

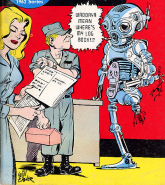
Issue 117

PS

1962 Stories

# THE PREVENTIVE MAINTENANCE MONTHLY

WROOVE  
MEAN  
WHERE'S  
MY LOG  
BOOK?



IF

YOUR EQUIPMENT  
MAINTENANCE  
GIVES YOU A  
PAIN...

PAIN  
BOUNTING  
UP

HONTS  
ON  
EDGE

TENSION  
BUILDS



TAKE A LIBERAL DOSE OF

TM

NEED ONE? ORDER IT  
ON DA FORM 17 FROM  
YOUR PUBLICATIONS  
SECTION.

## Warning: CAREFUL HANDLING

In the beginning it was a crude sort of thing.

**Dirty, it's unpredictable. Limited in its use.**

But as time went by man studied his ingenuity and know-how and the thing gradually lost its crudeness.

It was refined and expanded so its wherever special needs came up.

It was not long before it became one of the most important things on the face of the earth.

No nation without it can be free. It is the very lifeblood of a modern way.

No effort or cost is spared in producing it. Fantastic precautions are taken to protect it . . . and to keep away all things that would contaminate it . . . and to make sure that it in turn will not contaminate.

But after all this caution, care and cost, what happens?

Sometimes failure to put the lid back on the oil can—or someone's neglect it. And this fabulous substance—that the wheels of fate and Fortune turn on—becomes in a matter of minutes just an oily, contaminated and dirty foam as it was when it settled in some dark corner a hundred million dollars ago.

Then . . .

**Careful Handling Called For.**



# PS PREVENTIVE MAINTENANCE MONTHLY

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## IF YOU GOTTA

Like why the furnace won't run or produce, that's why you wear load-carrying harness — to hold things together so you can get a job done. Could be you'd be embarrassed to death if your "suspenders" fail.

But they won't fail if you keep 'em in shape. Which amounts simply to giving 'em good PM.

Mostly this means wearing 'em right. Keeping 'em clean and fixing 'em pronto if anything goes wrong.

Belief alone, it means taking care of the different parts of your equipment according to the materials they're made of. For instance, canvas in the legs and pants, webbing in the belts and straps, and metal in the connectors.

Your guide in **PM 21-12 (May '61), w/changes**... **Care and Use of Individual Clothing and Equipment, TM-24's 21-124 Dec '51 and 207 (3 Jul 61)** give you the steps on the several load-carrying equipments.

### WHAT IF

Make the habit of checking your equipment off and on—before you look it up and while you're using it. If you find any of the defects in bold type you can do something. Otherwise, fix it yourself, if you can.

**SUSPENDERS** — **Get, belly straps, dirty, greasy.**

**STRAPS** — **Belly straps, cut, greasy, dirty.**

**BELT** — **Belly straps, dirty, cut, greasy.**

**WEBBING** — **Wet, oily, rusty, bent, broken, worn, twisted up right.**

**PLATE AND METAL** — **Corrosion, belly straps, cut, weakened, dirty, greasy, belly straps.**



## GET LOADED...

### HOW IF

When your legs and packs get dirty, follow the steps on canvas care in **Para 3 of FM 21-12 (May 61)** and in **Para 14(1) in TM 24-107**.

First, try to get rid of dirt, mud, clay, oil/grease and other foreign matter with a brush (a soft bristled one can work with stiff bristles) or by wiping it good with a damp or dry cloth.



If that won't do the trick, wash the stuff in a pail of warm water that has very mild soap or detergent in it—use just plain warm water. But don't scrub it with a brush, and don't use anything like chlorine bleach, yellow GI soap or any fluids or dyes that could stain the fabric.



After it's washed good, rinse out all the soap, and stretch the equipments to its original shape before drying. Dry it in the shade or indoors, but never in direct sunlight or near a hot stove or radiator so this will discolor it.



Wash the soles of marching boots and canvas covers with warm water and mild soap. Then clean and air-dry 'em.

You clean the web lines (belts and straps) just like you clean canvas and you dry 'em the same way. However, like it says in **Para 8 of FM 21-11**, you

never try to re-tie or repair any web stuff. That's a chore for your support people. If the belts and straps are too faded, wear 'em in.

### HOW IF

For repairing canvas items, follow the steps in **Para 14 of FM 21-11** and **Chapter 3 of TM 14-500**.



**Seam**—Fold the top edges of the strap over together and sew, using your fingers or a tool with them already there.



**Seam**—Fold the top edges together on the wrong side of the strap and sew 'em together.



**Prep'd Edges**—For the top edge ends and meet up.

### WHAT IF NOT

Even and best, though, good PM means using but not abusing your equipment. Clean it when it gets dirty; dry it out when it gets wet. And whenever you can, try to prevent it from both dry and dampness. These tend to mildew, a disease that's fatal to all kinds of fabric.

Your load-carrying equipment is in your own personal supply line. In a showdown, it could be your life line. Keep it in line.



## COOLING SYSTEM

Check radiator level. If low, it's time to top it off.

Check the coolant level in the radiator. If it's low, top it off. Also check the coolant level in the expansion tank. If it's low, top it off. If the coolant level is low, it could be a sign of a leak. Check for leaks around the radiator, hoses, and the expansion tank. If you find a leak, you'll need to repair it.

Top up coolant as needed.

## TIRE

Check tire pressure. If it's low, top it off. Also check the tire tread. If it's worn, you'll need to replace it. Check the tire for any damage, such as cuts or punctures. If you find any damage, you'll need to repair it.

## WAXING

Check the wax filling. Add, if necessary.

When waxing with the waxes, make sure you don't heat the filling.

## ELECTRICAL CONNECTIONS

Check all electrical connections. Tighten them. Check the insulation where cables run against the machine or where they get exposed to air. They will burn when necessary.

Check the electrical connections. Tighten them. Check the insulation where cables run against the machine or where they get exposed to air. They will burn when necessary.

## SOFT, BERRY

Check the soft berry. If it's low, top it off. Also check the berry for any damage, such as cuts or punctures. If you find any damage, you'll need to repair it.

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Check the soft berry. If it's low, top it off. Also check the berry for any damage, such as cuts or punctures. If you find any damage, you'll need to repair it.

So, just because it only takes you a couple of minutes to pull these belts out and after operation you can't see them, don't touch them.

Come a time in every guy's life when it pays to take a good look and a quick look.

**Connie Rodd's**  
 "DON'T BE LOST WITH"



### *Safety straps*

There's safety in numbers, but trying to find the number that'll give you that safety can be a tough job. That is—like getting the FSM for the adjustable safety strap that goes on the rear of your medical D6 and 5-ton truck's cargo body.

If you've been trying to get it by using the old 1949-FC000008 number or by FSM 42-01,198-0008, and you still don't have any luck, we've got you covered.

Here's a number you can let down some place handy that'll get you that strap—FSM 1544-164-0164. The manufacturer to go with it is Inrap, Wabbling.

Remember, it's a Chemical Corps item because the Chemical Corps has been given rights responsibility for safety equipment.



### *Folding deck stools*



There was a time when you couldn't get the folding deck stools separate from the plywood field deck (FSM 1118-267-1004). But no more. Now you'll find the stools (Stools, Folding, FSM 7420-263-0004) and the deck (Deck, Field, plywood body, FSM 1118-267-1004) both listed in 54 16428-26-02 (31 May 61).

## Point-to-Point



"So you ask, what's a vent? And the answer is that it's "an empty space in something."

In this case that "something" is the fuel injection lines in your vehicles that have the 805 and 1700 fuel injected gasoline engines.

Any time you're on the go with those vehicles, their engines get real hot. Part is, the manifolds in 'em get "white hot"—and that's hot spelled with a Double L. So-o-o, when the engine's turned off, much of its heat is absorbed (that's what I by them their fuel lines.

The white heat that hits the fuel lines expands the fuel, putting extra pressure back into the injection lines. Expanding gases are forced through the manifold and into the manifold.



That's what the trouble begins. The engine it won't... start, and the fuel in the lines turns back to liquid and sticks so it takes up less space. An a gap or vent is left in the line.

The only way the gap can be filled is to do a "lean mixture". And this draws a lean fuel from the manifold and is hard on the engine.

As your engine cools down, some lines may be affected by this injection-line gap while others are not. Then, when the engine's started, it'll miss and run rough... and that ain't good.

Give those engines a break. Each time you start the vehicles, use the "hand primer pump". Be it hot or cold mean it while cranking the engine. And never use the primer pump, except when you're cranking, because you could cause hydrolock lock when the engine starts.







Tankers . . .

Watch that ammunition release interrupt switch on the M13 ballistics computer—wrong moves can break it.

Play it cool when you're replacing or removing a cam in the computer—of cam changing time'll become switch burning time in a hurry.

**(In case, the operator'll go smooth as silk if you make sure the cam roller is resting on the deepest cam in the computer—usually the OFFER.)**



**OR**

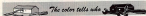
**If you're removing all the cams and there's no place to rest the cam roller—you turn the entire motor clockwise as long as possible and hold it that way till the cam change's completed.**



Either one of them two steps'll keep you from ever again hearing the alarm switch—because they both keep the groove in the alarm handle from twisting cam shafts and kicking the remaining pin shaft through the switch.

Next, the very first thing you do before you start replacing a cam is to make sure you throw the circuit breaker switch to the OFF position.

But, everybody does that, right?



*The color tells who's who.*

A small dab of paint (usually 1K or uniformity) on each tool in your M13 tool kit and the inside of your tool box helps you keep track of your cams. Each mechanic picks his color, making sure to keep the paint away from any working surfaces or areas where he grips the tools. The smaller the dab, the easier it is to remove on return.



## Keep that golden touch

All that glitters may not be gold.

But even if it's not the real thing—you can let your dealer let it down for a reason.

For example... take the new golden Smith on the Ball rear spring. K&M 3009-001-0011, that's being heard these days.



You wouldn't get a wooden wheel for it at your favorite power shop, but it's worth its weight in that favorite yellow stuff as far as preventing maintenance goes.

That golden color comes from an anti-rust finish put on the rear spring and is a big improvement over the normal black finish job that used to be heard.

So—yes, spare the aluminum.

Don't get eager and try to remove the Smith to make the rear spring match the rest of the color scheme.

All you do—in addition to working up a receipt—is make it a lot easier for you to start looking up the fitting operation on the Ball.

## Save M13 CO for

Here's a better picture of how the nipple fits into the sampling bulb of your M13 carbon monoxide detector kit. In now, do Percy a favor and X over the illustration for use on page 24, PB 127.



And, here's a reminder of what Percy told you in PB 127... Make sure the nipple is inserted into the bulb, and the metering valve is out. That way you can adjust the valve without removing the bulb.





## Makes no difference



Left is right or right is right—makes no difference. If you think you have to have an MSAI protective field mask with the padding on the left side when you're using it as a nuclear-bombardment-field mask—you don't.

You use the mask to better breathe whether to protect your eyes and face from the instructor's back-blows and unlearned propellants. But you don't have to use the padding on the mask—you'll have just as good a protection without it.

There are a couple of things to keep in mind. You will have to take care of the mask's rubber's getting blinding it around when it's put on the mask—it'll dent.

Also, you don't want to longer to attach DA Form 10-137 tag to the mask's head harness. That's the tag that you have to put down the left that the mask's been used in nuclear-bombardment field and has to be inspected according to DA 1-58-10 (17 Dec 79) before CBM use.



LARGE IS OK,  
BUT WE WANT  
YOUR DREAM  
WHEN WE  
EIGHT  
LARGE  
ATTENTION  
WILL



## Spring's not spring

Get your own  
valve job...



Conduct similar your monthly maintenance on the float bowl of your MSAI smoke generator. And you've come to the inspection and maintenance.

You clean all parts in dry-cleaning solvent and dry them thoroughly. Then you inspect them to make sure they're not worn too much or damaged.

If there are any parts that need to be replaced, you replace them. Then you replace the gaskets.



To see if it's time to assemble the parts of the float bowl, you use the float bowl and with a new one float bowl.

First the needle valve spring and valve go into the float bowl. Then here is where you install the spring. Instead of placing that needle-valve spring with the large nut and the needle valve, you'll it around and put the small nut over the needle valve. That way you'll get some spring out of the spring. Then you use that assembling the parts into the float bowl and make that little spring's going to do it.



You have tools to do certain jobs on your MLE1 portable flame thrower. There *are* two jobs to be done without tools.

It's mighty important to know when and how to use tools, but it's even more important to know how you can damage your equipment when you use tools where they're not supposed to be used.

That's a good thing to keep in mind when you put the barrel and valve body assembly together on your MLE1.



There's a ball joint cap found in the barrel and valve body that's to be screwed on finger tight.

Maybe you think you could do a better job if you use a wrench, but that's not the case. When you screw that cap on right, the gun won't fire. Also, you might break the cap.

So when you're supposed to tighten parts by hand, remember finger tight that is, not wrench tight.



The number one way to set up the M711 telescopes in your MLE1D unit for shooting is to forget to tighten the wingnuts that hold the traps in its MLE1 mount. The scope on sighting the wingnuts, along with other info on installing and servicing the telescopes, is in TM 5-2002. It doesn't hurt to look over the TM before the telescopes leave the mount or get put back in.



## DISK SLIPPED—OUT?

One day ... there was this inspection team making the rounds on a Nike-Hercules site.

And man-o-wa-god, if the inspection didn't give the world a delightful because some disks were missing from one of the track rubbers.

You know the disks—they pop out when too much air pressure builds up in the cabinet. There's a cross-shaped ramp in front of each disk so it won't get lost when it blows out. Once it settles, tho, a disk turns up missing.

Just remember, ... it's up to your support unit to replace the disks. You can help 'em by monitoring that the disk is fixed on pages 76 and 140 of TM 9-1450-280-28P/1 (Jan 61). The number changes to Disk, Solid, Plain, and it comes under ESM 1-09-525-7484.



## THE RIGHT CLAMP

You will be filling around with the old clamps for the battery cabinet in your Nike-Hercules missile? This one, tho, is. It has hardware that's easy to use.

Here's the one you might be using. It's self-locking.

The latest clamp is listed under ESM 4150-011-0117 in TM 9-1450-280-28P/1 (Aug 61). Hold up, tho. The number has been changed to ESM 4150-280-1607 and the Ord Part No. is 807160.



# UGH NUTTY PROBLEM?



First I'll get you out from any backwards look to that the new bearing caphead and lock nut you installed on your Horotec launching and handling rail for a strap as built on a nut. Right?

However... if the track rolls on the change set up in 3PAC-OLD YES, WILL you dropping from the nut's nut being flat against the top, here's how to force the bearing figure back to your side of the force.



If the lock nut, ITEM 15.10-011-0100, sticks out like a nose straight mainly on account of too heavy a buildup of the metal, solve the problem and miss a nut of Gigaville with this fix.

Remove the nut and machine it off



at a 45 degree angle.

Grind off the 45 degree angle all the way around like the drawing shows and the nut'll take to the top like a tilted trap your favorite puppy doll.

## YES... BUT

You heard right.

The word is that you can use a torque wrench to measure your Hawk missile calipers.

The torque wrench is given the real green if has a handle to work with. Plus, even so, a torque wrench is built for tightening—not for loosening.

In play it means... and give your torque wrench a break—the fair kind, not the forced kind.

For repairing the calipers, use the 1/2-in drive socket wrench handle that goes under ITEM 11.20-021-7918. The handle's in your Automotive Mechanic's Tool Kit, ITEM-1188-754-0641.



## YOU'D BETTER BELIEVE IT



**LO SUPERSTITION!** The John Deere is right when it says that the front drive on your back loader-tractor has a capacity of  $\frac{1}{2}$  pint of oil.

When it comes to checking the oil level in the front drive . . . that's something else again. What you don't do is check it at the fill plug.

Supposing you check the level at the fill plug . . . and you find that the oil's level with the plug. You think you're in good shape, don't you? Well, when the oil is level with the fill plug, that means you've got almost two quarts in the front drive. And that much oil can take you down the road or damaged oil seals because of the pressure that builds up in the overfilled casing when you're running the loader-tractor.

No . . . there's only one sure way to stay out of trouble when you're servicing the front drive.

### Oil Service

Check the oil every 50 hours, or quarterly, whichever comes around first.

Put the chain plug back in.

Remove the small (1/2") oil plug from the center of the front plug.



By the way, incidentally . . . whenever you remove the small plug to check the oil level, you might get some overflow. This could be just the result of splashing. A careful check is to add oil until you get a steady flow from the hole. Then stop adding oil and wait until it stops flowing before you replace the plug.

## NOT IN PRINT

You can save yourself a lot of looking.

You're not going to find any special wrap-on tubing and maintaining the fan drive's interrupted and slow-step switches on your Hawk blower. And you can look high, low and in-between for the same kind of info on the blower and filter plugs. This kind of info's not to be had.



Order your blower and filter plugs from your nearest GAA dealer. Or write to GAA, Dept. 100, 10000 GAA Drive, Dallas, Texas 75243.

Write us, we'll give you the info you need.

## HOT COOLANT TIPS

And speaking about damage...don't forget to check on how the coolant is flowing when you put in a new straddle package. Could be you'll find the flow has been stopped by an air lockman all right that'll lead to a heat up pump because of overheating. And the straddle'll take a licking, no doubt.



The odds is that you'll get rid of the air lock by removing the filter plug and letting the coolant run until the air bubbles run themselves away. Then add coolant CR 41 with the coolant pump, making—no bring the coolant up to the proper mark on the coolant manometer. If you don't do it this way... you'll put in one more coolant.

If the warning that there's work, call in your support unit.

## GAA WILL HELP



Next time you're taking your Hawk blower, you can't show up on your info sheet—especially if you're in a spot where it's kinda tough to tell the difference between handle and valve.

It's a good idea to put some GAA on the machine surfaces of the machine that is the focus.

Remove the grease and check for rust once a month and then put on some more GAA.

You do the same thing—only once a week—in the exposed part of the blower handle cylinders.



One thing's for sure...you can't do it without the Hawk LW valves when the coolant line is disconnected. You know...the when you take the magazine package out of the system.

And you can't do it without good enough. Everything the valves without the line being hooked up means the coolant pump will overheat and become damaged.

## TRIP IT

Dear Hawkman:

One of the monthly checks on the Hawk blower is a down-swinging performance test in which the forward moving water is stopped. The usual way of doing this is by hand—a kind of hairy disaster.

Do you know of a better way of doing it?

SVC14

Ever Reginald T. A.

Your support has to trip the forward moving water when it makes unexpected checks on the blower. And I'll say those people love the answer. They use a support—about 1/2 inch long and 1/4 to 3/8 inch in diameter to do the tripping.

RAY



# NO

When a flywheel and clutch assembly disintegrate in one of your heavy trucks ... there's no escape.

It can happen and did with an M113 M3 size job's hill to was his falling down a hill ... badly, nobody got hurt from flying pieces 'cause a locally-made pressure shield had been put over the clutch-flywheel housing.

THE SHIELD GOT FOR THREE HOURS THE HAPPY DAYS BEFORE ... THE PRESSURE AND SHOCKING WERE UNUSUAL MOUNTAINS ... AND THE LADY TOOK A REAL DELIGHTING.



# ESCAPE

When you reach the top of a hill ... stop momentarily with to enter the right low gear range (you know how) before you take 'er down the hill.

The reason's simple. In descending a hill with a heavy load, your clutch drive train usually becomes a prop train.

The load pushes the engine speed up (RPM increases) through the gear ratio—thanks to 24.6, 22.6 to differential, differential to prop shaft, prop shaft to transfer and transmission, transmission to clutch, and clutch to engine flywheel.

This means that the only way to keep your M113's engine RPM within the governed range (1400-1500 RPM) for which it was designed is to control that push from the wheels ... by shifting the brakes on the way down.

Remember, the engine governor has no control over the engine speed unless the engine's pulling the load. When descending the hill, the weight of the truck and the load push the engine the only relief the engine gets from this slowing action is through the wheels by shifting the brakes.

Now—do never—hold the clutch in while going down the hill. With the clutch disengaged, the engine would normally idle, while the clutch and other drive train components would be revved up to a much higher RPM ... a sudden reengagement of the clutch while there's still too much of RPM (whether you double the clutch drive train).

Always check out and shift with the allowable road speed for each gear range you're chosen. For the M113, with 1 ton payload, see TM 9-2336-204-1 (Feb 67), given with this prep.

**Copy**

As shown, there are two sets of road speed ranges for each gear range.

M113 - Standard Load and Maximum		
Gear	Minimum	Maximum
1st	10-15	15-20
2nd	15-20	20-25
3rd	20-25	25-30
4th	25-30	30-35
5th	30-35	35-40
6th	35-40	40-45

Take no chances on them M113-loads you ignore any feelings that hit you like "something else wrong"—cause it does and it will.



The last time you looked at the Ford window screen in your '64 new 3741-cubic truck, did you find a hole punched in it ... just above the roof of the Ford box trailer?



A screen with a hole won't do much of a job keeping dirt out of your Ford seat. When it's in loose shape like that, the only answer is another screen (FORD 2013-623-2780).

But you can save this new screen, plus any others that are still in good shape, with the help of a small home-made pressure cage. The cage is made with 1/2-in. welding rods (brown painted) and is done like this:

First, sand out a piece of rod to about 2 1/2-in. (2) and slide the ends together.

Then, measure the two pieces of rod across the middle of the screen. Fold the ends and weld.

Now, spread out another rod to a 2-in. (2) circle and slide it around the middle of the other two pieces.



With another rod make a 2 1/2-in. (2) circle, only this time don't slide the ends up ... leave about a 1-in. gap. This end goes to front. Bring the other end up to slip the cage down into the screen and let slide with the door under clip.

Finally, join both circle pieces up by soldering these pieces of 3/8-in. rod between them. The ends should be staggered and around the two pieces about 2-in. apart. Test finished job about hole like this.

When it's all done the cage becomes shoulder's touch the window screen. With this cage in your gas tank filler neck, the fuel hose nozzle can't slip down deep and poke holes in the screen.

## MWO's FOR TC VEHICLES



Dear Half-Mast,

Where can I find a listing of MWO's for commercial design vehicles?

Ego M. E. R.

Dear Inquirer M. E. R.,

There's no index (or listing) of MWO's for commercial design vehicles, nor are MWO's, as you know them, issued for commercial design vehicles.

Information on authorized modifications for these vehicles is published in letter-leafs by the Chief of Transportation, as the changes come about. You'll also want to see past *TRUCK*, page 11-1 APR 58-1 (Jan 1962): "Joint Procedure for Management of Administrative Use Motor Vehicles."

These letters are dispatched to all major commands for further distribution to all their subordinate commands operating commercial design vehicles, including TCG and TA units.

For example, one of the current listings of authorized modifications in Letter, USATATMA, DCATM-FG, 15 Sep 61, Subject: "Modification and/or Conversion of Commercial Design Vehicles." The letter lists both required and optional modifications, such as mirrors, mud-flaps, mirrors, signs, lights and warning lights.

When any required changes are due on any of your vehicles, the information should come to you from your next higher headquarters, through your maintenance support unit. Also, your installation transportation office should have these listings, or you get them from Transportation Administrative Transport Management Agency (USATATMA), Fort Meade, Maryland.

*John J. ...*

## WATER TANK TROUBLE?

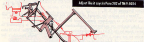
If the drinking water in your tank tastes like it's been appraising maybe MWO 9-2108-215-5072 (14 Feb 60) hasn't been applied to your tank. That's the MWO that tells how to clean out the tank and paint it. In, if you have an M200, M100A1, M400, M300A1 or M107A2 trailer and the MWO hasn't been applied, better take it to your Ordnance support. (Remember the first issue on the MWO cleaning and painting list is for two years from publication date of MWO.)



# IN THE BALANCE

Your life, or anybody's, could "hang in the balance" unless the Hydra-Matic transmission linkages you just 67-69-cruiser 1H-cou trucks are adjusted, gear checked or inspected... just in.

## Major link adjustments of TH 461



A check and lookover on that TH 461-1 is a must for every driver and mechanic on these cruises. Besides telling you to always set your parking brake before engine is started, the TH also says only authorized mechanics'll tinker with the adjusting and positioning of these links.

The reason a mechanic should be so familiar on this score is because it's really "tricky business."

First, say the throttle valve control lever didn't get you into the control valve spline shaft far enough, it'll allow the shift lever to wander off the spline and you'll lose control of the shift range. You'll put your shift lever into neutral, but that's not what you'll get on the shift pattern in the transmission. Guess you see the pleasure now?? You just might be into forward gear... right?

Follow the TH 461-1's cue when adjusting the linkages—no shortcuts. When the throttle valve control lever is put on, make sure it's shoved so well the end of the shaft is flush with the outside surface of the lever, and then tighten up the lever lock nut tight.



SPIN SHIFTER  
SHOULDER IN  
SPACE WITH  
BURST OF  
ENGINE'S VACUUM  
CONTROL.  
TIGHT.

Check the pins, levers, yokes, etc., for signs of wear and get new parts pronto if needed. If the splined ends are bad, get support to help out—over 100 shops specializing in the vehicle.

Making sure the connection to the levers and the shafts stands up and not flexing them into place, is a must.

Remember, you wouldn't want anybody pointing an M1 at you—loaded or not. The same thing goes for standing in front of any vehicle with a running engine—in sight or loaded, as never do in.

## ... BE SENSITIVE/BE SAFE ...



There's only one way for you to safely set the front end adjustments on the Hydramatic model.

The ball joint pin must be EXACTLY flush with the machined surface of the transmission case. You've got hardly a hair to play with as you set it by the reference you're allowed. It's a mere 4 in. — *Notice*, TM 9-8004 (para 28L, page 254) was capital letters to tell you to be EXACT about this adjustment.



Anytime you're unable to do this like the TM says, it's time to have a talk with Olinator.

And make a double sure of this... although the transmission may work with the pin sticking out beyond what the TM allows, this setting exceeds wear limits, and in the end could cost up a costly repair job.

So for safe all the way around, let Olinator know the very first time you find you can't get the pin down flush.

## BLOWING YOUR TOP

Are you in a wet area where the intense top of your jeep has the nasty habit of coming down every year or so? Try giving it a coat of military marine compound, MM-41 1250a (TM 9008-104-1041). This stock number will give you five gallons from Quartermaster which can be painted or sprayed on. Make sure you follow the instructions on the label before you give the entire surface a good coating.

## CIRCLE RIGHT



Supply shortages may have you using MM steering gears in MM-41's as replacements. Gear ratios differ, but they do. Remember one thing, tho. The steering knuckle adjusting link stays on the way the vehicle TM says. Turning circles are 35-in for the MM and 34-in for the MM-41 no matter which gear they've got.

COUGH!

MANAGE!

# A LOSING SCORE

COUGH!

You start with a score that results in a dead engine. What could happen here? You make sure that the connections from the air filter to the carburetor intake are OK and sound and tightened just right.



Then, if the connections are just right, you sit full of dust and dirt and get rolled along with the filtered air into the carburetor where it'll join up with gas vapors. Then the whole sorry mess'll move into the combustion chamber and search cylinders and pistons, find where they get power—bust!

Tactical and commercial-type engines, y'know, take a variety of connections. Some like the Quattrone's PC-35 engine have air intake ribbons with flanges. Others—like the M38 Jeep and the M35A1 General crew shovels—simply have hoses and clamps.

# SCORE



MANAGE!  
I don't see how the carburetor's carburetor jets can be adjusted to the carburetor jets.

But the general idea's the same on all of 'em. To make sure only the air that's been purified in the air cleaner gets into the carburetor. So, you make sure your equipment's hot, but I show you the right connections.



1. Attach the filtered pipe to both ends.
2. If it has an elbow, with the elbow flange pointing to the side so the flange fits over the hole on the wing side to be tight before you tight . . . and tighten it good.
3. If it just has a hose and clamp, make sure the flange fits a place on the intake and that the cover fits on the clamp on good and tight.
4. Double check to see that the hose and clamp fit the carburetor and are also snug and tight.

Incidentally, when you pull the engine and have it running on a one-man—like a tank engine, for instance—the man to have an air cleaner hooked up. Oh, if it happens you can't do this, at least run the engine in a box or shop or some other dust-free area.

Or, if you do have to run it outside, pick a spot where no other vehicles are riding the dust. In fact, it might even be a good idea to run down the area first. In other words, don't make a tick to protect this trouble from making its debut on it.



Here's some advice to make her give you better under all types of conditions.

For instance, on a cold, damp day when the only thing warm is a flight heater, it's a couple of "yes, smoking makes heat" is a two-prong attack. Here's how:

After you complete steps 1, 2 and 3 on the instruction plate, cut one lighted burner and a fuel valve in front of the line, burn it then heat in the streamer instead of the one the manufacturer has.

HEAT UP THE  
ONE 2 TO 4  
BURNERS

WALK AROUND BURNER  
ONE INTO HEATER  
COMFORTABLE



Now, without taking the fuel and cut step a second lighted cut into the burner streamer. You have it light up with you.

Of course, this might take some doing for a beginner, but with a little practice it'll be applicable easy. A new man might be better off by getting a buddy to help on this two-prong bit. One man can do the pre-heating and the other the flying up.

### WATCH YOUR BIRD

But, whenever the conditions are, keep your line away from the line gear and the combination chamber opening when you're lighting up—so you won't recognize that guy in the mirror.



And, while you're in it, let her do other safety steps on the instruction plate. Move the fuel ship into the burner before pre-heating the tank, or lighting the burner. And never use the fuel valve to work the fuel before lighting it. Always use fuel from a separate container for this.



LET IT BE...

The new standard burner has two shut-off valves on each burner and gives good service. But if you have one of the old models with one valve, then you'll have trouble with the larger 11-gal unregulated tank they're using these days. The old ones were 24 gal. The combination chamber'll pop up and off.

There's a quick company for the old pre-heating runs for this. Use the one that fits the instruction book.



BE A GOOD BOY  
TO THE BOY  
FOR THE GOOD BOY, try this: Use one 20 or 25-gal unregulated tank for the burner and one 11-gal unregulated tank for the heater. Use the combination chamber and the side of the tank as the fuel tank just opposite the burner line.

But, remember, the choice you get here, your support guy's apply the post-mounted cam's by adding one more dimension to the hinge. The new cam should be used on the heavy 1/2-in. metal rim. This way the rim won't get cut into by the new shoulder and the mounting will be more secure and rigid.

But whatever you do, don't make the mistake of trying to tighten the screws like you would on the 24-gal can. The shoulder will fit tight against the sides of the old-type rim, but not so with the 20-gal rim. If you keep messing down there you'll end up with a hole in the rim, or at least damage to the rim coating.

#### BE AND STAY

A heater that's cleaned after every operation and protected from the winter weather will do a better job and last longer. TM 10-4465-208-11 (Jan 61) is loaded with good data on the care of your heater under normal and unusual conditions. Use in connection of



either way, the rim'll be close as far as using it for cleaning your equipment. The Medical people consider it a health hazard when the rim gets chipped off. What's more, when a rim gets damaged like this, it can't be re-mounted and those rim are in short supply in some areas.

heat and cold and heavy rain.

But the treatment you give your equipment when it's comparatively stable can be just as important. So look up preventive care in Chapter 4 of the TM when you have to put it in mothballs for a short time.





# JOE'S DOPE

# THE REPLACEMENT

GENTLEMEN, I  
HAVE GREAT NEWS!  
OUR TESTS ON THE  
GRANT INDESTRUCTIBLE  
SUPER HOLE AND  
BOMBIC HOLE LEVEL,  
TRACTOR N° 1A  
INDICATE ITS  
READINESS FOR  
TROOP USE!

BOY! THIS  
WILL SHOW  
THE DOCTORS  
ELECTRANS!

YES... THE BEST  
TRACTOR HIS  
COMPANY EVER  
INVENTED!

WHIGGAMONDONICS N°  
"The only thing ever built  
thought of  
by American Dooms!"

NO SO... A FEW WEEKS LATER

WELL... YOU SAY  
IT'S DURABLE?

EVEN ABOVE AND  
BEYOND NORMAL  
WEAR AND USE?

WELL... POINTS  
COUSARONE,  
Y'LUCKY DOG...  
YA BORN A  
NEW DOGS  
AT LAST!

ABOUT  
TIME!



WELL, WE'VE RECALLED  
MISSION COORDINATES  
THAT'S HOLDING US  
TO LEVEL IN TWO  
HOURS!

...AND...



HEY JACK,  
GIMME A GIVE  
FIRST THING  
STARTED!

I DON'T  
THINK YA  
OUGHTA,  
SPECIBONE!  
IT WINT GOOD  
FOR U!

AND  
GAVE YR  
CHEAP  
ADVICE!



**3** SOME TIME LATER ...

WELL, THE TRANSMISSION  
BLEW UP IN THE CAUTION  
THIS IS A NEW  
TRACTOR.

CRUISE  
DESIGN,  
INC...

SEND IT  
BACK TO  
R AND D!



DO NOT BE DISCOURAGED,  
MATE... WE WILL NOW  
DESIGN X-28... IMPROVED  
DESIGN TO PERMIT  
PUSHING AND PULLING  
WITHOUT HARM TO THE  
TRANSMISSION.

GREAT,  
DOC!

WELL,  
GREAT!

YOUR  
MAN...  
MAYBE CAN  
STOP US!

**HYDRAFORCE**  
The Power of the  
Hydraulic



FINE... SHOW IT INTO THE POOL... AND ADDIN IT!



WAA, LOOK! VERY QUALTY!



HEY KUMBLEFLOCK, THIS IS THE DIFFERENCE THAT YOU ORDERED TO HAVE HIM WITH THE ORDERING BRACE BIT.

WAA, THEY SAID DON'T ORDER MA, THEY WROTELE THE ADD THEY WERE!



A PUNCHING BRACE THAT WILL NOT BE RUINED EVEN THO ORDERED WHEN ENGAGED BY GARY?

YOU CAN DO IT, GUY...

YES, OUR TONGUED BRACE.

FOR RENT

# Joe's Dope Sheet



**WE HAVE THE WORLD'S BEST EQUIPMENT ...** *Take care of it*

IF YOU WANT TO DISPLAY THIS CENTERPAGE ON YOUR BULLETIN BOARD, OPEN IT UP, LEAVE IT OUT AND PIN IT UP.

NO ONE'S AGAIN

WHEELBRIDGE ON THE  
WHEEL. THEY PUT THE UN-  
PROVED X-22 AT THE  
HIP GATE.

TAKE IT TO A COMPARE  
THE FORD RANGE WITH  
LEVELING... PUT MY  
CRICKLEBUSTER ON IT.

NOW  
RIGHT  
OUT,  
COLPER,  
IT'S  
FOOLISH!

...ABOUT THE  
WE GOT SOME  
OF THE NEW  
STAND OUT HERE  
...OLD JOBS DON'T  
STAND UP!



CRICKLEBUSTER... YOU'RE  
ENGAGING THE MASTER  
CLUTCH WITH THE  
THROTTLE WIRE OPEN!  
YOU'RE ABUSING MY  
TRANSMISSION!

SO,  
I  
AMN  
HERE...  
REMYNTRA  
DE SHON  
TARDI TANGI  
BUTTER!



500  
GARDI...  
CHECK...  
HOW... CRAY CRAY  
MAN, BELIEVERS!

WELL TO YE  
SA...  
THE  
SACRENT  
WAS HERE,  
BUT WE  
HAD THE  
CORN STUFF





DISAPPEAR. THIS IS THE ULTIMATE... I HAVE ELIMINATED THE OPERATOR!



SEE, THE ROBOT OPERATES THE VEHICLE, DOES EVERYTHING IN PERFECT TUNING... NEVER DOES ANYTHING WRONG. WEHAAA! WEHAAA! AREN'T THEY?



WEHAAA! WEHAAA!



SO, WHY AREN'T YOU FROM WEHAAA?

MAINTENANCE MEN HATED TO USE ROBOT ENERGY 8000 WATTS... BUT, I AMN'T LUCKY YET... I'M WORKING ON A GADGET THAT WILL KICK THE LIVES! (SPLATS) OETA THE OPERATOR WHEN HE GOOPS!

## QUESTION AND ANSWER DEPARTMENT



Dear Hal/Matt,

*Do you jerk or don't you?*

Some of the TM's top tracked vehicles should be steered smoothly instead of in a series of jerks. The latter kind the TM's for the M35 and M71 APC tracked vehicles say you should steer with several quick, short, pulls instead of one long pull.

*What's wrong?*

Pat M. C. M.

Dear Friend M. C. M.,

Nobody. There are two ways to steering, because there are two types of steering controls.

Vehicles with the CD-500 or CD-500 transmission (most tanks, M71's and the M71 APC) should be steered smoothly because that's the best deal when the steering unit is built into the transmission.



Use with a steering wheel while holding the TM's (M35 and M71) or M71 APC.

When the steering unit is in the untracked differential, as it is in the M35 and M71 APC's, your best bet is to steer in a series of short pulls—not jerks, pulls. This lets the steering lever handle most of the work when you push the steering lever half forward between pulls. You don't steer any kind of tracked vehicle by jerking it because that puts too much strain on the engine and power train. Use one of TM's 11-365 (M35) or 11-365 (M71).

NO JERKING, SEVERAL SHORT PULLS



Use with a steering wheel while holding the TM's (M35 and M71) or M71 APC.



Remember, you never smooth (and I mean smooth—smooth!) if your vehicle has a CD-500 or CD-500 transmission, regardless of what kind of steering device you are holding—a wheel, one steering lever, a single steering lever, or a handle.



## FLASH ON FLASHERS



Dear Wolf-Dieter,

Our literature has 64 models that carry cranks, and some of our drivers have mobility left arms. That makes a turn to traffic a risky deal. And some states say it's illegal to be without turn signal lights.

How can we get these directional signals for our cranks?

Er H. B. B.

Dear Lieutenant H. B. B.,

You'll find the answer in 68 5-205 (28 Mar 68), Sec. It has details on how to get and install directional signals on military transport vehicles.

But, first, you need approval from the major commands for your area—or from the tech service that has operational control of the vehicles.

The vehicles have to be lit up and on public highways. And you get the signals by (local) purchase like AR 711-85 says. They're not needed for lanes. So, slip an eye into the 68 list of all. Once they're installed, you'll need a quick disconnect for use when loading.

*Flashy Flash*

## M84 SNORKELS

Dear Wolf-Dieter,

I need snorkels for my M84 M2 A1 motor, but the supply people are giving me a hard time because I can't find the stock number. What can I do?

Major D. M. B.



Dear Sergeant D. M. B.,

Take that simple, Snags. There isn't work number because the snorkels are supposed to last the life of the vehicle.

However, you can talk supply for Inlets and Exhaust Gills Operating Instructions, Ordnance Part Number 8710000 and 8710007, one of each.

Now what? Well, you can call your supply people and ask them for the part number 8710000 and 8710007.

If they can't, you will have to talk your support unit to fabricate them for you. There are more in the supply system.

*Flashy Flash*

## NEW CLAMPS

Dear Half-Heart:

Now you see 'em and now you don't . . . I mean the Clamp. Longs J. just no more! Another vital life safety and directly related run through. The rubber falls apart in no time.

These are the clamps listed on page 117 of T&E 9-2388-124-20P (Aug 68) under ESN 11461200-011.

Can we get any stronger clamps?

Yes M. M.

Dear Sergeant M. M.,

You . . . the clamps you mention are now being replaced, back in production and in supply, by improved clamps, long, ESN 11461200-002. They're listed in T&E 9-2388-124-20P (Nov 68) Page 121, Item 4.

*Half-Heart*

## DON'T DYE YET!

Dear Half-Heart:

Is there anything we can get to re-dye our fatigues uniforms back to their original olive green or olive drab? The clothes turn white after washing.

EP4 F. R. McE

Dear Specialist F. R. McE,

No soap, in essence, Dyeing's a dead-end-war words the effect.

Here's why: When a uniform gets worn, the fabric changes so that even which have faded a lot will dye differently. Even more which have not faded so much.

There's a lot of technical reasons behind this, but let's just say that even if there was a dye that'd do the trick, it'd have to be applied several times to keep the uniform uniformly colored.

And there's one other guess dye that can cause the gaff of a lot of bleaching.

No, old they do come up with a dye that'd bring the faded areas up to the same color as the unfaded areas—and keep 'em that way—your best bet's to

pass up re-dyeing uniforms.

However, there're a couple good ways to keep your uniforms from fading too fast in the first place.

**DON'T**

1. Don't use bleach after washing it.

**DON'T**

2. Don't let the clothes get too hot.

A look-over in ESN 21-15 (Aug 61) on Care and Use of Individual Clothing and Equipment will show you a lot on this.

Incidentally, this same rule goes for all other personal equipment too—stuff like your duffel bag, combat pack, mess-kit, tent and cot, covers for your mess-kit, mess-eating tool, etc. Don't dye 'em!

*Half-Heart*

## NO ESCAPE HERE



Dear *Mail-Mail*,

We read what you had on the gas valve assembly for the M16 in FI 103, page 7 and had the drawings in our unit checked. We found the leaf with the tapered section all over the place. It was on the top, in between and on the bottom. So, normally we changed it the way FI says.

But we are wondering why the tapered leaf isn't set up so it's at the bottom with the tapered part facing the hole. It seems to us the gas can't escape as well when the flat side of one of the leaves hits the hole.



Dear Sergeant D. B. B.,

You're so right. It can't.

But, if you had the tapered part facing the hole, you'd foul up the whole idea of the gas assembly.

The dust behind the assembly is to allow gas, under pressure, to enter the chamber from the gas line through the rear gas port.



But remember one thing . . . the gas assembly is really a one-way street.

After the leaves open under pressure to let gas from the rear port into the chamber, they snap shut and trap the gas.



SFC D. B. B.

When the propellant leaves the gas tube, the tube pressure drops to zero real fast. The gas trapped in the chamber under pressure then flows back into the tube thru the forward venturi holes; this creates a suction from the front toward the mouth, clearing out the gas.



If the leaves in your weapon happen to get assembled wrong, they won't work right as one-way valves. And your chamber won't evacuate like it's supposed to.

*Happy Rifleman*

## INSIDE OR OUTSIDE?

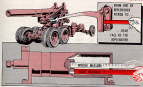


Dear Hag-Mag,

An argument has developed among our section chiefs as to how to measure the amount of oil in the sump of a piston assembly of our 4-cyl. engines.

TM 9-1004 says you measure from "the end of the sump piston in the rear face of the sump" (that's the piston that's connected to the crank). The question is, do you measure from inside the sump or outside the sump on the end of the sump piston rod?

L. J. R.



Dear Lieutenant J. R.,

The "mistake" in this argument has already been done.

Because you measure the amount of oil from the end of the sump piston—not from the bottom of the sump—it is in the end of the piston.

Your best bet—when you're using the correct metal ruler that comes with the oil pump—is to use the ruler

on the lower surface of the piston guide assembly and push it in until it hits the end of the piston.

This way the ruler can't tip up from the sump side and fool you up.

Of course, like it says in TM 9-1004, dated Jan 53, the allowable range in the sump is from 1 1/4 to 4 inches. For the amount you're looking for it's 3 1/4 inches. Right?

## THE RIGHT EXTINGUISHER

Dear Hal-Max,

I don't question what the extinguisher you on our Hazard Job #103 handles well?



IPC R. B. M.

Dear Sergeant R. B. M.,

The extinguisher you want for your M49C (also the M49A1) comes from the Engineers under PON 410300-4401. Its manufacturer code: Extinguisher, Dry-Carbon Dioxide standard

charged, fixed, non-detachable cylinder, KC type, 3A or 1.44 or 40CFR, silver-dust-cylinder, MIL-SPEC-11137, 1-inch fixed valve w/whisper release, 10 pound, Reg FD, 10-Aug 75.

*Hal-Max*

## M49C GETS THIS HOSE

Dear Hal-Max,

If you get a discharge-type M49C gas tanker that needs a 35-ft delivery hose. The only hose we had in TM 9-2530-209-209 (8 Apr 59) is PON 2540-812-7777, a gravity-type hose that won't do the job.

How can we get a replacement for the 35-ft hose?

IPC P. L. C.

Dear Sergeant P. L. C.,

The hose you need is listed in Change 5 to TM 9-2530-209-209. It's hose, discharge, 1 1/2-in by 35 feet long, PON 2540-812-8172.

change delivery after being modified.

These gravity hoses were not authorized for the M49C's coming from the factory, but they're available for M49C's that need 'em. You'll get only one assembly per vehicle, though, 'stead of two as in the past.

On future production, M49C's will get a gravity dispensing hose, without



8172 8172 PON 2540-812-8172

8172 8172 PON 2540-812-8172



This Dispenser, gravity hose type, PON 2540-812-7777, also shows up in page 139 of TM 9-2530-209-209 and in Change 5 (11 Dec 59) to TM 9-4000 for the M49 gas tanker and for M49C gas tankers that will have a hoseless dis-

charger, or OEM equipment. It'll be only for pickup (insert) and gravity discharge hose storage racks.

*Hal-Max*



WE TALK TALK, WORDS AND SONG ...

**A LITTLE AGE HELPS**

It happens every conceivable time!

Just about the time you think you've got a good, general everyday rate of chance to go by, along comes an exception to shake it all up.

Take those electron tubes used in your communication equipment, for example. You'd think the longer they were in use the more chance they'd have of burning out or going bad. So you sure figure that after they've given you a certain number of hours of good and helpful service, they ought to be replaced and retired before they suddenly get tired of the whole business and bug out in a critical moment.

This makes sense. It seems only reasonable to assume that everything's gonna go into time and the more hours it has run in the more likely it is to go. This is the theory behind a lot of maintenance practices—especially with equipment where safety is a factor, like aircraft.

**BUT WHEN IT COMES TO MOST ELECTRON TUBES, THIS HANDY LITTLE RULE GOES OUT THE WINDOW. BECAUSE THE LONGER AN ELECTRON TUBE HAS WORKED WELL, THE LONGER IT'S LIKELY TO WORK WELL.**



Upon a point, of course. This doesn't mean your good tube keeps on getting stronger and may go on forever. It's gonna go sometime. It's just that it doesn't necessarily become less dependable with age.

If a tube is working all right today, it has as much chance of working all right tomorrow—and a month from now—as a new tube. Maybe even more of a chance.



This happy little characteristic of an efficient tube is not so surprising when you look into it a little more. The most critical period for a tube is during the first few operating hours. It then has a chance to "soak up" or "ship out" . . . and if it passes its tests, you get a helpful future ahead. Or so says a glowing ad.

In the decades ago that a tube that's worn its spurs during those first hours will continue to put out like the usual croaker it is.



Which is more than you can say for a new tube. A spanking new tube is more like a new girl friend. She may be prettier than the old one but her performance is a mighty uncertain matter. In many circles a tube must make up with other circuit components—and you know the old tube was pretty well married up.



Now this doesn't mean you should continue good tubes in use if your main rule was to replace 'em after a certain number of hours . . . or at a periodic service. There may be other good reasons for buying your vacuum tubes.



But in those cases where there's no specified time life for the tubes, think twice before you replace a probably good tube just because it's over a fixed service. Because tubes, like some other things, merely get older—they don't necessarily wear out. And there's every reason to believe the more experience they've had the better and longer they'll put out for you.

## SHORT ONE FOR SHORTS



Warning: All items  
purchased that's sold just  
before that's, that I do

This significant short is your maintenance ME-7111, used with your maintenance AN-ERM-101, could be caused by the billions playing on the switches every plug-off and shorting the common. Check this stuff off to see as it shows up and sure yourself some trouble. A little light air pressure (and that means very light) may get your shorts more back into operation. If it doesn't, have your support check it, and sure watch it sure does.





## ~~OLD GOLD~~

Your H-33/PT handset suddenly feels just something like a collector's item. Which means that's its class, class supply—with little chance of any new ones coming off the production line for many a month.

Putting it in two words: an unpleasant!

So you want to pull PM in double duty whenever you handle one of these H-33's. Little things like . . .

Hold the transmitter to lips. Things like loosening and tightening the transmitter cap . . .



Hook the H-33-12122 cord when there's nothing to say.



Try it down easy-like. Your guests can't stand much jostling, dropping, banging, etc., without showing the strain.



Hooking up the transmitter bracket should work a good deal better . . .



And check the cable clamp and nut for tightness. One of these rattling on the line can lead to a signal error.



## ~~NEW-TYPE~~ ~~TUBE TALK~~

Don't push another button on your TV-TVU-tube electronic tube set yet unless you've got the latest one down in hand. And that's in TR 11-5621-214-1276, dated Jan 62. It calls for new tube-set settings on the new-type TV2 tubes, among other things.

## ~~OOPSI WRONG~~ ~~CONNECTOR~~

In the first section one cable of your MC-1317DC now has a female connector where it ought to have a male. If necessary, just replace the female with a 21 connector made connector, P/N 1011-809-4731-0000. You won't need a whole new cable.

# A COUPLE ON YOUR T-368 /URT



Get your copy of TM 11-889-10 (May 58) handy! It's your operator's manual for the T-368 radio transmitter set.

Well, turn to paragraph 20 on page 21—what it says AM Operation. It says there to throw the PLATE RELAY switch to OFF (down) when performing AM operation.



She works OK this way but there's one little thing: Plate relay RA is supported (suspended) and demagnetized, which may cause the contacts to burn or pit in quick order.

So, to head off this trouble, you have

the PLATE RELAY switch in the ON or up position when you're operating.

But . . . before you sign off on your transmitter, make one more little note. When the ambient temperature gets higher than about 70 degrees F, you might get some ruckus in the RF deck.

Keep an eye on the wiring insulation behind the oscillator-multiplier assemblies. When it gets real warm in there it can strike the insulation.



If trouble develops, have your repairman replace the insulation with flexible sheathing, P/N 1579-226-2162.

## ~~BETTER BE SAFE...~~

Dear Half-Mail:

What's the deal on those MC-104 hard tube modulators we use in the track system of our F100 system? Some of us say they're radioactive and therefore need special handling, especially when it comes time to dispose of 'em.

Others say the tube is harmless, radioactively glowing, and needs no special handling. What's right, Serge?

SFC P. M.

Dear Sergeant J. H.:

I think I can put an answer to that on the scope right away.

Electronic Tube, type 6444, PSN 2600-301-8150, is classified radioactive. It's listed in TB ORG 608, Change 3, dated 26 May 61. This TB points the way on what tubes are radioactive and what precautions should be followed in the handling, disposal and storage of them. It also covers the fire and treatment if one of these tubes falls and breaks in envelope.

You'll also find this tube listed in the revised TB ORG 231, dated 3 Apr 61.

When it comes to loosening caps on the fastholders of your single line-power supply AM-1007U, one good rule does not deserve another.

If you give those caps too much of the old rule, they'll crack the fastholders every time. So may does it when you know 'em up.

All you want is a good connection... and you'll never get it by cracking the nutscape.



## FOR TIPSY TRAILERS



It's the  
simple solution  
to many of your  
and your trailer's  
problems.

You say your ANTI-TIP trailer doesn't have a leg to stand on when it's mounted in that 110-ton trailer? That's how your trailer looks to your support. The application of MWD 8-2000-213-5073 (11 Apr 52). It provides a rear support leg for the M104, M104A1, M104A2 and M104A3 trailers.



The way you lay 'em down makes all the difference.

And, it helps us have a salvage man, too handy.

That's the way for keeping your common equipment from getting heated up any time you lay it on the deck of a truck for the trip between your unit area and the shop.

Padding the equipment on an old mattress will keep it from being all stretched and stuck up every time you hit a bump.





SCREWDRIVER, FLAT TIP  
 25-30mm, 25mm, 47  
 25mm, 47mm



FOR 100-100-100

100

SCREWDRIVER, CROSS TIP  
 25-30mm, 25mm, 47mm, 47mm  
 25mm, 47mm, 47mm, 47mm



FOR 100-100-100

100

SCREWDRIVER, FLAT TIP  
 25-30mm, 25mm, 47mm, 47mm  
 25mm, 47mm, 47mm, 47mm



FOR 100-100-100

100

SCREWDRIVER, FLAT TIP  
 25-30mm, 25mm, 47mm, 47mm  
 25mm, 47mm, 47mm, 47mm



FOR 100-100-100

100

SCREWDRIVER, CROSS TIP  
 25-30mm, 25mm, 47mm, 47mm  
 25mm, 47mm, 47mm, 47mm



FOR 100-100-100

100

SCREWDRIVER, CROSS TIP  
 25-30mm, 25mm, 47mm, 47mm  
 25mm, 47mm, 47mm, 47mm



FOR 100-100-100

100

SCREWDRIVER, FLAT TIP  
 25-30mm, 25mm, 47mm, 47mm  
 25mm, 47mm, 47mm, 47mm



FOR 100-100-100

100

WELDING IRON, CIRC  
 25-30mm, 25mm, 47mm, 47mm  
 25mm, 47mm, 47mm, 47mm



FOR 100-100-100

100

WELDING IRON, CIRC  
 25-30mm, 25mm, 47mm, 47mm  
 25mm, 47mm, 47mm, 47mm



FOR 100-100-100

100



WELDING IRON, CIRC  
 25-30mm, 25mm, 47mm, 47mm  
 25mm, 47mm, 47mm, 47mm



FOR 100-100-100

100

FOR 100-100-100



FOR 100-100-100  
 25-30mm, 25mm, 47mm, 47mm  
 25mm, 47mm, 47mm, 47mm

FOR 100-100-100  
 CARTRIDGE, WELDING IRON, CIRC  
 25-30mm, 25mm, 47mm, 47mm  
 25mm, 47mm, 47mm, 47mm



FOR 100-100-100  
 25-30mm, 25mm, 47mm, 47mm  
 25mm, 47mm, 47mm, 47mm



**WRENCHES AND OTHER TOOLS**

**FIGURE 21-1**

211

WRENCH OPERATING RANGE: 1/2" (12.7 mm) length of hole

FIG.	OPERATING RANGE	LENGTH (INCH)	OPERATING RANGE
120000-001	1/2" - 3/4"	3	1/2" - 3/4"
120000-002	1/2" - 1"	3	1/2" - 1"
120000-003	1/2" - 1"	3 1/2	1/2" - 1"
120000-004	1/2" - 1"	3 1/2	1/2" - 1"

WRENCH OPERATING RANGE: 3/4" (19.0 mm) length of hole

FIG.	OPERATING RANGE	LENGTH (INCH)	OPERATING RANGE
120000-005	3/4" - 1 1/4"	4	3/4" - 1 1/4"

WRENCH OPERATING RANGE: 1 1/4" (31.8 mm) length of hole

FIG.	OPERATING RANGE	LENGTH (INCH)	OPERATING RANGE
120000-006	1 1/4" - 2"	5	1 1/4" - 2"

WRENCH OPERATING RANGE: 2" (50.8 mm) length of hole

FIG.	OPERATING RANGE	FIG.	OPERATING RANGE
120000-007	1/2"	120000-017	1/2"
120000-008	1/2"	120000-018	1/2"
120000-009	1/2"	120000-019	1/2"
120000-010	1/2"	120000-020	1/2"

WRENCH OPERATING RANGE: 1 1/2" (38.1 mm) length of hole

FIG.	OPERATING RANGE	LENGTH (INCH)	OPERATING RANGE
120000-011	1 1/2" - 2 1/4"	6	1 1/2" - 2 1/4"

WRENCH OPERATING RANGE: 2" (50.8 mm) length of hole

FIG.	OPERATING RANGE	LENGTH (INCH)	OPERATING RANGE
120000-012	2" - 3"	7	2" - 3"

WRENCH OPERATING RANGE: 1/2" (12.7 mm) length of hole



WRENCH OPERATING RANGE: 3/4" (19.0 mm) length of hole



WRENCH OPERATING RANGE: 1 1/4" (31.8 mm) length of hole



**FIGURE 21-2**

212

WRENCH OPERATING RANGE: 1/2" (12.7 mm) length of hole

FIG.	OPERATING RANGE	LENGTH (INCH)	OPERATING RANGE
120000-013	1/2" - 3/4"	3	1/2" - 3/4"

WRENCH OPERATING RANGE: 3/4" (19.0 mm) length of hole

FIG.	OPERATING RANGE	LENGTH (INCH)	OPERATING RANGE
120000-014	3/4" - 1 1/4"	4	3/4" - 1 1/4"

WRENCH OPERATING RANGE: 1 1/4" (31.8 mm) length of hole

FIG.	OPERATING RANGE	LENGTH (INCH)	OPERATING RANGE
120000-015	1 1/4" - 2"	5	1 1/4" - 2"
120000-016	1 1/4" - 2"	5	1 1/4" - 2"
120000-021	1 1/4" - 2"	5	1 1/4" - 2"
120000-022	1 1/4" - 2"	5	1 1/4" - 2"





The same goes for other tools that may have been changed anywhere on your bird—you want to give 'em a chance to work it.

Sometimes a snare can even be just a little too tight to his head with tabs by giving 'er some extra—just to be on the safe side.

But over-tubing can be almost as bad as under-tubing. For example you could be too tight to the tail coxae yolk's flipping hinge bearings by filling 'em up



to the top and not leaving an air space. So you'd get a snare drip—drip—drip! TM 1-18-11D-1, page 1-18, figure 1-11 has the snare with a special service note (S, A) for checking the oil level.

### NO FAT

Your maintenance manual also has an inspection standard for checking the end play between the spherical bearing outer race and the upper roller nut bore. It's on page 3-65, paragraph 2-130b of your TM 1-18-11D-1.

When you check the end play it will feel real loose, so your natural inspection is that it must be more than the 0.045 inch max allowed. But the only sure way to check the end play is to put a dial indicator up there and check it.

In all probability you'll find that the play is within the limits and your bird won't have to go to your support for correction.



There's other ways you can keep your "aircraft availability" curve in a non-high trim too.

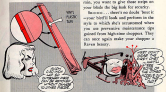
### A SMALL TRIM

For example right now you could be spending a lot of time cleaning the steel leading edge of the main rotor blade, right?

If so, run your papers over a copy of TR 1-11-200-1050 (50 Cts 00) "Application of Vinyl Plastic Tape to Metal-Metal Bore-Bush-Landing-Rings." It's just made to cut down on erosion, corrosion . . . and adding weight.

When you get the tape on, remove it carefully and you'll see carefully and you won't have to rebalance the Main, either. One thing though—this tape is not recommended for nitro engine protection. And if your bird flies through nitro, you want to give those strips on your intake the big look for society.

Reason . . . there's no doubt 'bout it—your bird'll look real pertentious in the style in which she's accustomed when you use premium maintenance oils gained from nitrogen shippers. They can once again make your shippers a Raven honey.



**KEEP FLEXIBLE LINKAGE FLEXIBLE**

The rattle rattle in your bore (8-11H) smooth linkage won't stand for a heavy grease or oil lubricant in cold weather. This flexible linkage can freeze up on you as soon as any moisture accumulates on the lubricant. . . . If not on the run-up, then at altitude. So when before freezing temps are expected, you switch to MEL-G-7411A. . . . See it says on page 3-10 (Lube-Guide) of TR 11-1530-200-20 (50p 00).



## ALL HOLDS BARRID

Dear Editor,

The cutaway air brake on the Snow (18-11) may look like an ideal hand hold for steering the sled. But it's not as strong as it looks!

The fact is that some types, called the "periscope" air brake, have produced cracks in the mount braces. That's what happened to our sled, so we did the only rational thing to prevent the braces from going completely.... we stopped riding the sleds.

But there's no good reason for a stopper to look like a woodpecker was inside! So when you have plenty of minutes talking to us use hand holds!

A friendly reminder to our ground crew that all holds on the "periscope" air brake has done the trick.... no new cracks since!



**SAFETY BARRIERS**

By Sgt Jack Crowley  
New Jersey ARMC

*Ed Note*—This periscope was a really convenient, but it looks like you've got the logical answer. I've just gone back adding up some things!

## BEST FOOT FORWARD—SAFELY

STAY THE WAY YOU ARE



When you step into a sled you always put your feet first forward. But when you put it could lead to an injury—if you miss a step. There's only so much room on most boarding steps!

Take the step on the Skisnow (14-11). You've got room for one pair of boogies and that's about all. So a little reminder could be an utile save.

Why not watch the words **WATCH YOUR STEP** on the sled (14-11) above the step on your sled? It'll help you put your feet first forward—safely.

You'll want to write the word on this in TB 4907.



# LITTLE LUBER



Dear Wally,

Anybody who's ever ground the push-pull rod and coil bearings in a Snow CR-111, or Starvac CR-211, knows you have to make like a Hoodlum in some places. You need some maintenance QFT's lubricant!

So we dressed up this handy little lubricant to use on those hard-to-get-to

bearings.

The tool's made of cold rolled steel and you can get your supplier to make it, or have it made by a commercial outfit, for about 45 cents apiece. We had one made for each model, in their dimensions:



To use the tool you just insert the screw through the bearing center. Then you thread the screw into the reciprocating coil the tool is snug with the bearing, and shove the piston to 'em.



McGee James H. Moore  
 Milton Field  
 Staten Island  
 New York

(If Snow-Down's like a good tool in here when you work in close quarters.)





## GIVE 'EM A BOOST



Dear Editor,

Your auxiliary generator in power units does a fine job helping us run all types of equipment—especially when the frost is on the pumpkins and the old mill gear frames wear.

Giving your Army aircraft the boost they need to start their engines spinning is a good example.

To give aircraft starting systems this extra kick, they need to use problem-

**1** First, use both ends of spare storage battery with the integrated wye base and collapse in the wall case for normal starting and operating.

**How to do it:**



For use on either spare battery in your Organizational Test Set, Section, Set B Supplemental, two in Set B, and four in Set C (the generator only).

**CONTROL BY**  
**STARTED.**  
**DO!**



**GENERATOR**  
**START** (CABLE)  
**STOP** (CABLE)

**2** Now, hook up the battery to parallel with the generator. You do this by connecting the positive lead from the generator to the positive-battery terminal, and the negative-generator lead to the negative-battery terminal.

Be sure use the charging circuit breaker switch on the generator in the OFF position. The 3-position switch should always be placed in the OFF position any time you start the generator and when you are done the aircraft.



Now, get your starting circuit wires and connect to terminals terminal of the spare battery to the aircraft's start receptacle.



Now, now you've got **POWER**. **USE** as SPARE BATTERY as AIRCRAFT.

With this hook-up, you keep the generator from being overworked and will allow the system to bypass the batteries before the aircraft while taking a ground reading of all the instruments and meters in the plane. Just double-check that the aircraft's master battery switch is off before you start.

One important thing to remember:

**DON'T ATTEMPT TO START THE AIRCRAFT WITH THE GENERATOR SWITCHES SET TO IN THE AIRCRAFT.**

The usual output of the generator is one amp to do the job all by itself. Loading the generator to do the work on its own can result in serious damage — maybe disabling it permanently.

Now, keep this in mind. Before starting, check the spare battery to be sure it's fully charged. Take a fresh one from the rack if you have one . . . or open the generator with the charging circuit breaker switch in the ON position to bring the battery up to full charge.

Then, when you shut down, put the breaker switch in the OFF position. This will prevent the battery connected to the generator from discharging.

Without help from the generator, the battery will crank the aircraft engine for a limited time only. However, using the generator as a battery to the electrical system at a maximum output of 24-28 volts will maintain a constant voltage throughout the electrical system and prevent a voltage drop in the complex system.

Most of these gadgets are mounted on trailers and you can use 'em on your heavy construction equipment and wheel and track vehicles that have the 24-volt system. This will help to prevent injury to operators and maintenance personnel, and eliminate damage to equipment caused by hooking chains, pulling, pushing, bending, logging, and shoring.

James F. Barrett  
R. Ransing, Co.



## CHAIN SAW SOLO



Dear Editor,

For power-type work around a construction site, the least possible tool weight, 100 1/4-1180-246, also works with the 1-KW generator it read and stick with in this work of the woods.

There's just one little catch, though, which we learned from biting off too big a chew.

The 1-KW generator can't pull both chain saws at once.

Our own guys show off the load on the generator that this one-long approach can stand, as if you want to put two sawyers on a job they have to take some with the trigger.

Thought you'd want to put this word around, as when what can save themselves some trouble.

Clay S. Bryant

(Ed Note—Sometimes even touch a ground. Right?)

P. Leonard Wood, Ma.

## ROCKY BOTTOM



Dear Editor,

On some of your Mike Lanchester designs, the main cylinder supporting rollers and the channel rolls have twisted lower enough to let a minute loaded platform rock on the rim—especially during console operation.

To prevent this dangerous condition from developing, each factory should have got its support people to check the condition of the cylinder mounting. Then a factory mechanic should check

the tightness of the nuts on both the roller and the channel rolls at least once a month, as a scheduled maintenance service.

This makes for on-on-the-level operation.

Gene Handwerker

Manager

Tappan, N. Y.

(Ed Note—Good idea. Console operation is no time for such a roll.)

## Coranic Rodd's BRIEFS

Any time you're out there, you're out there. You're out there. You're out there. You're out there. You're out there.

### *MOO tank filters*

Are the air cleaner filter baskets on your MOO tank getting clogged up? Make sure condensed steam from the air does it. It's easy to stop, though. All you gotta do is get the rust off the baskets with solvent, vapor degreaser, gel, sand blasting, or just plain elbow grease. Once you have the baskets clean and bright, one can of Spray Foamal, F24 8030-100-0407, will keep them that way.

### *Stay cool*

If the sweat on your skin as MIA officer cabinets comes back from support looking like a few hundred sport models spoiled—don't get stuck. Chances are you've got one of the new khaki wood chairs with different blends of coloring. They're soft and cool and have a lot of holes—so you won't get clogged for your sporty look by some impurities.

### *Seal the seams*

You've got yourself troubles in spaces where you need some water works to help from the outside of your Mark equipment—like the inside of a ship—through the seams on to the different electrical boards inside. You can make sure this doesn't happen to you, too, by testing some sealing compound along the seams. The compound, F24 8030-242-2384, is on page 3 of TM 9-453-021-30F (2-81).

### *Lightweight shelter steps*

TM 9-453-110 Apr 82 is hot off the press and waiting to help you and some of your shelter mates. It gives you maintenance and repair steps on your 2-1415 and 2-1416 shelters.

## *"Operation ARM" aims for combat-ready gear*

If you're the guy who's been waiting more people to take an interest in and do something about keeping equipment combat-ready, then jump up, click your heels and shout the happy word—

"Operation ARM" (for Army Ready Material) has been fired off from Pentagon headquarters. Studies and actions are rolling; you'll be seeing and hearing lots about "Operation ARM" during the coming few weeks and months. Get the first scoop by taking a gander at AR 17-14 12 June 82.

"Operation ARM" always makes sure Army equipment is kept as combat-ready as the soldier.

*Would You Stake Your Life on  
the Condition of Your Equipment?*

IF

YOUR EQUIPMENT  
MAINTENANCE  
GIVES YOU A  
PAIN...

FACE  
BOUNTING  
UP

HEETS  
ON  
EDGE

TENSION  
BUILDS



TAKE A LIBERAL DOSE OF

TM

NEED ONE? ORDER IT  
ON DA FORM 17 FROM  
YOUR PUBLICATIONS  
SECTION.