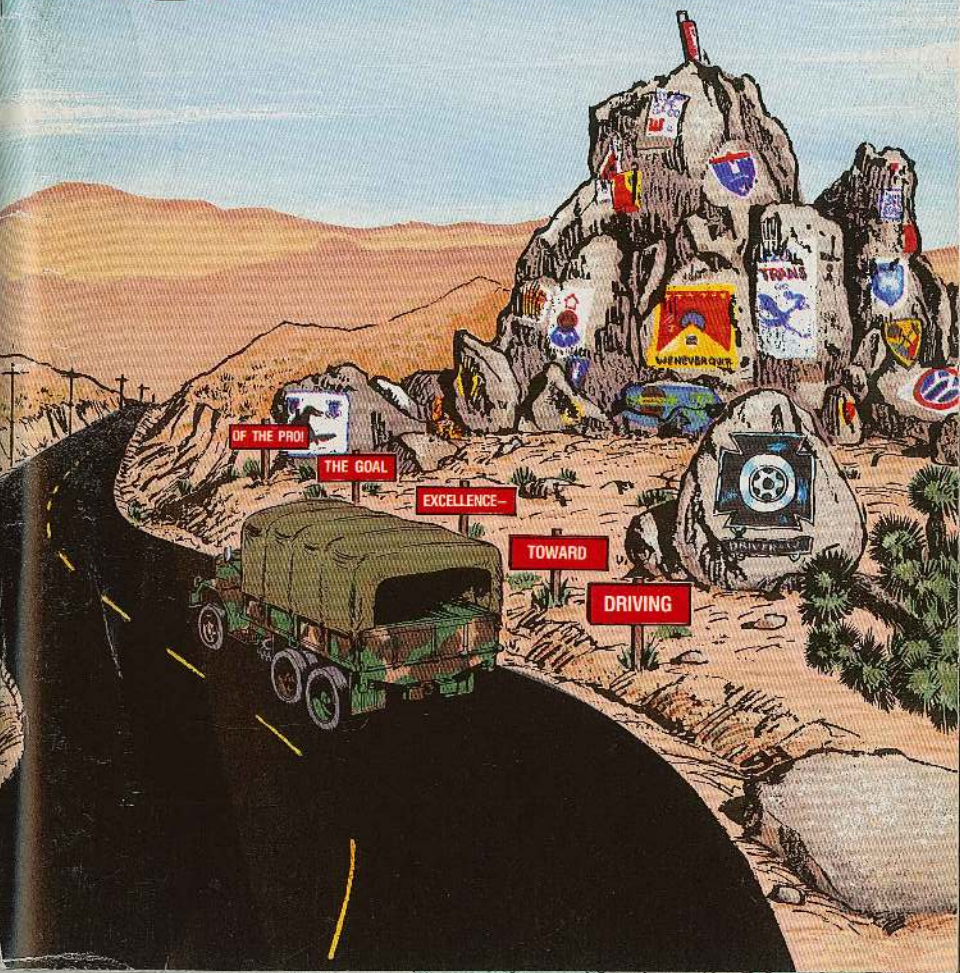


Issue 376

PS

★
March
1984

THE PREVENTIVE MAINTENANCE MONTHLY



PS THE PREVENTIVE MAINTENANCE MONTHLY

Published by the Department of the Army for the information of all soldiers assigned to combat and combat support units, and all soldiers with organizational maintenance and supply duties. Within limits of availability, older issues may be obtained direct from Editor, PS Magazine, c/o US Army Materiel Readiness Support Activity, Lexington, KY 40511.

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MSG Half-Mast
PS Magazine
Lexington, KY
40511

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New TM's for...

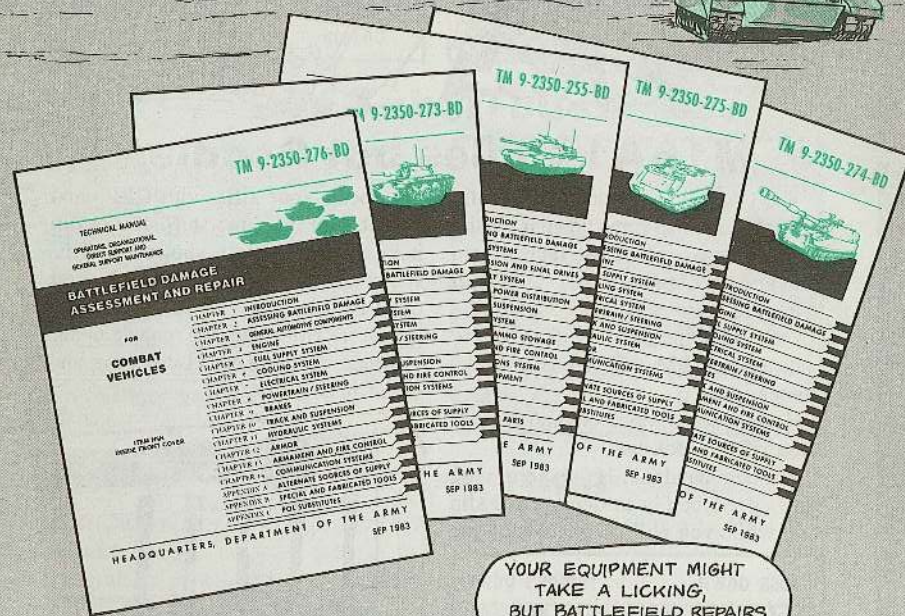
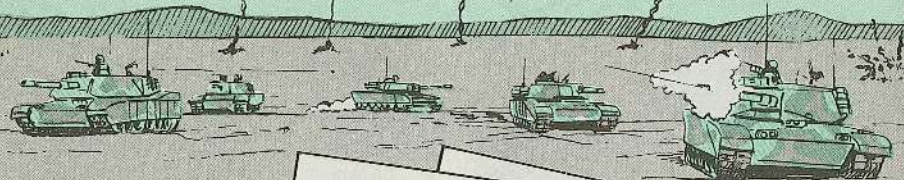
Battle Damage Repair

As long as there have been battles, there has been battlefield damage. Those who have repaired that damage quickly on the spot, through ingenuity and common sense, have often returned to the battle and won.

Knowing that, the Army has come up with the Battle Damage Repair Program. Using information gathered from combat experience and current know-how, the Army has begun to provide TM's for repairing weapons systems in combat so that the mission can be completed.



TM 9-2350-276-BD—General Combat Vehicles
TM 9-2350-273-BD—M48/M60 Series Tanks
TM 9-2350-255-BD—M1 Tank
TM 9-2350-274-BD—M109 Series Howitzers
TM 9-2350-275-BD—M113 Family Carriers



Others will follow on aircraft, the Bradley Fighting Vehicles and the Chaparral. They'll contain guideline repair procedures and damage assessment criteria.

These TM's will be used only for battlefield repairs when authorized by your commander. As soon as the mission is over, regular repair procedures will be used to get your systems back to normal condition.

YOUR EQUIPMENT MIGHT TAKE A LICKING, BUT BATTLEFIELD REPAIRS CAN KEEP IT TICKING!





M16A1 Oldies but Goodies

The odds 'n' ends on M16A1 rifle PM are much like some popular music.

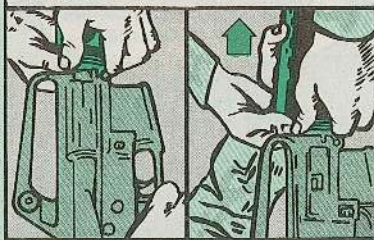
You take a few words, repeat them over and over, and you've got a record that can't miss.

Only with the M16A1, the odds 'n' ends of bad PM add up to bullseye misses.

Here're some ways, old and new, to keep rifles shooting.

- When handguards on your rifle stick, get a buddy to depress the slip ring while you pull up and out on the

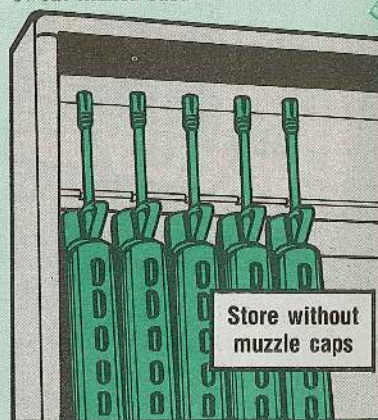
Press down. . . . remove guard



handguard. Never pry off the handguard. It'll crack or break.

- Clean your rifle with CLP, and lube it with the same stuff. Never dip it in water or take a shower with it. Water rusts, and it'll rust parts you can't even see.

- Store rifles with the muzzle open. Muzzle caps cause barrels to sweat, and sweat makes rust.



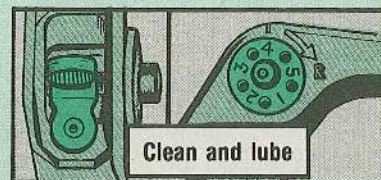
Store without muzzle caps

- Store rifles with the ejection port cover (EPC) closed. That prevents dust and dirt from getting inside.



Keep cover closed

- Clean and lube the front sight post and rear sight after use. That prevents binding when you try to adjust the sights.



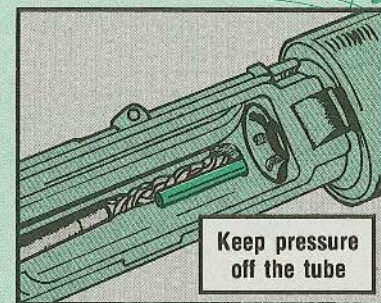
Clean and lube

Gas Tube Touch

Go easy when you clean the gas tube on the receiver end of your rifle. Work the bore brush around the tube as straight as possible.

When you clean the exposed portion, keep your weight off the tube.

If you bend the tube in any direction, it won't mate with the bolt carrier key. That means the rifle will malfunction, or you may have to get the gas tube replaced.



Keep pressure off the tube

Shine Solution

Bright, shiny spots on your M16A1 rifle don't mean a trip to DSU for refinishing.

All those spots need a touch-up of solid film lubricant.

This is covered in Item 3, "Upper Receiver Group", Table 2-6 of TM 9-1005-249-20. So touch 'em up, don't ship 'em out.

Covers

If dust, sand or rain in your area make problems for M16A1 rifles, you armorers can help riflemen keep them clean and dry with cover, NSN 1005-00-809-2190. The NSN gets a box of 100. Troops can fire with the cover in place, if need be. Get your CO's OK before you order them.



Gas Piston Listenin'

Dear Half-Mast,
Exactly when should the gas piston of the M60 machine gun be removed and cleaned? TM 9-1005-224-24 spells it out for storage only. SGT P.R.C.

WHY IS THIS OL' 60 SPUTTERIN' SO BADLY?

BECAUSE LAST TIME I CLEANED IT, I DIDN'T LISTEN TO THE PISTON!



Dear Sergeant P.R.C.

The basic rule on cleaning the gas piston is: if it won't slide, clean it! It should slide freely in the gas cylinder and give a clicking sound as you tilt the weapon. A dirty piston can cause sluggish operation, failure to fire or feed, short recoil or a runaway gun. Clean off crud and carbon residue with CLP, and wipe the piston thoroughly dry before you reinstall it and re-use the weapon. The **only** time the piston gets a light coat of CLP is when the weapon is to be stored in the arms room. You ream the vent hole in the gas cylinder extension after each firing.



Remove and clean

Half-Mast

Barrel Ring

When you spot a ring near the breech end of your M60 machine gun barrel, relax a little. The barrel is safe to fire. Actually, it's a groove where the barrel tube and a sleeve meet. The sleeve makes a groove .020- to .040-in wide... about 6 inches from the breech end.

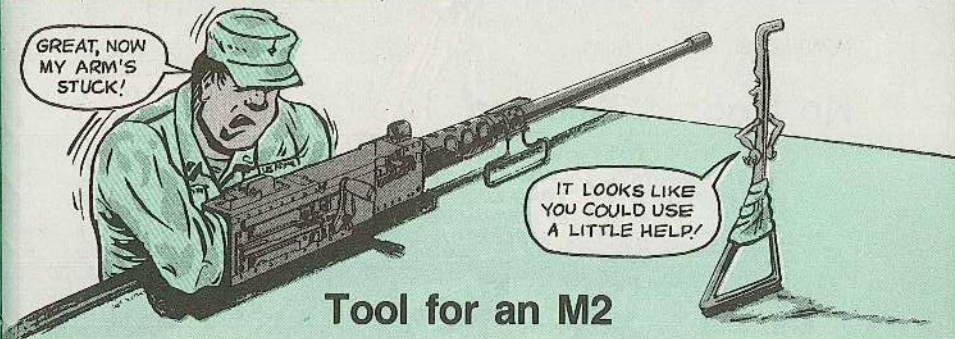


Groove in barrel-fire away

Bonus Checks

Armors who turn in their M60 machine guns for repair or periodic checks will get some bonus readiness checks from Direct Support. The word for DS is in Armament Command letter DRSMC-MA (26 Sep 83), available through Logistic Assistance Offices (LAO) or command G4's.

GREAT, NOW MY ARM'S STUCK!



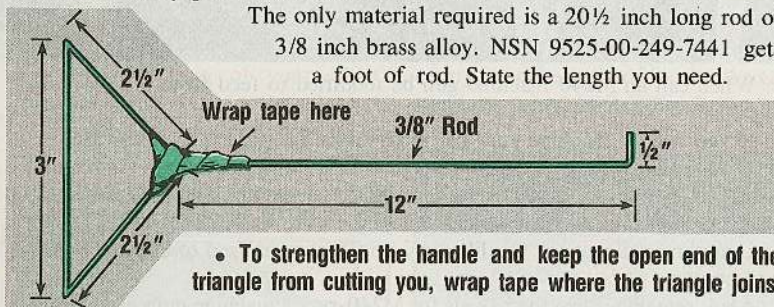
IT LOOKS LIKE YOU COULD USE A LITTLE HELP!

Tool for an M2

Armors can beat the cocking lever blues of their M2 machine guns with a simple, easy-to-make tool.

It gets you off the hook when somebody fails to push the cocking lever forward before they put the bolt into the receiver.

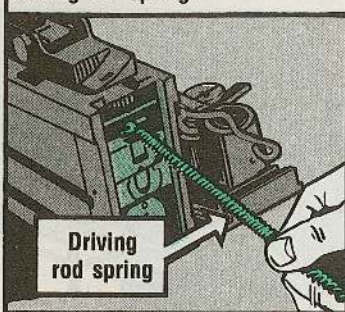
The only material required is a 20 1/2 inch long rod of 3/8 inch brass alloy. NSN 9525-00-249-7441 gets a foot of rod. State the length you need.



• To strengthen the handle and keep the open end of the triangle from cutting you, wrap tape where the triangle joins.

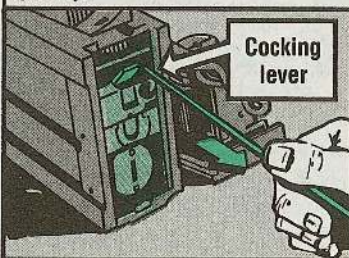
To use the tool:

• Remove the backplate and driving rod spring.



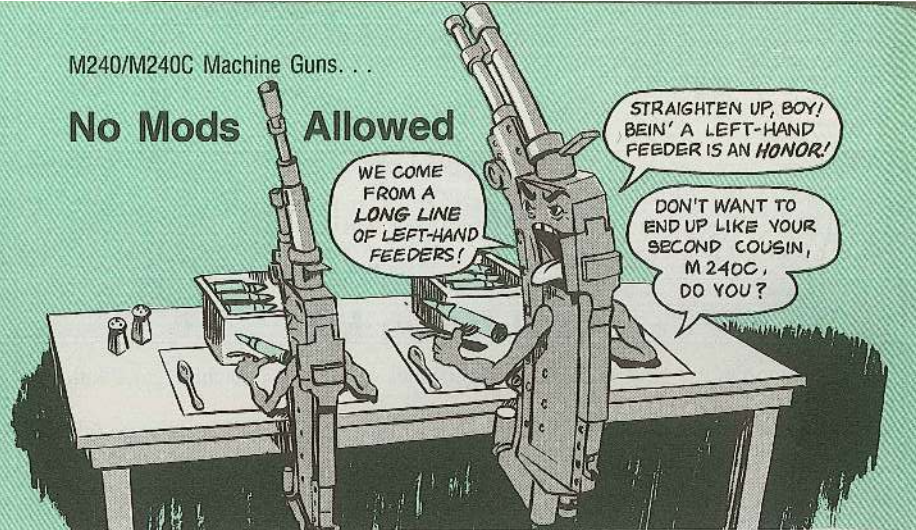
Driving rod spring

• Hook the tool over the cocking lever... half way up the lever. Don't hook it too high or it'll jam.
• Press down hard on the lever and pull back with several hard yanks. The bolt should free itself quickly.



Cocking lever

No Mods Allowed



When can an M240 machine gun be modified to feed from the right side? Never.

If you need a machine gun that feeds from the right, get an M240C.

Modification of either gun to change the direction of feeding is not authorized. That's because the guns are identified as separate models by the NSN's, part numbers and serial numbers stamped on the receiver.

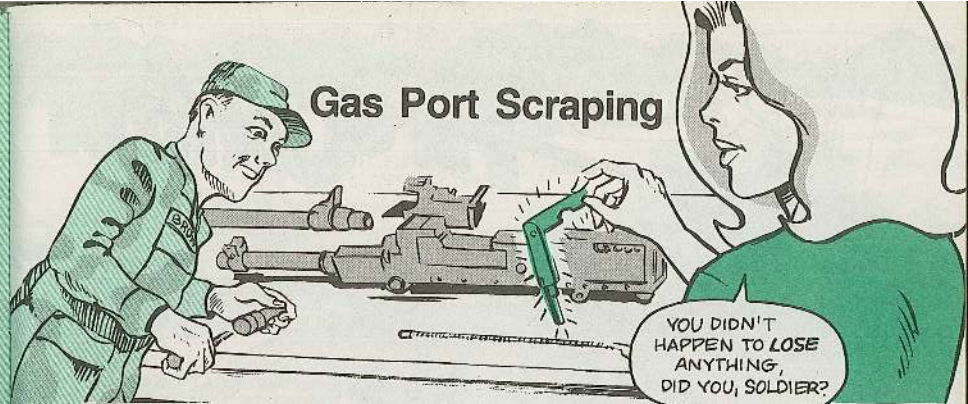
Unauthorized changes would screw up the system used to keep tabs on the weapons.

Also, remember that the barrels for M240-series machine guns are not interchangeable with other guns. You get 2 barrels for each gun at issue. They are matched to the receiver. Each barrel and bolt is checked for fit and head-spaced to that receiver. That prevents ruptured cartridges, damage to bolt, barrel and receiver and injury to users.

If a problem develops with one of the barrels, don't go looking for a spare. Turn the gun and both barrels in to your DS unit. They'll take care of it.



Gas Port Scraping

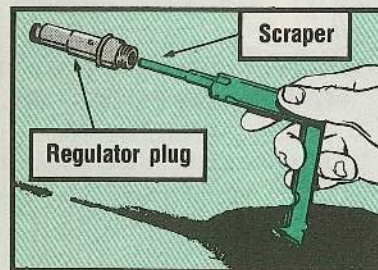


Knives, screwdrivers, "P-38's" or other improvised tools add up to damage and malfunctions when it comes to cleaning the center hole in the gas regulator plug of your M240 machine gun.

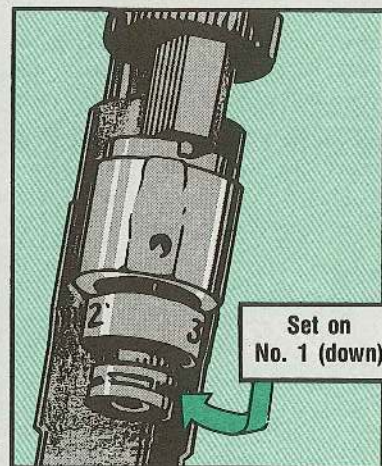
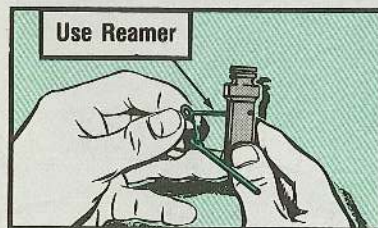
The **only** tool you should use to clean or scrape carbon from the regulator

can round out the holes and cause malfunctions.

Armorer's who set up M240's for training missions (or gun crewmen with an urge to tinker) should be sure the gas regulator plug inlet settings are on No. 1.



plug is combination regulator scraper, NSN 4933-01-033-1504. Use reamer, NSN 4933-01-047-3394, for gas inlet holes 1, 2 and 3. Any substitute tools



Setting the gas port on No. 2 or 3 inlet is not intended to increase the rate of fire. They only help maintain the rate of fire when carbon builds up when it's cold or dusty. They put an extra load on various parts of the weapon. Those 2 settings are not for normal conditions.



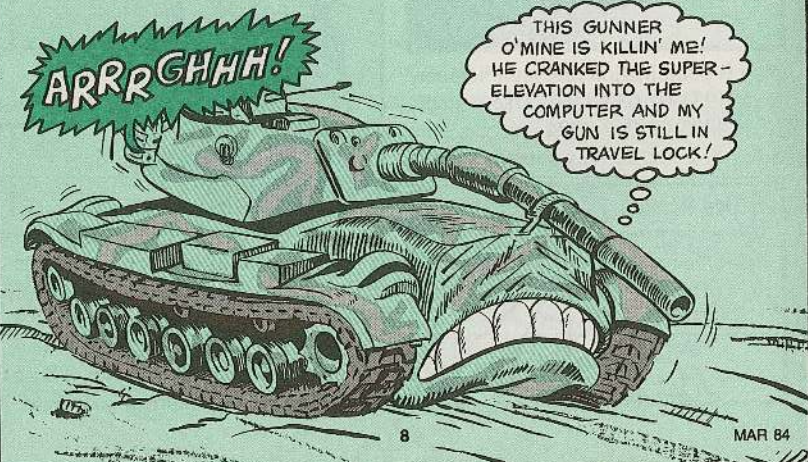
FireControl

M60A1 tanks: Gunners, after you make the ammo selection on your ballistic computer, let your hand ride back with the ammo selector handle. Don't let it snap back to the computer case. You can derail the cam follower roller and cut up the servo wheel inside the computer.

Don't let the handle snap back!



Also, don't crank super-elevation into the computer and then push in on the reset switch unless you've made sure the gun tube is out of travel lock. Otherwise, a capscrew's likely to break in the main gun super-elevation adapter.



Computer Care

HEY, WAITUP! WHAT'S CONNIE'S FREQUENCY?

CONNIE'S TUNED ME INTO COMPUTER PM!

ATTENTION ALL GUNNERS AND TANK COMMANDERS... **TAKE IT EASY ON ALL COMPUTER KNOBS AND SWITCHES!**



M60A3 and M1 tanks: Gunners and TC's, computer knobs and push buttons are tools for you to use, not abuse. They need the same consideration and care you give ammo. They're just as important in putting steel on target.

In addition, keep all computer access doors closed when you're not working



Don't abuse switches, knobs and buttons

Be sure you know how they work and that you turn them no more than is necessary. Never force them past their stops. Do that and you're not going to hit much of anything with your tank's gun.

on a test or on the range. Keep all electrical connections tight and clean. And, never spray water anywhere near the ballistic computer.

Remember, your fire control system is only as good as the care you give it. Beat up on the switches, knobs and buttons—or mess up a procedure—and your system's a bust.

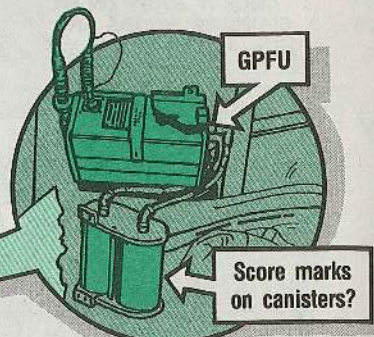


It's a Chain Reaction

Noticed a funny scraping noise in the turret that you can't identify?

Check for score marks on the gas particulate filter unit canisters. Find any? Then back up a little and eyeball the M240 coax machine gun ammo storage box mounting brackets.

Chances are the box has broken loose

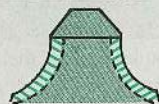


from the brackets. This lets the ammo box pull away from its mount, 'special-ly when it's full of ammo. The box will crowd the GPFU canisters out enough so they'll rub against the hull casting just outside the turret basket. Solve the problem by getting your DSU to reweld the ammo box mounting brackets.

Drive Sprocket Wear Change

You can forget that drive sprocket and hub assembly wear caution on Page 10-348 of TM 9-2350-255-20-1-3-4.

The headshed says the sprockets and hubs are good for as long as they pass the sprocket gage wear test. The 150-mile use limit for reversed sprockets has been scratched.



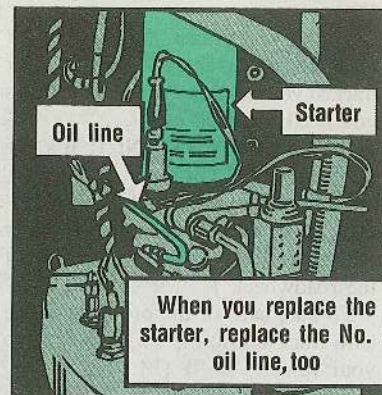
You replace a reversed sprocket and hub when it's worn down to the wear marks in both directions between the sprocket teeth.

Try This for Starters

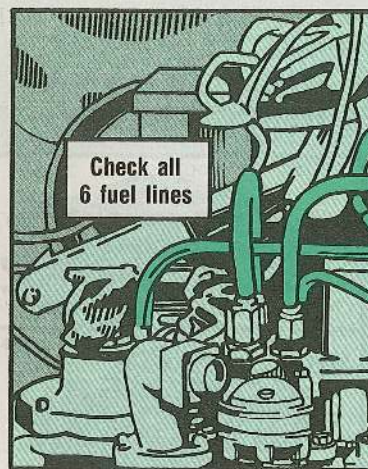
When you install a new Leece-Neville starter, NSN 2990-01-136-1206, in your M1 tank, you'll need a new engine oil feed line, too.

There's enough interference between the new starter and the No. 4 bearing oil feed line (Item 2, Fig 18, TM 9-2350-255-20P-1) that the starter won't fit.

Remove the old feed line and discard it. The replacement line has the same NSN, 4710-01-074-8343, as the old one. The part number, 12284528, is different, tho, so use it when you order.



Send Fuel Leak Packing



Not all fuel leaks near the engine come from the fuel filter. You've figured that out after replacing the filter only to still find fuel leaking, right?

Check out the 6 fuel lines leading to

Fuel Tank Repair

For the how-to on fuel tank repair, see Para 2-5f in TB 43-0001-39-7 (Oct 83).

and connecting the main fuel control. A bad preformed packing on any one of 'em could be the cause of your problem.

The lines and packings are in Fig 14, Page 2-34 of TM 9-2350-255-20P-1.

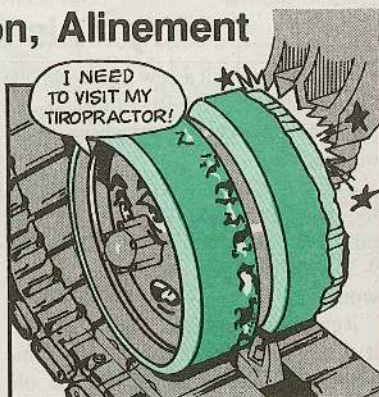
Check Tension, Alinement

If you've noticed increased wear mostly on the inner roadwheels on your tracked vehicle, there're a couple things you need to check out.

- **TRACK TENSION:** If it's too tight, the track will bind. As it binds, it puts more pressure on the inner roadwheel than on the outer one. The wear will appear uneven across the face of the roadwheel.

To take care of the problem, make sure track tension is set according to your vehicles's -10 TM.

- **ROADARM ALINEMENT:** A bent or distorted roadarm will put extra pressure on a roadwheel, causing it to wear quicker than its mate. Of course, if the distortion is great enough, the



centerguides will beat a tattoo on the roadwheel or you'll throw track a lot.

To solve the problem, get your mechanic to check out the suspect roadarm. If it's bent, he'll have it replaced.

Don't Get Caught in the Middle

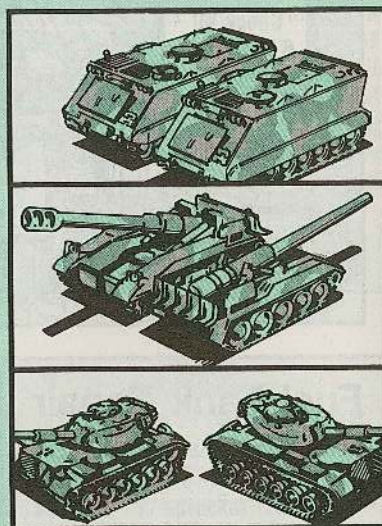
Slave starting combat vehicles will be a whole lot safer for you if you remember to not get caught in the middle.

Between vehicles, that is.

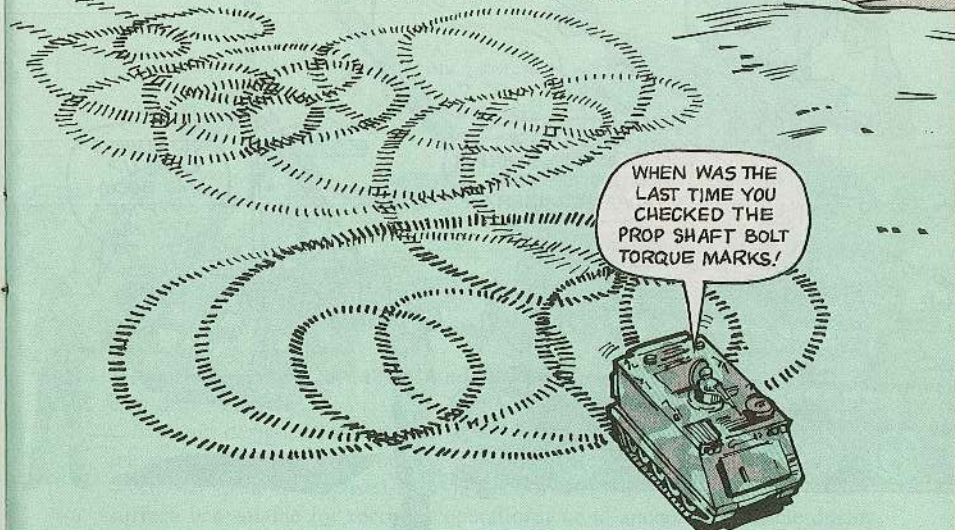
That means you never slave start vehicles front to front. Depending on the vehicle, you either:

- Park the live vehicle beside the dead one, with both vehicles headed in the same direction.
- Park the live vehicle beside the dead one, headed in the opposite direction.
- Park the live vehicle in front of and at right angles to the dead one.

In any case, you don't stand between vehicles during a slave start. It could be your middle that gets caught.



Check Those Bolts



Much of the damage caused by loose or missing U-joint and propeller shaft bolts can be avoided, crews, if you check 'em for looseness before you head out on a mission.

Even tho this check is not in your -10 PMCS, it soon will be. And, if any U-joint or prop shaft bolts are missing or loose, your vehicle is NMC. That's the word in Para 2-7c of TB 43-0001-39-6 (Jul 83).

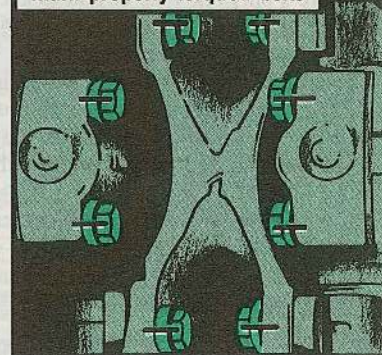
Your organizational mechanics are required to check the torque on the bolts during the quarterly PMCS. That word's in C7 to TM 9-2300-257-20.

After they've made the check, ask them to make alinement marks on the bolt heads and U-joint yoke or prop shaft. The marks can be made with paint, or with a scribe or awl.

Then, all you'll need to do is give the old eyeball to these marks before you

move out. If a bolt has come loose, report it to your mech.

Get your mech to mark properly-torqued bolts



This way, you cut down on the damage done to your carrier because of U-joint or prop shaft failure. . . and you cut down the chances of injury to yourself if something breaks at speed.



Wire Rope Wear and Tear

You can damage your M88A1 boom winch wire rope if you're careless during rigging and operating.

There's only one type of bolt to keep the wire rope retainer in place on the boom sheave. It's NSN 5305-00-144-1475, self-locking shoulder bolt. It's stronger than fully threaded common bolts that can break or loosen up under the strain. That can let the wire rope slip off the sheave and jam up on the boom.

Paying out or retrieving the wire rope at an angle to the boom also causes damage. Set up for operation on a straight line between the boom and the object to be moved or recovered. Otherwise, the wire rope binds as it rides in the sheave.

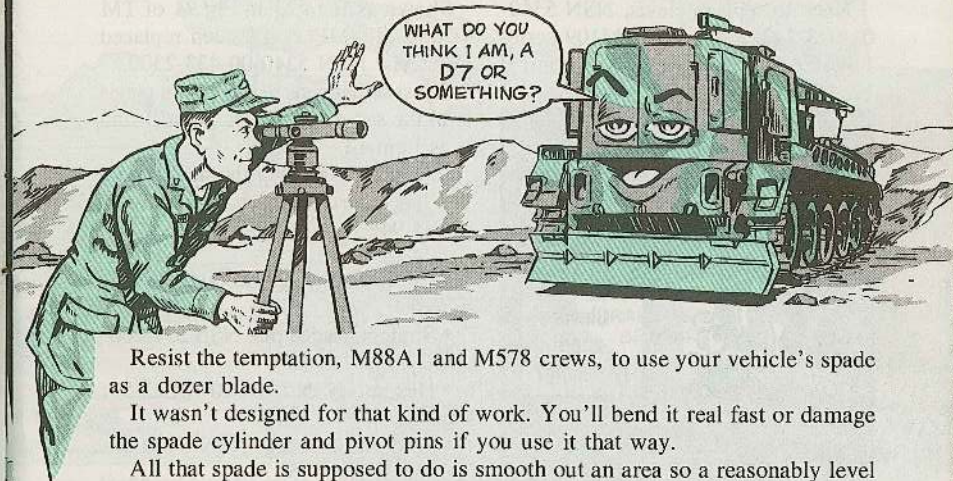
If a retainer bolt breaks, the wire can jump out and jam on the boom. Or, it can get kinked or frayed. It could even break.

At any rate, the rope can get damaged. Save yourself some embarrassing explanations and do the job right.

TM "Short"

TM 9-2350-256-20 for the M88A1 is short on instructions for removing and replacing the compensating idler arm and for adjusting the bearings. Until the TM is changed, you can refer to TM 9-2350-257-20-1-3, Pages 14-64 thru 14-71. The instructions for the M60A1 RISE tank can be used as a guide.

They're Not Bulldozers



Resist the temptation, M88A1 and M578 crews, to use your vehicle's spade as a dozer blade.

It wasn't designed for that kind of work. You'll bend it real fast or damage the spade cylinder and pivot pins if you use it that way.

All that spade is supposed to do is smooth out an area so a reasonably level surface is available for recovery operations, or to anchor the vehicle during winching. Never use it for digging or dozing.

Use Ballast Plates



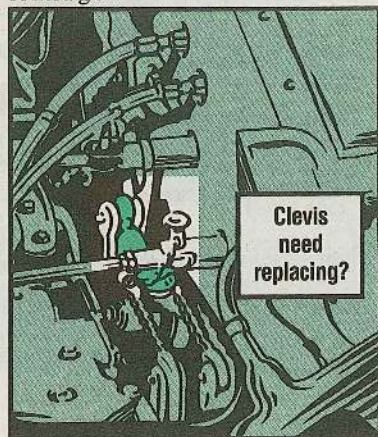
You always use the ballast plates when you swim your command post carrier. They're needed to offset the weight of the commo equipment you're carrying.

TM 9-2300-257-10, Pages 4-14 and 4-15, gives you a chart showing how many plates are needed to offset up to 6 commo sets.

If you need ballast plates, any steel plate $36 \times 12 \times \frac{1}{2}$ inches is acceptable. You can get steel from your DSU in large sheets which your mechanic cuts to fit.

Brake Clevis Replacement

Need to replace clevis, NSN 5340-01-013-2432, in your M109-series howitzer's service brake control linkage?



Clevis
need
replacing?

Shown as Item 23 in Fig 94 of TM 9-2350-217-24P/1, it's been replaced by clevis, NSN 5340-00-433-2300.

It just so happens that the right clevis is in the same TM figure. You'll find it as Item 13.

In addition to using the new clevis, you'll need to use these parts also found in Fig 94:

- Cotter pin, NSN 5315-00-842-3044, Item 6
- Straight headed pin, NSN 5315-00-081-7723, Item 12
- Hex nut, NSN 5310-00-732-0559, Item 14
- Rod end bearing, NSN 3120-00-089-3322, Item 15
- Straight headed pin, NSN 5315-00-957-0765, Item 19

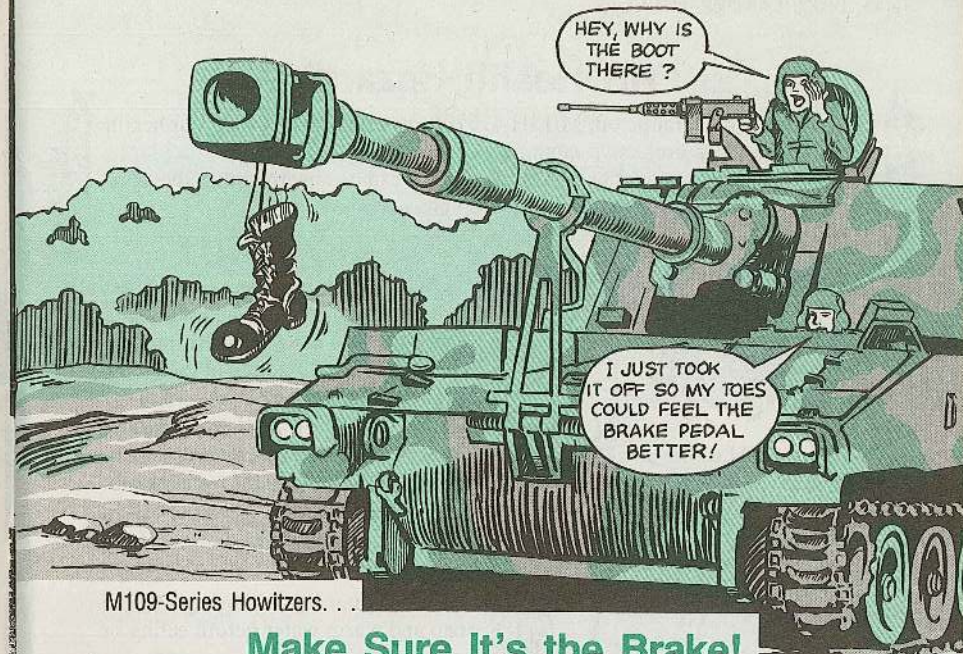
M109A2/A3 SP Howitzers. . .

Ballistic Shield Tighten-up

Loose screws on your howitzer's ballistic shield could lead to broken screws.

If enough of the screws loosen up, the shield could shift and cause damage to the screws and the shield gasket.

When you make your general checks before operation, eyeball the shield screws. Tighten any loose screws you find.



M109-Series Howitzers. . .

Make Sure It's the Brake!

Drivers, when you're operating your howitzer, don't mistake the raised portion of the accelerator pedal for the brake. One driver hit the accelerator instead of the brake, fatally injuring the ground guide.

The accelerator is shaped like it is so you can reach it with the seat up and the hatch open. Make sure you know how to hit the brake pedal—and can hit it fast in an emergency.

Easier Fan Removal

Pulling the powerpack and radiators to get at the fan tower on your M110-series howitzer or M578 recovery vehicle is a bummer, right? Then check out TB 43-0001-39-3 (Oct 82), Pages 2-27 thru 2-29. It gives details on how to reverse the fan's mounting bolts. That'll let you remove the fan without pulling the pack and radiators.

M198 Muzzle Brake Lube

LO 9-1025-211-13 for the M198 towed howitzer doesn't list lube procedures for the muzzle brake. So check out Page 3-58 of TM 9-1025-211-20&P. Also, you can now use CLP for cleaning and lubing the muzzle brake. Page 6-2 of TB 43-0001-36-8 (Jan 83) has the word.

FRH Health Hazard

Fire resistant hydraulic oil, MIL-H-41670B, can be hazardous to your health if you don't wear protective clothing.

The oil has toxic and irritating chemicals that can be absorbed thru the skin. It can produce paralysis if it gets inside you.

If you work with FRH, here are some things you can do to protect yourself:

★ Wear old clothing (sometimes called class X), gloves, goggles and a respirator. You can use the Respirator, NSN 4240-00-022-2524, in the No. 1 Supplemental Tool Set.

BE WARNED: A respirator **will not** filter out fumes. It **will** prevent splashed fluid from getting into your mouth.

★ If FRH gets in your eyes, wash them immediately and get medical attention.

★ Wash your hands thoroughly with soap and warm water before eating or smoking.

★ If you get FRH on your clothes, remove them as soon as possible. Wash any skin areas contaminated by FRH as soon as possible. Wash clothing in a strong detergent.

A warning about the hazards of FRH will be added to LO's and TM's when they're updated.

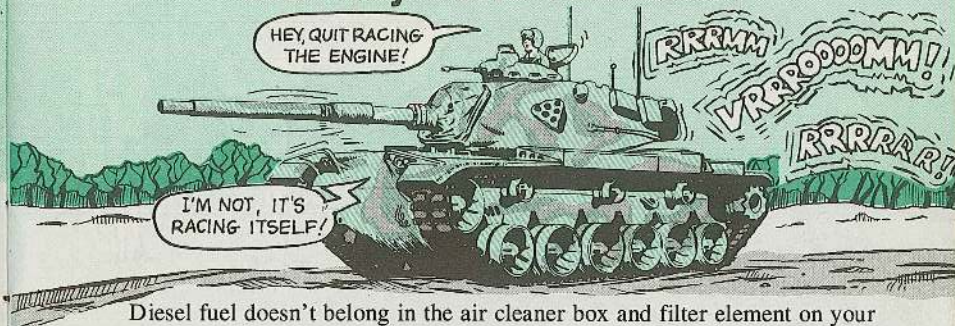
Servo Valve Return

M60-series tank stabilization servo valves, NSN 1015-00-088-3805 and NSN 1015-00-613-6894, are depot repairable. The -20P manuals are wrong when they say the valves are throw-aways. If you've got any unserviceable valves on hand, turn 'em in. Support will ship 'em to Anniston Army Depot, marked for "B14 Field Service Stock."

M60 AVLB PTO Plate

Use NSN 5340-01-136-4687 to get the PTO access plate for your M60 AVLB. It's shown as Item 7 of Fig 8 in TM 5-5420-202-20P.

One-Way Valve Reversed?



Diesel fuel doesn't belong in the air cleaner box and filter element on your tanks.

Fuel in the air system can cause a runaway engine or even a blown cylinder.

If there is fuel in your air cleaner, it's probably because the fuel tank-to-air cleaner check valve is installed backward.

Have your mech check it out. The valve's arrow should point toward the fuel tank, not toward the air cleaner.

Air Intake Plugs...

Buy 'em or Make 'em—But Use 'em

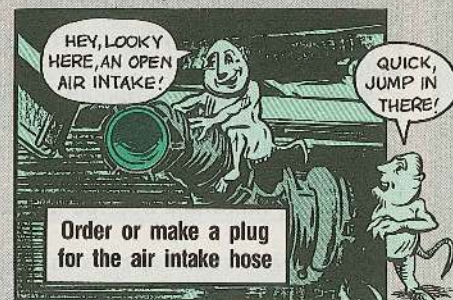
When you mechs pull a powerpack, you disconnect a bunch of hoses, wires, inlets and outlets.

These connections need to be covered to keep dirt and trash out. This is especially true for the engine air intake hose. Your engine needs lots of clean air, but if the intake has been left uncovered when the pack is out, chances are the air won't be too clean. NSN 5340-00-855-7993 will get you a plug for the air inlet.

There are assorted sizes of caps and plugs in the supply system that can be used in the other places. Check out the microfiche of Catalog C-5340-IL. Look for the tables listing sizes of Caps, Protective, Dust and Moisture Seal.

Or you can make 'em. Use the plastic caps from coffee or shortening cans, for example. Or use weatherproof duct tape, NSN 5640-00-103-2254. Or use both.

Just make sure those openings are covered. It'll help keep away the dirty engine gremlins that cost you lots of downtime.





Dear Editor,

Protecting transmitting set target boards used in TOW and Dragon training is a problem.

The boards are damaged in transit and in storage. So is the target source.

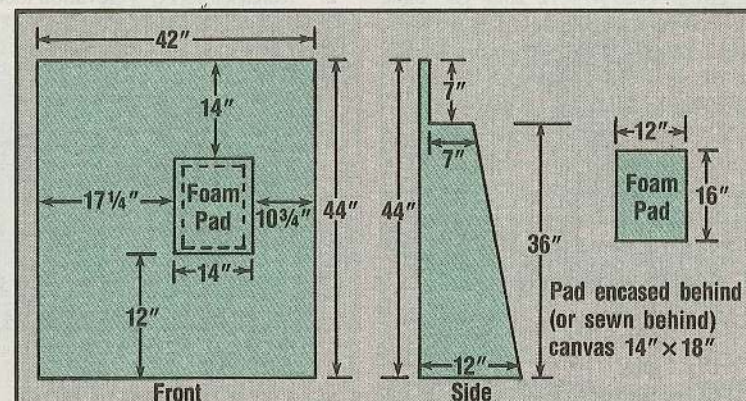
We've cut down the damage considerably with fabricated canvas covers. . . which are kept on whenever the boards are not in use. We also added a foam pad that we enclosed in canvas over the area of the target source.

The only materials needed are cotton duck canvas and the foam padding.

Each board needs approximately 3 square yards of canvas and a 12 x 16-in foam pad.

Canvas can be ordered with NSN 8305-00-170-3882, which gets you a 36 x 36-in piece. Request 3 pieces for each cover you need.

Get a dozen foam pads with NSN 8130-00-142-9746. Units or their friendly post canvas shop can stitch the cover together using the following sketch:



We also made a carrying case for the cable assemblies that attach to the power supply cables (NSN 6920-00-454-8259 and 6920-00-453-9197).

We used the same canvas, plus a 26-in carrying strap made from webbing, NSN 8305-00-263-2479. The NSN gets you a 36-in strip.

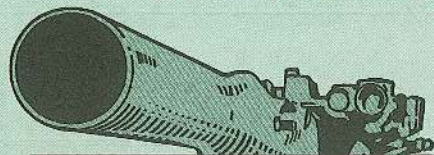
The dimensions are as follows:

SSG R. F. Dagen
CSMS C, Rochester, NY



(Editor's Note—Good, inexpensive idea! Thanks for sharing it.)

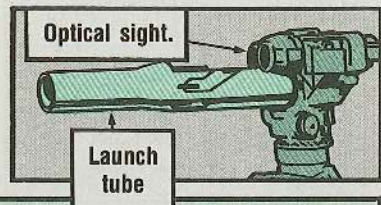
TOW Counterbalance Update



NO DRIFT ON THE LAUNCH TUBE IS THE RIGHT DRIFT, IF YOU CATCH MY DRIFT!

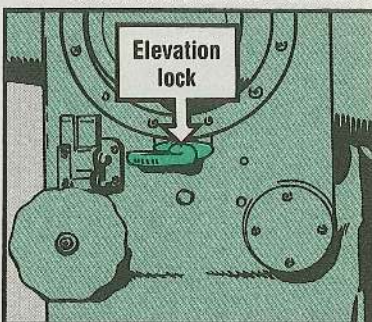
TM 9-1425-470-12 and C5 once spelled out a counterbalance check for the TOW elevation mechanism. It's not in the new TM's, but it's a good one to make to assure accuracy:

1. Install the optical sight and launch tube on the traversing unit (TU).



XM501E3 Parts Kit

2. Release the TU's elevation lock.



3. If the end of the launch tube does not drift up or down, the counterbalance is OK. If the tube does drift up or down, notify your DSU that the elevation mechanism needs to be adjusted.

Caution: Do not install the missile simulation round (MSR) for the check. Use only the launch tube and sight.

GRRR!

HEY, MOOSE! COOL YOUR JETS! YOUR U-JOINT PARTS KIT IS NOW IN STOCK!

Next time you need the universal joint parts kit for your XM501E3 I-HAWK loader-transporter, go for it with NSN 2520-01-121-9884. This is the new NSN for Item 6, Fig 61, Page 2-173 of TM 9-1450-500-24P. The kit is for the transfer propeller shaft.

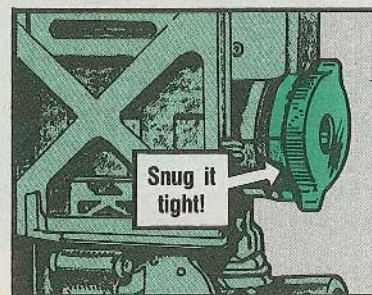
Stinger Zingers

Several battery precautions and an antenna tip can add to your scores when you use the Stinger missile system trainer.

Ignore them and they can put you out of business.

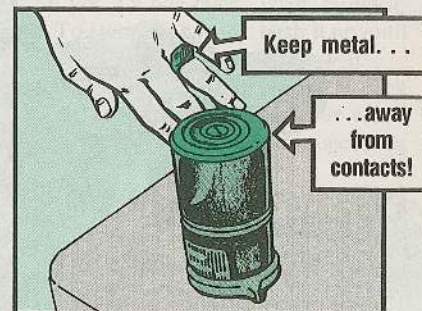
Screw it Up

When you install the BCU into the tracking head trainer (THT), snug it up tight. A loose BCU can work out, fall, and put you down. It can also cause expensive battery damage.



Snug it tight!

When BCU contacts are exposed, keep metal away from them. That includes your own watch or ring.



If you short the contacts, you'll get a volt jolt. And, the contacts will burn... to the point where the battery will be ruined or at least need support level repair.

Moisture Caution

Before you charge or install a battery, be sure there's no moisture in the charging or battery wells and that the contacts themselves are dry. A dry cloth can be used to remove moisture.

Moisture destroys battery contacts as readily as shorting them with metal.

Antenna Tip

When you set your trainer or weapon down, set it on the side opposite the antenna. It's cushioned for that.

If you set it on the antenna side, you'll damage the antenna.

REMEMBER, IF YOU SET ME DOWN, MAKE SURE THE ANTENNA'S UP!



Stinger Harness

Need a replacement M4 transport harness for your Stinger basic load when you carry it in your 1/4-ton cargo trailer? Get the harness with NSN 1450-01-024-6936. Note on your exception data request: "For replacement of non-repairable transport harness."

Redeye in the

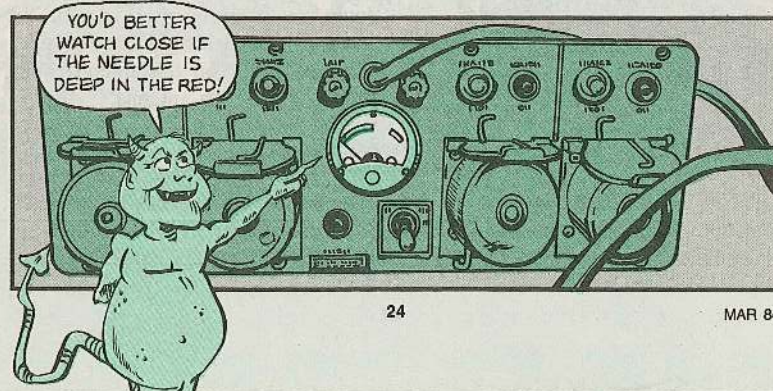


eyeball the charge meter of your PP-6118 battery charger whenever you install a BA-523 in one of the wells.

If the battery, used with the M76 Redeye training set, reads deep in the red, be extra cautious. Monitor the meter for several minutes.

The needle on the meter should move slightly toward the white—or 50 percent charge—block. If it doesn't, turn the battery in to your Direct Support for a checkout.

A "stuck" needle indicates a battery in poor condition. Trying to bring it up to full charge can damage the charger's voltage regulator circuit cards and other components.



Red



Sight Frame

Dab a little petroleum jelly or GIA grease on the sight frame stop to prevent rounding out, burrs or rips.



Raising or lowering the sight digs in to the stop and can eventually make the sight droop. Or, it may not stay up at all. The grease cuts down on wear.

Pump Handle

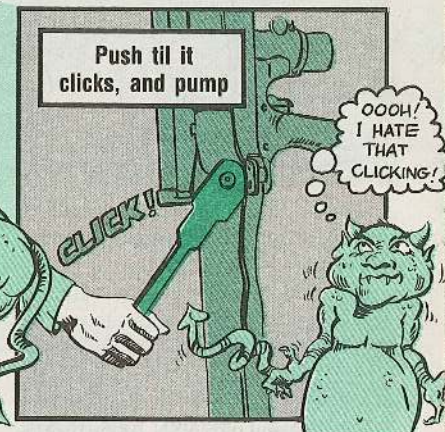
Think "click" when you work the gas pump handle of the trainer.

For operation, push the handle down till you get one click. Then, pump it.

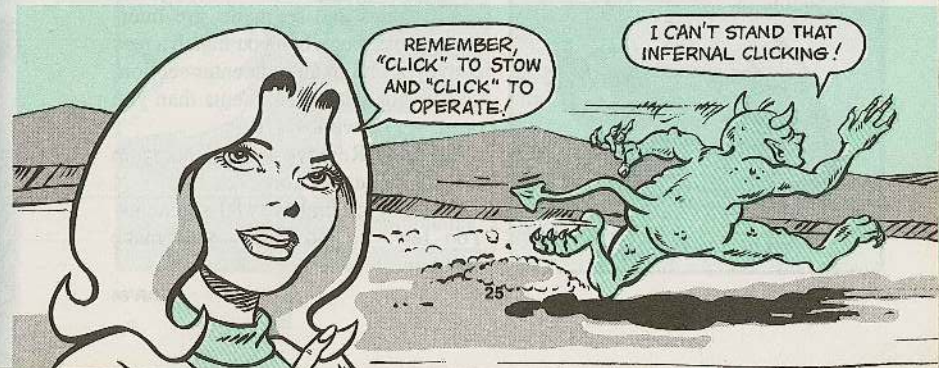
To store the handle, push it up until you get one click. Then, stow it.

The point is, you must get a click when you stow it, or the handle won't be set up for that downward, operating click.

Push til it clicks, and pump



In that case you could be tempted to force the handle downward for a click that isn't going to come. Forcing it can cause expensive damage to the handle mechanism.



Vulcan Shoot Chute

WE DON'T
NEED YOU, SO
BEAT IT!

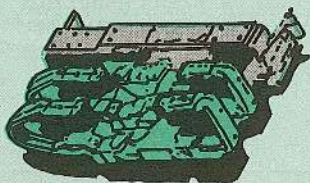
C'MON, GUYS,
WE KNOW WHEN
WE'RE NOT
WANTED!

Think "80" when you install or replace an ammunition chute assembly on your M163A1 Vulcan.

The feeder, center and conveyor sections must total 80 segments to prevent feeding and loading problems.

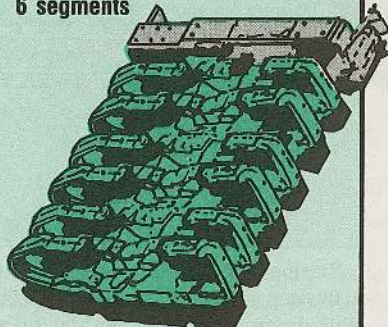
The problem of segment count exists because of the new (NSN 1005-01-078-9776) and old (NSN 1005-01-005-2825) conveyor ends that are in the field. The old conveyor end has 2 segments and the new conveyor end has 6 non-removable segments.

2 segments



"OLD" configuration

6 segments



"NEW" configuration

All chutes and segments are interchangeable, but when you match a new conveyor end to an old center section, you've got 4 more segments than you need. . . or want.

Solution: Remove 4 segments from the old center section.

The magic number is 80 segments. Too few, or too many, will make problems.

IPAR Heating Up?

The liquid cooling system of your Improved Hawk's IPAR keeps components cool in the receiver-transmitter (RT) and high voltage power supply (HVPS).

Coolant is routed over the series regulator tube in the HVPS and the ferrite isolator, stabilatron tube, pulse transformer and charging choke (reactor) in the RT.

Those components will overheat:

1. If the coolant is contaminated (as with water)—
2. If the coolant level is low—
3. If filters are dirty—
4. If you use the wrong coolant.

The major cause of overheated components in the RT and HVPS is contaminated coolant.

• To check for water contamination, eyeball the dipstick. If you see water droplets on it, or if you suspect contamination when you change filters,

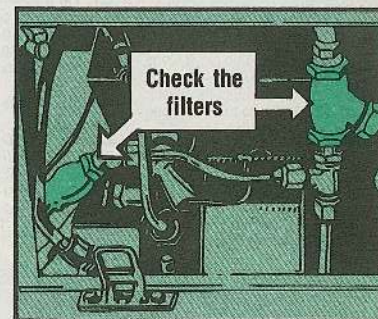
your support has to purge the system. Just replacing filters won't solve the problem, since the contaminated OS45 remains in the system in the HVPS and RT.

If you replace the liquid cooler for any reason, get the system purged. Contamination can still be in the coolant lines.

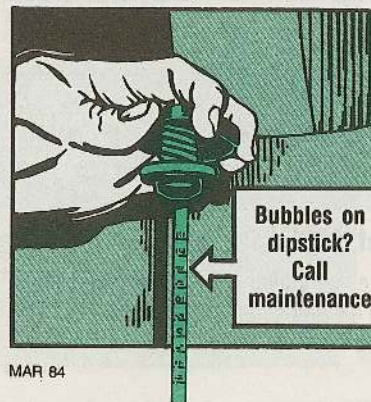
• Eyeball the coolant level. If it's low, add **only** OS45 Type II coolant. A mix will contaminate it.

• Suspect filters in overheating. If the RT meter reading is higher than 160 PSI or the HVPS reading is higher than 120 PSI, replace the filters. Checks and

Check the
filters



Bubbles on
dipstick?
Call
maintenance



procedures are in Tables 3-10 and 3-16 and Para 4-11 of your -12-1 TM. If meter movement flutters up and down, your fluid probably is just low. In which case, add fluid.

If overheating continues after you've checked out the coolant, troubleshoot and get help from support, if necessary.

PUBS



This is a selected list of recent pubs of interest to organizational maintenance personnel. This list was made from a computer printout provided by the Adjutant General.

Miscellaneous

FM 23-1 (Test) Dec 83 Bradley fighting vehicle gunnery
LO 5-3825-209-12 Jan Rotary sweeper towed
LO 5-3825-221-12 Jan Water distributor Model W15B9019
LO 5-3895-217-12 Jan Distributor, liquid, bituminous material
LO 5-3895-221-12 Jan Mixer, concrete, Model HBG
LO 5-3895-329-12 Jan Mixer, rotary tiller, Model B2-1171
LO 5-3895-342-12 Jan Mixer, concrete, Model 499A
LO 9-2320-270-12 Jan Truck tractor (C-HET) M911
LO 10-3930-242-12 Jan 6,000-lb rough terrain forklift
LO 10-3930-630-12 Jan MHE-231 forklift
LO 10-3930-632-12 Jan MHE-229 forklift
TB 9-4910-745-30 Jan No. 2 Common automotive maintenance and repair shop equipment; installation in one M35A2 cargo truck and one M105A2 cargo trailer
C3, TB 55-9150-200-24 Jan Eng/transmission oils, fuels and additives for Army aircraft

Technical Manuals

C1, TM 5-2805-261-23P Jan Out-

board motor, gasoline OMC Model AM-40A

C1, TM 5-4310-276-24P Jan Compressor, reciprocating; air, 5 CFM Kellogg American Model G-311-PC

C3, TM 5-4320-256-14 Dec 83 Pump assembly, flammable liquid, centrifugal, 100 GPM Model FARE 3950

C2, TM 5-4320-273-14 Dec Pumping assembly, 350 GPM capacity, Model 04A12C-MVG4D

C8, TM 5-6115-465-12 Jan 30-KW diesel

TM 9-2330-271-14P Jan Semi-trailer van electronic; XM574, XM574E1, XM654, XM680, XM680E1, XM738, XM739, XM739E1, XM822, XM823, XM824, XM844, XM845, XM847, XM848, XM849, XM850, XM912 and XM913

TM 9-2350-247-20P Nov 83 Carrier, cargo M548 and M548A1

C1, TM 9-2350-215-10-1 Nov 83 Tank, M60A1 and M60A1 (AOS)

C1, TM 9-2350-215-10-2 Nov 83 Tank, M60A1 and M60A1 (AOS)

C4, TM 9-2350-217-20N Nov 83 Howitzer, M109A1 and M109A3

C2, TM 9-2350-255-10-1 Nov 83 Tank, M1

C3, TM 9-2350-255-10-3 Nov 83 Tank, M1

C1, TM 9-2350-257-10-2 Dec 83 Tank, M60A1 (RISE) and M60A1 (RISE Passive)

C3, TM 9-2350-303-20-2 Nov 83 Howitzer, M109A2

C11, TM 10-1670-240-20 Jan Miscellaneous airdrop canvas,

webbing, metal, and wood items

C4, TM 10-3510-208-12 Jan Laundry unit, Model M-532

C4, TM 11-5805-390-15 Jan AN/MGC-34 telegraph terminal

C2, TM 11-5815-205-14 Jan AN/MGC-17 teletypewriter central office

C2, TM 11-5815-206-12 Jan AN/PGC-1, AN/PGC-3, TT-4A, TT-4B, TT-4C, TT-335, TT-537, TT-698, TT-698A, TT-698B, TT-722 and TT-722A teletypewriters

C5, TM 11-5821-248-12 Dec 83 AN/ARC-102 radio set

C2, TM 11-5821-259-20 Dec 83 AN/ARC-114 radio sets

C6, TM 11-5840-211-12 Jan AN/PPS-4A radar set

C5, TM 11-5840-229-15 Dec 83 AN/TPS-33 radar sets

C5, TM 11-7440-240-10-1 Jan OA-8389 (Bn) fire direction center

C5, TM 11-7440-241-10-3 Jan OA-8390 fire direction center

TM 55-1510-209-23P-1 Nov 83 AVUM/AVIM

C10, TM 55-1520-228-23-2 Nov 83 AVUM/AVIM, OH-58A, C

C24, TM 55-1520-237-23-4 Mar AVUM/AVIM, UH-60A

C17, TM 55-1520-237-23-6 Mar AVUM/AVIM, UH-60A

C16, TM 55-1520-237-23-7 Mar AVUM/AVIM, UH-60A

C16, TM 55-1520-237-23-8 Mar AVUM/AVIM, UH-60A

C15, TM 55-1520-237-23-9 Mar AVUM/AVIM, UH-60A

C12, TM 55-1520-237-23-10 Mar AVUM/AVIM

AUDIO-VISUAL STUFF

Available at battalion or post Learning Center

TEC Lessons

020-171-5712-A Turret power operation on M60A3 tank

041-061-5867-A Direct vehicle movements using ground guide signals
043-441-1089-F FAAR re-

ceiver system, Part I
221-441-5706-J Energize forward area alerting radar
621-113-6319-A Trouble-

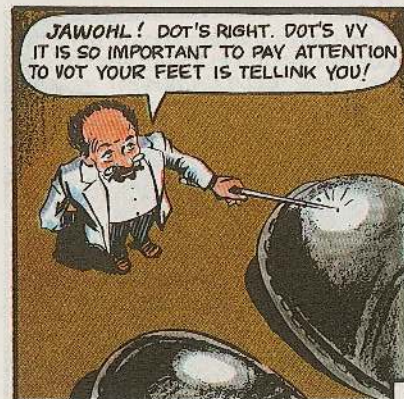
shoot SB-86 switchboard
730-051-8403-F Clearing a sidehill excavation site, Part II

How to Get MCRL

The article on Page 62-63 of PS 373 gave you a bum steer. The Master Cross-Reference List (MCRL) is not distributed with the AMDF from CDA. To get the MCRL, submit a DA Form 12-21 to your pubs people.

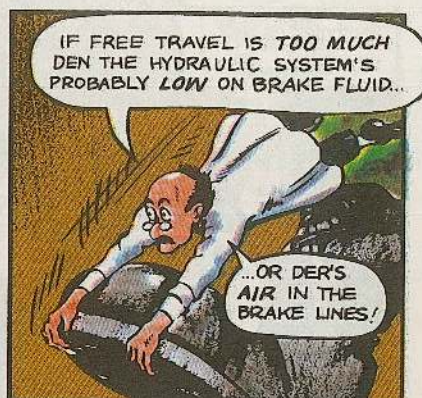
Footnotes on driving for...

Pedal Pushers





IF DER'S **NO** FREE TRAVEL,
DER BRAKES ARE PROBABLY
DRAGGINK AND **VEARINK** OUT
AS YOU DRIVE!



IF FREE TRAVEL IS **TOO MUCH**
DEN THE HYDRAULIC SYSTEM'S
PROBABLY **LOW** ON BRAKE FLUID...

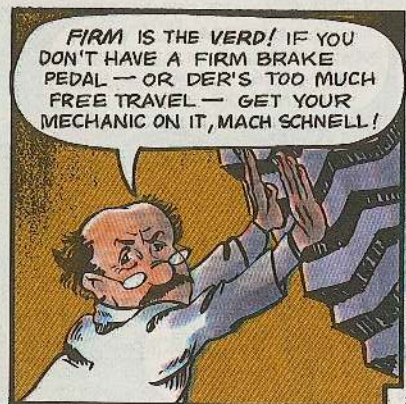
...OR DER'S
AIR IN THE
BRAKE LINES!



OOMPH! BROGAN,
YOU BIG OAF, DIS
FREE TRAVEL IS
TOO MUCH!



A SPONGY BRAKE PEDAL IS BAD
TOO... IT MEANS DER'S AIR IN
THE LINES!



FIRM IS THE **VERD!** IF YOU
DON'T HAVE A FIRM BRAKE
PEDAL — OR DER'S TOO MUCH
FREE TRAVEL — GET YOUR
MECHANIC ON IT, MACH SCHNELL!



NOW, BROGAN, VOT DOES DIS
OTHER FOOT TELL YOU ABOUT
CLUTCHINK?

UH-H-H...



VELL DEN, DO
YOU KNOW VOT
A **BORED** FOOT
IS?

I THINK IT'S
A WAY OF
MEASURING
LUMBER, LIKE...



NO-NO-NO! IT'S A FOOT THAT GETS
TIRED OF DOING NOTTINK — SO IT
SITS ON DER CLUTCH PEDAL. IT'S
CALLED **RIDINK** THE CLUTCH!



CLUTCH RIDINK BURNS UP DER
THROWOUT BEARINK! VEN
YOU'RE NOT OPERATINK YOUR
CLUTCH, KEEP YOUR FOOT ON DER
FLOOR! YOUR CLUTCH PEDAL IS
NOT-EIN-FOOT-REST!!!

OUCH!
GOTCHA!



NOW... DO YOU
REMEMBER VOT
I SAID ABOUT...
BRAKE PEDAL
FREE TRAVEL?

I'M HAVING IT
TATTOOED ON
MY FOOT SO I'LL
NEVER FORGET!

DOOH!
SUCH
EXCITE-
MENT!

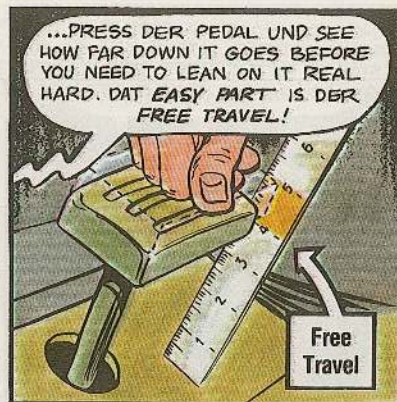


CLUTCH PEDAL FREE TRAVEL HAS
GOT TO BE JUST RIGHT. **TOO LITTLE**
FREE TRAVEL DOES THE SAME AS
CLUTCH-RIDINK — BURNS UP THE
THROWOUT BEARINK!



HERE — LOOK AT DIS, BROGAN —
HERE'S HOW YOU OR YOUR MECH
CHECK FREE TRAVEL ON THE
CLUTCH...

Free
Travel



Clutch Free Travel Standards

M151A2 1/4-ton—1 1/8 to 1 1/2 inches Para 4-12f, Pg 4-51 TM 9-2320-218-20-1-1; other M151-series 1/4-ton—1 1/8 to 1 1/2 inches, Para 2-41b, Pg 30. C5 to TM 9-2320-218-20.

M561/M792 1 1/4-ton (Gamma Goat)—3/4 to 1 1/8 inches, Para 3-3f, Pg 3-15, TM 9-2320-242-20-3-1.

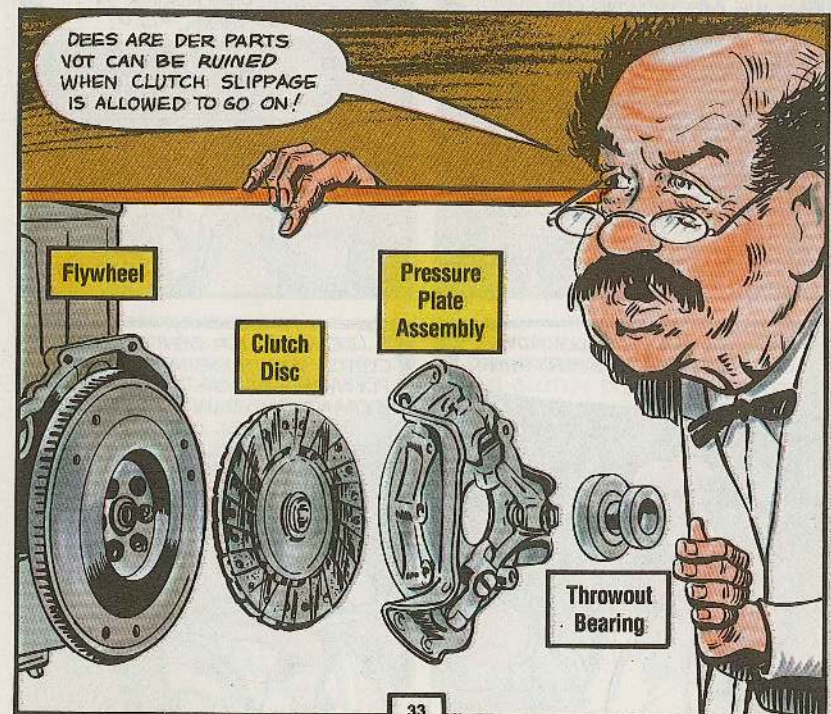
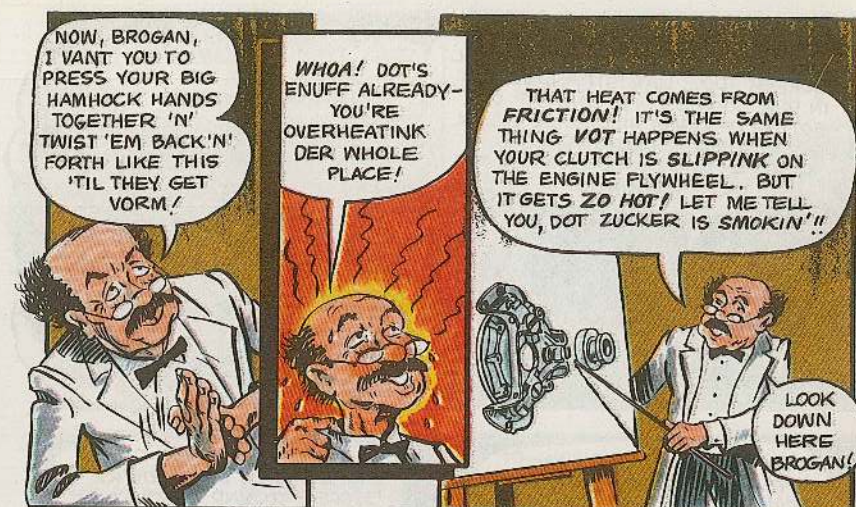
M35A2-series 2 1/2-ton (multifuel)—1 1/2 to 2 inches, Para 3-3e, Pg 3-15, TM 9-2320-209-20-3-1.

M35-series 2 1/2-ton truck (all others)—1 1/2 inches to 2 inches, Para 150a, Pg 261, TM 9-2320-209-20.

M39A2-series 5-ton (multifuel)—2 to 2 1/2 inches, Para 3-3a, Pg 3-2, TM 9-2320-211-20-3-1.

M39-series 5-ton (all others)—2 to 2 1/2 inches, Para 2-49, Pg 2-80, TM 9-2320-211-20.

M809-series 5-ton—2 to 2 1/2 inches, Para 3-6a, Pg 3-9, TM 9-2320-260-20-3-1.





AND IF YOU DON'T **DETECT** CLUTCH SLIPPAGE — AND **REPORT IT** — YOU'LL SUFFER TOO... LIKE STRANDED OUT IN DER BOONIES ... ZITTINK AT DER BOTTOM OF ZUMM HILL YOUR TRUCK CAN'T CLIMB... BECAUSE YOUR CLUTCH-E-POOPIN' AND BURNEN ZEE OUT! VERSTEHEN?



IT'S EASY TO TELL WHEN DER CLUTCH STARTS SLIPPINK...YOU LET UP ON DER CLUTCH. GIVE 'ER THE GAS TO MOVE OUT...



...BUT YOU DON'T GET CLUTCH ENGAGEMENT LIKE YOU'RE 'SPOSED TO. UND DER MAY BE ZUMM CHATTERINK 'N' SHUDDERINK ALZO!



DEN, YOU MAY FINALLY MOVE OUT — UND THINK EVERYTHINK IS OK...



...BECAUSE DER **HEAT** OF THE CLUTCH DISK RUBBINK ON DER FLYWHEEL IS MAKINK DER PARTS EXPAND AND IMPROVINK CLUTCH TO-FLYWHEEL CONTACT!



BUT ALL OF DIS JUST CAUSES VURSE DAMAGE — NEXT TIME CLUTCH SLIPPAGE WILL BE VURSE! ZO... (COFF)... EXCUSE ME!

UH-O... GETTING A LITTLE BIT OVERHEATED MYSELF HERE!



AT THE **FIRST** SIGN OF YOUR CLUTCH SLIPPINK, **REPORT IT**... VEN ALL YOUR TRUCK MAY NEED IS CLUTCH ADJUSTMENT OR A NEW CLUTCH DISK! (COFF)



COFF — COFF — GOTTA GETTEN ZUMM WATER. HERE, BROGAN, TELL 'EM DIS!

OK



TO CHECK FOR CLUTCH SLIPPAGE, RUN YOUR ENGINE WITH THE PARKING BRAKE **ON** AND TRANSMISSION IN THE **HIGHEST** GEAR. LET UP ON THE CLUTCH PEDAL —



EASY! IF THE CLUTCH PEDAL DOESN'T START TO TAKE AHOLD SOON AFTER THE PEDAL STARTS UP, IT'S **SLIPPING!**

GLUG GLUG



IF IT WORKS OK, PUT THE PEDAL BACK DOWN **QUICK** — LETTING THE CLUTCH DISK SLIP ON THE FLYWHEEL WILL **BURN UP** THE DISK FACING. **REPORT CLUTCH SLIPPAGE — GET IT FIXED!**



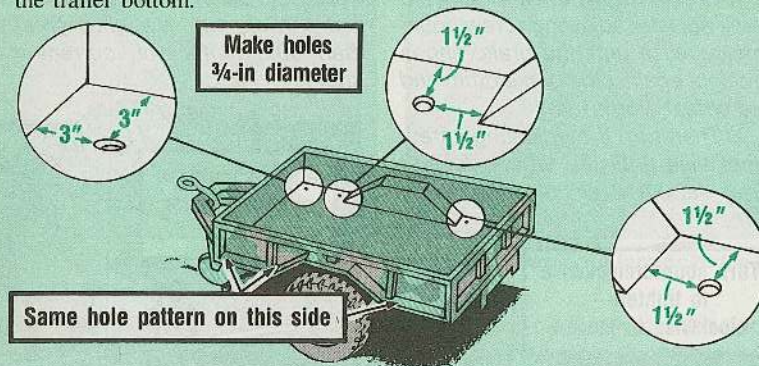
Perils of POL-ing

It's tough enough hauling a 600-gal fuel pod in your 1 1/2-ton trailer, what with guarding against tip-over and tip-back. You sure don't need a fire to add to the excitement.

A trailer with spilled fuel sloshing around in the bottom—or with fuel-soaked leaves 'n' trash—is a fire waiting to happen!

For safety's sake, keep trash cleaned out of your trailer. Wipe up spilled fuel, too, or flush it out with water and detergent.

And, if your command gives the OK, have your mech drill drain holes in the trailer bottom.



15W40 Oil Is "In"

You'll soon be able to use 15W40 multiviscosity oil in your wheeled vehicles. But until you get further word, keep using the oil called for in your vehicle's LO. 50-weight oil is being phased out, so when it's no longer available, order 15W40 with these NSN's:

9150-01-152-4117 (1-qt can)
9150-01-152-4118 (5-gal can)
9150-01-152-4119 (55-gal drum)

If your vehicle is in warranty, you'll still use the oil grade specified by the manufacturer for the warranty period.

15W40 will be picked up as the replacement for 50-weight in changes to the LO's.

This oil also covers the temperature ranges for the 40- and 30-weight and part of 10W. That means it could be used instead of 30- and 40-weight and down to 5° F.

Other "straight weight" oils (10-, 30- and 40-weight) will continue to be available as needed. TACOM Msg DRSTA-MTC 181530Z Aug 83 has the word.



Getting 'em Adjusted

TM instructions for adjusting the brake slack adjusters on trucks and trailers with air brake systems are sometimes a little short on detail and a little long on confusion.

Here's the right procedure:

① First, raise the wheel off the ground.

② Rotate the wheel and turn the slack adjuster adjusting screw counterclockwise until the brake shoes are tight against the brake drum and the wheel won't turn.

③ Then turn the adjusting screw clockwise until the wheel doesn't drag—about 3 clicks or $\frac{1}{4}$ to $\frac{1}{2}$ turn.

Turn counterclockwise to tighten—
clockwise to loosen

④ Get a fellow mech to apply the brakes and measure the angle between the push rod and slack adjuster. It should be slightly greater than 90° . If it's not, correct the angle.

Angle should be slightly greater than 90°

⑤ Remove the cotter pin and clevis pin and loosen the adjusting screw to disconnect the slack adjuster from the push rod.

Remove the cotter pin...

... and clevis pin

⑥ Loosen the push rod locknut and turn the yoke counterclockwise to increase or clockwise to decrease the angle.

Disconnect stock adjuster from push rod

Loosen locknut...

... and turn yoke to increase or decrease the angle

⑦ Put the clevis pin into the slack adjuster and push rod, and get your buddy to push the brake pedal again.

⑧ Measure the slack adjuster and push rod angle again.

⑨ If it's over 90° , tighten the push rod locknut and put the cotter pin back into the clevis pin. If not, repeat steps 4 through 8 until you get the angle right.

⑩ Finally, go back and readjust the adjusting screw.

LOOK OUT, MA'AM,
WE DON'T HAVE
ANY BRAKES!

SEEMS TO ME YOU
OUGHT TO CHECK YOUR
BRAKE SLACK ADJUSTERS!

COOL IT!

WOW! THAT PHONE
MUST BE HOTTER THAN
OUR TRANSMISSION!

YEAH, THEY'RE STEAMED
AND THEY SAID THEY'D
COME OUT AND GET US --
AGAIN... THEN WE'RE
GOIN' TO GET SOME
REFRESHER TRAINING!

If you had to drag your foot on the road to slow your M911, you'd need a mighty long leg—and you'd learn mighty quick about heat buildup.

But heat's already a big problem when some drivers don't learn how and when to use their transmission hydraulic retarder to slow their M911-M747 rig. They're holding the retarder pedal down for too long at a stretch. They're letting heat build up in the transmission—past the maximum allowable temperature.

They're burning up transmissions—at more than \$10,000 a copy!

Watch Temp Gage!

Everything's got a limit. Your transmission's got a limit—an oil temperature limit of 300° F—just like it says on that plate right next to the oil temperature gage. The transmission's normal operating temp is also mentioned on that plate—160°-220° F. There's not much you need to do about that, but... you've got to control temperature buildup caused by retarder operation!



MAX. ALLOWABLE OIL TEMPERATURE
IN CONVERTER RANGE 250° F

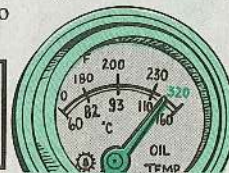
MAX. ALLOWABLE OIL TEMPERATURE
IN RETARDER MODE 300° F

How? Simple! Let up on the retarder

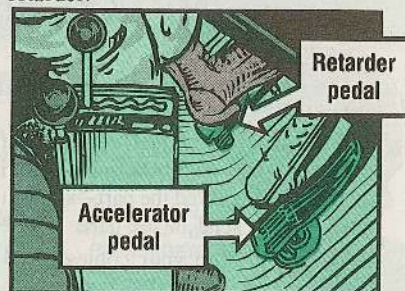
that temp gage so you don't let the temperature go over 300° F!



... the needle is
just about on
the "3"



And remember to keep your right foot off the accelerator pedal while you're using your left foot on the retarder.



pedal. You give the transmission oil a chance to cool off—it doesn't take long. Then you can mash down on the pedal again.

That's the ticket—on 'n' off, on 'n' off... as long as you need to use the retarder... while keeping an eye on

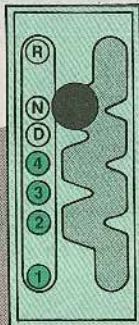
And never use your retarder pedal for a footrest while cruising.

In either case, there's no sense in your retarder and engine fighting each other.

That's How—Now When. . .

Your retarder's mighty handy. It saves wear and tear on your air brakes. And it lets you hold your air brake system in reserve for stopping and for real heavy-duty slowing.

But your retarder's not for all braking. It's not much help when you're operating in high gear ranges. It works best



SEE PAGE
2-20 IN YOUR
TM 9-2320-270-10



Positions 4, 3, 2, and 1 provide increasingly greater engine braking and hydraulic retarder effect. (THE LOWER THE GEAR RANGE, THE GREATER THE BRAKING AND RETARDING EFFECTS.)

in lower gear ranges. Like with your transmission in first. Or, better yet, your transmission in first and your auxiliary transmission in low range.

One of the best times is when you're traveling downhill.

Smart drivers use the same gear for going downhill that they used for climbing the other side of the hill. This gives better control of engine speed and vehicle speed—so you won't "blow" your engine from overrevving and so you won't wind up trying to stop a runaway rig!

So, with your truck in one of the lower gear ranges, your retarder is a good bet for keeping downhill speed under control.

M911 C-HET Warranty

Don't toss out the Oshkosh-furnished replacement part off your M911 C-HET.

They guarantee all their replacement parts 6 months or 6,000 miles—from the date you received the part—and you may need to send in the part.

Also, hold onto your copies of all paperwork on those parts. You need to include copies with claims sent to Oshkosh.

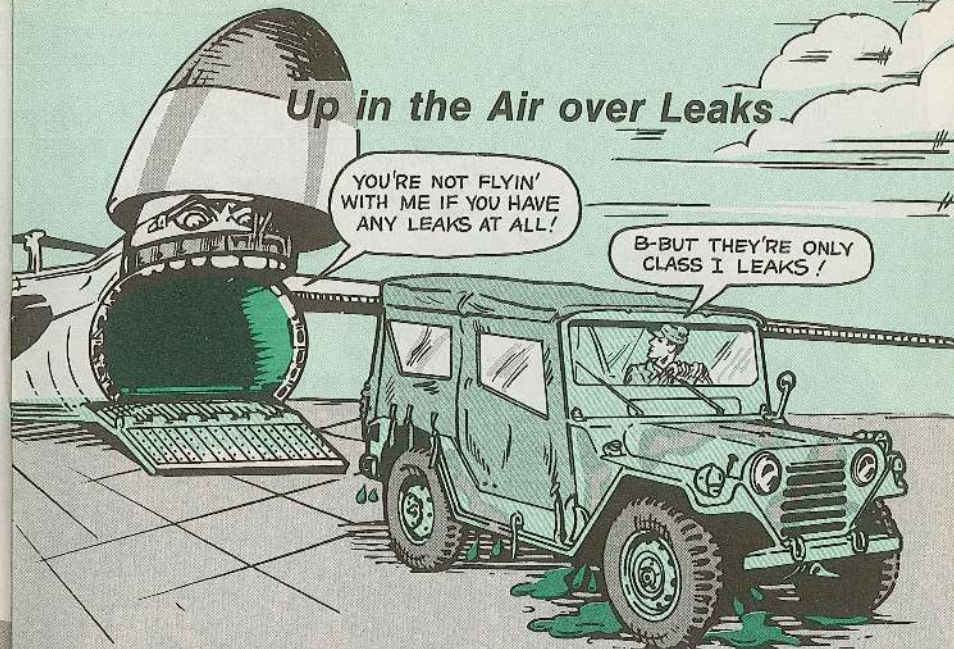
For info on warranty claims, check out Appendix F of your Maintenance Management UPDATE No. 1. Your local LAR (Logistics Assistance Representative) can help too!



IF YOU HAVE ANY TROUBLE, JUST BRING 'ER BACK, BUT...

...YOUR LOCAL LAR (LOGISTICAL ASSISTANCE REPRESENTATIVE) CAN HELP TOO!

Up in the Air over Leaks



The PMCS in the equipment -10 TM's allow operation with either Class I or Class II leaks of oil, coolant or diesel fuel. There's no question about a Class III leak—it deadlines the equipment.

But the Air Force has different rules when it comes to air transport of this equipment. The loadmaster won't load equipment with any leaks at all.

So, find out what the rules are before you get to the loading point so you can correct any faults that would keep your equipment on the ground.

Battery Caution Decal

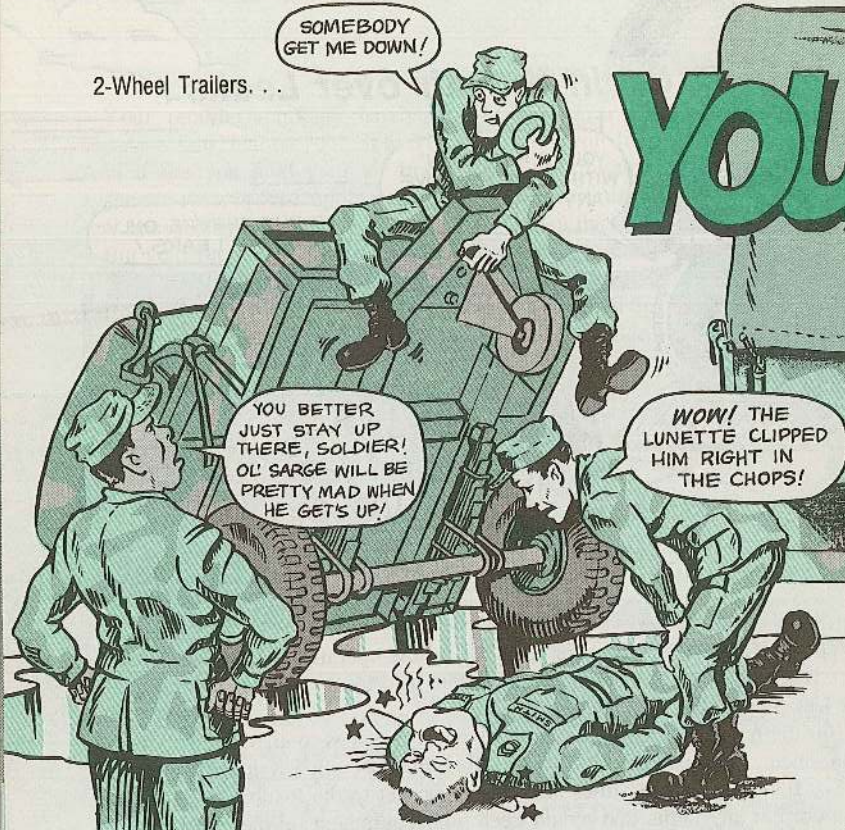
Caution decal, NSN 7690-00-912-3504, reminds you to disconnect battery cables before charging. Stick it near the battery.

CAUTION

BOOSTER OR BATTERY NEG. (-) CABLE MUST GO TO NEG. (-), POS. (+) TO POS. (+) DISCONNECT BATTERY CABLES BEFORE USING CHARGER

THIS DECAL WILL HELP YOU REMEMBER!





You Prevent Tip-Back!

Check for Danger!

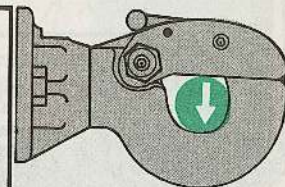
Before you unhook from your truck, check your trailer's center of gravity!

Eyeballing is not enough. If the lunette is resting only lightly on the bottom of the tow pintle, a tip-back could happen anytime after you unhook. Just the weight of someone leaning on the rear might be enough to shift the center of gravity.

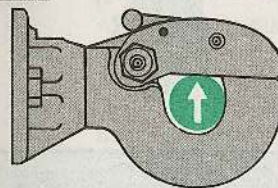
If the lunette's pressing up against the top of the pintle, your trailer will tip back as soon as you pull away.

So grab ahold of the lunette. Try to move it in the pindle—sideways and up-and-down. The lunette should be pressing down hard in the pindle—hard enough so you can't move it easily.

SAFE:
Lunette pressed down HARD in tow pindle



DANGER:
Lunette lifted in tow pindle—or even easy to move around



Too light in the front? Change your parking position—turn the trailer around—park somewhere else. Park where your trailer's center of gravity is well to the front.

Rear Support Leg Helps ¾- and 1¼-Tonners



Some trailers already have a rear support leg. It can be added to other trailers with local command approval. There're two different support legs available—NSN 2590-00-318-6691 and NSN 2590-01-026-4179. They're pretty much alike and do the same job.

The leg will carry some weight, but don't expect it to hold up the tail end of a heavily loaded trailer with a center of gravity far to the rear.

It's a bad day when your loaded trailer tips backward. . . and damages the trailer. . . and, maybe, the cargo, too.

Worse is your losing some hard cash for letting it happen.

Even worse is someone—maybe you—getting hurt by the tip-back.

Tip-back is most likely to happen when you park with your trailer pointed uphill. You release your truck's tow pindle. . . pull away. . . and your trailer takes a tail-dive!

But this can happen on level ground, too, when your load's too heavy in the rear—either because you loaded your trailer wrong or the load shifted during travel. The center of gravity you had in front of the wheels has moved toward the rear—maybe far enough to make your trailer tail-heavy!

And it's plain to see what happens when your cargo is a liquid—like the water in your 400-gal water trailer or the fuel you're carrying in a pod on a cargo trailer. The uphill position of your trailer and the liquid in the rear add up to a big, sudden change in the center of gravity!

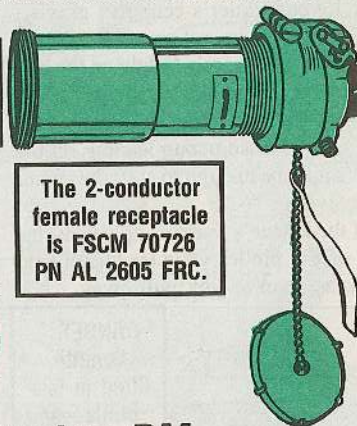
Power Cable Repair Parts

You don't have to replace the complete 2-conductor power cable used with your van when a connector is damaged. All you have to do is replace the connector.

If you need the complete 2-conductor cable, order NSN 4910-00-395-1994. It's 25 feet long and is listed in SC 4910-95-CL-AO1.

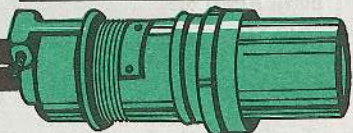
A cable 50 feet long comes with NSN 2590-00-104-4572. Use it in place of NSN 2590-00-992-0518 on Page 74 of TM 9-2330-227-14, which costs more.

They cost about \$50 each. Order the female one on a DD Form 1348-6. The RIC is \$9E.



The 2-conductor female receptacle is FSCM 70726 PN AL 2605 FRC.

The 2-pin male plug is NSN 5935-00-306-2032.



Welder Engine PM

NSN 2940-00-891-9342 gets a filter element for the oil filter on your M887 Contact Maintenance Truck welder engine.

Check the crankcase oil level after every 8 hours of operation. Keep the case filled to the FULL mark on the dipstick.

Drain the crankcase and refill with new oil every 50 hours.

Replace the oil filter element after every 100 hours of operation. If operating conditions are extremely dusty, replace the filter element at every oil change.



Replace filter element with NSN 2940-00-891-9342



I'M JUST MAKIN' A FEW NOTES ON WHICH TIRES CAN NOT BE RETREADS!

THAT'S UP-TO-DATE PM!

Rollin' with Retreads

Are you up-to-date on retreaded tires—where you can use 'em and where you can't use 'em?

AR 750-36 says you may use 'em on all vehicles except the front wheels of a bus.

But Goers and M747 semitrailers are also exceptions. TACOM Msg DRSTA-WG 271500Z (Jul 79) nixes retreads on the Goer. The M747 falls under TACOM Msgs DRSTA-M 252000Z (Mar 82) and DRSTA-M 202000Z (Apr 82). They say it's OK to use retreads already on your M747, but replacements must be new tires.

Your local command may have other restrictions.

Point Hits Ground First

There's only one way to mount self-cleaning Goer tires. . . with the "V" tread at the top of the tire pointing to the front of the truck. Dirt falls away, the tread stays empty and bites into the ground.

Mount tires with "V" pointing forward



Particle Hose . . . No Handholds

Some mechanics are cracking the threaded insert in the diffuser housing when they try to stop a leak at the fluid passage bolt.

They grab the particle hose assembly (Item 46, Fig 96, TM 55-1520-210-23P-1) with one hand and tighten the bleed air line "B" nut with an 11/16-in wrench. Results: damaged boss diffuser threads (Item 19, Fig 17, TM 55-2840-229-23P-1) kinked hose, more leaks.

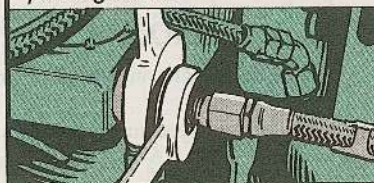
HERE'S HOW
TO STOP A
FLUID PASSAGE
BOLT LEAK...

—Hold the fluid passage bolt (Item 47, Fig 96, TM 55-1520-210-23P-1) with a 13/16-in wrench while you back off the bleed air line "B" nut with an 11/16-in wrench. This's so you won't kink the bleed air line when you tighten the fluid passage bolt.

—Disconnect the nut on the 3&4 oil bearing line (Item 11, Fig 64, TM 55-2840-229-23P) with a 9/16-in wrench.

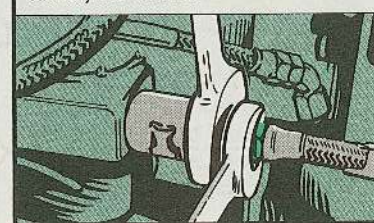


—Now you can hold the fluid multiple connector (Item 49, Fig. 96, -210-23P-1) with a 1-in wrench as you tighten the fluid passage bolt.



—Reconnect the oil bearing line.

—Hold the fluid passage bolt as you tighten the bleed air line "B" nut. No bum threads, no kinks, no leaks.

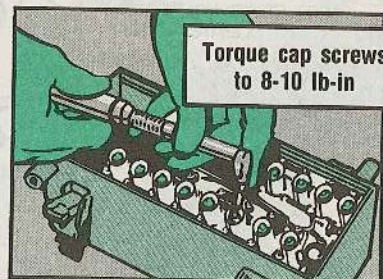


Battery Assault

Take a gander at the battery now. Be sure the battery filler cap screws are in straight (not cross-threaded) and torqued 8 to 10 lb-in.

Use torque wrench NSN 5120-00-117-4832 from your TK-90/G battery service tool kit.

Torque cap screws
to 8-10 lb-in



Careless battery maintenance can get you a face full of potassium hydroxide (KOH). That smarts!

Like maybe you "assault" the battery by leaving a filler cap screw loose so it can vibrate out. Or maybe you dropped a screw into the battery case. Either goof could short a cell and cause it to overheat. You can get a dose of caustic KOH on your hands, arms, face. . . even in your eyes!

When you store or transport the battery, be sure the cover is in place and latched.

Use rubber gloves, apron and face shield for added protection when you inspect, clean or service the battery. TM 11-6140-203-14-2 has the maintenance info.

Cat 1 EIR Phone:
AUTOVON 693-2066
(24 hours)

AVIATION MESSAGES

If your unit has not received a message in which you have an interest, check with your next higher headquarters.

CH-47-83-09 SOF Maint Mandatory, inspection of CH-47D integrated lower control actuators 232200Z Nov 83

CH-47-83-10 SOF Maint Mandatory, One-time inspection of CH-47C sync shaft adapter assemblies 292200Z Nov 83

MIM-AH-1MEA-83-06 Maintenance manual revisions 071700Z Nov 83

MIM-T63-83-MEA-05 Minimum clearance when adjusting the RPM stop screw on engine governors 181500Z Nov 83

MIM-UH-60A-MEA-83-16 Installation and handling caution for pressure cartridge assembly (Squid cargo hook assembly) 161720Z Nov 83

UH-60A-83-11 SOF Maint Mandatory, inspection of accessory module oil return screen for contamination with fibrous material 221600Z Nov 83

UH-60A-83-12 SOF Maint Man-

datory, inspection of tail rotor servo assembly for bent servo valve input stem 042100Z Nov 83

UH-60A-83-13 SOF Technical, repetitive inspection of the forward sliding cover assembly as part of each preflight inspection 011800Z Nov 83

UH-60A-83-14 SOF Operational, cargo hook operations with UH-60A 011830Z Nov 83

UH-60A-83-15 SOF Maint Mandatory, cargo hook relief from limitations imposed by prior SOF messages 281730Z Nov 83

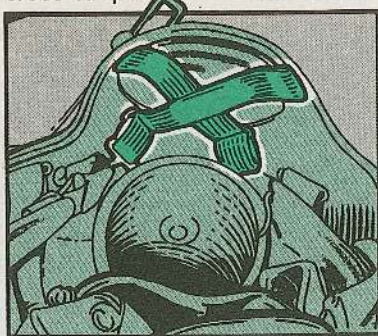
SPH-4 Helmet...

WHEN DID YOU GET
YOUR MIKE BOOM FIXED?
WE READ YOU LOUD
AND CLEAR NOW!

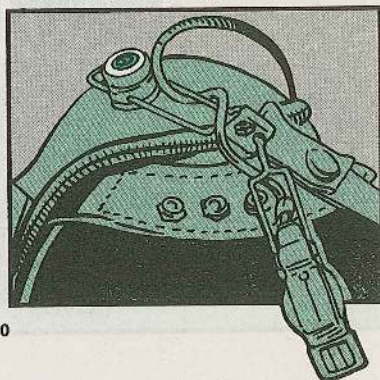
Some microphone boom attachment holes get elongated from fair wear 'n' tear. A loose boom means you can't keep the mike close enough for your lips to brush against it when you speak into it—that means poor voice transmission.

Here's how to "fix" the boom:

• Unhook the 2 ear cup tension cross straps.



• Unscrew the bolt that holds the swivel assembly on the helmet. Remove the outside washer.



Mike Boom Fix



• Scuff the concave side of one of the slotted washers with 80-grit sandpaper, NSN 5350-00-543-3600.



• Peel back the chafing ear cup pad to get to the swivel assembly post screw on the inside of the helmet. Hold the bolt on outside helmet with pliers as you remove the post screw.



• Ditto the same size area on the inside of the helmet.

• Clean both areas with a cloth dampened with denatured alcohol, NSN 6810-00-201-0906. Let it dry.

• Put a thin coat of adhesive, NSN 8040-00-273-8717, on the scuffed-up areas (washer and helmet). Allow 3-5 minutes for the adhesive to get tacky, then stick the washer to the helmet.

• Put the microphone boom and swivel assembly back on and tighten snug.

In about 2 hours your swivel assembly will hold the mike exactly where you need it... no droopy mike... no garbled talk.

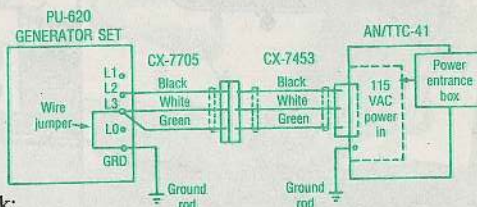
Central Calls

It takes a blend of power and precision to keep your AN/TTC-41 telephone central and its SB-3614 switchboards directing traffic smoothly.

The power? Your PU-620 generator set, of course. Precision is needed to keep delicate circuit cards on line.

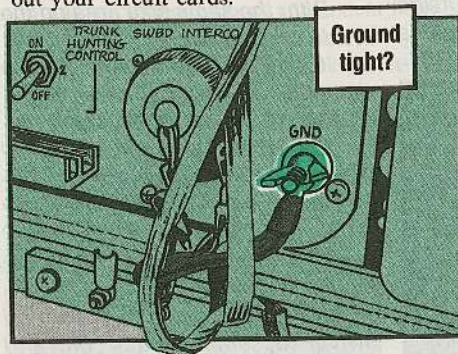
Check Your Muscle

Before flexing your muscle, see if your connections are tight and right. TB 43-0125 shows you the correct wiring scheme. Here's how yours should look:



Pay special attention to grounding. TM 11-5805-693-12 clues you in. Remember you must make connections to bare metal.

A poor ground gives you unreliable power. Surges and transients can punch out your circuit cards.



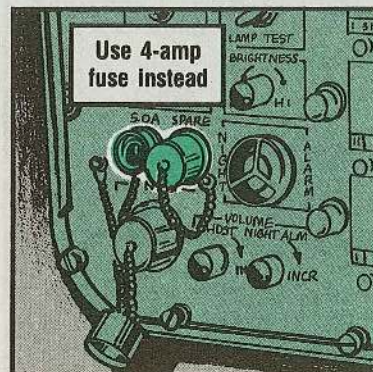
'Course, you also must make sure your switchboards and the rig itself are solidly grounded. Then, you're ready to operate.

Have your generator set running up to speed and smoothly before applying power to the rig. The PP-6224 power supply and all other gear inside—especially the switchboard—should be OFF.

Set the right voltage output on your power supply. Start up the biggest users first. That's either the air conditioner or heater. Then, go down the line, ending with the smallest power drains.

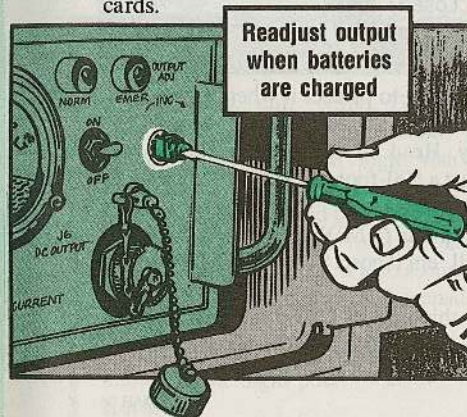
Protect your switchboards from overload by using a 4-amp fuse, NSN 5920-00-557-2647, in the front panel. Although the panel says "5.0 amp," the headshed wants you to use the smaller version.

for Good PM



Get a set back from support? Make sure they didn't slip in the bigger fuse.

When you're operating and charging batteries at the same time, you set your PP-6224's output higher. Remember to set it back when the batteries are charged. The extra voltage can burn up cards.

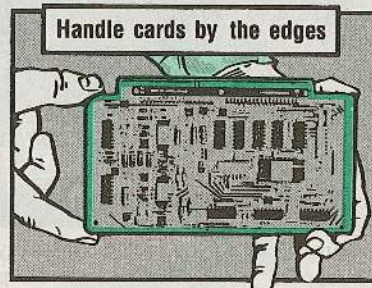


Likewise, if you have a generator failure, shut down the gear inside your TTC-41. Turn it on again only when your PU is back on line.

Practice Card Care

Protection for your SB-3614 circuit cards starts with careful handling. Keep pins straight by pulling and seating cards carefully. Use the extractor that comes with your gear. It's NSN 5999-01-038-6793.

Once you've removed a card, handle it on the edges only. The natural oil from your skin—not to mention any other dirt or oil—can ruin a card.



Static electricity is another card killer. Even that small jolt you get when you touch metal or another person is more than enough to ruin a circuit card. So, ground yourself.

You can often do it by holding on to something metal while handling the card. Or, you can stand on a conductive mat while you work.

Wrist Strap Zaps Static

If you handle cards a lot, use a wrist strap. The Army doesn't stock 'em yet, but a local electronics supply outlet should have some. Be sure the one you use has an in-line, 1 megohm resistor in the ground wire. Without it, a big jolt could ruin your circuits.



Finally, when you pack a card away or want to protect it when it goes back to support, watch what you use for packing.

Bubble pack generates static electricity. Head off damage by using a wrap of antistatic polyethylene material. You get a 500-foot roll with NSN 9330-00-113-9438.

That NSN isn't on the Army Master Data File (AMDF), so tell your support so in the DD 1348-6's remarks block. Tell 'em it costs \$116, too. The Routing Identifier Code (RIC) is S9G.

Wrap a card before you put it in any shipping sack to protect its circuits.

Finally, test switchboard circuits with a field phone patch, not a loop back test. Most cards can't carry the loop back's high ring voltages.

Keep on Crankin'

It's not the cranking that kills your TA-312 telephone's ring generator—it's the sudden stop.

The crank is mated to the generator with plastic. A hard crank, a sudden stop, maybe a reverse motion to cut the ring short, and you snap the plastic.

That spells a trip to support for a new ring generator.

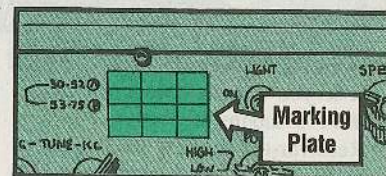
Keep on cranking hard enough to get your ring, of course, but let the generator roll to a stop.

Another crank saver is to always tuck the handle back flush with the generator when you're through ringing.

RT-524 Marking Plate

A marking plate for your receiver-transmitter is NSN 9905-01-133-6894.

The headshed is changing the plate from DS to organizational replacement. That word will be in TM 11-5820-401-20P.



AN/TNH-24 Fuse

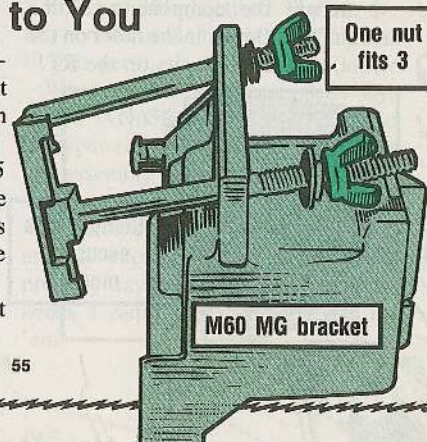
You need a 1-amp fuse, NSN 5920-00-280-8342, for your sound recorder-reproducer set's high-speed time code reader and high-speed time code generator. It replaces the 1/2-amp fuse, NSN 5920-00-898-0400, listed in TM 11-5835-247-12 and -20P. The commo headshed OK's the use of the bigger fuse.

Nuts to You

One wing nut, NSN 5310-01-038-2205, does triple duty when it comes to securing your night vision sights.

Not only does it hold the AN/TVS-5 and AN/PVS-4 onto their M60 machine gun mounting brackets, it also secures the AN/PVS-4 onto the M203 grenade launcher.

This new NSN brings the wing nut shown in the sight pub.



AN/GRC-106

Matchup

QUIT YOUR
HOLLERING!
MY DRIVING'S
NOT THAT
BAD!

THAT WASN'T ME
WHO HOLLERED!

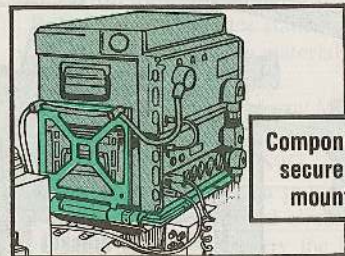
An airborne radio set? It could happen if you forget to secure it to its MT-3140 mount.

Receiver-transmitters and amplifiers aren't the same on the inside. That's why you turn 'em in as a set when one needs maintenance.

Component cases aren't always the same, either. So, when you get a new pair from support, go through the mounting procedures.

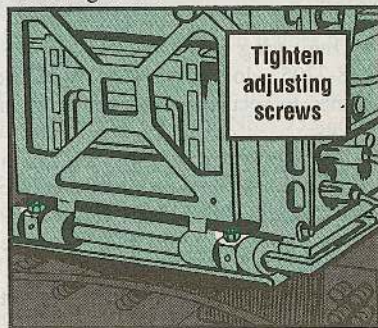
Forget the ones in your -10 TM, tho, they're incomplete. Here's what you do:

1. Secure the components in the mount. The RT rests in the holes on the mount, and the amp sits on the RT.



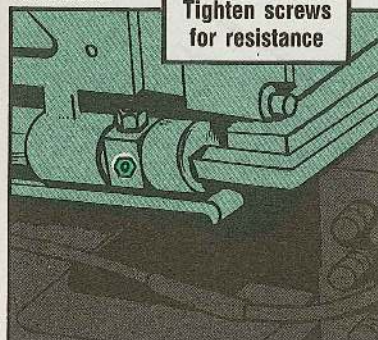
Components
secure in
mount?

2. Rest the crossbar assemblies against the radio. Alternately tighten the adjusting screws on each side until the crossbar touches the bottom of the mounting notch.



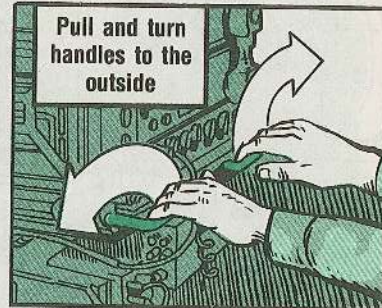
Tighten
adjusting
screws

3. Tighten each adjusting nut $\frac{1}{4}$ turn. If needed, tighten the hex head screws in each pivot assembly until you feel resistance.



Tighten screws
for resistance

4. Make sure you've got the right tension by pulling the release handles and turning them to the outside. Turn 'em back and push 'em into the slots on the front of the mount.



Pull and turn
handles to the
outside

If you've adjusted it correctly, there'll be no binding and the set will be secure.

If there's binding, alternately loosen the adjusting nuts until it's gone. On the other hand, if the radio isn't secure, tighten the nuts until it is.

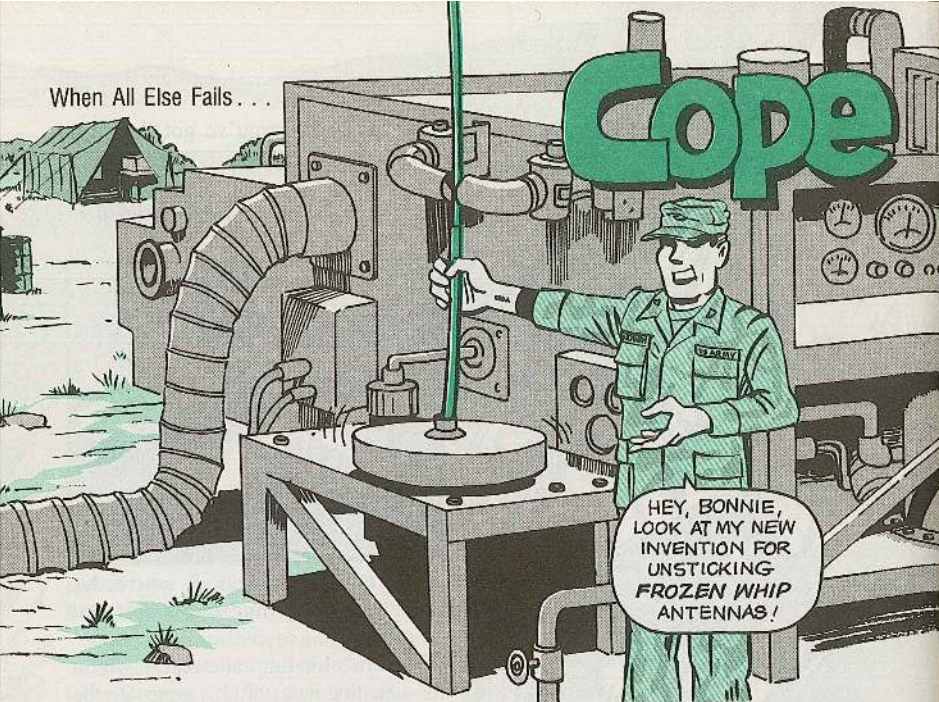
A final test. Pull the handles and turn 'em to the outside. If friction is right, the crossbar assemblies will move away from the set and the handles and crossbars will stay wherever they're released.

Still too little friction? Tighten the hex screws in each pivot assembly until you get it.

When your set is rack-mounted—say, in the AN/GRC-142 or -122 radio teletypewriter set—you may have to set the assembly on the floor to do the work.

'Course, you should adjust your sets anyway. It could be they weren't done properly way back when. After all, who needs a radio set "dropping in" on 'em?

When All Else Fails...



Prevention's the best medicine when it comes to unsticking whip antenna sections.

KEEP 'EM CLEAN: Before putting sections together, be sure they're clean. Grit or dust on a mating surface can lock the sections up tight.

A pencil eraser, notebook paper or a non-abrasive pot scrubber will do the cleaning trick. Lay off with steel wool, sandpaper or other abrasives, tho. They take off the copper coating the sections need for good electrical contact.

You can use a bore brush—gently—to clean the female mating sections.

GREASE THE SKIDS: Once they're clean, add a little silicone, NSN 6850-00-880-7616, to the male section.



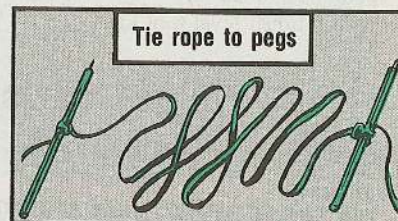
Don't overdo the lube on radiating antenna sections. Use just enough to smooth the way, and keep 'em from freezing together. To keep sections from sticking, back 'em off half a turn after you've snugged 'em up.

Cope with a Rope

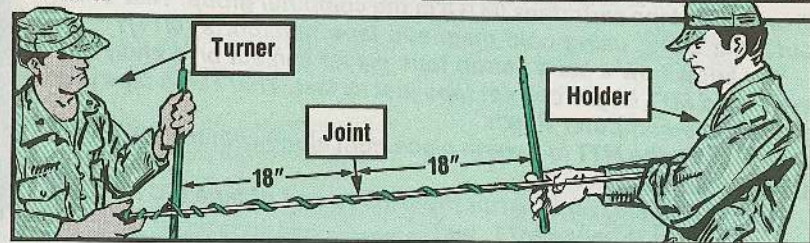


PLAY IT SAFE: Prevent sections from binding by taking 'em apart occasionally. Experience will tell you how often it's needed.

If you already have frozen sections on your sturdy tubular antennas, here's one way to get 'em apart. We heard about it from then SSG Robert Bonura of Ft Polk, LA.



Tie a tent peg to each end of a 5-ft rope. With a buddy holding one peg, wrap the rope around the sections counterclockwise. Start 18 inches above the frozen joint and end 18 inches below it.



With your partner holding his end still, turn the other end around the sections until the rope tightens. Continue until the section loosens and begins to turn. Take it apart by hand if you can. If you can't, do the "rope trick" again.

If a bottom section binds, wrap the rope to the antenna base. Hold it there while your buddy turns the top peg.

TACFIRE MTT Cleaners

Pulling a PMCS on your computer group's magnetic tape transport (MTT) is tough without the right cleaners.

Here are 2 cleaners your pubs don't tell you how to get:

- **FREON.** Careful with this one. There are NSN's for freon floating around, but you need a special water-based one. Order it by PN only, and code your request 2B—do not substitute, only the requested item will do.

Ask for PN MS180FREONTE. The Federal Supply Code for Manufacturer (FSCM) is 18598. Use Routing Identifier Code (RIC) B16.

- **COBRA BRUSH.** Request NSN 7920-00-134-1998. This brush will soon be added to your TK-225 organizational level tool kit.



Keep Heads Warm, Too

Dear Editor,

The TACFIRE PMCS pubs caution against using cold (below 32° F) magnetic tape cartridges (MTC) in the computer group. That's fine, but what about using cold magnetic tape transports (MTT)?

You know how a car's stereo tape player can act on a chilly day. Well, cold MTT heads can eat tape just as fast. That eaten tape puts your whole computer down.

I say store the MTT in a warm place right along with the MTC when temps start dipping.

Another tape saver is to run the MTC to end of tape (EOT) before you remove it from the MTT, just like the PMCS pubs say. It takes a little extra time, but it'll keep the MTT from eating slack tape.

CPT Robert Burns
APO New York 09114

(Editor's Note—Good thinking, Sir. The commo headshed agrees with you. All you cold-weather communicators take note.)

Remember the Drain!

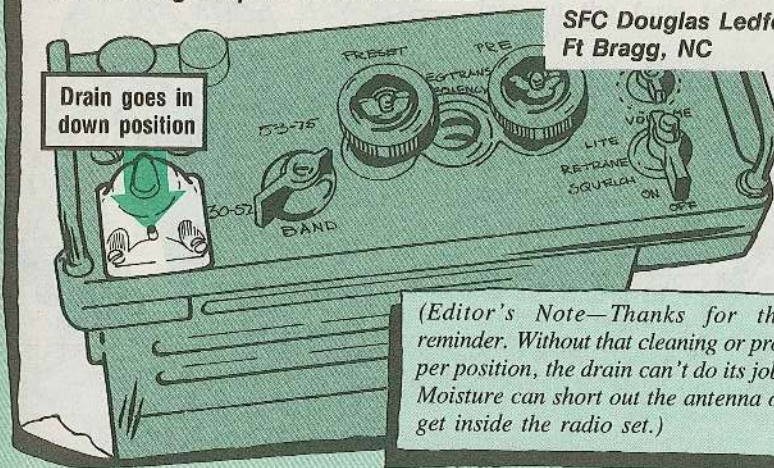
Dear Editor,

Many commo-types don't know about the drain hole on their AN/PRC-77 radio set's antenna mount.

The hole should be cleaned out regularly during the organizational maintenance quarterly.

But, operators also must make sure the hole is "under" the antenna as shown in Fig 3-1 of TM 11-5820-667-12. If it's not, they should tell their org shop to turn the mount.

SFC Douglas Ledford
Ft Bragg, NC



(Editor's Note—Thanks for the reminder. Without that cleaning or proper position, the drain can't do its job. Moisture can short out the antenna or get inside the radio set.)

AN/TRC-112 Refueling Caution

Shut down and button up your radio terminal set before refueling your vehicle.

Left operating, the power amplifier air inlet draws in explosive fumes. Heat or a spark can then ignite them.

Keep the air inlet valve buttoned up any time the fuel cap is off, too.

You can get a caution decal reminder with PN (80063)SC-C-938742.

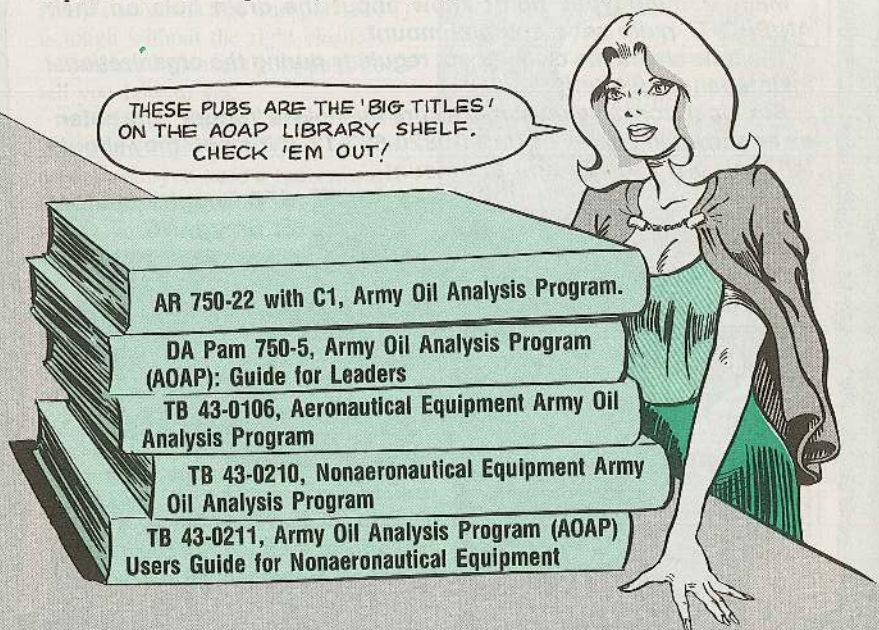
Get 2 per Track-112. One goes outside under the air inlet; the other inside on the power distribution panel.



AOAP Pubs

The Army Oil Analysis Program is more than just another Program with a capital P. It's a vital part of your everyday maintenance operation.

THESE PUBS ARE THE 'BIG TITLES'
ON THE AOAP LIBRARY SHELF.
CHECK 'EM OUT!



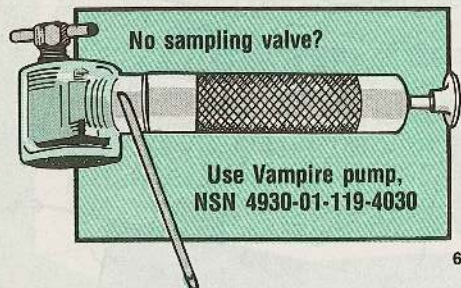
Use DA Form 12-9A for pams and the AR and DA Form 12-34C for TB's to get on regular distribution for these pubs. Get your pubs people to order current copies of all the pubs on a DA Form 4569 through AUTODIN.

AOAP Oil Sampling

Use Vampire pump Model 43-78m, NSN 4930-01-119-4030, to make oil sampling easier when there's no sampling valve. The pump will be included in TB 43-0210 and will be added to the No. 1 and No. 2 Common shop sets. Until then, use Appendix A of CTA 50-970 as your authority.

Get a 1,000-ft roll of 1/4-in plastic tubing with NSN 4720-00-964-1433. The authority is TB 43-0210.

NSN 8125-01-082-9697 brings you 120 3-oz plastic bottles for oil samples.



Equipment ID Card...

Do-It-Yourself Tip

Dear Editor,

Here's our version of the Equipment Identification Card that goes in the Equipment Records Folder. It's printed on hard-stock card copy and inserted in the outside pocket of the folder. We've included service and lube data on the form for easy reference.

This system may be of interest to other units.

EQUIPMENT IDENTIFICATION CARD					
1. ADMIN NO H-16	2. REGISTRATION NO NB 02 OT	3. SERIAL NO A1512891			
4. MODEL NO M151A2	5. NOUN TRK. 1/4 TON	6. NSN			
7. UNIT 1/200 INF Bde	8. AOAP SAMPLE DUE 12 Aug 84 / 24 hrs.				
9. OPERATOR PFC YODA	10. SUPERVISOR SGT JABBA				
11. NEXT SERVICE DUE: a. MILES/HOURS 37,981 b. DATE 14 Sep 84		12. NEXT LUB DUE: a. MILES/HOURS 27,212 b. DATE 27 Aug 84			

GANG FORM 0054, 15 JAN 83

WO1 Anne E. Fowler
Georgia Army National Guard

(Editor's Note: Good idea! Units may want to add a block for AOAP Sample Due, like so:

11. NEXT SERV DUE:	12. NEXT LUB DUE:	13. AOAP SAMP DUE:
a. MILES/HOURS	a. MILES/HOURS	a. MILES/HOURS
b. DATE	b. DATE	b. DATE

Out With the Old!

When your new ARMS Monthly AMDF microfiche comes in, toss out the old! All the way out! File 13!

Resist the urge to pass it along to a buddy... it'll only cause trouble. Each monthly AMDF has about 100,000 data element changes. Each October, about 800,000 prices change.

If your buddy needs a current copy, he or she can call AUTOVON 977-6741, FTS 589-6741, WATS 717-782-6741, or write:

Chief
USA DARCOM Catalog Data Activity
ATTN: DRXCA-BTM
New Cumberland Army Depot
New Cumberland, PA 17070

Lucky PM Tips

M2 Burner Unit Generator

You don't need the protective caps on generators installed as spares in your M2 burner unit. Throw away the plastic caps that come on a new generator. Otherwise, they'll melt into a glob that's hard to get off. The caps protect the threads only in shipping.

JD410 Tire NSN's

Get the front tire for your JD410 Loader backhoe with NSN 2610-01-049-2796. The back tire comes under NSN 2610-01-054-0338. Make a note since the NSN's are not in your TM 5-2420-222-14&P-1 or -2.

Hobart Welder Parts (Sources)

Having trouble finding a local source of parts for your Hobart welding gear? The headshed can help by providing the address and phone number of the nearest dealer. Write to:

Commander USA AMCCOM
ATTN: DRSMC-MAT-T (R)
Rock Island, IL 61299
Or call
AUTOVON 793-6509 or
Com (309) 794-6509.

Tank and Pump Unit Outlet

Get a magneto outlet—Item 3, Fig 5-1 of TM 10-4930-204-13—for your tank and pump unit with NSN 2920-00-939-9834. It's left out of your -23P.

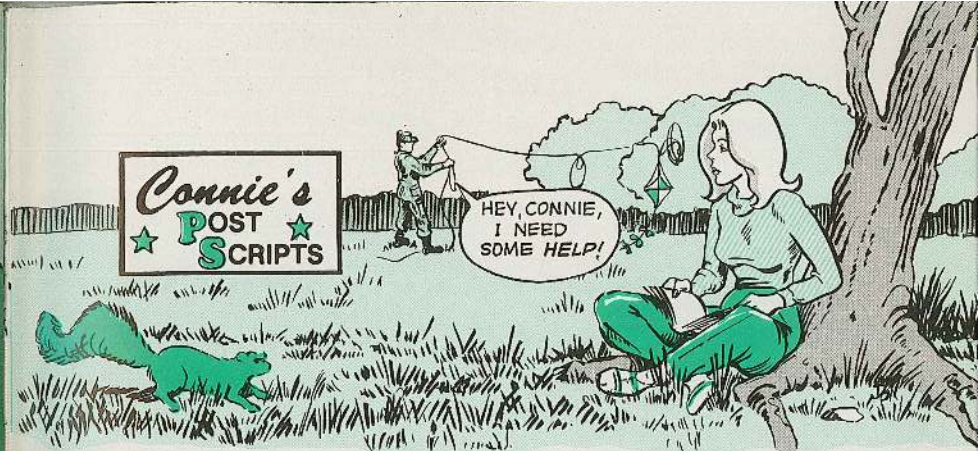


Immersion Heater

NSN 4520-01-136-5495 gets a hood assembly for your M67 immersion heater. The SMR code for Item 12, Fig E1, TM 5-4540-202-12&P has been changed to PAOZZ by the headshed.

MW24B Fuel Filter

NSN 2910-00-401-4189 will get you a fuel filter kit for your scoop loader. This gets you one primary and one secondary spin-on filter element.



Towing an M1 with an "88"

When you tow an M1 tank with an M88A1 recovery vehicle, you need to be very careful with speed, tow bar or cable hookup, and turning and stopping.

The M1 weighs more than the "88" and that creates safety problems.

- Always use a third vehicle—another M1—as a hold-back vehicle when you tow an M1 down a hill, even though you use a tow bar.

- Allow no one to ride in or on an M1 while it's being towed.

- Tow at 5 MPH or slower when using a tow bar.

- Tow at 2 MPH or slower when using tow cables.

- Never make sharp turns in 1st gear. Make gradual, wide turns.

- Never make sudden stops.

If you don't do these things, the M1 tank you're towing may push you sideways, may run up over your rear, may ruin your transmission or brakes, and might even flip you over.

M332 Trailer Towing Hazard

TACOM Msg DRSTA-MVA 231000Z Sep 83 puts these restrictions on towing M332 ammo trailers in tandem:

- Use a 5-ton truck for towing.
- Don't tow more than 2 trailers in tandem.

- Tow in tandem only in off-road conditions at no more than 10 mph.

- Highway towing in tandem is not authorized.

Safety considerations make towing more than two M332 trailers in tandem dangerous.

Turret Motor Goof

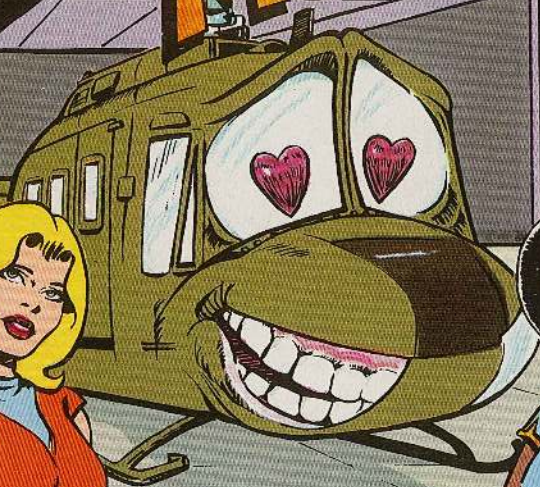
We dropped the ball on Page 5 of PS 373 when we showed the traverse mechanism lube plug instead of the turret motor hydraulic fluid dipstick. The check to see if the fluid level is low is made at the top of the hydraulic reservoir. Some vehicles have a liquid sight gage instead of a dipstick.

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