



**THE
PREVENTIVE
MAINTENANCE
MONTHLY**

ISSUE 761 APRIL 2016



COMBAT VEHICLES

Stryker Oil Drain Pan Leaks
Stryker Emergency Fuel Shutoff Panel Damage
Stryker Fuel Pump Line Corrosion
M88A2 Recovery Vehicle Power Cable Rub
M119A3 Howitzer PM Tips



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Vehicle Antenna Tie-down Advice



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TB 43-PS-761, 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 of those DoD or DA. Neither DoD nor DA exercises any editorial control over, and cannot vouch for, content on non-DoD websites.

PS, The Preventive Maintenance Monthly (ISSN 0475-2953) is published monthly by the Department of the Army, Redstone Arsenal, AL 35898. 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), Bldg. 3303, Redstone Arsenal, AL 35898.

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

Just write to:

MSG Half-Mast

PS, the Preventive Maintenance Monthly

USAMC LOGSA (AMXLS-GP)

Bldg. 3303

Redstone Arsenal, AL 35898

Or email:

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

Internet address:

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

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1601505

Issue 761

PS

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April
2016

THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-761

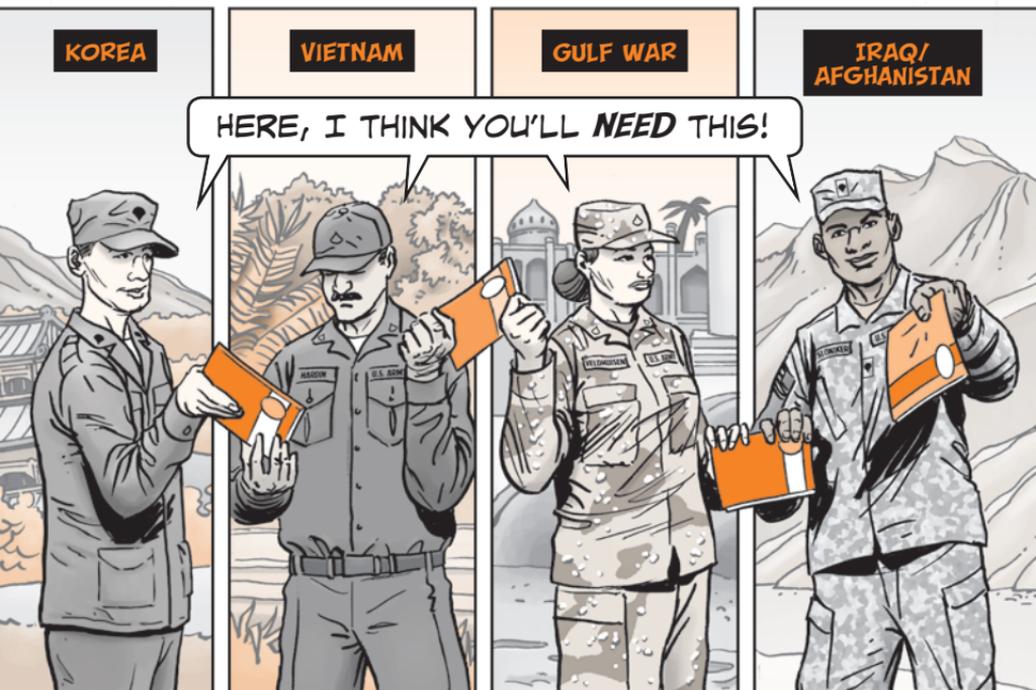
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EVEN IF
YOU END
UP IN THE
RAIN...

...GOOD
PM KEEPS
YOU IN THE
GAME.

See Pages 56-57 to learn about DAC's *ammo and explosives apps!*

PS Has Your Back!



The Army budget was big over the last 14 years. Lots of new equipment and extensive contractor support. Now one word—sustainment—tells us that something’s changed.

That word cements the fact that Army funding is decreasing; end strength is declining, too. The era when supplies were plentiful and Soldiers could hand over most maintenance and repair tasks to contractors has ended.

As contractor support winds down, many Soldiers must learn or relearn how to maintain Army equipment. But the equipment is more complex and the budget is more limited than ever. It’s the ultimate challenge of “Do more with less.”

We know fewer Soldiers loaded with more responsibilities equals a mighty heavy load in the maintenance lane. Fortunately, that’s one area where we can help.

We’ve got 65 years under our belt at *PS Magazine*, so we’ve weathered a few drawdowns over the decades. We know it’s an uncertain and even scary time, but like always, we’ve got your back.

To stay in the know, read current and prior *PS* issues at:

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

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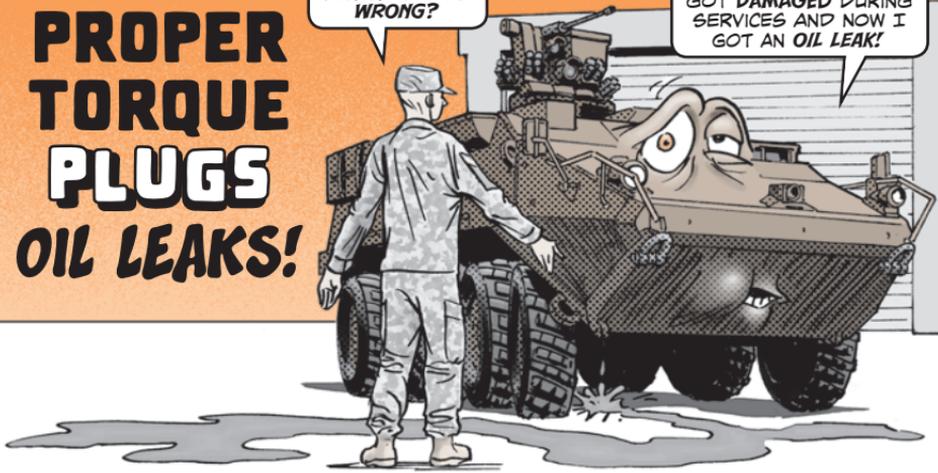
PS COMBAT VEHICLES



PROPER TORQUE PLUGS OIL LEAKS!

YOU LOOK AWFUL! WHAT'S WRONG?

MY OIL PAN DRAIN GOT DAMAGED DURING SERVICES AND NOW I GOT AN OIL LEAK!



HEADS UP, STRYKER MECHANICS! QUITE A FEW DOUBLE V-HULL STRYKERS ARE DEVELOPING LEAKS AT THE OIL PAN DRAIN.

IF ENOUGH OIL LEAKS, THE STRYKER'S C7 ENGINE IS SEVERELY DAMAGED, COSTING YOUR UNIT **BIG MONEY.**



Leaks happen when the 90-degree elbow fitting, which attaches to the oil drain tube, is torqued too tight while attaching it and the fitting adapter to the bottom of the drain pan.

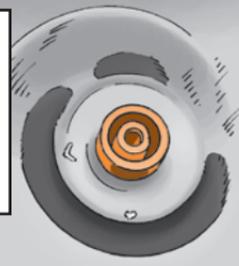
A too-tight fitting can damage the insert where the fitting attaches to the oil pan drain. If the insert is damaged or pulls away from the drain pan, an oil leak starts.

So during services, torque the fitting to 33-37 lb-ft, but no tighter. That will keep the fitting in place and keep leaks from happening.

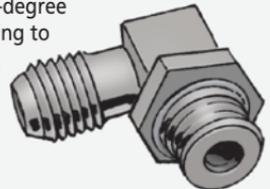
Oil can leak if insert is damaged or missing



Oil pan drain insert can be damaged or pull loose if fitting is too tight



Torque 90-degree elbow fitting to 33-37 lb-ft



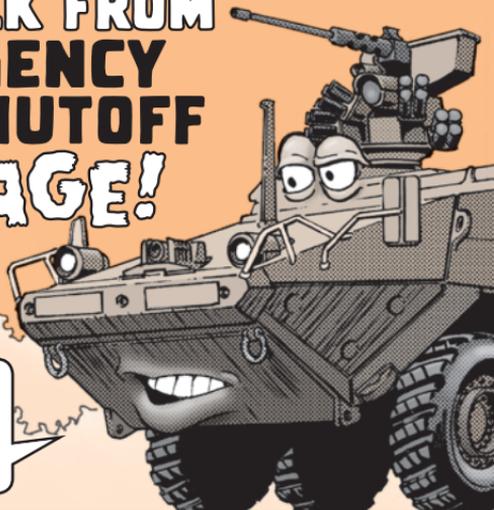
Stryker...

STEP BACK FROM EMERGENCY FUEL SHUTOFF DAMAGE!

MISSION
TIME, GOOD
BUDDY!



REMEMBER
WHAT HAPPENED
LAST TIME, SO
WATCH WHERE
YOU PUT THOSE
BIG FEET!

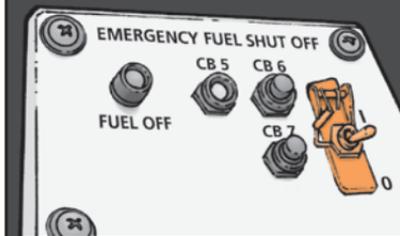


Crewmen, the driver's compartment in your Stryker can be tight quarters. So be very careful to not damage the emergency fuel shutoff panel when you're squeezing in and out of the compartment.

One wrong move and your boots can easily knock the panel, NSN 2910-20-006-8496, out of action. And without a working emergency fuel shutoff panel, your Stryker is NMC! Replacing it will set your unit back about \$2,800.

It's also easy for your personal gear, including weapons, to snag the panel and tear off circuit breakers, switch guards and switches. So easy does it when you're getting in and out of the driver's compartment.

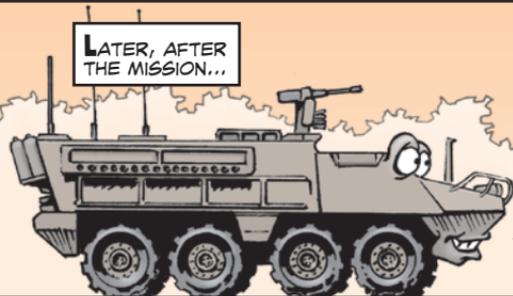
Emergency fuel shutoff panel can be damaged when entering or exiting driver's compartment



LATER, AFTER
THE MISSION...

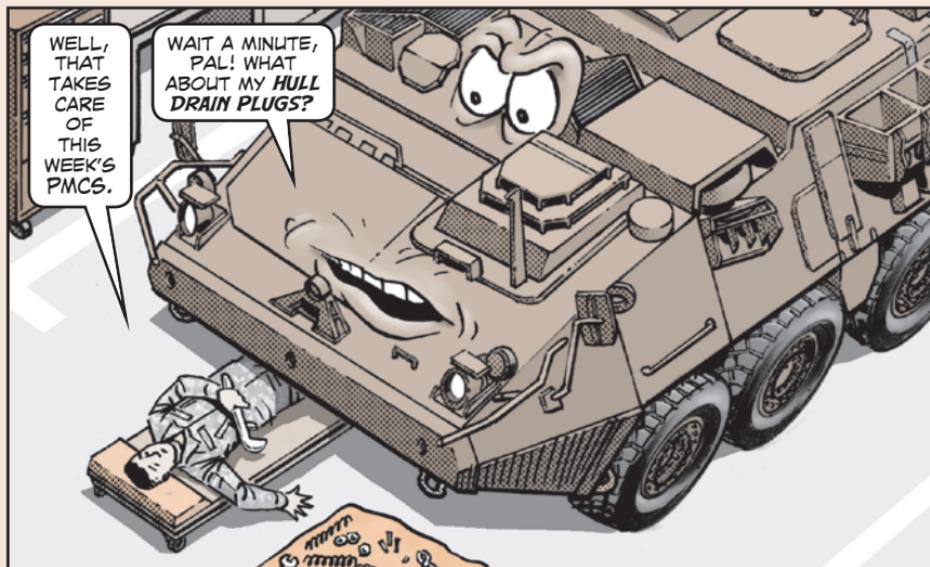
I DIDN'T STEP ON ANY-
THING I SHOULD'N HAVE!

YOU'RE SO GOOD
ON YOUR FEET, YOU
REALLY OUGHTA BE
ON **DANCING WITH
THE STARS!**



Stryker...

PLUG AWAY FUEL PUMP PROBLEMS

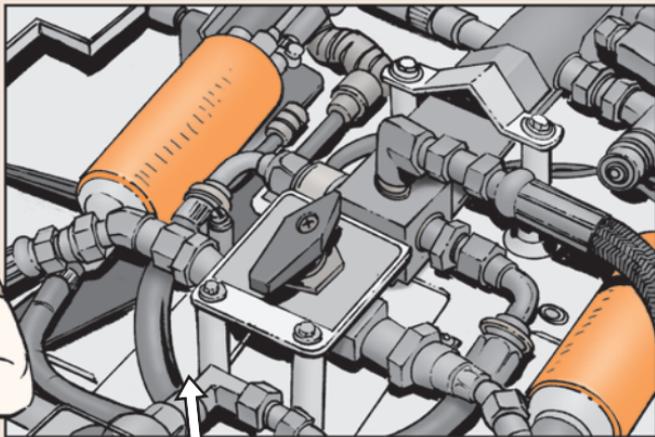


CREWMEN, REMOVING YOUR STRYKER'S HULL DRAIN PLUGS AFTER EVERY MISSION AND DURING WEEKLY PMCS CAN SAVE YOU AN AWFUL LOT OF HEADACHES.

A LEAK FROM ONE OF THE ELECTRICAL FUEL PUMPS, LOCATED AT THE REAR OF THE VEHICLE, LETS FUEL COLLECT UNDERNEATH THE FLOOR PLATES.

THE FUMES ARE **BAD FOR YOU** AND THE SPILLED FUEL COULD EVEN CAUSE A FIRE OR HAZARDOUS MATERIALS (HAZMAT) SPILL.

AND THOSE LEAKS CAN GO UNDETECTED FOR A LONG TIME BECAUSE OF THEIR LOCATION.



Fuel pumps can leak fuel into hull

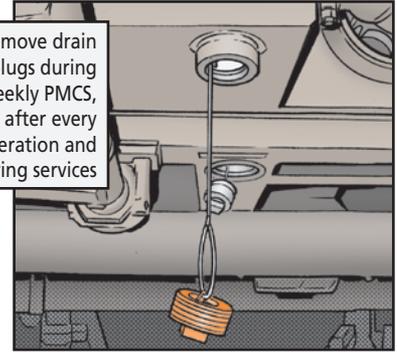
PS MORE

AVOID THOSE PROBLEMS BY OPENING THE HULL ACCESS DOOR IN THE REAR CENTER FLOOR PLATE DURING WEEKLY PMCS AND AFTER EVERY OPERATION. LOOK AND SMELL FOR FUEL AND HYDRAULIC FLUID AT THE BOTTOM OF THE HULL.

TELL YOUR MECHANIC RIGHT AWAY IF YOU SEE EVIDENCE OF LEAKS.

IF EVERYTHING CHECKS OUT, OPEN ALL 15 DRAIN PLUGS AND ALLOW ANY COLLECTED MOISTURE TO DRAIN INTO A DRIP PAN.

Remove drain plugs during weekly PMCS, after every operation and during services

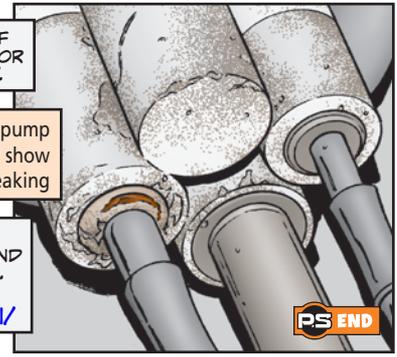


MECHANICS, DURING SERVICES CHECK BOTH OF THE ELECTRICAL FUEL PUMPS' WIRING SEALS FOR SIGNS OF **CRACKS, EROSION OR FUEL LEAKAGE.**

IF YOU SEE ANY, REPLACE THE PUMP AND SUBMIT A PRODUCT QUALITY DEFICIENCY REPORT (PQDR).

Replace fuel pump if wiring seals show signs of leaking

FILE PQDRS THROUGH THE PRODUCT DATA REPORTING AND EVALUATION PROGRAM (PDREP). ACCESS PDREP AT: <https://www.pdrep.csd.disa.mil/>



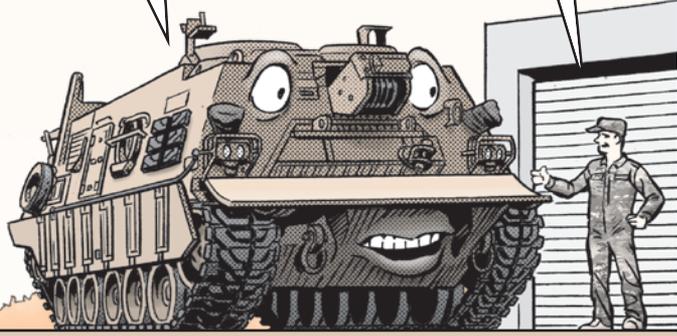
PS END

M88A2 Recovery Vehicle...

CLAMP DOWN POWER CABLE DAMAGE

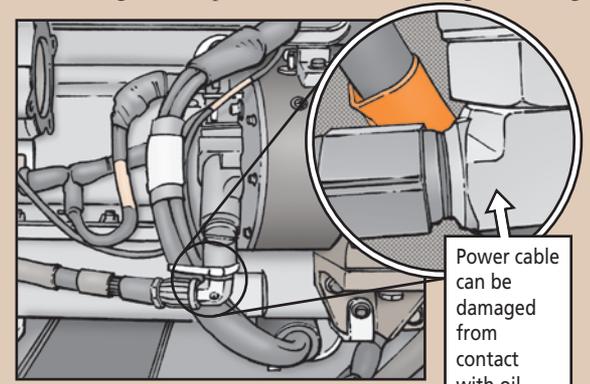
I'M READY TO DO SOME TOWING TODAY, BUDDY!

THAT'S GREAT! BUT FIRST LET ME MAKE SURE YOUR GENERATOR'S POWER CABLE DOESN'T GET DAMAGED.



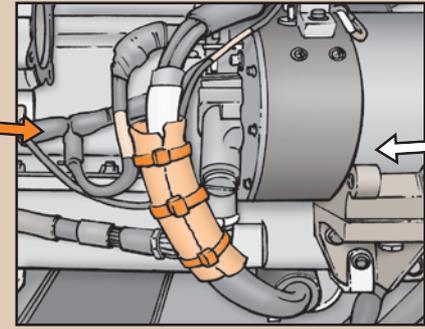
Mechanics, the generator's power cable and the oil line fitting connector in your M88A2 recovery vehicle's engine compartment have been caught rubbing shoulders again.

That's bad because if the connector, NSN 4730-01-032-1393, rubs through the power cable, NSN 2590-01-497-9452, the cable can short out. And that can cause fuel and oil in the engine compartment to catch fire!



Power cable can be damaged from contact with oil line fitting connector

You can keep that from happening by using a pre-cut hose, NSN 4720-01-506-5538, as a protective sheath over the power cable.



Secure pre-cut hose, NSN 4720-01-506-5538, with three cable ties, NSN 5975-00-074-2072

Here's how:

1. Replace the power cable before installing the pre-cut hose if it's already been damaged from contact with the oil line fitting connector.
2. Clean the area on the cable where you'll install the pre-cut hose with a mild soap and water solution or dry cleaning solvent. That'll remove any oil that could cause the hose to shift.
3. Center the hose in the area where the connector makes contact with the cable. The seam of the hose should face outward.
4. Use three cable ties, NSN 5975-00-074-2072, equally spaced, to tighten down the hose. Just make sure the center cable tie isn't positioned where it'll make contact with the connector.

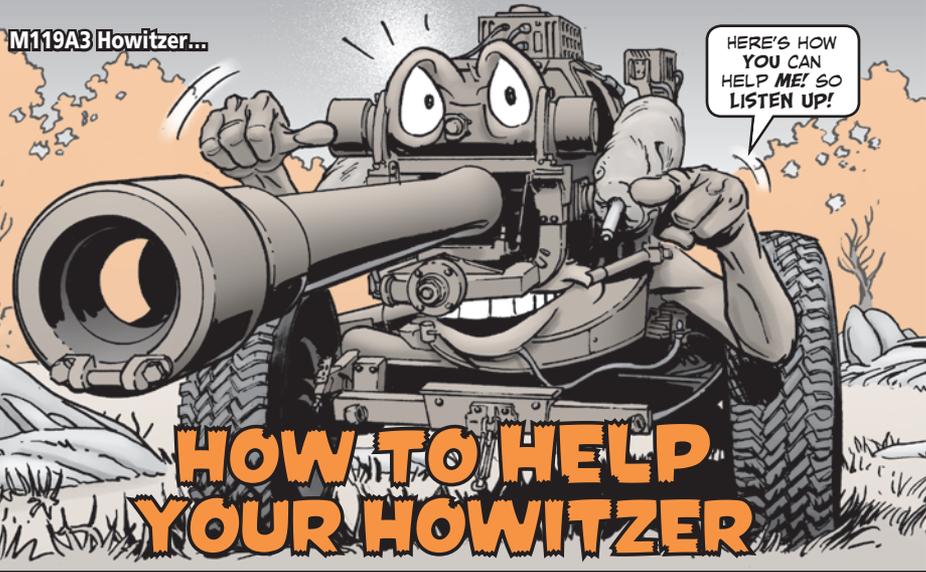
Check out TACOM Ground Precautionary Action Message 15-007 for more information. You'll find it on the TACOM-Unique Logistics Support Applications (TULSA) website:

<https://tulsa.tacom.army.mil/Safety/message.cfm?id=GPA15-007.html>

You'll need your CAC and first-time users must request access.

Questions? Contact Terry Smart, DSN 282-7849, (586) 282-7849, or email:

terry.d.smart2.civ@mail.mil



HERE'S HOW YOU CAN HELP ME! SO LISTEN UP!

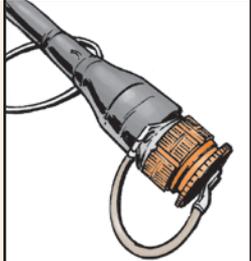
HOW TO HELP YOUR HOWITZER

SOMETIMES IT'S THE LITTLE THINGS THAT CAN HELP A **BIG GUY** LIKE THE M119A3 HOWITZER.

READ AND HEED, HOWITZER CREWS!

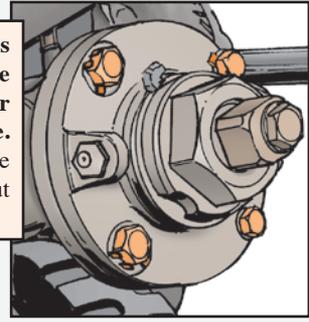


Use caps for the cable connectors whenever the cables are disconnected. Those caps are the only protection the connectors have from dirt and sand that can plug them up. Unfortunately, it doesn't take many trips to the field before caps disappear. Don't wait for the caps to magically reappear. Tell your repairman ASAP so he can get them replaced.



Use caps when cables are disconnected

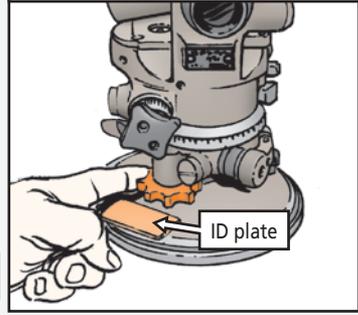
Don't forget key washers when installing bolts for the cradle extension sector gear and the nuts for the saddle. Without the key washers, the bolts and nuts will back out during firing.



STORE THE M2 AIMING CIRCLE PROPERLY TO PREVENT DAMAGE. SCREW THE LEGS ALL THE WAY IN. STORE THE AZIMUTH KNOB DIRECTLY OVER THE ID PLATE. OTHERWISE, THE M2 **WON'T** FIT IN ITS CASE PROPERLY.



Store azimuth knob directly over plate



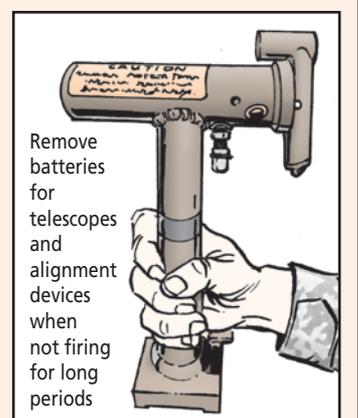
WHEN YOU FORCE THE LID SHUT, THE ELEVATION KNOB'S WORM SHAFT CAN BE BENT. THEN YOU'RE TALKING A MAJOR REPAIR.

Remove batteries for support equipment when you're not firing for long periods. Otherwise, those batteries leak and the equipment is damaged by corrosion. Which equipment?

- M187A1 telescope mount,
- M137A2 panoramic telescope,
- M140A1 alignment device,
- M90A3 straight telescope.

Check for the M140A1 alignment device's O-ring. When the M140A1's light kit is removed, the O-ring often disappears. No O-ring means moisture can get in the M140A1 and then you can't see anything. Check for the O-ring after taking off the light kit.

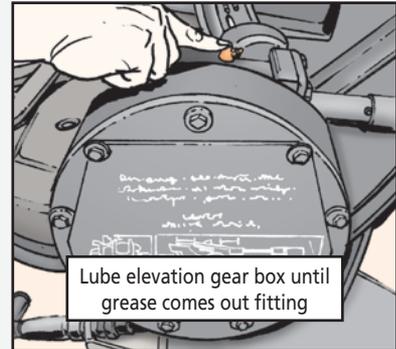
One other M140A1 tip: Don't take off the light kit if the battery goes bad. Just replace the battery. Remember, you'll get much more power from the 3.6V AA lithium battery, NSN 6135-01-523-3198.



DON'T OVERDO LUBING THE ELEVATION GEAR BOX.

IF YOU PUMP AND PUMP GREASE IN THE GEAR BOX, ITS SEALS **POP!**

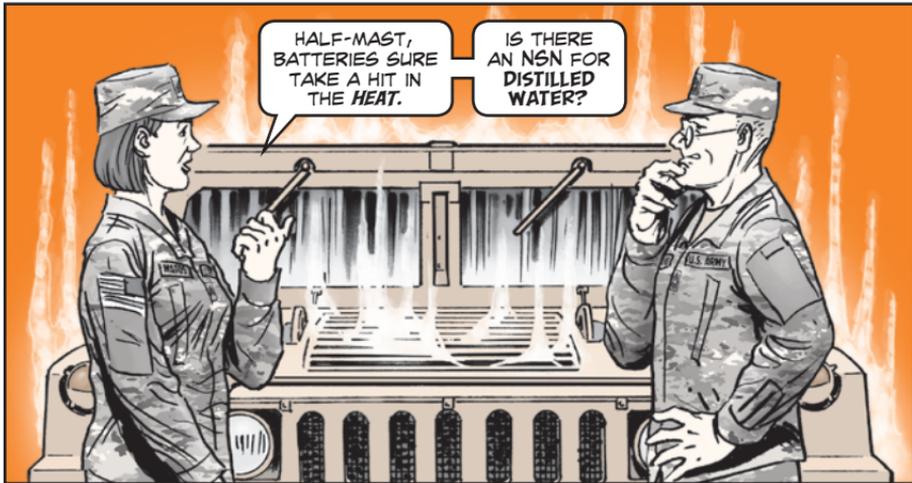
JUST PUMP WTR IN THE FITTING UNTIL WTR COMES BACK OUT OF THE FITTING. THEN STOP!



PS

TACTICAL VEHICLES





HALF-MAST,
BATTERIES SURE
TAKE A HIT IN
THE HEAT.

IS THERE
AN NSN FOR
DISTILLED
WATER?

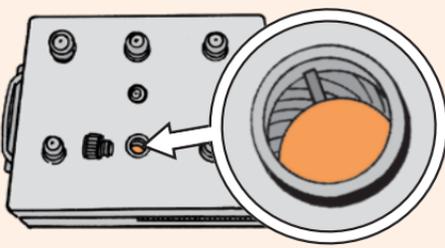
CHILL WITH DISTILLED



GOOD QUESTION,
SERGEANT!

YOU CAN ORDER SIX 1-GAL UNITS OF **DISTILLED WATER** WITH NSN 6810-00-682-6867. OR GET ONE 5-GAL CONTAINER WITH NSN 6810-00-356-4936.

BOTH NSNS ARE MANAGED BY THE DEFENSE LOGISTICS AGENCY (DLA). THEY MAY HAVE OTHER DISTILLED WATER OPTIONS.



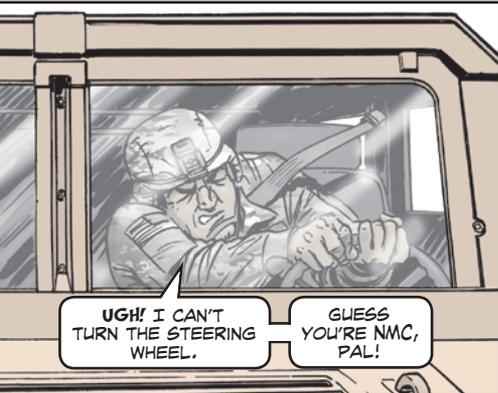
Fill cells with distilled water to within $\frac{1}{4}$ inch of filler cap neck

FOR HELP OR TO ORDER DLA-MANAGED ITEMS, CONTACT: DLA CUSTOMER INTERACTION CENTER, TOLL FREE: (877) 352-2255, DSN 661-7766, OCONUS DSN (312) 661-7766, (269) 961-7766, OR EMAIL: diacontactcenter@dia.mil

ALSO, IF YOUR BASE OR POST HAS A CHEMICAL TESTING AREA, THEY MAY HAVE A READY SUPPLY OF DISTILLED WATER THAT IS SELF-GENERATED OR THEY MIGHT RECOMMEND A LOCAL PROCUREMENT SOURCE.

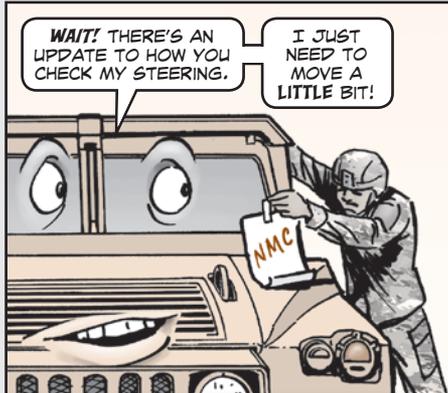


Up-armored HMMWVs... **MOVEMENT MATTERS FOR STEERING CHECK**



UGH! I CAN'T TURN THE STEERING WHEEL.

GUESS YOU'RE NMC, PAL!



WAIT! THERE'S AN UPDATE TO HOW YOU CHECK MY STEERING.

I JUST NEED TO MOVE A LITTLE BIT!

Dear Half-Mast,

We've come across an issue about how to properly check the power steering on up-armored HMMWVs.

Item 20 of the Before PMCS in TM 9-2320-387-10 (Item 19 in TM 9-2320-387-13&P) says that with the engine running, the steering wheel should move freely from left to right. If it doesn't, the vehicle is NMC. But with the weight of the vehicle, plus the friction generated between the tire and road, the steering is tough to move on all of our vehicles.

Any chance of an update on this PMCS item? I believe that as long as the steering components are all there and serviceable, drivers should be able to drive the vehicle slowly while checking for free movement.

Mr. M.D.G.

YOU BET, SIR! TACOM IS WORKING TO UPDATE TM 9-2320-387-10 TO INCLUDE THE CORRECT PROCEDURE.

UNTIL THAT HAPPENS, PULL OUT YOUR STUBBY PENCIL AND MAKE A FEW CHANGES.



FIRST, A QUALIFICATION:
WHILE THE TM SAYS TO MOVE THE STEERING FROM LEFT TO RIGHT, THERE'S **NO REQUIREMENT** TO TURN IT FULLY FROM STOP TO STOP. DRIVERS WHO DO THAT ARE JUST MAKING THEIR JOBS **HARDER**.

A HMMWV WITH STEERING THAT TURNS FROM LEFT TO RIGHT WITH NORMAL OR SLIGHTLY MORE THAN NORMAL EFFORT WHILE THE VEHICLE IS SITTING STILL IS USUALLY GOOD TO GO.

BUT WITH THE ADDITION OF **ARMOR PROTECTION KITS** AND THE **RESULTING STRAIN** ON OVER-LOADED AXLES, SOME UP-ARMORED HMMWVS **WON'T** PASS THIS STATIC STEERING CHECK.

IF YOUR HMMWV IS IN THAT CATEGORY, RECHECK THE STEERING WHEEL LIKE THIS...

1. Position the vehicle in an area to allow enough room to operate for a short distance at 5-10 mph in a zig-zag pattern with no obstructions.
2. With the vehicle at idle, the transfer in H, and the transmission in drive (D), allow the vehicle to move forward at not less than 5 and not more than 10 mph. As the vehicle moves forward, turn the steering wheel from right to left. The steering wheel should move freely.

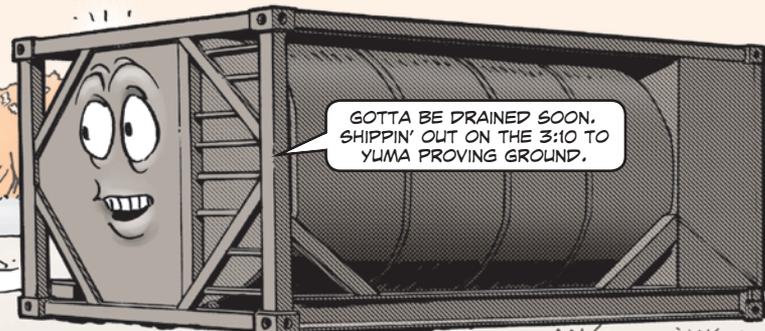
Transportation...

Shipping HIPPO by Rail



COME ON IN! THE WATER'S FINE.

NOT TODAY, PAL!

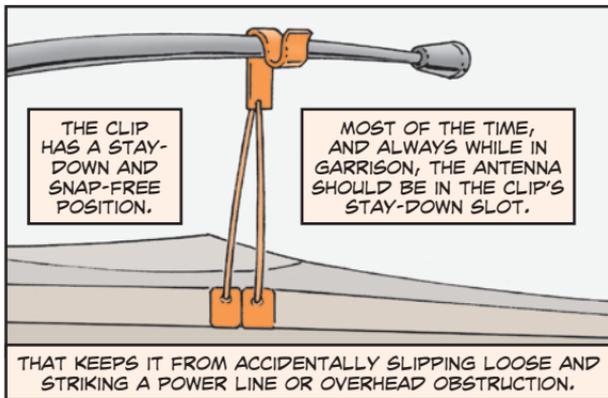


GOTTA BE DRAINED SOON. SHIPPIN' OUT ON THE 3:10 TO YUMA PROVING GROUND.

We imagine hippos around water, but there's one case where H₂O needs to be scarce: when the Army's M105 HIPPO, NSN 5430-01-487-7760, has to be shipped by rail. In that case, the water tank must be drained completely. Secure the HIPPO on a container on flatcar (COFC) or DODX flatcar using 20-ft ISO locks.

The HIPPO can't be transported by rail while still on a PLS/LHS truck or trailer. It doesn't have holes in its frame that accept PLS/LHS transport pins, so that configuration can't pass a rail impact test.

Questions about shipping the HIPPO or other equipment? Call the Military Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA) at (800) 722-0727 or e-mail: usarmy.scott.sddc.mbx.tea-dpe@mail.mil



THE CLIP HAS A STAY-DOWN AND SNAP-FREE POSITION.

MOST OF THE TIME, AND ALWAYS WHILE IN GARRISON, THE ANTENNA SHOULD BE IN THE CLIP'S STAY-DOWN SLOT.

THAT KEEPS IT FROM ACCIDENTALLY SLIPPING LOOSE AND STRIKING A POWER LINE OR OVERHEAD OBSTRUCTION.



THE STAY-DOWN POSITION IS THE **MOST COMMON**. HOWEVER, IT **DOES** HAVE ITS OWN **SAFETY PROBLEMS**.



IF YOU HIT AN OBSTRUCTION WITH THE ANTENNA LOCKED DOWN, THE ANTENNA WILL SHATTER.

SO, IF YOU ARE OPERATING IN THE FIELD AWAY FROM ALL OVERHEAD OBSTRUCTIONS **EXCEPT TREES**, YOU CAN PUT THE ANTENNA IN THE **SNAP-FREE POSITION**.

THAT WAY, IF YOU HIT A TREE LIMB, THE ANTENNA WILL **POP LOOSE** INSTEAD OF BREAKING.

IF YOUR VEHICLE HAS **MORE THAN ONE ANTENNA**, ALWAYS TIE THEM DOWN ALONGSIDE THE VEHICLE.

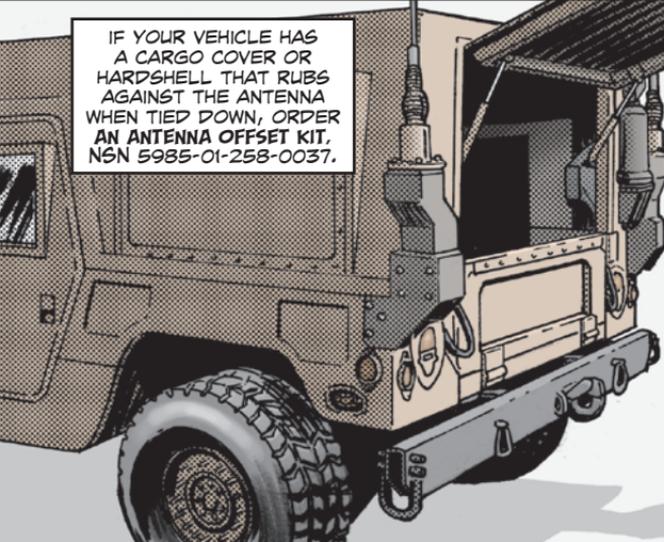
NEVER CROSS ANTENNAS OR THE TRANSMITTING ONE WILL FEED ITS SIGNAL TO THE ONE IT'S TOUCHING. YOU'LL GET INTERFERENCE AT A MINIMUM AND MAYBE EVEN DAMAGE YOUR RADIO'S CIRCUITS.



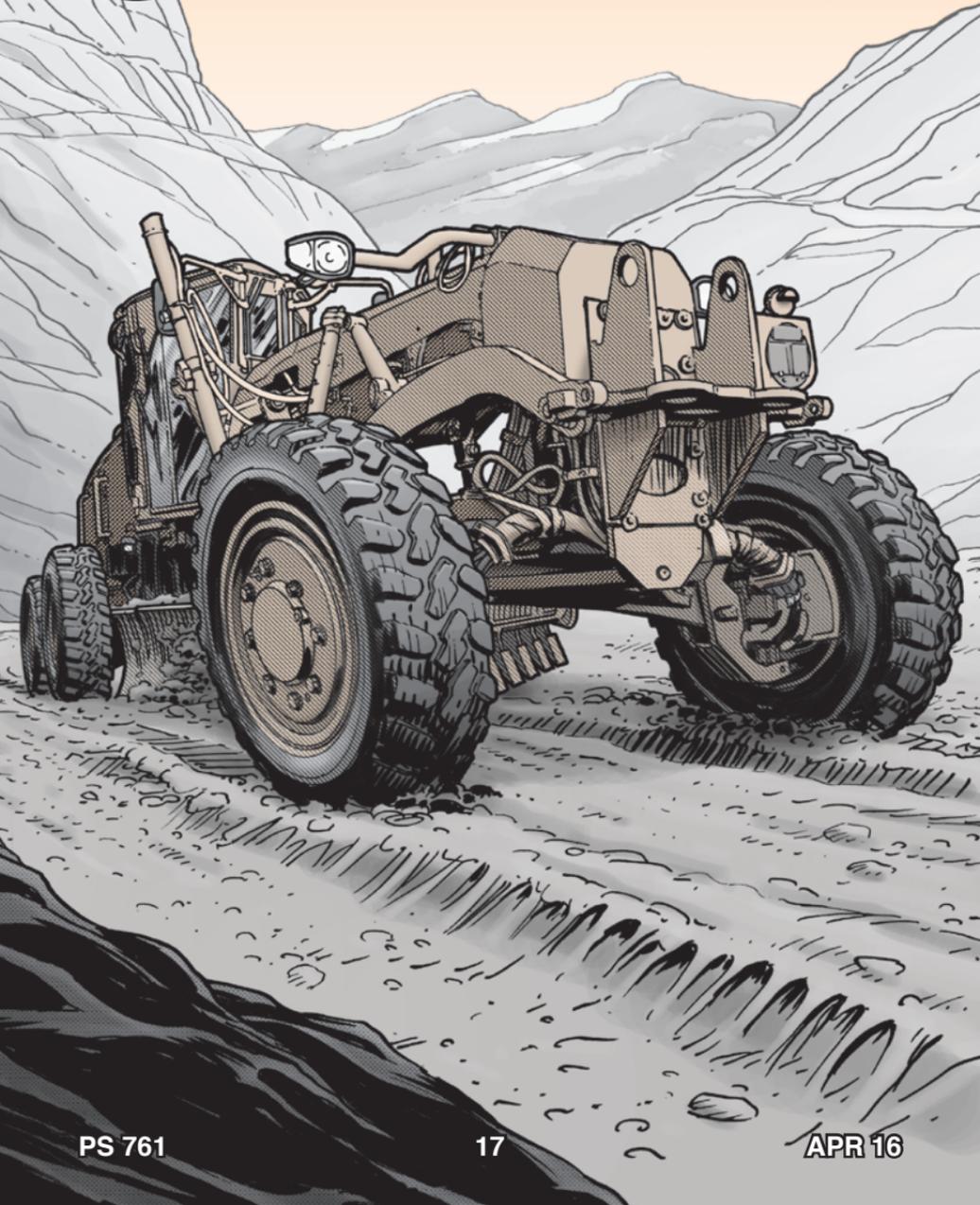
DON'T CROSS THE ANTENNAS AND DON'T CROSS THE STREAMS!

DOING EITHER ONE WOULD BE **BAD!**

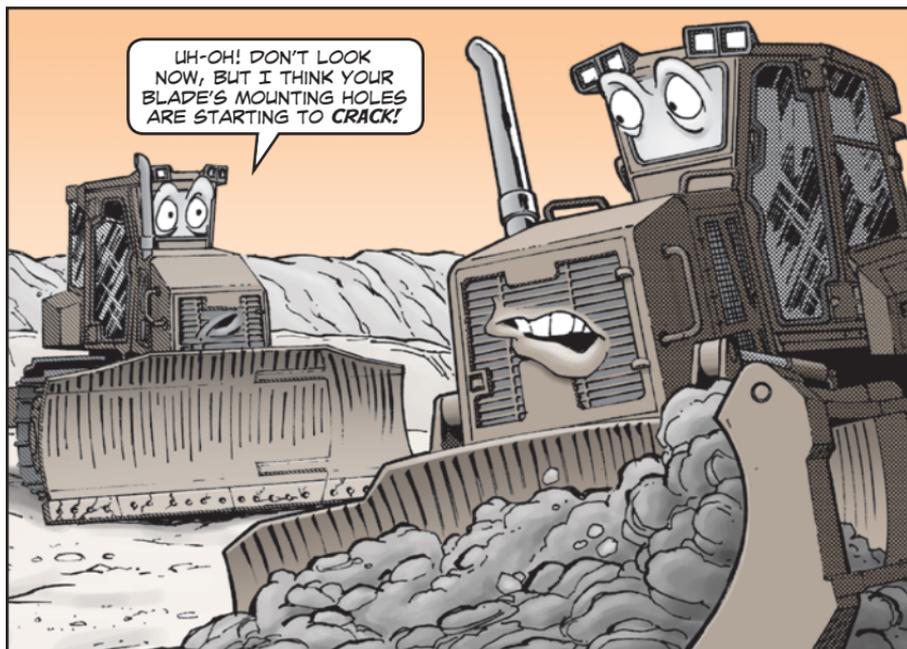
IF YOUR VEHICLE HAS A CARGO COVER OR HARDSHELL THAT RUBS AGAINST THE ANTENNA WHEN TIED DOWN, ORDER AN **ANTENNA OFFSET KIT**, NSN 5985-01-258-0037.



THE OFFSET KIT MOVES THE ANTENNA BASE A FEW INCHES TO THE **OUTSIDE** OF THE VEHICLE, PROVIDING ENOUGH CLEARANCE TO **STOP THE RUBBING**.



KEEP TRACK OF MOUNTING HOLE **CRACKS**



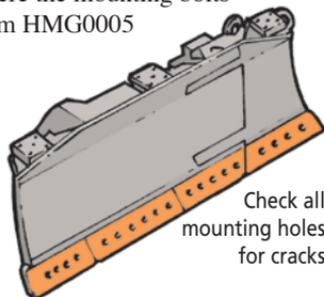
Some units have reported problems with the attaching hardware for the D6K dozer's blade, specifically the moldboard and cutting edges.

The area in question is around the square holes, where the mounting bolts fit into the blade. Only dozers with serial numbers from HMG0005 through HMG00069 and HMG00071 are affected.



GET DOWN ON YOUR HANDS AND KNEES AND LOOK FOR ANY **CRACKS** AT THE CORNER OF THE MOUNTING HOLES.

IF THE **CRACKS** GET **BAD ENOUGH**, THE BLADE'S HARDWARE **COULD COME LOOSE OR FALL OFF!**



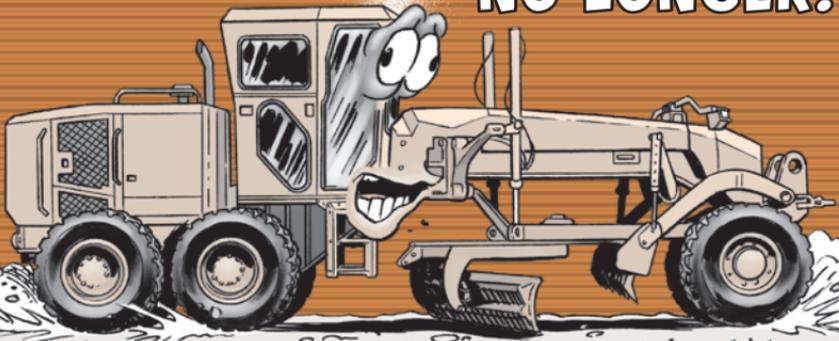
Check all mounting holes for cracks

If you see or suspect problems with the D6K blade's mounting holes and hardware, contact Caterpillar directly for help. The POC is Gregory Costley, (309) 578-3295. Or email him at: costley_gregory_e@cat.com

**120M
Road
Grader...**

WITH THESE NON-DIRECTIONAL
TIRES, I DON'T KNOW IF I'M
COMING OR GOING!

**Follow the
→ Arrow... ←
NO LONGER!**



Dear Half-Mast,

The tires on 130G CAT road graders have always been directional. When pointed in the right direction, the tire's chevron pattern provides great traction in loose sand, dirt, mud and gravel.

When mounting a new tire, you only had to look for the direction arrow on the sidewall. That way you could always be sure the tires were mounted in the right direction.

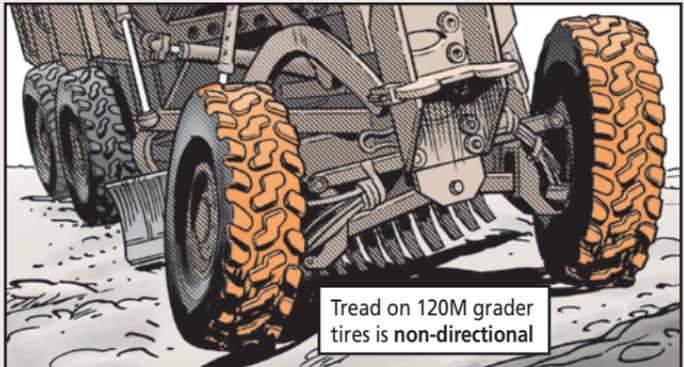
When our unit got the new 120M CAT road graders, I figured the tires would work the same way. But a close look at the grader's sidewall revealed no directional arrow.

Does it matter which way the tire is mounted on the 120M?

SGT M.S.F.

THE 120M ROAD GRADER USES A NON-DIRECTIONAL TIRE WITH A PATTERN THAT'S THE SAME **REGARDLESS** OF THE DIRECTION OF TURN.

IN A NUTSHELL, YOU WON'T HAVE TO THINK TWICE ABOUT TIRE DIRECTION ON THIS VEHICLE!



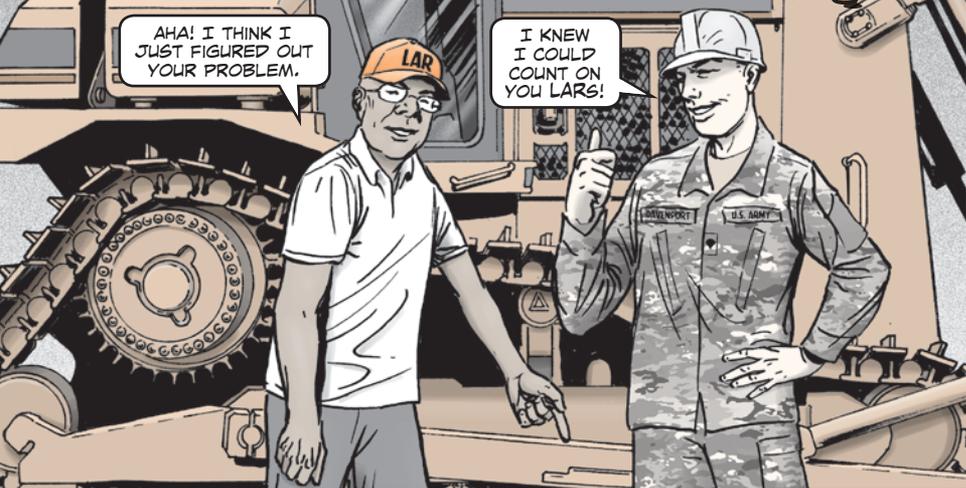
Tread on 120M grader
tires is non-directional

Training...

LARs Are Here to Help

AHA! I THINK I JUST FIGURED OUT YOUR PROBLEM.

I KNEW I COULD COUNT ON YOU LARS!



Dear Editor,

Recently, two equipment specialists from TACOM LCMC's Combat Engineering (CE) group travelled to Ravenna, OH, to give a maintenance training course on the D7R II dozer.

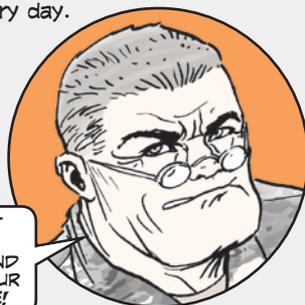
The course was specifically designed to train the TACOM logistics assistance representatives (LARs) on how to troubleshoot, repair and use maintenance support device (MSD) software to diagnose and isolate equipment system faults. That knowledge allows us better support the Soldiers in our units.

LARs are one of the main contacts between the CE group and the Soldier, so we were able to share our views from the Soldier's perspective. We not only learned more about the dozer's electrical, hydraulic, transmission and engine systems, but the CE specialists learned a lot about the conditions and needs faced by Soldiers every day.

Please remind Soldiers that their TACOM LARs are always working to get the knowledge, understanding and expertise necessary to help with equipment problems. When Soldiers are facing a maintenance issue and aren't sure where to turn, TACOM LARs are always ready and willing to help.

Jimmy Richardson
TACOM LAR
Ft Bragg, NC

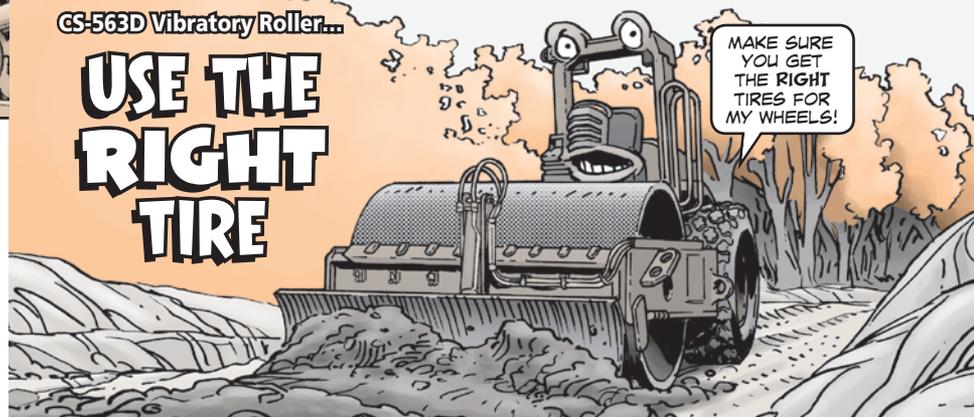
THANKS FOR THE GREAT LETTER, JIMMY. THE ASSISTANCE THAT YOU AND ALL LARS PROVIDE TO OUR SOLDIERS IS INVALUABLE!



CS-563D Vibratory Roller...

USE THE RIGHT TIRE

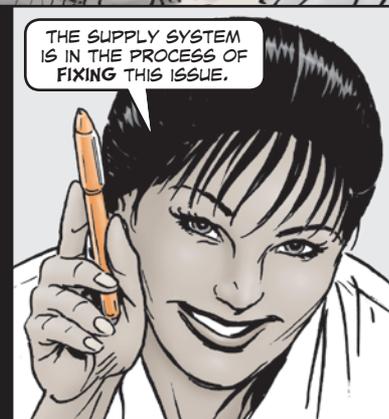
MAKE SURE YOU GET THE RIGHT TIRES FOR MY WHEELS!



Only the 8-ply tire, NSN 2610-01-188-5171, should be used on the CS-563D vibratory roller. The 12-ply tire and wheel assembly, NSN 2610-01-559-2780, is used only on the up-armored (AOA) CS-563D vibratory roller. However, some of the NSN 2610-01-559-2780 tire and wheel assemblies have been delivered with an 8-ply tire installed. That's the wrong tire.

If you have received the NSN 2610-01-559-2780 assembly with an 8-ply tire, order the 12-ply tire, NSN 2610-01-559-2780, and have it installed on the wheel assembly by an authorized service center.

THE SUPPLY SYSTEM IS IN THE PROCESS OF FIXING THIS ISSUE.



OPERATORS AND MECHANICS, MAKE GOOD USE OF YOUR LARS. YOU'LL BE GLAD YOU DID.

?
IF YOU'RE NOT SURE HOW TO FIND YOUR NEAREST TACOM LAR, CHECK OUT PAGES 14-15 OF PS 759 FOR HELP. GO TO:

<https://www.logsa.army.mil/psmag/archives/PS2016/759/759-14-15.pdf>

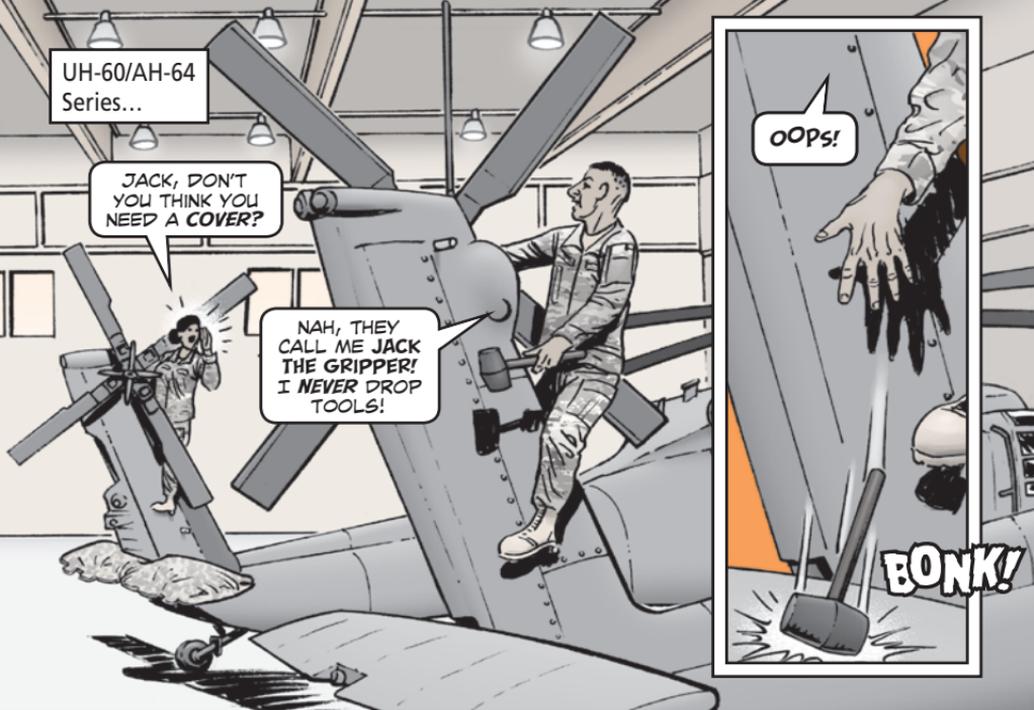


PS AVIATION

PS 761

22

APR 16



PROTECT STABILATORS FROM **DAMAGE**



Before you even think about going topside, rustle up and install the stabilator cover. That's job #1 before you start hammering or turning a wrench or screwdriver. The cover prevents damage if a tool slips from your fingers. It may be hard to believe, but even the best mechanics are butterfingers from time to time.

Dropping a tool on an unprotected stabilator causes unnecessary and costly damage. So it's vital that you protect stabilators from tools that can cause punctures or dents. If you don't have a cover, get your upholstery shop to make one.

On Pages 35-37 of PS 697 (Dec 10), you'll find the plans for a homemade cover, plus info on how to order covers from GSA. Go to:

<https://www.logsa.army.mil/psmag/archives/PS2010/697/697-35-37.pdf>

SAVE YOUR BACK AND ROTOR BLADES



THIS IS A WHOLE LOT *EASIER* SINCE WE STARTED USING THIS BLADE POLE WITH THE HOLDER!

YOU GOT THAT RIGHT! TRYING TO PUT THAT SWIVEL PIN INTO THE BLADE OPENING WASN'T WORKING.

YEAH, IT KEPT *SLIPPING* OUT.

FOLDING HEAVY BLACK HAWK ROTOR BLADES USING THE BLADE POLE IS A **BACK-BREAKING BALANCING ACT.**

THE BLADE POLE HAS A **SWIVEL PIN** AT THE TOP THAT FITS INTO AN OPENING AT THE END OF THE ROTOR BLADE.

WHEN FOLDING BLADES, THE SWIVEL PIN IS **INSERTED** INTO THE BLADE. THE **SWIVELING ACTION** OF THE BLADE POLE MAKES IT **HARD TO CONTROL.**

IT TAKES **AT LEAST FOUR PEOPLE** TO LIFT THE BLADE AND MOVE IT TO THE REAR OF THE AIRCRAFT.

THE **PROBLEM** IS BALANCING THE POLE WHILE FOLDING THE BLADE.

IF THE PIN ON THE BLADE POLE **SLIPS OR BREAKS**, THE BLADE WILL **DROP!**

THEN YOU'VE GOT A **BROKEN OR DAMAGED ROTOR BLADE** AND **MAYBE EVEN INJURED PERSONNEL.**

THE **SOLUTION** TO TAKING THE BURDEN OUT OF LIFTING AND FOLDING BLADES IS TO **BOLT A BLADE HOLDER** TO THE LIFTING POLE.

THE HOLDER **SLIDES** AROUND THE BLADE AND **MAKES IT EASIER TO MANEUVER** THE BLADE WITHOUT **SLIPPING.**

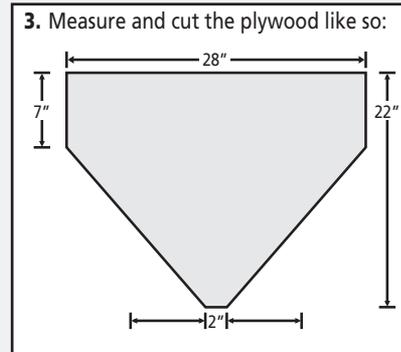


HAVE YOUR SUPPORT SHOP MAKE THE HOLDER USING THESE MATERIALS:

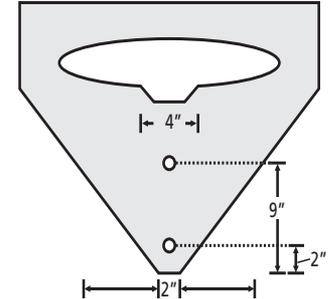
- One 22x28-in piece of $\frac{3}{4}$ -in plywood, NSN 5530-00-051-0512
- Two self-locking nuts, NSN 5310-00-126-5754
- Two $\frac{1}{2}$ -in shear bolts, NSN 5306-01-014-1732
- Four washers, NSN 5310-00-149-9130

Follow these steps when cutting the plywood:

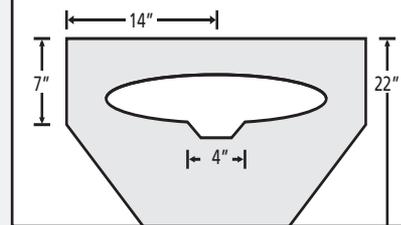
1. Remove upper pin from blade pole.
2. Remove lock assembly from blade pole.
3. Measure and cut the plywood like so:



6. Drill two $\frac{1}{2}$ -in holes in the wood. Position the holes 2 inches and 9 inches from the center bottom of the V shape portion of the holder.



4. Cut a hole in the wood in the shape of the blade.



7. Measure 67 inches and 74 inches up from the bottom of the pole's base and drill a $\frac{1}{2}$ -in hole at each location.
8. Break all sharp edges and debur holes.
9. Attach the blade holder to the lifting pole with the self-locking nuts, shear bolts and washers.

WP 2014 00, FIG 193 OF TM 1-1520-237-23&P, ALSO HAS THE DETAILS TO MAKE THE BLADE POLE.



CH-47D/F,
MH-47G...

OK, EVERYTHING
LOOKS GOOD
FOR HOOKUP!

MY ROTOR BLADES
LOOK GOOD, TOO!
THANKS FOR THE
PAINT JOB!

Rotor Blade Paint NSN Update

PAGE 38 OF PS 731
(OCT 12) SAID TO USE
BLACK LUSTERLESS PAINT,
NSN 8010-00-527-2884,
ON CHINOOK ROTOR BLADES.
THAT'S NO LONGER TRUE.

THE **RIGHT PAINT** TO USE FOR ALL
CHINOOK ROTOR BLADES IS **BLACK
POLYURETHANE PAINT,** NSN 8010-01-
397-3980. IT'S A TWO-COMPONENT
PAINT THAT IS MIXED TOGETHER TO
MAKE TWO QUARTS.

THE F-MODEL CHINOOK'S IETM, TM 1-1520-
271-23&P (DEC 15) **ALREADY** LISTS THE -3980
BLACK POLYURETHANE AS THE PAINT TO USE.

THE D-MODEL CHINOOK'S IETM, TM 1-1520-240-
23&P, DOESN'T, BUT WILL SOON BE UPDATED.
UNTIL THEN, ORDER NSN 8010-01-397-3980
WHEN YOU NEED TO PAINT ROTOR BLADES.

YOU **WON'T** FIND THIS IN **EITHER** IETM,
BUT THE **BLACK POLYURETHANE PAINT** IS
ALSO AVAILABLE IN **TWO OTHER SIZES.**

THE FOLLOWING
NSNs ARE
ALTERNATES THAT
FALL UNDER THE
SAME MILITARY
SPECIFICATION:

Size	NSN 8010-
3 pints	01-545-1944
3 quarts	01-545-1947

HIGH OVER
[REDACTED]
AIRSPACE...



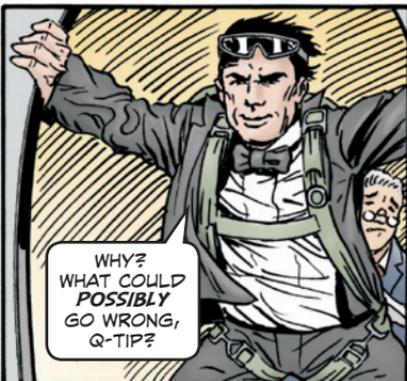
BONDO, YOU REALLY SHOULD
CHECK THAT EXPERIMENTAL
PARACHUTE *BEFORE* YOU JUMP!



YOU DIDN'T
HAVE TIME TO
TEST IT BEFORE
THIS MISSION.



WHY?
WHAT COULD
POSSIBLY
GO WRONG,
Q-TIP?



DO YOU WANT ME TO
GO THROUGH MY SPREAD-
SHEET? I PREPARED IT
JUST FOR YOU.

DON'T
WORRY
SO MUCH,
Q-TIP...



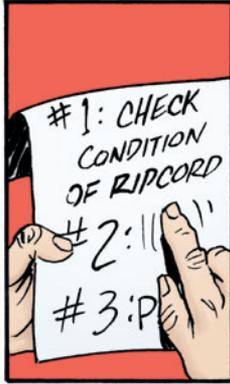
...YOU'LL
LIVE LONGER.



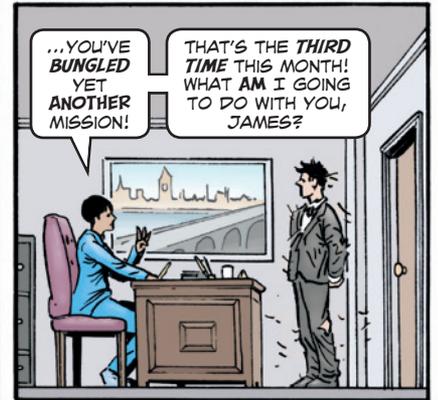
BONZAI!



presenting JAMES BONDO in **PM Royale**



BONDO, YOU'VE NOT ONLY MANAGED TO EMBARRASS EVERYONE HERE WITH YOUR LACK OF PREVENTIVE MAINTENANCE...



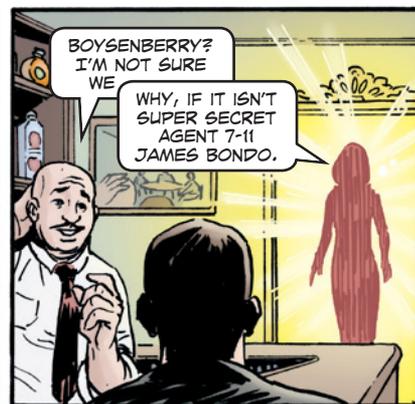
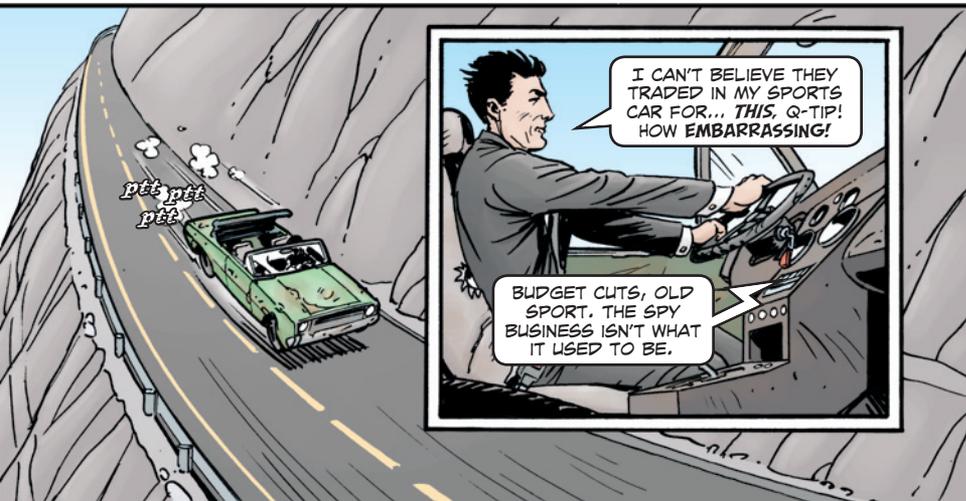
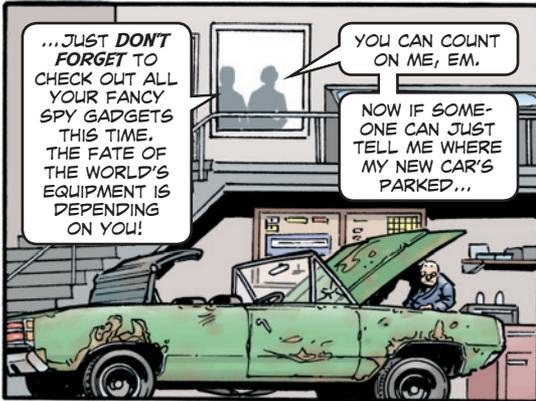
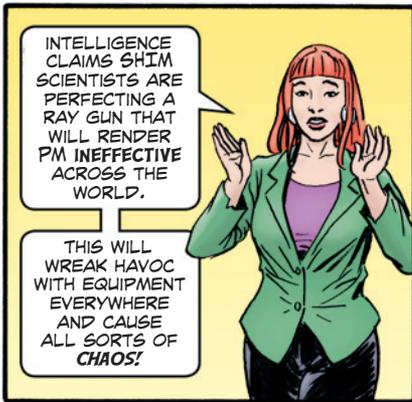
THAT'S THE **THIRD** TIME THIS MONTH! WHAT AM I GOING TO DO WITH YOU, JAMES?



EM!

THAT'S WHAT YOU SAID WHEN YOU BURNED UP THE ENGINE IN THE ASTON MARTIN.







I HAVEN'T SEEN YOU SINCE YOU CRASHED THAT HELICOPTER IN SWITZERLAND AFTER FORGETTING TO CHECK ITS FUEL FILTER.



I'M SURE I DON'T KNOW WHAT YOU'RE BABBLING ON ABOUT.

AND WHY ARE YOU HERE, VESPA?



I HEARD YOU WERE LOOKING TO INFILTRATE SHIM.

I BELIEVE I CAN GET YOU INSIDE.

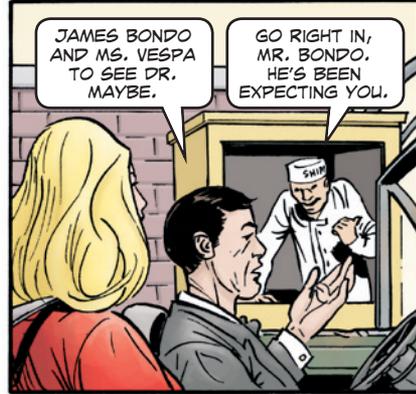


LET ME GUESS. YOU FORGOT TO CHECK THE OIL AGAIN, DIDN'T YOU?

I'M STARTING TO REMEMBER NOW WHY WE NEVER GOT MARRIED.

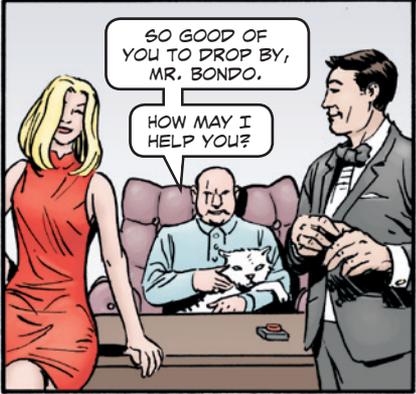


MAKE A LEFT HERE.



JAMES BOND AND MS. VESPA TO SEE DR. MAYBE.

GO RIGHT IN, MR. BOND. HE'S BEEN EXPECTING YOU.



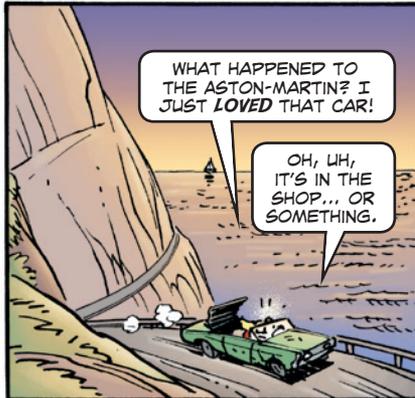
SO GOOD OF YOU TO DROP BY, MR. BOND.

HOW MAY I HELP YOU?



I SUPPOSE I COULD USE SOME HELP, BUT FIRST, HOW ABOUT A SMOOTHIE?

OH, JAMES!

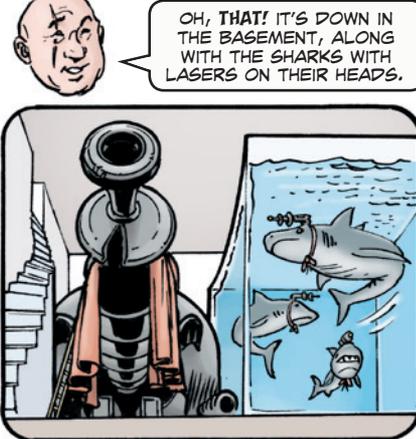


WHAT HAPPENED TO THE ASTON-MARTIN? I JUST LOVED THAT CAR!

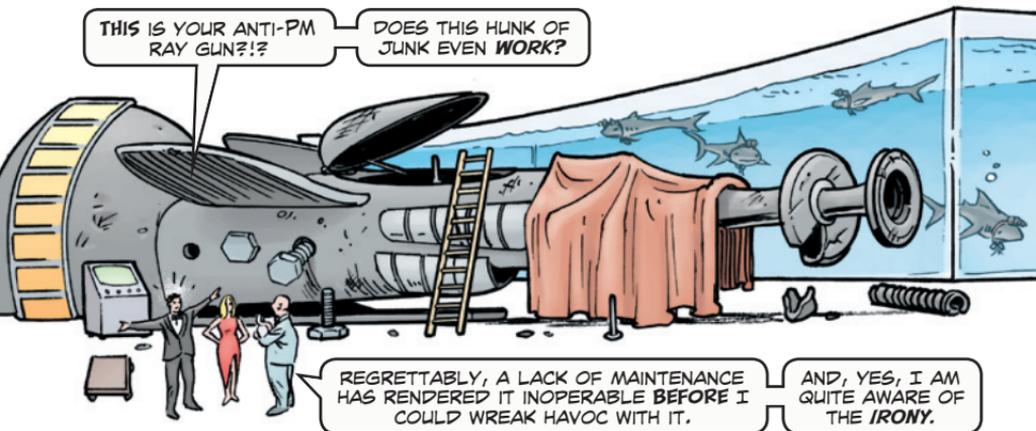
OH, UH, IT'S IN THE SHOP... OR SOMETHING.



SPIES-R-US SENT ME TO CHECK OUT YOUR ANTI-PM RAY-GUN THINGAMA-BOB. DO YOU DENY HAVING ONE?



OH, THAT! IT'S DOWN IN THE BASEMENT, ALONG WITH THE SHARKS WITH LASERS ON THEIR HEADS.



THIS IS YOUR ANTI-PM RAY GUN?!?

DOES THIS HUNK OF JUNK EVEN WORK?

REGRETTABLY, A LACK OF MAINTENANCE HAS RENDERED IT INOPERABLE BEFORE I COULD WREAK HAVOC WITH IT.

AND, YES, I AM QUITE AWARE OF THE IRONY.

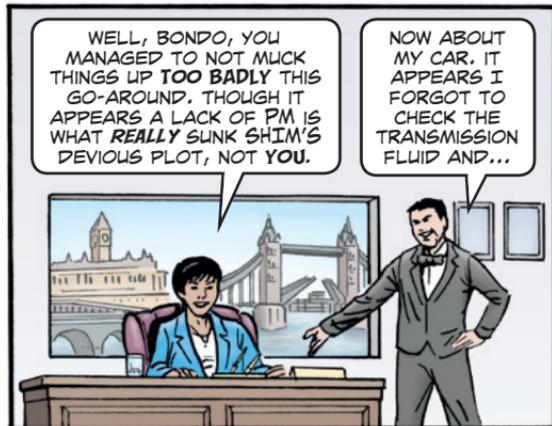


TELL YA WHAT, DOC, LEMME CRAWL AROUND IN THERE AND SEE IF I CAN GET HER WORKING AGAIN.

JAMES! YOU'LL DO NO SUCH THING. LET'S GET BACK TO SPIES-R-US HQ SO YOU CAN MAKE A FULL REPORT ON WHAT WE'VE FOUND.



AW, GEE. NONE OF MY NEFARIOUS WEAPONS EVER SEEM TO WORK.



WELL, BONDO, YOU MANAGED TO NOT MUCK THINGS UP TOO BADLY THIS GO-AROUND. THOUGH IT APPEARS A LACK OF PM IS WHAT REALLY SUNK SHIM'S DEVISS PLOT, NOT YOU.

NOW ABOUT MY CAR. IT APPEARS I FORGOT TO CHECK THE TRANSMISSION FLUID AND...



OH, JAMES, WHEN WILL YOU EVER LEARN?

PS MISSILES



ALSO
FEATURING
**SMALL
ARMS**

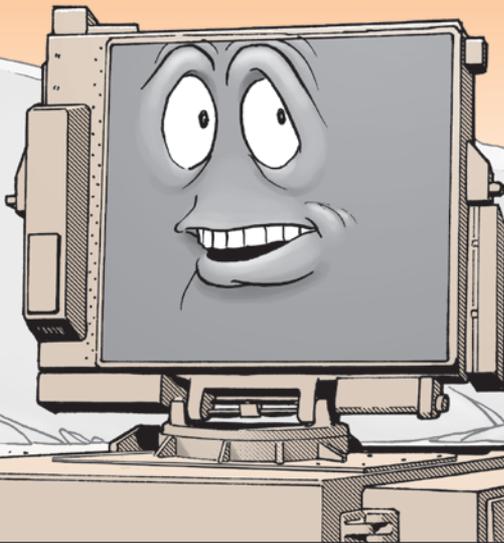
PS 761

35

APR 16

GUARD AGAINST SENTINEL PROBLEMS

THANKS FOR ALL THE GOOD PMCS! I'M READY TO SPOT THE ENEMY NO PROBLEM!



GUARDING AGAINST THESE SENTINEL PROBLEMS WILL MAKE DETECTING THE ENEMY SO MUCH EASIER...

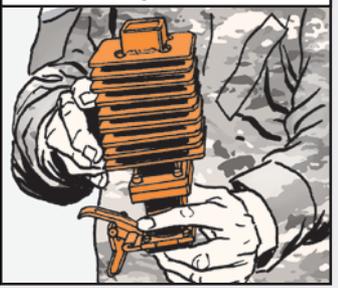


...AND YOU SO MUCH SAFER...

Be careful! The Sentinel produces lots of voltage and rotates very fast. Just a moment of carelessness can spell curtains for a Soldier.

Before you do any maintenance, install a dummy load. That way the Sentinel sends RF into the dummy load and not into space where it could microwave anyone on top of the Sentinel.

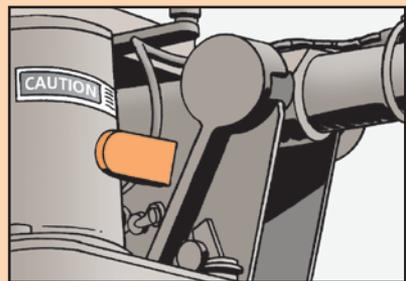
Dummy load keeps you safe when working on Sentinel



Check and re-check that the brake is locked before you climb on top of the Sentinel. If the brake isn't set, you could take a sudden trip if the Sentinel is activated and its dish whirls around.

When you climb on top, always use the three points of contact method. That prevents sudden falls.

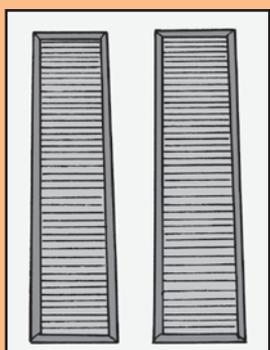
Before rotating the Sentinel, make very sure everyone is out of the way. This is especially important if you're operating remotely.



Make sure brake is set **before** climbing on top of Sentinel

Clean the filters. The Sentinel produces lots of heat. If it's not getting lots of cooling air, it overheats, which causes electrical problems.

Check the filters daily when you're operating. If they're clogged, clean them with soap and water or blow them clean with low-pressure air. Remember there are five: two up top, two on the side, and one in the power distribution panel. They all need to be cleaned.

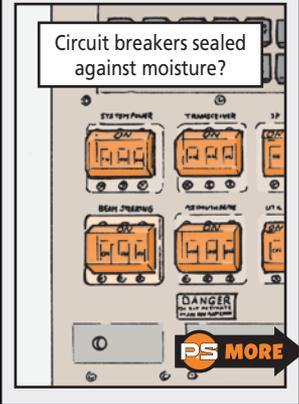


Check filters daily and clean if necessary. In desert, order an extra set

If you must constantly run the Sentinel in the desert, get an extra set of filters. That way you don't have to wait for the filters to dry before re-installing them.

Make sure the circuit breakers on the control panel are sealed. Sometimes that's forgotten when the Sentinel is in for maintenance. Without the seals, water gets in the circuit breakers and causes electrical damage.

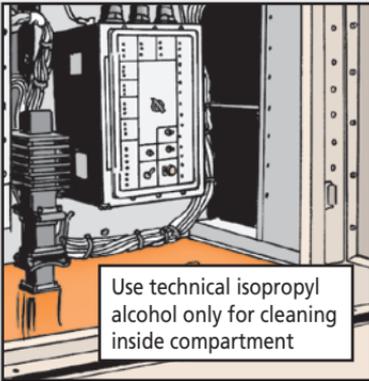
Circuit breakers sealed against moisture?



PS MORE

Keep the compartment doors closed as much as possible. Sand cause abrasions and other problems for electrical components. Wipe the compartment clean daily when operating.

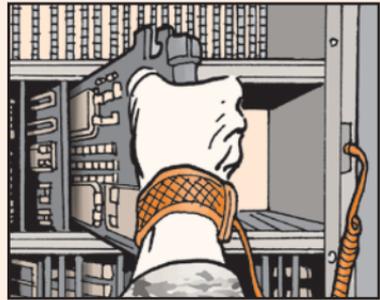
Don't use rubbing alcohol to clean inside the compartment. That strips the protective coating off the compartment walls, which can lead to corrosion and arcing. TM 9-1430-Sentinel (Oct 14) says to use technical isopropyl alcohol, NSN 6810-00-753-4993, for cleaning because it's 70 percent isopropyl and 30 percent water. No acetone, no problems.



Wear ESD (electrostatic discharge) protection to handle circuit cards. Some of the Sentinel circuit cards cost thousands. One tiny spark can ruin one of those cards and your good name.

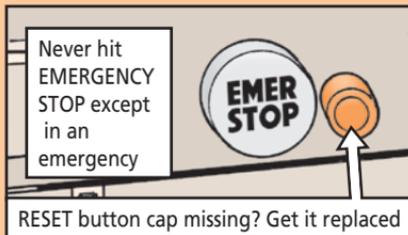
Before handling any circuit card, put on an ESD wrist strap and plug it in. Make sure the Sentinel itself is grounded or the ESD strap won't do any good. Never put circuit cards down on a metal surface. Lay them down on an ESD mat or place them in an antistatic pouch.

NSN 4940-01-253-5368 brings an ESD kit with two wrist straps, a grounding cord, mat, three antistatic pouches and three barrier bags.



Wear ESD strap when handling circuit cards

Don't hit Emergency Stop except in an emergency. Some units shut down their Sentinels that way. That bypasses the shutdown procedure and leads to electronic damage. Plus that can damage the button itself.



If the cap for the EMERGENCY STOP RESET button disappears, get it replaced ASAP. Without the cap, the button's housing traps dirt and sand and eventually stops working. Order a new cap through your contract support with PN 40215A746.

GPS Antenna NSN No Longer Good



Dear Editor,

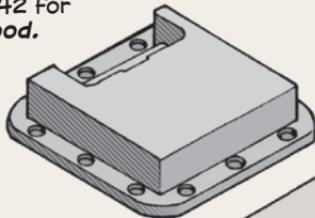
Please let Soldiers know NSN 1055-01-457-8342 for the M270A1 MLRS GPS antenna is **no longer good**. It's Item 45 in Fig 90 of TM 9-1055-647-13&P.

Now units must order the antenna with PN H00000872 through the Performance Based Logistics (PBL) item contractor, Lockheed Martin, as part of the fire control system.

Jorge Castro
AMCOM LAR
Ft Sill, OK

Editor's note:

You got it, Jorge!



M16-Series Rifle, M4/M4A1 Carbine...

MIM Published on New Selector Switch



PAGE 40 IN PS 758 (JAN 16) TOLD YOU ABOUT THE NEW **M16/M4 AMBIDEXTROUS SELECTOR SWITCH**, NSN 1005-01-585-6042, THAT IS REPLACING THE **OLD ONE-SIDED SELECTOR SWITCH**, NSN 1005-01-225-8339.

TACOM HAS PUBLISHED MAINTENANCE INFORMATION MESSAGE (MIM) 16-002 THAT TELLS YOU **HOW TO INSTALL THE NEW SWITCH**, PLUS HOW TO ALTER THE OLDER M12 RACKS SO THAT M4S AND M16S WITH THE NEW SWITCH WILL FIT **SECURELY**.

TO FIND MIM 16-002, GO TO:

<https://tulsa.tacom.army.mil/Maintenance/message.cfm?id=M116-002.html>

THE REPAIR PARTS FOR THE SELECTOR SWITCH ARE THE RIGHT LEVER, NSN 5930-01-585-4340, AND CAP SCREW. NSN 5305-01-586-6997.

PAGE 40 IN PS 746 (JAN 15) AND PAGE 40 IN PS 753 (AUG 15) GAVE TWO METHODS FOR ALTERING THE M12 RACK.

JUST REMEMBER THAT ANY M12 RACKS MADE **AFTER** SEPTEMBER 2013 **WON'T** NEED TO BE ALTERED. SO TEST YOUR RACKS FOR THE PROPER FIT **BEFORE** DOING ANYTHING ELSE.

RACKS THAT HAVE BEEN ALTERED NEED TO BE CERTIFIED BY A LOCAL TACOM LAR.

M16-Series Rifle,
M4/M4A1 Carbine...

I LOVE THE VOICE
OF EXPERIENCE WHEN
IT COMES TO PM.

LISTEN TO WHAT THESE
GUYS FROM LEONARD
WOOD HAVE TO SAY.



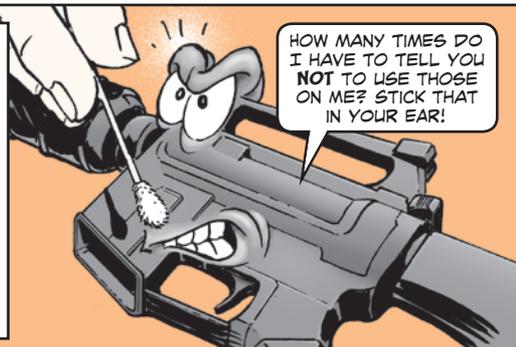
Advice from Ft Leonard Wood

Dear Editor,

We repair the small arms at the Ft Leonard Logistics Readiness Center (LRC). We think these suggestions on the M16 rifle and M4/M4A1 carbine will help operators, armorers and 91F repairmen get the most out of their weapons:

No cotton swabs!

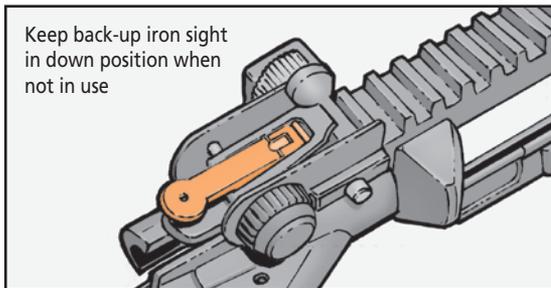
Units are actually buying swabs and adding them to the cleaning kits. When Soldiers use the swabs to clean the bolt carrier key, the cotton comes off and plugs the key, and soon the weapon stops firing. The cleaning kits come with pipe cleaners and that's what Soldiers need to use instead of swabs.



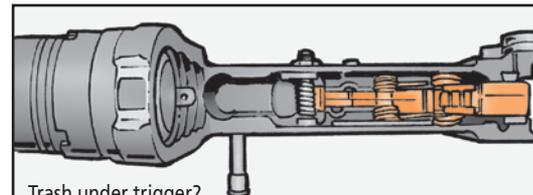
HOW MANY TIMES DO
I HAVE TO TELL YOU
NOT TO USE THOSE
ON ME? STICK THAT
IN YOUR EAR!

Protect the back-up iron sight. We've had to replace as many as 100 in one week. Keep the iron sight in the down position whenever you're not using it. Don't stack weapons on top of each other. And, obviously, don't drop weapons.

Keep back-up iron sight
in down position when
not in use

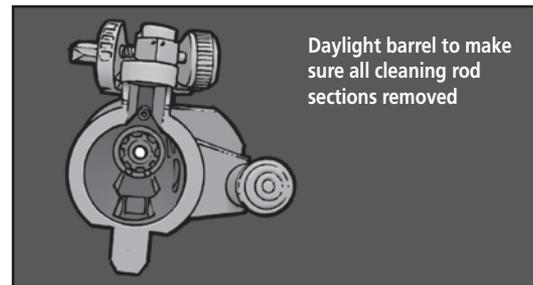


Check under trigger for trash. When Soldiers do training where they crawl on the ground, dirt and pebbles often get stuck under the trigger. Even a tiny pebble can jam the weapon. You can get most trash out with a pipe cleaner or low pressure air.



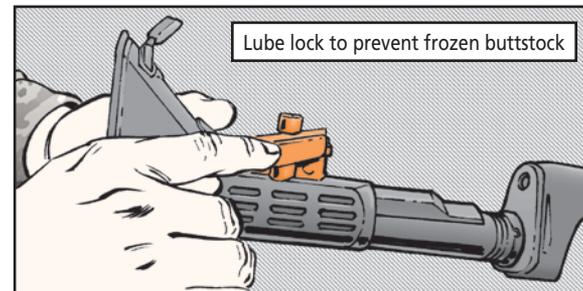
Trash under trigger?
Clean with pipe cleaner or low-pressure air

Make sure all of the cleaning rod is out of the barrel. We've had several weapons explode because a cleaning rod section was accidentally left in the barrel. If you "daylight" the barrel (look through the chamber to see if you can see out the muzzle), you can be sure the barrel's clear.



Daylight barrel to make sure all cleaning rod sections removed

Lube adjustable buttstock lock. If the lock goes too long without lube, it freezes and then you can't adjust the buttstock. When you do PMCS, put a few drops of CLP on the lock and work the buttstock back and forth.



Lube lock to prevent frozen buttstock

Thoroughly clean the weapon before inspecting it or sending it to higher maintenance. Carbon hides cracks and makes gaging inaccurate. Besides, support will send a dirty weapon right back to you for cleaning.

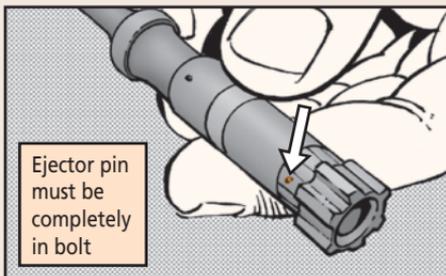


HEY, I'M NOT GOING TO MAINTENANCE LOOKING LIKE THIS. CLEAN ME!

PS MORE

Armorsers and 91Fs, install the ejector pin completely in the bolt. If the pin's not flush, count on it breaking off.

Victor Jackson
Mark Haggith
LRC
Ft Leonard Wood, MO

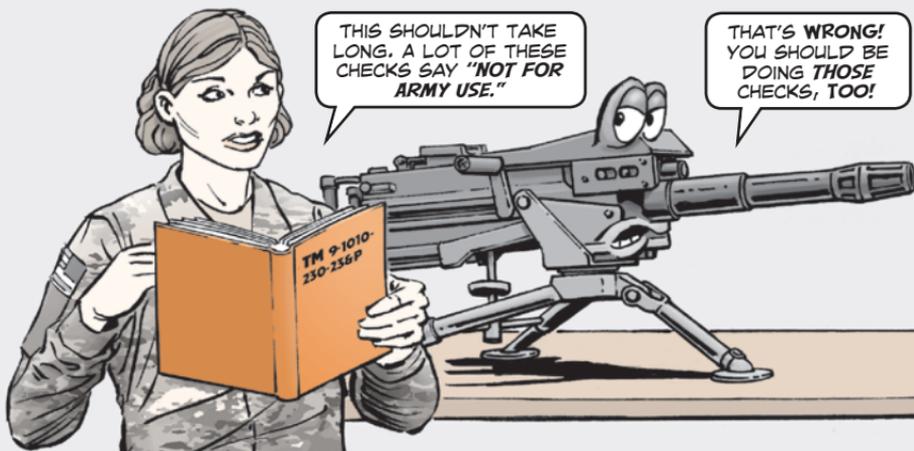


Editor's note: *We love to hear the voices of experience. Thanks.*



MK 19 Machine Gun...

WHY DOESN'T THE ARMY DO IT, TOO?



Dear Half-Mast,
The MK 19's semiannual maintenance in TM 9-1010-230-23&P says under several of the checks "Not For Army Use." Marines, on the other hand, are required to check important components like the bolt and the sear assembly. This doesn't make sense. Why the difference?

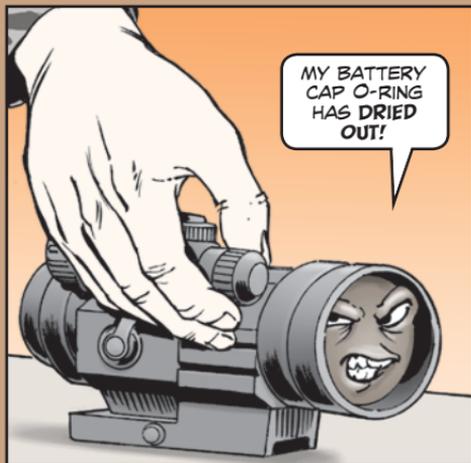
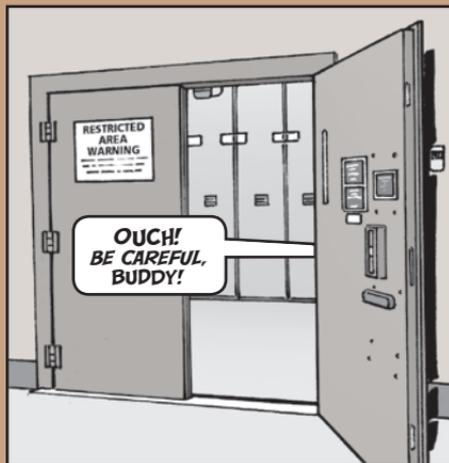
Mr D.L.

Dear Sir,

You're right that it doesn't make sense. And that's why the Army will require in the next revision to the TM that all semiannual checks be made by both the Marines and Army. But don't wait. Anywhere the TM says "Not for Army Use," cross that out.

Half-Mast

Oh, O-ring Lube Is Good!



Dear Half-Mast,

Here at Ft Leonard Wood's optics shop, we've been getting numerous service calls about the M68 COMP M4 sight. Our investigation found that Soldiers couldn't remove and install the M68's battery cap because the cap's O-ring had completely dried out and seized the cap.

In some cases, the battery cylinder broke off from the M68 when they tried to remove the cap. That made the sight unrepairable.

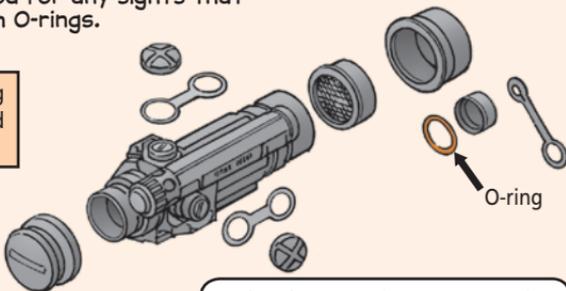
We found the solution on Pages 54-55 of PS 734 (Jan 14), which recommended silicone compound, NSN 6850-00-177-5094, for cable O-rings.

We apply a thin coat of the compound to the O-ring with a cotton-tipped applicator whenever we do maintenance on the M68. If the armorer will do this at least quarterly, seized battery caps will cease.

The compound is good for any sights that have battery caps with O-rings.

Lube battery cap O-ring with silicone compound at least quarterly

Johnny Vaughn
Gayla Campbell
Jimmy Childers
Dal Campbell
Toby Frazier
Joe Cruz
TACOM FMX-Optics Shop
Ft Leonard Wood, MO



Editor's note: *Armorer's need to seize this tip to prevent seized battery caps. Thanks, all!*

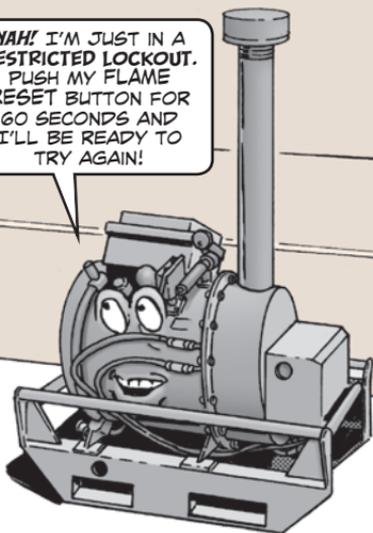
PS SOLDIER SUPPORT



WH-400
Water
Heater...

I TRIED TO START YOU THREE
TIMES AND NOW YOU *WON'T* RESET.
GUESS I'D BETTER REPLACE YOUR
PRIMARY SAFETY CONTROL.

NAH! I'M JUST IN A
RESTRICTED LOCKOUT.
PUSH MY FLAME
RESET BUTTON FOR
60 SECONDS AND
I'LL BE READY TO
TRY AGAIN!



KNOCK OUT LOCKOUT WITH A LITTLE KNOWLEDGE

The WH-400 water heater works on a simple principle, operators. You turn it on, the fuel valve opens and sprays fuel through the fuel nozzle, and the electrodes energize to create a spark that lights the fuel.

At each startup, the primary safety control performs a “trial for ignition” (TFI). If the flame doesn’t start within several seconds, a buzzer sounds and the water heater is locked out. This is called a **safety lockout**.

No problem. Just press the red FLAME RESET button for one second and you’re ready to try again.

But if it’s a new WH-400, or you’re trying to start one that’s had its fuel drained for transport or storage, it may take several tries to get the heater started. And if the primary safety control does three safety lockouts in a row, the control enters a **restricted lockout**.

In restricted lockout, pressing the FLAME RESET for one second again does nothing. That leads some operators to assume they have a bad primary safety control, NSN 4540-01-575-2421, so they order a new one.

Here’s a little known fact: To release the water heater from a **restricted lockout**, press and hold the FLAME RESET button for 60 seconds. You won’t find this mentioned in the hard copy of TM 10-4520-266-13&P that comes packed with the WH-400, so make a note until the TM is updated.



THINGS TO REMEMBER

YOU GUYS HAVE TAKEN GREAT CARE OF ME! NOW I'M READY FOR SOME SERIOUS CROWD CONTROL.

CONTROL YOURSELF, BIG GUY! WE'RE JUST TRAINING TODAY.



Dear Editor,

The non-lethal capability set (NLCS) is designed for crowd control. It consists of the dismantled operations module, NSN 1367-01-561-5279; the detainee/crowd control operations module, NSN 1367-01-561-5276; the convoy module, NSN 1367-01-561-5277; and the checkpoint module, NSN 1367-01-561-5278. As an instructor for the set, I've picked up these PM nuggets that can help other units:

Establish accountability

The set costs \$1.3 million, so you don't want its components disappearing. Limit the number of people who have access to the set and make sure each item is properly signed out.



HEY! WAIT A MINUTE. YOU NEED TO SIGN FOR THAT! I DON'T WANT STUFF DISAPPEARING!

Run set's two generators at least monthly

If the generators sit for long periods, their seals and fuel go bad. The generators come with a TM that will guide you in PMCS. It's a good idea to store the generators in the motor pool where it's easier to service them.



OK, TIME FOR YOUR MONTHLY RUN.

GREAT! I NEED THE EXERCISE!

Store tasers and their cartridges in arms room

Temperature extremes affect both the tasers and cartridges. If they're left for long periods in the cape set containers, they can end up warped or frozen.



Store tasers and pepper spray in arms room



Keep OC (pepper spray) cans in the arms room, too. If they get too hot or cold, their O-rings leak.

Make PMCS for set part of every Monday maintenance day

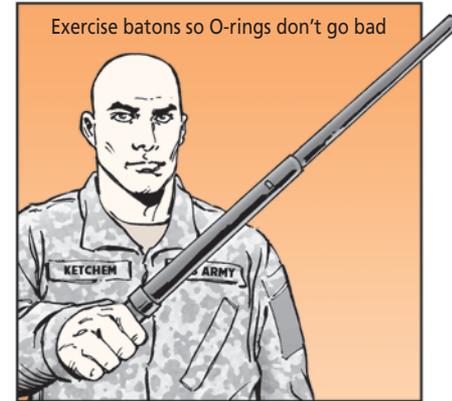
The set is made up of 10 Conexes full of equipment. That's too much equipment for just one day a month's worth of attention. PMCS part of the set each Monday. That makes it manageable.



OK, IT'S MONDAY, PEOPLE. LET'S DO PMCS ON THE STUFF WE DIDN'T GET TO LAST MONDAY.

Exercise batons and traffic spikes

Batons also have O-rings. If they sit unused for months, the O-rings dry up and the batons can't be adjusted.

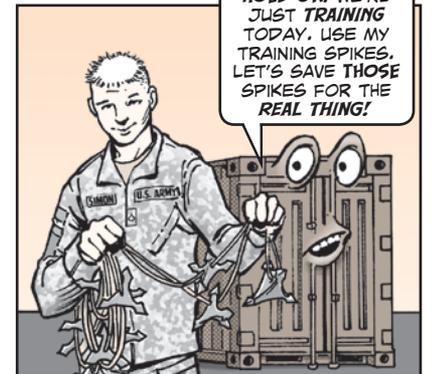


Exercise batons so O-rings don't go bad

Lay out the vehicle arresting devices (traffic spikes) monthly. If they're stored for months without being unrolled, they can end up sticking together.

Train with training devices

That's why they're called training devices. If you train with the real items, such as the spike strips, eventually they'll be damaged.

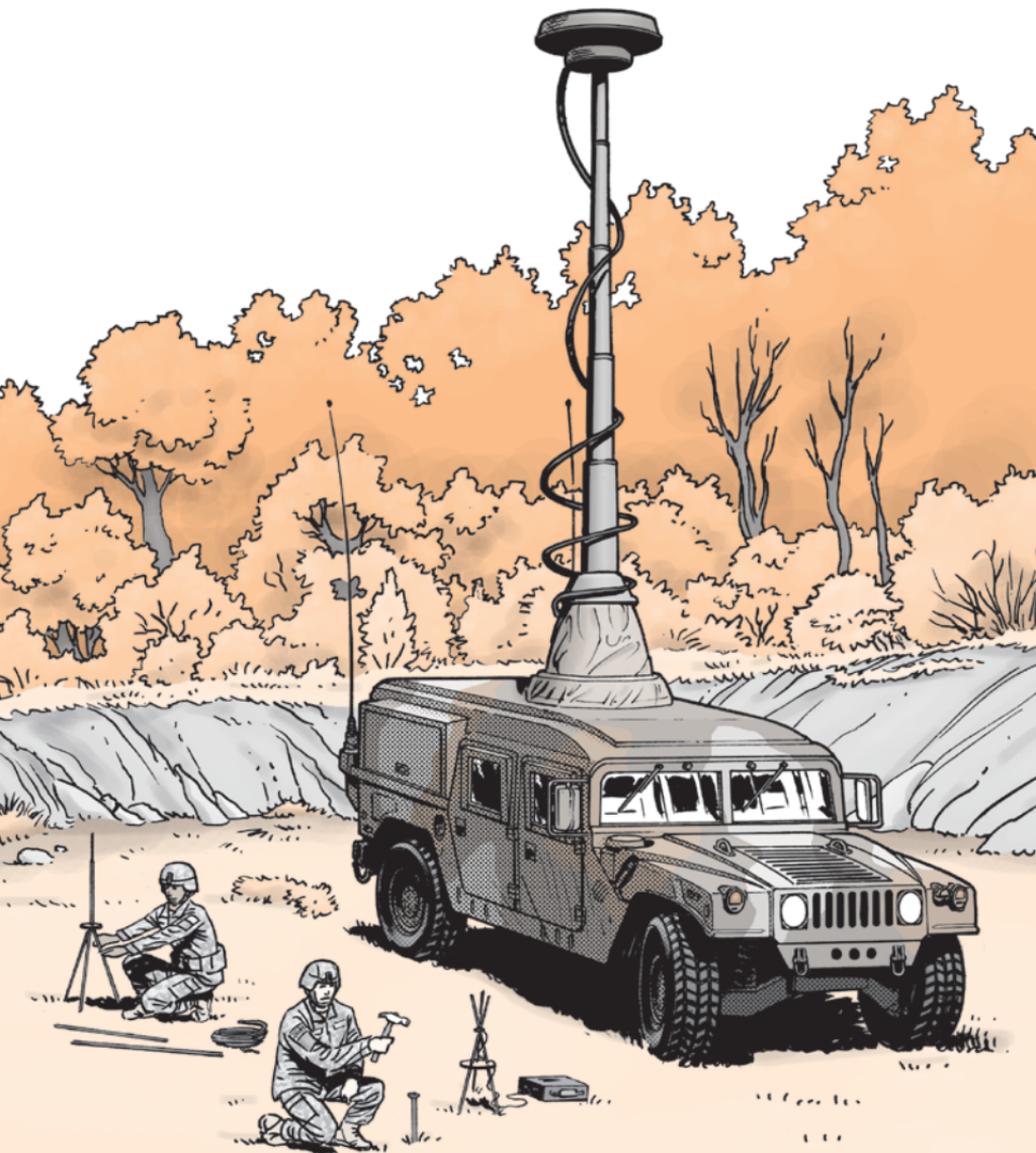


HOLD ON! WE'RE JUST TRAINING TODAY. USE MY TRAINING SPIKES. LET'S SAVE THOSE SPIKES FOR THE REAL THING!

For help with the non-lethal capability set, go to the manufacturer's website: <https://www.aardvarktactical.com> or call (800) 997-3773.

SFC Steven Ketchem
Interservice Non-lethal Individual Weapons
Ft Leonard Wood, MO

Editor's note: Great tips, Sergeant. Thanks for the help.



PS COMMUNICATIONS

Keying is the Key to GPS Protection!

PROTECTING ALL OF YOUR GPS DEVICES IS **IMPORTANT** BECAUSE OF EMERGING THREATS.

YOU MUST KEEP YOUR DEVICES **KEYED** TO PROTECT THEM FROM SIGNAL INTERFERENCE.



GPS is Critical Across the Battlefield

GPS DEVICES ARE ESSENTIAL FOR WARFIGHTER MISSIONS.

DON'T GO INTO THE FIGHT WITH AN UNPROTECTED GPS DEVICE!



PS MORE

Keying is the Key

For maximum performance for military operations, you need to ensure that every selective availability anti-spoofing module (SAASM)-equipped GPS device is always COMSEC keyed. This includes the well-known DAGR, as well as the embedded receivers "hidden" inside many other weapon systems.

Emerging threats make the electromagnetic environment more challenging than ever for low-power radio signals like GPS. Loading all SAASM receivers with COMSEC key materials is your best defense against signal interference. When keyed, your GPS receiver provides the highest possible level of anti-spoofing protection, including positioning, navigation and timing (PNT) accuracy. When your GPS receiver is keyed, it tracks the military GPS signal, Precise Positioning Services (PPS).

An unkeyed SAASM-based GPS receivers are no better than standard commercial GPS receivers. When your GPS receiver is unkeyed, it is only tracking the commercial GPS signal, Standard Positioning Service (SPS). And that presents an increased risk to military operations.

All units with SAASM-based GPS devices *must* have current COMSEC keys loaded before their receivers are used in combat, combat support or combat service support operations. That means you must perform pre-combat checks (PCCs) and pre-combat inspections (PCIs) to ensure that your equipment is keyed. There are two types of SAASM-based GPS: embedded and stand-alone.

Embedded SAASM Devices

Some line replaceable units (LRUs) with embedded GPS cards aren't routinely opened at the unit level. These systems are required to provide access points for key-fill.

Check your equipment carefully. If it has a key-fill device, review the TMs to determine if the GPS key-fill is required. If so, follow the TM instructions to maintain the key.

Stand-alone GPS Receiver

The primary stand-alone device is the AN/PSN-13A defense advanced GPS receiver (DAGR), NSN 5825-01-526-4783. Units must maintain keys in all DAGRs regardless of how they're used.

DAGRs have a custom key-fill connector interface that requires a special key-fill adapter cable, NSN 5995-01-521-3185, to connect with the fill device.

You can quickly verify the current key by checking the DAGR display screen.



Keep DAGR keyed for maximum performance



Note About DAGR GPS Keys

Maintaining the DAGR COMSEC key can be a burden for operators. To relieve that hardship, the GPS system offers over-the-air key distribution (OTAD). That reduces the need for physical keying to just once a year. The OTAD software was released under MWO 11-5820-1172-23-1. You can get a copy of the MWO and the software at the PNT website:

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

For help with keying your DAGRs, contact PMP PNT's Stephen Morrissey at (478) 926-9511 or by email: stephen.r.morrissey.civ@mail.mil

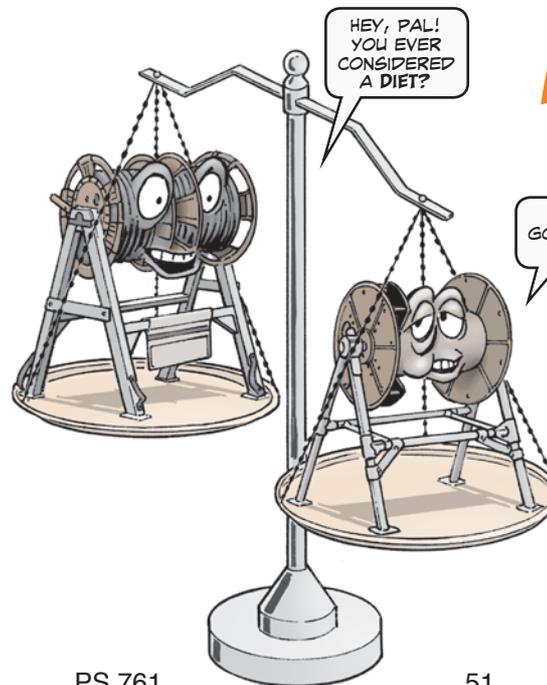
If you need help with keying other stand-alone or embedded GPS systems, contact the project/program/product manager or the sustainment agency responsible for the end item.

To use OTAD, your DAGR must have MWO 11-5820-1172-50-1 applied. The MWO covers turning in the obsolete AN/PSN-13 DAGRs that cannot use latest operating software (OS) or the OTAD signal. It also details upgrading the affected AN/PSN-13A DAGRs. The details of that MWO are addressed in CECOM Maintenance Advisory Message 2014-07-0002 (6 May 14), which can be found on the PNT website.

More information about how to confirm OTAD is working on your device is in the latest change to the DAGR's TM 11-5820-1172-13&P (May 14/Ch 1, Aug 15). You'll find it on the LOGSA ETM website: <https://www.logsa.army.mil/etms>



RL-309/U Cable Reel Stand...



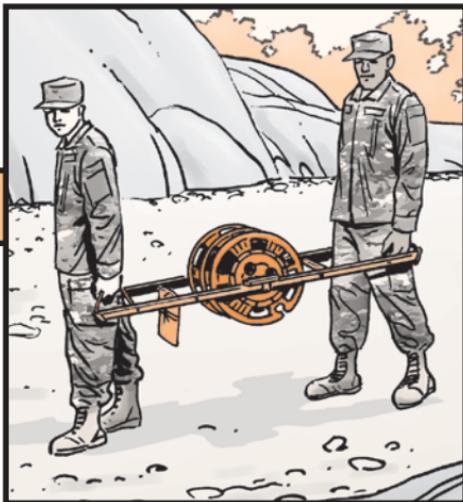
NEW STAND LIGHTER FOR LUGGING

WOULDN'T DO ANY GOOD. SIGH I'M JUST A HEAVYWEIGHT.

When it's time to lay or recover commo cable, using the old RL-31 cable reel stand can provide quite a workout. When you combine the stand's 59 pounds with body armor, a backpack and weapons, you're lugging a heckuva lot of weight!

That's where the Army's new RL-309/U advanced lightweight reel stand comes to the rescue. The RL-309/U weighs in at 22 pounds, 63 percent lighter than the old RL-31. Its other benefits include:

- Faster, easier and safer to deploy and retrieve cable over rough terrain
- Strong lightweight aluminum frame with stainless steel hardware for durability
- **Folds flat and locks closed for easy transport with all pieces self-contained**
- Easy setup and operation with no tools required
- Replaceable axle bushings that snap in and out
- Deploys and retrieves cable from either direction
- An attached heavy-duty storage pouch for transporting brakes and crank handles



THE RL-309/U COMES WITH NSN 8130-01-630-1792 (TAN) OR NSN 8130-01-630-1702 (GREEN). USE THE FOLLOWING NSNs FOR REPAIR PARTS...

Item	NSN
Leg assembly, tan (2 per stand)	5975-01-630-1923
Leg assembly, green (2 per stand)	5975-01-630-1747
Axle holder with bushing (2 per stand)	5365-01-630-1817
Axle holder bushing (2 per stand)	5365-01-630-1816
Brake assembly	5340-01-630-1932
Hand crank assembly	5340-01-630-1896
Split/dual axle	3040-01-630-1797
Quick-release pin	5315-01-630-1915
Hinge	5340-01-630-1938
Side brace (tan)	5975-01-630-1715
Side brace (green)	5975-01-630-1581
Fabric carrying handle	5340-01-630-1707
Fabric pouch	5140-01-633-8564



For more information, check out the manufacturer's website at:

<http://www.occfiber.com/products/ALRS>

Questions? Contact Melissa Fox or Kate McDevitt at the CECOM Engineering Office, DSN 648-6164, (443) 395-6164, or by email at:

melissa.a.fox25.civ@mail.mil

kate.h.mcdevitt.civ@mail.mil



OE-254 Mast Antenna...

HEY, DID YOU
BRING THE SILICONE
COMPOUND?

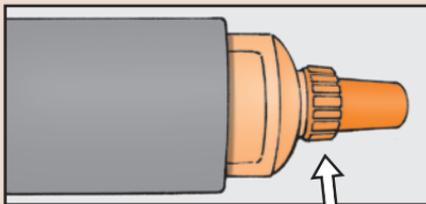
NAH. IT
WOULDN'T
FIT IN THE
TRANSIT
BAG.

SILICONE SIZE MATTERS!

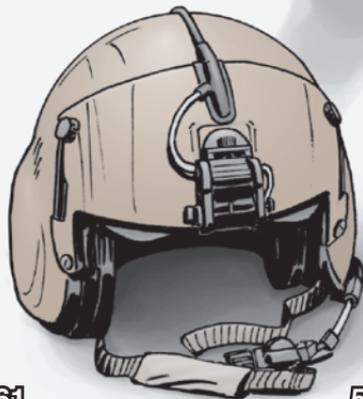
The OE-254 antenna mast group, NSN 5985-01-063-1574, includes a 2-ounce tube of silicone compound, PN SM-B-944742 (MIL-S-8660), that's stored in a special protective compartment of the transit bag. Unfortunately, the silicone has no NSN and is not available through the supply system.

The expendable supplies and materials list in Appendix B of TM 11-5985-357-13 lists an 8-oz tube of silicone compound, NSN 6850-00-880-7616, as a replacement. Unfortunately, this tube is too large to fit inside the transit bag's compartment.

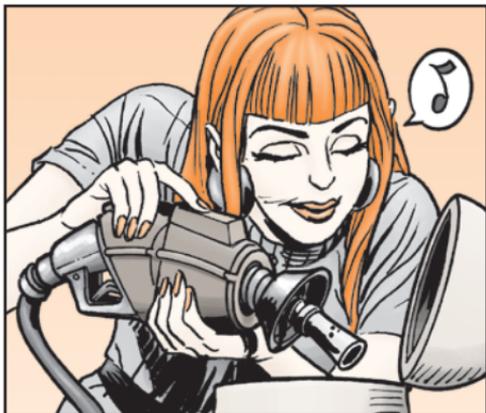
A better substitute is NSN 6850-00-177-5094. While this 2-oz tube of MIL-S-8660 silicone compound is still too large to fit into the transit bag's compartment, it's small enough to fit into one of the lower mast section tubes for protection and convenient storage.



Slide 2-oz tube of silicone compound into lower mast section tube for protection



PWKP Refills Knowledge Tank



Due to repeated deployments over the past decade, some Soldiers have lost critical technical skills, especially in the petroleum and water arenas.

To boost learning and refresh maintenance skills, the Quartermaster School's Petroleum and Water Department has opened a Petroleum and Water Knowledge Portal (PWKP) online. The virtual portal can help bridge technical knowledge gaps and aid home-station sustainment training.

Petroleum and Water

KNOWLEDGE
PORTAL

P&W Components	Purpose	SKN-Live Calendar																																										
<ul style="list-style-type: none"> FARP Guide Petroleum Equipment Go/No Go Petroleum Inspection Checklist Petroleum Operations & Joint Publication Guide Petroleum Laboratory Certification Checklist & Publication ROM Guide Water Equipment Go/No Go Water Inspection Checklist 	<p>This Knowledge Center is a virtual, online environment to provide training and tools to energize a culture of stewardship throughout our formations. It provides the means for knowledge sharing, collaboration and interaction as it relates to Petroleum and Water.</p> <p style="text-align: center; background-color: #333; color: white; padding: 2px;">Hot Topics</p> <ul style="list-style-type: none"> ATP 4-43 Petroleum Operations replaced FM 10-67-1 effective 06 August 2015 DLA-Energy published a change to FY2015 Fuel Prices Effective Feb 2015 (under "Customers/Partners" dropdown menu) Army Petroleum Center (APC) site has Fuel Technical Letters (FTL's) and Technical Advisory Messages 	<div style="text-align: center; border: 1px solid #ccc; padding: 5px;"> <p>April 2016</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>S</th><th>M</th><th>T</th><th>W</th><th>T</th><th>F</th><th>S</th> </tr> </thead> <tbody> <tr> <td></td><td></td><td></td><td></td><td></td><td>1</td><td>2</td> </tr> <tr> <td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td> </tr> <tr> <td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td> </tr> <tr> <td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td> </tr> <tr> <td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td> </tr> </tbody> </table> </div>	S	M	T	W	T	F	S						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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The PWKP is brimming with resources, including:

- inspection checklists, publications and SOPs for petroleum and water equipment.
- a list of Army-approved petroleum and water courses.
- videos demonstrating petroleum and water operations.
- interactive media instruction tools.
- links to more communities that support the Army's petroleum and water mission.

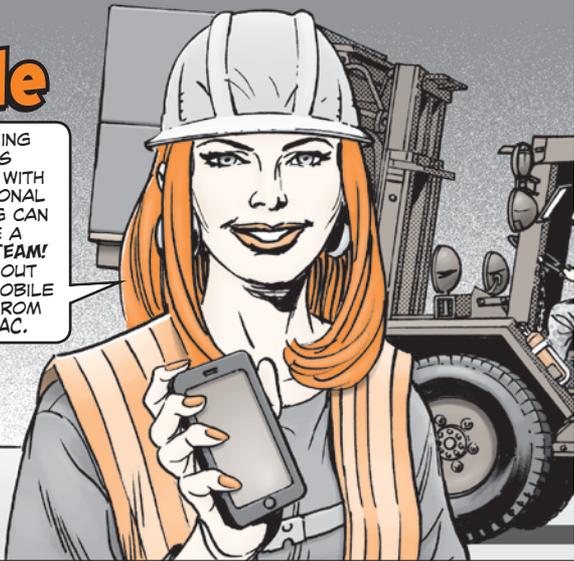
The center is also part of the Sustainment Knowledge Network (SKN) and SKN forums, so it's easier than ever to connect with subject matter experts.

Access the PWKP by CAC at: <https://www.us.army.mil/suite/page/697424>

To submit questions or comments to the petroleum and water experts, click the red Ask the Expert button.

DAC Mobile Apps

LEARNING APPS PAIRED WITH TRADITIONAL TRAINING CAN MAKE A GREAT TEAM! CHECK OUT THESE MOBILE APPS FROM THE DAC.



THE DEFENSE AMMUNITION CENTER (DAC) HAS FIELDIED SEVERAL MOBILE LEARNING APPLICATIONS FOR THOSE WHO WORK WITH AMMUNITION AND EXPLOSIVES.

THE FOUR APPS COVER CRITICAL SAFETY, STORAGE AND HANDLING PRACTICES. THEY INCLUDE...



AMMO SCG

YOU'LL LEARN ABOUT THE 13 DIFFERENT STORAGE COMPATIBILITY GROUPS (SCG) ASSIGNED TO AMMUNITION ITEMS AND HOW TO INTERPRET THE COMPATIBILITY TABLE AS YOU MOVE AMMO TO DIFFERENT STORAGE SITES.

YOU'LL ALSO SEE WHAT CAN HAPPEN IF COMPATIBILITY RULES ARE VIOLATED.



ESQD MOBILE

THIS APP TEACHES YOU HOW TO USE THE EXPLOSIVES SAFETY QUANTITY DISTANCE (ESQD) CALCULATOR, A TOOL THAT DETERMINES HOW MUCH AMMUNITION CAN BE SAFELY STORED AT A GIVEN LOCATION AND HOW FAR AWAY TO KEEP PERSONNEL AND EQUIPMENT.

IT'S GOT 10 SCENARIOS THAT USE THE MOBILE ESQD CALCULATOR AND TEST YOUR KNOWLEDGE OF ARMY ESQD STANDARDS.



YELLOW BOOK

THIS APP IS A MOBILE VERSION OF THE POPULAR FIELD GUIDE. IT COVERS CONSOLIDATED HAZARD CLASSIFICATION, PHYSICAL SECURITY, MARKING, TRANSPORTATION AND STORAGE DATA AND OTHER CRITERIA FOR A VARIETY OF AMMUNITION ITEMS.

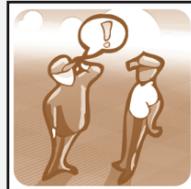
LIKE THE HARD COPY VERSION, THE APP DOESN'T REPLACE ANY OFFICIAL SOURCE DOCUMENTS, BUT IT'S A HANDY TOOL FOR FIELD OPERATIONS.



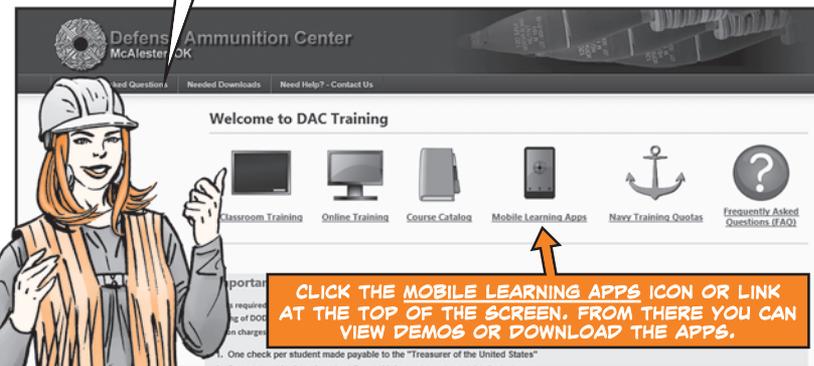
SOLDIER SAFETY

THIS APP COVERS THE BASIC DO'S AND DON'TS WHEN HANDLING, STORING OR TRANSPORTING AMMO.

WATCH AND INTERACT WITH "PRIVATE PUDDINHEAD" WHILE HE LEARNS ABOUT BASIC AMMO SAFETY THROUGH TRIAL AND ERROR IN A VARIETY OF HUMOROUS SITUATIONS.



TO CHECK OUT ONE OR MORE OF THESE FREE APPS, VISIT THE DAC WEBSITE AT: <http://www.dactces.org/>



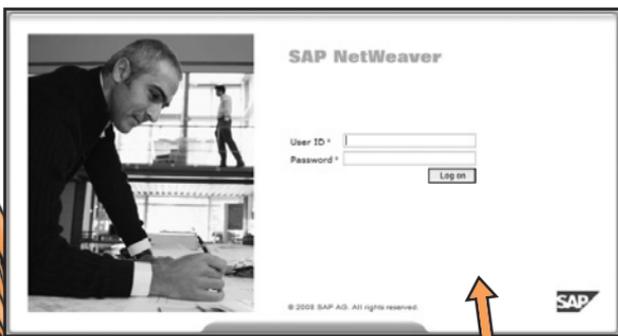
CLICK THE MOBILE LEARNING APPS ICON OR LINK AT THE TOP OF THE SCREEN. FROM THERE YOU CAN VIEW DEMOS OR DOWNLOAD THE APPS.



Solving GCSS-Army Lockouts

EVER ACCIDENTALLY LOCK YOURSELF OUT OF GCSS-ARMY?

YOU KNOW THERE'S A **PROBLEM** IF YOU GET AN ODD-LOOKING SCREEN WHEN YOU TRY TO LOG IN.



YOU'LL SEE THIS SCREEN IF YOUR GCSS-ARMY ACCOUNT IS LOCKED, NOT SET UP OR YOUR CAC CERTIFICATE IS INVALID.

AS GCSS-ARMY WAVE 2 ROLLS OUT ACROSS THE ARMY, MANY USERS NEED **HELP** UNLOCKING THEIR ACCOUNTS OR WANT TO KNOW WHAT'S UP WITH THAT SAP NETWEAVER ERROR SCREEN. SO IF YOU SUBMIT A HELP DESK TICKET, YOU MAY END UP ON A LONG WAITING LIST.

HERE ARE **THREE POSSIBLE CAUSES AND RESOLUTIONS** FOR THE SAP NETWEAVER SCREEN...

1. Your account hasn't been fully established. If you have self-registered but an access administrator (AA) has not yet successfully transferred you to a role or position, you'll be unable to log in. Once the AA has granted you access, it can take up to 20 minutes before you can log in.
2. The certificates on your CAC weren't published. This is rare, but it can happen if you recently got a new CAC. Choosing an old CAC certificate when logging in can also cause an error.
3. Your account really is locked.
 - **Active Army:** Contact your local GCSS-Army AA or SASMO for assistance.
 - **Reserve:** Contact your local GCSS-Army AA.
 - **National Guard:** Contact your state/territory GCSS-Army POC in the G-4 section of the Joint Force Headquarters.



I CAN'T GET IN GCSS-ARMY! WHAT'S THIS WEIRD SCREEN?

DON'T PANIC, WRIGHT. I READ ABOUT THIS IN PS. WE'LL GET IT SORTED OUT.

IMPORTANT! AFTER YOUR ACCOUNT IS UNLOCKED, YOU'VE GOT 24 HOURS TO EXECUTE A TRANSACTION CODE IN GCSS-ARMY TO KEEP IT UNLOCKED. OTHERWISE THE SYSTEM WILL LOCK IT AGAIN.
GCSS-ARMY ACCOUNTS MUST BE ACCESSED AND A TRANSACTION PROCESSED AT LEAST ONCE EVERY 35 DAYS TO PREVENT LOCK-OUTS.

Access Administrators

GCSS-ARMY AAS WHO NEED REFRESHER TRAINING ON HOW TO UNLOCK ACCOUNTS CAN GET IT THROUGH THE GCSS-ARMY TRAINING AND CERTIFICATION (GTRAC).

GO TO: <http://gcss.army.mil/>

PICK THE TRAINING TAB ON THE GCSS-ARMY WEBSITE, CLICK FAMILIARIZATION-WEB BASED TRAINING, AND COMPLETE THE ADMINISTRATIVE FUNCTIONS TRAINING PARTS 1 AND 2.

THE DECENTRALIZED USER ADMINISTRATION (DUA) SECTION OF THE END USER MANUAL PLUS (EUM+) ALSO HAS A TRANSACTION GUIDE THAT COVERS THE ACCOUNT UNLOCKING PROCESS.

OF SAFETY AND SOLVENTS

HOW'D OUR UNIT SCORE IN SAFETY, MASTER SERGEANT?

YOU PASSED INSPECTION, BUT THERE'S ROOM FOR IMPROVEMENT.

WE CAN COVER A FEW OPTIONS TO IMPROVE YOUR SCORE.



PS MORE



ARMY MECHANICS AND TECHNICIANS USE MANY PRODUCTS CONTAINING HAZARDOUS MATERIALS (HAZMAT) ON THE JOB. THAT'S BECAUSE ORDINARY TASKS, LIKE CLEANING PARTS, REQUIRE IT.

THE CLEANING PROCESS ITSELF CAN MULTIPLY HAZARDS.

FOR EXAMPLE, PARTS WASHING STATIONS ARE USED TO REMOVE RESIDUE THAT CONTAINS DEGREASERS SUCH AS CARBURETOR AND ENGINE CLEANER SOLVENTS.

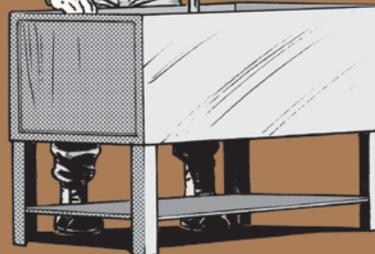
THESE MATERIALS INCLUDE HAZMAT LIKE PETROLEUM DISTILLATES, AROMATIC HYDROCARBON, BENZENE AND PETROLEUM NAPHTHA. THE WASTE THEY GENERATE CREATES MORE ACIDS, IGNITABLE CHEMICALS AND OTHER TOXIC WASTES.

ONE STEP TOWARD LIMITING WASTE AND IMPROVING SOLDIER SAFETY IS LOOKING AT ALTERNATIVES TO STANDARD PRACTICES.

INSTEAD OF SOLVENT-BASED WASH STATIONS, UNITS CAN GET STATIONS THAT ARE AQUEOUS CLEANER-BASED. AQUEOUS CLEANERS ARE PH-NEUTRAL OR ALKALINE WATER-BASED SOLUTIONS THAT CLEAN AS WELL AS SOLVENTS.

ANOTHER OPTION IS SEMI-AQUEOUS SOLUTIONS THAT CONTAIN LESS SOLVENT.

EVEN A FEW CHANGES CAN REDUCE THE AMOUNT OR NUMBER OF SOLVENTS.

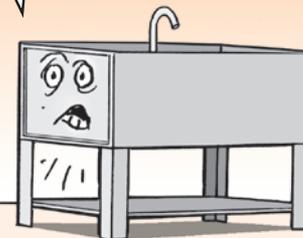


Five Tips to Extend Solvent Life and Cut Costs

1. Always wipe parts down. Remove as much excess residue as possible before placing parts in a solvent tank.
2. Create stages to clean heavily soiled parts. Use one solvent tank for the initial cleaning and a second solvent tank for the final cleaning.
3. Regularly clean out sludge from aqueous cleaning tanks.
4. Coordinate with your contract support organization to ensure your unit is using the longest service interval possible for your solvent exchange service.
5. Ensure no other solvents are used over parts washers (spray solvents are a common culprit). Mixing spray solvents, such as carburetor cleaner, means the solvent in the parts washer can't be recycled.

DON'T CONTAMINATE MY PARTS WASHER SOLVENT WITH STUFF LIKE PAINT, POL OR GASOLINE.

UNITS CAN BE CHARGED TO REPLACE CONTAMINATED SOLVENT SOLUTION.



FOR MORE MAINTENANCE TIPS AND TOOLS, GRAB YOUR CAC AND CHECK OUT THE COMMAND MAINTENANCE DISCIPLINE PROGRAM (CMDP) KNOWLEDGE CENTER ONLINE AT:

<https://www.us.army.mil/suite/page/693941>

PS END



BLACK SOCKS GET GREEN LIGHT

Good news, Soldiers! You can now wear black socks with Army fitness uniforms. So the choice of black or white socks is yours, but all socks must be plain with no logos and cover the calf or entire ankle. Look for this change in the next revision of DA Pam 670-1, *Guide to the Wear and Appearance of Army Uniforms and Insignia*.

GK VRRT Forklift Steering Cylinder Revisited

Page 13 of PS 757 (Dec 15) listed NSN 3040-01-294-3441 for the forklift's left-front and right-rear steering cylinder. That's wrong. The correct NSN is 3040-01-294-3411.

HMMWV Geared Hub Plug Revisited

Page 13 of PS 756 (Nov 15) said to use a $\frac{3}{8}$ -in hex head driver to remove the HMMWV's geared hub drain plug. That's incorrect. You'll actually need to use a $\frac{5}{16}$ -in or an 8mm Allen key driver to fit the plug's slot.

MSD HELP DESK DELIVERS

Need help with your maintenance support device (MSD), internal combustion engine (ICE)/smart wireless internal combustion engine (SWICE) kits, or ULLS-A(E) logbook? No problem: Product Director Test, Measurement and Diagnostic Equipment (PD TMDE) fixes snafus! For warranty repair, hardware or software issues, password reset or field support, set up a user account and submit a customer service request (CSR) at: <https://msd.us.army.mil/>
Or call (877) 564-1137, (256) 876-2200, or email: apats@redstone.army.mil

TS-3920C Test Set Calibration Revisited

Page 60 of PS 752 (Sep 14) and Pages 24-25 of PS 757 (Dec 15) said to ship the TS-3920C/ASM computer test set (CTS), NSN 6625-01-529-3346, to the manufacturer for calibration. In both instances, that's not the case. Test sets are calibrated by Army TMDE, not the manufacturer. Refer to Pages 20-21 of PS 754 (Sep 15) for test set calibration:

<https://www.logsa.army.mil/psmag/archives/PS2015/754/754-20-21.pdf>

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

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

KEYING IS THE KEY!



C'MON, DAGR!
WHY AREN'T YOU TRACKING?

I CAN'T TRACK BECAUSE I'VE BEEN HACKED!
YOU DIDN'T KEY ME!



KEEP ALL YOUR GPS DEVICES, INCLUDING YOUR DAGR, KEYED SO THEY CAN TRACK MILITARY SIGNALS.



OTHERWISE, YOUR DEVICES ARE **NO BETTER** THAN A STANDARD GPS RECEIVER THAT'S **VULNERABLE** TO THREATS.