



**THE  
PREVENTIVE  
MAINTENANCE  
MONTHLY**

TB 43-PS-602, The Preventive Maintenance Monthly, is an official publication of the Department of the Army, providing information for all soldiers assigned to combat and combat support units and all soldiers with unit maintenance and supply duties. All information published has been reviewed and approved by the agency responsible for the equipment, publication or policy discussed. Application of the information is optional with the user. Masculine pronouns may refer to both genders.

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

Just write to:

MSG Half-Mast  
 PS, the Preventive Maintenance Monthly  
 USAMC LOGSA (AMXLS-AM)  
 5307 Sparkman Circle  
 Redstone Arsenal, AL 35898-5000

Or e-mail to:

psmag@logsa.redstone.army.mil

Internet address:

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

By order of the Secretary of the Army:

**ERIC K. SHINSEKI**

General, United States Army Chief of Staff

Official:

**JOEL B. HUDSON**

Administrative Assistant to the Secretary of the Army  
 0232401

Issue 602

# PS

January  
2003

## THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-602

Approved for  
Public Release;  
Distribution is  
Unlimited

### NEW YEAR'S RESOLUTIONS

1. Keep plenty of bug spray handy.
2. To patch the hole in my tent.
3. Avoid the meatloaf MRE --**AT ALL COSTS!**--
4. To keep foot powder in my boots!!!
5. To write home more often!
6. To check out the PS Index on page 27!

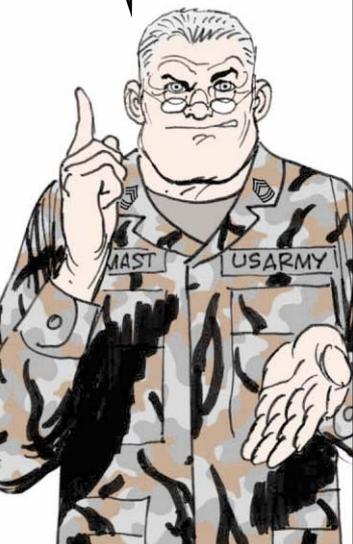


**AMMO HANDLING**  
PART 3 (OF 3) • SEE PAGE 48

# How Official is PS?



**DON'T WAIT!**  
IF THE INFO IS IN PS, IT'S OFFICIAL AS FAR AS YOU'RE CONCERNED!



Some units misunderstand this statement on the PS table of contents page: "Application of the information is optional with the user." They think because what they see in PS is "optional" they can ignore it.

That's a mistake! Preventive maintenance information gets into PS only after a difficult journey through commodity commands where the information has been reviewed by the equipment experts. If they don't approve an article's information, the article doesn't make it in the magazine.

So everything you read in PS has been blessed by the command who manages that piece of equipment. The information in PS is "official" in the sense that it's officially approved. PS articles often correct or clear up information in TMs, ARs, or FMs. The information appears first in PS because PS usually can get it to the field faster.

You shouldn't wait until the info makes it into the "official" publication before you act upon it. That may be too late.

The option not to follow the instructions in PS lies with your commander. Unless he or she says otherwise, use the info. Your equipment will appreciate it.



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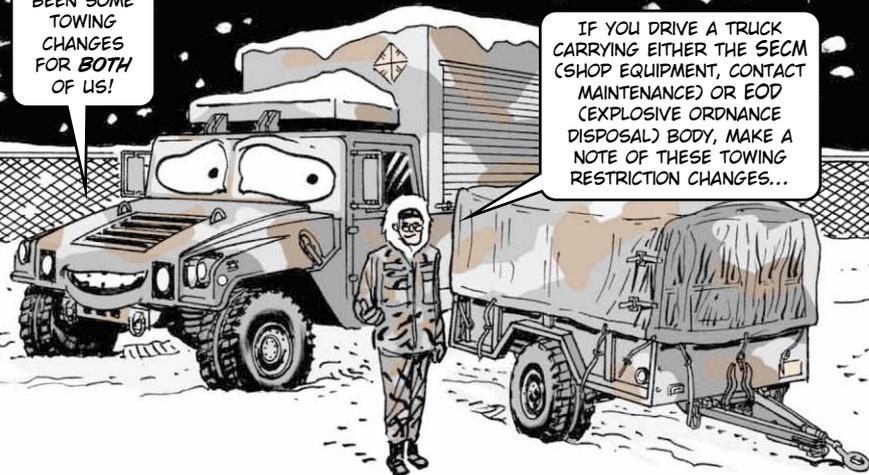
PS, The Preventive Maintenance Monthly (ISSN 0475-2953) is published monthly by the Department of the Army, Redstone Arsenal, AL 35898-5000. Periodical postage is paid at the Huntsville, AL post office and at additional mailing offices. Postmaster: Send address changes to PS, The Preventive Maintenance Monthly, USAMC LOGSA (AMXLS-AM), 5307 Sparkman Circle, Redstone Arsenal, AL 35898-5000.

# TOWING CHANGES FOR SECM AND EOD

THERE HAVE BEEN SOME TOWING CHANGES FOR BOTH OF US!

IF YOU DRIVE A TRUCK CARRYING EITHER THE SECM (SHOP EQUIPMENT, CONTACT MAINTENANCE) OR EOD (EXPLOSIVE ORDNANCE DISPOSAL) BODY, MAKE A NOTE OF THESE TOWING RESTRICTION CHANGES...

SO, GET OUT YOUR TMS AND GRAB A PENCIL!

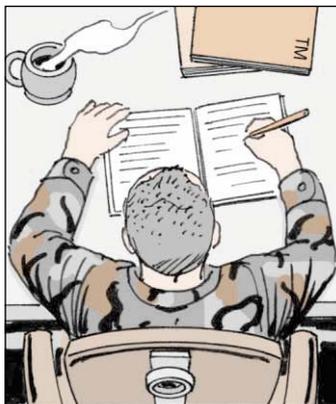


## SECM

❖ The warning at the bottom of Page C in Change 1 to the SECM's TM 9-4940-563-13&P (Jan 98) should read: "All SECMs are capable of towing either the M116- or M101-series trailers. The maximum trailer load capacity is an evenly distributed 4,200 pounds with a tongue weight not to exceed 420 pounds. NOTE: MWOs 9-2330-392-35-1 and 9-2330-392-20-1 must be applied to the trailer and MWO 9-2320-288-20-6 must be applied to the vehicle chassis."

❖ Para 1-7.b (3), Page 1-7 in Change 2 to the TM should read:

"(3) Limitations. The SECM is limited by capacity from performing Depot Level Maintenance tasks on equipment in need of repair. Fording capability is limited to hard bottom surfaces not deeper than 30 inches (76.2 cm). All SECMs are capable of towing either the M116 or M101-series trailers. The maximum trailer load is an evenly distributed 4,200 pounds with a tongue weight NOT to exceed 420 pounds. NOTE: Prior to towing trailers, MWOs 9-2330-392-35-1 and 9-2330-392-20-1 must be applied to the trailer and MWO 9-2320-288-20-6 must be applied to the vehicle chassis."



## EOD

❖ The warning at the bottom of the warning summary at the front of TM 9-4940-566-23&P (Nov 99) should read: "All EODs are capable of towing either the M116 or M101 series trailers. The maximum towed load capacity is an evenly distributed 4,200 pounds with a tongue weight not to exceed 420 pounds. NOTE: Prior to towing trailers, MWOs 9-2330-392-35-1 and 9-2330-392-20-1 must be applied to the trailer and MWO 9-2320-288-20-6 must be applied to the vehicle chassis."

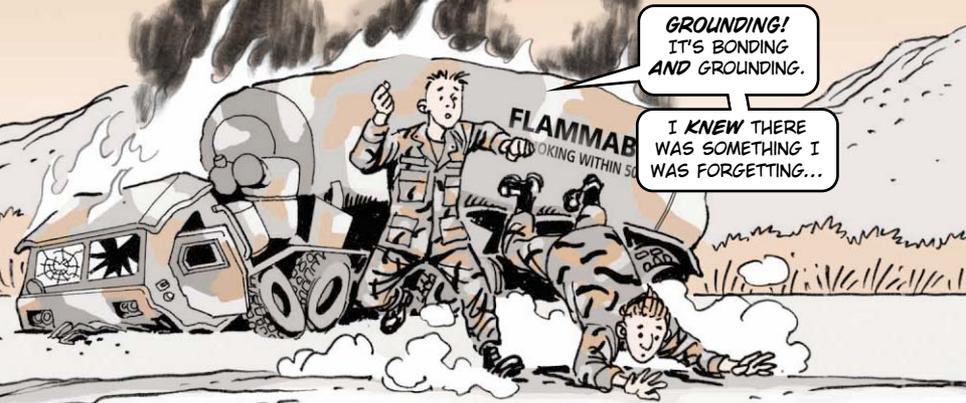
❖ Para b.(3), Page 0002 00-1 in Change 1 to the TM should read: "Limitations. Fording capability is limited to hard bottom surfaces not deeper than 30 inches (76.2 cm). All EODs are capable of towing either the M116- or M101-series trailers. The maximum towed load capacity is an evenly distributed 4,200 pounds with a tongue weight not to exceed 420 pounds. Note: Prior to towing trailers, MWOs 9-2330-392-35-1 and 9-2330-392-20-1 must be applied to the trailer and MWO 9-2320-288-20-6 must be applied to the vehicle chassis."

If you're not sure if these MWOs have been applied, check for the MWO identification plate on the trailer/chassis.

If you have questions about these changes, contact TACOM-RI's Tom Littlefield at (309) 782-1913/DSN 793-1913 or e-mail

littlefield@ria.army.mil

# Sound Ground Lowdown



More than one eyebrow will hit the hairline if a spark occurs during a fuel-loading or refueling operation.

Where does that spark come from? Static electricity.

This is the same kind of electricity you feel when you walk on a carpet and reach for a metal object or touch another person.

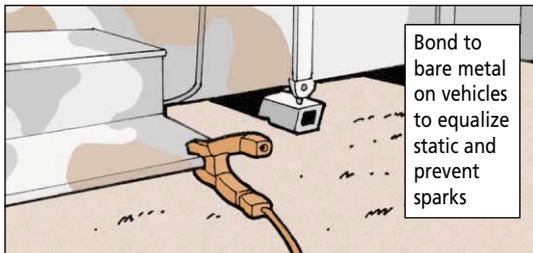
Static electricity also comes from the friction of fuel flowing through a hose or fuel falling through the air. As the static charge builds, it tries to jump across any gap separating it from other parts of the system.

If there are fuel vapors in the gap when a spark flashes across—KA-BLAM—that's all she wrote!!

You can't prevent static, but you can prevent it from arcing or sparking with bonding and grounding.

## Set a Bonding Path

Bonding is connecting a wire from your tanker to the vehicle you're going to refuel. It equalizes any static electricity on the vehicles. You can also bond vehicles by grounding each to the same ground point.

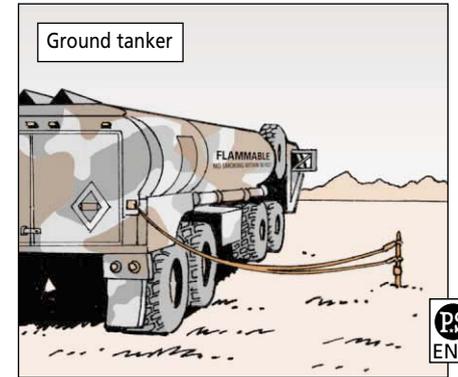


## Grounding

Grounding is hooking up a vehicle to a ground rod so that static will flow into the earth. You can drive a rod into the ground and connect a ground strap from the vehicle to it, or you can hook the strap onto a water pipe or other grounded metal.

That should keep a spark from turning into an explosion or fire.

For more on grounding, see your vehicle operator's TM and FM 10-67-1, *Concepts and Equipment of Petroleum Operations*.



FMTVs...

# BACK-UP HYDRAULIC PUMP

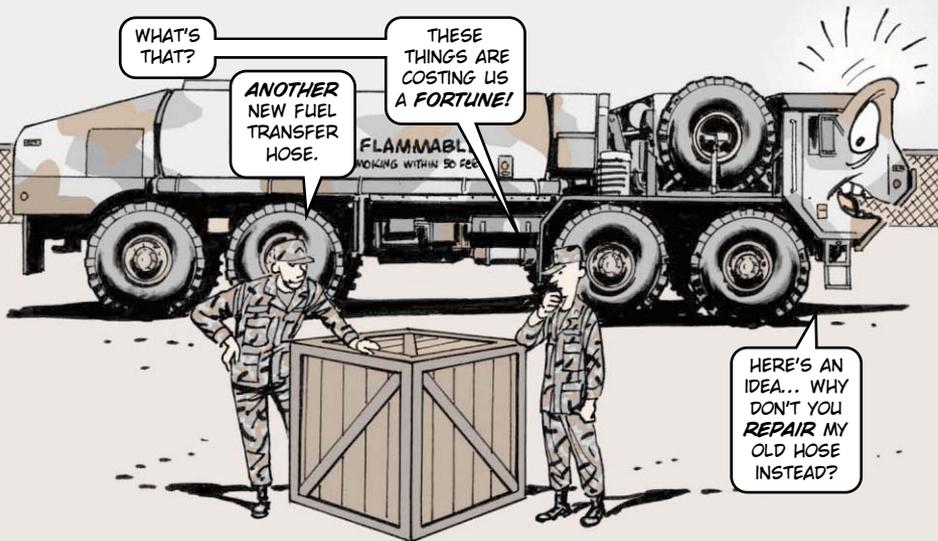


Water, ice and snow play havoc with your FMTV's back-up hydraulic pump. These elements cause the pump's cylinder rod to rust. Rust tears the pump's seals, causing 'em to leak. Enough rust and corrosion cause the pump to stay stuck—that's not good when you need to use it.

All FMTVs have the manually operated back-up hydraulic pump. If the powered hydraulic system fails, this pump provides the hydraulic pressure needed to use the cab tilt, suspension compression and spare tire lowering and raising mechanism.

So do the hydraulic pump a favor. Exercise it every month. Exercising the pump keeps its seals lubricated.

# REPAIR, DON'T REPLACE HOSE



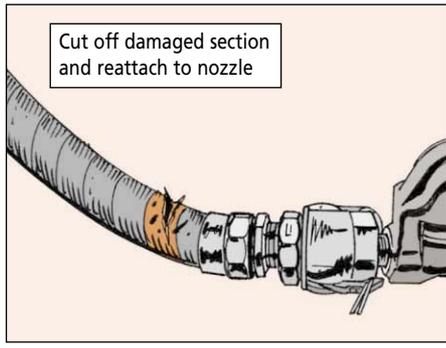
Dear Editor,

The fuel transfer hose on our M978 HEMTT always seems to wear out fastest where it connects to the fuel nozzle. That's where most of the bending and flexing takes place.

Most units I've seen replace the entire hose assembly when that happens. That costs more than \$340.

Instead of ordering a brand new hose, we remove the fitting, cut off the 3 or 4 inches of damaged hose and reattach it to the nozzle. Since the repaired hose is only a few inches shorter, we can do this several times without affecting the mission. The money we save can be better used for more critical maintenance items.

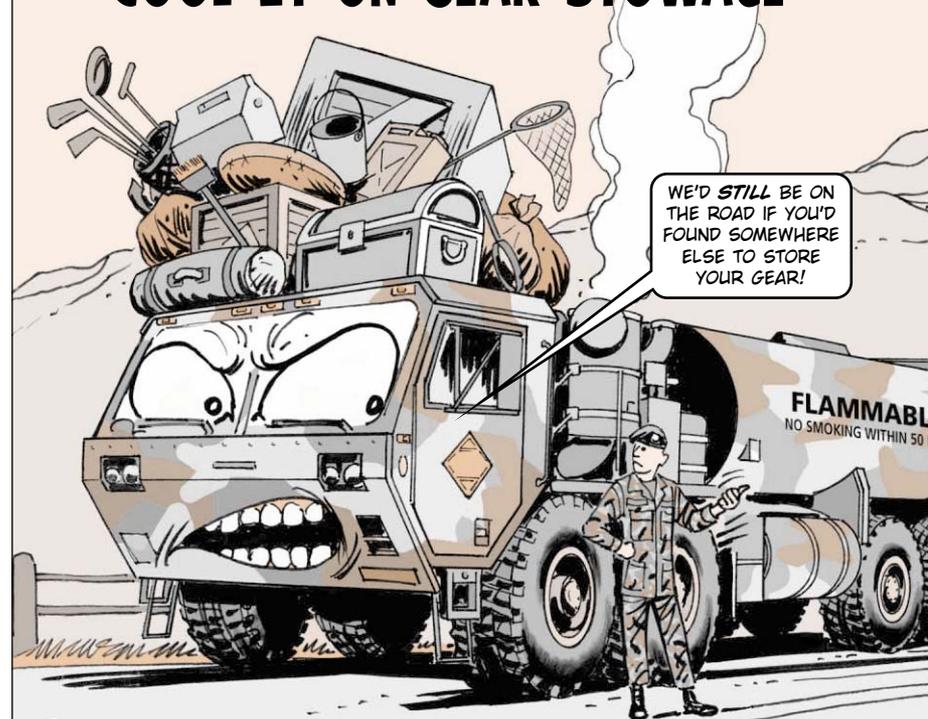
Motor Pool  
588th DSU  
Ft Sill, OK



From the desk  
of the *Editor*

You've given us some fuel for thought! Check out the fabrication instructions on Page F-16 of TM 9-2320-279-20-3 for reattaching the hose.

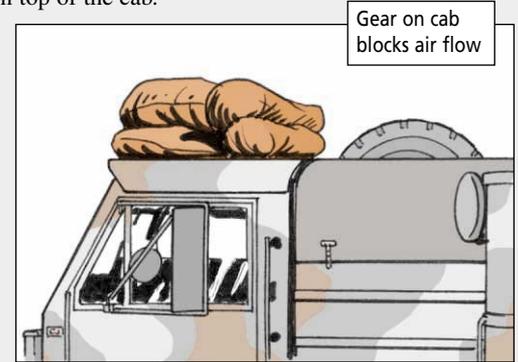
# COOL IT ON GEAR STOWAGE



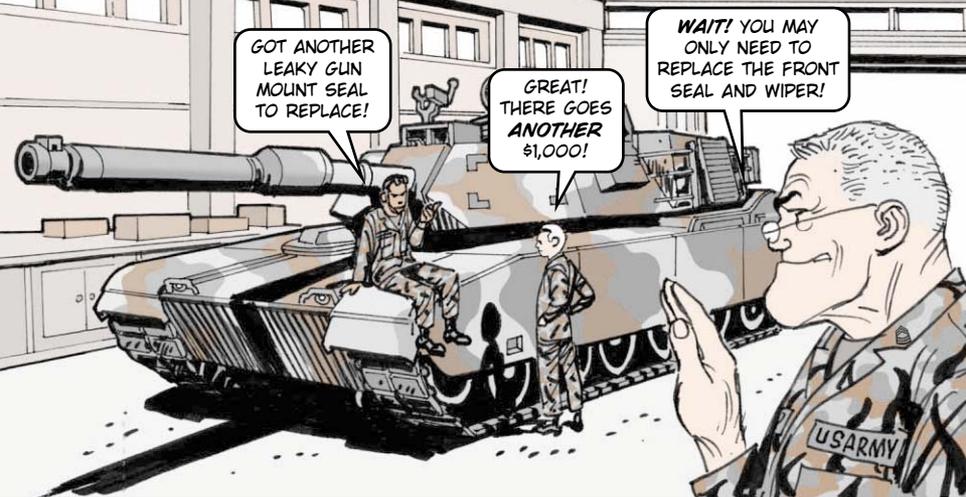
In order to cool your HEMTT's engine, the radiator needs cool air. That's not gonna happen if you pile your gear on top of the cab.

Camo nets, backpacks, duffle bags and other gear tied down on top of the cab will block the air flow channel that funnels air to the radiator. No air, no cooling. And soon, no engine.

Sure, space is tight. But you're better off finding somewhere else to put that gear. It beats thumbing a ride when the engine overheats.



## Save On Gun Mount Seals



GOT ANOTHER LEAKY GUN MOUNT SEAL TO REPLACE!

GREAT! THERE GOES ANOTHER \$1,000!

WAIT! YOU MAY ONLY NEED TO REPLACE THE FRONT SEAL AND WIPER!

Normal use and regular exercise of a tank's main gun will ensure the gun mount seals stay flexible and lubricated, mechanics. Even so, a leak could eventually develop.

When that happens, you may think you have to install a new seal kit, NSN 1090-01-259-9112. Not only does the kit cost more than \$1,000, but you have to completely disassemble the gun mount to install it.

Before you do that, take a close look at the leak's location. If the leak is coming from the front seal only, you can replace just the front seal, NSN 1015-01-284-8303, and wiper, NSN 5330-01-176-8751.

Those two parts cost about \$65 and can be replaced without disassembling the gun mount.

'Course, if the rear seal is leaking, you'll still need to order the kit and replace both the front and rear seals.

## M1 Idler Arm Seal

Mechanics, don't replace the idler arm seal on M1/IPM1 tanks with NSN 5330-00-978-7353. Too many of those seals have developed leaks. Order a stronger seal with NSN 5330-01-478-2379. Pencil in the change to Item 24 in Fig 240 of TM 9-2350-255-24P-1.

## KEEP NUTS IN THEIR PLACE



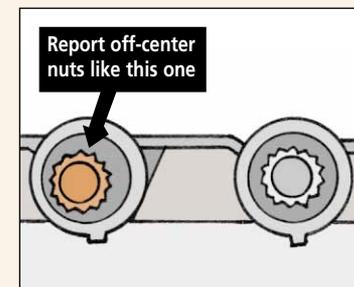
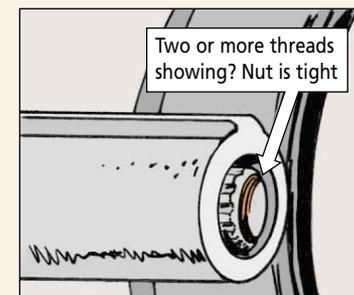
I'M G-GOING TO SH-SHAKE APART IF THEY D-DON'T CHECK MUH-MY TRACK PIN NUTS!

Crewmen, nothing messes up your day like a broken track on your Bradley or MLRS. So it pays to do your part in making sure that doesn't happen—like keeping a close eye on the track pin nuts.

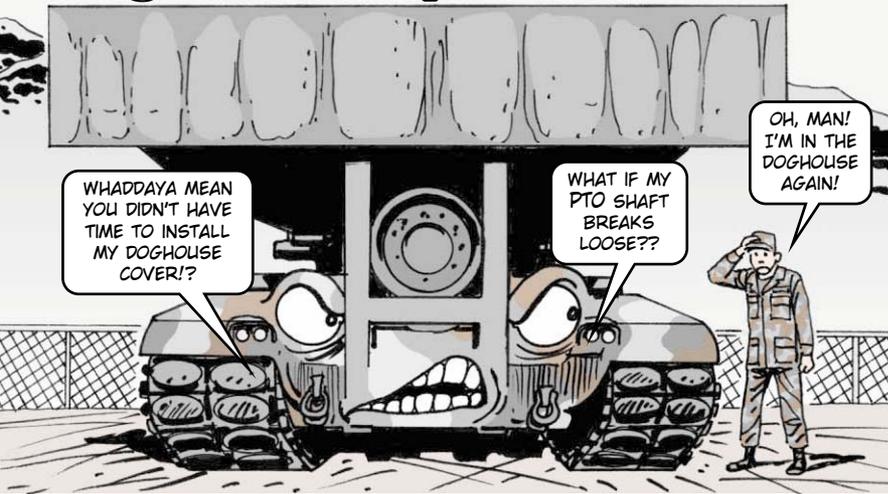
Eyeball the nuts after each operation. If there are two or more threads showing past the front edge of the nut, it's good to go. One thread or less means the nut's loose and your track is at risk.

Check for off-center track pin nuts. Worn bushings result in off-center nuts, which make it next to impossible to keep track tension set right.

Mark loose or off-center nuts and report 'em to your mechanic. He'll replace loose nuts, NSN 5310-01-140-4555, and torque them to 299-325 lb-ft. Don't let him retorque them, though. The nuts won't hold a second time.



AVLB...  
**Doghouse Keeps You Covered**



WHADDAYA MEAN YOU DIDN'T HAVE TIME TO INSTALL MY DOGHOUSE COVER!?

WHAT IF MY PTO SHAFT BREAKS LOOSE??

OH, MAN! I'M IN THE DOGHOUSE AGAIN!

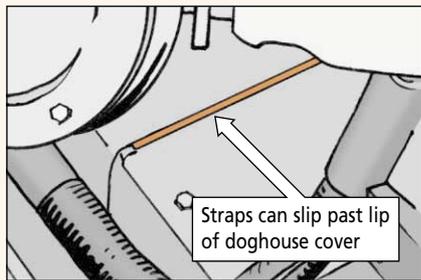
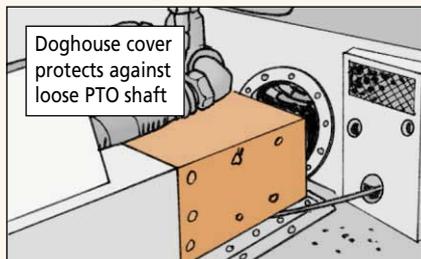
Do you have a doghouse cover over the PTO shaft in your AVLB? If not—and the shaft breaks loose—you could be in another kind of doghouse.

Sure, installing the doghouse cover is a hassle. Space is limited and you're probably thinking the cover doesn't do much good anyway. But you'll regret not installing the cover if the shaft ever breaks loose.

If that happens, pieces of the PTO shaft can go flying. The only thing protecting you is the doghouse cover. So replace a missing cover with NSN 5420-00-363-3931.

Once you have the cover in place, don't use it as a place to store duffle bags, ruck sacks or other items.

Straps can work down past the lip of the doghouse cover and wrap around the PTO shaft. If that doesn't break the shaft, the intense heat can catch the material on fire.



M992A2 Ammo Carrier...

**GOT STARTER PROBLEMS?**



IT'S ALREADY RUNNING! YOU'LL BURN UP THE STARTER!!

IT'S NOT ME! IT'S ENGAGING ON ITS OWN!

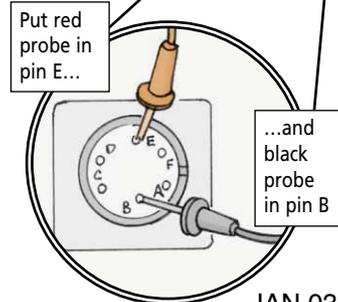
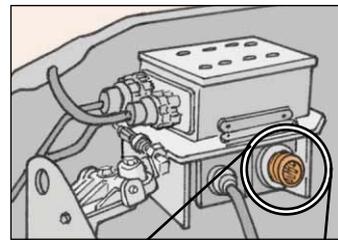
Could be that the problem isn't the starter at all, but the ammo carrier's starter relay, NSN 5945-01-291-0734.

Depending on the age of the starting system, the current draw can be greater than what the starter relay can handle. Too much current fuses the relay's contacts together.

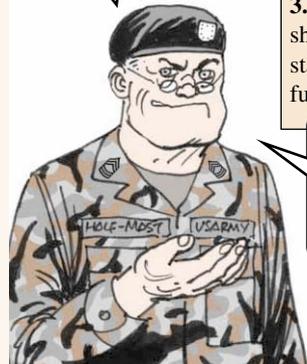
When that happens, the carrier may not start and the starter may engage by itself while the carrier is already running. Mechanics may also get a surprise if they try to replace the starter. When the last wiring harness is connected, the starter may engage even if the starter switch is off and the master power is off.

IF YOUR CARRIER HAS ANY OF THESE SYMPTOMS, HAVE YOUR MECHANIC CHECK THE STARTER RELAY FOR FUSED CONTACTS. HERE'S HOW...

1. Disconnect the wiring harness, NSN 6150-01-383-4031, from the starter relay.
2. Using a multimeter, place the red lead on pin E and the black lead on pin B.
3. If the multimeter shows continuity, the starter relay contacts are fused. Replace the relay.

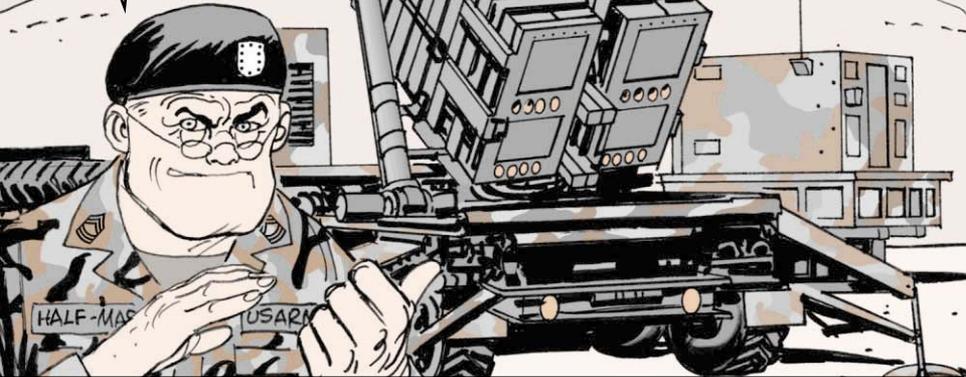


MAKE A NOTE OF THIS TEST UNTIL THE TROUBLESHOOTING PROCEDURES IN TM 9-2350-293-20-1 ARE UPDATED.



# Making It Easy for ECS

HERE ARE SOME GOOD IDEAS FOR YOUR ECS, PATRIOTEERS!



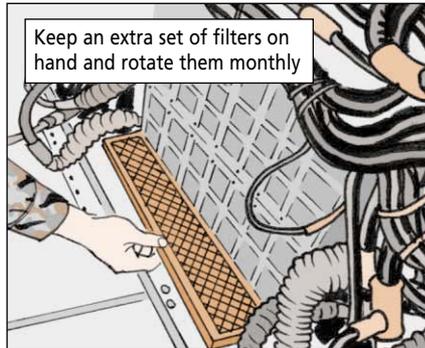
Dear Editor,

We have several tips for Patriot crews that will make things easier for the engagement control system (ECS):

● Keep two sets of inlet and outlet filters on hand for the ECS and change them monthly (weekly in the desert). When you have time, clean the dirty filters with an air hose. If they're really dirty, wash the filters and let them air dry.

By rotating and cleaning the filters, you keep clean air going to all the sophisticated electronic gear inside the ECS. But you also get more life out of the filters because you give yourself time to clean the used ones instead of just replacing them with new filters.

● The storage device for the tactical storage system (TSS) is cold sensitive. If it sits in the cold all night, it won't work well until the ECS has warmed up. When you're not operating and it's cold, store the storage device inside where it's warm.



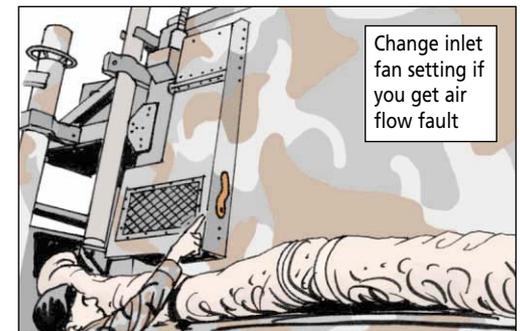
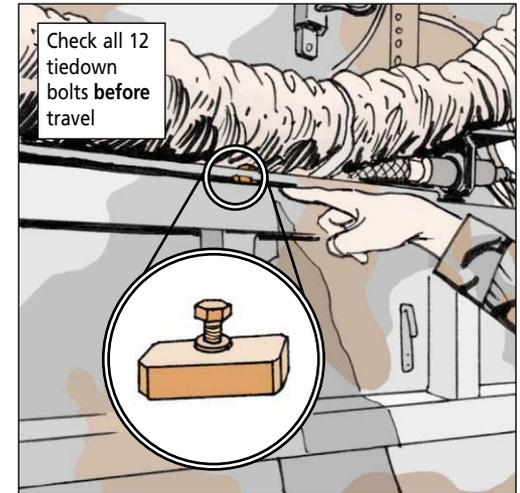
● The bay doors inside the ECS (and Information and Coordination Central and Communications Relay Group) actually have two different latches: one turns to the right and the other to the left. If you order the wrong latch, you waste time and \$500.

To tell which latch you need, simply turn the handle and see which direction the latch turns as you face the outside of the door. If it turns to the right, it's a right-hand latch (Item 3, Fig 12, TM 9-1430-1600-24P) and comes with NSN 5340-01-254-1600. The left-hand latch (Item 2, Fig 12) comes with NSN 5340-01-254-1601. The latches latch better if you lube them monthly with WD-40 or some other light oil. Otherwise, they will stick.

● Before travel, check all 12 cargo tiedown bolts on the ECS/ICC/CRG trucks. The bolts often break from jolts on the highway. Broken bolts let the van shake during travel and expensive equipment can be damaged.

● If you get an air flow fault, try changing the air inlet fans' settings from SUMMER to WINTER or vice versa and see if that clears the fault. If it does, switch back to the original fan settings and continue to operate.

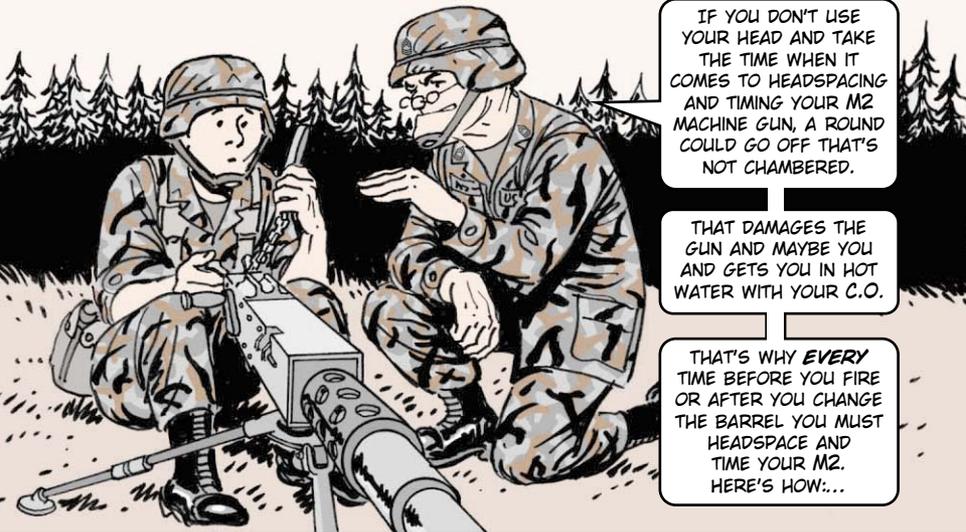
SPC Christian Armstrong  
SSG Ramon Cummings  
CW2 Charles Woody  
D Co, 5/7 ADA  
Baberhausen, Germany



From the desk of the Editor

You have indeed made it easier for ECS crews. Good job.

# Use Your Head and Take the Time



IF YOU DON'T USE YOUR HEAD AND TAKE THE TIME WHEN IT COMES TO HEADSPACING AND TIMING YOUR M2 MACHINE GUN, A ROUND COULD GO OFF THAT'S NOT CHAMBERED.

THAT DAMAGES THE GUN AND MAYBE YOU AND GETS YOU IN HOT WATER WITH YOUR C.O.

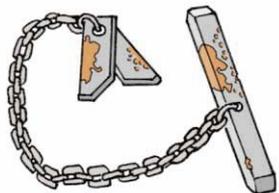
THAT'S WHY *EVERY* TIME BEFORE YOU FIRE OR AFTER YOU CHANGE THE BARREL YOU MUST HEADSPACE AND TIME YOUR M2. HERE'S HOW:...

## Pre-check Checks

If your M2's in bad shape now, you won't be able to headspace and time it later. So before you go to the field, do these checks:

**Gauges.** If the headspace and timing gauges are bent, rusted or pitted, you can't accurately gauge, so get good gauges from your armorer. He can order new gauges with NSN 5220-00-535-1217.

Gauges bent, rusted, pitted?



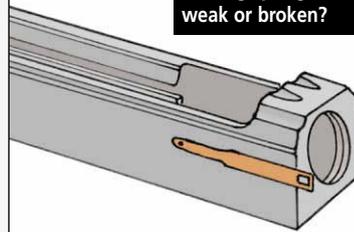
**Timing nut.** If the timing nut can be easily moved with one finger or it doesn't click as you move it, its spring is weak and it won't hold timing. Tell your armorer. The spring must be replaced.

Test timing nut spring



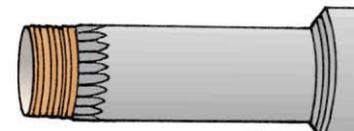
**Barrel locking spring.** If the spring can't hold the barrel in place, the barrel can turn during firing and headspace is lost. So test the spring by getting the correct headspace and then trying to unscrew the barrel. If the barrel turns, the spring is weak or loose. Tell your armorer. The spring must be replaced.

Locking spring loose, weak or broken?



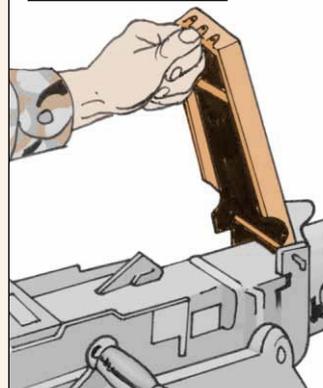
**Barrel and barrel extension threads.** If the threads are chipped or burred, it will be difficult to screw in the barrel. What's worse, you may think you've completely screwed in the barrel, but you haven't. Result: bad headspace. Your armorer can usually stone chips and burrs smooth.

Burred or chipped threads?

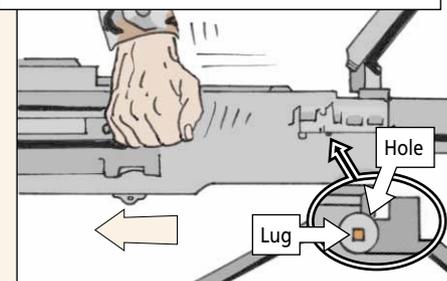


## How to Headspace

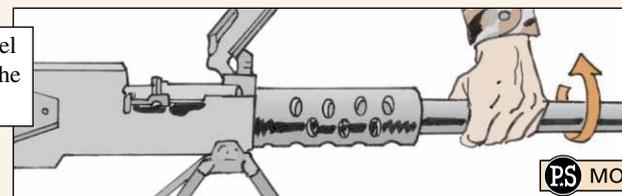
1. Raise the cover completely.



2. Pull the charging handle back until the barrel-locking spring lug is aligned with the 3/8-in hole on the receiver's right side. To keep the bolt back, insert the small loop of an M2 ammo link between the trunnion block and barrel extension.



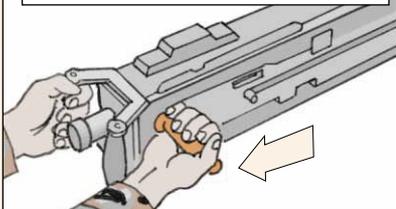
3. Screw the barrel all the way into the barrel extension.



4. Unscrew the barrel two clicks, remove the link and let the bolt go forward.

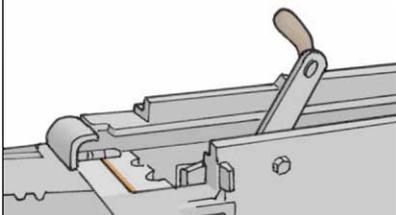
To see if the barrel is locked with the bolt in the forward position, try to turn the barrel in either direction. If it turns, something's wrong. Don't try to fire. Tell your armorer.

5. Pull the charging handle back to cock the weapon.

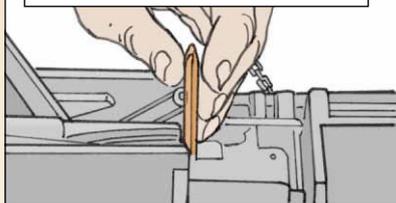


6. Ease the bolt forward.

7. Pull the charging handle back until the barrel extension and trunnion block are no more than 1/8 inch apart.

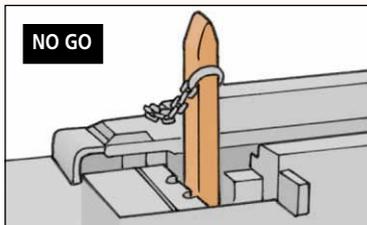
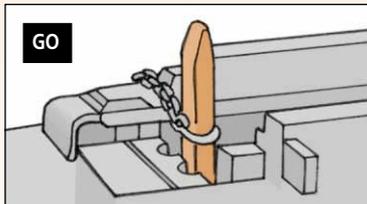


8. Keep the charging handle back to maintain the 1/16-in separation.



Raise the extractor and try to insert the GO gauge all the way up to the ring in the T-slot between the bolt face and rear of the barrel.

If the GO end goes down the T-slot to the center ring and the NO GO won't go in, headspace is OK.

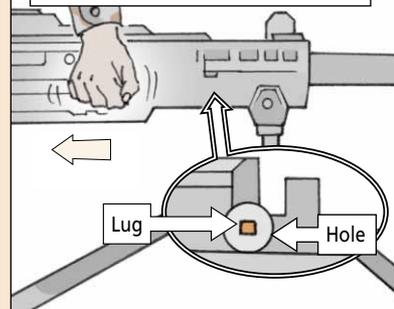


## Headspace Too Tight

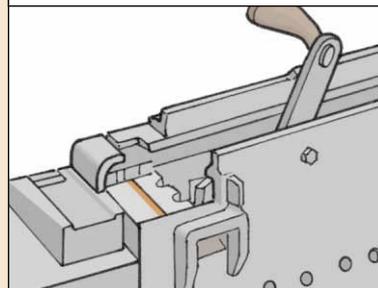
IF THE GO END WON'T FIT, HEADSPACE IS TOO TIGHT. DO THIS...



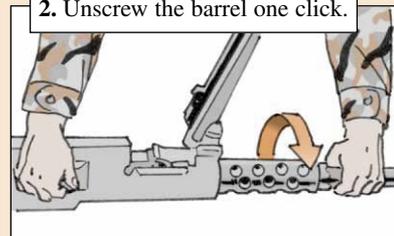
1. Pull back the charging handle until the barrel-locking spring lug is centered in the 3/8-in hole.



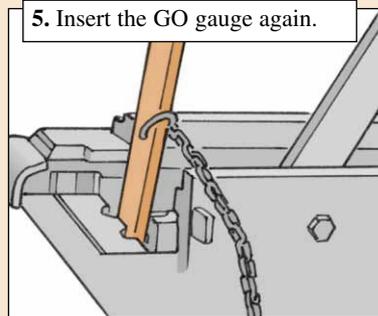
4. Pull back on the charging handle until the barrel extension and trunnion block are about 1/8 inch apart.



2. Unscrew the barrel one click.



5. Insert the GO gauge again.



3. Ease the bolt forward.



SO WHAT DO YOU DO IF HEADSPACE IS BAD? READ ON...

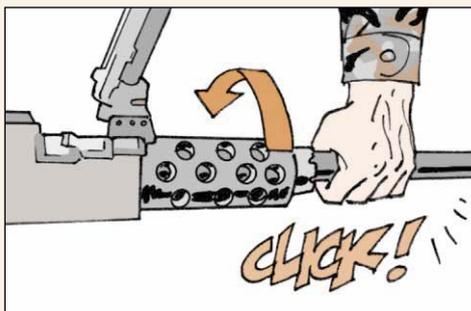
If the GO end fits and the NO GO end doesn't, the headspace is OK. If the GO end still won't fit, repeat these last five steps until it does.

Do not unscrew the barrel more than five clicks beyond the first two clicks in steps 1-5. If you have to turn the barrel more than seven clicks, something's wrong. Tell your armorer.

## Headspace Too Loose

If the NO GO end of the gauge fits into the T-slot, the headspace is too loose. To fix loose headspace, do the same five steps you did for too tight headspace, except screw in the barrel one click.

Repeat the five steps until the GO end fits, but the NO GO end doesn't.



## How to Time

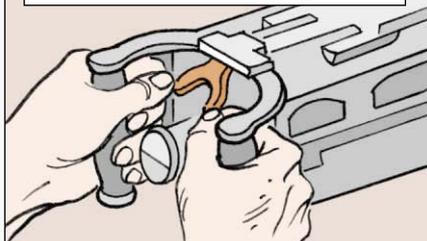
After headspacing comes timing.

1. Pull the charging handle all the way back and cock the weapon. Ease the bolt forward.

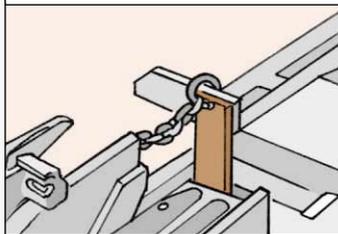
2. Pull the bolt back far enough to insert the NO FIRE gauge between the barrel extension and trunnion block. Insert the beveled edge of the timing gauge against the barrel notches. Slowly release the charging handle.



3. Press the trigger. If the gun doesn't fire, go to the next step. If it does fire, you've got early timing.



4. Pull the bolt back just far enough to take out the NO FIRE gauge and put in the FIRE gauge with the beveled edge against the barrel notches. Slowly release the charging handle.



5. Press the trigger. If the M2 fires, timing is OK. If it doesn't fire, you have late timing.



DO YOU HAVE TIME FOR EARLY/LATE TIMING?

YOU'D BETTER HAVE THE TIME!

JAN 03

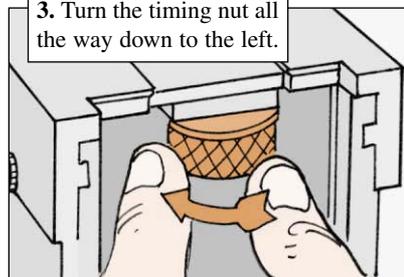
## Early/Late Timing

Never cock your M2 with the back plate off. The driving spring rod could go through your chest. The bolt must be forward before you take off the back plate.

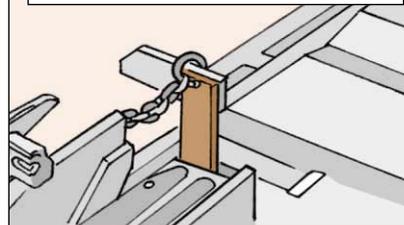
1. Take the gauge out of the receiver. Cock the M2, then ease the bolt forward.

2. Take off the back plate.

3. Turn the timing nut all the way down to the left.



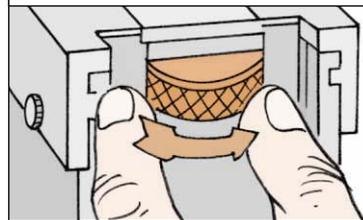
4. Pull the bolt back only far enough to insert the FIRE gauge, and slowly release the charging handle.



5. Push up on the trigger bar. The gun shouldn't fire.



6. Turn the timing adjustment nut one click to the right. Push up on the trigger bar. Continue to alternate turning the timing adjustment nut one click right and pushing up on the trigger bar until the M2 fires.



7. After the gun fires, turn the nut to the right two more clicks and stop.

8. Take out the gauge and put on the back plate. Cock the gun, then ease the bolt forward.

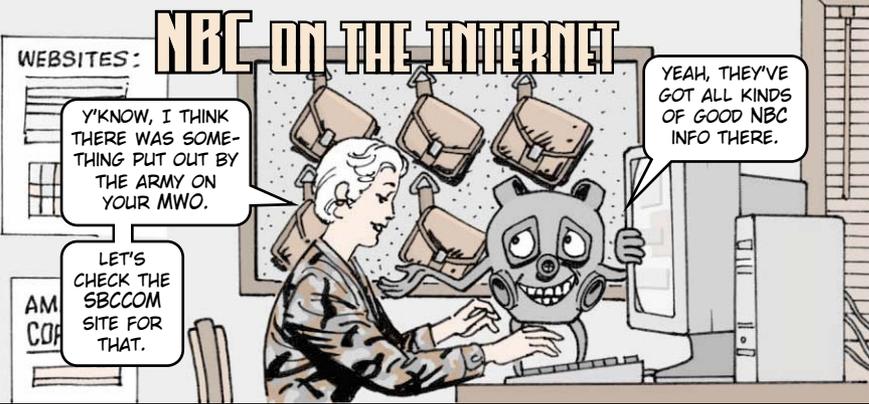
9. Recheck the timing two more times with the back plate on. If the timing still isn't right, do the early/late timing procedure one more time.

Still no luck? Tell your armorer. Something's wrong.

ARMORERS, IF YOU HAVE M2S IN YOUR ARMS ROOM, COPY THIS ARTICLE AND USE IT TO TRAIN YOUR M2 GUNNERS.

IT WILL HELP PROTECT YOUR UNIT AND YOUR M2S.





The answers to many of your questions on NBC equipment are as close as your computer.

The Army Electronic Product Support (AEPS) website  
<http://aeps.ria.army.mil>

takes you directly to the Soldier and Biological Chemical Command (SBCCOM) website for chemical defensive equipment, which includes masks, decon equipment, and smoke generators.

When you get to the AEPS website, look for AMC COMMANDS AND ACTIVITIES and click on SBCCOM.

[GuardNET](#)  
[Logistics Information Network \(LINK\)](#)

**AMC Cmd's & Activities:**

- [AMC Headquarters](#)
- [AMC LAO Offices](#)
- [AMCOM](#)
- [AMSAA](#)
- [DAC AmmoHelp Hotline](#)
- [Defense Ammunition Center \(DAC\)](#)
- [CECOM](#)
- [OSC](#)
- [LAISO](#)
- [LSCSA](#)
- [SBCCOM](#)
- [STRICOM](#)
- [TACOM-Rock Island](#)
- [TACOM-Warren](#)

At the SBCCOM site you can find info on:

- ★ Chemical Go-to-War Program
- ★ shelf life information for SBCCOM-managed items
- ★ chemical maintenance hotline
- ★ old PS articles on NBC equipment
- ★ advisory messages
- ★ chemical newsletters
- ★ demilitarization instructions
- ★ NBC equipment descriptions
- ★ links and POCs for NBC items managed by other commands, such as radiac equipment and chemical clothing

If you **can't** find what you need at the website, also listed are points of contacts for the different equipment, plus hyperlinks that will take you to other NBC sites.

AEPS require a password, but you can apply for one on-line. If you have questions about the SBCCOM website, contact Len Guldenpfennig at (309) 782-7180/DSN 793-7180, [guldenpfennig@ria.army.mil](mailto:guldenpfennig@ria.army.mil), or Mary Wischoff at (309) 782-1936/DSN 793-1936, [wischoffm@ria.army.mil](mailto:wischoffm@ria.army.mil).

Construction Equipment...

# CAN THE SPRAY-CAN ETHER!



VISIT ANY ENGINEERING BATTALION AND YOU'LL SEE SOME CONSTRUCTION EQUIPMENT WITH BUILT-IN STARTING AIDS.

THESE STARTING AIDS HELP YOU START THE ENGINE IN COLD WEATHER.

**NOW LISTEN UP!**

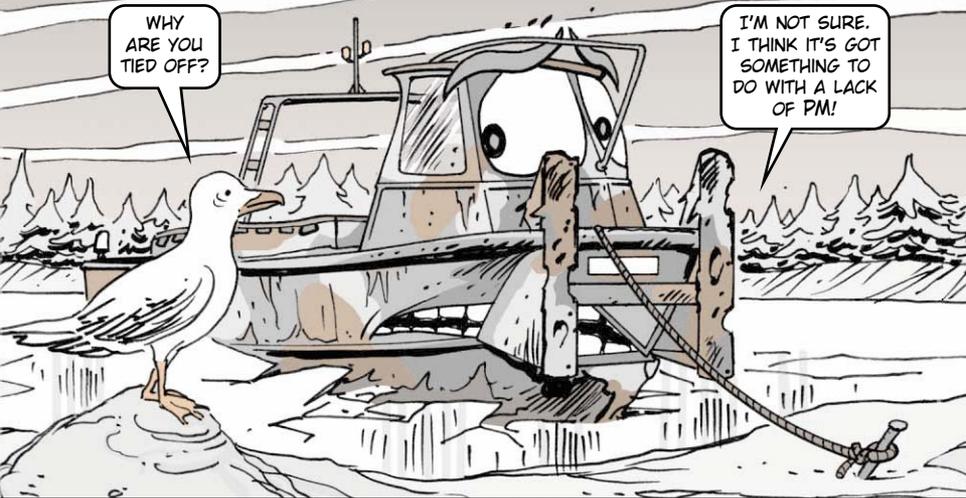
IF YOUR EQUIPMENT DOESN'T HAVE A BUILT-IN STARTING AID, JUST LEAVE IT ALONE. DON'T HEAD BACK TO THE WORKBENCH, GRAB A CAN OF ETHER SPRAY, AND GIVE IT A GO. SPRAYING ETHER WHERE IT'S NOT SUPPOSED TO BE USED WILL CRACK PISTONS, BEND RODS AND RUIN HEADS.

WHEN YOUR CONSTRUCTION EQUIPMENT **WON'T** START, HERE'S WHAT TO DO...

- Troubleshoot your vehicle according to its TM.
- Go easy on the vehicle's starter. Never keep the starter engaged for more than 15 seconds.
- Have your mechanic replace an empty starting aid canister if the vehicle has one.
- If your vehicle won't start in three tries, call in your mechanic to find out what's wrong.



# COLD WEATHER PM



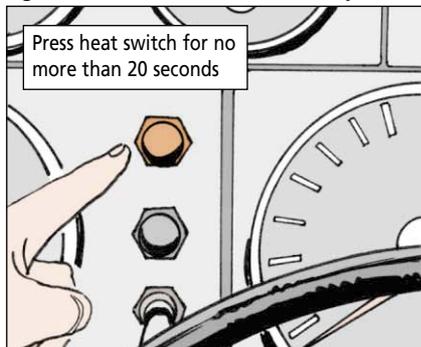
No doubt you bridge boat operators know TM 5-1940-277-10 like the back of your hand.

In addition to that knowledge, here are some cold weather tips to keep in mind before ice forms on the pond.

## Getting Started

The bridge boat's twin engines are usually hard to start in cold weather. That's because the engine heat system takes longer to work. Just remember that you can only press the switch for 20 seconds at a time. Pressing the heat switch longer than 20 seconds causes the system to burn up. The same goes for the starter.

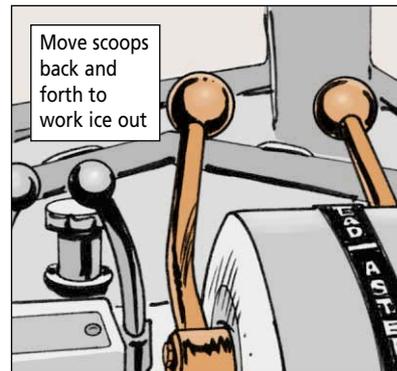
It's good practice to start the engines every two hours and let them run for about five minutes during cold weather, but no more than that. Running the engine in neutral causes it to overheat—and can do some serious damage.



Running the engine in neutral can also let ice form in the scoop linkage. When that happens, you won't be able to steer the bridge boat until you move the scoops back and forth to work the ice out.

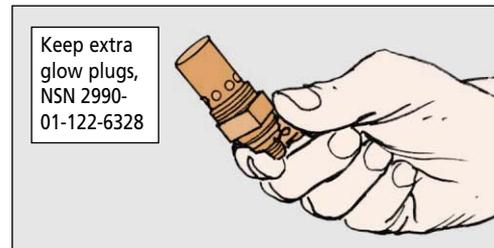
Move the scoop controls and steering wheel often when the boat isn't running so that they don't freeze in place.

If you see ice forming, remove it. You don't have to recover the boat from the water to remove the ice if you can chip it off.



## Glow Plugs

Cold weather and burned out glow plugs seem to go hand-in-hand. Do your bridge boat (and yourself) a favor. Keep extra glow plugs handy. They're available with NSN 2990-01-122-6328 and shown as Item 16, Fig 40 of TM 5-1940-277-20P.



# Instrument Panel Update

FINDING A REPLACEMENT INSTRUMENT PANEL FOR YOUR BRIDGE BOAT CAN LEAVE YOU WITH A REAL SINKING FEELING!



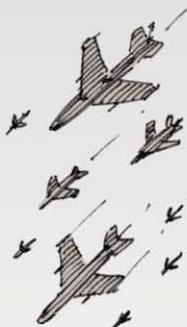
That's because the panel with gauges, push buttons, wires and switches shown in TM 5-1940-277-20P is no longer available.

But now you can get a new and complete instrument panel that puts your bridge boat back in the water.

Order the new panel on a DD Form 1348-6 with CAGE K3335 and PN 80169 from RIC AKZ. It'll take 8 weeks lead-time to order the panel at a cost of \$2,700.

Camouflage...

👉 **NEW** 👈  
 ★ **IMPROVED** ★  
**EQUIPMENT  
 CAMOUFLAGE**



THIS NEW  
 CAMOUFLAGE  
 WORKS **GREAT!**

THOSE GUYS  
 UP THERE HAVE  
 NO IDEA WE'RE  
 DOWN HERE!



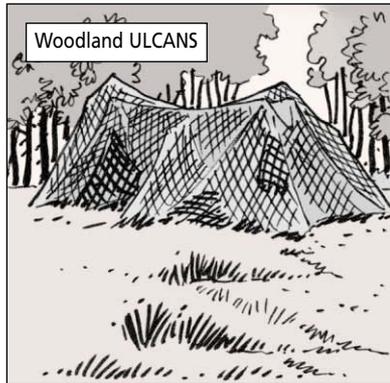
THE ARMY IS FIELDING  
 A NEW IMPROVED  
 CAMOUFLAGE SYSTEM  
 CALLED ULCANS  
 (ULTRA LIGHTWEIGHT  
 CAMOUFLAGE NET  
 SYSTEM).

ULCANS IS  
 RESISTANT TO FIRE,  
 MOLD, AND MILDEW,  
 HAS AN ANTI-SNAG  
 DESIGN, AND IS EASIER  
 AND QUICKER TO SET  
 UP AND TEAR DOWN.  
 IT REPLACES LCSS  
 (LIGHTWEIGHT  
 CAMOUFLAGE SCREEN  
 SYSTEM AND  
 LIGHTWEIGHT  
 CAMOUFLAGE  
 SUPPORT SYSTEM).

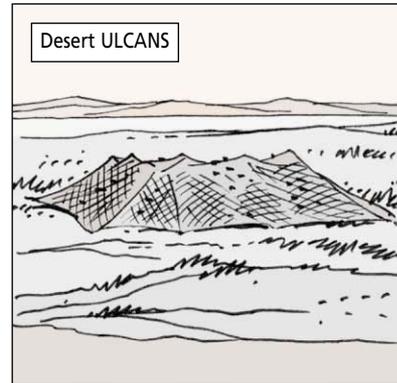
UNITS WILL NEED TO  
 CHANGE THEIR MTOES  
 TO REFLECT THIS  
 SWITCH TO ULCANS.



Woodland ULCANS



Desert ULCANS



HERE ARE  
 THE ULCANS  
 NSNs...



- Woodland, general purpose, radar scattering, NSN 1080-01-457-2956
- Woodland, general purpose, radar transparent, NSN 1080-01-475-0697
- Desert, general purpose, radar scattering, NSN 1080-01-475-0696
- Desert, general purpose, radar transparent, NSN 1080-01-475-0694

"THESE ULCANS  
 NSNs BRING BOTH  
 THE SCREENS AND  
 SUPPORT SYSTEMS."

"AS OF YET, THERE  
 IS NO ULCANS  
 REPLACEMENT FOR  
 LCSS SNOW  
 CAMOUFLAGE."

USE THESE NSNs TO  
 ORDER LCSS SNOW  
 CAMOUFLAGE...



- Type IV radar-scattering screen system, NSN 1080-01-266-1826
- Type III radar-scattering screen system, NSN 1080-01-266-1823
- Type II radar-scattering screen system, NSN 1080-00-103-1233

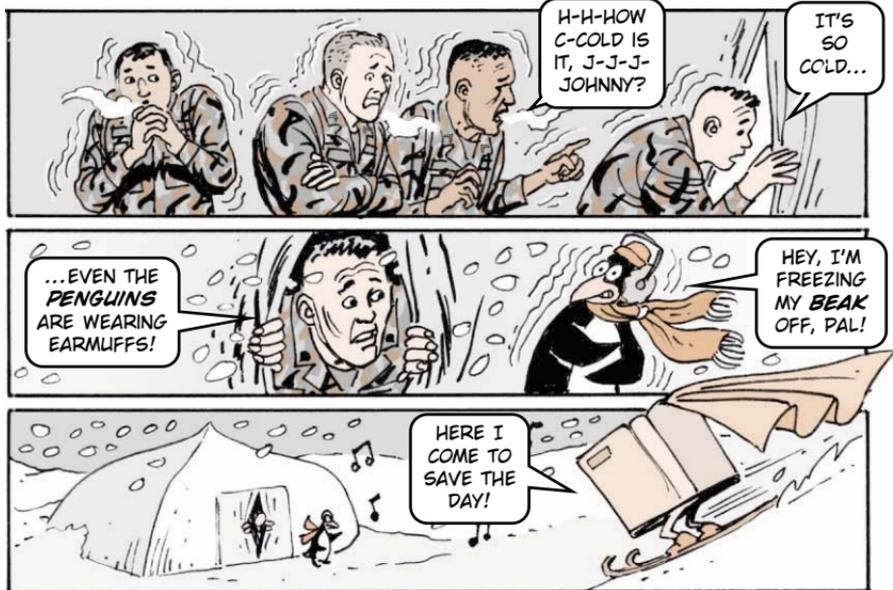
- Type II radar-transparent screen system, NSN 1080-00-103-1234
  - Type II support system, NSN 1080-01-179-6024
  - Type I support system, NSN 1080-00-556-4954.
- This can also be used with the Type IV and II systems.

"THE SWITCH FROM LCSS TO ULCANS IS AN **ALL-OR-NOTHING** DEAL. YOU CAN'T REPLACE COMPONENTS OF LCSS WITH ULCANS COMPONENTS."

"ULCANS AND LCSS SCREENS HAVE DIFFERENT RADAR AND THERMAL PROPERTIES, PLUS THEY USE DIFFERENT SCREEN CONNECTIONS."

"IN ADDITION, ULCANS USES A SHAPE DISRUPTER INSTEAD OF A BATTEN SPREADER. SO WHEN PARTS OF YOUR LCSS NEED REPLACING, ORDER A WHOLE NEW ULCANS."

# NEAT HEAT FOR SMALL SPACES



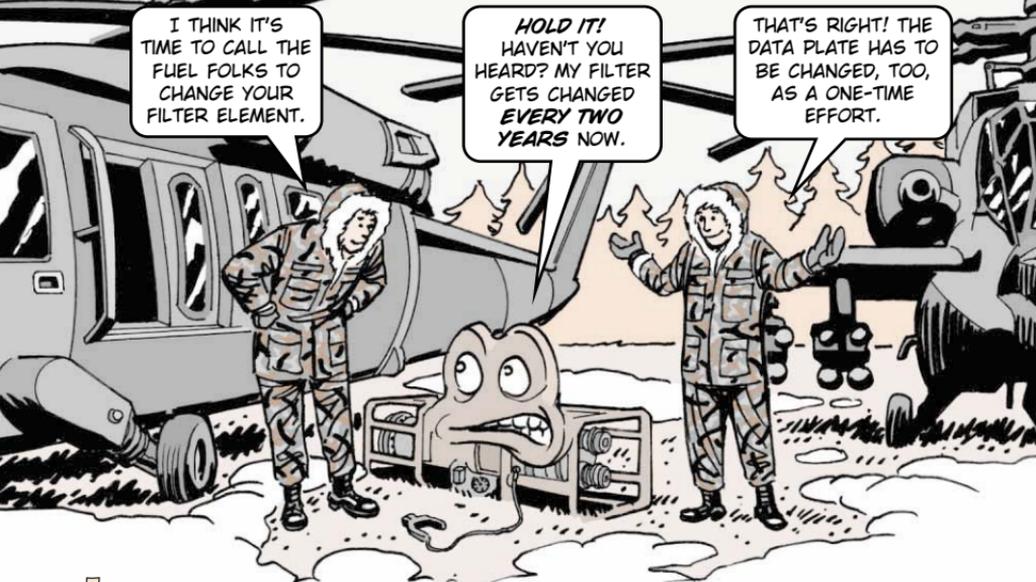
It's winter, it's cold, and you need a heater for your 4-man soldier crew tent. Your problem's solved with the newest addition to the family of space heaters. The small space heater, NSN 4520-01-478-9207, is specially designed to heat the 4-man soldier crew tent. It's simple, safe, rugged and low-cost. No other heater comes close.

TAKE A LOOK AT SOME OF MY FEATURES...



- Burns DF-1, DF-2, DF-A, JP-5 and JP-8 liquid fuel.
- Burns clean. Eliminates smoke and hazardous gases.
- Built-in fuel tank allows you to heat without the use of external gear. You can also operate from an external fuel supply using hoses, a gravity feed adapter, fuel can and fuel can stand.
- Ignites with a match. Doesn't need electrical power for ignition.
- Assembles for operation in 20 minutes or less.
- Vents exhaust gases outside tent with pre-assembled, nestable stack
- Heats food and water with the standard 8-in diameter mess kit pan.
- Operates in temperatures ranging from -60° F to 60° F. Storage temperature ranges from -60° F to 160° F.
- Weighs only 25 pounds, including all accessories.

# CHANGE ELEMENT ONCE EVERY 2 YEARS



Fuel handlers, the once-a-year change-out requirement of the advanced aviation forward area refueling system's (AAFARS) fluid filter separator element is too often.

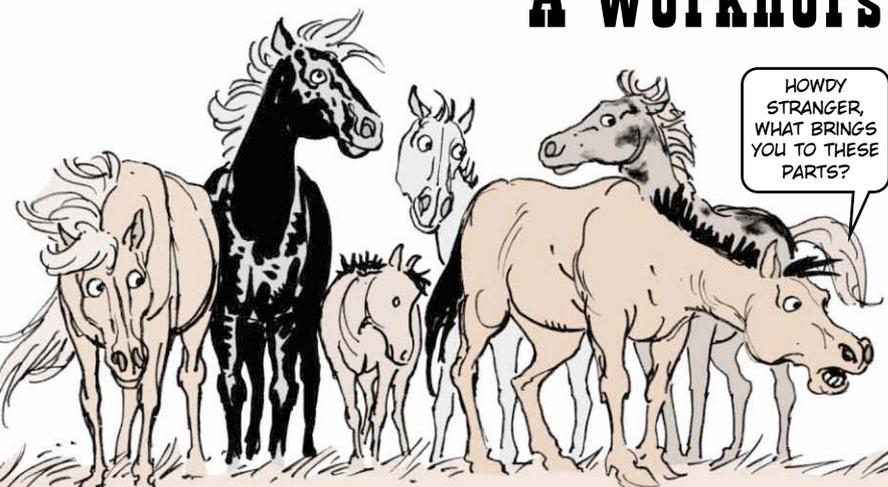
So instead of changing the AAFARS filter separator element every year, the TACOM headshed says to change it every 2 years. That's because every 2 years makes better use of the separator element without increasing its failure rate. Your cost to replace the element is reduced, too.

If you haven't done so, use the metal stamp set in your Common No. 1 tool kit, NSN 4910-00-754-0654, to change the AAFARS data plate info from 1 year to 2. Also, if there's space, stamp in the month and year the separator is changed for purposes of accountability. The marking of the data plate is a one-time occurrence, not every 2 years.

Note these changes until TM 10-4330-237-13&P is changed.

BETA SYSTEMS RDU/SVILLE, N.C.		Stamped data plate
FILTER SEPARATOR ASSEMBLY		
MODEL NO. _____	SERIAL NO. _____	
DESIGN FLOW RATE _____	GPM AT _____ PSI MAX. W.F.	
FIRST STAGE COALESCER ELEMENTS QTY: _____ PART NO. _____	SECOND STAGE PERMANENT SEPARATORS QTY: _____ PART NO. _____	
API GI _____	THIRD STAGE _____	
	NITOR PER MIL-M-82380 NTS- _____ PART NO. CDF- _____	
CONTRACT _____	ORDER NUMBER _____	
DATE OF MANUFACTURE _____		
CHANGE ELEMENTS AT _____ PS OR EVERY _____ YEARS, WHICHEVER C		Stamp in month and date when filter is changed here
DATE ELEMENTS INSTALLED METER TOTALIZER READING _____		

# A Workhorse Needs PM



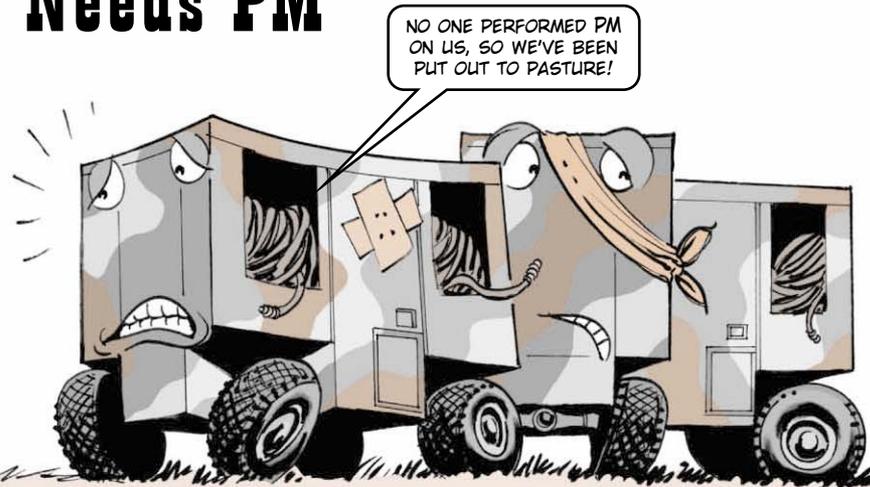
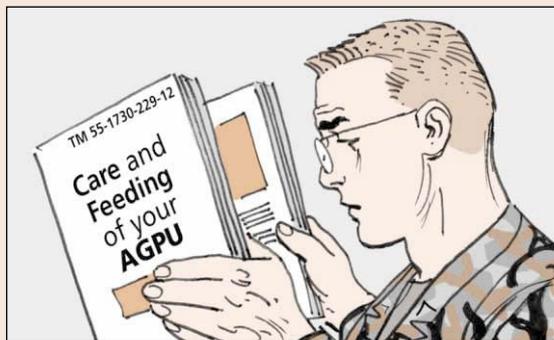
HOWDY STRANGER, WHAT BRINGS YOU TO THESE PARTS?

YOUR AVIATION GROUND POWER UNIT (AGPU) WILL WORK FOR YOU WHEN YOU NEED IT, BUT ONLY IF YOU PERFORM THE REQUIRED PREVENTIVE MAINTENANCE.



It's a workhorse and is often operated beyond its limits. You'd be hard-pressed to do your job without it. If it remains abused and neglected, it will fail to perform when you need it.

So don't mistreat your AGPUs. They need PM care and feeding just like your big birds do. Since school-trained AGPU mechanics are few and far between, check out TM 55-1730-229-12 and TM 55-1730-229-24P for info on how to maintain your AGPU and take note of these additional tips to keep your AGPU up to snuff.



## Driving Tips

- The maximum self-propelled speed of the AGPU is 3 mph, but that doesn't mean you should push the pedal to the metal and try to run it like you're at the Indianapolis 500. So ease up on the speed and cruise a little.

- 20 mph is the top towed speed for your AGPU on nice, smooth surfaces! If the road is rough, limit your speed to 10 mph.

- Low tire pressure can ruin tires. Check tire pressure often for 28 psi. Look for missing wheel lug nuts.

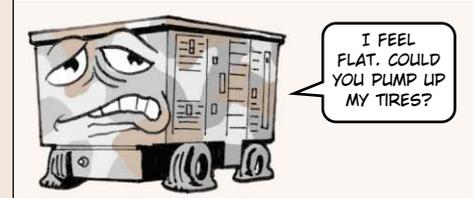
- When towing an AGPU, don't back it up with a tow vehicle. That can damage the drawbar or tongue assembly, or you can break a pivot bolt. If you back up an AGPU, use its own power.



LET'S MAKE THIS QUICK AND FAST!

NOT TOO FAST! THIS ISN'T A DRAGSTRIP!

TELL 'EM, TUG. 20 MPH IS TOPS FOR ME FOR TOWING.



I FEEL FLAT. COULD YOU PUMP UP MY TIRES?

○ AGPUs can be driven in two modes. The primary mode is with the engine running to provide DC power to the propulsion system. The alternate mode is without the engine running and operating on battery power. Here's where the rubber meets the road: **Always** use the primary mode if you're propelling your AGPU for more than 500 feet, like going to the far end of the flight line. **Never** use battery power to propel an AGPU for long distances. That will drain the battery.

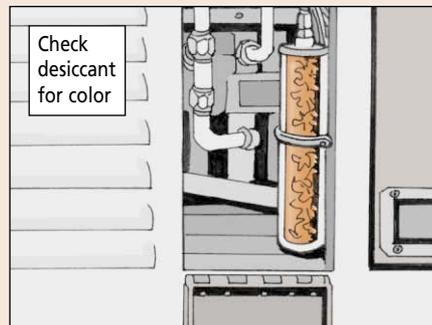
○ Don't use the M4K or other 4,000-lb forklift to lift an AGPU. A loaded AGPU weighs 4,275 lbs and pushes the limit of an M4K. If loading operations require moving an AGPU, use a 6,000-lb capacity forklift.



### Hydraulic and Operating Tips



- Before operating an AGPU, make sure the hydraulic reservoir is at  $\frac{3}{4}$  full.
- Check the desiccant in the vent dryer, too. If it's less than 25 percent blue, add fresh desiccant, NSN 6850-00-680-2233. If you have no desiccant on hand, fire up the nearest oven and bake the old desiccant at 350° for 4 hours or until the original blue color returns.
- Make sure hoses have no kinks or breaks. Make sure all connections are tight.



○ Remember, mechanics, that maximum hydraulic operating pressure is different for some aircraft. It's 1,000 psi on the OH-58D and 3,000 psi on AH-64s, UH-60s and CH-47Ds.

○ When you start an AGPU, you get three tries of 30 seconds each. Then you must wait 20 minutes for the starter to cool down before you try to start the AGPU again. If it fails to start on the fourth try, **stop** and let your AVIM shop know you have a problem before you attempt another start.

○ If you have to start an AGPU from a DC generator, you only get two tries of 30 seconds each. Then you have to wait 20 minutes for cool-down. The next start up attempt, you get two tries of 15 seconds each. Still doesn't start? Let your AVIM shop know.

○ If you slave an AGPU from a battery, the start-up procedure is different. You get three attempts of 30 seconds each. Then you wait 20 minutes and make two more attempts for 30 seconds each. Nothing? Your AVIM shop needs to find the problem.

○ Check the AGPU frame, housing and doors. Look for dents, cracks, punctures, corrosion, damaged or broken hinges, latches and braces.

○ Eyeball the control panel for corrosion, missing parts, or cracked or broken glass on the gauges.

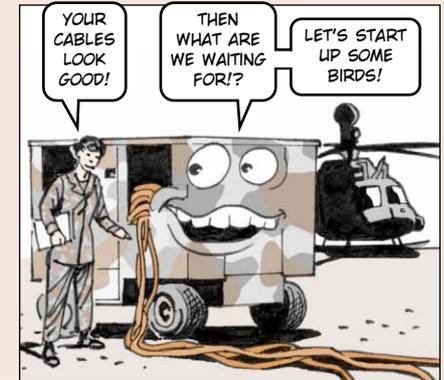
○ Check the battery for a loose or missing holddown or guide, missing or damaged vent drain tubes and loose or damaged connectors. Check the electrolyte level, too.

○ Inspect the engine compartment for oil or fuel leaks, corrosion in the air intake duct, loose or missing bolts, or damaged hoses.

○ Check out the hydraulic compartment for leaks, low fluid levels, cracked gauge glass and damaged or corroded fittings.

○ Check all cables and hoses for torn or worn insulation, loose clamps or missing spiral wrap and netting.

○ Look for loose or missing fasteners, bent or broken springs, broken or loose terminals, and loose or missing brush terminals.



# TAIL LANDING GEAR YOKE TROUBLE

OH, NO!  
NOT THE TAIL  
LANDING  
GEAR AGAIN!

THE LAST TIME  
I REPAIRED THAT,  
I WAS USING  
A C-CLAMP AND  
WOODEN BLOCKS  
AND IT TOOK  
FOREVER!

USE THIS  
TOOL ON THE  
YOKE ASSEMBLY  
INSTEAD.

IT'LL SAVE  
TIME AND YOU  
WON'T HAVE TO  
REDO THE  
PROCEDURE.

Dear Rotor,

The teflon-coated bearing sleeves, NSN 3120-01-139-2099, and the teflon-coated washers, NSN 3120-01-107-4189, are difficult to install on the UH-60's tail landing gear yoke.

The procedure in Paras 3-4-25.5 and 3-4-25.6 of TM 1-1520-237-23-3 takes several hours for each aircraft and still the washer won't always line up properly on the yoke. We often have to redo the procedure.

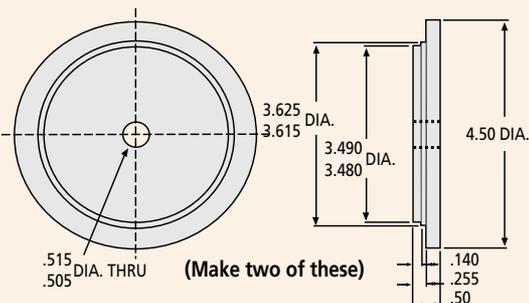
The procedure uses a C-clamp and two wooden blocks on the yoke. Then it has us apply pressure to the bearing sleeves and the washers to make sure the sealing compound is squeezed out uniformly around the washers.

This method forces the washers out of alignment on both the top and underside of the yoke. If the adhesive on the seal dries on the yoke, it's difficult to insert the fork assembly through the yoke with off-center washers.

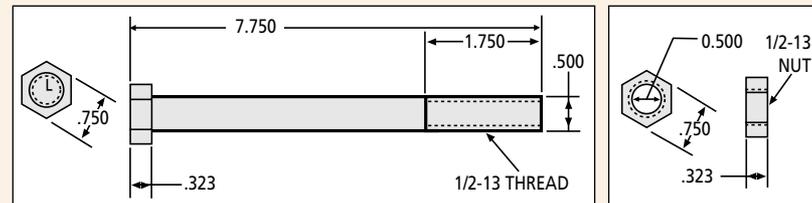
But we've come up with a reversible teflon bearing washer tool that'll insert the bearing sleeve and seat the washer properly.

The new tool prevents damage to the new washer and yoke during installation, and cuts our repair time to 30 minutes.

Here are the materials and dimensions an AVIM shop can use to make a bearing sleeve tool. Make the tool from aluminum bar, NSN 9350-00-236-3184, like so:



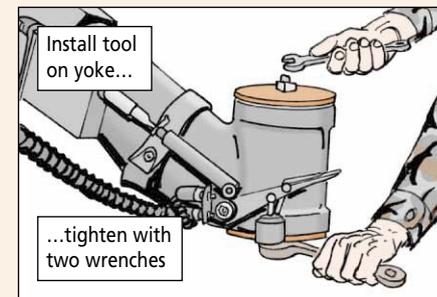
You'll also need a 1/2-13 x 13-in bolt and a 1/2-13 nut.



After the tool is made, we follow the TM procedure as required. After the washers are in place on the yoke, seat the plates on each end of the yoke. Insert the bolt from the bottom of the yoke through the plate's holes. Attach the nut and tighten it with two wrenches until the sealing compound squeezes out uniformly. Continue to follow the rest of the procedure as required.

Sgt Andres Chamorro, Jr.  
MAARNG

PS 602



Another great tool  
for a mechanic's  
arsenal!

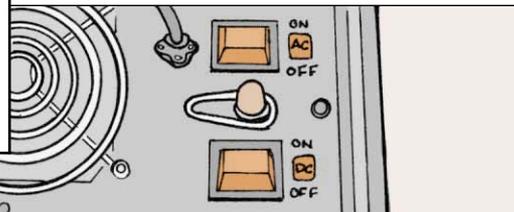
*Rotor Blade*

# Getting External Power



THE J-6362/U CABLE, NSN 5940-01-427-9395, WILL CARRY 24-VOLT DC POWER TO THE PP-8444A/U BATTERY CHARGER, NSN 6130-01-443-0970, FROM ANY VEHICLE WITH A NATO SLAVE RECEPTACLE—UNLESS THERE ARE PROBLEMS.

"IF YOUR BATTERY CHARGER DOES NOT POWER UP AFTER IT'S CONNECTED BY THE CABLE TO THE RECEPTACLE, MAKE SURE THE AC POWER SWITCH IS OFF AND THE DC IS ON."



STILL NOTHING?



"IF NEED BE, USE COMPRESSED AIR TO CLEAN THE CONTACTS. CANNED AIR USED FOR CLEANING KEYBOARDS WORKS WELL. GET SIX, 12-OUNCE CANS WITH NSN 7930-01-406-4055.



"STILL NOTHING?"

"ISOLATE WHETHER THE PROBLEM IS WITH THE CABLE OR THE CHARGER. IF POSSIBLE, SWITCH THE CABLE WITH ANOTHER ONE."



"TURN THE DC SWITCH ON AND OFF SEVERAL TIMES TO CLEAN THE SWITCH CONTACTS."



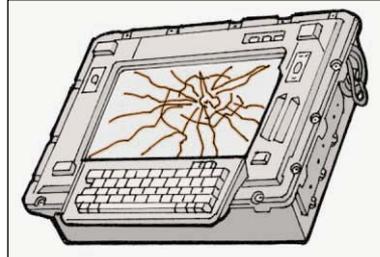
IF THIS WORKS, THE PROBLEM COULD BE A BLOWN FUSE IN THE CABLE. REPLACE IT BY FOLLOWING THE INSTRUCTIONS IN TM 11-6130-489-136P.

IF THIS DOESN'T WORK, THE PROBLEM IS WITH THE CHARGER. TURN IT IN TO DS FOR REPAIR.

# DISPLAY SCREEN PROTECTION

There is a mountain of hand-held terminal units (HTU), AN/PSG-9(V)1 and (V)2, at the manufacturer for replacement of cracked display screens.

And guess what? Cracked screens are *not* covered under the warranty if it is determined to be other than fair wear and tear. The money for replacement comes out of your unit's pocket.



WHADDAYA MEAN, MY UNIT'S GOTTA PAY TO FIX ALL THESE DISPLAY SCREENS?!?

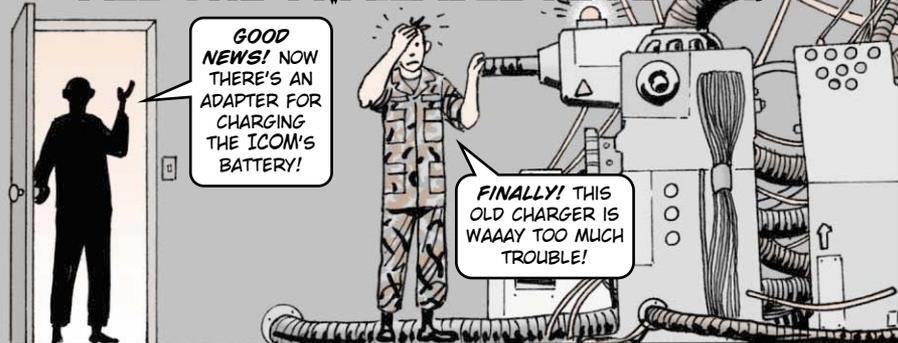
Protect those screens by putting on reinforcement modification kit, NSN 5895-01-483-2434. The kit includes an aluminum plate, two pieces of Velcro and installation instructions.

AT 50 BUCKS, THE KIT'S A BARGAIN COMPARED TO THE PRICE OF REPLACING AN HTU.



Rechargeable Batteries...

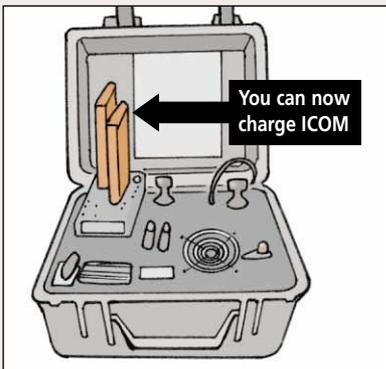
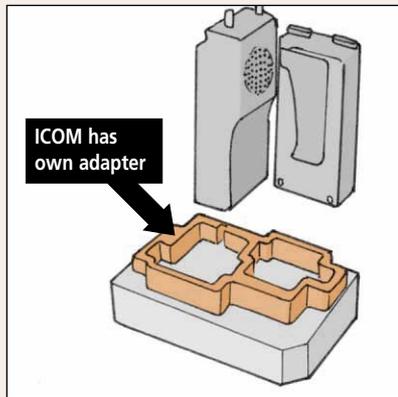
# ALL THE AVAILABLE ADAPTERS



The PP-8444A/U universal battery charger just got a little more universal. You can now charge the soldier intercom (ICOM) radio's rechargeable battery.

In the past, your only option for the ICOM battery was the AC bulk charger.

Now, using the J-6556/P adapter, NSN 5940-01-483-6772, you can use PP-8444A/U, NSN 6130-01-443-0970.



Add the J-6556/P to this list of other adapters:

Adapter	Battery	NSN 5940-01-
J-6358A/P	BB-390	492-6570
J-6357/P	BB-388	427-8601
J-6356/P	BB-516	427-9183
J-6355/P	BB-503	427-9247
J-6354/P	BB-2847	427-9278
J-6521/P	BB-2600	467-8813
J-6523/P	BB-557	467-5852

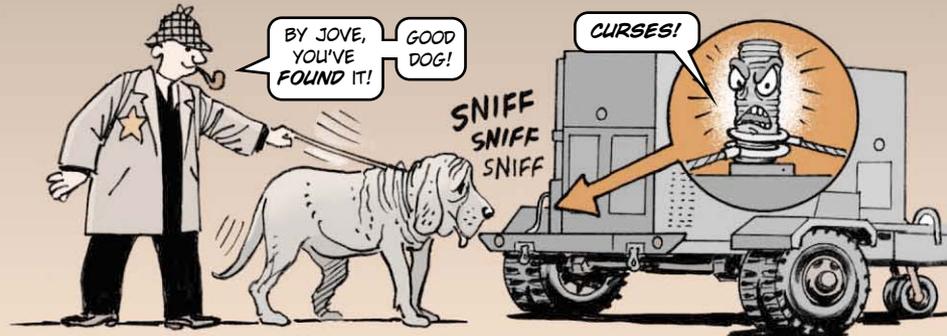
In order to use vehicle power for the PP-8444A/U, you will need the 24-volt slave cable, NSN 5940-01-427-9395.

For more info visit the rechargeable battery website at:

[www.monmouth.army.mil/cecom/lrc/lrchq/power/rechargebat.html](http://www.monmouth.army.mil/cecom/lrc/lrchq/power/rechargebat.html)

AN/MJQ-37,-38...

# THE POWER PLANT PUZZLE OR WHERE THE HECK IS THE GROUND STUD?



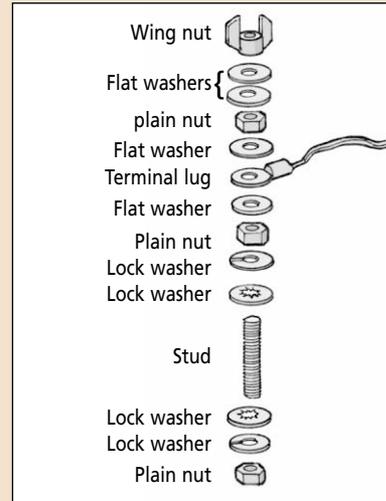
It takes many equipment pieces to make an AN/MJQ-37 or -38 power plant. The 10-KW generators, the switch box, the trailer, and the accessory box all come together to form a power plant and also a large stack of TMs.

Finding an oddball part that falls under its own category can be quite a challenge. That's the case with the trailer grounding stud and its parts.

The stud goes through the trailer fender and lets you ground the generators to the trailer and the trailer to a ground rod.

The stud is tough, but you can bust it or lose its parts. If that happens, here is what you need to get grounded again:

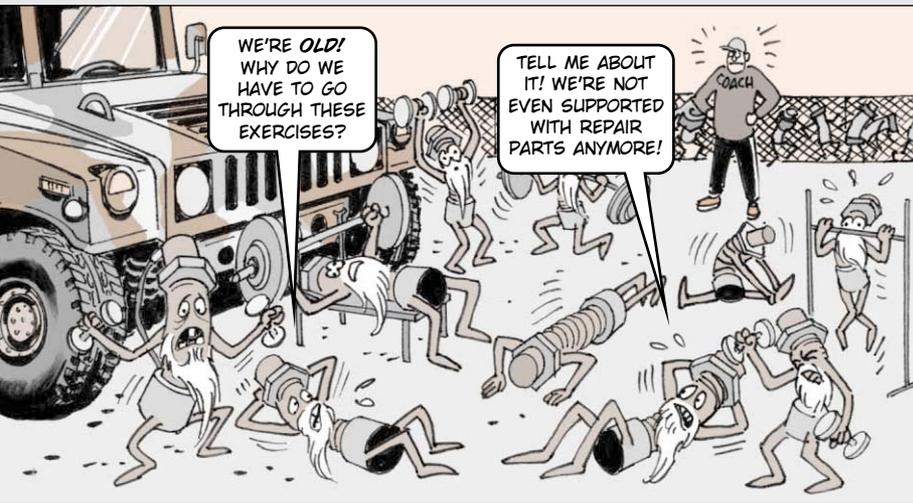
Item	Number needed	NSN
Wing nut	1	5310-01-078-5996
Lock washer	2	5310-00-184-8971
Flat washer	4	5310-00-187-2413
Plain nut	3	5310-00-584-7995
Terminal lug	1	5940-00-113-8190
Lock washer	2	5310-00-022-8847
Stud	1	5307-00-227-1741



The stud goes through the trailer and attaches on the bottom side with one of each kind of lock washer and one of the plain nuts.

On the top side, put on one of each kind of lock washer, one plain nut, one flat washer, the terminal lug, a second flat washer, the last plain nut, two more flat washers and finally, the wing nut.

# KEEP THE AS-3900



# IN SHAPE



Dear Editor,

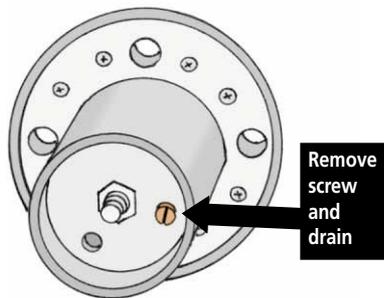
Many of our vehicle-installed SINGGARS still have the AS-3900 antenna, NSN 5985-01-189-7925, and not the replacement AS-3900A, NSN 5985-01-308-8988.

The AS-3900 is no longer supported with preventive maintenance instructions or repair parts. In fact, when it goes bad, you turn it in for the Alpha model.

However, I see no reason why the AS-3900 can't be maintained and given a longer life. Just some basic PMCS will keep the antenna in shape and delay replacement costs. Here's what I recommend:

The main problem is water getting into the matching unit. I have found cup-fulls of water in matching units. The matching unit should be regularly checked for cracks in the upper housing. The upper housing should be kept clean and small cracks should be sealed with RTV.

Matching units need to be regularly drained through the hole in the bottom of the matching unit by removing the screw.



Another problem is missing screws! A missing screw lets moisture into the housing.

The original screw is no longer available, but I've found a substitute that works. Order stainless steel screw, NSN 5305-00-054-6666. Put a sealing washer, NSN 5330-00-448-1018, on with the screw. Finish the job with a dab of silicone grease, NSN 6850-00-880-7616, on the threads.

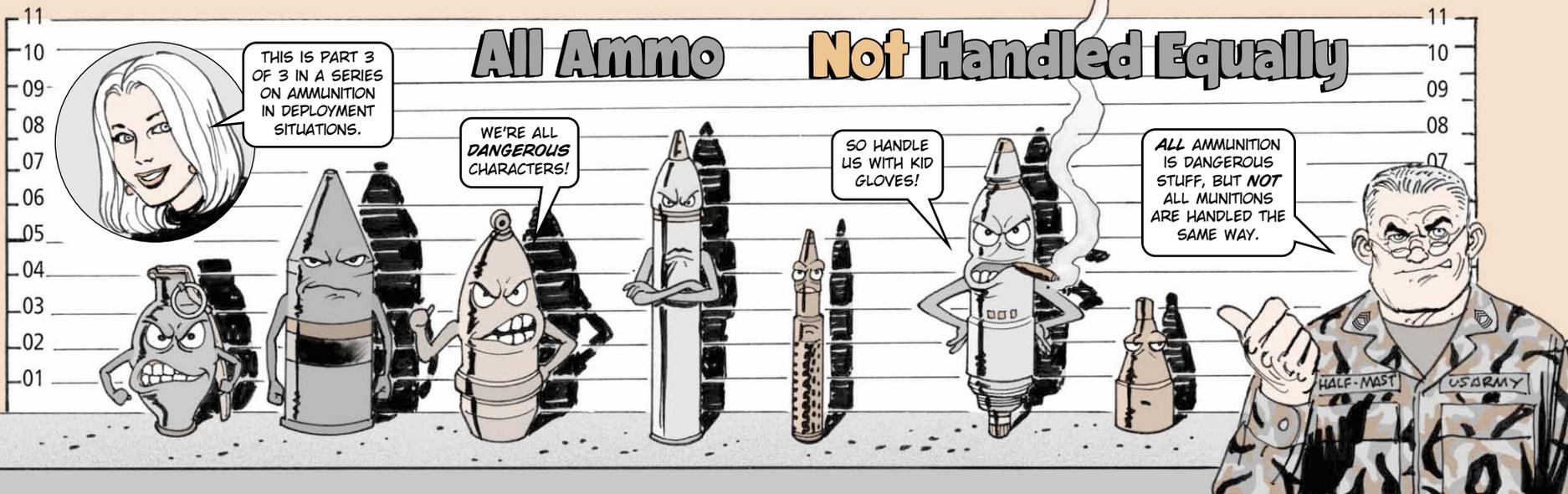
Replace missing screw with this one



Jim Uber  
AMSA #76  
Niagara Falls, NY

## From the desk of the Editor

Thanks for the antenna tips, Mr. Uber. We're all for any ideas that extend the life of equipment through preventive maintenance. Operators, if you still have the AS-3900 antenna supporting your vehicle-installed SINGGARS, make a PMCS plan of your own in order to keep the antenna working. Also, if you're missing those screws, take Mr. Uber's recommendation and order them today.



## Small Arms Ammunition

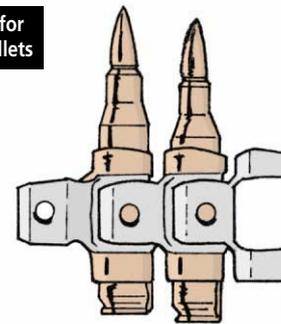


To make sure small arms ammunition will function right, give rounds, clips and magazines a quick inspection before use.



- Reject rounds that have bullets seated too far in or out of their cases. They make an uneven clip or belt that will jam your weapon.

Check rounds for mis-seated bullets

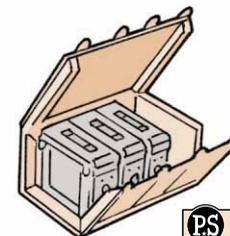


- Turn in rounds that are loose, split or have lopsided points.
- Avoid belted machine gun ammunition with weak, broken or stretched links.
- Don't use rifle clips or magazines with dents, bulges, cracks or weak springs.

Once you've determined your small arms ammunition is safe, keep it that way by storing it in closed metal containers. That keeps the ammo dry and out of the direct rays of the sun in hot weather.

Make sure you save all inner and outer packing material for repackaging unused small arms ammunition for turn-in.

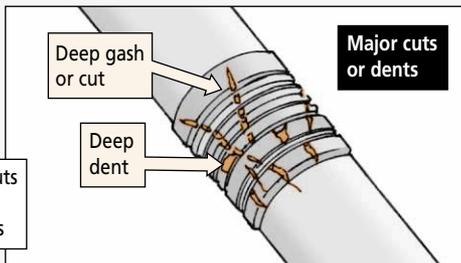
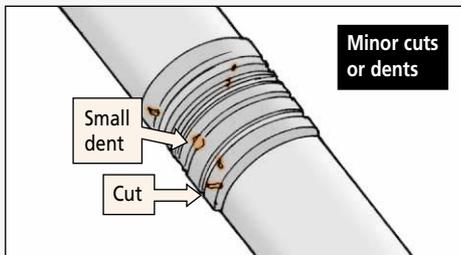
Save packing material for reuse



## Artillery Ammunition



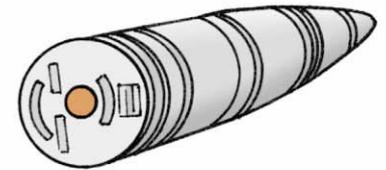
- 155mm projectiles with loose or cracked base plates, loose, missing or damaged grommets, and damaged or corroded rotating bands. A cut or dent that extends through all sections of the rotating band could cause a short round.
- Severely corroded aluminum base plates on Improved Conventional Munitions (ICM), specifically the M483A1 with the green base plate. Corrosion could cause a blown weapon.



Deep dents and cuts in rotating band cause short rounds

- Swollen obturating bands on 155mm rocket-assisted projectiles (RAP) and ICM projectiles. The bands may swell due to moisture and pop out of groove. Reseat the bands if possible. Reject the round if the bands are cracked or missing.
- A stuck lifting or closing plug on 155mm projectiles. The plug must be tight, but it should give to a good, strong turn. If not, turn in the projectile. If the plug threads are rusty, clean them and apply a light coat of silicone grease, NSN 6850-00-702-4297. Then, keep the plug in place until the round's ready for use.
- Liquid or crystalline matter oozing or growing around the threads in the nose or the fuze cavity on high explosive D544 155mm projectiles. The goo could be explosive exudate or a leaking chemical. Isolate the leaky round and call in the Explosives Ordnance Disposal (EOD) experts.
- White smoke or gray crusty powder indicating a leaking white phosphorus (WP) round. Leaking WP rounds should be immediately submerged in water and left there. Notify EOD.
- Primers that are not flush with the cartridge case on 105mm artillery ammunition. If the primer sticks out, you could accidentally bump, strike or compress it and ignite the propellant. If the primer is too far in, it won't fire at all.
- Damage to the base of primer-installed rounds. Use the fiber container cap to safeguard the primer until it's being loaded.
- Supplementary charges, if needed, on C445 105mm and D544 155mm ammo. Never fire a short fuze designed for a shallow fuzewell in a deep-cavity projectile without using a supplementary charge. Turn in projectiles that are missing supplementary charges.
- Rounds damaged by recoil or rammed out of a gun or howitzer. Turn them in.

Protect the percussion primer from bumps, strikes or compression



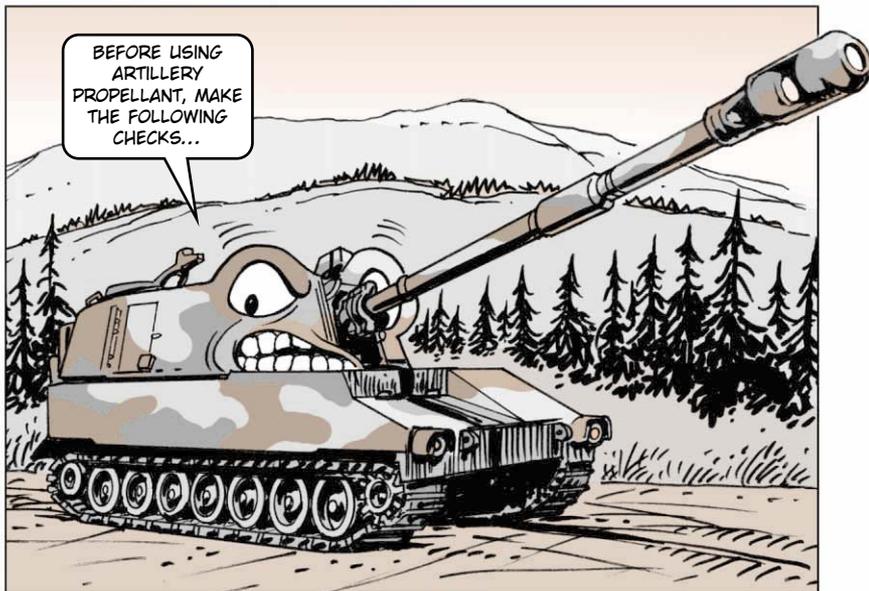
## Pyrotechnics

Any signaling devices that have misleading or missing color markings should not be used. Using the wrong color signaling device could have disastrous consequences.

You may notice bulging of the storage container for the M206 infrared countermeasure flare. This is due to gas pressure buildup inside the container.

The gas is flammable, but the M206 flares are still OK to use. Just open the container slowly and carefully so the gas can vent. Don't use tools that may cause a spark and don't have any open flames nearby.

## Propellant



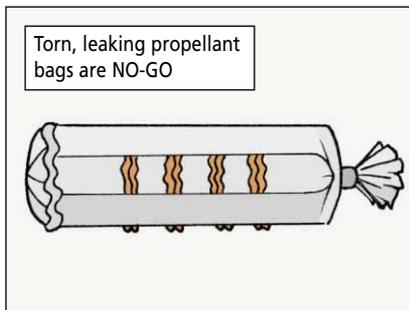
● Propellant containers should be closed tight to protect against moisture.

● Propellant bags should be firm, dry, clean, laced and tied. Do not use bags that are torn or leaking propellant.

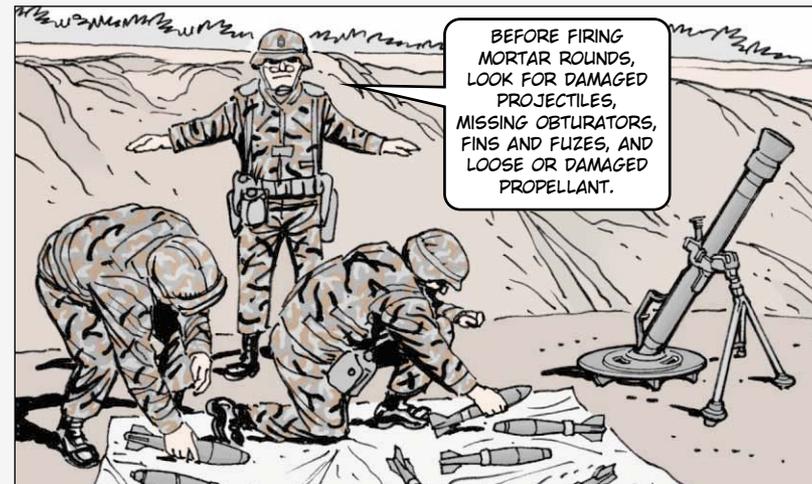
● Propellant bag stains aren't necessarily bad. Yellow stains are okay. So are blue, brown or orange stains as long as the cloth is strong. Blue, brown or orange stains with cloth that is weak and tears easily should be turned in to your ammunition supply point (ASP).

● Always eyeball the igniter on separate-loading propellant. The igniter end will be padded, marked IGNITER, or packed in red cloth. The igniter must be clean, dry and have loose powder. Lumpy, damp igniter may not work right and may result in erratic flight, hangfire or misfire. Turn it in to your ASP to be checked.

● You can remove propellant increments when ammunition is authorized for zone firing. But **never** add extra increments. If you do remove semi-fixed or separate-loading increments, store them in a safe place. Follow your unit's SOP for proper disposal.



## Mortar Rounds



**Warning!** Never let the base primer of any mortar ammunition hit hard on the bottom of the containers. That could ignite the propellant. Protect the primer with the fiber container end cap prior to firing.

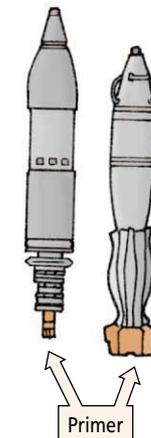
Keep mortar rounds packaged as long as practical to keep propellant from exposure.

Always store your WP mortar ammo so the rounds are in a vertical position.

Use a two-man procedure to open and remove rounds packed in "jungle wrap".

The first opens and holds the waxy container wrappings open while the second removes the round. That way the one with the sticky hands won't have to touch the round.

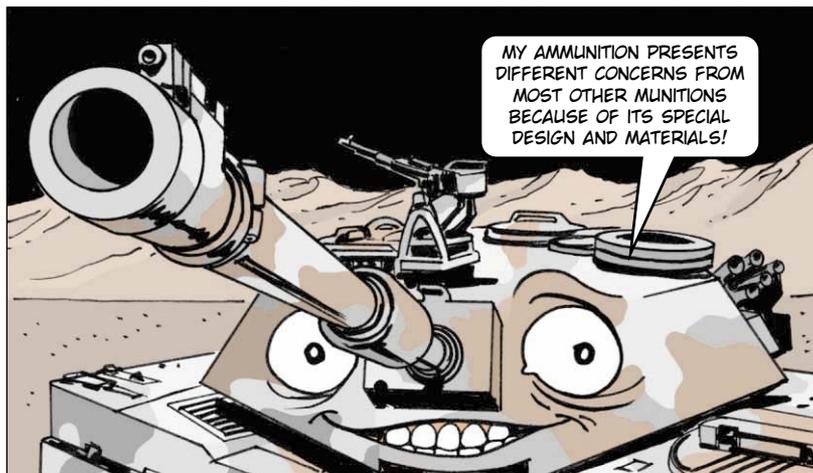
Never let mortar base primers hit hard on container bottoms



### 81mm HE M374A2 (1315-C256) and 81mm M375A1/A2 (1315-C276) WP Smoke Cartridges

Every precaution must be taken to keep C256 and C276 ammunition dry. Firing in wet weather is not a good idea because critical short rounds may occur when propellant charge bags are wet or have previously been exposed to moisture.

## Tank Ammunition



120mm tank rounds have a combustible cartridge case, synthetic obturators, easily damaged nose tips and, on the M829-series, depleted uranium (DU) penetrators.

TAKE THE TIME TO CHECK YOUR 120MM AMMO FOR THE FOLLOWING PROBLEMS...



- A cracked or punctured cartridge case.
- Scratches or abrasions to the cartridge case that remove the protective coating and expose a yellowish white material.
- Loose projectiles (separation from the cartridge case).
- Cracked obturator.
- Cracked sabot.
- Bent, cracked or loose windshield.
- Damage to the cartridge, which might expose the DU core. **Any** possible damage to the DU core should be reported to your NBC NCO for action.

Check out TM 9-1300-251-20&P to determine serviceability of tank ammunition. If you're in doubt or don't have the TM available, turn in suspect rounds to your ASP and draw new ammo.

The M829A1 cartridge is susceptible to forward bourrelet expansion from water freezing between the penetrator and the sabot. When this happens, the round is either difficult to chamber or won't chamber at all.

If you are chambering rounds in freezing temperatures and you have one hanging out of the breach about 8 inches, a frozen bourrelet is the likely problem. Remove the round and place it where the ice can melt. After the ice melts, the round is OK to use.

When loading unpackaged ammunition into a tank, be careful not to dent or scrape the cartridge case, projectile or fuze.

Watch for primers not flush with the cartridge case. If the primer sticks out, it could be dangerous to use. If it's too far in, the primer won't fire.

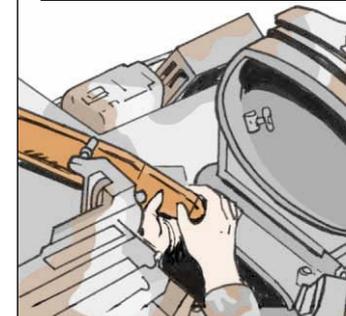
Protect electrically fired cartridges from static electricity caused by low humidity and layers of clothing during the winter months. Ground your stored cartridges with whatever grounding equipment is available.

Turn in all rounds damaged by recoil or rammed out of a gun.

Tarps or other suitable waterproof covering should be placed over the turret bustle on uploaded tanks when parked. Water leakage into the bustle can cause damage to uploaded ammunition, including corroded stub cases and primers. Wet, soggy combustible cases may not chamber properly. That results in low round velocity, poor accuracy and residue problems.

If standing water is present in the bustle, don't store ammo in the bottom row of turret racks.

Do not dent ammo when moving it into or out of combat vehicles



## Grenades

WHEN HANDLING FRAGMENTATION HAND GRENADES AND SMOKE GRENADES, YOU SHOULD...



- Be sure the safety pin is present and installed before you remove a grenade from its container. If you can't see the pin, assume it isn't there and get assistance.
- Never lift or handle a grenade by the safety pin pull ring or safety clip.
- Don't pull the grenade safety pin until you are ready to use the grenade.
- Avoid putting a grenade in a location where the safety pin could be accidentally removed.
- Never put an HC smoke grenade into water. HC reacts violently with water.
- Cold temperatures may cause the thermite grenade (AN-M14, G900) to explode rather than burn when used.

HC grenades and water *don't* mix



## Mines



Mines are composed of various plastics and metals which are susceptible to damage and deterioration. Never use or emplace mines that are cracked or damaged.

The plastic case on M18A1 (Claymore) anti-personnel mines (1345-K143 and K145) that were manufactured before December 1989 may become soft and sticky. This deterioration is caused by a chemical reaction between the explosive and polystyrene component of the plastic.

As long as the explosive isn't exposed, the mine is OK to use. However, you may need to cut the mine from its cloth bandoleer. Limit the cut to the minimum required to extract the mine from the bandoleer.

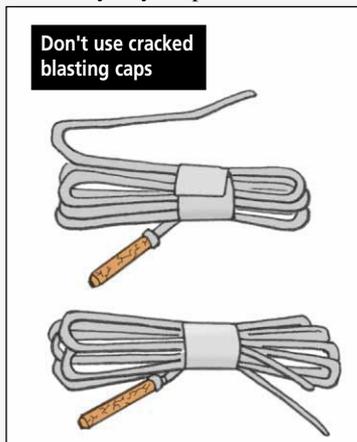
## Demolition Material

Detonators, initiators, squibs, blasting caps and other initiating devices should always be carried in protective containers—never loosely in your pocket.

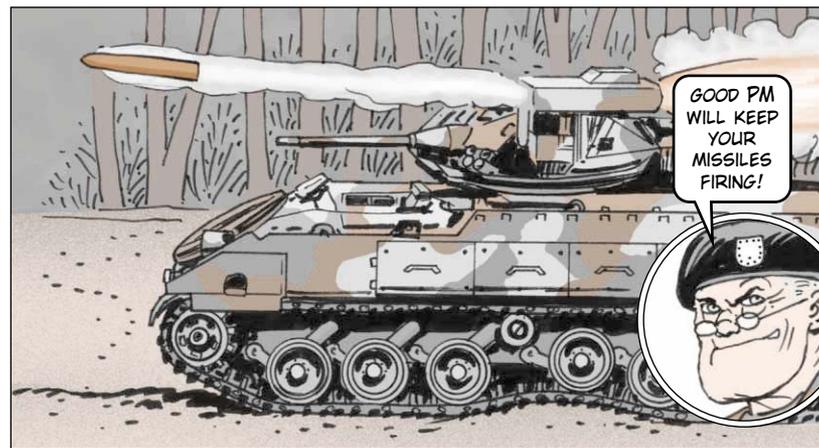
The devices should be securely packed inside the container to prevent rolling and jostling. Mark the container so you'll know what's inside.

Some demolition materials, like sheet explosive and C4 blocks, come with an adhesive backing. The adhesive won't stick to a wet surface or if temperatures are below freezing. You'll need to devise a field-expedient method to affix the demolition explosives when it's wet or freezing.

Don't use blasting caps that have cracks or splits. Be sure electric blasting caps are shunted by twisting the lead wires or have a short circuit tab attached.



## Rockets and Guided Missiles



Rockets with bent or broken fins, dented motors or launcher tubes, or broken electrical connections are NO-GO and should be turned in.

Don't use rockets that have been dropped. The propellant grain may crack if dropped, especially in cold weather. That could result in motor blow during rocket flight.

Solid propellant rocket motors in guided missiles that have been dropped more than eighteen inches should be tagged unserviceable and returned to the ASP. Cracked rocket motors could rupture inside the launcher, causing injury and equipment damage.



Protect electrically initiated rockets and guided missiles from static electricity. Use whatever grounding material is available.

When storing rocket motors, rockets and guided missiles, point them in a direction that will cause the least damage to personnel and equipment if they accidentally fire.

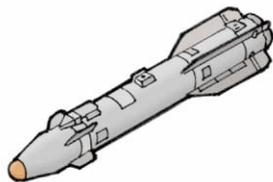
After unpacking guided missiles that contain desiccant bags, immediately return the desiccant to the container for later reuse and close the container.

Avoid sealing wet missiles in shipping and storage containers. If possible, place the wet missiles in a sheltered area or cover, allowing them to dry inside their containers before attaching the lids. Don't forget to add desiccant if available.

The HELLFIRE's environmental protection cover (EPC) kit may be installed on the nose of the missile in cold weather to protect the seeker dome prior to launch. There are two configurations of the EPC:

- The MH51, NSN 1377-01-159-3918, can be used on the AGM-114A/B/C/K HELLFIRE missile.
- The MT26, NSN 1377-01-359-2923, has a longer cable for use on the AGM-114F HELLFIRE missile.

Be sure the missile dome is ice-free before you install the EPC. It's a tight fit and may shatter if you try to install it on an icy missile dome.



**Check missile dome for ice before installing EPC**

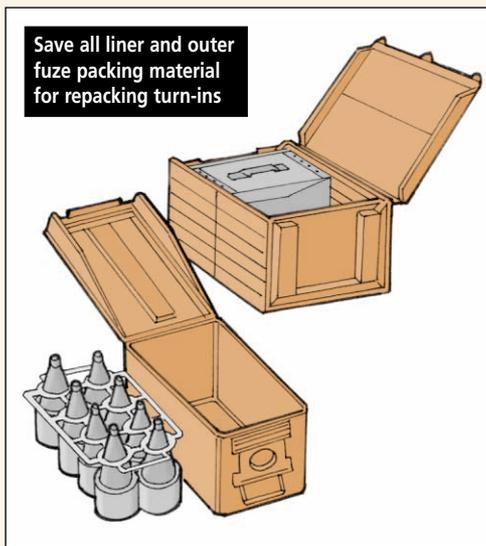
## Fuzes



After removing fuzes from their containers, save the inner and outer packing material and desiccant. Put it all back in the original container so that it'll be available for repackaging turn-ins.

The styrofoam inner packing material will absorb moisture from humid air. That can make it difficult to remove the fuzes, so keep the container closed as much as possible.

Before firing fuzed ammunition, make sure the fuze is fully seated. The fuze shoulder must be seated smack on the projectile's nose with no threads or space showing.



Make sure the safety pins, pull wires or any other safety device on fuzes are in place and in good shape. Never remove the safety device until you're ready to fire.

If the safety device is missing, broken, corroded or dented, turn in the fuze or report it.

Know which fuze tools are authorized for which fuzes. Then use the tools gently when you screw on a fuze. Never force, spin, roll or drop a fuze. When a round is issued to you already fuzed, leave it fuzed unless your ammunition pubs give you a different fuze for the round.

Unauthorized or altered fuzes are also off-limits. Ammunition with no fuze or the wrong fuze can blow up in the bore or become a dud downrange.

Before fuzing, make sure the fuze cavity is clean. Use a lint-free, clean cloth and wooden (not metal) stick to clean the cavity. For the fuze to seat right, the fuze and projectile threads must be clean. Never use a fuze or projectile with damaged threads. Turn it in.



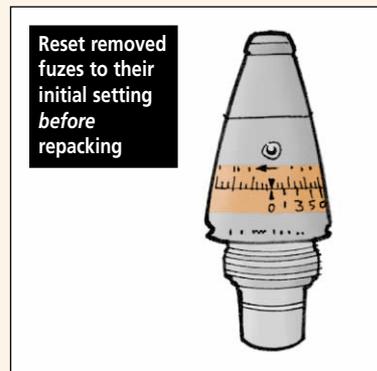
Keep fuzed ammunition out of the path of your weapon's recoil or anything else that might bang it. If a round is hit, isolate it with a tag explaining what hit the round, then report it immediately. Do the same for any damaged rounds, fuzed or not.

Prepared fuzes that haven't been fired need special handling. Clean them well before repacking in the original packing.

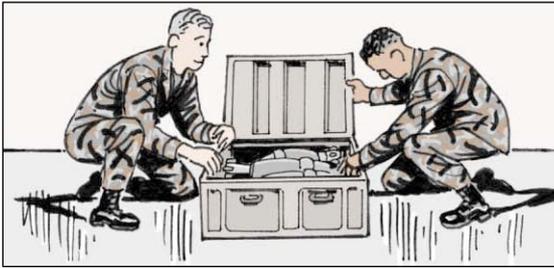
For separate-loading ammunition, remove the fuze, pack it carefully and replace the projectile's plug and gasket. Write on the box the date the ammunition was repacked. Use that ammunition first next time you fire to cut down on opened boxes.

Removed fuzes should be reset to their initial setting before being repacked.

M732 proximity fuzes (DODIC N464) must be stored nose down (arrow on box pointing up) to prevent the battery electrolyte from leaking.



## More Help

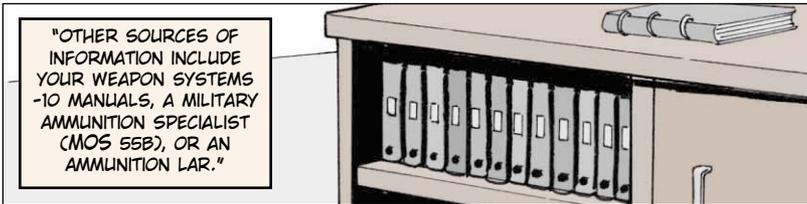


"WHEN IN DOUBT ABOUT THE PROPER CARE AND CONDITION OF AMMUNITION, THE BEST SOURCE FOR ADVICE IS A QUALITY ASSURANCE SPECIALIST (AMMUNITION SURVEILLANCE), OR "QASAS."



A QASAS MAY BE CONTACTED THROUGH YOUR ASP, RANGE SAFETY, OR EOD PERSONNEL.

YOU CAN ALSO CHECK WITH PERSONNEL FROM YOUR AMMUNITION SUPPLY ORGANIZATION OR LOGISTICS STAFF ELEMENT.



"OTHER SOURCES OF INFORMATION INCLUDE YOUR WEAPON SYSTEMS -10 MANUALS, A MILITARY AMMUNITION SPECIALIST (MOS 55B), OR AN AMMUNITION LAR."

AN ON-LINE 24-HOUR AMMUNITION HELP SYSTEM (AMMOHELP) ALLOWS ANYONE WITH AN OFFICIAL NEED TO SUBMIT QUESTIONS REGARDING MUNITIONS, EXPLOSIVES, LOGISTICS, QUALITY, SAFETY, SECURITY, TRAINING, EQUIPMENT, OR TECHNOLOGY.

THE U.S. ARMY DEFENSE AMMUNITION CENTER (DAC) ALSO MAINTAINS USEFUL AMMUNITION SUPPORT INFORMATION ON ITS WEB SITE.

DAC Home Page:  
<http://www.dac.army.mil/>  
 AmmoHelp web site:  
<http://www.dac.army.mil/ammohelp/>  
 AmmoHelp e-mail:  
[ammohelp@dac.army.mil](mailto:ammohelp@dac.army.mil)  
 AmmoHelp toll-free hotline:  
 1-877-668-2840

Connie's  
 POST  
 SCRIPTS



## Got The SKO SC?

SC 9999-01-SKO contains illustrations and NSNs for all the available tool kits the Army uses. If you ever need to order a replacement tool or do a tool inventory, you'll need that SC and you'll need the latest edition (it's updated in April and September). It comes as a CD-ROM and is on the Internet. Your pubs clerk can order EM 0074 (IDN 212093) at <http://www.usapa.army.mil> or through your normal pubs channels. You can also get the SC's info at the SKO website, <http://weblog.logsa.army.mil/sko>.

## Alcohol NSNs

If your truck is equipped with an alcohol evaporator, make sure it's full before cold weather arrives. Alcohol keeps moisture in the vehicle's air brake lines from freezing. NSN 6810-00-275-6010 gets a 5-gal can of technical methanol. NSN 6810-00-2245-8353 gets a 54-gal drum.

## REPLACEMENT 'ROPE'

Make your own replacement tiedown straps for the new coated polyester cargo covers using NSN 4020-01-463-8181. That'll get you 280 feet. At about \$2 a foot, it's a lot cheaper than buying a new cargo cover just to get the straps.

## Straps for Strapping LBE

It's not a good idea to have your equipment clanking while going through enemy territory. But that's what will happen if you leave gear hanging loose from your LBE. Unit supply can order military cable wraps and STRAC (strike team ready around the clock) bands for tying down gear online at [www.gsaadvantage.gov](http://www.gsaadvantage.gov). The new modular lightweight load-bearing equipment (MOLLE) will come with STRAC bands.

## NEED SHRINK-WRAP TAPE?

When it's time to wrap up and ship a helicopter, where do you go for shrink-wrap tape? NSN 8135-01-250-2299 is available from GSA through the GSA special order program. If you need this tape, submit a MILSTRIP requisition and it will be directed to Susan Kempler, 212-264-3520 at GSA. The tape will be shipped directly from the vendor to you.

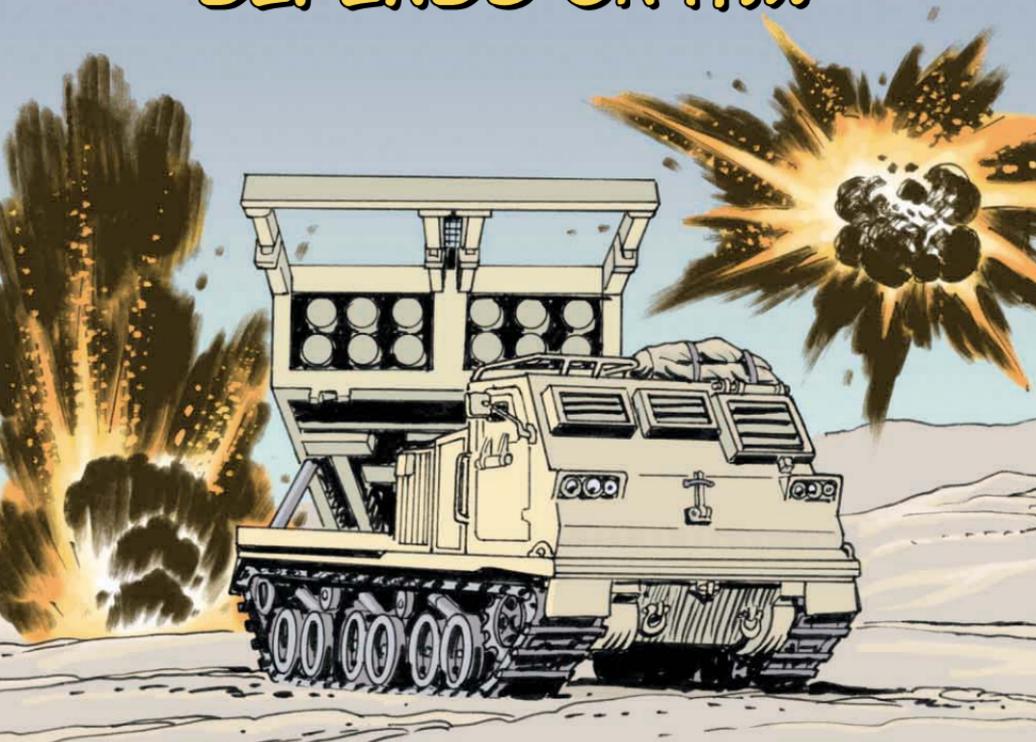
## SOUND OFF!

If you've ever complained about DA Pam 738-750, *Functional Users Manual for the Army Maintenance Management System (TAMMS)*, then you've got a chance to have your comments heard! Comments to a draft revision are due by 31 Jan 03. Go to <http://www.lia.army.mil>. Click on the *Logistics Regulations & Pamphlets - DPMS* on the left side, then click on *Work-in-Progress*. PAM 738-750 is at the bottom, and an electronic 2028 for your comments is at the very bottom of that page.

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

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

**STORE, TRANSPORT,  
INSPECT AND  
MAINTAIN AMMO  
AS THOUGH YOUR LIFE  
DEPENDS ON IT...**



**...IT DOES!**

**SEE ARTICLES IN  
PS 600, 601 AND 602!**