

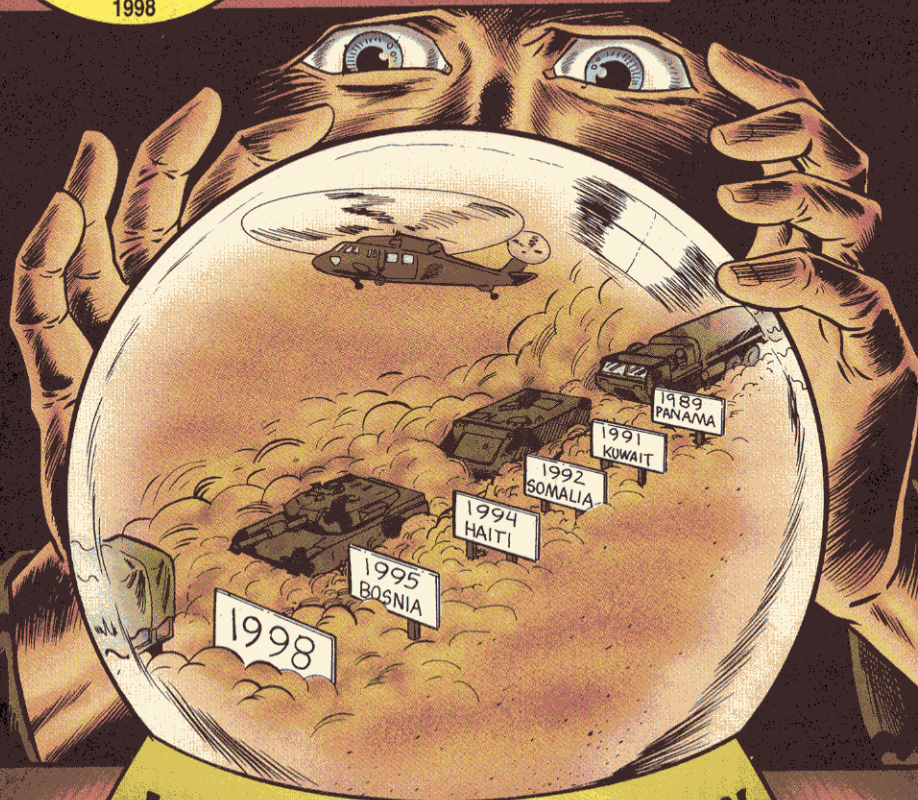
Issue 542

PS

January
1998

THE
PREVENTIVE
MAINTENANCE
MONTHLY

TB 43-PS-542



IS YOUR EQUIPMENT READY
FOR WHAT LIES AHEAD?

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Look Before You Leap

Environmental concerns produce big headaches for the US Army. We've been told to operate and maintain the world's best military equipment without polluting the air, ground and water.

It's no secret that many petroleum-based products and cleaners are labeled hazardous materials, either before or after use, or both.

The Army's worked hard to reduce their numbers, to handle them safely, and to find substitutes for them.

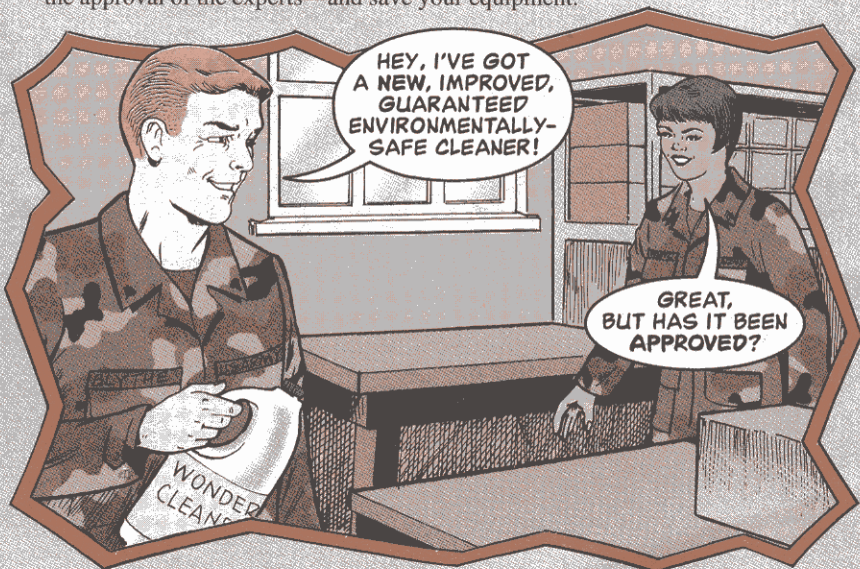
It's also no secret that there's a booming business for "substitutes" that claim to be less hazardous and just as effective.

Unfortunately, that's created another headache: In the rush to save the environment, we've discovered that some of those substitutes are destructive to the equipment.

Many of you found that out the hard way—by using a type of hydraulic fluid in Abrams tanks that destroyed seals and some metals, or by using a water-based enzyme solvent that didn't clean as well and also corroded metal surfaces.

So, what to do? The old adage "Look before you leap" comes to mind. Ask questions of the equipment experts who are responsible for your equipment before you use any unauthorized substitute. Or contact your local logistics assistance rep (LAR). If he doesn't know the answers, he can get them for you.

Most hazardous materials will eventually be replaced. But let it happen with the approval of the experts—and save your equipment.





THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-542, 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, and questions or comments on material published in PS. Just write to:

MSG Hall-Mast
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Or E-mail to:

psmag@logsa.army.mil

Internet Address:

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By Order of the Secretary of the Army:

DENNIS J. REIMER

General, United States Army Chief of Staff

Official:

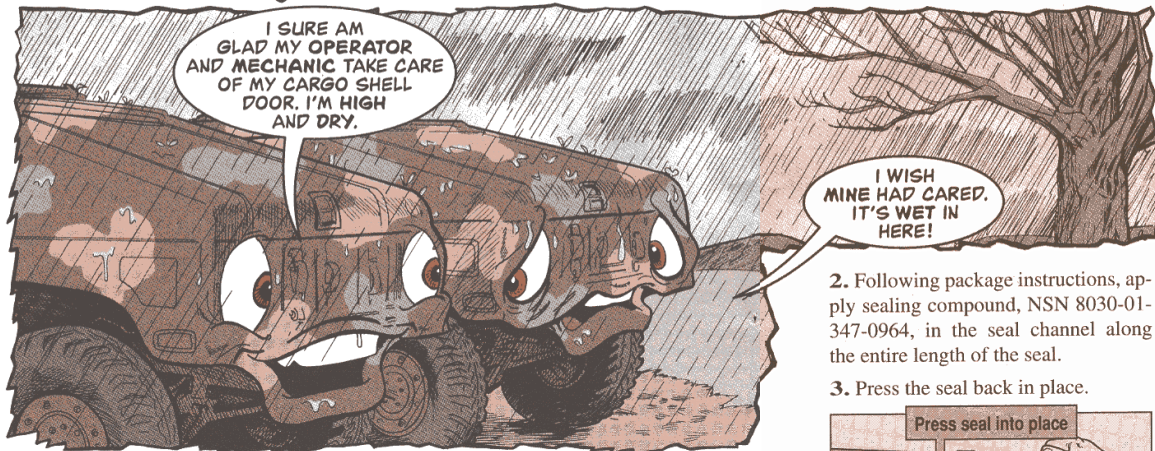
Joel B. Hudson
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Cargo Shell Seal Care



Your armament carrier won't be helping to "keep the powder dry" if the cargo shell door seal lets grit, dust, dirt and moisture inside.

Test the seal on your HMMWV's cargo shell door by slipping a piece of paper—a dollar bill will do—between the door seal and the door opening. Then close the door and try to pull the paper out.



The seal and the door should fit tight enough to keep the paper from sliding

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

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

1. Use clean cotton rags and Type III P-D-680 drycleaning solvent, NSN 6850-01-331-3349, to wipe off all the



grease, grime and grit around the edge of the door. Use soap and water to clean the rubber seal. Let the seal dry.

I WISH MINE HAD CARED. IT'S WET IN HERE!

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

3. Press the seal back in place.



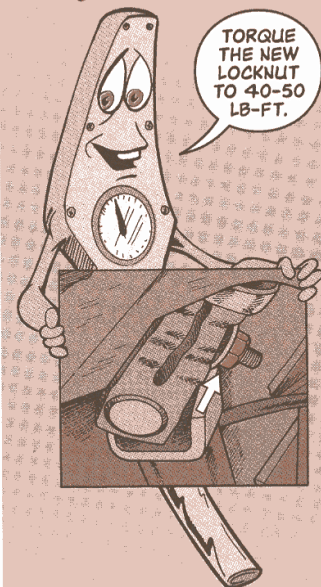
4. Close the cargo door and let the compound dry.



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

Use Steering Gear Nuts Once

Mechanics, always use new locknuts, NSN 5310-00-840-6222, and torque them to 40-50 lb-ft when you replace the HMMWV's intermediate steering shaft or gearbox.



Locknuts form to the bolt when they're first put on, but they will work loose if used a second time. Likewise, new locknuts work loose if the wrong torque is used to hold 'em in place.

Once a locknut works loose, steering control suffers. U-joints and steering gear splines are also damaged.

6.5L Diesel vs Precleaner


You HMMWV owners who have opted to use precleaner, NSN 2940-01-302-8028, to help stop clogged air cleaner elements, listen up!

The precleaner can be used on the new 6.5-liter detuned diesel engine, which is replacing the 6.2-liter engines.

But, the precleaner cannot be used on the XM1114 model HMMWV that's in use in Bosnia. That truck uses the new 6.5-liter turbocharged diesel engine.


The precleaner doesn't provide enough air flow for the turbo engine, causing poor performance and possible engine damage.

SOMEWHERE
IN BOSNIA...



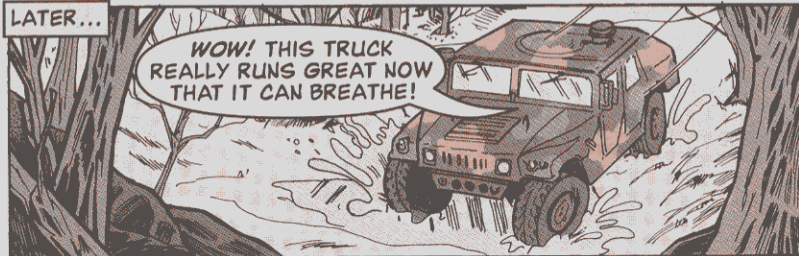
I'M REALLY
DISAPPOINTED IN
THE PERFORMANCE OF
THIS XM1114 HUMVEE,
MASTER SERGEANT
HALF-MAST.

HMMM,
THAT'S ODD. IT
HAS A 6.5 LITER
TURBOCHARGED
ENGINE.



AHA! HERE'S THE
PROBLEM. THIS
PRECLEANER DOESN'T
ALLOW ENOUGH
AIR FLOW FOR THE
TURBOCHARGER. PUT
THE ORIGINAL AIR
CLEANER CAP
BACK ON.

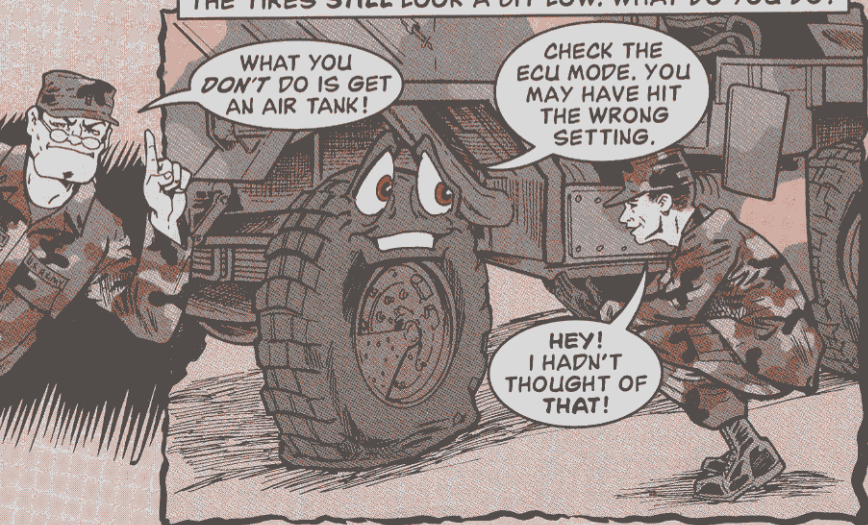
LATER...



WOW! THIS TRUCK
REALLY RUNS GREAT NOW
THAT IT CAN BREATHE!

CTIS REGULATES TIRE PSI

YOU'VE STARTED YOUR M939A2-SERIES 5-TON AND THE TIRES STILL LOOK A BIT LOW. WHAT DO YOU DO?



Never manually add air to any tire on the M939A2 while operating the central tire inflation system (CTIS). You can mess up the CTIS' electronic control unit (ECU).

Your mechanic has to disconnect the CTIS system to manually add air.

The CTIS regulates the air pressure, adding or removing air as necessary.

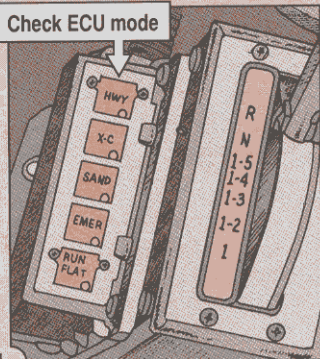
Once you crank up your truck, the ECU automatically checks and regulates the air pressure in each tire.

If you suspect the tire pressure is still not right, check to see that you have selected the proper ECU mode.

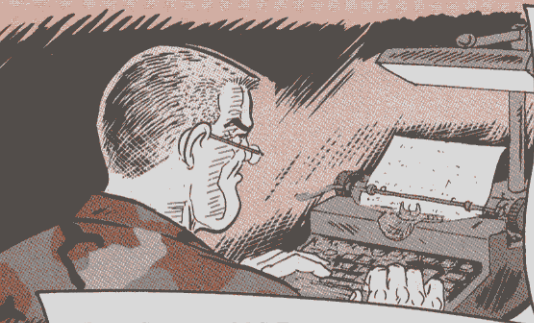
For example, if you've selected "sand," the CTIS lowers the air pressure for driving in sand.

If, after several minutes, you still notice under-inflated tires and you've done everything allowed by TM 9-2320-272-10, **stop**. That's all you should do. Go get a mechanic or your supervisor.

Check ECU mode



Air Filter Foul-up



Dear Half-Mast,

When checking the air filters on our unit's M939-series trucks, we've found some fouled with oil. Where's the oil coming from? And what should we do about it?

SGT M.S.F.

Dear Sergeant M.S.F.,

Believe it or not, fouled filters often start with an overfilled fuel tank.

The fuel tank, transmission gear case and transfer gear case on these 5-tonners all vent into the air cleaner duct.

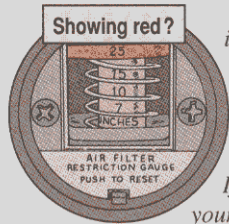
Fuel from an overfilled tank can run through the vents...and end up in the gear cases. Then, oil from that overfilled gear case is forced out through the vent lines...and ends up in the air cleaner.

Of course, it's also possible that a leaking interlock air cylinder can pressurize the transfer and push oil into the air cleaner.

So, if the air restriction indicator in the cab shows red, check the air cleaner.

If it's oil-clogged, check the levels in the transmission and transfer gear cases.

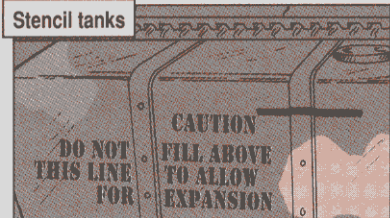
If they're overfilled, have your mechanic drain the excess.



If the transfer or transmission gear case is low, support can check the transfer interlock air cylinder for leaks.

A good reminder not to overfill the fuel tank is to paint a line two inches from the top of the tank. Then, stencil "CAUTION: Do not fill above this line to allow for expansion" in 1-in black letters, as shown in Fig 17 of TB 43-0209.

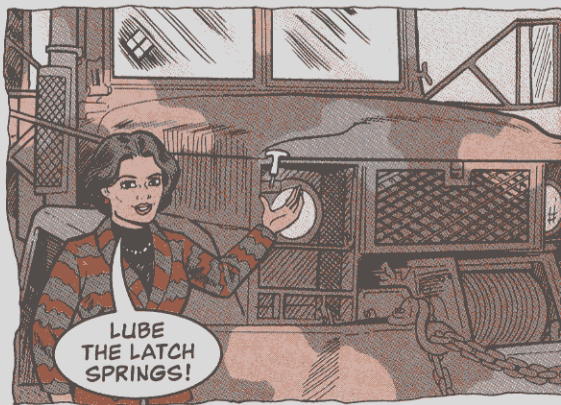
Half-Mast



PIN DOWN CORROSION

Hood latch springs on older 2¹/₂-ton and 5-ton trucks are a bear to open when rust sets in. You'll end up breaking the springs or replacing them, or both.

Head off rust by hitting the latch's internal spring with a shot of lubricating spray, NSN 9150-00-458-0075. Open and close the spring vigorously a few times. Then spray it again at every scheduled service.



2¹/₂-ton Trucks . . .

Ditch Brake Light Switch

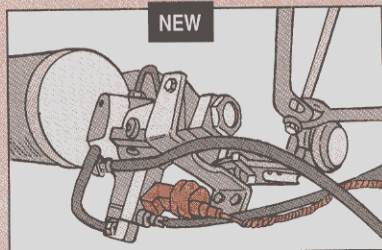
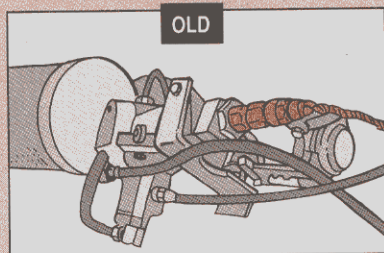
There are still some 2¹/₂-ton trucks out there with the old hydraulic fluid-operated brake light switches.

They are safety hazards.

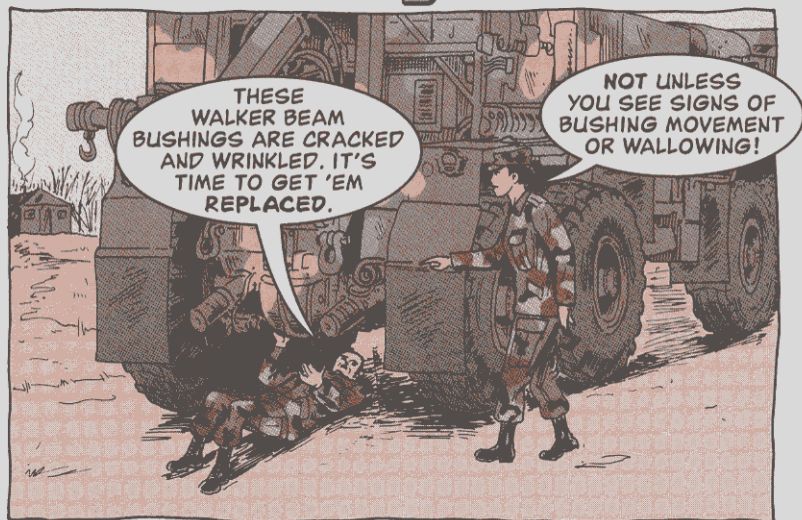
The switch can blow an electrical connector pin, dumping all your hydraulic fluid. Then you have no brakes.

Replace that switch with air-operated switch, NSN 5930-00-789-6192. TM 9-2320-361-20 shows the new system. To install the switch, you need a conversion kit, NSN 2530-01-105-5025.

The kit brings the switch, instructions, mounting hardware and a ¹/₂-in elbow. Some trucks need a ³/₈-in elbow, NSN 4730-00-289-0155, so measure the tubing to find out which elbow you need.



What Bushing Wear Ain't



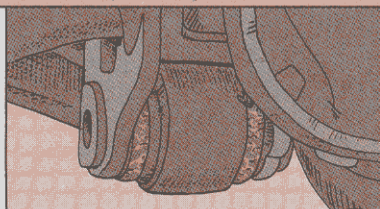
Cracked or wrinkled paint alone does not identify equalizer beam bushing wear. A cut here or a gouge there doesn't, either.

But, many HEMTTs wind up job-ordered to support for equalizer beam (walker beam) bushing replacement when all they have are paint cracks and wrinkles, or minor cuts and gouges.

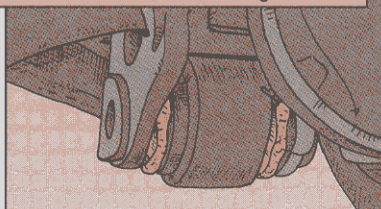
Cracked or wrinkled paint can make bushings look like they're dry rotted. Cuts and gouges can make them look ready for the scrap heap.

Send your HEMTTs to support for bushing replacement **only** when you detect movement in the bushings. If they are turning (look for signs of movement against the beam bore) or wallowing (the bushing is narrower in some spots than others), they're shot. Otherwise, you don't have bushing wear.

Paint cracks, wrinkles, minor cuts are OK...

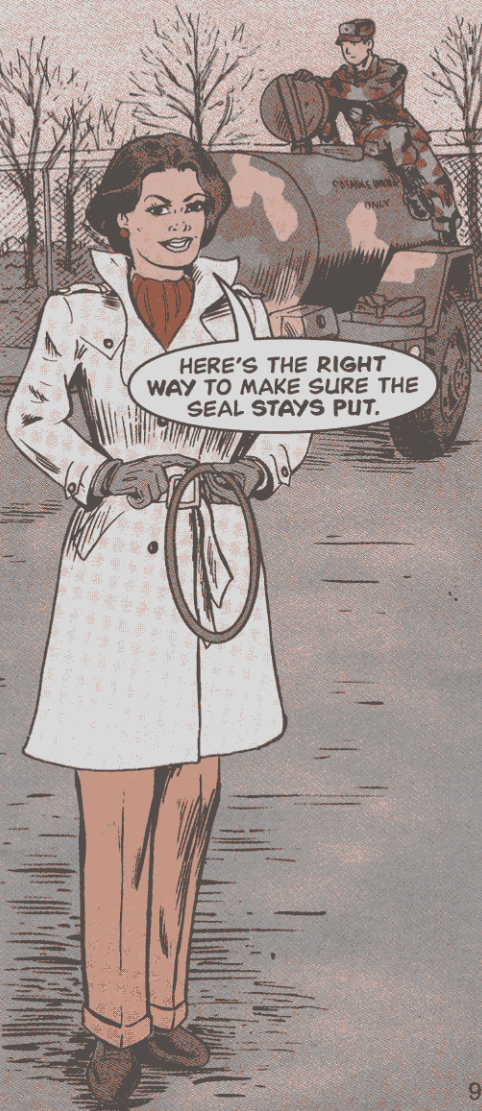


...but movement or wallowing is not OK



New Deal on Cover Seal

If you see leaks around the manhole cover on your M149A2 400-gal water trailer, have your mechanic replace the old seal with an improved seal, NSN 5330-01-317-9640.



HERE'S THE RIGHT WAY TO MAKE SURE THE SEAL STAYS PUT.

Replace leaky seal

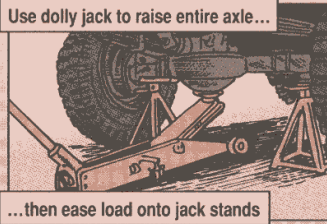


- Remove the manhole cover.
- Scrape off the old seal and toss it.
- Sand the outer 1 1/2 inches of the underside of the cover with emery paper.
- Use denatured alcohol to wash the sanded area. Be careful not to touch the sanded and washed area with your bare hand. Oil or dirt from your hand can keep the sealant from working properly.
- Let the cleaned area dry.
- Put a 1-in band of silicone sealant, NSN 8040-00-118-2695, around the outside edge of the cover.
- Slip the seal onto the cover.
- Put a little more sealant around the inside of the seal.
- Now lay the cover down with the seal on a smooth, flat surface, such as a work bench. Let the sealant cure for 24 hours.
- Rinse the cover with water.
- Install the manhole cover on the tank.

MAKE YOUR STAND, JACK!

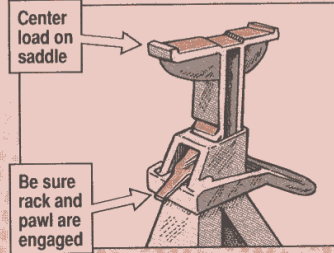
Operation

- ✔ Always use jack stands in pairs.
- ✔ Use a 10-ton dolly jack to raise the vehicle. If you're raising the entire axle, lift at the middle of the axle, then place a jack stand at each end.



- ✔ Lower the jack slowly to ease the load onto the jack stands. Dropping a load onto jack stands can ruin them.

- ✔ Center the load on the stand's saddle. Make sure the rack and pawl are engaged before and after the load is applied.



- ✔ Make sure all jack stand legs are firmly on the ground.
- ✔ Leave as many tires as possible on the vehicle and on the ground.
- ✔ Raise the vehicle only as high as necessary to do your work.
- ✔ Do not shake or bump the vehicle after it has been placed on the jack stands. The stability of vehicles left unattended should be rechecked before resuming work.
- ✔ Never use a jack stand as leverage to pry or pivot yourself or a repair part under a vehicle.
- ✔ Use secondary supports—railroad ties, A-frames, floor jacks, or cranes—if there's any question about the vehicle's stability during a maintenance procedure.

✔ Jack stands are designed to take a lot of pressure without breaking. And they will, as long as you do your part.

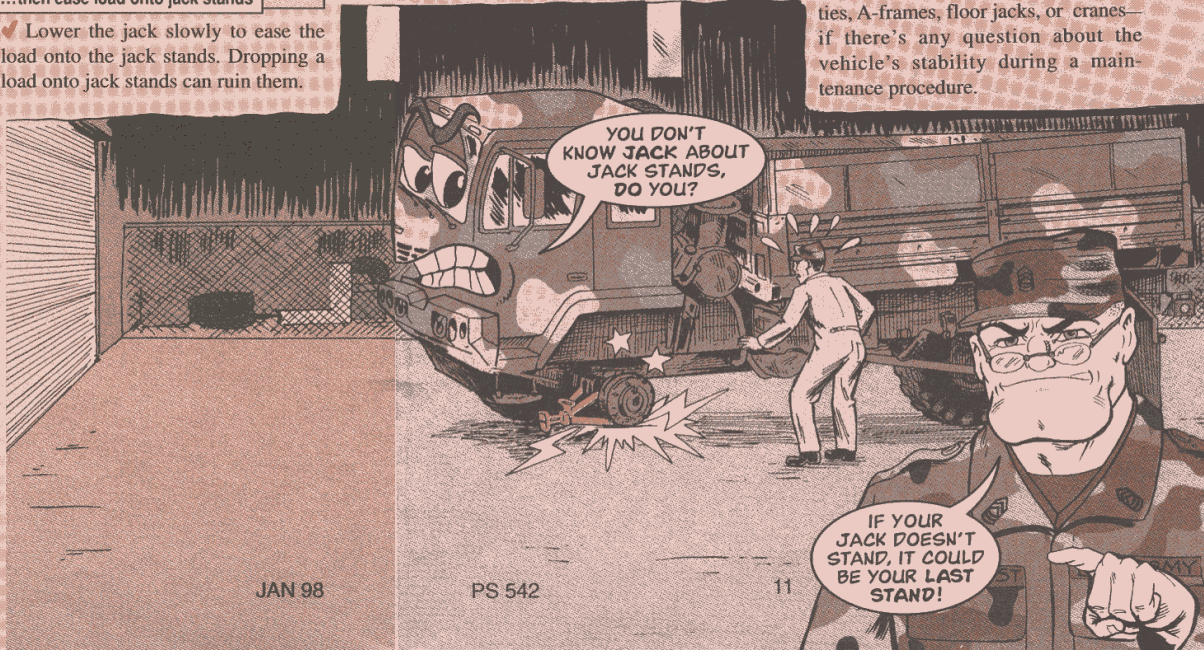
Your first job is to make sure the jack stands are the proper size and in good condition. A little carelessness can make you a three-time loser:

- ✔ **You lose a jack stand.** A jack stand that's damaged can't be used again.
- ✔ **You lose a vehicle**—at least temporarily—when it is damaged by a fall from a jack stand.
- ✔ **You lose life or limb.** Think of the damage you'll receive if you're working under a vehicle when a jack stand gives way. You can't be fixed as easily as a truck.

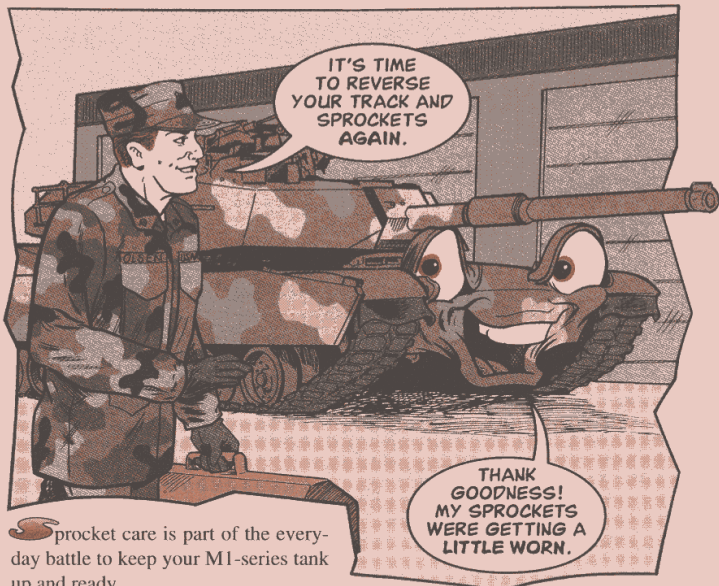
So what can you do to protect jack stands, vehicles and yourself? A lot!

Preparation

- ✔ Follow the instructions in your vehicle's TM for size and placement of jack stands.
- ✔ Park the vehicle on a level, hard surface.
- ✔ Shut off the engine, set the hand brake and chock the wheels that won't be raised. That keeps the vehicle from rolling.
- ✔ Inspect the stands before use. Look for bends, separated welds, cracks and corrosion. If you have any questions about the stability of a stand, have it tested by support. TB 43-0142 has the word.
- ✔ Make sure your stands are straight and that the pawl seats fully in the column teeth.



Timely Track Tips



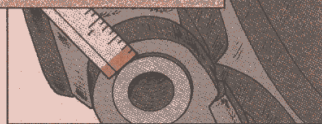
Sprocket care is part of the everyday battle to keep your M1-series tank up and ready.

End Connectors

Always replace end connectors when they reach their wear limits—less than 1/8 inch left for T156 track and less than 3/16 inch left for T158 track.

Bad end connectors don't fit well on the sprocket teeth. That results in wear

Measure end connector wear



that can ruin even a new sprocket in short order.

Track Tension

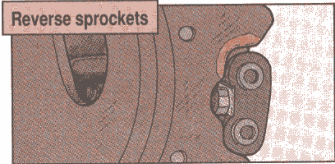
When checking or adjusting track tension, follow **all** the info in your -10 TM.

The TM tells you to drive your vehicle backward 20 feet and then forward 20 feet. Make sure you shift into neutral and coast to a stop after you've gone forward 20 feet. Using the brake will throw off the tension adjustment and lead to sprocket cupping.

Annual Reversal

The -10 TMs are not clear on the annual requirement to reverse sprockets. So, some units think you only have to reverse sprockets on tanks with T158 track.

Not true. T156 track sprockets should also be reversed annually. It's the T156 track itself that shouldn't be reversed.



T156 track pads are angled and should point in one direction only.

If the sprocket is worn to the back edge of the wear mark **before** the year is up, go ahead and reverse the assembly. If both marks are reached, replace the sprocket.

Hot Off the Presses

If you need more info on track wear, TACOM has published a T158 Track Inspection Bulletin. It has many examples of worn sprockets and end connectors that will help you determine the serviceability of your tank's track.

See your TACOM LAR for a copy.

M2/M3-Series Bradleys ...

Turret Ring Chatter

The right amount of lube is a good thing. Too much lube just attracts dust, dirt and sand.

Gritty grease chews up your Bradley's turret ring teeth. By the time you hear the sound of wear—turret chatter during traversing—it's too late. The teeth are worn, repairs are needed, and costs are high.

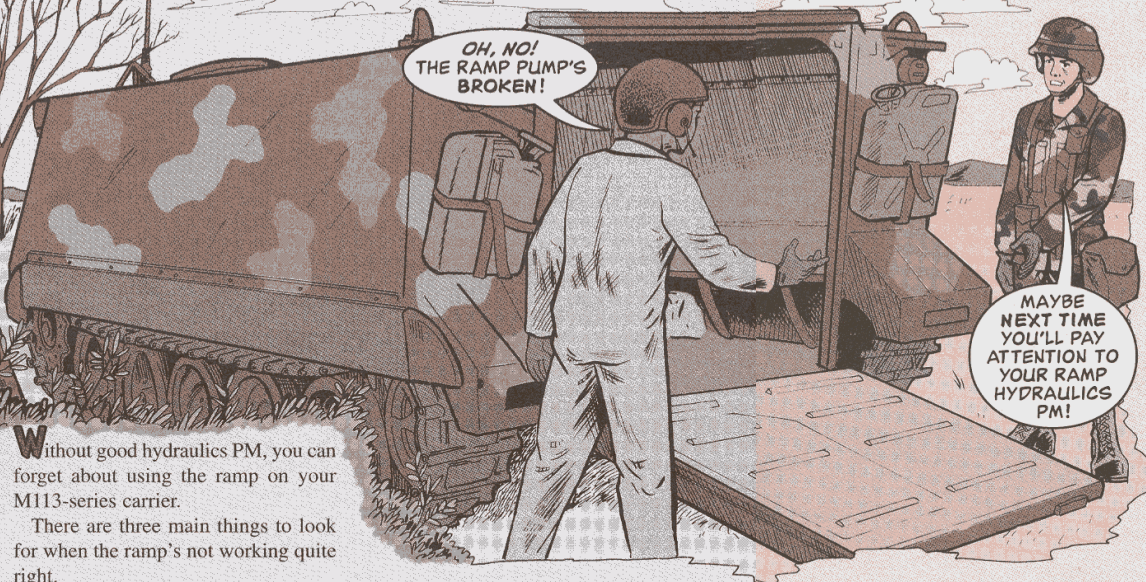
Eyeball the ring to see how much grease and grit have built up.

If you see a heavy coating, wipe it off with a clean cloth and drycleaning solvent. Then apply a thin, even coat of grease. You'll have to traverse the turret several times to make sure all bearing teeth are lubricated.

Remember, though, use lube sparingly.



Ramp Hydraulics Are Vital



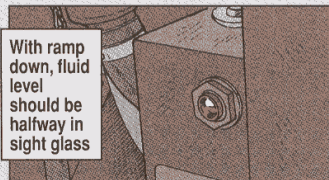
Without good hydraulics PM, you can forget about using the ramp on your M113-series carrier.

There are three main things to look for when the ramp's not working quite right.

1. Low Fluid Level

Before you eyeball the fluid level in the ramp hydraulic reservoir, **make sure the ramp is all the way down.**

A partially lowered ramp always causes a low reading. Then, when you



bring the fluid to a proper level—half-way in the sight glass—you actually end up with too much.

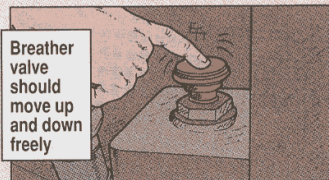
Using the ramp with too much fluid overpressurizes the system. Hydraulic lines blow and you're stuck with a big, messy problem.

So, lower the ramp completely before you check the sight glass. That'll give you an accurate reading.

2. Clogged Breather Valve

Dirt and oil clog the breather on top of the reservoir. A clogged breather won't relieve pressure.

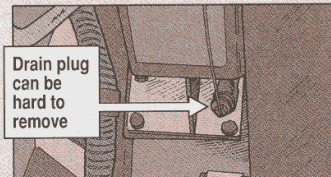
A quick tap-tap on the breather will give you the whole story. If the breather springs up and down, it's in good shape. If it won't move, it's clogged. Remove the breather and clean it with dry cleaning solvent.



3. Clogged Strainer

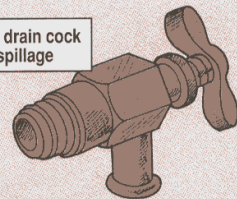
The reservoir strainer should be removed and cleaned by your mechanic every six months or 1,500 miles, whichever comes first. To do that, he'll have to drain the reservoir first.

Mechanics, the drain plug may have been overtightened or rounded off from using the wrong tools. Or, when the plug finally does come off, fluid spills all over your tools and hands before it finally ends up in the drain pan.



You can solve those problems by replacing the plug with an angled drain cock, NSN 4820-00-845-1096, the next time you drain the reservoir. Just attach a piece of AOAP tubing and drain away.

Use angled drain cock to prevent spillage



Clean the strainer and reservoir tank with dry cleaning solvent, like it says in LOs 9-2350-261-12 and 9-2350-277-12.

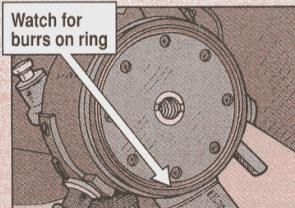
Look Out!



Do you feel like shouting “look out” or “watch that” when someone acts careless around your prize possessions, like your stereo or car? If your ground/vehicular laser locator designator (G/VLLD) could talk, there are a few things it would shout about, like:

Night sight: The insert for the night sight mounting screw is nylon. If the screw is cross-threaded, one hard twist ruins the insert and you can't use the sight. If the screw binds, reposition the mount and try again. Just don't force it.

Watch for burrs on both the G/VLLD and night sight mounting rings. They're a tight fit. Burrs ruin the fit. Even if you manage to mount the night sight, you won't be able to borescope. Ask your repairman to stone off burrs.

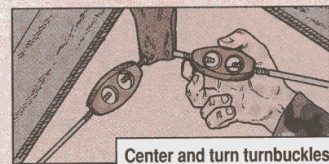
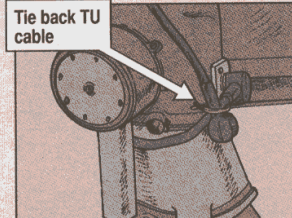


Keep paint away from the mounting rings. It's as bad as burrs.

TU cable: If the traversing unit cable's left dangling when you put the TU in the backpack, count on it being torn off. The solution is simple. Wrap the cable around the TU and use a twist tie to secure it.

Turnbuckles: If the turnbuckles aren't centered and facing the tripod legs, the adjustable links are at their limits. A few good jolts during travel and the links are stripped or bent. You can't level the G/VLLD.

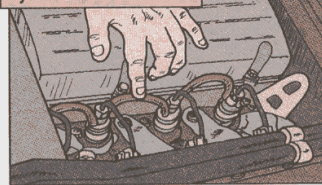
When you're through operating, center the turnbuckles and turn them so they face the legs.



SUSV Fuel Line Checkup

Drivers, if you smell fuel when you hop into your SUSV's cab, report it right away. There's a fuel leak somewhere in the engine compartment that needs your mechanic's attention now.

Eyeball fuel line for leaks



Mechanics, one area to eyeball is where the fuel return lines are mounted on top of the engine.

These lines will deteriorate from long-term storage and engine heat. Eventually, they'll start to leak. If a line feels wet, or its protective cover is worn off, the line is shot. Replace it.

DON'T BE FUELISH, KEEP AN EYE ON MY LINES.



PM for the Road

No doubt many of you SUSV drivers know TM 9-2350-285-10 like the back of your hand. But, here are some extra doses of PM that will keep your SUSV mission-ready even in the coldest of climates.

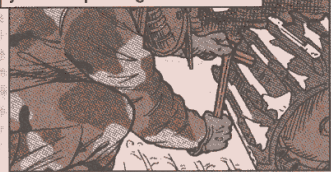
Track Tension, Adjustment

Waist deep in the snow is no time for track problems on your SUSV.

The right time to adjust the track is before you head out of the motor pool.

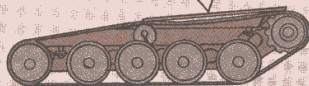
The SUSV's track is made of rubber. It stretches and shrinks, depending on the temperature. When you make a track adjustment, do it in the same temperature in which you will be operating the vehicle, especially in cold weather.

Adjust track in same temperature you'll be operating SUSV



Lay a yardstick or something similar on the track between the sprocket and support wheel. Use a ruler at the center of the yardstick to measure the dis-

Check tension with a yardstick



tance between the yardstick and the track. More than an inch means the track is loose.

Tighten the track by turning the track tensioner's adjusting screw clockwise. Turn the screw counterclockwise to decrease tension.

As always, when it comes to track tension, follow the info on Page 3-12 of TM 9-2350-285-10.

Let Water Out

To keep your SUSV's engine running smoothly, remember to drain the fuel/water separator once a week, like it says in your -10 TM's PMCS chart.

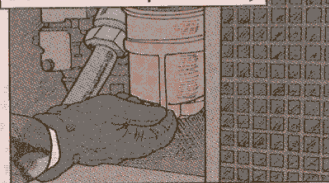
Draining lets you see what condition the fuel and fuel filter are in.

Put drained fuel into an approved hazardous waste container. Never dump it down a drain or on the ground.

If the fuel is clear, you're OK. If the fuel does not run clear, close the valve and report it to your mechanic.

Also, be sure your mechanic replaces the fuel filter element semi-annually.

Drain fuel/water separator weekly

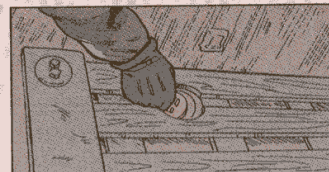


Do not drain the fuel/water separator when temperatures fall below 32°F.

Drain Plug Reminder

When the SUSV goes for a swim, make sure the drain plugs in both cars

are nice and tight. If there's a loose or missing plug, water floods into the car and shorts out the electronics.

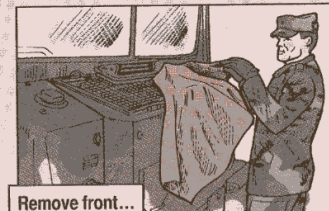


Tighten drain plugs before swimming

Take Covers Off

Take off the radiator's grille cover before starting the SUSV. If you leave the cover on during operations, cool air can't circulate through the radiator and the engine overheats.

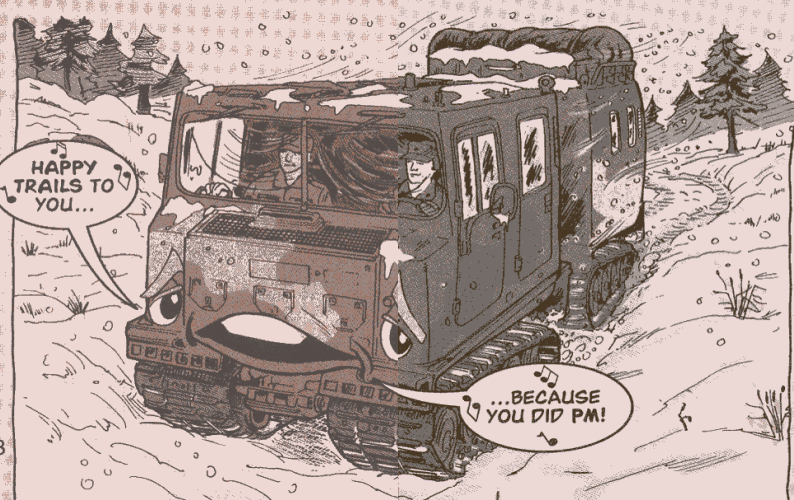
Same goes for the rear grille cover that fits over the exhaust port—remove it before starting. If you leave the cover on, heat from the exhaust stack melts the plastic cover. Store the covers in the passenger door's side pocket.



Remove front...



...and rear grille covers



The Bracket Racket

When you open the upper rear door on your M992-series ammo carrier, the last thing you expect is the door to come crashing down.

But if the door on your carrier is held up by an aluminum bracket, it may really be the last thing you expect.

Aluminum brackets can crack under the strain of holding up the 300-lb door. That's a bad situation, especially if you're standing in the way at the wrong time.

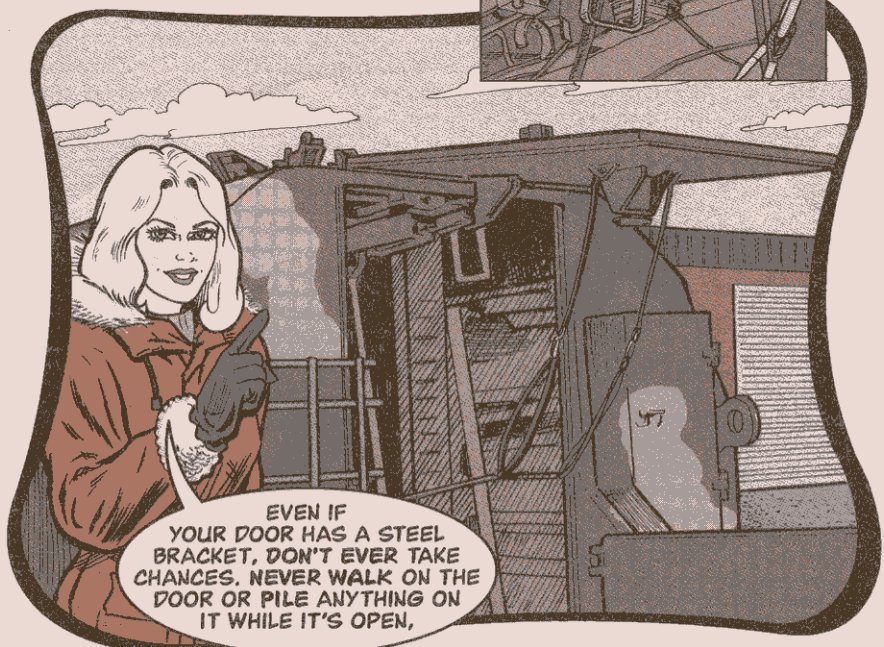
Be safe. Have your mechanic replace those aluminum brackets with steel ones, NSN 5340-01-158-0825.

There are two ways to check for aluminum brackets:

C Use a magnet. If the magnet sticks, the bracket is steel. If not, it's aluminum.

C Eyeball the bracket. Aluminum brackets are cast as a single piece. Steel brackets have welds at the base of the flanges.

Use magnet to check mounting bracket



EVEN IF YOUR DOOR HAS A STEEL BRACKET, DON'T EVER TAKE CHANCES. NEVER WALK ON THE DOOR OR PILE ANYTHING ON IT WHILE IT'S OPEN,

Aww, Nuts!

HEY, DIDN'T ANYONE CHECK MY HUB NUTS BEFORE WE LEFT?

Idler wheel hub nuts have always been a problem for M992s and M109s.

Road wheel hubs have a lock washer under their self-locking nuts. But there's no room for lock washers on the idler wheel hubs. That means vibration from firing and normal operation loosens the nuts.

Loose or missing nuts put more strain on the remaining nuts and studs. You may lose the idler wheel hub.

Fixing the problem takes a team effort. Your mechanic helps by using wet torque on the nuts instead of dry torque. He'll lubricate the stud threads with lubricating oil, NSN 9150-00-231-2361, then torque the nuts to between 162 and 198 lb-ft.

You operators have to eyeball the nuts before and after every operation. If the nuts are loose or show signs of movement—shiny metal around the edges of the nut—tell your mechanic right away. He'll replace 'em.

GUESS NOT!

BOINK

Check nuts for looseness



Tireless Tire PM

WE'VE GOT ALL THE ROCKS OUT, SERGEANT... BUT WE HAVE SOME TIRE SPIN CUTS!

GOOD JOB! NOW CHECK THE AIR PRESSURE.

GOTCHA!

Operators, tire replacement on rubber-tired construction and material-handling equipment can get real expensive.

Save those tire dollars with good operator PM.

Driving Tips

Slow down when you leave or enter the load or dump area from the haul road. Slower speed reduces impact damage and tire cuts.

Never skid down steep slopes. Next to outright spinning your wheels, the quickest way to strip a tire is to lock the wheels of a fully loaded machine while going downhill.

Braking a fast-moving loaded scraper or dump truck down a 20 percent grade grinds off rubber like an emery wheel grinding down a piece of soft metal.

Keep It Clean

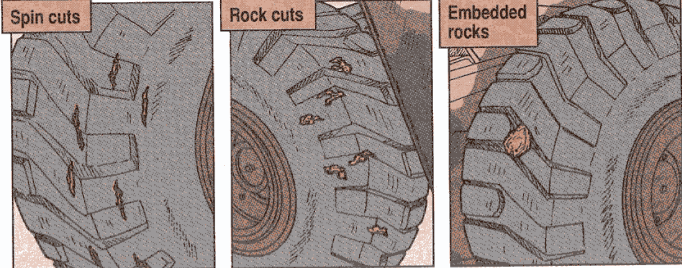
Keep the working area clean. Lower the bucket to the ground when you approach a bank or pile of rocks or rubble. That picks up junk that could damage the tires. Loose rocks also let tires spin and cause unstable vehicle handling.

Approach piles and banks straight on. Angling into the pile exposes tire sidewalls to a beating from fallen rocks.

Check 'em Often

Check tires often, especially in quarries, for signs of tire spin cuts. Check your tires when you stop for a break. Get rid of all embedded rocks. If you don't, every time the tire rotates, rocks are pushed deeper into the tread. Pretty soon a

rock passes through the tread and into the soft body rubber. Then, it's just a matter of time before a blowout or puncture.



Watch Air Pressure

Keep the right amount of air in tires. Never over-inflate or under-inflate tires just to make 'em match in size or circumference. Paint the recommended cold-inflation pressure on the wheel rim near the valve stem.

Never mix radial and bias-ply tires on the same vehicle. You lose steering control, have poor handling, and risk mechanical damage and uneven tire wear.

Always use the type of tire that's designed for the job you're doing. Use matched tread design tires on all drive wheels.

On earth-moving equipment, replace tires that have less than 13/32-in tread depth.

INSERTING INSERTS EASIER

NOW I'VE GOT TO REDO THAT SCREW INSERT AGAIN.

HERE'S AN IDEA WE CAME UP WITH.

Dear Editor,

Every Avenger unit spends much time replacing screw inserts because they pop out so easily if they're overtightened.

The hard part about installing the inserts is keeping them in place for the 24 hours it takes for the epoxy to harden. If the insert shifts out of position, you have to start the whole job again.

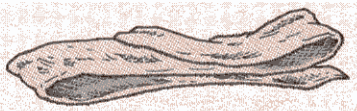
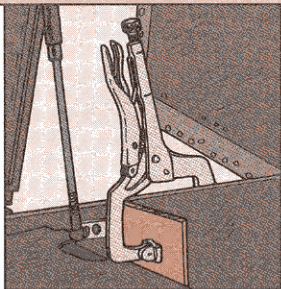
We keep the insert in place with a 2x4-in piece of fiberglass. Anything similar would work. We fasten the fiberglass over the insert with a clamp or tape and leave it there for 24 hours.

If the insert wiggles to the touch after that, we put the fiberglass back on for another 24 hours. That's usually long enough.

One other thing we've found is that it's easier to repair scratches and cracks with fiberglass paper, NSN 1440-00-152-3172, than with epoxy. We just cut out the paper, glue it in place with the resin that comes with the paper, let it dry, and sand it smooth. It's quicker and much less messy than epoxy.

SPC Lyquinta Bruno
SPC Camella James
SPC Kevin Crump
801st MSB
Ft Campbell, KY

Fiberglass holds insert in place



Fiberglass paper works better than epoxy



Staying Juiced



Corrosion can stop your Avenger in its tracks. When it invades the slave cable connections, the juice flowing from the vehicle to the missile system batteries dries up and leaves the missile system with no power.

A little rubbing with fine sandpaper keeps the current flowing. Disconnect both ends of the slave cable to prevent shocks. Use sandpaper to lightly rub out any corrosion inside the slave cable connections. Wipe out the connections with a dry, clean cloth. You're done.

Check the slave cable connections for corrosion at least monthly. In humid areas, do it weekly.

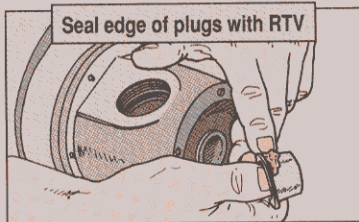
The Big Slipping Seal

Dear Editor,

If moisture gets in the Avenger's sliring, you have power and commo problems. It's difficult to trace where these problems come from, so perfectly good components often get replaced.

Moisture penetrates the sliring through the sliring's drain plugs when crews steam clean underneath the Avenger. The three plug caps don't seal well enough to keep out moisture.

We dried up the moisture problem by putting RTV around the caps' edges before installing them. Now the caps seal out moisture.



**SPC Kevin Crump, 801st MSB
PFC Billy Bell, 2/44th ADA
Ft Campbell, KY**



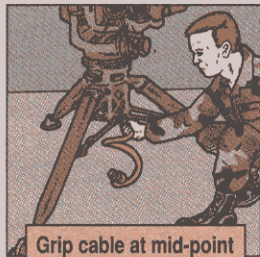
Hands Off Head

Dear Editor,

During setup, most TOWsters pull the cable out of the well in the traversing unit (TU) by the cable head. That causes two problems: First, you'll have trouble pulling out the entire cable, which makes it difficult to connect the cable to the MGS. Second, tugging on the cable head can tear the wiring loose at the head. A \$2,000 cable must be replaced.

Those problems are eliminated by gripping the cable at its mid-point rather than the head. That makes it easier to pull the cable all the way out without tearing the wiring at the head.

SGT Allan Nelson
801st MSB
Ft Campbell, KY



FROM THE DESK OF THE Editor 

Not using the cable head is using
your head. Thanks.

Readers Quiz

Here are some key questions about equipment in this issue of PS. See if you know the answers.

WHEELED VEHICLES—Can you use an air filter precleaner on HMMWVs with the 6.5 liter engine? (Page 4)

COMBAT VEHICLES—How is the wear criteria different for the end connectors on T156 and T158 track on M1-series tanks? (Pages 12–13)

COMBAT ENGINEERING—What can operators of construction and material handling equipment do to save tire wear and tear? (Pages 22–23)

MISSILES—How can you keep moisture out of the Avenger's slinging? (Page 25)

SMALL ARMS—What components of the M16-series rifle do soldiers most often fail to clean? (Pages 38–39)

COMMO—What is the main source of electrostatic discharge (ESD)? (Pages 40–43)

AVIATION—What's an inexpensive way to protect your Apache's Hellfire missile laser seeker from being blinded by the sun? (Page 47)

NBC—What can every soldier do to ensure that his M41 mask passes the protection assessment test system (PATS)? (Pages 54–56)

SOLDIER SUPPORT—What will prolonged exposure to sunlight do to your M24 binoculars? (Pages 58–59)

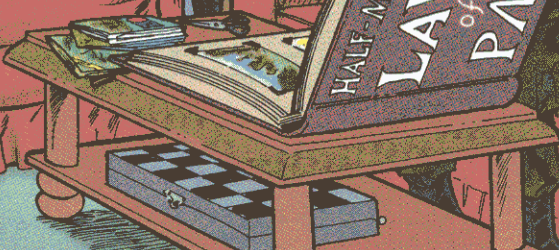
Half-Mast's LAW of PM

COME IN.

SORRY I'M LATE,
MASTER SERGEANT
HALF-MAST. MY VEHICLE
BROKE DOWN, SO I HAD TO
WALK. HERE'S A SPECIAL
DELIVERY FROM
CONNIE RODD,

WHAT A WAY
TO HELP UPDATE MY
SCRAPBOOK! CONNIE'S
PACKAGE AND, I'LL JUST
BET, YOUR BREAKDOWN.
TAKE YOUR JACKET OFF
AND HAVE A SEAT,
SPECIALIST.

HALF-MAST'S
LAW
of
PM



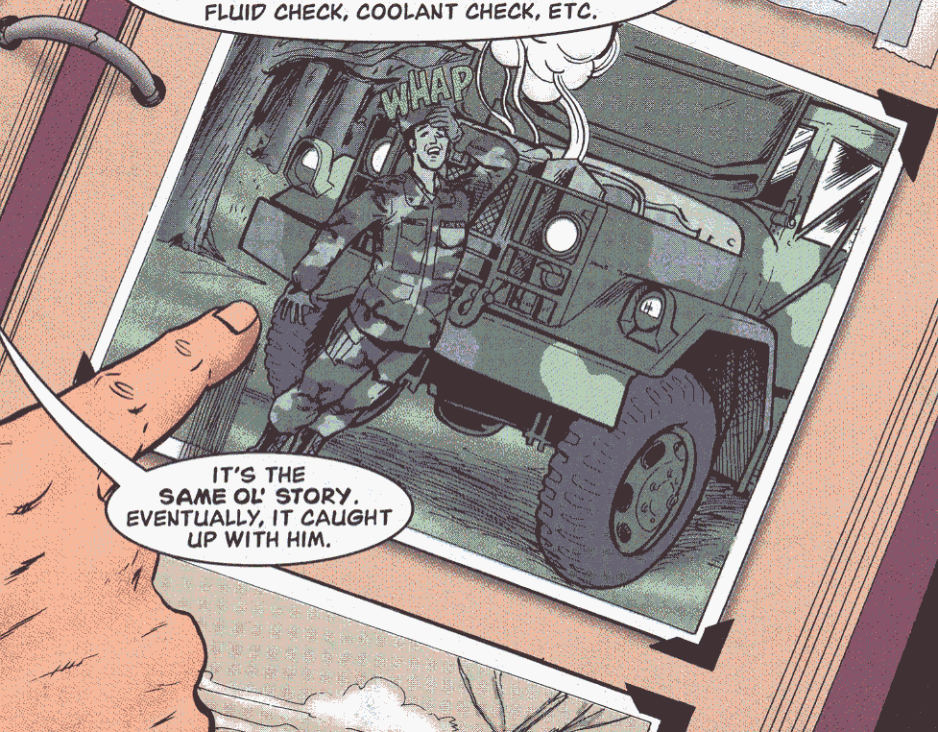
HOW'S
MY BREAKDOWN
CONNECTED TO YOUR
SCRAPBOOK?

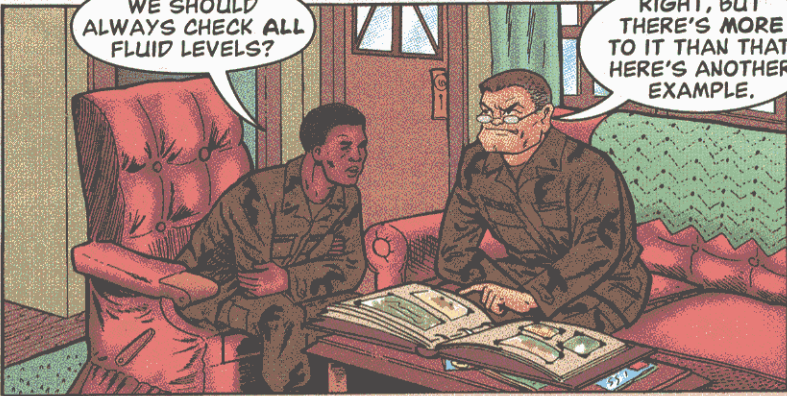
THIS SCRAPBOOK
REFLECTS ALL MY YEARS AS A
PROONENT OF PROPER PM.

I CALL
IT HALF-MAST'S
LAW OF PM.

SEE, HERE'S A DRIVER WHO
JUMPED RIGHT BEHIND THE WHEEL AND
TORE OFF DOWN THE ROAD WITHOUT PERFORMING
ANY PMCS... ENGINE OIL CHECK, TRANSMISSION
FLUID CHECK, COOLANT CHECK, ETC.

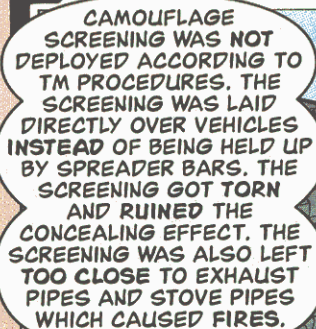
IT'S THE
SAME OL' STORY.
EVENTUALLY, IT CAUGHT
UP WITH HIM.





WE SHOULD ALWAYS CHECK ALL FLUID LEVELS?

RIGHT, BUT THERE'S MORE TO IT THAN THAT. HERE'S ANOTHER EXAMPLE.

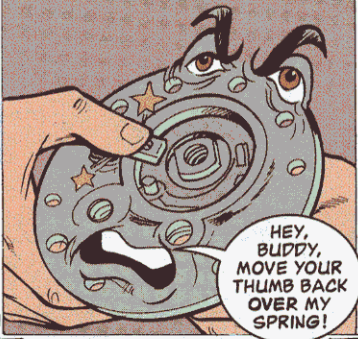


CAMOUFLAGE SCREENING WAS NOT DEPLOYED ACCORDING TO TM PROCEDURES. THE SCREENING WAS LAID DIRECTLY OVER VEHICLES INSTEAD OF BEING HELD UP BY SPREADER BARS. THE SCREENING GOT TORN AND RUINED THE CONCEALING EFFECT. THE SCREENING WAS ALSO LEFT TOO CLOSE TO EXHAUST PIPES AND STOVE PIPES WHICH CAUSED FIRES.



WE DON'T REALLY NEED THIS, DO WE?

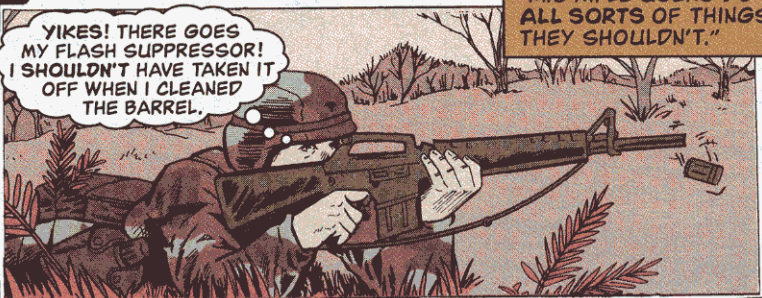
NAH!



HOW TO REMOVE THE FUEL BOOST PUMP ON A KIWOWA, COBRA, OR HUEY IS SPELLED OUT IN THE TM, YET MECHANICS DEPRESS THE SHUTOFF VALVE ARM IN THE MIDDLE OR ON THE OPPOSITE END, NOT DIRECTLY OVER THE SPRING.




HEY, BUDDY, MOVE YOUR THUMB BACK OVER MY SPRING!



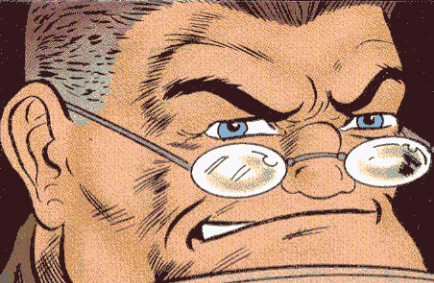
YIKES! THERE GOES MY FLASH SUPPRESSOR! I SHOULDN'T HAVE TAKEN IT OFF WHEN I CLEANED THE BARREL.

"M16 RIFLE USERS DO ALL SORTS OF THINGS THEY SHOULDN'T."



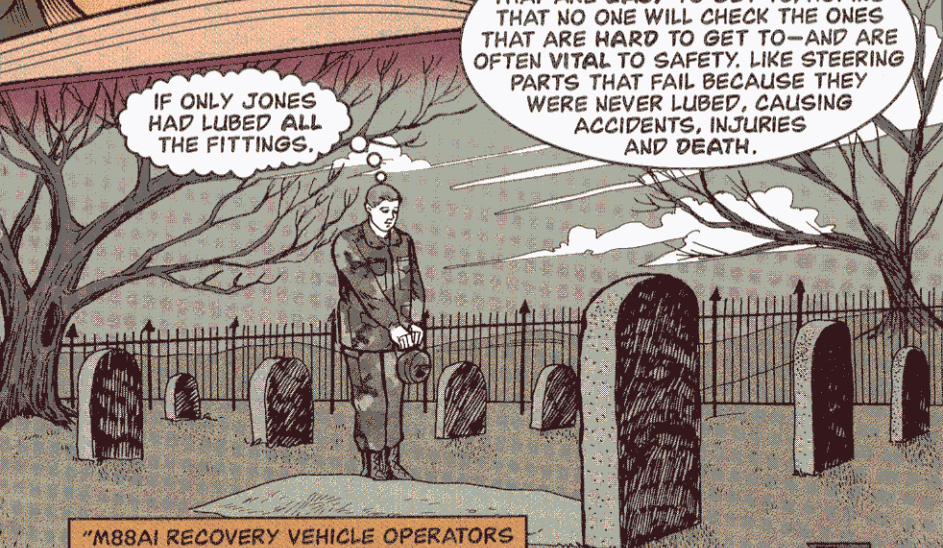
SO, FOLLOWING THE TM SHOULD SOLVE THE PROBLEM.

THAT'S NOT ALL. SOME SOLDIERS DO ONLY WHAT THEY CAN GET AWAY WITH, NOT EVERYTHING THAT NEEDS TO BE DONE.

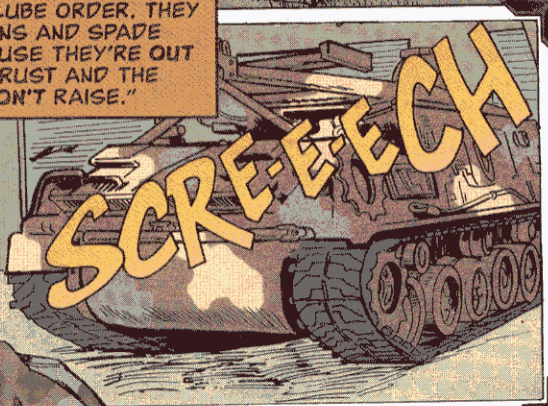



IF ONLY JONES HAD LUBED ALL THE FITTINGS.

THEY LUBE ONLY THOSE GREASE FITTINGS THAT ARE EASY TO GET TO, HOPING THAT NO ONE WILL CHECK THE ONES THAT ARE HARD TO GET TO—AND ARE OFTEN VITAL TO SAFETY. LIKE STEERING PARTS THAT FAIL BECAUSE THEY WERE NEVER LUBED, CAUSING ACCIDENTS, INJURIES AND DEATH.



"M88AI RECOVERY VEHICLE OPERATORS DON'T FOLLOW THE LUBE ORDER. THEY MISS BOOM PIVOT PINS AND SPADE CYLINDER PINS BECAUSE THEY'RE OUT OF SIGHT. THE PINS RUST AND THE BOOM AND SPADE WON'T RAISE."





CLEANING THE MUZZLE BRAKE AND BORE EVACUATOR ON M109-SERIES HOWITZERS IS A HARD JOB, SO CREWS PUT IT OFF WHENEVER THEY CAN. CARBON BUILDS UP INSIDE AND BY THE TIME THEY FINALLY GET TO IT, THE BRAKE AND THE EVACUATOR ARE ALMOST IMPOSSIBLE TO REMOVE.


I'LL CLEAN THIS NEXT TIME!



SOLDIERS FOLD AND STORE TENTS AFTER USE WITHOUT GIVING THEM A CHANCE TO AIR DRY. MOISTURE CAUSES MILDEW DAMAGE.

YOU STINK.

WELL, YOU AIN'T NO PETUNIA, PAL.



GAS SYSTEMS ON M60 AND M249 MACHINE GUNS DO NOT GET CLEANED CORRECTLY, LEADING TO PROBLEMS IN FIRING.

WHAT GIVES?

IT'S NOT FEEDING CORRECTLY.

LEAD-ACID BATTERIES ARE TOO OFTEN REPLACED BECAUSE OF WHAT HASN'T BEEN DONE TO CARE FOR THEM—NO CORROSION REMOVED FROM POSTS AND CONNECTORS, ELECTROLYTE LEVEL NEVER CHECKED NOR DISTILLED WATER ADDED AS NEEDED AND NO RUNNING AT FAST IDLE TO KEEP THEM CHARGED.

WE GET NO RESPECT.

YEAH.

MI TANK DRIVER SHUTS DOWN IMMEDIATELY AFTER OPERATION, NEGLECTING THE REQUIRED TWO-MINUTE COOLDOWN PERIOD. EXCESS HEAT CRACKS THE TURBINE ROTORS AND CLOGS BEARINGS AND OIL PORTS. WHEN THIS HAPPENS ENOUGH, HEAT CRACKS AND RUINS THE REAR ENGINE MODULE.

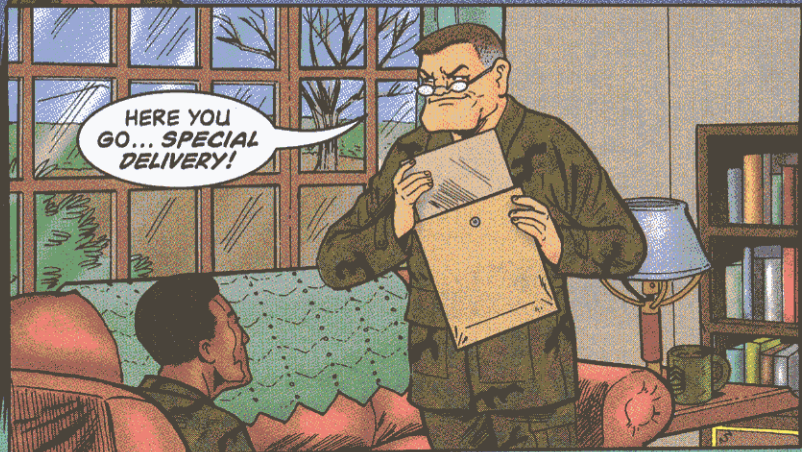
ANTENNA MOUNTS ON VEHICLES RARELY HAVE THE MOISTURE DRAINED FROM THEM, NOR ARE THE CONTACTS KEPT CLEAN.

GLUB!— THAT MEANS CORROSION AND POOR COMMUNICATION.

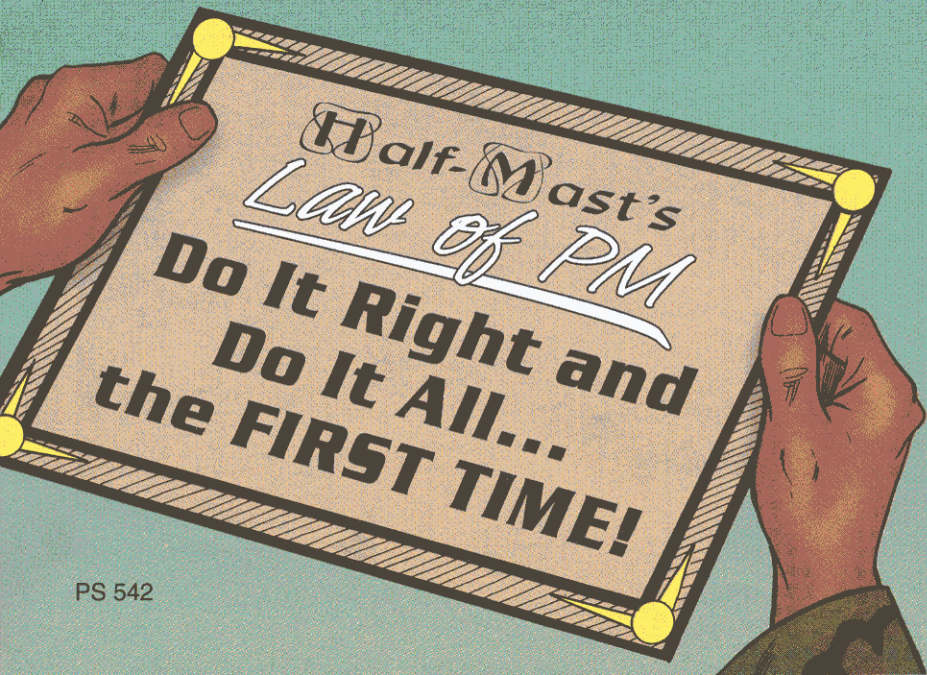
DID YOU LET THE ENGINE COOL DOWN?



ALL THIS MAKES
A LOT OF SENSE, MASTER
SERGEANT. BUT, HOW WOULD
YOU SUM IT ALL UP?



HERE YOU
GO... SPECIAL
DELIVERY!



Brush Off Spring Problem

Dear Editor,

The big problem with the M9 pistol is the trigger bar spring. Just a nudge when you're cleaning the M9 can send the spring flying. Without the spring, you have a weapon that can't be fired.

We have a couple of suggestions to keep springs from disappearing. First, let the armorer handle cleaning around the spring, unless there's an emergency in the field. It's a much simpler job in the arms room and it won't be a catastrophe if the spring disappears.

Second, armorers should use a soft brush, not a toothbrush, to clean around the spring. A soft brush is not going to dislodge the spring, but it will clean out most dirt. The self-help store should have plenty of soft brushes, or you can order one with NSN 7920-00-514-2417.

One caution, armorers: When you take off the handgrips, double-check that you put the lock washers back on. Without them, the screws go in the grip too far. When the magazine's pushed in, it jams and you can't get it out.

SGT Larry Kendrick
801st MSB
Ft Campbell, KY



The Fix(es) Is In

The M4A1 carbine has been around long enough now for a few problems to turn up. Fortunately, armorers, these are problems with solutions.

Poor Extracting

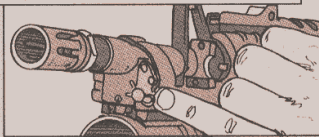
Order a new, heavier buffer, NSN 1005-01-231-3138, and a new extractor, NSN 1005-01-424-5899. The buffer slows the rate of fire and helps the extractor keep up. You can ID the new extractor by its black insert. The

new buffer has an H stamped on its center face.

M203 Grenade Launcher Quick-release Button

When the M203 is mounted on the M4A1, a nudge to the button for the quick-release lets the M203 come loose. The fix is a hitch pin clip, NSN 5315-00-420-1105. Just fit the clip behind the button. Then the button can't be depressed.

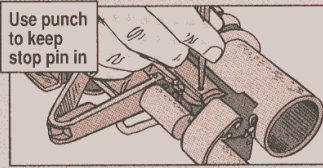
Clip prevents barrel from coming loose



M203 Barrel Stop

When the M203 is mounted on the M16 rifle, the handguard holds the pin for the barrel stop in place. But the M4A1 handguards don't reach that far, so the pin works out. The solution is to stake the hole edge once only on both sides of the receiver with a center punch.

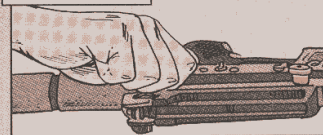
Use punch to keep stop pin in



Other Stuff

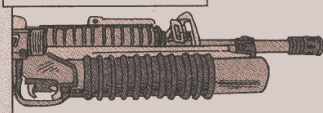
Caution your unit that the nuts for the M4A1 carrying handle should be hand-tightened only. The nuts have slots, so soldiers think it's OK to use a screwdriver. But if they're tightened too much, the only way to loosen the self-tightening nuts is with pliers. That rubs off the receiver's finish and leads to corrosion.

Hand-tighten nuts



When the M203 is mounted on the M4A1, the sling swivel can't be mounted on the left side of the barrel or it interferes with the M203 barrel release latch. Mount it on the right side instead.

Swivel goes on right side when M203 is mounted



Oops! Missed a Spot

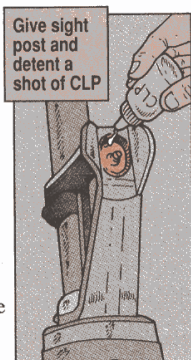
Any armorer will gladly bet his paycheck that he's going to find certain parts haven't been cleaned and lubed when M16 rifles come back from the field. Soldiers skip cleaning these parts again and again.

But neglect collects its debt eventually. Sight posts freeze or forward assists jam. That makes you riflemen look bad on the range. Spend a few extra cleaning minutes and catch these often-missed spots:

✱ **Front sight post:**

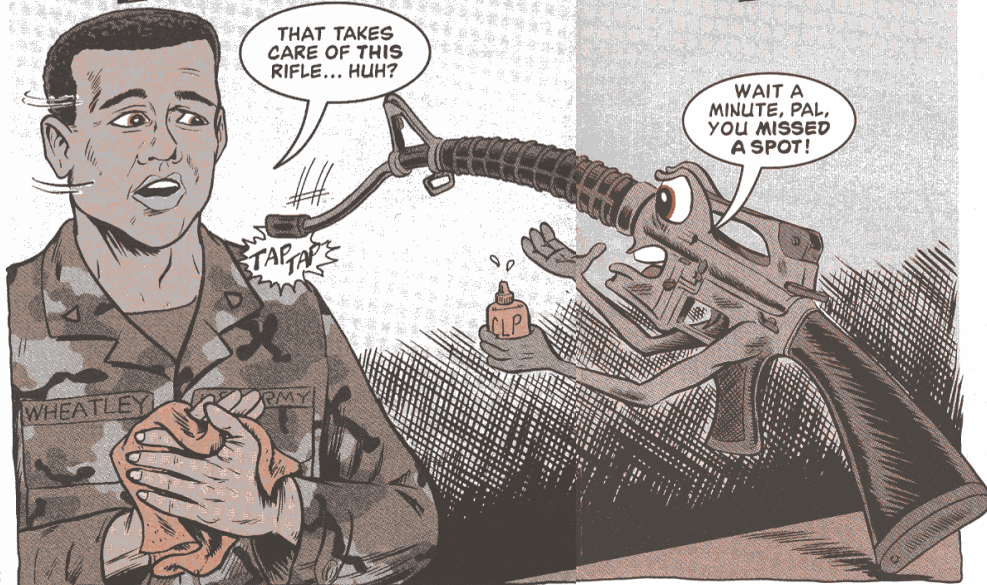
Clean around the post with a toothbrush. Depress the detent and give it a drop or two of CLP.

Work the detent and post up and down until they move smoothly. If they don't move smoothly, tell your armorer.

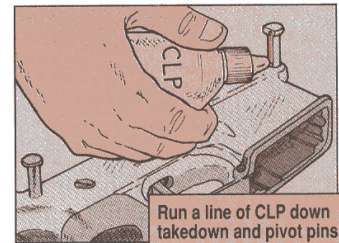


He needs to take apart the sight and clean it.

✱ **Forward assist:** Squirt one shot of CLP in the forward assist port inside the upper receiver. Run the forward assist back and forth until all dirt is forced out.

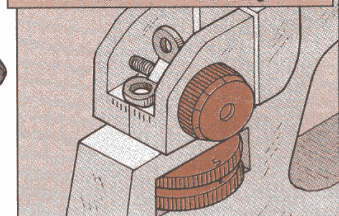


✱ **Takedown and pivot pins:** Put a strip of CLP down each pin. Work the pins in and out of the receiver until they move easily. This makes it much easier to disassemble your M16.



✱ **Windage and elevation knobs:** Squirt a couple of drops of CLP on each knob. Completely rotate the knobs to work all the lube in.

Use CLP on elevation and windage knobs

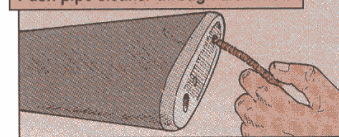


✱ **Charging handle:** Pull out the handle from the receiver and clean it with a cloth and CLP. Use a pipe cleaner dipped in CLP to clean out the handle's slots.



✱ **Buttstock drain hole:** Push a pipe cleaner through the hole to clear it. If the hole stays plugged, moisture collects inside the buttstock and soon corrosion is chewing up the lower receiver.

Push pipe cleaner through drain hole



No Static Allowed

ESD strikes silently, destroying or degrading transistors, resistors and integrated circuits. It can strike anytime, anywhere—during packing, shipping, handling or installation of sensitive electronic equipment.

What Causes ESD?

In many cases, ESD comes from electrically charged objects in your work area: clothing, rugs, chairs, paper, ordinary packaging materials, or the work surface itself.

But the main source of ESD is you! You build up as much as

| STATIC GENERATORS | 10-20% relative humidity | | 65-90% relative humidity | |
|--|--------------------------|-------------|--------------------------|--|
| | | | | |
| Walking across carpet | 35,000 volts | 1,500 volts | | |
| Walking over vinyl floor | 12,000 volts | 250 volts | | |
| Worker at bench | 6,000 volts | 100 volts | | |
| Vinyl envelopes for work instructions | 7,000 volts | 600 volts | | |
| Common poly bag picked up from bench | 20,000 volts | 1,200 volts | | |
| Work chair padded with polyurethane foam | 18,000 volts | 1,500 volts | | |

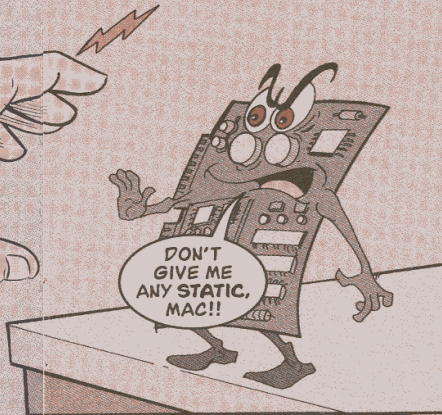
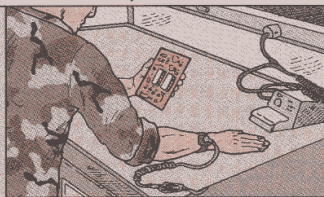
20,000 volts of static electricity by walking across the floor or combing your hair. Then, just by touching a circuit card, you'll discharge static electricity, often without realizing it.

A spark as little as 30 volts ruins a sensitive electronic device.

Static-Safe Workstation

Protect your equipment from ESD. Work only at a static-safe workstation that includes a grounded static-dissipative table mat, floor mat and wrist strap. They're designed to limit static

Handle cards only at static-safe workstation



buildup and carry already existing charges to the ground.

Here's what's available:

NSN 4940-01-250-4236 will bring you a static dissipative table mat, common point ground system, and wrist strap, for use in all areas other than clean rooms or laminar flow booths. It also includes a small/medium and large/extra large wrist cuff.

NSN 4940-01-250-4237 gets you a portable work surface, common point ground system, and wrist strap, for use where other static control used in work stations is not available. It also includes a small/medium and large/extra large wrist cuff.

Use NSN 5920-01-253-5368 to order a field service kit, which has 3 pouches, MIL-P-81997, type II; 3 barrier bags, MIL-B-81705, Type I; 2 wrist straps; 1 ground cord and mat, static dissipating.

If you're going to be packaging ESD-sensitive (ESDS) equipment, here's a couple of ways to protect them:

First, put the cards into some anti-static bubble wrap, NSN 8135-01-234-6649. That number isn't on the AMDF, so order it on DD Form 1348-6 from RIC GSA. Then, make a bag from static shielding barrier material, NSN 8135-01-185-6816. Heat seal the bag with a hand-held sealer, NSN 3540-00-975-4255.

If the piece of electronic equipment is small enough, put it into one of these ESD-free flexible cushion pouches:

| Pouch Size (inches) | NSN 8105-01- |
|---------------------|--------------|
| 12x12 | 197-2965 |
| 11x15 | 215-4752 |
| 10x10 | 197-2966 |
| 10x12 | 197-7846 |
| 8x8 | 215-0462 |

Whichever way you go, finish the job with a fast pack. ESD

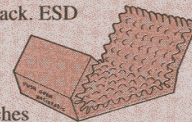
fast packs are NSN 8115-01-019-4084 for

12 x 18 x 3 1/2 inches and NSN 8115-01-057-1244 for 10 x 10 x 3 1/2 inches.

There's much more to know about packaging, and you can get the word from a LOGSA pub. To get your copy of Packaging—The Basics, write to:

LOGSA-PSCC
ATTN: AMXLS-TP-P
11 Hap Arnold Blvd
Tobyhanna, PA 18466-5097

Or call DSN 795-7685, or (717) 895-7685.



A few precautions and regular PM around your workstation will keep static electricity under control.

High Charge

These common items have a high static charge: candy wrappers, folders, paper, styrofoam cups, cigarette packs, plastic and masking tape, plastics, vinyl, heat guns with blowers and common packing material. Keep them away from the work site. If you must have technical manuals and paperwork at the workstation, store them in antistatic bags.

Things like magnets, radios, tape players and telephones can create an electromagnetic field. Keep them clear of the workstation.

If you must package an item in stretch- or shrink-wrap, do it away from your workstation. Packaging an item with these materials generates static electricity.

Training

People handling ESDS items should be trained in ESD precautionary procedures. Untrained personnel should **never** handle ESDS items when the items are outside the ESDS protective packaging.

Clean Means Safe

Dirt and dust on the table and floor mats act as insulators, making it harder



for the mats to carry electrical charges to ground. Clean the mats with a soft cloth, or brush them with a whisk broom.

Use only brushes made with natural bristles, such as horse hair. Brushes made with nylon or other synthetic bristles will generate static electricity.

Never wax or polish the table or floor mats. That leaves a residue that insulates the mats.

Grounding

Connect table and floor mat grounding cords directly to shop ground. Ground each workstation individually. Never connect workstations in series to ground them.

Make sure your grounding cords are firmly attached to bare metal, not paint.

Wear your wrist strap on your skin, not over your sleeve, or it won't work.



Replace grounding cords if they're badly worn or cut.

If you can't use ground straps, touch a grounded metal object before removing ESDS items from their protective packaging.

Resistance Checks

Follow the manufacturer's instructions for measuring the resistance of your workstation components. That's

the only way to be sure your workstation's doing its job of carrying static charges to the ground.

Measure grounding cord resistance once a week with an ohmmeter or multimeter.



Measuring resistance in the wrist strap is especially important. The strap gets more wear and tear than any other part of your workstation. Measure it at least daily.

The wrist strap has a resistor to protect you against high-voltage shocks. If the resistance is too low, the strap can't protect you. Too much resistance means the strap can't draw static electricity away from your body. Either way, you'll need to replace it.

Have your workstation tested for resistance from the surface of the table or floor mats to ground. That takes special testing equipment and special support. Contact your local TMDE support folks or CECOM LAR for help.

For more information on ESD protection, see these publications: MIL-HDBK-773, Electrostatic Discharge Protective Packaging; MIL-HDBK-263, Electrostatic Discharge Control Handbook; MIL-STD-1686, Electrostatic Discharge Control Program; and MIL-W-87893, Electrostatic Discharge Control Work Station.

If you can't find copies locally, order them by writing:

Defense Automated Printing Service
700 Robbins Avenue
Bldg. 4/D
Philadelphia, PA 19111-5094

Call DSN 442-2179/2626 or (215) 697-2179/2626 for customer assistance. Or fax your request to DSN 442-1462, (215) 697-1462.

You can also enroll in a correspondence course on electrostatic discharge, called Packaging and Handling of Electrostatic Discharge Sensitive Items, 908F60-PT6000, by writing:

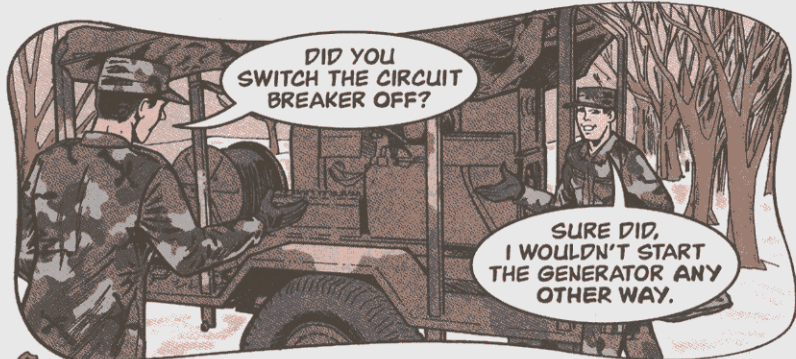
DA Institute for Professional Development (AIPD)
US Army Training Support Center
Newport News, VA 23628-0001

OK, I'M
GROUNDED. IS THAT
BETTER?

MUCH
BETTER!

PS END

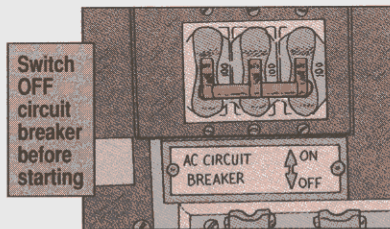
Remember Breakers and Gaskets



Operators, protect your generator and the equipment it powers by switching OFF the generator's circuit breaker before starting the generator.

If you leave the circuit breaker ON during start-up, a power surge could damage the equipment the generator is powering.

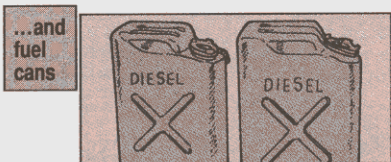
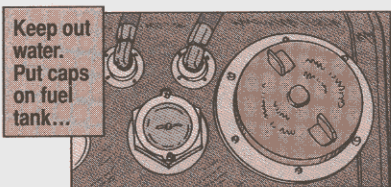
that's free of cracks and nicks. A good gasket creates a tight seal to keep out condensation and water.



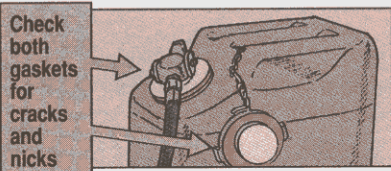
Fuel

Water in the fuel chokes the engine. The engine coughs, sputters and dies. Result: No generator power. Worse yet, it could damage the engine.

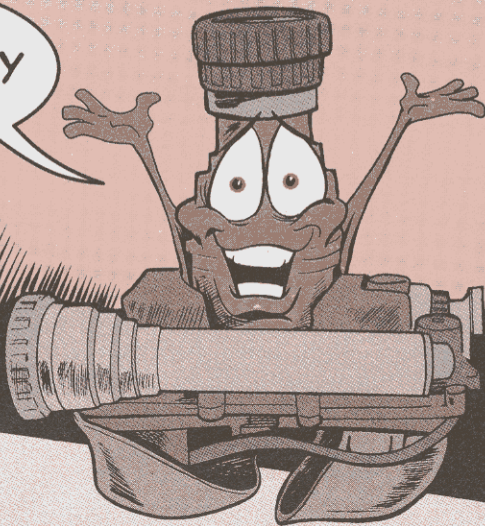
You've got to keep water out of the fuel. The best place to start is with the caps on the fuel tank and fuel cans. Make sure that each cap has a gasket



If you use an auxiliary fuel line to feed fuel from a can to the auxiliary pump, check the gasket on the fuel can adapter, too.



JUST
REPLACE MY
SWITCH!



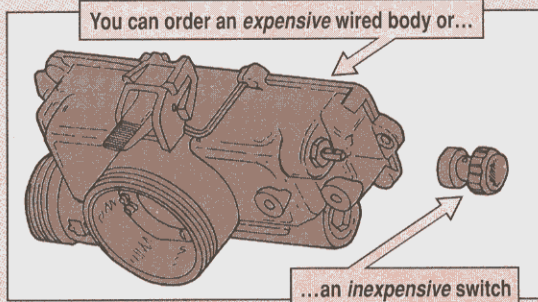
When the **OFF-ON-PULL IR** switch on your night vision goggles goes kablooeey, **you** can replace the \$250 wired body assembly, NSN 5855-01-246-6814.

Or your support folks can replace just the switch with NSN 5930-01-303-0565. The switch costs about \$20.

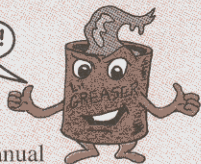
Look for your AN/PVS-7B manuals to be changed to show that DS repairs it. Until the TMs are changed,

CECOM says to go ahead and have DS change just the switch.

Remember, though, this procedure is just for the old wired body, NSN 5855-01-246-6814. The new wired body assembly, NSN 5855-01-381-6048, has a different switch. The switches are not interchangeable.



Grease Is the Word



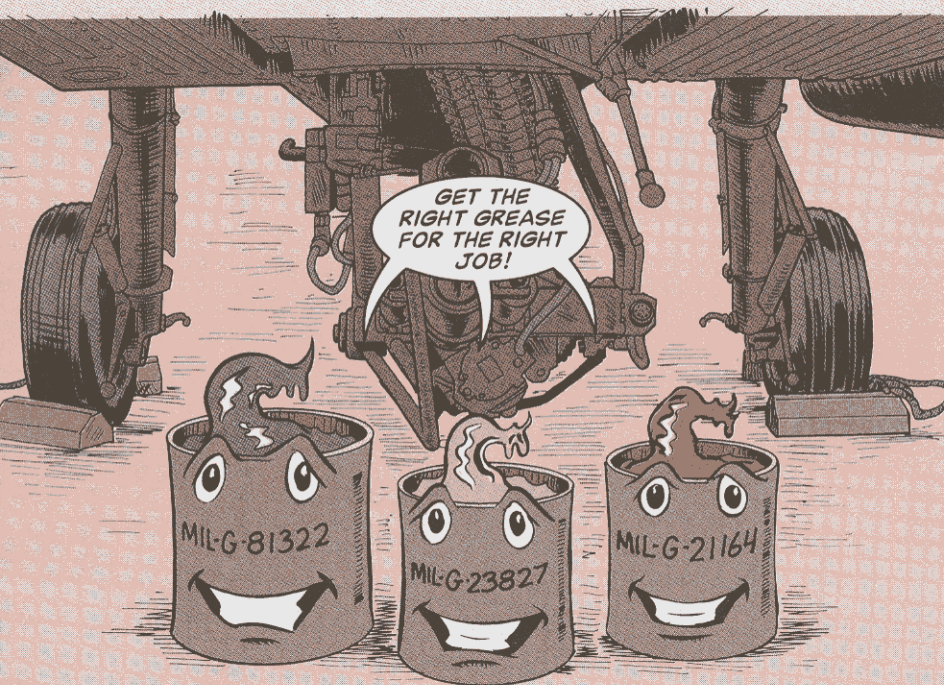
Not all grease is created equal. That's why your 30mm gun manual calls for **three** different types: MIL-G-21164, MIL-G-81322, and MIL-G-23827.

MIL-G-23827 is rarely used and there doesn't seem to be a problem with it. The problem is that too many of you are using MIL-G-81322 when MIL-G-21164 is called for, and vice versa.

MIL-G-21164 is molybdenum disulfide. It's graphite blue and is used on things like the barrel support, recoil pins and clamp halves, constant speed drive gear cam assembly and the chain. Its heat resistance is greater than standard grease, but it's also more abrasive.

MIL-G-81322 is standard aircraft grease. It comes in several colors including red, beige and brown. It's used on things like the gun support bearings, transfer housing, the bevel gear and the vertical drive shaft assembly. It's cheaper, but it breaks down quicker than MIL-G-21164.

So get out that yellow highlighter and mark the called-for grease in the Materials/Parts section of each task in TM 9-1090-208-23-1-1, -23-1-2 and -23-2. Now make your own help sheet listing the type of grease and all the task areas that use it. Before you apply grease to a gun, check the sheet.



Hellfire Eye Patch



Dear Windy,

In southern Mississippi, where the sun can be brutal, the lens on the Hellfire missile laser seeker turns cloudy and discolored. This blinds the eye of the missile.

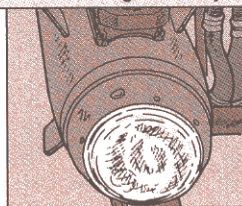
Deicing set, NSN 1377-01-169-4323, can be used to protect the lens, but it costs \$2,500—and we don't need it to deice.

So we use an OH-58D engine exhaust cover, NSN 8115-00-887-1953.

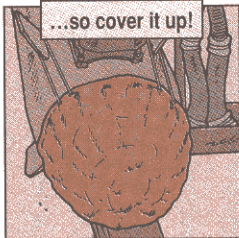
It slips over the lens perfectly. We attach it with rubber bands around the guidance fins.

**SFC Ronald E. Groce
SSG Dallas Long
1108th AVCRAD
Gulfport, MS**

Laser seeker gets cloudy...



...so cover it up!



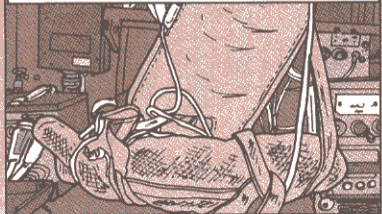
Since exhaust covers are cheap and lenses aren't, great idea! You might want to attach the cover with something more substantial, like an elastic cord. Also, attach a Remove Before Flight streamer to the cover.

Windy

Pack Carefully

Some of you Kiowa pilots and crew members think the aft electronics bay makes a good storage area. Well, you're right, it does.

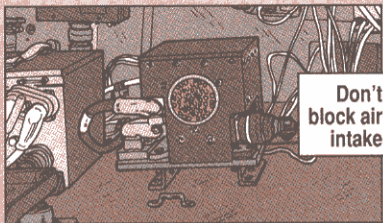
Electronics bay has some storage area...



... but things shouldn't be just tossed in

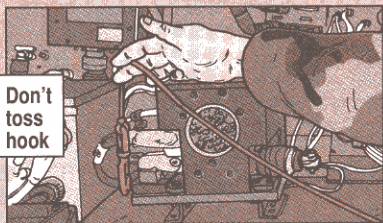
But, there's a big difference between storing something neatly and just throwing it in. That difference can destroy a DC power converter.

A carelessly placed pillow block or pilot's bag can block the air intake vent on the power converter. With no air to keep it cool, your converter will be down in no time.



Don't block air intake

Sometimes a blade tiedown hook does the damage. Tossed just right (and it often seems it is) the hook can land across the DC pole on the power converter. Scratch one converter.



Don't toss hook

There's no secret to solving these problems. Take your time when storing things in the electronics bay. Forget the "toss and the throw." Adopt instead the "put and place."

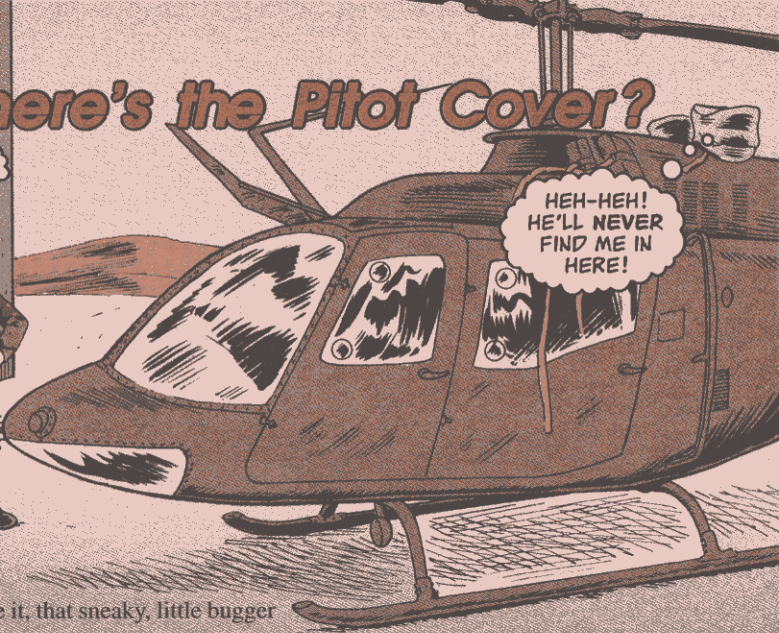


STOW THAT GEAR AND LET'S GET SOME COFFEE.

SOUNDS GOOD!

THAT'S NO WAY TO TREAT YOUR BIRD!

Where's the Pitot Cover?



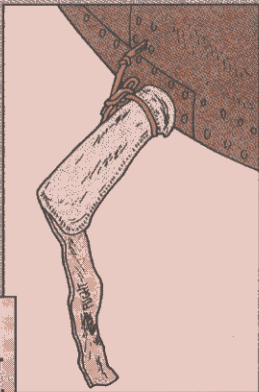
Let's face it, that sneaky, little bugger can hide.

Yeah, we're talking about the pitot tube cover for the nose pitot of the Kiowa.

Seems an awful lot of you are snipping the rope that ties the pitot cover to the engine pillows. You're doing it to keep the ropes from scratching the windshield. Seems smart, but you've just made a big item small. A small item can hide.

Where?

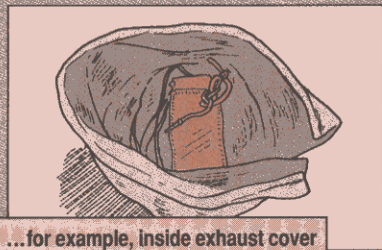
Without rope, pitot tube cover can hide...



Well, how about at the bottom of an exhaust cover. Or maybe under an engine pillow.

And here's the real fly in the ointment: those small guys in hiding seem to come out just in time to cause big-time FOD problems.

So, keep the pitot cover attached to the pillow blocks. If you can't do that, take off the short REMOVE BEFORE FLIGHT streamer from the cover and attach a long one.



...for example, inside exhaust cover

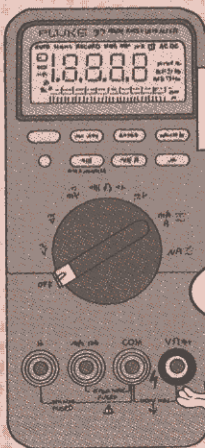
Multimeter for Rocket Current

Before you load rockets on your Apache, Kiowa or Cobra, Page 3-15 of TM 9-1055-460-13&P says you must do a rocket firing current check.

Your unit is authorized the AN/PSM-45 multimeter, NSN 6625-01-139-2512. It will do the check, but—and here's the problem—you can no longer get that model.

When you order the AN/PSM-45, you'll get the -45A, NSN 6625-01-265-6000. The AN/PSM-45A won't do the rocket firing current check!

AH-1 . . .



Use
Fluke 87
multimeter

CHECK
IT OUT!



There is a multimeter that will, though. It's the Fluke 87, NSN 6625-01-312-2930. It will also do the other jobs the -45A does.

ACALA has authorized units with the AN/PSM-45 multimeter on their MTOE to order the Fluke 87.

Eventually, the Fluke 87 will be added to the special tools list in the aircraft TMs.

Making the Bumper Stick

Dear Windy,

On Page 37 of PS 524 you said to replace just the bumper on the Cobra's landing gear support instead of the entire landing gear support when a bumper wears out. Sounds good, but we've got a problem. The adhesive recommended on Page 3-13 of TM 55-1520-236-23 and on Page 3-3 of TM 55-1520-234-23 requires you to heat the support assembly in an oven in order to get a bond between the bumper and the support.

But, we don't have an oven and don't know of many folks that do. Is there another adhesive that doesn't need this heating process? We tried this adhesive without heating it, but the bumper slides off the support in about a day.

SGT A. B.

Dear Sergeant A. B.,

Use adhesive, NSN 8040-00-273-8716 or NSN 8040-00-165-8614, to keep the bumper attached to the support.

Windy

ALSE...

Tape the Radio Switch

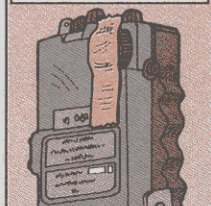
Dear Windy,

We save ourselves a lot of frustration—and a lot of batteries—by taping over the VOL ON/OFF switch on the survival vest's AN/PRC-112 radio set.

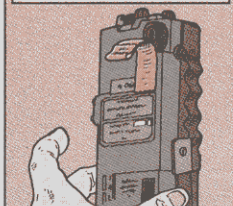
The switch often gets turned on when the radio gets stuffed into the survival vest pocket. Just take two inches of "100 mile-per-hour" tape and put it over the radio's switch.

When you want to turn on the radio, pull the tape back. To make pulling the tape back easier, we fold one end so it won't stick to the radio.

Tape prevents accidental activation



Double-over tape end to make removal easier



SFC Keith P. Hunter
ALSE
Ft Rucker, AL

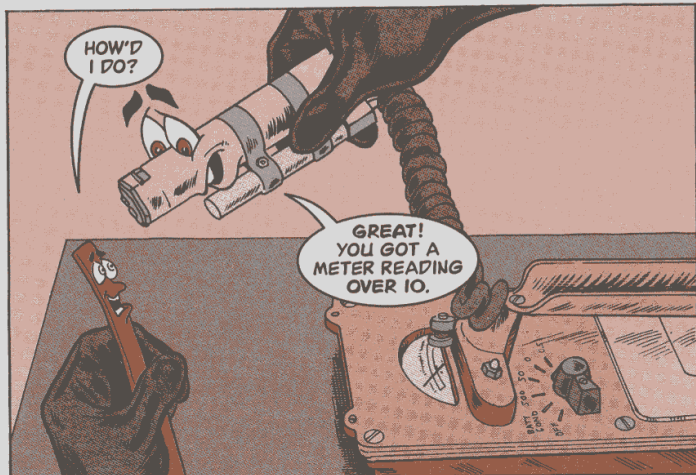
A simple tip, but important. An emergency radio with a dead battery is nothing more than a grave marker. We recommend, if available, surgical tape, NSN 6510-01-060-1639. It does not leave the gummy residue that "100 mile-per-hour tape" leaves.

Windy

THIS TAPE WORKS GREAT. THANKS FOR THE TIP, SERGEANT.

THANK SERGEANT HUNTER.

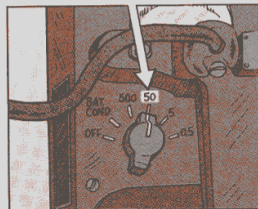
Old Samples Need Testing



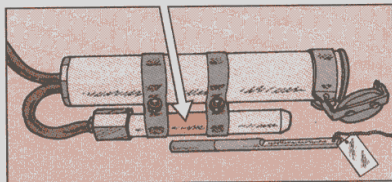
Think your MX-7338 radio-active test sample is too weak to test the AN/PDR-27 radiac set?

Find out for sure before you turn it in for a new one. Here's how to test it:

⇒ Set your AN/PDR-27's function switch to 50.



⇒ Put the purple (active) end of the test sample flat against and parallel with the center part of the set's small probe.

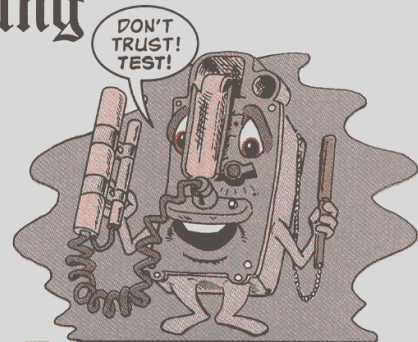


⇒ If the meter reads 10 or more milliroentgens per hour, your test sample is still strong enough to test the AN/PDR-27.

⇒ If the meter reads below 10, make sure the fault's not with the AN/PDR-27. Troubleshoot it without the test sample according to your radiac's TM.

If the radiac set checks out OK, then you know you have a weak test sample. Turn it in to your local radiation protection officer (RPO). Get a new one from him.

Don't forget to chain the new sample to the carrying case as shown on Page 1-8 of TM 11-6665-230-12.



M12A1 Decon . . .

Dry Up Dry Rot



Dear Half-Mast,

We have lots of trouble with the M12 decon hoses dry-rotting during storage. Is there anything we can do to stop the rot?

SGT S.C.

Dear Sergeant S.C.,

Yes. Before you park your M12s, clean the hoses with a mild detergent mixed with hot water. Be sure to wipe off all the grease. Let the hoses completely air dry.

Store them in the hose compartments on the M12 pump and burner unit. Make sure the compartment lid on the burner is securely latched to seal out water. Put on the pump's cover, NSN 4230-00-943-5536, to keep its hoses dry.

Cover keeps hoses dry



Half-Mast

Passing the PATS Test

The M41 protection assessment test system (PATS) is made to test NBC masks with great precision, since the mask is life-or-death protection. Because PATS is so precise, it doesn't

take much—condensation, a dirty outlet valve—for a mask to flunk the test.

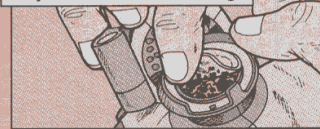
So, before testing, each soldier should clean his mask and do a thorough PMCS. A loose canister or side

voicemitter, a dirty outlet valve or inlet valve, or a poorly adjusted head harness will fail the mask. Make sure the outlet valve cover is cleaned inside as well as outside.

2904. Other alcohols clog the PATS' optic system. If the PATS becomes too clogged, it must be sent back to the TMDE Army Primary Standards Lab for repair.

Take off the storage cap only to install the alcohol cartridge. While using the cartridge, put the cap on the alcohol capsule to keep the alcohol uncontaminated. When you're finished with the PATS, immediately put the storage cap back on to seal out air contamination.

Dirty valve causes bad readings



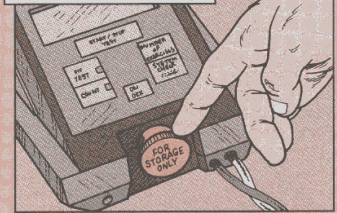
After each soldier dons his mask, have him connect the drink tube quick-disconnect to the M1 canteen cap and blow out the drink tube. That gets rid of moisture inside the tube.

Look through the eyelenses to check that the drink tube extension is not pressing against the soldier's forehead. That closes off the air sampling path.

If necessary, readjust the extension so you can see its opening.

For the PATS itself, don't skimp on alcohol. Use only reagent grade isopropyl alcohol, NSN 6810-01-382-

Only remove storage cap to install alcohol cartridge

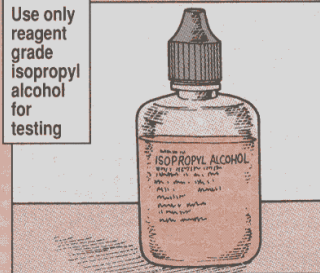


Take off the high efficiency particulate filter **only** to do an ambient particle background check or a mask fit test. Put the filter back on as soon as you're through to prevent contamination.

Only remove particulate filter for particle count



Use only reagent grade isopropyl alcohol for testing



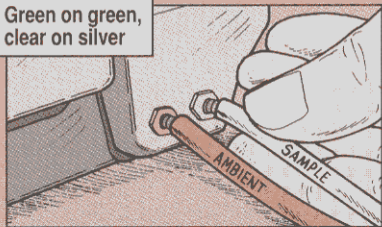
OH, MAN, I'LL NEVER PASS THIS TEST. IT'S TOO HARD.

DON'T WORRY, PAL. FOLLOW THESE PM TIPS AND YOU CAN BREATHE EASY!

If you get a low particle count, try this troubleshooting:

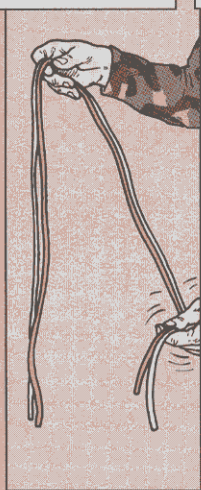
- Move to an area where the air is not as clean, or open a window, or light a candle.
- Use fresh alcohol.
- Change the alcohol wick.
- Check that the twin tube assembly is not kinked or blocked and that the

Green on green,
clear on silver

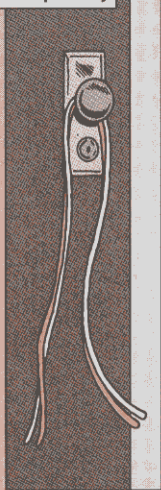


clear tube is hooked to the silver fitting and the green tube to the green fitting. Also check the tubes for moisture. Shake them out and hang them up to dry if necessary.

Moisture in tubes?
Shake them out...

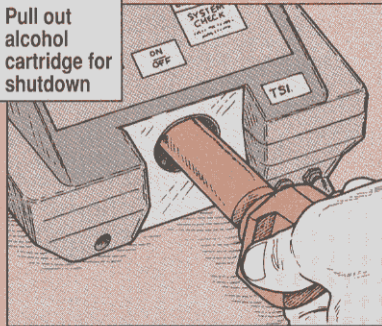


...and hang
them up to dry

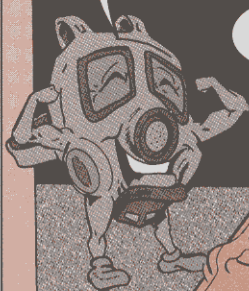


When you're ready to store PATS, remove the alcohol cartridge. If PATS sits with the cartridge installed, alcohol saturates the counting mechanism and PATS is kaput.

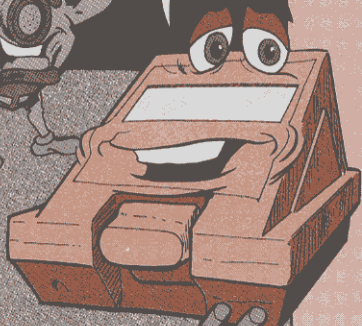
Pull out alcohol
cartridge for
shutdown



I'VE
PASSED AND
I'M READY
TO GO!



CAN YOUR
MASK PASS THE
PATS TEST?



Parts Lowdown

THIS IS
JUST WHAT I'VE
BEEN LOOKING
FOR.



Search until your eyes bug out, but you won't find a pub that lists parts for your strapping and sealing kits.

Don't waste your money buying a whole new kit, though. Find the replacement parts you need in this list:

| Kit, NSN 3540-00-565-6240 | | |
|---------------------------|-------------------|----------------|
| Item | NSN | Qty |
| Sealer | 3540-00-223-8855 | 1 |
| Stretcher | 3540-00-278-1250 | 1 |
| Box | 3540-00-897-5516* | 1 |
| Seals, 3/8-in | 8135-00-239-5285 | 5,000 |
| Strapping, 3/8-in | 8135-00-283-0664 | 100-lb coil |

| Kit, NSN 3540-00-565-6241 | | |
|---------------------------|-------------------|----------------|
| Item | NSN | Qty |
| Sealer | 3540-00-234-6741 | 1 |
| Stretcher | 3540-00-278-1250 | 1 |
| Box | 3540-00-897-5516* | 1 |
| Seals, 1/2-in | 8135-00-239-5308 | 5,000 |
| Strapping, 1/2-in | 8135-00-283-0666 | 100-lb coil |

| Kit, NSN 3540-00-565-6242 | | |
|---------------------------|-------------------|----------------|
| Item | NSN | Qty |
| Sealer | 3540-00-234-6742 | 1 |
| Stretcher | 3540-00-278-1250 | 1 |
| Box | 3540-00-897-5516* | 1 |
| Seals, 5/8-in | 8135-00-290-1086 | 5,000 |
| Strapping, 5/8-in | 8135-00-283-0667 | 100-lb coil |

| Kit, NSN 3540-00-565-6243 | | |
|---------------------------|-------------------|----------------|
| Item | NSN | Qty |
| Sealer | 3540-00-234-6742 | 1 |
| Stretcher | 3540-00-278-1250 | 1 |
| Box | 3540-00-897-5516* | 1 |
| Seals, 3/4-in | 8135-00-239-5288 | 5,000 |
| Strapping, 3/4-in | 8135-00-283-0668 | 100-lb coil |

| Kit, NSN 3540-00-565-6244 | | |
|---------------------------|-------------------|----------------|
| Item | NSN | Qty |
| Sealer | 3540-00-223-8592 | 1 |
| Stretcher | 3540-00-278-1251 | 1 |
| Cutter | 5110-00-223-6281 | 1 |
| Box | 3540-00-897-8117* | 1 |
| Seals, 1 1/4-in | 8135-00-239-5294 | 1,000 |
| Strapping, 1 1/4-in | 8135-00-283-0671 | 100-lb coil |

* These boxes are local purchase items.

BIGGER ISN'T ALWAYS BETTER—AT LEAST NOT WHEN IT COMES TO THE NEW M24 MINIATURE BINOCULARS.

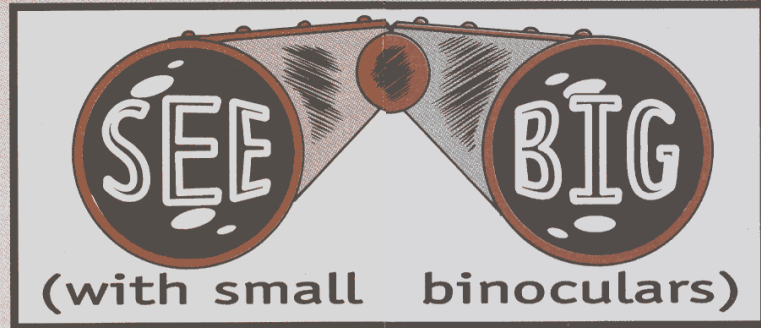


The M24s weigh just over a pound and are small enough to fit into a BDU pocket, yet they have the same magnification, laser protection and reticle of the larger M22 binoculars.

Get the M24 binoculars with NSN 1240-01-430-6944. CTA 50-909 is your authorization for ordering.

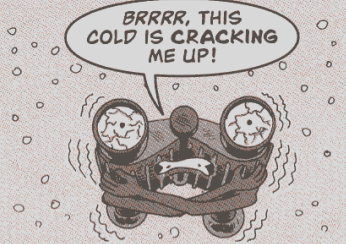
Keep 'em Working

Once you've got the M24 binoculars, take good care of them.



✓ Do not breathe directly on the optical elements during cold weather. Your breath will condense on the lenses and freeze.

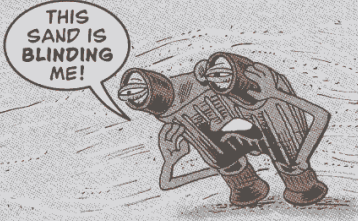
✓ Never expose the binoculars to sudden and extreme temperature changes—like taking them from a well-heated room to sub-zero temperatures. The optical elements may crack.



✓ Use lens covers when going from a warm area to a cool area. That lets the lenses cool gradually and prevents condensation.

✓ Do not let the binoculars lie unprotected in direct sunlight. High temperatures let gas escape from inside the binoculars and can break down the adhesive that holds the optical elements in place.

✓ Keep the lens covers on and the binoculars in your pocket as much as possible in sandy areas. Blowing dust and sand will scratch the glass and foul the adjusting mechanisms.

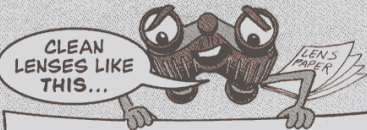


If you lose the covers, replace them as soon as you can. The eye lens cover is NSN 6650-01-433-3048. NSN 6650-

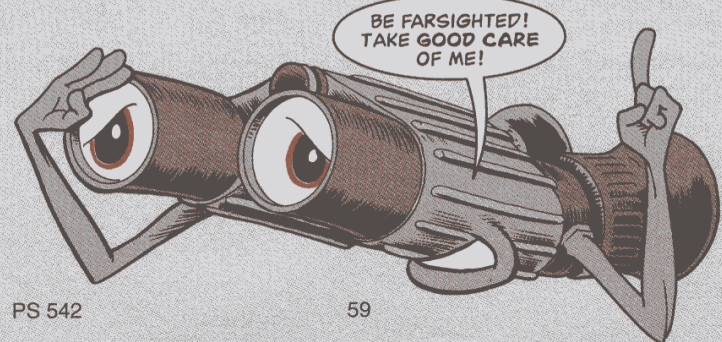
01-433-3056 gets the objective lens cover.

Keep 'em Clean

Keep the exterior clean with a lint-free cloth, NSN 8305-00-267-3015. Remove grease spots, fingerprints and other oil with a lint-free cloth dampened with soap and water. Then dry the binoculars with another lint-free cloth.



1. Blow away as much dust and dirt as possible.
2. Form a little broom with a piece of lens tissue, NSN 6640-00-663-0832, and brush off the lenses. No rubbing, though. That can scratch the glass.
3. Blow off the lenses once again.
4. Moisten another piece of lens tissue and gently wipe the lenses. Water or glass cleaner works well. In a pinch, use saliva to clean the lenses.
5. Dry the lenses with a third piece of lens paper.



GOOD SIGNS of SAFETY

CAUTION

DO NOT OPERATE
WITHOUT
EYE PROTECTION

CAUTION

WATCH
YOUR
STEP

| Legend | NSN 9905-01- |
|--|--------------|
| Caution Hearing Protection Required | 100-8205 |
| Caution Hearing Protection Required in this Area | 031-1247 |
| Caution High Noise Area Wear Ear Plugs | 122-1140 |
| Caution Eye Protection Required | 100-8203 |
| Caution Do Not Operate Without Eye Protection | 100-8204 |
| Caution Highly Flammable | 054-0428 |
| Caution Watch Your Step | 054-0450 |

THESE BLACK
AND YELLOW CAUTION
SIGNS ARE 10x14
INCHES.

CAUTION

CAUTION

HIGHLY
FLAMMABLE

CAUTION

HIGH NOISE AREA
WEAR EAR PLUGS

CAUTION

WEAR GOGGLES
WHEN USING THIS
MACHINE

CAUTION

HEARING
PROTECTION
REQUIRED

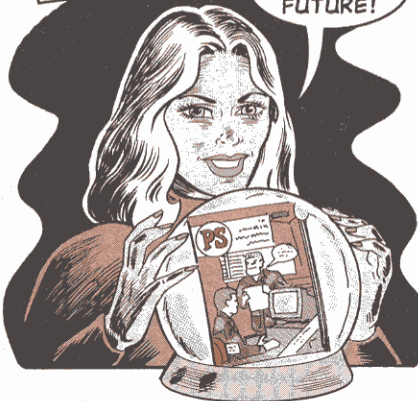
There is also a 7x10-in size available for the **Highly Flammable** sign with NSN 9905-01-054-0427, and the **Wear Goggles When Using This Machine** sign with NSN 9905-00-956-6324.

If you have noisy gear that requires a black and yellow noise caution plate, order it with NSN 9905-00-198-2728. The sign is 4.6 x 2.13 inches and has an adhesive backing.

Check out AR 385-30, Safety Color Code Markings and Signs, for more information on which type and color signs and symbols to use in dangerous areas.

Connie's
★ POST ★
★ PS ★
★ SCRIPTS ★

I SEE A
BRIGHT PM
FUTURE!



M40 Mask Inspection

Too many soldiers are stowing M40 masks folded in the carriers, just like the old M17 mask. That shears off the internal drink tube coupling and cuts a hole in the 6 o'clock position on the inside of the inlet valve housing. NBC NCOs, inspect all your M40s right now. Replace any masks with those defects. Brief your unit on the correct M40 stowing procedure from the -10 TMs.

ECS Spray Bottle Correction

The spray bottle, NSN 8125-01-336-2854, listed at the bottom of the chart on Page 51 of PS 540 is only a sprayer attachment. It's used on the pint and quart bottles of the environmentally compliant solvent (ECS), PF.

Environmental Catalog

The Defense Logistics Agency's (DLA) new environmental products catalog is out. To get one, call DSN 695-5699 or (800) 345-6333. A CD-ROM version comes with each hard copy. The catalog has NSNs and other info on POL, solvents, batteries and other products. You can see the catalog and other DLA pubs on the Internet at

<http://www.dscr.dla.mil>

You can read and download items, and even order online.

Unit Supply UPDATE Update

Here's an update on the scheduled distribution dates for AR 710-2, AR 735-5 and DA Pams 710-2-1 and 710-2-2, all of which are included in Unit Supply UPDATE 14 (Feb 94). Each revised publication will be distributed separately to replace the UPDATE. The ARs should be to the field by Mar 98. The revised DA pams will be printed and distributed later this year. Hold on to UPDATE 14 until you have each of the pubs revisions.

ATCOM Equipment Move

The Aviation and Troop Command (ATCOM) is no more. All the equipment previously managed by ATCOM is now managed by TACOM, TACOM-ACALA, CECOM, SSCOM, and the new Aviation and Missile Command (AMCOM). To find out who now manages the equipment you use, see TB 43-0155, The Transfer of Function of Equipment Publications Managed by the US Army Aviation and Troop Command (ATCOM). If your unit didn't get the TB, have your pubs clerk order it. It also tells you where to send DA Form 2028s, Recommended Changes to Publications and Blank Forms.

DISTRIBUTION: To be distributed in accordance with the initial distribution number (IDN) 340312, requirements for TB 43-PS-Series.

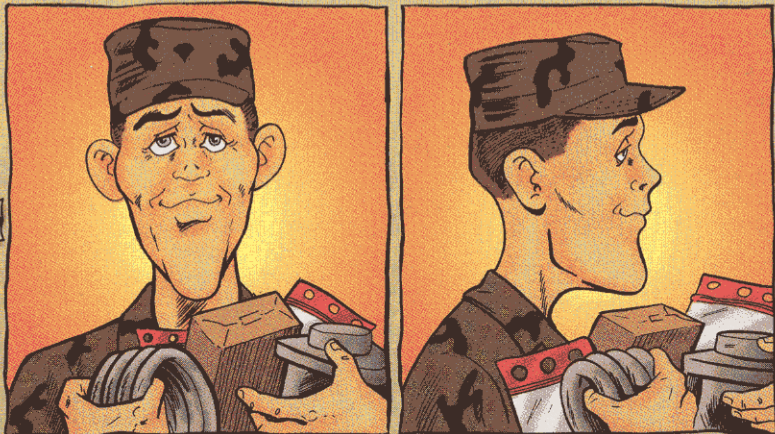
**Would You Stake Your Life *right now* on
the Condition of Your Equipment?**

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FOR HOARDING PARTS



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alias: Kraft T. Hydern

- Failed to move REPAIRABLES to support for OVERHAUL!
- Failed to send the COMPLETE ASSEMBLY!
Removing small parts or modules just runs up the TAB!

**SET HIM STRAIGHT
BEFORE YOUR SUPPLY
PIPELINE RUNS DRY!**