


Issue 460

PS

March  
1991

THE  
PREVENTIVE  
MAINTENANCE  
MONTHLY

TB 43-PS-460

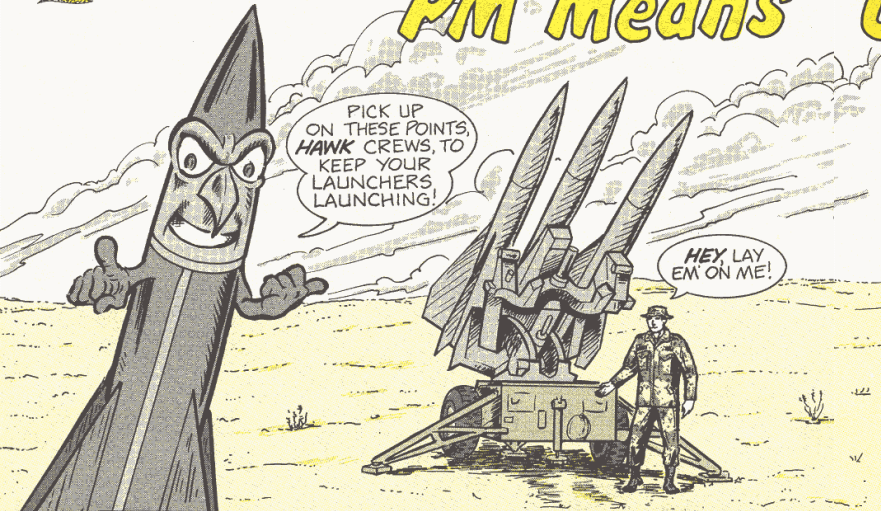


HEY, WE'D  
BETTER CHECK  
THE TM FOR  
UNUSUAL  
CONDITIONS!

NOTHING UNUSUAL  
ABOUT THESE CONDITIONS--  
WAIT 'TIL THE  
SHAMAL BLOWS!



# PM Means Good Launch



## Tight Studs

Check the rear retaining studs on the booms for tightness before loading missiles. A loose stud leaves the missile loose on the launcher. Tighten studs with a hex socket head wrench from your tool kit.

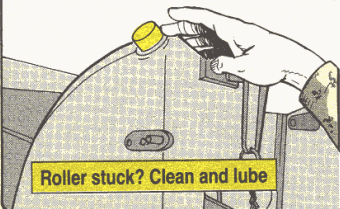


Stud loose? Tighten with a hex socket head wrench

## Loose Rollers

Rotate the rollers on the booms to ensure they move easily. A frozen roller can damage the missile during launch.

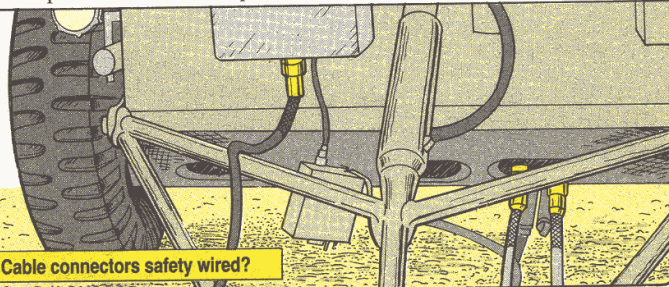
Your repairman can remove sticking rollers with a screwdriver. Clean them with a light preservative oil, coat them lightly with GAA and reinstall the rollers.



Roller stuck? Clean and lube

## Wired Connectors

Check that the power, data, and launcher control unit cable connectors are safety-wired. Otherwise, connectors will twist loose during operation and connector pins will short out. Report connectors that aren't safety-wired.



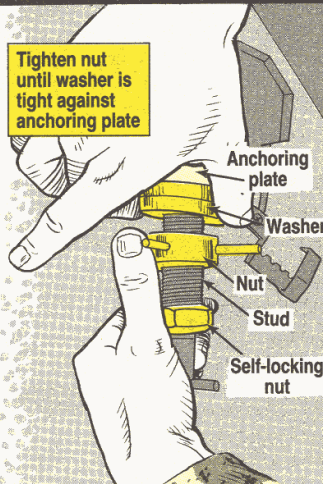
Cable connectors safety wired?

## Pallet Poop

When transferring missiles from the launcher to pallets, remember to carefully install the missile anchoring studs. If they're crossthreaded in the missile or not fully seated, it will cause expensive damage to the missile. Concentrate on these points:

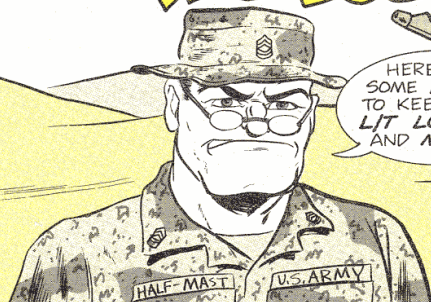
1 The stud should turn at least 2½ times in the missile's wingnut. If it doesn't, realign the stud and try again. Dry graphite, NSN 9620-00-233-6712, will sometimes make the job easier. Don't force the stud. If you can't get 2½ turns, something's wrong.

2 The plain round nut must be screwed tight until the regular washer is tight against the anchoring plate before you tighten the self-locking nut. Otherwise, you can strip the wingnut.





# The Load-Down on PM

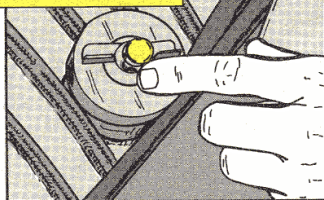


HERE ARE SOME PM TIPS TO KEEP YOUR L/T LOADING AND MOVING!

The HAWK loader/transporter (L/T) usually gets the least attention of all the HAWK equipment. Yet if it quits during loading operations, you're in a missile unit that can't load missiles for firing. Here are some points to load up on to keep your L/T chugging along:

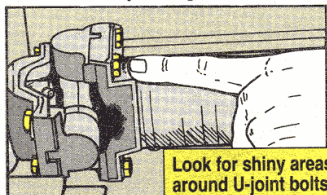
**Differential filler cap.** Feel the cap's breather when you check the differential to make sure the breather moves. Otherwise, pressure builds up in the differential and pops the seals.

Check for up and down breather movement



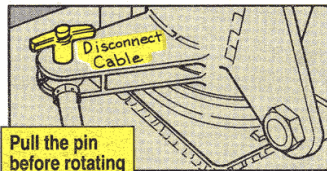
**Final drives.** At least monthly, remove the access covers and look for shiny areas around the final drive axle bolts for the U-joints. If the bolts work

out, the whole axle can fall off. Report loose bolts to your repairman.

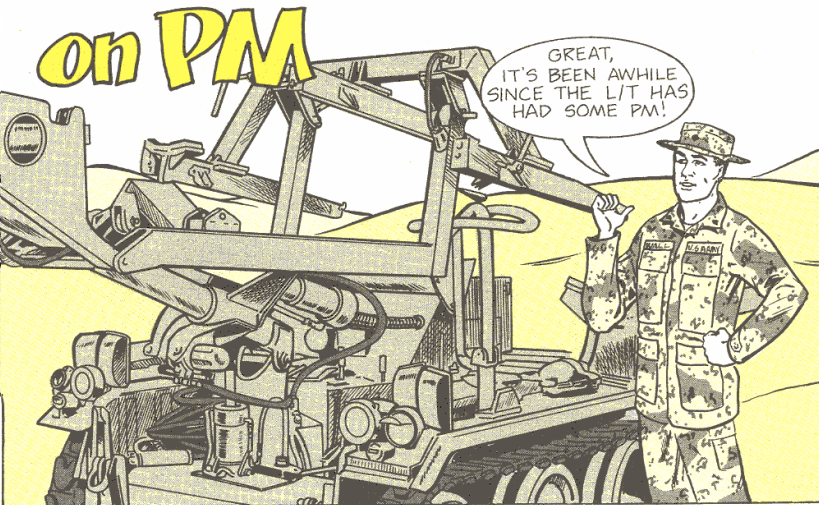


Look for shiny areas around U-joint bolts

**Data cable.** Cable after cable gets ripped out of the boom because crews forget to disconnect it before they rotate the superstructure. Help yourself remember by painting DISCONNECT CABLE beside the quick release pin for the azimuth cylinder piston rod. Pulling the pin's the last thing you do before moving the superstructure.

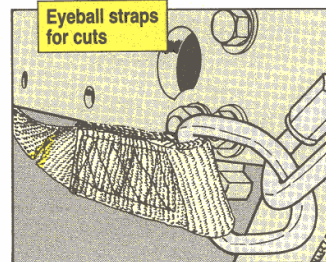


Pull the pin before rotating



**Tiedown Straps.** Keep a close eye on the missile tiedown straps for cuts, fraying, and shrinkage, especially in the heat of the desert. Just one bad strap, NSN 5340-01-266-2829, makes the loader NMC, so keep extras on hand.

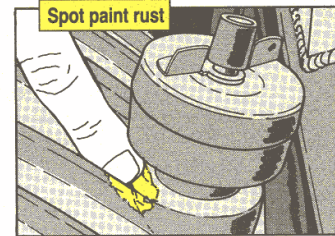
For extra crew safety, you can order whisker bars, NSN 9150-01-245-2427.



Eyeball straps for cuts

**Halo Assembly.** A loose halo assembly is usually caused by its two bolts stripping out. If the halo comes off, the driver has no protection. Have your support weld a loose halo to the L/T frame to keep it secure.

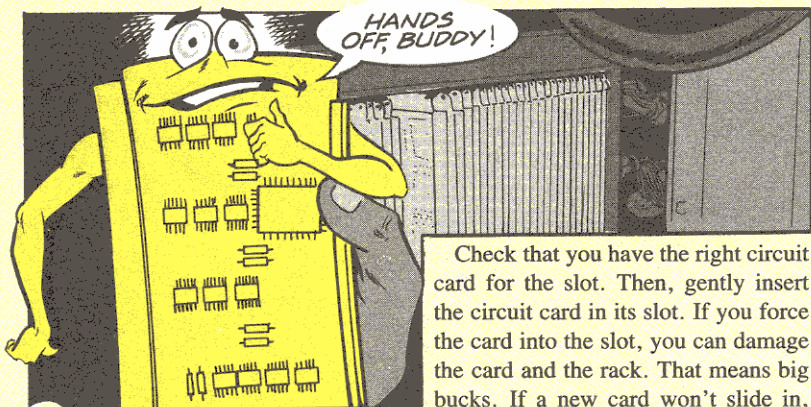
**Spot Painting.** In wet climates, corrosion quickly eats up the L/T frame. Monthly, eyeball it for peeling paint. Spot paint according to instructions in TB 43-0242, CARC spot painting.



Spot paint rust



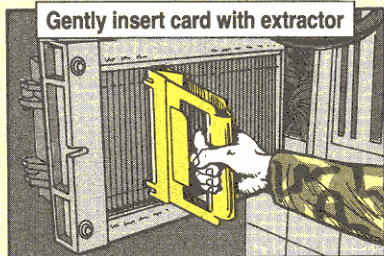
## Give Circuit Cards Good PM Deal



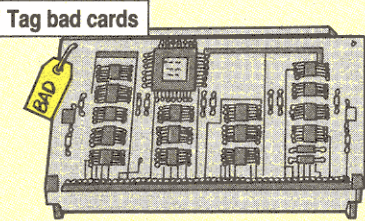
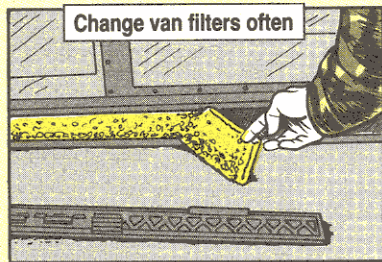
Check that you have the right circuit card for the slot. Then, gently insert the circuit card in its slot. If you force the card into the slot, you can damage the card and the rack. That means big bucks. If a new card won't slide in, reposition it and try again. If that doesn't do the trick, try another card.

**C**ircuit cards are the brain cells for HAWK and Patriot missile systems. A damaged circuit card can be hard to troubleshoot and cause big bucks in repairs. Maintainers can give circuit cards a good deal with these points:

Circuit cards need lots of clean, cool air. Otherwise, they overheat and stop working. Change the van filters at least as often as the PMCS schedules say—more often in the heat and dirt of the desert. Make sure crews don't block air intake or exhaust vents. If the van fans become noisy, inspect them. They may need to be cleaned or replaced.



Tag bad cards and don't leave them lying around. Turn them in as soon as possible. If a bad card gets mixed in with the good ones, it can cause troubleshooting nightmares.





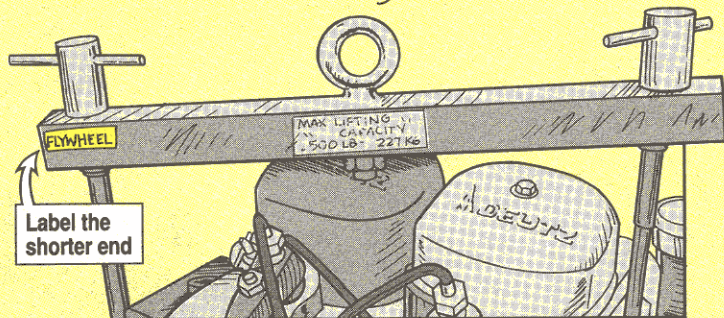
# Bar Lifting Bar Reverse

Dear Editor,

At first glance, the lifting bar used on the Chaparral's system engine looks like it will fit on the engine either way.

That's not the case. The slightly shorter side must be attached to the flywheel side of the engine. If the lifting bar's put on backwards, the bar rods can break, and the engine crashes to the floor.

Take the guesswork out of installing the lifting bar by labeling or painting FLYWHEEL on the shorter end of the lifting bar.



Bill Hazelton  
Ft Bliss, TX

NOW  
THERE'S AN  
IDEA YOU CAN'T  
GET BACKWARDS!

(Editor's note: Your lifting bar suggestion will be uplifting for Chaparral repairmen. Thanks.)

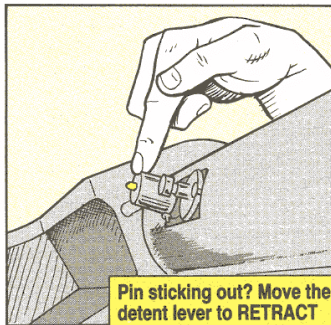


# DON'Ts are as Important as DOs



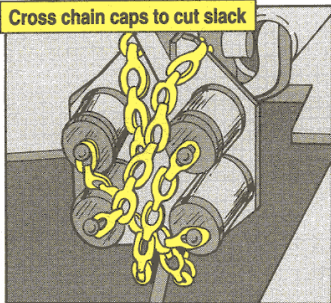
Sometimes what you don't do can be as important as the PM you do.

➔ Never load or unload missiles without first eyeballing the shear pins on the launch rails. If the pins aren't in the closed position, they will be sheared off.



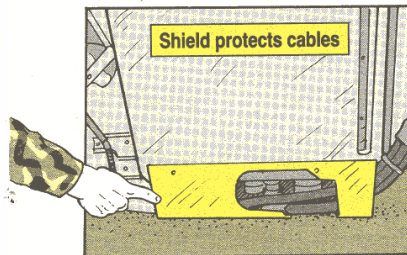
➔ Never leave the dust cap chains on the missile storage bins dangling. Otherwise, the missile cases will catch the chains when they're loaded in the bins and the bin's inner support cable

assembly will be ruined. Take slack out of the chains by cross-chaining them: Put the top right cap on the lower left connection and vice versa.



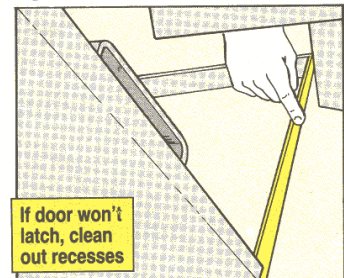
➔ Never put equipment in the gunner's compartment or throw equipment in the crew equipment compartment. A rifle left on the right side of the gunner's compartment catches the sight and ruins it. Throwing BII like chains or pickaxes in the crew equipment compartment damages system power cables.

➔ Never slam shut the master control panel door or bustle without first making sure all cables are out of harm's way. Otherwise, cables are damaged. Make the job simpler by tying the cables together with tie-downs. Your repairmen can also order a master control panel cable shield, on a DD Form 1348-6 using CAGE 18876, PN 13143360 from B64.

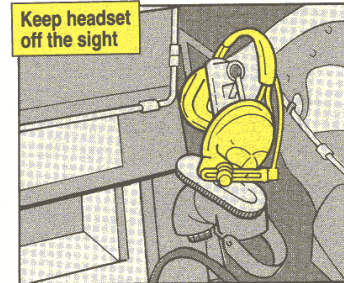


➔ Never step on the tailgate by the master control panel or step down in the gunner's compartment anywhere except on the seat. One bad step knocks off control panel switches.

➔ Never slam or kick shut the doors to the crew equipment compartment or main power unit. That damages the latches and the INTERLOCK INDICATOR won't go off. If the doors won't latch, clean off the door recesses. If that doesn't do the trick, report it.



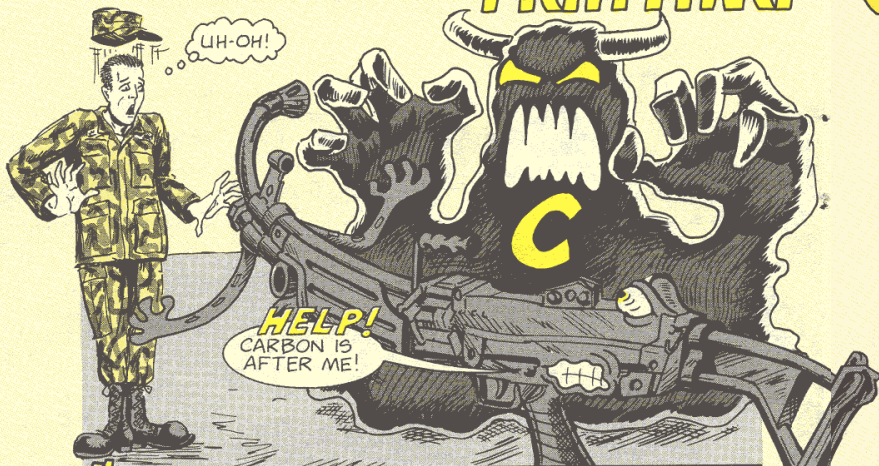
➔ Never hang the headset on the sight. Otherwise, the headset wires are ripped out when the launch rails are moved.



➔ Never turn on the power supply switches before you turn on the mount drive circuit breakers. If you forget, power surges ruin circuitry.



# FIGHTING CARBON BUILDUP



Carbon can cut down your M249 squad automatic weapon (SAW) in its prime. Carbon can take a powerful, smoothly-operating weapon and quickly turn it into a sputtering, straining and useless machine gun.

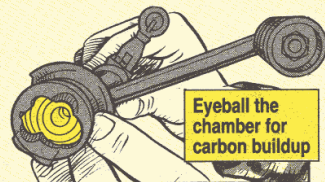
After just a couple hundred rounds, carbon starts to coat moving parts and plug the gas system. Very soon your M249 sluggishly feeds the next round. Eventually, it stops feeding altogether. Here's how to help your SAW beat the Big C:

**Gas System.** This is the biggest victim of carbon, particularly the regulator. Heat from firing bakes carbon into the regulator. The longer the carbon sits, the harder it is to remove. That's why you need to scrape out the regulator and the rest of the gas system as soon as possible after firing.

Your scraper and lots of elbow grease are the only way you'll get rid of most carbon. Pay particular attention to the grooves in the regulator and in the piston and the hole on the piston's front—they're often missed. Tell your armorer about stubborn carbon. He can whip it with drycleaning solvent.

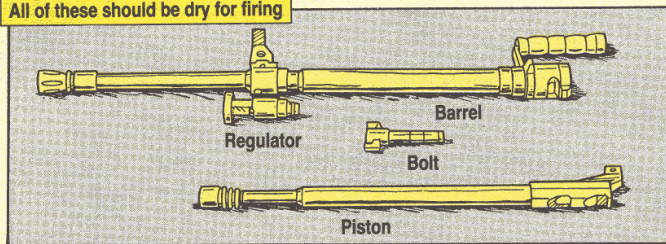


**Barrel.** Carbon builds up in the chamber and causes double feeding and cookoffs. Use your chamber brush to clean it out. Eyeball the chamber, too, every 200 rounds in the field. If you spot carbon, remove the barrel and run the chamber brush through it.

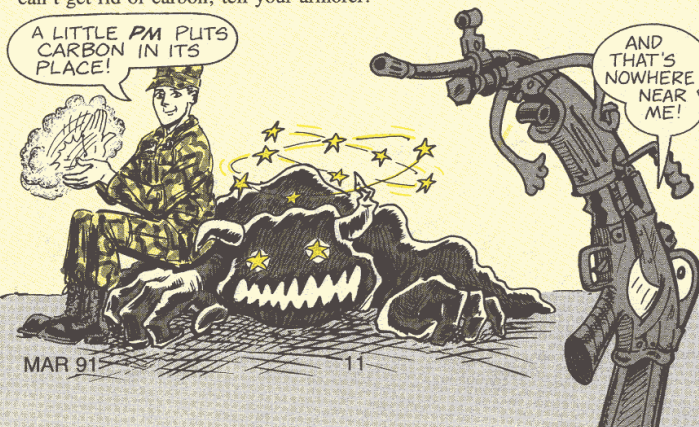


**CLP and Abrasives.** CLP makes carbon problems worse. On the regulator, for instance, CLP coats the regulator's insides and causes carbon build-up that makes it impossible to clean. For firing, the regulator, barrel, piston, and bolt should all be dry.

All of these should be dry for firing



If you use an abrasive like sandpaper to remove carbon, it also removes the M249's finish. That sets up the weapon for corrosion. If your scraper or brushes can't get rid of carbon, tell your armorer.



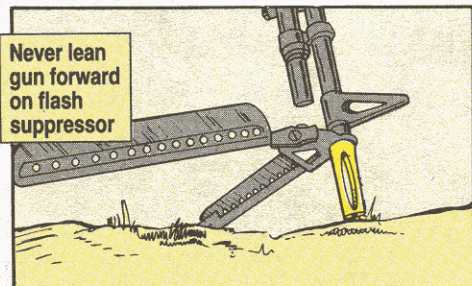


## No Swift Kicks in the Bolt

If your stereo's turntable was sticking or your VCR refused to eject a tape, you wouldn't try to fix the problem with a swift kick. That would only turn a minor problem into a major repair.

The same holds true for stuck bolts on M60 and M249 machine guns: Kicking is not the answer.

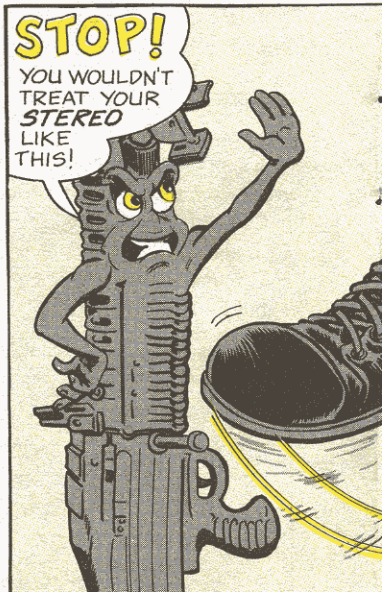
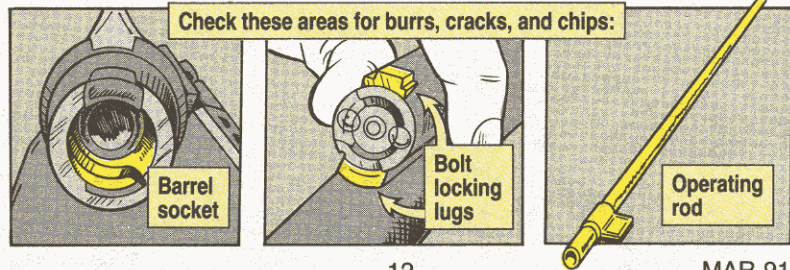
Kicking the cocking handle to free the bolt usually accomplishes only three things: Breaks the operating rod, bends the cocking handle, and dents the cocking handle slot.



Leaning your M60 or M249 forward on the flash suppressor to get better leverage on the cocking handle is no good either. That bows the bipod, breaks the bipod yoke, loosens the flash suppressor, and plugs the barrel.

There's only one solution for stuck bolts: Call your armorer. He'll get support to unstick it.

The bolt usually gets hung up because the bolt locking lugs are stuck in the barrel socket or the operating rod is broken. So, the best way to head off stuck bolts is to eyeball the barrel socket, bolt locking lugs, and operating rod for burrs, cracks, and chips BEFORE you go to the field. Report problems.





# Relieving Gas Problems

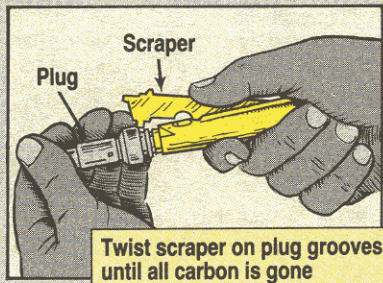


**G**as problems can be just as bad for your M240 as they are for your digestion. If the gas produced by firing can't go where it's supposed to, rounds won't chamber and your gun won't fire. It needs the plop, plop, fizz, fizz of good PM.

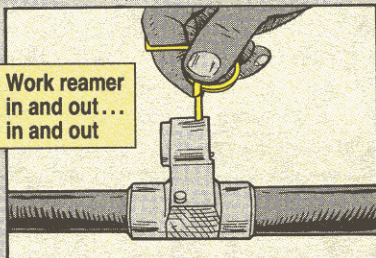
Carbon causes gas problems. It quickly builds up and stops up the gas regulator and plug. If the carbon's not cleaned out regularly, it becomes so hard it will break your cleaning tools.

The solution is simple: Clean the regulator and plug as soon as possible after firing before the carbon gets a chance to harden.

Twist your scraper in the plug until all the carbon's gone. Use the scraper's point on the plug grooves and all over the plug.

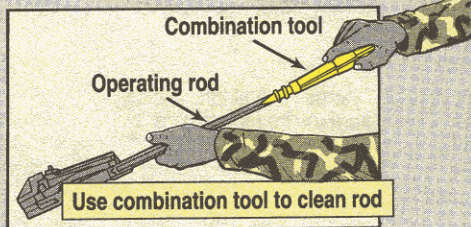


The tricky part's clearing the plug holes with the small reamer. If you twist or bend the reamer hard, it can snap. Instead of twisting the reamer, try working it in and out of the plug holes. Then, twist the reamer.



Use the large reamer to clear the barrel's gas port hole.

Clean carbon out of the operating rod and the gas cylinder with your combination tool.



Your M240's gas problems have dissolved.



# Charged Up for Fighting



Dry firing is the usual cause of bolt and barrel chamber damage. Dry fire as little as possible. Use a dummy round. It protects these parts.

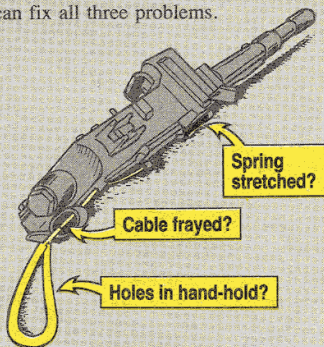
eyeball the charging cable for fraying and its spring for signs of stretching. Check the rubber hand-hold for holes that cable strands can stick out of and poke your hand. Your armorer can fix all three problems.

**Y**ou may be charged up for fighting, but if you haven't paid attention to your M240's charging system and other parts you're not going to be charged up for shooting. A little PM and handling attention, though, will keep your M240 charged up and ready to fight.

## Charging

If you can't charge your M240, you can't fire. So before you go to the field charge it several times to be sure the bolt locks. If it doesn't catch, your M240 could have sear or trigger spring problems. Tell your armorer.

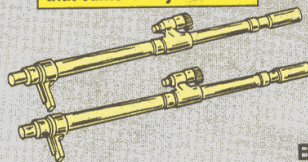
**Charge several times to be sure the bolt locks back**



Keep the cable in good shape by pulling it steady and straight. If you yank it, you can yank it off. If you pull it at an angle, it rubs and frays on the cable guide.

Protect the charger cable spring from catching on the gunner's control handles or sight control knobs. Pass your M240 into the turret barrel first so you don't have to maneuver it as much to mount it. Remove it from the turret receiver first. If it's not mounted, lay your M240 on its side with the charger cable up.

**Use ONLY the two barrels that came with your M240**



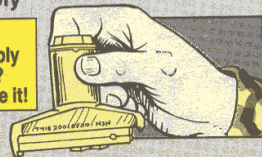
## Barrel

It's two to a customer when it comes to the barrel. The two barrels that come with your M240 have been headspaced especially for it. Tag the spare barrel so it won't get misplaced. Using a barrel from another M240 could result in barrel, bolt, or receiver damage. Never use another barrel, even in an emergency.

## Buffer Assembly

Shake the buffer assembly. If it rattles, get it replaced. Its discs are loose and it won't be able to handle the M240's recoil. The operating rod and bolt will be battered and ruined.

**Buffer assembly rattles? Replace it!**



## M242 Automatic Gun...

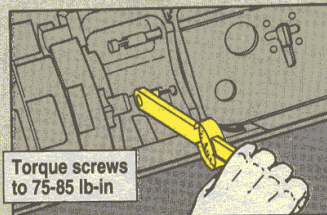
# Help for Bradley Mechanics

**H**ere are a couple of quick ones that will save you mechanics time and trouble with your M242 gun:

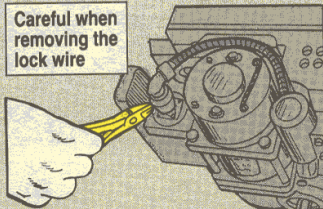
**Get the torque right—75-85 lb-in**—when you screw in the socket head cap screws in the front chain guide. Overtorquing screws will strip threads. Then it's a major job for DS.

If you use the same screws again and again, they're apt to strip out when you torque them.

**Be careful when taking off and putting on the locking wire for the motor's electrical connector.** The connector's lock ring is aluminum. If you jerk hard on the locking wire, you tear out the lock ring. The gun's NMC until the entire connector is replaced.



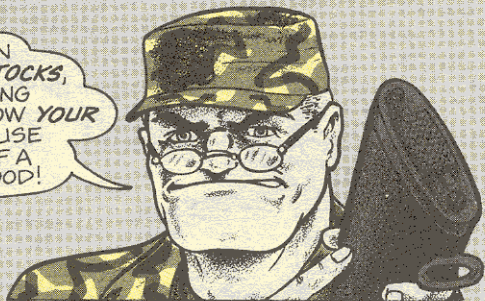
It's a good idea to put in new cap screws, NSN 5305-01-122-9633, too.



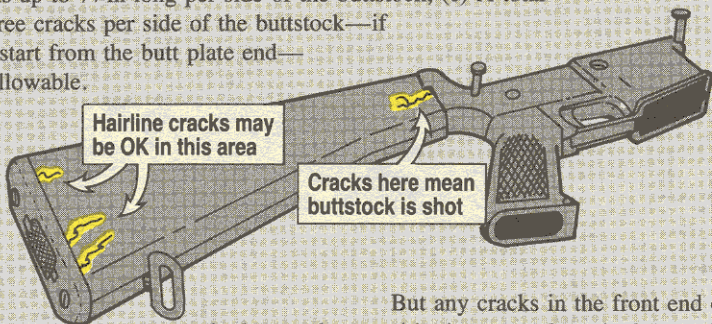


# Take Stock in Buttstock PM

A FEW REMINDERS ON M16A1 AND -A2 BUTTSTOCKS, ARMORERS. REPLACING THE BUTTSTOCK IS NOW YOUR JOB, NOT SUPPORT'S. USE THIS RULE TO DECIDE IF A BUTTSTOCK'S STILL GOOD!



**U**nder the following conditions, hairline cracks (no chipped-away material allowed) at the butt plate end of the buttstock are acceptable: (a) One hairline crack, no longer than one inch, per buttstock side; (b) Two additional hairline cracks up to 1/4-in long per side of the buttstock; (c) A total of three cracks per side of the buttstock—if they start from the butt plate end—are allowable.

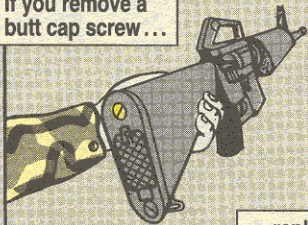


But any cracks in the front end of the buttstock mean it's time to replace the buttstock.

You will be replacing the butt plate if you don't take it easy tightening the butt cap screw. Just one turn too many can distort the liner or crack the butt plate. Turn the screw until you feel resistance. Make one more quarter turn. Stop.

Remember, the screw can be used only once. The screw has a self-locking nylon insert that is ruined when you unscrew it. It can no longer keep the butt plate tight.

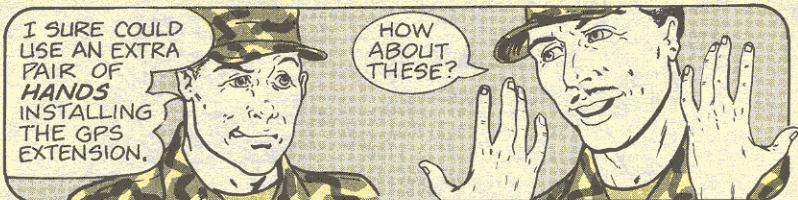
If you remove a butt cap screw ...



... replace it with a new one



## GPS Extension Installation Tip

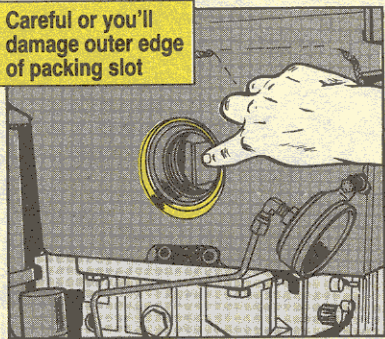


It's easy to damage the commander's extension of the gunner's primary sight (GPS) during installation. That's because it's oddly shaped and relatively hard to handle.

Make good use of the other pair of hands you need in the installation procedure to prevent the damage. Here's the tip:

☞ Position yourself and your helper so that you can mount the extension squarely into the GPS mounting hole. Be especially careful with the outer edge of the packing slot.

Careful or you'll damage outer edge of packing slot



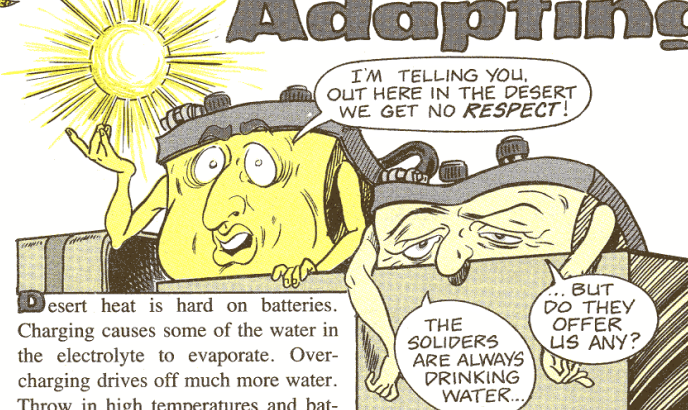
☞ While one of you holds the extension, the other installs and tightens the screws, washers and spacers. Make sure that you tighten the screws equally so there is no misalignment or cocking at the GPS mounting hole. Most damage occurs during the screw tightening.

Finish the installation as described in the TM. Do not attempt this job unless you have help. It is too easy to damage the GPS extension if you try it single-handedly.





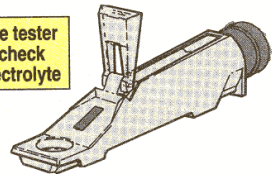
# Adapting to the Heat



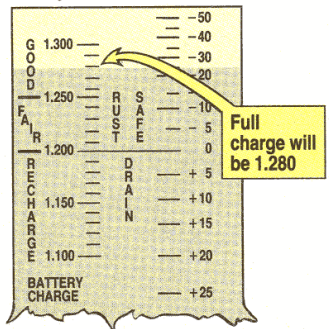
Desert heat is hard on batteries. Charging causes some of the water in the electrolyte to evaporate. Overcharging drives off much more water. Throw in high temperatures and batteries can go dry quick.

Your mechanic can check the electrolyte using the optical battery/anti-freeze tester, NSN 6630-00-105-1418.

Use tester to check electrolyte



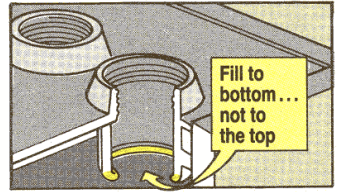
He should get a specific gravity reading of 1.280 for a fully-charged battery.



Forget what Para 2-5a of TM 9-6140-200-14 (Jul 89) says about using tropical electrolyte in lead-acid batteries in high temperature areas.

## Daily Checks

Vehicle operators need to check the electrolyte level every day. It should be at least 1/2 inch above the top of the plates. If the filler hole has a lip or an indicator at the bottom, fill to that.



ELECTROLYTE LEVEL LOW

ELECTROLYTE LEVEL OK



THIS BIRD'S EYE VIEW SHOWS EYE-SHAPE



More is not better! If batteries are filled to the rim, the electrolyte will boil out through the vent caps when the battery charges.

High temperatures cause the electrolyte to expand. If the batteries were full when checked at a lower temperature, the level will be too high. Use the battery filler syringe, NSN 6140-00-808-7325, to remove the excess.

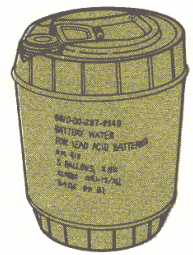
If you find a battery that needs water, let your mechanic know ASAP!

The best water is distilled water. NSN 6810-00-682-6867 gets a gallon, NSN 6810-00-356-4936 a 5-gal jug.

Another good choice is battery water. It has no more than 100 parts per million of impurities, and costs a little less than distilled water. Here is what's available:

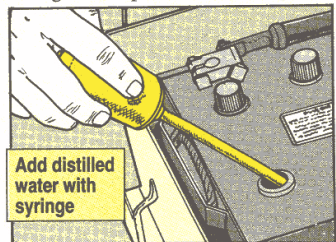
Size (Gal)	NSN 6810-00-
1	286-3783
5	297-9540

Use distilled or battery water



there is no other choice, good drinking water— but NOT mineral water— can be used.

Use a battery filler syringe or a battery gravity filler, NSN 6140-00-635-3824. Both are in the No. 1 Common shop set. These fillers allow precise filling and help avoid overfilling.



## Cap Out Sand

Be sure to keep the caps on the fill holes on your battery. That'll keep sand out of your battery. If you need a replacement cap, check with the battery shop for one from an unserviceable battery.

Replace missing caps



## Battery Matching

It's OK to mix 6TN and 6TL batteries in a vehicle. Just don't mix those batteries with maintenance-free batteries.





HMMWVs...

# Clean Air Coming Thru!

Dear Editor,

My HMMWV's air filter gets a heavy workout when I'm driving in the dirt and dust. Here's what I do to help the engine breathe a little easier.

I take the air cap off the air intake shield assembly and put in a precleaner like the type that's used on commercial construction equipment.

The precleaner, NSN 2940-01-302-8028, collects the fine dust before it gets to the air cleaner. Just use a rag to clean up any dust buildup.

A plastic centerpiece of the precleaner will reflect sunlight, so cover it with tape or camouflage paint it. That's all there is to it!

SSG Donald Patterson  
Ft Polk, LA

(Editor's note: Sounds like a clean way of doing business in the desert. Units should get their commander's OK before ordering a precleaner).





# Surge Cure

THIS THING IS  
BUCKING LIKE AN  
OLD MULE!

DON'T BE  
FUELISH WHEN  
I'M MULEISH! REPORT  
MY STICKY INJECTOR  
VALVE TO SUPPORT!

CHOKE

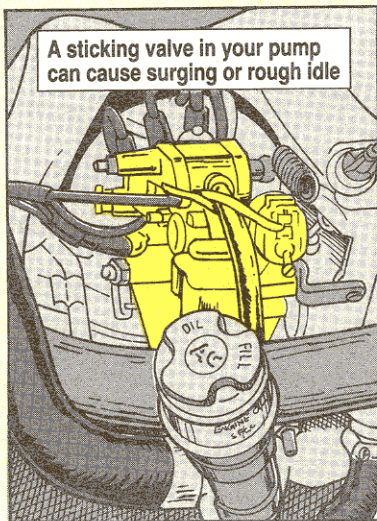
KOOF  
SPUT

If your CUCV surges when you take your foot off the accelerator pedal, report it! It's not supposed to happen and there's a fix for it.

The surging or rough idle is caused by the delivery valve sticking in the fuel injector pump. If your truck has this problem, write it up on the -2404. Support maintenance will change the pump and have it fixed.

If your truck is still under the 5-year/50,000-mile warranty, you can get it fixed free.

Thanks to a SMART suggestion by Richard J. Booth at Ft Lewis, a note will be added to the operator's PMCS to report rough idle or surging on deceleration or going downhill.





CUCVs...

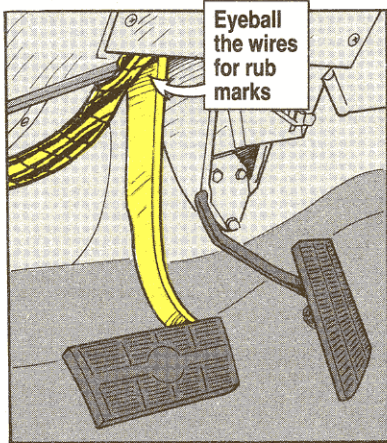
# Wiring Harness Rubbed Raw



**W**ires from the instrument panel wiring harness rub against the CUCV's brake pedal bracket. Vehicle vibration causes chafing. Insulation wears through, exposing the wire underneath. If a bare wire touches the bracket, you get an electrical short.

Eyeball the wires near the brake pedal bracket for rub marks.

If you see any, wrap the harness with plastic conduit, NSN 5975-01-160-8458, or electrical tape, NSN 5970-00-419-4291. Then use a tie strap, NSN 5975-00-074-2072, to pull the harness away from the brake pedal bracket.



## Differential Lube Difference

**J**ust like there are different CUCV models, there are different lube requirements for the front differentials.

All models use GO80/90 or GO75 gear oil, depending on the expected temperature. But M1028, M1028A1 and M1031 vehicles also need four ounces of additive, NSN 9150-01-198-3829, any time the differential is drained and refilled.

On those models, put the additive in the front differential first, then add the correct GO until the oil is level with the filler hole.



# Old Axles and New Hubs

Dear Half-Mast,

Our unit is converting the front wheel bearing locknut configuration on a 1984 model M1009 to the setup that's used on 1985-87 M1009's. Can we stick with the original '84 front axle spindle and outer axle shaft?

SGT S.K.

Dear Sergeant S.K.,

Stick with the '84 front axle spindle and outer axle shaft. It's  $\frac{1}{4}$  inch shorter, but that doesn't matter.

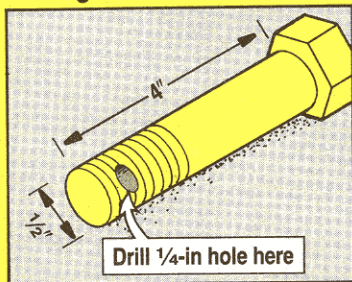
A list of the new parts for the 1985-87 setup are called out on Page 25 of PS 422 (Jan 88).

Half-Mast

## Spare Tire Lock

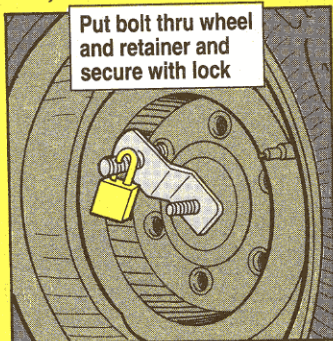
Dear Editor,

I found a simple way to secure the spare tire on M1009 CUCVs using a  $\frac{1}{2}$  by 4-in bolt, NSN 5305-00-071-2079. Drill a  $\frac{1}{4}$ -in hole through the end of the bolt.



Insert the bolt from the rear of the spare through a stud hole and through the hole in

the retainer. Then secure it using a lock from padlock set, NSN 5340-00-912-4087.



This prevents anyone from unscrewing the retainer.

William C. Gatewood  
AMSA 114(G)

(Editor's note: Secure for sure! Thanks.)



# Wheel Lug Nut

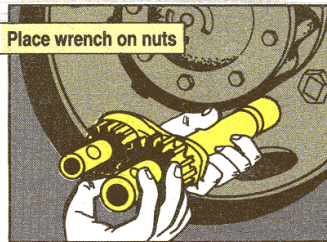


When the outer lug nut is frozen on the inner nut on a dual, putting too much force on the outer nut can break the stud or strip threads. Instead, grab the wheel stud nut wrench, NSN 5120-00-378-4411, that's in the No. 1 Common shop set. It's just what the doctor ordered.

Instructions on using the wrench are harder to come by. Here's how you use it:

1 Be sure the inner wrench is inside the outer wrench. Then slide both wrenches over the lug nuts. The inner wrench fits over the 3/4-in square inner

nut, while the outer wrench fits the 1 1/8-in outer nut.

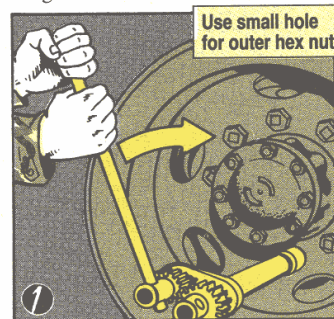


2 To loosen the outer nut, slip the wrench over the lug nuts. Remember that the nuts on

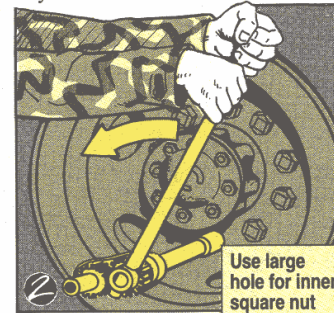
# Loosening

the left side have left-hand threads, and the right-side ones have right-hand threads.

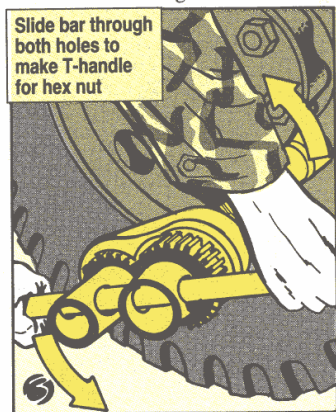
Now here's the tricky part. When using the small hole, turn the wrench the opposite way you normally would to remove the nut. That's because of the gears in the wrench.



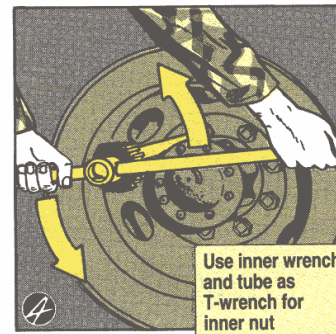
3 After you've loosened the outer nut, you can loosen the square nut. Use the longer handle and slide it through the larger hole. Pull the normal way to loosen the nut.



4 After you've loosened the inner and outer nuts, you can line up the two holes on the wrench and slide the bar handle through them. This makes a T-handle for removing the outer nut.



5 Once the inner nut is loose, use just the inner wrench and the longer handle as a T-wrench.





# One Kit - Many Parts



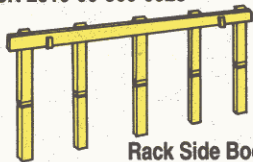
HERE'S WHAT YOU GET IN THE TROOP SEAT AND TARPULIN KIT, NSN 2540-01-155-0112, FOR YOUR M929 OR M930 5-TON DUMP TRUCKS.



**Strap Assembly, Safety**  
NSN 5340-00-594-8032



**Rack Side Body, L.H.**  
NSN 2510-00-860-0523



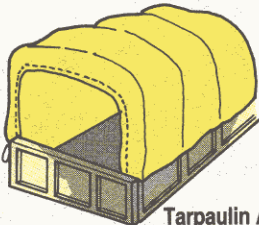
**Rack Side Body, R.H.**  
NSN 2510-00-860-0517

**Seat, Side Rack, Troop, L.H.**  
NSN 2540-00-860-0522

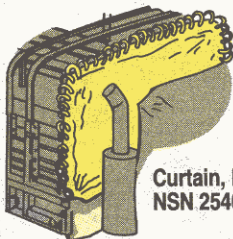


**Seat, Side Rack, Troop R.H.—**  
NSN 2540-00-860-0520

**Bow & Stakes**  
NSN 2540-00-860-0519



**Tarpaulin Assembly**  
NSN 2540-01-182-7557



**Curtain, End**  
NSN 2540-00-860-0516

Follow the installation instructions in Para 2-28 of C2, TM 9-2320-272-10 for the troop seat and Para 2-29 for the bows and tarp.



# Chain Link Not Needed

Dear Half-Mast,

The Basic Issue Items List in Appendix B of TM 9-2320-211-10 shows the NSN for a chain link as 4010-00-291-4962, but I can't find that NSN on the AMDF. What gives?  
SSG M. A. M.

Dear Sergeant M. A. M.,

The chain link shown as Item 5 on Page B-6 has been dropped. It will not be replaced. This is to bring the BII for the M543/A1/A2 wreckers in line with the BII for the M816 and M936. You don't need the link to complete your BII.

Half-Mast

DELETE...  
NO REPLACEMENT.

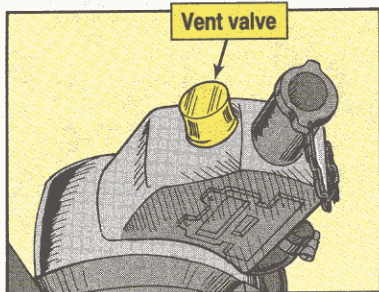
ILLUSTRATION		BASIC ISSUE ITEMS LIST		
FIGURE	ITEM	NATIONAL STOCK NUMBER	PART NO.	DESCRIPTION
B-1	1	2540-00-670-2459		<b>COMMON ITEMS</b> BAG: Pamphlet, cotton duck, 3 in. x 9-1/4 in. x 11-1/4 in. BAG: Tool, cotton duck, 10 in x 20 in, w/flap HANDLE: Bar, wheel stud nut wrench, 3/4 in dia x 30 in lg, phos. finish JACK: Hydraulic, hand, 8-ton cap, 11 in. closed (max), 23-1/2 in. open (min), w/oper lever LINK: chain repair, 1/2 in. dia PLIERS: C
B-1	2	5140-00-772-4142	7691712 (19207)	
B-1	3	5120-00-243-2419	2-3-170 (81337)	
B-1	4	5120-00-595-8396	MIL-W-43105 (81349)	
B-1			16W233 (04741)	
		<del>4010-00-291-4962</del>	<del>7712093 (19207)</del>	
		5120-00-223-7398	MS15382-2 (96906)	

M809-Series Trucks...

## Pump Vent NSN

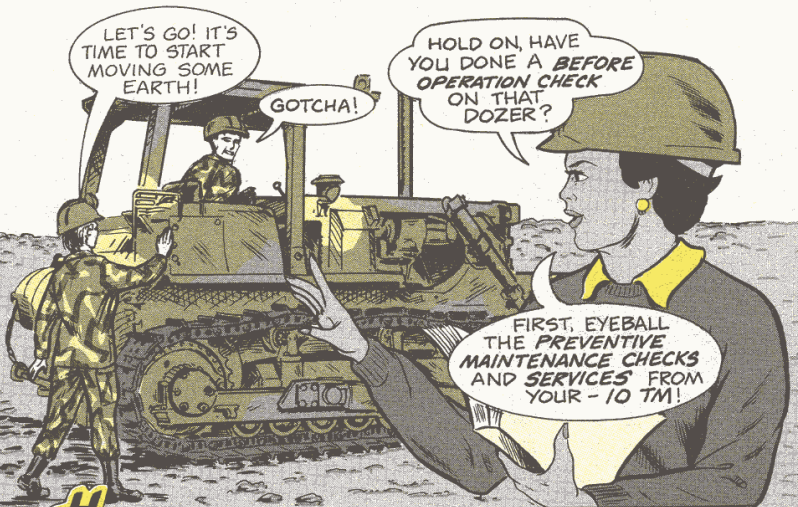
The vent valve for the power steering pump on these 5-tonners is not listed in TM 9-2320-260-20P. You can order one with NSN 2920-01-094-0791 or NSN 4820-00-726-4719. Both will work, but NSN 2920-01-094-0791 costs over \$4, while NSN 4820-00-726-4719 is only 40 cents.

Neither one looks exactly like the old valve, but both will work.



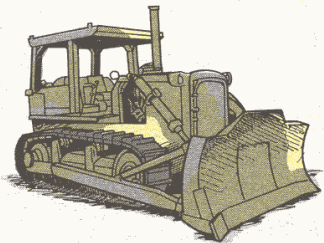


# Be Your Own Inspector



**H**ere's a checklist to help you get it going. It will guide you to all your tractor's tender spots. Use your DA Form 2404 to list anything you find wrong and can't fix.

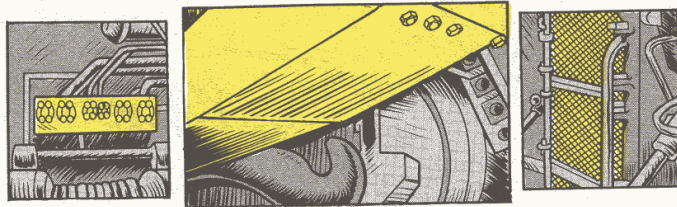
**OVERALL**—Size up your tractor like a hand would a horse. Look hard at main items—blades, trunnions, teeth, tracks, rollers and sprockets.



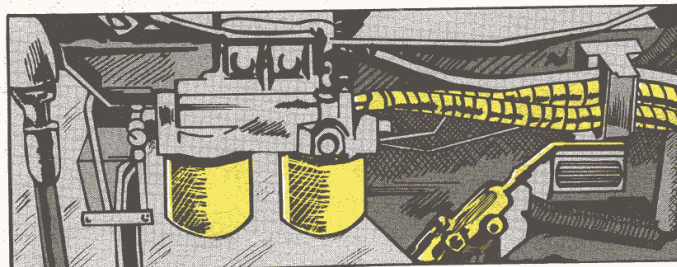
**UNDERSIDE**—You have this chance only once a day. Look for puddles and stains from oil, fuel or hydraulic leaks. Clear your sinuses and sniff... sniff... sniff.



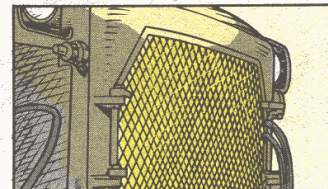
**CLOSE-UPS**—Look for burn stains or carbon on manifold joints. Eyeball grilles, belly pans and vents for trash, mud, leaves, brush and rocks. Look for loose or missing nuts, bolts or damaged parts.



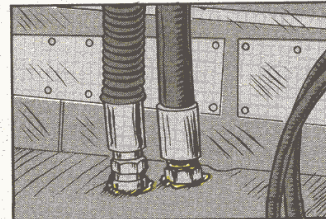
**INSIDE-ENGINE COMPARTMENT**—Eyeball blots, drips, spray spots, loose drive belts and breaks. A flashlight helps.



**RADIATOR**—Add coolant if needed. Avoid mineral-loaded and chemically-softened water—these clog radiators fast. Never overfill—leave space for expansion.



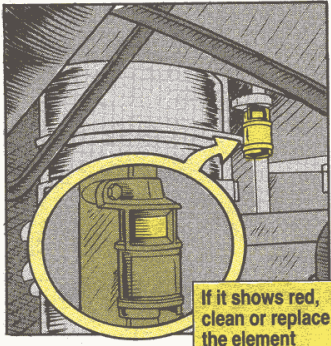
**HOSES, LINES AND FITTINGS**—Look for leaks in core, lines, hoses



and gaskets. Hoses crack, harden or rot, with age.

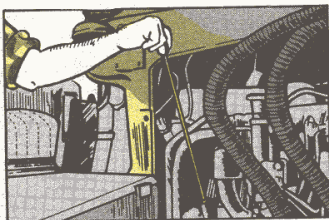


**AIR CLEANER**—Check air restriction indicator with the engine running.

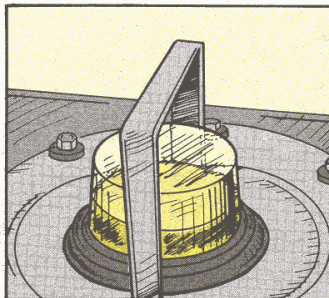


If it shows red, clean or replace the element

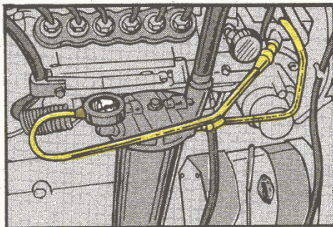
**ENGINE OIL**—Check engine oil level. Add oil, if needed.



**HYDRAULIC FLUID**—Check level. Add fluid as required.

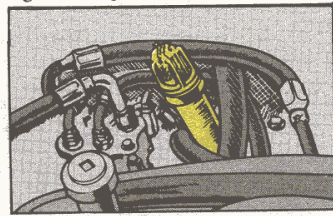


**FUEL LINES, VALVES**—Eyeball fuel lines, shut-off valve and drain valve for leaks.

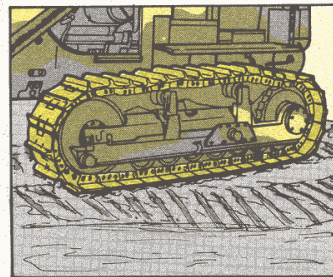


**FUEL TANK**—Check the fuel supply. Fill as necessary.

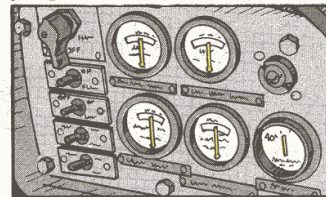
**TRANSMISSION OIL**—Measure the steering clutch, bevel gear, and transmission or converter oil level while the engine's idling on low. The right reading is FULL.



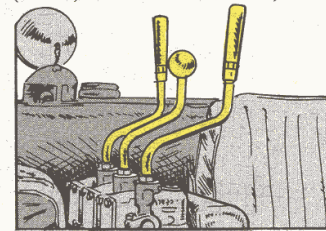
**TRACK ADJUSTMENT**—Check the track each morning to make sure it doesn't sag more than the TM allows.



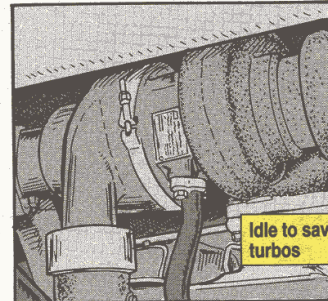
**GAGES**—Warming up gets the juices to flowing and dials to normal ranges. For **NORMAL** or **OPERATING RANGE**, get the word from the TM. The battery indicator or ammeter has to be in the **CHARGE** range before you go.



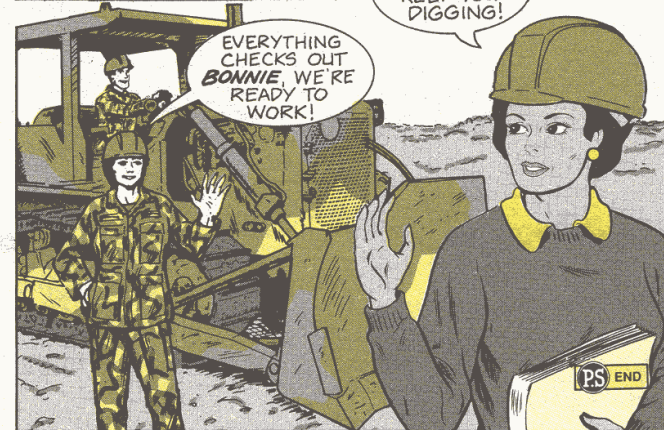
**CONTROLS**—Test them out. Report shaky turns, jerky or sloppy response on hydraulic-run attachments (blades, scarifiers and winches).



**TURBOCHARGER**—This is the gadget that packs air into your engine. Bearing oil starvation is the main turbo killer. It happens when you start the engine and move to high idle before the oil has warmed up or when you shut down a hot engine, quick-like. Idle the engine at 700-800 RPM for 4 to 5 minutes before moving the throttle wide open. Always idle a hot engine 3 to 4 minutes before shutting down.



Idle to save turbos



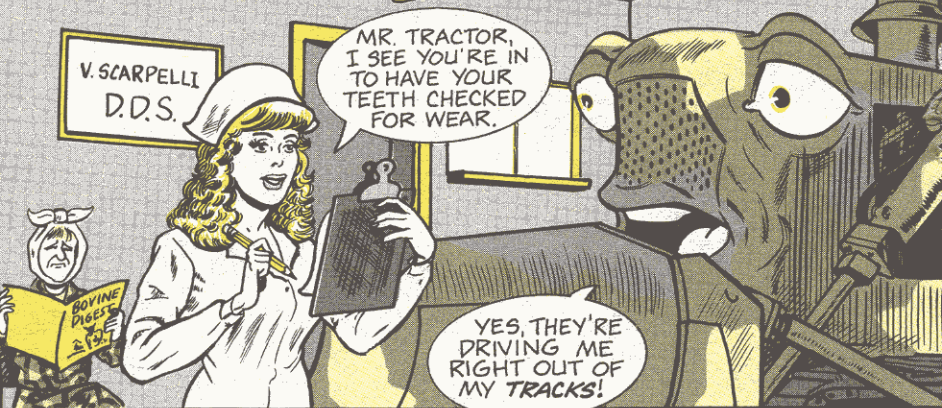
GREAT, THAT WILL KEEP YOU DIGGING!

EVERYTHING CHECKS OUT BONNIE, WE'RE READY TO WORK!

PS END



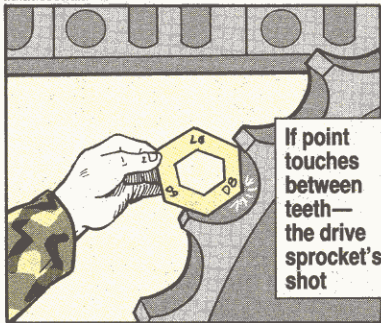
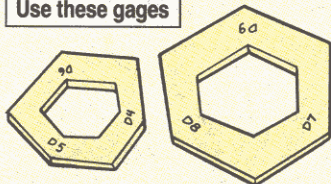
# Check Sprocket Teeth



**T**oo much tooth wear on the drive sprocket of a Cat tractor will cause the track to jump the sprocket.

Use a drive sprocket gage to check sprocket wear. Order a gage to measure the D4, D5, and D6 sprockets on a DD Form 1348-6 by using CAGE 11083 PN 5P8616 and RIC S9C. A gage for the D7, D8, and D9 sprockets is NSN 5210-01-225-1132.

## Use these gages



Here's how to gage the sprockets:

- ☛ Set the point of the gage marked for your tractor between the teeth of the drive sprocket.

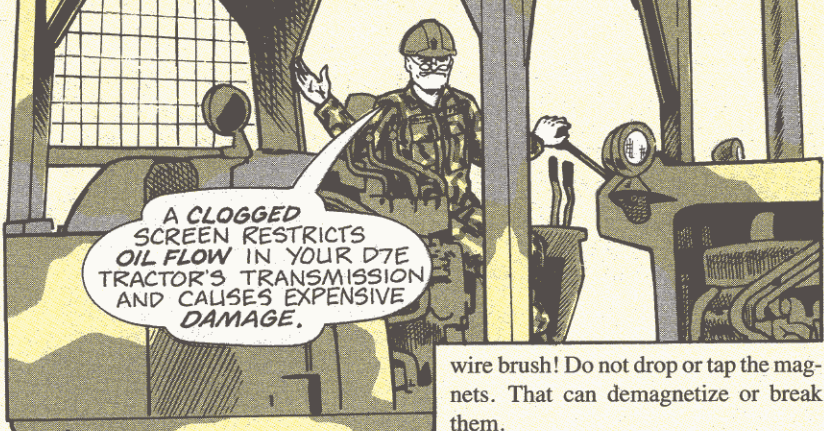
- ☛ If the point doesn't touch, the sprocket's OK.

- ☛ If the point touches, the sprocket's shot. Get support to replace it.

Gage the drive sprocket every 1000 hours or when you can no longer adjust the track.



# Keep Screen Clean

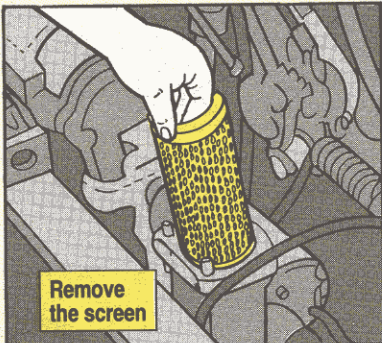


A CLOGGED SCREEN RESTRICTS OIL FLOW IN YOUR D7E TRACTOR'S TRANSMISSION AND CAUSES EXPENSIVE DAMAGE.

**C**leaning the screen and magnets is a 250-hr service in LO 5-2410-214-12. But there's nothing in the TM to tell how to clean the screen.

Here's how:

**1** Remove the cover and spring, then remove the screen and magnets.



Remove the screen

**2** Wash the screen in P-D-680 dry-cleaning solvent. Clean the magnets with a stiff bristle brush. Don't use a

wire brush! Do not drop or tap the magnets. That can demagnetize or break them.

**3** Look at the cover seal for cracks, tears or mashed edges. If you find any of that, replace the seal with a new one, NSN 5330-00-863-5549.



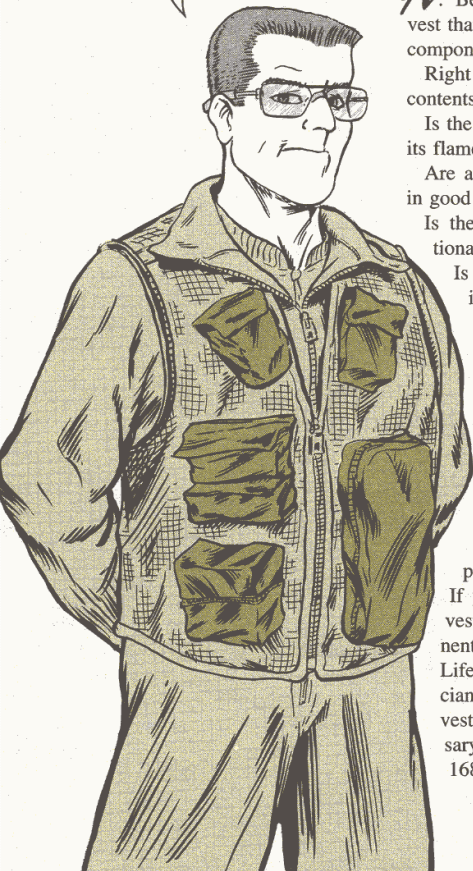
**4** Install the magnets, screen, spring and cover, in that order. Tighten the cover nuts to 31-34 lb-ft dry (no oil) or 23-25 lb-ft wet (threads lubed with oil).

**5** With the engine running and the transmission in neutral, pull the dipstick to measure oil level. Add oil to bring it to the Full mark on the dipstick.



# Shape Up Your

CHECK OUT  
THIS CHECKLIST  
SO YOU CAN TAKE  
INVENTORY.



**Q:** What's worse than being stranded after your bird goes down?

**A:** Being stranded with a survival vest that's missing components or has components in less than tip-top shape.

Right now, check your vest and its contents.

Is the vest clean? A dirty vest loses its flame-retardant properties.

Are all the components in the vest in good condition?

Is the distress marker light operational?

Is the dial face of the compass intact?

Is the blade of the pocket knife sharp?

Is the water bag free of tears?

Is the signaling mirror scratch free?

Are the operating instructions legible?

Is the survival kit intact? Is the inspection date current?

Does the vest have all its components?

If you find problems with your vest or if you're missing components, tell your unit's Aviation Life Support Equipment technician. He knows how to clean the vest and how to order all the necessary components by using TM 55-1680-317-23&P.

MAR 91

# Survival Vest

Survival kit, individual, vest type

**NSN 8465-00-177-4819—Large**

**NSN 8465-01-174-2355—Small**

Bag, drinking water storage, 3-pt capacity

**NSN 8465-00-634-4499**

\*Blanket, casualty, orange, 96 x 56 inches

**NSN 7210-00-935-6667**

Compass, magnetic, unmounted, lensatic, luminous, M2

**NSN 6605-01-196-6971**

\*Fire starter, magnesium

**NSN 4240-01-160-5618**

Fire starter, spark lite

**NSN 1680-01-233-0061**

Holster, revolver, for .38 cal revolver

**NSN 1095-00-208-7598**

Insect repellent, 1-oz. cartridge

**NSN 6840-00-142-8965**

Knife, hunting, 5-in blade

**NSN 7340-00-098-4327**

\*Knife, pocket, multi-purpose

**NSN 5110-00-162-2205**

Lightmarker, distress, plastic, round

**NSN 6230-00-938-1778**

Battery, dry-cell

**NSN 6135-00-073-8939**

Flashguard, AGR-FG1B

**NSN 6230-00-401-2285**

Mirror, emergency signaling, 3 x 2 inches

**NSN 6350-00-105-1252**

Radio set, AN/PRC-90

**NSN 5820-00-782-5308**

Battery, non-rechargeable, 14 volts

**NSN 6135-00-838-0706**

Cartridge, .38 cal special, ball, M41

**NSN 1305-00-322-6391**

Cartridge, .38 cal special, tracer, M41

**NSN 1305-00-301-1692**

Signal kit, personnel distress, 7 flares, launcher

**NSN 1370-00-490-7362**

MAR 91

Survival kit, individual, with headnet and mittens, matches, saw and the following components:

**NSN 6545-01-120-2632**

Item	NSN
Aspirin tablets	6505-00-118-1948
Bag, food sample	6695-00-118-2918
Bag, plastic	8105-00-837-7754
Bandage, adhesive	6510-00-913-7909
Bandage, gauze	6510-00-913-7906
Chloroquine and primaquine phosphate tablets	6505-00-913-7905
Diphenoxylate hydrochloride and atropine sulphate tablets	6505-00-118-1914
Povidone iodine ointment	6505-00-148-7096
Razor, surgical preparation	6515-00-926-2089
Skin closure, adhesive surgical	6510-00-054-7255
Soap, toilet (1000)	8520-00-551-0375
Sulfacetamide sodium ophthalmic ointment	6505-00-183-9419
Water purification tablets (50)	6850-00-985-7166
Tourniquet, nonpneumatic	6515-00-383-0565
Vest survival, large (less components)	8415-00-177-4818
or small (less components)	8415-01-173-8098
*Whistle, ball	8465-00-254-8803

\*Items marked by an asterisk are not initially issued as components of the kit. They may be requested on an as-required basis when authorized by your commander.

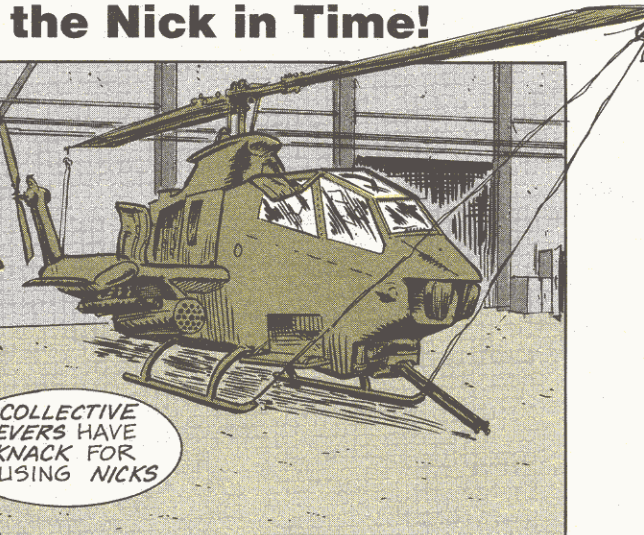
35



# Stop the Nick in Time!



COLLECTIVE LEVERS HAVE A KNACK FOR CAUSING NICKS

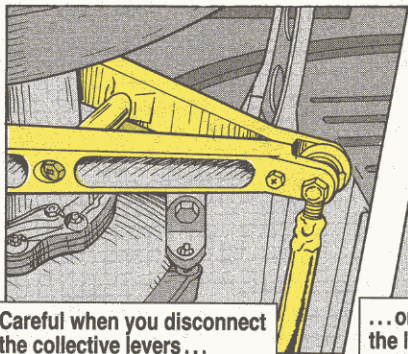


**M**aintaining the swashplate anti-drive link support means more than just measuring the depth of a nick. It also means preventing that nick.

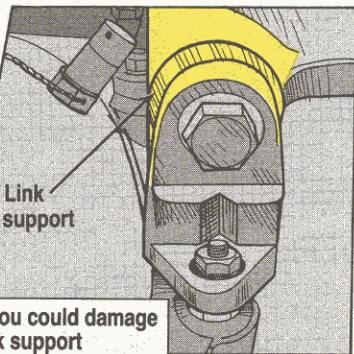
A big cause of nicks is disconnected collective levers. Allowed to fall free, the levers carry the weight of the swashplate and scissors down on the anti-drive link support.

It's easy to let the levers drop when you're following the disassembly instructions on Page 5-107 of TM 55-1520-236-23. Those instructions don't warn you of the consequences!

So right after you do step e.(1), be careful when placing collective levers in full down position or you may damage the support assembly.



Careful when you disconnect the collective levers...




Link support

... or you could damage the link support



UH-1 Huey...

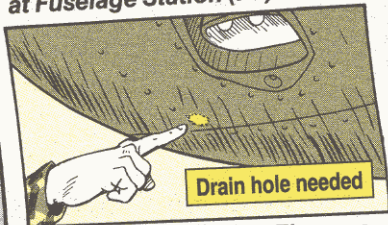
# Draining APU Water



KEEP MY  
INSIDES DRY  
TO BE READY  
TO FLY!

Dear Editor,

After washing our Hueys, water stands in the forward compartment of the APU connector. If you don't drain it ... **CORROSION!** We solved the problem by drilling a  $\frac{7}{32}$ -in hole at Fuselage Station (FS)226 and



Butt Line (BL)11.50L. The area can be found by using the diagrams in Chap 2 of TM 55-1520-210-23-1.

John C. Beckman  
Ft Hood, TX

*(Editor's note: Battling corrosion is a top priority! AVSCOM OK's your fix. It's good to see another knockout punch delivered.)*

## Clock NSN

Use NSN 6645-00-150-6526 to order a replacement clock for AH-1S, CH-47C, CH-54A&B, UH-1, OV-1, U-21, U-8, OH-6 and OH-58A/C aircraft. Clock, NSN 6645-00-084-1424, is no longer available.

## Cotter Pin Caper

Any time you install a cotter pin on your aircraft, make sure it's a good one. Look for cracks at the hair pin curve and in the legs before and after installation. If it's cracked, replace it. The word's in AVSCOM Msg GEN-90-ASM-02.



## Add & Change Skids & Shoes

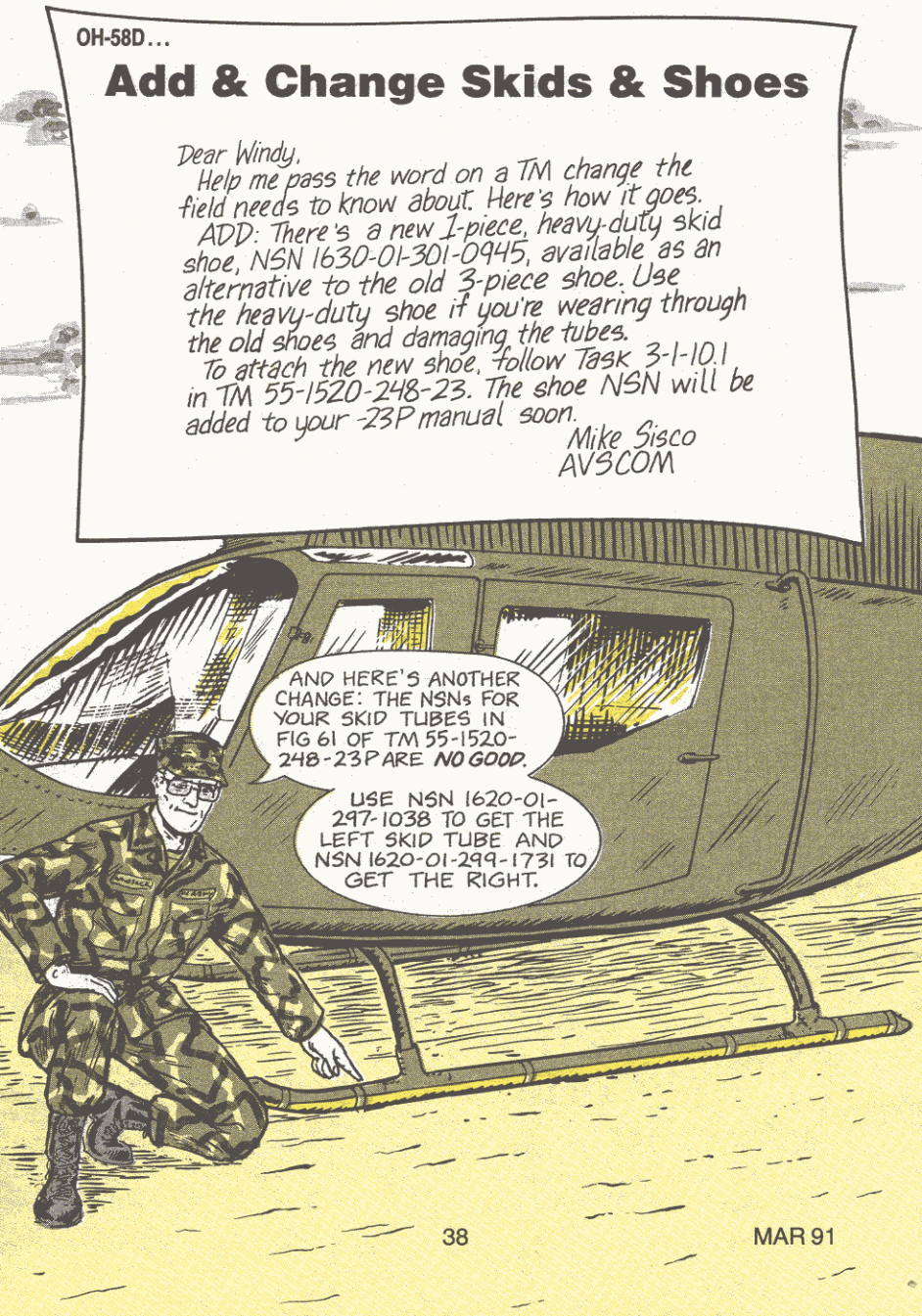
Dear Windy,

Help me pass the word on a TM change the field needs to know about. Here's how it goes.

**ADD:** There's a new 1-piece, heavy-duty skid shoe, NSN 1630-01-301-0945, available as an alternative to the old 3-piece shoe. Use the heavy-duty shoe if you're wearing through the old shoes and damaging the tubes.

To attach the new shoe, follow Task 3-1-10.1 in TM 55-1520-248-23. The shoe NSN will be added to your -23P manual soon.

Mike Sisco  
AVSCOM



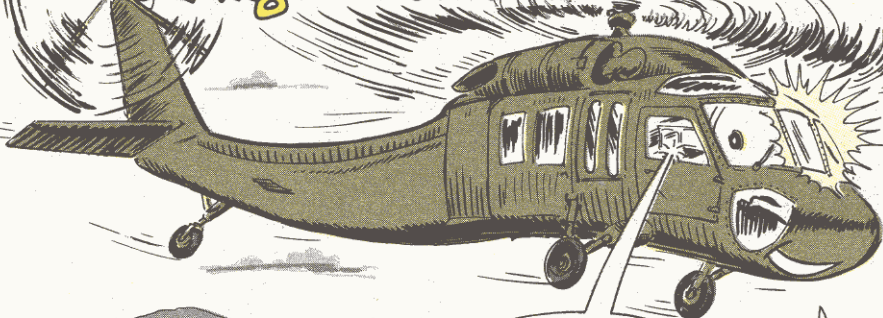
AND HERE'S ANOTHER CHANGE: THE NSNs FOR YOUR SKID TUBES IN FIG 61 OF TM 55-1520-248-23P ARE NO GOOD.

USE NSN 1620-01-297-1038 TO GET THE LEFT SKID TUBE AND NSN 1620-01-299-1731 TO GET THE RIGHT.



UH-60A Black Hawk...

# Change Plastic to Glass



**Y**ou say you hate your Black Hawk's plexiglas center windshield?

You say all it ever does is scratch?

You say you'd give anything to replace it with glass?

Well, surprise, surprise! You can now replace the plexiglas center windshield with a glass windshield, NSN 1560-01-207-7485.

See your local AVSCOM Logistics Assistance Representative (LAR) for replacement instructions. If your LAR

I CAN SEE CLEARLY NOW!

YOU BET!

doesn't have them yet, he can get them by writing to:

**US Army Aviation Systems Command**  
**ATTN: SFAE-AV-BH-L**  
4300 Goodfellow Blvd  
St. Louis, MO 63120-1798  
Or by calling  
DSN 693-1704 or  
Comm 314-263-1704.

## Aviation Messages

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

**OH-58-91-ASAM-01**, ASM, Maint Mand, OH-58A/C, recall of filter tube PN 23051141, T-63-A-720 engine, 272100Z Nov 90.

**OV-1-91-ASAM-01**, ASM, Info, OV-1D/RV-1D propeller, NSN 1610-00-179-6275, time between overhaul, 152000Z Nov 90.

**U-21-91-01**, SOF, Tech, U-21-A/D/G/H, RU-21A/H, T74-CP-700 engine fuel leak, 151500Z Nov 90.

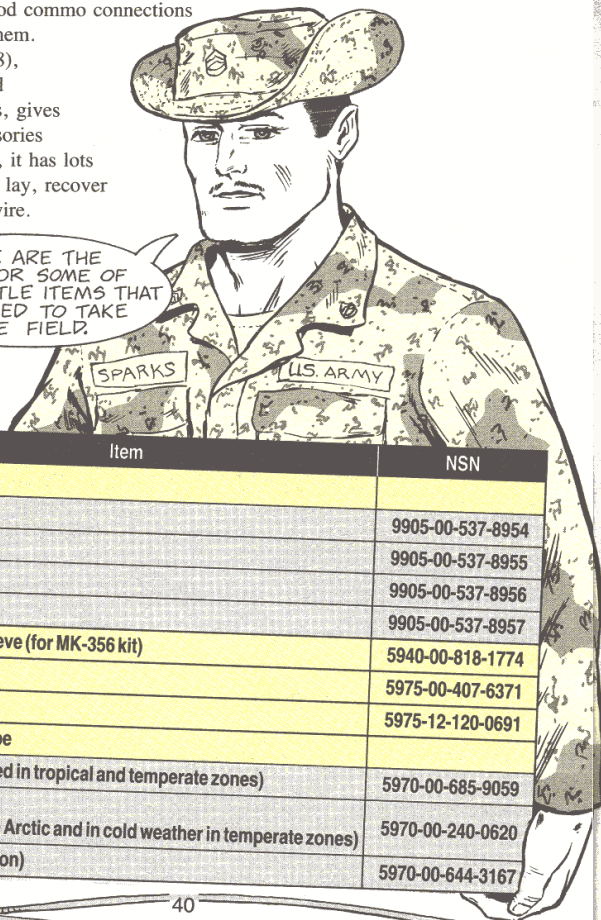
CAT 1 EIR Phone:  
DSN 693-2066  
(24 HOURS)



# Remember the Little Things

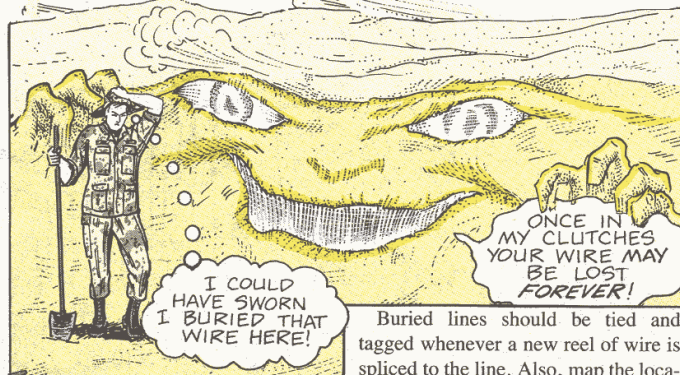
When you go to the field, make sure you take everything needed to keep your wire up to par. That way you'll be sure to get good commo connections when you need them. TC 24-20 (Oct 88), Tactical Wire and Cable Techniques, gives you all the accessories you'll need. Plus, it has lots of tips on how to lay, recover and splice field wire.

HERE ARE THE *NSNs* FOR SOME OF THOSE LITTLE ITEMS THAT FOLKS NEED TO TAKE TO THE FIELD.



Item	NSN
• Wire tags	
Red	9905-00-537-8954
Yellow	9905-00-537-8955
Green	9905-00-537-8956
White	9905-00-537-8957
• Splicing sleeve (for MK-356 kit)	5940-00-818-1774
• Lance pole	5975-00-407-6371
• Wire hanger	5975-12-120-0691
• Electrical tape	
TL-636 (used in tropical and temperate zones)	5970-00-685-9059
TL-600 (used in the Arctic and in cold weather in temperate zones)	5970-00-240-0620
TL-83 (friction)	5970-00-644-3167

# Now You See It, Now You Don't



If you use wire in the desert, here are a few things you need to know:

✓ Leave plenty of slack in the line to allow for sand shift.

Shifting sand causes wire to disappear. To make finding it easier the next time, tag and tie it.

✓ Bury the lines for better wire service. Make sure the wire is buried about 12 inches deep so it won't be damaged by track vehicles.

Buried lines should be tied and tagged whenever a new reel of wire is spliced to the line. Also, map the location and direction of the buried wire to help ease your maintenance task.

✓ Tie three lance poles together at the top to form a tripod if overhead wire must be used. The lance poles help keep the wire up in severe windstorms.

✓ Blowing sand does a number on wire insulation. Be sure to check for damaged insulation every chance you get.

## Distribution Group Lamp NSN

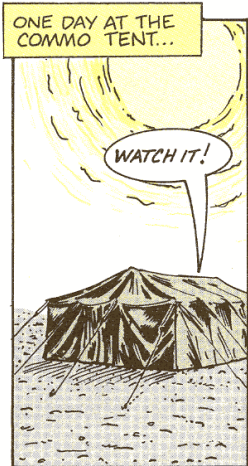
Get the control panel lamp used on the power distribution/interconnection group, ON-224T, with NSN 6240-00-143-3049. Make a note until it's added to TM 11-6110-249-24P.

## Electrical Cap NSN

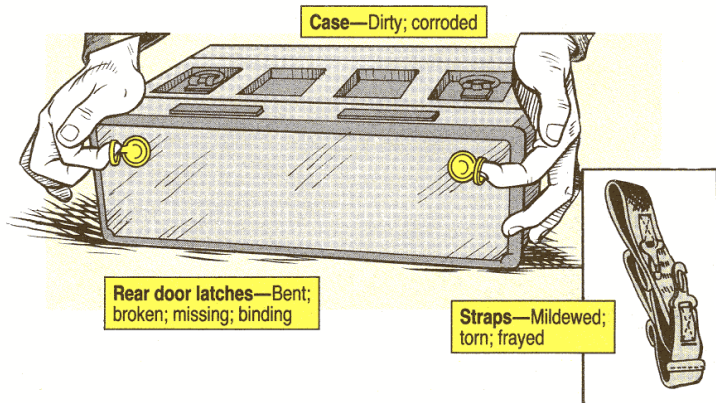
The NSN and part number for the electrical cap on the OA-3633/GRC power supply are wrong in Fig 1 of TM 11-5820-498-20P. The correct part number is SMB454855 and the correct NSN is 5999-00-892-8123. Make a note until the TM is updated.



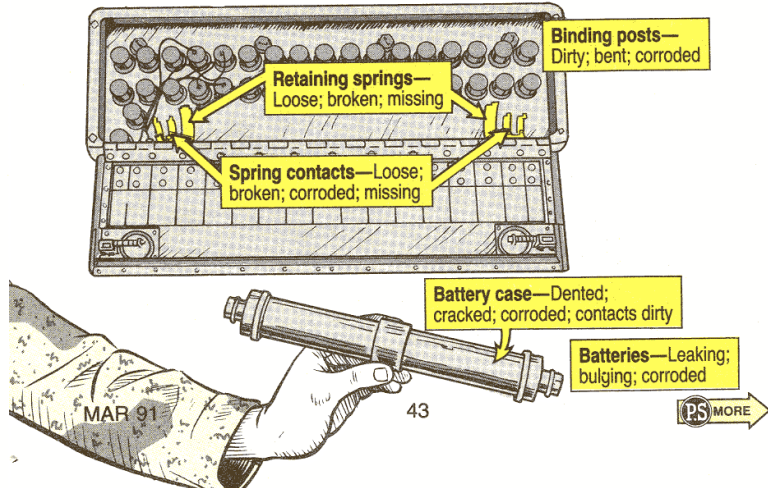
# Make Good Connections



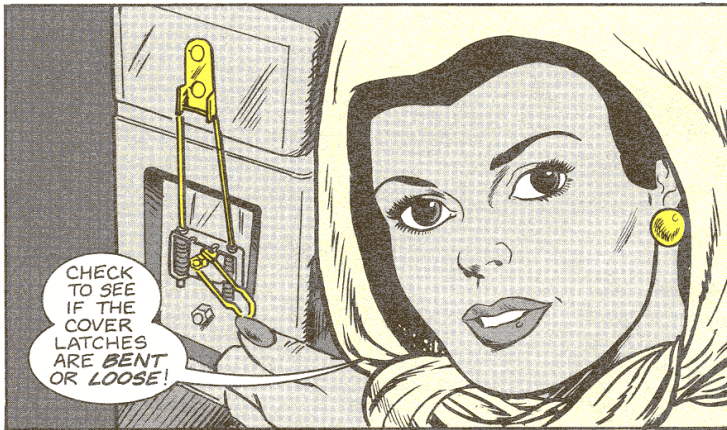
## SB-22 Case (Door Closed)



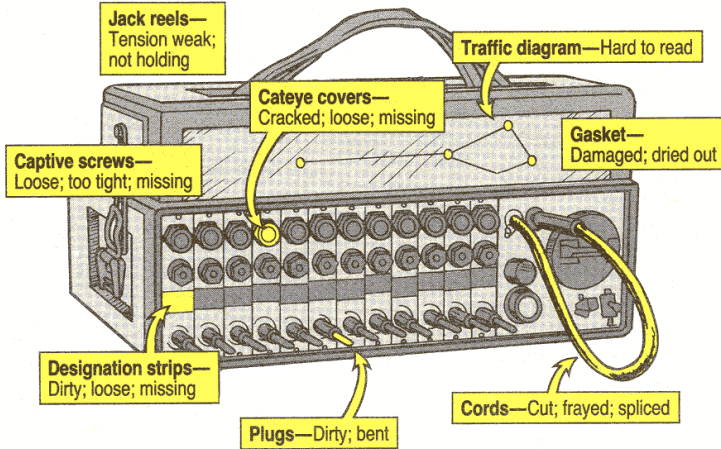
## SB-22 Case (Door Open)



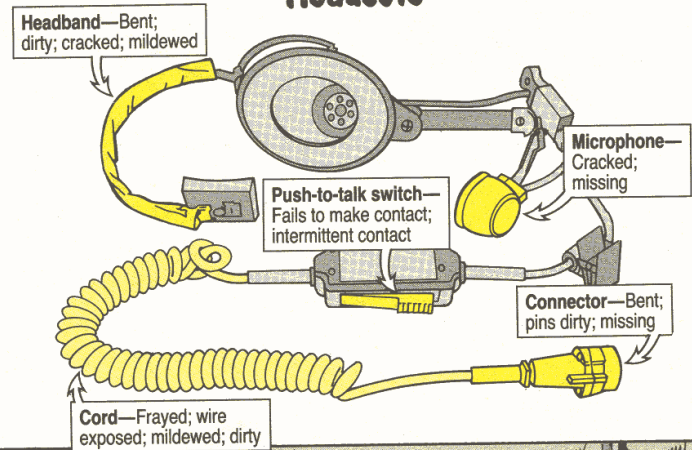




## TA-221,-222 Circuit Panel

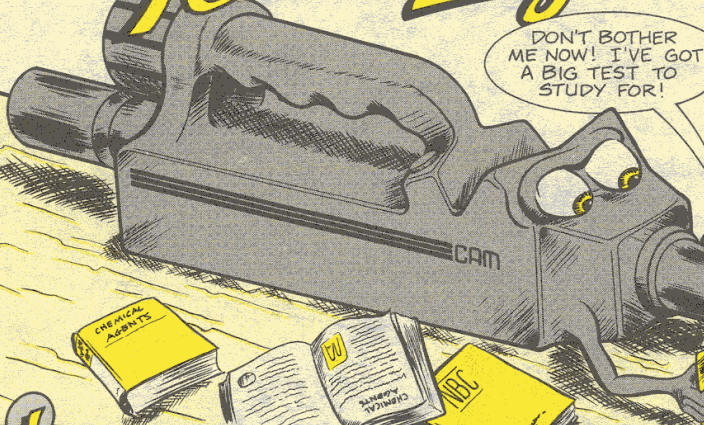


## Headsets





# Test Before



# Testing



*Repair Parts Available*

If your new chemical agent monitors (CAM) are to test accurately for nerve agent, they will require testing first by NBC NCOs. Here are some guides to help CAMs pass the test:

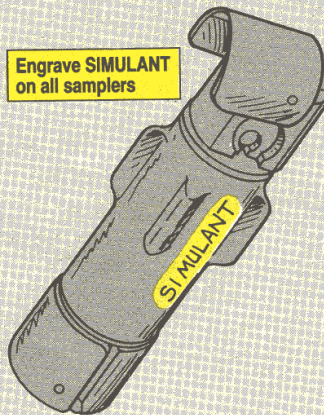
Before you issue a new CAM, wipe-test, self-test, and confidence-test it like it shows in Chap 2 of TM 3-6665-327-13&P. Otherwise, you can't be sure the CAM's accurate and safe.

To prevent moisture or acetone buildup, perform the self-test and confidence-test every week a CAM's in storage. If a CAM has built up moisture, it may have to warm up before passing the confidence-test—usually 30 minutes unless the CAM's never been used before. Then it can take up to eight hours.

Run a CAM at least 30 minutes per week and at least five minutes after all bars from the confidence-test have cleared. This can save lots of time clearing the CAM later.

Do the wipe-test at least yearly to check for radiation—or six months from the last wipe-test if a CAM has come from another unit. Fill out and turn in a transaction card after each wipe-test like it shows in AR 710-3.

To keep the confidence sampler from being confused with real nerve agent, engrave SIMULANT on all samplers. Blacken the word with a marker so it won't be missed.



NBC NCOs, you can help your support get your chemical agent monitors (CAM) back in service if you pass along this info on repair parts:

Part	NSN 6665-99-225-
Nozzle cap	4111
Locking ring	4100
Nozzle thrust washer	4101
Nozzle holder seal	3975
Nozzle assembly	3962
Drift tube seal	4096
Battery cap	4112
Environmental cap	3971

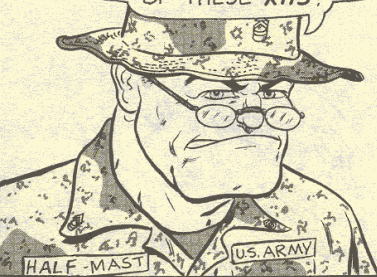
The spanner wrench used to remove the nozzle assembly comes with NSN 5120-99-252-8645.

Your support can order the parts through normal supply channels.



# First Line of Chemical Defense

YOUR LIFE COULD  
DEPEND ON THE CONDITION  
OF THESE KITS!



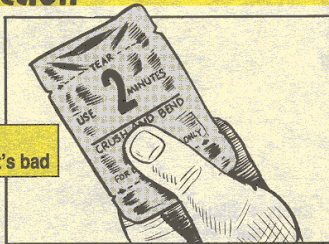
In the event of a chemical attack, the M258A1 decon kit will be the first thing you reach for to neutralize deadly nerve agent or mustard gas. How well the kit does its job will mean the difference between survival and serious injury or death.

That's why you NBC NCO's must make sure there're enough M258A1s on hand for every person in your unit, that the kits are in good shape, and that they haven't reached their expiration dates.

## Inspection

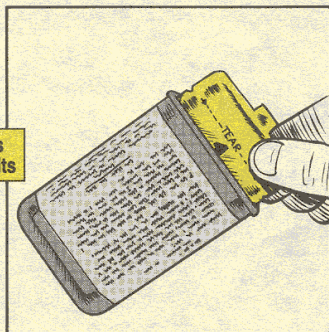
At least monthly, inspect all kits for swelling, seepage or burst packets. A packet No. 2 is swollen if you can't feel its glass ampoule.

If you can't feel the ampoule, the packet's bad



Remove bad packets. Reassemble the remaining good packets to make complete kits: three No. 1 packets and three No. 2s. As much as possible, keep packets from the same lot number together. That will make it easier to check expiration dates. The lot number is printed on the packet's label.

Group good packets to make complete kits



All M258A1 expiration dates have been extended until 1992. The word's in AMCCOM Maintenance Advisory Msg 90-24. Your local AMCCOM Logistics Assistance Representative can get you a copy.

## Disposal

M258A1 kits that are unserviceable or expired must be disposed of as hazardous waste. Here's how to legally get rid of the kits:

Contact your local Defense Reutilization and Marketing Office (DRMO), Environmental Quality Office, and Transportation Office. They will tell you how to store and package the kits while they arrange disposal.

Prepare labels for each shipping container with this info:

M258A1 Skin Decontaminating Kit

NSN 4230-01-101-3984

Shipping Label: Corrosive

Shipping Name: Chemical Kit

Hazardous Waste Number and Item:

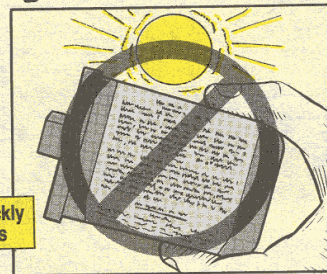
D001, Ethanol

Fill out DD Form 1348-1 with six copies. Write "HW" in block C. List the number of kits being turned in and "D001, Ethanol." Keep one copy for yourself, stick one to the container, and give the other copies to the DRMO.

## Storage

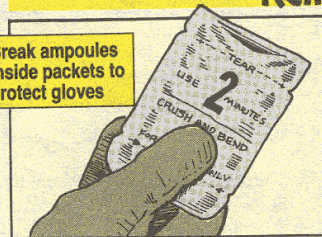
Pay attention to temperature. Never store kits in below-freezing temperatures. They'll freeze. Protect kits from heat above 110°F. Never leave the kits lying in direct sunlight. Even on an only mildly hot day that can cause the kits to heat up.

Direct sunlight can quickly hurt a kit's effectiveness



## Reminders

Break ampoules inside packets to protect gloves



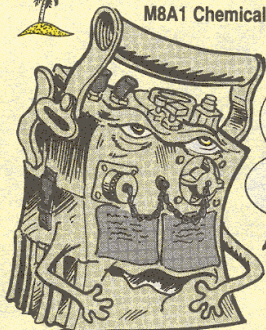
Make sure your unit knows to break the ampoules while they're still in the packets. If they break them outside, they may puncture their protective gloves.

Emphasize to them that they must decon their skin first, then their equipment. It's critical that they neutralize nerve agent on their skin immediately.





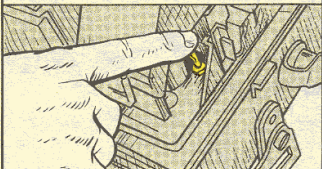
## M8A1 Chemical Alarm...



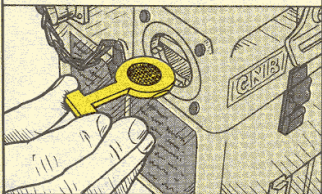
URP!  
I'M  
SICK!  
HAS  
ANYONE  
GOT A  
BROMO?

Sometimes the purging procedure in TM 3-6665-329-12&P is not enough to clear the M8A1's detector: Sometimes the detector cell gets so contaminated that normal purging won't clear it. Then you can't reset your M8A1. Try this before you turn in your alarm:

Open the case, flip the pump switch to ON, (switch points in) and close the case.

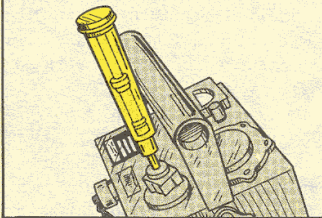


Make sure the air filter is clean. Change it if necessary.



# Purge

Install the flowmeter.

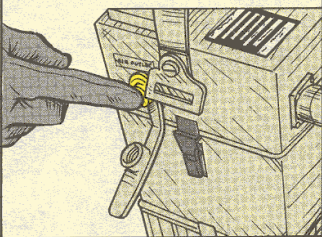


☉ Turn on the M8A1 and adjust the volume to low level.

☉ Run the M8A1 for a few minutes.

If the needle does not go toward the green area of the detector meter, put on your disposable gloves and shut off the air outlet valve with your finger.

Close the air outlet valve.



Keep your finger there until the needle goes toward green, but no longer than 30 seconds at a time. Push the Battery Test and Reset Button (BTRB) to reset the detector. Keep plugging the valve until the alarm stops.

☉ Turn off the detector when the needle reaches green. Open the case and flip the pump switch to OFF.

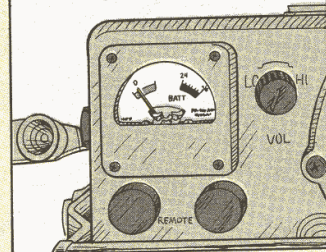
# Purging Problems

☉ Close the case, turn on the detector, press the BTRB, and let your M8A1 run until the needle goes to green.

☉ Repeat this procedure if necessary. If you still get NO GO, turn in your M8A1. Direct Support can use the gas particulate filter in the M140 test set to purge the alarm.

You can help prevent purging problems if you operate the detector on a weekly basis.

Run your M8A1 until the needle moves to green.



## M17-Series Mask...

# Voicemitter PM Loud and Clear

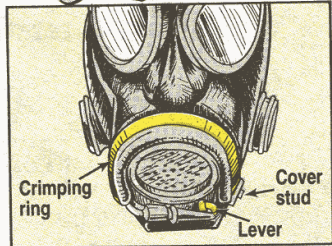


If you don't pay attention to your mask's voicemitter-outlet valve assembly, you could be in big trouble. Do these checks to ensure you breathe and drink freely:

- ✓ Voicemitter-outlet valve assembly housing cracked or twisted?
- ✓ Drinking tube control lever housing bent more than 1/8 inch out of vertical position or retaining nut finger-loose?
- ✓ Drinking tube won't operate when lever is moved?
- ✓ Cover studs missing?
- ✓ Crimping ring bent?

Any of these problems make your mask NMC.

It's OK for the voicemitter-outlet valve assembly to be scratched (surface marks), but not cracked (any cracks that can be felt with your fingertip). Turn in masks with cracks.

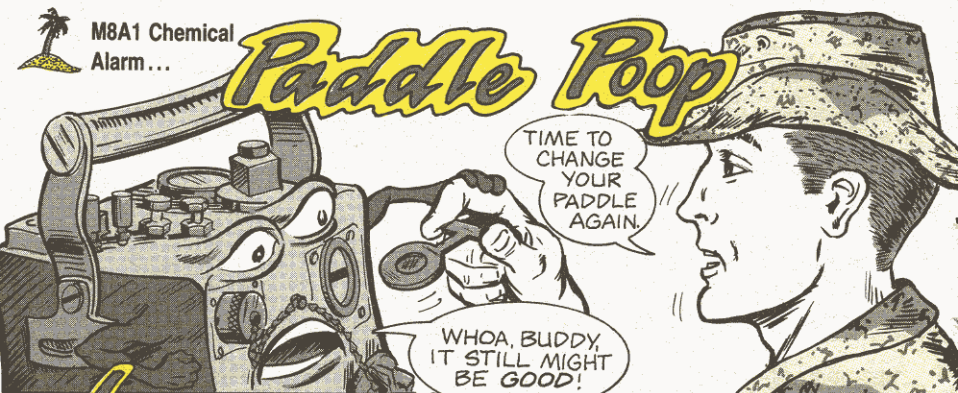







M8A1 Chemical  
Alarm...

# Paddle Poop

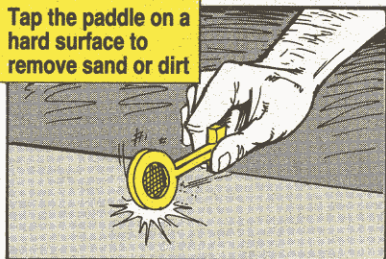



If you change M8A1 air filter paddles in the desert by the book, you may waste paddles that are needed in case of attack.


Page 2-116 in TM 3-6665-312-12&P says replace the paddle every six hours in very dusty or sandy conditions. Do this instead:

 Check the air flow with the air flowmeter. If the flowmeter ball reaches the green band, the paddle's still good. Keep operating.

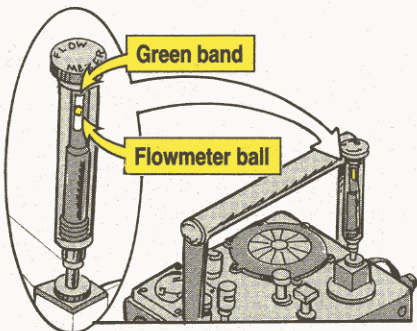
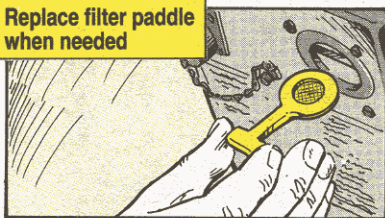
**Tap the paddle on a hard surface to remove sand or dirt**




 Stick the paddle back in and repeat the air flow test. If the flowmeter ball now reaches green, the paddle's still good. Continue to operate for six hours before testing the paddle again.

 Replace the paddle if the ball does not reach green.

**Replace filter paddle when needed**




 Remove the paddle if the ball doesn't reach the green band. Tap the paddle on a hard surface to remove sand or dirt.


For more info, see AMCCOM Maintenance Advisory Msg 90-22. Your AMCCOM Logistics Assistance Representative will have a copy.



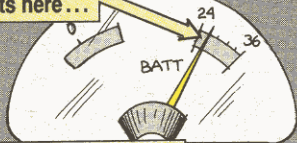
# Battery Lifesavers

The desert's searing heat can suck the power out of your M43A1 detector BA3517/U batteries before they get off the starting line. Powerless batteries leave you with an alarm that can't detect. That can leave you dead. Protect yourself and your batteries like this:


 Store batteries in as cool a place as possible. The cooler they are, the longer they hold their charge. Keep them in an insulated chest, wrap them in a blanket, or do anything else that protects them from direct sunlight.


 Do the before operations battery check carefully, especially with old batteries. If the voltage meter reads in the low end of the black zone—around 24 volts—don't use that battery.

If needle points here ...



... don't use the battery

 Shield the detector from direct sunlight by propping a cardboard or wooden box over it. Even inside the M43A1, the sun can quickly heat the batteries. Hot batteries self-discharge quickly. Be careful, though, not to block off the air inlet or outlet.

 Take backup batteries. No matter what you do, batteries won't last as long in the desert. You will need extras.

ALL RIGHT,  
WHO FORGOT  
THE SUN  
BLOCK?



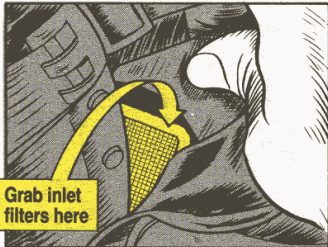


# Breathe Easier with PM



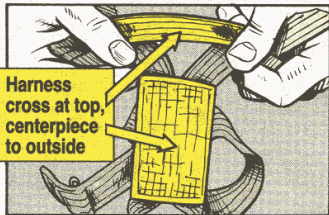
Try these PM pointers to make breathing easier in your M17 mask:

- Hold the filter element at the top, not the bottom, when you remove it.



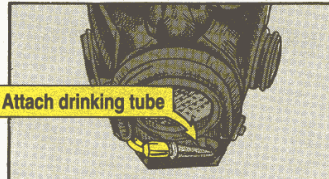
That gives you better leverage and a better chance you won't rip the mask.

- Be sure to reattach the harness so the cross is on the top and the center-piece is to the outside. It's easy to get



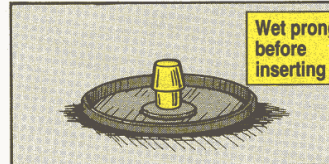
the harness on backwards and that causes a bad fit.

- Double-check that you've attached the drinking tube. It's easy to



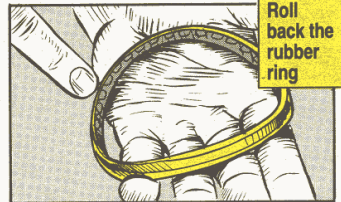
miss. If you forget, it gets plugged, and you can't drink.

- Wet the outlet valve disc's prong before you stick it in the outlet valve



housing. That makes it easier to push in the prong and easier to get the disc completely flat on the valve housing.

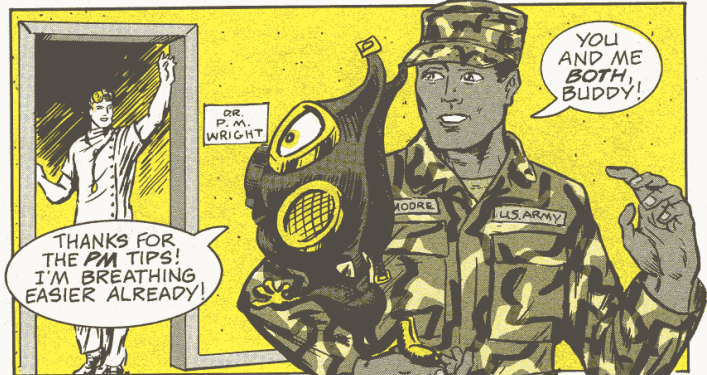
- Roll back the rubber ring on the eye outsert completely before you put



it on the eyering. That makes it easier to position the outsert. After you roll the ring down on the eyering, feel the outsert to see if it's seated tight. If it's loose, it could fall off in the field.

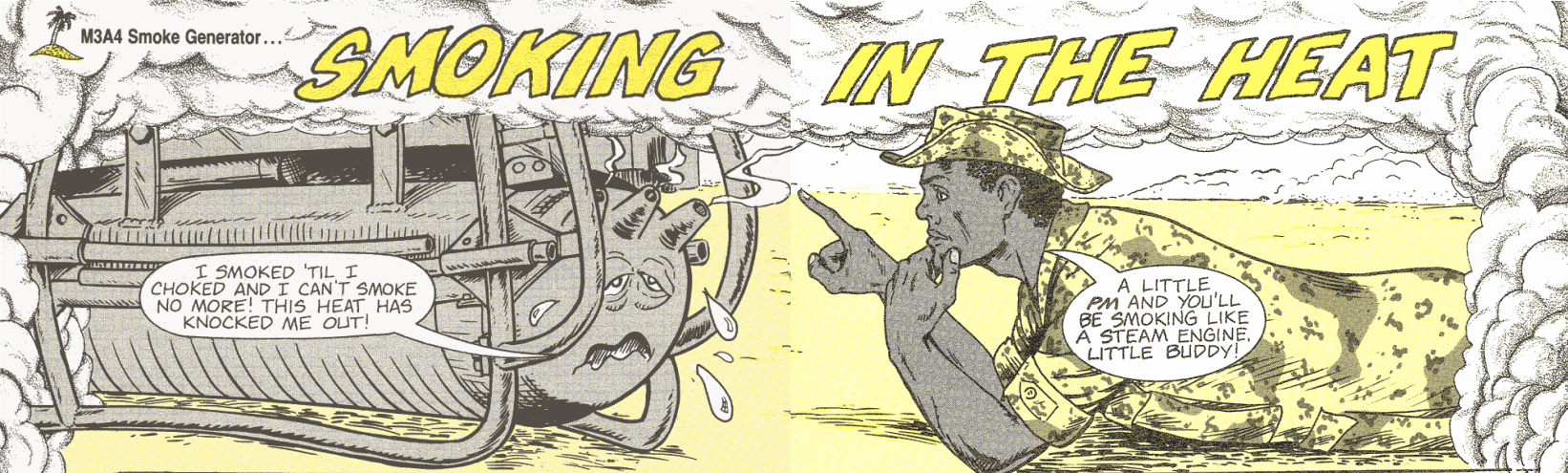
- Use alcohol to clean off tough spots from your mask. It will save you a lot of rubbing. Alcohol's part of your mask's expendable supplies.

- Eyeball the carrier for oil spots. If oil has soaked through the carrier, it may damage your mask. Try cleaning the carrier with soapy water and a brush. If that doesn't get the oil out, ask for a new carrier.





# SMOKING IN THE HEAT



I SMOKED 'TIL I CHOKED AND I CAN'T SMOKE NO MORE! THIS HEAT HAS KNOCKED ME OUT!

A LITTLE PM AND YOU'LL BE SMOKING LIKE A STEAM ENGINE, LITTLE BUDDY!

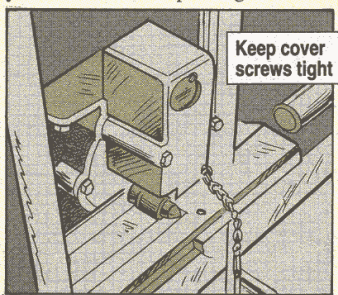
**H**ot times can mean hard times for your M3A4 when it comes to smoking in the desert. The generator overheats in the fierce heat and suddenly your M3A4 has gone cold turkey on smoking. Here are a few ways to beat the heat:

- ☁ Tighten daily the screws of the fog oil pump covers and keep the covers over the rocker arm holes when your M3A4's not operating. If loose

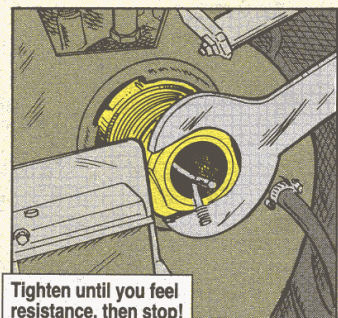
covers swing back and forth or the holes are left uncovered, sand freezes the rocker arms and the engine seizes.

Check the rocker arms for movement with a screwdriver before startup. If they don't move freely, report it.

- ☁ Tighten the head hand-tight and then stop. If you overtighten the head, its seal wears out fast, the head overheats, and the M3A4 shuts down.



Keep cover screws tight



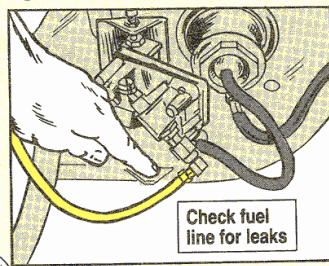
Tighten until you feel resistance, then stop!

In the desert, your repairman should keep extra seals, NSN 5330-00-507-4900, on hand. Heat knocks out the seals fast.

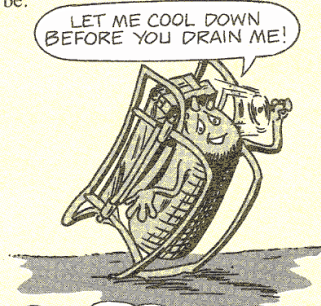
- ☁ Pay special attention to the fuel line and fuel hose and their backups during BEFORE PMCS. The desert's heat and harsh sun will increase cracking of the lines and hoses that leads to leaks and fires. If you spot cracks or damp spots, get the line or hose replaced.

- ☁ Wrap your tools in the tool roll before you put them in the toolbox. If you leave them loose, they become finger-burning hot without the insulation of the tool roll.

- ☁ Wait as long as possible—24 hours is best—after shutdown to drain the fog oil pump. Hot fog oil can ignite if it splatters on a hot engine. The cooler the engine the safer draining will be.



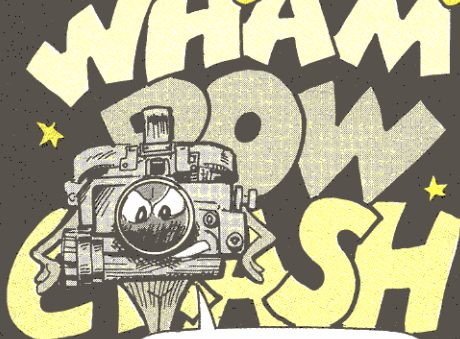
Check fuel line for leaks



LET ME COOL DOWN BEFORE YOU DRAIN ME!



# A Fighting Chance



NIGHT VISION CAN MAKE THE DIFFERENCE! KEEP ME CLEAN AND DRY!

Imagine you're in a fist fight and can't see. Blows are banging at you from all directions. WHAM! POW! CRUNCH! But you're defenseless because you can't see a blessed thing.

A nightmare, right?

Well, it will be a nightmare come true if you don't look out for your night vision sight or viewer. You could end up in a night battle blind because you didn't keep an eye on your sight. Your enemy can see you, but you can't see him. You're a sitting duck.

Give yourself and your night vision equipment a fighting chance like this:

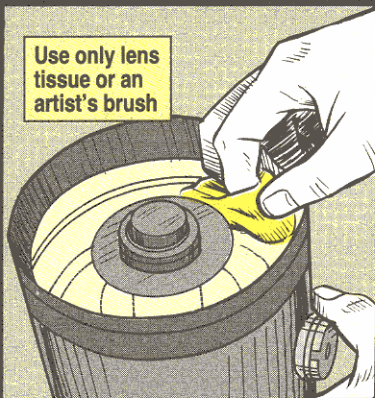
Use the lens cover. It not only protects the image intensifier from blindingly bright light but also the lens' fragile coating from scratches. Put the lens cover on as soon as you've finished with the sight.

Store the night sight. If you're not going to use the sight, stick it in the storage case. The case's foam padding protects

the night sight from bumps and kicks that snap power receptacles and knock the sight's insides out of whack.

Carry the sight with two hands, clutching it to your chest. If you carry it loosely, it's easy to drop. A bad fall is bad news for a delicate sight.

Clean the lens only with lens tissue or an artist's brush, depending on what your TM says. If you use something like an old rag, you scratch the lens and dim your vision.



NSN 5855-01-143-4488 gets a cleaning kit. Your equipment's TMs list others. Your unit should keep plenty of kits on hand.

Clean the lens like this:

- Clean away any remaining dust or smudges with a cotton pad moistened with a cleaning solution or a little alcohol.
- Wipe only in one direction or in circles according to what the TM says. Repeat, if necessary, with a clean pad.

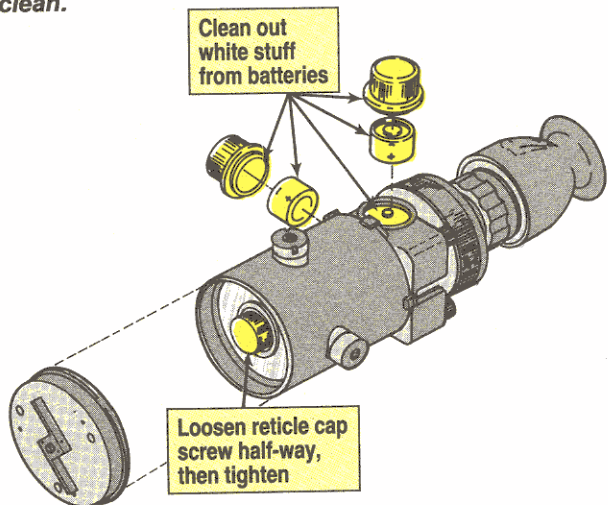


# Real Sight Savers

Dear Editor,

We've found two quick solutions to two common AN/PVS-4 problems that can save operators a call for help.

No image? Unscrew the battery cap and look for corrosion—white stuff. If you spot any, remove the battery and wipe everything clean.



That should let the battery give the sight the power it needs. No reticle? Loosen the reticle cap screw half-way and then screw it tight again. If a bad ground's causing the problem, that often cures it.

Still got problems? Now call your repairman.

Clarence Dates  
Ft Benning, GA

(Editor's note: Your tips are good ones to keep an eye on.)



# PURBS

This is a selected list of recent purbs of interest to organizational maintenance personnel. This list was made from a computer print-out provided by the Adjutant General.

**TM 1-1520-238-T-2** Sep AH-64A integrated troubleshooting master failure symptom index

**TM 1-1520-238-T-10** Sep AH-64A wiring diagrams

**TM 9-1005-318-L** Sep M167A2 Vulcan

**TM 9-1090-206-20-1-CL** Aug Helicopter armament subsystem: M97A4

**TM 9-1450-300-24P** Nov Chaparral carrier

**TM 9-2330-356-14** Oct M967, M967A1, M969, M969A1, M970 and M970A1 5,000-gal tank semi-trailer

**TM 9-2350-284-10-HR** Dec M2A2/M3A2 Bradley

**TM 9-2610-200-14** Nov Care, maintenance, repair and inspection of pneumatic tires and inner tubes

**TM 11-5995-211-14&P** Jun CX-13357/TRC-179(V), CX-13358/G, CX-13359/G, CX-13360/G and CX-13361/G cable assemblies

**TM 11-6625-3221-14&P** Jun Reference frequency oscillator (RFO) test set TS-4245/G

**TB 55-1510-213-20-09** Oct Elevator trim tab attachment hinge bracket fluorescent penetrant inspection OV-ID and RV-ID

**TB 55-1520-240-20-51** Nov Aft transmission cooling fan vibration check, CH-47D

**LO 9-2805-203-12** Feb Engine, gasoline, 6 HP, Mil Std models 4A032-1, 4A032-2, 4A032-3 and 4A032-4

**PAM 710-2-117** Ground and missile equipment mandatory parts list

## Maintenance & Safety-Of-Use Messages

**AMCCOM SOU-MSG-37-90**—Advisory, Safety information on AN-M8 HC smoke, AN-M14 incendiary, and M18-series smoke hand grenades, AMSMC-DSM-MA 291940Z Nov 90.

**AMCCOM SOU-MSG-39-90**—Advisory, Restriction on using M17 decontaminating apparatus spray wand to spray personnel, AMSMC-MA 141600Z Dec 90.

**AMCCOM Maintenance Advisory MSG 90-59**—Shortage of electronic amplifier for M8A1 chemical agent alarm, AMSMC-MAR-ED(A) 171630Z Dec 90.

**AMCCOM Maintenance Advisory MSG 90-56**—Gives equivalent full charge (EFC) criteria for M900 round used on M1 105-MM tanks, AMSMC-MA 191328Z Dec 90.

**AMCCOM Maintenance Advisory MSG-90-58**—Gives ordering information for M1A1 bore brush assembly, AMSMC-MA 191330Z Dec 90.

**AMCCOM Maintenance Advisory MSG-90-57**—Replace old extractor spring on M16-series rifles, AMSMC-MA 211400Z Dec 90.

**AMCCOM Maintenance Advisory MSG-90-54**—Modification on M1/M1A1 tank's turret ammo door knee switch lever, AMSMC-MA

241507Z Dec 90.

**AMCCOM Maintenance Advisory MSG-90-61**—Gives information on premature failure of flexible drive shaft assembly for the Bradley fighting vehicle systems, AMSMC-MA 241710Z Dec 90.

**AMCCOM Maintenance Advisory MSG-90-63**—Information on availability of protective cover for M16-series rifles, AMSMC-MA 111400Z Jan 91.

**CECOM SOU-MSG-90-12-01**—Advisory, Potential safety hazard with ground fault circuit interrupters in AN/TRC-173A radio terminal set, AMSEL-SF-SEP 101800Z Dec 90.

**CECOM SOU-MSG-90-12-04**—Advisory, Internal jumper wire missing on some 5- and 10-KW MSE generators, AMSEL-SF-SEP 211800Z Dec 90.

**TACOM SOU-MSG-90-40**—Advisory, Technical/Maintenance, Gives monthly PMCS information on M1-series tank's exhaust duct seal, AMSTA-M 141330Z Dec 90.

**TACOM SOU-MSG-90-39**—Advisory, Operational, Inspect seat belts on TACOM vehicles, AMSTA-M 010800Z Jan 91.

**TROSCOM SOU-MSG-33-90**—Alert, Possible defective HP seal in US divers first stage pressure regu-

lator, AMSTR-MEP 271430Z Dec 90.

**TROSCOM SOU-MSG-32-90**—Advisory, Update on TROSCOM SOU-MSG 07-90 on Army diving equipment, AMSTR-MEP 141430Z Dec 90.

**TROSCOM Maintenance Advisory MSG 90-52**—Changes automatic return item list (ARIL) code for fuel injection pumps used on 15- and 30-KW DED generator sets, AMSTR-MEP 052230Z Dec 90.

**TROSCOM Maintenance Advisory MSG 90-53**—Provides testing requirements for closed circuit refueling nozzles, AMSTR-MEP 171454Z Dec 90.

**TROSCOM Maintenance Advisory MSG 90-54**—Rebuild or repair relay box assembly on 15-, 30- and 60-KW DED generator sets, AMSTR-MEP 182001Z Dec 90.

**TROSCOM Maintenance Advisory MSG 91-02**—Information on using 5- and 10-KW DED generators with acoustic suppression kits (ASK) in high temperature areas, AMSTR-MEP 090830Z Jan 91.

**USAHECSA SOU-MSG**—Maintenance on the bus metering transformer on MEP-208A 750-KW generators, CEHEC-SH 191710Z Nov 90.





HEY, CONNIE,  
WHAT'S THE BIG  
DEAL ABOUT  
SAVING A  
FEW CENTS?

### M16 Rifle Cover

Order a cover for your M16-series rifle with NSN 1005-00-809-2190. The cover fits with the 30-round magazine installed. The cover helps protect your rifle from sand and dirt when you're not firing.

### Emergency Towlight NSN

Operators, you no longer have to tow in the dark with your 5-ton wreckers. Have your mechanic order emergency towlight, NSN 6220-01-217-8316. Get a wiring harness, NSN 2590-01-222-5437, to hook it up. It's the same towlight used with the HEMTT wrecker.

### CUCV Troubleshooting Update

Here's the latest info for the confidence test on your STE/ICE before troubleshooting the CUCV's transmission (see Page 15 of PS 455). Now the truck headshed says to run confidence test 66, like so: Set the TEST SELECT switches to 66. Press and release the TEST button. Wait for the display to show 0066. Set the TEST SELECT switches to 99. Press and release the TEST button. The display will blank, then show .8.8.8.8. After some tests, it will alternate between PASS and the software revision number.

### How to Handle DS2

You can now get a TB that explains how to safely handle, store, and ship DS2. TB CML 113 will come to you automatically if you already receive TM 3-250, Storage, Shipment, Handling, and Disposal of Chemical Agents and Hazardous Chemicals. Otherwise, get your pubs clerk to order it on DA Form 4569. To get future changes to the TB, order on DA Form 12-99, using form 12-34E and block 4105.

### Desert Tan Tarp Available

NSN 2540-01-325-7719 gets a tan tarpaulin for the M101-series 3/4-ton cargo trailer. Use Appendix A of CTA 50-970 as your authority to order.

### M16 Extractor Spring

There are two types of M16 rifle extractor springs: those with a rubber insert and those without. The spring without an insert has a high failure rate and must be replaced. Always use new springs, NSN 1005-00-760-3768. The word's in AMCCOM Maintenance Advisory Message 90-57. Your local AMCCOM Logistics Assistance Representative can get you a copy.

A FEW  
CENTS CAN  
MULTIPLY INTO  
A PILE OF  
MONEY!



Distribution: To be distributed in accordance with DA Form 12-34-C-R, for TB-43-series.

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



**PS**

**THE  
PREVENTIVE  
MAINTENANCE  
MONTHLY**

TB 43-PS-460, 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, questions on maintenance and supply problems, questions or comments on material published in PS. Just write to:

*MSG Half-Mast  
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Lexington, KY 40511-5101  
FAX: DSN 745-3555  
or Comm 866-293-3855*

By Order of the Secretary of the Army:

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General, United States Army  
Chief of Staff

Official:

**THOMAS F. SIKORA**  
Brigadier General, United States Army  
The Adjutant General

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# Cost Reduction + Good PM

There's a big push on nowadays to chop down the cost of running the Army.

You have a big part in that job. The way you operate and use your equipment and the way you maintain it all play a part in this cost-reduction business.

Operate your gear like it should be operated... no banging and slamming. Keep it clean, adjusted, lubed and perking just right. It'll last longer... and won't have to be replaced by a new one so soon. Saves \$\$.

Get your unit mechanics in for the tough jobs. They have the know-how, tools and parts to keep your gear purring. When the job's too big for them, they get the support maintenance outfit rung in to keep you moving, shooting and communicating.

If you're a mechanic, one of the biggest bets for keeping down the tab is using your test equipment to check for bum parts. Know, for sure, before you yank a part and replace it with a new one. Saves \$\$.

Supply folks, too, know what to do. Get and stock only what your unit needs. No rat-holing for "just in case they're out." No "nice to have." Remember that when the whistle blows, you go with what you've got—including parts and supplies. You don't want more than you can carry. Saves \$\$.

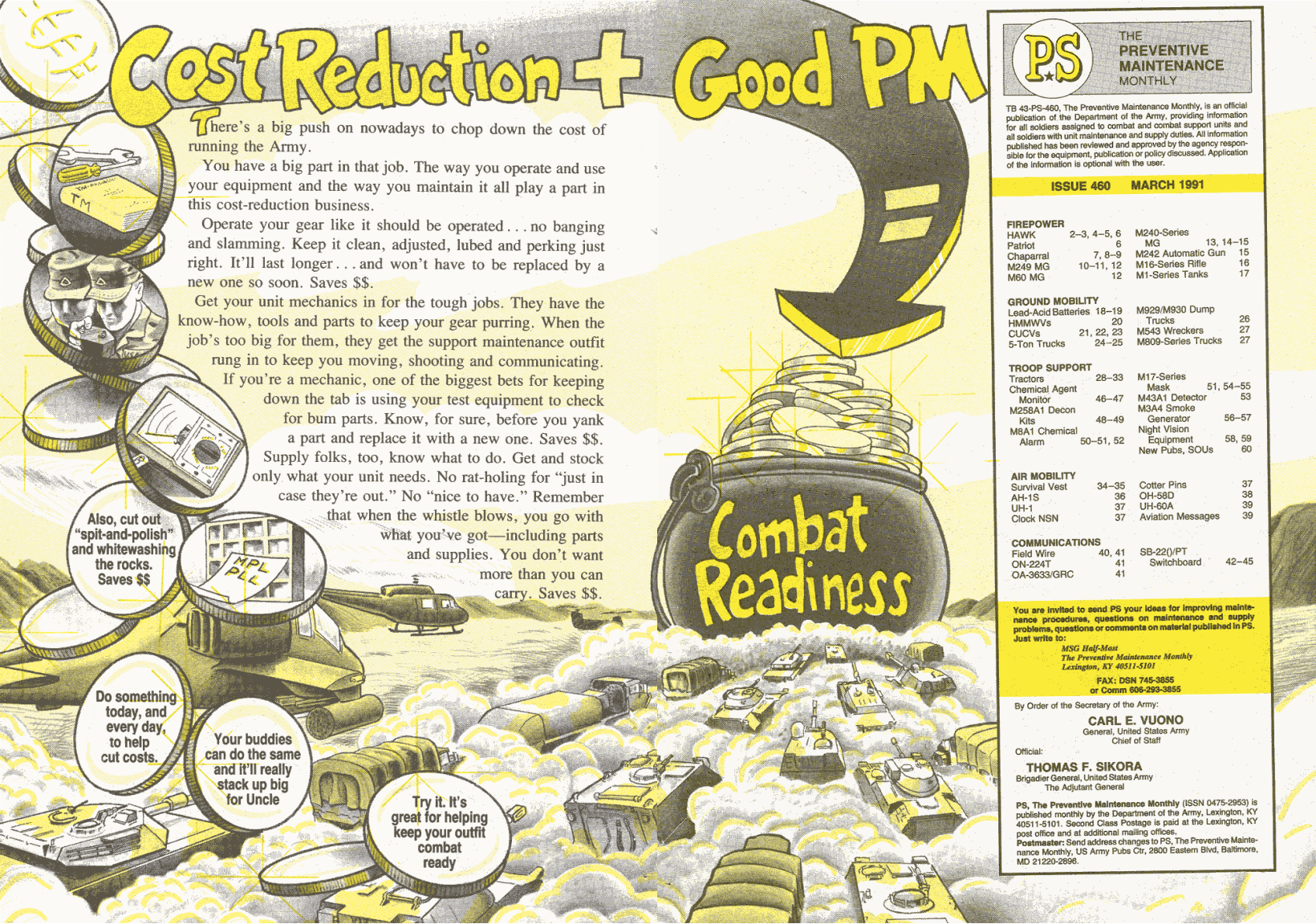
Also, cut out "spit-and-polish" and whitewashing the rocks. Saves \$\$

Do something today, and every day, to help cut costs.

Your buddies can do the same and it'll really stack up big for Uncle

Try it. It's great for helping keep your outfit combat ready

**Combat  
Readiness**





# CHANGE *YOUR UNIT'S* ADDRESS

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**Baltimore Pubs Center**  
with DA Form 12-R.



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