


Issue 417

**PS**

★  
August  
1987

# THE PREVENTIVE MAINTENANCE MONTHLY



TH-THE AIR, EVEN  
MORE THAN THE SEA  
IS UNFORGIVING OF  
HUMAN ERROR!

Approved For  
Public Release;  
Distribution is  
Unlimited

**"The Ups 'n' Downs of Flight"**  
See Page 27

# Supply Excellence Awards

WINNERS AND RUNNERS-UP IN THE SECOND ANNUAL CHIEF OF STAFF ARMY AWARD FOR SUPPLY EXCELLENCE COMPETITION ARE:



- ACTIVE ARMY MTOE UNITS**  
**Company, Battery or Troop**  
 Winner - 287th MP Co, Berlin, Germany  
 Runner-up - 766th MI Detachment, Berlin, Germany
- Battalion or Squadron**  
 Winner - 3d Bn, 8th Armor, Hanau, Germany  
 Runner-up - 44th Engr Bn (Combat Heavy), Camp Mercer, Korea
- ACTIVE ARMY TDA ORGANIZATIONS**  
**Company, Battery or Troop**  
 Winner - Jungle Operations Training Center, Ft Sherman, Panama  
 Runner-up - 8902d Civ Spt Gp, Stuttgart, Germany
- Battalion or Squadron**  
 Winner - 509th Sig Bn, Camp Darby, Italy  
 Runner-up - 6941st Guard Bn, Berlin, Germany
- ARMY NATIONAL GUARD UNITS**  
**Company, Battery or Troop**  
 Winner - HHC, 329th Spt Gp, Virginia Beach, VA  
 Runner-up - HHC, 228th Sig Bde, Spartanburg SC
- Battalion or Squadron**  
 Winner - 111th Sig Bn, Greenwood, SC  
 Runner-up - 1st Bn, 129th FA, Richmond, MO
- ARMY RESERVE MTOE UNITS**  
**Company, Battery or Troop**  
 Winner - HHD, 462d Trans Bn, Trenton, NJ (1st Army)  
 Runner-up - 810th Station Hospital (300B), North Little Rock, AK (5th Army)
- Battalion or Squadron**  
 Winner - 448th Engr Bn, (Combat Heavy), Ft Buchanan, PR (2d Army)  
 Runner-up - 8th Bn, 40th Armor, Ft Huachuca, AZ (6th Army)

TB 43-PS-417, 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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By Order of the Secretary of the Army:

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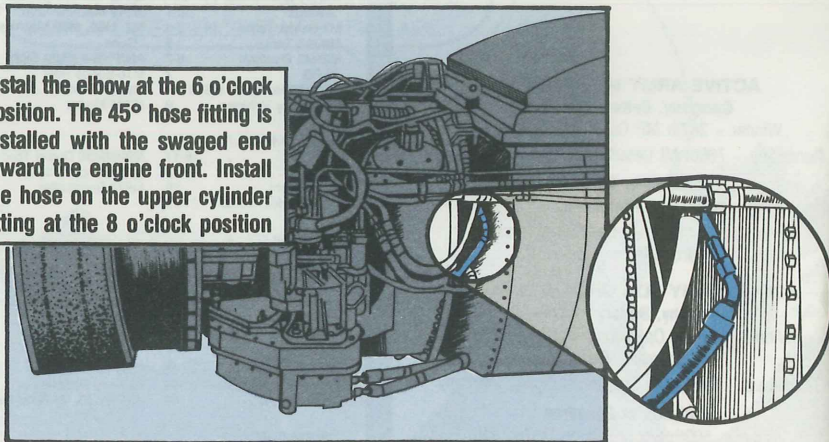
## Install Elbow Right—Prevent Fire

It's overlooking the little things that can cook your favorite crew's goose, M1 mechs.

Like the elbow on the cylinder at the power turbine stator actuator. The elbow can be turned at any angle before it's tightened, and that's the problem.

Turned at the wrong angle—away from the fuel hose that fits on it—the elbow puts a lot of strain on the hose. Too much strain brings a fuel leak and a possible fire.

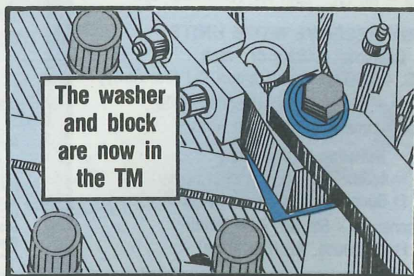
Install the elbow at the 6 o'clock position. The 45° hose fitting is installed with the swaged end toward the engine front. Install the hose on the upper cylinder fitting at the 8 o'clock position



Eyeball the elbow right now. If it looks like the inset, you're good to go. Otherwise, see Page 2-188 of TM 9-2350-255-20-1-3-1 or Page 2-173 of TM 9-2350-264-20-1-3-1 for the right way to point the elbow.

## Bus Block Info Moved

Now that the Sep 86 TM 9-2350-255-20P-1 is out, you'll find the info on the M1 tank's battery bus block and recessed washer in Fig 98. The bus block is shown as Item 43 and the washer is Item 59. Forget what we had on Page 2 in PS 411 about where to find the parts.



## Hardened Yoke Washers Required



Loose yokes on the oil cooler fan drive gearbox cause lots of damage to shaft components. And without working fan gearboxes, your M1, IPM1 or M1A1 tank is overheated real quick.

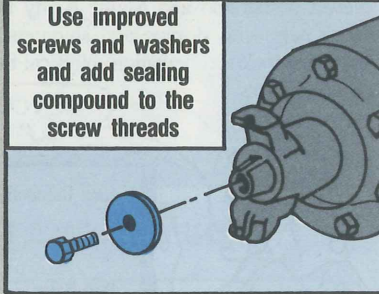
To stop the yokes from working loose, use new washers and cap screws that let you torque the yoke screws tight.

Replace the washers and screws on both the right- and left-side yokes with improved washers, NSN 5310-00-987-1294, and cap screws, NSN 5305-01-010-2362.

Add a little dab of sealing compound, NSN 8030-01-025-1692, to the screw threads before torquing the screws to 30-40 lb-ft.

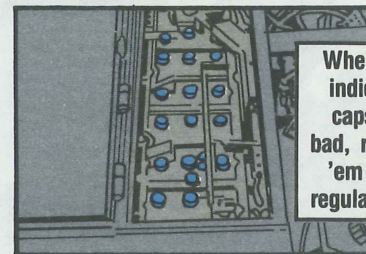
Using the new parts and installation info will make loose yokes ancient history.

Use improved screws and washers and add sealing compound to the screw threads



## M1 Battery Indicators Out

Battery condition indicator, NSN 6625-01-083-5357, fails too often to be much use. So next time one fails, replace it with a standard battery cap. You can pick up extras at your DS battery shop. You won't need gasket, NSN 5330-01-085-6258, either.



## LO Changes

THIS NEW SAMPLING SCHEDULE IS GREAT!



IT SURE SAVES TIME!

Semiannual and annual services for changing oil and filters in M1-series tank transmissions are now "biennial" services.

That means you change the oil and filter every 2 years or when an AOAP oil analysis tells you to.

LO 9-2350-255-12 and LO 9-2350-264-12 will be changed to show you draw AOAP samples every 75 engine hours or 90 days.

TACOM Msg AMSTA-MCD 091500Z Apr 87 has the complete word.

## DESCOM Supply Assistance Services

Customer Assistance Teams are available upon request from Sharpe, Red River, New Cumberland and Mainz Army Depots to help with unit supply problems. Need help with storage and shipment operations, supply bottlenecks or system failures, stock reconciliation, physical inventories, hands-on training for unit supply personnel, etc.?

THEN CALL THE DEPOT THAT SUPPORTS YOUR AREA:

<b>New Cumberland</b>	AUTOVON 977-6590 Comm 717-770-6590	22 Northeastern states, Central America and Europe
<b>Red River</b>	AUTOVON 829-2113 Comm 214-838-2113	18 Central and Southeastern states
<b>Sharpe</b>	AUTOVON 462-2344 Comm 209-982-2343	8 Western states, Hawaii, Alaska, Korea, Okinawa, Japan and Guam
<b>Mainz</b>	06131-696-379 after duty hours, 06131-687-949	USAREUR

## Preventing Rate Tach Cable Damage

WHAT'S THE MATTER, BUD?

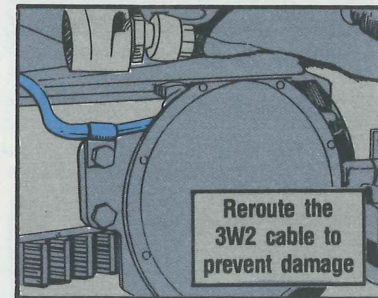
I CANT MOVE THE TURRET!

Feed rate tachometer cable 3W2 can get crushed between the turret and ballistic drive linkage when the main gun is at full elevation.

A crushed cable means the tank computer cannot feed in automatic lead when the gunner or commander is tracking a moving target.

To prevent damage, you mechs need to move the cable. Use two loop clamps, NSN 5340-00-281-4425. Attach the clamps to the two upper rate tachometer mount bolts.

That'll move the 3W2 cable out of the way and keep your crew "on target."



## M109 Watered Down Fuel

WATER AND FUEL DON'T MIX!  
A GASKET CAN STOP WATER SEEPAGE!

Water in the fuel will put an M109 on the ropes. You can prevent water getting in by putting a new gasket on the fuel filler cap.

That'll keep the water that collects around the fuel cap from seeping into the fuel. NSN 5330-00-179-0414 gets the gasket.

## Added 2W10 Cable Protection

KEEP ME COVERED AND I'LL LAST A LONG TIME!

The 2W10 electrical cable often gets damaged when you remove or install the M242 chain gun.

The gun is a handful and a half to hold, so many times it's set down—or dropped—hard on the cable. That cuts cable life.

To protect the cable, here's a quick solution:

- Have your supply folks order hose, NSN 4720-01-174-4984. Cut the 25-ft roll into 2-ft lengths.
- Split the short hoses lengthwise and place one over each 2W10 cable, starting at the end that hooks up to the P2 connector.
- Use electrical tiedown straps (NSN 5975-00-074-2072 for 100 straps, 6½ inches long) to hold the hose in place. Space out five straps over the length of the hose.

The extra protection will go a long way in saving 2W10 cables, which don't come cheap.

## M2/M3 Boresight Lamp NSN

The boresight lamp, NSN 6240-01-125-5737, for the Bradley's integrated sight unit has an AMDF price of \$45.91. But you can get a substitute for about a buck. Use NSN 6240-00-155-7851.

## Red River Hotline Update

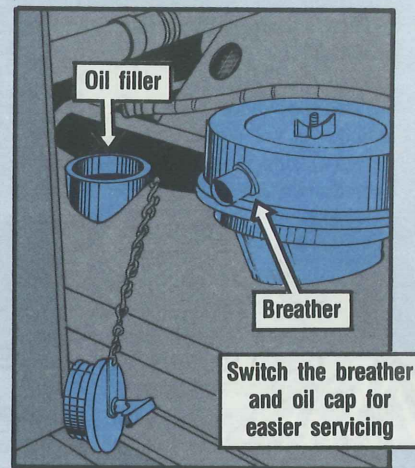
Make these changes in your Hotline directory for Red River Army Depot: Red River is the prime depot for maintenance on M113 FOV (incl. ITV, FISTV, Vulcan, Chaparral), M2/M3 Bradley, MLRS—AUTOVON 829-3100, COMM 214-838-3100.

## Filler/Vent Cap Switcheroo

Mechs, you can end the hassle of putting oil in the Bradley's engine.

You'll notice that the crankcase breather cap is in a much better location for filling than the filler cap.

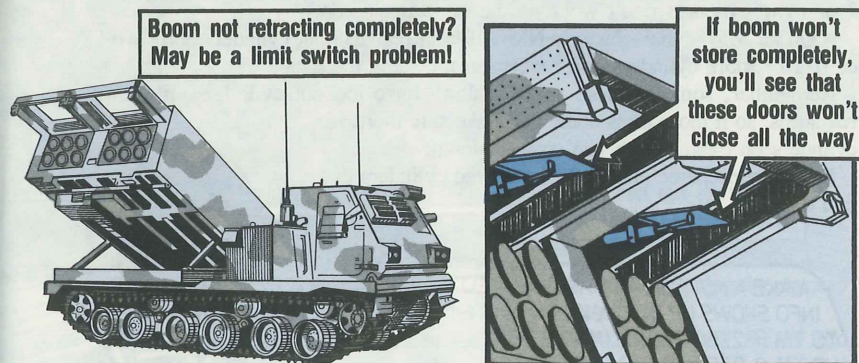
Since the breather and filler caps are interchangeable, all you need to do is switcheroo. Re-filling's easy, and the engine can breathe just as well too.



## Keep an Eye on the Boom

Mechs, has your favorite MLRS crew reported that the launcher/loader boom extends too far? Not far enough? Fails to retract completely? Have you had to replace a boom extension actuator?

All these signs are symptoms of limit switches that are out of adjustment.



So when you get that first report of a boom that doesn't work right, let your DS know. It's their job to make the adjustment.

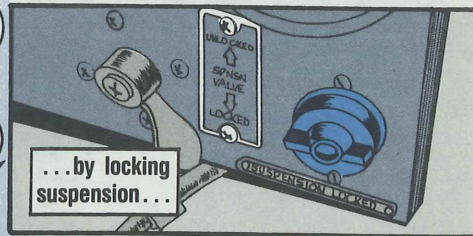
## Lockout Cylinders Added to PMCS

There's a new before-operation PMCS procedure for checking your vehicle's lockout cylinders.

Look for cylinders that don't work. A cylinder is not working if its roadarm moves upward when the roadwheel goes over an obstacle.



HERE'S HOW THE CHECK GOES: LOCK YOUR VEHICLE'S SUSPENSION.



- Drive each track over a 4x4 wooden block. Have a crew-member watch as each roadwheel rides over the block.

- On an M110A2, the vehicle is NMC if both front lockout cylinders don't work or if

- 2 or more cylinders don't work on the same track side.

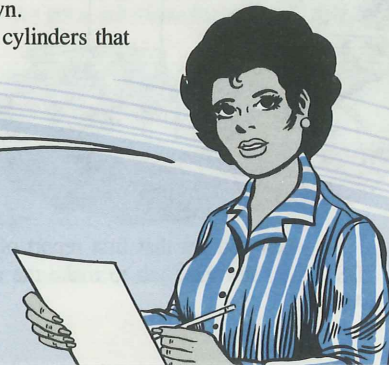
- On an M578, the vehicle is NMC if both rear lockout cylinders don't work or if 2 or more cylinders don't work on the same track side.

Remember, some of these vehicles don't have lockout cylinders on the #3 roadarms, so if those arms come up, make sure there are cylinders on them before you write it down.

Let your mechanic know when you find cylinders that don't work.



MAKE A NOTE UNTIL THIS INFO SHOWS UP IN CHANGES TO TM 9-2350-238-10 (M578) AND TM 9-2350-304-10 (M110A2)

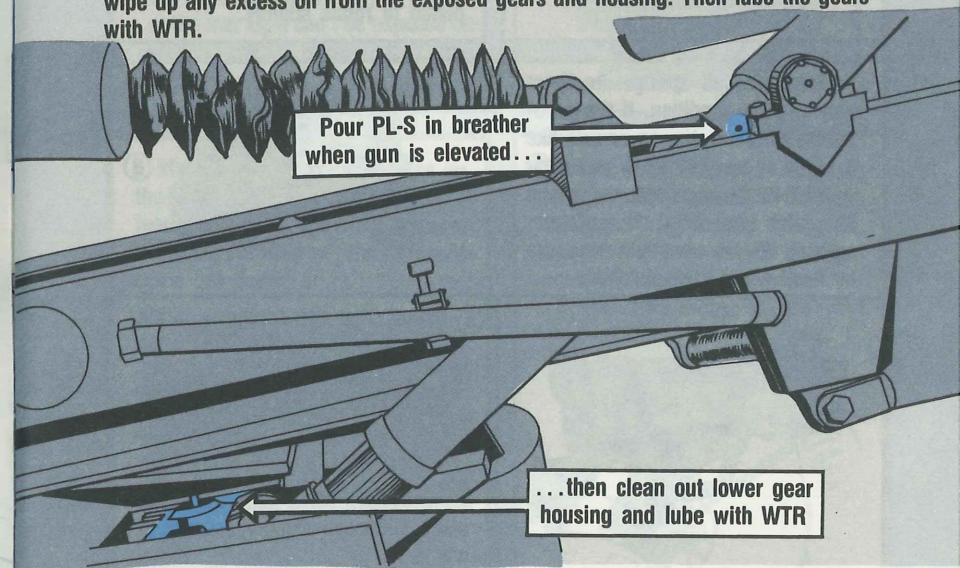


## Lubing the Elevating Ball Screws

There've been some changes, mechs, on lubing the M198's elevating ball screw assemblies. Here's how it stacks up now.

- The quarterly service in LO 9-1025-211-13 is now unit level instead of crew. You pour 2-4 ounces of PL-S in each breather hole, then depress and elevate the gun tube several times to spread the oil.

- The LO's annual service for your DS unit is now a quarterly service at unit level. So, after you lube the assemblies, you remove the lower gear housing cover and wipe up any excess oil from the exposed gears and housing. Then lube the gears with WTR.



Pour PL-S in breather when gun is elevated...

...then clean out lower gear housing and lube with WTR

(The quarterly PMCS in TM 9-1025-211-20&P will include greasing the exposed gears with WTR after the excess oil has been removed.)

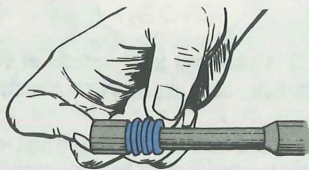
Now you've got the picture, see Change 3 to TM 9-1025-211-20&P for the info and parts to work on the cover, gasket, screws and washers.

Look for this info in updates to your LO and TM's.

# SPOT

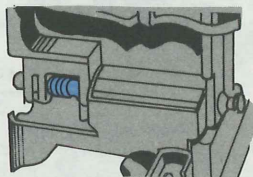
Your M249 is a sturdy weapon, but like all machine guns if you don't take care of it, you can have problems. Use these PM checks to keep it firing.

- ① Check the piston for burrs. If the piston's burred, your M249 will be hard to charge.



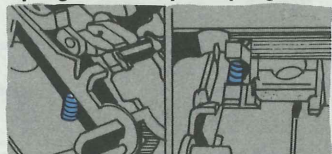
Also, test for looseness at the piston assembly's housing by pulling back and forth on the housing. Find any looseness? Report it. It's OK for the piston to rotate slightly.

- ③ Make sure all springs are there and in good condition. If the cover spring's broken, the cover acts like it will stay up. But when you clear your M249, the cover falls and maybe it'll catch your hand. If the cover spring's OK, the cover will rise some by itself when it's unlatched.



- ④ If the safety spring's broken, the safety won't work and your M249 won't be safe. The spring's bad if the safety flops in and out.

- ⑤ Make sure the cartridge guide springs and feed pawl springs are in

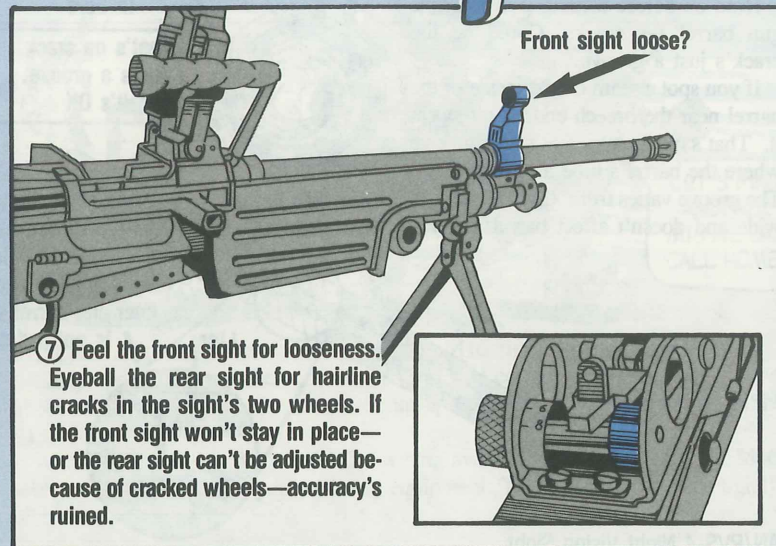


place. If they're missing, your M249 will jam.



- ⑥ Eyeball the operating rod spring for flat spots.

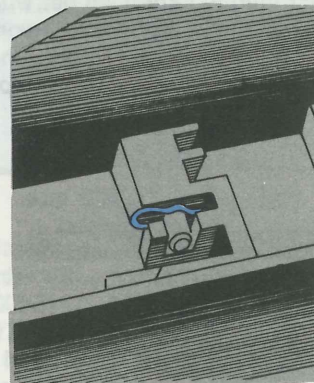
# Weak Spots



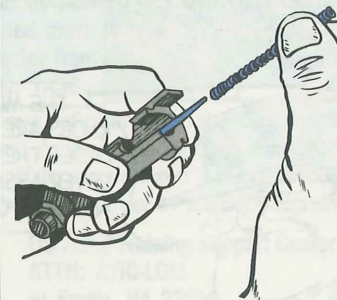
Front sight loose?

- ⑦ Feel the front sight for looseness. Eyeball the rear sight for hairline cracks in the sight's two wheels. If the front sight won't stay in place—or the rear sight can't be adjusted because of cracked wheels—accuracy's ruined.

- ⑧ Make sure the retaining clips on the takedown, pivot, handguard and feedtray cover pins are all in place. If a pin clip is missing, the pin could come out during firing.



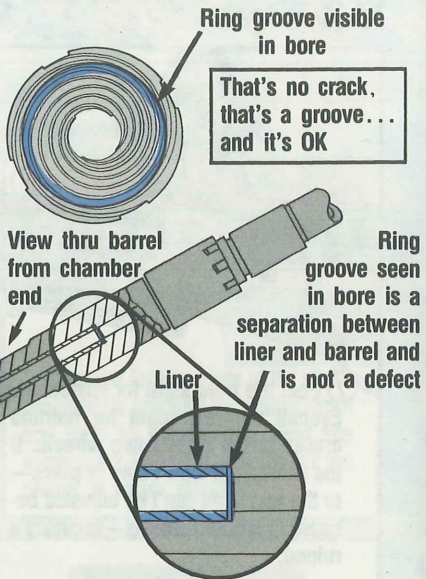
- ⑨ When you install the firing pin spring, be sure to put the bunched end on the firing pin first. Otherwise, the spring will fly off next time you remove the bolt. If you spot problems, tell your armorer.



## That's No Crack

Hold on before turning in a machine gun barrel for cracks. Could be the crack's just a groove.

If you spot a seam on the inside of the barrel near the breech end, don't sweat it. That's no crack, that's the groove where the barrel's tube and liner meet. The groove varies from .020 to .040 inch wide and doesn't affect barrel safety.



M2 Machine Gun

AN/PVS-4 Night Vision Sight...

## Screwed Up Mounting Screws

Dear Half-Mast,

We're having a problem getting the right AN/PVS-4 mounting knob assembly for the M60 machine gun. The mounting knob we get with NSN 5855-01-039-2834 works fine for the M16 rifle, but doesn't work for the M60 because its mount needs a notched screw to hold the washer. We have 100 deadlined mounts because of this. Can you help?

J. S.

THE MOUNTING KNOBS ARE DIFFERENT. ORDER THE M60 SCREW LEVER ASSEMBLY WITH NSN 5315-01-132-3577!



## Rust Busters

RUN FOR IT!

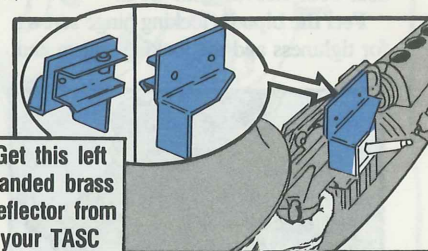


Prevent rust and corrosion and give your M16 rifle a longer life—like so: Shiny spots on your rifle soon turn to rust and corrosion...if nothing's done about them. Have your armorer touch up spots with solid film lubricant, NSN 9150-00-168-2000.

Also head off rust and corrosion by wiping away any handprints on your M16 with the rag that's part of your cleaning equipment. Then lubricate the area lightly with CLP.

## No Brass Deflector

Hold one, all you left-handed M16 riflemen. That cartridge case deflector, NSN 1005-01-171-4778, listed on Page C-3 of TM 9-1005-249-10 is not a brass deflector for left-handed shooters. In fact, it's not a brass deflector at all. It's a brass catcher used with the M261 rimfire adapter for .22-cal ammo. It's being deleted from your TM next time it's updated. Have your armorers get left-handed



When you order NSN 1005-01-171-4778, you get a brass catcher for .22-cal ammo  
AUG 87

brass deflectors from the local Training and Audio-Visual Support Center. If the support center is out of deflectors, they can get more by sending a request to:

US Army Training Support Center  
ATTN: ATIC-LOM  
Ft Eustis, VA 23604



# Making Your

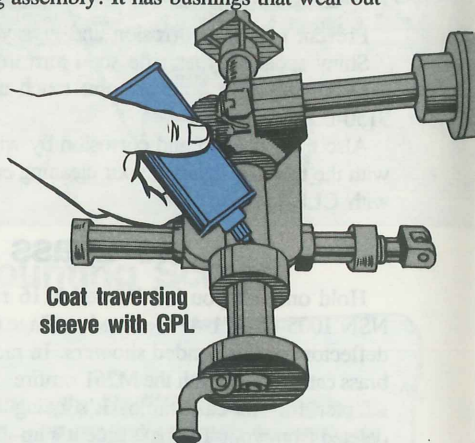
Your M29A1 mortar won't matter much in battle if corrosion and slipping parts make it impossible to aim accurately. Stay on target with these PM tips:

**Lube religiously** because the M29A1 has parts that are brass, aluminum or hollow. It doesn't take long for friction and corrosion to do major damage. Follow the lubrication instructions on Pages 3-0 through 3-3 in TM 9-1015-200-10 to the letter. In hot or sandy areas, lube more often, but—

—Pay special attention to the traversing assembly. It has bushings that wear out before you know it if they're not lubed right. DS has to replace 'em. Just put a light coat of General Purpose Lubricating (GPL) oil on the traversing sleeve.

—In sandy areas, you'll need to do things slightly different. Before you go to the field, wipe oil off the traversing and elevating sleeves. Sand sticks to oil and rubs parts raw. During breaks, wipe off the two sleeves again. Try to keep the mortar covered as much as possible. When you return from the field, lightly coat both sleeves with GPL.

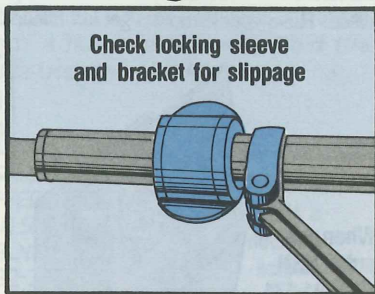
**Feel the bipod's locking hinge screws** for tightness and the locking sleeve and



Coat traversing sleeve with GPL



Feel locking hinge screws for looseness

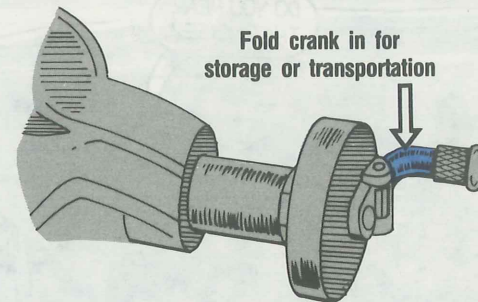


Check locking sleeve and bracket for slippage

bracket for slippage. Do this during PMCS. If the hinge and sleeve can't hold tight, accuracy dips as the mortar slips. You can tighten the screws yourself. Your armorer takes care of slipping sleeves.

# Mortar Matter

Lay your M29A1 down, never drop it. The mortar's heavy duty equipment, but a fall can "knock out" the shock absorber, elevating mechanism spindle and cranks. For travel or storage, fold the traversing crank in to protect it from knocks and boots.



Fold crank in for storage or transportation

M224 Mortar...

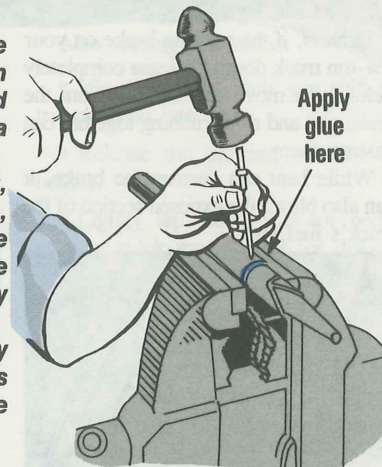
## Post Up Aiming Posts

Dear Editor,

The M14 aiming posts for the M224 mortar are light aluminum and often come apart at the weld after just a little use. We've got a quick fix.

Next time an M14 comes apart, armorers, apply super strong glue, NSN 8040-00-142-9193, where the post's head and base join. Put the post back together. Wipe away excess glue. Let dry.

Give the post extra strength by staking with a punch four spots 90 degrees apart where the base fits over the head.



Apply glue here

Jose Santiago  
Ft Benning, GA

(Editor's note: I'd stake my reputation on that being a good fix.)

HMMWV...

# Parking Brake Safety

DO YOU HEAR  
THAT NOISE?



SURE DO, AND I HAVE  
A NAGGING FEELING IT  
HAS SOMETHING TO DO  
WITH THE PARKING BRAKE!



Drivers, if the parking brake on your 1¼-ton truck doesn't release completely before you move out, friction from the brake pad and rotor rubbing together can destroy them.

While heat can destroy the brake, it can also blister the exposed section of the truck's fuel tank.

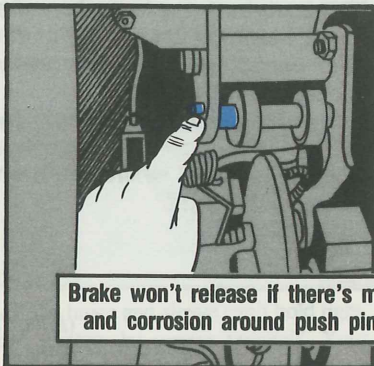


Heat can blister  
the fuel tank

Either way, you can be in big trouble. Here's how to keep your brake cool:

## Before Operation

Releasing the parking brake completely will be tough if corrosion and mud have built up around the brake's push pins and caliper guide.



Brake won't release if there's mud  
and corrosion around push pins

Your best defense against damaging the parking brake is to keep the exposed brake parts free of mud, sand, rocks and other junk.



Keep sand, rocks and mud  
cleaned off caliper guide

Do the daily PMCS and follow the cleaning procedures in your -10 TM. Be sure the brake is lubed on schedule.  
AUG 87

Also, during operations:

- Idle the engine while you shift the transmission into drive.
- Release the parking and service brakes.
- Lightly tap the accelerator pedal, as your truck moves, feel for drag or hesitation.
- If your truck doesn't move or if it hesitates, have your mechanic take a closer look at the parking brake.

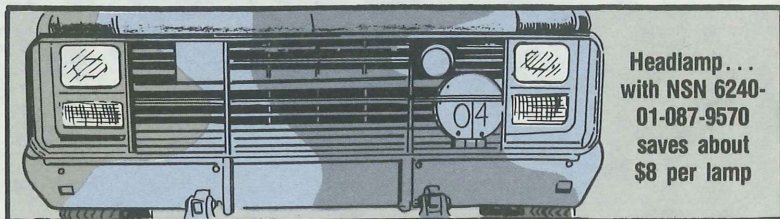
## During Operation

Stop... if you feel a drag when you put the vehicle into gear or you hear unusual noises or feel strange vibrations while you're driving. Be sure the parking brake is released. If that's not the problem, get help from your mechanic, pronto.

# PM Tidbits

## Headlamp Cost Saver

The next time you need to replace headlamps in a CUCV, save your unit and Uncle a big chunk of change. Order new lamps with NSN 6240-01-087-9570, not NSN 6240-01-180-9022 shown in TM 9-2320-289-20P.



Headlamp...  
with NSN 6240-  
01-087-9570  
saves about  
\$8 per lamp

That'll save nearly \$8 per headlamp...and that can add up to a tidy sum.

The only difference between the two is that the more expensive one—the one listed in the TM—is a halogen and the other a standard sealed beam.

Granted, the halogen's brighter, but they're interchangeable...and the standard unit gives plenty of light to drive by.

## Cargo Body Kit

You can get a cargo body kit, NSN 2510-01-147-9917, for each new CUCV. The kit includes canvas, frame and mounting brackets.

The M880 cargo cover fits the CUCV—so you can save money by keeping the cover. Organizational mechanics can put them on the CUCV's, using the instructions in TM 9-2320-266-20.

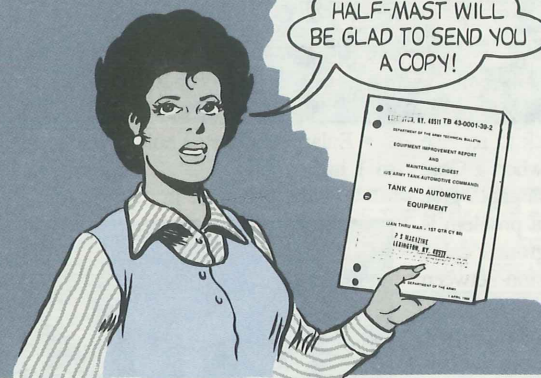
If you're repairing or replacing a cargo cover, order the parts you need from Figs 164-166 of TM 9-2320-289-20P.



## Glow Plug Info

Your TM's are short of info on troubleshooting glow plugs, but TACOM's EIR and Maintenance Digest, TB 43-0001-39-2 (Apr 86), has the dope—27 pages on how to identify, operate and troubleshoot the system.

If you don't have that TB, get a copy of Pages 3-35 through 3-62 from your local TACOM Logistic Assistance Representative. Or write MSG Half-Mast for a copy.



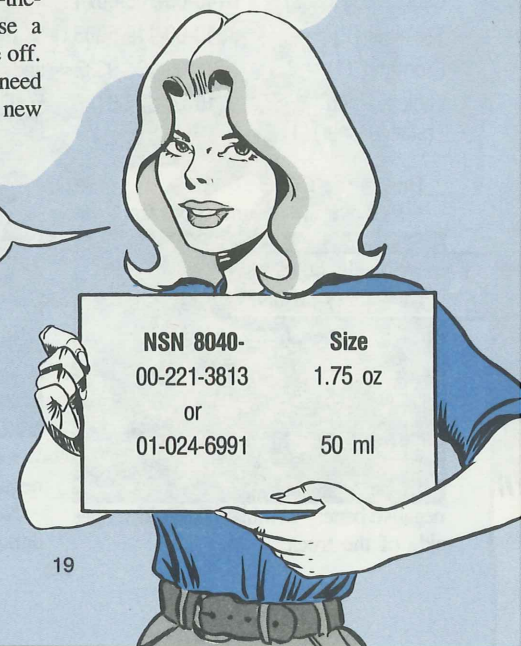
HALF-MAST WILL BE GLAD TO SEND YOU A COPY!

## Mirror Stick-on NSN

The shake, rattle and roll of off-the-road driving will sometimes cause a CUCV's rearview mirror to vibrate off.

If the mirror's not broken, you need a glue that'll hold, not a whole new mirror.

YOU CAN PUT THE BRACKET ON WITH ADHESIVE



NSN 8040-	Size
00-221-3813	1.75 oz
or	
01-024-6991	50 ml

WHY IS THE OIL PRESSURE GAGE ACTING SO CRAZY?

I'M NOT SURE BUT I THINK WE BETTER PARK THIS GOAT, NOW!

Mechs, don't be too quick to replace the battery and alternator when a Goat won't start or the instrument gages give you bum readings. The real problem is probably a poor battery ground cable connection. Paint or corrosion between the cable and body creates resistance.

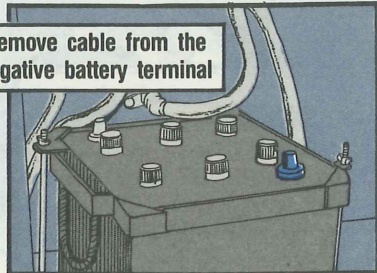
Solve the problem by making a new ground cable that reaches from the battery to the engine bell housing. Here're the parts you need:

ITEM	NSN
Cable (42 inches)	6145-00-705-6674
Terminal (2)	5940-00-115-5006
Grommet (1)	5325-00-174-9332
Lock washer (star washer)(1)	5310-00-627-6128

Here's the fix:

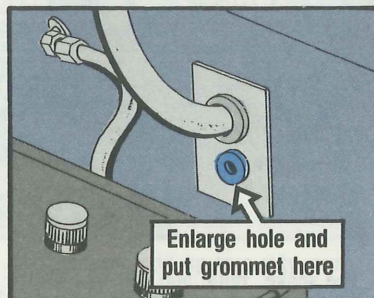
- Remove the ground cable from the

Remove cable from the negative battery terminal

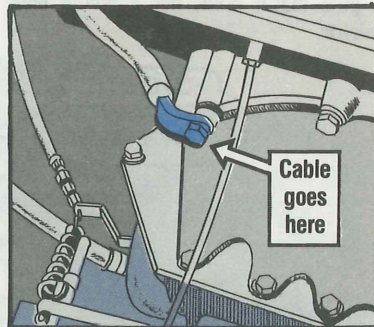


negative battery terminal on the passenger side of the truck.

- Enlarge the screw hole in the body to 1 inch.
- Put the grommet in the hole.



- Push the cable through the grommet and attach it to the bell housing screw with the lock washer.



- Connect the cable's other end to the negative battery terminal.
- No more gages with Saint Vitus's dance.

## Light Confusion

Dear MSG Half-Mast,

We're having problems getting the right stop light/taillight assembly for our trucks.

The -273-20P and -283-20P manuals list different assemblies for the left and right lights. But the AMDF converts the two numbers to a third number.

When we get that light and try to install it, it won't fit. The wiring must be modified.

What gives?

SFC C. O. S.

HERE'S THE STRAIGHT SCOOP ABOUT THE RIGHT AND LEFT STOP LIGHT/TAILLIGHT ASSEMBLIES



Dear Sergeant C. O. S.,

The numbers in the TM's, NSN 6220-01-068-1357 for the right assembly and NSN 6220-01-066-4077 for the left, are correct.

Both the left and right assemblies are available from supply.

The AMDF is wrong and will be changed to rescind the substitute light.

*Half-Mast*

# Bum Engine Retarder = NMC

GOOD THING MY ENGINE RETARDER IS WORKING!



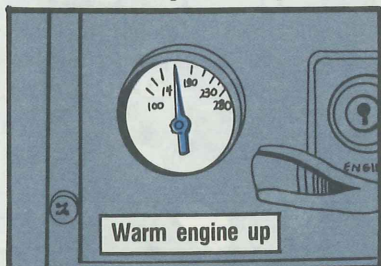
The engine retarder on your M915-series truck gives extra braking power to stop your truck.

If it doesn't work, your truck is NMC. This is spelled out in TACOM Msg AMSTA-MTC 041400Z Aug 86. If you don't have a copy, see your local TACOM Logistic Assistance Representative.

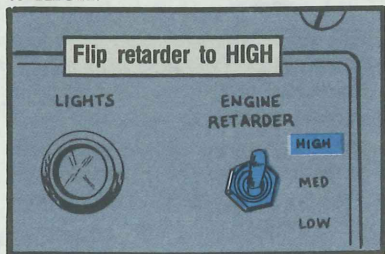
Both TM 9-2320-273-10 and TM 9-2320-283-10 (the M915A1) tell you to check the retarder. But neither TM tells you how.

## Here's the way you do it:

- Start the engine and let it warm up until the water temperature is up to 170°F.



- Flip the retarder selection switch to HIGH.



- Floor the throttle and release it. Then



immediately step on the retarder foot switch to energize the engine brake solenoids. Keep your foot on the retarder foot switch until the engine returns to idle speed. Repeat this six to eight times to bleed any air trapped in the engine brake housing.

- You can tell if the retarder is working OK because you'll hear a change in exhaust noise and note rapid engine deceleration.

# Transmission Breather Wrong!

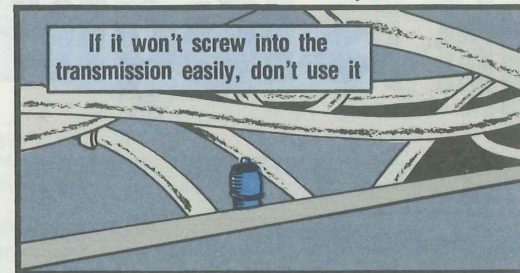
If a replacement transmission breather vent won't screw in easily, don't force it!

A batch of breathers, NSN 2520-01-077-2803, were threaded wrong.

If you try to force one of these bum breathers into the transmission, you'll strip the threads in the upper control group plate. Then support has to fix the transmission.

Get the right breather by ordering FSCM 11083, PN 9N1597 on a DD Form 1348-6. Write in the Remarks block, "Do not cross to NSN 2520-01-077-2803."

If it won't screw into the transmission easily, don't use it



M929/M930 Dump Truck...

# Flaps Up When Dumping



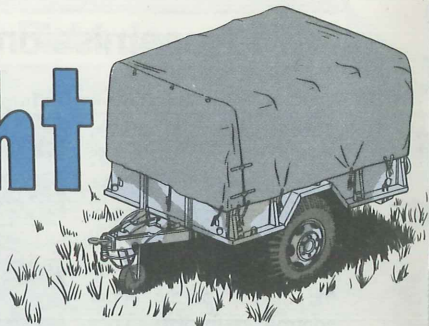
Hey, dump truck drivers, take an extra minute and hook those mud flaps up before dumping your load. Otherwise, you'll end up tearing the flaps off.

When backing up and dumping, flaps get caught under the rear wheels. Before you know it, they're gone.

Those mud flaps have special hooks to keep them out of the way of the wheels when dumping. So use the hooks 'n' save a flap.



# Tight Is Right



**Dear Half-Mast,**  
There's confusion in our unit about how tight the lunette's castellated nut should be on an M105-series trailer. The TM's don't have torquing info, so what's right?

1LT C. C.

**Dear Lieutenant C. C.,**  
Tighten the lunette's castellated nut to 400-450 lb-ft, to the nearest cotter pin slot.

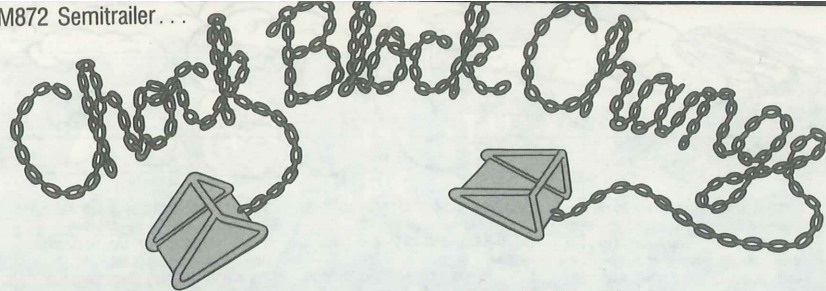
Tighten the lunette's castellated nut to 400-450 lb-ft



*Half-Mast*

## M353 Brake Hose

Get the flexible brake hose that runs from the frame to the wheel on M353 3½-ton trailers with NSN 4720-00-143-3956. This NSN will be added to TM 9-2330-247-14&P.

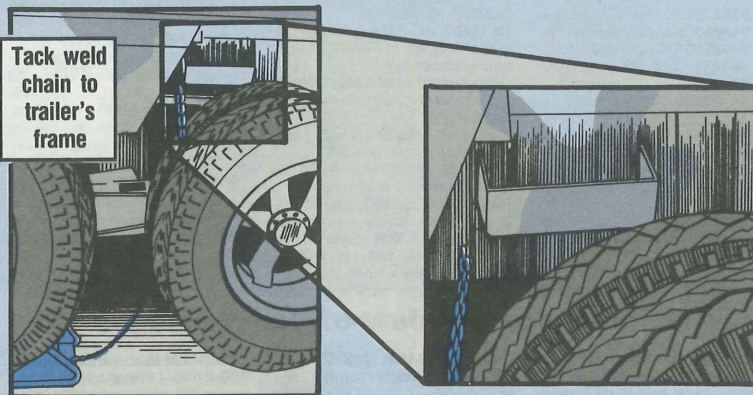


**Dear Editor,**

The metal splash shields on our M872's are bent out of shape when drivers leave chock blocks under the trailer's wheels and back over them.

This pulls the chock block chains so tight that the splash shields eventually give way.

We've come up with a simple solution. Just remove the chock block



chain from the splash shield and tack weld it to the trailer frame. Then only the chain'll give way with no further damage to the trailer.

**Melvin Ellinger**  
Ft Leonard Wood, MO

*(Editor's note: Your solution sounds like a winner! You can also solve the problem by converting to the M872A3's chock block chain setup. The block has a short length of chain and snap hook that unhooks from the stowage bracket. Para 2-17a of TB 43-0001-39-4 (Oct 86) has the word on this.)*



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

TM 5-1940-277-20P Mar Bridge boat, NSN 1940-01-105-5728 and 1940-01-218-9165  
 TM 5-6115-271-24P May 3-KW generator, NSN 6115-00-017-8237, -8238, -8239  
 TM 5-6675-308-24P May Position and azimuth determining system  
 TM 9-1425-470-24P Apr TOW weapon system  
 TM 9-1425-485-L Mar LANCE guided missile  
 TM 9-1425-525-L Mar HAWK missile  
 TM 9-1425-600-12 Apr Patriot missile  
 TM 9-1425-601-14 Apr Patriot missile  
 TM 9-1425-1525-24P Apr HAWK missile  
 TM 9-1430-388-24P Mar Pershing II missile  
 TM 9-1430-529-24P Apr HAWK missile  
 TM 9-1430-603-10 Jun Patriot missile  
 TM 9-1430-1525-24P Apr HAWK missile  
 TM 9-1430-1528-24P Jan HAWK missile  
 TM 9-1430-1534-24P May HAWK missile

TM 9-4935-646-24P May Multiple Launch Rocket System (MLRS)  
 TM 9-5855-450-24P Mar TOW 2 missile  
 TM 9-6920-646-24P Jul Multiple Launch Rocket System (MLRS)  
 TM 11-5805-759-12-4 May 82 BR-17-31 Communications controller  
 TM 11-5810-282-14P TSEC/HY-12 ComSec equipment  
 TM 11-5810-308-24P TSEC-KG-84 dedicated loop encryption device  
 TM 11-5815-614-13-2 Apr 85 TT-812/TSC-116 Extel teleprinters service  
 TM 11-5815-620-12-2 Apr 85 Mailfax 3500 secure facsimile transceiver  
 TM 11-5820-992-12-2 Aug 81 RF-2370/A remote control unit  
 TM 11-5820-994-12-2 Sep 84 RA6793A HF receivers  
 TM 11-5821-311-20P Aug RT-1167CF/ARC-164(V), RT-1145F/ARC-164(V) receiver-transmitter  
 TM 11-5865-223-24P-1 May 5-250/G shelter w/AN/GLQ-3B counter-measure set  
 TM 11-5895-1360-12-2 Nov 84 Fixed plant adapter 4100 and 4200  
 TM 11-5965-286-23P May MK-1697/G headset-microphone kit  
 TM 11-5985-382-12-2 Mar 84 RF-281/RF-281A automatic antenna coupler: RF-339/RF-339A coupler control  
 TM 11-5895-1047-23P Aug AN/TRS-2) platoon early warning systems

TM 55-1520-238-23P-2 Jun AVUM Launch Rocket System (MLRS)  
 TM 55-1520-238-PMS Mar 10 hour/14 day inspection checklist  
 TB 43-0002-2 May Maintenance expenditure limits for FSC groups 17 and 49, FSC Classes 1710, 1730, 1740 and 4920  
 TB 43-0002-37 Apr 86 Maintenance expenditure limits for FSC Class 4610 (48X Microfiche)  
 TB 43-0144 May Painting of vessels  
 LO 5-4310-276-12 Jun Air compressor (NSN 4310-00-843-8885)  
 LO 11-5840-354-20 Jul AN/TPQ-36(V) 1, 3, 5 radar sets  
 SC 3940-90-CL-NO1-HR May Components list for sling set, cargo  
 SC 4210-90-CL-NO1 May Forced entry and rescue equipment set, aircraft crash  
 SC 4210-90-CL-NO1-HR May Components list for forced entry and rescue equipment set, aircraft crash  
 SC 6230-90-CL-NO2-HR May Components list for light set, marker, emergency  
 SC 6675-97-CL-E21-HR May Components list for surveying set  
 FM 17-12-2 Jan Tank combat tables - M48A5/M60-series  
 PAM 750-10 US Army equipment index of modification work orders

## Maintenance & Safety-of-Use Messages

AMCCOM SOU-MSG—Operational Advisory, Battery hazard in tank gunnery target holding mechanism, AMSMC-MA, 212100Z May 87.  
 TACOM SOU-87-42—Operational, Suspend external AC use on M934/M934A1 5-Ton expandable vans, AMSTA-QWM, 111405Z May 87.  
 TACOM SOU-87-38—Advisory, Technical/Maintenance, Installation of spotlight switch for M44-series trucks, AMSTA-MTB, 151700Z May 87.  
 TACOM SOU-87-37—Advisory, Technical/Maintenance, Loose and missing bolts on HMMWV starter and halfshaft, AMSTA-OWL, 281805Z Apr 87.  
 TACOM SOU-87-35—Advisory Operational, Hazard warning lights are overridden by brake lights on all tactical wheeled vehicles except

CUCV, AMSTA-MTA, 281300Z Apr 87.  
 TROSCOM Maintenance Advisory-MSG-87-09—T-10- and MC1- family personnel parachutes, age and service life limitations changed, AMSTR-MES, 041600Z May 87.  
 TROSCOM SOU-MSG-09-87—LACV-30 gearbox mount inspection, AMSTR-MES, 221843Z May 87.  
 TROSCOM SOU-MES-07-87—Identifies hazardous wheel side ring NSN 2530-00-738-9061, found on lube and service unit, NSN 4930-00-935-4454 and CARDOX plant, NSN 3655-00-453-8980, AMSTR-MES, 190930Z May 87.  
 TROSCOM SOU—MSG-06-87—Technical, Deadline of King Electrical Manufacturing space heater Model KEP 2430, NSN 4520-00-540-2038, AMSTR-MES, 040900Z May 87.

TROSCOM Maintenance Advisory MSG-87-06—Prevent water from entering DC electric motor NSN 6105-01-139-3183 on the 350GPM pump assemblies, NSN 4320-01-047-1927 and NSN 4320-01-092-3551, AMSTR-MES, 180930Z May 87.  
 TROSCOM SOU-MES-05-87—Inspect Oxygen Mask MBU-12/P and other similar masks used by military freefall parachutist, AMSTR-MES, 200900Z Apr 87.  
 TROSCOM SOU-MES-07-87—Inspect withdrawal line guide ring, Martin Baker MK J5D parachute container, AMSTR-MES, 071530Z May 87.

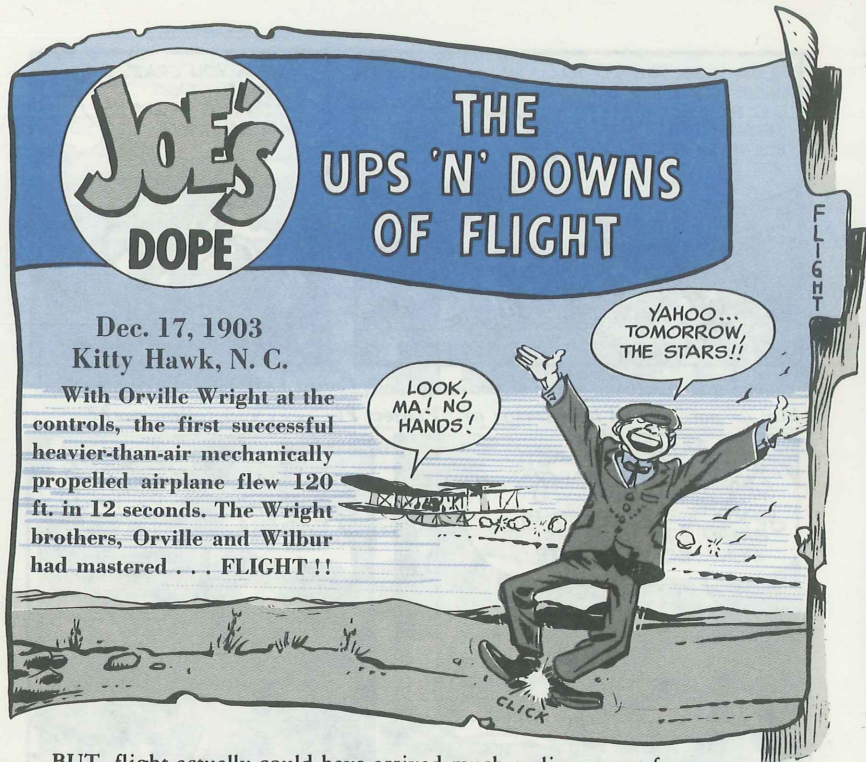
Your Direct Support or Logistic Assistance Office (LAO) can provide you with more information.

# JOE'S DOPE

## THE UPS 'N' DOWNS OF FLIGHT

Dec. 17, 1903  
 Kitty Hawk, N. C.

With Orville Wright at the controls, the first successful heavier-than-air mechanically propelled airplane flew 120 ft. in 12 seconds. The Wright brothers, Orville and Wilbur had mastered . . . FLIGHT !!



BUT, flight actually could have arrived much earlier except for a very familiar failure in maintenance on the part of a couple of air types who thought the only enemy of flight was gravity!!

This is how it happened!

In the year 1492 A.D. during the Renaissance, two brothers, whom we will call Martini and Rossi pondered over the writings of the Da Vinci and knew flight was not for th' birds . . . so to speak.





I'MA THINK YOU GO TO UNCLE COUNT LABONZA AND GET SOMA LOOT, BECAUSE WE GONNA BUILDA AN AEROPLANE... YOU CAH-PEECH?

SI, SI! BUT WHY YOU CALLA IT "AEROPLANE" ROSSI?



WOTTA YOU CRAZ'... F'CAUSE AT'SA F'CAUSE AT'SA WOT IT'SA CALLED!!! THAT'SA WHY!

OH!

And so, Martini seeks an audience with Count LaBonza in order to have him as patron and benefactor of "Project Fly" . . . you follow me??



**HARDEE HAR-HAR!**

WHEEZ! WOTTA, YOU CRAZ! YOUA GONNA FLY? YOU WANTA ME TO STASH TH' BREAD FOR THISA STOOPID IDEA... GO FLY A KITE!!

BUT, UNC... IT'LL MAK'A YOU RICH' N' FAMOUS ANDA...



...YOU'LLA WINA DA WAR WITH TH' BORGIAS!

**SOLD!** YOU GOTTA DA LOOT, NEPHEW... BUT WATCHA YOU SELF.. IFA WE DON'TA FLY, YOU GONNA CRY..

With Count LaBonza booting th' tab, work begins and soon mounts to a fever pitch . . . plans, materials, testing, fabrication, wind tunnel tests (yup, that too) and soon, the day for the first flight arrives.



ALMOSTA READY! HEY ROSSI, YOU SHOO THATA PART GOESA IN THAT WAY?

WOTTA YOU CRAZ! I'MA INVENTED IT!

ALLA UNAUTHORIZ'DA PEOPLES LEAVA TH' AREA!



LOOKA COUNT, HE'SA FLY!!

WHY NOT! THAT'SA MY NEPHEW, THE AEROPLANE BUILDER.



**CRASH**



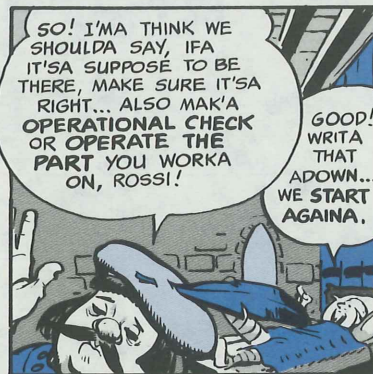
WOTTA WE DID WRONG? MARTINI!

WE DID A MURPHY... WE PUTA DRIVE SHAFT INA BACKWARDS, AND WE DIDN'T CHECK IT OUT!



HOW COME YOU CALLA IT MURPHY?

BECAUSE, IFA PART CANA BE PUT IN WRONG SOMEBODY EESA SHURE TO DO IT!



SO! I'MA THINK WE SHOULDA SAY, IFA IT'SA SUPPOSE TO BE THERE, MAKE SURE IT'SA RIGHT... ALSO MAK'A OPERATIONAL CHECK OR OPERATE THE PART YOU WORKA ON, ROSSI!

GOOD! WRITA THAT ADOWN... WE START AGAINA.



BUT "UNC" APLEASE... WE FIXA MISTAKE! THISA TIME IT'SA FOOLPROOF!

HO-KAY... BUT A' IFA YOU GOOF... IT'SA POOF!



Joe's

# Dope Sheet

WHAT WENT  
WRONG?

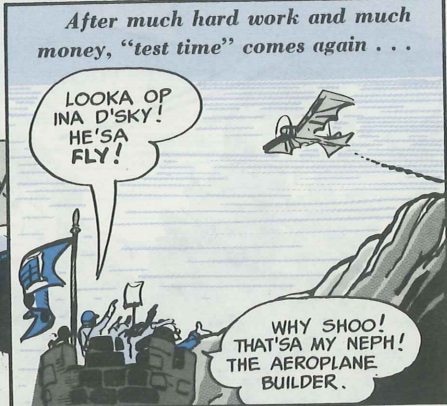
YOU!

The margin of error is slight  
On anything dealing with flight.  
When you take to the air,  
Make sure everything's there  
In place, free to work—working right



WE HAVE THE WORLD'S BEST EQUIPMENT... *Take care of it*

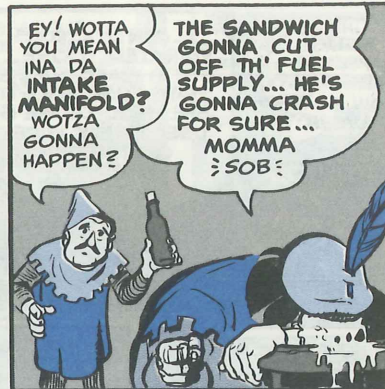
IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BULLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.





**BELLA! BELLA!**  
YOU DID IT, KEEDO. HAVA  
SOME VINO WITHA YOUR HERO  
SANDWICH.

**YIPE!**  
I'MA FORGOT!  
TH' HERO!  
SHE'SA IN  
THE INTAKE  
MANIFOLD.



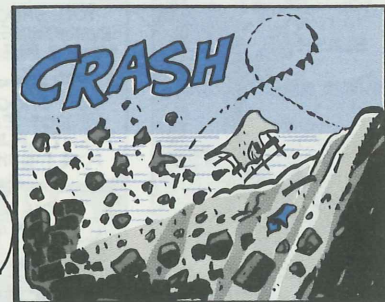
**EY! WOTTA**  
YOU MEAN  
INA DA  
INTAKE  
MANIFOLD?  
WOTZA  
GONNA  
HAPPEN?

**THE SANDWICH**  
GONNA CUT  
OFF TH' FUEL  
SUPPLY... HE'S  
GONNA CRASH  
FOR SURE...  
MOMMA  
:SOB:



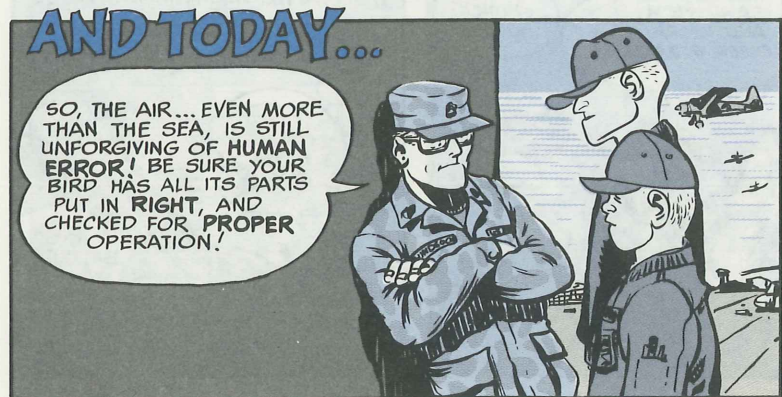
**COUNT! HE'SA**  
FLY! BEE-YOUTIFUL!  
BELLA PRIMA.

**DOTZA NIZE**  
BECAUSA IF HE  
DON'T, HE'SA MY  
DECEASED NEPHEW,  
THE AEROPLANE  
BUILDER.



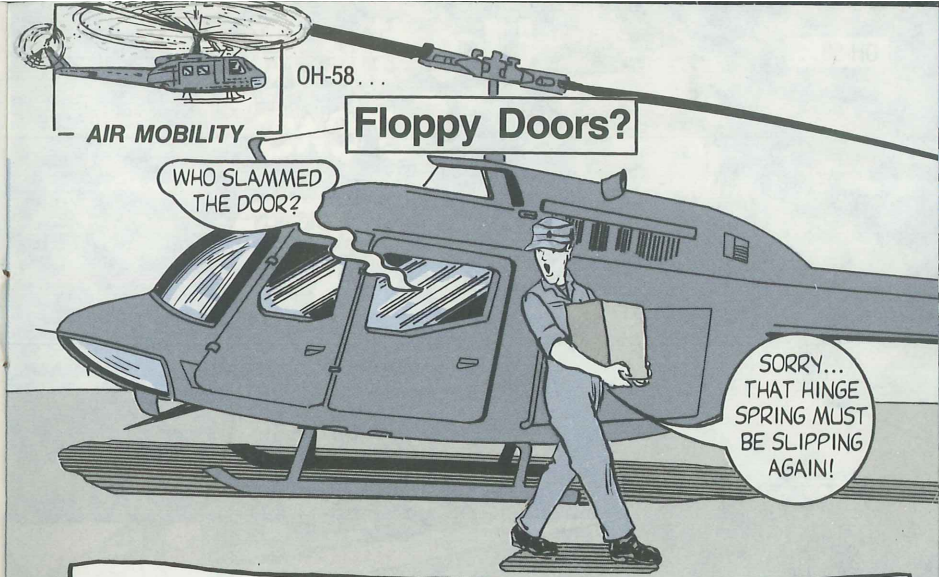
**CRASH**

The count did recover... but he outlawed all talk of flying, burnt all books on the subject and death was the penalty for *EVEN* thinking about it...



**AND TODAY...**

SO, THE AIR... EVEN MORE  
THAN THE SEA, IS STILL  
UNFORGIVING OF HUMAN  
ERROR! BE SURE YOUR  
BIRD HAS ALL ITS PARTS  
PUT IN RIGHT, AND  
CHECKED FOR PROPER  
OPERATION!



OH-58...

AIR MOBILITY

**Floppy Doors?**

WHO SLAMMED  
THE DOOR?

SORRY...  
THAT HINGE  
SPRING MUST  
BE SLIPPING  
AGAIN!

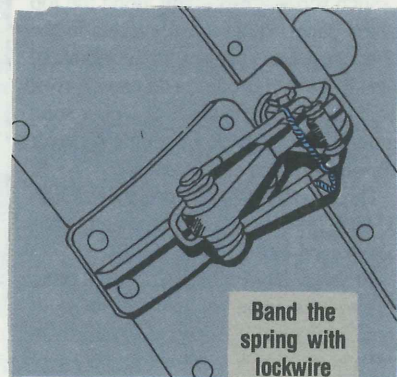
Dear Editor,

We've had a problem with flapping crew doors. Hinge springs that hold the door open wear out quickly. Then the spring slips out of the hollow pin that holds the door open.

Entering and leaving the cockpit then becomes a real adventure, especially if you have your hands full.

'Course, the permanent solution is simply to replace the hinge spring—or the whole hinge assembly. In the meantime, though, you can extend the life of the spring by banding the sides of the spring. We do it with .032-in lockwire. It keeps the spring from slipping out of the hollow pin.

**Bingo! No more floppy doors!**



Band the  
spring with  
lockwire

**SSG Bruce Mitchell**  
Ft Lewis, WA

(Editor's note: Sounds like you've tied down all the loose ends.)

# Use the Right Screws



HEY, BIG GUY—  
I DON'T THINK  
YOU'LL FOOL  
THIS MECH!

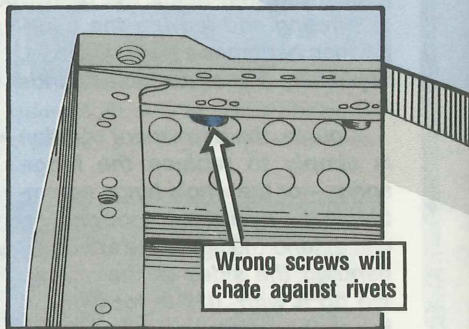
Careful, Kiowa mechs, when you replace your bird's tailboom access panel. Screws just a tad too long can lead to aircraft structure damage.

Such screws, especially along the top of the panel, chafe against rivets in the tailboom structure due to engine vibration. This loosens the rivets and causes rivet wear. If you don't catch the wear soon enough, you'll have a structural repair job on your hands.

The length of the screws, NSN 5305-00-925-7856, excluding the head, must not exceed 3/8 inch.

So keep them separated from other screws when you remove the cover. If they get mixed up, be sure to measure 'em before you install them.

To be extra safe, measure all new screws before you use 'em in the access panel—just in case they were mislabeled or fouled up in manufacturing.



Wrong screws will  
chafe against rivets

## Bubble Polish NSN

Kiowa crew chiefs, use NSN 7930-01-115-4744 to order a pint of plastic polish for your birds' plastic windshields. The NSN listed on Page 39 of PS 410 is no longer available.

# Tailwheel Removal Made Easier



A CARGO STRAP HELPS  
KEEP THE TAIL LANDING GEAR  
FORK FROM SPREADING WHEN  
YOU'RE REMOVING THE WHEEL!

THANKS, WINDY!

Dear Editor,

**Removing the Black Hawk's tail landing gear wheel and tire can be a real pain. When we loosen the castellated nut on the landing gear axle assembly, the fork assembly spreads enough to bind against the axle. Then the axle has to be pounded out before we can remove the wheel.**

**We solved the problem by wrapping a cargo strap around the fork assembly and securing it as tight as we can. It keeps the fork from spreading when we remove the axle nut so that we can easily remove the wheel axle.**

**We're also able to install the wheel much easier than we used to.**

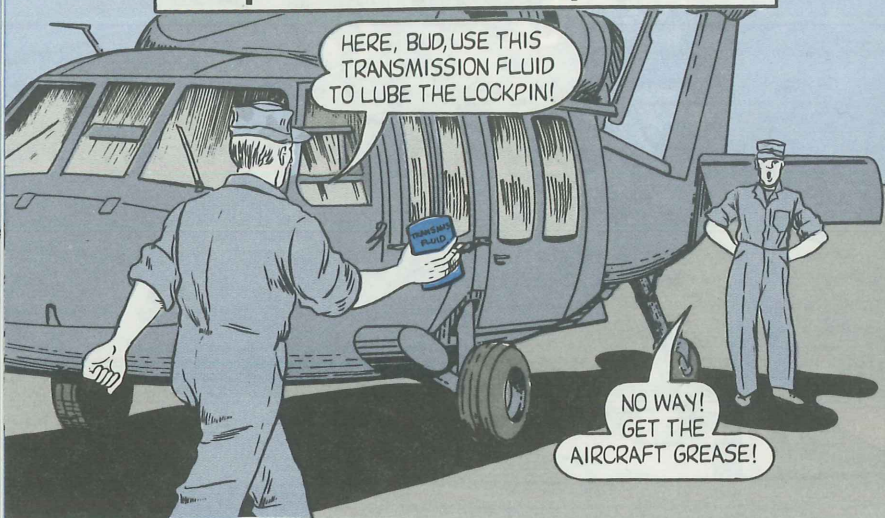


Strap  
keeps  
fork  
from  
spreading

SSG Ernest Lewis  
Ft Lewis, WA

(Editor's note: That's real wheelin' and dealin', Sarge. Good job!)

## Keep Tailwheel Lockpin Lubed



Only bad things can happen if you don't lube your Black Hawk's tailwheel lockpin often enough.

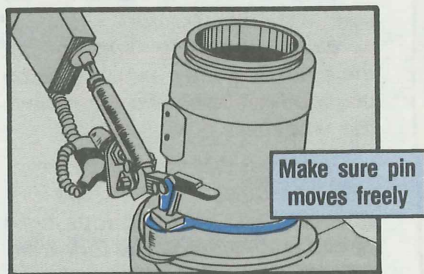
For example, it may not unlock on command when the bird's ready to be taxied or towed. Or it may not lock once the bird lifts off for a mission.

Grease the lockpin every 500 flight hours unless you're operating in a very wet climate. Then lube as often as you and your maintenance officer think it needs it.

Using the wrong lube is almost as bad as not using any at all. Some mechs grab whatever's handy—engine oil, hydraulic fluid, transmission fluid—instead of aircraft grease, MIL-G-81322, like it calls for in Task 2 of TM 55-1520-237-23-4.

Eyeball the lockpin often—at least every 14 days like it says in TM 55-1520-237-PMS-1. Move the pin up and down with the manual lever to make sure it moves freely. If it doesn't move free

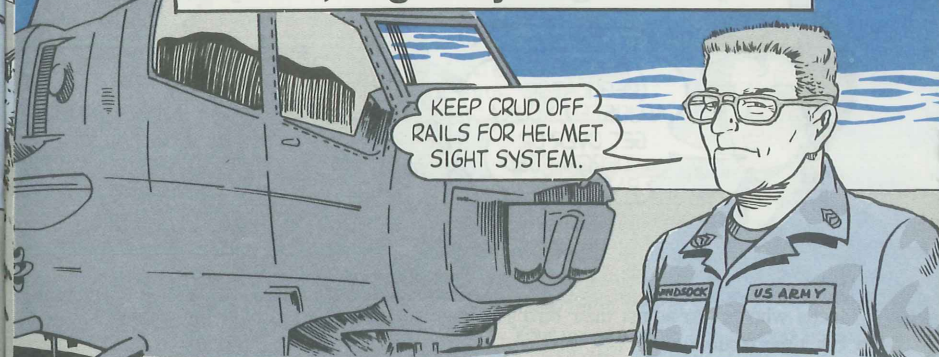
and easy, put a couple of drops of penetrating oil on it. NSN 6850-00-508-0076 gets a ½-oz can.



But keep penetrating oil and all other lubes away from the landing gear wear plate on the fork assembly below the lockpin. The wear plate is Teflon-lined and will deteriorate fast if it's soaked with lube.

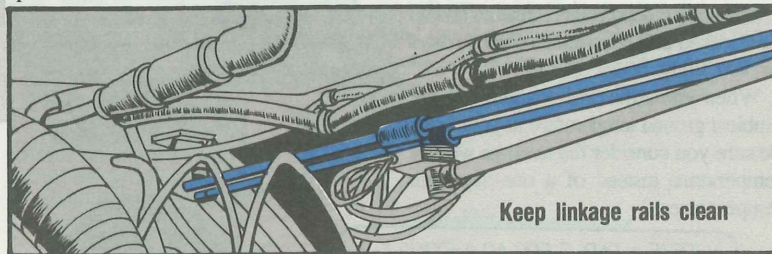
If you accidentally get oil or lube on the wear plate, remove it with a clean cloth and wash it with soap and water.

## Sealant, Sight System Don't Mix



Careful with the sealant, Cobra mechs, when you install a new canopy, crew door windows and windshields.

You've got to keep that sticky stuff off the linkage rails of the bird's helmet sight system (HSS). If you get sloppy with the cement, you could stop free movement of the carriage over the rails. Without free movement, you can forget target practice.



If you do get sealant or any other foreign material—such as paint spray, sprayed insecticides, window cleaners, oils, or tape—on the rails, you've got to clean them good.

Wipe 'em with a lint-free cloth soaked with alcohol. NSN 6810-00-275-6010 gets a gallon of methyl alcohol.

Then move the carriage along the rails. If the carriage binds, alternately wipe the rails, move the carriage, wipe the rails... until the carriage travels freely without binding.

### Other Sight Savers

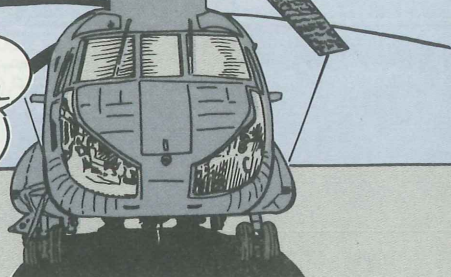
Remove small nicks and light damage by rubbing the rails with crocus cloth. Then wipe the rails clean.

Never use the linkage rails for a handhold when you leave the cockpit. That'll bend the rails and they'll have to be replaced at \$2,600 a throw.

Never throw anything haphazardly into the cockpit before climbing in. You could damage the rails or other sensitive equipment with a bad toss.

## Adjust Regulators Seasonally

IF YOU DON'T KEEP THE REGULATOR ADJUSTED, YOU'LL GET OVER OR UNDERCHARGED BATTERIES.



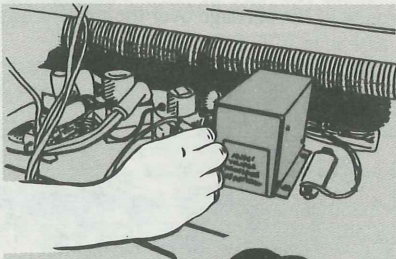
Mechs who fail to adjust their bird's voltage regulator periodically are asking for big time trouble.

An improperly adjusted regulator can cause overcharging. The result will be battery destruction and possible helicopter damage.

Para 3-4c of TM 11-6140-203-14-2 says that carbon-pile voltage regulators must be checked weekly or every 25 flight hours, whichever comes first, and adjusted as necessary to compensate for temperature changes.

The newer, solid state regulators should be checked and adjusted every 120 days or 100 flight hours.

When you adjust the regulator to the ambient ground temperature in your area, be sure you consider the average weekly temperature instead of a one-day high temperature.



HERE'S A TABLE FOR ADJUSTING THE VOLTAGE REGULATOR ACCORDING TO THE AVERAGE GROUND LEVEL AMBIENT TEMPERATURE:

TEMP	SETTING (Volts)
Above 80F	27 ± 0.2
32F to 80F	28 ± 0.2
Below 32F	28.5 ± 0.2

See your aircraft's maintenance manual for procedures to adjust the regulator. If your bird's manual doesn't have the info you need, go by the info in Para 3-282 of TM 55-1500-204-25/1.

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## Protect Your Protection

A VESTED INTEREST COULD SAVE YOUR LIFE!



If you accidentally spill lube oil, grease, hydraulic fluid or fuel on your SRU-21/P survival vest, turn it in and get a clean one. An oil- or fuel-soaked vest could offset the fire-retardant properties of your Nomex flight suit in a crash.

Your unit's Aircraft Life Support Equipment (ALSE) technician knows how to clean your vest without ruining its fire-retardant properties. Cleaning instructions are in Para 2-6 of TM 55-1680-317-23&P.

But you can help keep your survival vest in good shape by dry brushing it with a soft bristle brush to remove dirt, dust and mud. And be careful where you put your vest when you're not wearing it. Hang it up in a clean, dry place.

## AVIATION MESSAGES

CAT 1 EIR Phone  
AUTOVON 693-2066  
(24 hours)

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

AH-64-87-09, SOF, Maint Mandatory, Removal of copilot/gunner boarding step, 161545Z Apr 87.  
AH-64-87-10, SOF, Maint Mandatory, Aircraft engine mount pins inspection, 162030Z Apr 87.  
AH-64-87-11, SOF, Technical/Operational, Lifting of restriction on firing area weapon system (AWS), 282300Z Apr 87.  
OH-6-87-02, SOF, Maint Mandatory,

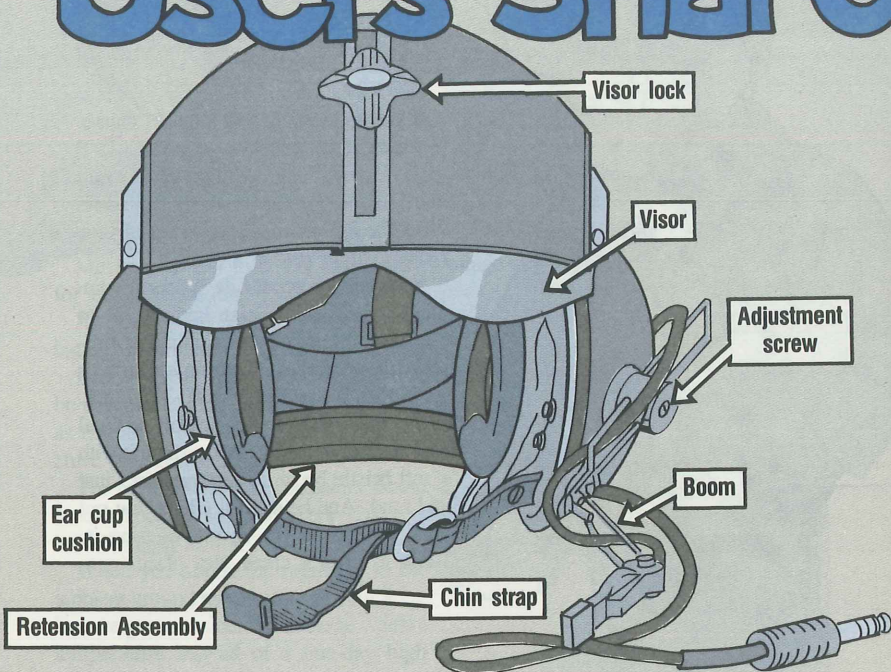
Reduction in retirement life of the third stage turbine wheel on T63 engines, 211800Z Apr 87.  
OH-6-87-03, SOF, Technical, One-time inspection of governor control ROD P/N 369A7706-3, 231700Z Apr 87.  
OH-58-87-03, SOF, Maint Mandatory, Reduction in retirement life of the third stage turbine wheel on T63 engines, 211800Z Apr 87.  
UH-60-87-05, SOF, Operational, Stabilator operational procedures, 112000Z Apr 87.  
C-12-87-02, SOF, Technical, One-time inspection and installation of elevator

trim tab system modification, 162200Z Apr 87.  
U-21-87-02, SOF, Technical, One-time inspection and installation of elevator trim tab system modification, 221830Z Apr 87.  
MIM-OH-6A-87-XSOF-01, Vibration tests after field installation of helical torque-meter gear, 301830Z Apr 87.  
MIM-OH-58A-87-XSOF-01, Vibration tests after field installation of helical torque-meter gear, 301830Z Apr 87.  
MIM-UH-1-87-XSOF-03, Aircraft steel tail rotor grips, 301815Z Apr 87.

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# Users Share



Your unit's Aviation Life Support Equipment (ALSE) technician is the main man in keeping your SPH-4 flight helmet serviceable.

But there aren't enough hours in the day for him to do the job right unless you flyboys and crew chiefs catch the little problems before they become big problems. You can do it by pulling operator PMCS like it says in TM 10-8415-206-12&P.

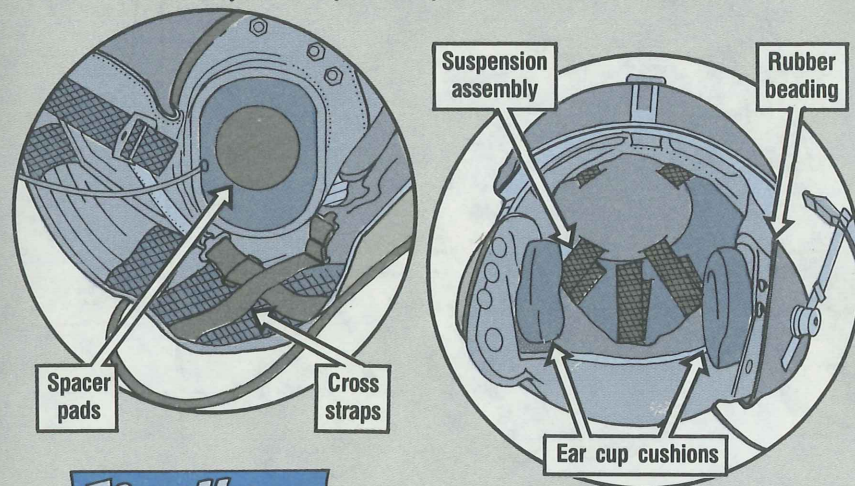
Check your helmet **before** each mission, like so:

- Operate the visor lock to make sure it locks in the retracted position. Lower and raise the visor. It should move freely in its tracks.
- If needed, wipe dust off the visor with a clean, damp cloth. Use a mild soap solution to clean off grease, oil and perspiration. Never use brown paper towels or dirty rags. You'll scratch or stain the plastic and cloud visibility.
- Eyeball the chin strap, retention assembly and suspension assembly for torn fabric, frayed stitching, fasteners that won't fasten and buckles that won't buckle.
- Check the ear cup cross straps for fraying, loss of elasticity and a defective buckle. If you use spacer pads to add pressure around the ear cups, make sure they're still tight and in good condition. Same goes for the ear cup cushion.

# Maintenance!

- Is the helmet liner loose, cracked, stained, dented or gouged? Any crack, dent or hole bigger than 2 cubic centimeters makes the liner unserviceable.
- Make sure the rubber beading is bonded to the helmet's edge. It protects you from sharp edges around the helmet. If it's loose, cracked, chipped or dry rotted, get it replaced.
- Examine the microphone and headset for loose or missing screws. Make sure the microphone boom can be locked into position with the adjustment screw. Some flyboys strip the adjustment screw hole in the shell when they muscle the microphone into a new position without loosening the screw.

If you find **anything** wrong with your helmet, turn it into your unit's ALSE technician. Never try to fix it yourself—you could double the trouble.



## Finally...

**NEVER** use the mike boom as a handle for carrying your helmet. Use only the protective bag for carrying it.

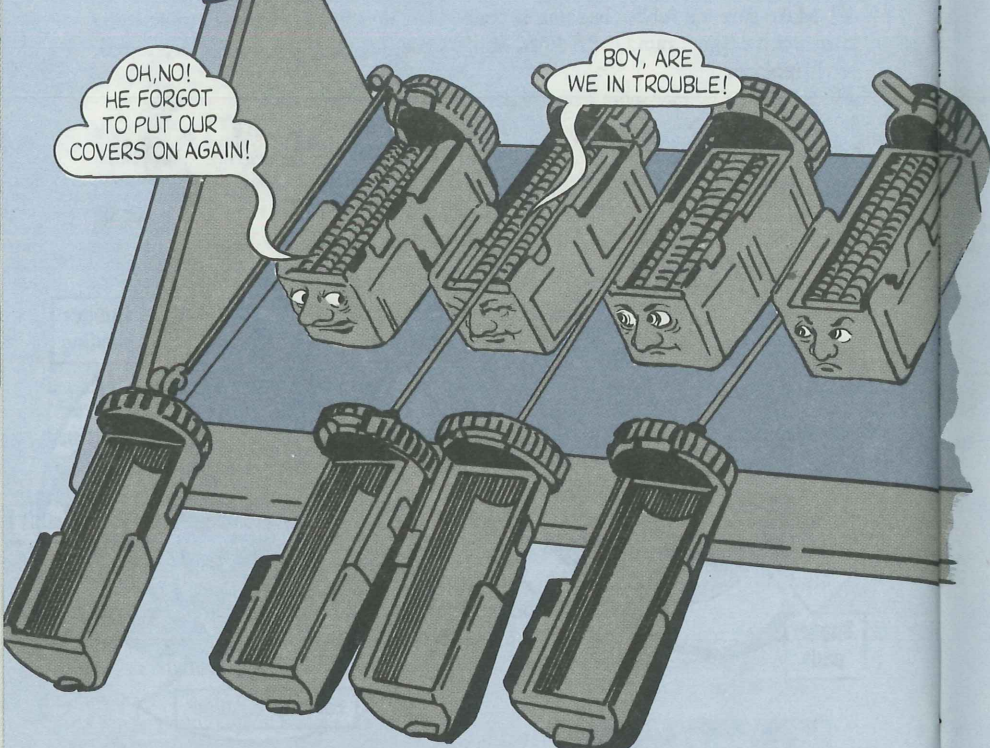
**NEVER** ever sit on your helmet. That's not what it was designed for.

**NEVER** throw your helmet into the cockpit or anywhere else. Set it down carefully, wherever.



This is what happens when you abuse your helmet!

# Double Up With Pair Care



OH, NO!  
HE FORGOT  
TO PUT OUR  
COVERS ON AGAIN!

BOY, ARE  
WE IN TROUBLE!

Luck may be with you the first time. The message'll get through. But odds of getting through the next time are very slim.

After squeezing the couplings in place, turn the upper lock and connector lock at the same time. This puts even pressure on the connector. Uneven pressure damages the connector.

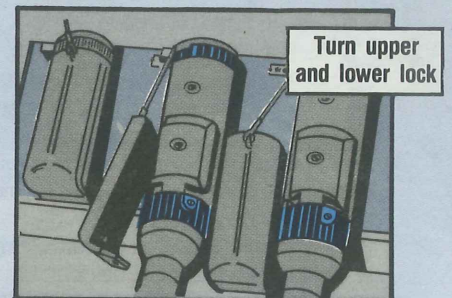
When the cable's hooked to a van, keep a safety clamp on. This helps protect the plug and connector if a vehicle runs over the cable or someone trips over it.

The clamp helps if you forget and drive off with the cable attached to the power source. The clamp just might prevent pulling the receptacle box out of the van.

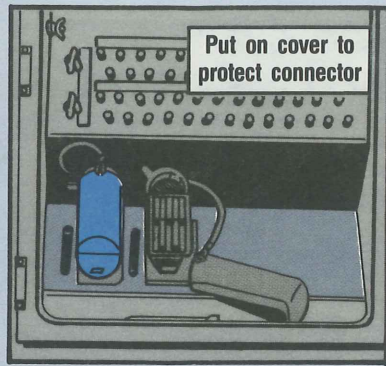
Head off connector damage. Disconnect the cable as soon as you're ready to roll.

When you're removing the connector from the receptacle, release the locks together and lift evenly.

Angling can cause damage to the plugs.



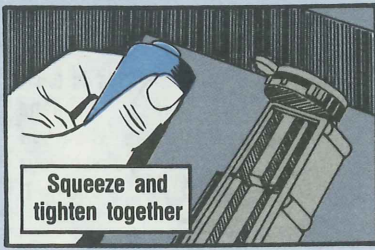
Turn upper  
and lower lock



Put on cover to  
protect connector

Keep dirt and dust out of the connector and receptacle. Always put the cover in place over the U-185()/G, U-186()/G or U-187()/G plug when it's not in use.

When you wind up the cable on the reel, add protection by tying the plug to the inner section of the reel rim. Use field wire or strong twine.



Squeeze and  
tighten together

With the 26-pair cable you have a backup system—paired to a double take—that'll keep circuits communicating as long as you couple them to good PM.

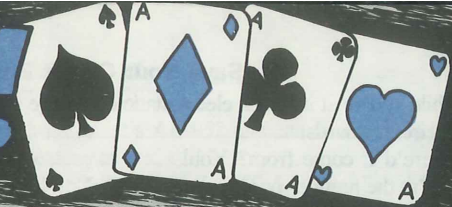
When you're putting the squeeze on the cable connector and receptacle, make sure they're lined up. Forcing them together at an angle cracks or breaks the contact pins.

THAT WAY  
YOU'LL KEEP THE  
CONNECTOR FROM GETTING  
KICKED AROUND  
OR STEPPED ON.





# Deal Yourself Aces!



CAREFUL...  
LET ME SHOW  
YOU HOW TO  
HANDLE  
THAT CARD!

It's in the cards—"right" beats "wrong" when it comes to dealing with those printed circuit cards in your TD-660 multiplexer and CV-1548 telephone signal converter.

Before you put a hand on the cards, turn your gear off. Plugging into an operating set can blow card circuits quick!



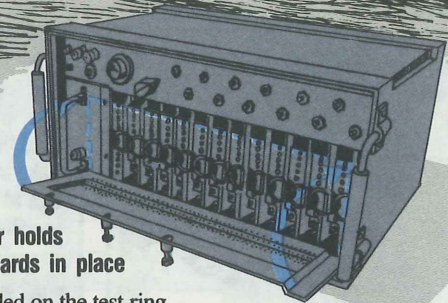
GENTLY, WHEN YOU INSERT  
THOSE CARDS. SLAMMING THEM  
INTO YOUR SET BENDS PINS

Just push until you feel the pins touch the receptacles. Then seat the card firmly. Never shove a card hard or hit it with the heel of your hand to "be sure." Pin already bent? Try straightening it with needlenose pliers—you may not need a new card.

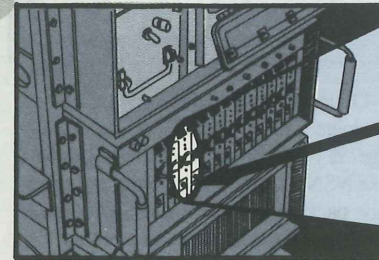
# Aces!

After the cards are in place, put the card cell cover or retaining bar back on your set. Then, the cards won't jiggle loose. Loose cards make for poor contact—or none at all. Besides, you need to shut out dust and dirt that'll short out your set.

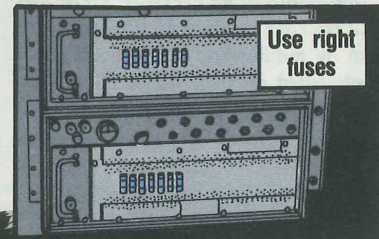
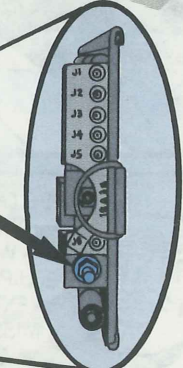
Cover holds  
the cards in place



A light touch is all that's needed on the test ring button of your CV-1548. Holding it for 10-15 seconds can start a chain reaction of trouble—maybe including card damage.



Touch test  
ring button  
lightly



Use right  
fuses

Trouble starts with the 18A3's R5 resistor burning out. This leads to a burned-out transistor in the 18A2 panel, then a blown fuse in the 18A1 power supply.

Never overfuse or replace a fuse with a piece of tin foil or other substitute. You'll damage the cards—or even your CV-1548.

REMEMBER, HOLD THE TEST BUTTON FOR ONLY 2 SECONDS, RELEASE FOR 5, HOLD FOR 2, AND SO ON, UNTIL YOU GET AN ANSWER.



## Save Your Circuit Board

While you're at it, block electrostatic discharge (ESD). ESD will zap your radio set's circuit boards.

Where'd it come from? You!

You're the number-one carrier of ESD. You build up thousands of volts of static electricity just by walking across the floor, sliding around in your chair or combing your hair.

To protect your circuit boards, ground yourself with a wrist strap, NSN 4240-01-063-4880.



Keep all circuit boards in the original ESD protective packaging until you are ready to use them. Then, save the original packaging materials. Take the new board out of the package at the place where the exchange will be made.



USE THE EXTRACTOR THAT COMES WITH YOUR EQUIPMENT. IF THE EXTRACTOR'S MISSING, ORDER ONE WITH NSN 5999-01-038-6793.

Once you've removed the board, repackage it in its original anti-static package. If you don't have the original pack, use NSN's in PS 399 to order anti-static fast packs and NSN's in PS 405 to get anti-static storage bags and pouches.

Make sure to let everyone know that your package contains an ESD-sensitive item by putting one of the CAUTION labels listed on Page 49 of PS 405 on

each fast pack container. The yellow and black CAUTION Labels are:

Size (inches)	Quantity	NSN 7540-01
2 by 2	500	109-8815
4 by 4	100	110-4906

FOR YOUR SAFETY, MAKE SURE YOUR EQUIPMENT IS PROPERLY GROUNDED.

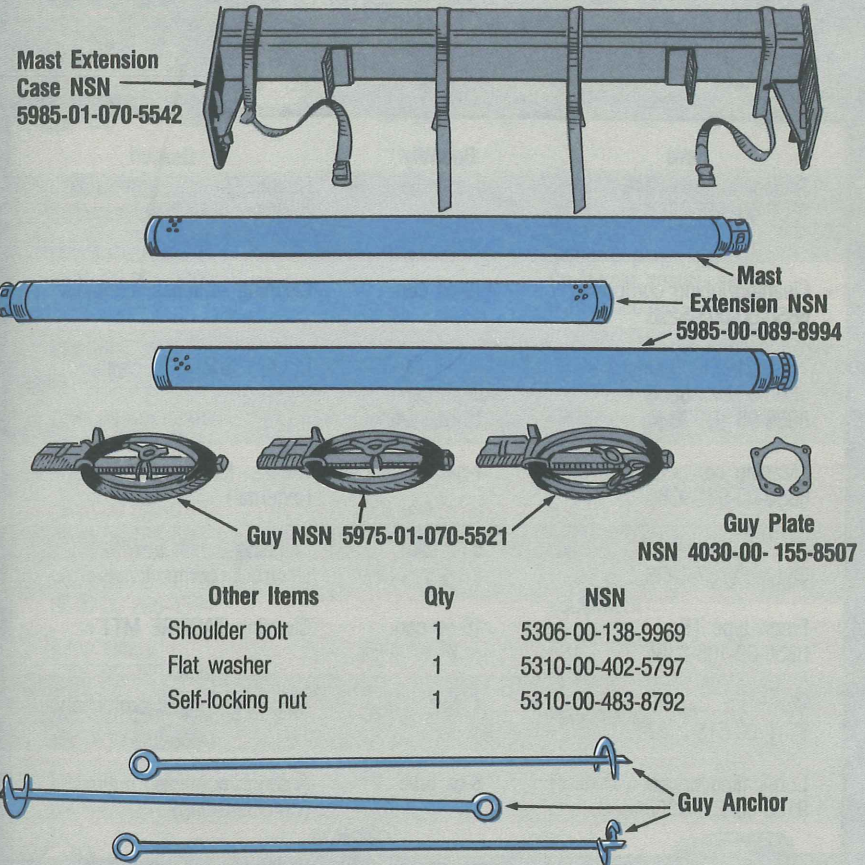


Antenna Mast...

## Put It Up Easy—er

Putting up your AN/GRC-103 radio set's AB-952 antenna is a lot easier with the parts in the MK-1009 mast extension kit.

These items, used to boost that antenna to its full 50 feet, are listed by part numbers only in TM 11-5820-540-20P (Aug 86), but you can get some of them with these NSN's:



There aren't any NSN's for the guy anchor, PN SM-B-551426, or the snaphook, PN SM-D-551398-1. Order these items on a DD Form 1348-6. Use the FSCM listed in the TM. The RIC is B16.

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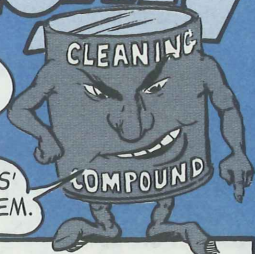
49



IT'S TIME TO FIGHT THE WAR AGAINST DIRT AND GRIME. HERE'RE SOME ITEMS YOU'LL WANT ON YOUR SIDE.

LET'S GET 'EM.

# Enemy



Item	Quantity	Use
Silicone compound 6850-00-880-7616	8-oz tube	Rubber O-rings, grommets, gaskets, preformed packing, antenna threads
Cleaning/lubing compound 6850-00-003-5295	16-oz can	Cleaning switches, contacts
Trichlorotrifluoroethane 6850-00-984-5853 6850-00-105-3084	5-gal can 16-oz can	Contact and head cleaner
Cleaning compound 6850-00-597-9765	1-gal can	Grease, fungus, dirt remover (external)
Isopropyl alcohol 6810-00-753-4993	8-oz can	Cleaning circuit boards, electronic components
Freon type TE 6850-00-105-3084	16-oz can	Cleaning TACFIRE MTT's
Varnish 8010-00-515-2487	1 pint	Moisture, fungus protection
Lubricating grease 9150-00-257-5358	8-oz tube	Antenna contacts (non-insulating)

LET'S GET OUTTA HERE!



# Clean Up

WE'LL CLEAN UP THEIR ACT!



Item	Quantity	Use
Talcum powder 8510-00-817-0295	9-oz can	Switchboard plugs and moisture shields
Denatured alcohol 6810-00-201-0906	1 pint	Cleaning plugs, springs (in humid areas), search-light reflectors
Polishing cloth 7920-00-985-6849	13½ × 11-in sheet	Switchboard plugs and packs
Silicone compound 6850-00-927-9461	5-oz tube	Heatsink compound, heat protection
Lens tissue 6640-00-597-6745 6640-00-240-5851	6 × 4-in (50 sheets) (100 sheets)	Night vision equipment, optics
Lens tissue 6640-00-285-4694	11 × 7-in	Night vision and projection equipment
Lens cleaner 6850-00-392-9751	2-oz bottle	Night vision and projection equipment
Anti-static compound 6850-00-882-6690	3½-oz bottle	Plastic gage windows
Insulating compound 5970-00-181-0190	Kit	Protective coating for printed circuit boards

ORDER THESE ITEMS NOW TO COMBAT THE DIRTY ENEMY!



## Save Those Dry Cells

THERE'S STILL  
PLENTY OF LIFE IN ME!  
SOB

I KNOW WHAT  
YOU MEAN!



Dear Half-Mast,  
I've got a couple of problems with the BA-1312/U and BA-1391/U mercury batteries.



First, there's white powder that forms on a new battery inside its plastic packaging. Does this make the battery unserviceable?

Second, do I refrigerate mercury batteries prior to use or do I store them at room temperature?

SGT D. R.

Dear Sergeant D. R.,

Forget about tossing those batteries out. They're still good. Just wipe off the powder, which is an oxide of the electrolyte, and use the battery.

Storing mercury batteries at room temperature's OK, but storing them in a refrigerator is better. They'll last longer. Store the batteries like it says in Para 6a of SB 11-6, FSC 6135 Primary Battery Supply Data.

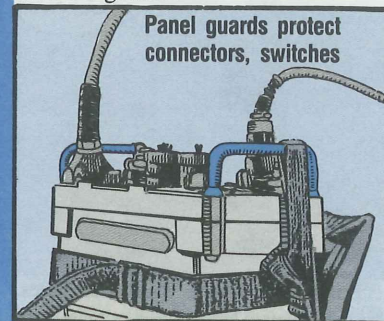
*Half-Mast*

## Ease Off the Muscle



Take care when you already have a handset or headset hooked up. Dropping either component when you're through talking will tug at the wiring and pull connectors loose.

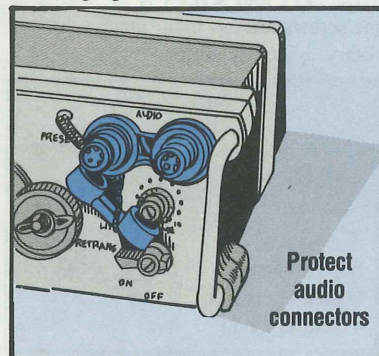
You can even mess up connectors on backpack radios. Panel guards protect accessories, but the connectors stick up over the guards.



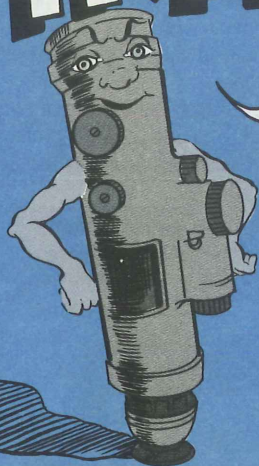
If you manhandle or drop the set, you can knock a connector loose or break the radio's face.

Too much muscle messes up the connectors on the front panel of your radio. A loose connector lets you twist and turn wiring inside. A cracked connector lets in moisture. So, easy does it when you're hooking up audio accessories.

When you're ready to move out again, never hoist the radio by the antenna or a cable. This'll pull loose a connector or break the front panel.



# PM Helps You See Clearly



PM IS  
A FRIEND  
TO BOTH  
OF US!  
IS THAT  
CLEAR?

face won't stay put, which makes for sight problems during the day. The cover's nut or stop assembly needs adjusting.

Remember to keep the daylight cover on during the day. Just a few rays will damage the image intensifier tube. When you remove the cover, it's a good idea to immediately put it in either the storage case or your pocket. Left lying around, the cover disappears and you're sightless during the day.

**Protect with cover during the day**



Burned-out image intensifier tubes, busted batteries and shorted-out electrical parts will blind your AN/PVS-4 night vision sight and leave you shooting in the dark. Keep your eye on these tips and your AN/PVS-4 will see clearly.

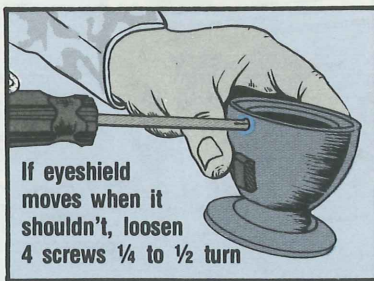
## Covering Daylight Covers

If the daylight cover's face moves by itself, tell maintenance. Otherwise, the



**If daylight cover face moves by itself, report it!**

If the eyeshield moves when you turn the diopter focus ring, try loosening the eyeshield's four screws  $\frac{1}{4}$  to  $\frac{1}{2}$  turn. If the screws are too tight, the eyeshield's rotary assembly sticks.



**If eyeshield moves when it shouldn't, loosen 4 screws  $\frac{1}{4}$  to  $\frac{1}{2}$  turn**

The eyeshield's leaves should open and close with normal pressure. If they don't, tell maintenance. Never try to help the leaves by poking with a pencil or stick. You'll cause the leaves to open permanently, and you may scratch the lens.

**Never poke leaves**



Remember, you must remove the AN/PVS-4's batteries after operations—like it says in Step 12 of your PMCS. Left in for long periods, the batteries could leak and damage the sight.

**Remove battery when you're done operating**



## Moisture Protection

Moisture causes the eyeshield to rot. Never clean the AN/PVS-4 with anything wetter than a damp cloth. Make sure all parts are completely dry before you stow it.

If the lens fogs, pump the eyeshield a few times. If that doesn't clear it, turn the sight in. Something's wrong.

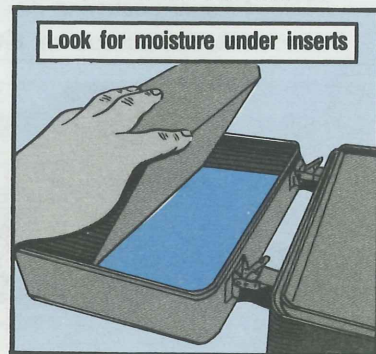
If your sight shows a weak image or no image at all, eyeball the battery assembly for dirt. Dirt keeps the battery from making good contact. Wipe the cap and spring with a clean rag. Clean the battery and sight's contacts with an eraser.

In wet climates, pull the carrying case's inserts out during daily PMCS and look for moisture. In all climates, keep the case closed and latched as much as possible to shut out rain and dust.



**Weak or no image? Clean battery cap, spring and contacts**

**Look for moisture under inserts**

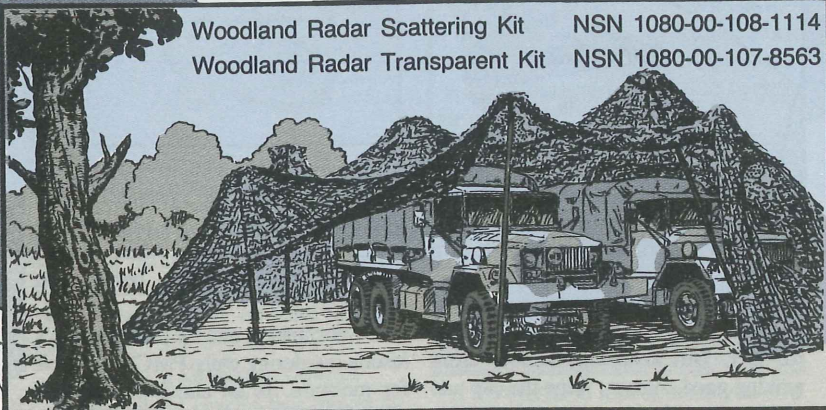


# Screen Repair Kits

FINDING TM 5-1080-200-13&P  
A BIT CONFUSING ABOUT SCREEN  
REPAIR KITS AND THEIR COMPONENTS?  
THIS WILL CLEAR THE PICTURE.

HERE ARE THE NSN'S FOR THE  
CAMOUFLAGE SCREEN REPAIR KITS:

Woodland Radar Scattering Kit NSN 1080-00-108-1114  
Woodland Radar Transparent Kit NSN 1080-00-107-8563

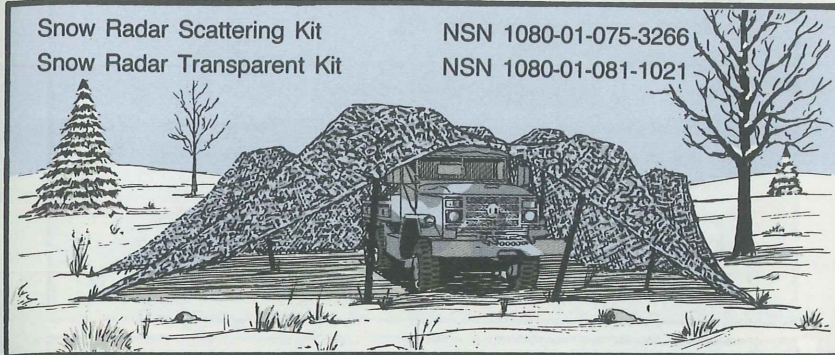


Desert Radar Scattering Kit NSN 1080-01-075-4014  
Desert Radar Transparent Kit NSN 1080-01-073-3220



Snow Radar Scattering Kit  
Snow Radar Transparent Kit

NSN 1080-01-075-3266  
NSN 1080-01-081-1021



All the kits except for the snow have these components in common:

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

The woodland radar scattering also has:

ITEM	NSN
1 16-ft cord	4020-01-041-0788
6 5-ft lengths of twine (Twine, 30 yard shuttle)	1080-01-062-2184
1 square meter garnished net	1080-01-047-9312
1 square meter garnished net	(Not on AMDF)
20 square feet camouflage cloth	1080-01-051-1433

The woodland radar transparent also has:

ITEM	NSN
1 16-ft cord	4020-01-041-0788
6 5-ft lengths of twine (Twine, 30 yard shuttle)	1080-01-062-2184
1 square meter garnished net w/lanyard	1080-01-183-4480
20 square feet camouflage cloth	1080-01-051-1432

The desert radar scattering also has:

ITEM	NSN
1 16-ft cord	4020-01-041-0788
6 5-ft lengths of twine (Twine, 30 yard shuttle)	1080-01-060-1698
1 square meter garnished net w/lanyard	1080-01-183-4481
20 square feet camouflage cloth	1080-01-073-1269

The desert radar transparent also has:

ITEM	NSN
1 16-ft cord	4020-01-041-0788
6 5-ft lengths of twine (Twine, 30 yard shuttle)	1080-01-060-1698
1 square meter garnished net	1080-01-183-4482
20 square feet camouflage cloth	1080-01-075-4016

Here are the components and NSN's for the snow radar scattering and snow radar transparent:

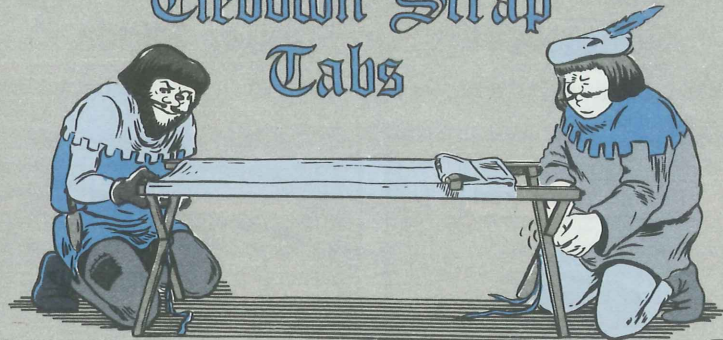
ITEM	NSN/PN
1 16-ft cord	PN 140041 CAGE 52973
6 5-ft lengths of twine (Twine, 30 yard shuttle)	1080-01-073-0817
200 clear plastic straps	5975-00-111-3208
30 quick connect/disconnect pins	5315-01-075-8014
30 quick connect/disconnect brackets	1080-01-069-8089
1 lanyard	1080-01-073-3198
36 square feet camouflage cloth (for radar scattering)	1080-01-073-3194
36 square feet camouflage cloth (for radar transparent)	1080-01-073-3197

USE DD FORM 1348-6 TO ORDER THE WOODLAND SCATTERING NET AND THE 16 FT. SNOW CORD FROM RIC A12!

PS END

Cots...

## Tiedown Strap Tabs



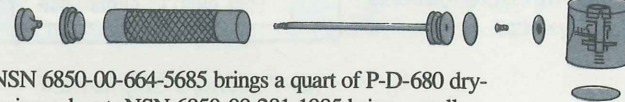
*It's time once again to undo your cot,  
So you slip the tab through the slot,  
But the bar is bent and the tab gets caught,  
So you pull hard and off it does lop,  
And a ragged strap is now what you've got,  
So heed our words of good advice,  
Bend that bar with screwdriver or knife.  
The next time you slip the tab through the slot  
The tab will slip through and not get caught.*

AOAP...

## Clean That Pump

An oil sampling pump must be clean before you use it. Left-over oil from the last sampling will ruin the sample you're taking.

Clean the pump piece-by-piece with dry cleaning solvent and let it air dry.



Take the pump apart and clean each piece

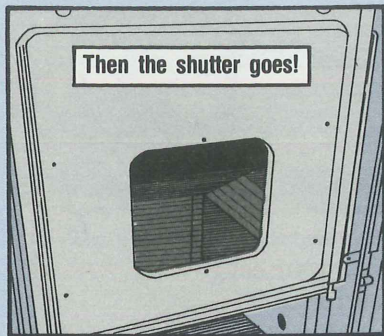
NSN 6850-00-664-5685 brings a quart of P-D-680 dry-cleaning solvent; NSN 6850-00-281-1985 brings a gallon.

Find cleaning instructions in Section III, Para 16d of TB 43-0210, Nonaeronautical Equipment Army Oil Analysis Program.

## Better Rivets for Shutter Slides

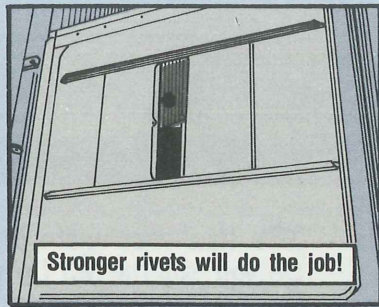
Failure of rivets results in the loss of the shutter slides.

NSN 5320-01-237-2696 replaces Item 19, Fig D1 in TM 10-7360-204-13&P. NSN 5320-00-129-9706 replaces Item 21.



Then . . . no control of the air flow that feeds the flame.

But stronger rivets are available.



Order the slide and slide spacer with the part numbers in the TM. There are no stock numbers.

IM-93/UD Dosimeter . . .

## Protect With Boots

Dear Editor,

On Page 61 in PS 407 you said to use plastic tape to protect the IM-93/UD's charging end if the protective cap's lost. We've come up with a better solution—communication binding post rubber boots, NSN 5999-00-869-6263. The boots seal out dirt and moisture and only cost 13 cents apiece.



CPT Richard Shipkowski  
APO New York

(Editor's note: Sounds like you've put the boot to that problem.)

AUG 87



## Belvoir RD&E Hotlines

The TROSCOM Research, Development & Engineering Center at Ft Belvoir has three 24-hour hotlines. If you have questions on:

- Combat engineering equipment, call AUTOVON 354-2654, COMM (703) 664-2654.
- Materials, fuels and lubricants, call AUTOVON 354-3576, COMM (703) 664-3576.
- Supply distribution equipment, water and fuel supply systems, marine craft, support equipment, electric power systems, heaters or air conditioners, call AUTOVON 354-5120, COMM (703) 664-5120.

Tell them your name, unit, AUTOVON or commercial phone number and your problem. They'll get back to you with help.

## GSA Hotline

The General Services Administration (GSA) has a hotline for complaints or suggestions about the quality of Federal Supply Service items (priced under \$25), such as tools, paper items products and industrial products. The hotline is available 24 hours a day, seven days a week. When you call, give your name, unit, AUTOVON or commercial phone number, the item you want to discuss and the problem. Call FTS 557-1368 or Commercial (703) 557-1368.

## TMDE Hotline

Need a fast answer to a Test Measurement and Diagnostic Equipment (TMDE) supply or maintenance problem? Call the TMDE Hotline, AUTOVON 745-4157/3564/3650 or COMM (606) 293-4157/3564/3650.

## AOAP Mailing Kit

You can now get the leakproof mailing kit, NSN 8125-01-193-3440, to send in AOAP samples. Each kit has 24 non-aeronautical sampling bottles, plastic shipping sacks and mailing cartons. Use Appendix A of CTA 50-970 as authorization.

## M939 Heater Motor

The blower motor for your 5-ton truck's heater is NSN 6105-00-512-9225.

## Correct Your M16A2 TM

There's a glitch in TM 9-1005-319-10 (Aug 86) for the M16A2 rifle. There are 6 cartridge magazines, NSN 1005-00-921-5004, authorized, not 1 as shown on Page 124. Make a note till you see the next change to the TM.

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

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