

Issue 513

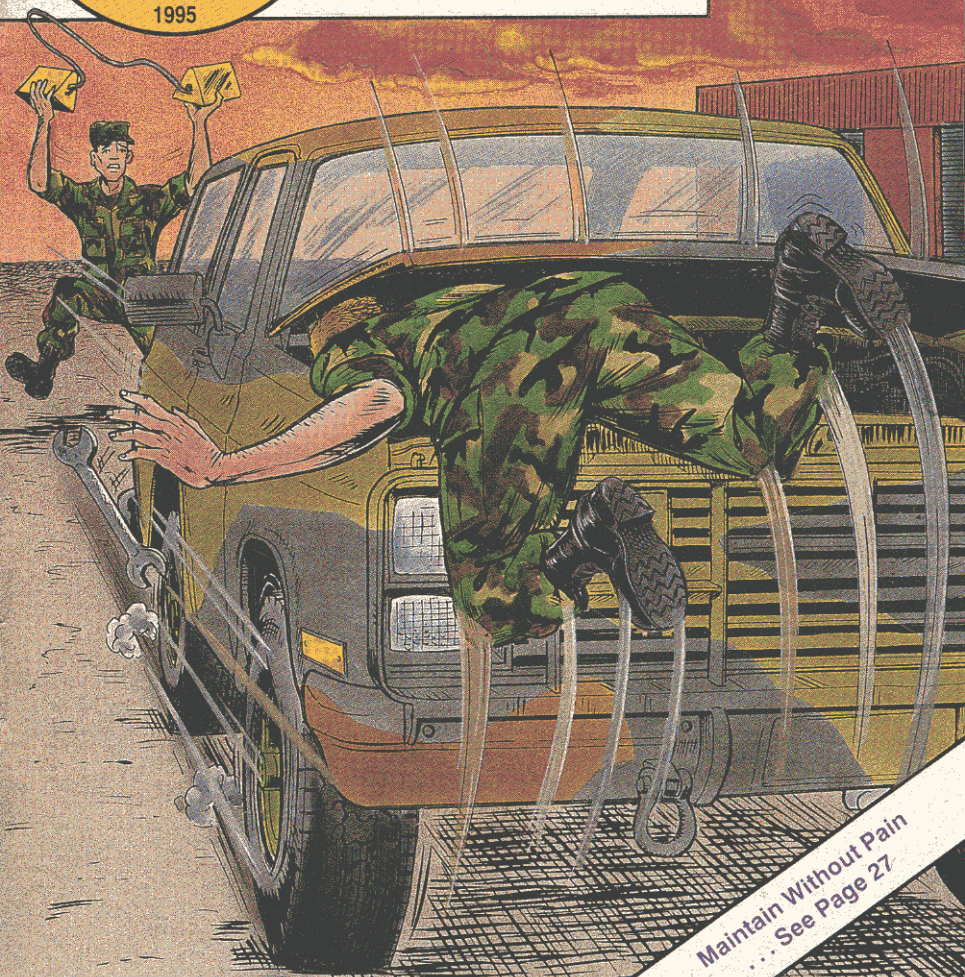
PS

August  
1995

# THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-513

Has your  
buddy read  
this issue?  
Pass it along!



Maintain Without Pain  
... See Page 27



# Good PM Means Sweating the Small Stuff

MAN, WHAT A MESS!  
THIS SHOULD NEVER HAVE  
GOTTEN THIS BAD!

Just as tiny acorns grow into great oak trees, little maintenance problems can grow into major repairs at huge expenses.

That's why it's so important for drivers and operators to report or repair every problem they find during PMCS, no matter how small it seems.

Remember the old saying: For want of a nail, the shoe was lost; for want of a shoe, the horse was lost; for want of a horse, the rider was lost.

Well, that idea is just as valid today as it was then. But we're not talking about horseshoe nails anymore.

Now we're talking about small fluid leaks, dirty air filters, corrosion, and other warning signs that PM needs to be done.

Forget these things and you'll have a vehicle that won't go, a radio that won't work, a cannon that won't fire, a helicopter that won't fly. For want of a "nail", the show stops.

The message for today's operator, driver, gunner is: When you see a loose bolt, tighten it; when you see corrosion starting on your gear, clean it off; when you see a fluid leak, stop it, report it or keep an eye on it.

There are immediate dividends to this policy, too. It's easier, faster, and cheaper to solve a small problem now than to repair a major problem later.

For instance, it might only take a wrench to tighten a loose gearbox drain plug. Let it go, however, and you might wind up with frozen gears.

PMCS is the time to find these little problems. It's the one time you're required to go all over your truck, radio system, helicopter or whatever.

By the numbers, you poke, peek and probe at your gear. You are in position to find the small things that can grow into major problems.

REMEMBER,  
YOU CAN HEAD OFF A  
PROBLEM NOW...OR  
REPAIR IT LATER.



THE  
PREVENTIVE  
MAINTENANCE  
MONTHLY

TB 43-PS-513, The Preventive Maintenance Monthly, is an official publication of the Department of the Army, providing information for all soldiers assigned to combat and combat support units and all soldiers with unit maintenance and supply duties. All information published has been reviewed and approved by the agency responsible for the equipment, publication or policy discussed. Application of the information is optional with the user.

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You are invited to send PS your ideas for improving maintenance procedures, suggestions for articles, or comments on material published in PS. Just write to:

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Or E-mail to: [psmag@logsa-cmh2.army.mil](mailto:psmag@logsa-cmh2.army.mil)

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# SIGHT ON

**I**gnoring your TOW's optical and night sights will soon put you and your TOW in the dark. And that's a bad place to be with a line-of-sight missile like the TOW.



## Protect Sights

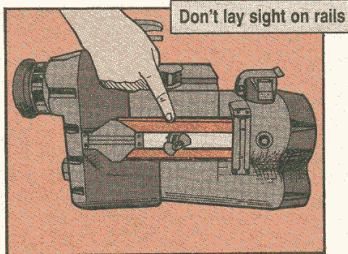
The sights are the most delicate — and expensive — parts of the TOW and they need the most protection.

Keep sights in case as much as possible. Strap them in for travel

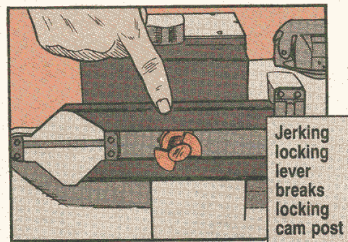


But that's not enough during travel. A sight bouncing around a truck will soon have ruined circuitry and cracked lenses. Use tiedowns, NSN 5340-01-029-9085, to keep sights tight. And never toss a sight. Hand it off or lay it on the ground.

But don't lay the op sight on its rails. The sight's weight breaks the cam control and the sight can't be properly locked on. Lay it down so the eyepiece side is off the ground.



Do not muscle the night sight's locking lever, either. If the sight's positioned right on the op sight, the lever pulls back easily. A hard jerk breaks the op sight's locking cam post — a depot repair.

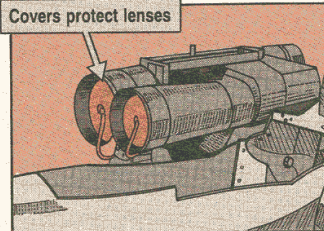


# SIGHT PM

## Use Lens Covers

Both sights' lenses can be scarred by blowing sand. That makes looking through sights like looking through soup. Protect the lenses with lens caps.

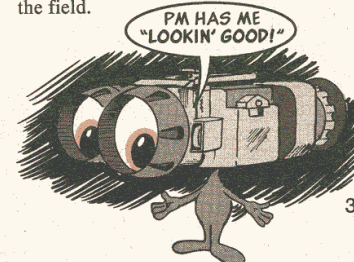
Covers protect lenses



The op sight doesn't come with caps, but you can order them: Large cover, NSN 5340-01-121-8776, small cover, NSN 5340-00-855-7993, and the eyepiece cover, NSN 5340-01-087-1298.

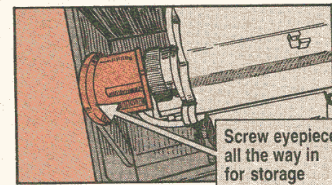
Poke holes in the covers and use string to tie the covers to the sight. Your support can bore a small hole in the lens shield for one end of the string.

Check for the night sight covers during BEFORE PMCS. If a cover's missing, tell your repairman so he can order a new one. If a cover's strap is broken, use string to tie the cover to the night sight so the cover won't disappear in the field.



## Eye Cups

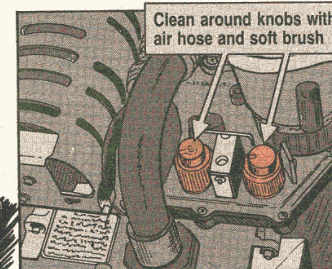
Do not use the night sight eye cup as a handle. It will tear right off and your eye will have no protection. Screw the eye cup all the way in before you put the night sight in its case. Otherwise, the case edge will shear it off.



## Cleaning

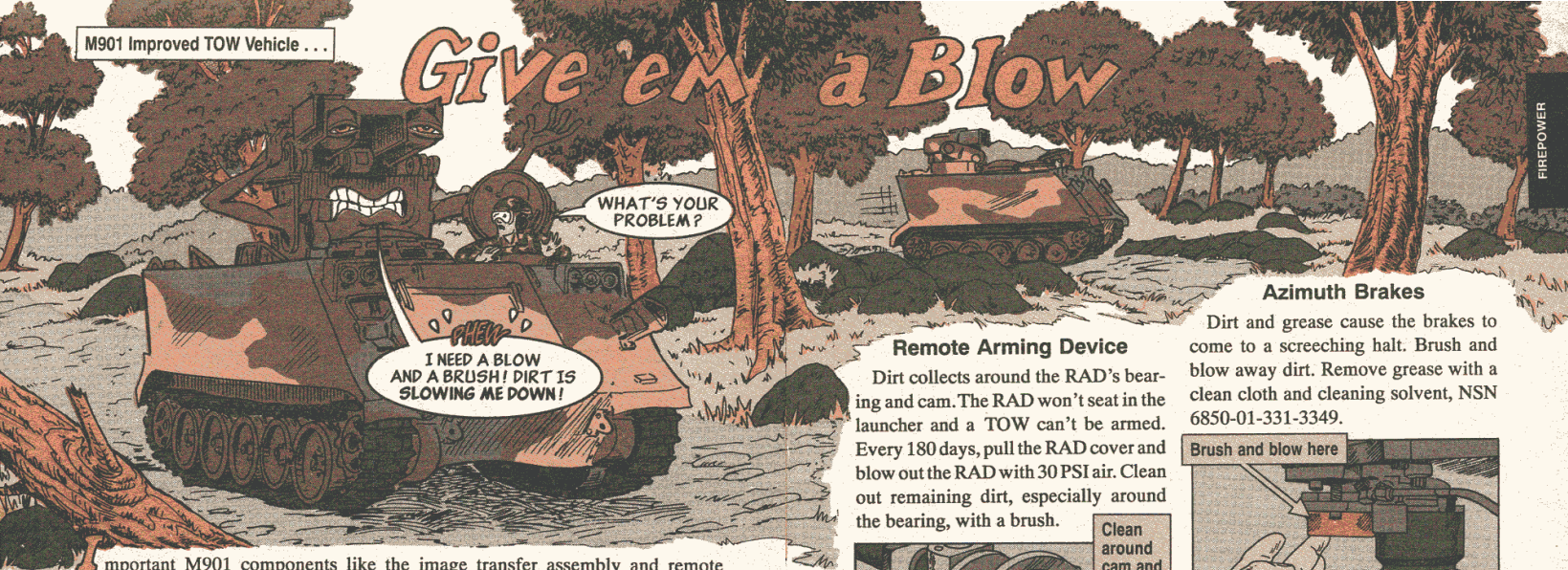
Clean both sights' lenses only with lens tissue and cleaning solution, NSN 7930-00-880-4454. Anything else scratches the lenses.

But you also need to clean away dirt and sand from the eyepieces, knobs and rings. If you don't, you'll soon have trouble adjusting the sights. You can blow away dirt with 30 PSI air or sweep it out with a soft brush.





# Give 'em a Blow



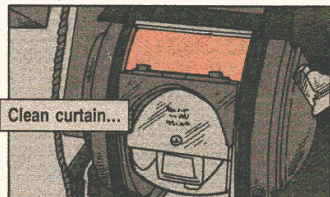
Important M901 components like the image transfer assembly and remote arming device won't do their jobs if dirt and grease gunk things up. Clean 'em real good every six months to keep them working smoothly.

## Image Transfer Assembly

Dirt builds up around the ITA curtains and causes them to bind. Eventually, dirt gets in the ITA and makes for difficult viewing.

In the field, use a clean paint brush daily to wipe away dirt from the ITA curtains. That prevents most dirt buildup.

But semiannually your repairman needs to disassemble the ITA down to the dome lens and erector assembly window for really clean curtains. Then he can wipe curtain guides with clean water and a lint-free cloth to get the dirt a brush can't.



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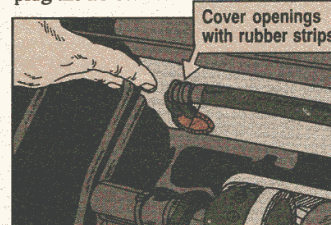
AUG 95

## Remote Arming Device

Dirt collects around the RAD's bearing and cam. The RAD won't seat in the launcher and a TOW can't be armed. Every 180 days, pull the RAD cover and blow out the RAD with 30 PSI air. Clean out remaining dirt, especially around the bearing, with a brush.



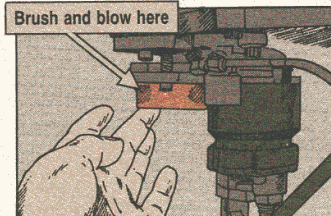
Seal out most dirt by glueing pieces of rubber (old inner tube's good) over the openings in the RAD box for the cable and hydraulic lines. Foam insulation or RTV caulking are also good ways to plug the holes.



PS 513

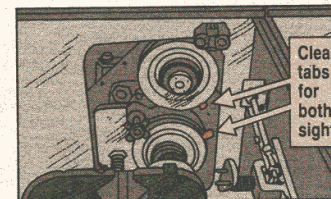
## Azimuth Brakes

Dirt and grease cause the brakes to come to a screeching halt. Brush and blow away dirt. Remove grease with a clean cloth and cleaning solvent, NSN 6850-01-331-3349.



## Night Sight Motors

The motors for the brightness, contrast, and focus controls clog with dirt. Pull their access covers and give 'em a blow and a brush. Do the same with the lateral alignment tabs for both the night and day sights.



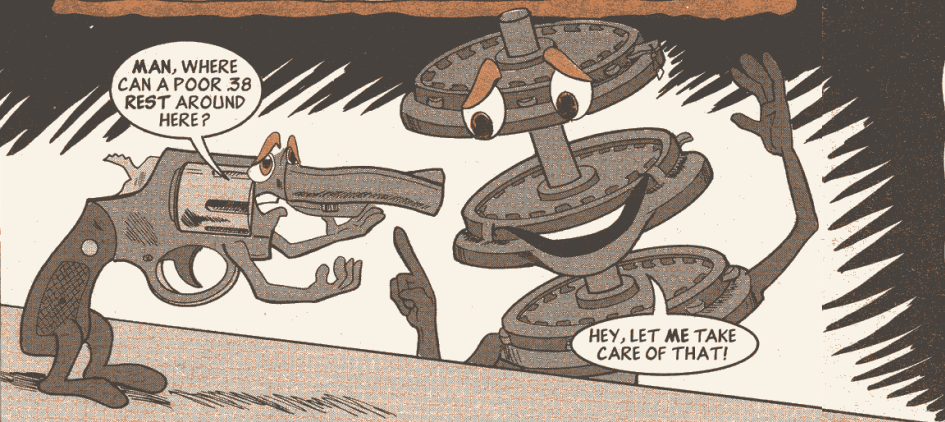
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AUG 95



# Rack for .38-cal Pistol

**N**eed a rack for your .38-cal revolvers? Invert the tray of your M1920 .45-cal pistol racks, NSN 1095-00-650-7453. But don't stop there.



You'll need to put on locking posts, too, to meet security standards. Without the posts, the revolvers can be wiggled out of the rack.

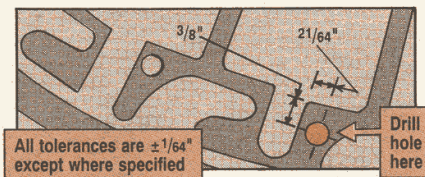
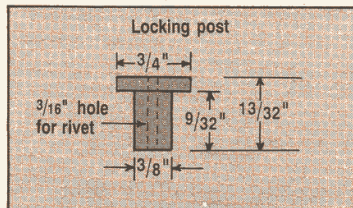
Here's how to do the job:

❶ Remove the center post rivet that holds each circular rack you need for your .38s.

❷ Turn the rack upside down and put it back on the center post.

You need 20 locally made locking posts and 20 rivets, NSN 5320-00-818-0942. Posts are made from 3/4-in stock by your support.

❸ With a 3/16-in drill bit, drill 20 holes in the inverted rack. Holes should be on the right hand side of each pistol slot, 3/8-in down and 21/64-in from the slot edge.



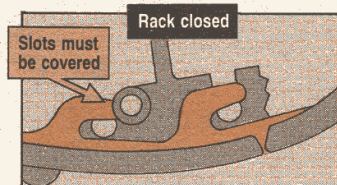
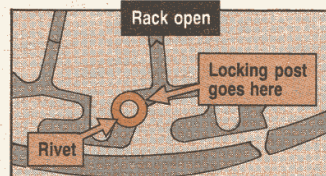
❹ The locking post goes on the outside of the rack. Insert the rivet through the rack frame and into the post. Peen the rivets until each post is secured tightly to the rack frame.

❺ When all posts are installed, rivet the rack to the center post.

Slide the rack closed to be sure that each pistol slot is covered completely by the metal shafts (pistol locks) that go through the trigger guards.

❻ Reverse the revolver that's next to the lock...so that the lock and locking mechanism can clear.

Finish the rack by covering the exposed metal bottom (now top) on the rack with duct tape, and cardboard cut to fit. Then paint the rack with OD paint.



## Just a Touchup, Please!

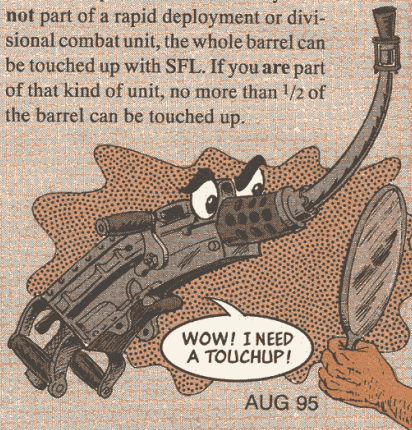
**I**f the finish comes off your unit's M2 machine guns, corrosion can't be far behind. Once corrosion gets a foot in the door, an M2 may be on its way out the door for good. Corrosion can make an M2 unrepairable.

That's why armorers must inspect M2s at least quarterly for spots where the finish has worn off. If there is no corrosion or damage, thoroughly clean the spot and touch it up with solid film lubricant (SFL), NSN 9150-01-260-2534.

TM 9-1005-213-23 is being changed to authorize SFL for touching up the machine gun. It can be used on up to 1/3 of the receiver surface.

If more than 1/3 of the receiver surface has no finish, the machine gun should be turned in.

The exception is the barrel. If you're not part of a rapid deployment or divisional combat unit, the whole barrel can be touched up with SFL. If you are part of that kind of unit, no more than 1/2 of the barrel can be touched up.





# Flaky GPS Filters

The filters in the gunner's primary sight (GPS) body assembly are there to protect your eyes, gunners. So when one of the filters is faulty, you've got good reason for concern.

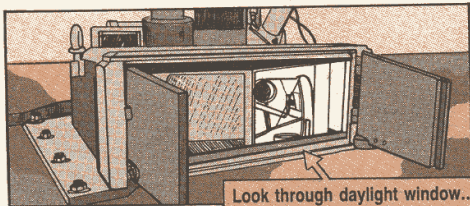
Light filter, NSN 1240-01-251-4849, located in the GPS unity window, is one that bears watching. The special coating on the light filter is starting to peel and flake off on some vehicles.

Normally, that's not a problem. All vehicles are also equipped with a laser eye safe filter that's installed between the laser and the GPS body. That protects

the eyes of everyone within the tank's laser range.

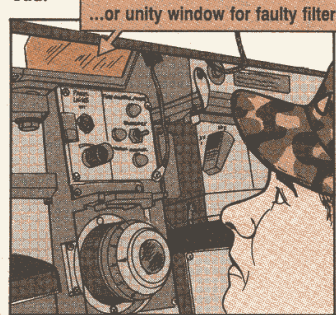
During combat, though, the eye safe filter is removed. That leaves the light filter as your only line of defense against reflected laser beams while you're looking into the unity window.

Finding a bad filter is easy. Look into the GPS daylight window from the outside of the tank under the dog house or



Look through daylight window...

through the unity window on the upper portion of the GPS. Either way, you'll see scratches or flaking if the filter's bad.



...or unity window for faulty filter

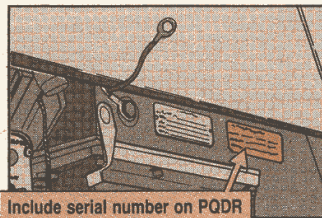
WHAT'S WITH THE SHADES?

I NEED ALL THE LASER PROTECTION I CAN GET!

If the filter is bad, get it replaced at once. Make sure you document the bad filter by submitting an SF 368, Product Quality Deficiency Report (PQDR). Send the PQDR to:

US Army ARDEC  
ATTN: AMSTA-AR-QAWC  
Rock Island, IL 61299-7300

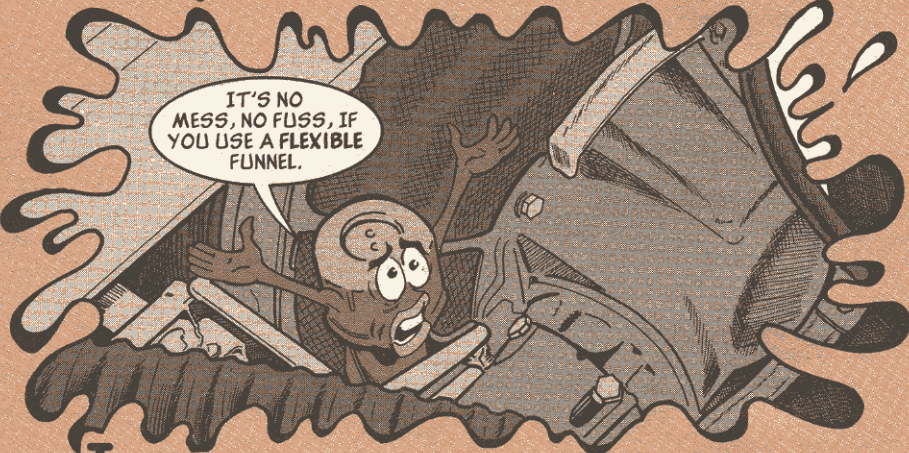
Make sure you include the unity filter serial number on the PQDR. You'll find it on the small label on the upper right-hand side of the GPS body assembly.



Include serial number on PQDR



# Keep Oil Where It Belongs

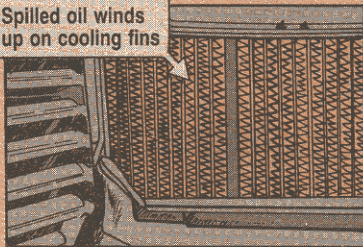


IT'S NO  
MESS, NO FUSS, IF  
YOU USE A FLEXIBLE  
FUNNEL.

**T**he transmission filler neck on your M1-series tank doesn't have a very large opening, mechanics.

How small is it? Too small to try pouring transmission fluid directly from the can.

No matter how careful you are, some of that fluid is going to spill. When it does, the oil residue ends up stuck to the cooling fins on the oil coolers.



Spilled oil winds  
up on cooling fins

That spilled oil attracts dirt and dust like a magnet. The gooeey mess that forms on the cooling fins won't let the heat radiate away from the oil inside the coolers. The result is engine or transmission damage.

If your tank's oil funnel tip is broken or too large for the transmission filler opening, get a new funnel. Oil spilled from a funnel causes just as much damage as oil spilled from a can.

Flexible funnel, NSN 7240-00-559-7364, is made for the job. It holds one quart, though, so use it carefully. Do not pour more than that in the funnel at one time. Then make sure all the oil that's supposed to go into the transmission gets there.



Flexible funnel  
prevents oil spills



## Let the Water Out!

**D**rivers, hull drain valve checks are open-and-shut operations. If you're not making the checks, the case against you is open-and-shut, too.

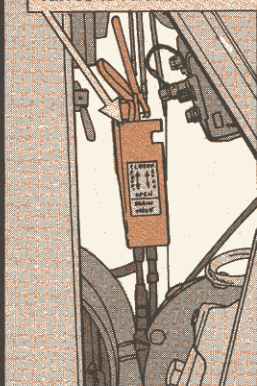
Running with open hull drain valves lets dirt, dust and water into the hull. It also makes valves easy targets for damage as they dangle underneath the tank.

Make sure the hull's drain valves are closed before a mission begins.

When you shut down for the day, though, open the valves to drain water out. Water that stays in the hull causes corrosion and shorted electronics.

Mixed with dirt and dust, the water causes a mud so hard to remove that it has to be chipped away.

Open and close hull drain valves to release water



M1A1 Collimator . . .

## Get a Grip on Leg Lock

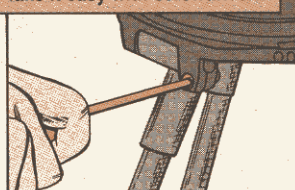
**W**hen you lock the legs on the M1A1 collimator's baseplate, the tighter the better, right?

**Wrong!**

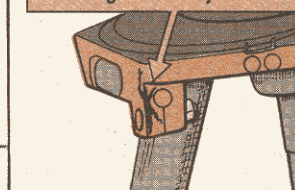
Tighten those screws too much and you'll crack the baseplate hinge assembly. With the legs loose and wobbly, the collimator can't do its job.

Just tighten the screws enough to keep the legs from moving — no more, no less.

Take it easy with screwdriver...



...or hinge assembly will crack





# Slick Oil Slick Fix

Dear Editor,

We've got Version 6 of the MLRS, where the oil filter was moved from the right- to the left-hand side of the engine compartment. To remove it, you first have to disconnect the canister, drop it down, slide it all the way over to the right-hand side and lift it out.

The filter sits pretty low, so you have to remove the canister with only one hand. With the canister full of oil, it's almost impossible to remove it without sloshing oil all over the engine compartment.

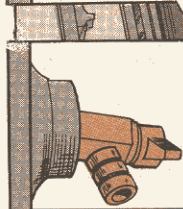
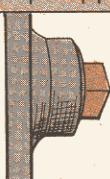
Here's an easier way:

The next time you change the oil filter, replace the plug on the bottom of the canister with a drain cock, NSN 4820-00-287-4268.

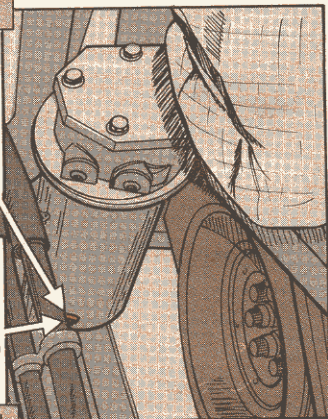
From then on, you can drain all the excess oil into a container before removing the canister. With the oil gone, it's easy to remove the canister without making a mess.

SGT Jay McCauley  
A/21st FA  
Ft Hood, TX

Replace pipe plug...



...with drain cock

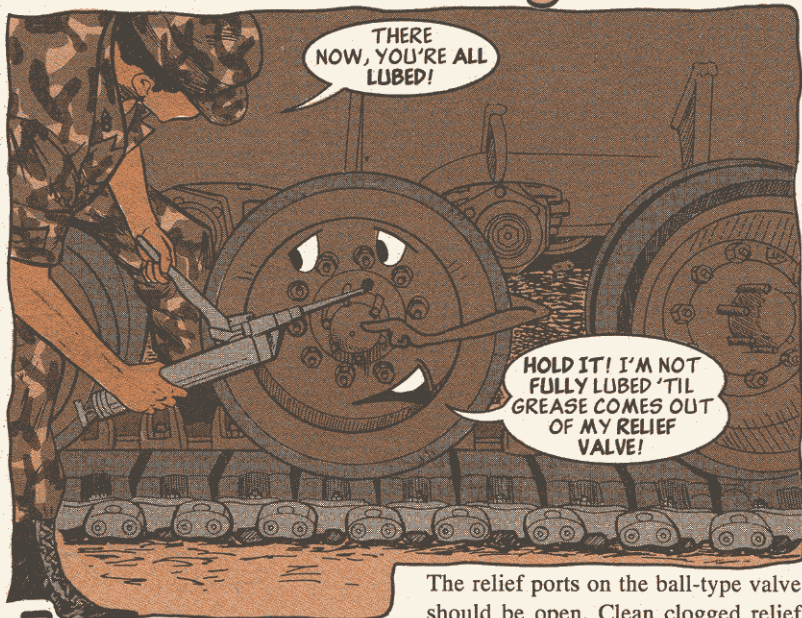


FROM THE DESK OF THE Editor

You cleaned up with that idea, Sergeant. You may want to attach a small piece of AOAP tubing to the drain cock before you drain the oil, too. That'll minimize splashing.



# Grease'em Right



**T**here's a right way and whole lot of wrong ways to do maintenance tasks, mechanics.

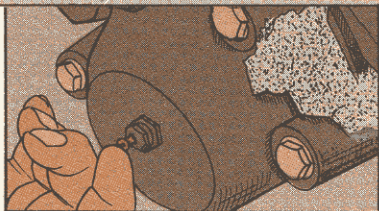
Lubing the bearings in the M728 CEV's roadwheel hubs is a good example. If you don't take care of the relief valves first, grease is forced past the seal. The bearings don't get lubed and the roadwheel seizes.

Here's the right way:

1. Clean away old grease and dirt from each relief valve with a clean dry cloth, NSN 8305-01-152-3587.
2. Eyeball the relief valve to make sure it is working properly. There are two types of relief valves. The plunger-type should move easily in and out.

The relief ports on the ball-type valve should be open. Clean clogged relief valves in P-D-680 dry cleaning solvent and then dry them with compressed air.

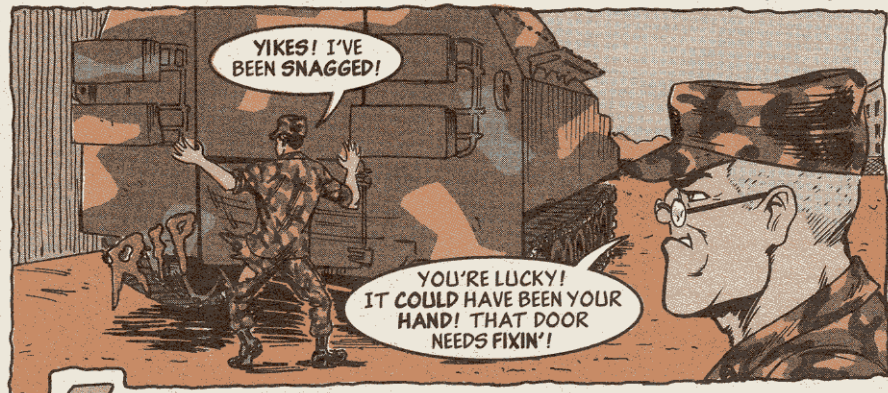
**Stem move easily? Plunger-type valve is OK**



3. Apply lube to the grease fitting until grease comes out from the relief valve. Double-check to make sure no grease shows up at the seal.
4. Wipe the relief valve to remove any excess grease.



# Homemade Seal Fix

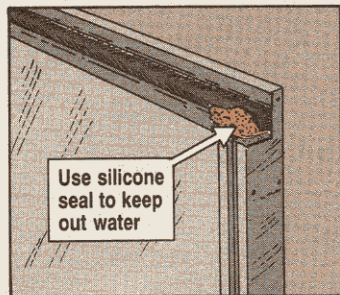
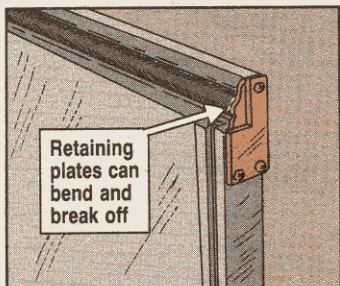


**T**he next time you're ready to close the rear doors on your M992 ammo carrier, do yourself a favor. Take a close look at the four retaining plates at the corners of each door.

The plates hold a rubber seal in place that keeps rainwater from seeping inside the vehicle. Trouble is, over time, the retaining plates start to bend outward. Eventually the plates break off, leaving behind jagged pieces of metal that can rip clothing—or maybe even a finger.

The next time you find a bent retaining plate, fix it like this:

1. Take off the old retaining plate and seal.
2. Remove any broken screws or file down the screw shafts flush with the door edge and repaint the area.
3. Clean and dry the area of the door between the two strip seals with drycleaning solvent.
4. Apply a bead of silicone sealant, NSN 8040-00-865-8991, to the cleaned area. The silicone should touch each of the strip seals and be about 1/2 inch high and 1/2 inch wide.
5. Let the silicone dry for about an hour with the doors open. Then close the doors and allow the silicone to harden for 24 hours.





# Guard Against Bigfoot



**F**or all its size and strength, the engine on that M992-series ammo carrier can still be hurt if you don't watch your step, mechanics.

A carelessly placed foot will snap off the engine's coolant high temperature switch and coolant temperature transmitter. Then, they either don't work or they start giving you false readings.

You can prevent this damage by taking a few minutes to install some pre-made guards. Here are the parts you'll need:

Item	NSN
Protective cover	5930-01-226-3491
Lock washer (A)	5310-00-407-9566
Lock washer (B)	5310-00-582-5965
Machine bolt	5306-00-226-4826
Flat washer	5310-00-809-4058
Nut	5310-00-905-0762
Wire tie strap	5975-00-899-4606

You'll need to order two of the protective covers. The other NSNs bring 100 of each item.

Here's how to install the covers:

**1.** Detach the loop clamp that connects the engine oil dipstick to the coolant manifold. Leave the loop clamp on the dipstick and toss the hardware.

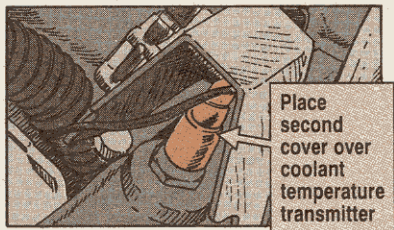
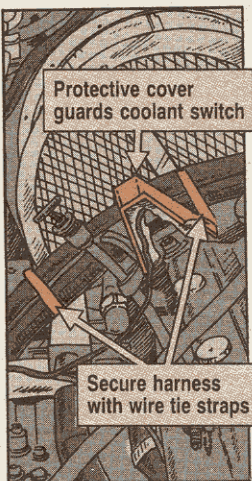
**2.** Place a protective cover over the coolant switch and attach it using the two existing bolts and two new lock washers (A).

**3.** Attach the dipstick loop clamp to the protective cover with machine bolt, flat washer, lock-washer (B), and nut.

**4.** Toss the loop clamp holding the wiring harness that runs behind the coolant switch and replace it with two wire tie straps.

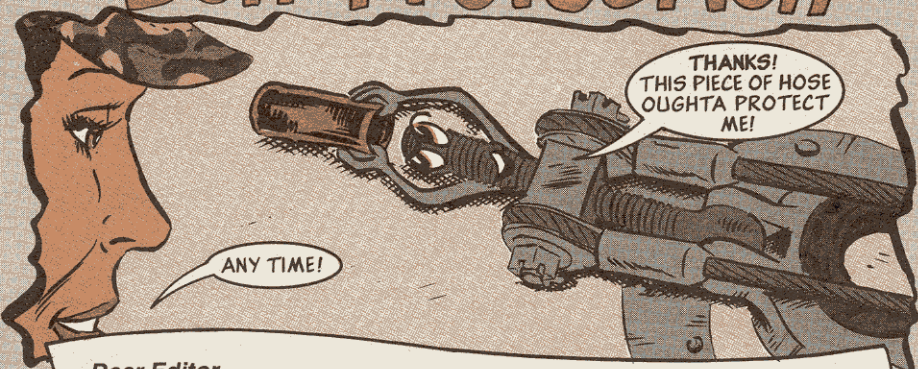
**5.** Place a second protective cover over the engine coolant temperature transmitter. Secure it in place using the two existing bolts and two new lock washers (A).

**6.** Secure the transmitter wire to the left side of the protective cover using a wire tie strap.





# Bolt Protection



Dear Editor,

The threads on the M119A1 howitzer's front firing stay eye bolt get torn up during emplacement. Once the bolt threads are scarred, it's difficult to turn the front firing stays.

We protect the bolt threads with rubber hose. Cut off a 2-in piece of  $\frac{3}{4}$ -in rubber hose. An old garden hose will work. Stick the hose over the bolt, and leave it. No more messed up bolts.

SGT Joe Carter  
SGT Charles Gordon  
Schofield Barracks, HI

FROM THE DESK OF THE Editor 

Sounds like the thread of a good idea. Thanks.

## US to UK

The M119A1 is manufactured by both the British and the United States. That has caused some problems with parts NSNs.

There are both British (-99-) and U.S. (-01-) parts NSNs in the supply system. If you order a U.S. part, you may receive the British equivalent — and vice versa. That creates confusion tracking parts.

To clear up the confusion, the Armament and Chemical Acquisition and Logistics Activity has developed a parts list that matches U.S. parts with their British equivalents.

Get a copy of the list by writing: ➡

ACALA  
ATTN: AMSTA-AC-MAWS  
Rock Island, IL 61299-7630



# The Trouble with Tires

Taking care of the tires on your M198 towed howitzer has never been easy. Suddenly, it's even harder.

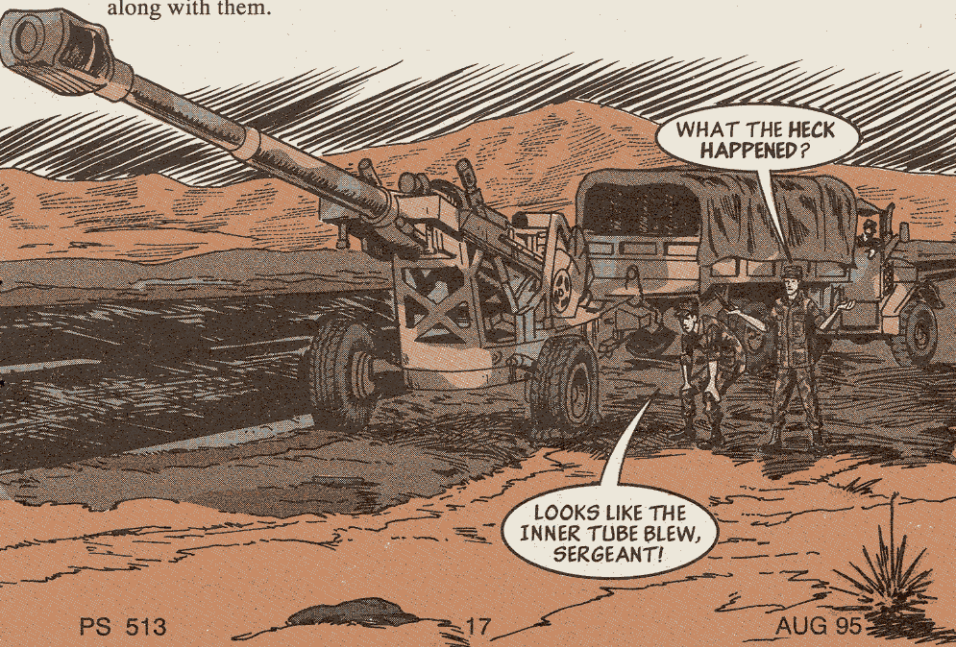
Some bias-ply inner tubes were accidentally mixed and shipped along with the radial inner tubes that come with NSN 2610-00-029-0563.

That's not a problem if your howitzer has bias-ply tires. But a bias-ply tube inside a radial tire is another matter.

That mix can result in anything from a slow leak to a sudden blowout — something that poses serious danger to both you and your howitzer.

The mixed stock was shipped on 9 Aug 94, so inner tubes installed before then are safe. If you've had a new inner tube installed after that date, or if you're unsure when a tube was installed, here's what to do:

1. Inspect your howitzer's tires. If they're bias-ply, you're safe. If they're radials, go to step 2.
2. Remove the inner tubes and check the markings. If the tube says **11.00-20** and **DO NOT USE WITH RADIAL TIRE**, it's a bias-ply inner tube. Replace it. If the tube is marked with **11.00R20**, it's a radial. Keep using it.
3. When replacing bias tires with radial tires, remember to order radial tubes to go along with them.





# Post These Lube Notes

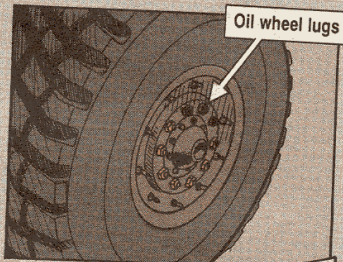
**L**ube keeps the wheels going around. It keeps everything else mechanical in good shape, too.

It's up to you drivers and mechanics to make sure your vehicles get the lubing attention they need to stay on the road.

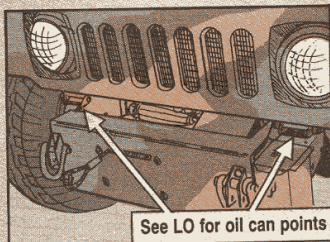
That doesn't just mean oil in the crankcase, either—although that's a biggie.

HERE ARE A HANDFUL OF LUBE NOTES YOU SHOULD KEEP IN MIND...

One good place to practice that friction beating game is wheel lugs. Any time you have the nuts off—changing a tire, when the bearings are being serviced—clean the lugs and oil them. It'll make the nuts go on easier this time and come off easier next time. It'll even make torque easier to apply and more accurate.



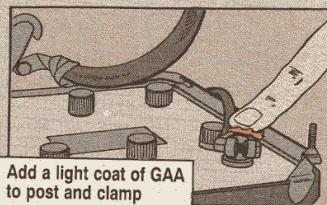
Remember the oil can points when you pull a lube service. The required ones are called out in the lubrication order (LO). But don't be tight with the oil. If you see a place where metal hits metal, or friction could be a problem—hit it with a shot of oil.



When you're lubing, keep squirting grease into the fitting until the old grease starts pushing out. That ensures that each joint is getting the lube it needs. HMMWV ball joints are an exception to this rule. Pump only two or three shots of grease into the fitting. Otherwise, you'll fill up the boot and it will pop when you hit a good bump.



Mechanics, always put a little grease on battery terminal posts after the clamps go back on. Remember: More is not better. Just a light coat will keep down corrosion.



Make sure your vehicle is on level ground before you make a fluid check. Parking on a grade can give you bogus readings. That leads to overfilling crankcases or gear boxes.

Likewise, any time you're making a cold check, let the vehicle sit long enough for the fluid to drain into its reservoir. Otherwise, you get a bad reading and can add more fluid than needed. That blows seals.

WOW, I'M A PRETTY IMPORTANT GUY!

ME, TOO!



Batteries . . .

# POSITIVE FIRST? NEGATIVE



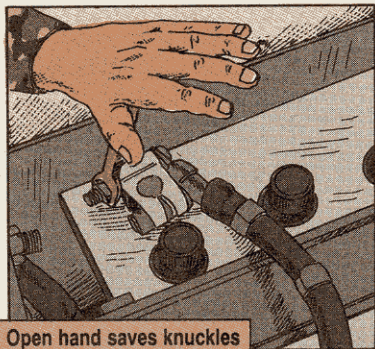
It pays to think positive, unless you're removing a vehicle's battery. Thinking negative then could save your life.

If you loosen the positive cable first, and your wrench touches a ground — ZAP! Current goes through the wrench to you. That can mean a bad burn — or worse.

The solution is to remove the **negative side first**. Then, there's no path for the electricity to get to you if you do hit ground while removing the positive side.

## Use Open Hand

Save a bunch of skinned knuckles when you're working with batteries and such by pushing a wrench with your palm open. Your knuckles will be out of the way if the wrench slips off the nut.



Open hand saves knuckles



CUCV ...

# Loose Clips Sink Plugs

When you're pulling semiannual services on a CUCV, make sure the end connectors on the glow plug wiring harness have a good grip on the plugs.

Just one loose connection can knock out all eight plugs.

Bad connections produce resistance.

Too much resistance kills plugs. One failed plug means more voltage going to the remaining plugs. This domino effect kills the rest.

Save the plugs by making sure all connections are snug.

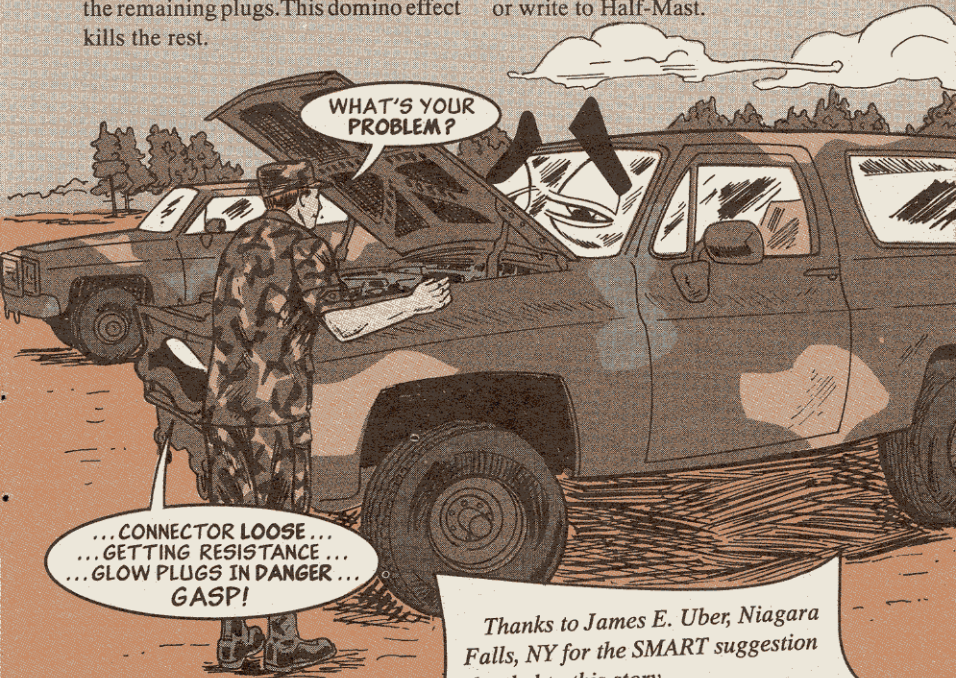
If you find a loose end connector, replace it. Connectors are NSN 5940-01-358-9397 and terminals are NSN

5940-01-345-6269.

Instructions are in Para 3-7g of

EIR Digest TB 43-0001-39-7 (Dec 91). If you don't have it, contact your LAO or write to Half-Mast.

Replace connectors if they're loose



Thanks to James E. Uber, Niagara Falls, NY for the SMART suggestion that led to this story.

GROUND MOBILITY



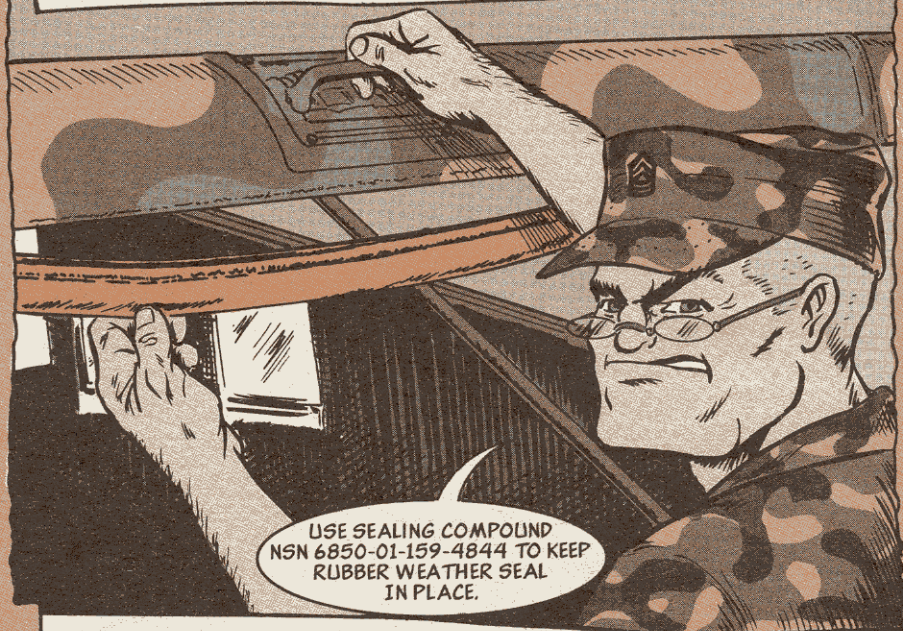
# Keep Seal in Place

Dear Half-Mast,

The rubber weather seal on my TOW carrier's cargo shell won't stay in place. When it comes loose, dust and moisture get inside to cover and damage the TOW components.

What do I use to keep the seal in place?

SFC M.S.F.



Dear SFC M.S.F.,

First, gently remove the seal. You can reuse it unless it's torn. Then, use a clean rag and P-D-680 dry cleaning solvent to wipe off the area where the seal fits.

Remove any bits of seal from the door surface with a knife or screwdriver. Use soap and water to clean the rubber seal. Dry the seal. Then apply sealing compound, NSN 6850-01-159-4844, in the seal channel along the entire length of the seal. Press the seal back in place, and close the cargo door.

If the rubber seal is torn, replace it with NSN 5330-01-195-9083.

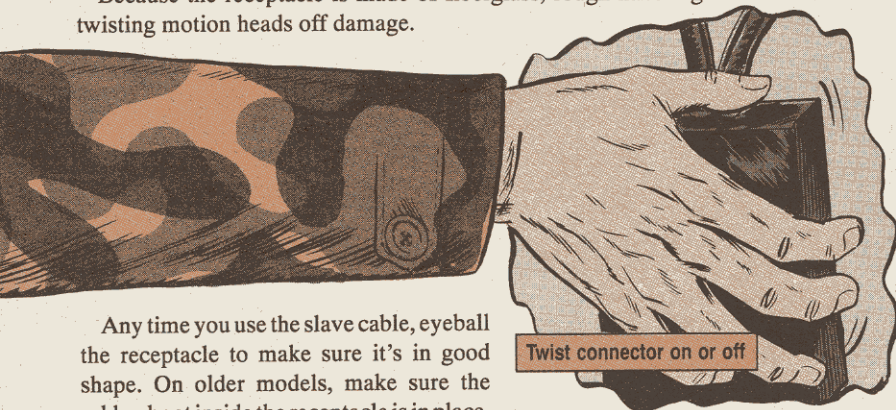
*Half-Mast*



# Twist Off Cable Connector

**T**wist the connector when you connect or disconnect your HMMWVs slave cable. Never just push or pull the connector.

Because the receptacle is made of fiberglass, rough handling will break it. A twisting motion heads off damage.

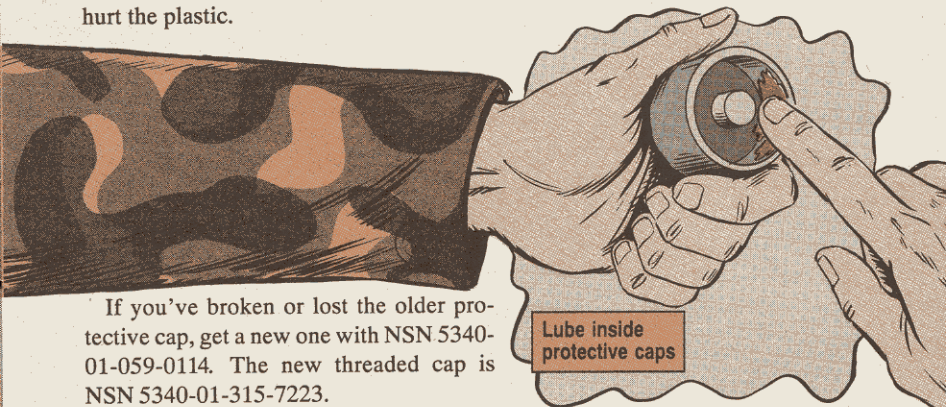


GROUND MOBILITY

Any time you use the slave cable, eyeball the receptacle to make sure it's in good shape. On older models, make sure the rubber boot inside the receptacle is in place.

If the boot is missing, you can short out the cable, damaging equipment or people.

Older slave receptacle protective caps are held on by friction. To let those caps slip on and off easier in both cold and hot weather, lube them. Use a little waterless hand cleaner, NSN 8520-00-965-2109, on the inside. This lube won't dry out or hurt the plastic.



If you've broken or lost the older protective cap, get a new one with NSN 5340-01-059-0114. The new threaded cap is NSN 5340-01-315-7223.

If the cord that holds the cap is broken, replace it. Get a 9-in piece of cord from spool, NSN 4020-00-246-0688. Terminal rings to fasten the cord to the cap and to the vehicle are NSN 5940-00-143-4794. Use pliers to crimp the terminal rings.



# Replace Spindle Lockwasher

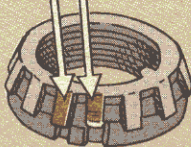
**W**hen you adjust the HMMWV's spindle bearings during semi-annual PMCS, remember to toss out the old spindle nut lockwasher, NSN 5310-01-213-4185. It's not safe for reuse.

Reused lockwashers fail, which lets the locknut loosen. Then, the wheel assembly can fly off the HMMWV. Bad news when you're moving down the road! So, replace the lockwasher at each service. And, when you put in the new lockwasher, always bend two tabs like Para 6-13 of TM 9-2320-280-20-2 tells you.

HM-M-M... I WONDER IF THE MECHANIC BENT THE LOCKWASHER TABS?



Bend two tabs

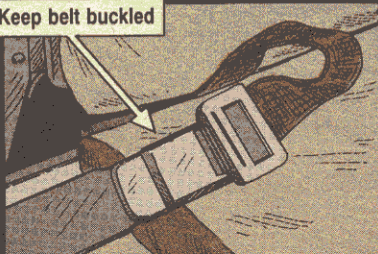


## Seat Belts Draw Grit

**W**hen they're just hanging around, HMMWV seat belt buckles get packed with sand, dirt and grit. Then they won't work.

The solution is simple. Fasten the belts when they're not in use. It keeps out dirt and grit, and also keeps them from dangling in the way of feet or cargo.

Keep belt buckled



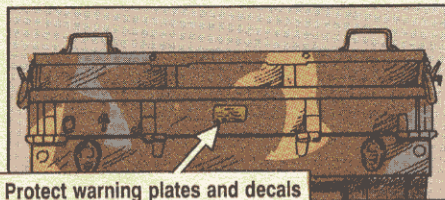


# Keep the Paint Off



BEFORE YOU SEND ANY EQUIPMENT TO SUPPORT FOR A PAINT JOB, MAKE SURE YOU'VE COVERED UP EVERYTHING YOU DON'T WANT COVERED OVER, SUCH AS ...

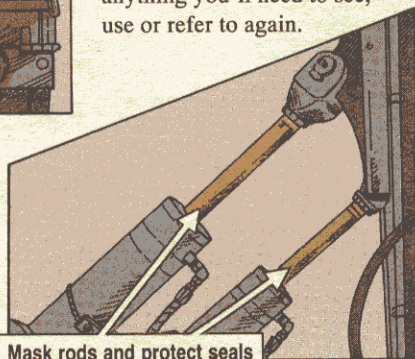
✦ **Lights, lenses, and windows** so you can still see and be seen when the equipment comes back.



✦ **Data plates, warning decals and operating instructions** — anything you'll need to see, use or refer to again.

✦ **Exposed seals and gaskets.** Paint ages and cracks rubber.  
✦ **Hydraulic cylinder rods.** Paint will keep them from moving smoothly, and can tear up the cylinder's gaskets.

Use paper or masking tape for the coverup job, not grease. Grease smears onto the vehicle and keeps paint from sticking.





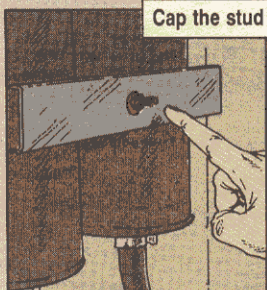
# CAP THAT STUD

**T**he screw holding the HET's gas particulate filter unit bracket is a hazard to your head. Cover up the screw.

The screw sits at head level in the cab. Get careless, or in a hurry, and those bare threads can bite.

You can get a cap to cover the threads with CAGE 15819 PN 234-3/8701-89. Order it on a DD Form 1348-6 from RIC S9I.

Until the real thing arrives, protect noggins with a ball of tape or some other cushioning material.





# MAINTAIN *Without* PAIN



YOUR NEW HAIRSTYLE LOOKS GREAT, BONNIE.

THANKS.



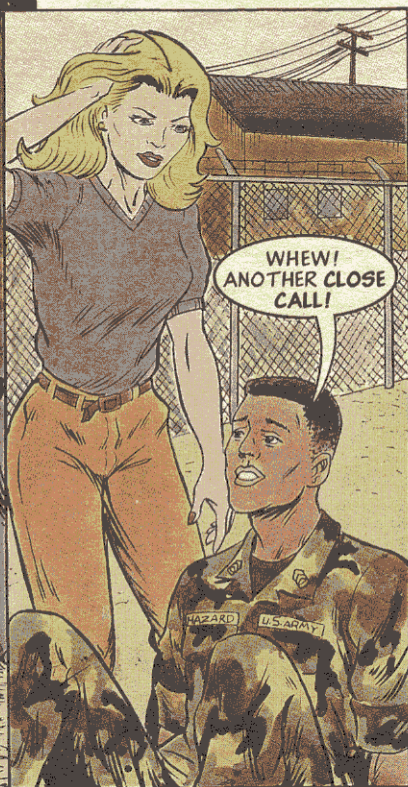
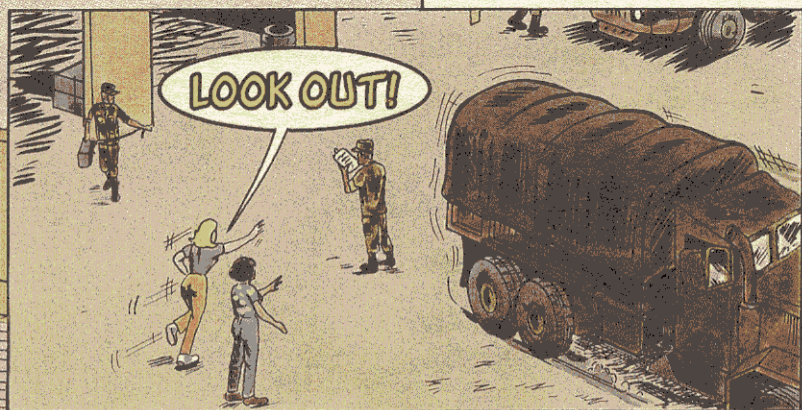
DOES SERGEANT HAZARD'S NOTE SAY WHY HE WANTS TO SEE US?

NO. IT JUST SAYS TO STOP BY HIS MOTOR POOL RIGHT AWAY. SOUNDS URGENT!

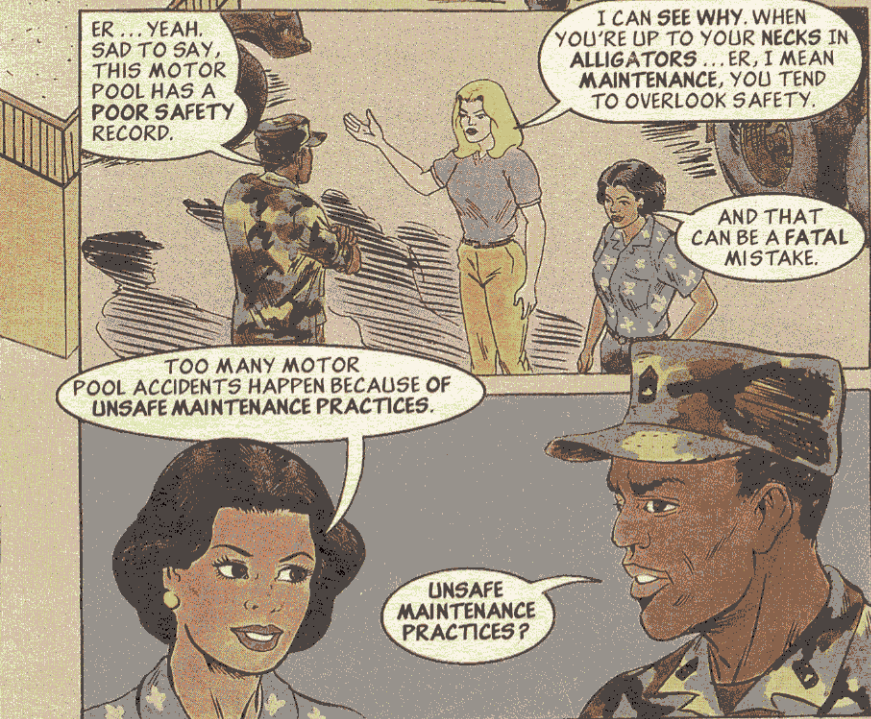
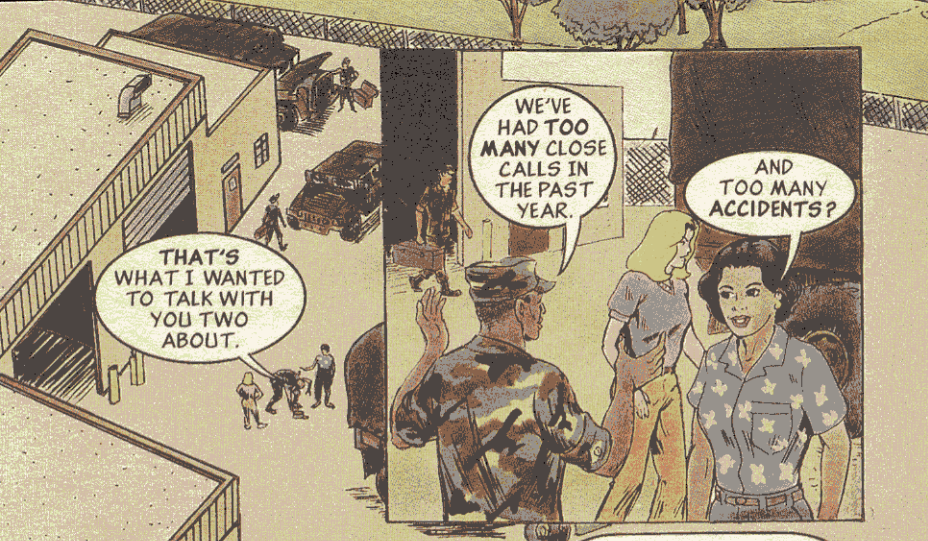


OH, LOOK—THERE'S SERGEANT HAZARD NOW.





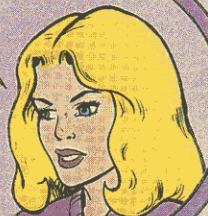
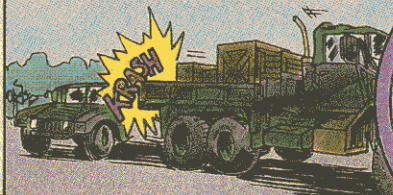






"THAT INCLUDES ALL THE OPERATIONS THAT GO ON AROUND A MOTOR POOL—EVERYTHING FROM FIXING BRAKES TO HANDLING BATTERIES TO DRIVING AND PARKING VEHICLES."

LIKE THAT TRUCK THAT ALMOST HIT YOU. THE DRIVER COULDN'T SEE BEHIND HIM AND WAS BACKING UP WITH NO ONE GUIDING HIM.

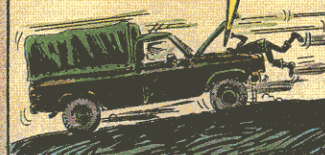


CAREFUL DRIVERS ALWAYS USE GROUND GUIDES WHEN BACKING UP VEHICLES.

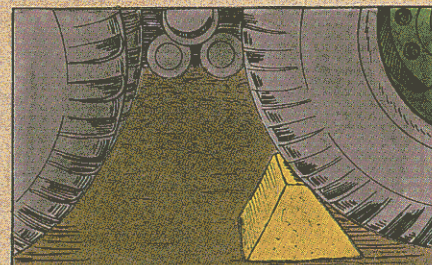


C'MON. WE'LL SHOW YOU SOME MORE WAYS TO PLAY IT SAFE WHEN YOU DO MAINTENANCE.

AGH!



"SOME SOLDIERS WORK ON THEIR TRUCKS WITHOUT CHOCKING THE WHEELS... THAT CAN MEAN TROUBLE!"

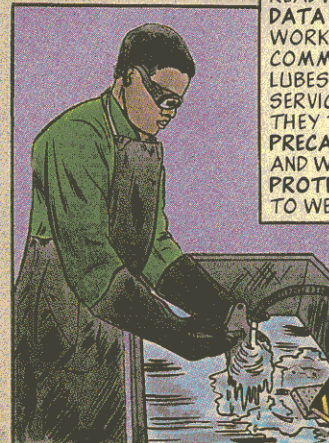


"CAREFUL SOLDIERS CHOCK VEHICLES BEFORE DOING ANY MAINTENANCE. THE CHOCKS KEEP THE VEHICLE FROM ROLLING IF THE PARKING BRAKES FAIL."

SOME SOLDIERS WORK AROUND FUELS AND LUBES, CLEANING COMPOUNDS, PAINTS AND SOLVENTS WITHOUT BEING AWARE THAT THESE MATERIALS CAN BE HAZARDOUS.



"CAREFUL SOLDIERS READ MATERIAL SAFETY DATA SHEETS BEFORE WORKING AROUND COMMON MOTOR POOL LUBES AND OTHER SERVICE MATERIALS. THEY TELL YOU WHAT PRECAUTIONS TO TAKE AND WHAT PERSONAL PROTECTIVE CLOTHING TO WEAR."





SOME SOLDIERS FAIL TO WEAR PROTECTIVE GEAR WHEN THEY WORK ON LEAD-ACID BATTERIES.

"THERE'S ALWAYS A CHANCE THAT BATTERY ELECTROLYTE WILL SPILL OUT AND BURN THEM."

OOCH!  
OWWI! THAT  
BURNS!

"CAREFUL SOLDIERS PROTECT THEMSELVES BY WEARING A FACE SHIELD OR GOGGLES, RUBBER GLOVES AND AN APRON."

SOME SOLDIERS RUN VEHICLE ENGINES IN MAINTENANCE SHOPS WITH POOR VENTILATION. THEY FORGET THAT EXHAUST FROM AN ENGINE IS DEADLY.





SOME SOLDIERS USE HAND TOOLS THAT ARE WORN OUT OR DAMAGED. USING TOOLS WITH CRACKED HANDLES, SCREWDRIVERS WITH BLUNT TIPS, OR WRENCHES WORN FROM LONG USE WILL GET YOU HURT.







LATER ...



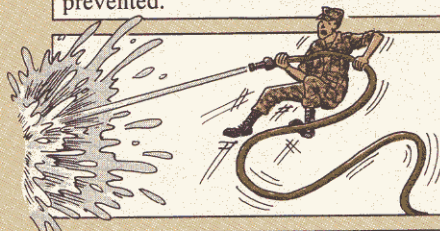


# It Ain't a Water Gun!

When a pilot calls on the Kiowa Warrior's .50-cal machine gun to fire, he needs that gun to answer the call. It might not if the gun pod charger motor assembly has been penetrated by water.

Here are four things you can do to make sure the charger motor stays dry and the .50-cal fires when called upon.

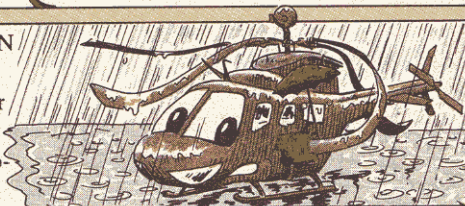
- 1. PULL YOUR DAILIES AND DO YOUR PMCS.** Gun PM is too often neglected and problems are fixed, not prevented.



- 2. NO HIGH PRESSURE WASHING OF THE GUN POD SYSTEMS.** The system may look sealed and safe, but blasting it with high pressure water will eventually drown your charger motor and other critical areas.

- 3. DON'T LEAVE YOUR GUN OUT IN THE WEATHER.**

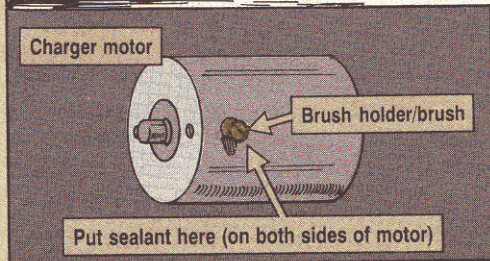
Whenever possible, store it. For those times it's not possible, your only defense is good corrosion prevention.



- 4. RIGHT NOW, GO SEAL THE MOTOR BRUSH HOLDER CAPS.**

Those areas are the most likely spots for moisture to enter. Use sealant, NSN 8040-01-239-6828, and put a light coating over the installed brush holder cap.

Look for this info in a revision to TM 9-1090-214-23&P.





# TAKE THE PRESSURE OFF

**D**id you hear the one about the guy who used a sledgehammer to kill a fly? The fly was smashed, but so was the table it had landed on.

Did you hear the one about the guy who used high-pressure water to clean his Black Hawk engine? The engine sparkled, but water penetrated and zapped all electrical and electronic components.



Never use a sledgehammer to kill a fly and never use high-pressure water to clean a Black Hawk engine. Use the universal wash unit and follow the directions in Chapter 1 of TM 55-2840-248-23.

After the fly is smashed, your job is not done. You still have to clean up the dead fly.

After you correctly wash your engine, your job is not done. You still have to check all components for water entry, especially around electrical connectors.

Finally, you swat flies when the flies are buzzing and need to be swatted. You swat flies on their schedule, not yours.

You clean your Black Hawk engine when it's dirty. It doesn't matter if your schedule says a cleaning is not due. Cleaning intervals must depend on local operating conditions. Ideal conditions let you extend your cleaning interval, whereas working in the dirt means more frequent cleaning.

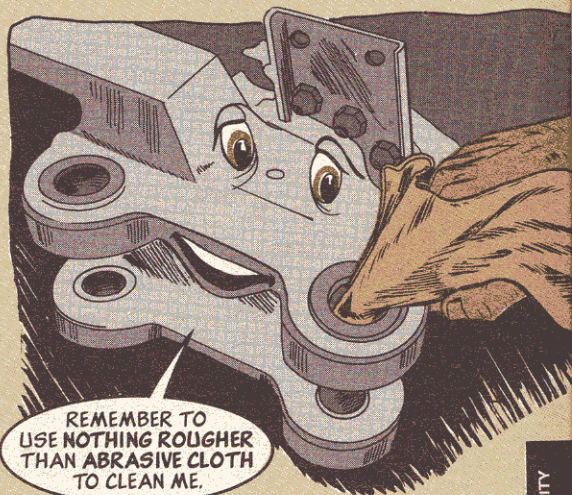


# SPINDLE CLEANING CARE

**W**hen your TM says to clean the bonded washers of your Black Hawk's main rotor spindles with abrasive cloth, that's what it means.

It does not mean you can use sandpaper or wire brushes. They scratch the hardened bottom surface of the washer. Then you have to replace the whole spindle, like it says in Para 5-5 of TM 55-1520-237-23-3.

So, use only abrasive cloth to clean the washers. You can get a package of 50 sheets with NSN 5350-00-192-5050.



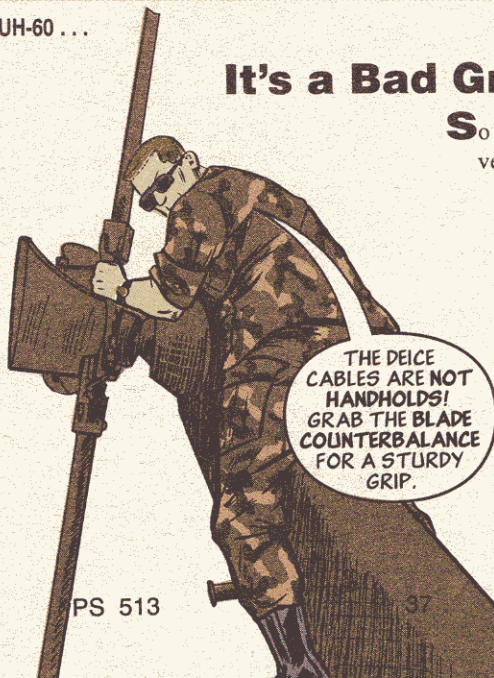
UH-60 ...

## It's a Bad Grab

**S**o you're making the trek up the vertical fin to pull maintenance on the tail rotor and you've just about reached the top. Where do you grab?

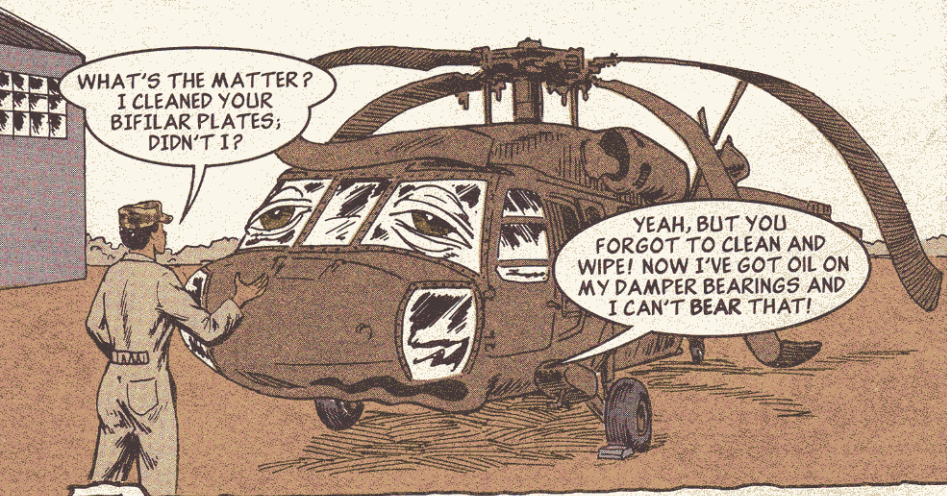
If your answer is the deice cable, you've made a bad grab. The cable sure is convenient, but it was not made to handle the stress.

Instead, grab the counterbalance in front of the blade. It will take the stress and give you a firmer, more secure hold.





# BEARING UP



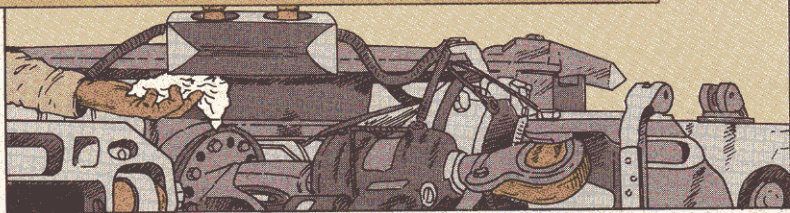
**T**he Black Hawk's main rotor head damper bearings aren't bearing up because oil-based products are getting on the teflon liner.

When oil and teflon meet, the liner swells up and collects dirt, which grinds away at the liner. Soon the bearing is shot.

Many bearings are ruined by misdirected oil that comes from cleaning the bifilar weights. The damper bearings are right under the weights. Hastily sprayed and misdirected oil will drift down or run down to the bearings.

When you clean in the bifilar area, remember the words "coat and wipe." Coat instead of spray when possible, and wipe up the excess.

**Keep oil off bearings under bifilar weights by wiping them with a clean rag**



To clean the damper bearings, use a clean, dry cloth.

Remember, the UH-60 rotor head is loaded with bearings that have teflon liners. Except for the bifilar and swashplate, no lube is allowed on the rotor head.



## The Peeling of the Pole

Dear Windy,

We all know that slingloading is a dangerous job. But one danger that can be eliminated is having the skin peeled from your arm by the loading pole grounding cable aboard a Chinook.

Even the best effort to keep the ground cable out of the way sometimes fails and the cable wraps around an arm or a leg. This happens most often when using night vision goggles and when slinging multiple loads.

If the pole is dropped, or gets hung, or is torn from your hand, the grounding cable rips down an arm or leg and takes flesh with it as it goes.

Here's how to stop this flesh-eater:

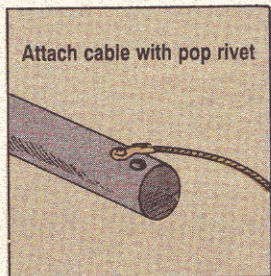
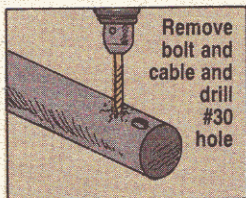
Remove the steel bolt that holds the cable to the pole and remove the cable.

Drill a number 30 size hole into the pole near where you removed the steel bolt.

Now, attach the cable to the pole with pop rivet, NSN 5320-01-015-6896.

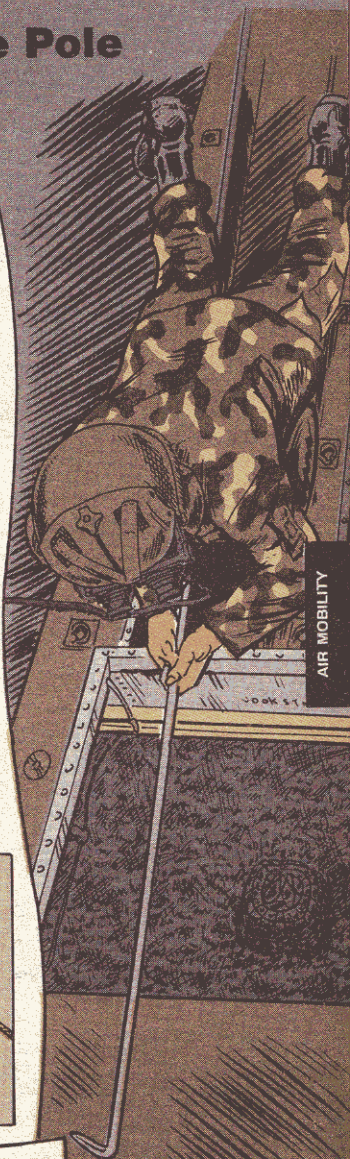
That rivet is strong enough to hold the cable to the pole during all normal operations. But when the pole gets hung and jerked away, the rivet will break and the cable will come free.

SGT John Bowden  
Birmingham, AL



Mine eyes have seen the scars of the peeling of the pole. A fine solution to a dangerous problem.

Windy





# Cleaning Connector Corrosion



It's not the yellow brick road, but there is a cleaning and corrosion prevention path for aircraft multi-pin electrical connectors. It's a path that must be followed, or your aircraft might not make it home next time.

Scrub corroded connectors with non-abrasive pad, NSN 7920-00-151-6120. If that doesn't do the trick, try abrasive pad, NSN 5350-00-967-5089. But don't overdo the muscle power with an abrasive pad.

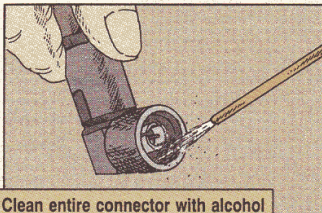
Wipe away corrosion residue with cleaning cloth, NSN 8305-00-267-3015.

Wipe corrosion off connector with cloth



Then clean the entire connector inside and out with isopropyl alcohol.

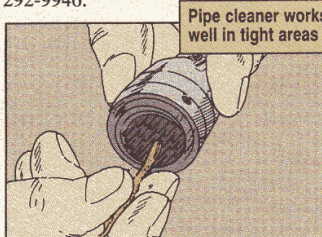
NSN 6810-00-983-8551 brings a quart, and NSN 6810-00-753-4993 brings an 8-oz spray can.



Clean entire connector with alcohol

Remove the excess solvent and residue with the cleaning cloth.

For the hard to reach area between the pins, use a pipe cleaner, NSN 9920-00-292-9946.

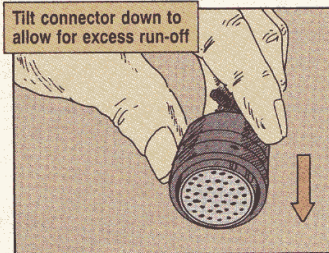


Pipe cleaner works well in tight areas

Let the connector dry.

To prevent future corrosion, lightly coat the entire connector inside and out with water displacing corrosion preventive compound, NSN 8030-00-546-8637. You can use NSN 8030-01-041-1596 on the outside as a substitute, but it builds up and is harder to remove later.

Tilt the connector down while coating to allow the excess to run off.



Tilt connector down to allow for excess run-off

Allow a few minutes of drying time, then wipe off any excess with the cleaning cloth.

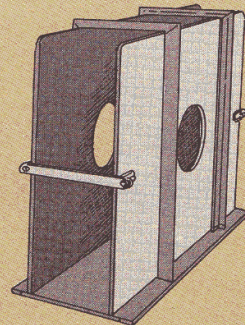
For more corrosion prevention info, see TM 1-1500-343-23, Avionic Cleaning and Corrosion Prevention.

## Inflation Cages

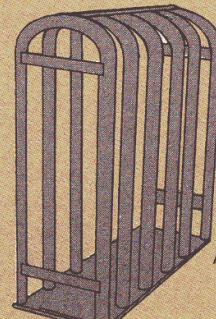
Figure 7-1 of TM 55-2620-200-24, Aircraft Tires and Inner Tubes, gives instructions on how to make an aircraft tire inflation cage. This safety fixture is an essential piece of ground support equipment.

You can buy a ready-made cage with NSN 4910-00-204-2448. The Air Force uses this cage for tires up to 14.00 x 24, and it is slightly bigger and stronger than the cage you make.

The cage you can make

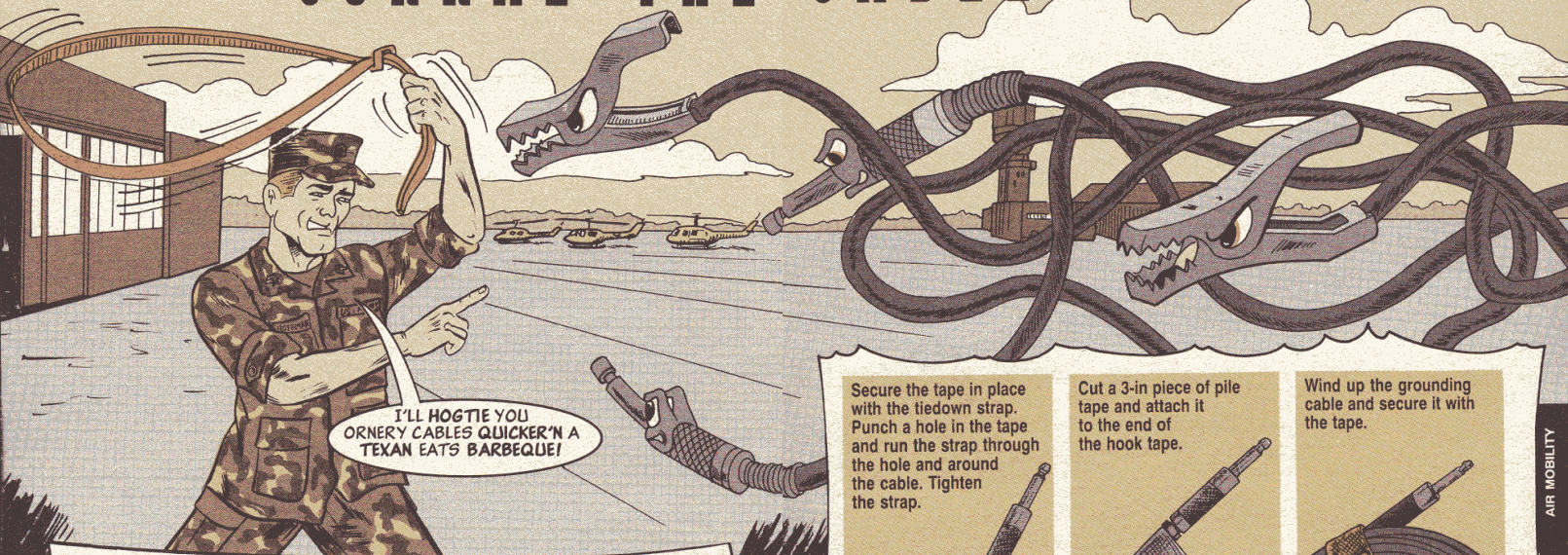


The cage you can buy





# CORRAL THE CABLE

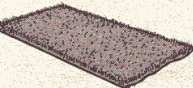


Dear Windy,

Anyone who has worked in aviation for a day knows what a pain it is to keep unused grounding cables from becoming a tangled mess. Here's how we straightened out this problem.

You need 1-in hook tape, NSN 8315-00-106-5973; 1-in pile tape, NSN 8315-00-106-5974; and one electrical tiedown strap, NSN 5975-00-111-3208.

Pile tape  
NSN 8315-00-106-5974



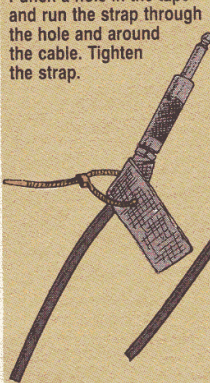
Electrical tie down strap  
NSN 5975-00-111-3208



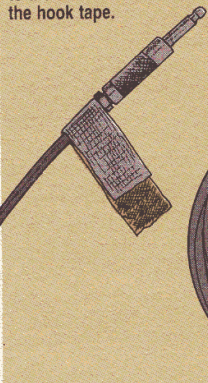
Hook tape  
NSN 8315-00-106-5973



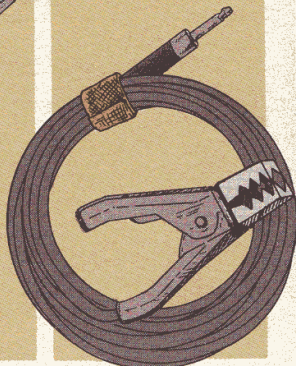
Secure the tape in place with the tiedown strap. Punch a hole in the tape and run the strap through the hole and around the cable. Tighten the strap.



Cut a 3-in piece of pile tape and attach it to the end of the hook tape.



Wind up the grounding cable and secure it with the hook tape.



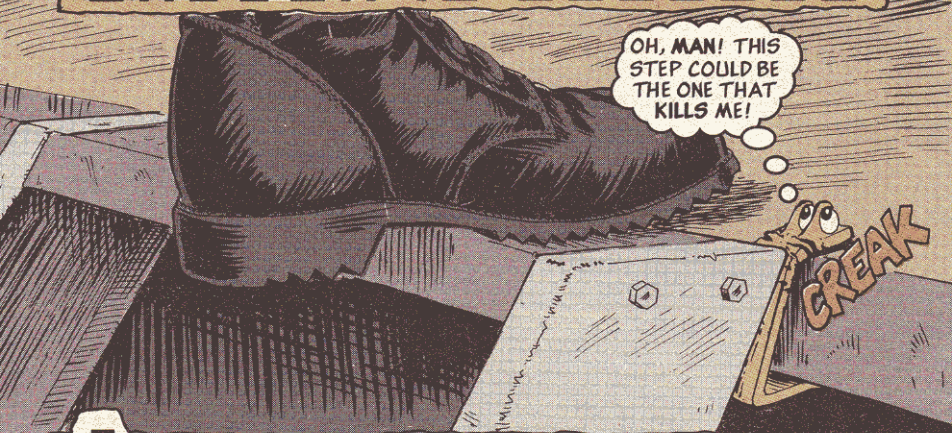
You can use more than three inches of tape if the cable is too long.  
SGT Lester T. Hoffman, Jr.  
APO AE

A small fix that will save big headaches. Way to wrap that problem up, Sergeant!

*Windy*



# LADDER TO SUCCESS

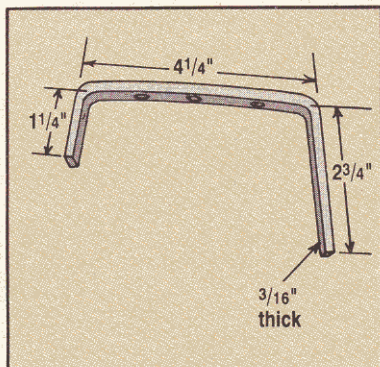


If you work around digital group multiplexer or satellite communications equipment, then you're familiar with the S-280 shelter. You should also be familiar with the MX-10583 ladder, NSN 2540-01-205-0071, and its weaknesses.

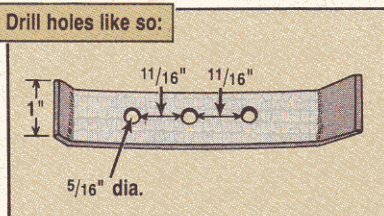
The bracket that holds the ladder to the tailgate is made of aluminum — not the toughest metal around. With folks tramping in and out of the shelter, the bracket bends and breaks. There goes the ladder and you along with it.

You can't get a replacement bracket, so you have to order the entire ladder. That costs more than \$1500.

Forget that. Instead, get your commander's OK for your DS metal shop to make a bracket out of steel. It'll be sturdier and safer. Send DS one of the aluminum brackets to use as a model. Or they can use this pattern to fabricate the bracket:



Drill holes like so:



Attach the steel bracket with the bolts, nuts and washers that came with the original.



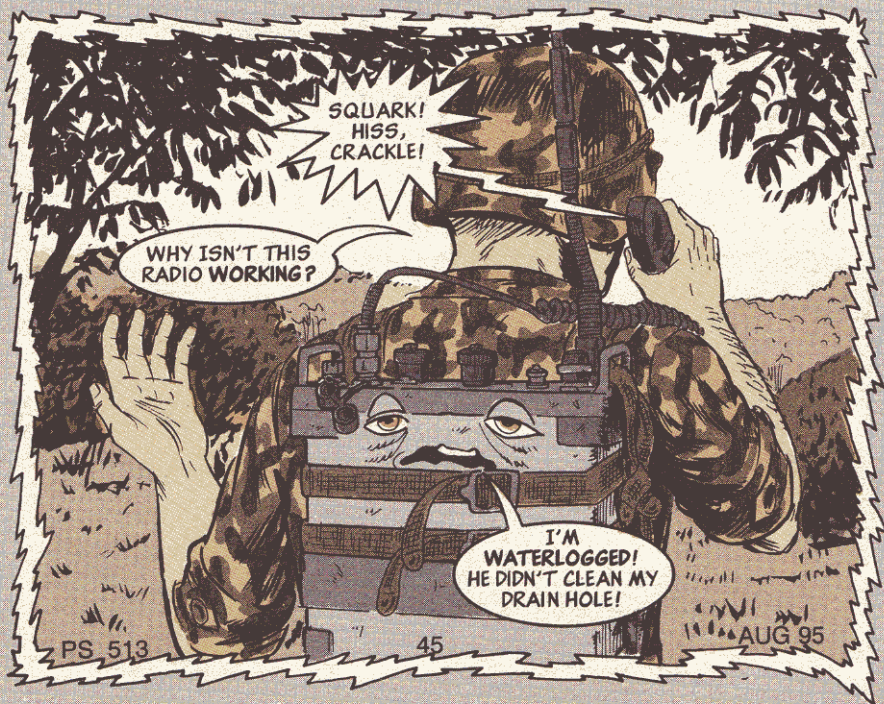
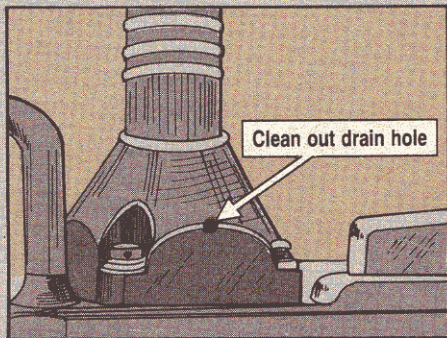
# No Pain, No Drain

**I**t's always the little things that trip you up. Take, for instance, the antenna mount on your AN/PRC-77 radio set.

You know you should clean out the whip antenna receptacle during quarterly unit PMCS. But did you know you should also clean out the little drain hole at the base of the mount?

The hole lets moisture drain out of the mount. If dirt or grime blocks the hole, moisture can corrode the receptacle, short out the antenna or get inside the radio set.

So, clean out the hole with a match or toothpick each time you pull PMCS. Another good time to clean it is after the radio's come back from the field.





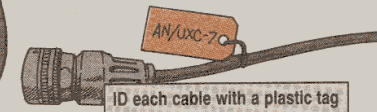
# Label Cables



So, how do you keep track of cables? Well, for starters, make sure they're identified as belonging with the AN/UXC-7. You can do that with a grease pencil, NSN 7510-00-240-1526, and these plastic ID tags with wire fasteners:

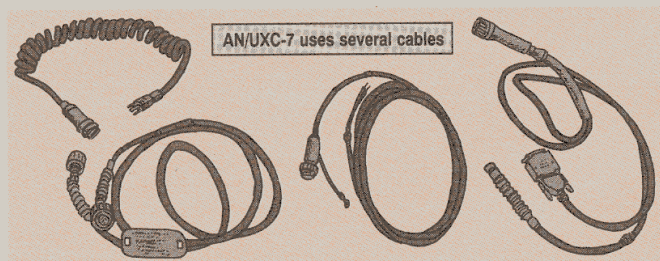
Tag color	NSN 9905-00-537-
Red	8954
Yellow	8955
Green	8956
White	8957

Just print "AN/UXC-7" on the tags and tie them to the cables.



Depending on your mission, you could use all sorts of cables to operate your AN/UXC-7 fax—everything from AC and DC power cables to interface cables for the DSVT, DNVT, KY-57 or KG-84. There's even a dual purpose cable to connect your fax to the RT-1539 or a computer.

Before it's all said and done, you could end up toting around a lot of cables. And the more you have, the more chance they'll get lost or separated from your gear. That can cost you money.



Storing cables inside the fax cover is NOT the way to keep track of them. They just put pressure on the power knob when you close the cover. Sooner or later they'll break the knob.

Don't store cables inside fax cover



It's also a good idea to store all the fax cables together in a case or a bag. NSN 8415-00-782-2989 brings a waterproof carrying bag that works well. Use Appendix A of CTA 50-970 as your ordering authority.





# BATTERY MIXUP IS A ISSUE



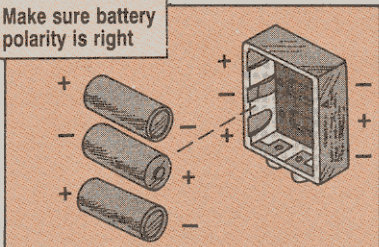
It's a fact: Installing the wrong batteries and reversing battery polarity can ruin your AN/CYZ-10 or -10A Data Transfer Device (DTD).

## Hard Lesson

Some people have found out the hard way. They put three 6.5-volt BA-5372/U lithium batteries—the **WRONG** ones—in the DTD. They also reversed the battery polarity when they put in the batteries.

The batteries quickly ignited, burning and melting the plastic battery compartment. The heat damaged the DTD beyond repair, and the replacement cost was more than \$2,000.

**Make sure battery polarity is right**



## Know Your Batteries

Preventing a DTD meltdown means knowing which batteries to use and which to avoid.

- o NEVER install BA-5372/U lithium batteries in the DTD. They weren't meant for use in the device. The same goes for the BA-1372/U mercury batteries.

- o DO use three BA-5123/U 3-volt lithium batteries or their commercial equivalent, the DL123A, in the DTD. Both batteries carry NSN 6135-01-351-1131. In an emergency, you can also use one 9-volt commercial alkaline battery, NSN 6135-00-900-2139, in the DTD.

## A Simple Reminder

As a reminder to use only the BA-5123/U or its equivalent in the DTD, stick a self-adhesive warning label on the side of the battery holder.

**Put label on holder**

**WARNING**   
CHECK BATTERY BEFORE INSTALLATION  
INCORRECT BATTERY MAY CAUSE FIRE  
USE ONLY: BA-5123 OR EQUIVALENT  
DO NOT USE: BA-5372 OR EQUIVALENT

Get the warning labels from the Project Manager, Joint Tactical Area Communications Systems (PM JTACS). You can call DSN 995-3308 or commercial (908) 544-3308, or write to:

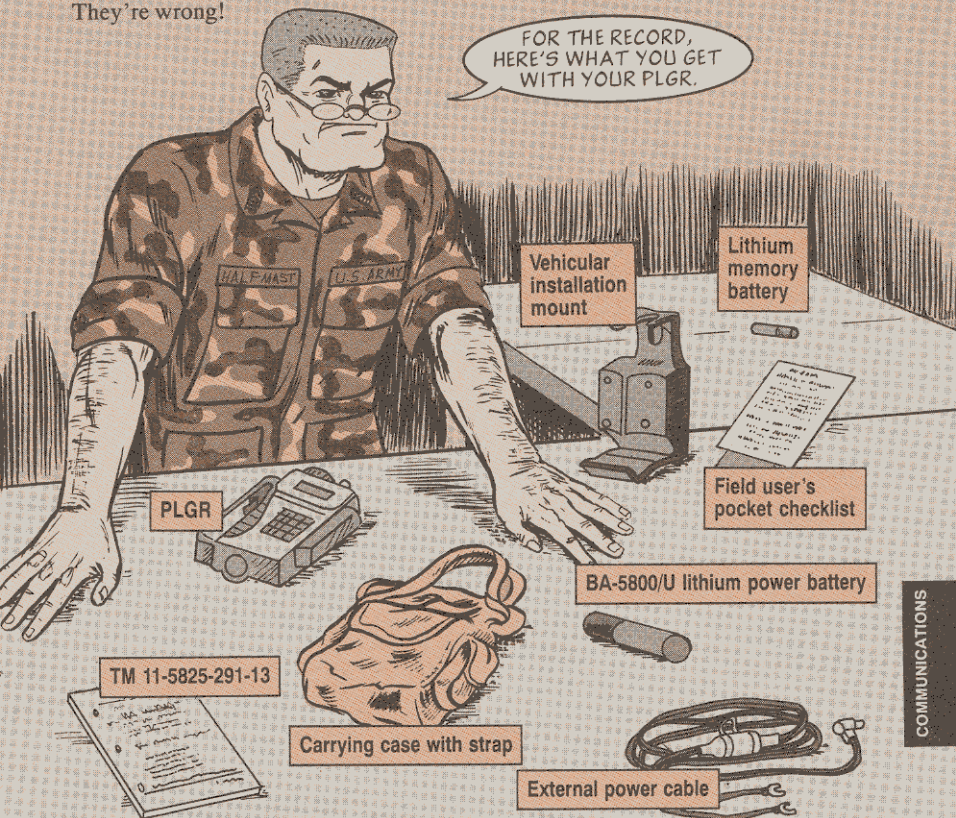
Project Manager, Joint Tactical Area  
Communications Systems  
ATTN: SFAE-CM-JTC-RMD-L  
BLDG 739  
Fort Monmouth, NJ 07703-5000



# YOU CAN'T HAVE IT ALL

Do you know what accessories you're authorized for the AN/PSN-11 precision lightweight GPS receiver (PLGR)?

TM 11-5825-291-13 does not make it clear. So, some people believe they're entitled to all the items in the TM's parts list and additional authorization list. They're wrong!



Other accessories are issued on a limited basis. For instance, one PLGR-to-PLGR cable is issued for every five PLGRs.

There are restrictions on ordering some items. For example, only special operations and HALO troops are authorized the antenna helmet. And only units with a SINCGARS radio can get a PLGR-to-SINCGARS cable.



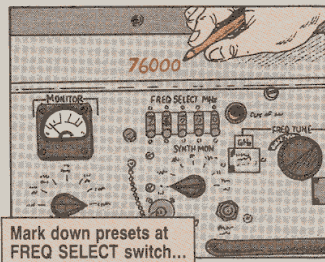
# MAKE YOUR MARK

Operators, no two missions are exactly alike. That means the equipment settings—the presets—on your satellite communications terminal may change according to the mission.

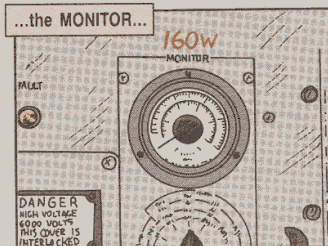
So, when you get the cut sheet listing the presets for your mission—the frequency setting, data rates, transmission power, circuit card requirements—copy this information on the equipment itself with a grease pencil, NSN 7510-00-240-1526. That way you can tell at a glance what the settings should be. It also makes it easier to monitor the readings on the equipment.

Here are some examples of places where you can mark down the presets:

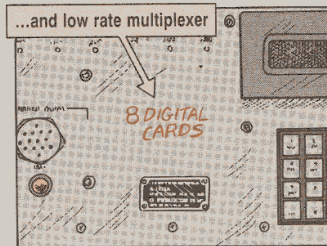
✓ **FREQ SELECT MHz** switch on the electrical frequency synthesizer. Note the frequency for the mission.



✓ **Watts MONITOR** on the radio frequency amplifier. Jot down the power in watts above the monitor.



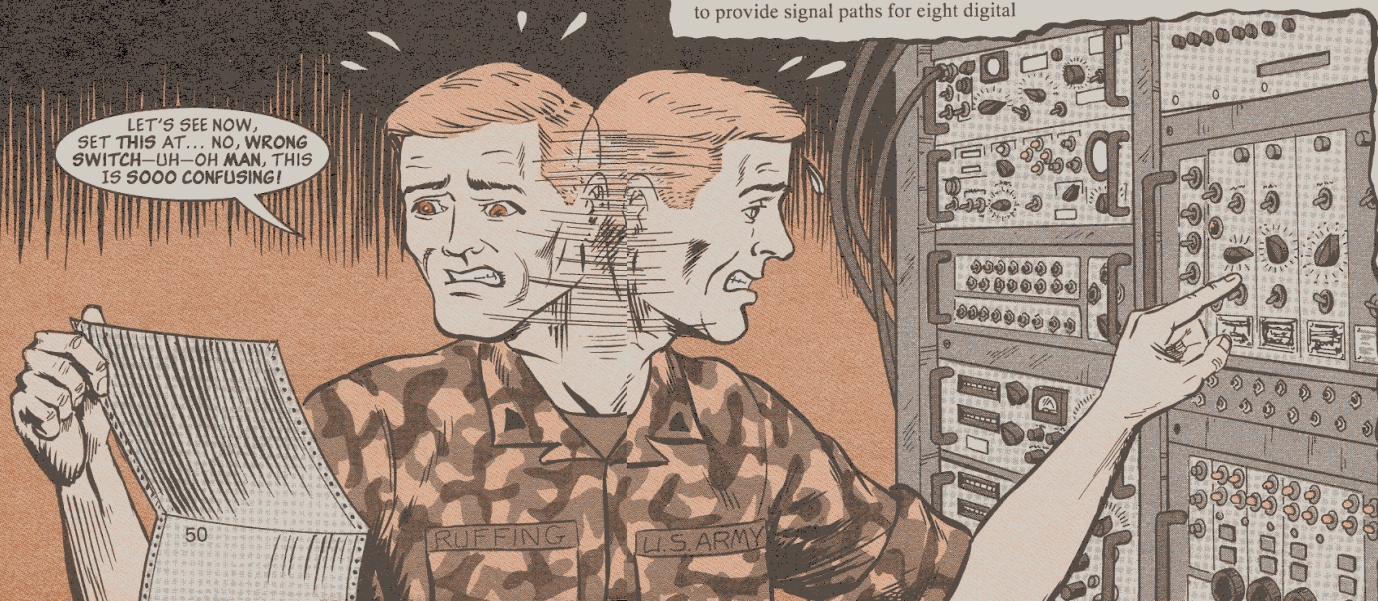
telephones, then you'll need eight digital circuit cards. List the number of digital and analog cards for the mission.



✓ On the low rate multiplexer (LRM). The number of digital and analog circuit cards in the LRM changes, depending on the mission. For instance, if you have to provide signal paths for eight digital

Once your mission's accomplished, wipe away the pencil markings with a clean rag dampened with general purpose cleaner, NSN 6850-01-371-8049.

LET'S SEE NOW,  
SET THIS AT... NO, WRONG  
SWITCH—UH—OH MAN, THIS  
IS 5000 CONFUSING!





# PARTS IS PARTS

Stakes, pins, anchors, rope and rivets--here are some NSNs and tips that are good to have in one place:

IF YOU KEEP BREAKING TENT STAKES OR LOSING PINS, HERE ARE REPLACEMENT NSNS TO ORDER.

## STAKES

NSN 8340-00-	Material	Length (inches)
823-7451	steel	12
261-9750	wood	16
261-9751	wood	24
261-9752	wood	36
985-7461	steel	18
261-9749	aluminum	9

After you get those tent pins, drive 'em in right and they'll last longer and do a better job.

Never angle a tent pin away from the tent because it gives it more leverage from the tent line. When the canvas gets wet and shrinks, the pin acts like a lever and enlarges the hole. Then the pin comes loose.

Drive short pins—like the 12-in steel pin or the 16-in wooden pin—straight up-and-down.

Drive longer pins—like the 24-in or 36-in wood pins—at a 15-degree angle toward the tent.

HERE'S SOME GOOD INFO ON GP TENT PINS.

## REPLACEMENT PINS

For replacement pins to go with the GP tents' aluminum poles, order:

Pin Assembly NSN 8340-01-	Diameter (inches)	Length (inches)	Used on pole: NSN 8340-01-
036-3781	3/8	1 1/2	753-6574
036-3782	3/8	2	753-6574
036-3783	3/8	2 1/2	753-6574
036-3779	1/4	1	753-6575
036-3780	1/4	1 1/2	753-6575

## GROUND ANCHOR KIT

To get a ground anchor kit, order NSN 8340-00-951-6423. It gets you 50 ground anchors, two driving heads, two handles, and two steel driving rods.

You need the kit to drive anchors or stakes in desert sand for your GP Medium. The sand's usually loose on top, but when you get a few inches below the surface, it's packed together like a brick!

If you don't have ground anchors, use steel tent pins for the desert. Bring extra pins because the sand will ruin some of them.

## WEATHER SAVVY

If it's cold, use 12-in steel pins instead of wooden or aluminum ones.

When the ground is frozen too hard to drive the steel pins in, chop small holes for them. Then fill the holes with slush or water. It'll freeze and anchor the pins.

When it's time to get them out again, chop the ground around them until they loosen. Never pound them with a hammer, because you'll break the pin.

Keep your tent lines tight if you want the tent to stand up in winter storms.

But if the weather is wet, lines need slack to allow for shrinkage.

Slide fasteners that don't slide are a pain. Get slide fastener lubricant with NSN 9150-00-999-7548.

On frame-type tents, cold canvas won't always cover the frame at first.

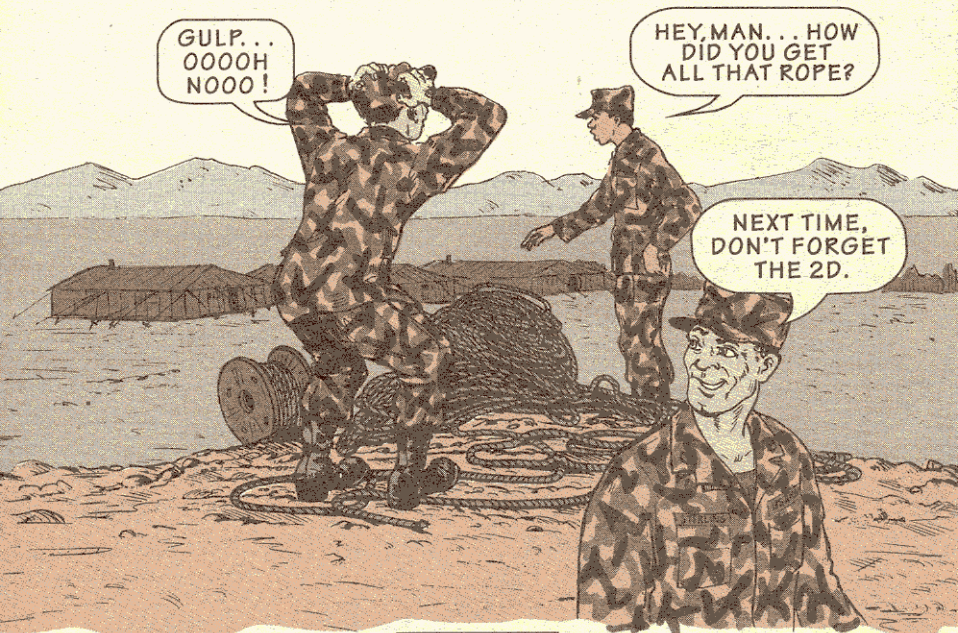
Never force it. Instead, lay it over the frame and secure it. When the heat from inside the tent warms the canvas, finish tying it down.



## ROPE

For rope, order NSN 4020-00-536-3476, and tell 'em how much you need by putting 2D in card column 65-66 of your supply request. Otherwise, you'll get a 2,250-ft roll!

You'll find tips on selecting a site for your tent and other cold weather info in FM 31-70. General tent repairs are covered in FM 10-16.



## TENT RIVETS

Forget about putting new rivets in the frame of your frame tent. The machine you need to do the job is not available.

Instead, here's a simple fix to put your frame tent back on its feet.

1. Drill out the rivet hole all the way through the frame. The original hole for the rivet only goes halfway through.

2. Slide in a screw and fasten it on the other side with a washer and nut. It's that easy.

Here's what you'll need:

Item	NSN
Screw, hex	5305-00-068-0501
Nut, plain, hex	5310-00-761-6882
Washer, lock	5310-00-582-5965



## EASIER DRAINING



Dear Editor,

When you start up the M157 smoke generator, fog oil drips out of the baffles until the M157 reaches operating temperature. The fog oil collects in the drip pan and sloshes out during travel. Fog oil gets on the HMMWV truck bed and makes a gooey mess. Fog oil that splashes out on the ground is not good for the environment, either.

It's not easy to fit a container under the drip pans' drains to cleanly drain off the fog oil. That's why we came up with a way to drain off the oil with a hose.

**Here's what you need:**

- ✓ 5 feet of rubber hose, NSN 4720-00-684-4033
- ✓ a tube-to-hose adapter, NSN 4730-00-555-1152
- ✓ a pipe-to-tube adapter, NSN 4730-00-266-0534

Assemble hose and adapters and connect them to drain cock



Fit them all together. Connect one end of the hose to the drain petcock. Then drain the fog oil into a container. No mess, and you can connect the hose in seconds.

Keep the hose in the truck when you're not using it. That way it's always handy.

Bob Weston Ft  
McClellan, AL

FROM THE DESK OF THE Editor

Sounds like no-pain draining.  
Thanks.



## KITS AT A

## GLANCE

If your camouflage nets are getting ragged from quick setups and tear-downs, fix 'em.

When the nets are too worn to repair, order new ones. And if your repair kits are depleted, reorder 'em.

Keep in mind that Type I nets are radar transparent. Type II, III and IV nets are radar scattering. Not all nets can be repaired by putting in just any piece of net, though.

Type I and II nets can be repaired with Type II, III and IV nets. Type III can be repaired with Type III and IV. But use only Type IV to repair Type IV.

TM 5-1080-200-13&P (with changes through 1992) is easier to read than before, but if you still have trouble with it, here are NSNs for the camouflage screen (net) repair kits:

ALL REPAIR KITS EXCEPT THOSE FOR SNOW HAVE THESE COMMON COMPONENTS.

Item	NSN
200 black plastic straps	1080-01-022-8633
30 quick connect/disconnect pins	1080-00-559-1551
30 quick connect/disconnect brackets	5340-00-564-9062
1 lanyard	1080-00-571-5015

Kit	NSN 1080-
Woodland, radar scattering	01-266-1832
Woodland, radar transparent	00-107-8563
Desert, radar scattering	01-266-1834
Desert, radar transparent	01-073-3220
Snow, radar scattering	01-266-1830
Snow, radar transparent	01-081-1021

ON TOP ARE PARTS THAT ALSO COME WITH THE WOODLAND RADAR SCATTERING KIT.

AND THESE PARTS COME WITH THE WOODLAND REPAIR TRANSPARENT KIT.

Item	NSN
1 16-ft cord	4020-01-041-0788
6 5-ft lengths of twine	1080-01-062-2184 (30-yd shuttle)
1 sq mtr garnished net	1080-01-266-1820
20 sq ft camouflaged cloth	1080-01-275-7919

Item	NSN
1 16-ft cord	4020-01-041-0788
6 5-ft lengths of twine	1080-01-062-2184 (30-yd shuttle)
1 sq mtr garnished net w/lanyard	1080-01-183-4480
20 sq ft camouflage cloth	1080-01-051-1432

Item	NSN
1 16-ft cord	4020-01-041-0788
6 5-ft lengths of twine	1080-01-060-1698 (30-yd shuttle)
1 sq mtr garnished net	1080-01-266-1819
20 sq ft camouflage cloth	1080-01-275-7920

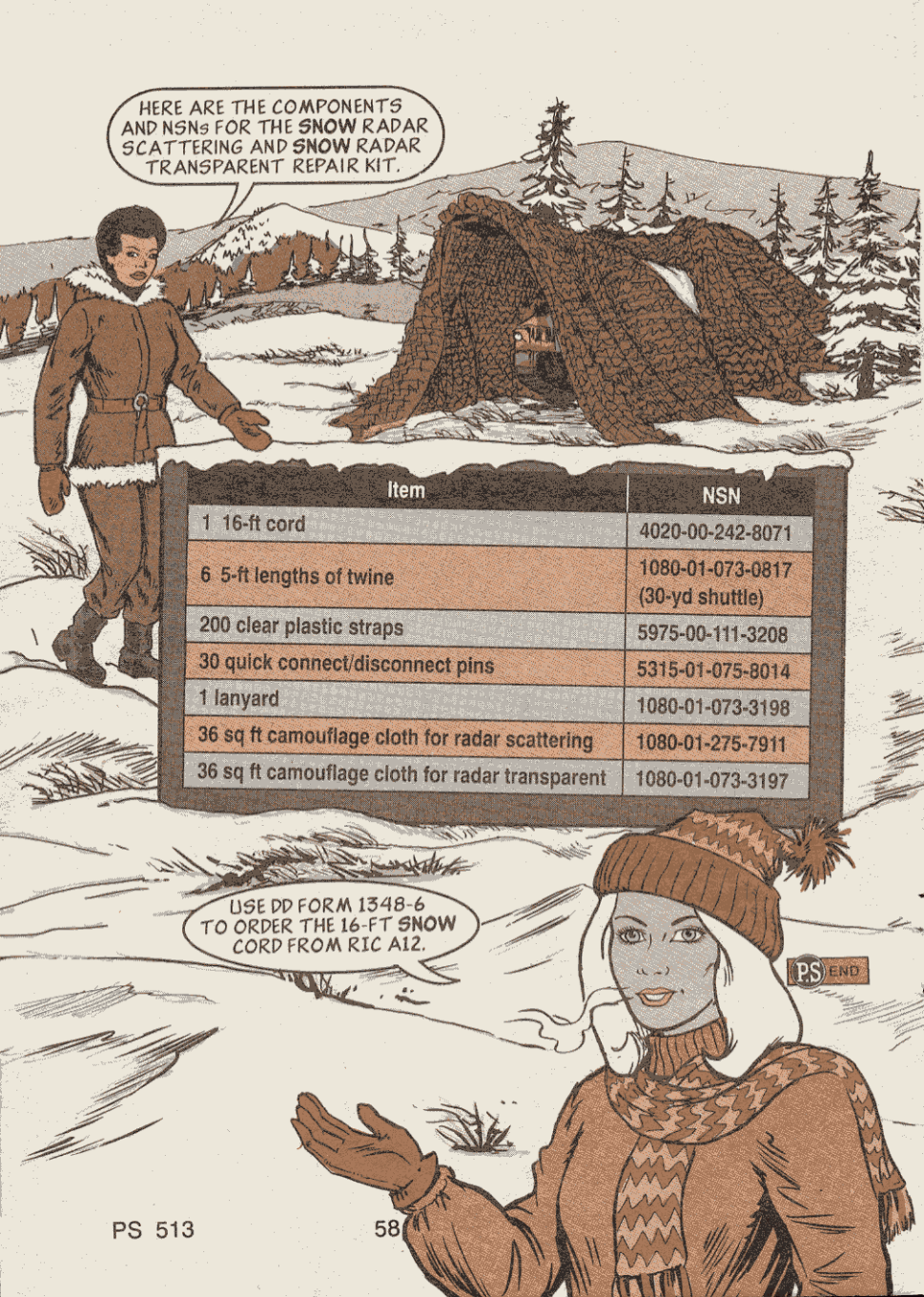
Item	NSN
1 16-ft cord	4020-01-041-0788
6 5-ft lengths of twine	1080-01-060-1698 (30-yd shuttle)
1 sq mtr garnished net	1080-01-183-4482
20 sq ft camouflage cloth	1080-01-075-4016

UP HERE ARE PARTS THAT COME WITH DESERT RADAR SCATTERING KITS...

...AND THE DESERT RADAR TRANSPARENT KIT INCLUDES THESE PARTS.



HERE ARE THE COMPONENTS  
AND NSNs FOR THE **SNOW** RADAR  
SCATTERING AND **SNOW** RADAR  
TRANSPARENT REPAIR KIT.



Item	NSN
1 16-ft cord	4020-00-242-8071
6 5-ft lengths of twine	1080-01-073-0817 (30-yd shuttle)
200 clear plastic straps	5975-00-111-3208
30 quick connect/disconnect pins	5315-01-075-8014
1 lanyard	1080-01-073-3198
36 sq ft camouflage cloth for radar scattering	1080-01-275-7911
36 sq ft camouflage cloth for radar transparent	1080-01-073-3197

USE DD FORM 1348-6  
TO ORDER THE 16-FT **SNOW**  
CORD FROM RIC A12.

PS END



# TAKE CARE OF THE TRACK

WHAT'S YER PROBLEM?

MY TRACKS ARE KILLIN' ME! I'M DUE FOR SOME PM!

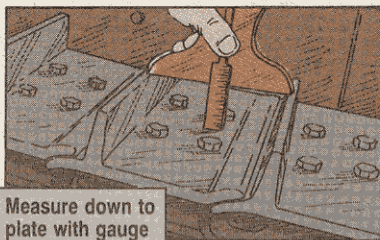
**M**echanics, maintaining your tractor's track takes some special tools and special know-how. Problem is, the TMs don't list all the special tools you need, or tell you how to make certain measurements every 250 hours or quarterly.

Here are the tools and the info you need:

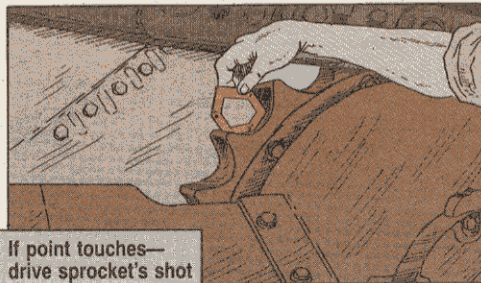
♥ Use a drive sprocket wear gauge, NSN 5210-01-225-1132, to measure sprocket wear on D7 and D8 sprockets.

Set the point of the gauge marked for the tractor you're working on between the teeth of the drive sprocket. If the point doesn't touch bottom, the sprocket's OK. If it touches, get support to replace the sprocket.

♥ Use broad-based depth gauge, NSN 5210-00-221-1902, to measure the height of the grouser. Set the base across two adjacent grousers and measure down to the plate on D7s and D8s. If the grouser is less than 1 1/2 inches tall, replace the shoe.



Measure down to plate with gauge



If point touches—drive sprocket's shot

YOUR AUTHORITY TO ORDER THE GAUGES IS APPENDIX A OF CTA 50-970.





# Maintenance Excellence Award Winners

HERE ARE THE  
WINNERS AND RUNNERS-UP  
OF THE FY94 ARMY AWARDS  
FOR MAINTENANCE  
EXCELLENCE.



## ACTIVE MTOE UNITS

### LIGHT CATEGORY

WINNER HHD, 6th Ord Bn, Waegwan, Korea  
RUNNER-UP HHD, 503d MP Bn (Abn), Ft Bragg, NC

### INTERMEDIATE CATEGORY

WINNER HHC, 14th Combat Engr Bn (Corps), Ft Lewis, WA  
RUNNER-UP Battery C, 5th Bn, 3d ADA, McCully Barracks, Germany

### HEAVY CATEGORY

WINNER HHC, 307th Sig Bn, Camp Carroll, Korea  
RUNNER-UP 2d Bn, 18th FA Bde, Ft Sill, OK

## RESERVE MTOE UNITS

### LIGHT CATEGORY

WINNER HHC, 412th Engr Cmd, Vicksburg, MS  
RUNNER-UP 322d Civil Affairs Bde, Ft DeRussy, HI

### INTERMEDIATE CATEGORY

WINNER 804th Sig Co, Ft DeRussy, HI  
RUNNER-UP 619th Trans Co, Auburn, ME

### HEAVY CATEGORY

WINNER 813th Engr Bn, Ft Richardson, AK  
RUNNER-UP 824th Quartermaster Co, Ft Bragg, NC

## NATIONAL GUARD UNITS

### LIGHT CATEGORY

WINNER 11th ATC Platoon, Jacksonville, FL  
RUNNER-UP HHC, 213th Area Support Group, Allentown, PA

### INTERMEDIATE CATEGORY

WINNER Co D, 891st Engr Bn, Ft Scott, KS  
RUNNER-UP HHD, 728th Main Support Bn, Lock Haven, PA

### HEAVY CATEGORY

WINNER Co D, 109th Avn Bn, Boone, IA  
RUNNER-UP HHC, 2d Bn, 112th Inf, Lewistown, PA

## TDA UNITS

### LIGHT CATEGORY

WINNER Pusan Storage Facility, Pusan, Korea  
RUNNER-UP Cold Regions Test Activity, Ft Greely, AK

### INTERMEDIATE CATEGORY

WINNER Mobilization and Training Equipment Site, Ft Riley, KS  
RUNNER-UP HSC, 751st MI Bn, Camp Humphreys, Korea

### HEAVY CATEGORY

WINNER 731st MI Bn, Schofield Barracks, HI  
RUNNER-UP Joint Security Area Bn, Camp Bonifas, Korea





### Cheap CAM Power

Save lots of dollars by using the battery assembly, training (BAT) to power your chemical agent monitor (CAM) during training and PMCS. The BAT lets you run the CAM with four D-cell alkaline batteries or from a 110/120 VAC outlet, instead of using expensive CAM batteries. Order the BAT with NSN 6910-01-333-3631, project code GG4. Use only the 6 VAC adapter that comes with the BAT—other adapters can burn out the CAM circuitry. The BAT is not for missions. It does not meet mission requirements for cold weather.

### Keyless Drill Chucks

GSA now has keyless chucks for 3/8 and 1/2-in portable drills. Order the 3/8-in chuck with NSN 5130-01-390-2395 and the 1/2-in chuck with NSN 5130-01-390-2396.

### Parts Cleaning Can

Get a bench-type safety can used for cleaning small parts with NSN 4940-00-684-0580. The can stands 6 3/4 inches high and 11 3/4 inches across and holds up to two gallons of cleaning solvent. It comes with side handles and a hinged lid. Appendix A of CTA 50-970 is your ordering authority.

### Grenade Launcher Cover

The parts TM is the wrong place to find canvas covers for the M239 and M250 grenade launchers. Instead, look in the AAL of the -10 TMs for your M1-series tank, M88A1 recovery vehicle, and M60A3 tank. NSN 1040-01-042-3861 gets the left hand cover. The right hand cover is NSN 1040-01-043-7896.

### M1022 Takes a 5-Ton

Use only a 5-ton truck to pull the M1022 dolly set. Never mind that Page 1-11 of TM 9-2330-379-14&P says you can use a 2 1/2-tonner. The 2 1/2-ton truck can't maintain enough air pressure to supply both air brake systems.

### M129A3 Door Handle Mixup

The inner and outer door handles, Items 16 and 29, in Fig 31 of TM 9-2330-374-14&P are reversed. Item 16 is the semitrailer door's outside handle, NSN 2540-00-287-2571. Item 29 is the inside handle, NSN 2540-01-031-9085.

### Forget M249 Gauge

We told you armorers wrong on page 9 of PS 510. Gauging the M249 firing pin is not your problem, it's direct support's. If you have doubts about a firing pin, get support to check it.

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

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# NO DRAIN

An illustration of a man in a hat and boots crouching on a grassy hill, looking towards a large military-style truck with a canvas-covered cargo area parked on a path in the background. The scene is set in a wooded area with trees and bushes.

# BIG PAIN

**MOISTURE RUSTS AIR LINES—**

**NO BRAKES!**

**MOISTURE FOULS FUEL—**

**NO POWER!**



**DRAIN WATER  
PER TMS**