

**PS****THE  
PREVENTIVE  
MAINTENANCE  
MONTHLY****ISSUE 722 JANUARY 2013**

TB 43-PS-722, 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. The use of product or company names does not constitute endorsement of those products, services or companies by the U.S. Army. The use of non-DoD hyperlinks, along with their content, does not constitute endorsement by DoD or DA. Neither DoD nor DA exercises any editorial control over, and cannot vouch for, content on non-DoD websites.

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M1-Series Tank Oil Filter Recall  
M1-Series Tank FRH Checks  
M2/M3-Series Bradley Dipstick Gaskets  
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Towed Howitzer, Paladin Cannon Bore Cleaning

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**usarmy.redstone.logsa.mbx.psmag@mail.mil**

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**1233101**

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-GP), 5307 Sparkman Circle, Redstone Arsenal, AL 35898-5000.

Issue 722

**PS**

January  
2013

# THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-722

Approved for  
Public Release;  
Distribution is  
Unlimited



***"Who knows  
what evil lurks  
in the hearts  
of men..."***

**See 'Soar High  
with Shadow PM'  
on page 22!**



# Preventive Maintenance: What Do *You* Think Of?

**W**hen you hear the words—preventive maintenance—what do you think of? If you're like most Soldiers, in your mind's eye you probably see:

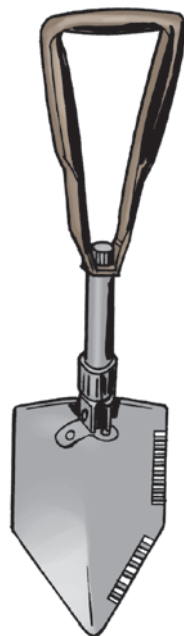
- Trucks and tanks in motor pools
- Helicopters on the flight line
- Rifles and pistols in the arms room
- Radios in the commo shop

You also probably picture Soldiers taking care of this equipment by inspecting, cleaning, lubing or replacing parts.

But when you hear the words—preventive maintenance—do you ever think of clothing, body armor, hydration systems, tents, space heaters, kitchens or scores of other troop support items? This gear deserves PM, as well. Here are some examples of what troop support gear PM can do for you:

- **Keep your Army combat uniform clean and lasting longer.** Launder it by the book. Use a mild detergent and the correct water temperature.
- **Prevent a sleepless night in a leaky tent.** Patch small holes and tears with the tentage repair kit, NSN 8340-00-262-5767.
- **Ensure your hydration system stays fresh.** Disinfect the bladder with household bleach to curb the growth of mold and bacteria.
- **Sleep safely.** Inspect the exhaust stack pipes on your space heater before firing it up. Look inside for clogs or soot build-up that might prevent deadly fumes from venting. Clean the insides with a rag.

The PMCS tables in your TMs describe a lot more checks and services you can perform on troop support items. All of them support you and your mission. Some of them may even keep you alive. Now that's something to really think about.



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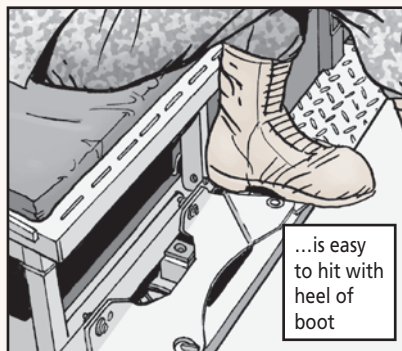
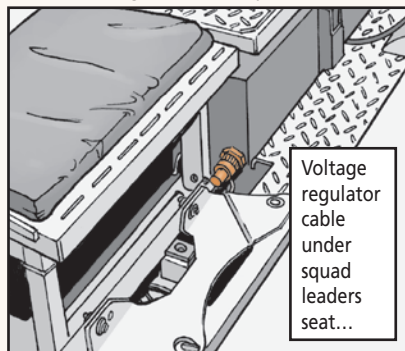
Stryker...

# PUTTING YOUR FOOT DOWN



**M**echanics, seems like just about any place a Soldier puts his big feet can cause you problems. The latest spot is inside the troop compartment of the Stryker.

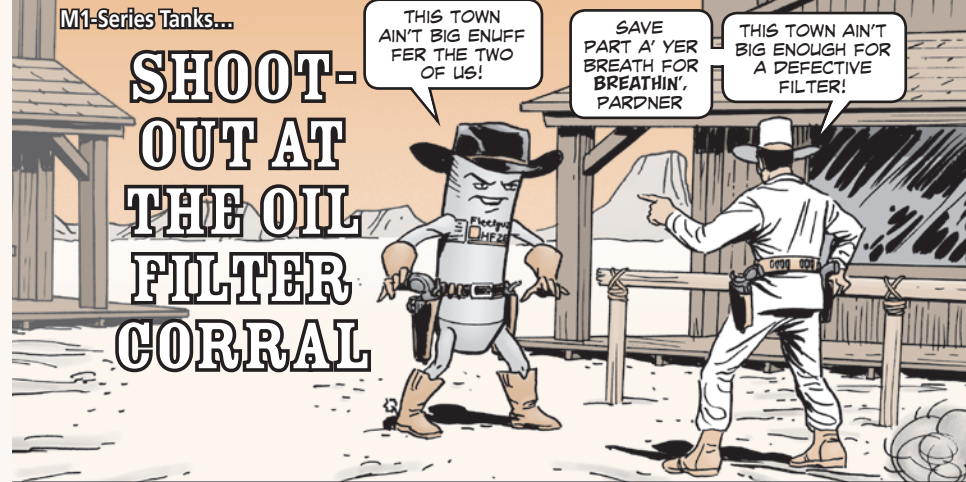
The W4 cable that screws into the side of the battery box sits right under the squad leader's seat. It would be really easy for a Soldier's heel to hit the W4 cable and either damage it or slowly unscrew it.



A damaged or loosened cable won't allow the vehicle's batteries to charge. You can spend a lot of time and lose a lot of sleep trying to troubleshoot this problem. So make it one of your first checks.

M1-Series Tanks...

# SHOOT-OUT AT THE OIL FILTER CORRAL



**C**rewmen, there's a bad engine oil filter out there. And it's up to you to run him out of town before he guns down your M1-series tank!

The bad filter was manufactured by Fleetguard and testing has shown that the epoxy compounds used in the filter may break down. That can lead to catastrophic engine failure!

Right now, take a look at the engine oil filter on your tank. If it's clearly labeled Fleetguard with black letters and includes the part number HF28202 in red letters, get it replaced as soon as you can. If you don't have a replacement filter on hand, order a new engine oil filter parts kit, NSN 4330-01-118-2868.

You should get one of five different filters with the kit:	Manufacturer	CAGE	P/N
	Pall Aeropower Corp	18350	AC-9540F-74
	Purolator Products	90005	1763950
	PTI Technologies Inc	05228	7590568-101
	Separation Technologies	9Y277	ST66414896C
	Honeywell International	99193	3-300-474-05

Replace defective oil filter



If the kit or your tank has any filter other than what's on this list, replace it.

If you have to change the filter, changing the engine oil isn't necessary. You also won't need to submit a special AOAP sample.

However, you should hang on to the bad filter as an exhibit and submit a PQDR. You'll receive instructions on where to send the filter.

The complete scoop is in TACOM maintenance action message 12-007:

[https://tulsa.tacom.army.mil/safety/mam/tacom\\_wn/MA12-007.html](https://tulsa.tacom.army.mil/safety/mam/tacom_wn/MA12-007.html)



# KEEP YOUR REPLENISHER ON THE LEVEL

TIME TO  
HEAD OUT TO  
THE FIRING  
RANGE!

HANG ON,  
GUYS!

YOU HAVEN'T  
CHECKED MY  
REPLENISHER  
LEVEL YET...

...AND I'M  
FEELIN' A  
LITTLE GASSY!

When was the last time you checked and bled the FRH in your tank's replenisher, crewmen? If it has been a while, you could be putting yourself and others in danger!

They are easy tasks to complete and can prevent some serious problems. If the recoil system is low on fluid, or there's air in the system, the main gun could recoil uncontrollably the next time it's fired. When that happens, the cannon shears its retaining bolts and slams into the ammo compartment. You don't want to be in the way if that happens!

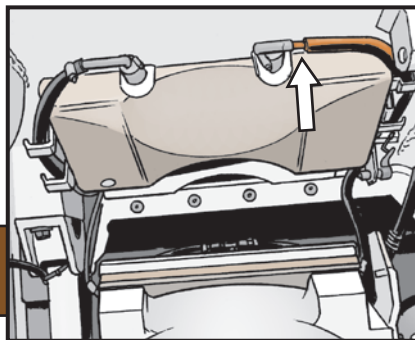
## Replenisher Level

Check the replenisher level by raising the gun tube to maximum elevation. The replenisher's reservoir should be at or above the MIN LEVEL mark.

If the replenisher oil level is low, add some FRH now. Here's how:

1. Park the tank on level ground and raise the gun tube to max elevation.
2. Make sure you're wearing long sleeves (rolled down), rubber gloves, goggles and a faceshield. FRH contains a chemical that can cause paralysis if it's taken orally. FRH can also be absorbed through the skin, so wash thoroughly with soap and water if you get any on you.
3. Disconnect the hose from the plug on the top right side of the replenisher reservoir.
4. Uncoil the hose by sliding it out of the six retaining clips around the outside of the replenisher.
5. Extend the hose through the loader's hatch.
6. Put the small BII funnel, NSN 7240-00-404-9793, in the hose and slowly add FRH, NSN 9150-00-111-6256, until the fluid level reaches the MIN LEVEL mark on the replenisher.
7. Remove the funnel, slide the hose back through the retaining clips and reattach it to the plug on top of the replenisher.

If the fluid level in the replenisher keeps moving down over time, report it. You could have a Class III leak.

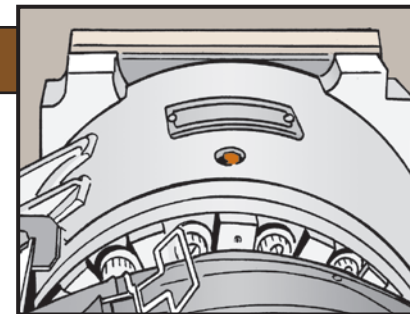


## Bleed Recoil System

Checking the FRH level in the replenisher isn't all you need to do, though. If there's air in the system, the replenisher could give you a false reading. The level may look good when it's actually low.

So when do you need to bleed the system? Unless you like living dangerously, you'd better do it prior to firing exercises and every time the recoil system is drained and refilled. Here's how:

1. Make sure you're wearing long sleeves, gloves, goggles and a face shield for protection.
2. Elevate the main gun to maximum elevation with the hydraulic pump handle and check the replenisher to make sure it's full.
3. With turret power off and the system hydraulic pressure reduced to zero, manually depress the gun tube just below level.
4. Loosen, but don't remove, the bleed plug below the gun mount ID plate.
5. Allow all the air to escape until you see FRH starting to ooze from around the bleed plug.
6. Retighten the bleed plug. Wipe off any FRH with a rag and dispose of it properly.
7. Recheck the replenisher reservoir. Add FRH if needed.



# A STICKY SITUATION FOR DIPSTICK



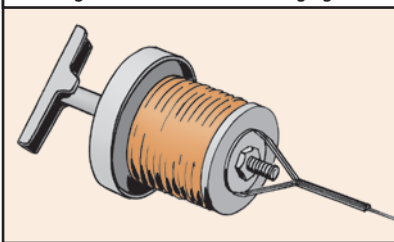
**T**he gasket under the top of your Bradley's transmission oil dipstick is there for a good reason, crewmen.

After checking the oil level, you have to turn the T-handle on the dipstick to lock it in place. Turning the T-handle squeezes the gasket under the top of the dipstick to completely seal the opening.

But if that gasket is damaged or missing, you won't get a good seal. Water, dirt and sand can get past the seal and into the transmission. Not good!

Take a close look at the dipstick seal after checking the oil level. If it's cut, torn or missing, replace the dipstick with NSN 6680-01-180-5640.

Too tight on T-handle will damage gasket

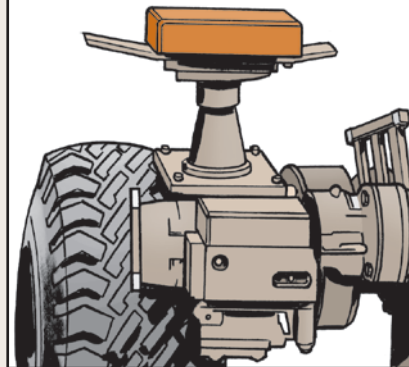


# What to Know Before You Tow

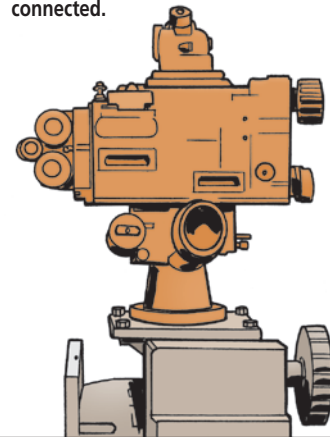
**W**hen towing the M119A2 howitzer, you need to take special care of the M137A2 panoramic telescope and M187A1 telescope mount. If you don't, damage is sure to follow.

Keep these tips in mind:

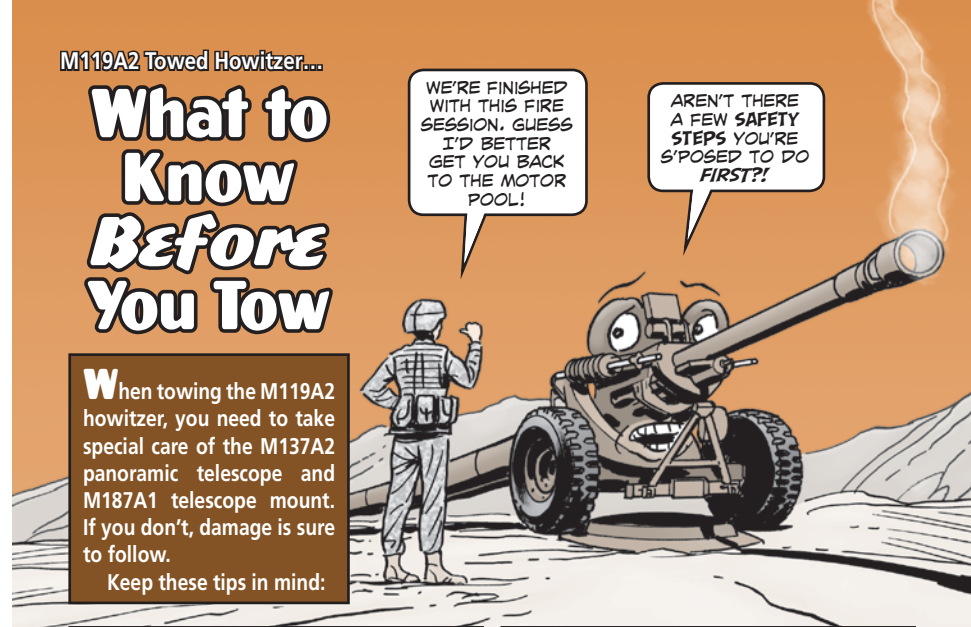
- Whenever the M137A2 isn't installed, make sure the plastic quick-release protective cover, NSN 5340-01-042-1330, is installed on the M187A1 telescope mount. Without the cover, the quick-release handles could loosen and fall off.



- Never tow your howitzer with the M137A2 installed. Vibration could damage both the telescope and the M187A1 mount where the two are connected.



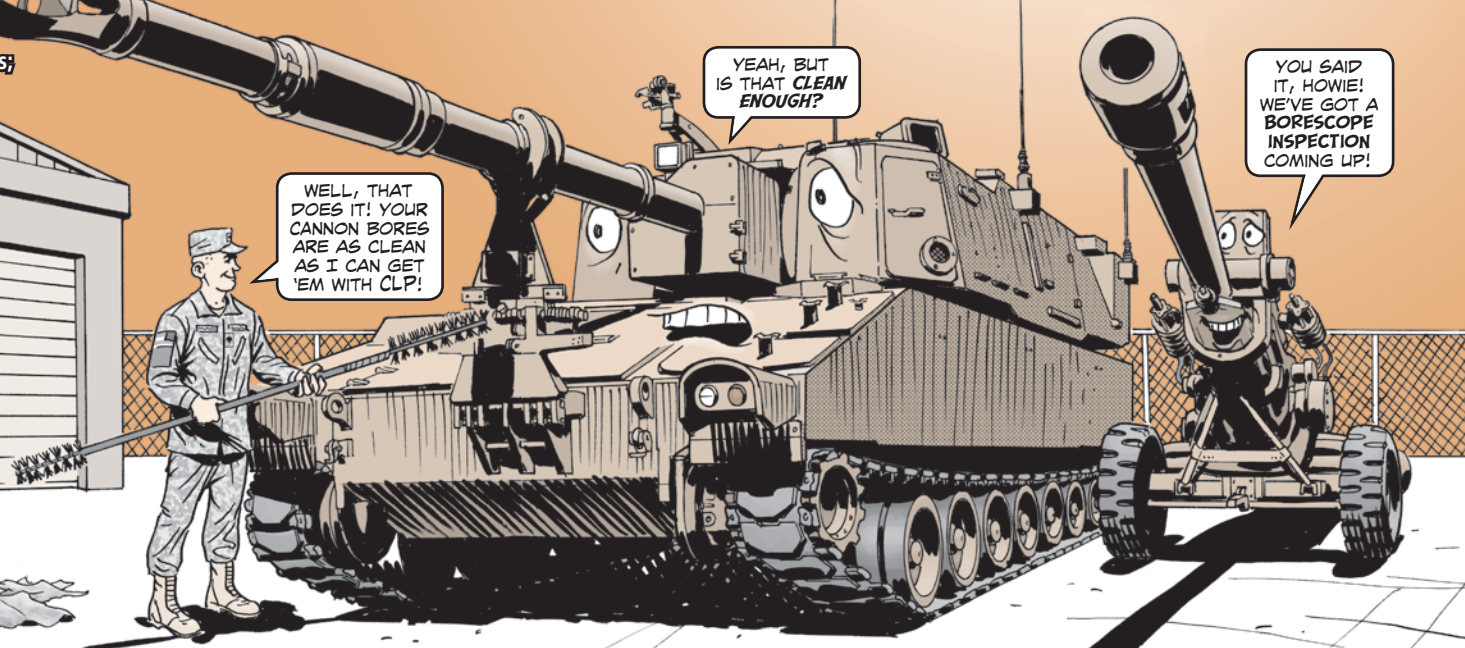
- Make sure the canvas fire control telescope mount cover, NSN 1240-00-819-4524, is installed prior to towing. Without the cover, flying debris can damage the M187A1 mount.



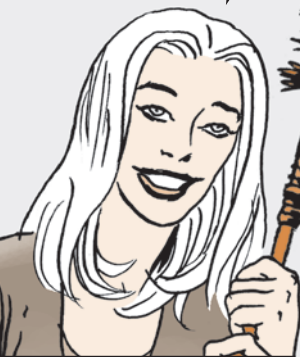


M119A2, M198, M777A2 Towed Howitzers;  
M109A6 Paladin...

# WHEN 'CLEAN' ISN'T CLEAN ENOUGH!

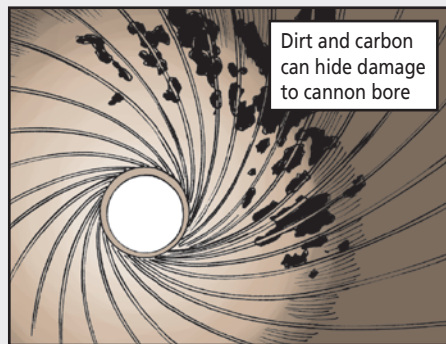


CREWMEN, THE -10 TMS FOR YOUR TOWED HOWITZERS AND M109A6 PALADIN GIVE PRETTY SPECIFIC INSTRUCTIONS ON HOW TO **PROPERLY CLEAN** THE CANNON BORE ON THE DAY OF AND THE DAY AFTER FIRING.



Generally, that means using that particular vehicle's bore brush, cleaning sleeves, and CLP. Add in a whole lot of elbow grease and you'll get a pretty clean bore.

But when it's time to do a borescope inspection, those cleaning procedures just aren't enough. They can leave behind small amounts of carbon and dirt that can hide erosion or pitting inside the bore.

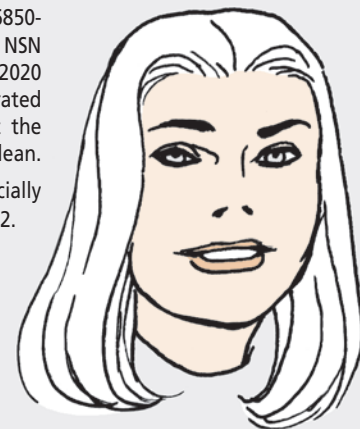


So, immediately before the inspection, follow the cleaning procedures outlined on Pages 2-1 through 2-2 of TM 9-1000-202-14, *Evaluation of Cannon Tubes* (Feb 99, w/Ch 5, Jan 11).

1. Clean the cannon bore using your howitzer's bore brush and a cleaning sleeve saturated with RBC (rifle bore cleaner), NSN 6850-00-224-6658 (1-qt), NSN 6850-00-224-6663 (1-gal), or NSN 6850-00-249-8029 (5-gal).
2. Swab out the bore with a wash of solvent, NSN 6850-01-472-2721 (1-qt), NSN 6850-01-474-2319 (1-gal), NSN 6850-01-472-2717 (5-gal), or NSN 6810-01-097-2020 (5-gal). Pass the bore brush and cleaning sleeve saturated with the solvent through the bore, changing out the cleaning sleeve as necessary until it comes out clean.
3. Dry the bore using clean, dry, lint-free cloth or specially prepared paper wiping towels, NSN 7920-01-368-1622.

Eyeball the interior of the bore, looking for any damage or erosion to rifled and smooth areas. Appendix A-S in TM 9-1000-202-14 will tell you exactly what to look for.

WHEN YOU'RE FINISHED, APPLY A LIGHT COAT OF CLP TO **PREVENT CORROSION** BETWEEN FIRINGS.





# A/C V-Belt Pulley Interference

I THINK I HAVE A PROBLEM WITH MY FAN CLUTCH.

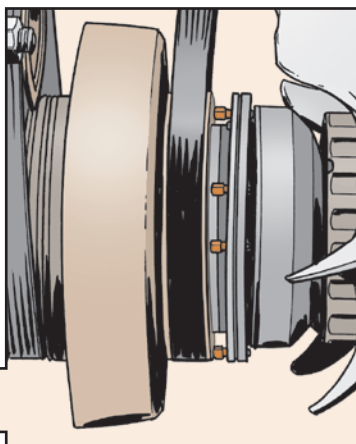
CAN YOU HELP ME?



If your unit has FMTVP1, FMTVA1P1, FMTVA1P2, LVAD and HIMARS trucks with air conditioning, you may have a problem. There could be contact between the engine fan clutch bolts and the A/C V-belt pulley. The contact itself **doesn't** make your truck non-mission capable, though.

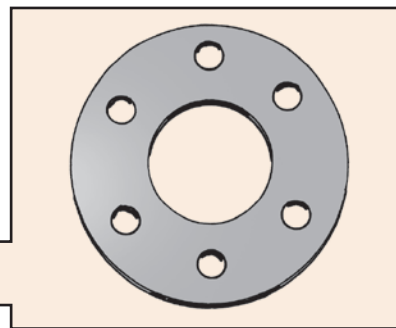
But the bad news is, depending on how much contact there is between the pulley and fan clutch, the fan clutch could fail or the fan clutch assembly could be damaged. And that **does** make your truck NMC.

Fan clutch retaining bolts with small clearance to A/C pulley can cause damage



The good news is a spacer plate is available through BAE Systems to fix this issue. The spacer plate provides more clearance between the fan clutch and A/C V-belt pulley. Use it if the fan clutch retaining ring bolts are worn and need to be replaced or if the fan clutch itself is damaged.

Fan clutch spacer plate, P/N GTS006001, provides extra clearance



## Get Well Plan

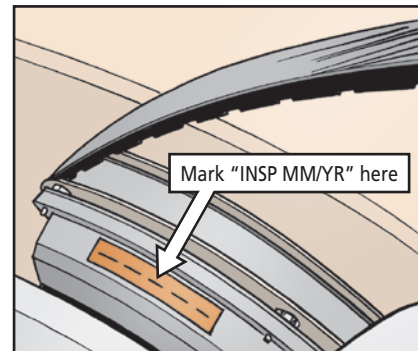
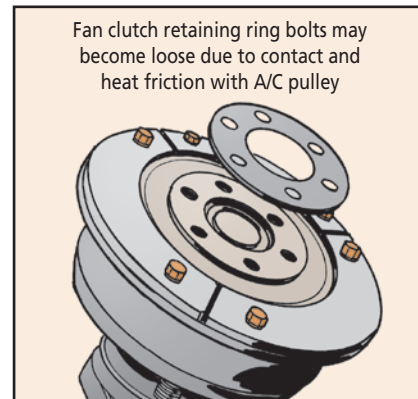
See TACOM MAM 12-025 for complete fan clutch inspection and replacement instructions. It's available online:

<https://tulsa.tacom.army.mil/SAFETY/message.cfm?id=MA12-025.html>

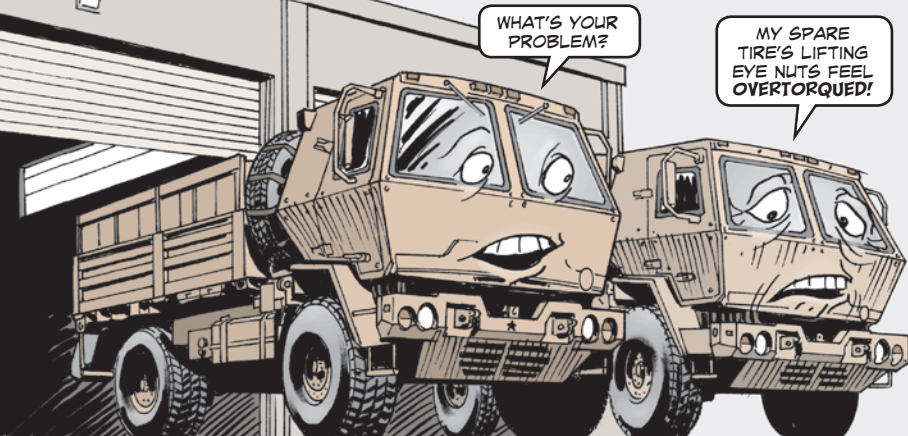
Here's a summary of what you should do:

1. Look for metal-to-metal contact from the fan clutch bolt heads to the face of the A/C pulley.
2. If you see any damage to the fan clutch, replace it and install the new spacer, PN GTS006001, on the new fan clutch. Refer to the TACOM MAM for details on how to get the spacer.
3. If the fan clutch retaining ring bolts are excessively worn and can't be tightened, replace the fan clutch and install the new spacer plate.
4. Undamaged or slightly worn retaining ring bolts with no other signs of damage to the fan clutch or A/C pulley can be tightened. Torque loose retaining ring bolts to 30 lb-in.
5. If you can't use this torque wrench method, use this alternate tightening method: Once the bolt is seated and the lock washer is compressed with no gap between the retaining plate and clutch, tighten the bolt with an additional  $\frac{1}{4}$  to  $\frac{3}{8}$  turn.
6. After inspecting and following these steps, use a paint pen to mark serviceable fan clutches: "Insp. Month/Year", for example, Insp. 12/12.

Fan clutch retaining ring bolts may become loose due to contact and heat friction with A/C pulley



# REPLACE SPARE TIRE CARRIER CHAIN STUDS!



If your unit has FMTV A1P2 trucks with serial numbers below 737,560, or LVAD model M1081A1 and M1093 trucks within serial number range L-T120386EHFV to M-T120972EHBW, **your truck's spare tire lifting eye studs could fail.** And that can lead to the entire 363-lb wheel and tire assembly falling, injuring personnel and damaging equipment.

Thankfully, this preventable problem doesn't make your truck NMC. The trouble was created during vehicle production when the spare tire lifting eye nuts on these trucks were over-tightened. The resulting slightly stretched studs in turn weakened the stud threads.

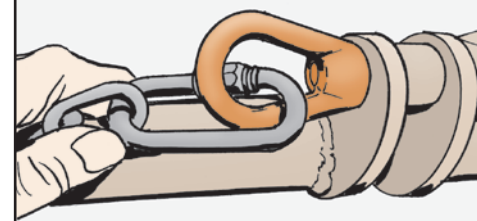
The lifting eye assembly secures the chain used to lift the spare tire. Both eye nuts are screwed onto a common stud. When the spare wheel and tire assembly is lifted from the truck, the lifting eye assembly supports the full weight of the spare tire while aloft.

Prevent a possible failure by replacing the eye nut studs, NSN 5307-01-416-9968. Install them with the proper torque value of 44 ft-lbs.

Until stock runs out, replacement studs will be issued at no cost to units. For ordering instructions, contact TACOM's Crystal Simmons at DSN 786-6642, (586) 282-6642, or email:

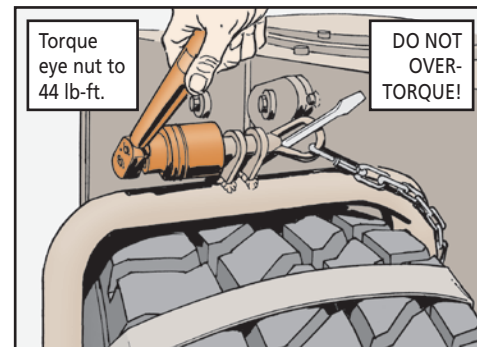
[crystal.j.simmons4.civ@mail.mil](mailto:crystal.j.simmons4.civ@mail.mil)

Lifting eye assembly secures spare tire chain



Torque eye nut to 44 lb-ft.

DO NOT OVERTORQUE!



INSTRUCTIONS FOR REPLACING THE SPARE TIRE LIFTING CHAIN STUDS ARE INCLUDED IN THE GPA 12-022 SAFETY MESSAGE...  
<https://tulsa.tacom.army.mil/SAFETY/message.cfm?id=GPA12-022.html>

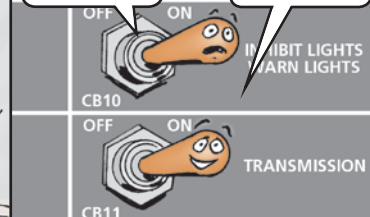
## CIRCUIT BREAKER REMINDER

LOOKS LIKE I'M GOING NOWHERE FAST! MY BATTERIES ARE DRAINED!



HEY! MAKE SURE WE'RE IN THE OFF POSITION!

ESPECIALLY ME!!

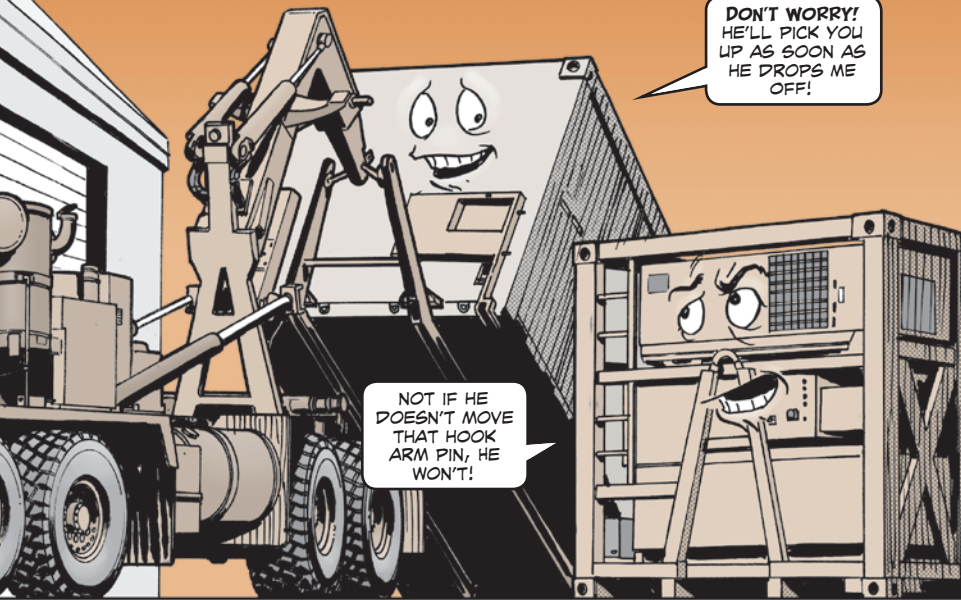


Crewmen, make sure the circuit breakers in your M1117 armored security vehicle (ASV) are switched OFF after the day's run. If the breakers are left ON—especially the one for the transmission—the vehicle batteries will drain in no time.

So, switch off the breakers right before you turn off the engine. That way you're not stuck with dead batteries the next morning when it's time to start up the vehicle!

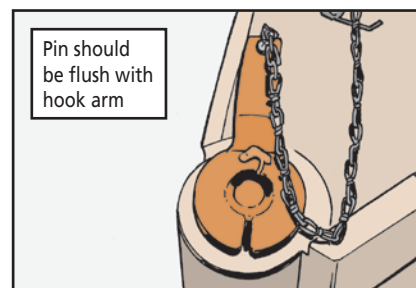
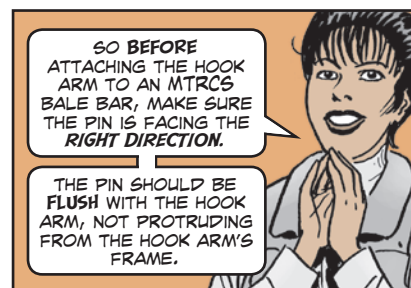
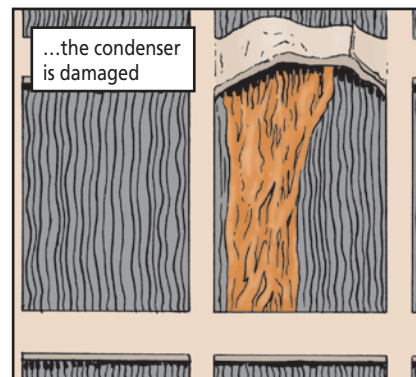
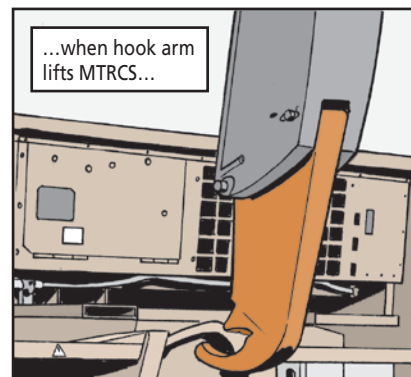
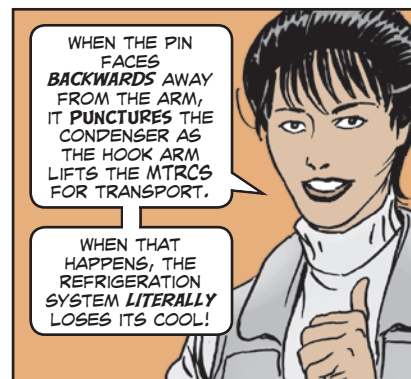


# TURN HOOK ARM PIN AROUND



OPERATORS, THE REFRIGERATION CONDENSER UNITS IN THE MULTI-TEMPERATURE REFRIGERATED CONTAINER SYSTEM (MTRCS) ARE SUFFERING A LOT OF DAMAGE.

THAT'S BECAUSE THE HOOK ARM PIN ON THE M1074/A1 PLS AND M1120/A2/A4 HEMTT LHS CAN MOVE FREELY IN THE ARM.



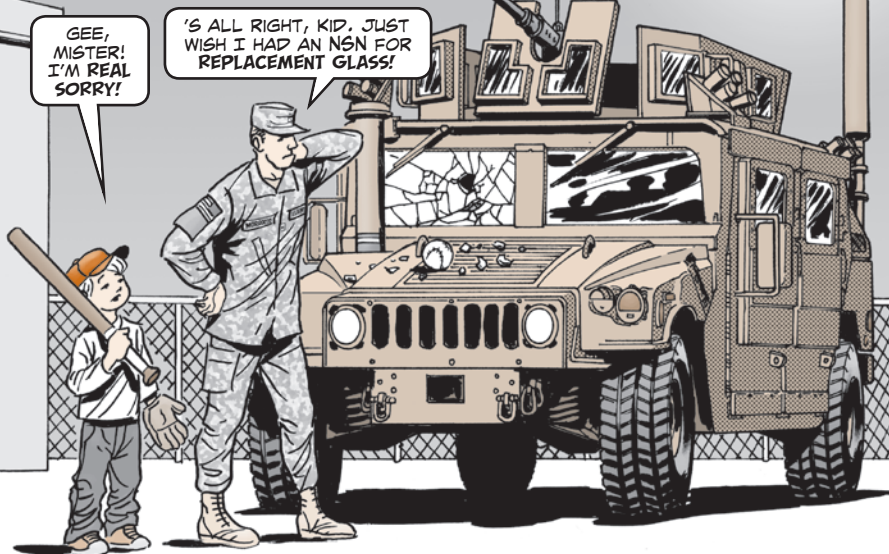
## PLS Trailer Wheel Rims Have 12 or 14 Bolts

By now, your unit's M1076 PLS trailers should no longer have 10-bolt wheel rims. That's true if MWO 9-2330-385-20-1, *Installation Instructions for Bolt Together Wheels*, has been applied. The MWO describes a 12-bolt rim (Titan wheel), but a 14-bolt rim (Accuride wheel) will work fine, too. Either wheel rim comes with NSN 2530-01-500-4991 and can be mixed on the same trailer and axle.



Up-armored HMMWVs...

# B-KIT AND FRAG 5 KIT GLASS



Dear Half-Mast,  
My unit has some up-armored HMMWVs with the B-kit and others with the Frag 5 kit. Which NSNs should we use to replace the glass in the doors and window assemblies?

SFC I.C.

Dear Sergeant I.C.,  
We have a clear answer for you. For M1151A1, M1152A1, M1165A1, and M1167 up-armored HMMWVs with the B-kit, the front and rear door glass comes with NSN 2510-01-581-2107; the left-door window assembly comes with NSN 2510-01-581-4181; and the right-door window assembly comes with NSN 2510-01-581-4183.  
For M1151A1, M1152A1, M1165A1, and M1167 up-armored HMMWVs with the Frag 5 kit, the door glass comes with NSN 2510-01-563-8322; the left-door window assembly comes with NSN 2510-01-545-5898; and the right-door window assembly comes with NSN 2510-01-545-5899.  
Finally, for M1114s with the Frag 5 kit, the door window assembly comes with NSN 2510-01-545-5856.

*Half-Mast*

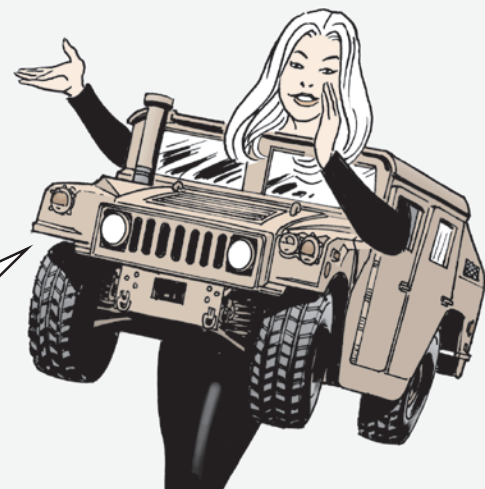
Up-armored HMMWVs...

# GET YOUR WINDSHIELD GLASS HERE!

YOUR UNIT'S UP-ARMORED HMMWVS COULD HAVE ONE OF THREE WINDSHIELD CONFIGURATIONS INSTALLED...

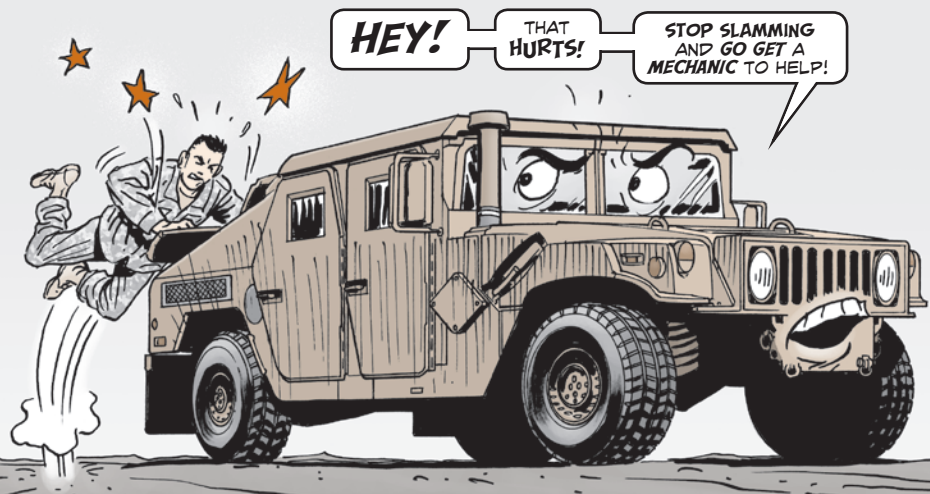
WINDSHIELD, HEATED WINDSHIELD, OR THE IMPROVED VEHICLE EMERGENCY EGRESS (IVEE) WINDSHIELD.

EYEBALL THIS TABLE TO SEE WHAT YOU'LL NEED TO ORDER WHEN IT'S TIME TO REPLACE THE WINDSHIELD.



HMMWV model	Type of windshield	Left hand NSN 2510-	Right hand NSN 2510-	Kit NSN
M1114	Windshield	N/A	N/A	N/A
	Heated windshield	01-435-9690	01-435-9693	N/A
	IVEE windshield	01-552-0620	01-552-0624	2510-01-552-0617
M115A1	Windshield	01-535-6001	01-535-6000	N/A
	Heated windshield	01-560-1159	01-561-2540	2540-01-558-7677
	IVEE windshield	01-560-7677	01-560-7680	2510-01-560-7672
M1152A1	Windshield	01-535-6001	01-561-6000	N/A
	Heated windshield	01-560-1159	01-560-2540	2540-01-558-7677
	IVEE windshield	01-560-7677	01-560-7680	2510-01-560-7672
M1165A1	Windshield	01-535-6001	01-535-6000	N/A
	Heated windshield	01-560-1159	01-561-2540	2540-01-558-7677
	IVEE windshield	01-560-7677	01-560-7680	2510-01-560-7672
M1167	Windshield	01-535-6001	01-535-6000	N/A
	Heated windshield	01-560-1159	01-561-2540	2540-01-558-7677
	IVEE windshield	01-560-7677	01-560-7680	2510-01-560-7672

# FIX CARGO SHELL LATCH PLATE FAILURE



**I**f your M1151, M1151A1, M1151A1WB1, and M1167 HMMWVs have failing cargo shell forward latch plate assemblies, you might be a little frustrated. Here's what you can do to prevent the failures and ease the frustration.

If your HMMWV's hatch doesn't close smoothly during PMCS, tell your mechanic. And make sure you're opening and closing it the right way.

Also, ensure the forward latches are fully engaged with the forward strikers before opening the cargo door from the rear position. That should help protect the cargo shell forward latch plate assembly.

But if you do all that and there's still a problem, your HMMWV's cargo shell forward latch plate assembly may have failed.

You can't find replacement procedures in the TM yet, but you can get them from TACOM LCMC. Just send your unit information and request to:

## **TACOM LCMC**

**Program Manager, Light Tactical Vehicles (PM-LTV)**

**ATTN: SFAE-CSS-TV-L**

**Warren, MI 48397-5000**

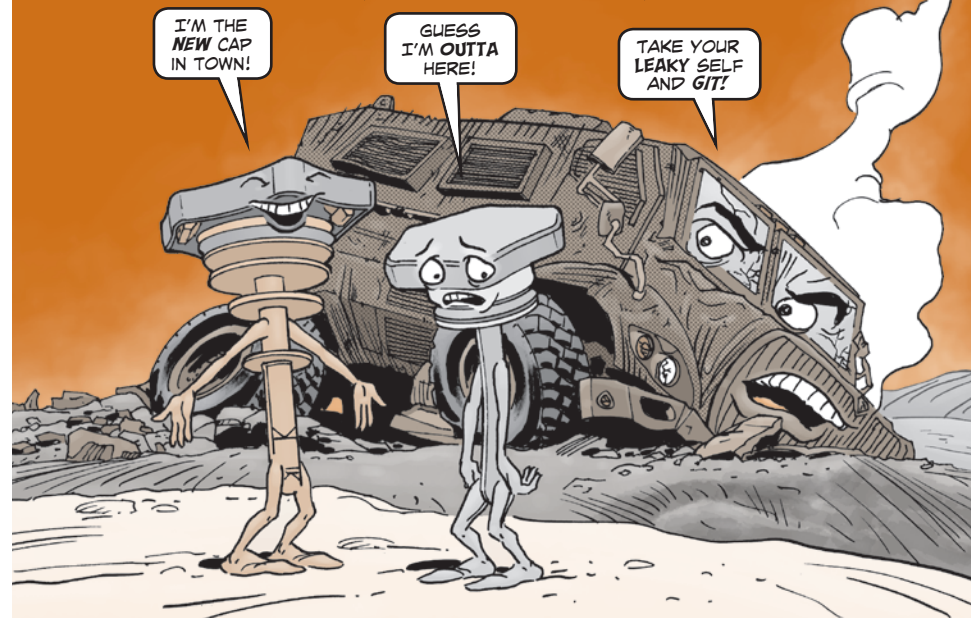
Questions? Contact Oscar Chapman at DSN 786-6510, (586)282-6510, or

[oscar.b.chapman.civ@mail.mil](mailto:oscar.b.chapman.civ@mail.mil)

and Nathaniel Zachary at DSN 786-4305, (586)282-4305, or

[nathaniel.j.zachary.civ@mail.mil](mailto:nathaniel.j.zachary.civ@mail.mil)

# POWER STEERING CAP'S A REAL MISHAP!

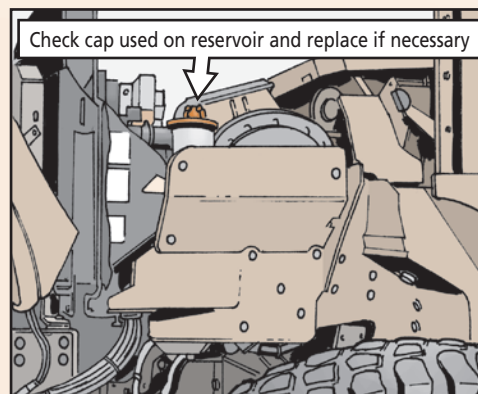


**A** loss of power steering fluid will cause the MaxxPro to steer hard or erratic during operation—or not at all!

The culprit is usually the vehicle's original power steering reservoir cap, NSN 2590-01-556-5316. It's a known leaker.

To stop fluid loss, replace the old cap with a new style cap. The new cap, NSN 6680-20-006-4251, has three baffles on its dipstick that keep fluid from seeping past the cap.

So eyeball the cap you have on your MaxxPro. If it's the old-style cap, replace it now.





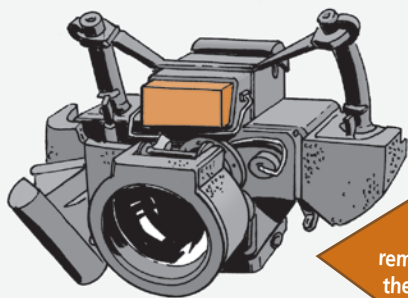
IF YOU GIVE YOUR JAVELIN JUST WHAT IT NEEDS—THE ATTENTION THAT COMES FROM GOOD PMCS—it will DO WONDERS FOR YOU IN THE FIELD.

# Just What Your Javelin Needs!

HERE'S WHAT WE'RE TALKING ABOUT...

**Don't let it sit.** Too many Javelins are left to gather cobwebs for months at a time. Problems that would be IDed by the built-in-tests (BIT) go undetected. Then when you are finally ready to fire the Javelin, it's not fit for duty.

Just sticking the battery in the Javelin monthly and letting it run for 30 minutes will keep it ready for action. Do the same for the field tactical trainer, too. Sergeants' Time is a good time to power up the Javelin and refresh your knowledge of how it works. And don't forget the 180-day verifications that need to be done by support.



I WISH YOU HAD GIVEN ME A LITTLE EXERCISE THESE LAST FEW MONTHS.

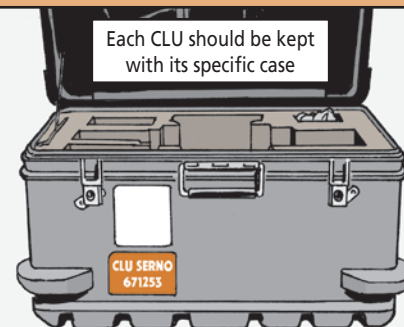
NOW I DON'T FEEL SO HOT.

But when you're done, remember to remove the battery. If it's left in the Javelin, the battery could leak and cause corrosion.

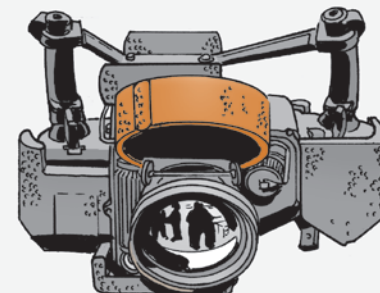
**Keep CLU with its case.** Each CLU is paired with a specific storage case. They both have the same ID number. By keeping the CLU in its own case, you protect the CLU and make it easier to track.

If any of your Javelin cases are ever damaged or disappear, contact the Javelin Integrated Technical Operations Center for a replacement. Call (888) 528-4862 or email: [jvitoc@jvjavelin.com](mailto:jvitoc@jvjavelin.com)

Each CLU should be kept with its specific case



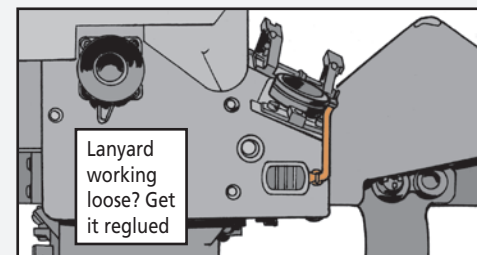
**Remember that CLUs are different.** The M98A1 and A2 versions have different afocal assemblies. If you don't pay attention to which afocal cover you order, you may get one that doesn't fit. Order the A1 cover with NSN 5895-01-474-6669 and A2 cover with NSN 6650-01-540-5157.



M98A1 and -A2 afocal assemblies have different covers

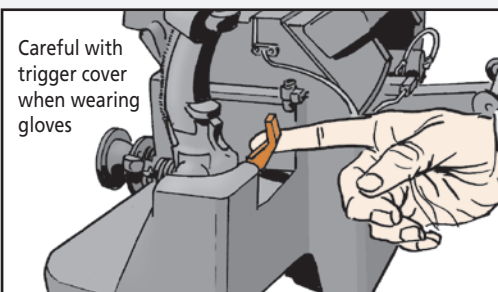
**Check connector cap's lanyard during PMCS.** The lanyard is just glued onto the CLU and over time it works loose. Then the cap disappears, which can be difficult to replace. Just feel during PMCS if the lanyard is working loose. If it is, tell your repairman so he can re-glue it.

Lanyard working loose? Get it reglued



**Careful with the trigger cover while wearing gloves.** The bulk of your gloves makes it easier to accidentally break the trigger cover when you pull it down. Be gentle. And be careful when you're rolling the CLU off your shoulder. The guard is often broken then, too.

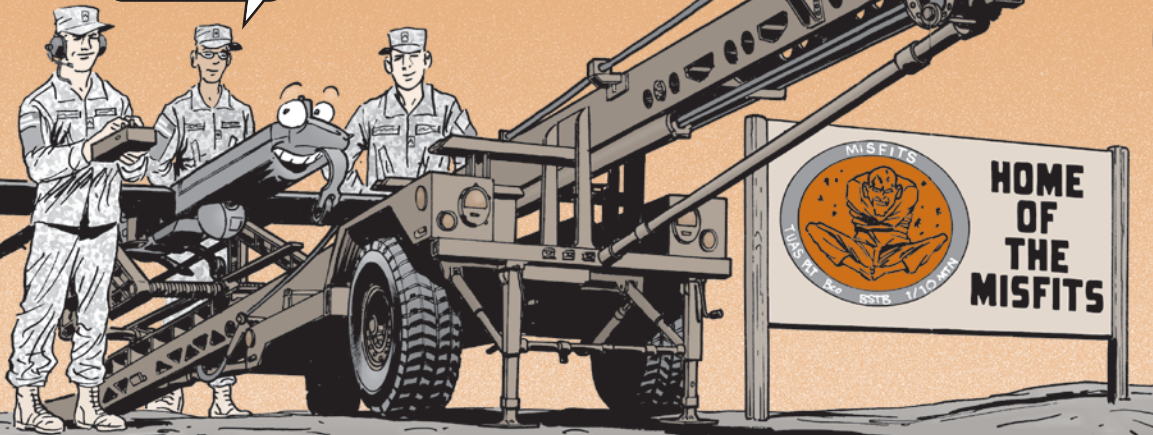
Careful with trigger cover when wearing gloves





# Soar High with Shadow PM

HEY, THANKS FOR THE PM! NOW I'LL SOAR THROUGH THIS MISSION.



THE SHADOW TACTICAL UNMANNED AIRCRAFT SYSTEM (TUAS) CAN'T SOAR HIGH ON ITS MISSION UNLESS PM SOARS HIGH WITH IT!



## Preflight Inspections

Always perform every PMCS inspection and check outlined in your TM before flight. Even when PMCS becomes old hat, never trust your memory. Always depend on the TM so you don't miss anything.

Do all of your pre-flight inspections and before engine start checks like it says in TM 1-1550-689-CL, *Operator's Manual and Crewmember's Checklist*.

Use TM for maintenance, not your memory!



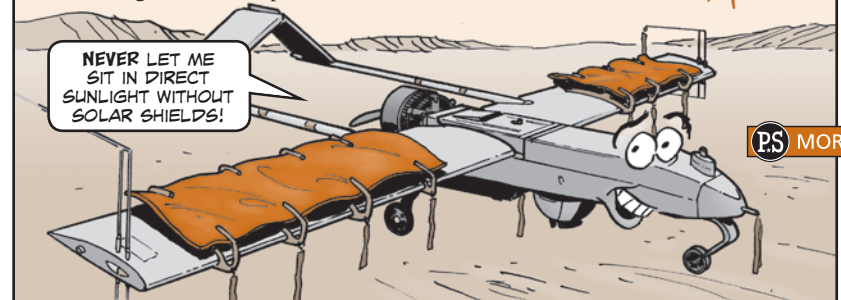
## Solar Shields

In searing heat, never leave the Shadow's wings uncovered. The sun's heat can warp the carbon fiber wings. Protecting the wings with solar shields also minimizes fuel loss through the fuel tip relief valve.

Fuel loss is caused by fuel expansion as it gets hot. The lost fuel is supposed to get caught in the overflow container on the wing tip relief valve. But if the valve fails, the fuel pouches rupture inside the wings. The fuel system is dependent on ZERO air ingestion at the engine, and a vacuum leak will cause air ingestion 99.99 percent of the time.



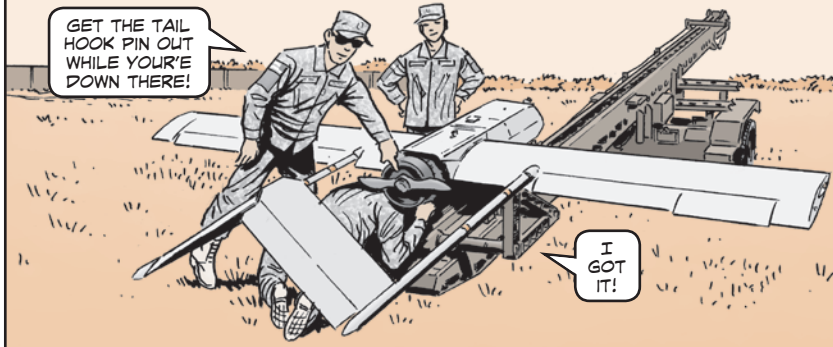
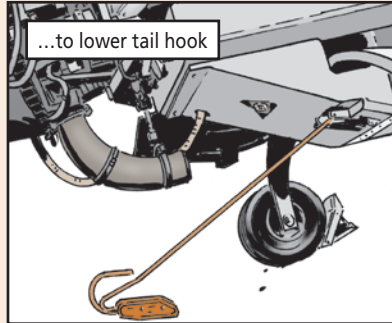
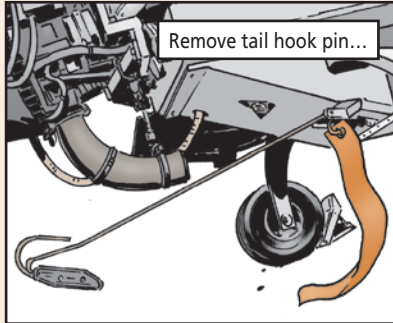
NEVER LET ME SIT IN DIRECT SUNLIGHT WITHOUT SOLAR SHIELDS!



PS MORE

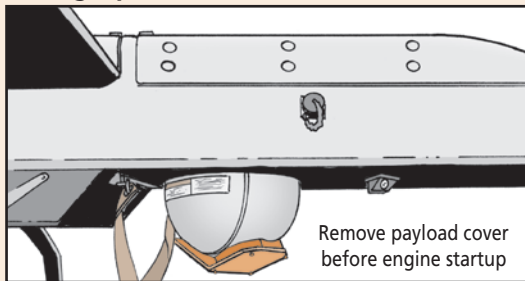
## Launching the Shadow

Before launching the Shadow from the launcher, make it a habit to remove the tail hook pin before starting up the engine. Removing the pin lowers the tail hook so the Shadow can stop on the runway when landing. Forget the pin and the tail hook won't catch the primary pendant during landing. The Shadow will overrun the runway and hit the net to stop.



## Powering Up the Shadow

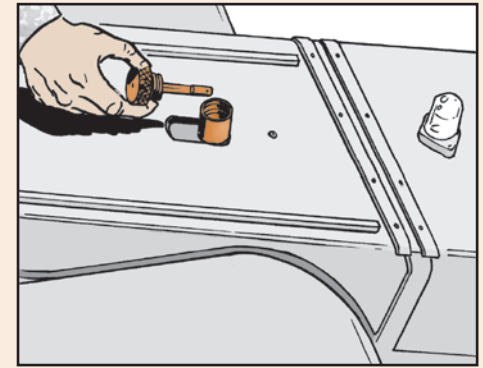
Before starting up the Shadow, remember to remove the payload cover. When power is turned on, the infrared/optical sensor payload moves and rotates. If the cover is still attached, it will hit and damage the underside of the fuselage.



## Check the Oil

The Shadow uses a lot of oil during flight. You must add oil before it flies again. Without enough oil, the Shadow may not make it back.

CHECK THE OIL BEFORE EVERY FLIGHT!



## Maintenance Upkeep

No matter what you do to the Shadow, **all** maintenance must be recorded in the logbook so other maintenance personnel will know what has been done in the past. For example, you must record what components were replaced and what failures occurred during flight. Also, if inaccurate flight hours are recorded, scheduled maintenance won't take place on time.

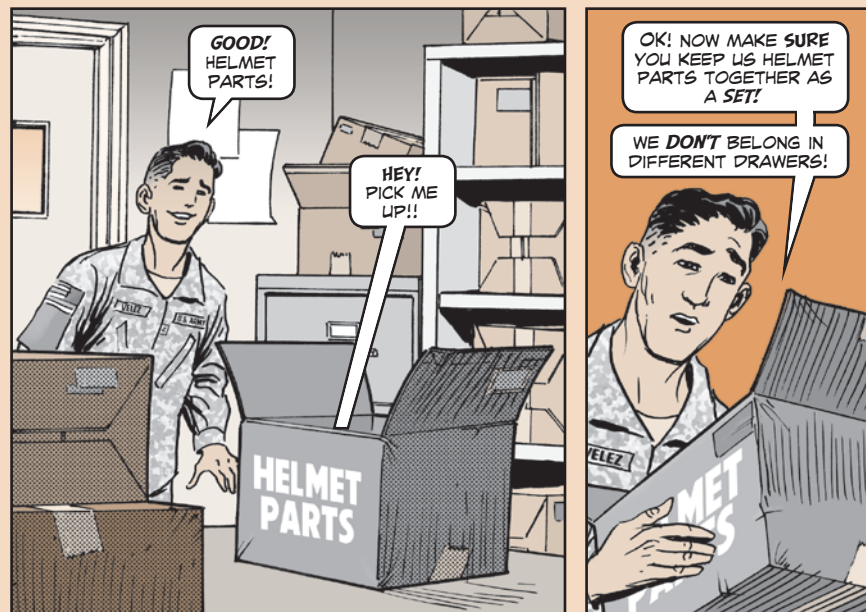


TO KEEP YOUR SHADOW IN THE AIR AND NOT GROUNDED, CHECK OUT THE GOOD WORD IN TM 1-1550-689-10-1 AND 10-2, OPERATOR'S MANUAL FOR SHADOW 200 TACTICAL UNMANNED AIRCRAFT SYSTEM (TUAS) (NSN 1550-01-534-3238).





# KEEP PARTS TOGETHER



**A**lmost every day, parts and supplies come into the unit tech supply office or the supply support activity (SSA).

Sometimes, parts come in separate packages or boxes as a set. That's when you should pay close attention to the shipping labels so you don't separate parts that belong together.

If you don't really eyeball matched sets or two-part components, the end result is a mismatch of parts and components. Then, when a unit puts in a request for a part, you could end up giving them the wrong parts because the set was separated or stored in different parts drawers.

The next time you think you have an extra component or part, think twice. It could be a part of a matched set.



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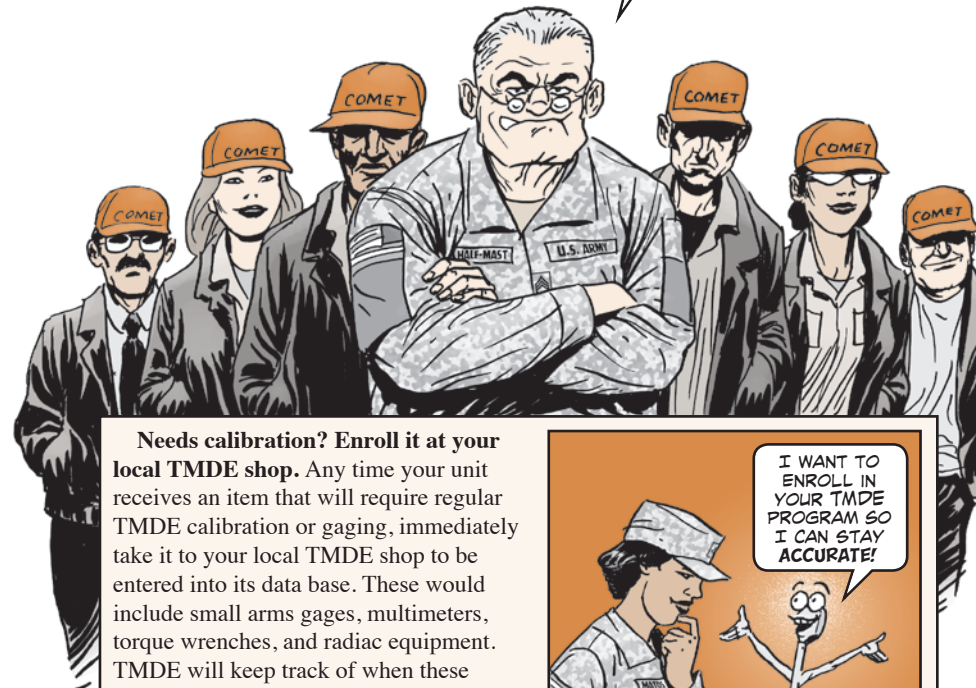
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# MAINTENANCE ADVICE FROM COMET!

THE FT CARSON  
COMMAND MAINTENANCE  
EVALUATION TRAINING  
TEAM (COMET) HELPS  
UNITS TRAIN AND  
MAINTAIN TO GET THE  
BEST PERFORMANCE  
OUT OF BOTH SOLDIERS  
AND EQUIPMENT.

THROUGH  
THEIR  
EXPERIENCE,  
THEY OFFER  
THESE  
SUGGESTIONS  
FOR YOUR  
OWN UNIT...



**Needs calibration? Enroll it at your local TMDE shop.** Any time your unit receives an item that will require regular TMDE calibration or gaging, immediately take it to your local TMDE shop to be entered into its data base. These would include small arms gages, multimeters, torque wrenches, and radiac equipment. TMDE will keep track of when these items are to be checked and let you know when the deadline nears. That's one less thing to worry about. See TB 43-180 for what requires calibration. TMDE data is available at LOGSA's LIW site:

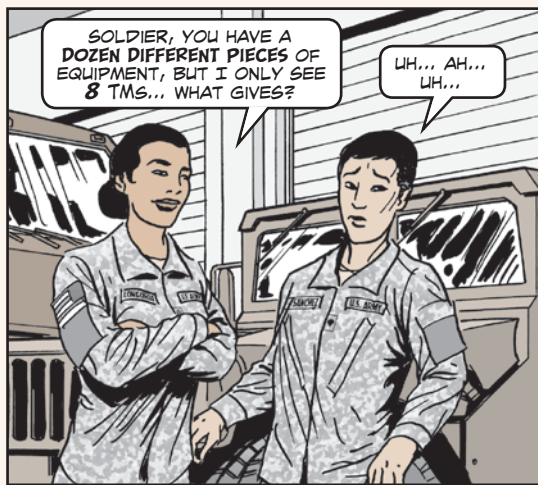
<https://liw.logsa.army.mil>

Just select the TMDE icon.

For the **M2 machine gun gages**, remember that when they come back from TMDE they will have new serial numbers. Armorers need to write down the new serial number on a tag and attach it to the gage. That avoids confusion during inspections.

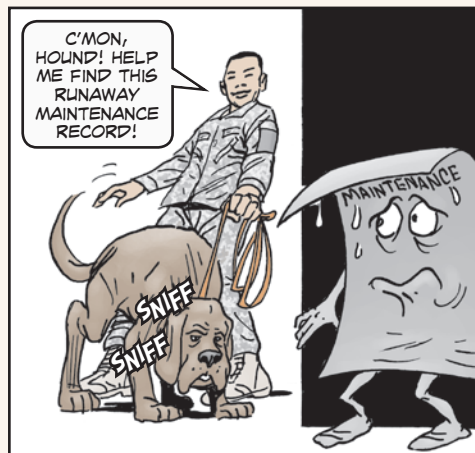


**Order -10 TMs and order more than you need.** Units are supposed to have an operator's TM for each piece of equipment. The -10 is needed to do a thorough PMCS. And if you don't have enough TMs you will be gigged during inspections. But after every trip to the field, some -10s won't make it back. That's why it's a good idea to order extras. Your pubs clerk can do this for you.



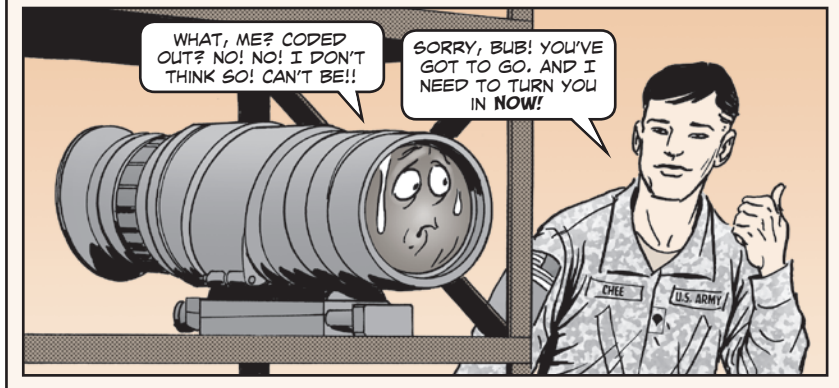
**Make sure your unit knows how to fill out the PMCS forms, DA Forms 5988E and 2404.** The forms ensure that faults found during PMCS get fixed. Sergeants' Time is a good time for a refresher course on the forms.

**Keep track of maintenance records during rotations.** If the records disappear when your unit rotates overseas and back, you have to start again from scratch. That's a huge amount of work you want to avoid at all costs. This has been a particular problem for records on small arms gaging. And if your equipment goes through any of the rebuild programs like SARET, make sure to get the paperwork showing that. You may need to prove that later to avoid unnecessary gaging.



**Hand-carry the high security arms room locks when you do a rotation.** If you pack the locks in a CONEX, you'll probably never see them again. At \$600 a pop, they're not cheap to replace.

**When weapons and sights have been coded out, turn them in.** You have 90 days to turn the items in, but once that has passed you must go through the whole code out procedure again.



**If an item is reportable, get it entered in SAMS-E.** This includes all weapons and CBRN items like the ICAM and JCAD. Having the items in SAMS-E makes it easier to track maintenance, repairs and gaging. If any of the PMCS forms are done manually, make sure that information gets to the SAMS-E clerk so that it can be entered in the system. Otherwise, it will be lost. Check the Maintenance Master Data File (MMDF) for what's reportable. It can be found on LIW by selecting the LIW Rsres icon.

**Don't make a Soldier an armorer without proper training.** Sometimes when much of a unit is deployed, an inexperienced Soldier is left in charge of the arms room. If the Soldier doesn't know how to inventory weapons or sign them out properly, it can cause major accountability problems for the commander. If your post has a COMET team, see them for armorer training. If your post doesn't have COMET, contact your logistics assistance office for training information.



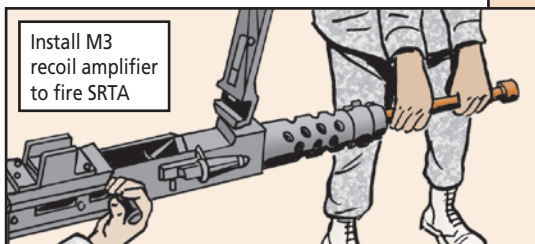
# SRTA Requires M3 Recoil Amplifier

AHHH! WHAT A WONDERFUL DAY FOR TRAINING!

INSTALL MY M3 RECOIL AMPLIFIER AND WE'LL BE READY TO GO!

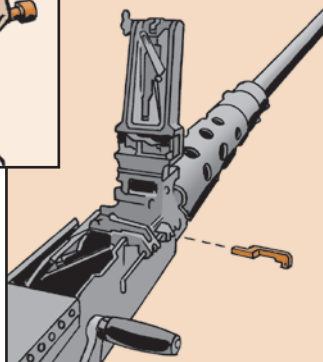
COMING RIGHT UP!!

If you're going to be firing short range training ammunition (SRTA) with either your M2 or M2A1 machine gun, you must use the M3 recoil amplifier, NSN 1005-01-323-5406.



Install M3 recoil amplifier to fire SRTA

Replace front cartridge guide with discriminator



Without the M3 installed, there's not enough back pressure to fire SRTA continually. The M3 screws into the M2 or M2A1 receiver the same way the barrel does. When you install the M3, make sure the discriminator is properly installed in place of the front cartridge guide. That ensures normal live ammo can't be fired.

Don't look for info on the M3 in the M2's TM 9-1005-347-10. The M3 has its own TM, TM 9-1005-203-13&P. Check it out at:

<https://www.logsa.army.mil/etms/online.cfm>

SRTA is intended for target practice at up to 700 meters. But just because it's for training doesn't mean it's not lethal. SRTA should never be used for force-on-force training. Wear eye and hearing protection and practice normal safety rules when firing SRTA.

# How to Install BFA on M2A1

I'M READY FOR SOME SERIOUS TRAINING TODAY!

GREAT, BUT FIRST I HAVE TO FIGURE OUT HOW TO INSTALL YOUR BFA!

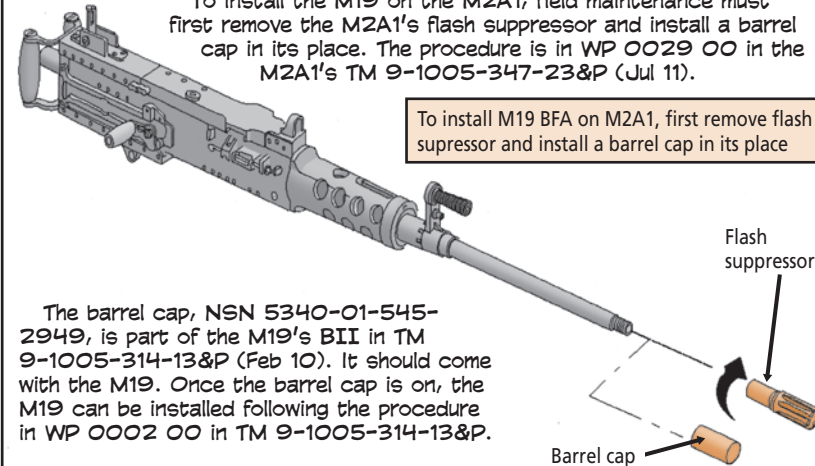


Dear Editor,

As a TACOM logistics assistance representative at Ft Riley, I have been asked several times how to install the M19 blank firing attachment (BFA) on the new M2A1 machine gun.

To install the M19 on the M2A1, field maintenance must first remove the M2A1's flash suppressor and install a barrel cap in its place. The procedure is in WP 0029 00 in the M2A1's TM 9-1005-347-23&P (Jul 11).

To install M19 BFA on M2A1, first remove flash suppressor and install a barrel cap in its place



The barrel cap, NSN 5340-01-545-2949, is part of the M19's BII in TM 9-1005-314-13&P (Feb 10). It should come with the M19. Once the barrel cap is on, the M19 can be installed following the procedure in WP 0002 00 in TM 9-1005-314-13&P.

Gerald Kripe  
TACOM LAR  
Ft Riley, KS

**Editor's note:** This will greatly help units that are learning how to fire their new M2A1s. Thanks for the advice, Gerald.

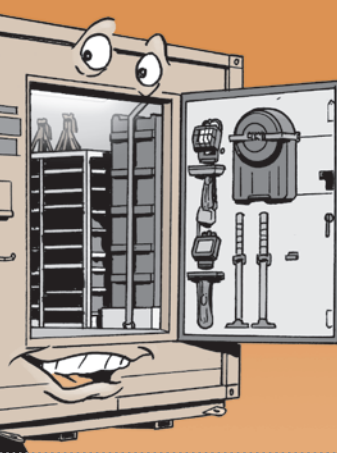


# Hats Off to SATS Tips!



WE'VE GOT SOME GREAT TIPS FROM SGT SMITH TO HELP KEEP YOUR SATS IN TIP-TOP SHAPE!

THANKS, HALF-MAST! I'VE BEEN WORRIED ABOUT MOISTURE, INEXPERIENCED DRIVERS AND WHATNOT.



Dear Editor,

Through my work with the standard automotive tool set (SATS), I've come up with a few suggestions that will help other units keep SATS at it:

## Moisture Defense

Where moisture is left standing, corrosion will soon follow. Corrosion can eventually ruin tools, so you want to fight moisture buildup. The vapor capsules that hang in the van help absorb moisture, but they need to be changed at least yearly—more often in humid areas. If you're operating in humid areas, it's a good idea to add extra vapor capsules, too. NSN 6850-01-590-1676 gets four capsules.

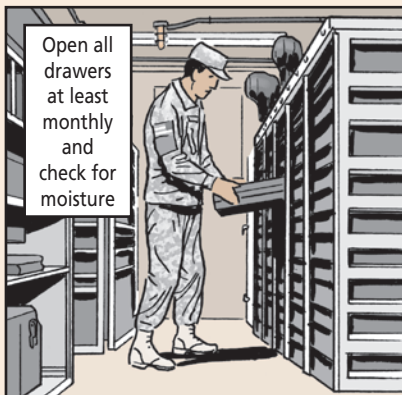
At least monthly (weekly if it's humid), open all the tool drawers and check for moisture. If you find any, wipe everything dry.

Change vapor capsules at least yearly—more often in humid areas



If moisture is a big problem, add more capsules

Open all drawers at least monthly and check for moisture



## Hidden A/C Circuit Breaker

Power surges can trip the circuit breakers for the SATS air conditioner and then you have no A/C. But many repairmen don't realize that often the first circuit breaker that trips is behind the A/C inlet panel. Remove the panel's four screws and check the circuit breaker before you call in the A/C repairman.

The TM for the A/C is TM 5-4120-386-14 and it's on the ETM site:

<https://www.logsa.army.mil/etms/online.cfm>

## Experienced Drivers Only

Because SATS is top-heavy, it can be more difficult to handle than many other Army trailers. You don't want rookie drivers driving SATS. SATS requires the skill of an experienced driver.

When dealing with high winds, units might want to consider using a heavier truck, like the HEMTT, for towing SATS. The LMTV is light enough that it can have trouble dealing with strong gusts of wind knocking SATS around.



### Don't Trust Step

If the step at the rear of SATS isn't securely latched, it can swing in when you step on it, sending you tumbling. Even if the step is latched, it sometimes has enough give to cause a tumble if you're not careful. It's safer to use the step bracket as a step. It won't move.

Now I have three questions about SATS that Soldiers could really use help with:

1. Is there an NSN for the lightbulb for the SATS worklights?
2. Is there an updated drawer layout? What we have doesn't reflect the tools that have been added.
3. Are there any other tires that can be used on the trailer? The current tire sinks in the sand too much.

SGT Daniel Smith  
F Co, 2-43 ADA  
Ft Bliss, TX



**Editor's note:** Great SATS advice and that's a fact!

Here are the answers to your questions:

1. No, You must purchase the 500-watt or smaller halogen bulb locally. You can find the instruction book for the light at [http://www.cooperindustries.com/content/dam/public/lighting/products/documents/consumer\\_products/instruction\\_sheets/sqs505qd\\_825\\_0532\\_is.pdf](http://www.cooperindustries.com/content/dam/public/lighting/products/documents/consumer_products/instruction_sheets/sqs505qd_825_0532_is.pdf)
2. Yes. You can access the most current SATS TMs, tool locator guides and 2062 hand receipts at PM SKOT: <https://www.us.army.mil/suite/page/601934>
3. Per TM 9-2330-328-14&P, you should use only the LT 235/85/R16 on/off road pneumatic radial. But for driving on sand, the tires need to be inflated to 75 psi.



PS END

## Local TMDE Sends PATS for Calibration

LOOKS LIKE YOU DON'T SEND ME FOR CALIBRATION, BUT YOUR LOCAL TMDE DOES.

GOOD! THAT'LL BE EASIER FOR ME.



Dear Editor,

On Pages 41-42 of PS 716 (July 12), you told CBRN specialists to send their M41 PATS (protection assessment test system) to the TMDE activities at either Pirmasens Army Depot or Redstone Arsenal for calibration.

Actually, the local TMDE support centers should be doing that, not the individual CBRN specialists. The CBRN specialists should turn in their PATS for calibration every 12 or 18 months to the local TMDE facility, which will then ship PATS to the Pirmasens or Redstone addresses you listed. Determine your calibration interval by checking TMDE's TB 43-180, *Calibration and Repair Requirements for the Maintenance of Army Materiel*. Direct questions to the local TMDE labs.

Bob Herndon  
US Army TMDE Activity  
Regions West

**Editor's note:** Got it! Thanks for straightening us out.

M26 Decon...

## HOW DO YOU GET HOSE FILTERS?



Dear Half-Mast,

TM 3-4230-238-10 says we can clean the filter for the M26 decon's metering valve suction hose. But eventually you need to replace the filter and I can't find any mention in the TM of a filter NSN. Does it have one?

W.O.

Dear Mr. W.O.,

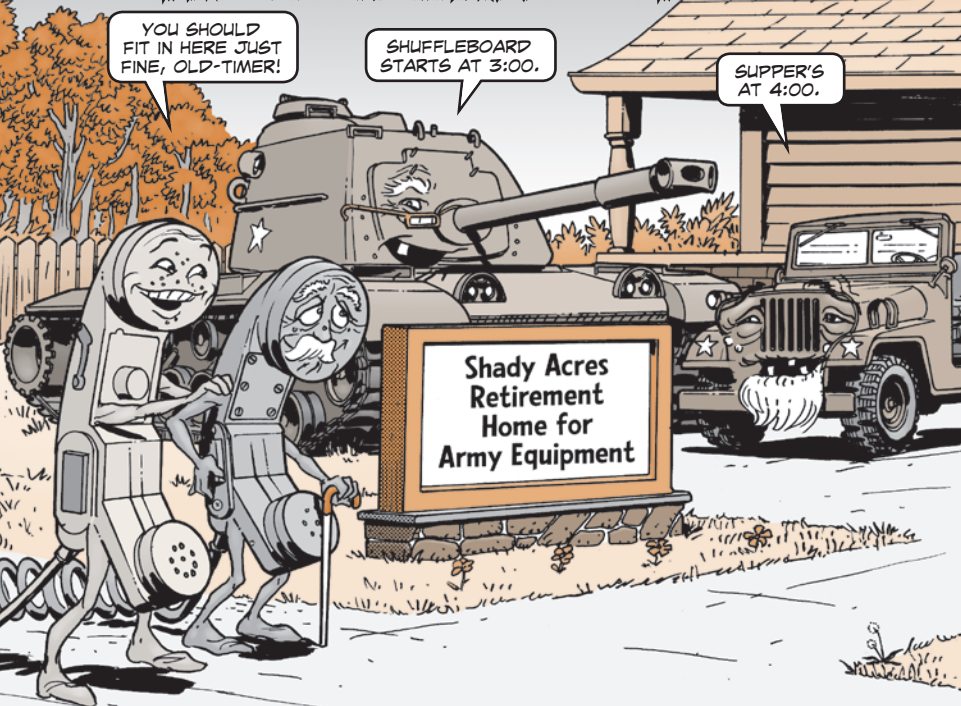
We're in harmony on this one. Order the filter with NSN 4730-12-324-0555.



Half-Mast



# GET A HANDLE ON THE NEW HANDSET



YOU SHOULD  
FIT IN HERE JUST  
FINE, OLD-TIMER!

SHUFFLEBOARD  
STARTS AT 3:00.

SUPPER'S  
AT 4:00.

Shady Acres  
Retirement  
Home for  
Army Equipment

The old, reliable H250/U handset, NSN 5965-00-043-3463, has been used on a lot of radios over the years, including the SINCGARS. But that old handset has headed for retirement.

It's been replaced by the new and improved H-250B/G handset, NSN 5965-01-549-6390. The H-250B/G comes with a built-in volume control and earphone jack with detachable earphone.

There are a few of the old handsets in the supply system and returns will still be accepted and reissued to fill any requirements. But as soon as they're gone, all requisitions will be filled using the H-250B/G. Even if you prefer the old handset, it won't be an option once stock is exhausted.

Questions? Contact Miguel Salles, DSN 648-6239, 443-395-6239, or by email:

[miguel.a.salles.civ@mail.mil](mailto:miguel.a.salles.civ@mail.mil)

# NSNs for Hook- and-Loop Fasteners



WOW!  
THIS STUFF  
WORKS  
GREAT!

VERRRY  
FUNNY,  
GUYS!

NOW,  
C'MON...  
GET ME  
DOWN!

Hook-and-loop fasteners are commonplace these days. You'll find them on ACUs, body armor, MOLLE, ECWCS and more. Problem is, the fasteners take a beating and wear out over time. If you're running a clothing repair site in the field, you need an ample supply of fasteners. The following NSNs bring you hook tape and loop (pile) tape.

Keep extra  
fasteners on  
hand

## Hook Tape

Width in inches	Color	NSN 8315-
1	olive green	00-106-5973
1 1/2	olive green	00-151-6481
2	olive green	00-450-9837
2	black	00-926-4931
4	sage green	01-187-7773*

## Loop Tape

Width in inches	Color	NSN 8315-
1	olive green	00-106-5974
1 1/2	olive green	00-151-6483
2	olive green	00-498-6631
2	black	00-926-4930
4	sage green	01-187-7774*

\* These NSNs are not on the AMDF. Order them on DD Form 1348-6 and put "NSN not on AMDF" in the REMARKS block.

## A note about length when ordering hook-and-loop (pile) fasteners:

Generally, these fasteners are ordered by the yard. Some fastener NSNs require you to order minimum lengths. Go online to DoD Email for length requirements:

<https://dod-email.dla.mil/acct/>

# PREPARING TO SHIP EQUIPMENT

GEARING UP FOR DEPLOYMENT IS A MAJOR CHALLENGE.

YOUR UNIT MUST PREPARE ITEMS (INCLUDING VEHICLES AND AIRCRAFT) FOR TRANSPORT.

THE WORK INCLUDES...

- load planning
- filling out transportation documents
- ID marking on crates and equipment
- blocking and bracing containers
- ISO container packing

YOUR GOAL IS TO HAVE YOUR EQUIPMENT ARRIVE IN THEATER INTACT AND FULLY MISSION CAPABLE.

WE'RE READY AND RARIN' TO GO!!

IF YOU HAVE TO DEPLOY WITH HAZARDOUS MATERIALS, YOU'RE FACED WITH **ANOTHER** CHALLENGE.

HAZMAT IS A SMALL PORTION OF THE ITEMS A UNIT MOVES WITH.

BUT BECAUSE OF ITS WEIGHTY NATURE, IT PRESENTS SOME OF THE GREATEST PROBLEMS.

HERE ARE SOME SIMPLE GUIDELINES FOR DEPLOYING WITH HAZMAT-AND SOME PEOPLE WHO CAN GIVE YOU HANDS-ON HELP...

## Training

Make sure your unit has plenty of Soldiers with HAZMAT certification. These are the people who classify, inspect, document and certify HAZMAT shipments. Have them get the training early, well before deployment. The training is not easy. It's two weeks of college-level classes.

Initial and refresher HAZMAT training is available through the Defense Ammunition Center. Here's their website:

<http://ammo.okstate.edu>

Find out who is already HAZMAT certified in your unit. Go online to the Army Training Requirements and Resources System (ATRRS):

<https://www.atrrs.army.mil>

From the home page, click on the ARMY heading. Then click on ATRRS Training Tracker. The Training Tracker allows a command sergeant major or a first sergeant to view the training records of Soldiers assigned to his unit identification code (UIC). (The UIC is a six-character code that identifies each Army unit.)

## Budget

Set aside funds to buy regulations, labels, placards and containers. You'll need them to help make sure your HAZMAT is legal to ship. Don't scrimp on preparing HAZMAT. That can delay shipments. It's also dangerous. You'll need the most current regs to keep up with all the changes in the HAZMAT world. And there are lots of changes.

Put placards on HAZMAT





## Equipment Can Be HAZMAT Too

Your unit's HAZMAT certifier is picky about what goes on military shipments. So, you must prepare your equipment before it's shipped. For more on preparing equipment, see Chap 204 of Defense Transportation Regulation (DTR) 4500.9-R, *Part II-Cargo Movement* (Jun 08). You'll find it on the United States Transportation Command website: <http://www.transcom.mil/dtr/part-ii/chapters.cfm>



## Shipping Commercial Products

Consider the commercial products you plan to ship. Some units have bought insecticides, compressed gas and cleaning supplies that are not HAZMAT in the US. But overseas they might be regulated as HAZMAT. If so, you'll have to buy suitable labels and packaging. Read material safety data sheets (MSDS) to find out if the items you bought downtown are HAZMAT for shipment.

MSDS are available online at the Hazardous Materials Information Resource System (HMIRS):

<http://www.dliss.dla.vmil/hmirs/>

## Who Do You Turn To for Help?

USAMC LOGSA Packaging, Storage and Containerization Center (PSCC) offers packaging and shipping help for your equipment and HAZMAT. PSCC:

- helps you determine what packaging, handling and transportation training you need
- recommends regulations, documents, labels, placards and shipping containers
- advises you on prepping equipment and HAZMAT for shipment
- helps you prepare transportation and certification documents

For more information, contact the LOGSA PSCC: [toby.pt@us.army.mil](mailto:toby.pt@us.army.mil)  
Or phone DSN 795-7070/7105, (570) 615-7070/7105.



## Hazardous Materials...

# HAZMAT Questions Answered ONLINE!

IT'S A COMPLICATED BUSINESS, WORKING WITH HAZARDOUS MATERIALS (HAZMAT).



HANDLING, PACKAGING, STORING AND TRANSPORTING HAZMAT RAISE ALL KINDS OF THORNY QUESTIONS.



FOR EXAMPLE...



DO YOU KNOW WHICH DOCUMENTS TO USE WHEN SHIPPING?

DO YOU UNDERSTAND PACKAGING REQUIREMENTS?

HOW DO NATIONAL AND INTERNATIONAL LAWS RELATE TO DOD REGULATIONS?

DO YOU KNOW HOW TO GET A COPY OF A DEPARTMENT OF TRANSPORTATION (DOT) SPECIAL PERMIT, A COMPETENT AUTHORITY APPROVAL (CAA), OR A CERTIFICATE OF EQUIVALENCY (COE)?



AND HOW ABOUT HAZMAT TRAINING? WHAT TRAINING AND CERTIFICATION DO YOU NEED AND WHERE DO YOU GET IT?





- Go to the PSCC home page:  
[https://www.logsa.army.mil/pssc/PSCC\\_WebDev/PSCC/psscindex.htm](https://www.logsa.army.mil/pssc/PSCC_WebDev/PSCC/psscindex.htm)
- Click on HAZMAT.
- On the next web page, in the left-hand banner, click on HAZMAT Question?

It'll take you to an online form that lets you submit questions. Fill out the form, including name, command/activity, mailing address, DSN and commercial phone numbers, email address and your question. Then click the target icon to submit it.

**LOGSA**  
Products Services About Contact LEC Training

**PSCC**

HAZMAT Question??

Just complete the form below and click on the target to submit your question. Your question will be sent to the LOGSA PSCC P&T Division. They handle questions on hazardous materials regulations (national, international, and DOD), packaging, marking, labeling, certification, documentation, placarding, etc.

Name: \_\_\_\_\_

Command/Activity/Company: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

DSN Phone: \_\_\_\_\_ Commercial: \_\_\_\_\_

Email Address: \_\_\_\_\_

Question: \_\_\_\_\_

**PSCC answers HAZMAT questions online**

The PSCC Packaging & Transportation (P&T) Division team will research your question and answer it by email.

You can also go directly to the HAZMAT Question form with this url:

[https://www.logsa.army.mil/pssc/PSCC\\_WebDev/P&T/HAZMAT/hazmatquestions.htm](https://www.logsa.army.mil/pssc/PSCC_WebDev/P&T/HAZMAT/hazmatquestions.htm)

Or you can phone DSN 795-7070/7144/ 7685, (570) 615-7070/7144/7685.

## As Long As You're Online

And while you're on the PSCC website, you'll benefit by looking at a few other web pages:

From the home page, click on HAZMAT. The next web page discusses PSCC's role in HAZMAT:

- packaging and policy
- transport and storage
- marking, labeling and placarding
- certification
- training
- on-site guidance and more



In the left-hand banner of the page, you'll find links to:

- DoT-E, CAA & COE
- Training
- HAZMAT Regulations
- FAQs

Explore these pages and expand your HAZMAT education.

## Material Safety Data Sheets

Need material safety data sheets (MSDS)? From the PSCC home page, click on HMIRS. The link takes you to a page that discusses the DoD Hazardous Materials Information Resource System (HMIRS). In the fourth paragraph, click on this web site. You'll go to the Defense Logistics Agency (DLA) HMIRS website, where you'll find MSDS. Of course, you can go directly to DLA HMIRS with this url:

<http://www.dlis.dla.mil/hmirs/>

**DEFENSE LOGISTICS AGENCY**  
Logistics Information Service

Home/Products/Services/Programs/Cataloging/Log Tools/Supplier/Training/Library

HMIRS Home  
System Access  
Login  
Password Reset  
FAQ  
Training  
Links/Resources  
HMIRS Team

**HMIRS SYSTEM**

The Hazardous Materials Information Resource System (HMIRS) is a FOR OFFICIAL USE ONLY (FOUO) product. Unauthorized distribution of this product or its contents is strictly prohibited and may be punishable by up to 10 years imprisonment and/or a fine up to \$10,000.

The Hazardous Materials Information Resource System (HMIRS) is a Department of Defense (DoD) automated system developed and maintained by the Defense Logistics Agency. HMIRS is the authoritative source for Material Safety Data Sheets (MSDS) for the United States Government military services and civil agencies, per DODI 8050.06. It also contains Government unique value-added information input by the service/agency focal points. This value-added data includes HAZCOM warning labels and transportation information. The system assists Federal Government personnel who handle, store, transport, use, or dispose of hazardous materials.

DLA Customer Interact: Center, 1-877-352-2255 or DSN 661-7788 Email: [dlacontactcenter@dlm.mil](mailto:dlacontactcenter@dlm.mil)

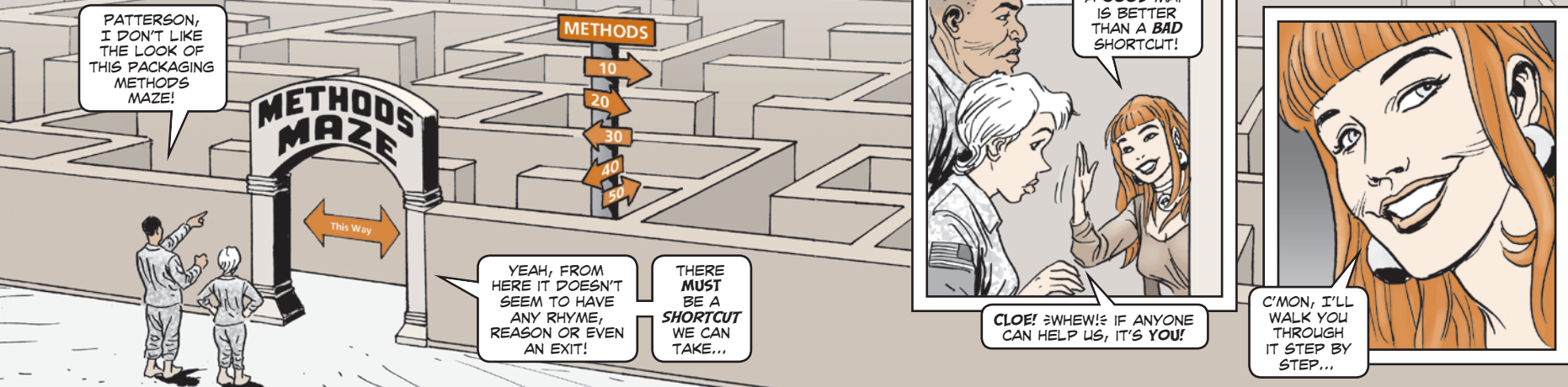
Go to the HMIRS website... ...to get material safety data sheets

**RIGHT-TO-KNOW INFORMATION**  
**MATERIAL SAFETY DATA SHEETS**

PS  
END



# Packaging... CLEARING THE METHODS OF PRESERVATION MAZE



Does it seem like you're wandering through a maze when trying to figure out how to protect your unit's items for shipment or storage? A good map is what you need. Once you learn about military packaging preservation methods, you can navigate around any obstacles that pop up.

An excellent map is MIL-STD-2073-1, *Standard Practice for Military Packaging*. This pub tells you about the available methods to protect materiel against corrosion and deterioration, physical and mechanical damage, and other harm. Any of these can happen during storage, handling, or shipment of materiel.

Deciding which protection method to use on a particular item is based on that item's characteristics. It's common sense that you wouldn't package delicate electronics equipment the same way you would an M1 Abrams tank!

In military packaging, there are five basic preservation methods. They are:

- Method 10-Physical protection
- Method 20-Physical protection with preservative (with greaseproof wrap, as required)
- Method 30-Waterproof or waterproof-greaseproof protection (with preservative, as required)
- Method 40-Water-vaporproof protection (with preservative, as required)
- Method 50-Water-vaporproof protection with desiccant.

Many military items, like engines, avionics, gyroscopes, and electrostatic-sensitive devices, need a high level of protection. That's usually because they are high dollar value items, can deteriorate rapidly, or are sensitive to physical damage.

## FAQs

**Q: How do I return unserviceable reparable items?**

**A:** Return them in the package the new replacement part came in, if the packaging is still in good condition. If it was damaged, then duplicate the package as best you can.

**Q: We can't find packaging instructions for an item. Can we just make up our own?**

**A:** Before you reinvent the wheel, be sure to check for packaging instructions in LIW, FED LOG, and WebFLIS. If none of these places have information on your item, then contact the item manager's packaging specialists.

You can also examine the item's characteristics and look up requirements for a similar item. MIL-STD-2073-1 lists all methods and sub-methods for military packaging.

However, the best choice if you don't understand something in MIL-STD-2073-1 or you have questions is to call the Logistics Support Activity's Packaging, Storage and Containerization Center at DSN 795-7105, (570) 615-7105, or email: [toby.pt@us.army.mil](mailto:toby.pt@us.army.mil)



# How to Use *PS Magazine's* Online Search Tool!

**PS MAGAZINE IS CHOCK FULL OF INFO, SPANNING MORE THAN 60 YEARS! THAT HAS ALWAYS BEEN OUR STRENGTH.**

**A FEW YEARS AGO WE CREATED A TOOL THAT HELPS READERS SEARCH THROUGH OUR BACK ISSUES.**

**WE CAN HELP YOU FIND WHAT YOU NEED FROM OUR ARCHIVES.**

**OUR ONLINE SEARCH TOOL IS EASY TO USE!**

**HERE'S HOW IT WORKS. FIRST, GO TO OUR SEARCH ENGINE: <https://www.logsa.army.mil/psmag/searchForm.cfm>**

**THE PREVENTIVE MAINTENANCE MONTHLY**

Enter a word or phrase below and click on the Search button [Helpful Hints](#)

Options:

From:  All To:  All

Include: ☒ Articles ☐ Issues ☐ Indexes

[Search PS Magazine]  
[Email PS or Request Back Issues] [Get PS Each Month]  
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Include: ☒ Articles ☐ Issues ☐ Indexes

OUR SEARCH TOOL LETS YOU SEARCH FOR WORDS, NOMENCLATURES, NSNs, TMS OR MODEL NUMBERS—VIRTUALLY ANY TERM USED IN THE MAGAZINE.

ALL THE PS PDF FILES FROM 2000 FORWARD ARE SEARCHABLE.

SEARCH AS FEW ITEMS AS POSSIBLE. HERE, TRY "HMMWV."

**Search and Surf**

**THE RESULTS PAGE RESTATES YOUR SEARCH CRITERIA AND TELLS YOU HOW MANY RESULTS WERE FOUND. RESULTS ARE DISPLAYED IN GROUPS OF TEN.**

**CLICK ON ALL TO SCROLL THROUGH ALL THE RESULTS.**

**THE MOST CURRENT ARTICLES ARE LISTED FIRST, AND TITLE LINES ARE LINKED TO THEIR ARTICLES. THE SUMMARY IS TEXT LIFTED FROM THE ARTICLE.**

**IF THE SEARCH TERM IS FOUND IN THE SUMMARY, IT WILL BE HIGHLIGHTED.**

**THE PREVENTIVE MAINTENANCE MONTHLY**

Search Criteria: "HMMWV"

Options Selected: Search All Years Display Articles

Items Found: 421

1. Title: [HMMWV... Smart Start System Control Box Buzz](#)  
Year: 2012 Issue: 710 Page: 12  
Summary:  
We're talking about your HMMWV's smart start system (S3) control box. Some people didn't get the word that the S3 control box, NSN 6110-01-542-7901, is replacing the engine electrical start system (EESS) control box, NSN 6110-01-491-2158. The biggest difference between the EESS and the S3 is that the S3 control box has three connector receptacles, while the EESS control box has only two.

2. Title: [HMMWV... Replace Old Transmissions by Attrition](#)  
Year: 2012 Issue: 710 Pages: 10-11  
Summary:  
11PS 710JAN 12 The truck headshed tells us that there have been a lot of questions from the field about the 4L80E HMMWV transmission and transmission control module (TCM) E-PROM (or erasable programmable read-only memory). So when the time comes for a replacement, you'll get a replacement NSN 6110-01-491-2158.

**IF YOU WANT TO CONDUCT A NEW SEARCH, THE SEARCH AGAIN BUTTON IS AVAILABLE AT THE TOP AND BOTTOM OF THE RESULTS LIST.**

**THE PREVENTIVE MAINTENANCE MONTHLY**

Search Criteria: "HMMWV"

Options Selected: Search All Years Display Articles

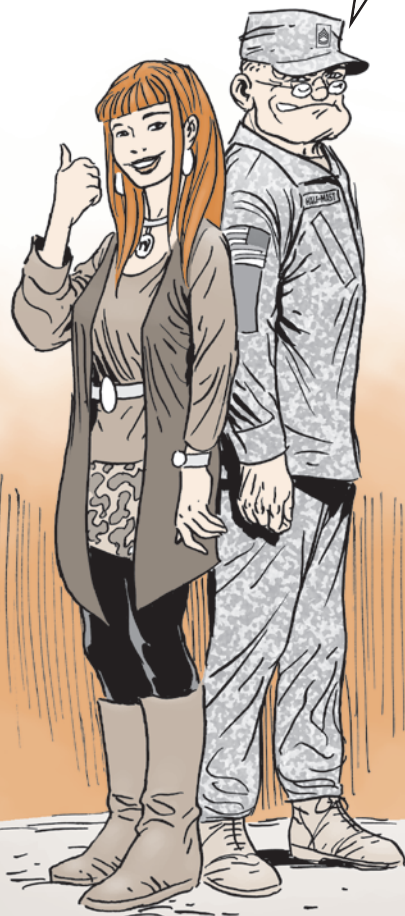
Items Found: 421

**PS MORE**



THESE HELPFUL HINTS SHOULD IMPROVE YOUR SEARCHES.

BUT, THERE ARE ALWAYS TIMES WHEN YOU CAN'T RECALL THE WHOLE NSN OR TM NUMBER. IN THAT CASE, OUR WILD CARDS MAY COME IN HANDY.



## Helpful Hints

- Search using as few terms as possible to get broad results. For example, "HMMWV" is better than "high mobility multi-purpose wheeled vehicle"
- Using more search terms will produce fewer but more specific results. A search for HMMWV alternator will find articles about alternators on HMMWVs.
- Quotes are your friend. Place multiple search terms in quotes to find only those articles that contain all of the search terms in the specified order. This can help you whittle down the results. For instance:  
"combat vehicles" = 66 items  
vs combat vehicles = 201 items
- If you can't find the desired info, try using fewer or related search terms
- For model numbers, searching for the basic model may give you better results. For example, if you're looking for the thermal sight AN/PAS-13(V)3, enter AN/PAS-13 or AN/PAS-13\*. Or, instead of M40 mask, try M40.
- The search tool looks for terms at the beginning of a word. So drive returns drive, drives, driver, driven, and driveshaft.
- Searches are not case sensitive.

## Wild Cards

- The asterisk (\*) replaces any character(s) before or after the search term
- If you know the first part of a search term, use a trailing asterisk. For example, 5940-01-517\* will return pages with NSN 5940-01-517-7731.
- If you know only the last four numbers in an NSN, use the (\*) before it. So \*7731 will find pages with NSN 5940-01-517-7731.
- If you know only the middle part of a search term, use an (\*) before and after: \*517\* will return NSN 5940-01-517-7731.
- The question mark (?) matches any character in a specific position.
- The asterisk (\*) and question mark (?) wild cards can be used together. TM 972320?387\* will find articles with TM 9-2320-387-10.

## One for the Road

WE DIDN'T LOAD ISSUES PRIOR TO 2000 ON OUR SEARCH TOOL BECAUSE THAT INFO ISN'T UP-TO-DATE.

BUT YOU CAN VIEW ISSUES BACK TO 1990 ON OUR WEBSITE BY CHECKING OUR ARCHIVES AND INDEXES.

AND IF YOU EVER NEED ONE OF OUR OLDER ARTICLES, DROP US AN EMAIL:  
[half.mast@us.army.mil](mailto:half.mast@us.army.mil)



Visit the PS Magazine website:

<https://www.logsa.army.mil/psmag/pshome.cfm>

PS END

## Army Forums Moving to milSuite

All Army Professional Forums will migrate to milSuite, beginning in December 2012 and completing migration by March 2013. Current forum memberships will not transfer. To stay in the know, register with milSuite at:

<https://www.milsuite.mil/>

## Learn Seasonal Hazards

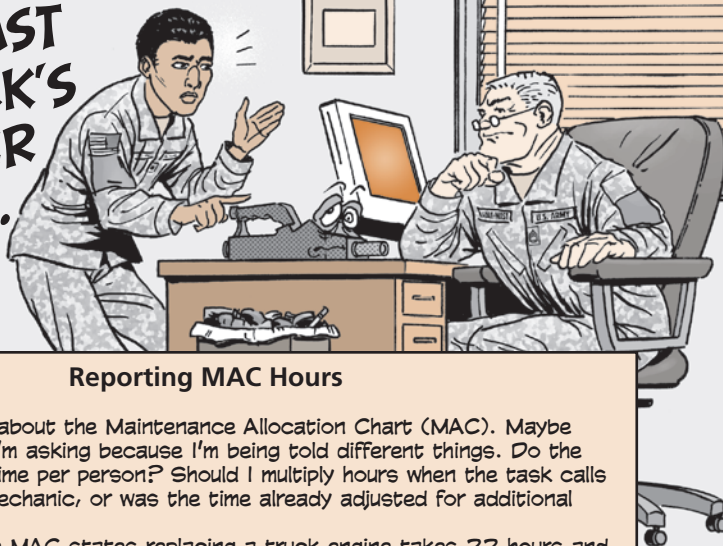
The USACRC/Safety Center launched a new year-round Army safety awareness campaign called Know the Signs. It focuses on the unique hazards each season brings. Info changes every three to four months. Articles, posters, videos and other materials are free and can be downloaded at:

<https://safety.army.mil/knowthesigns>

## Check Out AKO My Library

Want to immerse yourself in a good e-book? Or maybe you prefer audio books? In AKO My Library, you can find these, plus use the Army's subscription to databases ranging from automotive to small engine repair, dictionaries to digital collections, even current popular magazines and daily newspapers. The portal packs a ton into one tidy space. You'll find My Library under the "Self Service" tab in your AKO account.

# MSG HALF-MAST MCCANICK'S ANSWER DEPT.



## Reporting MAC Hours

Dear Half-Mast,

I have a question about the Maintenance Allocation Chart (MAC). Maybe it's a silly one, but I'm asking because I'm being told different things. Do the MAC hours reflect time per person? Should I multiply hours when the task calls for more than one mechanic, or was the time already adjusted for additional personnel?

For example, if the MAC states replacing a truck engine takes 22 hours and requires two mechanics, does that mean the total hours I report is 44?

SGT W.G.

Dear Sergeant W.G.,

Thanks for asking. Hey, the only silly question is the one someone's afraid to ask! The 50/50 chances of getting this one wrong are too high.

Yep, times on the MAC already include the total time it should take the specified number of personnel to complete the job. So if the MAC calls for 22 hours and it takes two mechanics to complete the task from start to finish, each mechanic should receive 11 man-hours credit.

Does it really matter if man-hour reports are right? You betcha. If maintenance managers can't quantify each shop's workload by man-hours, then they can't schedule work efficiently.

When inaccurate data is sent to DA, it paints a false picture of the man-hours needed to repair equipment. This can lead to maintenance managers at any level making decisions based on the wrong info.

Bottom-line, the man-hours you report affect your unit's budget. **Underreporting** may cause your unit to lose mechanic slots. **Overreporting** is wasting money, and can likewise lead to personnel cuts or reassignments if DA determines unit maintenance funds were mismanaged.

Kudos to you, Sergeant, for not guessing but requesting official guidance.

Half-Mast

## Use UOCs for HMMWV Thread Protectors

Dear Half-Mast,

Item 4 in Fig 217B of TM 9-2320-387-24P shows a thread protector used on the seat mounting studs of the battery box cover. Is that thread protector used on all HMMWV commander's seats or just on the M1113 and above?

G.C.

Dear Mr. G.C.

The headshed says that for the commander's seat referenced in the TM, use the tapered spacer (thread protector), NSN 5365-01-380-7340, for all models except the M1114.

References to front seat configurations are different than the commander's seat, however. So use the following information to clarify the commander's seat and front seat info for HMMWVs.

- Item 4 in Fig 217B of TM 9-2320-387-24P: Use the tapered spacer, NSN 5365-01-380-7340, on the commander's seat for up-armored HMMWVs with usable on codes (UOCs) TTA, TTT, TT1, UUA, UUU, UU1 and UU2.
- Item 4 in Fig 216 of TM 9-2320-387-24P: Use the tapered spacer, NSN 5365-01-380-7340, on the M1113 commander's seat (UOC XAA).
- Item 23 in Fig 231 of TM 9-2320-280-24P: Use the tapered spacer, NSN 5365-01-380-7340, on the commander's seat for legacy HMMWVs with UOCs AVY, A11, A13, A14, A15, A20, A24, A25, A26, A27, BVY, B15, B16, B17, B18, B20, B24, B25, C17 and NNN.
- Fig 230 in TM 9-2320-280-24P: A different configuration is used for the front seats in legacy HMMWVs with UOCs HVY, H11, H13, H14, H15, H16, H17, H18, H20, H21, H24, H25, H26, H27, H28 and MMM. They do not use the tapered spacer.

This information is also referenced in an upcoming Interactive Electronic Technical Manual (IETM). The up-armor HMMWV IETMs are scheduled for release in early 2013. The legacy HMMWV ETMS have an estimated release of late 2013 to early 2014.

Half-Mast

## Get Replacement HMMWV A/C Caps

Dear Half-Mast,

I am writing in regards to the HMMWV with the A/C installed. My primary focus is the M1151A1 high pressure and low pressure service port caps.

I have been unsuccessful at finding replacement caps. I do not see an illustration for them in any of the TM's. There wasn't an NSN provided in the Maintenance Action Message MA11-004 either. They can be locally purchased but our contract requires as much as possible to be ordered through the supply system with an NSN.

I.C.

Dear I.C.,

The TACOM headshed says that you need NSN 5340-01-548-4825 for the blue low pressure cap and NSN 5340-01-547-6786 for the red high pressure cap. They also said these items will be included in the next revision to the technical manual.

Half-Mast



# Connie's POST SCRIPTS

## M1112 Trailer Brake Line

The front hydraulic brake line for the M1112 water trailer comes with NSN 4710-01-436-4034. It replaces PN 12472170, which is shown as Item 3 in Fig 9 of TM 9-2320-397-14&P (Apr 00).

## WIRE ROPE GREASE

The wire rope used on cranes and dozer winches is constantly exposed to the elements. Give it extra protection with wire rope grease. NSN 9150-00-530-6814 brings a 35-lb can.

## M870A1 SEMI-TRAILER SEAL PRESERVES BRAKE SHOES

Are the mechanics in your unit changing a lot of brake shoes on M870A1 semi-trailers because oil is oozing past the wheel seal? The seal that comes with NSN 5330-01-047-9367 solves that problem. It replaces NSN 5330-01-063-3674, which is shown as Item 6 in Fig 10 of TM 5-2330-378-14&P (Jun 99). Make a note until the TM is updated.

## FMTV Front Grille

To get the front grille for the FMTVs use NSN 2510-01-524-9257. This NSN replaces the one shown as Item 11 in Fig 249 of TM 9-2320-366-24P-1.

## M1022 Wheel Seal

Use NSN 5330-01-082-7965 to get a metal-ring wheel seal for the M1022 dolly set. This NSN replaces the parts info shown as Item 18 in Fig 12 of TM 9-2330-379-14&P.

## GROUNDING AND BONDING PAMPHLET

Proper grounding and bonding of generators and commo equipment isn't merely a safety protocol. It's a matter of life and death. For your own protection—and that of your fellow Soldiers—use CECOM Pamphlet TR 98-6, *Earth Grounding and Bonding*. Get it from the CECOM Directorate for Safety at DSN 648-3812, (443) 395-3812, fax (443) 395-3836 or email: [usarmy.apg.cecom.mbx.amsel-sf@mail.mil](mailto:usarmy.apg.cecom.mbx.amsel-sf@mail.mil)

You can also mail your request to:

CECOM Directorate for Safety

ATTN: AMSEL-SF

3200 Raritan Avenue

Aberdeen Proving Ground, MD 21005-1850

## BACKHOE LOADER (BHL) SUPPORT

When you need repair parts, commercial technical manuals or maintenance services for the Case Backhoe Loader, NSN 2420-01-532-3399, email:

[dpg@cnh.com](mailto:dpg@cnh.com)

A company field support representative will assist your unit in getting the support you need to keep your backhoe loader mission-ready. You can also call (800) 388-6103, CONUS, or (954) 968-0372, OCONUS, for assistance.

## HEMTT Headlight Help

Need new headlights for your unit's HEMTTs? For now, you'll need to order NSN 6220-01-547-9043 because the headlight that comes with NSN 6220-01-586-4949 isn't in stock. But it'll probably be available again in the early part of calendar year 2013.

## SHELF LIFE FOR SURVIVAL FOOD AND WATER

Questions keep coming up concerning how long survival food and water is good for. Let's put the issue to rest. For food, shelf life is 5 years and service life is 3 years. Water is good until the expiration date. Check out WP 0642 00-4 and 00-6 of TM 1-1680-377-13&P-7 for the good word on this.

## BOBCAT SKID-STEER LOADER TIRE

To get a 10-ply tire for the compact skid-steer loader (Models 763 and S150) use NSN 2610-01-582-6399. Make a note until this NSN is added to TM 5-3805-285-14&P and TM 5-3805-288-14P.

## LRT-110 Crane Belt Tensioner NSN

Get a new belt tensioner for the engine on your 7 1/2-ton rough terrain crane with NSN 2920-01-291-6477. It replaces PN 3908163, which is shown as Item 3 in Fig 5-6 of TM 5-3810-305-24P (Jul 91). That PN does not cross to an NSN.

## Annual Service Kit NSN for M978A2 HEMTT

On Pages 12-13 of PS 719 (Oct 2012), we gave you NSNs for the annual service kits for tactical vehicles. But some of you brought an error to our attention and we thank you. The correct NSN for the M978A2 HEMTT's annual service kit is 4910-01-591-4509, **not** 4910-01-591-5409.

COME BACK NEXT MONTH FOR MORE BRIEFS!



## 621B SCRAPER CAB LINERS

Use these NSNs if the cab liner in your scraper is falling apart.

Adhesive primer, NSN 8040-00-826-3535, keeps the liner in place.

Liner	NSN
Front of the cab floor	2510-01-178-8863
Rear of the cab floor	2510-01-187-2235
Floor mat	2540-01-184-4688
Side panel	2510-01-182-9272
Insulator panel	5970-01-176-0128

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?



THE MESSAGE IS CLEAR ON WHAT **NOT**  
TO WEAR DURING MAINTENANCE!