

# PS

## THE PREVENTIVE MAINTENANCE MONTHLY

ISSUE 724 MARCH 2013

TS 43-P5-724, 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.



### TACTICAL VEHICLES

Tactical Vehicle Tiedown Provisions  
FMTV A1P2 Protective Caps for EHPU  
M1117 ASV Drain Plug Reminder  
M1152/A1 HMMWV Windshield Washer Bracket  
MRAP M-ATV Hood PM  
MRAP M-ATV Battery Cable  
M872A4 Semitrailer TM Note Change  
M939/A1/A2-Series Truck Hot Water Heater  
Towbar Parts Turn-in



### COMBAT VEHICLES

Stryker JCIMS Panels  
M1200 FSV, M707 FSV Spreader Bar



### CCE/MHE/ROUTE CLEARANCE

SUSV Steering Damper Pressure  
SUSV Track Improved  
M9 ACE Exhaust Hose  
SPARK II Roller Control Unit Damage  
HMEE-1 Spare Tire Carrier  
D7G Tractor Steering Brake  
M160 Light Flail PM Pointers



### AVIATION

OH-58D Door Chain Fix  
UH-60M, CH-47F Improved Signal Data Converters  
UH-60, AH-64, CH-47 External Hydraulics  
CH-47D/F Servocylinder Safety Blocks  
AH-64A/D Maintenance Operation Checks  
Aircraft Panel Removal  
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**USAMC LOGSA (AMXLS-GP)**  
**Bldg. 3303**  
**Redstone Arsenal, AL 35898**

Or email to:

**half.mast@us.army.mil** or  
**usarmy.redstone.logsa.mbx.psmag@mail.mil**

Internet address:

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

By order of the Secretary of the Army:

**RAYMOND T. ODIERNO**  
General, United States Army Chief of Staff

Official:

*Joyce E. Morrow*  
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Administrative Assistant to the Secretary of the Army

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**PS**

March  
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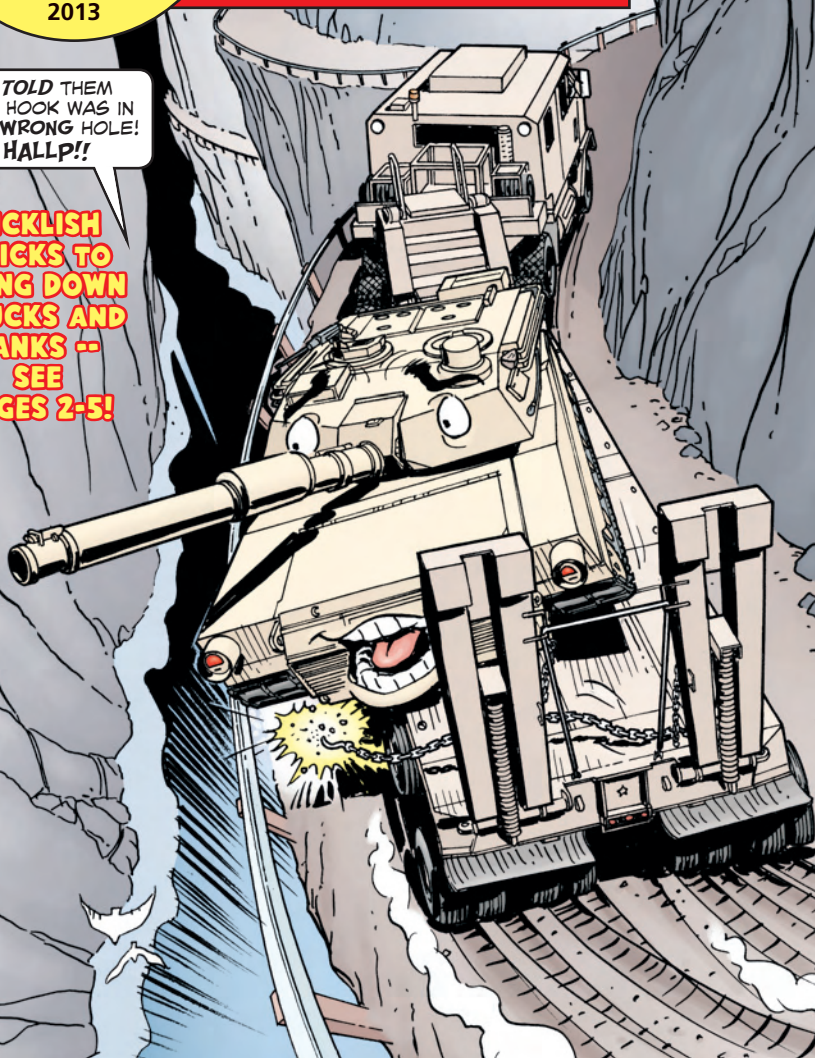
# THE PREVENTIVE MAINTENANCE MONTHLY

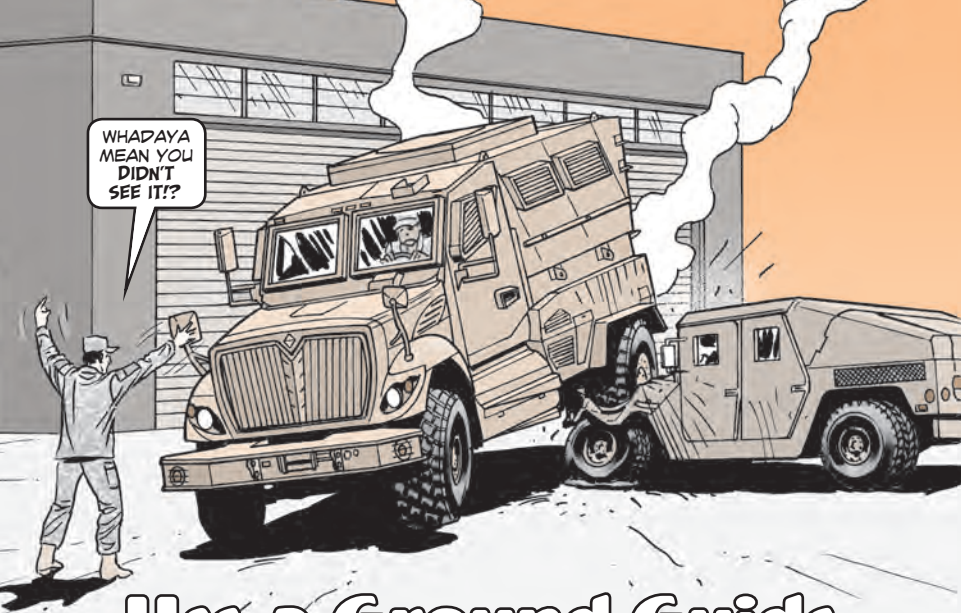
TB 43-PS-724

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I **TOLD** THEM  
THE **HOOK** WAS IN  
THE **WRONG** HOLE!  
**HALLP!!**

**TICKLISH  
TRICKS TO  
TYING DOWN  
TRUCKS AND  
TANKS --  
SEE  
PAGES 2-5!**





## Use a Ground Guide Every Time!

Soldiers, sometimes little things make a big difference. Using a ground guide when you maneuver equipment can prevent equipment damage. It can also keep Soldiers safe. Using ground guides every time does make a **big** difference!

Since ground guides act as a vehicle operator's eyes, have your unit apply the following tips for safe ground guide usage:

- Train drivers to correctly use ground guides.
- Train drivers and other Soldiers how to ground guide.
- Make sure drivers stop if they lose sight of their ground guide.
- Always use ground guides when backing up and in congested areas.
- Use ground guides when traveling cross-country during limited visibility.
- Use ground guides in bivouac and assembly areas.
- Use two ground guides when vision is restricted.
- Equip ground guides with suitable lights, such as two flashlights and extra batteries.
- Ground guides will:
  - clear themselves, clear the vehicle, and give vehicle movement commands.
  - stay in the driver's line of sight.
  - keep a proper distance, at least ten yards, from the vehicle.
  - stay out of the path of travel by keeping to the side and front (or side and rear) of the vehicle, ideally on the driver's side.
  - never walk backward and never get between two vehicles.
  - only give signals to the driver.
  - use hands signals. Voice signals can be misunderstood or go unheard.

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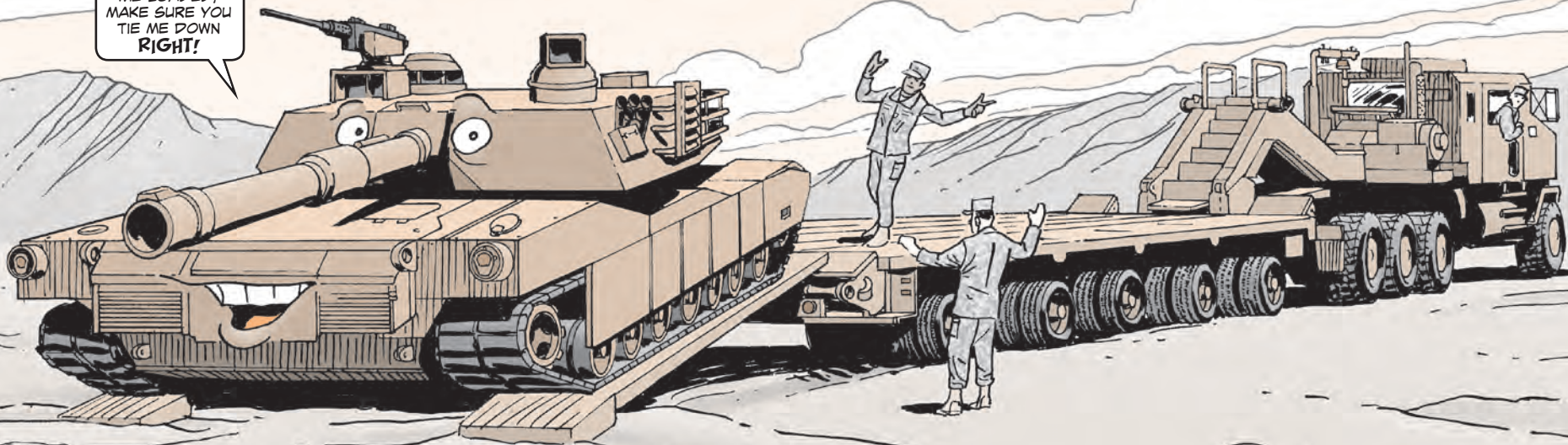
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# KNOW YOUR TIEDOWN PROVISIONS!

ONCE YOU GET  
ME LOADED,  
MAKE SURE YOU  
TIE ME DOWN  
RIGHT!



Dear Editor,

In Jan 98, the Military Surface Deployment and Distribution Command (SDDC) Transportation Engineering Agency (TEA) issued MIL-STD-209J, *Interface Standard for Lifting and Tiedown Provisions*, an update to MIL-STD-209H.

The new information stated that removable provisions (shackles) were no longer allowed for vehicle tiedowns on new vehicles. However, if shackles are used on older vehicles, the nut has to be tack-welded in place to prevent the shackles from being easily removed from the vehicle.

When it's time to transport the vehicles, they can't be safely tied down if the approved and tested shackles are missing! Proper use of vehicle tiedown provisions is critical when securing vehicles for rail, highway, or sea transport. Otherwise, the vehicle may come loose on a railcar, truck or trailer, or ship.

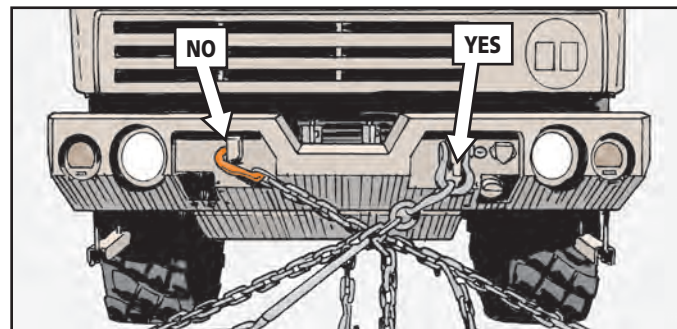
Eventually, in Feb 05, we released MIL-STD-209K and again tried to encourage the move away from shackles. SDDC spends well over \$100,000 a year worldwide on replacement shackles. I asked one CONUS port how much they spend on shackles each year. Here's their reply:

2008 - \$21,206.96  
2009 - \$22,887.00  
2010 - \$23,236.20  
2011 - \$26,000.00  
2012 (first 2 months) - \$26,664.00

And this is just from one port. You can imagine the total expense worldwide paid by SDDC to buy replacement shackles that are supposed to be BII for the vehicles! And imagine the delay in moving vehicles if the right shackles aren't at the port!

Unfortunately, when a shackle is missing, the wrong shackle is sometimes selected to replace it. Just because a shackle looks like it fits doesn't mean it's strong enough to do the job. The wrong shackle could fail.

Plus, sometimes vehicles are tied down without shackles when they should be. It's *wrong* to insert the tiedown hook into the shackle bolt hole. The resulting stress on the tip of the tiedown hook can break it off. Then the vehicles could move on the deck of a ship. That shouldn't happen!



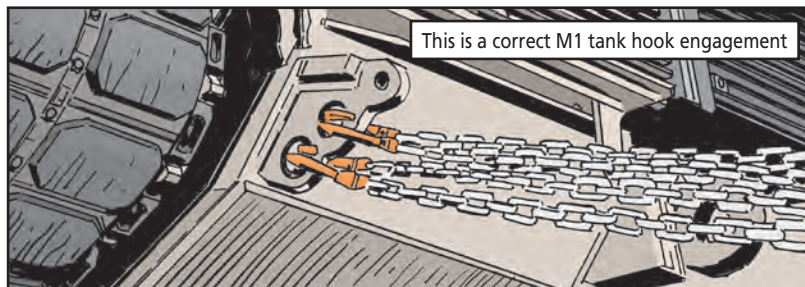
Don't insert  
tiedown hook  
into shackle  
bolt hole!  
The hook  
could break!



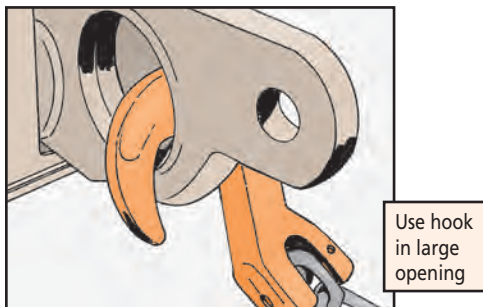
The SDDC TEA has been advising program managers and contractors to use shackleless provisions on new vehicles.

We were able to assist in the design for a new shackleless provision on the M1 tank chassis.

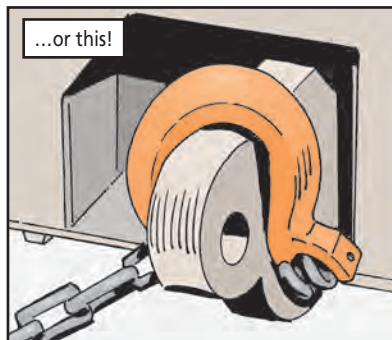
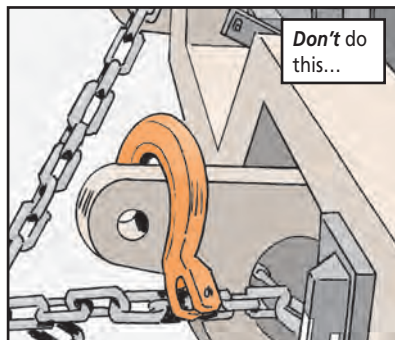
In this picture, the hooks are engaged directly to the provision and the tow lug can be seen above the double-holed provision. This is correct.



Also, the latest version of the FMTV LTAS vehicle uses a shackleless provision on the front of the truck. Because it's a new design, some folks in the field don't seem to understand that all they need to do is place the tiedown hook into the large opening.



Instead, people are running the hook and chain through the opening, and placing the hook on top of the provision. We've seen write-ups where folks in the field are saying one opening is too small for a shackle (the tow lug) and the other is too big (the actual shackleless provision) for a shackle.



We are even seeing the new shackleless provisions on MRAPs being misused! Once again, hooks are placed into the smaller bolt holes rather than engaging the provision directly.

Finally, blockage is sometimes an issue. Even with shackleless provisions on a vehicle, other attached equipment can block access to the proper tiedown point.

Using the proper equipment in the right way is critical to the safe movement of military vehicles and equipment. Guidance on how to safely move military vehicles can be found at the SDDC Transportation Engineering Agency website:

<http://www.tea.army.mil/DEP/TRANSPORT/default.asp>

Any help you can give us that leads to the proper use of these new shackleless provisions would be greatly appreciated.

John D. Newman  
Chief, Deployability Engineering Branch  
SDDC TEA

*Editor's note: Consider it done, Mr. Newman. Readers, save your unit time and money by making sure you properly use the shackleless provisions. Review and use the guidance you've just been given. Let your vehicle's TM, MIL-STD-209K, and the SDDC TEA website help you as well.*



FMTV A1P2...

## Protective Cap PROTECTS Hydraulic Fluid!

WHEN IT'S RAINING  
OUTSIDE, MY ELECTRIC  
HYDRAULIC POWER UNIT  
(EHPU) NEEDS PROTECTION  
FROM THE WATER!

FMTV A1P2 trucks were fielded without the protective (or breather) cap, NSN 5340-01-590-0054, installed on the EHPU. As a result, the EHPU fluid is getting contaminated with water. That can lead to failing cab lift hydraulic components.

But there's an easy fix to prevent future contamination and the trouble it brings: Make sure your truck's EHPU breather is covered with its cap.

Breather cap



Breather  
without cap  
installed





M1117 ASV...

MAN, IT'S  
R-REALLY C-C-  
COLD OUT H-HERE  
TUH-TODAY!

YOU  
S-SAID  
IT!

THE  
W-WATER  
IN M-M-MY  
H-HULL IS  
FROZEN  
S-SOLID!

## DON'T FORGET DRAIN PLUGS

Grewman, it's a known fact that water collects in the hull of your armored security vehicle (ASV).

That's because water drips off wet boots and uniforms, trickles in from the top of the vehicle, comes in from the wash rack, or seeps in through loose drain plugs during fording.

### Water's Three Problems

**Solid:** If you're in a cold-weather region like Alaska or areas of Afghanistan, the water in the hull and under the floor plates will freeze. And because water expands as it freezes, lines and fittings are ruptured, causing all kinds of damage.

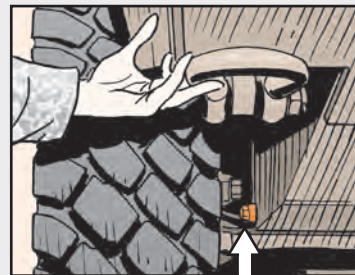
**Liquid:** Water under the floor plates will rust the vehicle's air brake valves and just about anything else made of metal.

**Gas:** As temperatures go up, the water evaporates and condenses on radios and other electronic gear. Enough moisture can short out electronic equipment.

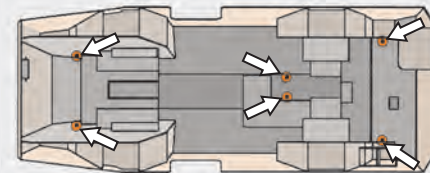
### Here's the Fix

Open the hull's drain plugs on the bottom of your ASV. There are six of 'em, so make sure you open 'em all or you'll leave water behind.

There are six hull drain plugs



Remove all drain plugs to let water out



Bottom view

You'll find a plug in all four wheel wells (behind the wheel assembly) of the vehicle. The last two plugs are directly under the vehicle, near the back half of the middle area. You'll see the locator views of the plugs shown in WP 0048-2 of TM 9-2320-307-10 (Sep 10).

By the way, make sure any water drained from the hull goes into a drip pan and is disposed of according to your unit's SOP. That's because any fluid leaks, like coolant, oil and power steering fluid, can end up in the vehicle's hull, too. So never dump contaminated water down a drain or let it run onto the ground.

Also, you don't want water to get back in through the drain plug openings. Make sure you reinstall 'em before operation—and do it right. Plugs that are too loose will vibrate free. And plugs that are too tight are hard to open and more likely to be left closed when draining is needed.

So apply a little anti-seize compound, NSN 8030-01-087-8254, to the threads before installing the plugs. That lets you tighten the plugs enough to keep them from vibrating loose, but makes them easier to open next time.

Just make sure you put the compound on each plug's threads and the threaded portion of the hull. That way, all the threads are coated and the plugs won't stick.

M1152/A1 HMMWV...

## SEEKING WINDSHIELD WASHER NOZZLE BRACKET

PSST!  
HEY, BUDDY!  
Y'WANNA BUY  
A WATCH?

I'M  
GOOD.

ASK HIM IF HE HAS A  
WINDSHIELD WASHER  
NOZZLE BRACKET!

Dear Half-Mast,  
I'm trying to find the NSN for the windshield washer nozzle bracket for an M1152 HMMWV. The nozzle is shown as Item 23 of Fig 228 in TM 9-2320-387-24P. But the bracket that attaches the nozzle to the windshield deflector isn't there. Can you point me in the right direction?

SGT C.G.

Dear Sergeant C.G.,

Yes, we can. On M1152s with no armor, use NSN 5340-01-596-4594 to get the new-style nozzle bracket. On M1152A1s with B kit armor, NSN 5340-01-596-4595 brings the new-style nozzle bracket. The correct bracket for M1152A1s with underbody armor and no B kit armor comes with NSN 5340-01-596-4592. And if you need the new-style spray nozzle for any of these vehicles, get it with NSN 2540-01-596-1571.

Half-Mast



# A Little Hood PM Needed

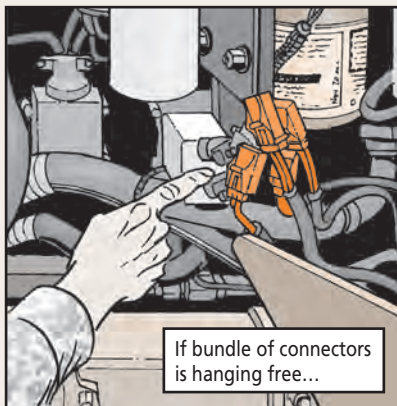


THANKS FOR HELPING ME CLOSE THAT HOOD.

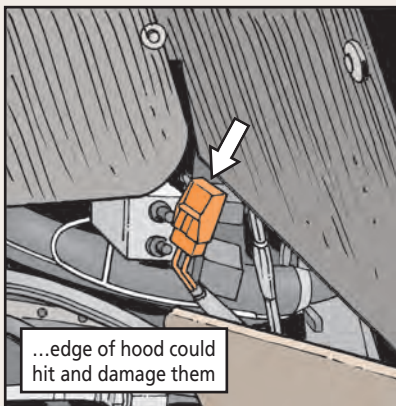
IT PROBABLY SAVED MY MRAP A LOT OF DAMAGE!

**A**n extra set of hands are what's needed to raise or lower the hood on your M-ATV. That extra help prevents the stress cracks caused by flexing and keeps the hood from slamming shut.

Having a buddy on the other side also allows you to guide the hood past the bundle of electrical connectors on the driver's side. Otherwise, the hood might damage one or more connectors. A damaged connector for the vehicle's washer fluid reservoir, for example, means you can't wash a dirty window. That's a real bummer!



If bundle of connectors is hanging free...



...edge of hood could hit and damage them

As an added precaution, use a tie strap, NSN 5975-00-156-3253, to secure the connectors together to the cold start bracket and power steering line. That'll keep all of the connectors out of harm's way.

## Battery Cable Pinch



SNIFF-SNIFF...  
MMMMM!  
SOMETHING'S COOKING.

I LOVE A GOOD BARBEQUE!



HEY!  
WAITAMINNT!!  
THAT'S ME COOKING!!

**W**here there's smoke... there may be fire! Keep that in mind with the M-ATV's battery power cables.

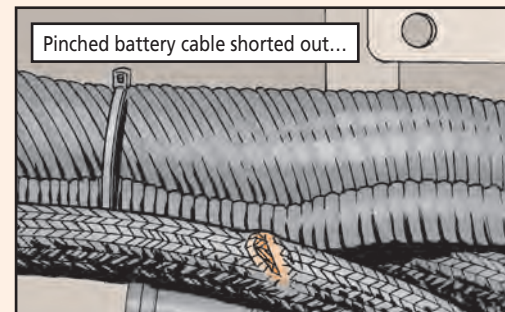
Before the smoke and fire hit your M-ATV, you need to get down on your hands and knees and inspect the vehicle's battery cables, especially behind the transfer case area and hull.

Here's what to look for:

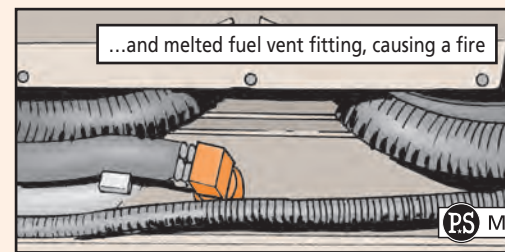
### Transfer Case Area

One recent fire came from a battery cable and hose clamp that were pinched against a steel plate in the transfer case area, causing an electrical short.

The short melted a steel vent elbow, which released and ignited fuel vapors, causing a fire beyond the reach of the vehicle's fire suppression system (FSS). That particular fire melted the engine's fuel return line and damaged all the air, fuel and electrical lines in the transfer case area forward of the fuel tank. The fire had to be put out with a hand-held fire extinguisher.



Pinched battery cable shorted out...



...and melted fuel vent fitting, causing a fire

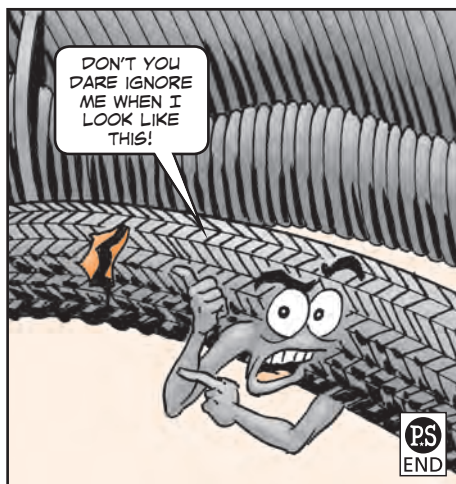


## Behind the Hull

In another case, a battery cable behind the hull shorted out against the Roxtec armor cover. This fire occurred behind the hull, directly above the front of the fuel tank!

Plain and simple—a damaged or chafed battery power cable renders the M-ATV NMC.

The headshed is working on a solution to stop these fires with added wire insulation or re-routing. But until they do, tell your mechanic about any chafing or damaged cables **PRONTO!**



## M872A4 Semitrailer TM Note Change

A caution sticker on your M872A4 semitrailer says, "Do not connect the 12-volt and 24-volt cables at the same time or damage to the tractor electrical system may occur!" It's found on the right side of the intra-vehicular (IV) receptacles. So the note shown in WP 0004 00 and WP 0007 00 of TM 9-2330-331-14&P (Dec 05) that says, "During blackout operation, both the 12-volt and 24-volt power cables are required," is wrong. The note should read, "During blackout operation, only the 24-volt power cable is required." Make a note until the TM is updated.

## M939/A1/A2-Series Truck Hot Water Heater Blower Motor

A new blower motor for the M939/A1/A2 5-ton's personnel water heater comes with NSN 6105-01-608-3974. It replaces NSN 6105-00-512-9225, which is shown as Item 27 in Fig 549 of TM 9-2320-272-24P-2 (Feb 99). The new blower motor includes an impeller fan, mounting hardware and instructions. Install it just like you did the old fan by following the procedures starting on Page 3-782 of TM 9-2320-272-24-2 (Jun 98).

## Turn In All Towbar Parts

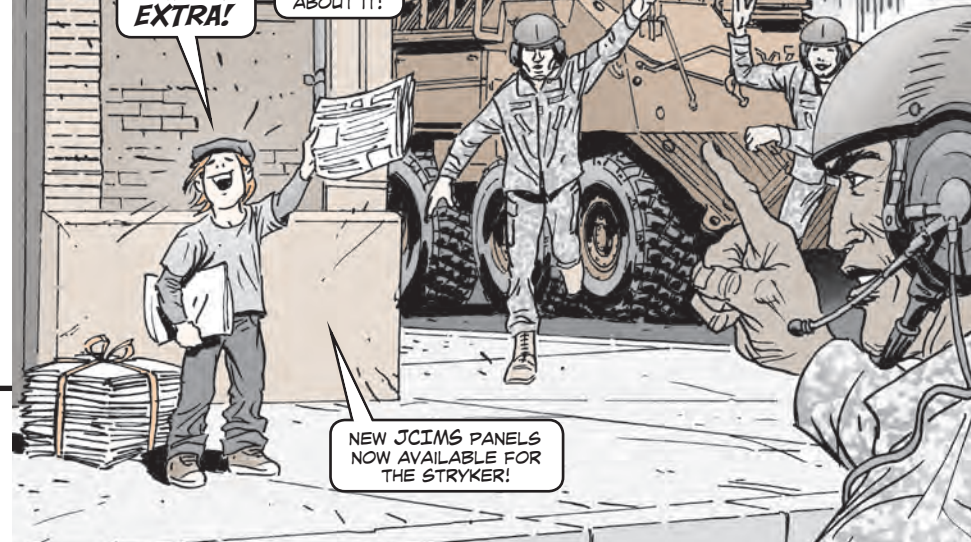
When it's time to turn in your wheeled vehicle towbar, NSN 4910-01-365-9304, make sure you include all of its components. Too often, towbars are arriving at Red River Army Depot, TX, without the clamp assembly, NSN 5120-00-624-0556. That increases costs and adds to the time it takes to repair and reissue the towbars.

Stryker...

# JCIMS Panels Added

**EXTRA,  
EXTRA!**

READ ALL  
ABOUT IT!



**GOOD NEWS, CREWMEN!**  
THE JCIMS STRYKER  
COMMON #1 AND #2  
HAVE NEWLY ASSIGNED  
COMBAT IDENTIFICATION  
PANEL (CIP) NSNs.

**HERE'S WHAT'S AVAILABLE...**

### Stryker Common #1

| Item        | NSN 2320-   | Details   |
|-------------|-------------|---|
| Front panel | 01-609-3872 | Fits on the front of the vehicle                    |
| Side panel  | 01-609-3876 | Fits on both the left and right side of the vehicle |

### Stryker Common #2

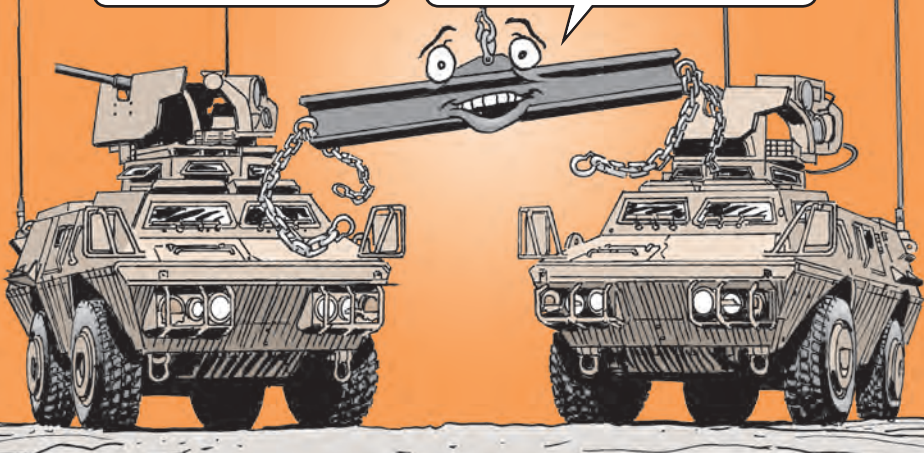
| Item                      | NSN 2320-   | Details   |
|---------------------------|-------------|---|
| Front panel               | 01-609-3872 | Fits on the front of the vehicle  |
| Side panel (toolbox)      | 01-609-3882 | Contains two panels. The first panel fits on the top half of the toolbox on the right side of the vehicle. The second panel fits on the bottom half of the toolbox. (NOTE: It is <b>very</b> important that both panels be mounted as close as possible to the center-mounted hinge so that they are viewed as one panel through a thermal optic instead of two.) |
| Side panel (escape hatch) | 01-609-3878 | Contains one panel that mounts on the crew escape/ingress/egress hatch on the left side of the vehicle  |



# RETURN SPREADER BAR FOR MOD

DOES YOUR UNIT HAVE ANY M1200 ARMORED KNIGHT OR M707 KNIGHT FIRE SUPPORT VEHICLES?

THEN YOU NEED TO LOCATE AND TURN IN **ME**, THE SPREADER BAR ASSEMBLY, NSN 3940-20-001-0168, THAT CAME WITH YOUR VEHICLE DURING FIELDING.



THE SPREADER BARS NEED TO GO BACK TO THE MANUFACTURER FOR A **SAFETY MODIFICATION**.

SHIP THE OLD ASSEMBLY, **FREE OF CHARGE**, TO...

DRS Sustainment Systems, Inc.  
McDaniel & Stevens  
ATTN: Chantele Adams  
Bldg 6  
West Plains, MO 65775  
(417) 257-6216

WHILE YOU'RE AT IT, SEND AN EMAIL TO THE TACOM TECH ASSIST TEAM AT:  
[tacom-lcmc.ilsc\\_techassistance@mail.mil](mailto:tacom-lcmc.ilsc_techassistance@mail.mil)

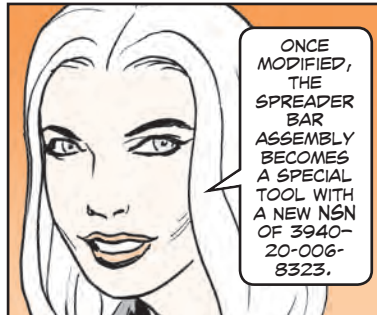
INCLUDE YOUR UNIT ID AND A POC.

THAT WILL HELP PM HBCT KEEP AN UPDATED LIST OF ALL SPREADER BAR ASSEMBLIES THAT HAVE BEEN MODIFIED.

THEY CAN ALSO HELP WITH ANY SHIPPING QUESTIONS.



ONCE MODIFIED, THE SPREADER BAR ASSEMBLY BECOMES A SPECIAL TOOL WITH A NEW NSN OF 3940-20-006-8323.



# STEERING DAMPER PRESSURE IMPORTANT!



MAN! THIS SH-SURE IS A R-ROUGH R-RIDE!



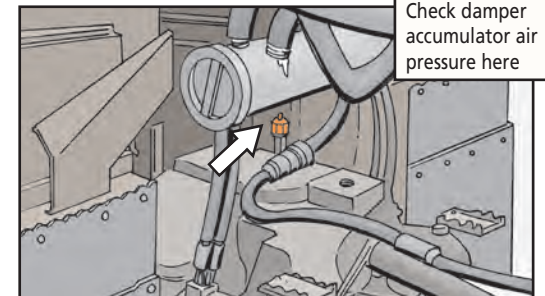
A CH-CHECK OF THE AIR P-PRESSURE IN MY STEERING DUH-DAMPER WOULD SMOOTH THINGS OW-OUT!

**M**echanics, keep an air pressure gauge handy when it comes to the SUSV's steering damper.

Page 8-29 of TM 9-2350-285-20 (Jun 90, w/Ch 4, Jan 01) says to pressurize the accumulator between 29-102 psi. But that range is far too wide.

The correct range is 55-85 psi, like it says on Page 2-10 of the TM. Air pressure of at least 55 psi in the accumulator will prevent damper bottoming, which causes steering component damage and rough handling. More than 85 psi can overstress seals and steering lines.

If drivers complain that a SUSV rides or steers hard, and you find the air pressure is between 55-85 psi, check out the accumulator's hydraulic fluid level. That information is found in Step 24 on Page 8-29 of the TM.







## SUSV TRACK IS NEW AND IMPROVED!

The new track assembly includes one track, one sprocket kit with two sprockets, two wheels, and one tensioner assembly. Installation instructions are included.

You'll find that this assembly is easier to assemble and takes less time to install than the old style track. Even better, it's a whole lot cheaper!



## M9 ACE... EXHAUST HOSE REMINDER

**M**echanics, do your armored combat earthmover a favor by not stepping on the exhaust hose inside the vehicle's engine compartment.

Sure, the hose looks like a convenient footrest while you're working on the engine, but your weight will break the exhaust clamps.

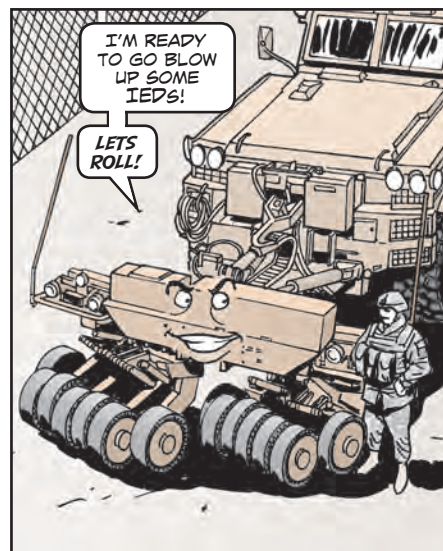
A busted clamp means the exhaust gas can vent directly onto the batteries—not good. It also lets deadly exhaust into the operator's compartment—definitely not good!

So, eyeball the exhaust clamps. See a loose clamp? Snug up the hose and tighten the clamp. Replace a broken clamp with NSN 5340-01-183-6863.



SPARK II...

## CONTROL UNIT DAMAGE SPARKS MOD KIT!

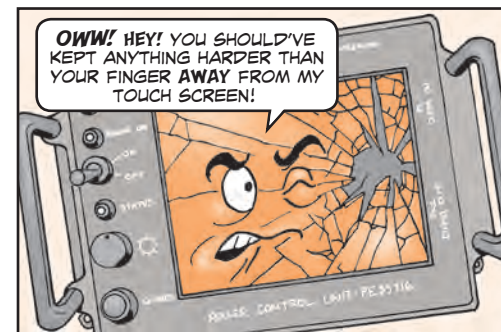


**W**ord from the field is there's been a sharp increase in damaged roller control units (RCUs) for the self-protected adaptive roller kit (SPARK II) that mounts to the front of your MRAP M-ATV.

Seems the touch screen on these RCUs is easily damaged by careless boots, Kevlar, rifle stocks or just simple neglect. Just one busted RCU costs about \$3,500 to replace. In the meantime, the vehicle's ability to explode improvised explosive devices is out of service. Plain and simple, the SPARK II is NMC!

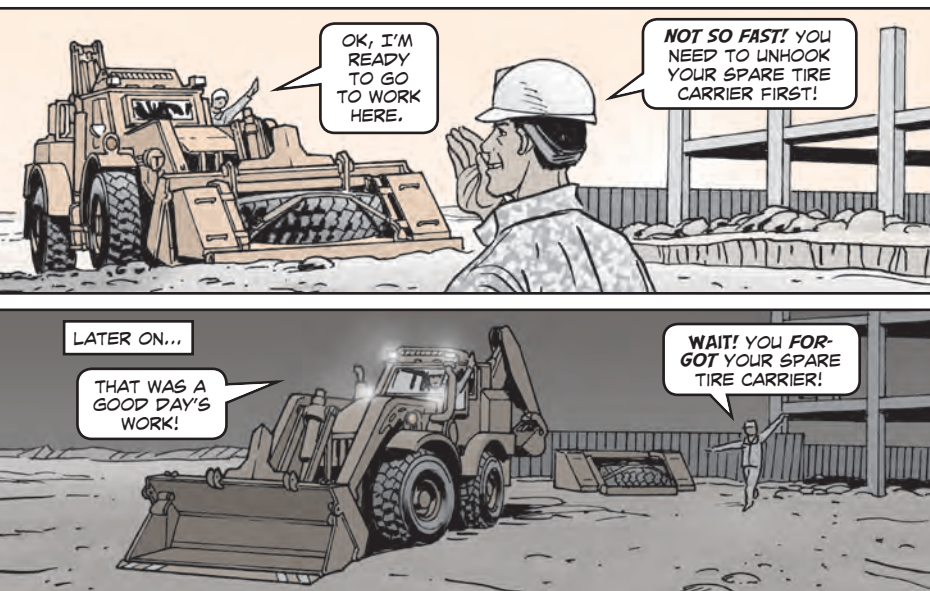
The headshed has a modification kit in the works to protect the RCU's touch screen. It includes a more durable case that protects the screen.

Until the kit becomes available, remember to keep anything harder than your finger away from the RCU's touch screen.





# Don't Forget the Spare Tire Carrier!



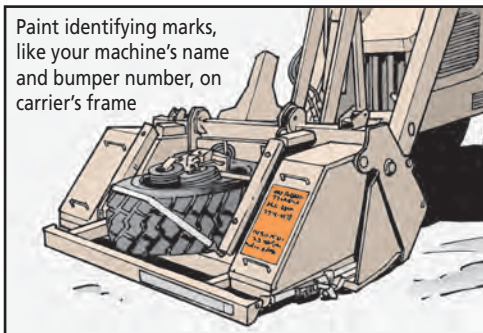
In order to start scoop loader bucket operations, you'll need to unhook the excavator's spare tire carrier from the front bucket.

The carrier holds the spare tire, COEI hand tools and some BII items. All in all, we're talking about \$10K worth of equipment here.

So make sure these items are out of the way during operations. You don't want to accidentally run over or drop a load on them. Also, don't leave 'em behind at the work site when it's time to head back to the motor pool. Hey, don't laugh! It's happened on more than one occasion.

That's why it's a good idea to paint identifying marks—like your machine's name and bumper number—on the carrier's frame. That way, if you **do** forget it, others at the work site will know who to return it to.

Paint identifying marks, like your machine's name and bumper number, on carrier's frame



## STEERING BRAKE ADJUSTMENT

HEY!  
WHAT  
GIVES?

UH-OH!  
MY STEERING  
BRAKES AREN'T  
WORKING!

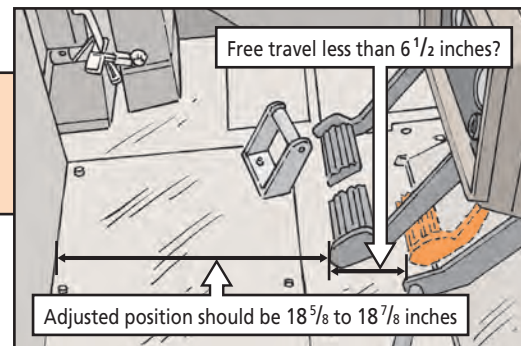
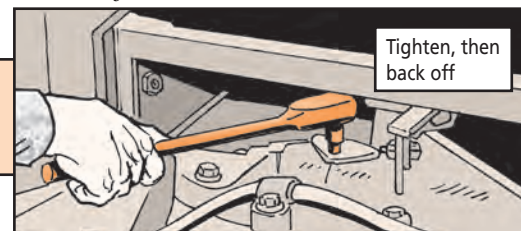


Operators, when the tractor's steering brake pedals reach the floor, you can't turn the tractor. That means it's time for an adjustment.

Have your mechanic adjust the brakes when the pedal free travel is more than 6 1/4 inches with the parking brake disengaged. Take the measurement at the center of the pedals. Check 'em every 250 hours.

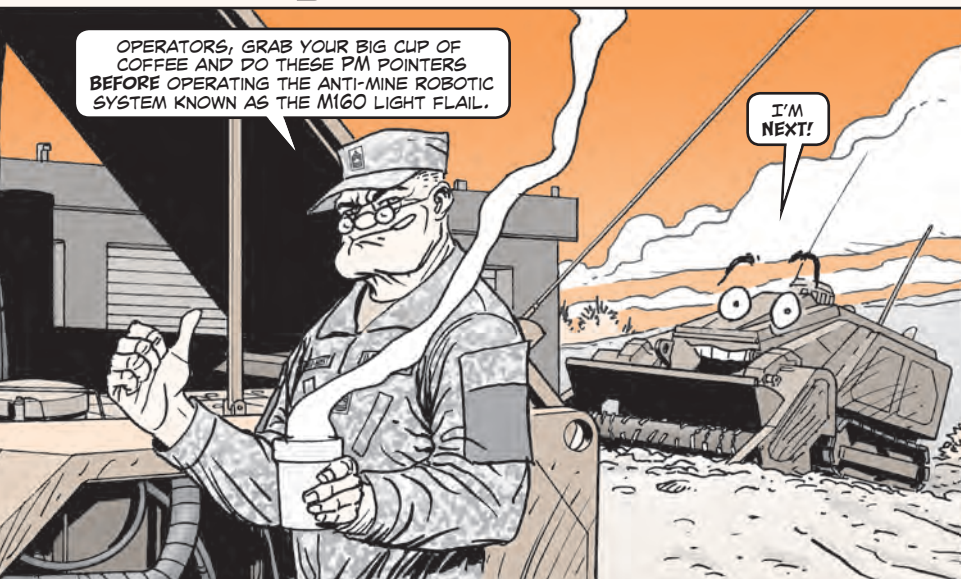
Mechanics, here's how to make the adjustment:

1. Remove the guard and the brake screw cover.
2. Use a torque wrench and turn the adjusting screw clockwise until you get a reading of 14-16 lb-ft.
3. Back off the screw 1 1/2 turns. This gives the right clearance between the brake linings and the drum.
4. Then, adjust the pedal linkage so there's 18 5/8 to 18 7/8 inches between the brake pedal face and the front of the seat support.
5. Replace the cover and guard. Replace the cover gasket if it's damaged. Repeat this procedure for the other pedal.



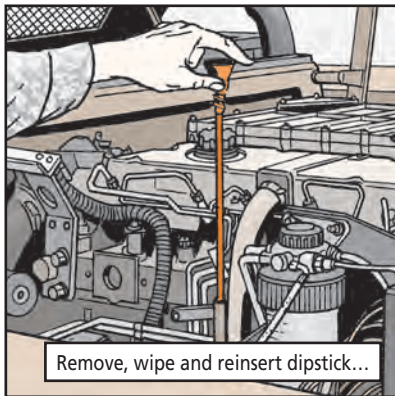


# M160 Light Flail PM Pointers

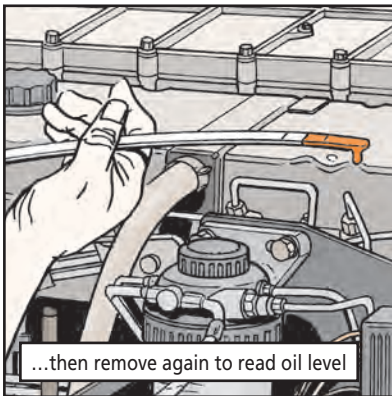


## Engine Oil Level Check

Always check the engine oil level before operation while the engine is cold. Remove and clean the dipstick, then insert and remove it again to make the check. The oil level should be between the two notches on the dipstick. If it's low, add oil through the engine oil fill cap at the rear of the engine's valve cover. Clean the oil filler cap, then reinstall it.



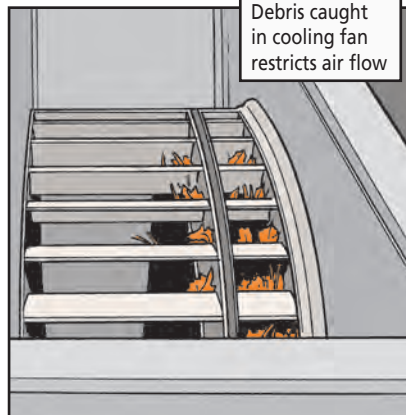
Remove, wipe and reinsert dipstick...



...then remove again to read oil level

## Cooling Fan Clean Up

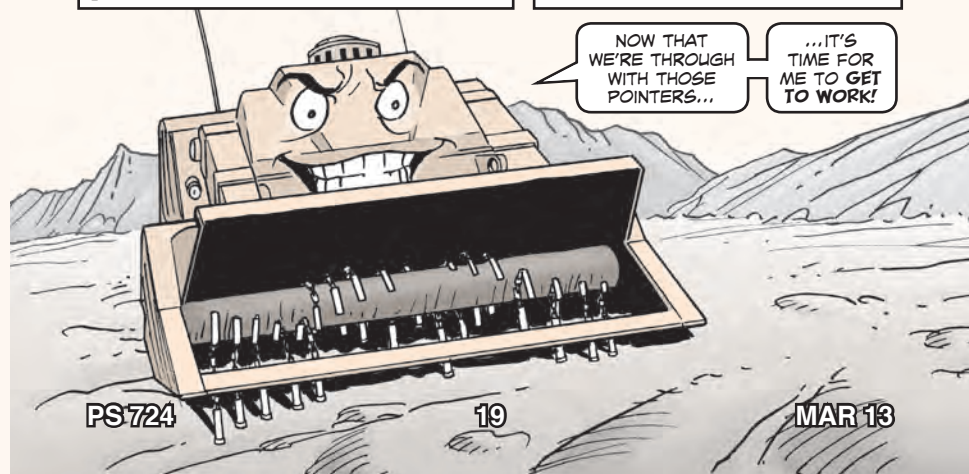
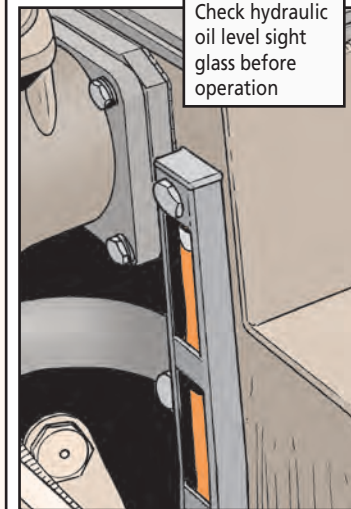
Eyeball the fins on the cooling fan for the engine's radiator. This fan draws air through the radiator and blows it out the top of the vehicle. The fins get clogged with debris like leaves, twigs, small branches and mud. That can jam the cooling fan and restrict the smooth flow of air passing through the radiator.



So use low-pressure air or water (30 psi) to clean out the debris. While you're at it, take a few minutes to clean the radiator fins and screen, too. That also takes low-pressure air or water.

## Hydraulic Oil Level

Follow the good word in WP 0012-9 when it comes to checking the vehicle system's hydraulic oil level. Be sure to check the oil level while the engine is cold and not running. You'll find the hydraulic oil level sight glass indicator on the outside of the hydraulic oil tank. The oil level should be halfway up the sight glass.





LOOKS LIKE THE  
MISSILE SYSTEM IS  
ACTING SCREWY!

## FIXING THE DOOR CHAIN PROBLEM

I THINK THE  
CHAIN SHORTED  
OUT THE MISSILE  
SYSTEM AGAIN!

WELL, WE  
DON'T HAVE  
TO WORRY  
ABOUT THAT  
ANYMORE.

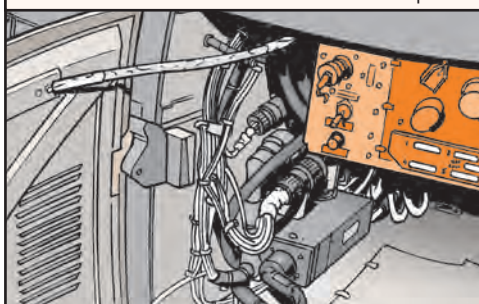
LOOK WHAT I FOUND  
IN PS MAGAZINE!

ALL WE HAVE  
TO DO IS  
APPLY SOME  
POLYURETHANE  
TO THE CMWS  
CONNECTIONS  
AND WE'RE  
BACK IN  
BUSINESS!

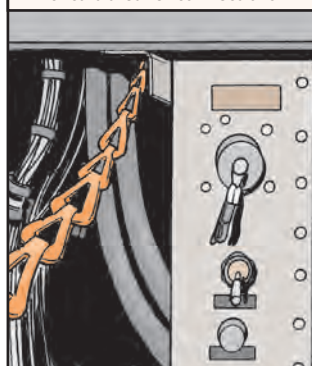
Armament, electrical and avionics repairers, the Kiowa Warrior aft avionics door chain has caused problems for the common missile warning system (CMWS) and in some cases the aircraft itself.

While the aircraft is in flight, the door chain can accidentally contact exposed CMWS circuit breaker wire connections behind the CMWS panel. When that happens, it causes electrical shorts that burn out the CMWS wiring.

Connections are behind CMWS circuit breaker panel



Metal chain can cause electrical short upon contact with exposed circuit breaker connections



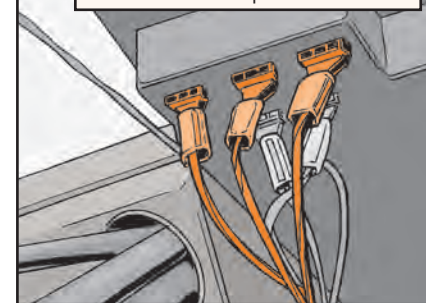
As a temporary fix, some repairmen have resorted to applying heat shrink tubing to the chain to prevent metal-to-metal contact with the circuit breaker wiring. That's not needed anymore.

So here's the solution. Instead of applying heat shrink tubing to the chain, follow the instructions in TB 1-1520-248-20-86, *Temporary Application of Polyurethane Removable Sealant to CMWS Circuit Breaker Wire Connections for All OH-58D Aircraft*. The fix involves applying polyurethane removable sealant, NSN 8030-01-577-8134, to the exposed CMWS circuit breaker wire connections using a dispenser, NSN 5120-01-494-7678. Applying sealant to the circuit breaker wire connections prevents shorts from the door chain.

TB 1-1520-248-20-86 gives you all the materials and detailed instructions to prep your aircraft before applying the sealant. For your safety, make sure you pay close attention to the warnings, cautions and notes.

Make a note that this fix will be added to an upcoming revision to MWO 1-1520-248-50-24, *Modification Instructions for the Installation of Common Missile Warning System (CMWS)*.

Apply polyurethane to circuit breaker connections to prevent shorts

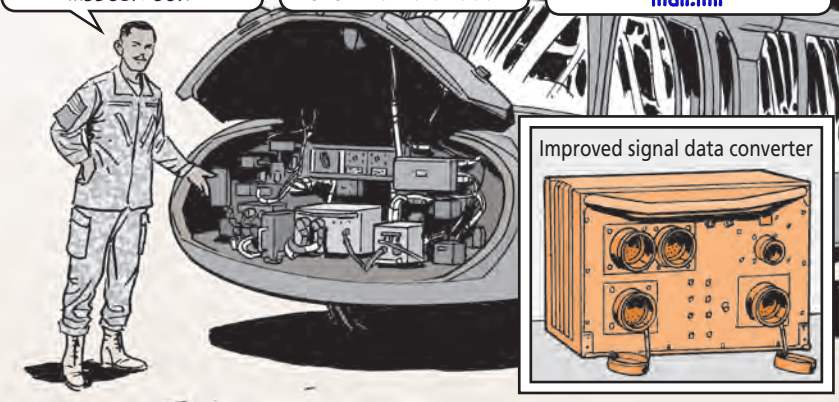


## RETURN IMPROVED SIGNAL DATA CONVERTERS

MECHANICS, THE CECOM HEADSHED HAS A LIMITED SUPPLY OF SERVICEABLE IMPROVED SIGNAL DATA CONVERTERS, NSN 5895-01-577-5425 (PN MB503A-00).

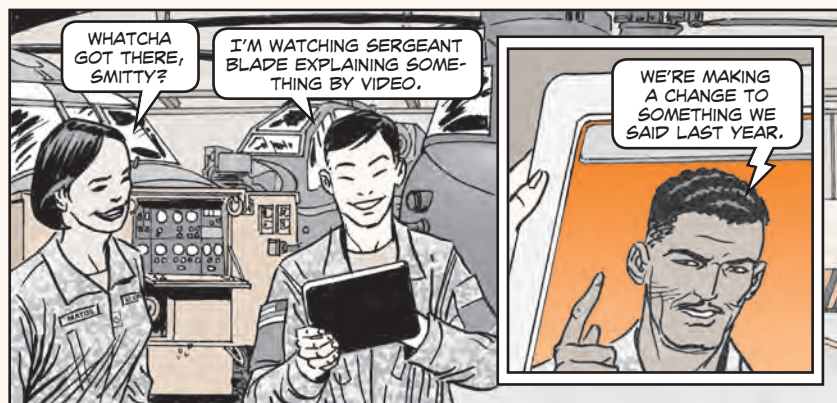
TO HELP THEM OUT, RETURN ALL UNSERVICEABLE IMPROVED SIGNAL DATA CONVERTERS THROUGH NORMAL SUPPLY CHANNELS TO CECOM FOR REPAIR.

IF YOU HAVE QUESTIONS, CONTACT THE ITEM MANAGER, DANIELLE ZAMBRANO, AT (443) 395-1426 OR EMAIL: [danielle.i.zambrano.civ@mail.mil](mailto:danielle.i.zambrano.civ@mail.mil)





# APPLYING EXTERNAL HYDRAULICS TO AIRCRAFT



Dear SFC Blade,

Your article on Pages 22-23 of PS 718 (Sep 12) is not quite correct on how the stabilators move.

You imply that applying hydraulic pressure to the aircraft could make the stabilators move. Actually, the stabilators on both the Black Hawk and Apache are electrically-driven systems. They move when external electrical power is applied from the AGPU.

What moves when AGPU hydraulic pressure is applied to aircraft are the flight controls and the AH-64 pylons.

Mr. Graden Pitt  
Ft Hood, TX

Dear Mr. Pitt,

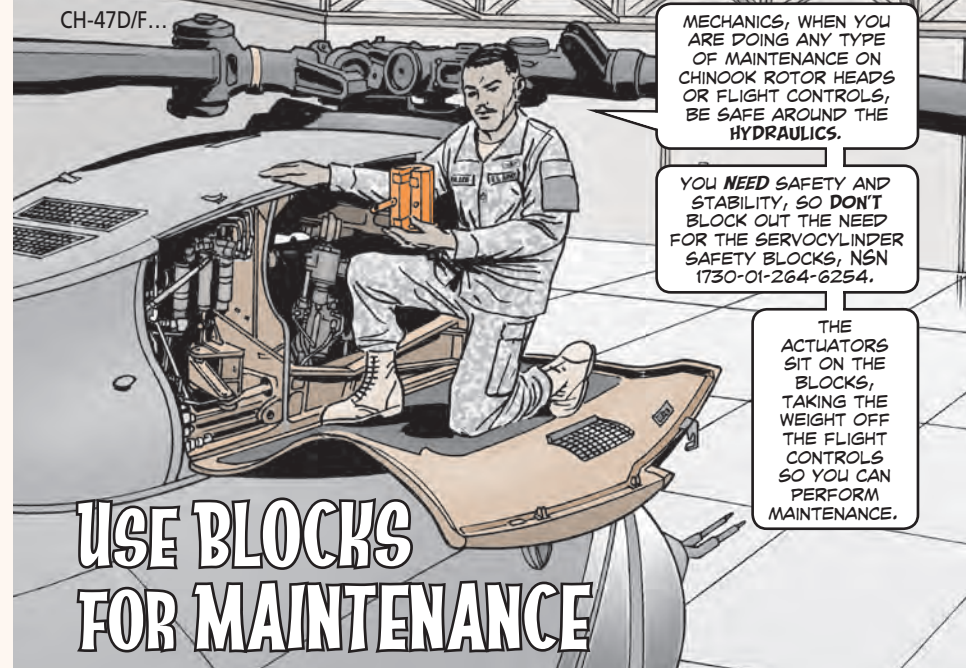
Thanks for writing and letting us know about the mistake. It's readers like you that keep us on our toes, so we appreciate your keen eye. We and the headshed missed this one.

You are correct about the stabilators being electrically-driven systems. We don't want any confusion about what systems can move and how.

In fact, the artwork shows the AGPU hooked to the aircraft for applying external hydraulics. Based on the artwork, the stabilator could not move because there is no electrical power being applied. The old artwork should've shown the AGPU hooked to the hydraulic lines, and not the aircraft.

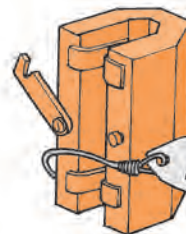
To briefly restate what the article **should** have said concerning the AGPU and aircraft: Electrical power from the AGPU can move systems like the stabilator and other electrically-driven systems. And applying AGPU external hydraulics to aircraft can move flight controls and change the pitch angle of blades and other hydraulic components.

*'Rotor' Blade*



Always use the blocks the right way. That means you must install them for each rotor head job where the TM or IETM procedure calls for their use. Use the block for maintenance on flight controls, too. They must remain installed until the job is done. It also means you'll have to adjust the equipment so that the blocks can be removed when the task is complete.

When you install a block, it must be placed on the piston with the slot of the block facing outward and the latch up. Just dropping the locking latch in place isn't enough—you must tighten the screw to hold the latch down.



Install block with slot outward and latch up so weight of actuator rests on block

REMOVE BEFORE FLIGHT

Remember, when a block is installed, you must have a Remove Before Flight streamer, NSN 8345-00-673-9992, attached. It must be **visible** on the outside of the surface of the aircraft so other mechanics will know maintenance is taking place.



# BE CLEAR ON MAINTENANCE OPERATION CHECKS

LET'S GET  
THESE MOCs  
DONE!

I'M WITH  
YOU ON  
THAT!

NOT QUITE YET,  
YOU GUYS! SOMEONE  
NEEDS TO DO A  
WALK-AROUND TO  
MAKE SURE YOU'RE  
ALL CLEAR!

YOU'RE RIGHT!  
I'LL DO THE  
WALK AROUND  
RIGHT NOW.

Maintainers, PMCS on your AH-64's M230 gun is important to maintain straight shooting. But pay particular attention to the before firing Preventive Maintenance Checks and Services in Para 4-5-1 of TM 9-1090-208-23-1-1 or in IETM 1-1520-Longbow/Apache.

Always make sure you do a thorough area weapon system maintenance operational check (MOC) like it says in TM 9-1090-208-23-2 or in IETM 1-1520-Longbow/Apache.

MOCs are important. That's because they allow you to verify your weapon system is fully mission capable after a problem has been corrected or prior to any live fire exercise. Remember to visually check the round guide and the bolt carrier assembly breech for any 30mm rounds. If you find rounds present, clear the gun.

Since the MOC requires hydraulics, it is important for personnel to stay clear of the gun travel area when power is applied. Gun subsystem failure could cause the gun turret to move when power is applied and if anyone is in harm's way, they will get injured.

Stay away from  
gun during MOC

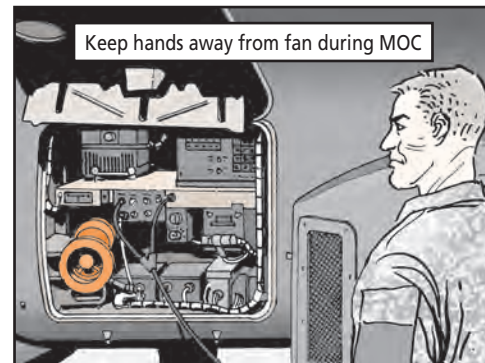
As dynamic tests are taking place, other things can happen during the MOC that can cause the gun to slew. For example, the M230 will also be slaved to the target acquisition designation sight (TADS), allowing the gun to slew wherever the TADS is looking. During this process, always make sure the forward avionics bay (FAB) panels are shut and maintenance stands are removed from the gun travel area during the dynamic tests or before the gun is actuated to avoid damage to the panels or equipment.

Walking around the aircraft to make sure all is clear and no one is working or doing maintenance near the M230 gun before MOC gun checks is the smart thing to do. Keep in mind to use caution when working in the right hand aft avionics bay at the load maintenance panel with the R295 open. The vanexial fan blades are exposed and turning. Keep your fingers out of the fan blade area or you could lose them.

Because the gun turret operates with 3,000 pounds of hydraulic pressure, anyone near the gun can be hit by the barrel or crushed against the ground if they are underneath the aircraft. Not only does the gun rotate left to right, but it also depresses. If the aircraft is "spoofed" or the elevation resolver on the turret is out of tolerance, the gun can strike the ground and lift the aircraft or crush a person. That's deadly!

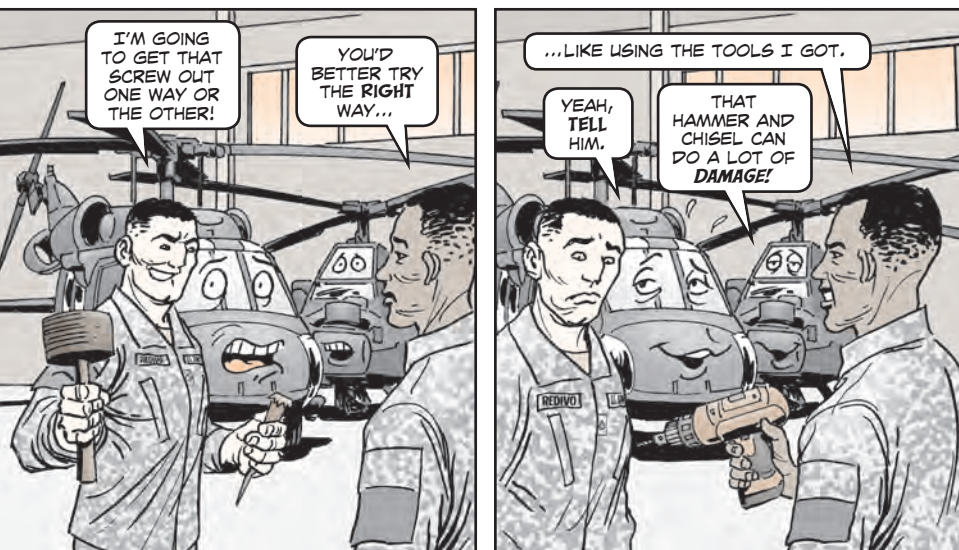
So make sure the area is called clear before MOC checks are done to avoid injury and damage to equipment.

Keep hands away from fan during MOC





## All Aircraft... Aircraft Panel Removal Done Right



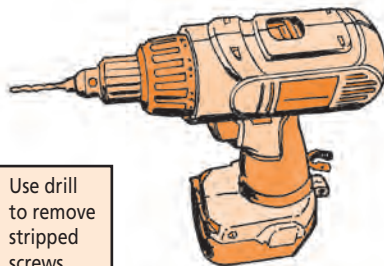
Removing panels from your airframe is not as simple as one, two, three, mechanics.

When you remove aircraft panels to gain access for maintenance or other repairs, make sure you set the conditions for success before you start. Select the proper size screw driver bit and check it for excess wear or damage. A sloppy bit fit will only strip out the screw. Set the drill in the aviation footlocker (AFL) on the lowest setting for each and every screw before you remove them. Then move up the setting as needed to get the screws out.

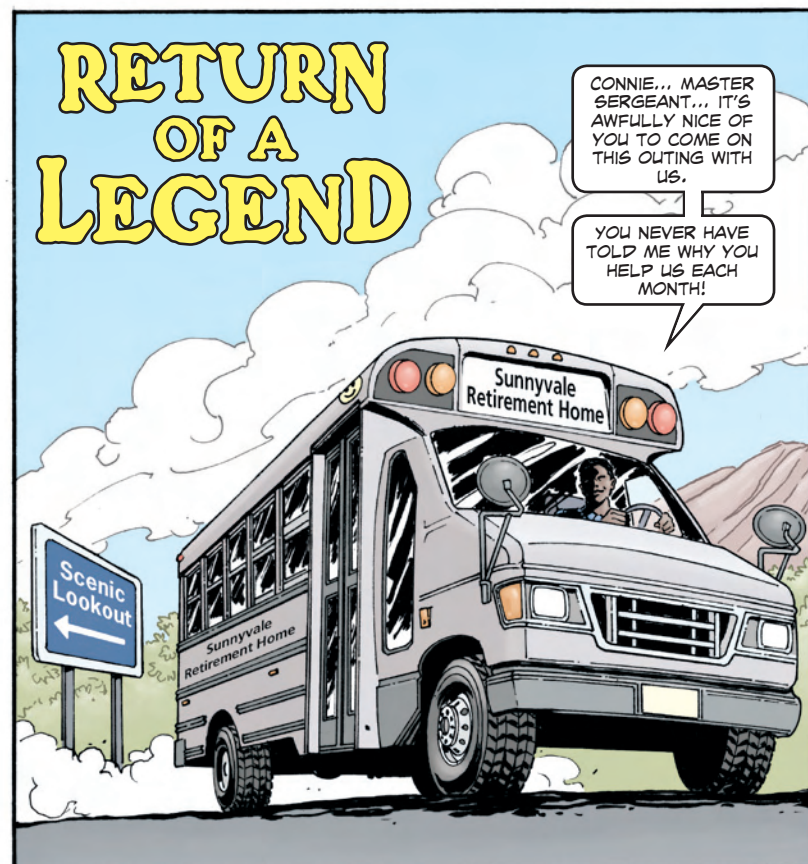
Using the wrong drill setting to remove screws strips them out. If you end up with stripped screws, then you've got serious problems and an unhappy airframe repairer, who'll have to remove stripped screws in one of two ways, neither of which is much fun.

One way is to drill a hole into the screw and take it out using a screw extractor. The second way is to modify the Phillips head screw by using a hack saw to cut a single slot in the head so that a flat-tip screwdriver can be used to extract it. Any slips here can damage the airframe.

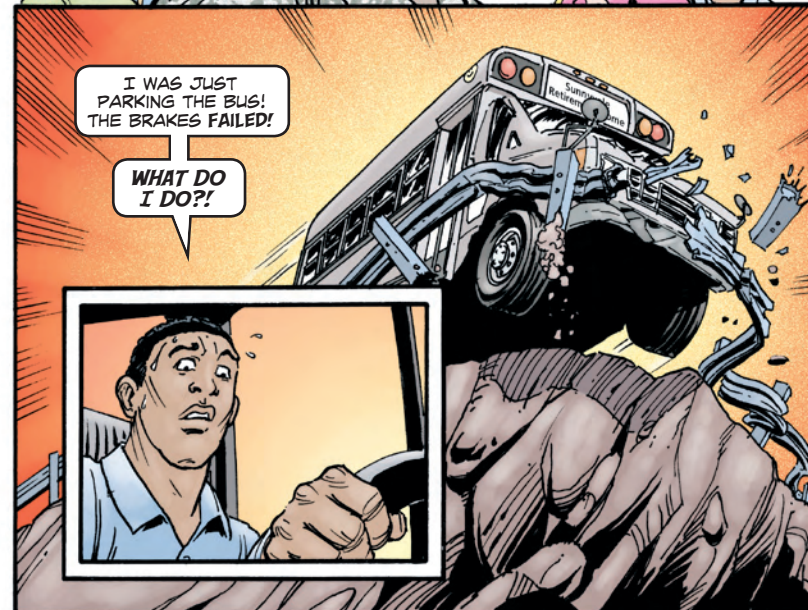
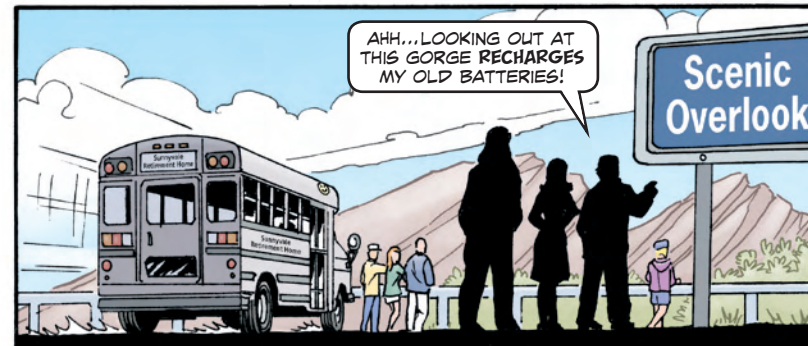
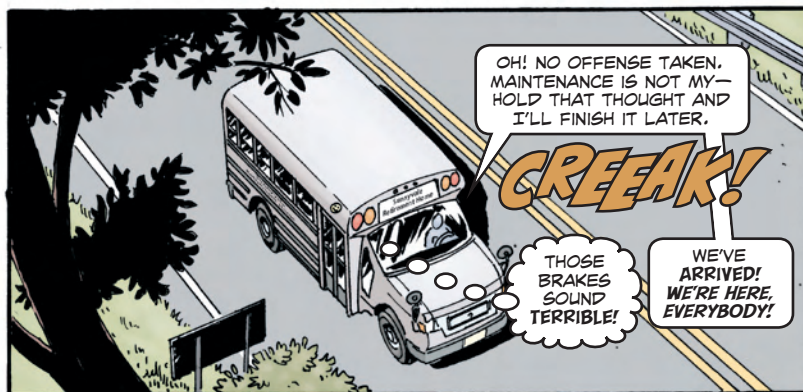
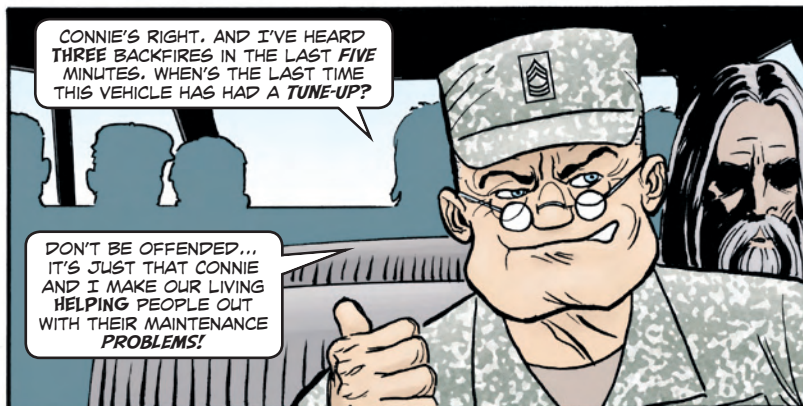
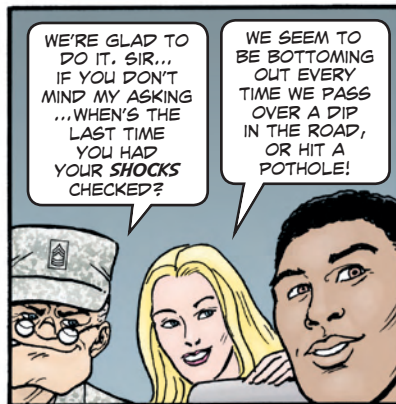
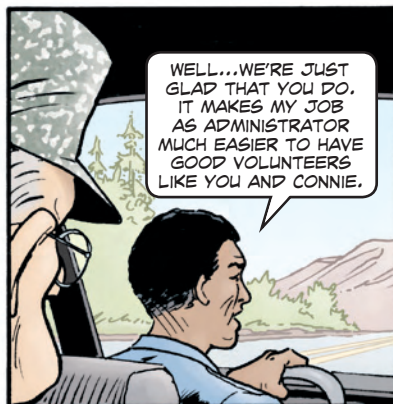
Remember, while removing screws from your airframe, a drill will not remove stripped countersunk screws.



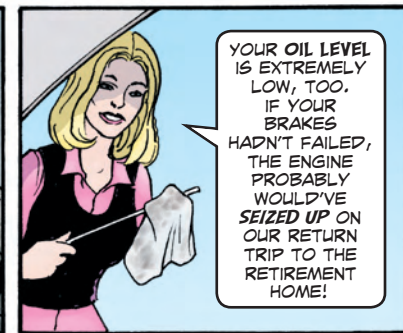
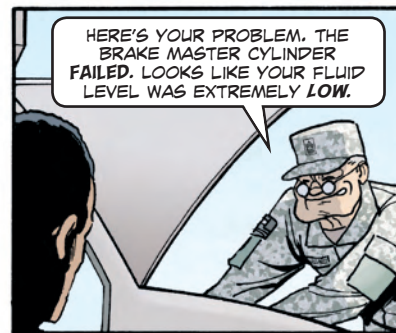
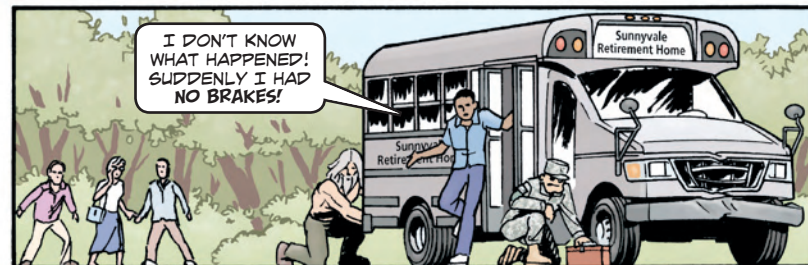
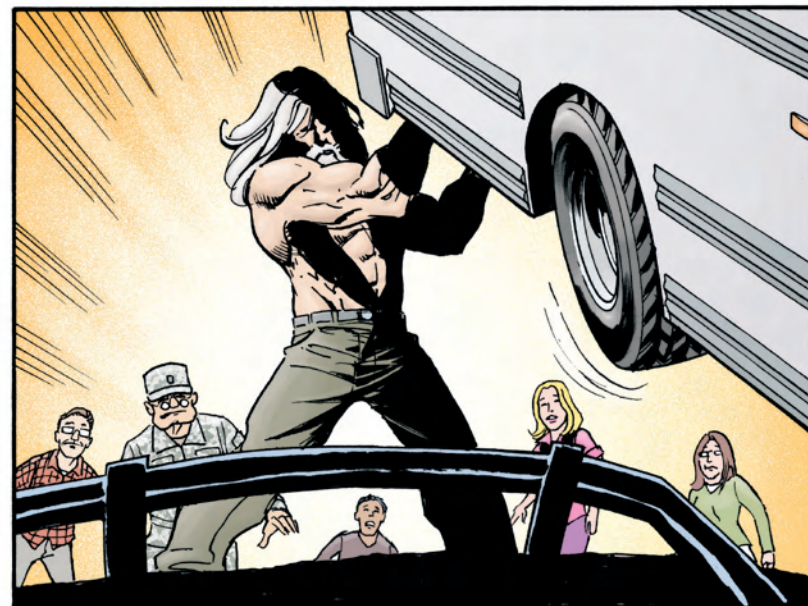
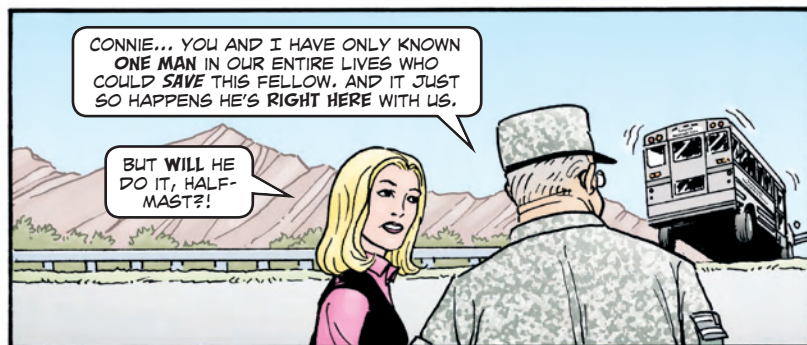
Use drill to remove stripped screws



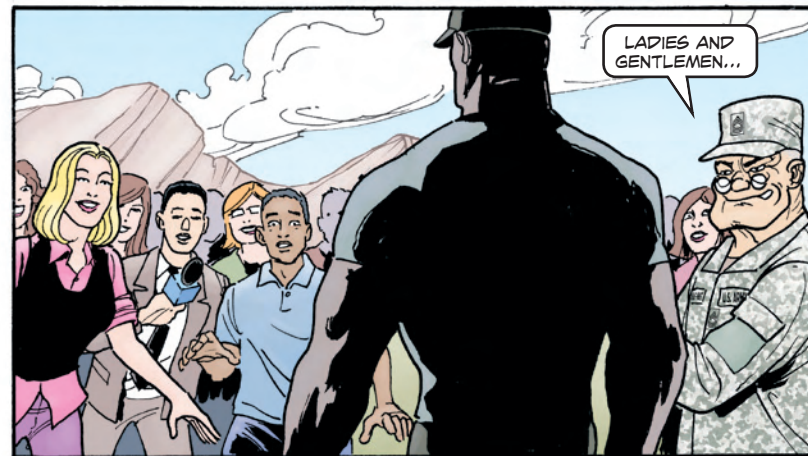
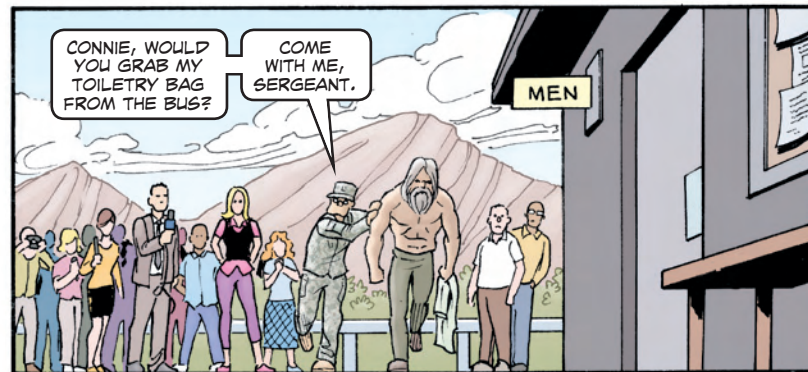
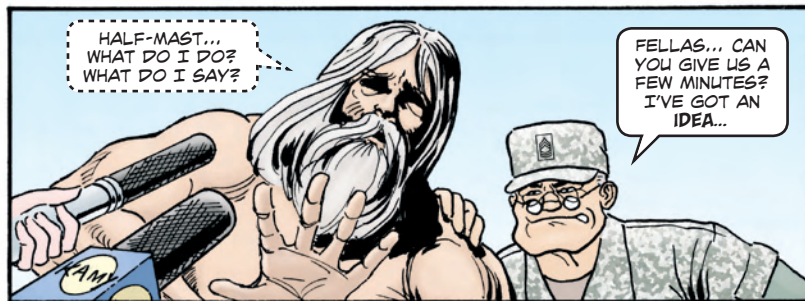
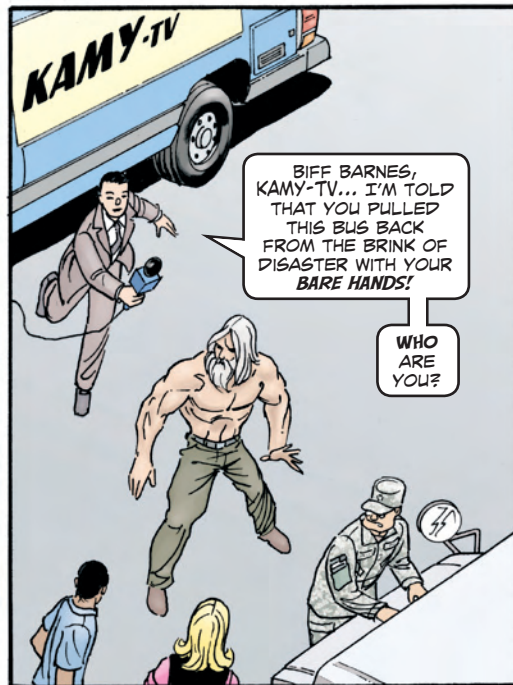




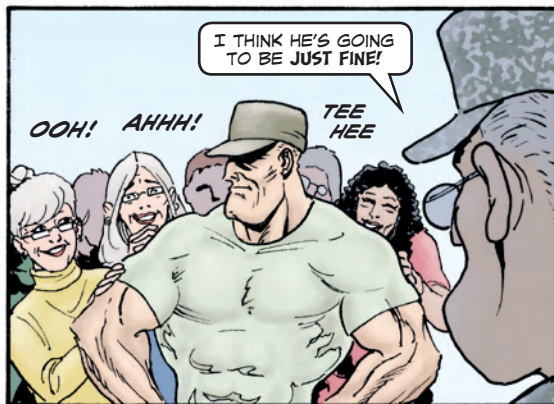
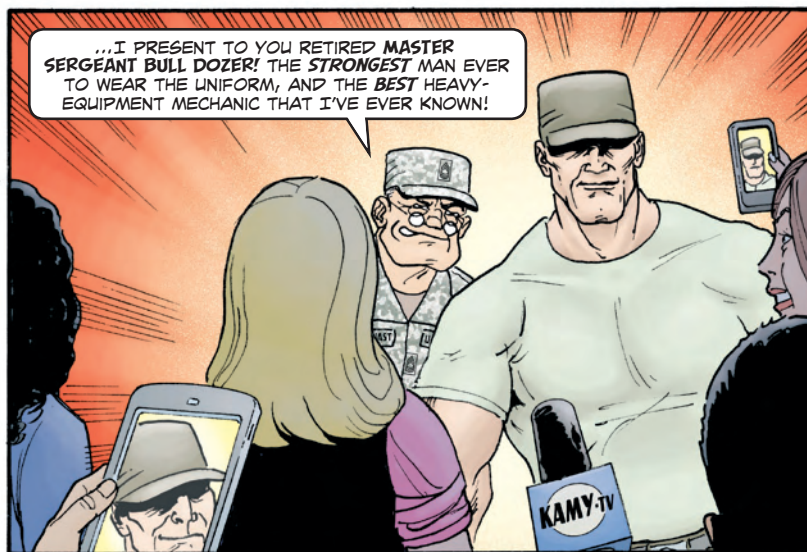












MSG BULL DOZER'S FEATS OF STRENGTH WERE FAMILIAR SIGHTS TO READERS OF *PS* MAGAZINE FROM 1954 UNTIL HIS RETIREMENT IN THE EARLY 60S.

HE CAME ABOARD IN ISSUE #17, WHEN *PS* BEGAN PUBLISHING ARTICLES ABOUT ENGINEERING EQUIPMENT.

**PS**

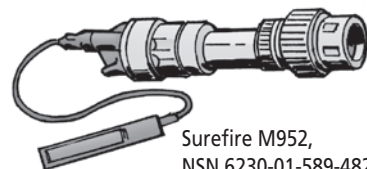
Small Arms...



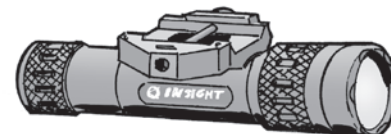
**NEED  
LIGHT?**

**ORDER  
THESE  
WEAPON  
LIGHTS!**

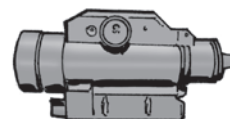
**A**fter rigorous testing, the Army has approved these four weapon-mounted lights (WMLs), which are free to deploying units through the rapid fielding initiative.



Surefire M952,  
NSN 6230-01-589-4822



L3/Insight Technology  
VBL-600-A26 WML, NSN 6230-01-603-2795



Streamlight TLR-VIR,  
NSN 6230-01-589-4887



SPA Defense SPL-120,  
NSN 6230-01-588-8427

The SPA model is no longer being purchased by the Army, so order one of the other three lights. The remaining stock of the SPA will continue to be fielded.

If you are deploying, contact PEO Soldier about authorization to get WMLs for free. Non-deploying units should order WMLs through normal supply channels.

If you have WML questions, contact PEO Soldier's Anthony Pesano at (703) 704-4895, DSN 654-4895, or email:

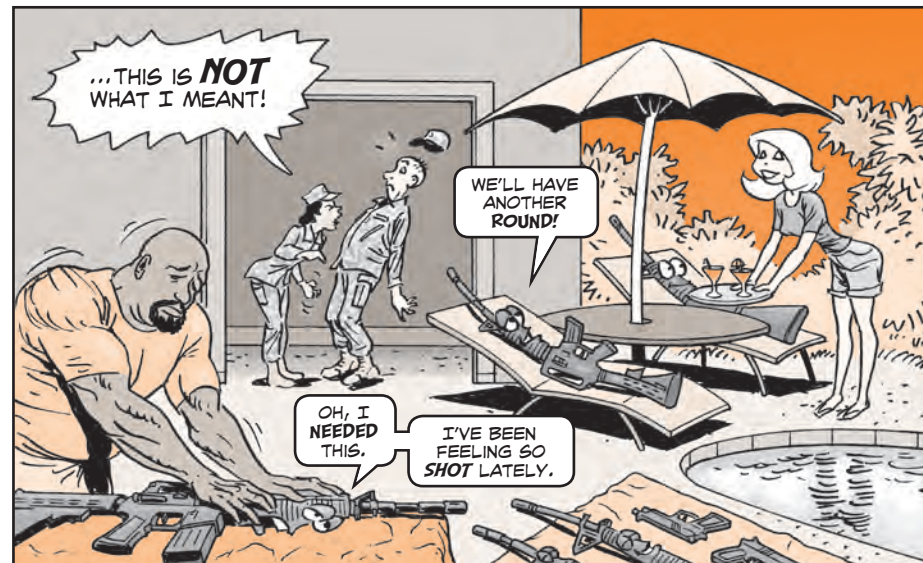
[anthony.j.pesano.civ@mail.mil](mailto:anthony.j.pesano.civ@mail.mil)

Or contact Tom Grover at (703) 704-3784, DSN 654-3784, or email:

[thomas.w.grover.civ@mail.mil](mailto:thomas.w.grover.civ@mail.mil)



# THINK RELAXED FOR STORAGE



Dear Editor,

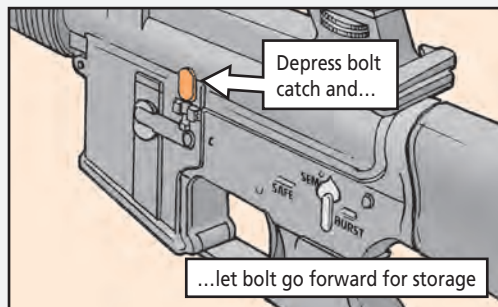
Through our experience repairing weapons here at the Ft Carson DOL, we see a couple of problems that armorers need to pay attention to:

### *Proper Storage*

Armorers are not storing rifles, machine guns and pistols properly. Soldiers lock and clear their weapons before they turn them in to the arms room. Often the armorers leave the hammer cocked and the bolt locked to the rear when they put the weapon in the rack. That tension on the hammer and trigger springs causes them to lose their strength, which means armorers then have to replace the springs. Leaving the bolt locked back weakens the recoil spring, which could lead to jamming.

For the M16 rifle and M4 carbine, storing them cocked can also cause them to fail the trigger pull test. Then the hammer and trigger pins must be removed and reinstalled. If that has to be done often, the pins' holes enlarge and fail gaging. Then the only fix is to replace the lower receiver.

Armorers can avoid all of these problems by *always* leaving the bolt or slide *forward*, the selector on *SEMI* for the M16/M4 or off *SAFE* for pistols and machine guns, and the hammer *uncocked* for storage. That's all it takes!



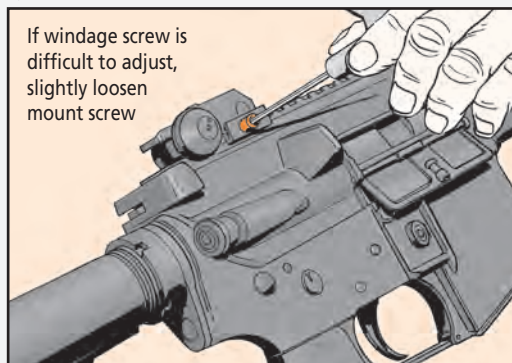
### *M16 Sight Suggestion*

If an ACOG sight is used on an M16 or M4, the backup iron sight should be installed on the weapon. The backup iron sight won't interfere with the ACOG, plus it is the ACOG's backup.

And, if Soldiers remove the iron sight, it's probably going to disappear. Stress this to the Soldiers in your unit.

If the iron sight's windage screw is difficult to adjust, it may just be that the sight's mount screw is too tight. Try loosening the mount screw a tiny bit and see if that solves the problem. Too often armorers just replace the iron sight when this problem occurs.

Allan Dykes  
Adam Treloar  
Ft Carson, CO



**Editor's note:** It only takes seconds, armorers, to uncock a weapon, slide the bolt forward, and set it on SEMI or off SAFE. Make it a habit to check that this has been done for every weapon before you put it in the rack.



Ammunition...

# Every Round Fired Doesn't Have To Be CC-A!



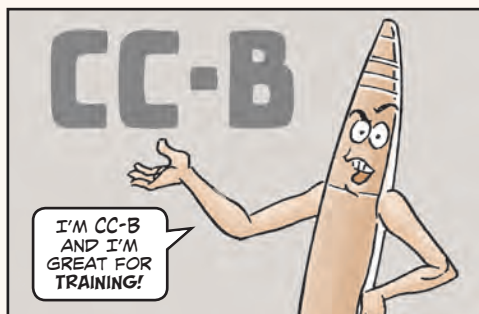
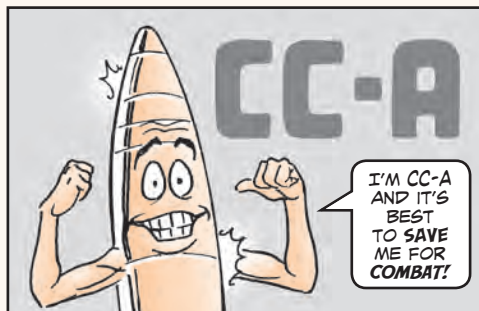
Dear Editor,

Ammunition supply points (ASPs) have millions of ammo rounds in varying condition codes (CCs). The codes are used to efficiently manage all these rounds.

Unfortunately, most units are only familiar with code CC-A: "serviceable and issuable to all customers without limitation or restriction." And that's all they ever ask for from their ASP.

That needlessly uses up CC-A ammo that is best saved for units deploying. CC-B ammo, for example, is "new, used, repaired, or reconditioned materiel that is serviceable and issuable for its intended purpose; however, it is restricted from issue to specific units, activities, or geographical area by reason of its limited usefulness."

A good example of CC-B ammo is linked machine gun tracer ammo whose tracers sometimes burn out before they reach their required distance. This ammo isn't good for combat, but it is excellent for training.



CC-C ammo is "serviceable (priority of issue) items that are issuable to selected customers, but which must be issued before conditions 'A' and 'B' materiel to avoid loss as usable assets."

Many CC-C types of ammo are lots in small quantities, lots with short shelf life or lots in cans that have already been partly fired. For example, a large segment of the M819 81mm smoke mortar cartridge stockpile is CC-C to ensure that ammo worth more than \$10M is used up rather than paying to get it demilitarized.

Units can save the Army big bucks and help their ASPs by asking for CC-B and CC-C ammo for training. One M819 mortar cartridge costs \$384, so you can see how big a help using the CC-C ammo can be. Firing up the CC-B and CC-C not only saves the cost of buying a new round, but frees up valuable storage space in ammo bunkers.

The Joint Munitions Command (JMC) teams of ammunition managers and quality assurance specialists and engineers spend many hours ensuring that any ammo units receive, regardless of condition code, will do what it's supposed to. JMC will never ship ammunition to you unless the ammo is determined to be reliable and safe to use.

Dan Saito  
JMC  
Rock Island, IL



*Editor's note: Units, keep Dan's suggestions in mind next time you get ready to train.*



Mortars...

# Tow MSK with HMMWV Only!

THE M326 MORTAR STOWAGE KIT (MSK) FOR THE M120MM MORTAR CAN'T BE TOWED WITH JUST ANY VEHICLE.

THE ONE AND ONLY VEHICLE THAT CAN SAFELY TOW THE MSK IS THE HMMWV.

Some units have tried using other vehicles. The result was broken MSK guide rails and upper guide plates. They make the MSK NMC, plus they're expensive to fix. So tow with the HMMWV only.

If you have any questions about the MSK, contact TACOM's Erik Jensen at DSN 786-1220, (586) 282-1220, or email: [erik.s.jensen4.civ@mail.mil](mailto:erik.s.jensen4.civ@mail.mil)

M9 Pistol...

## SAFETY LEVER UNSAFE?

Dear Editor,

The M9 pistol has been in use long enough that armorers need to be on the lookout for worn parts. We have seen several instances at Ft Carson where M9 safety levers have become worn to the point that there's too much distance between the lever and the hammer release lever. That makes the pistol unsafe.

Operators and armorers need to make a point of doing the Safety/Function check found in both TM 9-1005-317-10 and -23&P: "Rotate the decocking/safety lever to the SAFE (down) position. Manually cock hammer and release. Hammer should fall to full forward position." If the hammer stays cocked, the M9 is not safe to fire.

This is part of the operator's BEFORE PMCS, so this check always needs to be done before the M9 is fired.

Terry Blount  
TACOM Armament LAR  
Ft Carson, CO



Cock hammer and release.  
Hammer should fall full forward

**Editor's note:** Excellent tip, Terry. Thanks for letting us know this has become a problem.

Night Vision Sights...

DARN! YOUR DATA PLATE HAS DISAPPEARED!

I WONDER WHO CAN GET ME A REPLACEMENT?

CECOM!

## HOW TO REPLACE DATA PLATES

Dear Half-Mast,

We have a constant problem with the data plate labels disappearing from night vision weapon sights like the AN/PVS-4 or -4A or the AN/TVS-5 or -5A. Some units are etching the information onto the sights, which isn't a good idea. Is there any way to get replacement labels?

T.H.

Dear Mr. T.H.,

Yes, there is. Contact CECOM's Lauren Scicchitano at DSN 648-1404, (443) 395-1404, or email: [lauren.n.scicchitano.civ@mail.mil](mailto:lauren.n.scicchitano.civ@mail.mil)

Provide her the sight's NSN, how many labels are needed, whether the label is for the sight itself or the sight case, and a valid shipping address. Normally, you will receive the labels within a few days.

Units definitely should not etch numbers on sights. That could damage them or lead to corrosion.

Half-Mast

AN/PAS-13  
Thermal  
Weapon  
Sight...

## LITHIUM ONLY, PLEASE!

Sometimes it doesn't pay to try save a few bucks. A case in point is substituting standard alkaline batteries for L91 lithium AA batteries in the AN/PAS-13C, -13D and -13E thermal weapon sights.

The L91 AA batteries last up to 10 times longer than alkaline batteries, which means fewer battery changes during operations and less weight to lug around in your pack. Although alkaline batteries cost less per battery, they are more expensive, considering how many you need to complete a mission. So trying to save money by using cheaper batteries actually costs you money.

Order L91s with NSN 6135-01-333-6101 and use them.

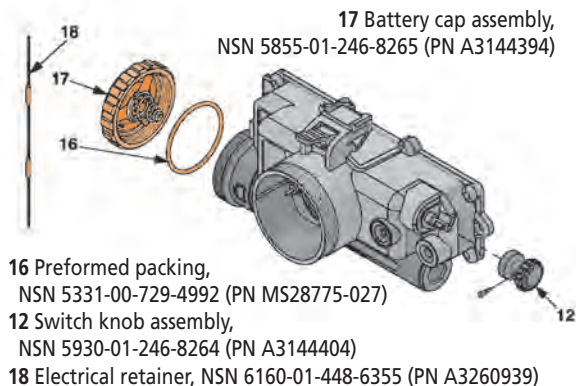
Many thermal weapon sights and night vision goggles are designed to be powered by 1.5V AA batteries. If you use batteries with a higher voltage in these devices, they will be damaged. Use only the batteries specified by the equipment's -10 TM.



## Wired Housing Assembly Brings ALL Parts

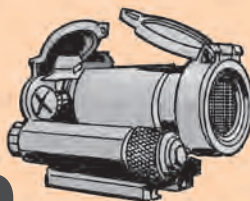
If you order the wired housing assembly, NSN 5855-01-381-6048 (PN A3207330), for the AN/PVS-7B and -7D night vision goggles, you don't need to order its components.

The wired housing assembly, which is shown as Fig C-2 in TM 11-5855-262-23&P-2, includes:



M68 Close Combat Optic...

## BATTERY BUSHING REPLACED



Dear Half-Mast,  
The battery sleeve bushing, NSN 3120-01-510-2337, for the M68 close combat optic (CCO) Comp M2 is a terminal item. How do I get a replacement?

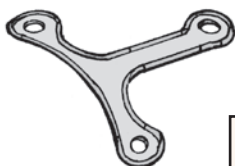
SFC E.B.

Dear Sergeant E.B.,

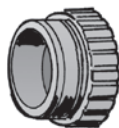
Good news! The bushing has been replaced with a battery extender assembly, which lets you install two batteries and thus gives your CCO more battery life.

Order these three items:

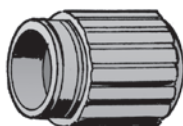
Rubber strap,  
NSN 5340-01-555-6132



Double battery holder assembly,  
NSN 6160-01-527-1695



Battery cap assembly,  
NSN 6160-01-555-6133



Half-Mast

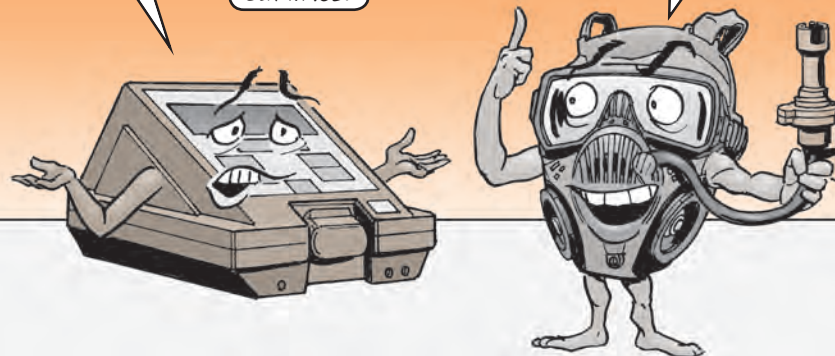
## M50/M51 Protective Masks: Is There an Adapter for PATS?

I'M NOT SURE I CAN TEST YOU!

I'M ONLY USED TO CHECKING OUT M40s.

SURE YOU CAN!

YOU JUST NEED MY PATS ADAPTER!



Dear Half-Mast,

We have already gotten the new M50/M51 masks. We are wondering if there's an adapter that will let us test it with the M41 PATS?

SFC R.R.

Dear Sergeant First Class R.R.,

Yes! The adapter for the M50/M51 comes with NSN 4240-01-546-4517 and allows you to connect the M41 PATS to the mask's drink tube.

The Army is going to begin widely fielding the M50/M51 masks in 2013. If you already have the M50/M51, here are a few other NSNs you will want to keep handy:

- Sunlight outsert, NSN 4240-01-528-9287
- Laser outsert, NSN 4240-01-528-9288
- Sizing tool, NSN 4240-01-532-7952
- Microphone adapter, NSN 5965-01-528-9290
- Drink coupler, NSN 4240-01-539-5593
- Outsert pouch, NSN 5140-01-539-5586
- Water canteen cap, NSN 8465-01-529-9800

For all the M50/M51 parts, check out the M50/M51's TM 3-4240-542-13&P at the ETM site: <https://www.logsa.army.mil/etms/>

You can also view there the M53's TM 3-4240-541-12&P.

If you have the M53 mask, you will need a different sizing tool. It comes with NSN 5120-01-529-9202.

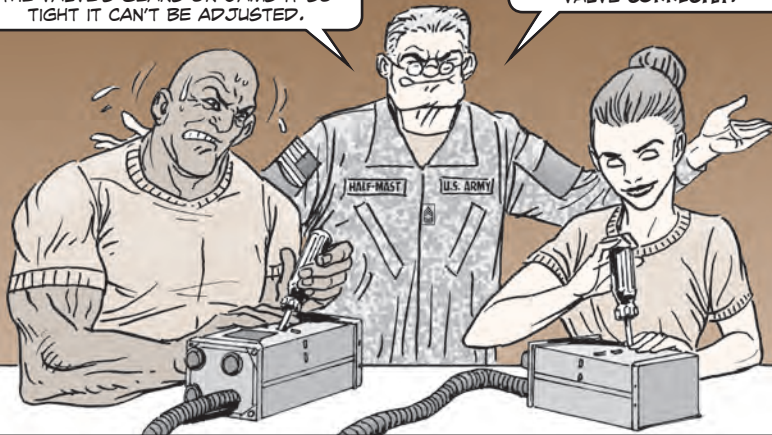
Half-Mast



# M2A2 Air Purifier... **EASY WITH IRIS VALVE**

MUSCLING UP ON THE IRIS VALVE ON THE M2A2 AIR PURIFIER EITHER STRIPS THE VALVE'S GEARS OR JAMS IT SO TIGHT IT CAN'T BE ADJUSTED.

IT TAKES JUST A LITTLE BIT OF TORQUE TO ADJUST THE VALVE CORRECTLY.



HERE'S THE SCOOP...

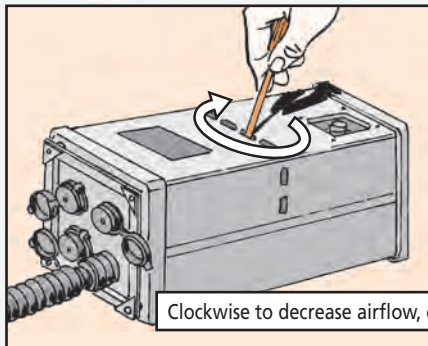


First make sure the cotter pin of the iris valve adjusting screw is not sheared off. If it is, the pin must be replaced before you can adjust the valve.

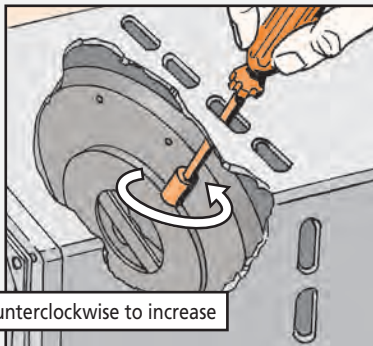
Adjust the airflow by inserting a screwdriver through the right center slot of the precleaner housing into the adjusting mechanism. Gently turn the screwdriver clockwise to decrease air flow or counterclockwise to increase airflow.

If you don't feel any resistance or hear any clicks, the air regulator is bad and needs to be replaced.

Acceptable airflow is 2.0 to 4.7 inches of water (3.0 to 4.5 cfm).

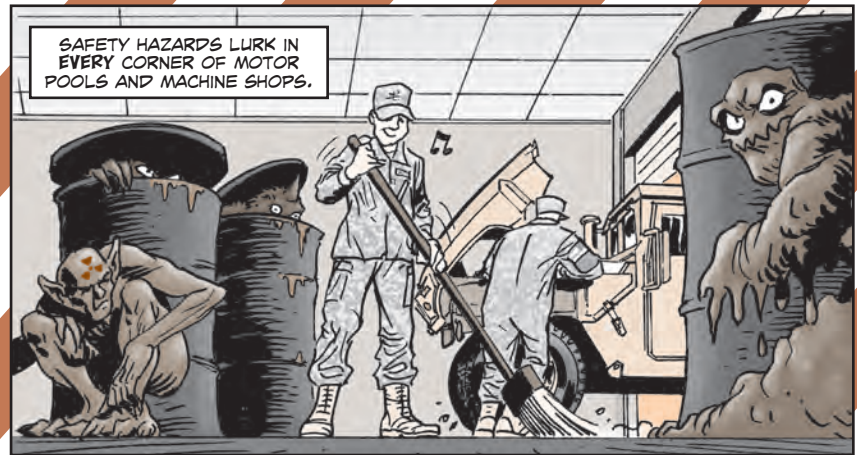


Clockwise to decrease airflow, counterclockwise to increase



# **CAUTION SIGNS FOR ALL OCCASIONS**

SAFETY HAZARDS LURK IN EVERY CORNER OF MOTOR POOLS AND MACHINE SHOPS.



BUT A FEW WELL-PLACED CAUTION SIGNS CAN ALERT SOLDIERS TO DANGER AND PROMOTE A SAFER WORKPLACE.

**CAUTION**  
HAZARDOUS  
MATERIAL  
STORAGE AREA



THE SIGNS ON THE NEXT PAGES ARE BLACK AND YELLOW, EXCEPT FOR THE FIRE EXTINGUISHER SIGN, WHICH IS RED AND WHITE.

FLIP THE PAGE TO FIND OUT MORE...







THESE SIGNS ARE 10 X 14 INCHES...

| Legend  | NSN 9905-    |
|---|--------------|
| CAUTION<br>Hearing Protection Required              | 01-100-8205  |
| CAUTION<br>Hearing Protection Required In This Area | 01-031-1247  |
| CAUTION<br>Eye Protection Required                  | 01-100-8203  |
| CAUTION<br>Do Not Operate Without Eye Protection    | 01-100-8204  |
| CAUTION<br>Watch Your Step                          | 01-054-0450* |

These are 7 x 10-in signs

**CAUTION**  
**HAZARDOUS MATERIAL STORAGE AREA**

**CAUTION**  
**HAZARDOUS/TOXIC CHEMICALS ARE USED IN THIS PLACE. MATERIAL SAFETY DATA SHEETS ARE AVAILABLE IN THE SUPERVISOR'S OFFICE**

| Legend  | NSN 9905-    |
|---|--------------|
| CAUTION<br>Hazardous Material Storage Area  | 01-342-4851* |
| CAUTION<br>Hazardous/Toxic Chemicals Are Used In This Work Place. Material Safety Data Sheets Are Available In The Supervisor's Office. | 01-342-4857* |
| CAUTION<br>Respirator Required In This Area   | 01-342-4853* |

**CAUTION**  
**RESPIRATOR REQUIRED IN THIS AREA**

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



**CAUTION**  
**DO NOT OPERATE MACHINERY WITHOUT GUARDS**

**CAUTION**  
**OPEN DOOR SLOWLY**

**CAUTION**  
**HAZARDOUS MATERIAL STORAGE AREA**

**CAUTION**  
**WEAR GOGGLES WHEN USING THIS MACHINE**

THESE ARE 3 X 5-IN SIGNS.

| Legend   | NSN 9905-    |
|--|--------------|
| CAUTION<br>Do Not Operate Machinery Without Guards | 01-342-4854* |
| CAUTION<br>Open Door Slowly                        | 01-342-4852* |
| CAUTION<br>Hazardous Material Storage Area         | 01-342-4859* |
| CAUTION<br>Wear Goggles When Using This Machine    | 01-342-4855* |

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

| Legend  | Size in inches | NSN 9905-   |
|---|----------------|-------------|
| CAUTION<br>Eye Protection Required In This Area | 7 x 17         | 01-210-5241 |
| Fire Extinguisher                               | 10 x 14        | 01-195-7682 |

**CAUTION**  
**EYE PROTECTION REQUIRED IN THIS AREA**

Here are two more signs that contribute to safety:

**FIRE EXTINGUISHER**

If you have noisy gear, slap this black and yellow caution plate on it: CAUTION High Intensity Noise Hearing Protection Required. Get it with NSN 9905-00-198-2728. The plate is 4.6 x 2.13 inches and comes with an adhesive backing.

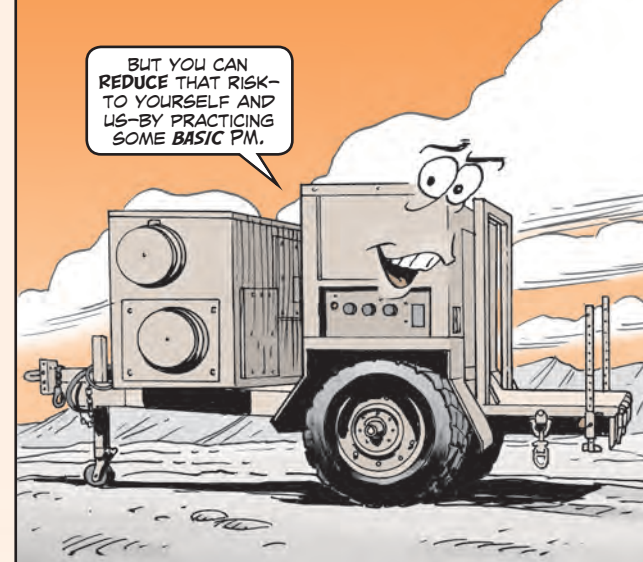
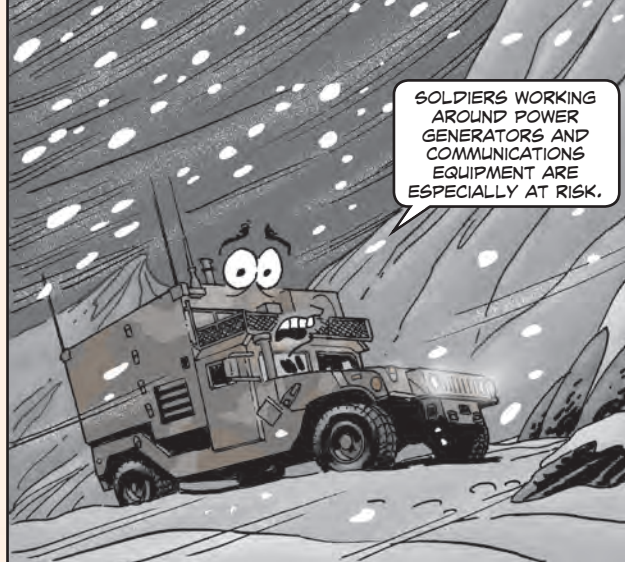
For more information on using signs and symbols in dangerous areas, see OSHA Regulation 29 CFR 1910, Subpart J. You'll find it at the OSHA website at:

<http://www.osha.gov/>



# STAY SAFE AROUND ELECTRICITY!

ELECTRICAL CURRENT CAN BE DANGEROUS, EVEN LIFE-THREATENING!



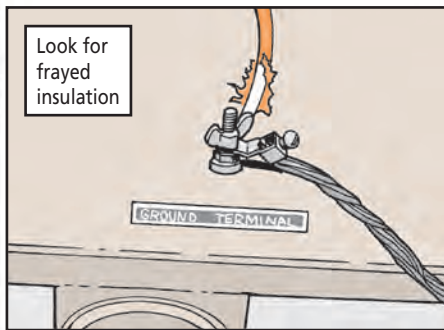
HERE ARE SOME PM TIPS FROM THE PROGRAM MANAGER'S OFFICE FOR MOBILE ELECTRIC POWER.

READ AND APPLY THEM. THEY WILL SAVE LIVES.

## 1. Inspect wiring regularly.

Look for frayed insulation and insulation worn down to the bare wires. It may not be your job to fix a wiring problem, but it is your job to report it.

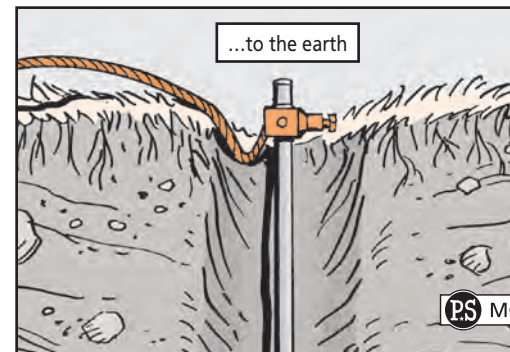
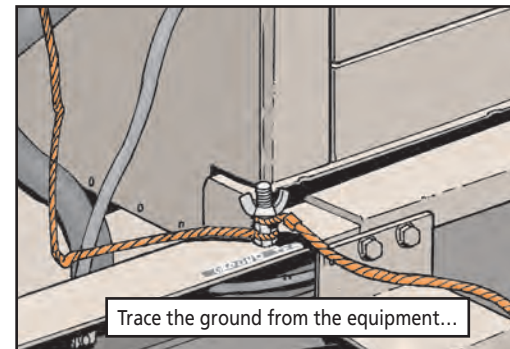
Look for frayed insulation



## 2. Check for grounds.

Every ground has two ends. At one end, the grounding wire is attached to a piece of equipment or a shelter. At the other end, the grounding wire is attached to a ground rod firmly planted in the earth.

The grounding wire should not be frayed or spliced. Make sure good compression connections, such as a lug-and-bolt, are used to attach the grounding wire to the equipment and the ground rod. Clips won't do the job. Never operate generators or equipment when the grounding electrode conductor is disconnected or you are working on it. If you do, stray voltage could hurt you or your equipment.





### 3. Equipment grounding conductors (EGCs) or bonding wires are just as important as earth grounds.

Check them also. They are there for your protection. EGCs are usually the green wire in the cable bundle that connects to the generator. Check to make sure EGCs or bonding wires are in place. Make sure they are not broken. Check connections to make sure they are tight.

Equipment specialists need to ensure that a low-impedance path to clear the mobile power equipment circuit breakers is in place and intact. Use your TM to check for a damaged EGC and the steps to take if you find one.

### 4. Co-located shelters need to be both grounded and bonded.

Bonding is when you electrically connect two shelters to keep them at the same voltage. A voltage difference between two shelters can lead to shocks and even electrocution. The best place for this bond is at the ground connections of the co-located equipment and shelters.

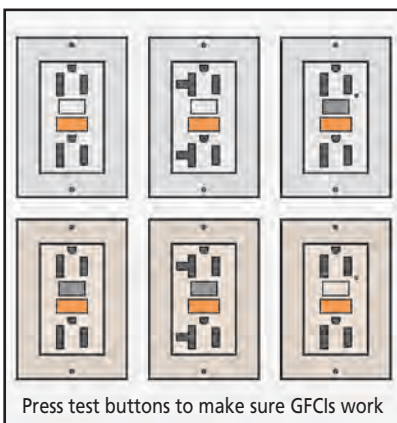


### 5. Check all ground fault circuit interrupters (GFCIs) and circuit breakers monthly.

They are for your protection. But if they are not maintained, they will not work. And if they don't work, they won't protect anyone.

Check the GFCIs and circuit breakers to make sure they haven't tripped. If they have tripped, the switch or lever will not be fully seated. GFCIs usually have a separate indicator that pops out when tripped. It's also a good idea to turn breakers off and back on to make sure the switches move.

Circuit breakers should never be used as a switch, unless they're designed to be one like on most generators and CE shelters. If a circuit breaker repeatedly trips, there is a reason. There is either an overcurrent, a short to ground or an equipment malfunction. All are dangerous conditions.



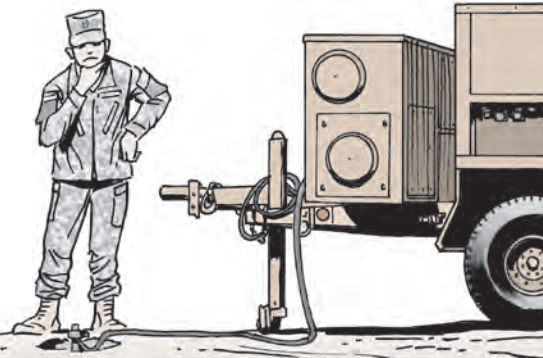
ONE OTHER TIP:  
OPENING A GROUND  
CIRCUIT DOES **NOT**  
CURE A CIRCUIT  
BREAKER TRIPPING  
PROBLEM.

IT JUST CREATES  
ANOTHER PROBLEM  
...A HAZARDOUS ONE.



WHEN YOU WORK WITH  
ELECTRICAL SYSTEMS...  
WHETHER IT'S MOBILE  
POWER OR FIXED  
INSTALLATIONS...**NEVER**  
TAKE NOMINAL VOLTAGE  
FOR GRANTED.

**ALL SOLDIERS ARE  
RESPONSIBLE FOR  
LOOKING OVER  
ELECTRICAL EQUIPMENT  
AND SPOTTING  
PROBLEMS.**



QUALIFIED SOLDIERS  
**MUST** VERIFY VOLTAGE,  
GOOD GROUNDING,  
GOOD WIRING AND  
GOOD BONDING.

THEY **MUST ALSO**  
MAKE SURE ALL  
ELECTRICAL SAFETY  
PROCEDURES ARE  
FOLLOWED.



FOR MORE  
INFORMATION, GET  
CECOM PAMPHLET  
TR 98-6, **EARTH  
GROUNDING AND  
BONDING.**

CONTACT CECOM DIRECTORATE FOR SAFETY  
AT DSN 648-3812, (443) 395-3812, FAX  
(443) 395-3836 OR EMAIL:  
[usarmy.APG.cecocom.mbx.amsel-sf@mail.mil](mailto:usarmy.APG.cecocom.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





# EXITING THE METHODS OF PRESERVATION MAZE: METHOD 20

THIS IS THE THIRD  
ARTICLE IN A SERIES,  
WHICH BEGAN WITH  
"CLEARING THE METHODS  
OF PRESERVATION MAZE"  
ON PAGES 52-53 IN  
PS 722 (JAN 13).

BACK IN JANUARY, WE INTRODUCED YOU  
TO A TYPE OF MAZE. IT'S THE "MAZE  
OF INDECISION" CAUSED BY CONFUSION  
OVER THE VARIOUS MILITARY PACKAGING  
PRESERVATION METHODS.

IN FEBRUARY'S  
ISSUE WE  
EXPLAINED  
METHOD 10.

HALP!

WRONG  
TURN!

THIS  
WAY

GOOD  
LUCK

THIS  
WAY

THAT  
WAY

SO CLOSE

THIS MONTH WE'LL COVER  
METHOD 20, THE **SECOND**  
POTENTIAL "EXIT" FROM  
THE MAZE.

I KNOW WHAT TO DO.  
I'LL LEAVE A TRAIL OF  
**BREAD CRUMBS**,  
JUST LIKE IN THAT  
FAIRY TALE.

NOW I WON'T  
GET LOST.

LOOK,  
HANSEL...

...ZA  
BREAD  
CRUMBS!

JA! JA!  
LET'S  
COLLECT  
ZEM TO  
USE ZO  
VE DON'T  
GET  
LOST.

## Method 20

Method 20 is physical protection with preservative (with greaseproof wrap, as required).

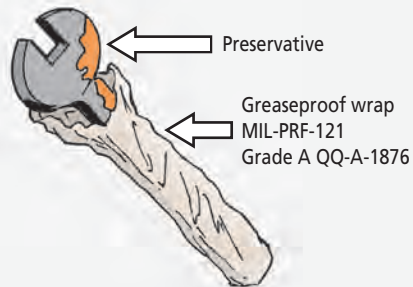
Use Method 20 primarily on metal items when their characteristics allow application of a corrosion preventive compound by dipping, flow coating, slushing, spraying, flushing, brushing or fogging.

Items preserved by Method 20 must not be damaged or impaired when removing preservatives using solvents, vapor degreasers, or alkali metal-cleaning compounds.

To use Method 20, apply a preservative coating to the item and, in some cases, add a greaseproof wrap. The preservative coating protects the item against water, salt, gasses or fumes during handling, shipping and storage.

In Method 20, the entire chemical protection afforded to the item is through the contact preservative.

### Method 20 - Preservative Coating Only (with greaseproof wrap, as required)



MIL-PRF-16173 hard preserved items and  
MIL-PRF-3420 or MIL-PRF-22019 VCI protected  
items may be exempt from wrapping

USING YOUR MAP OF MIL-STD-2073-1,  
STANDARD PRACTICE FOR MILITARY PACKAGING,  
FOLLOW THESE STEPS FOR **METHOD 20**...

#### 1. Clean and dry the item.



#### 2. Select and apply a preservative coating to the item or its parts as needed.



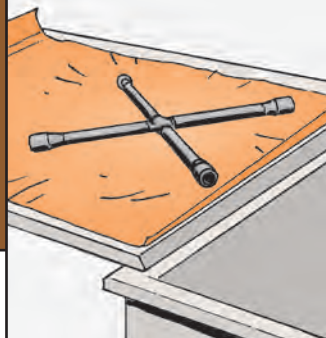


**NOTE:** BEFORE PROCEEDING TO STEP 3, ALLOW PARTS COATED WITH CODE 01 OR CODE 19 PRESERVATIVES TO DRY.

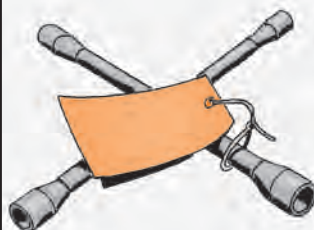
**DO NOT APPLY** THE WRAP IN STEP 3 UNLESS SPECIFIED IN THE CONTRACT OR ORDER.

ITEMS TREATED WITH CODE JL, VCI-TREATED BARRIER MATERIAL (MIL-PRF-22019) OR BAG (MIL-B-22020), WHICH ARE SECURELY TAPED TO MAKE AN AIRTIGHT ENCLOSURE, ARE **ALSO** EXEMPT FROM THE WRAP IN STEP 3.

**3. Enclose the coated item, cushioned as required, in a wrap conforming to MIL-PRF-121, Type I or II.**



**4. Apply markings according to MIL-STD-129.**



**NEXT MONTH, WE'LL DISCUSS METHOD 30.**

THERE, THERE...POOR BABY...IT'S OVER.



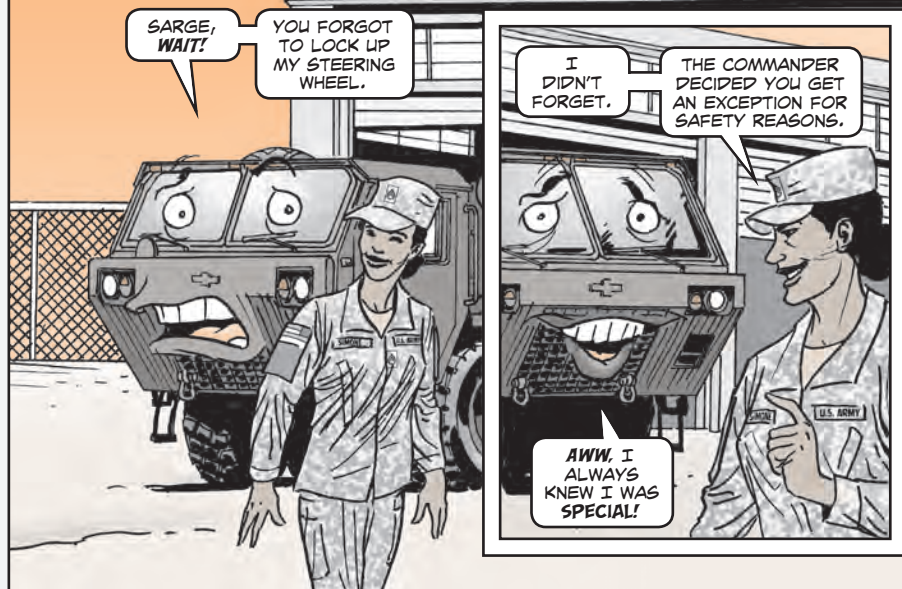
IF YOU GET **LOST** IN THE "MAZE" OR NEED HELP, CALL THE LOGISTICS SUPPORT ACTIVITY'S PACKAGING, STORAGE AND CONTAINERIZATION CENTER AT DSN 795-7105, (570) 615-7105, OR EMAIL [toby.pt@us.army.mil](mailto:toby.pt@us.army.mil)

You can find the publications referenced in this series at:  
<http://quicksearch.dla.mil/>

The quickest way to find a pub is to enter the numbers from its title (for example, MIL-STD-129 would be '129') into the Document Number search box and then press the Submit button.

Safety...

## Fuel Rigs: Lock 'em Up or Not?



For safety reasons, some units used to leave steering wheels unsecured on refueling vehicles and fuel tankers. If there was a fire, then these vehicles could be quickly moved out of danger.

Times change and security at post installations has been beefed up across the board. Now most units secure all of their motor pool vehicles. Some assume there are no exceptions to this rule.

Turns out there **is** a regulation that exempts fuel vehicles. It's just not easy to find. It's not covered in safety, maintenance, or hazardous waste/environmental publications. It's in a military police regulation.

AR 190-51, *Military Police, Security of Unclassified Army Property (Sensitive and Nonsensitive)* (Sep 93), requires military vehicles be secured.

However, Para 3-5e (2g) lists this exception: "Fuel tanker vehicles when, in the judgment of the installation commander, locking would create a potential unacceptable hazard to life or property."

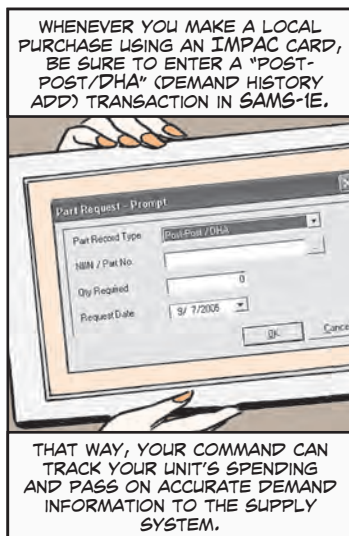
The AR is available online at the Army Publishing Directorate's website:

[http://armypubs.army.mil/epubs/pdf/r190\\_51.pdf](http://armypubs.army.mil/epubs/pdf/r190_51.pdf)

The key to resolving conflicting safety and security concerns is **risk assessment**. Commanders must weigh all the risks and make the final call.

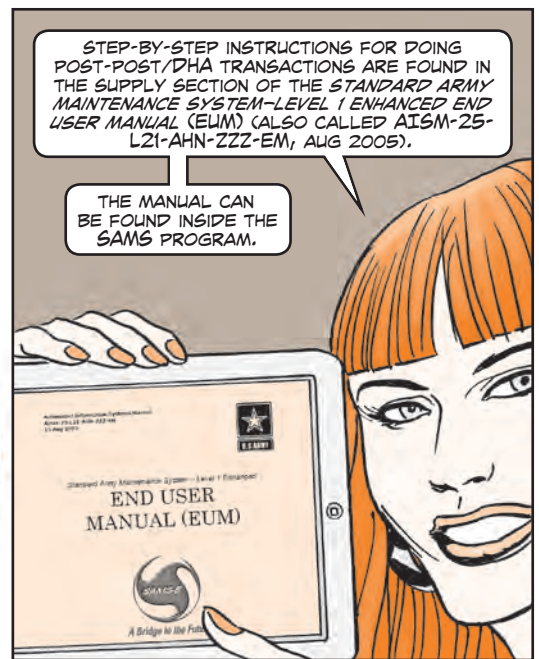


# Give Supply System a Helping Hand



FAILURE TO ENTER MANUAL REQUISITIONS FOR LOCAL PURCHASE ITEMS CAN RESULT IN **REDUCED** UNIT FUNDING FOR MAINTAINING AND OPERATING VEHICLES, WATERCRAFT OR EQUIPMENT.

CONSISTENTLY REPORTING IMPAC PURCHASES HELPS ENSURE YOUR UNIT'S OPERATING AND MAINTENANCE COSTS ARE ACCURATELY CAPTURED FOR ANNUAL BUDGET REVIEWS.



## Where to Find ALARACTs

Some of you need to track down All Army Activity (ALARACT) messages. The Army keeps an online database in AKO of ALARACTs going back to 1990. Folders are filed by year. Grab your CAC and check it out at:

<https://www.us.army.mil/suite/page/550282>

While you're there, be sure to save the main folder to your AKO favorites so you can find it again.

## Attention Army Mariners

Hunting for spare parts or TMs for your watercraft? The experts at TACOM in the Troop Support Group can help. Call DSN 330-6154, (586) 467-6154, or email:

[usarmy.detroit.tacom.mbx.ilsc-watercraft@mail.mil](mailto:usarmy.detroit.tacom.mbx.ilsc-watercraft@mail.mil)

## AR 700-145 Hits the Streets

A new Army Regulation, AR 700-145, *Item Unique Identification*, covers policy and responsibilities for planning, acquiring and sustaining item unique identification for Army-managed items. It became effective 24 October 2012.

Download the new AR at: [http://www.apd.army.mil/pdf/files/r700\\_145.pdf](http://www.apd.army.mil/pdf/files/r700_145.pdf)

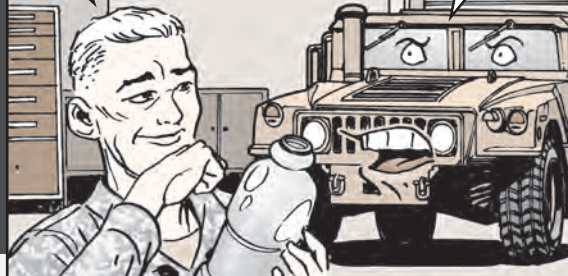
AOAP...

GLUG!  
GLUG!  
GLUG!



AHH... THAT WAS **GOOD!**  
HMM... NO NEED TO  
THROW THIS AWAY, I'LL  
JUST USE IT FOR MY  
AOAP SAMPLE.

UHH... I DON'T KNOW  
ABOUT THAT! YOU MIGHT  
WANT TO THINK **TWICE**  
BEFORE YOU REPURPOSE  
THAT BOTTLE!!



# OIL SAMPLING BOTTLES, PUMPS-AND- SUPPLIES

I'D LIKE TO USE  
THE **RIGHT** BOTTLE  
FOR MY AOAP,  
BUT I DON'T KNOW  
WHERE TO GET IT!

BOY,  
ARE  
YOU IN  
**LUCK!**



TRYING TO GET THE **RIGHT**  
PARTS FOR OIL SAMPLING  
BOTTLES AND PUMPS CAN  
BE LIKE PUTTING TOGETHER  
A PUZZLE. IF A PIECE IS  
**MISSING**, YOU **DON'T** HAVE  
THE **COMPLETE PICTURE**.



IF YOU'VE BEEN HAVING  
PROBLEMS FINDING AOAP  
PUMPS, O-RINGS, BOTTLES  
AND OTHER SUPPLIES, CHECK  
OUT TB 43-0211, **ARMY OIL  
ANALYSIS PROGRAM (APR 10)**  
FOR EVERYTHING YOU NEED.  
OR, CHECK OUT THESE LISTS...

## Aeronautical AOAP Sampling Supplies

| Item                                | NSN              | Qty   |
|-------------------------------------|------------------|-------|
| Nonmetallic tubing,<br>15"x 3/8" OD | 4710-00-933-4415 | 100   |
| Nonmetallic tubing,<br>30"x 10" OD  | 4710-01-087-1629 | 100   |
| Screw cap bottle                    | 8125-00-933-4414 | 144   |
| Shipping sack<br>6"x 10"            | 8105-00-290-0340 | 250   |
| Pressure sensitive<br>labels        | 7530-00-082-2661 | 5,000 |
| Plastic bag                         | 8105-00-837-7754 | 1,000 |

## Non-aeronautical AOAP Sampling Supplies

| Item                           | NSN              | Qty   |
|--------------------------------|------------------|-------|
| Oil sample bottle              | 8125-01-082-9697 | 120   |
| Sampling pump<br>(43mm)        | 4930-01-119-4030 | 1     |
| Sampling pump<br>(38mm)        | 4930-01-592-1656 | 1     |
| Non-metallic tubing<br>0.25 OD | 4720-00-964-1433 | 1,000 |
| Shipping sack<br>6"x 10"       | 8105-00-290-0340 | 250   |
| Oil sample<br>bottle mailer    | 8125-01-193-3440 | 24    |

## Vacuum Pump Spare Parts

### Old Style Pump (with Stand)

| Item   | NSN              | Qty |
|--------|------------------|-----|
| O-ring | 5331-00-579-8156 | 1   |
| O-ring | 5331-01-231-5216 | 1   |

### New Style Pump (No Stand)

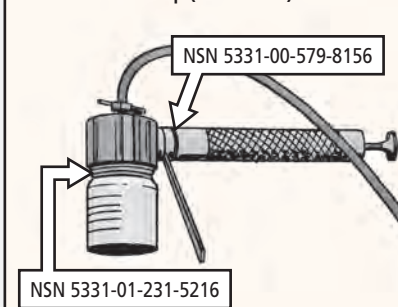
| Item   | NSN              | Qty |
|--------|------------------|-----|
| O-ring | 5331-00-579-8156 | 1   |
| O-ring | 5331-01-133-5858 | 1   |
| O-ring | 5331-01-226-8750 | 1   |
| O-ring | 5331-01-231-5216 | 1   |

CHECK OUT THE  
FIGURES BELOW TO  
HELP WITH REPLACEMENT  
O-RINGS FOR THE OIL  
SAMPLING PUMPS WITH  
AND WITHOUT THE  
STAND.

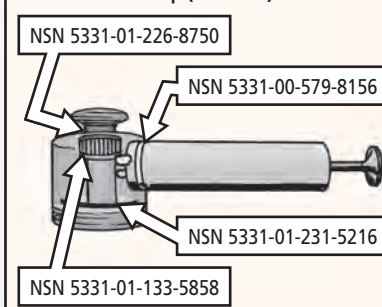
A SINGLE  
SAMPLE  
BOTTLE FOR  
BOTH AVIATION  
AND GROUND  
SUPPORT  
EQUIPMENT IS  
IN THE WORKS.  
WHEN AN NSN IS  
AVAILABLE, PS  
WILL GET THE  
WORD OUT!



### Pump (with stand)



### Pump (no stand)



Get replacement O-rings for oil sampling pumps



# Connie's POST SCRIPTS

SAY, BULL,  
REMEMBER OUR POST  
SCRIPTS SECTION?



SURE DO,  
CONNIE!



## FMTV -10 TM Binder

Get a binder for your FMTV's -10 TM with NSN 7510-00-889-3494. This green binder measures 2 1/2 x 8 x 10 inches.

## 966H Scoop Loader Axle Oil

The axle oil, NSN 9150-00-491-7197, listed as Item 31 in WP 0233 00-4 of TM 5-3805-291-23-2, is for arctic conditions only. Using it for anything other than arctic conditions will result in axle failure.

## HGU-56/P Helmet Update

The HGU-56/P aircrew integrated helmet system (AIHS) has a new quick-release chin strap assembly, NSN 8415-01-558-1082. The assembly is made up of the chin strap, NSN 8415-01-558-3127, and the quick-release pad, NSN 8475-01-434-0707. These NSNs replace the old chin strap assembly, NSN 8415-01-394-8023, which is a terminal item.

## M16/M4 MAGAZINE TOOL

Armors need to make sure they have the tool for weeding out bad M16 rifle/M4 carbine magazines. The tool, NSN 5120-01-574-0036, costs less than \$25. For instructions on using the tool, see Page 21 of PS 700 (Mar 11):

<https://www.logsa.army.mil/psmag/archives/PS2011/700/700-21.pdf>

## M1 Tank FBCB2 Correction

The FBCB2 central processing unit (CPU) article on Page 5 of PS 720 (Nov 12) was mistakenly listed as applying to the M1A2 SEP tank. The information actually applies only to the M1A1SA tank. The M1A2 SEP tank's FBCB2 is completely embedded.

## AR 11-1 Revision Makes Rounds

A major revision to AR 11-1, *Command Logistics Review Program*, went into effect 27 November 2012. It covers policies and responsibilities for managing the Command Logistics Review Program (CLRP). There is an added requirement for mandatory annual reports to the Deputy Chief of Staff G-4. Download the revised AR at:

[http://www.apd.army.mil/pdf/r11\\_1.pdf](http://www.apd.army.mil/pdf/r11_1.pdf)

## The FREE Ensemble TM is on the Net

Now that the fire resistant environmental ensemble (FREE) is being fielded, you'll need to keep it in good shape. Download TM 10-8415-237-10 from the LOGSA ETM and Air Warrior websites:

<https://www.logsa.army.mil/etmpdf/files/080000/086849.pdf>

<https://airwarrior.redstone.army.mil/Library/DocumentTracking.aspx?filterType=All>

## HEMTT A4 Forward Lighting Kit Brightens Wide Area

Need lighting for a wide area that works on your unit's HEMTT A4 trucks? Get the forward lighting system with NSN 6220-01-584-9947. That brings the kit and installation instructions for a front light bar with six lights. It costs about \$6,800.

## M978A4 HEMTT Hardware Update

There are a couple of NSN changes for your M978A4 HEMTT's hardware shown in Fig 438 of TM 9-2320-326-14&P. The coupling clamp, NSN 4730-00-142-1589, shown as Item 6, now comes with NSN 4730-01-514-5018. And the gasket, NSN 5330-01-161-6104, shown as Item 8, now comes with NSN 5330-00-391-8491. Make a note until the TM is updated.

## Online Archive of The HIP Times Now Available

Back issues of *The Heavy Tactical Vehicle Improvement Program (HIP) Times* are now available online. Eyeball the TACOM-produced newsletter's HEMTT, PLS, HET and M915 truck maintenance updates from 1994 to the present at:

<http://www.themotorpool.org>

Use a military email address to gain access.

## BATTERY BOX COATING COMPOUND

Any time the batteries are removed from your vehicle, eyeball the condition of the battery box. Use a wire brush to scrape off rust and old paint. After cleaning up the debris, protect the bare metal inside the box with bituminous coating compound. NSN 8030-00-290-5141 brings a gallon of the compound.

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?



**SAFETY-SMART  
MECHANICS  
USE MORE  
THAN JUST EYE  
PROTECTION!**



**THEY USE  
HEARING  
PROTECTION  
AND  
GLOVES,  
TOO!!!**