

PS

THE PREVENTIVE MAINTENANCE MONTHLY

Issue 76

1993 Series

EVERYBODY—AND EVERYTHING—LIKES
TO GET A LITTLE SOMETHING





nobody, but nobody

WOLD IT BETTER THAN **DIESEL POWER MAGAZINE**



"are you getting yours?"



Editorially speaking

CONCERNING INSTRUCTION MANUALS

"Anyone in the technical writing business knows the labor and trouble that goes into the preparation of an instruction manual. Perhaps, no other 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 re-tooled, carefully sized, engraved and captured, text and pictures are printed and bound.

"Finally, our instruction manual is brought forth into the great world and here, 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 steps are neglected. It takes all kinds of people to make a world. Let's see what might befall our unadvised manual.

"It might fall into the clothes 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 hidden in a lot of things in an old cabinet. "What's this junk?" he remarks as he looks the dust from it and finally finds it in the cabinet. So our manual leaves the world after a completely useless life.

"A variation of this is the man with

the 'inferiority' or perhaps a 'You-got-to-be-smarter' 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 sees them peak, peep, along the information corridor—and play the part



of the 'big boss'.

"The fellow is usually afraid that someone in the shop may have something for himself and cheat for his job. What is he kidding?"

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

"To him, all manufacturers are stupid, don't know a thing. He is the type that presented his comment based on an ACRS meeting. All instruction manuals should have pocket manual covers; then some of these fellows would at least get some use out of them.

This editorial from **CHIEF POWER MAGAZINE** is repeated without so much as a comma changed, to show you that people in and out of uniform seem to be hankers under the desk after all. After you get your jabs out of this you are cordially invited to share it with the man you think most likely to succeed in snatching your facts away.

"If our manual falls into those hands, it's a dead duck; no chance to be useful here. It will wind up 'screwed, unhooked, and someone is wrong.'

"Yet there is a bright side. Do you know that there are people who yearn for these manuals just as ardently yearn for a lively prospect on a visiting day? We have a letter from a man in Australia on our desk beseeching us to get him some—just for himself alone, but in fact he can use his meager store of tests 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 leaves the users of a useful, active life, but those who don'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 stress is 24/24H.

"When an engineer needs some help as a formula, he is liable to go to a well-thumbed Bart or Merit Handbook. When you wish to make 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 PE people never seem to get?]



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... OLD TANKS NEVER DIE EITHER

WITNESS THE NEW **M74**
RECOVERY VEHICLE



Vehicle Recovery, Aviation, 74



Frontal Exposure of the Beast

THE MONSTER 19

The tankers who used to swear around the Marine Base that the old King Eight was the "Best M74 tank the M74 Army ever had!" will be happy to know there's life in the old girl yet. The M74 tank, (M74) is the base for the new M74 Recovery Vehicle, Aviation. While the old lady has had a considerable face-lift, you old boys will find the latest version of your favorite Ford GAA 500-horse foot-eight and the 100-and-both maintenance just like always.

But that's about all you'll find that you ever saw before, on account the isn't a tank any more, it's a recovery vehicle. They gave the old girl plenty of "Oomph" to take in any tank you've got (up to 100 tons) of wherever it's sent to the beaches in.

HERE'S WHAT IT IS . . .



THE HEAVY TRACKED CHASSIS



IT HAS A LARGE STEEL
AXLE JOINED FRONT



THE GREAT METHOD
OF BUILDING A BROOMER



... IT'S EVEN DO LIKE A WOLF



A BURN WHICH FOR
TENDING WITH RECOVERY



IT'S RECOVER, UP!



... AND HOLD

HAVE HEAVYER STEEL SPRINGS AND TWO TYPES OF STEEL AND RUBBER TRACKS WITH CENTER SHAPED CHAINING INTEGRAL WITH THE TRACK. . . THE TRACKS'S TRIPPER.



WAP1100



IF YOU EVER TRIP FOR
21 POINTS, BETTER
GET THE BURNING
CHASSIS TRACKS.
ELSE YOU'LL GET
UP THE ASPHALT.

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, splined into the prop shaft at the transmission end is the power-release 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 50 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 shaft 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 subplate. This is a large steel slab mounted to the right side of the hull and drilled seven ways from Sunday with oil passages (Fig. 1).

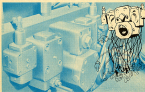


Fig. 1—Main valve subplate, the piece that's the brain of the hydraulic control system which gets the results to all the winches. Not tough, it's not to be machined.

It must have been a 1500 psi tank to set up, but now that it 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 motor you're using. These valves are sort of like relays in an electrical circuit. When you pull a control lever you close a little valve in a 1/2" line, and the pressure change operates the main valve, sending 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 haul, and at the same time makes for easy-to-operate coiled 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 other 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 built in 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 as a pull, and the relief valve will pop before the cable will break.

The vehicle itself operates like any M&A tank so see TM 5-750.



But this won't tell you how to work the recovery equipment, so the company is shipping a manual. Don't mistake it with each machine to help you out until the new TM comes out. Be sure you keep this manual with your tow vehicle. However, there have been a few changes that will affect the results you can expect. The final drive ratios are fixed (the old, lower amount makes a double-thick corner job.) which are slower but more powerful and let you tow a full-



trunk vehicle weighing up to 200,000 lbs.

The main winch, or tow winch, is mounted low in the hull, and feeds its $1\frac{1}{2}$ " 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 down to pull with a two-part line.

The A-frame type boom of this machine rides in the rearward position in a couple of storage clamps at the top of the boom support for travel. When in this position you can pass the $\frac{3}{4}$ " boom winch-cable out over a lead roller in the rear of the turret, over the boom above and over for all the ground towing.

For hoisting, you raise the boom to its forward position by means of two hydraulic cylinders mounted above the sprockets, which act on pins in the bottom of the boom pi-

vots. A heavy stay-cable supports it in the raised position, and a sheave at the top of the boom lets this cable handle twice revolutions 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 crane it too hoist or log at the top of the boom. This set-up permits straight hoisting up to 25,000 lbs. with a two-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-winding cylinders loose from the front 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.

In 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





getting it back to the shop, you turn to the towbar on the rear of your Monitor. 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 arsebandy to pick your teeth with a 500 lb bar, it is permanently locked in the pivot and there's a small hand-wheel that lifts on the telescoping spreader bar to help you get the legs up to the storage-clamps (Fig. 1). By cleaving this towbar into the towing-ops

on your crippled vehicle, you can light out for home and vitals and be pretty sure she'll be right there



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

work that's so long up, test up or copped up that you will have to cut it to bits, either by the work line or by the crew cut. For this purpose you will find Dry-Acetylene bottles, one Acetylene 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 24-type tank, you can get the driving instructions, take order, etc. from TM 9-139. But that won't tell you how to work the necessary parts.

Controls The controls that direct the winches and other necessary 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-and-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



levers (right side) that you pull back to release the brakes. Attached to the upper left corner of the control-value panel is the boom control-value 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 system 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 include space for 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 plate 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 shift back to the power-takeoff shift lever and, easing the thrust-lever, shift it backward to the engaged position. Release the clutch slowly and bring the engine up to 1800-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 lever to FULL-IN position (far west) and take the weight off the cable by pulling the auxiliary-winch valve on the control-value panel. Now shift the winch shift-lever to neutral, pull the spade release-lever, and lower the spade by pressing the auxiliary-winch lever. (Pull the auxiliary-winch brake-release valve on the control-value panel.) With the spade fully lowered, shift your main transmission into low, and ease up into 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 riggs take the auxiliary-cable and a shack-Block down to the recovery job by shifting the

auxiliary-winch shift into PAY-OFF position (back) and locking the auxiliary-winch brake-release valve in the OFF position (by way of the little lock on the winch brake-valve handle). By attaching the match-block to the job and returning the auxiliary-cable through it to the winch, he then connects it to the main tow-rope.

Now use the auxiliary winch to draw out the heavy main tow-line and carry it out to the job. You shift the low-winch lever back into pay-off position and hold the low-winch control-valve and the low-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 leading 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 some pay-off for the tow. If you have a load close to 10,000 lbs. or a badly stuck load to pull, use a two-part tow. (The heavy match-blocks for the main cable are stowed in the left, rear storage box. You don't have to lift two or three to put two back.)

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

main-cable before you get near the tow-winch cable. As to the lifting eye on the corner of the hull. These lifting eyes are steel castings, not forgings, and while they are plenty strong to stand their proper job of lifting the winch, they might have some under a heavy pull.

Now keep this in mind when making maximum load pulls: You have a duggon good strong cable on that low-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 master winch 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.

Third, you have a nice heavy slab of fixed armor on that hull between you and flying cables, way behind it when the pull gets near the maximum. The winch is supposed to stop before the cable breaks, but that plate has a confounding habit



HOISTING



ROUGH GROUND OR EXTRA HEAVY LOAD ... **WIG IN THE SPACE?**

Hoisting from: 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 stop-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 haul away. If your load is over 25,000 lbs., or if you don't know how heavy it is, or if you have a stack vehicle deep in the mud, or if you require slow, careful movement, carry the boom hold-down back up to the eye on the boom below the cable sheave and use a snatch block to make a two-part line.

Use boom position: When the hoist is made for such jobs as the replacement of power packages or towers, that is, a lift in which exact spotting of the load is required, you use the **LIFT BOOM** position. This is set up by placing the boom in **OPERATING** position, and placing a web strap, rope, or 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 attach with the quick-release pin you will find there. (This changeover can be made with the load suspended.) Now, holding the boom elevating^o 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 barrel 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 wrap the cable and snatch block. Then pull the boom control valve back into **LOWER** position,



...AND TOWING

HAVE A CHOICE. . . PICK SMOOTH GROUNDS

and ease her down. Be sure the stay lines don't foul on anything as she comes down. When the boom rests in the storage cradle on the boom support, brace 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 and the rear top hatch, feeding it carefully in the feed roller inside the turret as you do so. This cable is passed over the boom sheave on the stored boom, and can again be used with either a one- or a two-part line as needed. (See Fig. 2).

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 coming 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 front-locks and raise the towbar draw with the hand winch. The telescopic spreader-bar can be set to whatever width you want for the vehicle to be towed. Couple the devices of the towbar into the towing lugs of the



Fig. 2—Rear hoisting is done with cable coming from rear hatch, passed in the feed roller and passed over the boom sheave.



Fig. 2—Coil-over spring is best for heavy-duty jobs—leaf and coil for light jobs.

traced vehicle, and light cut (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 jolts 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 "MOWER, 35"

In addition to the regular servicing and lubrication of the chassis as per IAO (TMI) 9-798, you have the following points to check:

Hydraulic reservoirs. Located under the fared floor-plates is the hydraulic oil tank, this tank holds approximately 80 gallons of oil, Spec. 3-TSB. It is in two sections, the return and the fuel reservoir, 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 3-TSB hydraulic oil is not available, en-

gine oil OE 15 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.

Washers. All the washers are provided with oil-filled gear cases. These cases call for OE 15 for below 0°F operation, GO 50 for cold weather, 0°F to 30°F) and GO 140 for operation over 30°F. **Note:** Since the lubrication period on the washers is set at 625 hours, you will find that if you change the lubricant to match the temperature you will more than likely be well inside the time period. But use your head, if you are on a rough job in heavy conditions of dust and so on, change oil when it looks dirty.)

At the bottom of each wheel 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 washers are doing

a terrific job, but if you get edge and fragments there's trouble ahead. Tell Osherson 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 hoist 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 1½ gallons. You will find a plug (½" NPT) on the level gear end of the gear case marked OIL LEVEL, which shows you the oil level.

Winch grease-fittings All three winches also have a couple of grease 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 hoist 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 shaft-cables are equipped with grease fittings.

Greases 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 fire-wall, 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 booms 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.



Headings: Same as any other hydraulic system, you check hoses a fitting on any assembly you suspect has air in it, and let oil run out

until 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.

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 that 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.



Hot 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 fire carry away.

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



SAFETY

AND LAST BUT NOT LEAST

Now 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 ton. Don't even be afraid of this bugga—she's good strong and safe, but don't be foolish, either.



You've got a rigger called the Rigger—he should be a rigger, and a good one, for the latches he makes must stand both's pull. His gear must always be straightup. 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.



KEEP GUARDS
WELL OILED
AND IN GOOD
REPAIR.

...EAGER
AND SHARP,
PAL!

You use hydraulic pressure to take the brakes off strong springs to put them on. So any time your pressure falls while you are lifting, your brakes automatically 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 let, without releasing the brake.



WELD BACK
THE BRAKE RELEASE
WELD TO THE
CABLE OR LOWER
THE LOAD.

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

Connie Radd's "SHORT 'N' SWEET DEPT."



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-G-1584-13) will start to go solid at 0° F, but when you make a mixture of 55% of antifreeze to 45% of water (6 parts antifreeze/4 parts water), the stuff should protect your vehicle to approximately -50° F. For any other possible minimum temperatures out your way, you'd best see TM 9-555 on how much water to add to the solution.

Not that ethylene-glycol's intended for use in the bitter cold of -50° F. In the frozen waste-lands, exotic antifreeze (Stock No. 51-G-1585-150) is prescribed. This is a liquid electrolyte (colored yellow for identification) that needs no water in a climate where the water usually comes in blocks.

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

Karlton Aronoff, Mercedes, M. J., is giving away to any Oldsmobile Supply Office asking for it, a reference solution with which to calibrate 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 50/40 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 (shown inside)

was given a half-turn before the connecting-joint was hooked to it. To set her straight, disassemble 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 (T40K1), M41E2 (T40K2) and T34.

Hydro-matic fluid-level

Here's the new way to check the fluid level in those M135 2½-ton, hot track hydro-matic transmissions.

It seems that you get a reading that is higher than the actual level if the transmission lever set in "D" or neutral position as your engine idles during the level check. This is because the fluid sloshes in 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 P-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 track has been running.

If the 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 II 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 P-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.

Triple-Tube axle wheels

When Louis the Luber gets going on the underbelly of his tank he fills everything in sight till they're spouting oil and grease on their men.

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

those 1/4's, you want to read all the fine print first.

Trouble begins when Louis sees two plugs in the differential cover on the bus-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, Louis's troubles really start to bubble. The differential drums and overhauls and ratchets fit overhaul past the seals and all over the brake shoes. This does not help the truck stop as it might with dry brake shoes.

Louis should've 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—death in hot weather. In cold weather, he should fill to 1/4" of the opening.

Mr. Patrick Parke, your friendly OCT at Camp Peck, came up with a cure for Louis's lousy overhauling this process. He filled the square socket in the upper plug with lead. Now only the bottom plug can be taken out. He also got the guy right who paints the hub points: Made him take the red paint off the upper plug with his nail.

Push 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 ON 123 VEHICLE PM SERVICE



... OH, NOW
POSSIBLY TO
SUCCESSFULLY
ACQUITE THIS
TECHNICAL. YEAH!
DREAMS OF THE IMAGINARY
MACHINE, AND SOMETHING
FAMILIAR, AND DON'T
FORGET TO LOOK
AT THE TA...



WANT TO GET THE BEST OF BOTH, AND DON'T WANT TO PAY A "BIRD"
CREATOR, HERE'S THE ANSWER. IT'S A GOOD 'OL' 141. GET THE
BEST OF BOTH.

1. CHECK

CASH, INSTRUMENTS
AND ACCESSORIES...



Oil, Grease	Lubrication	Tire	Wax	Wash
WASH WITH THE BRUSH	WASH THE TIRE WITH SOAP	WASH THE TIRE	WAX THE WAX	WAX BRUSH

Wash	Wax	Wash and Wax
WASH TIRE AND WAX TIRE	WAX THE TIRE AND WAX TIRE	WAX TIRE TIRE AND WAX TIRE

2.

BRAKES CLUTCH TRANSMISSION AND TRANSFER



FOOT BRAKE	BIKING PEDAL	HAND BRAKE
THE BRAKE! WHEN IT "WORKS" STOPS IN A HURRY!	DOES IT "NOT WORK"? DO BRAKES GRABBER OR SLIP? !!	WOULD YOU WANT TO STOP ANYONE IN BRAKES WHEN THEY'RE STOPPED?

CATCH PEDAL	CLUTCH ENGAGEMENT
THE MORE YOU CATCH THE BETTER!	NO! CLUTCH, THAT'S NOT!

TRANSMISSION AND TRANSFER	
	THE POWER . . . TRANSMISSION IN BOTH FORWARD AND REVERSE
	BOTH WHEELS SHOULD TURN IN SAME DIRECTION
	HOW AT THE MOMENT, THIS STOPS—AS IT MOVES— UPON THE . . . HOW DO BRAKES SELECTIVE?

3.

STEERING ENGINE, AIR BRAKES

...AND YOU ALSO CHECK
GRAPE OIL LEVELS
OF LEAKS, BRIDGE
ROCKERS "TANGIBLE"
AND FEEL
BRAND CRACK
HORN, AND THE
FOR ENLIGHTENED
HEARING.

**STOP
STOP**

ANY
MOTION
IS
CRACK-
AND
CRACK!

WHEEL	STEERING	AIR BRAKES
 <p>YOU MUST FEEL-PLAY WITH WHEEL! CRACK BRACK!</p>	 <p>WHEEL MUST UP-GRACK!</p>	 <p>CRACK MUST CRACK 1-2-3-4-5-6-7-8-9-10 FOR BRACK! THE BRACK!</p> <p>CRACK! ... WITH BRACK! AND CRACK! CRACK! UP-GRACK! AND DOWN FOR BRACK!</p>

FRONT VIEW	POWER	DOWNWARD
 <p>WE MUST BRACK! BRACK! ... BRACK! BRACK BRACK BRACK BRACK BRACK!</p>	 <p>CRACK THE POWER! CRACK! CRACK!</p>	 <p>IN CRACK BRACK, CRACK CRACK! CRACK THE BRACK! CRACK! ... CRACK!</p>

RAPE BRACK	CRACK BRACK THE BRACK CRACK BRACK
 <p>WE MUST CRACK BRACK DOUBLE CRACK</p>	 <p>CRACK WITH IT CRACK BRACK BRACK CRACK BRACK</p>



Joe's

Dope Sheet



WE HAVE THE WORLD'S BEST EQ

On new parts Joe Dope is quite rich
But where do they go is the hitch
T.M.'s some guys treasure
For nothing but pleasure
...Results are bassackwards-tch-tch.



EQUIPMENT... *Take care of it*



Joe Dope Posters

NOW come ready for **HANGING**

In this and in future issues of *FL* 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 newspaper (you, for example) by cutting down on amount of paper used.

You like this poster idea? How about sending a card to Light-Bell About about it? That'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.

Tight Adjustment Basts



CD-850 Transmission Brakes

(There's the Rub, Bob!)

That referee from Section 5 who brags about stopping his million-ton truck 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 truck will be in Delancey 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 jobs adjust 'em too tight, thinking it's a good way to get better brakes. Bad fact is when they're that tight, they rub together all the time.

Pretty soon we brake! And you lose your tank for a short stay at Delancey.

You can have good brakes and keep the guts outta your transmis-

sion with this step-by-step adjustment:

UPGRADE

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 linkages 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 fuel. 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

drive—don't pull or push on either the apply arm or the linkage to get these to line up—they must simply fall in line. Now if the bolts 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 bolts on the linkage until the bolts 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 ball and brake pedal. If there isn't, then someone has been tinkering around with its adjustment. To get plenty of pedal clearance, remove the pin from the rod running forward to the brake pedal from the rear 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 O.K. 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 "W" (for "Released") in the window lined up with a dashed mark on the edge of the window. When you apply the brakes, the mark at the letter "A" (for "Applied") will line up with the dashed line (Fig. 1).

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



in 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. 3).

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 adjustment 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 "B" line should hit the etched 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.



SHOVE IT

OFF

The lead pushing-brake that's released and let go off on its own won't release all the way. It leaves the brake partly on. Break Transmission brake wear ing out. It shoves it all the way off.

GET THE LEAD OUT -

A lead foot gives you maximum control. It prevents keeping your size 12's on the floor. Brake shoes wind up with no brakes on their ends.

DISTRIBUTOR LUBRICATION . . .

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

On the M35 it's real easy, you don't do anything. This igniter has a sealed ball-bearing at the top of the shaft which is 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 use 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.



M35 and M37 Distributor

With the M35's and the M37's you have a lot more to do. Every 6000 miles or six months, you pull out the 1/2" 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 Grease into the shafts take hole then put the saturated wick back in. Get yourself ten crank greases in line and you can spend the rest of your time in the messy putting in new breaker points, see 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, quite like So—gently, gently with the lube on the cam.

Should You Tighten Tracks?

REAR

How and How Not To Do It!

TRACK TIGHTENING TIP

The job of track tightening usually takes a gang of fellows with track jacking, blowing, and digging. Now any capable track car can do it with no pain.



To tighten the left track (for vehicles with drive-axles 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 (oil 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 653, Pt. #14 (Holding Station). For vehicles with drive-axles in the front—M56E1, T56E1, T156, T57 and M75 (T15E1)—you can lock neutral steer to get slack in the left track and right neutral steer to work on the right tank.

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—Left tank track is loose to tighten; now you've got the slack gathered up.



HOW'S YOUR SAG?

WALK
SAG?



Here's the Right Slope on Track Tension



Place a 1" block between the track and 22 (from front) support rollers. If the track is properly adjusted a gap of 3/16" to 1/8" will be formed between support rollers #12 and #14 and the track.



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



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



50° ang between rear track support roller and compensating idler wheel.



40° ang between 2nd and 3rd (from front) support rollers.



30° ang between 1st and 2nd (from front) support rollers.



45° ang between 2nd and 3rd (from front) support rollers.

NOTE: Let vehicle coast to a stop on level ground before checking track tension. For the T70E1, T70E1 and T74 coast to a stop in reverse, keep vehicle in reverse and use angles just enough to pull slack to the top of support rollers without moving the vehicle.



SUPERCHANGING 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 "instant check" basis. Should we use the new number or the old?

PFC L. R. W.

Dear PFC L. R. W.,

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

You'll notice that the newer supply catalogs will give up the old. Old catalogs holding you in order the super-odd item might be discarded.

Half-Mast

TRACK-RECORD CHECKING TOOL

Dear Half-Mast,

Ord 4 291, 7-11 and Ord 4 291, 6-27 for a track record checking tool 241-2-

2081-273 for the M14 Light Tank. But I can't find anyone who has seen one. Can you give me the dope?

S. T. Q.

Dear S. T. Q.,

The track record checking tool was designed and tested back in 1943. Now it is even got a job work order number and the stock number but that's as far as it got. And even though it went out pretty good, the tool never did get into production, because the standard method of checking track record proved just as good.

Ord 4 291, 6-27 is being redrafted and the item is gonna be dropped. In plain English, the tool just ain't in the supply system.

Half-Mast

REWORKABLE OR UNREWORKABLE

Dear Half-Mast,

I got WFO 6249-877 and intend to comply with it. But there's a joker in the deck. This modification is on the M11 track and has to do with the pre-

pressure-regulator spring, Stock No. G749-741207. It's to be replaced by a stronger spring, Stock No. G749-811471, because the older one wasn't strong enough to do the job.

The old pressure-regulator spring isn't damaged or unreasonable 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 MFD says this spring must be retained in stock—in case it is unreasonable, in which case it should be disposed of per BR 733-136-1. Personally, I don't think it is unreasonable but what does the Army think? I'd sure hate to see these things burning back on my reputation like the proverbial hot potato.

WYGG, M. A. G.

Dear WYGG M. A. G.,

The confusion here in this particular case the old spring (Stock No. G749-741207) was not unreasonable. It has no lower changeability value so, since it's been retired from its only job, it's now unserviceable. Now get out your BR 733-136-1 and prepare hot springs for savings accounts.

Half-Nut

WEIGHTY PROBLEMS

Dear Half-Nut,

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

For one, the battery cable connectors



are breaking. And for two, the battery supports break loose, allowing it to drop. The post says it's OK as long as the roads but it's been a long time since it's over one of those.

SFC R. J. L.

Dear Sergeant R. J. L.,

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

For your one 'A1, try the same solution, use a heavier bag, such as Terminal Cable, wire-bag, H004-01-81100, M70 cable, 1/2" hole, if it hold your connections.

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

Half-Nut

SUPPLY & DIRECTIVES

How To Use These New PM Forms

Form SA-400
Form 401

- 1 Use it for vehicles like it says here.
- 2 And use it whenever this interval calls around. And circle which interval the inspection applies to.
- 3 This refers to a new car that's still in the mill, so don't waste people by asking for it, you'll get the word when it comes out.
- 4 Here fill in the info that each item asks for.
- 5 This is important, so don't skip to see how it.

A large illustration of a stack of papers. The top paper is crumpled and partially torn, with a piece of it flying off to the right. The stack consists of several sheets of paper, some of which are filled with text and a grid. The grid has several columns and rows, with some cells containing numbers or text. The papers are slightly offset, showing the edges of the ones underneath. The background behind the papers is a solid teal color.

If you're still anxious to know what goes about the official pump-on those new FM forms (DA 484 and 487), well here we move and stop ruffling your hair because ER 780.128.8 (14 Aug 83) is clear and and covers that angle pretty well.

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



1. Here simply follow the form numbers about this column and inspect as is the necessary but be alert not each and every article that applies.
2. There it's indicate what each is to be inspected.
3. If the article inspected is OK, put a check on that column.
4. If it needs adjusting, get your check in the ADJUST column ... and get a brief explanation of the necessary adjustments REMARKS.
5. Or if the article requires repairing, check the REPAIR column and again get a brief explanation under REMARKS.
6. How get this in there when you have a number of articles to be inspected and you find only one of the batch that needs attention, check that particular article ... and skip over the check mark.
7. And where all you gets initials and every adjustment and repair check mark.
8. When you see across on form that doesn't apply to the article being inspected, or serviced, put an X 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 visible FM is any where that may be handy to you may be followed, only to sure you hit them all. (The new ER has a good step-by-step procedure.)



For filling the back of Form 487 ... Turn the page

Inspector					
Shop name					
Address					
City					
State					
Zip					
Make					
Model					
Year					
Engine					
Transmission					
Drive					
Color					
License					
Inspection					
Remarks					
Inspector					
Supervisor					
Signature					
Date					

Engine					
Transmission					
Drive					
Color					
License					
Inspection					
Remarks					
Inspector					
Supervisor					
Signature					
Date					

1. Inspect the engine
 2. Inspect the transmission
 3. Inspect the drive
 4. Inspect the color
 5. Inspect the license
 6. Inspect the inspection
 7. Inspect the remarks
 8. Inspect the inspector
 9. Inspect the supervisor
 10. Inspect the signature
 11. Inspect the date

Inspector: *[Signature]*
 Supervisor: *[Signature]*

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



ARMAMENT & AMMUNITION

An Ace in the Hole



An IP5 #13 (page 572) said... If you cal. 50 heavy barrel Browning machine gun has been modified per MWO Ord A99-W11 (or MWO Ord A56-W1) for HD TU guns, you can save your head-space-adjustment jitters, too. Well, it, 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 23-48.

However, just to save the small tube in the right side receiver plate isn't enough to warn some people that they're handling an HD cal. 50 that's got inside the new barrel-locking spring assembly as which headspace adjustment needs to become 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. 18 available thru regular supply channels) that gets pasted on the receiver top-plate—just behind the cover latch. (CAUTION: Before you look 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 23-48 (and turn to Change 4, par. 11c) for required headspace-adjustment instructions before he starts twisting and adjusting the tube as per old labels.

HOW HOT TO REMOVE A STUCK PATCH

Here's what happens when a stick patch is shot out of a rifle. The barrel gets open. If a patch can't be blown out with a cleaning rod, it's a job for the power-sawing or sanding.



SPECIAL CARTRIDGE FOR RIFLE GRENADES

Here about the late Pvt. Elwood Searfield? Yeah—he forgot an 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 needles.

What happened? The rifle blew all its jobs and gas. Then, the bullet set off the grenade. Then off right in his face.

He should've 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 copper rod.

SEAR-IOUS BUSINESS FILES AND M1'S DON'T MIX

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

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

Rifle like that can go off almost any time. When it hits the dirt in training or combat, that'll trip off. It's the luckiest guy next to him that usually gets it—in the neck. Then, come the time in combat when he wants to squeeze off just one shot. It'll give two—or three. The joker'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.



AIRCRAFT SUPPLY



COMMON TOOL GAB SESSION

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

This is about Special Regulation 120-12-3, which for you tells down to one thing—equalizing from Air Force Tech Orders for common tools just ain't no more. So, it's do you well to take a "look see" at this SR, if yours isn't dated 7 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 175 (11 Aug 52) which says that the Transportation Corps is responsible for all aircraft activity because they're two entirely different subjects.

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



Illustration of a common tool tray.

applies to TO 00-34-57, Kit, Mach. Insts. Cig. Maint.

And for you flying carpenters, stand up and weep, changes have been made. TO 00-30-38, Kit, Mach., Propeller, and TO 00-30-39, Kit, Woodwork, have gone the way of the corn cob since learn came to town. Top and nothing, at least from Ordnance, replaces them. Here's why:

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



Marjorie Marjorie . . . the subject before the house is airplane bodies. Pieces in the army have metal leasers in the tools you need are in the sheet metal sets. But, if for some reason you need woodworking tools, then there may be an end 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 BK 720-100, para 196 F2.

Now for the Welders—y'know

the Set, Welding, Portable, TO 80-30-17. You might have a pile of trouble finding where Ordnance gives you welding gear. But you'll be alright on the MDS set—no problem—TO 00-30-71, Tool, Welder, is replaced by Tool Set, Welder, Cast, Ord 4, SWL, J 30, Rev 4, 41-T-3284-9781. Ordnance considers the Ordnance welding kit, 40-T-3284, as the replacing item. You can keep looking, but you won't find the kit in any of the new sets and, to help you, it's not listed separately in T/O & E. It just isn't there, that's 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 procedure to be will give you the green light as to when to start converting your Tool 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 SM, and requisition it. To wind this thing up, submit your issue slip or requisition in some old way you would for any other Ordnance item. For 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 700-80-10 with all 3 changes.

CONTRIBUTIONS

BY BOB



ONE TRANSMISSION NEEDED

Dear Editor,

One of our MCH drivers had to get a tow to the shop which was about 300 miles back. He helped hook up his MCH 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 steps on the transmission instruction plate which says to put the transfer lever in neutral, too.

While he was spinning slowly along he never the gears in his transmission. Even 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—Hydraulic don't mean automatic. The driver is the brain behind it, and they'll only understand it when they get acquainted with the T&E and follow instructions to a "T."

Restaurant Partner
AHE, Maryland



WELD HOLES AWAY

Dear Editor,

I am enclosing a photograph of a couple of wheel studs which failed here in Port Dix (Fig. 1). The driver reported that he found his wheel was very loose, and had tightened them as tight as he could get them. Some afternoon the nuts broke. We think that the wheel had shifted off center, so that the nuts were not bearing normally on the tapered ends of the nut and the wheel, but were carrying the full portion of the wheel load on one side of the flats below. 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 had a real loose wheel, they had better jack it up and be sure it was level before tightening the wheel nuts.

Irwin D. Peiss, DCT
Port Dix, New Jersey



BETTER GAS-VALVE PROTECTOR

Dear Editor,

This gas-valve protector for the M101 2½-ton is PD 211 (p. 488) was pretty good, but we have worked out a better design.

My gas valve malfunctioned down from guys tramping on it, so I rigged up a protector to stop 'em all (Fig. 2). I made it from 1½-gauge sheet steel. Don't make it per the sketch. Buy 10-cups, 500-ohm capacitors and lockwashers, put in the pressure and replace capacitors 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.

Ed C. Winslow
APO, Maryland

Ed Note—This is a long-printed board



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

BUBBLER MORTARS

Dear Editor:

There's one that had us really wrapped for awhile. The first round of 902 or 903 seems fixed from some new M&M, 4.2 mortars would cause me like a flaked French of July rocket and fall short . . . and sometimes dare short.

This business had us crazy and was doing till we wind up to a tough, almost inevitable coming of some kind of gyle inside the new tubes. Way we finally figured it, the first round burst out the coating and set things to rights. Youse the following rounds got off OK . . . and we were right!

An Ordnance weapons inspector we contacted said that the mortar had

likely got riveted with non-penetrative ANS 875 when they got wrapped. When the stuff hardens, ordinary mortar man's use is loose. But the stuff he stored as he will do the trick. It's degreasing, self-cleaning, solvent (Stock No. 513-4737-721, MIL-D-11001). Now all our new tubes get a dose of this solvent.

Of course, to be extra safe, after the solvent is used, the mortar 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 check-up of the deepening job of the tube.

Epl M. E. Altwang
Ravens

Ed More—Also, a good scrubbing and scrubbing with dry-cleaning solvent, Stock No. 41-5-1187-03 (MIL item) will free your mortar tubes of stubborn ANS-875.



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

ANSWER TO CROSSWORD IN PG #15

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Corvair Road's BRIEFS



Correct your date plates

Like Corvair predicted back in PS 47, B-Ord 480 (you'll see) says take your 14-ton and 14-ton 4 x 6's and your 27-ton and 31-ton 4x4's to Corvair dealerships and let them correct the date information on the 24-volt 44-model date plates. They'll "X" out the "70" and put in "71" to reflect the change from 60-90 to 60-70 in temperature range of $+40^{\circ}$ F to -10° F. Or better still, if you have the tools, eyes and nerves the date plate yourself. New year date orders and date plates will arrive.

STOP Audience Dear Road

To prevent the bottom panel of the outside doors of the Dodge Automobile (Model 82 HWB) from rusting out, drill two small holes in the bottom of the doors, joints and joint drilled edges. This'll let out the water that may seep in around the hinges.

Check that 10

As you take your 4135 and discover that the grease fittings on the lower forward part of your rear-brake shaft are

missing, don't blow a fuse. They're gone on purpose.

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

Reg. 10 9-8704 (21 Oct 72) does say they are there, but watch **Note 12** and this too rear-brake shaft items on the chart until you get your new 10.

There's the rest

Big-brother Calhoun is still having trouble with his 82B's right-front wheel rubbing against the frame, when making those steep left turns on the bumpy roads. Calhoun would fix it that by building up the weld on the right-front wheel-stop, that vehicle's turning radius can be reduced from 22' to 22 1/2'—enough to end the problem.

On that 74 El **DOE**

The second item 47 (which should be item 49) under 289924 on that yellow print-up check for which came in PS 214 should be changed to read "Boscher & Barker . . . SCARFEE". You'll never get the task started by just turning off the radio switch.

PERPETUAL INDEX

The quality of the work is the key to success.
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WHO...?



ME?

*... yeah, you ...
you're gotta ...
idea ...*

... about Trucks, Tanks, Engineer equipment
Ammos, 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 it's not and done, make life a lot easier. (Makes a Better Army, too.) I've seen these ideas in other stuff, so, I know you've got 'em.

Other guys need these ideas. Just scribble 'em down. Give all the date. If you can make a sketch or send a photo--fine, it'll help. I'll pass it along.

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

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

Half Mast