P.S

THE PREVENTIVE MAINTENANCE MONTHLY

Issue 16 1953 Series

EVERYBODY—AND EVERYTHING—LIKES TO GET A LITTLE SOMETHING

nobody, but nobody
said it neater than **DIESEL POWER MAGAZINE**

Editorially speaking

CONCERNING INSTRUCTION MANUALS

"Anyone in the technical writing business knows the labor and travail that goes into the preparation of an instruction manual. Perhaps, to others it is not so apparent.

"The text is carefully written, checked, rewritten, re-checked, and finally polished. Illustrations are carefully selected to show just the points that are meant to be emphasized, the pictures are retouched, carefully sized, engraved and captioned. Text and pictures are printed and bound.

"Finally, our instruction manual is brought forth after great pains and labor. It is ready to go out into the world in all its pristine beauty. Then what happens; it falls into the hands of people.

"Some sage once remarked, 'It takes all kinds of people to make a world.' Let's see what might befall our unsullied manual.

"It might fall into the clutches of a man with a 'work of art' or 'treasure' complex. This manual is too nice a thing to be left around where it might get into someone's dirty hands and get smudged up. So he carefully puts it away out of sight—and too frequently out of mind.

"The years pass; the engine is worn out or sold; and someone finds our manual on a top shelf somewhere or behind a lot of things in an old cabinet. "What's this junk?" he remarks as he beats the dust from it and finally tosses it in the rubbish. So our manual leaves this world after a completely useless life.

"A variation of this is the man with

the 'inferiority' or perhaps a 'I've-got-to-be-smartest' complex. He snags on to the manual and hides it away in his desk. Then if someone in the shop wants some answers they have to come to him. He can then peek, pass along the info—sometimes garbled—and play the part

of the 'big brain.

"This fellow is usually afraid that someone in the shop may learn something for himself and shoot for his job. Who's he kidding?

"Or perhaps our manual will fall into the grimy paws of the 'know-it-all' psychotic.

"To him all manufacturers are dumb; don't know a thing. He is the type that promoted this comment heard at an AERA meeting: 'All instruction manuals should have gasket material covers; then some of these fellows would at least get some use out of them.

This editorial from DIESEL POWER MAGAZINE is reprinted without so much as a comma changed, to show you that people in and out of uniform seem to be brothers under the cloth after all. After you get your yaks out of this you are cordially invited to share it with the men you think most likely to succeed in stashing your facts away.

"If our manual falls into these hands, it's a dead duck; no chance to be useful here. It will wind up 'unread, unhonored, and someone is stung.'

"Yet there is a bright side. Do you know that there are people who yearn for these manuals just as orphans yearn for a likely prospect on visiting day? We have a letter from a man in Australia on our desk beseeching us to get him some —not for himself alone, but so that he can use his meager store of texts to help a great many others that come to him for information.

"Then there is the man that digests the information in the manual when he gets it with the engine. He applies the information intelligently to fit his own

application and keeps the manual handy for reference when there is a job to be done.

"This manual bears the scars of a useful, active life. But then, who doesn't?—that's the way it is supposed to be. These manuals are to be used. They represent a lot of time and money spent by the manufacturer to help you get your money's worth out of his product. If this is accomplished, he has no better advertisement and our manual serves its purpose.

"When an engineer needs some help on a formula, he is liable to go to a well-thumbed Kent or Marks Handbook. When your wife makes that extra-special dish, she gets out the recipe. Well, your best recipe when you have to do a job on your engine is the instruction manual.

"Where do you fit in this picture?—think it over."

B. P. E.

(Ed Note—Could these horrible things possibly be happening to those copies of PS people never seem to get?)

IN THIS ISSUE

Issue No. 16 1953 Series

TANK-AUTOMOTIVE

SUPPLY & DIRECTIVES

ARMAMENT & AMMUNITIONS

ARMY AIRCRAFT

DEPARTMENTS

PS Magazine wants your ideas and contributions, and is glad to answer your questions. Just write: **Editor, PS Magazine, Aberdeen Proving Ground, Maryland.**

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...OLD TANKS NEVER DIE EITHER

WITNESS THE NEW **M74**
RECOVERY VEHICLE

Vehicle, Recovery, Medium, 74

Southern Exposure of the Same

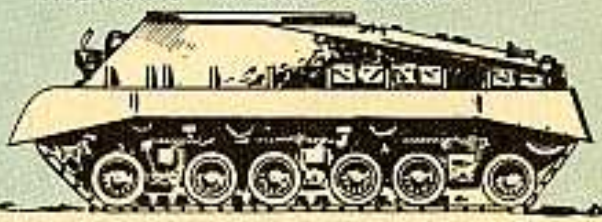
THE MONSTER jg

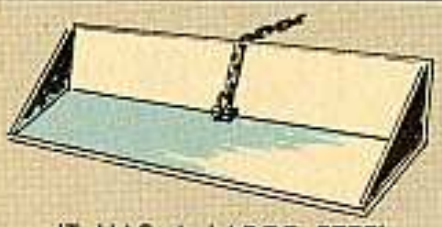
The tankers who used to swear around the Sterno fires that the old Easy Eight was the "Best *#%$ tank the *#%& Army ever had!" will be happy to know there's life in the old girl yet. The M4A3 tank, (HVSS) is the basis for the new M74 Recovery Vehicle, Medium. While the old lady has had a considerable face-lifting, you old sods will find the latest version of your favorite Ford GAA 525-horse bent-eight and the kick-and-shift transmission just like always.

But that's about all you'll find that you ever saw before, on accounta this isn't a tank any more, it's a recovery vehicle. They gave the old girl plenty of "Ooomph" to bring in any tank you've got (up to 45 tons) out of whatever it's sunk to the hatches in.

HERE'S WHAT IT IS . . .

THE M4A3 TRACKED CHASSIS

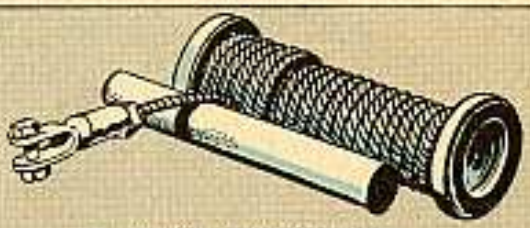




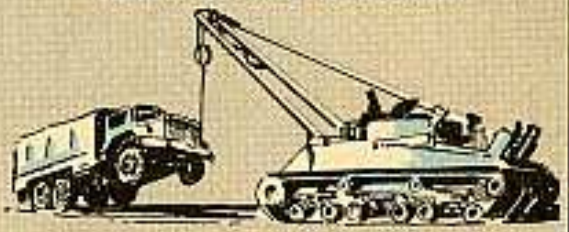
IT HAS A LARGE STEEL SPADE MOUNTED FRONT

IT'LL GRADE BEFORE OR DURING A RECOVERY

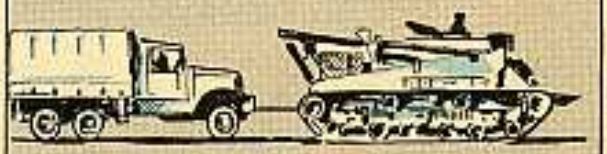
. . . IT'LL EVEN DIG LIKE A MOLE



A MAIN WINCH FOR TOWING AND RECOVERY

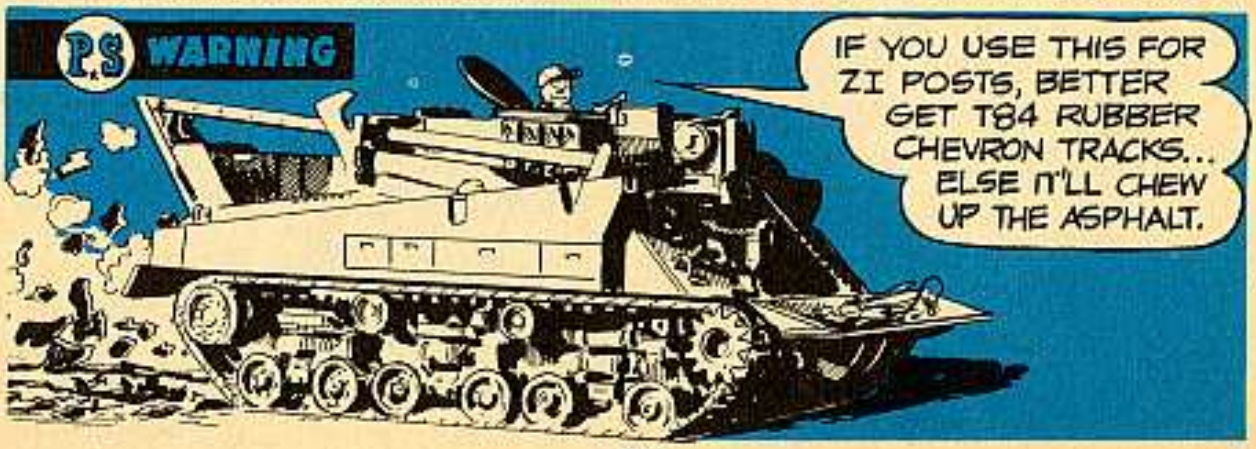


IT'LL RECOVER, LIFT



. . . AND HAUL

HAS HEAVIER STEEL SPRINGS AND TWO TYPES OF STEEL AND RUBBER TRACKS WITH DEEPER SHARPER GROUSERS INTEGRAL WITH THE BLOCK . . . THE TRACTION'S TERRIFIC.



HOW IT WORKS

The slickest thing about this machine is the hydraulic system, which takes the power from your main engine to the winches, and the winch controls. Spliced into the prop shaft at the transmission end is the power-takeoff unit. This is a sprocket mounted on ball bearings which will let the shaft turn without turning the sprocket when you don't need the hydraulics, and an internal-external gear splined on the drive shaft, which slips into the sprocket when you want it to turn. The sprocket drives a chain that runs in a sealed chain-case where it is pressure-lubricated at 30 pounds pressure with #10 oil from a special pump in the engine room. This chain drives a two-part constant-displacement pump that provides the power for the winches. At the rear end of this main pump, another short chain drives a smaller pump that supplies the power to take the brakes off the winches when you want to reel out cable.

From the pump, the hydraulic oil under pressure goes to the main valve sub-plate. This is a large, steel slab mounted in the right side of the hull and drilled seven ways from Sunday with oil passages (Fig. 1).

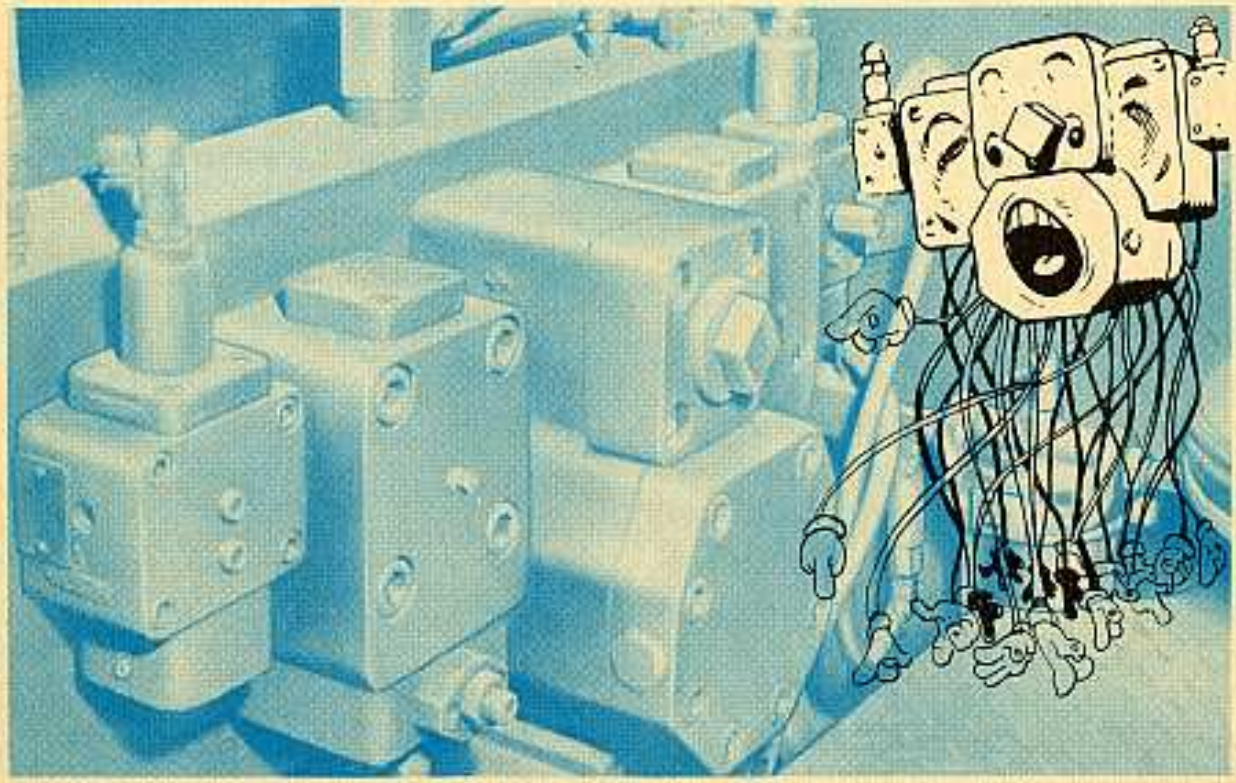


Fig. 1—**Main Valve Sub-Plate.** The gismo that's the brains of the hydraulic control system which puts the muscle in all the winches. Tho' tough, it's not to be manhandled.

It must have been a little bear to set up, but now that is worked out, it replaces a plumber's nightmare of piping. On this sub-plate are mounted all the winch control-valves and check-valves which direct the oil to whatever winch or accessory you are using. These valves are sorta like relays in an electrical circuit. When you pull a control lever you close a little valve in a ¼" line, and the pressure change operates the main valve, admitting pressure to the big lines that supply the winches. This permits the big lines to run directly to the job without going all over the hull, and at the same time makes for easy-to-operate control handles.

From the valves on the main valve sub-plate the oil runs to a hydraulic motor on each winch, or to the cylinders that raise the boom. These motors are what actually turn the winches, and they offer you one big advantage over any clutch-type of power train. No matter what speed the winch is turning, it has full power. The pull is just as great at six inches a minute as it is at sixty feet a minute. Better still, since there is a main pressure-relief valve (call it a safety valve if you like) set at 2000 pounds pressure, there is no need for shear pins in the winch drives. You can use the full power of the rig on a pull, and the relief valve will pop before the cable will break.

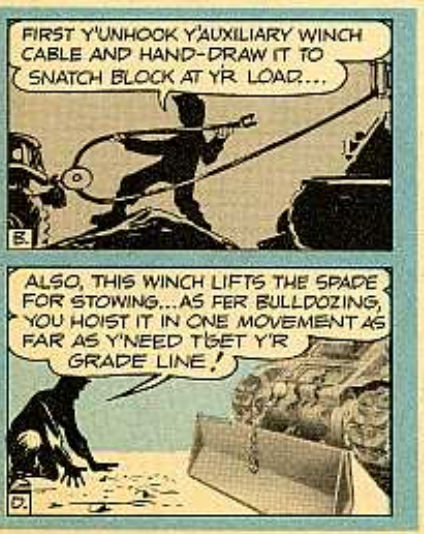
The vehicle itself operates like any M4A3 tank so see TM 9-759.

But this won't tell you how to work the recovery equipment, so the company is shipping a manufacturer's manual with each machine to help you out until the new TM comes out. Be sure you keep this manual with your new vehicle. However, there have been a few changes that will affect the results you can expect. The final-drive ratios are from the old, heavier assault tanks (a double-thick armor job.) which are slower but more powerful and let you tow a full-track vehicle weighing up to 100,000 lbs.

The main winch, or tow winch, is mounted low in the hull, and feeds its 1 ¼" cable out a slot in the front armor and through a guide roller. There's a ring on the hull below this roller where you can hook the cable clevis to pull with a two-part line.

The A-frame type boom of this machine rides in the rearward position in a couple of stowage clamps at the top of the boom support for travel. When in this position you can pass the ⅞" boom winch-cable out over a feed roller in the rear of the turret, over the boom sheave and use it for off-the-ground towing.

For hoisting, you raise the boom to its forward position by means of two hydraulic cylinders mounted above the sponsons, which act on pins in the bottom of the boom pivots. A heavy stay-cable supports it in the raised position, and a sheave at the top of the boom lets this cable handle minor variations of load and position so that both sides of the stay-cable carry equal loads. To use the boom, when raised, you lead the hoisting cable out the forward end of the turret, just behind the auxiliary winch, pass it over the boom sheave, and if you want a two-part line you pass it through the hoist block and return it to a becket or lug at the top of the boom. This set-up permits straight hoisting up to 25,000 lbs. with a one-part line or 50,000 lbs. with a two-part line, and will handle turret assemblies or power packages with ease.



Also when you need to pinpoint the hoisted load, in places where it would be tough or foolish to drive the vehicle to spot the load, you've got yourself a LIVE BOOM position. To use this feature, you raise the boom normally, and then take the boom-erecting cylinders loose from the feet of the boom and swing 'em over to the rear where they'll pin into the stay-line cranks at the rear of the turret. This will give you about 4' of in-and-out movement with the load (Fig. 2). However, no side movement is possible without moving the vehicle.

So between the main winch and the hoist, you'll be able to recover equipment from most any place or condition of breakdown. **The two winches can be used together when needed.** When it comes to

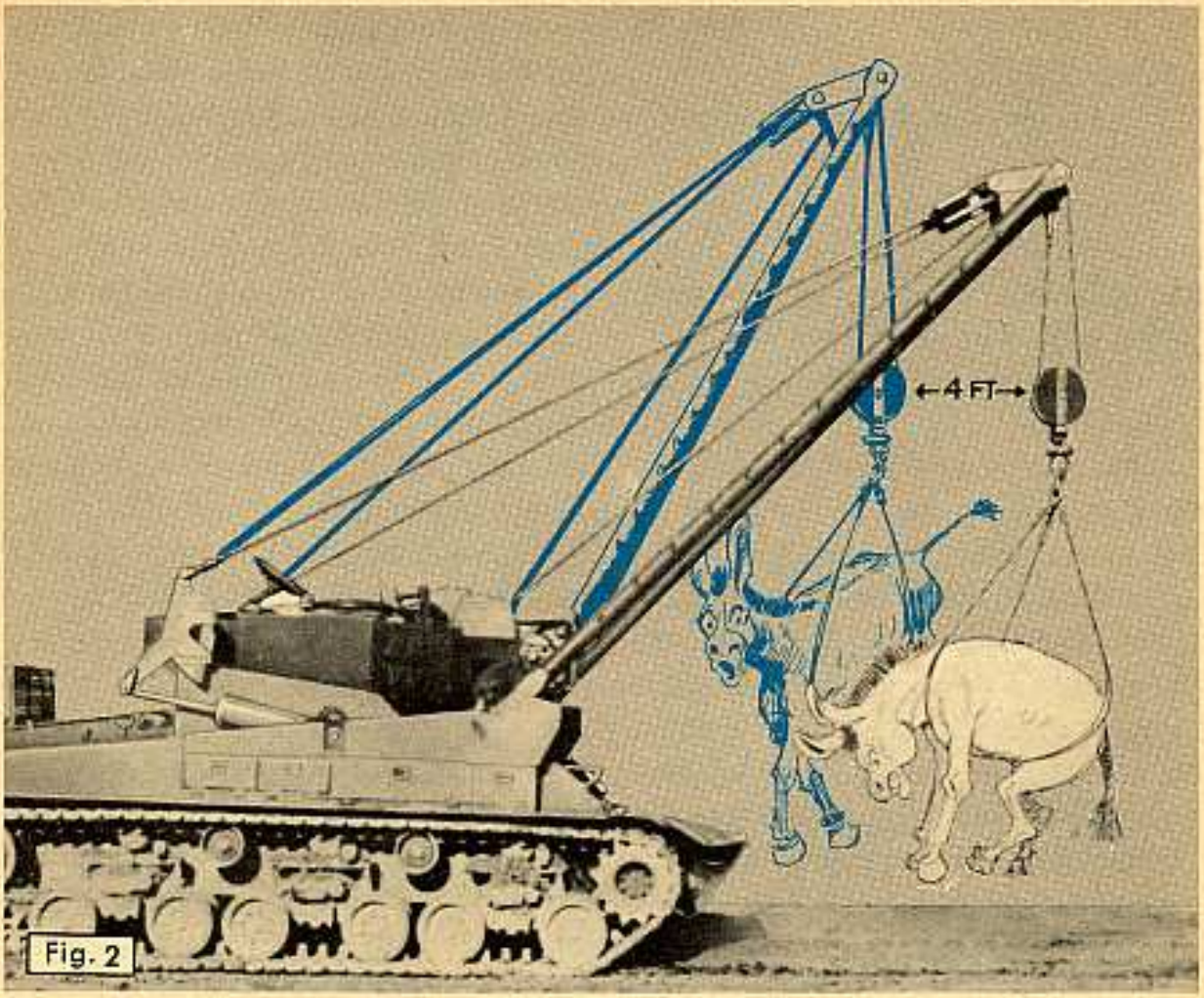


Fig. 2

getting it back to the shop, you turn to the towbar on the rear of your Monster. This is a two-piece towbar pivoted at the inner end so you can spread the legs to fit any vehicle. The only difference between this bar and the ones you're familiar with is the weight. This bar is much stronger and, consequently, much heavier than the previous towbars. Since it's a wee unhandy to pick your teeth with a 500 lb bar, it is permanently locked in the pintle and there's a small hand-winch that lifts on the telescoping spreader bar to help you get the legs up to the stowage clamps (Fig. 3). By clevising this towbar into the towing eyes on your crippled vehicle, you can light out for home and vittles and be pretty sure she'll be right there

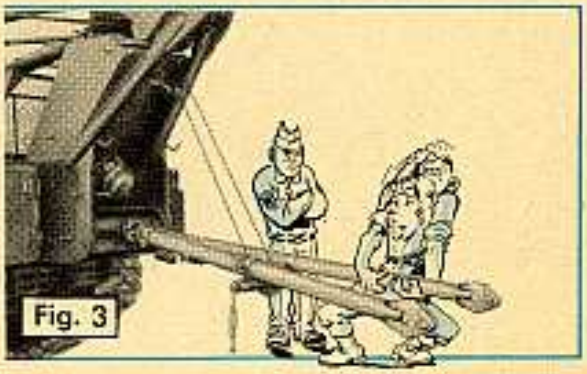


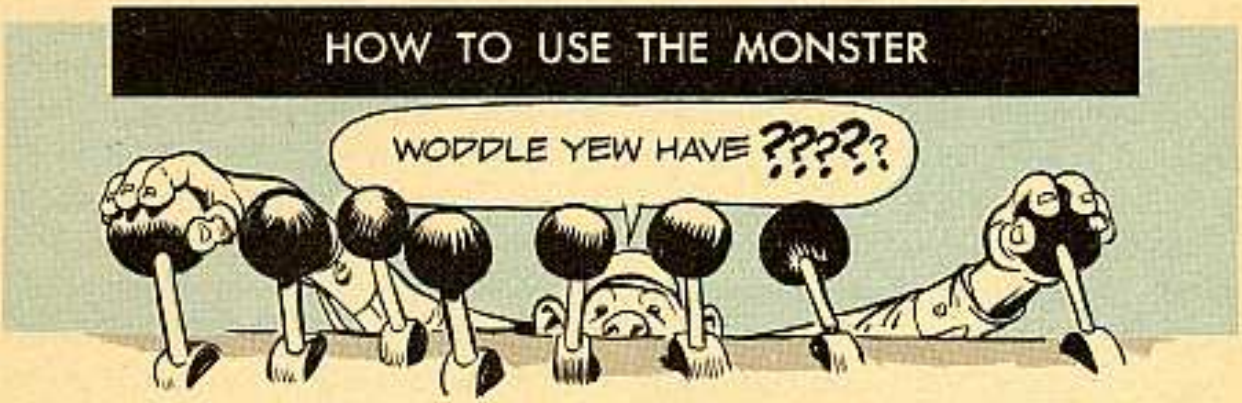
Fig. 3

like a dog's tail when you get in. If you ever need to, you can use the towbar to take the pull and the hoist cable to lift one end at the same time.

Now and then you'll run onto a

wreck that's so hung up, torn up or crippled up that you will have to cut it to bits, either to get the wreck loose or to get the crew out. For this purpose you will find Oxy-Acetylyne bottles, one Acetylyne and two Oxygen, inside the boom support. Welding and cutting equipment go with the OVM. (Just in passing, it is possible to raise the boom part way and use the boom-hoist cable to slide these bottles out.)

HOW TO USE THE MONSTER



If you haven't had much schooling in the M4-type tank, you can get the driving instructions, lube order, etc., from TM 9-759. But that won't tell you how to work the recovery parts.

Controls: The controls that direct the winches and other recovery equipment on this vehicle consist of:

The Power-Takeoff: At the driver's right rear is the control lever for the power-takeoff. To engage, you depress the clutch pedal and wait till the propeller shaft stops turning, then lift the thumb latch and shift the lever to the rear. Then take up the load slowly with the clutch. To disengage, depress the clutch and, lifting the thumb latch, return the lever to forward position.

The Control-Valve Panel (Fig. 4): Located between the driver and the bow-gunner-radio-operator, is the control-valve panel. On the main panel are three winch control-valve levers (left side) that you pull back to increase the pull, and three winch-brake control-valve

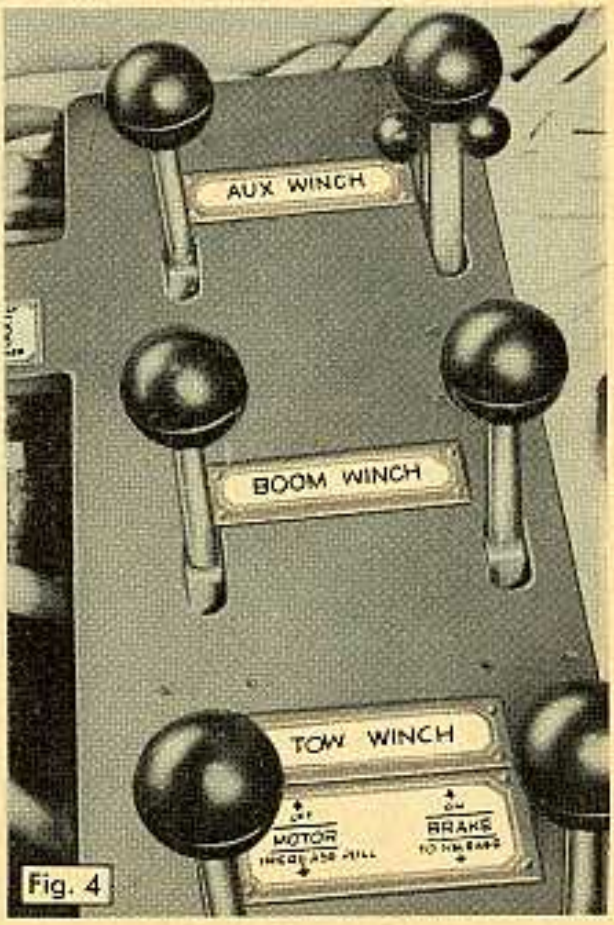


Fig. 4

levers (right side) that you pull back to release the brakes. Attached to the upper left corner of this control-valve panel is the boom control-valve lever which is pushed forward to elevate the boom, pulled back to lower it.

Winch Shift-Levers: On the driver's left are three levers that shift the winch gears to change the direction of rotation. (The hydraulic motors on these winches are reversible. Since the winches themselves are standard production items already equipped with a reverse gear, it was thought better to use this gear than to double up on the valves in the hydraulic system.) So, you push all three winch shifts **forward** to pull in cable, and you pull all three **back** to pay out cable. (See data plates on the winch shift-panel.)

WINCHING

To winch: To pull a vehicle up a bank or out of a hole with the main winch, you drive to the best position you can get and turn to face the recovery job. Depress the clutch pedal and wait for the drive shaft to stop. Now reach back to the power-takeoff shift-lever and, raising the thumb latch, shift it backward to the engaged position. Release the clutch slowly and bring the engine up to 1600-rpm. (You can hold this RPM by setting the hand throttle or by using the foot accelerator.)

Connect the auxiliary-winch cable to the chain in the center of the spade, and shift the winch shift-lever to PULL-IN position (forward) and take the weight on the cable by pulling the auxiliary-winch valve on the control-valve panel. Now shift the winch shift-lever to neutral, pull the spade release-handle, and lower the spade by releasing the auxiliary-winch brake. (Pull the auxiliary-winch brake-release valve on the control valve-panel.) With the spade fully lowered, shift your main transmission into low, and ease up onto it. (Continue to hold back the auxiliary brake-release valve until you are fully up on the spade.)

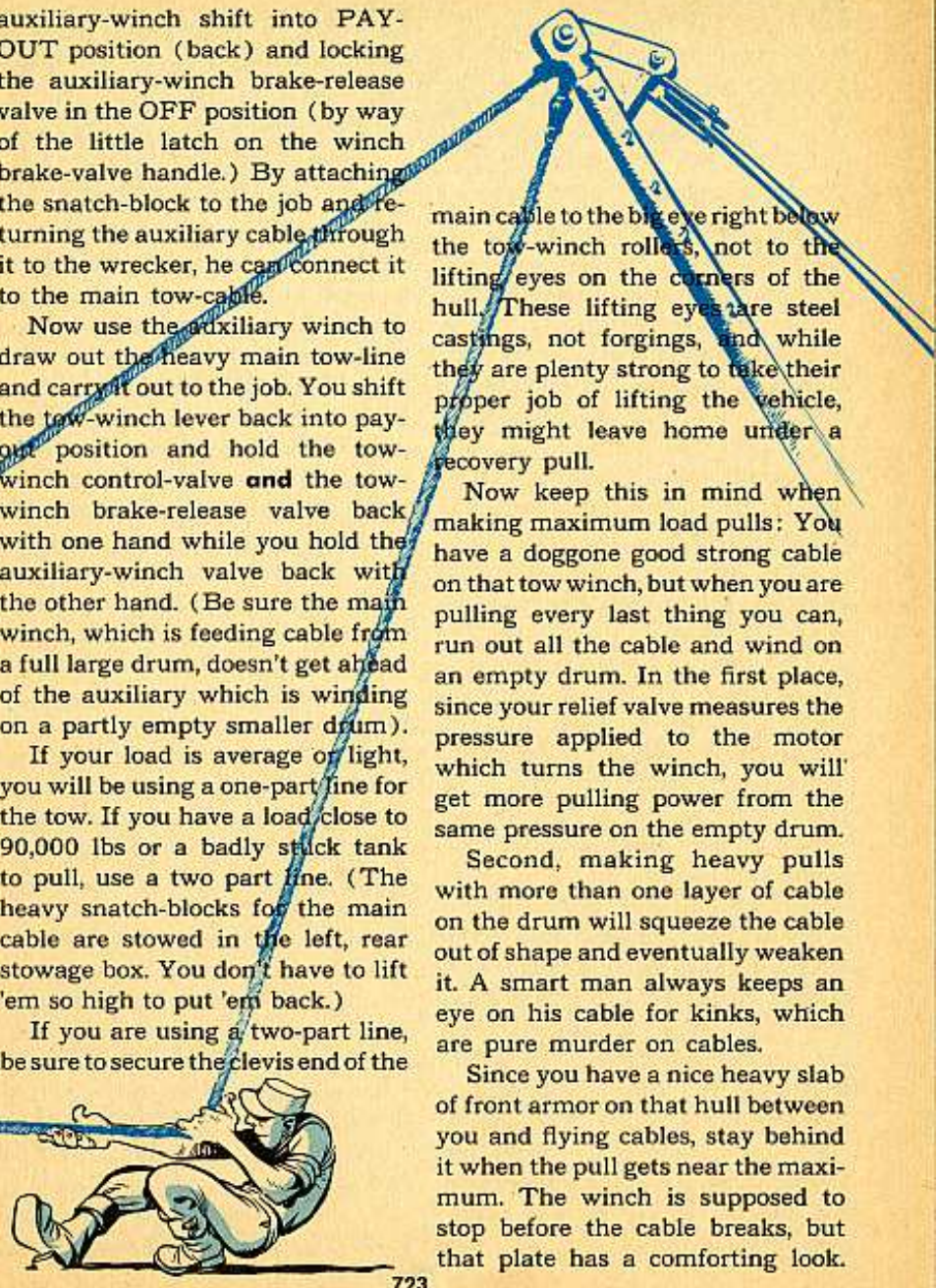
Now you can take the auxiliary-winch cable off the spade chain. Let the rigger take the auxiliary-cable and a snatch-block down to the recovery job by shifting the

auxiliary-winch shift into PAY-OUT position (back) and locking the auxiliary-winch brake-release valve in the OFF position (by way of the little latch on the winch brake-valve handle.) By attaching the snatch-block to the job and returning the auxiliary cable through it to the wrecker, he can connect it to the main tow-cable.

Now use the auxiliary winch to draw out the heavy main tow-line and carry it out to the job. You shift the tow-winch lever back into pay-out position and hold the tow-winch control-valve **and** the tow-winch brake-release valve back with one hand while you hold the auxiliary-winch valve back with the other hand. (Be sure the main winch, which is feeding cable from a full large drum, doesn't get ahead of the auxiliary which is winding on a partly empty smaller drum).

If your load is average or light, you will be using a one-part line for the tow. If you have a load close to 90,000 lbs or a badly stuck tank to pull, use a two part line. (The heavy snatch-blocks for the main cable are stowed in the left, rear stowage box. You don't have to lift 'em so high to put 'em back.)

If you are using a two-part line, be sure to secure the clevis end of the



main cable to the big eye right below the tow-winch rollers, not to the lifting eyes on the corners of the hull. These lifting eyes are steel castings, not forgings, and while they are plenty strong to take their proper job of lifting the vehicle, they might leave home under a recovery pull.

Now keep this in mind when making maximum load pulls: You have a doggone good strong cable on that tow winch, but when you are pulling every last thing you can, run out all the cable and wind on an empty drum. In the first place, since your relief valve measures the pressure applied to the motor which turns the winch, you will get more pulling power from the same pressure on the empty drum.

Second, making heavy pulls with more than one layer of cable on the drum will squeeze the cable out of shape and eventually weaken it. A smart man always keeps an eye on his cable for kinks, which are pure murder on cables.

Since you have a nice heavy slab of front armor on that hull between you and flying cables, stay behind it when the pull gets near the maximum. The winch is supposed to stop before the cable breaks, but that plate has a comforting look.

HOISTING

ROUGH GROUND OR EXTRA HEAVY LOAD .. DIG IN THE SPADE !

Hoisting, front: To make a lift with your boom, you position the vehicle, drop the spade if the ground is bad or the load is heavy. Release the boom stow-clamps, and erect the boom by engaging the hydraulic pump and holding the boom control valve forward. In erecting the boom, you want to be sure that **all** the slack is out of the stay lines.

Hold the valve forward until the relief valve pops and you hear the engine speed pick up. Also be careful that the stay cables do not snag on anything while the boom is going up. With the boom fully up, you lead the cable from the hoisting winch out the front hatch, and carry it over the boom sheave. (Here's where those steps on the boom leg come in.)

Now if your load is 25,000 lbs. or under, you drop the cable to the load and hoist away. If your load is over 25,000 lbs., or if you don't know how heavy it is, or if you have a stuck vehicle deep in the mud, or if you require slow, careful movement, carry the boom hoist-cable back up to the eye on the boom below the cable sheave and use a snatch block to make a two-part line.

Live boom position: When the hoist is made for such jobs as the replacement of power packages or turrets, that is, a lift in which exact spotting of the load is required, you use the LIVE BOOM position. This is set up by placing the boom in OPERATING position, and placing a web strap, rope, on anything else you can get, around the rod of the boom-cylinder to support the cylinder when the pin is removed. Then pull the pins out of the boom feet with the puller.

Then you swing the cylinder over to the back and pin it into the bottom of the stay-line crank with the quick-release pin you will find there. (This changeover can be made with the load suspended.) Now, holding the boom elevating-control valve forward will raise the boom until the sheave is about 4′ closer to the vehicle. This movement in and out will let you spot an engine or a turret without moving the vehicle, if no side movement is needed.

Lowering the boom: To return the boom to TRAVEL position, you first take down the hoist line and stow the cable and snatch block. Then pull the boom control valve back into LOWER position,

...AND TOWING

HAVE A CHOICE?. . .PICK SMOOTH GROUND

and ease her down. Be sure the stay lines don't foul on anything as she comes down. When the boom rests in the stowage clamps on the boom support, button them up and take off. (The boom cylinders must be swung forward and pinned to the boom feet for this operation.)

Hoisting, rear: To use the hoist cable to lift from the rear of the vehicle, you pass the boom winch-cable out the rear top-hatch, seating it carefully in the feed roller inside the turret as you do so. This cable is passed over the boom sheave on the stowed boom, and can again be used with either a one or a two-part line as needed (see Fig. 5).

You can use both the hoist cable and the towbar to accommodate a vehicle you want to tow with one end raised.

Caution: *Do not attempt to hoist from the rear with the hoist cable running out the front hatch.*

Towing: Except for the weight of the towbar, there is nothing new about setting up for a bar tow. You release the towbar travel-locks and ease the towbar down with the hand winch. The telescopic spreader-bar can be set to whatever width you want for the vehicle to be towed. Couple the clevises of the towbar into the towing lugs of the

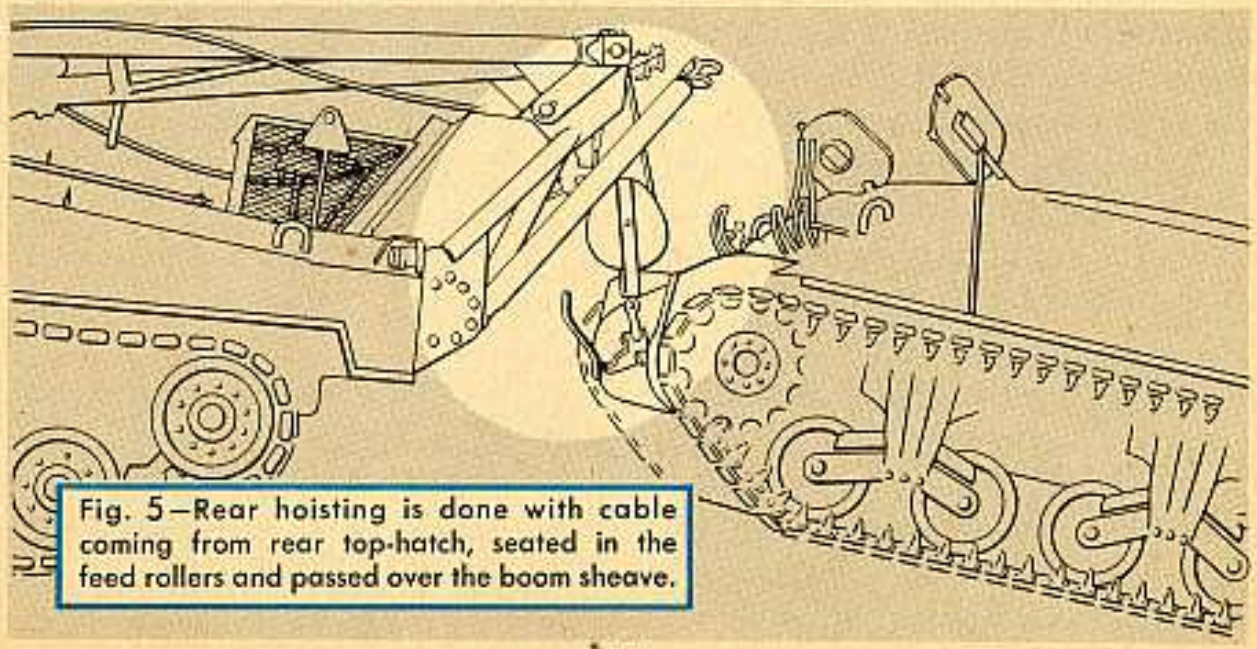


Fig. 5—Rear hoisting is done with cable coming from rear top-hatch, seated in the feed rollers and passed over the boom sheave.

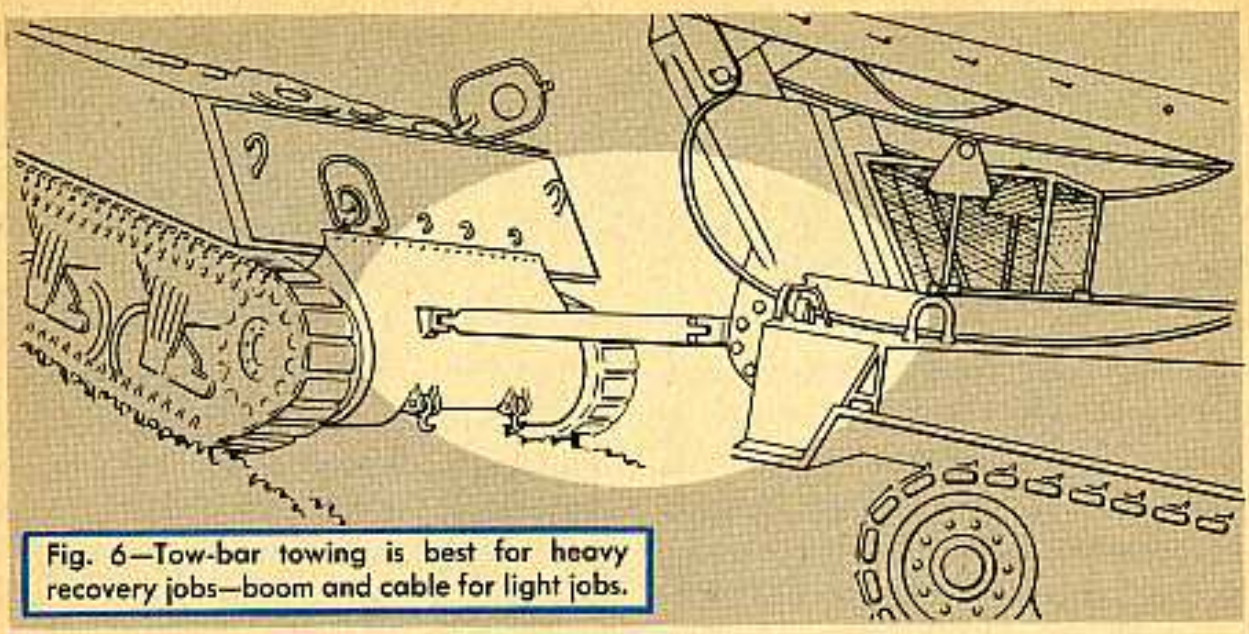


Fig. 6—Tow-bar towing is best for heavy recovery jobs—boom and cable for light jobs.

towed vehicle, and light out (Fig. 6). When towing, operate in any gear you need to keep your engine speed over 1200-rpm—around 2000 is best—and use your head to prevent jerks and jars. The bar is plenty strong, but why abuse it? Besides good drivers take a professional pride in a nice smooth tow over difficult ground.

SERVICING THE "MONSTER, JG"

In addition to the regular servicing and lubrication of the chassis as per LO (TM) 9-759, you have the following points to check:

Hydraulic reservoir: Located under the turret floor-plates is the hydraulic oil tank, this tank holds approximately 80 gallons of oil, Spec 2-79B. It is in two sections, the return and the feed reservoirs, which are connected by a 3" hose. Check the oil level by way of a dipstick in the return side (Left) and fill from this side. If 2-79B hydraulic oil is not available, engine oil OE 10 can be used to -10°F. Considerably more foaming will occur when filling, but once the system is completely filled you won't know the difference.

Winches: All the winches are provided with oil-filled gear cases. These cases call for OE 10 for below 0°F operation, GO 90 for cold weather, (0°F to 50°F) and GO 140 for operation over 50°F. (**Note:** Since the lubrication period on the winches is set at 625 hours, you will find that if you change the lubricants to match the temperatures you will more than likely be well inside the time period. But use your head, if you are on a rough job in lousy conditions of dust and so on, change oil when it looks dirty.)

At the bottom of each winch case there is a magnetic drain-plug. Be sure to watch this plug for chips of broken teeth when you drain the oil. A little fine metal dust is normal, since these winches are doing

a terrific job, but if you get chips and fragments there's trouble ahead. Tell Ordnance your troubles.

The tow winch holds nine gallons of lubricants, and the level should be kept between the two pipe plugs on the right side of the winch.

The boom winch holds about four gallons, and is also checked by a plug on the right of the gear case.

The auxiliary winch is the little fellow, and only holds 2½ gallons. You will find a plug (¾" NPT) on the level gear end of the gear case marked OIL LEVEL which shows you the oil level.

Winch grease-fittings: All these winches also have a couple of alemite fittings which want a high temperature grease. On the tow winch, one is on the brake shaft, and is reached by removing a plug in the brake case. The other is on the drum and can be reached through a hole in the left side of the winch case. On the boom winch you'll find only one fitting—on the shifter cable. Other lubrication is taken care of by the internal oil system. On the auxiliary winch there are two fittings, one on the bearing cap, and one inside the case flange which can be reached through a hole in this flange when the drum is rotated to the right spot.

Both the tow and auxiliary-winch shift-cables are equipped with grease fittings.

Caution: When greasing these winches, be careful not to use too much grease around the brake drum ends of the shaft. Grease may get into the brakes—and that's bad.

Oil filters: Back by the main valve sub-plate, on the engine firewall, is the hydraulic oil-filter and the power-takeoff lubrication filter. These are permanent element filters. All you need to do is to take off the shell and dump it every week; look carefully for metal chips. Also clean it every time you drain and refill either system.

Be careful! Trouble here if the inside element is not screwed in tightly. Then the outer case sucks in air and louses up the system. Leaks won't show because oil won't drip when there's a suction.

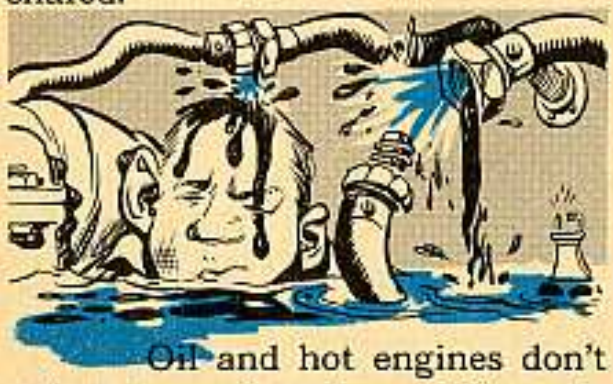
Chain case: The power-takeoff chain case has its own oil supply. The level is checked by a dipstick on the case.

Bleeding: Same as any other hydraulic system, you crack loose a fitting on any assembly you suspect has air in it, and let oil run out till it stops bubbling. Start at the pump and work to the cylinder or motor, being sure to tighten up behind you as you go.

INSPECTION

There are two basic ideas behind your inspection; if you keep them in mind, you won't go far wrong.

The simple one is that since this machinery is hydraulic, you want to be sure it is not leaking, that the joints are tight, and that the hoses and lines are not being pinched or chafed.



Oil and hot engines don't get on too well, and even if there is no fire, your buggy can be an awful mess if you have a line carry away.

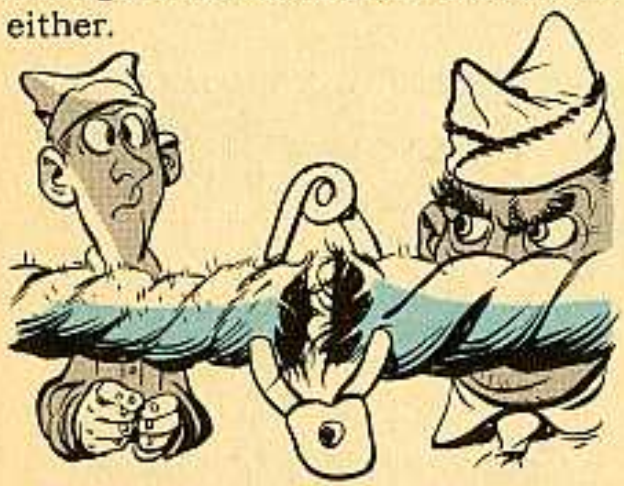
The other, and important, idea to keep in mind all the time you are around this machine is that it **is** a recovery vehicle. You never take this thing out until there is trouble somewhere. So, if you already have all kinds of trouble, you certainly don't want any more of it from your vehicle.

This idea will help you to see why a bright sunny afternoon is a fine time to be unwinding your cables and looking for kinks or broken strands, rather than trying to tie knots in one at midnight in a sleet storm.

AND LAST BUT NOT LEAST SAFETY

Since you've got almost unbelievable power in this machine for making recoveries, be always a little respectful of this power.

Of course, you already know better than to stand under a lift, or down hill from a tow. Don't ever be afraid of this buggy—she's good, strong and safe, but don't be foolish, either.



You've got a crewman called the Rigger—he should be a rigger, and a good one, for the hitches he makes must stand terrific pulls. His gear must always be shipshape. Better get rid of any doubtful blocks, cables, chains and so on the minute you spot 'em.

Doesn't take much longer for the rigger to walk around behind the machine when you've got a heavy pull on, and for the rest of the crew to duck back down inside the hull a bit.

You use hydraulic pressure to take the brakes off—strong springs to put them on. So any time your pressure fails while you are lifting, your brakes immediately go on and hold the load right where it is. On the tow winch and the hoist winch these brakes are made with a ratchet so you can reel in, or lift, without releasing the brake.

TAKE IT EASY... IT'S A BIG 'UN.

Check the antifreeze

The cool fact is that antifreeze needs the right amount of water to keep your engine from freezing.

Without water ethylene-glycol antifreeze (Stock No. 51-C-1554-15) will start to go solid at 0° F but when you make a mixture of 60% of antifreeze to 40% of water (6 parts antifreeze/4 parts water), the stuff should protect your vehicle to approximately -60° F. For any other possible minimum temperatures out your way you'd best see TM 9-850 on how much water to add to the solution.

Not that ethylene-glycol's intended for use in the bitter cold of -60° F. In the frozen waste-lands, arctic antifreeze (Stock No. 51-C-1555-755) is prescribed. This is a liquid ready-mix (colored yellow for identification) that needs no water in a clime where the water usually comes in blocks.

And speaking of freezing points —don't be half-safe, check your hydrometer for accuracy.

Raritan Arsenal, Metuchen, N. J., is giving away to any Ordnance Supply Officer asking for it, a reference solution with which to make the test.

When you get the solution, put some in a container and bring it to 70° F. Be sure it's that temperature by testing it with a thermometer. Then check the hydrometer in it and if the reading is more or less than 12.7, note the difference on a tag (plus if less than 12.7, and minus if more than 12.7) and attach it to the hydrometer. The amount should be added or subtracted as the case might be whenever the hydrometer is used on a 60/40 antifreeze-water mixture. This correction won't help on any other mixture, and the test just tells you if your hydrometer's off or not.

Fuel shut-off valve

Does the fuel shut-off valve in your light tank work right since that last repair job? If it doesn't, the pointer won't correspond to the dial setting.

If not, the trouble was caused when the valve-stem (down inside)

was given a half-turn before the connecting-joint was hooked to it. To set her straight, disconnect and turn the stem another half-turn. Then hook her up.

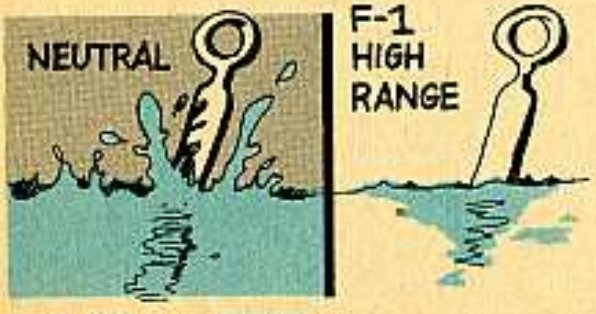
Now, to prevent such trouble next time you have the valve apart, make two punch marks side by side, one on the valve-stem and the other on the connecting-joint. Just line 'em up when the parts are put together again.

This fix will work on the M41E1 (T41E1), M41E2 (T41E2) and T141.

Hydra-matic fluid-level

Here's the new way to check the fluid level in those M135 2½-ton, 6x6 truck hydra-matic transmissions.

It seems that you get a reading that is higher than the actual level of the transmission fluid if you have the transmission lever set in "N" or neutral position as your engine idles during the level check. This is because the front clutch has a nasty way of throwing oil up against the dipstick.



Here is the cure:

You can start with a hot or cold transmission. In either case, start in NEUTRAL HIGH RANGE position, run the engine at idle three-to-five minutes with the transmission lever in F-1 LEVEL HIGH RANGE position and the parking brake on. Keep the engine at idle, pull out the dipstick, wipe it off, reinsert it and pull it out again to get your reading. The oil should stand at the COLD mark if you have not operated the unit for some time. It should be up to HOT FULL if your truck has been running.

If she shows low, keep the engine at idle and the brake on and add the necessary fluid. Check the level as you add fluid because you don't want to put in too much.

To fill an empty transmission, pour in 12 quarts of OE 10 and put filler cap back on. Run the engine at idle for five minutes with the parking brake on and the transmission lever set a F-1 LEVEL HIGH RANGE. Then add enough oil (usually about 4 quarts) to bring it up to the right point. Check the level as you add oil. Be mighty careful that you don't put too much in.

Banjo-type axle music

When Louie the Luber gets going on the underbelly of his 6x6 he fills everything in sight till they're spouting oil and grease out their ears.

Now, a little extra oil or grease may be fine in some places, but when it comes to the differential on

those 6x6's, you want to read all the fine print first.

Trouble begins when Louie sees two plugs in the differential cover on the banjo-type axle housing. He figures the lower one is to drain with, and the upper one is for filling. He fills her up to the brim through the top plug.

Then, Louie's troubles really start to bubble. The differential churns and overheats and retches its overload past the seals and all over the brake shoes. This does not help the truck stop as it might with dry brake shoes.

Louie shoulda used the bottom plug for filling. He would do better to ignore the top plug completely. He should check his differential oil-level through the bottom plug; it should be up to that bottom plug, no higher—that's in hot weather. In cold weather, he should fill to ½" of the opening.

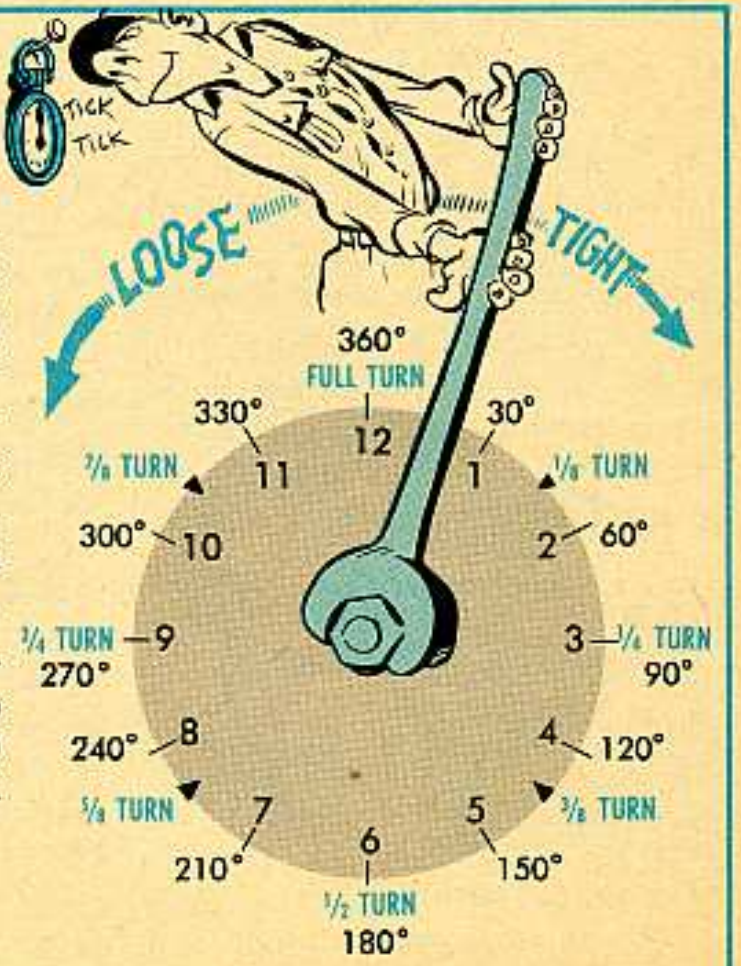
Mr. Patrick Porter, your friendly OCT at Camp Polk, came up with a cure for Louie's love for overfeeding this gearcase. He filled the square socket in the upper plug with lead. Now only the bottom plug can be taken out. He also set the guy right who paints the lube points: Made him take the red paint off the upper plug with his nose.

Trick by the clock

Use a clock or watch—any brand—when it comes to tightening or loosening bolts a certain number of degrees or fractions of turns.

To tighten turn clockwise from 12 to the hour corresponding to the fraction of a turn or number of degrees.

To loosen turn counter-clockwise from the hour to 12. Each hour is equal to 30 degrees. No more give-or-take and guessing.



JOE DOPE

A QUICK 1-2-3 ON VEHICLE PM SERVICE

... OKAY... NOW FOSGNOFF, TO SUCCESSFULLY EXECUTE THIS TECHNIQUE,...THINK! ORGANIZE THE INANIMATE MACHINE INTO SOMETHING FAMILIAR. AND DON'T FORGET TO LOOK AT THE TM.

BEFORE YOU BEGIN YOU WILL, OF COURSE, HAVE GIVEN THE VEHICLE A "BEFORE-OPERATION" INSPECTION, AND WASHED IT. NOW, GET A GOOD OL' 461 (OR 462) FORM AND START IN . . .

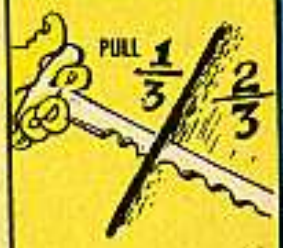
1. CHECK ➡ **DASH, INSTRUMENTS AND ACCESSORIES . . .**

OIL PRESSURE	SPEEDOMETER	TEMP.	FUEL	AIR
				
COMPARE WITH TM READING	WATCH FOR SHAKY HANDS	WATCH RISE	DOES IT WORK?	GAGE REGISTER?

HORNS	MIRRORS	WINDSHIELD WIPERS
		
WIRING? . . . SOUND AND NOTE TONE . . .	CHECK FOR CRACKS AND ADJUSTMENT	(AIR OPERATED) PROPER SPEED IS: 60 DOUBLE STROKES PER MINUTE

2.

BRAKES
CLUTCH
TRANSMISSION
AND TRANSFER

FOOT BRAKE	BRAKE PEDAL	HAND BRAKE
		
FREE TRAVEL? DOES IT "WORK"? PULLS TO A SIDE?	DOES IT HIT FLOOR? DO BRAKES CHATTER OR GRAB . . . ? ?	SHOULD HAVE ENOUGH RATCHET IN RESERVE WHEN "FULLY APPLIED."

CLUTCH PEDAL	CLUTCH ENGAGEMENT
	
TOO MUCH (OR LITTLE) FREE PLAY?	DRAG, CHATTER, GRAB, SLIP?

TRANSMISSION AND TRANSFER

JACK-UP ONE WHEEL ON EACH AXLE . . .

RUN ENGINE . . . TRANSMISSION IN BOTH FORWARD AND REVERSE

BOTH WHEELS SHOULD TURN IN SAME DIRECTION

FRONT WHEEL DOESN'T TURN? TROUBLE IN FRONT WHEEL DRIVE MECHANISM IN SHIFTING OR LINKAGE

RUN AT VERY MODERATE SPEED . . . LISTEN—IF IT VIBRATES— LOTTA NOISE . . . YOU'VE GOT TROUBLE I-N-V-E-S-T-I-G-A-T-E

3.

STEERING ENGINE, AIR BRAKES

WHEELS	STEERING	AIR BRAKES
		DASH GAGE SHOULD READ 100 PSI FOR ABOUT ONE MINUTE 
TOO MUCH FREE-PLAY WITH WHEELS STRAIGHT AHEAD?	WANDER? PULL? LEFT-OR-RIGHT	LEAKS? . . . WITH ENGINE AND VEHICLE STOPPED APPLY BRAKES AND LISTEN FOR LEAKS

ENGINE SPEED	POWER	GOVERNOR
		
IDLE SPEED RIGHT? KNOCKS, . . . HUMS?? NOISE YOU'VE NEVER HEARD BEFORE?	HOW'S THE PICK-UP? PULLING POWER?	IN LOWER GEARS, DOES GOVERNOR CHECK THE SPEED? IF SO . . . TROUBLE . .

PAPER WORK (SEE PAGE 748 FOR MORE ON PAPER WORK)

TRACK VEHICLES

USE FORM DA AGO 461 . . . 462
DOUBLE-CHECK

STICK WITH IT . . .
SEE THAT ALL ADJUSTMENTS ARE MADE

Joe Dope Posters

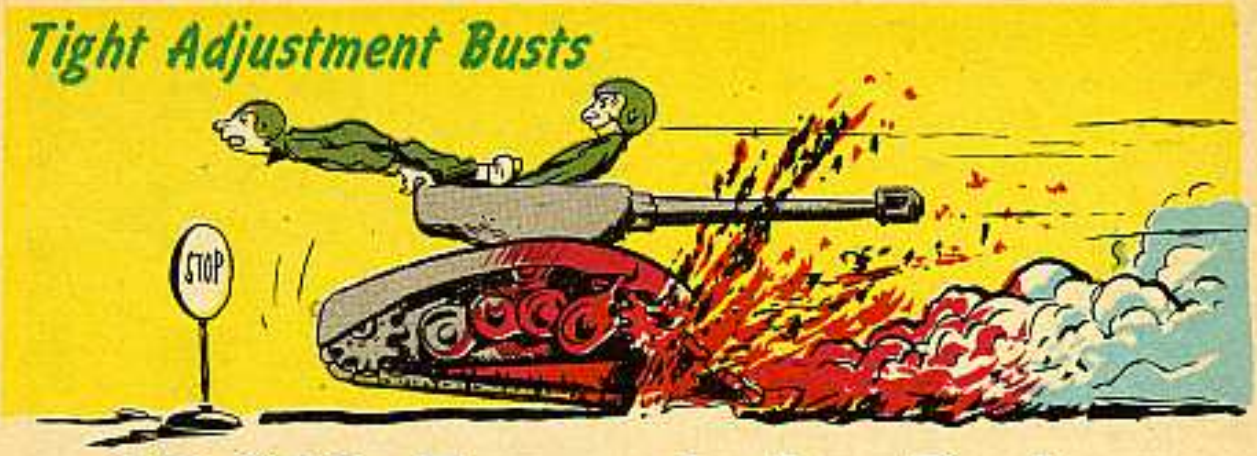
NOW come ready for **HANGING**

In this and in future issues of PS the cartoon in the center of the magazine will be all fixed up ready for you, the poster-maker.

Just pull out the two-page cartoon (the one about Joe Dope) from the middle of the magazine, apply thumb tacks where needed, and put it on the wall. That's all there is to it.

This way you get double duty from one sheet of paper. And you don't need an acre of wall space. Also, it saves cash for the taxpayers (you, for example) by cutting down on amount of paper used.

You like this poster idea? How about sending a word to Sgt. Half-Mast about it? He's the one who thought up the idea. Tell him if you like these small posters better than the big circus jobs—or, if you don't.



CD-850 Transmission Brakes

(There's the Rub, Bub!)

That refugee from Section 8 who brags about stopping his medium tank on a dime needs to have his head looked into some more.

Why? He's got his brakes adjusted too tight. And brakes that are too tight in the CD-850 transmission burn out faster than a trick cigar. You can lay 'em, odds even, that his tank will be in Ordnance for a transmission overhaul before his next 3-day pass comes through.

What happens is this: There are several discs inside the transmission that are forced together to give braking power when you hit the pedal. Some jokers adjust 'em too tight, thinking it's a good way to get better brakes. Sad fact is when they're that tight, they rub together all the time.

Pretty soon **no** brakes! And you lose your tank for a short stay at Ordnance.

You can have good brakes and not rip the guts outta your transmission with this step-by-step adjustment:

LINKAGE

First, inspect the brake linkages (all the rods, connectors, bars and shafts between the foot pedal and the brake unit in the transmission). Straighten bent linkage and oil all movable joints. Bent shafts or rods will throw brake adjustment off.

Second, go to the rear of tank and take off the transmission inspection covers from linkage-access-hole covers under the hull. Release the brakes. Now remove the clevis pin and disconnect the brake-apply arm from the linkage. At this point . . . this is where this differs with all other published procedures . . . pull the linkage toward the **rear** of the tank until it bumps against the stops to take up all the slack.

When it's all the way back see if the hole in the apply arm lines up with the hole in the linkage

clevis—don't pull or push on either the apply arm or the linkage to get them to line up—they must simply fall in line. Now if the holes do line up, you have no worries—simply insert the pin and make it fast. But if they do not line up — again don't move the arm or linkage—adjust the yoke on the linkage until the holes do line up. Then pin it. The linkage should have no tension in either direction. It should be relaxed, but not tight.

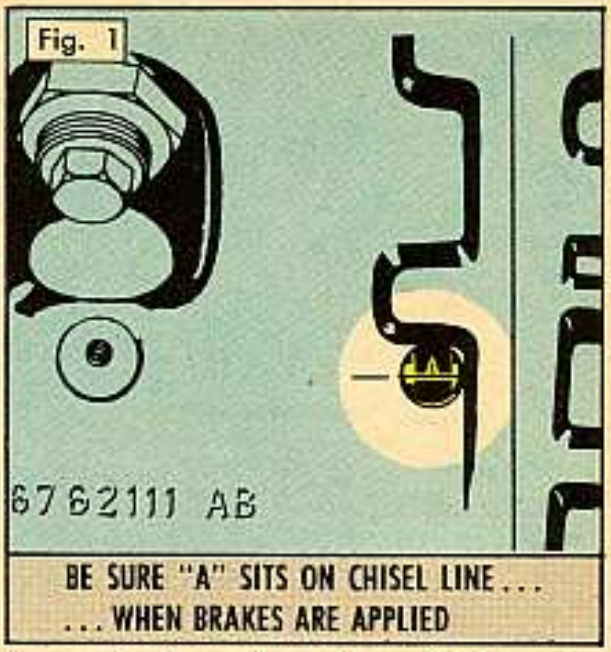
Take a look at the pedal in the driver's compartment—you now should have plenty of clearance between the hull and brake pedal, if there isn't, then someone has been monkeying around with its adjustment. To get plenty of pedal clearance, remove the pin from the rod running forward to the brake pedal from the cam assembly and adjust the rod's yoke until you have plenty of clearance.

BRAKE ADJUSTMENT

When you've got the linkage lined up, the next step is to see if the brakes themselves are OK. You'll have to do it separately for the brakes on both sides of the transmission.

First, you'll have to take off both the transmission-inspection covers from the rear of the hull. Then, take out the brake-inspection-hole plugs on the transmission that are next to the end covers.

You'll see a small circular window on each side of the rear of the



transmission housing. With the brakes off, you'll see a mark at the letter "R" (for "Release") in the window lined up with a chisel mark on the edge of the window. When you apply the brake, the mark at the letter "A" (for "Apply") will line up with the chiseled line (Fig. 1).

If you see the "A" above the chiseled line, the brakes are tight. If it is below, they are loose. There's the rub, and there's where you take

on the job of adjusting them.

To get at the adjusting screws that are on each side of the transmission, you'll have to take the cap off the adjusting screw and loosen the lock nut (Fig. 2).

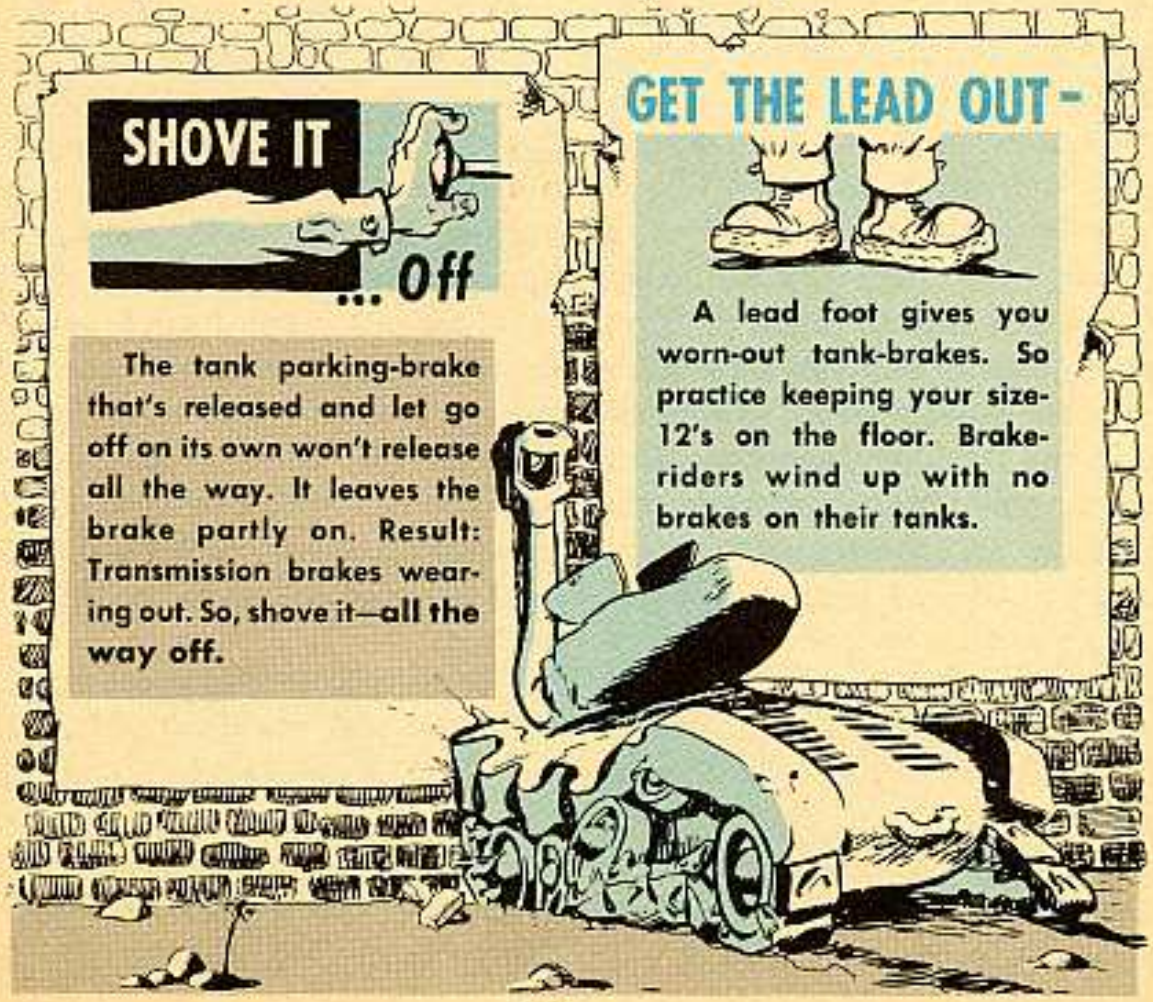
To tighten the brakes, you turn the adjusting screw the way the arrow on the housing tells you.

You reverse to loosen Here's where you have to be mighty careful: When turning the screw, the brakes must be in the released position. You apply and release the brake while adjusting to get the "A" line to match up. Never attempt to tighten the screw when the brakes are applied.

Be sure your final movement on the adjusting screw is to tighten. That takes out internal friction and lash. So if you happen to tighten too much or if you want to loosen tight brakes, back the adjusting screw off well beyond the correct point, and tighten slowly till you hit her on the nose.

When you've got it adjusted, the "R" line should hit the chiseled line when the brakes are off. When you push down hard on the brake pedal, the "A" line should come up even and not just "nearly so."

Then, all you need to do is tighten the lock nut, replace the cap, and you're ready to go out and stop on a quarter.

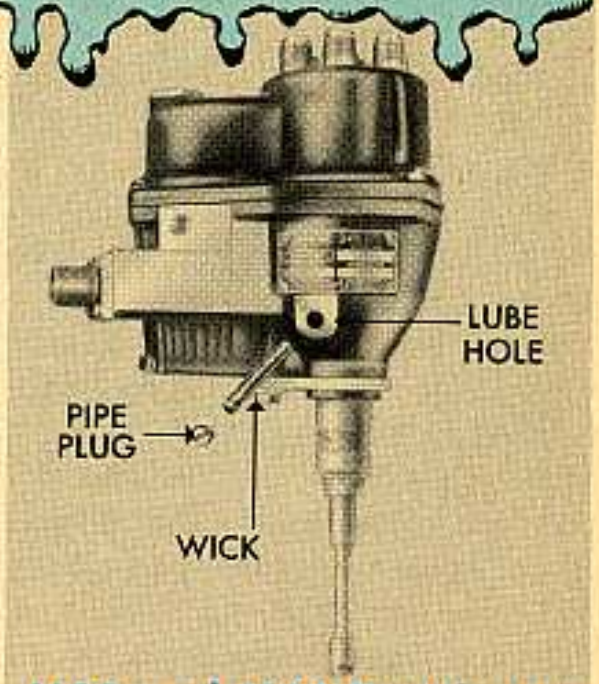


DISTRIBUTOR LUBRICATION ....

About the distributors in those new-fleet vehicles—here's the poop on lubrication: Unlike the older trucks, you don't have to attend to this gismo every time you grease the vehicle. But what attention it does need, it needs. Like everything else, unless you lube the shaft, it'll tighten up and grind away.

On the M135 it's real easy, you don't do anything. This igniter has a sealed ball-bearing at the top of the shaft which is life-time-lubricated inside the seal. The bottom of the shaft runs in a porous bushing that absorbs enough crankcase oil to keep it lubricated. (If you should happen to run out of crankcase oil, a distributor shaft will be the least of your worries, believe it.)

The M34 series, however, uses a different unit. There is no ball bearing, and the porous bushing runs the whole length of the shaft. The oil for this one is carried in a reservoir in the housing. The filler plug for this reservoir is between the distributor and the engine block, so it cannot be filled while the distributor's on the engine. Therefore, every time you have to remove this distributor for any reason, be sure to fill the oil reservoir with preservative lube oil. And if you don't happen to take off your distributor for any reason, pull it off every six months, anyway—just to oil it.



M38 and M37 Distributor

With the M38's and the M37's you have a bit more to do. Every 6000 miles or six months, you pull out the ⅛" pipe plug, located at the bottom of the distributor, and remove the felt wick (see figure). Soak the wick in preservative lube oil then put a small glob of GAA into the shafts lube hole then put the saturated wick back in. Get yourself too much grease in here and you can spend the rest of your time in the army putting in new breaker points, one set right after another.

Now . . . on all of these distributors, the LO's say to coat the cam lightly with GAA. Just a thin film, any grease that gets in between the breaker points will cost you a set of points, quick like. So—gently, gently with the lube on the cam.

Break Your Back Tightening Track?

RELAX

Here's A Good Bet... No Sweat!

TRACK TIGHTENING TIP

The job of track tightening usually takes a gang of heavies with much puffing, blowing, and disgusting. Now any coupl'a runts can do it with no pain.

To tighten the left track (for vehicles with drive-sprocket in the rear—M46, M47, M48): Coast your tank to a stop on smooth, level ground or pavement, shift to right neutral-steer, rev up the engine until the left track begins to tighten up but before the tank begins to swing. Immediately push in the foot brake and let up on the gas. Lock the brake down tight. Be careful not to speed up the engine so that the tank pivots.

The action of the steering to the right takes up the slack in the left track from the track-drive sprocket, down and under to the front road-wheel. This leaves the track lying loose on top of the track-support rollers. (Fig. 1).

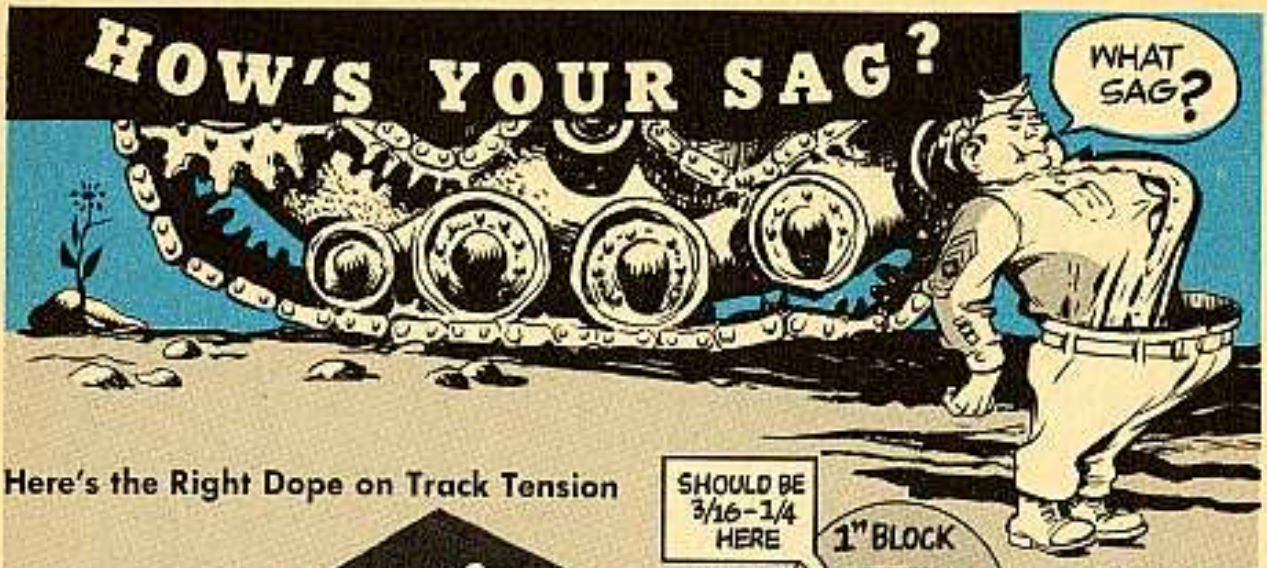
For the right dope on the M41E1 (T41E1), M41E2, (T41E2), and T141 see page 613, PS #14 (Bulldog Edition). For vehicles with drive-sprocket in the front—M8E2, T98E1, T194, T97 and M75 (T18E1)—you use left neutral steer to get slack in the left track and right neutral steer to work on the right track.

Then, all you need to do is take up the slack with the track tension adjusting-wrench.

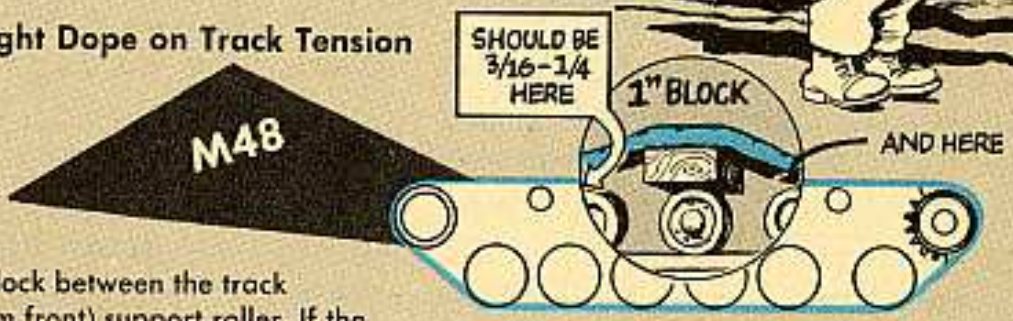
To tighten the other track: Release the brake lock and work in the opposite direction.

Easy does it.

Fig. 1—A tank track is easier to tighten once you've got the slack gathered on top.

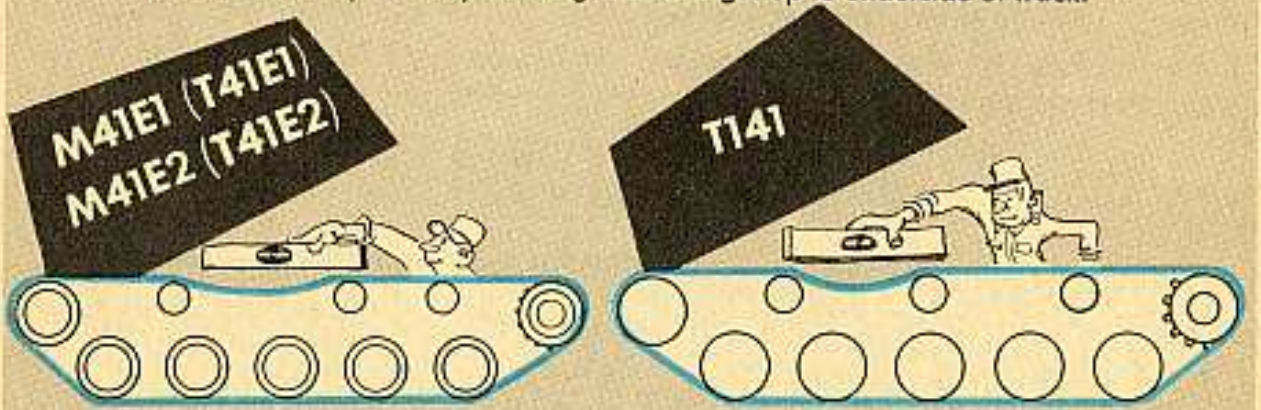


Here's the Right Dope on Track Tension

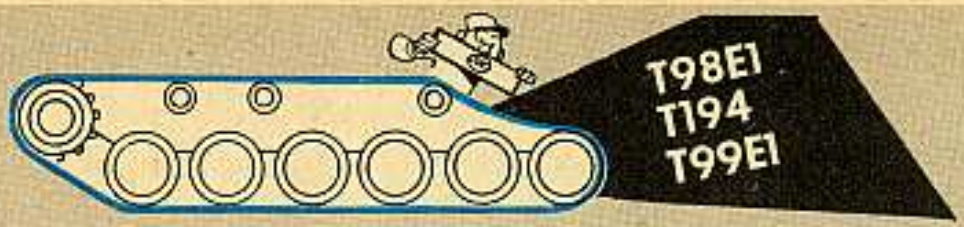


Place a 1" block between the track and #3 (from front) support roller. If the track is properly adjusted a gap of 3/16" to 1/4" will be formed between support rollers #2 and #4 and the track.

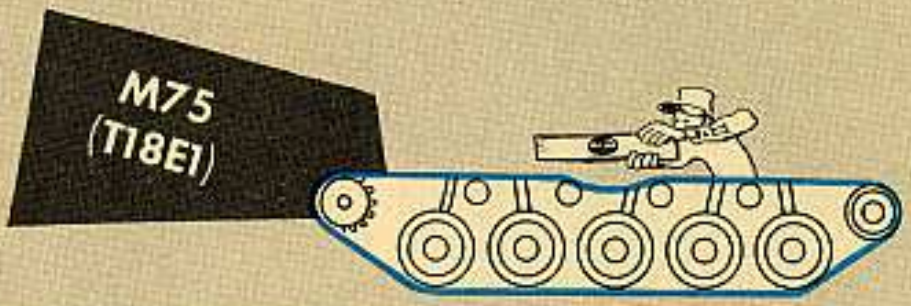
20-21" from top of compensating idler straight up to underside of track.



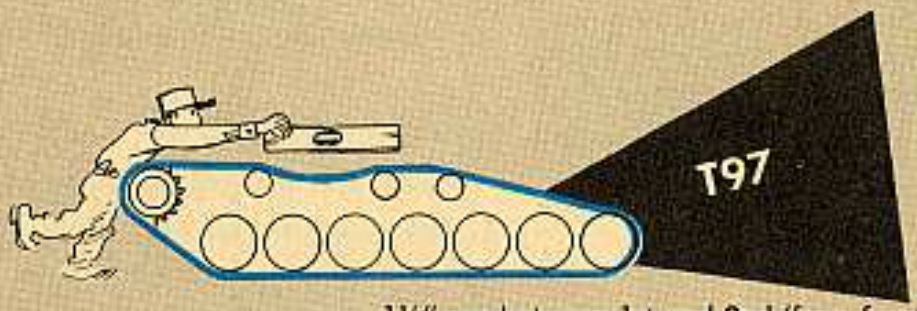
⅝-1" sag between 1st and 2nd (from front) support rollers.



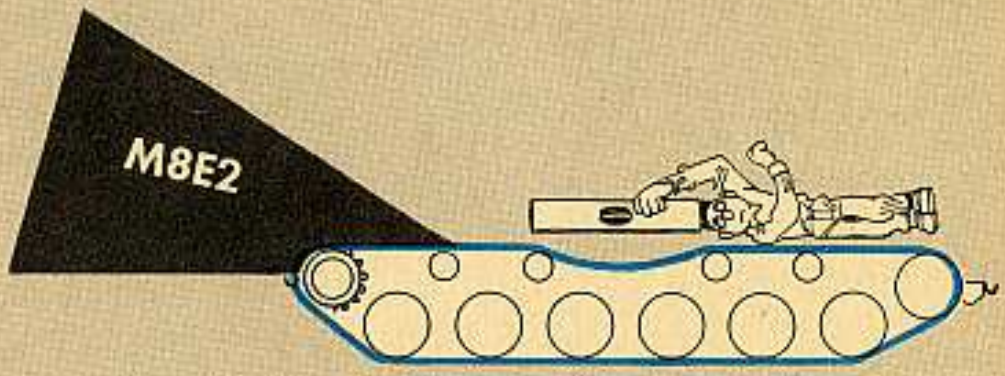
½-⅝" sag between rear track support roller and compensating idler wheel.



⅝-1" sag between 2nd and 3rd (from front) support rollers.



1¼" sag between 1st and 2nd (from front) support rollers.



⅝-1" sag between 2nd and 3rd (from front) support rollers.

Note: Let vehicle coast to a stop on level ground before checking track tension. For the T98E1, T99E1 and T194 coast to a stop in reverse, keep vehicle in reverse and rev engine just enough to pull slack to the top of support rollers without moving the vehicle.

SUPERSEDING STOCK NUMBERS

Dear Half-Mast,

There's been a lot of discussion here in my outfit about ordering parts that are being issued on an "exhaust stock" basis. Should we use the new number or the old?

PFC L. R. W.

Dear PFC L. R. W.,

A remedy for your dilemma to make double sure you don't go astray is to order with the new item number on your requisition or issue slip. It's your supply agency's job to worry about exhausting their stocks on the old item.

You'll notice that the newer supply catalogs tell you to do this. Old catalogs telling you to order the superseded item oughta be discarded.

Half-Mast

TRACK-TENSION CHECKING TOOL

Dear Half-Mast,

Ord 6 SNL J-16 and Ord 6 SNL G-27 list a track tension checking tool (41-T-3081-77) for the M24 Light Tank. But I can't find anyone who has ever seen it. Can you give me the dope?

S. T. Q.

Dear S. T. Q.,

The track tension checking tool was designed and tested back in 1945. Fact is it even got a job work order number **and** the stock number but that's as far as it got. And even though it tested out pretty good, the tool never did get into production, because the standard method of checking tension proved just as good.

Ord 6 SNL G-27 is being redrafted and the item is gonna be dropped. In plain English, the tool just ain't in the supply system.

Half-Mast

SERVICEABLE OR UNSERVICEABLE

Dear Half-Mast,

I got MWO G749-W5 and intend to comply with it. But there's a joker in the deck. This modification is on the M135 truck and has to do with the pres-

sure-regulator spring, Stock No. G749-7411507. It's to be replaced by a stronger spring, Stock No. G749-8331471, because the older one wasn't strong enough to do the job.

This old pressure-regulator spring isn't damaged or unserviceable in any way according to the usual standards—it's just being discarded because it wasn't right for the job it was supposed to do. Yet the MWO says this spring must be returned to stock—unless it is unserviceable, in which case it should be disposed of per SR 735-150-1. Personally, I don't think it is serviceable but what does the Army think? I'd sure hate to see these things bouncing back on my requisitions like the proverbial bad penny.

WOJG H. I. G.

Dear WOJG H. I. G.,

'Tis confusing but in this particular case the old spring (Stock No. G749-7411507) sure isn't serviceable. It has no inter-changeability value so, since it's been retired from its only job, it's now unserviceable. Best get out your SR 735-150-1 and prepare bad springs for salvage channels.

Half-Mast

WEIGHTY PROBLEMS

Dear Half-Mast,

Got a couple of problems around my M38A1's battery that's slowed down my travels over the bumpy roads in these parts. The 'A1 is one of my favorite people and I like to see it in fit shape.

For one, the battery cable connectors

are breaking. And for two, the battery supports break loose, allowing it to drop. The parts may do OK on first class roads but it's been a long time since it's seen one of those.

SFC R. J. L.

Dear Sergeant R. J. L.,

They've made changes in the jeeps now coming off the production line on the items troubling you, and in both cases the answer is the use of heavier stuff.

For your own 'A1, try the same solution. Use a heavier lug, such as Terminal Cable, solder-lug, H004-01-81160, 3/0 cable, ⅜" hole. It'll hold your connections.

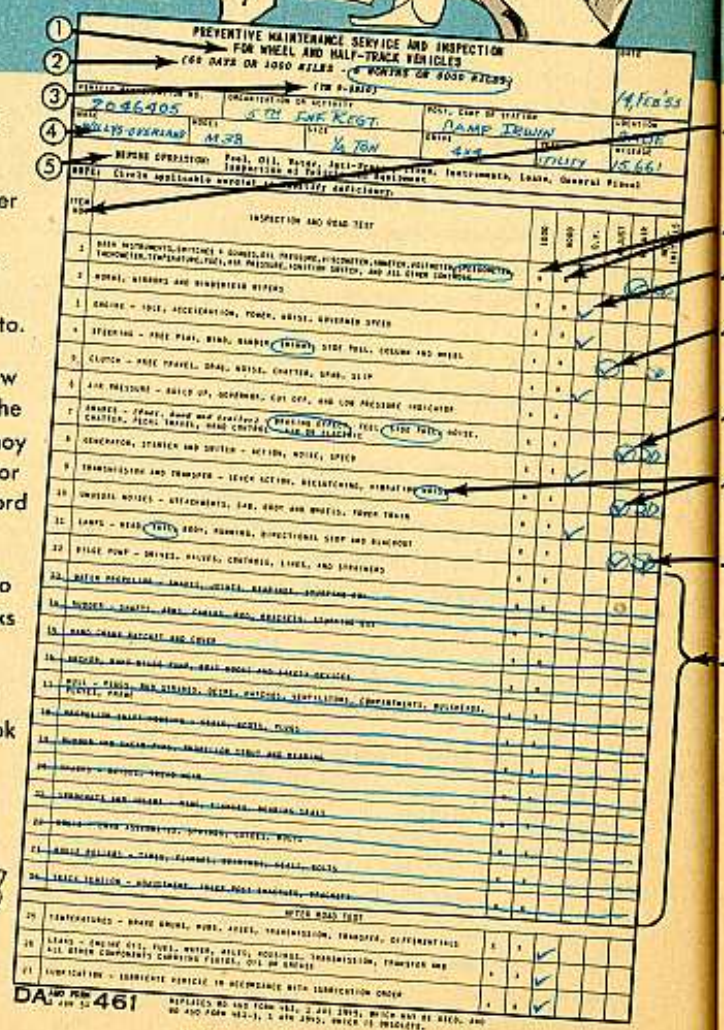
And increase the thickness of your broken battery supports by adding weld to its entire length or weld reinforcing strip metal along side. And put metal washers on the brackets where they're secured to the tray.

Half-Mast

SUPPLY & DIRECTIVES

How To Use Those New PM Forms

First DA AGO Form 461



(1) Use it for vehicles like it says here.

(2) And do it whenever this interval rolls around. And circle which interval the inspection applies to.

(3) This refers to a new TM that's still in the mill; so don't annoy people by asking for it; you'll get the word when it comes out.

(4) Here fill in the info that each block asks for.

(5) This is important; it isn't wise to overlook it.

If you're still anxious to know what-goes about the official poop on those new PM forms (DA 461 and 462), well fret no more and stop ruffling your brow because SR 750-125-5 (14 Aug 53) is now out and covers that angle pretty well.

In case the demand for that new SR is greater than your supply or if you're haunted by one of those "directive hoarders" and haven't had a squint at the instructions, well—here's a one-two briefing on how those forms are to be used.

(6) Now simply follow the item numbers down this column and inspect or do the necessary test to check out each and every article that applies.

(7) These X's indicate when each is to be inspected.

(8) If the article inspected is OK, put a check on that column.

(9) If it needs adjusting, put your check in the ADJUST column . . . and jot a brief explanation of the form's back side under REMARKS.

(10) Or if the article requires repairing, check the REPAIR column and again put a short explanation under REMARKS.

(11) Now get this—in items where you have a number of articles to be inspected and you find only one of the batch that needs attention, circle that particular article . . . and also circle the check mark.

(12) And above all you gotta initial each and every adjustment and repair check mark.

(13) When you run across an item that doesn't apply to the vehicle being inspected, or serviced, just run a line through that particular item.

When making your inspection it isn't necessary to follow the exact sequence given on the form. The sequence given in the vehicle TM or any other that may be handy to you may be followed, only be sure you hit them all. (The new SR has a good step-by-step procedure.)

For filling the back of Form 461 . . . Turn the page

YOU FILL OUT FORM 462 THE SAME WAY

PREVENTIVE MAINTENANCE SERVICE AND INSPECTION FOR FULL-TRACK VEHICLES (MONTHLY OR 250 MILES) (QUARTERLY OR 750 MILES) (TM 9-2810)

DATE: 22 MAY 53

VEHICLE REGISTRATION NO.: 30564245
ORGANIZATION OR ACTIVITY: 12TH MED TK BN
FIELD, CAMP OR STATION: FORT KNOX
LOCATION: KY
VEHICLE NOMENCLATURE: TANK MEDIUM, M46
MILEAGE: 1460

BEFORE OPERATION: Oil, Water, Fuel, Anti-Freeze, Vehicle and Equipment — Track, Locks, General Visual Inspection of

NOTE: Circle applicable numbers to identify deficiencies.

ITEM NO.	INSPECTION AND ROAD TEST	2GC	3GC	D.S.	ADJUST	REPAIR	MECH. SERVICE
1	GAGE INSTRUMENTS & GAUGES, OIL PRESS. & TEMP, ENGINE OIL TEMP., TORQUE CONVERT. TEMP. & PRESS., WARNING SIG.						
2	HORNS, SIRENS, WINDSHIELD WIPERS, MIRRORS						
3	LAMPS - HEAD, TAIL, BLACKOUT, FLOOD						
4	ENGINE - IDLE, ACCELERATION, POWER, NOISE, SMOKE, SPEED						
5	SUSPENSION - TRACK, BOGIE WHEELS, IDLERS, SPROCKETS, TORSION BARS, ARMS						
6	BRAKES - STEERING, PARKING, LEVERS, BRAKING EFFECT, SHOE ACTION, AIR						
7	[illegible]						
8	TRANSMISSION, TRANSFER, DIFFERENTIAL, TORQUE CONVERTER, NOISE, CONTROL, SHIFTING ACTION						
9	UNUSUAL NOISES - PROPELLER SHAFTS AND JOINTS, DIFFERENTIAL, WHEELS, IDLERS, SHOCK ABSORBERS, TANK						
10							
	AFTER ROAD TEST						
11	TEMPERATURES - BOGIE WHEELS (SHOCK ABSORBERS) TRANSFER DRIVES), DIFFERENTIAL						
12	AUXILIARY GENERATOR - POWER, (LOAD) GOVERNOR SPEED,						
13	ENGINE — ENGINE OIL PRESS., WATER, TRANSMISSION, TRANSFER AND TRACK WHEEL, DRIVES (OVER) DIFFERENTIAL, PRIMER						
14	HULL — PAINT, FENDERS, MUFFLER, VENTILATORS, CRASH PLATE, BOGIE SEATS						
15	TURRET — BASKET, HATCHES, VENTILATORS, LOCKS, SEATS,						
16	ARMAMENT — MOUNTS, BORE SYNCHRONIZER AND RECOIL CONTROL, ELEVATION AND TRAVERSING MECHANISM, RECOIL MECHANISM						
17	STOWAGE BOXES — AMMUNITION STOWAGE, RACKS						
18	WINCH, CRANE ASSEMBLY, FITTINGS, HOOKS						
19	LUBRICATION — LUBRICATE VEHICLE IN ACCORDANCE WITH LUBRICATION ORDER						
20							

MAINTENANCE OPERATION

BATTERY — SPECIFIC GRAVITY

1	2	3	4	5	6	7	8	9	10	11	12			
1245	1250	1245	1245	1250	1245	1250	1245	1250	1245	1250	1250	*	*	✓

BATTERY — VOLTAGE

2	2	1	1	2	2	2	2	2	1	1	1			
1.7	1.8	1.7	1.7	1.8	1.7	1.8	1.8	1.7	1.7	1.8	1.8	*	*	✓

ENGINE COMPRESSION

LEFT	90	88	90	85	88	85								
RIGHT	85	80	85	90	88	90								

24	CARBURETOR CAPS, VENTILATORS, FUEL FILTERS, DIESEL PUMP SCREENS, OIL FILTERS			✓			
25	MAGNETOS — CORE, CASES, TERMINALS, POSTS, CAP, SPARK TIMER, STEAM RELIEF TUBE						
26	WATER PUMP, FAN, DRIVE BELTS, PULLEYS			✓			
27	SPARK PLUGS, DISTRIBUTOR, COIL, WIRING, (IGNITION) ASSEMBLIES				⊘		⊘
28	VALVE MECHANISM — CLEARANCE, COVER GASKETS			✓			
29	CARBURETOR, FUEL PUMP, CHOKE, CARBURETOR CONTROL LINKAGES			✓			
30	EXHAUST PIPE AND MUFFLERS			✓			
31	MANIFOLD AND HEAT CONTROLS			✓			
32	STEERING AND PARKING BRAKES — ADJUSTMENT, LINKAGE			✓			
33	ENGINE FAN SHROUDS AND CYLINDER AIR DEFLECTORS			✓			
34	TRACK TENSION				⊘		⊘
35	ELECTRICAL CONTROLS, WIRING, COLLECTOR RINGS, SUPPRESSORS			✓			
36							
37							
38							

REMARKS

Item 6. See item 34
" 11. Rt. frt shock absorber cool
" 12. Blue smoke from exhaust
" 13. Idler grease seal leaking
" 27. Spark timing late
" 34. Left track loose: effects item 6.

Inspector: Gen LaLuz Sgt
Supervising Officer: W Lawn Capt Ord Corps

DA FORM 462

REPLACES DA AGO FORM 462, 31 JUL 51, WHICH MAY BE USED.

Item 1. Speedometer not working.
Item 4. Vehicle shimmies when going about 40 mph
Item 7. Pulls to one side when brakes are applied, does not happen everytime only now and then.
Item 9. Sounds like a few broken gear teeth
Item 11. Wire leading to tail light parted.
Item 35. Ignition timing late and points out of adjustment

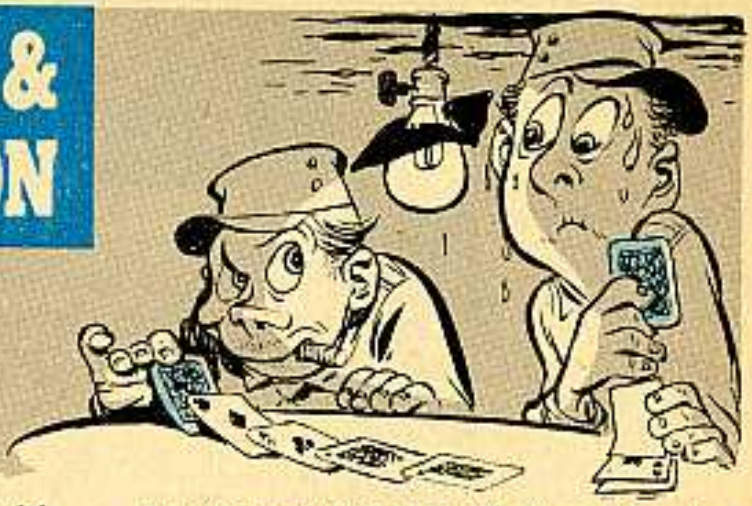
Inspector: Sgt. Gen Luz
Supervising Officer: J.W. Welch 1st Lt Ord Corps

When you find a defect that can't be corrected within your organizational maintenance, make a note in the REMARK space.

Last, the inspector or mechanic and the supervising officer must sign the form.

ARMAMENT & AMMUNITION

An Ace in the Hole

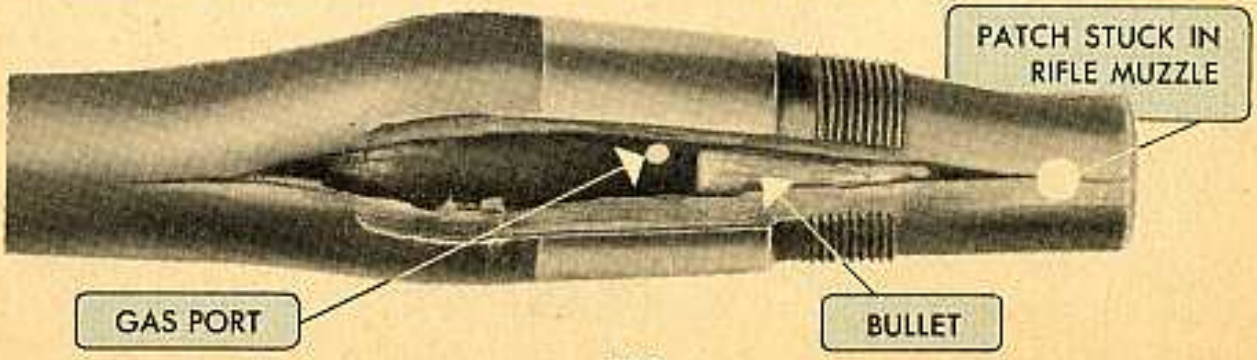


As PS #13 (page 572) said . . . if your cal. .50 heavy barrel Browning machine gun has been modified per MWO Ord A39-W13 (or MWO Ord A59-W2 for HB TT guns) you can wave your headspace-adjustment jitters farewell. If, that is, you're wise to the ways of headspace measurements for a modified weapon like it says in Change 4 (para 11 c) to FM 23-65.

Howsomever, just in case the small hole in the right side receiver-plate isn't enough to warn some people that they're handling an HB cal. .50 that's got itself the new barrel-locking spring assembly on which headspace adjustment needs to be done a little differently, there's another reminder that can't miss getting everybody straight on this very important piece of business. It's a small decal label (DA Label No. 19 available thru regular supply channels) that gets pasted on the receiver top-plate—just behind the cover latch. (CAUTION: Before you lick the label you gotta write with indelible stuff, in the lower right hand corner like so: Change 4, par. 11c). The decal label warns a gunner at a glance that the weapon's modified and he's to grab FM 23-65 (and turn to Change 4, par. 11c) for required headspace-adjustment instructions before he starts twisting and untwisting the tube as per old habits.

HOW **NOT** TO REMOVE A STUCK PATCH

Here's what happens when a stuck patch is shot out of a rifle. The barrel splits open. If a patch can't be taken out with a cleaning rod, it's a job for the armorer-artificer or ordnance.



SPECIAL CARTRIDGE FOR

RIFLE GRENADES

Hear about the late Pvt. Exprof Snarffle?

Yeah—he forgot as usual. But this time it was with that rifle grenade. He didn't unload the ball ammo before firing a grenade. The Quartermaster boys took care of him—didn't even need medics.

What happened? The rifle blew all to jebru and gone. Then, the bullet set off the grenade. Went off right in his face.

He shoulda unloaded his ball ammo before the grenade was put on the launcher. The right guy puts the special cartridge in the chamber. Then you're ready to put the grenade in the launcher and fire. The cartridge is like a blank except it has a crimped nose.

SEAR-IOUS BUSINESS

FILES AND M1'S DON'T MIX

It's dangerous living when there is a man in your squad with a yen for full automatic on his M1 rifle.

He's the joker who files away at the sear to get that "hair trigger" or until he thinks it's set for full automatic fire. That man's real dangerous.

Rifles like that can go off almost any time. When it hits the dirt in training or combat, she'll trip off; it's the innocent guy next to him that usually gets it—in the neck. Then, comes the time in combat when he wants to squeeze off just one shot. It'll give two—or three. The joke's on him, though; he'll never get full automatic.

More fun when the CO finds out about it and makes him pay for an M1 rifle.

COMMON TOOL GAB SESSION

OK you grease monkeys and supply people, pull up a GI can, have a sit while your ear gets bent a little.

This is about Special Regulation 700-50-5, which for you boils down to one thing—requisitioning from Air Force Tech Orders for common tools just ain't no more. So, it'll do you well to take a "look-see" at this SR; if yours isn't dated 2 June 53, you were behind the door when they were passed out. Nothing else will do because it's the latest bible and gives the score as of now regarding supply. And if anyone ever tells you that Ordnance isn't in the picture any more, just rub his nose in the SR—that is, if he's of a lower rank than you. Don't confuse this SR with General Order #76 (11 Aug 52) which says that the Transportation Corps is responsible for all aircraft activity because they're two entirely different subjects.

ORDNANCE IS STILL IN THE PICTURE...

For those who just can't seem to dig up the new SR, open your good eye and read on, this'll give you an inkling of what it's all about. This regulation says, this gizmo and that gadget of certain Air Force property classes are assigned to this or that Army Technical Service; you know, the Engineers, Ordnance, Quartermaster, etc. Well, in this case, Ordnance is the outfit seeing to it that you all get your common tools and shop equipment to keep your airplanes in top shape.

And . . . what's now so different from the old AF Tech Order way? Plenty bub, just keep reading . . . Here's a dry run (and by the numbers, too) on how it goes:

AS WAS (under AFF Tech Orders)	NOW IS (under Ordnance)
TO 00-30-151 Kit, Tool, Pilots, Liaison Acft, (AFF)	TOOL SET, PILOTS, ARMY ACFT, MOS 1981, Ord 6, SNL J-10, Sec 16
TO 00-30-32 Set, Elec., Aircraft	TOOL SET, ELECTRICIAN, ARMY ACFT, Ord 6, SNL J-10, Sec 18
TO 00-30-48 Kit, Worker, Paint, Dope and Fabric	TOOL SET, PAINT, DOPE AND FABRIC WORKER, ARMY ACFT, Ord 6, SNL J-10, Sec 19
TO 00-30-60 Kit, Worker, Sheet Metal, Acft	TOOL SET, SHEET METAL WORKER, ARMY ACFT, Ord 6 SNL J-10, Sec 20
TO 00-30-154 Kit, Tool, Mech, Liaison Acft	TOOL SET, GEN. MECH., ARMY ACFT, Ord 6, SNL J-10, Sec 17 (Don't let this throw you a curve, it's not the regular old general Mechanic 41-T-3534-30. Remember, the one with words "Army Acft" in the name is 41-T-3534-32.)
TO 00-30-150 Set, AFF Helicopter and Liaison Acft Base Tool (This set is replaced by one or the other Ordnance set listed across the way . . . you'll see how in a minute.)*	(1) TOOL SET, ORG. MAINT., ARMY ACFT, NO. 1, COMMON, Ord 6, SNL J-7, Sec 10 or (2) TOOL SET, ORG. MAINT., ARMY ACFT, NO. 2, COMMON, Ord 6, SNL J-7, Sec 11
*Now for a little explaining . . . Ordnance came up with two organizational tool sets for Army Aircraft just like they did for motor vehicles. The two sets together don't replace the Tech Order . . . No siree, bob! It's just a question of who you are, as to what you'll get. F'instance, if you're a Bn or a Regt and doing repairs on from one to three airplanes and have one to three airplane grease monkeys, you get set Number One. Howsoever, if you're a division or a division artillery and doing repairs on from four to fifteen planes and have from four to fifteen mechanics, then boy, you're doing alright and you'll get the set Number Two. That takes care of that.	
TO 00-30-248 Set, Maint., Fld., Liaison Acft, Army, is generally a dead duck also . . . but get this, the Tech Order is divided and replaced by sections: Sections I, II, V, VII and VIII Section VI	 SHOP SET, FM, ARMY ACFT, Ord 6, SNL J-8 Sec 20 SHOP SET, FM, SHEET METAL, ARMY ACFT, Ord 6, SNL J-8, Sec 21

Now for the benefit of the spitball shooter . . . Yes, forget about certain Tech Orders, which were not mentioned because they've gone out the window . . . (one or two will be covered another time).

The Tech Orders that are discussed below just won't appear anymore in allowance tables and according to Hoyle they are not replaced by anything.

TO 00-30-33 Kit, Inspector: The tools in this kit you now get in the various Ordnance sets. However, a word to the wise, all of the tools you previously got thru the Tech Order are not necessarily in the Ordnance sets. But then, you'll find Ordnance is giving you tools that you didn't have before. So-o-o, it's six of one and half dozen of another. Any questions?

TO 00-30-45, Kit, Mech. & Tech., A/C & Engine: If you were authorized this kit, you get the General Mechanic's set, and this also

applies to TO 00-30-57, Kit, Mech. Instr. Org., Maint.

And for you flying carpenters, stand up and weep, changes have been made. TO 00-30-58, Kit, Mech., Propeller, and TO 00-30-39, Kit, Woodworker, have gone the way of the corn cob since Sears came to town. Yep, and nothing, at least from Ordnance, replaces them. Here's why:

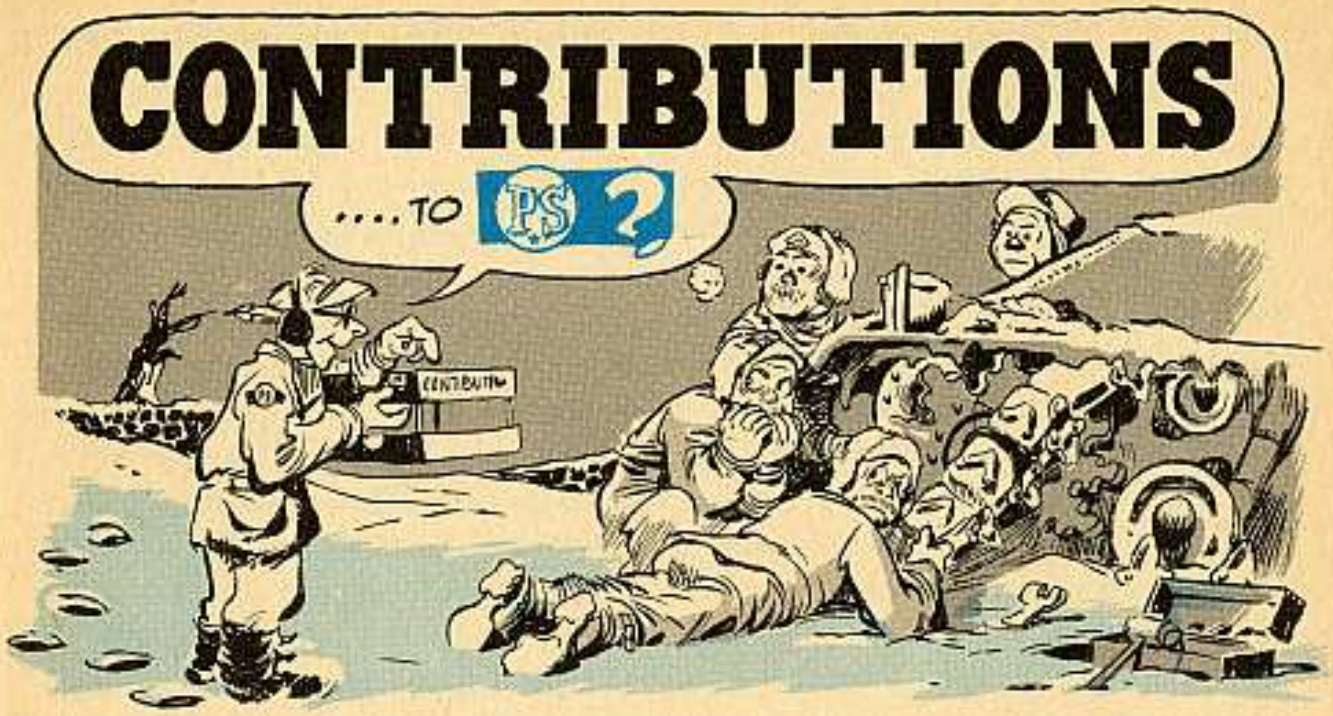
"Brass Row" decided in this day and age such things as brace and bits aren't needed to work on the body . . . we're not talking about

Marilyn Monroe . . . the subject before the house is airplane bodies. Planes in the army have metal bodies so the tools you need are in the sheet metal sets. But, if for some reasons you need woodworking tools, then there may be an out for you. The QM have the Tool Set, complete with tools, Carpenters, No. 1. This set should do the trick. If so, and it's not in your T/O & E, you'll have to have the old man put through a requisition the way it says in SR 725-10-2, para 19b #2.

Now for the Welders—y'know the Set, Welding, Portable, TO 00-30-17. You might have a mite of trouble finding where Ordnance gives you welding gear. But you'll be alright on the MOS set—no problem—TO OO-30-73, Tool, Welder, is replaced by Tool Set, Welders (ref: Ord 6, SNL J-10, Sec 6, 41-T-3554-975). Ordnance considers the Ordnance welding kit, 41-T-284, as the replacing item. You can keep looking, but you won't find the kit in any of the new sets and, so help you, its not listed separately in T/O & E. It just isn't there, thats all, and Ordnance probably won't list the kit in a T/O & E. But don't worry about it, the right people are looking into it now and one way or another you'll keep what you got or Ordnance will give you welding equipment.

Last but not least, the powers-that-be will give you the green light as to when to start converting your Tech Order set over to the replacing Ordnance set. But, in the meanwhile, if you need an item, such as to replace one worn out, then use the SNL and requisition it. To wind this thing up, submit your issue slips or requisitions in same old way you would for any other Ordnance item. F'example, to Post Ordnance or Post Ordnance to Ordnance Distribution Depot or for you jokers out in the field, go through your regular Ordnance channels. And if you really want the whole story, read SR 700-50-10 with **all** 3 changes.

CONTRIBUTIONS



ONE TRANSMISSION NEEDED

Dear Editor,

One of our M135 drivers had to get a tow to the shop which was about ten miles back. He helped hook up his M135 and climbed into his cab.

He put the transmission lever in neutral position and slouched down in the seat for a nice warm ride. But he forgot something. He forgot to follow the dope on the transmission instruction plate which says to put the transfer lever in neutral, too.

While he was spinning merrily along so were the gears in his transmission, 'cause with the transfer engaged they were locked to the output shaft. With the transmission in neutral the front pump wasn't working. To get the rear pump pumping he'd have had to be towed faster than 16 miles an hour to cut it in. The ground was pretty rough so they were taking it easy. With neither pump working, the spinning gears just weren't getting any oil. What should have been a minor repair turned out to mean a new transmission.

The Moral—Hydramatic doesn't mean automatic. The driver is the brain behind it, and they'll only understand it when they get acquainted with the TM and follow instructions to a "T."

Lieutenant Parker
APG, Maryland

STUD HOLES AWRY

Dear Editor,

I am enclosing a photograph of a couple of wheel studs which failed here at Fort Dix (Fig. 1). The driver reported that he found his wheel nuts very loose, and had tightened them as tight as he could get them. Soon afterward the studs broke. We think that the wheel had shifted off center, so that the nuts were not bearing correctly on the tapered cone of the nut and the wheel, but were catching the flat portion of the wheel disc on one side of the bolt hole. This would cause a severe bending strain on the stud, and account for the breakage.

You might want to remind the boys that if they find a real loose wheel, they had better jack it up and be sure it is centered before tightening the wheel nuts.

Lewis D. Price, OCT
Fort Dix, New Jersey

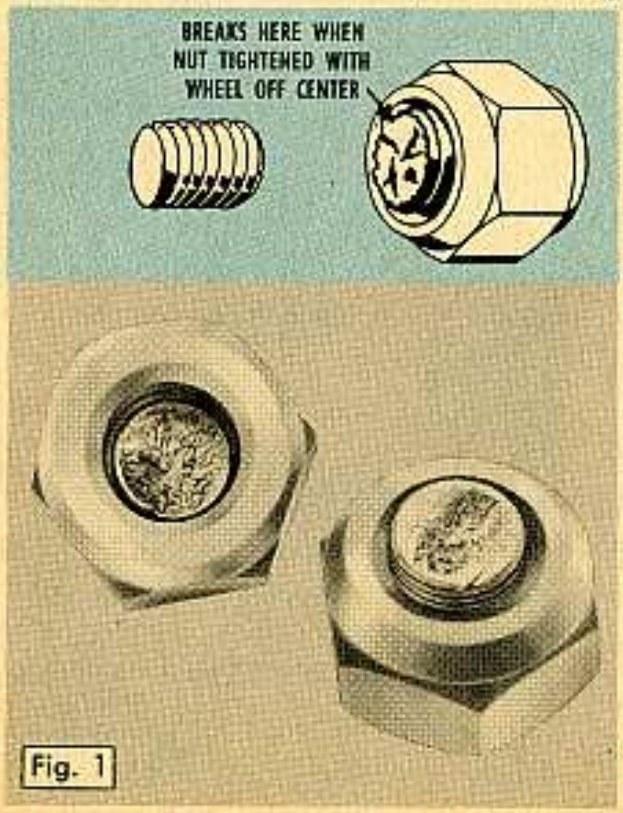


Fig. 1

BETTER GAS-VALVE PROTECTOR

Dear Editor,

That gas-valve protector for the M135 2½-ton in PS #11 (p. 468) was pretty good, but we have worked out a better deal here.

My gas valve was battered down from guys tramping on it, so I rigged up a protector to stop 'em all (Fig. 2). I made it from 12-gage sheet steel. Drill holes as per the sketch. Bend to shape. Remove capscrews and lockwashers, put in the protector and replace capscrews and lockwashers.

With this set-up you can turn the gas valve on and off at any time. The protector keeps big shoes off the shut-off valve but does not hinder you when you want to get at it.

Cpl C. Winslow
APG, Maryland

(Ed. Note—That is a bang-up idea and

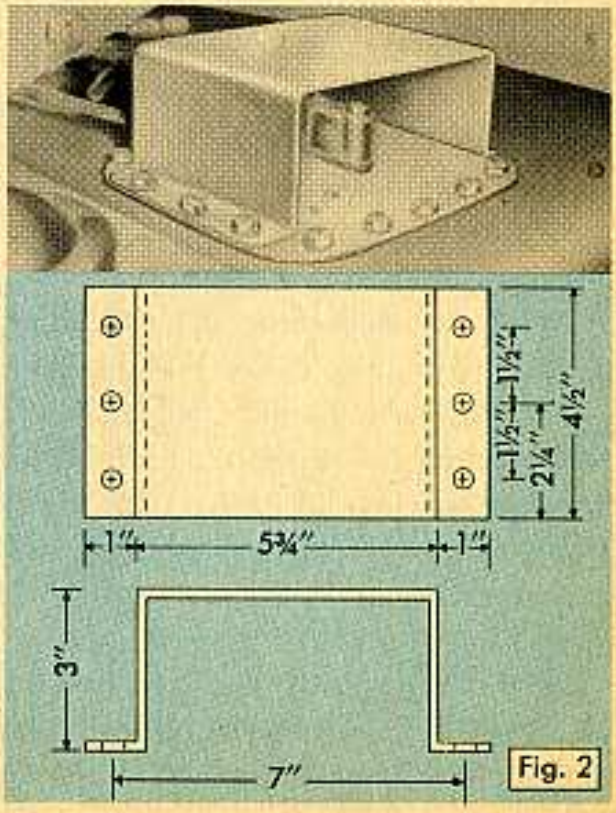


Fig. 2

it looks permanent and substantial. Thanks for the suggestion. Keep 'em rolling in.)

SLUGGISH MORTARS

Dear Editor,

Here's one that had us really stumped for awhile. The first round of M2 or M3 ammo fired from some new M30, 4.2 mortars would come out like a fizzled Fourth of July rocket and fall short . . . and sometimes darn short.

This business had us weary and wondering till we wised up to a tough, almost invisible coating of some kind of gook inside the new tubes. Way we finally figured it, the first round burned out the coating and set things to right, 'cause the following rounds got off OK . . . and we were right!

An Ordnance weapons inspector we contacted said that the mortars had likely got swabbed with rust preservative AXS 673 when they got stored. When this stuff hardens, ordinary solvent won't tear it loose. But the stuff he steered us to will do the trick. It's degreasing, self-emulsifying, solvent (Stock No. 51-S-4717-725, MIL-S-11090). Now all our new tubes get a dose of this solvent.

Of course, to be extra safe, after the solvent is used, the entire tube gets carefully inspected before the mortar's fired. We rely on a small mirror attached to a pole and a flashlight to give us a close-up of the degooking job of the tube.

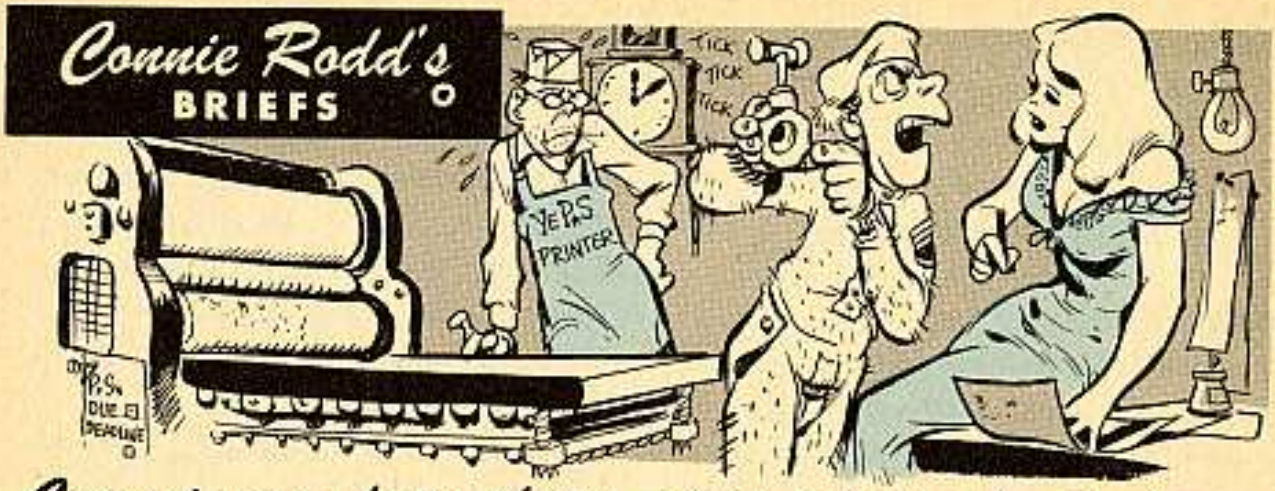
Cpl M. E. Altvena
Korea

(Ed Note—Also, a good soaking and scrubbing with dry-cleaning solvent, Stock No. 43-S-4387-55 {QM issue} will free your mortar tubes of stubborn AXS-673.)

Take a look at your mortar's insides with flashlight and mirror

SOLUTION TO DOUBLE-CROSSER IN PS #15

I	T	■	R	E	A	L	L	Y
■	A	I	N	T	■	S	M	A
R	T	■	T	O	■	G	E	T
■	■	S	T	I	N	G	Y	■
W	I	T	H	■	M	A	I	N
T	E	N	A	N	C	E	■	■
Y	O	U	■	■	C	A	N	T
■	T	A	K	E	■	I	T	■
W	I	T	H	■	■	Y	O	U



Correct your data plates

Like Connie predicted back in PS #7, TB Ord 485 (Jan 53) says take your ¼-ton and ¾-ton 4 x 4's and your 2½-ton and 5-ton 6x6's to Ord Maintenance and let them correct the lube information on the 24-volt M-Model data plates. They'll "X" out the "90" and put in "75" to reflect the change from GO 90 to GO 75 in temperature range of +40° F to -10° F. Or better still, if you have the tools, erase and correct the data plate yourself. Now your lube orders and data plates will agree.

STOP Ambulance Door Rust

To prevent the bottom panel of the outside doors of the Dodge Ambulance (Model KD-WWII) from rusting out, drill two small holes in the bottom of the doors, prime and paint drilled edges. This'll let out the water that may seep in around the hinges.

Check that LO

As you lube your M135 and discover that the grease fittings on the lower forward part of your rear-brake-shields are missing, don't blow a fuse. They're gone on purpose.

The fittings were put on the first two or three trucks made, but they didn't prove themselves. So, off they came.

Yep, LO 9-819A (21 Oct 52) does say they are there, but scratch **Note 12** and the two rear-brake-shield items on the chart until you get your new LO.

There's the rub

Hop-a-long Callahan is still having trouble with his M38's right-front wheel rubbing against the frame, when making those sharp left turns on the bumpy roads. Latest word has it that by building up the weld on the right-front wheel-stop, that vehicle's turning radius can be reduced from 23° to 22½°—enough to end the problem.

On that 741E1 OOPS pin-up...

The second Item #7 (which should be item #9) under DRIVER on that yellow pin-up check list which came in PS #14 should be changed to read "Booster & Starter . . . SQUEEZE". You'll never get the tank started by just turning off the radio switch.

PERPETUAL INDEX

Your monthly reference guide to all subjects covered in the last 12 issues of PS Magazine

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2C—INSIDE FRONT COVER; 3C—INSIDE BACK COVER; 4C—OUTSIDE BACK COVER

WHO...? ME?

...yeah, you.... you're fulla.... ..ideas ....

...about Trucks, Tanks, Engineer equipment Ammo, and all the other gadgets you're living with

They're the little things you've been doing to make equipment work better, last longer, and, when all's said and done, make life a lot easier. (Makes a better Army, too.) I've seen these ideas in other outfits, so, I know you've got 'em.

Other guys need these ideas. Just scribble 'em down. Give all the dope. If you can make a sketch or send a photo—fine. It'll help PS pass it along.

Mail it to me at PS Magazine, Aberdeen Proving Ground, Maryland.

It's a nice feeling to see your name in print.

Half-Mast