



**THE  
PREVENTIVE  
MAINTENANCE  
MONTHLY**

TB 43-PS-567, 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. Masculine pronouns may refer to both genders.

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You are invited to send PS your ideas for improving maintenance procedures, questions on maintenance and supply problems, and questions or comments on material published in PS. Just write to:

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**The Preventive Maintenance Monthly**  
**LOGSA, Bldg. 5307**  
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By Order of the Secretary of the Army:

**ERIC K. SHINSEKI**

General, United States Army Chief of Staff

Official:

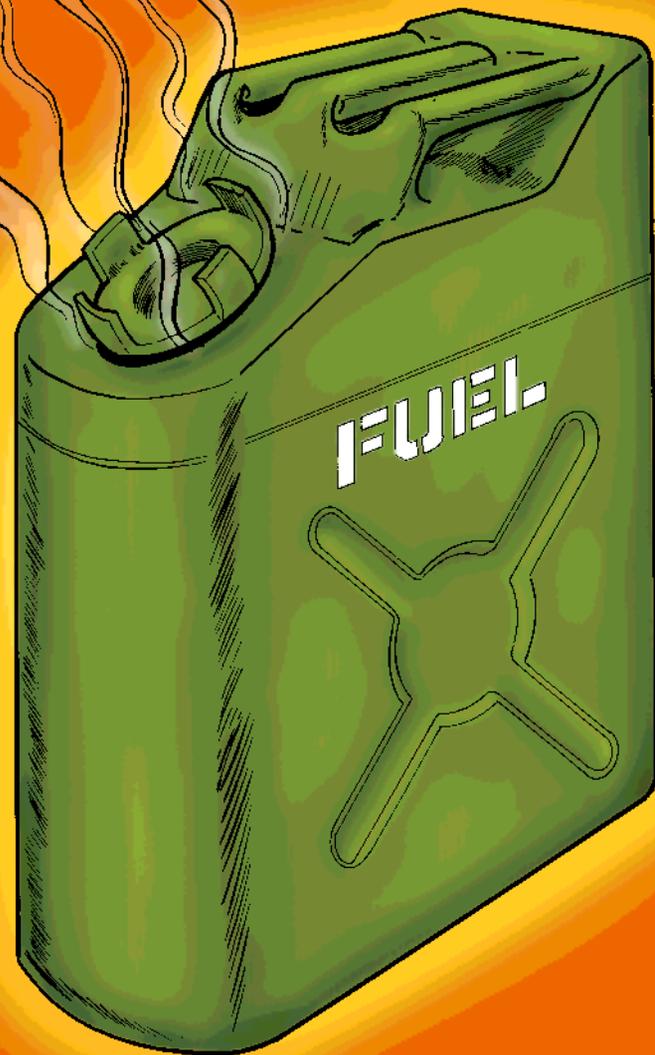
*Joel B. Hudson*  
**JOEL B. HUDSON**

Administrative Assistant to the Secretary of the Army  
 9934401

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# FUMES CAN IGNITE!



So drain cans completely before storing them or store them in an approved flammable liquid storage area!

Issue 567

# PS

February  
2000

## THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-567

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# PS in Cyberspace

COOL!



**C**hange is a constant.

When PS first started helping soldiers to keep their equipment moving, shooting and communicating, the Army was very different. We were fighting in Korea with M1 rifles, M46 tanks, M38 jeeps and eating C-rations. PS Magazines were passed around from soldier to soldier.

PS is still available on paper, and still passed around from soldier to soldier. But now, PS is also available on the Internet.

Just go to:

<http://www.logsa.army.mil/psmag/pshome.html>

to check out recent issues, search the PS index, request back issues, or send questions to MSG Half-Mast. (You'll need Adobe Acrobat Reader to view the issues.)

Instead of scratching your head, wondering where to find that recent issue you need, you can find it with a few clicks of your computer's mouse.

Indeed, times have changed, but what has not changed is our commitment to our readers. PS is there for you. And now you can find it in cyberspace or on paper.



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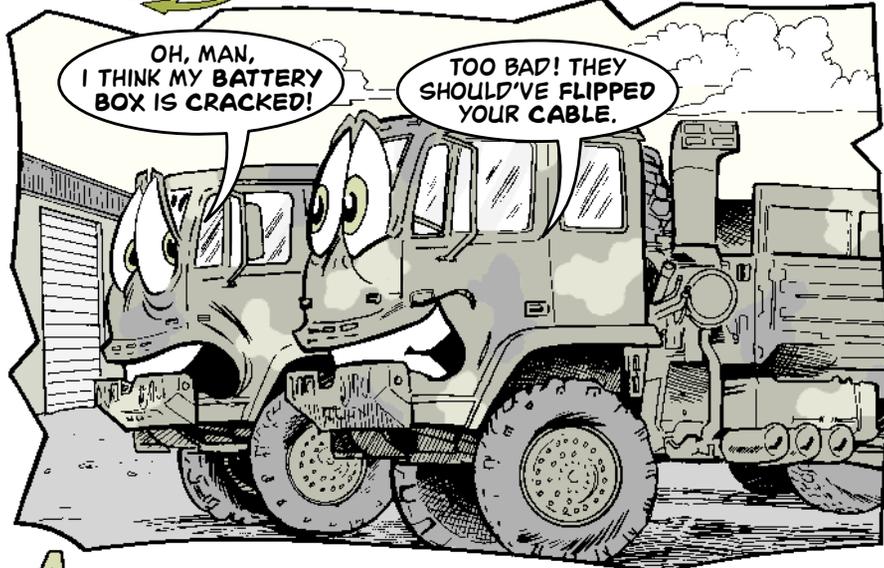
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## Flip Flop Saves Box Cover



**A** cable flip-flop and some new hardware will prevent a cracked battery box cover on your FMTVs.

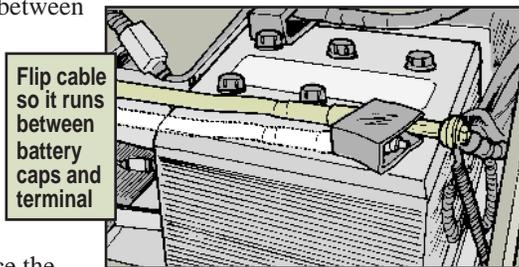
Eyeball the electrical cable that connects the negative posts on the front two batteries. If the cable is mounted between you and the battery posts, it needs to be moved.

Left where it is, the end that connects to the other two negative leads rubs against the box cover during operation. That damages the cover.

Flip-flop the cable so it lies between the battery posts and battery cell covers to prevent the damage.

To do that, loosen the two cable clamps and remove the two leads. Lift the cable off the posts, flip it over and reinstall it on the posts. Replace the terminal end bolt with NSN 5305-01-421-8208. It's a little longer than the old one so you can reattach the two leads.

Attach the leads with a new hex nut, NSN 5310-00-903-3994, and tighten the post clamps. You're good to go, with no more battery box damage.



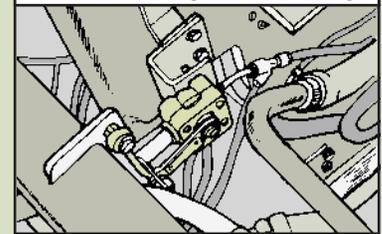
## Cab Leveling Linkage Check

Mechanics, if your FMTV operators clue you in to a cab latching problem, make your first check the cab leveling valve and linkage.

If the valve is faulty or the linkage is out of adjustment, the cab support assembly and the cab latch assembly may not come together correctly when the cab is lowered. Then the cab latch won't cradle in the support assembly, which creates a safety hazard and can break equipment.

Eyeball Para 16-8 of TM 9-2320-365-20-4 (for 2 1/2-ton models) and TM 9-2320-366-20-4 (for 5-ton models) for adjustment information. Replacement instructions are in the same paragraph.

Check cab leveling valve and linkage



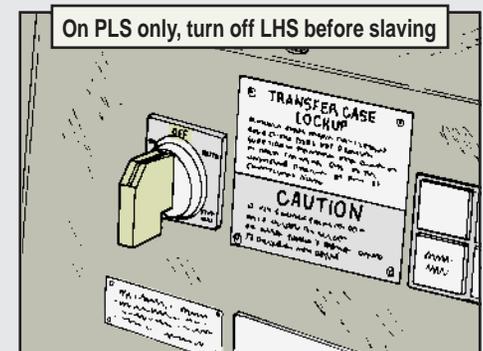
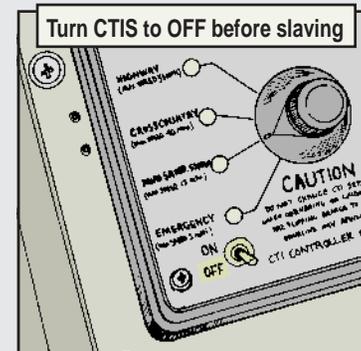
Heavy Equipment Transporter and Palletized Loading System . . .

## Slave Starting Updated

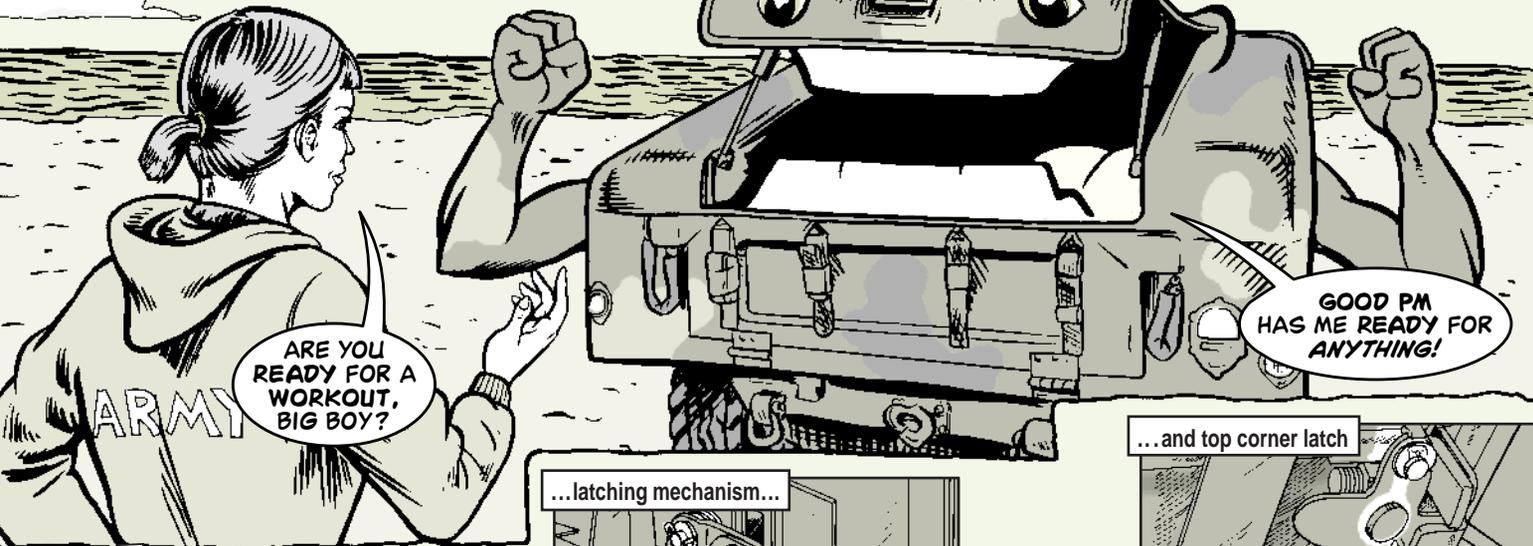
**A**lways turn off the central tire inflation system (CTIS) controller switch before you slave start a HET or PLS tractor. If you don't, the current surge during slaving can damage the CTIS controller.

A bum controller means that tire pressure can't be regulated automatically. That's bad news when you need extra traction in rough or sandy terrain.

For the PLS tractor only, you must also make sure the load handling system (LHS) is turned off before slave starting. That way there won't be a power surge to that controller to cause circuit board damage.



# Cargo Shell PM

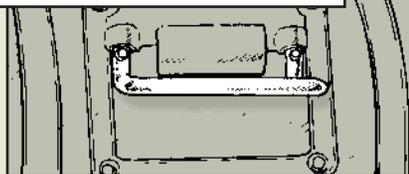


It doesn't take much PM to keep your hard-shell HMMWV's hatch door in good working order, but here are a couple of PM steps that really help:

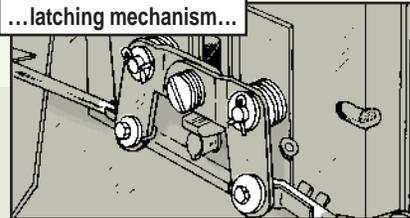
- ◆ Lube all hatch-latching mechanisms every 3,000 miles or 6 months with PL-S, just as the LO on Page G-5 of TM 9-2320-280-10 says.

The mechanisms do a lot more than just open and close. They also work like hinges so you can open the hatch from the front or rear.

Use PL-S on outside door handle...



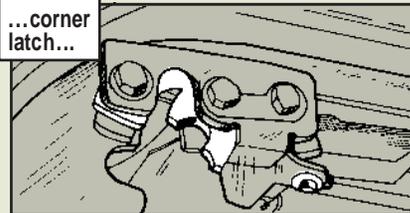
...latching mechanism...



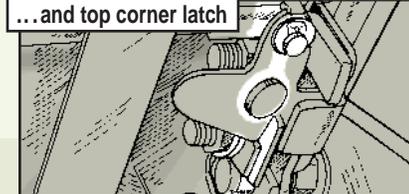
...inside door handle and latch...



...corner latch...



...and top corner latch



- ◆ Eyeball the gas springs often to make sure the bushings and clamps are in place at each end of the tubes. The bushings keep dirt, bugs and other crud out of the rods. If the bushings are gouged or missing, let your mechanic know.

If the clamps are loose, the bushings will soon be missing. So, get your mechanic to tighten the clamps.

Gas spring missing clamp?

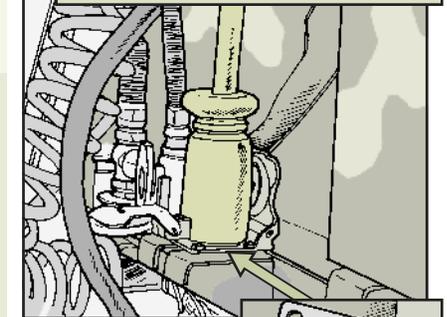


# "NO CHARGE" POWER HOOKUPS

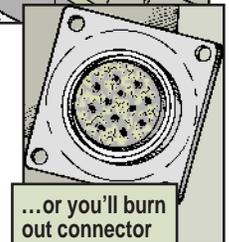
**A**void fireworks when you hook up electrical power cables between trucks and trailers by making sure there are no light switches in the ON position.

Arcing can occur as soon as the trailer cable's connector gets close to the truck's receptacle if the truck's lights are on. Arcing can destroy the receptacle on the truck or the cable connector, or both. And you'll have no lights until repairs are made.

Turn off lights before making hookup...



Before any trailer hookups, turn off all truck lights and match connector keys to receptacle keyways so that pins don't get bent or broken. Once all electrical hookups are made, then turn on the lights to make sure all your lights are working.



# Hard Shell Seal Deal



**W**hat you're packing under the hard shell door of your HMMWV armament carrier will be exposed to the elements if the door seal won't seal.

Do the paper test to see how the seal works against grit, dust, dirt and moisture. Slip a piece of paper—a dollar bill works OK—between the door seal and the door opening. Close the door and try to pull the paper out.

The seal and the door should fit tight enough to keep the paper from sliding out easily. If it comes out easily, either

the door's out of alignment or you've got seal problems. Report it.

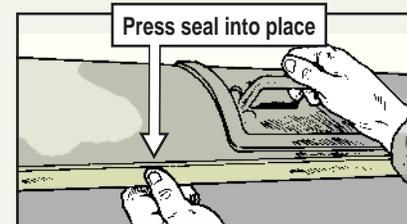
Mechanics, if the seal's loose—or just really dirty—here's what you need to do:

1. Remove the seal. Use clean cotton rags and Type III P-D-680 dry cleaning solvent, NSN 6850-01-331-3349, to wipe off all the grease, grime and grit around the edge of the door. Use soap and water to clean the rubber seal. Let the seal dry.

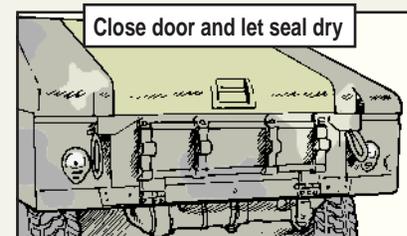


2. Following package instructions, apply sealing compound, NSN 8030-01-347-0964, in the seal channel along the entire length of the seal.

3. Press the seal back in place.



4. Close the cargo door and let the compound dry.



5. Repeat the paper test. If the seal fails the test again, replace it with NSN 5330-01-195-9083.

## 2 1/2-Ton and 5-Ton Trucks . . .

### Cab Floor Housekeeping

**A** few specks of dirt may seem harmless, but they can lead to brake trouble if they get in the brake master cylinder under the floorboard of your M44A2-series or M809-series truck.

So, always do a little housekeeping before you check the fluid level in the master cylinder.

Before you open the cylinder's access door, use a rag to clean the door and floor around it.

That way, no dirt gets into the master cylinder while it's open. And always cover the opened cylinder if you go to get some brake fluid.



# Insulation Installation

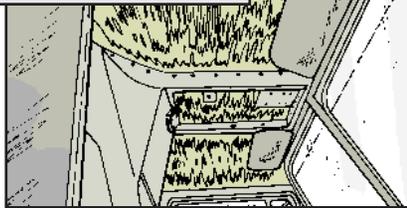
You operators who are lucky enough to drive vehicles that have cab insulation don't like to hear that you can't have it anymore.

But that's what happens when your mechanics say they can't find an adhesive that'll hold the stuff in place.

There's no need for that problem. If an adhesive is not specified in your vehicle's repair or parts TMs, your mechanic can use spray adhesive, NSN 8040-00-181-7761.

Clean the mounting surface of all old insulation and adhesive using a scraper and dry cleaning solvent, NSN 6850-00-281-1985. Then spray the adhesive on the insulation and the mounting surface.

Remove old adhesive with dry cleaning solvent



Apply the insulation to the surface and press it into place and hold it for about 15 seconds to allow sticking.

Then remember next time to keep the water hose away from the cab interior. Moisture in the cab is no good for electrical connections or insulation.



# It's Losing (Not Using) Oil



A gear case that's low on oil has to be leaking—there's no other way for that oil to get out. Plain and simple, the vehicle's gear case is losing oil...not using it.

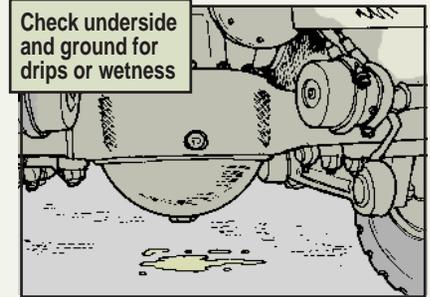
Your truck's transmission, transfer, winches or differentials just don't use oil like an engine does. Gear lube should last as long as the equipment.

Even a slow leak can let out enough lube over time to leave dry metal gears grinding against each other. Imagine what happens while your vehicle is operating hot and heavy. You can kiss those gears goodbye.

So, do the right thing by eyeballing the gear case for any drips or wetness

on the underside of the truck and the ground.

Check underside and ground for drips or wetness



Report any leak you see. The problem could be a bum gasket, loose cover screws or a plugged vent valve. Your mechanic can check it out before the gears check out for good.

# PM BULLETIN BOARD

## Max Speeds for M939s

It's official, drivers. Change 1 to TM 9-2320-272-10 sets maximum safe operating speeds for M939/A1/A2-series 5-ton trucks:

Highway and secondary roads	40 mph
Cross country roads	35 mph
Sand and snow	25 mph
Icy conditions	12 mph

## PLS Tail Lights

Need 12-volt light bulbs for the PLS's composite tail light? Don't use the ones shown as Items 7 and 8 in Fig 98 of TM 9-2320-364-24P—they're the wrong bulbs. Instead, use NSN 6240-00-143-3159 for Item 7 and NSN 6240-00-617-0991 for Item 8.

## 6K VRRT Forklift Clip

The internal retainer clip for the spotlight assembly on the variable reach rough terrain forklift is now available separately. Order it with NSN 5340-00-693-4175 and make a note until the NSN is added to Fig 61 of TM 10-3930-660-24P.

## HMMWV Wheel Kit

NSN 2530-01-443-3405 is the new kit NSN that gets Items 17-19 and 22-29 in Fig 139 of TM 9-2320-280-24P-1. The current NSN is wrong. Items 20 (runflat device for either a bias or radial tire) and 21 (lubricant for either a bias or radial tire) are not included in the kit. For a complete tire and wheel, see Fig 140.

## HMMWV Oil Pan Installation

Replacing a HMMWV oil pan is tough enough with all the parts you need on-hand. But Fig 4 of TM 9-2320-280-24P-1 makes no reference to nut, NSN 5310-01-158-6257, and two washers, NSN 5310-00-582-5965 (box of 100), needed to mount the starter cable support bracket. The nut and washers are found in Fig 66 as Items 34 and 35.

## M35A3 Beadlock

Need only the beadlock for a wheel on the M35A3 2 1/2-ton truck? Make a note in Fig 117 of TM 9-2320-386-24P that Item 2 is NSN 2530-01-398-2022. You don't have to order the entire wheel to get the beadlock.

## HMMWV Transmission Filter

NSN 4330-01-438-3813 gets a transmission filter kit for M998A2-series, M1113 enhanced capacity vehicles (ECV) and M1114 up-armor HMMWVs. The kit includes a seal and filter. It doesn't include the reusable transmission oil pan gasket, NSN 5330-01-360-5271. The kit includes Items 35 and 36 in Fig 94 of TM 9-2320-280-24P or Items 12 and 13 in Fig 88, TM 9-2320-387-24P.

## M870A1 Hub Cover

NSN 5340-01-042-0573 gets the axle hub cover for the M870A1 40-ton semitrailer. The cover's vent plug also comes with this NSN even though it's not shown with Item 2 of Fig 20 in TM 5-2330-378-14&P.

## Elastic Cord for Covers

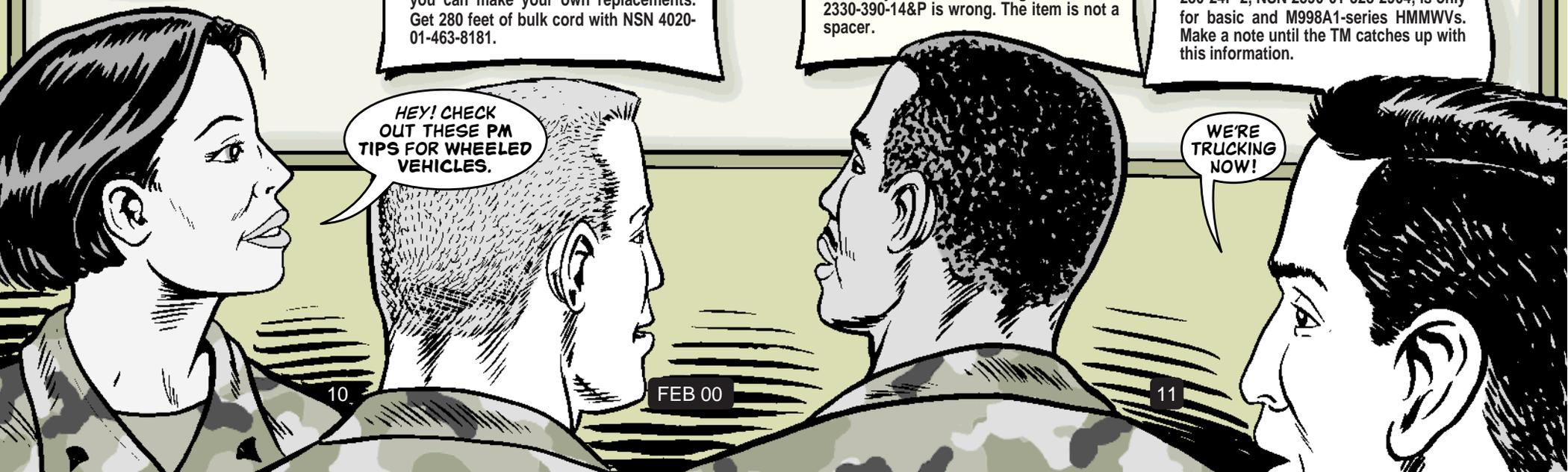
If your truck's cargo and cab covers are secured by black elastic ("bungee") cord, you can make your own replacements. Get 280 feet of bulk cord with NSN 4020-01-463-8181.

## M1022A1 Dolly Set Seal

NSN 5330-01-464-9956 gets a seal for the wheel assembly on the M1022A1 dolly set. The entry for Item 13 in Fig 17 of TM 9-2330-390-14&P is wrong. The item is not a spacer.

## HMMWV Brush Guard Kits

M998A2-series HMMWVs have their own brush guard kits, NSN 2510-01-461-7075. The kit shown in Fig 400 of TM 9-2320-280-24P-2, NSN 2590-01-328-2904, is only for basic and M998A1-series HMMWVs. Make a note until the TM catches up with this information.



HEY! CHECK OUT THESE PM TIPS FOR WHEELED VEHICLES.

WE'RE TRUCKING NOW!

# TLC Takes You a Long Way



OPERATORS,  
YOUR DOLLY SETS WILL  
FOLLOW YOU ANYWHERE IF  
YOU KEEP THEM READY  
WITH THESE PM  
POINTERS.

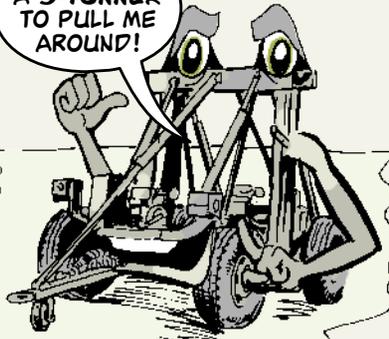


ROLLIN',  
ROLLIN',  
ROLLIN',  
KEEP THOSE  
DOLLIES ROLLIN',  
RIDE ON!

## It Takes a 5-Ton

Use only a 5-ton truck to pull M1022 and M1022A1 dolly sets. TM 9-2330-379-14&P for the basic M1022 dolly set says you can use a 2<sup>1</sup>/<sub>2</sub>-tonner. But forget that—the deucer can't maintain enough air pressure for both air brake systems.

IT TAKES  
A 5-TONNER  
TO PULL ME  
AROUND!



## Avoid Tight Turns

Ease off on too-tight turns. In a too-tight turn, the least you'll get for your trouble is bent tie rods.

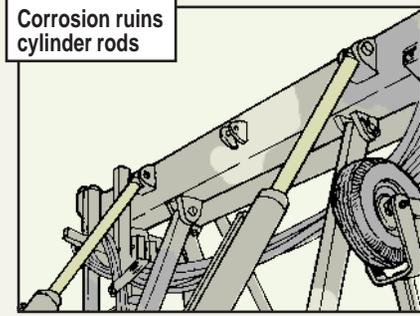
The dolly set turns shorter than the truck when being backed. While your truck is still turning, the tie rods on the dolly set are bending and breaking. If your turn is too tight, you could dump whatever the dolly set is carrying.

## Protect Hydraulic Cylinders

Corrosion ruins cylinder rods. It pits the rod so badly that seals can't prevent fluid leaks. If the leaks go to Class III, your dolly set is NMC.

So, stop corrosion long before it gets to pitting by exercising your equipment each week. Exercising spreads a thin coat of hydraulic oil on the cylinder rods.

Corrosion ruins cylinder rods



If you can't exercise the equipment, smear a thin coat of GAA on the rods.

If your dolly set is going to sit unused for more than a month, coat rods with GAA, then wrap them with waterproof paper, NSN 8135-00-753-4662. Use moisture-resistant sealing tape, NSN 7510-00-852-8180, to hold the paper in place.

## Watch Your Step

Keep your boots off the dolly set's emergency relay valve. The valve makes a convenient footrest during visual checks and services.

Don't step on emergency relay valve



Problem is, your weight will break the T-fitting that connects the brake system's air hoses into the valve. A busted valve means no brakes.

So, for safety's sake, stay off the valve.

# How Much Is Too Much?

**S**o you've noticed a little chunking on the roadwheels and support rollers on your Bradley or MLRS. You may be asking yourself, "Is it bad enough to replace the wheel?" and "How do I keep it from happening next time?"

Here's what you need to answer those questions.

## Inspection

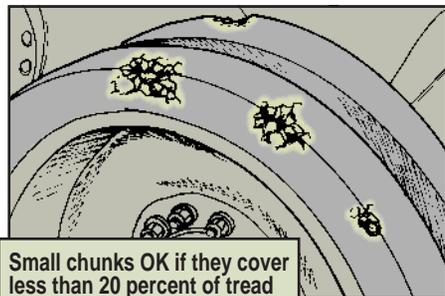
☒ **Weather cracking.** If weather cracks extend completely across the tread surface and are deeper than 1/4 inch, the wheel is unserviceable.

☒ **Chunking.** For roadwheels, one missing chunk of rubber that measures three by 4 inches or larger is enough to make your vehicle NMC.



Large chunks of missing rubber make vehicle NMC

Depth of the chunking doesn't matter. Even smaller chunks can make the



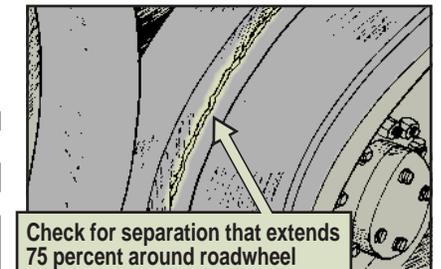
Small chunks OK if they cover less than 20 percent of tread



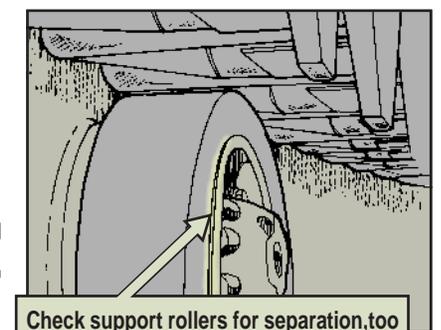
roadwheel unserviceable if they cover more than 20 percent of the tread surface.

For support rollers, it only takes a chunk measuring one inch by two inches to cause a deadline. Again, the depth of the chunking doesn't matter and a collection of smaller chunks that cover more than 20 percent of the tread surface make the support roller unserviceable.

☒ **Tread separation.** Separation of the tread that is one inch or wider and goes around 75 percent of the roadwheel makes your vehicle NMC. The same goes for support rollers, except the separation only has to be 1/2 inch or wider.



Check for separation that extends 75 percent around roadwheel



Check support rollers for separation, too

## Prevention

Damage to roadwheels and support rollers has three main causes:

### 1. Improper track adjustment.

Loose track lets the center guides hit the rubber tread on roadwheels and support rollers. That results in gouging and chunking of the rubber.

### 2. Loose hardware.

Loose lug nuts allow the roadwheels and support wheels to wobble. That further strips the lug bolt threads and eats away at the wheel's mounting holes.

The more the wheels move, the greater the chance that the center guides will hit and damage the tread.

### 3. Track debris.

Rocks that get thrown up by the track lodge between

the roadwheel arms. That results in gouging and deep cuts or grooves in the tread.

Check track tension after every operation and adjust it as necessary. Eye-ball roadwheel and support roller mounting nuts for looseness. Report any you find. Make sure you check your track daily for rocks and other debris. Remove them before they kill the wheels.

Finally, check out the good words in TM 9-2530-200-24, *Standards for Inspection and Classification of Tracks, Track Components and Solid-Rubber Tires*, for additional information.



## M2/M3-Series Bradleys, MLRS . . .

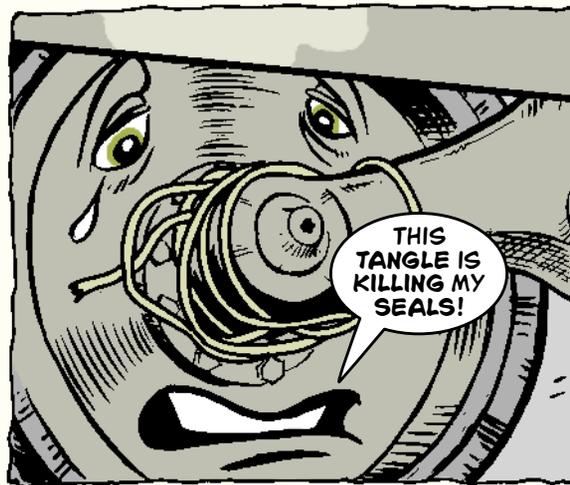
# Don't Let Roadwheels Get Wired

**D**rivers, one of the first things you need to do after bringing your Bradley or MLRS back from the field is check the roadwheels. They may be getting really wired.

Commo wire that's picked up by moving track snags on the road arms. As it tightens, the wire slips down the road arms to the roadwheels where it starts eating away at the roadwheel seals.

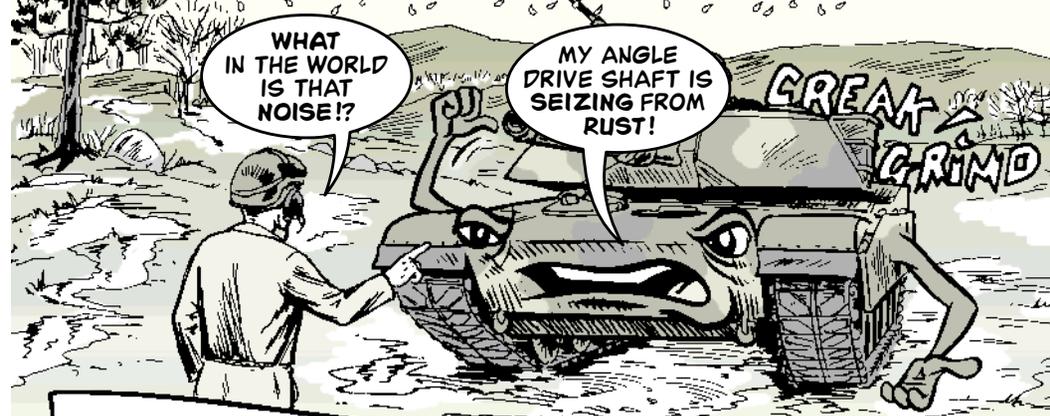
Eventually, a leak develops and the hub goes dry. Bearings burn out and the road arm has to be replaced.

While checking for loose hardware and low oil in the hubs during PMCS, take a look at the back of each roadwheel. If you spot commo wire, cut it loose and prevent damage before it starts.



## M1-Series Tanks . . .

# Down the Drain



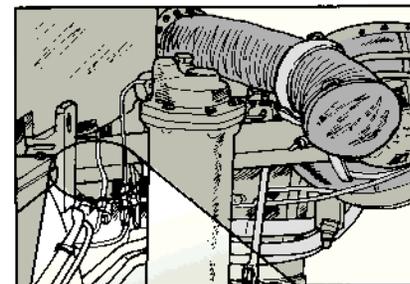
Dear Editor,

Water from washing, rain and condensation always seems to pool in the worst possible places on our tanks. One of those places is the left side angle drive shaft cover.

When the drive shaft sits in water long enough, rust develops. Pretty soon, the shaft won't move the fan and your engine isn't getting the airflow it needs.

We've stopped this problem by drilling a 1/4-in hole in the bottom of the lowest portion of the cover. Water drains away as fast as it comes in and the drive shaft stays rust-free.

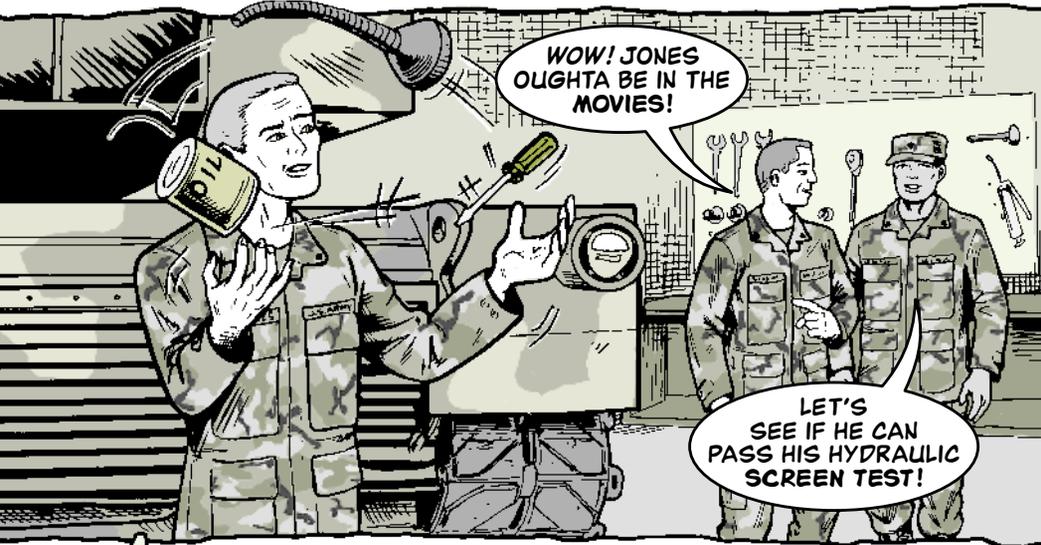
SPC Brad A. Morris  
2/70th AR  
Ft Riley, KS



FROM THE DESK OF THE Editor

We can't find any holes in that solution! Good job!

# Don't Fail the Screen Test



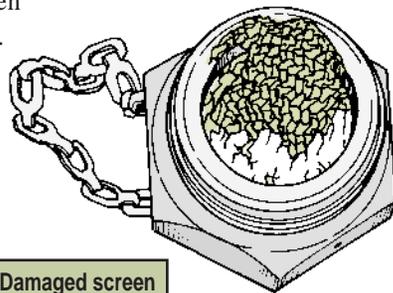
Adding FRH to your tank's hydraulic reservoir can turn into a juggling act for just one crewman.

The screen in the reservoir opening is too short so you can't insert the funnel and turn it loose without the funnel falling out. That means you're holding the FRH in one hand and a funnel in the other while trying to keep hazardous fluid from spilling on you.

Some crewmen solve the problem by punching a hole in the screen so the funnel will stay in place by itself. That leaves both hands free to pour the FRH.

But this "fix" often lets metal screen fragments get into the hydraulic system. And with the screen torn, it's easy for other contaminants to get into the reservoir, too.

Don't let this happen to you. When it's time to add more FRH to the hydraulic reservoir, **get the help of another crewman.** With one of you holding the funnel and the other pouring, the only thing that gets in your hydraulic system is fresh FRH.



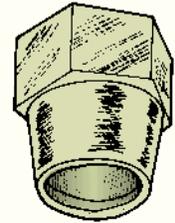
Damaged screen contaminates hydraulics

# One Piece or Two?

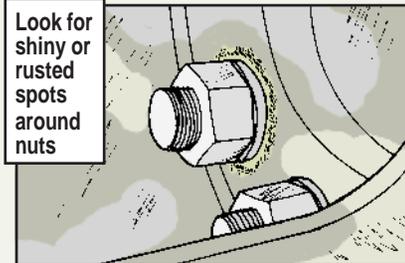
Loose sprocket hub mounting hardware on the final drive can put your M88A1 recovery vehicle or AVLB out of control.

Look for shiny spots or flaky rust around the nuts. That signals loose fasteners. If you find any, tell your mechanic.

One-piece dowels keep sprockets in place



Look for shiny or rusted spots around nuts



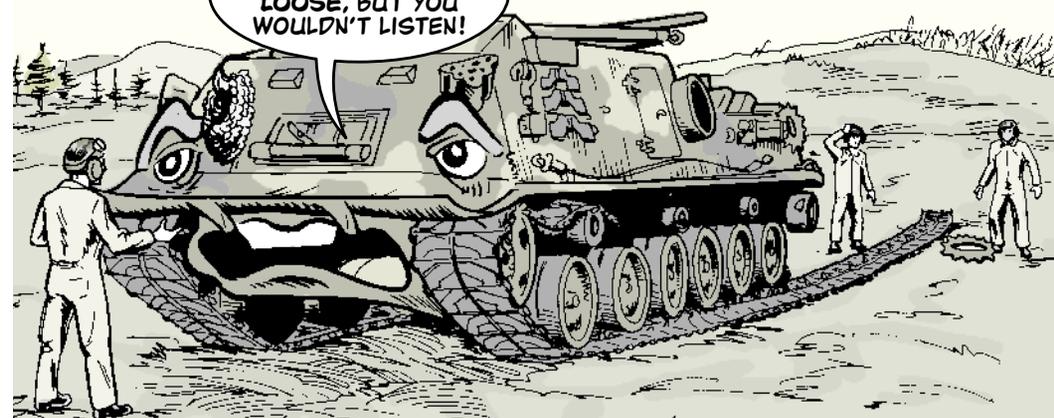
One way to keep the hubs tight is to get the nut and bushing setup replaced with dowels, NSN 5310-01-123-6782. Since the dowels are one piece instead of two, there's less chance of loosening.

It's OK to use bushings on one sprocket and two-piece hardware on the other, but **never** mix the two on the same sprocket. The nuts will loosen and you'll lose the sprocket.

Switching over to the one-piece dowel eliminates one other problem, too. You'll never have to worry about how to get a stuck bushing out of the sprocket again.

Right now, your only choice is to remove all the hardware and let the weight of the sprocket pull the stuck bushings out. That's dangerous for you and hard on the sprocket.

I TOLD YOU MY SPROCKET NUTS WERE LOOSE, BUT YOU WOULDN'T LISTEN!

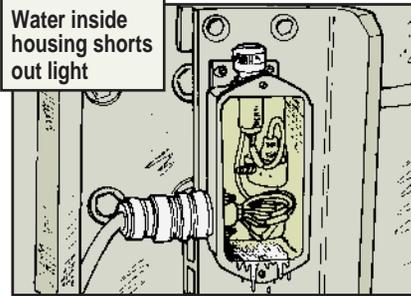


# Keep Warning

Dear Editor,

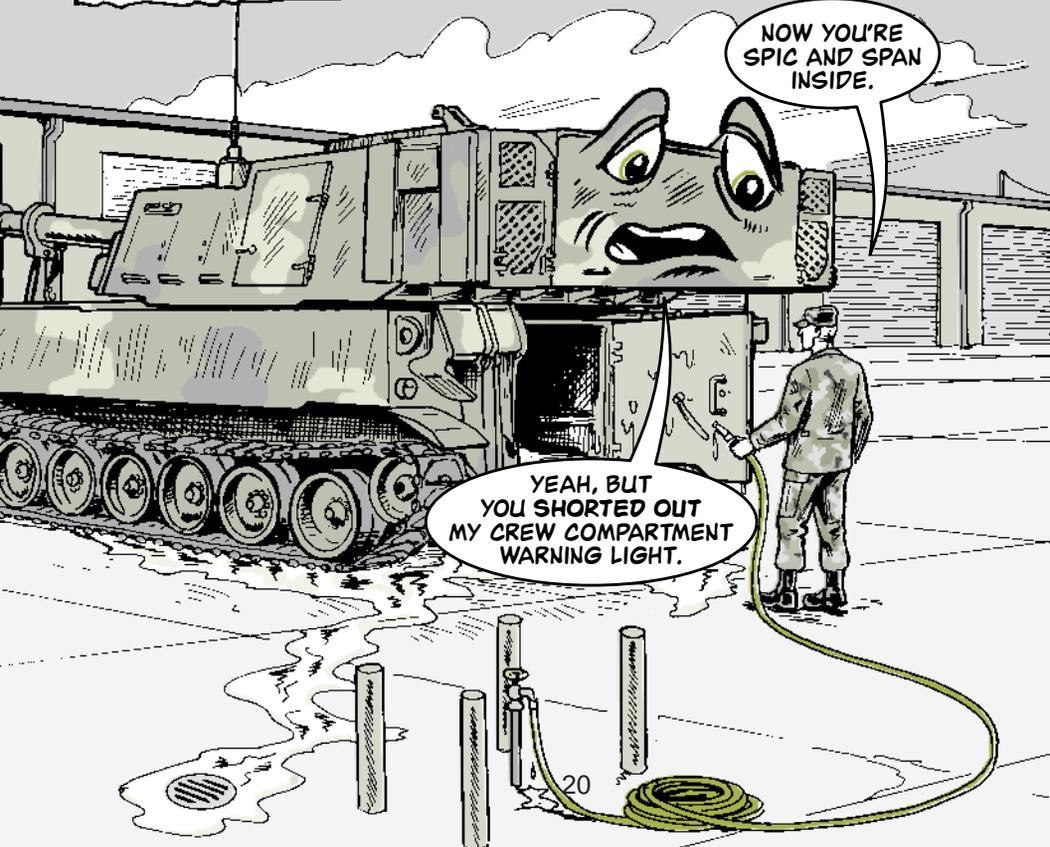
Hosing down the inside of the Paladin to keep it clean plays havoc with some of its electrical systems—especially the crew compartment warning light.

The warning light cover has a rubber gasket that's supposed to keep water out. But if the gasket is damaged or missing and water gets inside—ZAP!—the warning light shorts out. Then you have to rely on the master warning light in the driver's compartment to keep you aware of problems.



NOW YOU'RE SPIC AND SPAN INSIDE.

YEAH, BUT YOU SHORTED OUT MY CREW COMPARTMENT WARNING LIGHT.



# Light Sealed

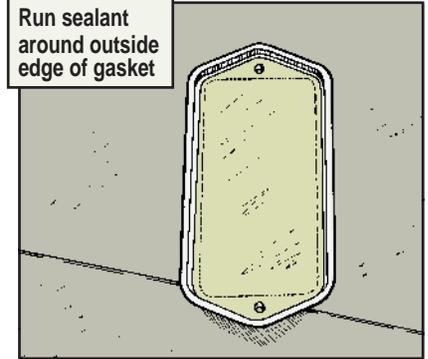
Since there's no replacement NSN for the gasket, most units fork over the bucks for a new warning light housing, NSN 6220-01-315-6283.

We protect the warning light and save some bucks by running a bead of clear silicone sealant, NSN 5330-01-165-2363, around the inside edge of the cover.

Just put the cover back in place before the silicone dries and wipe off any that oozes outside the housing. That gives you a waterproof seal that keeps the warning light on the job.

SGT John Spessard  
2/5th FA  
Ft Sill, OK

Run sealant around outside edge of gasket



FROM THE DESK OF THE Editor 

An excellent suggestion. Crewmen, keeping high-pressure water away from electronics will help, too.



## Stow the Pin!

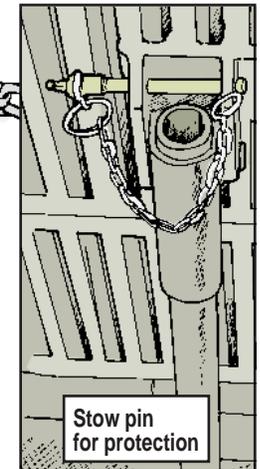
Crewmen, when closing the engine access grille on your howitzer or ammo carrier, make sure you stow the grille support arm's quick-release pin first.

A pin that hangs free gets broken or crushed when the grille is closed. The next time you open the grille, the support arm won't be able to hold it up.

Even if it's properly stowed, the pin will snap if you let the grille door slam shut. So, easy does it.

Replace a missing or damaged pin with NSN 5315-00-419-0758.

PS 567

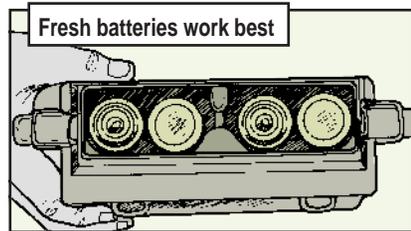


# Clues for Good

One piece of equipment that you want to do its very best is the AN/PSS-12 mine detecting set. After all, a mine is a terrible thing to miss.

Here are some clues to help your detection:

Put in fresh batteries. A new set of four D-cells will last at least 12 hours, but when you're dealing with mines you want batteries as strong as possible. Take an extra set of batteries to the field, too. Keep them in the carrying case in case the BAT LOW light comes on.



Keep your arm fully extended with the detector head about 2 inches off the ground when you sweep for mines. Make it 6 inches if the ground is rocky or uneven. You don't want to bang the head against anything. If your arm's not fully extended, you won't fully cover the 2-meter wide path your sweeps should make.

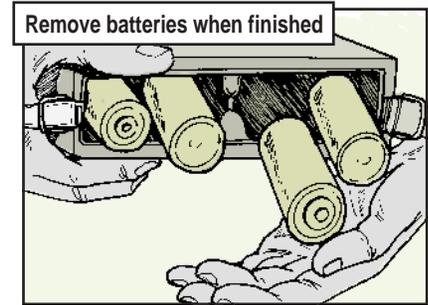


# Detecting

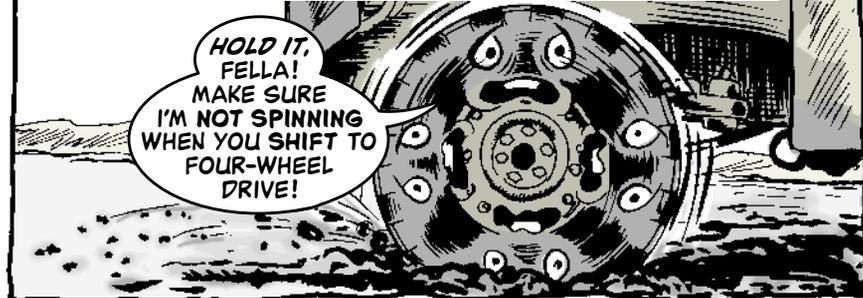
Think slow. Sweep slowly and walk slowly. If you move fast, you can miss a mine.

Squad leaders, keep tabs on how long your people are sweeping. One hour is the longest you should allow someone to sweep without a break. After an hour, their concentration will weaken without a rest.

At the end of operations, remove the batteries. If they're left in, they cause corrosion in the battery compartment.



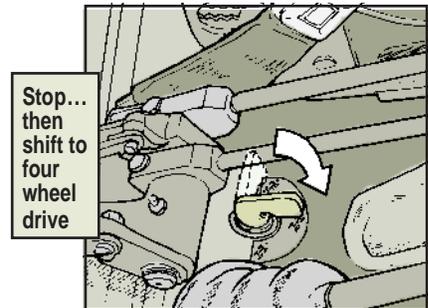
## Four-Wheel Drive Reminder

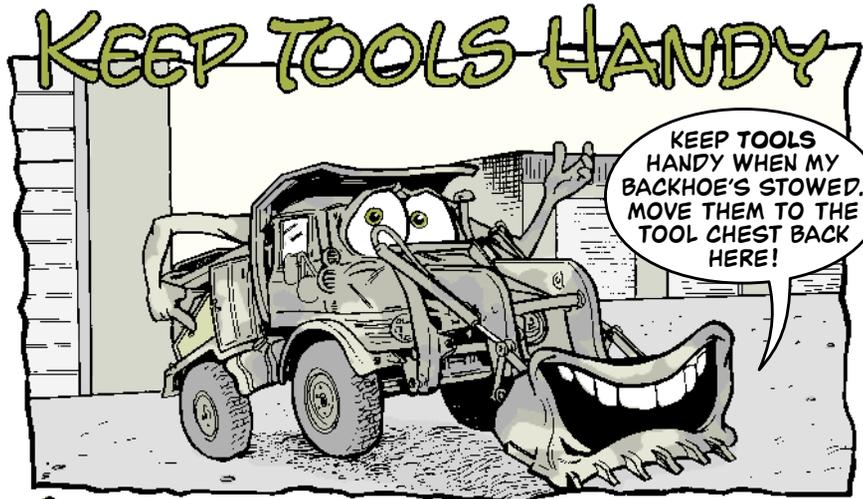


Don't engage either of your SEE's four-wheel drive options when a wheel is spinning in the sand, dirt or mud. You'll damage the SEE's differential or U-joints if you do.

Instead, engage the four-wheel drive before getting into the soft stuff. If you forget and wheels start spinning, stop! Then, shift into four-wheel drive and move out.

Also, never drive on a hard surface road with the four-wheel drive with differential locks engaged. That puts a strain on differentials, U-joints and tires.





Operators, while the SEE's backhoe is in the transport position, it's a bear to get at tools stowed in the small toolbox behind the cab.

To keep those tools handy, move 'em to the tool chest used for the chain saw and hydraulic tool accessories. Keep the vehicle's jack in place by using the tiedown straps in the tool chest.

## Loader Bucket Bushings

Bushings on the SEE's front loader bucket were left out of Fig 344 in TM 5-2420-224-24P. You need 12 bushings, NSN 3120-01-465-9249, six for Item 1 and six for Item 2. You also need four bushings, NSN 3120-01-461-8671, for Item 5.

## Cheaper Side Mirror

NSN 2540-01-004-2153 gets the side view mirror for the SEE. This mirror runs about \$7, which is cheaper than the one shown as Item 10 of Fig 219 in TM 5-2420-224-24P.

## Tie Rod's an Assembly

NSN 2530-12-175-8638 gets the SEE's tie rod assembly shown in Fig 171 of TM 5-2420-224-24P. The individual parts—Items 2 through 9—are no longer available separately.

# Idle Time Saves...Idle Time

Operator, you just started your dozer and you're ready to move out...right?

Not so fast!

Your dozer is like an athlete who needs to warm up before the race and cool down afterward. If it doesn't warm up and cool down—just like an athlete—major moving parts can break down. Then the dozer will be sitting instead of working.

Here's what you can do to keep your dozer on the job:

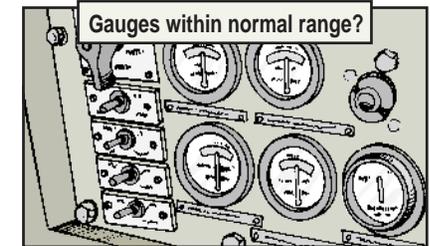
### Warm It Up

Immediately after start-up, make sure you have engine oil pressure. Then run the engine at 700–800 rpm for 5 minutes or so to warm up.

That gives the oil time to lubricate the parts. It also lets the engine warm up enough to boil off condensation caused by normal engine breathing. That way, you won't have to worry about condensation mixing with the

oil and forming a sludge that'll clog the engine.

Once you've got the dozer warmed up and operating, check the gauges, especially those for water temperature and engine oil pressure. They should be within the normal operating range.



### Cool Down, Too

After you've run that dozer hard, let it cool down before shutting it off. Idle the engine for 5 minutes. The engine needs to cool down slowly, or the heat can crack the block, warp a head or valves, or bake the oil until it's not slick enough to lube the bearings.



# Shields Keep Rocks Out

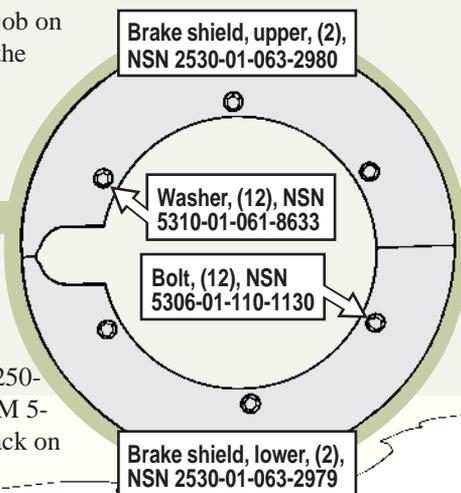
**M**echanics, small stones and rocks do a job on the scrapper's brakes. They work between the brake drums and shoes. When brakes are applied, drum linings get damaged.

You can prevent brake problems by adding shields to each wheel.

Here's what you need for each axle:

**Never** use brake shields when working in sand, though. Sand gets trapped behind the shields and wears out the brake shoes and drums.

You must take off the shields to do the 250-hour brake inspection on Page 3-387 of TM 5-3805-248-14&P-3. Be sure to put them back on when you're done.

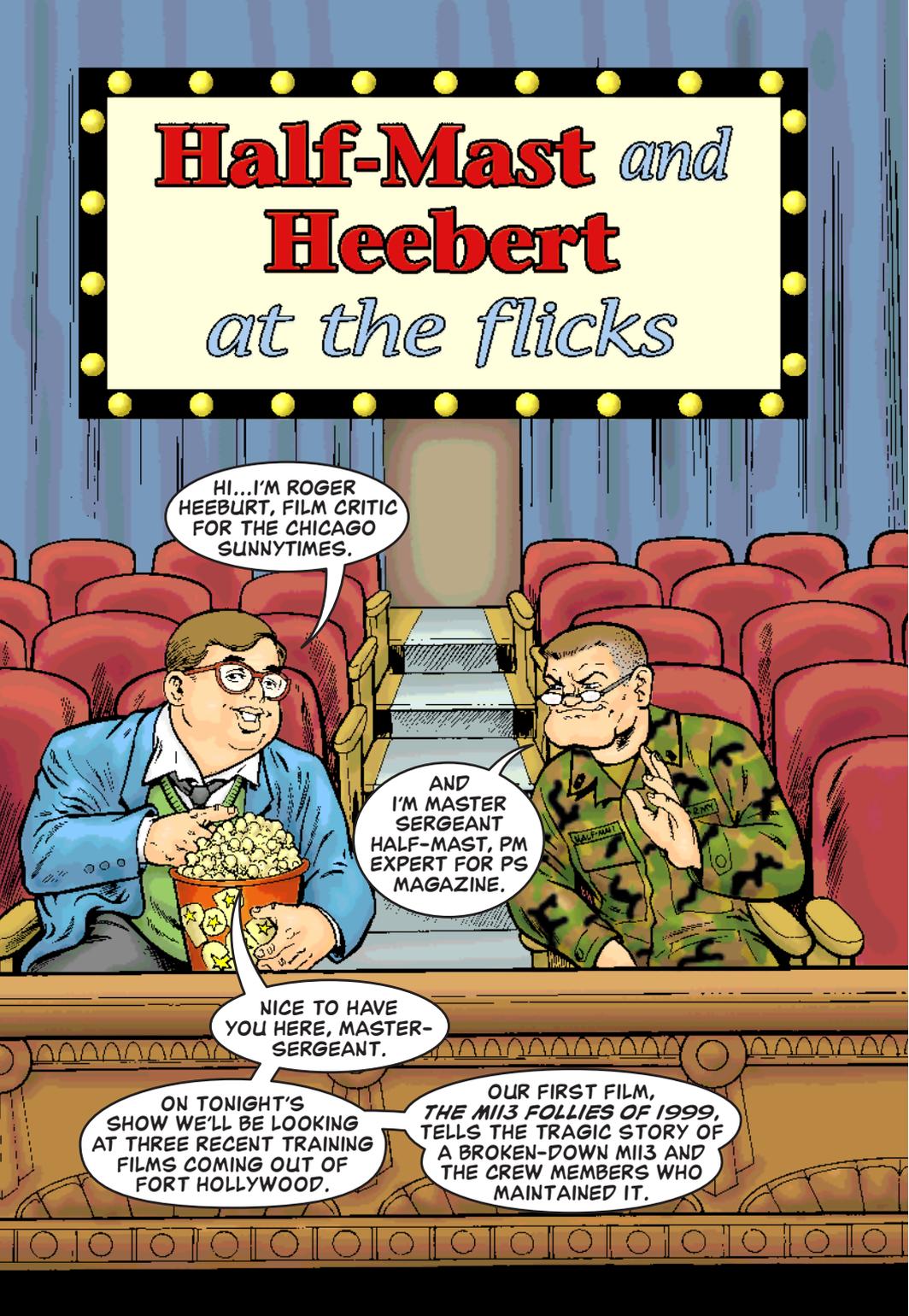


OH, MY  
ACHIN' BRAKES!  
I'VE GOT ROCKS  
IN MY SHOES!

SOUNDS  
LIKE YOU NEED SOME  
BRAKE SHIELDS.

GRIND

# Half-Mast and Heebert at the flicks



HI...I'M ROGER  
HEEBURT, FILM CRITIC  
FOR THE CHICAGO  
SUNNYTIMES.

AND  
I'M MASTER  
SERGEANT  
HALF-MAST, PM  
EXPERT FOR PS  
MAGAZINE.

NICE TO HAVE  
YOU HERE, MASTER-  
SERGEANT.

ON TONIGHT'S  
SHOW WE'LL BE LOOKING  
AT THREE RECENT TRAINING  
FILMS COMING OUT OF  
FORT HOLLYWOOD.

OUR FIRST FILM,  
*THE M113 FOLLIES OF 1999*,  
TELLS THE TRAGIC STORY OF  
A BROKEN-DOWN M113 AND  
THE CREW MEMBERS WHO  
MAINTAINED IT.

A FEW MOMENTS LATER...

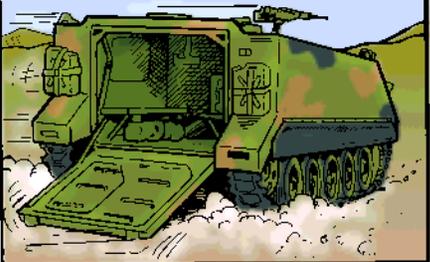
WOW! I GIVE THIS ONE A BIG 'THUMBS UP'. I THOUGHT THAT THE DRAMATIC PACING WAS SO WELL DONE. THE SUBTLE PERFORMANCES BY THE ACTORS TOUCHED ME DEEPLY.

I HAVE TO DISAGREE WITH YOU ON THIS ONE, ROGER. WHERE WAS THEIR MILITARY ADVISOR WHEN THEY MADE THIS MOVIE? ON MARS?!

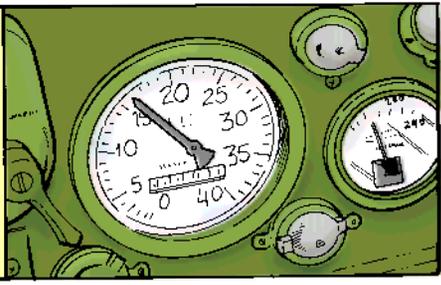
"IN ONE SCENE, THESE FELLOWS HAD W-A-A-A-Y TOO MUCH GEAR STORED ON THE RAMP. IT EVENTUALLY WOULD HAVE BROKEN THE CABLE."



"IN ANOTHER SCENE, THE RAMP WAS CLEAR, BUT THE CREW WAS DRIVING DOWN THE ROAD WITH THE RAMP DOWN! THAT'LL WARP THE RAMP, RUIN THE SEAL, BREAK THE LOCKS AND DAMAGE THE HINGES! ANY SMART M113 OPERATOR WOULD MAKE SURE THE RAMP IS FULLY UP AND LOCKED BEFORE MOVING OUT."



"AND DID YOU SEE THEM RACING THE ENGINE IN ORDER TO RAISE THE RAMP FASTER? IT TAKES 15-20 SECONDS TO RAISE THE RAMP AT 1,200 RPM. SURE, YOU CAN RAISE IT FASTER BY REVVING THE ENGINE-IF THE RAMP PUMP SURVIVES! YOU'VE GOT TO GO STEADY AND HAVE MERCY ON THE PUMP."

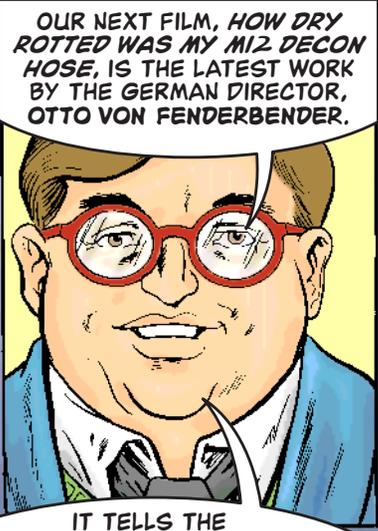


LAST, BUT NOT LEAST, THEY DROPPED THE RAMP MUCH TOO HARD! THAT PUTS A STRAIN ON THE HINGES, PUMP AND CABLE. SLOW AND STEADY IS THE WAY TO GO.



I HAVE NO CHOICE BUT TO GIVE THIS FILM A BIG 'THUMBS DOWN'!

I THINK YOU'RE MISSING THE WHOLE POINT OF THE FILM, BUT I CAN SEE THAT I'M NOT GOING TO CHANGE YOUR MIND!



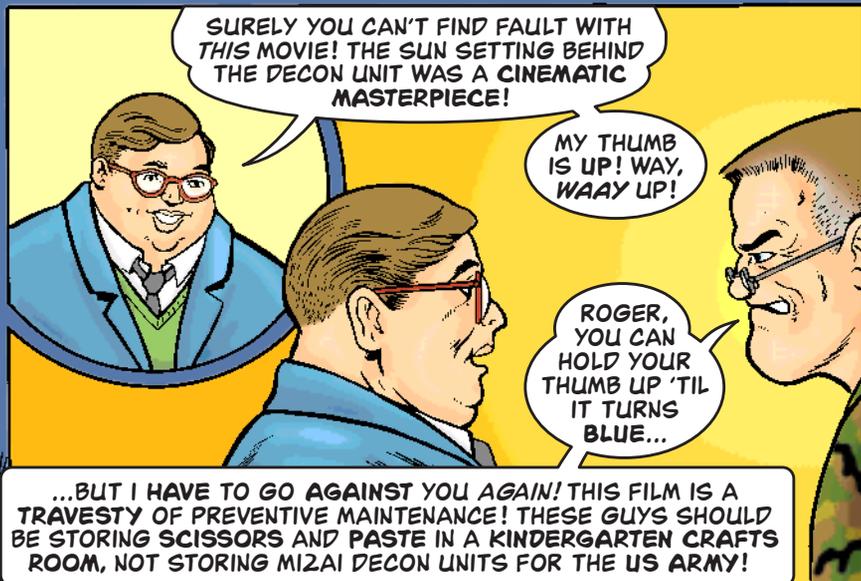
OUR NEXT FILM, *HOW DRY ROTTED WAS MY MIZ DECON HOSE*, IS THE LATEST WORK BY THE GERMAN DIRECTOR, OTTO VON FENDERBENDER.

IT TELLS THE FASCINATING STORY OF A SPECIALIST LEARNING THE ROPES FROM HIS GRIZZLED-BUT-GOOD-HEARTED SERGEANT ON THE CARE AND MAINTENANCE OF AN MIZAI DECON UNIT.



WE'VE GOT A LOT MORE DECON UNITS TO STORE.

RIGHT, SERGEANT!



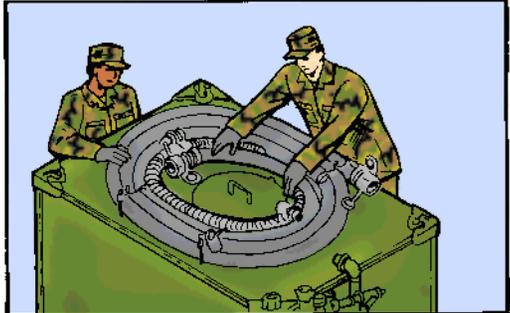
SURELY YOU CAN'T FIND FAULT WITH THIS MOVIE! THE SUN SETTING BEHIND THE DECON UNIT WAS A CINEMATIC MASTERPIECE!

MY THUMB IS UP! WAY, WAAY UP!

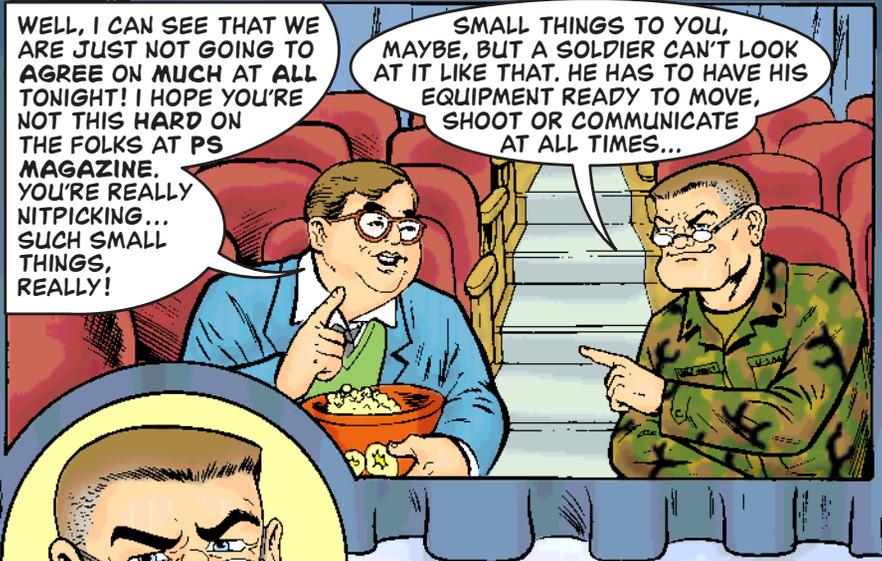
ROGER, YOU CAN HOLD YOUR THUMB UP 'TIL IT TURNS BLUE...

...BUT I HAVE TO GO AGAINST YOU AGAIN! THIS FILM IS A TRAVESTY OF PREVENTIVE MAINTENANCE! THESE GUYS SHOULD BE STORING SCISSORS AND PASTE IN A KINDERGARTEN CRAFTS ROOM, NOT STORING MIZAI DECON UNITS FOR THE US ARMY!

FOR STARTERS, BEFORE STORING THE HOSES THEY SHOULD WIPE OFF ALL THE GREASE, CLEAN THEM WITH A MILD DETERGENT MIXED WITH HOT WATER AND THEN LET THEM AIR DRY COMPLETELY. THEY SHOULD STORE THE HOSES IN THE HOSE COMPARTMENTS ON THE MI2'S PUMP AND BURNER UNITS, MAKING SURE THAT THE COMPARTMENT LID ON THE BURNER IS SECURELY LATCHED TO HELP SEAL OUT WATER. THEY SHOULD STORE THE BLENDER HOSE IN THE HOPPER OF THE WATER TANK AND THE SUCTION HOSE ON TOP OF THE TANK. FINALLY, THEY SHOULD PUT THE PUMP'S COVER ON TO KEEP THE HOSES DRY.



I'D RATHER EAT A MONTH-OLD BISCUIT THAN GIVE THIS MOVIE ANYTHING OTHER THAN THE BIG 'THUMBS DOWN' THAT IT DESERVES!

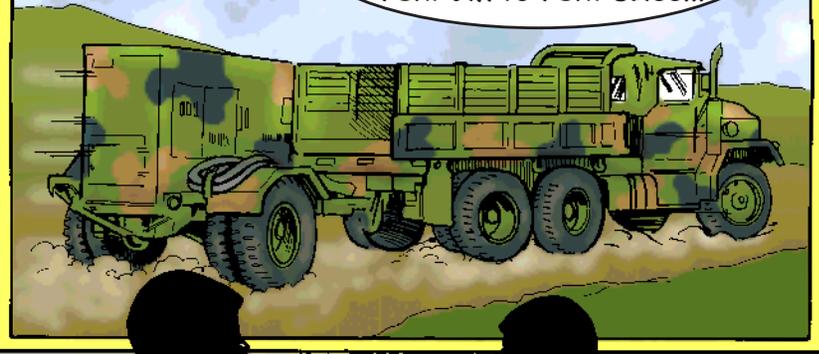


WELL, I CAN SEE THAT WE ARE JUST NOT GOING TO AGREE ON MUCH AT ALL TONIGHT! I HOPE YOU'RE NOT THIS HARD ON THE FOLKS AT PS MAGAZINE. YOU'RE REALLY NITPICKING... SUCH SMALL THINGS, REALLY!

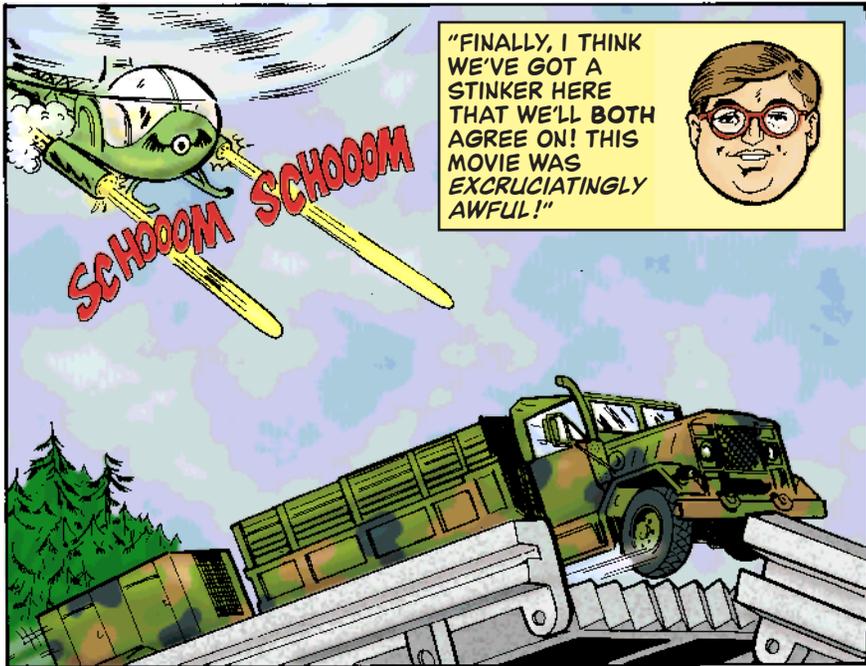
SMALL THINGS TO YOU, MAYBE, BUT A SOLDIER CAN'T LOOK AT IT LIKE THAT. HE HAS TO HAVE HIS EQUIPMENT READY TO MOVE, SHOOT OR COMMUNICATE AT ALL TIMES...



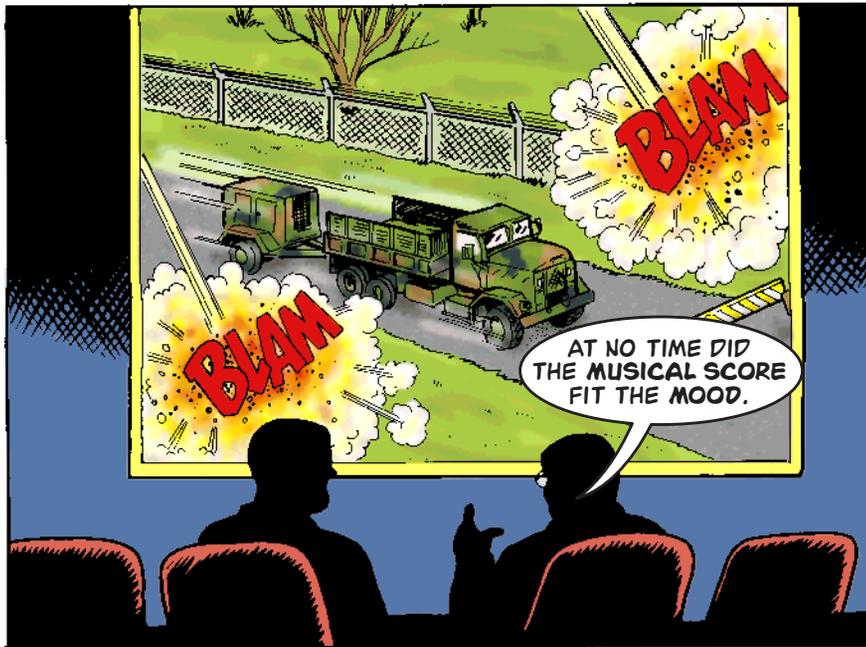
ROGER, OUR LAST FILM, *YOU ONLY TRAIL TWICE*, IS THE LATEST ENTRY IN THE JAMES BONDO SERIES. OUR HERO, DISGUISED AS AN ARMY SPECIALIST, MUST HAUL A GENERATOR ON A TRAILER FROM FORT DIX TO FORT BLISS...



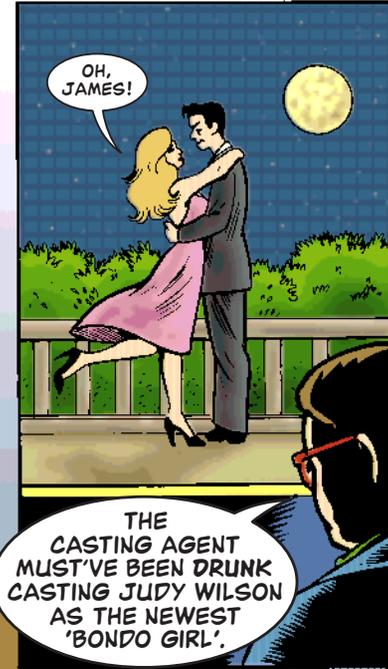
...WITH AN EVIL MADMAN TRYING TO KILL HIM EVERY STEP OF THE WAY.



"FINALLY, I THINK WE'VE GOT A STINKER HERE THAT WE'LL BOTH AGREE ON! THIS MOVIE WAS EXCRUCIATINGLY AWFUL!"



AT NO TIME DID THE MUSICAL SCORE FIT THE MOOD.



OH, JAMES!

THE CASTING AGENT MUST'VE BEEN DRUNK CASTING JUDY WILSON AS THE NEWEST 'BONDO GIRL'.



THE FILM EDITOR SEEMS TO HAVE DONE HIS JOB BLINDFOLDED WITH ONE HAND TIED BEHIND HIS BACK! THIS MOVIE IS EASILY THE WORST OF THE TWENTY-THREE 'BONDO' MOVIES.

NOW... YOUR TURN. LET 'EM HAVE IT!

I LOVED IT.

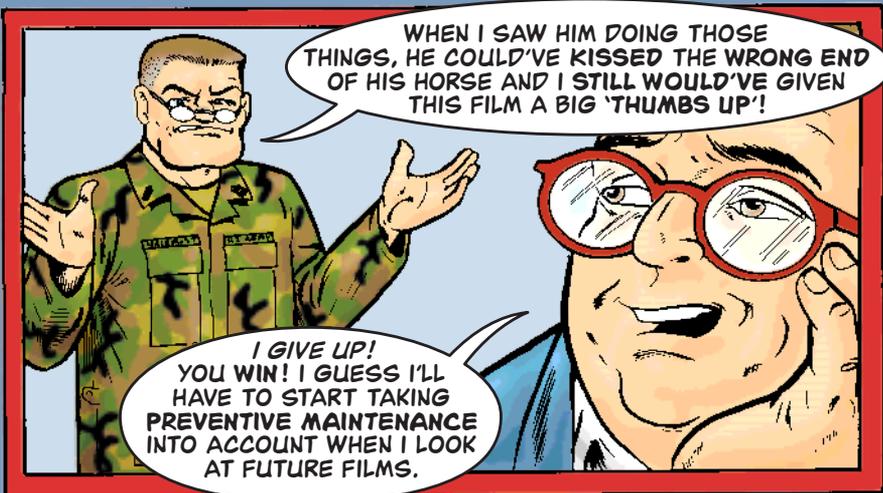
Y-YOU LOVED IT? HOW IS THAT POSSIBLE!?

EASY... THE WRITER WON MY HEART WHEN HE HAD BONDO GO THROUGH A PRE-TRIP CHECK. IT WAS WONDERFUL! I CLEARLY COUNTED THESE TEN THINGS HE LOOKED FOR.



- 1) Checked the trailer for rust and corrosion...
- 2) eyeballed the interconnecting hoses for gouges, worn spots and corroded connectors, as well as made sure they were color coded and connected right...
- 3) checked the trailer's tongue and lunette for damage...
- 4) checked the tires for excessive wear and correct inflation...
- 5) checked the protective canvas for holes and tears...
- 6) checked tiedown ropes for dryrot and fraying...
- 7) checked all bolts and lug nuts for tightness and corrosion, including the grounding bolt...
- 8) checked the lights...
- 9) checked the brakes, including the emergency hand brake...and
- 10) checked to see that the air tank petcock had been properly closed after draining.





WHEN I SAW HIM DOING THOSE THINGS, HE COULD'VE KISSED THE WRONG END OF HIS HORSE AND I STILL WOULD'VE GIVEN THIS FILM A BIG 'THUMBS UP'!

I GIVE UP!  
YOU WIN! I GUESS I'LL HAVE TO START TAKING PREVENTIVE MAINTENANCE INTO ACCOUNT WHEN I LOOK AT FUTURE FILMS.



THANK YOU, MASTER SERGEANT HALF-MAST, FOR SITTING IN WITH ME TONIGHT. UNTIL NEXT WEEK, ALWAYS SAVE US THE AISLE SEAT!

AND REMEMBER, GOOD PM WILL ALWAYS WIN YOU A 'THUMBS UP'!

# Contact this PM

Dear Editor,

If the electrical connectors of either the Avenger's missiles or the standard vehicle mounted launcher (SVML) are even slightly dirty, you'll have firing problems.

We stopped those problems by spraying contact cleaner, NSN 6850-01-393-7433, in the connectors of both the missiles and SVML before loading the missiles. That cleans out any dirt.

Another good tip is to keep SVML electrical and cryogenic connectors capped to seal out dirt when missiles aren't installed.

Of course, you never want to get water near the SVML. That causes major electrical damage.

CW2 David Cassity  
SGT Trevor Bacio  
SPC Jerry Parent  
A Btry, 2/44th ADA  
Ft Campbell, KY



Integrated Family of Test Equipment . . .

## Need Help, SPORT?

If you have trouble with the AN/PSM-95 soldier's portable on-system repair tool (SPORT) that's part of the IFTE, help is a phone call away.

If you have a technical problem, or if your SPORT needs repair, call toll free 888-577-6780. That gets you the manufacturer's help desk. If they can't fix the problem over the phone, they will give you a return authorization number and UPS tag number to return the SPORT for repair or replacement. If you are overseas, they will give you an express mail account number that lets you ship the SPORT through the Army post office.

The manufacturer will repair or replace the bad SPORT within 72 hours of receiving it.

SPORT can be shipped by your unit directly to the manufacturer while it's under warranty. Check the label on the back of the tool for the warranty expiration date. The warranties won't begin to run out until 2002.

# Canopy Conservation

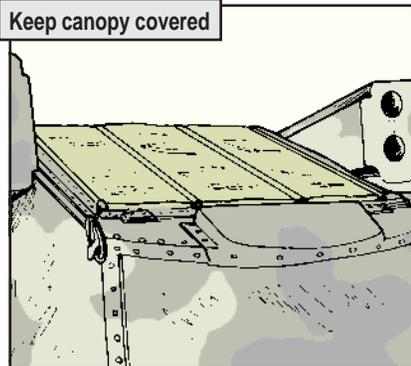
SOMEBODY SHOULD HAVE TAKEN BETTER CARE OF MY CANOPY. I CAN'T SEE THE TARGET!



The canopy is more than a door to your Avenger's turret. It seals out gases from missile exhaust and is your only window for sighting targets. If the canopy leaks or becomes so scratched that you can't see through it, you're in a world of hurt.

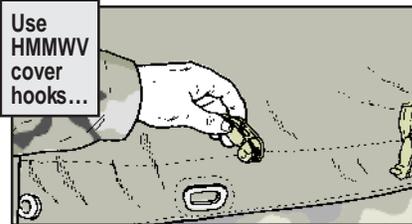
So, protect your canopy. Here's how:  
➔ Keep it covered. That's the best thing you can do. Blowing sand scours the canopy and soon it's clear as mud.

Keep canopy covered

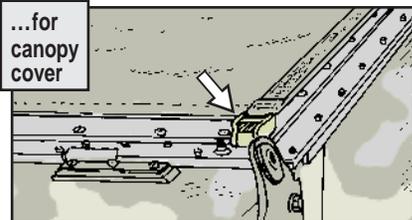


If your tarp still has metal fasteners, get them replaced with plastic hooks. The metal fasteners will scratch the canopy. Plastic hooks from the HMMWV cargo cover work great. If your local canvas shop doesn't have the hooks as bench stock, order them with NSN 5340-01-203-6542.

Use HMMWV cover hooks...

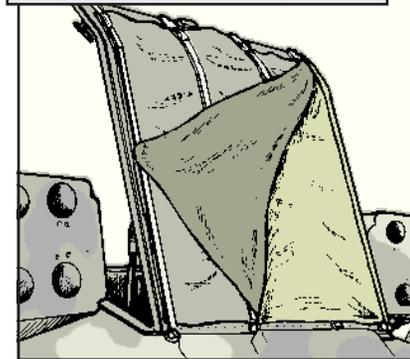


...for canopy cover



In areas where powerful winds are common, give the canopy extra protection with sleeping mats. Cut an old sleeping mat in half and put the pieces between the tarp and the canopy.

Sleeping mats provide extra protection



➔ Always close and latch the canopy before you move the turret or the vehicle. Otherwise, you can throw the canopy out of alignment or damage the mounting brackets for the canopy struts.

Use only lanyard to gently open and close canopy

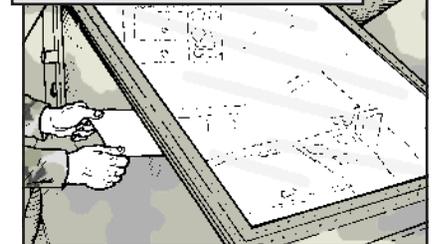


For the same reason, open and shut the canopy with the lanyard only—and do it gently. If you let the canopy spring open or slam shut repeatedly, the canopy's mounting brackets get damaged. So, guide the canopy in

place. And don't use the lanyard as a handhold when you climb in or out of the turret. That can damage the mounting brackets, too.

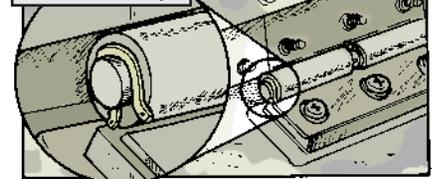
➔ Check for leaks. You don't want to find out the canopy is leaking by inhaling missile exhaust. Put a 6x1-in piece of paper half in and half out of each front corner of the turret. Close and lock the canopy. Pull on the paper. If either slips out easily, the canopy has problems. Tell your repairman.

If paper pulls out, canopy is leaking



➔ Look for the C-clips on the canopy hinges before you go to the field. They often pop off. Without the clip, the hinge pins can work out. Your repairman can replace the clip in minutes.

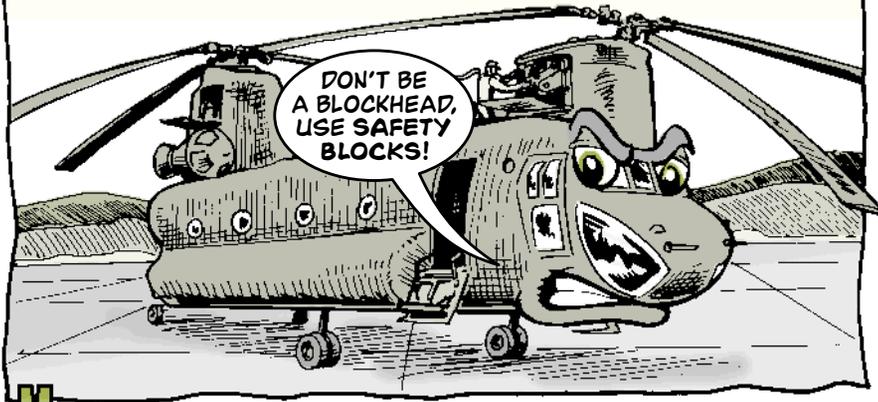
Check for C-clips



I CAN SEE CLEARLY NOW!



# BLOCKS FOR MAINTENANCE

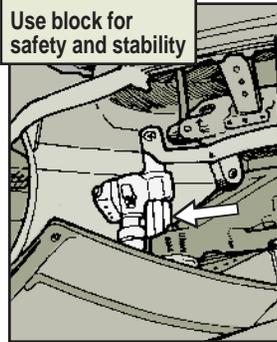


**M**echanics, when you're working on your Chinook's rotor heads, don't block out the need for servocylinder safety blocks, NSN 1730-01-264-6254. They provide safety and stability.

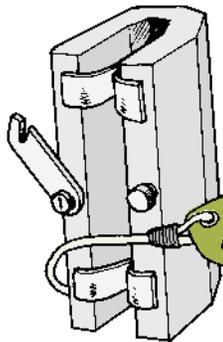
Crew chiefs, make sure the blocks are used, and used the right way. That means the blocks are installed for each job they're called for, and remain installed until the job is done. It also means retracing the equipment condition task trail to its start to make sure the blocks are removed when the job is done.

When a block is installed, it must be put on the piston with the slot of the block outward and the latch up. Just dropping the locking latch in place won't cut it—you have to tighten the screw to hold the latch down.

Use block for safety and stability



Install block with slot outward and latch up



**REMOVE BEFORE FLIGHT**

Keep streamer visible

Finally, an installed block must have a **Remove Before Flight** streamer, NSN 8345-00-673-9992, visible on the outside surface of the bird.

# TOO SMALL IS TOO RISKY

HMM, VERY INTERESTING.



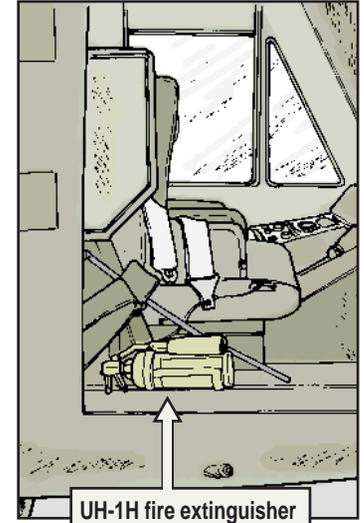
Dear Editor,

The fire extinguisher bracket for the UH-1H helicopter is NSN 4210-00-933-2929 according to TM 55-1520-210-23P. The FED LOG-AMDF shows the NSN as inactive-deleted without replacement. However, the FED LOG-FLIS (the DOD item manager) lists NSN 4210-01-183-4822 as its replacement.

This replacement is too small to work without major modifications that include the addition of a strap. Even then, it's a safety hazard because the fire extinguisher can't be quickly removed in an emergency.

I solved the problem by using the bracket, NSN 4210-00-106-6464, which is used on the UH-1M helicopter. It works on the UH-1H with no modifications.

SGT Lori J. Balsley  
OHARNG  
North Canton, OH



FROM THE DESK OF THE Editor

You've shown why it's important to follow the info in the FED LOG-AMDF. The Army does not always approve an item manager's replacement NSN. The NSN you list for the bracket that works is scheduled to appear in the next change to the TM. Good work!

# Leg It Out

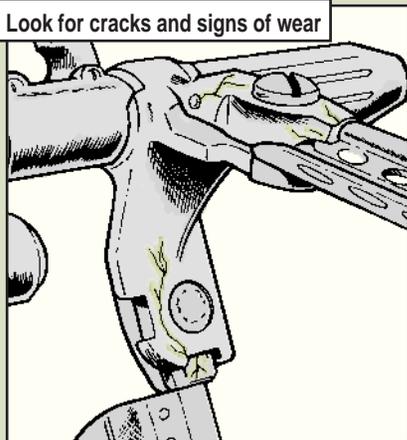


Unless your last name is Rambo, you'll find it difficult to fire your M60 or M249 if the bipod legs can't stand on their own.

Yet bipods are usually ignored during PMCS. They crack, won't stay in place, or get so bent they won't snap into place. Here's how to give your machine gun good legs to stand on:

Check the bipod where it locks onto the yoke. That's usually the first place legs crack, spread, or wear. If the bipod's cracked, worn, or spread, your armorer needs to know.

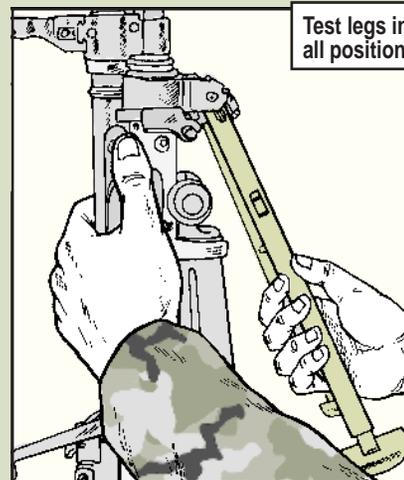
Look for cracks and signs of wear



# with PM

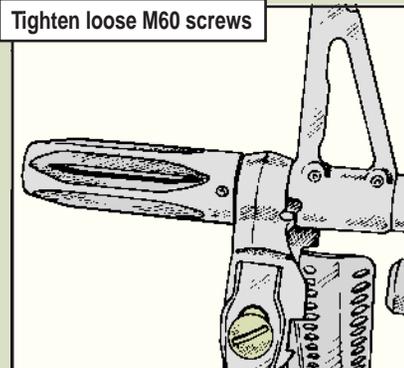
Test the legs in the stow position and all firing positions. If a latch won't hold, don't try to fix it by bending the latch. That weakens the latch. Support can fix a bad latch.

Test legs in all positions



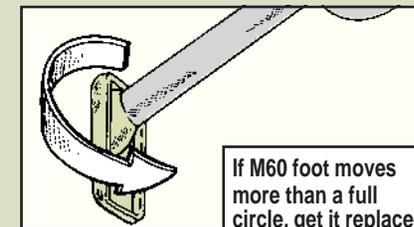
If the M60's legs are shaky, tighten their screws with your combination tool. Your armorer can stake the legs to keep them tight. Shaky M249 legs can be fixed by your armorer.

Tighten loose M60 screws



For the M60 only, turn the feet. If they move more than a full circle, they're too loose. Support needs to braze the feet or replace them.

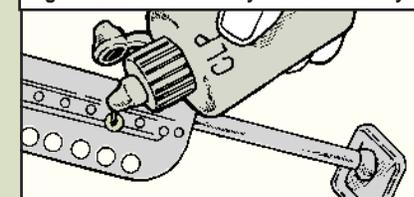
If M60 foot moves more than a full circle, get it replaced



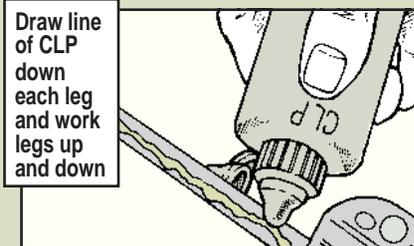
If the legs on either machine gun move stiffly, clean and lube them. With the legs fully extended, clean off dirt and grease with a rag.

Put a few drops of CLP on leg locks and work them in and out until they move smoothly. Draw a line of CLP down each leg. Work the legs up and down until they slide easily.

Put a few drops of CLP on leg locks. Move legs in and out until they move smoothly



Draw line of CLP down each leg and work legs up and down



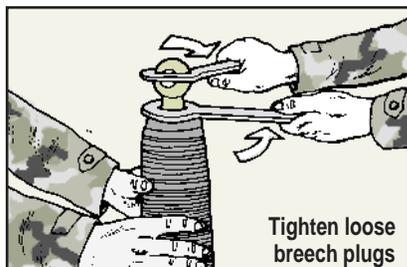
# Whatsamatta, Mortar?

**W**ow often do M252 mortar crews ponder this question when they get to the range? Too often, and usually because the M252s sat ignored in the arms room for months. Here are a few things you armorers can do to make sure your M252s are ready to hit the range.



## Breech Plug

A loose breech plug ruins accuracy and causes misfires and fatal accidents. If you can turn the plug by hand, or if you spot discoloration around the plug, it needs tightening. Use your wrenches to tighten the plug in the tube. If the seal's shot, replace it.

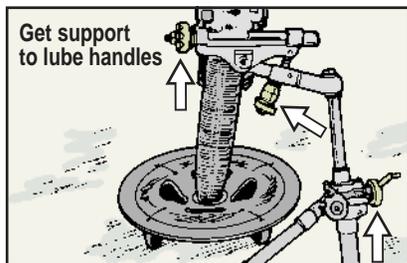


If the plug still won't stay tight, turn in the tube. Forcing the plug tighter will damage the tube.

Look for erosion around the firing pin, too. If you spot any, the tube needs to go to support.

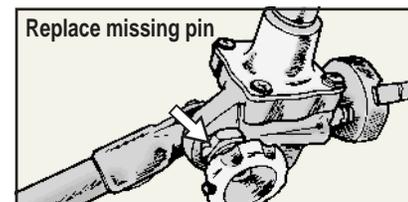
## Handles

Rotate the traversing, elevating and cross-leveling handles to check for binding. Support lubes these assemblies during the semiannual services, but



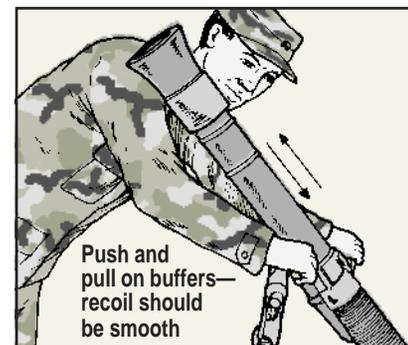
sometimes they need more lubing. If binding handles are forced, the mortar mount can be damaged. Support needs to clean and lube binding handle assemblies.

Eyeball the locking leg knob and locking nut for the cotter pin. No pin means the knob or nut can work loose and the M252 collapses during firing. Replace a missing cotter pin.



## Buffers

Water gets in the mount buffers and corrodes the spring. Bad springs mean the buffers can't handle the shock of firing, which causes the barrel clamp to slip. Test for bad springs by pushing down and pulling up on the buffers. They should move smoothly back into position with no free travel.



If they don't, have support take apart the buffers to clean and lube the springs and other parts with GPL.

## Locking Ring

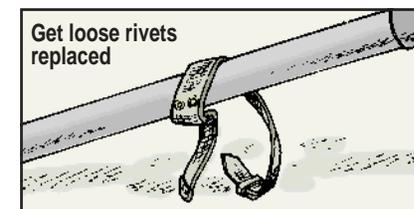
A loose locking ring means the blast attenuator can fly off during firing. Spot a loose ring by looking for shiny spots between the attenuator cone and the ring.

Cure a loose ring by staking the locking ring into the groove recess of the attenuator cone with a punch. But do that no more than three times. After that, staking does no good, so send the tube to support.



## Bipod Strap

The rivets that hold the strap pop off easily. No rivets means no strap and no way to lock the legs during travel. Check for missing or loose rivets. If you find any, get support to replace them.



# ALARMING PM



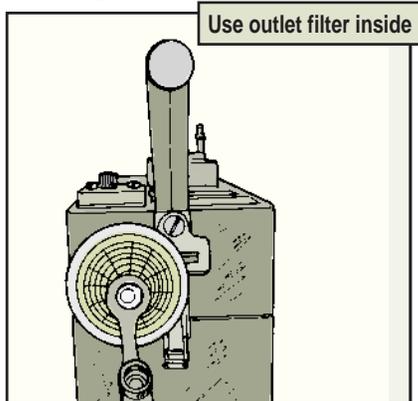
If you want your M8A1 chemical alarm to behave in an alarming manner, you need to keep it alert with PM.

## PMCS

The best thing you can do for your alarm's M43A1 detector is simply to run it. If it sits for weeks, it could take hours to purge the detector cell when you're ready to detect. So, run it at least 1 hour every month.

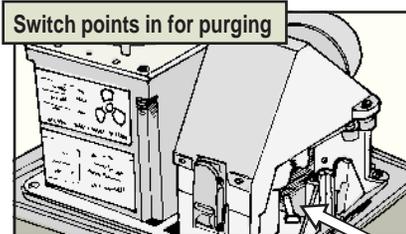


Because the M43A1 has a radioactive source, put on the air outlet filter to trap radioactive particles before you turn it on indoors. Be careful putting on the filter. If you force it on, it breaks the outlet port. That's a depot-level fix. If the filter doesn't turn clockwise easily, you've put it on wrong. Take it off and try again.



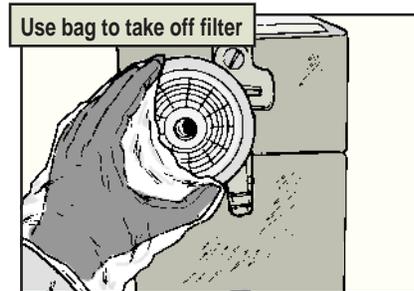
Better yet, order a snap-on adapter, NSN 4730-01-350-1584, that makes it easier to put on the filter.

Remember, to purge the M43A1 the toggle switch must be pointing in. Otherwise, the detector will shut down before it's through purging. Flip the switch back out when you're finished.

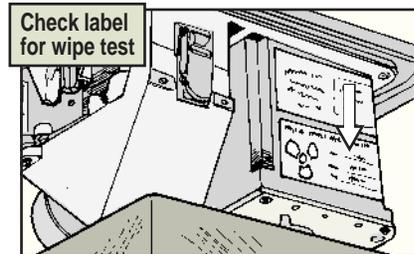


Once you've purged the M43A1, you can't pitch the outlet filter because it now contains radioactive particles. Don't touch it with your bare hand, either. Put its plastic shipping bag over it to unscrew it and then seal the filter

in the bag. If you're not using it again, the filter must be disposed of through the radiation protection office.

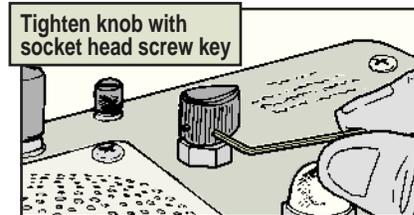


Because of its radiation source, the M43A1 detector must be wipe tested yearly for leaks. So check the label on the detector cell for the next due date.



If the test is past due, the M43A1 is NMC.

Feel the M42A1 remote alarm's horn knob for looseness before you go to the field. The knob often works loose and disappears. Your commo people



can tighten the knob with a socket head screw key from the TK-101/G tool kit.

## Troubleshooting

If the M43A1 flunks the flowmeter test, the rainshield adapter could be the problem. Is the adapter tightly screwed in? Is its O-ring missing or cracked? A loose adapter or one with a bad O-ring causes leaks.

### O-ring in place and in good shape?



If the adapter's OK, feel the outlet nut for looseness. Use only your fingers to turn a loose nut clockwise until it's hand tight.

### Tighten loose outlet nut hand tight



If that doesn't cure the problem, the air outlet cap is probably leaking. Tell your NBC NCO.

If the M43A1 is not responding to the built-in tests (BIT), check the toggle

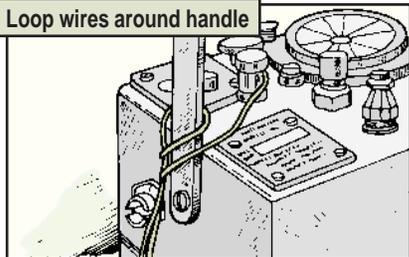


switch. It should be pointing out. Flip it out if necessary.

## In the Field

When you remote the detector to the alarm, tie off 9 inches of wire at the loop on the side of the detector. No loop? Wrap the wire around the handle several times. That keeps the wire from being jerked loose if someone trips over it.

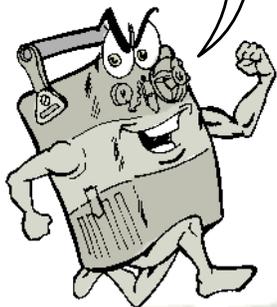
### Loop wires around handle



Fence off detectors with stakes or chem lights to warn drivers not to run over them.

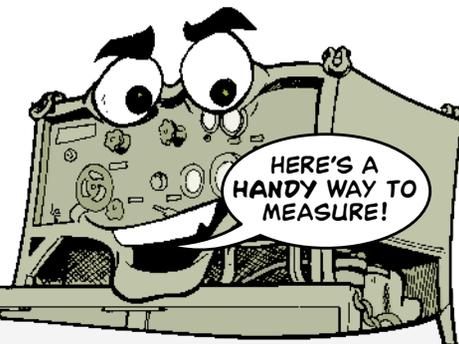
Finally, be sure to warn people before you test the alarm. Otherwise, you could come back to your unit to find everyone dressed in chemical gear... and glaring at you.

WITH PM,  
THE RESULTS ARE  
ALARMING!



M12A1 Decon ...

# Give It the Finger Test



Dear Editor,

When you're choking or idling the M12, it's often difficult to know just how far to pull out the choke or throttle. I tell students at the US Army Chemical School to give them both the finger test.

If you jerk the pump unit choke, it literally can come right out of the panel. Then you have no choke. Pull the choke out about the width of two fingers. That will usually give the right amount of fuel to start a cold engine.

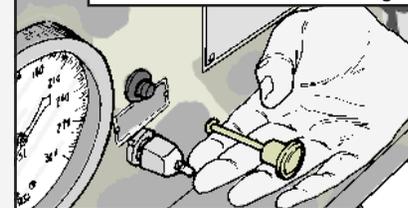
At shutdown, the pump unit should be idled at 500-600 rpm for 10-15 minutes until the engine cools down. So, turn the throttle clockwise until it sticks out about the width of your thumb. That will give the right rpm.

One other tip: If you're having trouble building up water pressure, turn off the engine and open the prime tank valve and the pump drain valve. Keep them open until water starts to run out of the pump drain valve. Then close the valves. That gets rid of air in the pump. With the engine running, open and close the spray wands several times. That gets rid of air in the water lines.

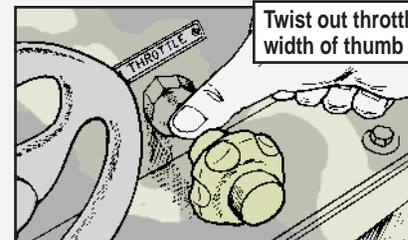
SSG Gernardo Tatum  
US Army Chemical School  
Ft Leonard Wood, MO



### Pull choke out width of two fingers



### Twist out throttle width of thumb



### Leave valves open until water starts to run out of pump drain valve. Then close valves

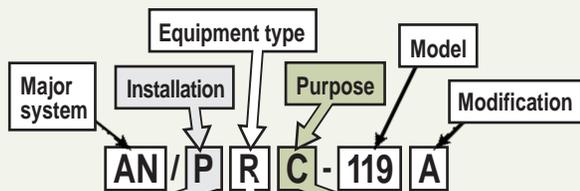


# Give Me an 'A',

# Give Me an 'N'...

**E**ver wonder what all those equipment letter combinations mean—like PRC, RT, VRC, UXC? It's simple once you know the code. The code is in MIL-STD-196E (Feb 98), *Joint Electronics Type Designation System*.

For example, the nomenclature for the SINCGARS manpack radio is AN/PRC-119A. After the AN (Army-Navy) prefix, each letter stands for a characteristic of the equipment. The number simply refers to the equipment model. So, your AN/PRC-119A is a P (portable) R (radio) C (communications) device. Here are more:



<p><b>A</b> - Piloted Aircraft  <b>B</b> - Underwater mobile, submarine  <b>C</b> - Cryptographic  <b>D</b> - Pilotless carrier  <b>F</b> - Fixed ground  <b>G</b> - General ground use  <b>K</b> - Amphibious  <b>M</b> - Mobile, ground  <b>P</b> - Portable  <b>S</b> - Water  <b>T</b> - Transportable, ground  <b>U</b> - General utility  <b>V</b> - Vehicular, ground  <b>W</b> - Water surface and underwater combined  <b>Z</b> - Piloted/pilotless airborne vehicle combined</p>	<p><b>A</b> - Invisible light, heat radiation  <b>B</b> - COMSEC  <b>C</b> - Carrier-electronic wave/signal  <b>D</b> - Radiac  <b>E</b> - Laser  <b>F</b> - Fiber optics  <b>G</b> - Telegraph or teletype  <b>I</b> - Interphone and public address  <b>J</b> - Electromechanical or inertial wire covered  <b>K</b> - Telemetry  <b>L</b> - Countermeasures  <b>M</b> - Meteorological  <b>N</b> - Sound in air  <b>P</b> - Radar  <b>Q</b> - Sonar and underwater sound  <b>R</b> - Radio  <b>S</b> - Special types, magnetic, etc., or combination of types  <b>T</b> - Telephone (wire)  <b>V</b> - Visual and visible light  <b>W</b> - Armament  <b>X</b> - Facsimile or television  <b>Y</b> - Data processing  <b>Z</b> - Communications</p>	<p><b>A</b> - Auxiliary assembly  <b>B</b> - Bombing  <b>C</b> - Communications (receiving and transmitting)  <b>D</b> - Direction finder reconnaissance and surveillance  <b>E</b> - Ejection and/or release  <b>G</b> - Fire control or searchlight directing  <b>H</b> - Recording/ reproducing  <b>K</b> - Computing  <b>M</b> - Maintenance/ test assemblies  <b>N</b> - Navigational aids  <b>Q</b> - Special or combination  <b>R</b> - Receiving, passive detecting  <b>S</b> - Detecting/range and bearing, search  <b>T</b> - Transmitting  <b>W</b> - Automatic flight or remote control  <b>X</b> - Identification and recognition  <b>Y</b> - Surveillance and control  <b>Z</b> - Secure</p>
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Some gear uses only one or two-letter codes. Here's a partial list of those:

- AB - Support for antennas
- AM - Amplifiers
- AS - Antennas, simple and complex
- BA - Battery, primary type
- BB - Battery, secondary type
- BZ - Alarm units
- C - Controls
- CA - Computers auxiliary units
- CD - Controlling devices
- CM - Comparators
- CN - Compensators
- CP - Computers
- CU - Couplers
- CV - Converters (electronic)
- CW - Radomes
- CX - Cable assemblies, non-RF
- CY - Cases and cabinets
- DA - Load, dummy
- DI - Data transmission
- DT - Detecting heads
- F - Filter units
- FO - Fiber optics
- FR - Frequency measuring device
- G - Generators, power
- H - Head, hand, chest sets
- HD - Environmental apparatus
- ID - Indicator units, non-cathode ray tube
- IM - Intensity measuring devices
- IP - Indicator units, cathode ray tube
- KG - Key generator
- KY - Keying devices
- LA - Laser
- LS - Loudspeakers
- M - Microphones
- MD - Modulators, demodulators, discriminators
- ME - Meters
- MK - Miscellaneous kits
- ML - Meteorological devices
- MO - Multipurpose
- MT - Mountings
- MU - Memory units
- MW - Microwave
- MX - Miscellaneous
- O - Oscillators
- OE - Antenna groups
- PL - Plug-in units
- PP - Power supplies
- PU - Power equipment
- R - Receivers
- RB - Robotics
- RD - Recorder-reproducers
- RE - Relay assembly units
- RL - Reeling machines
- RO - Recorders
- RT - Receiver and transmitters
- S - Shelters
- SA - Switching units
- SB - Switchboard
- SG - Generator, signal
- SM - Simulators
- SU - Optical units
- SY - Speech, secure
- T - Transmitters
- TA - Telephone apparatus
- TD - Timing devices
- TF - Transformers
- TH - Telegraph apparatus
- TN - Tuning units
- TR - Transducers
- TS - Test units
- TT - Teletypewriters and facsimiles
- ZM - Impedance measuring devices



# Getting the Winder in Line

The 12 winder stay assemblies (four 10-meter assemblies, four 15-meter assemblies, and four 20-meter assemblies) on your 15-meter mast antenna don't need a lot of PM, but they do need some.

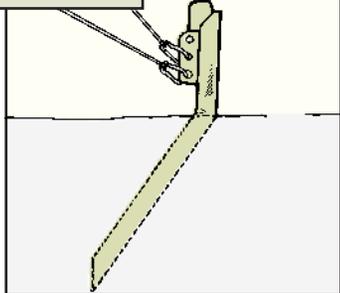
For example, the safety hook locking spring needs a few drops of oil every now and then. Rust has frozen too many locking springs open. A little lube will let the spring rest in the fully closed position.

Add a few drops of oil to hook spring



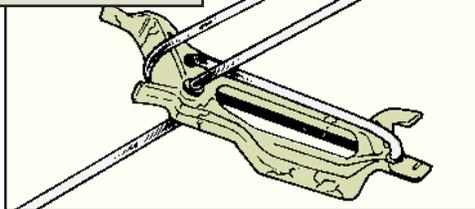
Stay anchors also need occasional attention. Check them for damage and severe bends. A bent anchor will not hold the antenna securely in place. Replace bent anchors.

Anchor bent?

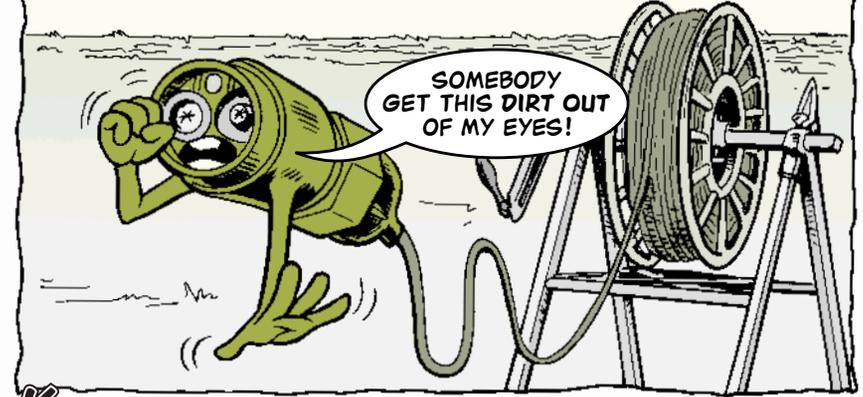


Finally, check the stretcher for cracks. If you find any, replace the stretcher with a plastic one, NSN 5120-01-343-3326.

Cracks in stretcher?



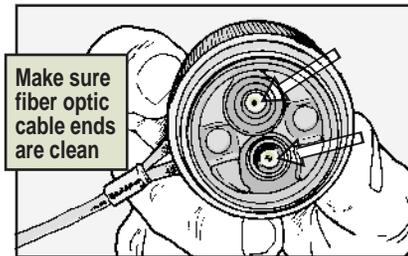
# TAP, TAP, BLOW, BLOW



Your 300-meter, NSN 6020-01-220-5435, and 1,000-meter, NSN 6020-01-208-1147, CX-13295/G fiber optic cables are sensitive to dirt once they're disconnected. Most of you do your PM job by using protective caps on the connectors when they're not hooked up.

But extra care is needed with fiber optic cables. The fiber optics in these cables are bare at two pin-sized points in the connector. Just a little dust or dirt on these points can stop your communications.

Make sure fiber optic cable ends are clean



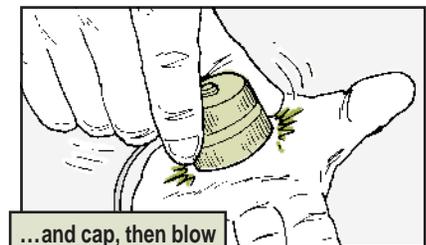
Often that little bit of dust or dirt comes from the connector cap. When you do a good thing by putting the cap

on the connector, it turns out to be a bad thing when dirt or dust lands on the bare fiber optics.

So make it a regular routine to tap the connector and then the cap on your hand to free loose dirt. Then give the connector and the cap a good blow.



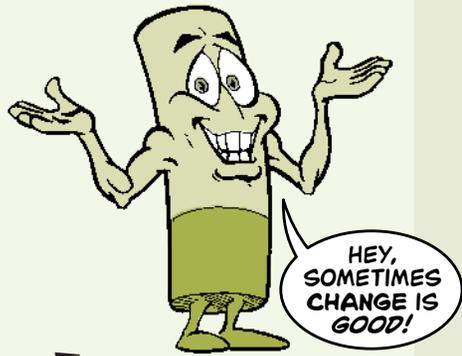
Tap connector...



...and cap, then blow

Now look them over. More stubborn dirt may require a brush to get out.

# New Discharge Device Advice



Take the change made to the complete discharge device (CDD) on several of the batteries manufactured by BlueStar and SAFT America. Batteries like the BA-5800A/U, NSN 6135-01-440-7774, the BA-5600A/U, NSN 6135-01-441-0402 and the BA-5590/U, NSN 6135-01-036-3495, for example.

The old CDD was a pain to activate. First you had to remove or carefully slit the CDD label. Then you had to depress the CDD with a small screwdriver. A slip could damage the battery or cause a battery to vent.

A little change in this case would be good and that's just what has happened.

Finding their way into your battery supply this year are batteries with a new CDD. So, put the screwdriver back in the toolbox—you won't need it.

The new CDDs have a plastic activation tab which is covered by a label. Just peel back the edge of the label and remove it. Removing the label will expose the pull-tab. Pull the tab to activate the CDD.

Here's one thing that hasn't changed: Only trained and designated personnel are supposed to do the discharging. Here's how they do it:

- ★ Discharge the batteries in a secure, well-ventilated area away from people and hazardous material.
- ★ Set discharging batteries at least 2 inches apart on all sides.
- ★ Let the batteries sit a minimum of 5 days for complete discharge.
- ★ Remember that discharging batteries may be hot. The heat could even deform the battery case. That's normal. However, if you hear a hissing sound or smell a strong, pungent odor, clear the area immediately until the odor is gone and the hissing stops. This is battery venting and you must dispose of these batteries as hazardous waste.

At the end of a normal, complete discharge cycle, the amount of lithium remaining in the battery will be small enough to let you dispose of the battery as non-hazardous waste. Even so, some places still require special disposal procedures.



# Cut Off Battery Drain

We all know that throwing the DC circuit breaker after shutting down your 5-KW or 10-KW generator won't stop the power drain on the batteries. The alternator, voltage regulator and battery charger continue to pull power from the batteries.

A battery master switch is the solution that will stop this problem.

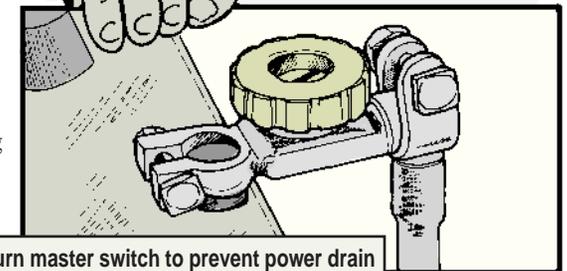
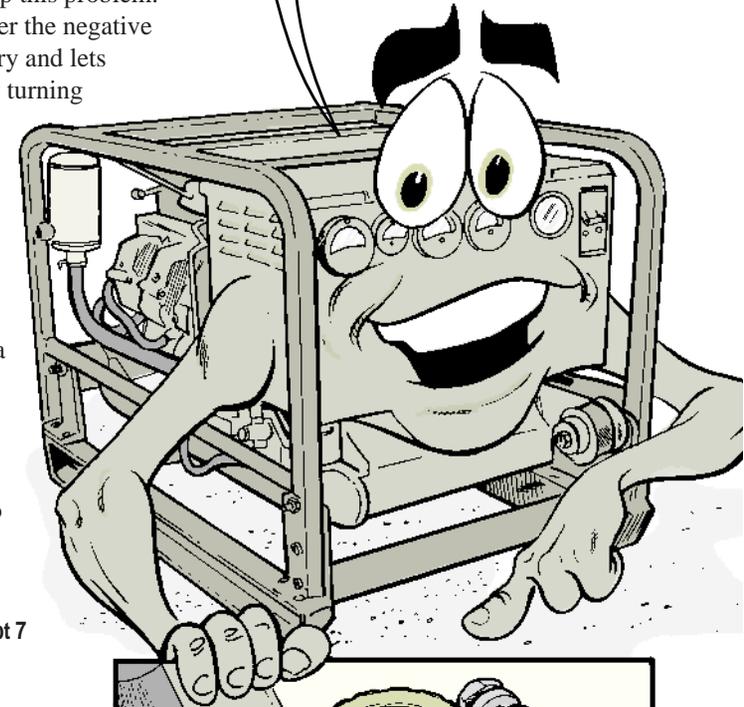
The switch fits over the negative terminal of the battery and lets you cut all power by turning a knob or throwing a knife switch.

Switches are available for local purchase from an auto parts store or tool catalogs.

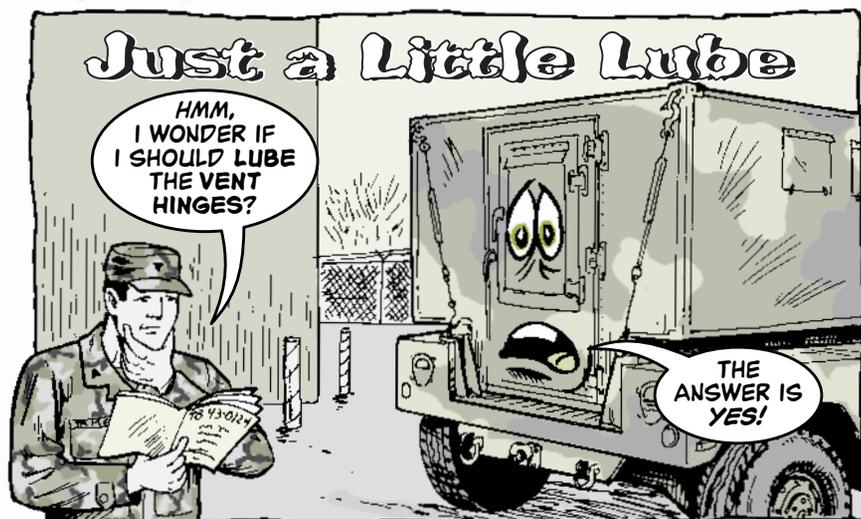
Or you can order a switch for around \$15 on a DD Form 1348-6 using part number 192-B from RICA12. There's no CAGE, so put in the REMARKS block:

**Bathurst Company**  
6875 Oakland Rd, Dept 7  
Loveland, OH 45140  
800-783-3122

While you're waiting for the switch, stop the power drain by disconnecting the negative cable from the battery every time the generator is shut down.



Turn master switch to prevent power drain



Sometimes it's easy to sweep the little things under the rug. Who has time to clean up the speck of dust when there's a pile of dirt to shovel away.

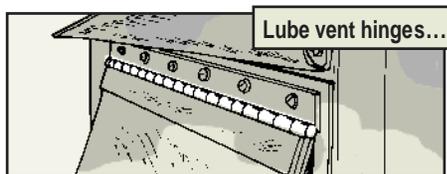
But, you know, that pile of dirt started with a speck of dust.

One of those specks of dust—that small job—is a lack of lubrication on commo shelter vent hinges, ventilating fans and door mechanisms.

TB 43-0124, Maintenance and Repair Procedures for Shelters, gives you a lot of leeway when it comes to lubing these areas and because of that, they're often forgotten or neglected. That is, until a hinge binds and then breaks or until a fan freezes. Then your shelter and the electronics inside are open to moisture, dust and dirt, and heat.

Regularly, and you know how often that is for the conditions in your area, you must lubricate door hinges, vent hinges, ventilating fans and door latches. Use lubricating oil, MIL-L-46167. NSN 9150-00-402-2372 brings a quart.

On hinges, fans and latches where corrosion has already gained a foothold, take 'em apart and clean them before you lube.



# NSNs for Common Wire



MECHANICS, HERE'S A LIST OF ELECTRICAL WIRE NSNs THAT YOU MIGHT NEED FOR YOUR EQUIPMENT.

THE UNIT OF ISSUE IS BY THE FOOT, EXCEPT WHERE NOTED. THE NSNs ARE ALL IN FSC 6145.

Gauge	Black	Red	White	Yellow
000	01-229-3617	none	none	none
00	01-229-3618	none	none	none
0	01-229-3619	none	none	none
2	01-229-3620	none	none	none
4	01-229-3621	none	none	none
6	01-229-3623	none	none	none
8	01-228-6267	01-230-1858	01-229-8299	01-230-1857
10	00-468-1261	01-020-1095	00-468-1260	01-231-1393
12	00-845-5957	00-845-5961	none	none
14	00-310-2598	00-310-2590	none	none
16	00-471-0428	00-889-8551	00-468-1259	01-229-9666
18	00-958-3655	01-169-0755	01-165-1430	01-169-0756
20	01-230-2520	01-230-2521	00-652-1441	00-652-9307 (500-ft spool)

Gauge	Blue	Brown	Green	Orange
8	00-023-6765	01-231-5966	01-230-1859	none
10	01-229-4127	01-229-4128	none	none
12	00-845-5959	00-845-5956	none	01-230-1862
14	01-230-2517	none	none	01-165-5633
16	00-471-3951	00-471-0429	00-468-1256	01-230-2519
18	01-169-2868	01-169-0754	01-165-1429	none
20	01-230-2522	00-989-5845 (1,000-ft roll)	00-989-5843 (1,000-ft roll)	none

# To Requisition or Not to Requisition?



The supply officer hands his supply clerk a note and asks, “Can we get this NSN?” The clerk looks it up in the FED LOG-AMDF, finds it and says, “You bet, Sir.”

A week later the requisition comes back, rejected, with instructions that tell the unit to “fabricate, assemble or use source coded XB items to manufacture the item.” The acquisition advice code (AAC) would have told the supply clerk this if he’d only checked it in the FED LOG-AMDF. He’s confused and soon to be embarrassed when he tells his boss what happened.

Many people think like the supply clerk—if the NSN is in the FED LOG or FED LOG-AMDF, then it can be requisitioned. **Maybe...maybe not!**

Check out the AAC. It tells you if you can requisition the item or need to do something else to get it. Here are the most common AACs:

AAC	Definition
C	Service managed, stocked and issued. Requisition through Army supply system if in the FED LOG-AMDF.*
D	DOD managed, stocked and issued. Requisition through Army supply system if in the FED LOG-AMDF.*
F	Fabricate or assemble (or use source-coded XB items or cannibalization) using info in the FED LOG-AMDF Phrase Code/Statement field. Do NOT requisition unless you cannot locally fabricate or assemble. Then, you must use Advice Code 2A (item not locally obtainable).
G	GSA managed, stocked and issued. Requisition through Army supply system if in the FED LOG-AMDF.*
J	Not stocked—long lead time. Requisition through Army supply system if in the FED LOG-AMDF.* The manager will order this item when he receives your requisition.

AAC	Definition
K	Centrally stocked for overseas use only. CONUS units have authority to go local purchase. OCONUS units requisition through Army supply system if in the FED LOG-AMDF.*
L	Local purchase. All Army given authority to use local purchase process. If unavailable locally, submit requisition through Army supply system, using Advice Code 2A, if in FED LOG-AMDF.*
N	Restricted requisitioning—disposal. Army authority to dispose of all on hand assets. Requisition only with PRIOR approval of the manager through Army supply system if in FED LOG-AMDF.*
T	Condemned item. Not authorized for requisition or use. You must dispose of all on-hand stock immediately and are forbidden to retain any assets or to requisition this item.
V	Terminal item with wholesale stock on-hand for issue until exhausted. No assets due-in. Requisition through Army supply system if in the FED LOG-AMDF.*
Y	Terminal item with NO wholesale stock on hand or due in. The item is gone. Do not requisition unless you must have the item to perform your mission. Then, use DD Form 1348-6 with Advice Code 2F (item is obsolete but still required). Submit to the next higher assembly manager or the weapon system/end item manager. If unknown, submit requisition to SOS: A35.
Z	Insurance/Numeric Stockage Objective item. Essentiality of the item requires minimum stock on hand at all times. Requisition through Army supply system if in the FED LOG-AMDF.*

*\* If the Army is not a user of an NSN then you must manually prepare a DD Form 1348-6 and send it to the SOS. “NSN not in the AMDF” should be annotated in block 11, REMARKS.*

## Army Oil Analysis Program . . .

### Don’t Spoil the Sample

If there’s oil from the last sample in your oil sampling pump, NSN 4930-01-119-4030, clean it good before you take another sample. Leftover oil in the pump contaminates any new sample.

Clean the pump piece by piece with any acceptable solvent.

Let the parts air dry before you put the pump back together.

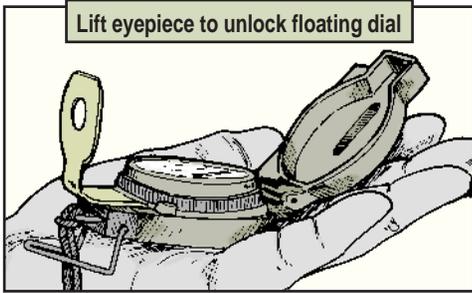
Save yourself—and the lab—a lot of time and trouble. Get it right the first time by working with a clean pump.

# Finding Your Way



If the floating dial on your new lensatic compass, NSN 6605-01-196-6971, is not floating, don't turn in the compass until you try lifting the eyepiece.

The eyepiece locks the dial down to keep it from being damaged when it's not in use. If you don't lift the eyepiece, the floating dial won't work. It has to float for the needle to show north.



That tip and others are on the card with use and care instructions that comes with every new compass. If your card is lost, contact James Boyd at CECOM, DSN 992-9511 or (732) 532-9511. His e-mail is: [boydj@mail1.mommouth.army.mil](mailto:boydj@mail1.mommouth.army.mil)

He will send you a new card. FM 21-26, *Map Reading and Land Navigation*, also has this info.

The old compasses, NSN 6605-00-151-5337 or NSN 6605-00-846-7618, are unserviceable and have been condemned for leaking the radioactive material that made them glow. Turn them in to your local Radiation Safety Officer per AR 11-9 and get the new compass.

The condemned compasses were made by Stocker and Yale. Commenga makes the new one.

# Signs of the Times

Don't sing the blues because you can't get a sign painting set with NSN 7520-00-375-9181, or find the components in any pub.



You can still get what you need by ordering the individual components. Here's everything you need.

Item	NSN	Quantity
Stencil set, marking, 1 1/2 inches	7520-00-272-9680	1 set
Stencil set, marking, 3 inches	7520-00-272-9683	1 set
Stencil set, marking, 5 inches	7520-00-272-9684	1 set
Paint brush, 3 inches	8020-00-597-4770	1
Paint brush, 2 inches	8020-00-260-1304	1
Varnish brush, 1 inch	8020-00-260-1306	1
Linseed oil	8010-00-152-3245*	1 gal
Varnish	8010-00-160-5852*	1 gal
Chest	5680-00-371-9462	1
Coating compound kit	8010-00-664-0019	1
Artist brush, 1/8 inch	8020-00-240-6361	1
Artist brush, 1/4 inch	8020-00-240-6362	1
Artist brushes, 3/8 inch	8020-00-224-8006	8
Black enamel	8010-00-527-2053*	1 qt
Red enamel	8010-00-527-3199*	1 qt
White enamel	8010-00-515-1596*	1 qt
Yellow enamel	8010-00-286-7758*	1 qt
Stencil board, 8x24 inches	9310-00-160-7853	100 sh
Template	9315-00-233-3745	30 sh
Carpet tacks	5315-00-238-1866	1 lb
Stencil brush	7520-00-223-8000	1

\* These items have a two year shelf life. Order as needed.

Tools . . .

## Handles Need TLC, Too

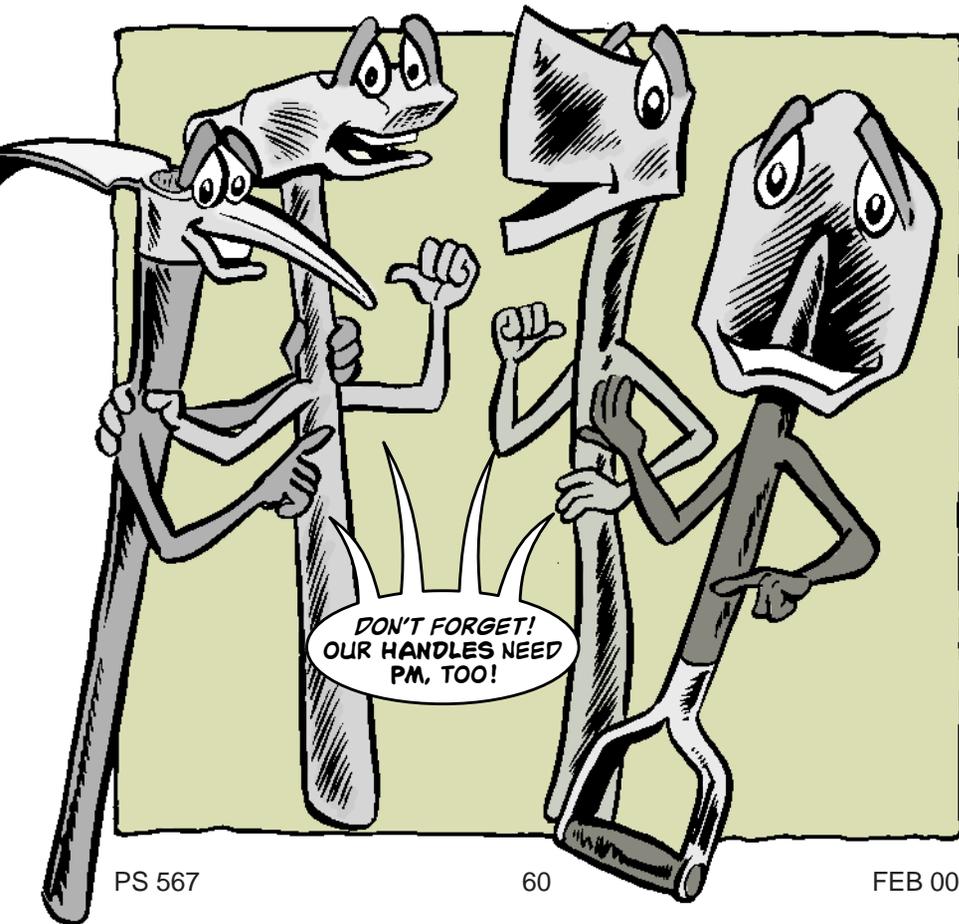
**E**xposure to the elements can crack the wood handles on pioneer and engineer-type tools.

If the tool is stored outside the vehicle, paint the handle to protect it against weather. Follow the local SOP for paint color—which usually means the same color as the vehicle's basic color, but no camouflage.

If the tool is kept inside the vehicle, forget the paint and rub the handle with linseed oil. This prevents drying, cracking and splintering. Order a gallon of linseed oil with NSN 8010-00-152-3245.

When a painted handle shows exposed wood, strip it and repaint it.

When an unpainted handle starts to feel dry, give it another rub with linseed oil.



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### SEE Ring Seal

NSN 5330-01-270-1311 gets the ring seal for the small emplacement excavator's front axle. The NSN shown for Item 25, Fig 131, of TM 5-2420-224-24P gets the wrong seal.

### Charger for No.1 Common

The PP-1660E battery charger, NSN 6130-01-446-4132, is now available as an "as required" addition to SC 4910-95-A74 for the No. 1 Common shop set. The charger will not be issued as a component, but can be ordered when authorized by local commanders. The updated SC should be in the Apr 00 edition of EM 0074, *Consolidated Publication of Components List*.

### Mask Faceform Is Out

Faceforms are out for M40/M42-series masks. Soldier and Biological Chemical Command (SBCCOM) says the masks do not need faceforms to keep their shape during long-term storage. So, NBC NCOs, just store the masks in their carriers like you do for short-term storage. The word's in SBCCOM maintenance advisory message (MAM) 99-05.

### AN/TYK-22/22A UPS Upgrade

If the uninterruptable power supply (UPS) of your Combat Service Support Control System/Common Hardware System-2 has a part number of 28-2757052-1 or 28-2757053-1, it must be retrofitted before 30 Jun 00. Right now the retrofit is free, but after 30 Jun 00 your unit will be charged \$700 or more. This retrofit will solve the power-off battery drain problem. If your UPS has a part number of 28-2757052-2, 28-2757053-2 or 28-2757053-3, the retrofit has been done. For more info, call Patty Harris at (877) 247-7711. Or e-mail her at:

[Patty.Harris@GD-CS.com](mailto:Patty.Harris@GD-CS.com)

### M1070 HET Breather Vent

Use NSN 4820-01-151-3692 to get an axle breather vent for your heavy equipment transporter. That vent costs less than a buck, about \$11 less than the ones shown as Item 4 in Fig 124, Item 2 in Fig 129, Item 2 in Fig 130 and Item 5 in Fig 131 of TM 9-2320-360-24P. The vent is also used on the HEMTT.

### MLRS Hull Drain Plug

Use NSN 4730-00-640-0279 to get a new 1-in diameter hull drain plug for your MLRS. The 3/8-in diameter plug shown as Item 5 in Fig 6 of TM 9-1450-646-24P is too small.



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**Would You Stake Your Life <sup>right now</sup> on the Condition of Your Equipment?**