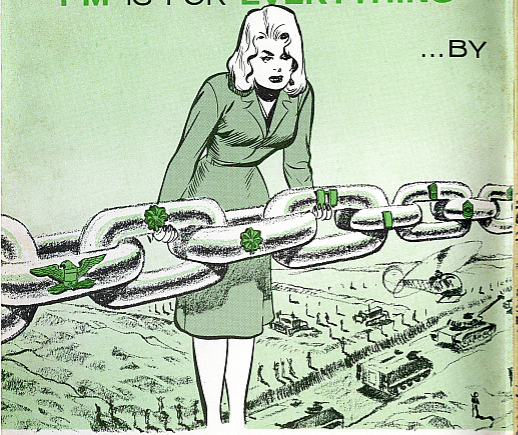

Issue 77
PS
1959 Series
THE PREVENTIVE MAINTENANCE MONTHLY
TIME FOR SPRING CHANGEOVER—PAGE 2
WILL EISNER

PM* IS FOR EVERYTHING

...BY



When it comes to *Preventive Maintenance, Everything and Everybody get in the act.

Everything—meaning every piece of clothing and equipment the Army issues you or that you use . . . gets the "plush-carpet" treatment by you when it comes to care, cleaning and right kind of operation.

It means **everything** . . . not just rifles and trucks. It means your tent, shovel, pack, radio, stove, jacket, recoilless rifle, mortar—everything.

And, Everybody . . . means just that—**everybody.**

Private—yes. Specialist—yup. Corporal—right. Sergeant—him, too. Yes, Sir, right on through lieutenants, captains, majors, colonels and generals. **PM** is everybody's job.

EVERYBODY

Which, when boiled down to a nub, means that when you (and every man in uniform) have been issued equipment to wear, use or operate, you've got the biggest job in the world—that of giving it the right kind of care and operation.

That's **Preventive Maintenance** your insurance to win in battle.

PS THE PREVENTIVE MAINTENANCE MONTHLY

Issue No. 77 1958 Series

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IN THIS ISSUE

ARTICLES

DEPARTMENTS

PS wants your ideas and contributions, and is glad to answer your questions. Just write to: **Sgt Half-Mast, PS, Raritan Arsenal, Metuchen, New Jersey.** Names and addresses are kept in confidence. The printing of this publication has been approved by the Director of the Bureau of the Budget (27 Apr 56).

DISTRIBUTION:
In accordance with requirements submitted on DA Form 12.

KEEP A REAL

Maybe you think you know all there is to know about cooling system maintenance for hot weather driving. Don't give odds on it, though, because there've been changes to the way you used to do it.

1. You'll need your equipment's TM or, in those cases where no TM has been published, the manufacturer's manual. It gives you the lowdown on those things that apply to your specific piece of equipment.

4. If you found that slick, filmy oil in your coolant before draining, you could have a leaky or blown cylinder head gasket, loose cylinder head bolts, a warped or cracked cylinder head, or you may have shot too much grease into the water pump. (Don't mistake oily-looking anti-rust inhibitor in anti-freeze for oil.)

7. Watch the coolant for bubbles on the surface or, if you have a bad compression leak, the water may surge over the top of the filler neck. Either way it means the cylinder head has to be taken off and checked for possible trouble.

COOL(ING) SYSTEM

One thing you ought to know at the start—what you do in the Spring has a lot to do with the way your liquid-cooled vehicle operates during the Summer, whether it be a truck, dozer, MHE or what have you.

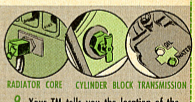
2. Before draining the cooling system, remove the radiator filler cap. Take your finger or a clean cloth and wipe the inside of the filler neck with it. What do you find? If she's clean, you're lucky. If she shows heavy rust or a slicky, filmy mess (that's oil), you have a cleaning job on your hands. Replace the filler cap.

3. Before draining, check your whole system for leaks. Check your hoses, particularly around the hose clamps where the clamps are likely to cut into the hose, the hose clamps themselves for tightness or whether they're sprung, the radiator, and the water pump.

5. To check it out, first fill your cooling system to the level mark. Remove the water pump drive belt, have a buddy start the engine.

6. With the brakes locked, have your buddy shift into drive, let the clutch out slowly, (if your vehicle has one) and speed up the engine gradually, causing the vehicle to pull.

8. If no trouble's found from this test, run the engine at fast idle until the temp gage reads normal operating temperature. Your TM tells you what normal operating temperature is for your equipment. By running the engine, you stir up the loose rust and scale in the cooling system, so it can flow out easily when you start draining.



9. Your TM tells you the location of the drain cocks and valves. You may have a number of them, so don't miss any. Of course, there's one for the radiator, but there are also others for the engine, the heater, and for water-cooled compressors. On the G-749 series Hydramatic trucks, don't overlook the plug marked WATER located at the bottom of the transmission housing.

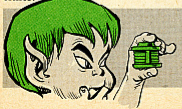
10. Turn off your engine when she reaches normal operating temperature. Unscrew the pressurized filler cap—carefully, else you might get sprayed with hot anti-freeze. Now, open all cocks and valves, and let the stuff pour out.

11. Awright—awright. I know what some of you guys are saying. "That's permanent anti-freeze that's pouring onto the ground. It's PERMANENT." Nope—it's not permanent—it's permanent-type, and you'll get arguments on just how long it's good for. During warm weather, water's a lot better than anti-freeze for your cooling system.

Don't forget that this anti-freeze that's pouring off has seen six months' service. It's lost a lot of its corrosion-resisting qualities. Keep using it, especially during hot weather, and corrosion can really build up in that cooling system. In other words, nothing is permanent, except death and taxes—and that includes anti-freeze.

Now, there's one—and only one—exception to this. You **won't** drain the anti-freeze in your **combat ready vehicles** unless fresh stuff is available right now for next winter. This doesn't mean you have to have it in your unit's supply shack. If you have it there, fine; if you don't, call your support unit and ask them if there's enough anti-freeze on hand for next winter. If they say yes, drain; if they say no, leave the stuff in there until you get the OK from them to drain.

This poop on draining permanent-type anti-freeze comes to you through the courtesy of TB Ord 651 (20 Jan 58). Why not give the sponsor a break—read his stuff. There's a lot of information there that's good to have—won't cost you a cent, either.



12. Now's a good time to get a new thermostat if the old one hasn't been operating right. If you're not sure how she's been acting, test it out like para 71b of TM 9-2858 says.

13. With the coolant out, all leaks fixed, and the thermostat in good shape, comes the time to clean the cooling system. If you found too much rust in the coolant when you started draining, you have to use that cooling system cleaning compound, FSN 6850-272-9327. Follow the instructions on the can. This is important—never use this stuff just for the heck of it. In other words, don't use it unless your radiator's clogged or your cooling system shows lots of rust. If used as a routine cleaner, the compound has a way of rusting the metal surfaces of the system.

14. When doing a straight flush job—not pressure flushing, that is—the big point to remember is that clear water must come flowing out of the drain cocks. Start off by making sure the drain cocks are closed. Fill the system with fresh water. Put the filler cap on and run the engine at normal operating temperature for at least five minutes. Off with the cap and open all the cocks.

If water is discolored, do it again—and again—and again—until she comes out clear. Remember, though—you have to run the engine **each time** long enough to reach operating temperature. When flushing, never put a hose into the filler neck and flow away—cold water'll cause the thermostat to close and the water won't circulate properly. Take a piece of wire and clean the gook out of the overflow tube and the drain cocks.

15. If your system has to be pressure flushed, the poop in Change 1 to TM 9-2858 will come in handy—it tells you how to do the job.

16. Before filling your cooling system with clean fresh water, clean out the radiator filler cap with a spray of water. To do a real thorough job, jiggle the inside valve as you play the water over the cap.

17. Pour clean water into the system. Before adding it, though, make sure the truck's temperature is below 200 degrees. If you're not sure, best let her set a while before pouring in the water.

18. Add rust inhibitor, FSN 6850-281-1984, to your system. This will help prevent rust—what else?

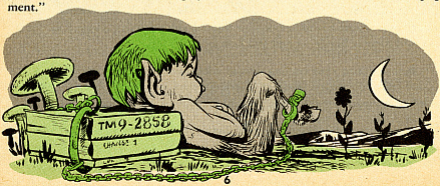
19. Check the system for leaks again, and check the radiator mountings to make sure they're tight.

20. Give the hoses a good going over, again. If they've developed a crack, change them. Give them a feel—they shouldn't feel mushy. They should be pliable, but firm. On tactical vehicles, get rid of hard-rubber hoses. They don't flex, and the end result is a split radiator inlet.

21. Check your drive belts, and make sure they're adjusted properly. Give the water pump a few shots of grease, if the LO calls for it and she hasn't had some recently.

22. Finally, with a pressure hose, blow debris out of the radiator fins. Don't use steam.

23. Keep TM 9-2858 and its changes 1 and 2 handy. Here's the title—it tells you what it's all about: "Cooling Systems: Vehicles and Powered Ground Equipment."

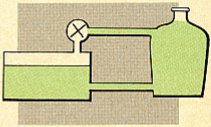


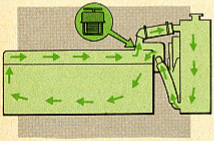
FILL IT FULL

Give your tactical wheeled vehicles full measure. In spite of the radiator filling instructions spelled out in various TM's, some guys aren't getting their cooling system filled properly. And there have been some cracked cylinder heads, which same cost mucho dinero.

OK, so anybody can fill a jug: all you do is pour water into it until it overflows. Why not the same thing for a radiator?

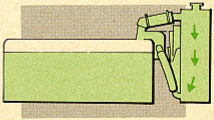
Well, the joker is in the thermostat. Your radiator is more than a jug. It's like a jug with a pipe outta the bottom. The pipe goes, of course, to the engine water pump, and another pipe comes back from the top of the engine's cylinder head to the top of the radiator.

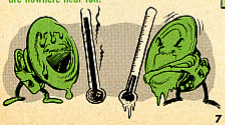




OK, as long as that top pipe is open, water poured into the radiator will also run out the bottom pipe, rise up in the water jackets, and fill the whole system.

But, if the top pipe is closed, the air in the water jackets can't get out, so the water can't come in. Which means you can have the radiator full to overflowing, but the water jackets are nowhere near full.





Now, as you know, your thermostat is a temperature controlled valve located at the water outlet at the top of the engine (in the elbow coming out of the cylinder head).

Since this valve stays closed until the engine coolant gets up to normal operating temperature, it will theoretically prevent you from filling the cooling system, until you warm up the engine.

This is why your TM tells you to run the engine up to normal temperature before adding water.

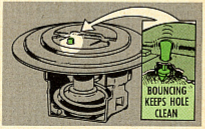
But there are a couple of pros and cons to consider here, too. If the coolant is below the circulating level the pump cannot circulate it up to the thermostat, thus the thermostat will stay closed longer.

This means that the top of the cylinders, and the whole cylinder head assembly will be running dry, and getting too hot. Eventually they'll get so hot that conducted heat and steam vapors will heat the thermostat and open it. But this is likely to be too late. The cylinder head is designed to transfer the heat of combustion to a circulating stream of water, and by the time it gets hot enough to open the thermostat without water, it is also in danger of being so hot at the valve ports, etc. that it will crack.

This is particularly true if you're adding cold water to the radiator at the time. When the thermostat does get hot enough to open, it lets the trapped air and steam out with a whoosh, and cold water comes up from the bottom of the radiator into the cylinder head. To the merry tinkle of cracking cast iron—expensive cast iron at that.

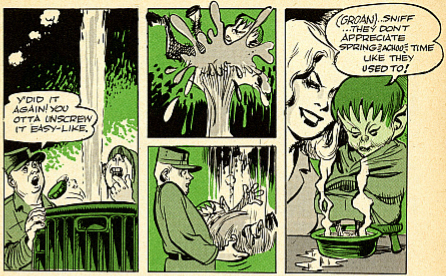
So, to stop this, there is a small air bleed hole in the thermostat's valve disk. And to keep this hole from plugging up, there is a loose jiggler rivet through the hole. The idea is that as the rivet bounces around, it will keep the hole cleaned out.

Ah so, as our Oriental friends say. But, it turns out that filling the radiator too fast has been known to push so much air through this bleed hole that the air picked up the rivet and lifted it up in the disk, so that the rivet head sealed the air vent. Once more, no air out, no water in, and you start out with a half empty cooling system.



OK, so much for the reasons why you maybe **can't** fill your radiator. Now for the ways on how you **can** fill it.

How you go about it depends on how full you think the system is when you start. Either you know it is plumb empty, because it has been drained or flushed,



or else you have been using the truck, and think you only need a little water.

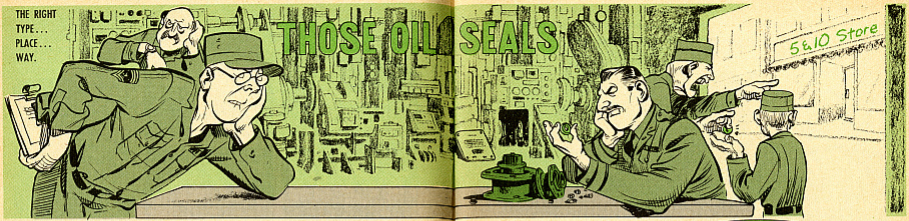
Now, if you know the system is empty, you start adding water **slowly**, being sure the water level check cock under the front of the radiator top tank is open. You know that your system holds 22 quarts, which is 5½ gallons, so you make sure you've put in anyhow 3 or 3½ gallons before running your engine. If the radiator fills up before you have that much water in it, just wait a while…smoke one. It'll go down.

All right, now you know you have at least three gallons in the system, and this also goes for trucks that have been in regular service and have not been drained. Start the engine and run it until it reaches normal operating temperature, around 180°F. Then add water **slowly** until it is standing in the filler neck. Remember, if you add cold water too fast, it will make your thermostat close on you. Take it easy.

When the water's standing in the filler neck, close the water level test cock (bottom of the radiator top tank, in front) and continue to pour in until you see no more air bubbles in the filler neck. Run your engine a few minutes and check again. Tighten your radiator cap and take off.

And for added safety, a smart man will check his water level again at the first halt, being careful about opening the level cock, because hot water under some pressure should come out.

So, that's it, the main secret is to be patient, fill slowly, run the engine up to normal temperatures for final filling, and check again after you've driven a while. Considerin' the trouble a cracked cylinder head can be, it's worth it.



The right type of oil seal in the right place installed the right way—that's one of the most important deals in keeping equipment running.

Compare the cost of a seal to the cost of the shaft or bearing or whatever it's on . . . and it amounts to cigarette money. But even though it's small change, expensive machinery can't operate without it.

To keep your rig on the job, it helps to know what seals to use how and where and when.

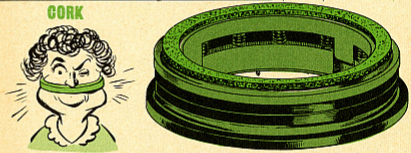
Always use your supply manual when replacing seals to make sure you're using the right ones.

When soaking or dipping any seal before installing it on a sealed system or unit, use the same oil or grease that's in the sealed system.

FELT

A felt seal is used when you want to keep dirt out (not to keep oil in). Soak it in lubricating oil before installation. If you have to split a felt seal to get it in place, make the cut at an angle.

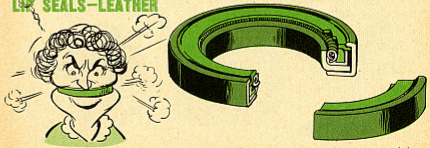
CORK



Cork seals are sometimes used in place of felt ones, but not where temperatures get above 150°F, or against acids, alkalies or high pressure.

Cork seals work best when used against a solid backing—like on a face-type seal. Coat the cork face with graphite grease.

LIP SEALS—LEATHER



Leather and rubber lip-seals are used on lots of equipment for the same job. Synthetic rubber is replacing leather in lots of cases.

Leather seals usually come pre-soaked in oil and packaged so they won't dry out. Pre-soaked, packaged seals don't need soaking before installation. But if your leather seals are dry, soak 'em in warm oil for about 30 minutes before putting them on.

LIP SEALS—RUBBER

Rubber seals are the thing for holding in lube and keeping out dirt when you've got parts operating at high speeds at high temperatures. They also work better than other seals on worn and misaligned parts. Dip a rubber lip-seal in oil before using it.

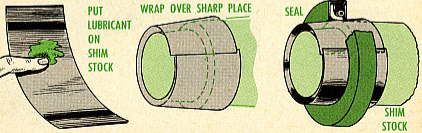
INSTALLING LIP-SEALS

Most of the time, a single-lip seal is installed in the direction of what it's holding in or out. If the seal is to hold lube in, the lip is placed toward the inside. When the main job of the seal is to keep dirt out, the lip is toward the outside.

On double-lip seals, the spring side of the seal usually has a wider lip. Always point the wider lip toward the lubricant you want sealed.

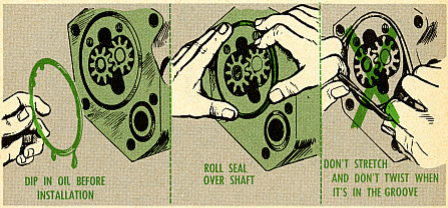
In a case where you've got a double-lip seal separating two compartments of lube, point the wider lip toward the compartment with more pressure . . . or the compartment with the thinner lube.

Remember it takes extra care to install a lip-type seal over a sharp shoulder, key-way, or spline. Put lubricant on shim stock and wrap the stock over the sharp place to give you a smooth, sliding surface.



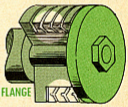
If you don't have shim stock, you can make a slide by coating heavy paper with grease.

O-RINGS

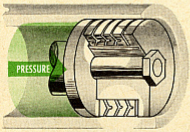


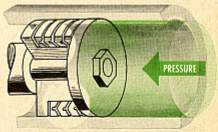
O-ring seals are cheap. So if they start to go bad, or you're tearing down and reassembling the parts they're on, use new seals.

CHEVRON PACKING



Chevron-type packing seals are mostly used in hydraulic cylinders. The main deal with chevron stuff is the direction of assembly. The point of the chevron is always installed away from the pressure or oil you're trying to keep in. That'll keep the two lips of the chevron pointing towards the pressure. Unless a





tension spring and adjustment nut is used with the packing (like some forklift trucks) always use enough shims behind the packing gland to keep the chevron packing under slight pressure.

Remember to use the right type seal . . . in the right place . . . check to make sure it's in good shape.

Connie Rodd's

"SHORT 'N SWEET DEPT"

Quick disconnect medicine

Sometimes it gets pretty sickening persuading those rubber connectors apart on your vehicle heating system's electrical circuit.

The medicine you need to cure this ailment comes in four handy sizes of Insulating compound, electrical: paste (Spec MIL-I-8660). Ask Ordnance for your favorite quantity—

FSN 5970-224-5277 . . . 2-OZ TUBE
FSN 5970-224-5276 . . . 8-OZ TUBE
FSN 5970-295-7685 . . . 10-LB CAN
FSN 5970-242-0910 . . . 50-LB CAN

A thin smear on the end of the male connector lets you shove it in and pull it out of the female connector as easy as turning on the ignition. This thin smear will stick for a while without hardening or evaporating. Insulating compound won't hurt the rubber connectors, either.

The reason these connectors fight you when you try to connect or separate them is because they were made to fit together like Siamese cats. This is the only way to keep them water and moisture proof. The older types let old man rust inside to play with their metal innards.

Even with the help of insulating compound, you still want to be careful not to bend the connectors, or you'll raise the devil with the metal terminals inside. Also, be sure both terminals are

lined up when putting the connectors together.

One other situation that'll give you a poor connection is a spreadout female connector. This is caused by pushing the lead-in wire up past the rounded portion of the female terminal. When the male terminal is shoved in place, the wire stops it from making a snug fit with its mate.

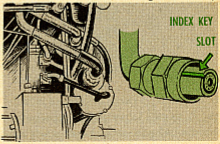
PART	FSN (ORD)
Connector, male (rubber)	5935-258-7192
Connector, female (rubber)	1015-833-8566
Terminal, male (bullet-shaped)	5975-057-2929
Terminal, female	1005-399-6676
Sleeve, insert (plastic)	5935-833-8562
Washer, C	5310-833-8567

Mate 'em

Sometimes, even the smallest of gidgets can throw you for a loss. F'rinstance, the small index key that crept into the receptacles of the later model booster

coil (FSN 2920-565-0785) that goes on the Continental 1790, 895 and AOI-402-5 engines.

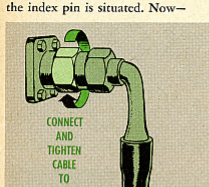
When you go to connect up the ground cable between the magneto and the booster, you may run into trouble getting this index pin and the cable's connector slot to mate up—in a way



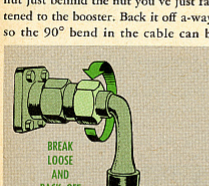
that'll let the cable reach between the booster and the mag. This can cause distemper.

To get them mated right, do this:

First, take the cable loose from the magneto end so you can hook it up to the booster receptacle. No matter where the index pin is situated. Now—

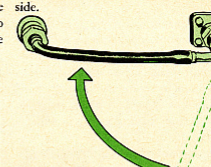


Next, break loose the ¾-in hex flare nut just behind the nut you've just fastened to the booster. Back it off a-ways so the 90° bend in the cable can be



turned freely. Take a look-see which way it should be swung—clockwise or counterclockwise—whichever way's the short way around so's to avoid turning it more than necessary. Else, you might twist off the wire.

Now connect up the cable to the mag side.



This done, tighten up the booster side, and you're in business.

Any thinner today?

Word's been going round that some men have been running into paint trouble. Seems as though they've been using petroleum spirits thinner TT-T-291 to thin their TT-E-485C, Type IV, semi-gloss, olive drab enamel. And some of the cans say to use the TT-T-291.

It's been found that TT-T-306, thinner, synthetic resin enamel, FSN 8010-160-5795, works better with the Type IV enamel. That FSN will get you five gallons from QM. The paint comes from the Engineers.

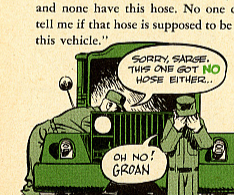
Some got 'em—some don't

Ran into a pal the other day, really crying the blues:

"Connie," says he, "this year I had a CMI and received one major deficiency on my M52 5-ton tractors for not having the rubber hose from the air cleaner

to the compressor motor on them. I have looked everywhere for an MWO on this.

"I drew seven new trucks this year and none have this hose. No one can tell me if that hose is supposed to be on this vehicle."



The truth of it is he won't find those hoses on any 5-ton trucks that were built after March, 1953. Up to that time, the hose was part of the deep water fording equipment that was installed on each vehicle. But, after that date, most of the fording parts—including rubber hose, tube and hose clamps connecting the air cleaner to the compressor—were left off the truck and put into a so-called "long fording kit." This was done to cut down on the cost of the vehicles.

Since this hose was left off at the factory, it's not an MWO deal, and he (and you) shouldn't get any gigs for not having it on the newer vehicles.

Short changed

Did you make your change—on the battery cover clamps of your M52 105-mm and M44 155-mm SP howitzers, that is?

Seems the clamp, FSN 5340-733-3487, that originally came on those vehicles can accidentally short circuit the juice box's positive pole or cable and cause the battery to explode.

You can now replace that clamp with a new one . . . and you can get it under FSN 6140-695-8938. So, order the new assembly before you find yourself with a shorted or exploded battery.

The M41A1 light tank and the M42 twin 40's are already covered on this deal by MWO G1-W57 (18 Jan. 55).

All the way round

Yep, that's what the two side tubes of the gun travel lock support on your M56 SPAT's need done to them. They need a plug weld put to them to plug up the holes at the top of the tubes where they are joined to the saddle. A close look'll tell you the tale.

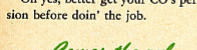
The tale goes like this. On vehicles after Serial Number 210 the holes got plugged up during production . . . they got welded all the way around . . . but on all earlier models the welding job is still to be done.

Before you start plug-weldin' these tubes, better take off the whole support to drain what water may be in the tubes and then take a wire brush to the spot that gets the weld.

Prime and repaint like it tells ya in TM 9-2851, and the job's done.

Oh yes, better get your CO's permission before doin' the job.

Comes the rub

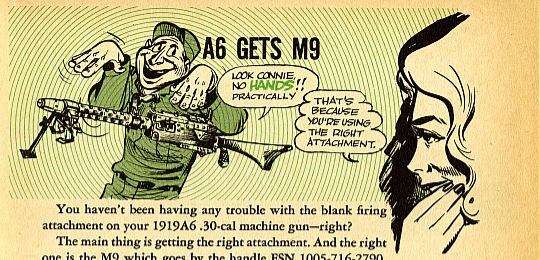


They're cropping up again—cases of chafed battery cables on the G742 series 2½-ton trucks. The trouble comes from the cables rubbing against the vehicle crossmember. And that comes from cables being in the wrong position when the battery box is shoved back in after inspection of the batteries.

This is the right way: Push the box in **slowly**, and keep an eye on the cables. When the box is in about half-way, lift the battery cables clear and put them on top of the battery. Then push the box in the rest of the way and make sure the cables don't get squeezed against the vehicle's crossmember. If they do, they'll rub. After a while the insulation will be chafed through to the wires and cause a short.

Like in TM 9-8022, this picture shows where the cables go. A little care when the box is shoved in could save a lot of trouble later.

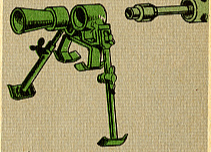
You'll be able to cut down on some of that chafing by grabbing yourself a copy of TB 9-2320-209-20/1. This new TB authorizes you to replace the old 82-in long battery-to-starter lead (Circuit 82) with a shorter 62-in wire . . . **immediately.** It's a local fabrication deal using the new wire . . . FSN 6145-705-6675 . . . and terminals . . . FSN 5940-705-6730 . . . already listed in Ord 7 SNL G742 (Sept 57).



You haven't been having any trouble with the blank firing attachment on your 1919A6 .30-cal machine gun—right?

The main thing is getting the right attachment. And the right one is the M9 which goes by the handle FSN 1005-716-2790.

The attachment comes in two parts just like the M6 attachment used with the 1919A4 and A4E1 .30-cal machine guns and the M3A1 that goes with the 1917A1 machine gun.



When you go to install the M9, it's first things first, so off come the flash hider, front barrel bearing and bipod.

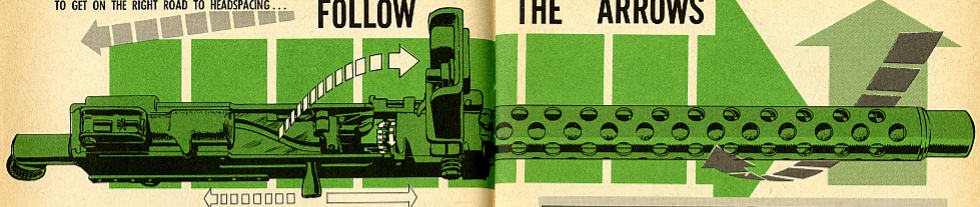
Then screw on the muzzle attachment and replace the flash hider and bipod.

Move to the receiver and pull the belt holding pawl pin back a half inch and slip the other part of the attachment under the short round stop. Push in the pin and you're all set.

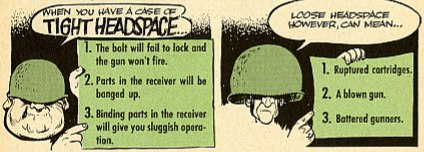
And don't forget to remove the attachment before you start firing the real stuff.

TO GET ON THE RIGHT ROAD TO HEADSPACING . . .

FOLLOW THE ARROWS



Headspacing your .30-cal machine gun is just about as easy as not headspacing the weapon. It only takes a few seconds. And correct headspacing saves wear and tear on the weapon, the ammo and you.



Say the weapon is assembled, but you don't know whether it's headspaced right. OK, then . . . follow the arrows and you'll have this headspacing business down pat.

First . . . pull the bolt handle to the rear until you can see the barrel notches on the rear of the barrel.

Second . . . wrap your hand around a cartridge, screwdriver or punch and screw the barrel into the barrel extension by turning the notches . . .

until the notches remain visible when the bolt is released (Bolt doesn't go into battery.)

Now, holding the bolt rearward, unscrew the barrel from the barrel extension **one notch** at a time (releasing the bolt after each click) . . .

until you can't see the notches anymore when the bolt is released (The bolt is all the way forward—in battery.)

Pull the bolt to the rear, unscrew the barrel two more notches to allow for heat expansion and again release the bolt. After you have the right headspace, make sure the barrel locking spring is engaged in a notch in the rear of the barrel.

Something like dirt, carbon or a corroded cartridge in the chamber could throw your weapon off even if the headspacin's correct. If so, clean it. If the gun's still sluggish, better let Ordnance look it over.

You guys who fire the 1917A1 machine gun have something else to think about. Make sure you wrap the packing the way your FM tells you. If you have it too tight, the barrel won't go all the way forward, giving you loose headspace. You can spot loose packing in no time . . . water'll leak from the jacket.

IT ALWAYS HELPS TO...

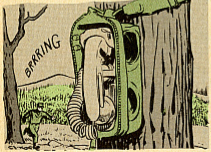
HANG IT UP RIGHT

Babies and handsets.

Put 'em in their cradles the wrong way and you'll probably end up with trouble. Especially the H-60/PT handset on the TA-43/PT, TA-312/PT and TA-263/PT field telephones.

The trouble usually develops around the springs in the handset retaining bracket—that gives the pressure to keep the handset snug in its cradle.

Those two little wire springs are a cinch to get knocked down and bent when an operator keeps slamming the handset down on them instead of pushing it against them head-on.



Once they lose their spring, the H-60/PT just won't stay put. Which means the phone has to be taken off the net, and your outfit will be hurtin' until a replacement is brought up.

So whenever you secure that handset, first slide the receiver end of it in so's to hit the springs head-on. Then it's a cinch to drop the transmitter end down into it's bracket for a firm fit.

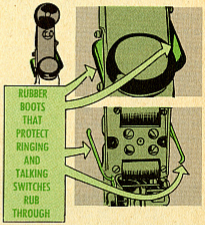
When the TA-43/PT, TA-312/PT and TA-263/PT Telephone Sets are mounted vertically on a tree or pole, be sure the set is hung so that the line terminals are at the top left. That way, the handset brackets will support the handset the way it should be supported.

YOUR BABY NEED...

A NEW PAIR OF BOOTS?

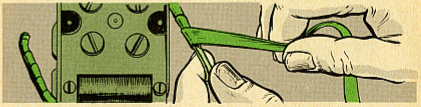
For a piece of equipment that doesn't walk, the trusty TA-1/PT telephone sure comes up with its share of boot trouble.

These are the two rubber boots (Cover, Protective, handset chassis) that protect the ringing and talking switches. They're put there to keep out dust, moisture, etc.



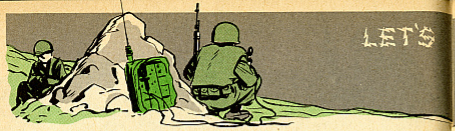
But the constant pressure of the operator's hand or fingers when he pushes those switches soon rubs the thin rubber through. That exposes the metal switch levers and opens up the chassis to the outside world.

One field fix that's come in handy to reduce that friction and wear is a short length of thin plastic "spaghetti" that you can slip right over the metal lever. That keeps the bootie from rubbing directly against the metal.



If there's no spaghetti in the pot, even a few windings of vinyl electrical tape, or even adhesive tape, will provide a cushion between bootie and lever. This little shoemaker operation, of course, is strictly preventive maintenance.

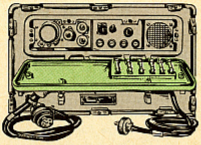
Once done, though, a man can ring and talk for many a day without worrying about a new pair of booties for his baby.



CONFUSING THE FUSING

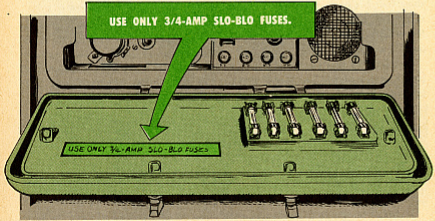
When it comes to fuses on your AN/GRC-9( ), a ¾-amp deal is plenty.

There was a time when the Power Supply PP-327A/GRC-9Y used a 2-amp fuse. But that soon proved to be more fuse than the unit needed—and gave way to the ¾-amp rating.



There's a chance your power supply is still using the heavier fuse—so you might make a quick check. And once the right fuses are in place, scratch out or paint over the incorrect 2-amp fuse rating that appears on the front panel.

The new sign should read, of course:



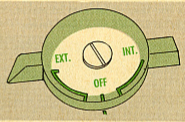
A rubber stamp or some hand lettering will be plenty good enough for applying this word of advice. Put it on the inside of the control cover door—next to the space where the spare fuses are mounted.

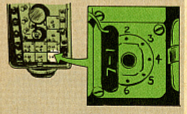
FSN 5920-232-3699 will fetch you the ¾-amp slo-blo fuses.

HANDIE-TALKIE HANDLING

Almost any time you're handling your PRC-6, there're three little operational troubleshooting items to take a reading on:

1. The INT-EXT switch is easy to operate and mighty important. But sometimes an operator will forget to turn it to the OFF position . . . when he's finished jawing. Bad for the battery and worse still for the future usefulness of the set.





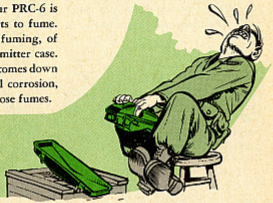
2. When the chassis cover is off, temptation is mighty strong to poke here . . . feel there . . . shake and push somewhere else. One of the most tempting gadgets is the JUMPER PLUG 7-1 on the test socket. Many a time it gets unplugged—and then plugged back in the wrong way, if at all. Be sure it's connecting holes 7 and 1 of the socket.

3. Whenever you're troubleshooting the chassis, naturally the inside dust cover has been lifted off. And far too often that cover never gets slipped back into place. It gets lost, misplaced or swallowed up somehow. Be sure it's there to provide double protection for the receiver-transmitter assembly.

ALL FUMED UP

When the battery on your PRC-6 is cooped up too long, it starts to fume. Target number one of its fuming, of course, is the receiver-transmitter case.

And before long the case comes down with a bad dose of internal corrosion, brought on by breathing those fumes.



So any time your handie-talkie is going to sit on the shelf for a spell, yank the BA-270/U battery so its fumes don't foul the case.

NO P'SSSST, PLEASE

"Hey, Joe, give me some air!"

So says the operator who figures his radio needs a strong blast of air to get the dirt and dust out of dark corners.

Seems like a good idea, but not in the case of something as sensitive as the insides of radio gear and stuff like that. A jet stream of compressed air aimed at the small tubes, capacitors, microphone elements, meter sockets, harnesses, etc., can throw things out of order just as much as dropping the set or banging it against something.

So, take it easy with those delicate parts. Breathe on 'em, maybe, but nothing stronger than that.

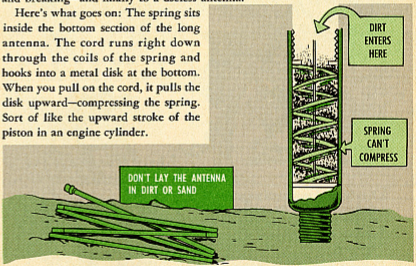
AILING ANTENNA

If the spring in your antenna is losing its bounce—watch out before it passes its misery along to the retracting cord.

The two work together in stretching out and folding up the long antenna—AT-271()/PRC—on your PRC-8, 9 and 10. When the spring gets clogged with sand, dirt, gook, etc., it just can't compress like it should.

And that means the cord can't extend as far as it ought to when a man's ready to fold up his long antenna and move on. Which leads to pulling and tugging and breaking—and finally to a useless antenna.

Here's what goes on: The spring sits inside the bottom section of the long antenna. The cord runs right down through the coils of the spring and hooks into a metal disk at the bottom. When you pull on the cord, it pulls the disk upward—compressing the spring. Sort of like the upward stroke of the piston in an engine cylinder.

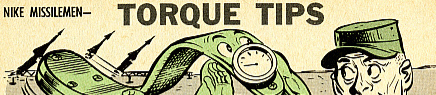


When dirt gets packed into that spring, it can't compress. When that happens, the cord can't be pulled out far enough to let a man fold all the sections of the antenna. That's when the pulling, tugging and breaking come in.

So any time you're handling your antenna, keep it off the ground and away from dirt and sand and anything else that might work into the bottom section to snafu the spring and shorten the length and life of the cord.

NIKE MISSILEMEN—

TORQUE TIPS

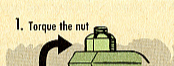


Torque wrenches are just like any other tools—you've got to handle 'em with respect if you want them to do a job for you. Only thing is you want to follow the rules extra special-like with torque wrenches.

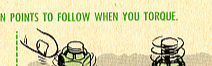
That goes double with a Nike missileman. Could be mighty embarrassing to watch a missile build up G's and then come apart at the seams 'cause somebody fouled up in torquing.

SO . . . MAKE A NOTE OF THESE SEVEN POINTS TO FOLLOW WHEN YOU TORQUE.

1. Torque the nut



—not the bolt head.

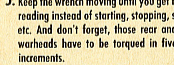


2. Keep the threads clean and free running.

3. Don't take a torque reading on bolts which have painted or corroded threads.

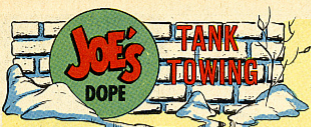
4. Don't let the bolt turn as you torque.

5. Keep the wrench moving until you get the right reading instead of starting, stopping, starting, etc. And don't forget, those rear and center warheads have to be torqued in five-pound increments.

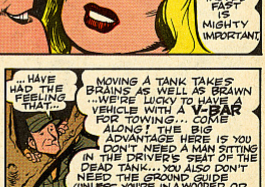


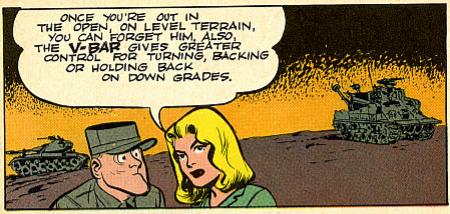
6. When you retorque, back off the nut until it is loose and then retighten to the right reading.

7. When lining up a nut so you can stick in a cotter key, turn the nut in the direction of tightening . . . don't back it off.

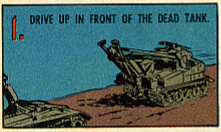


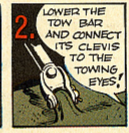
It was Spring and nowhere more than in the heart of Private Pentagon J. Flapp was the mysterious force we call 'Spring Fever' at work...





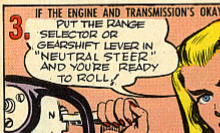
HERE'S HOW TO USE YOUR RECOVERY VEHICLE





...**IF** the engine or transmission's damaged, disconnect the universal joints (on all cross drive transmission types.)

...**IF** you're towing an M59 APC, you won't have to unless the differential is on the blink. If so, you disconnect the shafts at the final drives.



IF you've got an M41 or M42 Twin 40MM that hasn't been modified by MWO G1-W99 (29 OCT 57), you'll have to tie the gearshift lever in neutral steer.

BUT SUPPOSE YOU'VE GOT NO RECOVERY VEHICLE AROUND... **USE Y'R CABLES.**

USING YOUR TOWING CABLE AND THE DEAD TANK'S—HOOK 'EM UP CRISS-CROSS FASHION...

OR IF YOU GOT AN EXTRA LIVE TANK HOOK UP LIKE SO:

NOW, WITH TOWING CABLES YOU'VE GOT TO KEEP A FEW THINGS IN MIND!

EGGZACTLY!...NOW CONNIE I GOT A FEW THINGS IN MIND. I...

1. FASTEN YOUR CABLES TO THE TOWING HOOKS ...NOT THE PINTLE. THAT PINTLE WASN'T MADE TO PULL A DEAD TANK AROUND AND WILL POP REAL QUICK!

TOWING HOOK

TOWING HOOK

*Except the M48A2 tank pintle, which you CAN use for towing.

2. 'NOTHER THING...BE CAREFUL YOU DON'T BEND THE CABLE TRYING TO FASTEN IT TO THE TOWING HOOK. THE CABLE EYES'LL FIT THE HOOK WITHOUT ANY TROUBLE BUT IF YOU TRY TO DOUBLE UP THE CABLE, THE SHORT BEND'LL CRACK YOUR CABLE, AND BEFORE YOU KNOW IT, THE CABLE'LL SNAP. DIDJA KNOW THAT A TAUT CABLE BREAKING SUDDENLY CAN CUT THROUGH ¼ INCH OF ARMOR PLATE? THINK WHAT IT COULD DO TO YOU!

SNAP!

3. BEFORE YOU START TO TOW

ALL CONTROLS IN THE DEAD TANK MUST BE OFF!

AND THE TRANSMISSION SHIFT LEVER IS IN NEUTRAL STEER OR THE UNIVERSAL JOINTS ARE DISCONNECTED!

P N L H

4. MANUALLY LOCK TURRET, WITH GUN LOCKED IN TRAVEL LOCK.

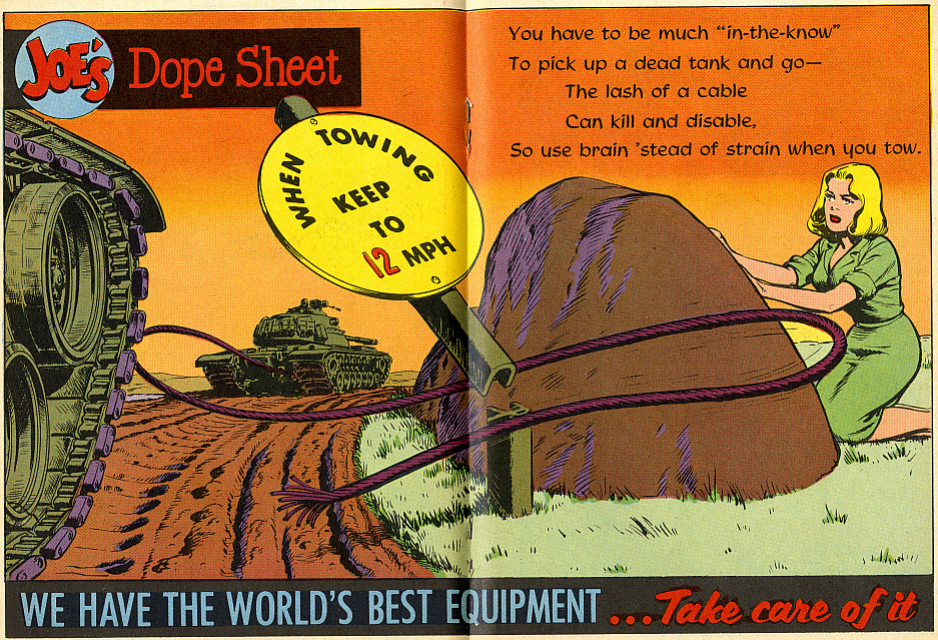
5. IF THE UNIVERSAL JOINTS HAVE NOT BEEN DISCONNECTED

KEEP TOWING TANK IN LOW...

UNTIL YOU REACH LEVEL GROUND...

THEN Y'CAN SHIFT TO HIGH.

TOP SPEED 12 MPH


JOE'S
Dope Sheet
WHEN TOWING KEEP TO 12 MPH
You have to be much "in-the-know"
To pick up a dead tank and go—
The lash of a cable
Can kill and disable,
So use brain 'stead of strain when you tow.
WE HAVE THE WORLD'S BEST EQUIPMENT ...Take care of it

6. IF THE DEAD TANK HAS BUM BRAKES

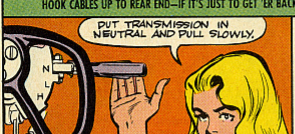
YOU'LL HAVE TO USE TWO TANKS—ONE FOR TOW—OTHER, FOR HOLD

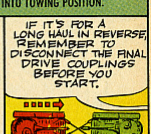
7. IF YOUR TANK-TO-TANK TALKIES ARE KAYOED...

8. IF YOUR TANK-TO-TANK TALKIES ARE OKAY

9. IF YOUR TANK'S STUCK (NOSE IN)

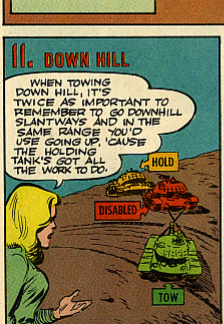
HOOK CABLES UP TO REAR END—IF IT'S JUST TO GET 'ER BACK INTO TOWING POSITION.

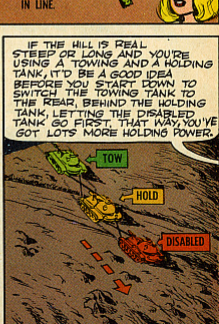




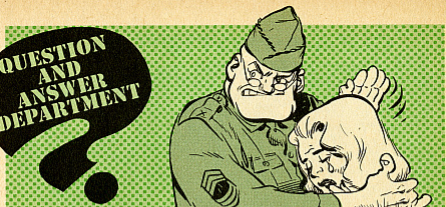
10. TURNING

11. DOWN HILL






AND IF YOU'VE BEEN USING TWO TANKS TO HELP THE THIRD, AND ONLY USING THREE CABLES (TWO BETWEEN THE TOW TANK AND DISABLED TANK, ONE BETWEEN THE DISABLED TANK AND HOLD TANK), YOU MAY WANT TO SWITCH...
UPHILL
...SO'S TO HAVE TWO CABLES BETWEEN THE HOLD TANK AND DISABLED TANK, AND ONLY ONE BETWEEN THE DISABLED TANK AND TOW TANK.
DOWNHILL
LIKE I SAID, TANK TOWING TAKES COMMON SENSE AND...HOLY SMOKE, HE'S GOT ME CORNERED!
AT LAST- YOU CAN'T ELUDE ME NOW, CONNIE.
HERE IT COMES... OH BROTHER...
CONNIE, FOR SOME TIME NOW I'VE BEEN PAYING YOU COURT...I FEEL IT ONLY FAIR TO MAKE MY INTENTIONS CLEAR TO YOU!
I CAN'T MARRY YOU. I'M IN LOVE WITH GUSSIE THE WAITRESS AND IT IS HER I INTEND TO MARRY. PLEASE TRY TO UNDERSTAND ...YOU'LL FIND SOMEONE ELSE....
SOMEHOW I GET THE FEELING THAT I DON'T QUITE UNDERSTAND WOMEN!



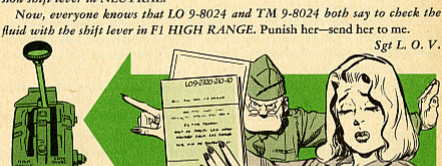
SHE STILL SAYS NEUTRAL

Dear Half-Mast,

Connie seems to have slipped a bit when telling us how to check Hydra-Matic fluid in PS 71. She leaves the impression that the oil is checked with the transmission shift lever in NEUTRAL.

Now, everyone knows that LO 9-8024 and TM 9-8024 both say to check the fluid with the shift lever in F1 HIGH RANGE. Punish her—send her to me.

Sgt L. O. V.



Dear Sgt L. O. V.,

Can't have her. Connie said NEUTRAL, and that's what she meant. From now on—and this has come down from the top—that Hydra-Matic should be checked with the shift lever in NEUTRAL.

Why? 'Cause it's downright dangerous to stick that shift lever in F1 HIGH RANGE and then start fooling around with something else while the engine's running.

The little bit of change you get between reading it in F1 HIGH RANGE and NEUTRAL won't make that much difference, and you can bet your last nickel that you'll see this info in LO 9-2320-210-10.

Half-Mast

CLEAN—NOT STERILE

Dear Half-Mast,

After years of Army service, I'm convinced a rifle must be clean. However, I believe that sometimes super cleanliness does more harm than good. For example, a unit goes on the range for annual qualification. During firing the barrel naturally picks up copper fouling. After the rifle is properly cleaned, the bore, especially the lands, may still show traces of copper.

Some people insist that this must be removed. Hours of work are involved before most of it is removed to the point where it will pass inspection. I maintain that such cleaning is unnecessary—and, in fact, harmful to the bore because of the wear at the muzzle and lands.

If I'm wrong, how can it be removed, using authorized material, in less than six hours?

Sgt H. D. Q.

Dear Sgt H. D. Q.,

You're right. Copper on the lands won't hurt the bore of your rifle and it's just a waste of time to try to remove it. The amount of copper or gilding metal that stays in the bore depends on the roughness of the lands and grooves in the barrel. The roughness is caused by tool "chatter" when the bore is rifled. **It doesn't hurt anything and there's nothing you can do about it.**

A barrel is generally considered clean when you can run a patch through it and it comes out clean. **Naturally, you remove all powder fouling, salts and stuff like that.**

Half-Mast

SEAT CANVAS

Dear Half-Mast,

How do I get canvas to repair or re-cover seat cushions and seat backs for my M-series vehicles?

Lt J. F. C.

Dear Lt J. F. C.,

What you want is Cloth, cotton, duck, No. 8, olive drab shade No. 7, hard texture, fire, weather, water and mildew resistant. You'll find it on page 12 of SM 10-1-8305, the last item listed.

There are about ten FSN's for this canvas, according to the width. The two generally used for vehicles are FSN 8305-170-4956, 36 inches wide, and FSN 8305-281-2887, 37 inches wide. If you have a special application where you need a wider canvas and can't put up with a seam, check the SM—it goes all the way up to six feet wide.

But remember, don't order extra width unless you really need it. A yard of 6-ft canvas costs more than twice as much as a yard of 36-in canvas. Those broader looms cost more.

Half-Mast

WHICH WAY THE SPLINE?

Dear Half-Mast,

What's the right way to install the drive shaft running from the hydraulic pump to the power-take-off on the M51 dump truck?

Fig 324 of TM 9-8028 shows the spline end of the shaft at the hydraulic pump. Yet, we've gotten some M51's which had the shafts mounted just the opposite—with the spline end at the power-take-off. Do we have to change them according to the TM?

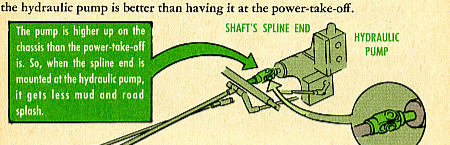
SP3 R. K. S.

Dear SP3 R. K. S.,

Nope—you don't have to change them. Actually, it doesn't matter too much

whether the spline end is at the power-take-off or whether it's at the hydraulic pump. Either way you'll get the same operation.

If you're in an area where there's lots of mud, though, having the spline end at the hydraulic pump is better than having it at the power-take-off.



LEGAL LOCK

Half-Mast

Dear Half-Mast,

We've just found out our state law says we have to use a safety-chain hook-up when we're towing M100 trailers with our M-series vehicles.

Trouble is the M38A1's and others we use don't have any place near the pintle to hook the safety chains. How can we fix that to keep the law away?

Sgt. F. F. J.

Dear Sgt F. F. J.,

Since you're working for Uncle Sam, the long arm of the state law won't necessarily point your way.

Here's why: Federal agencies don't always bring their vehicles exactly in line with every state's requirements. There are so many different things called for in various states that it'd be almost impossible to have every Army vehicle everywhere have everything.

However, in some areas a commander may wish to meet a state's vehicle requirements.

If that's the case where you are, your CO'll have to give you the go-ahead to make some eyes to drop those hooks into.

Best way to do it is replace the two bottom pintle-retaining bolts with two eye bolts. Chances are you'll have to fabricate 'em locally, but the bolts you need are ½-20 NF-3x2. These should keep everybody happy.

On trailers already equipped with chains, TB 9-871A1 (2 Jul 54) says you can take off the chains since revolving lunettes and pintles removed most of the hazards.

Half-Mast

TAKE IT AWAY...SAFELY

It doesn't happen often, but when it does, you Nike-Ajax or Corporal men don't want to fight the problem. Next time you find an acid drum leaking around the plug, transfer the acid to a sound drum if you've got the right equipment to do the job.

If you don't, you can't fool around and take any chances—either from the safety angle or on getting contaminated acid. Call your support people to give it a quick trip away from your site or working area.

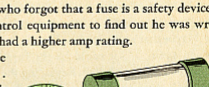
By Using The Right Fuse...

STOP THOSE OVERLOAD BLUES

Did you hear the one about the guy who forgot that a fuse is a safety device? It cost him some good Nike-Ajax fire control equipment to find out he was wrong when he replaced a fuse with one that had a higher amp rating.

The guys with the slide rules figure out what fuse goes with what circuit... and it just doesn't pay to tamper with the amperes.

You'll usually run into two kinds of fuses—plug or cartridge. Both have the same kind of safety feature built into them—a thin strip of metal that carries the current. When something goes haywire in the circuit like an overload, or a short, causing a high surge of current, the metal melts and the circuit is broken.

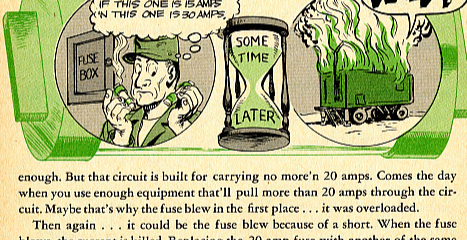


Then you've got circuit breakers, which work along the same lines, but are reusable. With the circuit breaker, the thin metal strip is replaced by two pieces of unlike metals, made into a single strip. Under normal temperatures, the bi-metal strip keeps a set of points closed and keeps the current moving. When too much current flows, or surges, the bi-metal strip overheats and expands. This causes the strip to bend, opens the points and breaks the circuit.

OK . . . suppose you have a thin metal strip-type fuse—a one-shot deal. Make it 20-amps, a good round number. One day it blows . . . and if you're on the ball, you replace it with another 20-amp fuse.

Maybe you're fresh out of 20-amp fuses, but you have some 30-amp jobs. You shrug your shoulders, put the fuse in its clip and you have power again.

Sure . . . you have power, but maybe you also opened the door to some real trouble. The 30-amp fuse'll let 20 amps of current pass through the circuit right



enough. But that circuit is built for carrying no more'n 20 amps. Comes the day when you use enough equipment that'll pull more than 20 amps through the circuit. Maybe that's why the fuse blew in the first place . . . it was overloaded.

Then again . . . it could be the fuse blew because of a short. When the fuse blows, the current is killed. Replacing the 20-amp fuse with another of the same rating will mean another blown fuse. But, sticking a higher amperage fuse into the shorted circuit gets rid of your protection. If the new fuse can carry more current than the wiring of the circuit, the wiring gets hot and out comes the fire extinguisher.

It's just as wrong to slip in a fuse with a lower amp rating if you're out of the right size. Say you replace the 20-amp fuse with a 10-amp one. The smaller one will handle things until you get more'n 10 amps going through the line. Then it's curtains for the fuse.

Whenever a slo-blo fuse goes on you, it's a sure bet you're putting a big strain on something. Those fuses are built to take a sudden shot of current—like when a

motor is winding up—for a short time. If the strain is too long, the fuse blows. This'll happen, for example, if you don't let the hydraulic oil warm up before you raise the erecting arm on your launcher.

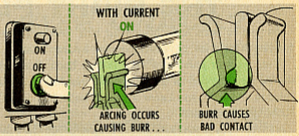
OK, then . . . it all boils down to remembering two things:

Find out what caused the fuse to blow before replacing it. With a circuit breaker, don't reset it until you know what made it kick out.

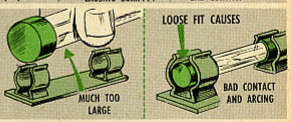
Use the right rated fuse. If you don't have one, deadline the equipment.

There're a couple of other things worth keeping in mind when it comes to fuses.

For one thing . . . cut off the power before you replace a cartridge fuse. Otherwise . . . you may get an arc that'll burr the metal part of the fuse and keep the fuse from getting good contact with the fuse holder.

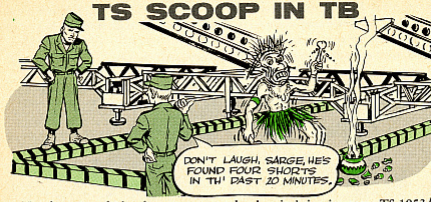


Make sure the cartridge fuse is the right size—in dimensions—for the holder you're putting it in. A loose fuse'll give you arcing.



If the fuse or its holder aren't bright and clean, touch 'em up with some crocus cloth.

TS SCOOP IN TB



You been wondering how to operate the electrical circuit test set, TS-1053/G, that you re supposed to use to pinpoint electrical foulups in the elevator and elevator-mounted launcher at your Nike-Ajax site?

You don't have to look far for the answer. The scoop's in TB 9-5016-2/1 (15 Sept 58).

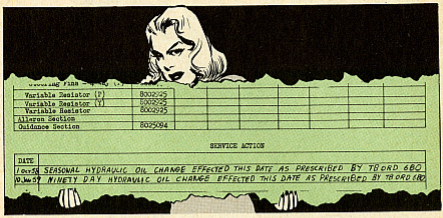
THE RIGHT PLACE

So you've been scratching your hair over one section of TB Ord 680—the TB for you Nike-Ajax guys on changing hydraulic oil.

You read in para 8c: "Missile Log Book Entry. The hydraulic fluid change should be recorded in the pertinent missile log and clarified in the REMARKS column." OK . . . you know it's the Missile Log and Test Record, but where's the REMARKS column?

Wonder no more . . . it's on page 4 of section IV. And the column isn't headed REMARKS. It's listed as SERVICE ACTION.

A seasonal or 90-day oil change would be written up something like so:



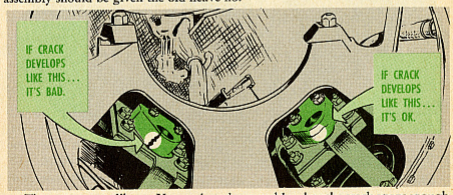
By the way... have you changed some of the nomenclatures on page 4? As you can see, Valve Ass'y—Elev & Rudder Solenoid Operated, has been changed to Steering Fins. And Linear Potentiometer goes by the handle Variable Resistor.

WHAT SIZE CRACK?

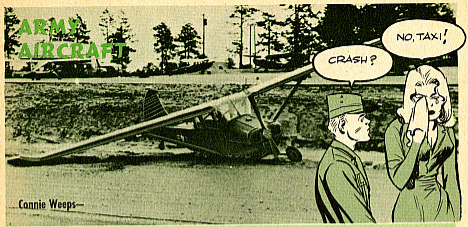
Hear tell some Nike-Ajax outfits are having trouble with the plate assembly for the M30 or M30A1 safety and arming device in their missiles.

Seems some of the assemblies get to developing a crack parallel to the explosive harness assembly connector.

The big question is . . . when does the crack in the plastic mean the plate assembly should be given the old heave-ho?



The answer goes like so: You replace the assembly when the crack opens enough for you to actually see the metal plate connector. The dope on this went out in ARGMA teletype ORDXR-FM 1893 (18 July 58).



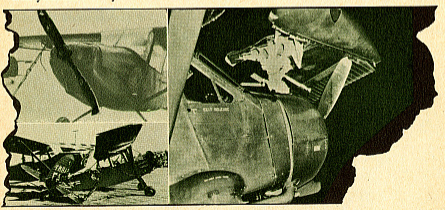
TAXI TEARUPS TEARS

"Now y'all listen here! This tearing up aircraft on the ground has got to come to a weepin', screechin' halt! Been too many aircraft coming to a screeching and grinding halt themselves!"

And the cryin' part of it is that it's all so doggone unnecessary!

Let's face it! There is some element of danger involved everytime an aircraft is off the ground—it's slight, but it's there. But there is no reason why the ships should come to any harm once they are safely back on the ground, have finished their landing roll, and are just being moved around on old terra firma.

But you think they're safe? Look at these!



And every one of them was torn up while being taxied!

And there were only two reasons for all these accidents: Either the airplane was being taxied by a man who had not been trained and properly authorized to start and taxi airplanes, or the properly authorized taxi man was moving too fast.

So the solution is real simple. If you are not properly checked out and properly authorized to taxi **that particular** type of aircraft, **don't try.** Either tow it, push it, or leave it right there until you can get an authorized man to move it.

And when you are properly checked out and on the posted list of taxi men, **don't overspeed!** Remember, that's no Flashburn Eight with power brakes you're driving. It's an obnoxious brute with a nasty habit of getting away from you and going off on a tangent. And then the flash burn comes from the Old Man, and centers a foot south east of **your belt buckle.**

EASY ON THE HARNESS

Sooner or later—if not now—your Bird Dog (L-19) will be sporting some fancy new harness to handle the ARC-44 radios. A depot retrofit takes care of its installation.

Rugged as they are, though, these harnesses have been taking a beating. The rear seat back is the villain. Because every time that seat back is lifted from the retaining sockets and replaced in the retaining sockets, it bumps the harness.

Too many hard bumps and even that tough, plastic casing around the wires will start to wear and crack. So next time you have to remove or replace that seat back keep the harness in mind.

Sort of e-a-s-e it past the wiring on the way down and on the way up. A second or two of PM then means years of service from the harness—and the ARC-44 as well.

ALL IN ONE PACKAGE

Comes now the new -20P manuals. Same like with the tech manuals of the other tech services, your new TM 1's will include a -20P section, and a -34P section. These will be the parts lists.

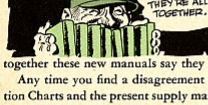
The -20P's will set forth the parts for organizational or second echelon maintenance, the -34P's will list the parts for field, or third and fourth echelon maintenance.

Some of the -20P's are out now, and in some cases they are separate manuals for the engine and for the airframe. But, as these are revised, they will be com-

bined, so that the units will only need one parts list for all their authorized work on the whole aircraft.

Also, at the time of this revision and combination, the Maintenance Allocation Charts, which tell you who has the right to do what, to what, with what, will be included in the–20P's.

So there you'll have the whole ball of wax in one manual. It will tell you what you are authorized to do to the aircraft, and will list the parts and special tool sets you are authorized to have to do it with. Simple, what?



Now, the people who have to put together these new manuals say they want your help. Like this:

Any time you find a disagreement between your present Maintenance Allocation Charts and the present supply manuals, be sure you fire off a UER, like it says in the front of the manual, and tell 'em about it. Because, being human like anyone else, these people occasionally slip up and assign a maintenance job to one echelon (you) without getting everything you need to do it into your supply catalog.

Since the MAC tells you what you've got to do, and also authorizes you to **draw** the part to do it with, but does **not** authorize you to **stock** the parts, you can see where you can end up over a barrel until the manuals get together on their story. So tell the boys about it.

Now here's another thing. Those Maintenance Allocation Charts represent the best thinking of a lot of smart people about what you guys in the field can and should do in the way of maintaining your aircraft. They've figured this thing out from all the angles, cost of training mechanics, cost of stocking parts, cost of the tools, chances of shipping the parts and tools overseas—they've figured it seven ways from Sunday.

But, like was said, they're smart people. And that means they're smart enough to know that they just might be wrong on some of this. And smart enough to realize that you guys working on the aircraft down on the unit flight lines might know some angles they missed.

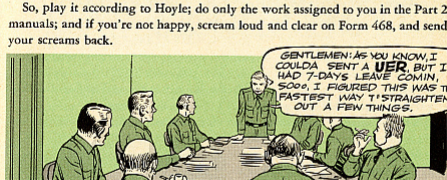
So they want you to make your recommendations, too. You can use DA Form 468 (Unsatisfactory Equipment Report).

So they'll listen to what you have to say. O'course, that doesn't mean you'll necessarily get every part or tool you want. There may be good reasons for not giving 'em to you. But at least your ideas will get looked at and kicked around some.

And in the meantime, be sure you go by the manual. Don't reach out and do any field maintenance work, no matter how well qualified you may be personally. It might sound silly for the instrument specialist from a field maintenance company to be told he can't touch instruments if he transfers to an aircraft company.

But it makes sense, because the requirements for replacement instruments are based on the average usage for all companies, and if Sergeant Flotzmo is repairing all the instruments down at the umpty-umpth Helicopter Company—Flotzmo being an instrument expert—it louses up the records, and when Flotzmo goes back to field maintenance, the umpty-umpth and a lot of other companies are going to be standing short for instruments.

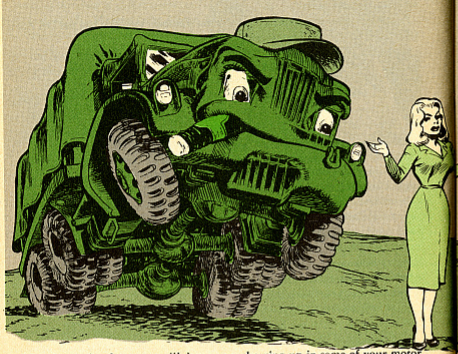
So, play it according to Hoyle; do only the work assigned to you in the Part 2 manuals; and if you're not happy, scream loud and clear on Form 468, and send your screams back.



And explain your screams. Don't just say that a unit mechanic ought to have a schnorkelbobber. Tell why he needs it, and what he'll do with it, and why you think that's better than sending the aircraft to field maintenance.

TWO BIG JOBS, THE 10-TON M123 AND M125—
ARE READY FOR THE TOUGH PULLS

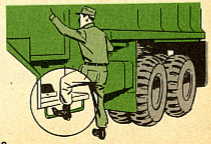
MEET THE 'BRUISERS'

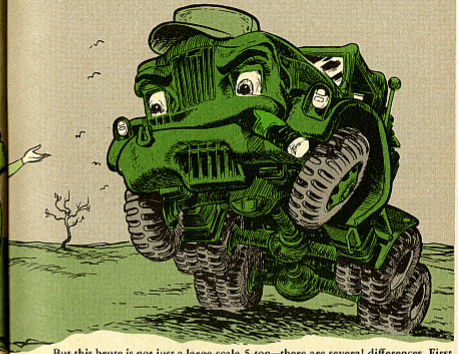


There's a pair of potent pullin' partners showing up in some of your motor parks these days. Some batteries will be getting the new M125 10-ton 6x6 cargo trucks for prime movers and some TC heavy lift companies and tank outfits will be getting its bob-tailed brother, the M123 10-ton truck-tractor.

Both these "bruisers" are variations on the same chassis, and believe it, they've got all it takes to get you and your loads through the tough going.

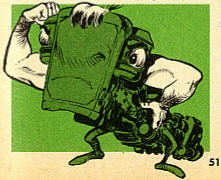
At first glance these trucks look something like the standard 5-tonners, on accounta they've got the same military cab. But as you get closer, you'll find they are considerably bigger. In fact, you'll see why there's a step rigged under the running boards. Unless you're a giraffe you'll use it to get up to that high cab.





But this brute is not just a large-scale 5-ton—there are several differences. First of all, it's powered by a 286-horsepower overhead valve V-8 engine.

This is coupled by way of a dual-disk clutch to a five-speed constant-mesh transmission. The gears driven by the engine are always in mesh with those driving the wheels. Shifting ranges is done by means of sliding dog clutches which lock the various gears to the shafts as you need 'em.



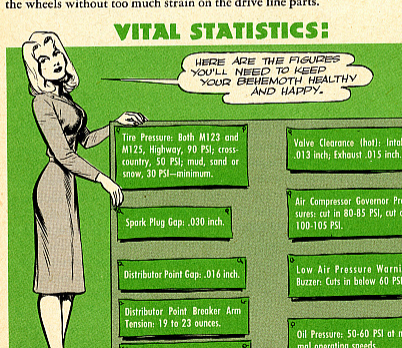
This type of transmission is the best for heavy truck duty, since you don't have to move the large heavy gears around. But there are no synchronizing rings in this setup. This means you **must** double-clutch when shifting, or you'll get howls, growls and maybe ground-up shifter teeth.

Another difference between the bruisers and the other military trucks is in the front-axle drive-mechanism.

Instead of the conventional CV joints and wheel mountings you're familiar with, these babies have two sets of bevel gears which route the power from the differential carrier down the center of a hollow king-pin and then out to the front wheels. At the same time, the size of the gears in this train gives you a speed reduction, delivering more torque at the front wheels with less strain on the drive parts. All this is design, and only concerns you when you come to lubricate the vehicle.

Naturally, with the front-drive-assembly giving you a speed reduction between the differential and the wheels, you need a reduction at the rear axles, too, so that the propeller shafts, turning at the same speeds, will give you equal speed on the front and rear wheels.

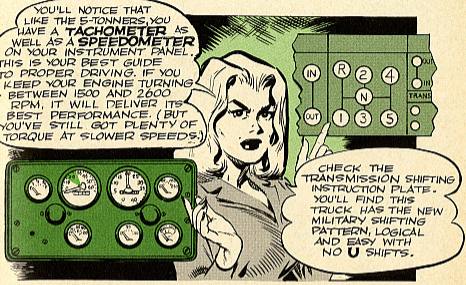
You get this from what are called "double-reduction" axle carrier and differential assemblies. The power comes into these diffs from the prop shafts and is geared down through a set of spiral bevel and a set of spur gears before it reaches the ring gears of the differentials. Once more, this gives you beaucoup torque at the wheels without too much strain on the drive line parts.



OPERATION:

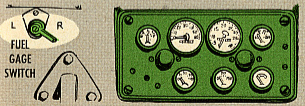
You know that the best maintenance men in the world couldn't keep up with improper operation. So preventive maintenance begins in the cab.

Leave us look at the buggy from the driver's seat, like before you shove off with her.



BEFORE STARTING:

Before starting your engine, take a look at the fuel system. On the dash in front of your steering column is your fuel gage switch, marked **L** and **R**. This connects your fuel gage to the transmitter unit in whichever tank you set it for. Your gages are marked in quarters, and since each tank holds 83 gallons of gas, you can figure about 20 gallons to the quarter mark on the gage. Naturally, to find out how much gas you have in the truck, you read the gage first on one tank and then on the other, and add 'em up.



Likewise, over beside the map compartment, you'll find a fuel-pump switch, also marked **R** and **L**, with which you select the tank you want to use. A smart man will be sure that the fuel gage is switched to the tank he is actually using.

In fact, a mighty fine way to use this fuel system is to use ¾ of whichever tank you choose first, and then switch both your gage and the pump over to the full tank. Then if anything keeps you from filling up again before you run out the second tank, you'll have twenty odd gallons up your sleeve to get home on.

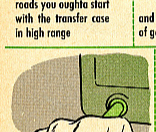
BEFORE MOVING OUT:

If you're on hard dry roads you oughta start with the transfer case in high range

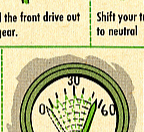
and the front drive out of gear.

Shift your transmission to neutral

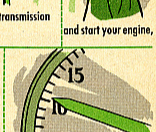
and start your engine,



choking as needed in cold weather.



Watch your oil gage to be sure the pressure comes right up,



and then run at about 1000 RPM until your low-air-pressure warning buzzer stops. Except on real cold days, that's all the warm-up you need.

MOVING OUT:

Then you are ready to move out. For the first couple of times you drive this truck, it might be a good idea to have a ground guide lead you out of any close quarters, particularly if you have to back up. When you're used to the size of the brute, you won't need this.

Starting off with an empty truck on level ground, you are OK to start in second. On hills, or when loaded, of course, you'll use first.

Like was said, on these trucks you have a straight stick-shift transmission, no synchro-mesh, and they should be driven by experienced drivers because they must be double-clutched. You'll find a rundown on this in your vehicle TM, another in TM 21-305, page 28, and a detailed description in PS 64, beginning on page 41. Practice until you are real skillful at this, and you'll have no trouble herding your bruisers along.

Remember, this is not the vehicle to use to break in your newest driver or third KP on some stormy midnight. Units are getting the best results when they assign a regular driver as a special duty assignment, and then make sure he is the only one who uses his vehicle and that he has ample time to look after it. After all, grooming a twenty-five thousand dollar stud horse is worth a good man's full time.

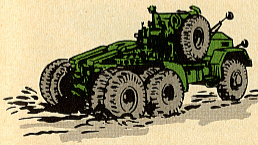
And in spite of the size of the brutes, you'll find they handle like baby carriages. The control pressures were designed so that if worst came to worst, a trained woman could drive 'em.

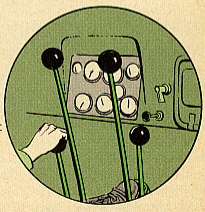
NOW, THAT TRANSFER!

No, not the one you been badgerin' the orderly room about . . . the transfer case on your truck. It's bolted right behind the transmission, with no intermediate drive shaft or U-joints to worry about. This gearbox has your high and low ranges in it, and also the gears that engage the front wheel drive. (Which is done manually on this truck, by those now professional drivers.)

You use your low range for real heavy going, rough cross-country, big tows and so on. You had best also shift to low range and use transmission fifth gear if you have to make any long runs below 15 MPH. This will save wear and tear that would fall on your transmission reduction gears if you ran in high range, transmission third gear.

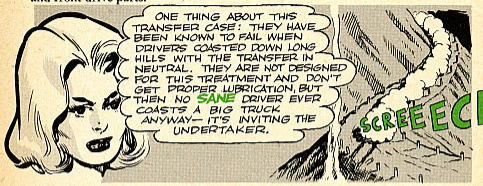
And as for the front drive, you'll normally run with it out of gear when on dry, hard-surfaced roads. On snow, ice, mud or loose sand, you use the front drive. You shift this one in while you're moving— an easy push on the transfer case lever closest to you does it, ease it forward to engage the drive.





Happen you get stuck before you get into front drive, let your drivers spin over very slowly while you shift in. To come out of front drive when you return to

good going, kick your clutch down while pulling back on the lever. Driving on hard, dry roads for long distances in front drives puts needless wear on your tires and front drive parts.



BRAKES:

Any of you who come from the farm are familiar with the brakes on farm tractors, and know how you use 'em to help steer, and to hold a slipping wheel so you can drive out with the other one.

So guess what this truck has? Yep, differential brakes, they call 'em. That little lever that points down on the steering column right under your left hand, the one with the air valves and fittings, is the control handle. You can apply the rear brakes on the left side by pulling this lever back, those on the right side by pushing it forward.

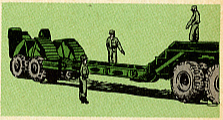
This is not a thing to do on good dry roads, but you can see that it will help you steer in mud, particularly if you have a heavy towed load fighting to keep you from turning.

You also have a separate control for the trailer brakes on the right side of the steering column. Gentle use of this one can straighten out the trailed vehicle if it starts to sway, and on slippery going you use it first, and tap your tractor brakes very lightly, so the hitch will stop in a straight line. Normally, your trailer brakes work with your tractor brakes, so the only time you use this control is when you want more brakes on the trailer than on the tractor, or want brakes on the trailer only.

SPARE TIRE:

The spare tire for this truck is a heavy brute, and the mounting is way high, so there's a davit on the truck, and a block and falls in the OVM to handle it. The upper block of this tackle locks when you pull the fall line away from the block (like a fence stretcher). But it's still a two-man job to shift this spare around.

FOR RECOVERY:



The M123 truck-tractors are bein used with the M15A1 and M15A2 semi-trailers in place of the older M26A1's as "Draggin' Wagons". The guys working 'em say they'll do almost everything the old ones will, and are lots easier to handle.

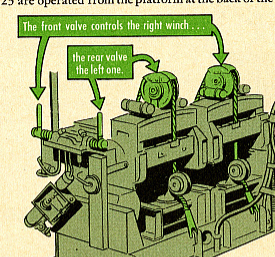
But: Remember this rig is intended as a tank transporter, not a recovery vehicle. Which means that those winches are intended to load tanks onto the trailer, not to pull 'em outta hull deep mud. If you've got a tank that's down a gully, or on its side, or axle deep to a tall Indian in mud, send a VTR out to make the heavy pull, and the transporter to bring it home.

Some posts limit the distance a VTR can run on its treads, so if necessary, take two transporters, one to carry the VTR, the other to bring back the recovered tank. About the only trouble that's shown up with these winches has been from trying to make too heavy a pull, recovering a tank. Now it may happen that you'll get your tail in a crack and have to overload 'em.

Well, if the man says you gotta, you gotta. Use all the snatch blocks you can get your hands on. If you can set up a four- or six-part line from each of these winches, you can shift anything that's loose at both ends. But be sure of your rigging. Use a stout tree for an anchor, and be careful. One of those big cables car-

ries away, it'll play Zorro with a hundred-pound snatch block, and you don't want to be there when the whip cracks.

The winches on the M123 are operated from the platform at the back of the cab, by air valves.



You set your transmission in third gear, the transfer case in neutral, and run your engine at 1000 RPM. There's a throttle control at the winching station to vary your engine speed as you need it.

HOT HEAD:

New equipment always shows up with a few problems. On these trucks it turned out that the exhaust stacks were at just the right height and direction to blast right into any cars on the road. One driver got the best cussing out he ever heard from the fellow in a passenger car who found this out. So there's a deflector on the way.

If your engine sounds rough as a cob, but feels all right, worry not about it. It happens that with half of the V8 engine exhaust coming out on each side of the cab, it will sound rough even when running smoothly. Skeptical types can walk back behind the truck until they hear both stacks equally and see for themselves. (The firing order does it).

HITCHES:

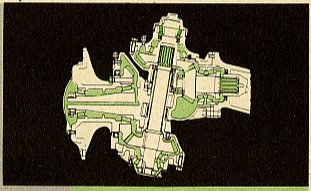
One other thing: There are two hitches supplied with the M125. One is the standard military pintle, which you use to tow trailers, light guns, anything with a ring-type lunette. Then there is the big universal drawbar for the heavy guns.

Normally this truck comes to you with the big drawbar installed at the rear, and the lighter pintle stowed in a bracket under the front left corner of the truck bed. This bracket has a hard time carrying the big artillery draw-bar. Smart units are stowing the big bars and trail clamps in supply, when they're not needed. Or keep a close eye on your bracket, and repair it if it starts to tear up.

LUBRICATION:

Also on these trucks you'll want to follow your LO right carefully, particularly on wheel bearing and front axle lubrication, on accounta they're built a little different from the other military trucks.

You'd better take a look at Fig 123 on page 220 of TM 9-8002 and be sure you understand this front end before you start lubing. Y'see, there are two housings filled with gear oil in this system.

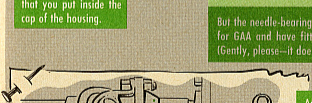


The top one lubricates the driving bevel-gear and its bearing, also the teeth of the driven bevel-gear.

Then there's a tapered roller bearing for the driven bevel-gear which is lubricated by GAA that you put inside the cap of the housing.

Down at the bottom, the bevel-gears, their bearings, and the wheel bearings are all lubricated by the gear oil in the bottom housing.

But the needle-bearings on the king-pin proper call for GAA and have fittings for shooting it to 'em. (Gently, please—it doesn't take much.)



And please remember that there are grease fittings in the spiders of the winch drive universal joints.

So, that's about it. You've got a real fine truck, a ten-ton Swiss watch, and if you use her right, she'll use you right.

When They're Batteries—

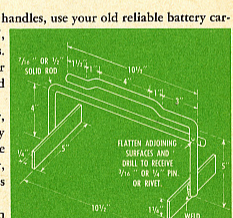
HANDLE WITH CARE

It may seem like nothing at all, but pulling a battery from one of your vehicles can turn into a pretty flub-dub kind of deal.

No sense in going into all the details about doing this job. But there are a couple or three points you gotta keep in mind. Like these:

When taking those 6-TN batteries out of your 2½-ton, 5-ton and 10-ton trucks, use the handles on the batteries. It'll make the job a lot easier than using a strap-type battery lifter.

For your 2-HN's, which don't have handles, use your old reliable battery carrier, strap-type, FSN 5120-288-9187, to put and take the battery from Jeeps. But, never use this battery carrier for totin' the battery around—the pull could damage the battery terminal posts.



Instead of the strap battery carrier, you can make a handy totin'er from any scrap metal rod and strap. You'll save the battery posts. This thing, by the way, will fit your 6-TN batteries as well as your 2-HN's.

Pryin' the terminals off the posts with a screwdriver or anything else except a Lifter and Scraper, battery terminal, FSN 5110-357-6341, can ruin the battery. This Lifter and Scraper is part of your Organizational Tool Sets . . . using other tools'll break the posts away from the plates, you know.

When working on those terminal nuts, it's a lot easier and safer to use a 9/16-in open-end or hex wrench. Pliers or an adjustable wrench that's too big will keep you working a long time and give you lousy results. And, of course, hammers are out—whenever you're playing with that battery.

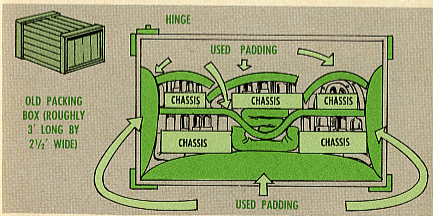
CONTRIBUTIONS

PAD YOUR CHASSIS

Dear Editor:

Here's the way we keep our delicate electronic equipment from being damaged when it's being taken from our missile unit to the tech services.

Instead of letting our chassis and test instruments rattle around on the floorboards or truck seats, we've taken an old packing box, roughly 3 feet long by 2½ feet wide, and padded it with the used padding or packing from an old packing



container. We put the chassis on the padding, then put more padding over and around it. This way, it's fully protected and no amount of hard jolts on bumpy roads will hurt it.

Our padded box saves wear and tear on the equipment, and we don't have to worry about it getting damaged en route.

Pfc Joseph J. Juchniewicz
Btry D, 1st Msl Bn, 562nd Arty

(Ed Note—Good deal for anyone who uses electronic equipment. You could also make a permanent-type padded box with shelves, which could be loaded from the side. This would protect the equipment more from being damaged by the weight of other equipment piled on top.)

A FILTER TIP

Dear Editor,

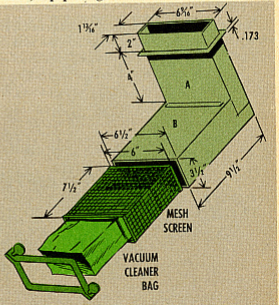
Really needed a cool, tender touch a while back. Half of our AN/GRC-19's came home from the field gasping for clean, fresh air.

Their transmitters (T-195) had near-fatal doses of fouled filters. Those that didn't were shut down with sand, dust and grit in their servo motors.

So to help give them their supply of clean, cool air we worked up a kit that uses nothing more than some sheet metal, a paper bag, some wire mesh and a little oil.

First off, you use the thin sheet metal (28 gage is fine) to make a couple of short ducts. One duct (A) fits air-tight into the air intake port opening in the transmitter. The other, (B), makes a right angle with the first one.

You might throw a rubber gasket around the flange of duct A where it fits into the intake port.



The only other part of the kit that you have to rig yourself is the wire-mesh screen—which fits right into duct B. As for the filter itself, all you need is one of those disposable paper bags that comes with any standard tank-type vacuum cleaner.

T-195/GRC-19

The whole deal fits together smooth and easy. Slip the bag into its mesh container and slide that assembly right into duct B. As my fancy drawing shows, the closed end of the bag is right there at the exposed end of the duct where it will do the most filtering good.

Coat the inside of duct B with some heavy oil (SAE 30) so's to trap any powder-like dust that might get through the dust bag. And that'll give you the finished filter.

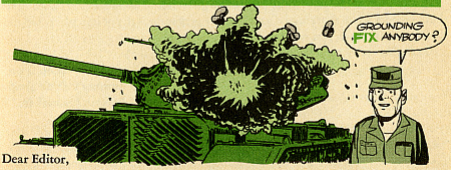
It provides a much larger filter area—and yet that right-angle duct set-up allows clearance for the connections underneath the intake port. We found that those bags do a good filter job for about 12 to 16 operating hours when the dust is flying fast and thick.

Duct B needs a cleaning and re-oiling every 70 to 80 hours of operation.

Sgt G. M. T.

(Ed Note—A bit of work involved, Sarge, but well worth it. You just can't run any risk of the antenna servo systems getting grit and sand in them. Watch that intake port, though, if your GRC-19 is going fording. You'll have to use the regular intake port cover to seal things up.)

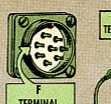
SAFETY GROUND



Dear Editor,

We recently had a man hurt while checking out a tank auxiliary generator for hydrostatic lock. He removed the spark plug then pulled the engine through without grounding the magneto. The spark plug lead gave off a spark which in turn set fire to the gas that was pushed out of the cylinder. He got a pretty bad burn.

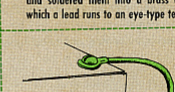
So we set out to make sure nothing like this would happen again. First we gave each mechanic a jumper wire with clips on each end, and told him to connect it from the "F" terminal of the generator control outlet to one of the engine shroud screws immediately when he removed the control cable. We pointed out the importance of a good electrical connection at both ends.



Later on one of our boys took some female connectors from the repair kit

and soldered them into a brass disk from which a lead runs to an eye-type terminal.

When we slip the disk into the generator control receptacle



and fasten the eye-type terminal down to a shrouding screw, we are positive that we have grounded the magneto once and for all.

So now each of our mechanics has such a grounder in his tool box, and the first thing he does when working on an auxiliary generator is to put it in place, before the generator is even removed from the tank.

Looks like we've got it licked.

Shop Crew
Combat Vehicle Shop
Raritan Arsenal, N. J.

(Ed Note—Fine deal . . . it doesn't matter much which of these ideas you use. They'll both do the job. The made-up adapter is probably a little better than the jumper, if only because it is less likely to get knocked loose while you are working on the generator. The important thing to remember is that all magnetos are "hot"—the ignition is ON—whenever the control wires are removed. You don't dare trust 'em until you have connected a positive ground to the primary lead. Take the time to rig one, and be safe.)

Connie Rodd's BRIEFS

High pressure story

So you've been wondering who checks out the high pressure air hoses used at your Nike-Ajax site. If anybody tells you it's the Engineers, give the man a cigar. He's right.

New battery TM

If you use lead-acid type storage batteries in your equipment, you'll want to latch onto TM 9-6140-200-15 (23 July 58). It supersedes TM 9-2857 and covers info on the waterproof type batteries used in the M-series vehicles. The new TM also has an up-to-date package deal on charging those little hot boxes.

FM for M1 rifle

Have you seen the latest Field Manual on the M1 Rifle? It's FM 23-5, "U. S. Rifle, Caliber .30, M1", dated September 1958.

Cable clue

Put away your Sherlock-style magnifying glass! Your new number for that rear throttle control cable on the M62 wrecker is Cable, with ends, assembly, FSN 3830-546-4762. Users of Ord 7 SNL G744 will find 'em waiting at depots when needed.

How's your primer?

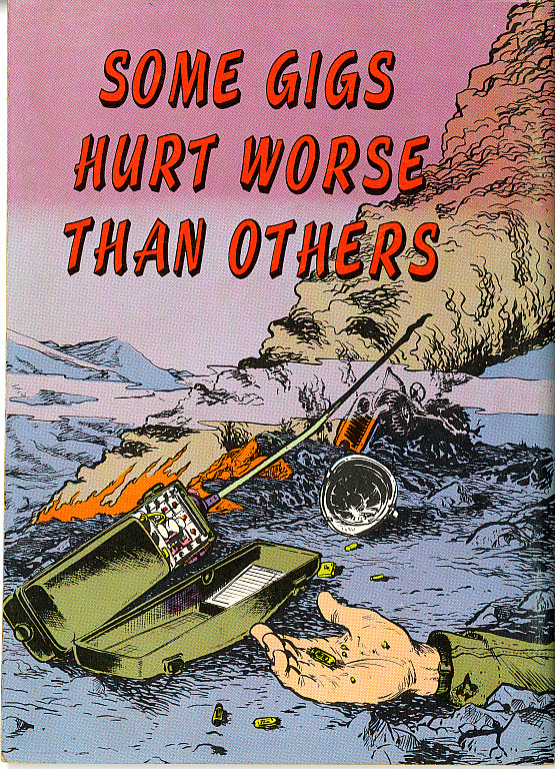
Pays to keep your peepers peeled on the primer pump, pal—if you're an M48A2 tanker. Some cracked primer pump bodies have been showing up in the field . . . and fuel leaks make for a fire hazard. So, replace a leaking pump immediately or you might wind up with an unscheduled hot time on your hands.

Hot handles

Could be the handles on some of your screwdrivers are the type that just can't stand heat. Some of the plastic models with a cellulose nitrate base are highly flammable and can get you in trouble. Get rid of 'em, fast. TB 9-5100-200-10/1 (28 July 58) and SB 9-163 (28 May 58) give you the dope.

Five's, not one's

You Nike-Ajax guys can save yourself from getting your requisitions bounced back when you ask for some trichloroethylene for cleaning around electric motors. Just don't put in for one-gallon cans. The smallest cans the Chemical people have hold five gallons. And you get that much under FSN 6810-184-4794.


SOME GIGS
HURT WORSE
THAN OTHERS