

Issue 750

**PS**

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# THE PREVENTIVE MAINTENANCE MONTHLY

**SPECIAL  
CORROSION  
ISSUE**

TB 43-PS-750

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WANT TO STOP  
CORROSION? SEE PAGES  
10-12 AND 26-44.



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1504904

# THE INDOMITABLE FOE

THIS DUMMY  
IS JUST LIKE  
CORROSION.

YOU CAN KNOCK IT  
DOWN BUT IT KEEPS  
COMING BACK.

SEE WHAT YOU CAN DO TO  
KNOCK OUT CORROSION ON  
PAGES 10-12 AND 26-44!

**POW!**

# PS COMBAT VEHICLES

## Combat vehicles:

- Avoid flarebacks
- Tools for unsticking rounds/stub bases
- Check M113 oil levels

M1-Series Tanks...

THIS CREW  
WAS **LUCKY** THEY  
WEREN'T INJURED—  
OR WORSE.

## BEAT BACK FLAREBACKS

FLAREBACKS ARE NOT  
JUST DANGEROUS—  
THEY'RE **VERY**  
**DANGEROUS.**

IF YOU EXPERIENCE ONE,  
YOU AND YOUR CREW-  
MATES WILL BE **LUCKY**  
TO ESCAPE INJURY.

BUT FLAREBACKS  
**CAN** BE AVOIDED  
WITH CAREFUL  
MAINTENANCE AND  
BY STICKING TO  
THE PROCEDURES  
OUTLINED IN THE  
TMS.

Flareback happens when the fuel-rich gases formed by firing the main gun enter the crew compartment, mix with oxygen, and then are ignited by some source.

During normal operations, the 120mm gun system uses the bore evacuator to remove the combustible and toxic fumes generated during firing. Some of this gas pressure is forced into the bore evacuator chamber through the gun tube gas ports.

After the projectile is fired, pressure in the gun tube falls off almost immediately and the pressure stored in the bore evacuator chamber is discharged through the gas ports. This gas discharge creates small “jet streams” which are directed through the gun tube toward the muzzle.

Fresh air is drawn in through the open breech, combines with the gases from the bore evacuator, and is propelled out the muzzle of the gun tube. That’s what keeps those gases out of the turret.

## Maintenance

YOUR FIRST  
LINE OF DEFENSE  
AGAINST  
FLAREBACK  
IS **PROPERLY  
MAINTAINING**  
THE BORE  
EVACUATOR.

The PMCS charts in your operator’s manuals detail the inspection and service procedures for the bore evacuator.

They include removing the bore evacuator for cleaning and servicing, cleaning the gas ports in the gun tube, and inspecting the bore evacuator and seals for tears, cuts, gouges and other deformities. New seals must be installed during semiannual services, even if they show no damage.

Another reason for flarebacks could be that fresh air is not drawn into the gun tube because of a failed stub base ejection.

You need an open breech to allow fresh air to be drawn into the gun tube. If the stub base won’t fully eject from the chamber after firing, there’s a problem. The usual cause is a faulty stub base deflector tray or damaged chamber extractors.

Regular maintenance includes  
checking seals for damage

Check  
deflector  
tray for  
damage



If the deflector tray is misaligned, the ejected stub base hits the front edge of the tray. Check the deflector tray closely for dents, nicks or gouges, especially at the front leading edge.

A misaligned or damaged stub base deflector tray can also damage the round during loading. The damage isn’t usually noticed since it happens when the round is chambered.

INSPECT THE CHAMBER  
EXTRACTORS FOR DAMAGE, TOO.  
AN EXTRACTOR WITH ROUNDED  
OR DAMAGED EDGES HAS A  
HARD TIME GRABBING THE  
STUB BASE.

IF YOU FIND  
DAMAGE  
TO THE  
DEFLECTOR  
TRAY OR  
EXTRACTORS,  
NOTIFY YOUR  
MECHANIC  
**IMMEDIATELY.**

THE PARTS  
**MUST** BE  
REPAIRED OR  
REPLACED  
**BEFORE** THE  
TANK CAN  
FIRE LIVE  
ROUNDS  
AGAIN.

Chamber extractors rounded? Report it!

Inspecting the rounds themselves is also a critical step in flareback prevention. Rounds that are contaminated with water, oil or other substances might not burn completely. The residue left behind could ignite any gases not expelled by the bore evacuator.

Inspect rounds for contamination before firing

PS MORE



CLOSELY INSPECT  
YOUR ROUNDS  
FOR DAMAGE OR  
CONTAMINATION  
THAT COULD  
LEAD TO  
FLAREBACK.

ROUNDS THAT  
ARE IN GOOD  
CONDITION CAN  
**MINIMIZE** THE  
SEVERITY IF  
A FLAREBACK  
DOES HAPPEN.

In addition to crew PMCS, sustainment maintenance is also critical. Proper borescoping, recoil exercises and the right cable adjustment for the gun system are critical if the weapons system is to function properly.

### Cam Speed

The best way to reduce flareback during operation is to set the operating cam speed to the **S** position. The initial starting position should be one click past the **S** position to make sure the cam is fully engaged.

However, if the cam setting is too slow, the stub base won't eject properly and the bore evacuator will start to discharge before the breech opens.

You'll find instructions for setting the cam based on temperature and operating conditions in WP 0460 of TM 9-2350-264-10-3 (Sep 11, w/Ch 3, Jan 15) and in WP 0552 of TM 9-2350-388-10-3 (Dec 12).

If the breechblock doesn't fully open or the stub base doesn't fully extract after firing, a flareback is possible. Stop and follow the procedures outlined in the TMs. Your safety depends on it!

Set cam speed as close to S as possible

REGULAR  
PM WILL  
**REDUCE** THE  
CHANCE OF  
FLAREBACKS  
AND KEEP  
YOU AND  
YOUR CREW  
**SAFE!**

PS END

YOWZA! WHAT  
HAPPENED TO  
YOU?!

FLARE-  
BACK!

I **TOLD** 'EM ABOUT  
USING THE RIGHT TOOL TO  
EXTRACT A ROUND BUT DID  
THEY LISTEN? **Nooo!**

## TOOLS FOR STICKY SITUATIONS

Using the wrong tool when extracting a stub base or stuck round from your tank's 120mm cannon tube can increase the danger of flareback. That'll ruin your day in a hurry.

If a stub base doesn't extract from the chamber after firing, don't use just any ol' tool. Make sure to use the cartridge ejector tool, NSN 1015-01-209-3484. It's listed as Item 22 in WP 499-14 of TM 9-2350-264-10-3 (Sep 11, w/Ch 3, Jan 15) and Item 25 in WP 0601-32 of TM 9-2350-388-10-3 (Dec 12).

A stuck round should be removed with the M5 cleaning and loading rammer (bell housing), NSN 1015-01-170-4911, and rammer staff, NSN 1015-00-699-0633. These tools are listed as Items 65 and 80 in WP 0499 of the -264-10-3 TM and Items 70 and 82 in WP 0601 of the -388-10-3 TM.

Cartridge ejector tool,  
NSN 1015-01-209-3484

Rammer staff,  
NSN 1015-00-699-0633

Bell housing,  
NSN 1015-01-170-4911

Use **right**  
tools for job

Now that you've got the right tools, make sure you use them the right way. It is very important that all CAUTIONS and WARNINGS be strictly followed during these procedures.

For M1A1 tanks, the procedures for removing a stuck round are in WP 0210 of TM 9-2350-264-10-2 (Sep 11, w/Ch 3, Jan 15). The procedures for removing a stuck stub base are in WP 0211.

For M1A2 SEP tanks, the procedures for removing a stuck round are covered in WP 0297 of TM 9-2350-388-10-2 (Dec 12). The procedures for removing a stuck stub base are in WP 0298.



FOR MORE INFORMATION ON **PREVENTING** FLAREBACK, SEE PAGES 3-6 OF THIS ISSUE.

M113-Series FOV...

## CHECK OIL LEVELS BEFORE **AND** AFTER

YOUR ENGINE AND TRANSMISSION OIL LEVELS LOOK **GOOD**.

A COLD CHECK IS NICE, BUT **DON'T FORGET** THAT I NEED A **HOT** CHECK, TOO!

ARE YOU CONFUSED ABOUT CHECKING THE ENGINE AND TRANSMISSION OIL LEVELS FOR YOUR M113-SERIES CARRIER? **READ ON!**

THE PMCS CHARTS IN THE -10 TMS SAY TO DO AN AFTER-OPERATION HOT CHECK ON BOTH, WHILE THE LUBE ORDERS (LO) SAY TO DO A BEFORE-OPERATION COLD CHECK, OR BOTH A COLD **AND** HOT CHECK.

YOU'LL GET **DIFFERENT READINGS** BASED ON WHETHER YOU DO A HOT OR COLD CHECK.

THE **RIGHT** THING IS TO DO **BOTH** CHECKS.

THE **COLD** CHECK MAKES SURE YOU HAVE ENOUGH OIL TO OPERATE THE VEHICLE WITHOUT CAUSING DAMAGE.

IT WON'T GIVE YOU A COMPLETELY ACCURATE READING, BUT IT DOES KEEP YOU FROM DRIVING THE CARRIER IF IT'S DANGEROUSLY LOW ON OIL.

THE OIL LEVEL SHOULD BE AT OR JUST ABOVE THE DIPSTICK'S F (FULL) MARK FOR A COLD CHECK.

IF THE LEVEL IS **BELOW** THE L (LOW) MARK, CALL YOUR MECHANIC TO CHECK FOR LEAKS. IF IT'S **VERY FAR ABOVE** THE F MARK, HE MAY NEED TO DRAIN SOME OIL.

THE **HOT** CHECK IS THE **MOST ACCURATE** AND THE ONE THE DIPSTICK WAS DESIGNED FOR.

YOU'LL NEED TO CHECK THE TRANSMISSION OIL LEVEL WHILE THE ENGINE IS RUNNING AT OPERATING TEMPERATURE (160-230°F).

TO CHECK THE ENGINE OIL, SHUT THE ENGINE DOWN AFTER IT REACHES OPERATING TEMPERATURE. WAIT 3-5 MINUTES AND CHECK THE OIL LEVEL.

YOU SHOULD GET READINGS **BETWEEN** THE L AND F MARKS. IF EITHER OIL LEVEL IS BELOW THE L OR ABOVE THE F, LET YOUR MECHANIC KNOW RIGHT AWAY.

# VIGILANCE KEEPS CORROSION AT BAY

WAH-HOO!

ANOTHER  
FIRE MISSION  
DONE... AND  
SO MY DAY  
IS DONE!

NOT SO  
FAST!

M109A6 PALADINS  
WITH REPAIRED GUN  
TUBES NEED **EXTRA  
VIGILANCE** TO MAKE  
SURE THEIR GUN  
TUBES ARE GOOD  
TO GO.

CREWMEN, IF  
YOUR M109A6  
PALADIN HAS A  
REPAIRED M284  
GUN TUBE,  
**LISTEN UP!**

FIRST,  
CHECK THE  
SERIAL  
NUMBER  
ON YOUR  
PALADIN'S  
GUN TUBE.

OK!



THAT R  
AT THE END  
MEANS IT'S  
A REPAIRED  
TUBE...

IT HAS AN R  
AT THE END!

... AND YOU'LL NEED TO  
FOLLOW SOME **SPECIAL**  
CLEANING, INSPECTING, AND  
LUBING INSTRUCTIONS DAILY  
AFTER FIRING.

FIRST, MAKE SURE YOU FOLLOW ALL OF THE  
AFTER PMCS SHOWN IN ITEM 16, WP 0148-20  
OF TM 9-2350-314-10-2. THEN FOLLOW THESE  
ADDITIONAL INSTRUCTIONS...

1. With the bore evacuator disassembled, give the 10 rear evacuator orifices and 3 forward metering holes a good cleaning with CLP, NSN 9150-01-054-6453. Make sure you get rid of all grease, carbon and corrosion so that you can clearly see the gun tube.

Clean grease,  
corrosion  
and firing  
residue from  
the 10 rear  
evacuator  
orifices and  
3 forward  
metering  
holes

2. Eyeball all 13 of the holes closely. If any of the bushings around the holes show signs of pitting or other corrosion damage, the service life of the tube is reduced. Tell your mechanic.

3. Check each of the 10 rear evacuator orifice bushings for clearance. The 3 forward metering holes do not have to be inspected.

Inspect the 10 rear evacuator orifice bushings for clearance

Two M284 bushing inspection tools are included with every repaired gun tube. Place one of the tools on the gun tube following the instructions that are printed on the tool. Make sure the measurement end of the tool hangs over the hole. There should be a gap between the bottom of the tool and the top of the bushing. If the tool touches any of the 10 bushings, tell your mechanic.

Two M243  
bushing  
inspection  
tools  
included  
with every  
repaired  
gun tube

4. Clean and lube the gun tube like it says in WP 0151-27 of TM 9-2350-314-10-2.

5. As an extra step, you'll need to use a gloved finger to apply GAA, NSN 9150-01-197-7690, to the head of all 13 bushings. Make sure you use enough pressure to force grease into the surrounding chamber area and under the head of the bushing.

6. Before reassembling the bore evacuator, make sure each of the 13 holes is completely clear of grease. Leave any behind and the bore evacuator may not work properly.

You can check out additional details in TACOM Maintenance Action Message 15-012. You'll find it on the TACOM-Unique Logistics Support Applications (TULSA) website:

<https://tulsa.tacom.army.mil/Maintenance/message.cfm?id=MA15-012.html>

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

Questions? Contact Joshua Smrt at DSN 786-8056, (586) 282-8056 or e-mail:

[joshua.a.smrt.civ@mail.mil](mailto:joshua.a.smrt.civ@mail.mil) or

Ken Johnson at DSN 786-8116, (586) 282-1170 or email:

[kenneth.johnson37.civ@mail.mil](mailto:kenneth.johnson37.civ@mail.mil)

PS END

Tow these articles back to the motor pool:

- HMMWV run-flat inserts
- M149A2 manhole cover seal
- M989A HEMAT tow bar hitch pin
- Diesel engine slobber prevention
- M978-series HEMTT tanker purging
- M-ATV MRAP hull draining

# Ran Out of Run-Flat Inserts

HOW AM I SUPPOSED TO REPLACE YOUR RUN-FLAT INSERT? THE OLD NSN IS NO GOOD ANYMORE.

THERE'S A 3-PIECE REPLACEMENT AVAILABLE, BUT **YOU'RE** NOT SUPPOSED TO CHANGE MY INSERT ANYWAY.

YOU'D BETTER GET ME A **NEW** TIRE AND WHEEL ASSEMBLY!

Dear Half-Mast,  
I'm having trouble finding a good NSN for the HMMWV's run-flat insert. FED LOG says NSN 2640-01-419-6202 is a terminal item and doesn't list a replacement. Can you help?

1SG L.M.

YOU BET, FIRST SERGEANT! THE ARMY IS NOW USING A 3-PIECE RUN-FLAT ASSEMBLY FOR THE HMMWV. THERE ARE **THREE** COMPONENTS THAT HAVE TO BE ORDERED...

Item	NSN
Liner	2610-01-613-1844
Sector kit	2530-01-612-5325
Beadlock spacer kit	2640-01-612-6934

HOWEVER, REPLACING THE RUN-FLAT IS A SUSTAINMENT LEVEL MAINTENANCE TASK **ONLY**. FIELD LEVEL UNITS SHOULD ORDER A NEW TIRE AND WHEEL ASSEMBLY. PAGES 12-15 OF PS 725 (APR 13) HAVE A **COMPLETE LISTING** OF TIRE AND WHEEL ASSEMBLY NSNs:

<https://www.logsa.army.mil/psmag/archives/PS2013/725/725-12-15.pdf>

LEMME AT THAT **MANHOLE COVER SEAL!** IT WON'T BE LEAKIN' WHEN I GET FINISHED WITH IT.

# LEAK TWEAK SEALS THE DEAL!

**WAIT!** THERE'S A RIGHT AND A WRONG WAY TO DO IT AND THAT SURE **AIN'T** THE RIGHT WAY!

**M**echanics, got a leak around the manhole cover of an M149A2 water trailer? Then it needs your attention right away.

Before you can install the new, improved seal, NSN 5330-01-317-9640, you'll first have to remove the old seal. Here are the steps to take:

1. Remove the manhole cover.
2. Scrape off the old seal and toss it.
3. Sand the outer 1 1/2 inches of the underside of the cover with emery paper.
4. Wipe with a damp cloth.
5. Let the cleaned area dry completely.

Now you're ready to install the new seal:

1. Apply adhesive, NSN 8040-00-118-2695, to the mating surface of the new seal and manhole cover.
2. Slip the seal onto the cover.
3. Now lay the seal side of the cover on a smooth, flat surface, such as a work bench or table top. Let the sealant cure for 24 hours.
4. Reinstall the manhole cover on the tank.

Replace  
leaky  
seal



SO YOU **DON'T**  
NEED TO LOCK THE  
TRAILER BEFORE  
BACKING UP, HUH?

## AVOID THE BACKUP HICCUP

**D**rivers with the HEMAT trailer in tow make the job look easy, even while making a turn or two. But backing the trailer up is another story.

So before you throw your truck in reverse, get out and make sure the trailer's tow bar is locked in place. Some drivers forget, or figure they're good enough to maneuver an unlocked trailer.

Those drivers end up embarrassed when they have to explain about the damage to their truck and trailer after the trailer jackknifes.

Make sure you lock the tow bar **every time** before backing the trailer. Just remove the hitch pin, raise the lock-pin handle, rotate it counterclockwise to the short slot, and replace the hitch pin. Get a couple of ground guides to help you back up, too.

If the hitch pin and chain are missing, replace them with NSN 4010-01-353-9428. You can also order the parts individually. The pin comes with NSN 5315-01-466-9517 and the chain with NSN 4010-01-353-9368. Note that the chain comes by the foot, so order as much as you need.

When you've finished backing, unlock the tow bar right away so you won't forget when it's time to move out again.

Move lockpin  
handle from  
open...

...to locked  
position  
**before**  
backing

## KNOW HOW TO CLOBBER SLOBBER!

CHUG CHUG CHUG CHUG CHUG CHUG C

UG CHUG CHUG CHUG CHUG C

**BLECH!**

**EWW!  
THAT'S  
NASTY!**

Dear Half-Mast,

We've been seeing an oil leak at the air box drain on our truck's Detroit Diesel engine. Any idea what's causing it?

Mr. J.B.

Dear Sir,

The 8V92TA Detroit Diesel engine used in tactical vehicles is a two-stroke engine. A natural output of that type of engine is slobber, which is partially-burned fuel and condensation that drains out of the hoses connected to the air box. This usually happens during long periods of low idling.

The best way to prevent this is to run the engine hard, under load, until it reaches normal operating temperature. At a minimum, you should run the engine at high idle. That'll help clobber your slobber problems.

*Half-Mast*

NO MORE SPITTOONS  
FOR ME!

NOT A  
MOMENT  
TOO SOON!

# Purging Tanker Purging Solution

OPERATORS,  
M978/A2/A4  
HEMTT FUEL  
TANKERS **MUST**  
BE PURGED  
**BEFORE**  
SHIPMENT.

*SNIFF*  
*SNIFF*  
WHAT IS THAT  
TERRIBLE  
SMELL?!

OH, C'MON! HOW DO YOU THINK **YOU'D**  
SMELL IF I LEFT STANDING WATER  
INSIDE YOU FOR A FEW WEEKS?

SO KEEP  
THESE  
**PURGING**  
**POINTERS**  
IN MIND...

- Make sure all the purging solution is removed from the tanker. Solution left behind will gum up plumbing, including the hoses, pipes, valves and filter separator. Then the tanker won't pump fuel like it's supposed to.
- After purging the tanker, get rid of the solution by following the procedure for gravity bulk unloading of fuel from the tanker. You'll find it in the operating instructions of TM 9-2320-279-14&P in IETM EM 0290 (Jun 09) for the M978, TM 9-2320-325-14&P in IETM EM 0289 (May 09) for the M978A2, TM 9-2320-326-14&P in IETM EM 0288 (Oct 08) for the M978A4.
- You'll also need to follow the IETM instructions to drain the tank. You'll find them in the "changing to a different fuel or fuel grade" track. Then perform the field-level maintenance procedure for the 2,500-gal tank drain.

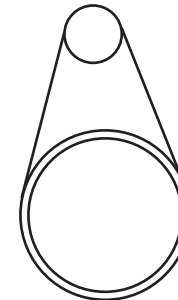
Those tracks have the lowdown on draining the solution from the tanker's plumbing.

...AS YOU GET THE  
TANKERS READY  
FOR DEPLOYMENT,  
SHIPMENT OVERSEAS  
OR FOR PROCESSING  
DIRECTLY TO A RESET  
PROGRAM.

**S**tanding water in the M-ATV's hull can cause all sorts of problems. Rust, electrical shorts and some really nasty smells are just a few.

To avoid water problems, get your mechanic to permanently remove the left- and right-side drain plugs in the vehicle's capsule floor. You'll find them next to the driver and passenger seats.

Have mechanic  
remove driver-side...



...and passenger-  
side drain plugs



REMOVING THE PLUGS ALLOWS  
ACCUMULATED WATER TO DRAIN  
CONTINUALLY DURING OPERATION.  
**NO WATER, NO PROBLEM!**

# PS Mag Live!

NOW THERE ARE  
**MORE** WAYS  
THAN EVER TO  
**CONNECT** WITH  
*PS MAGAZINE!*

BE SURE TO  
FOLLOW OUR  
BLOG AND  
FACEBOOK,  
BECAUSE  
WE POST  
THE **LATEST**  
MAINTENANCE  
AND SUPPLY  
INFO THERE.  
WE CAN GET  
URGENT NEWS  
OUT FASTER  
ONLINE.

BUT DON'T  
MISS OUR **PRINT**  
**EDITION** WITH  
ITS IMPORTANT  
ARTICLES AND  
GREAT ART.



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# All Aircraft... **REMEMBER YOUR GENERAL AIRCRAFT TMS**

I CHECKED THE MAINTENANCE MANUAL BUT I COULDN'T FIND ANYTHING TO HELP WITH REPAIR.

HEY, YOU KNOW HOW IT GOES! I'LL JUST ORDER A NEW PART.

**NOT SO FAST! DON'T JUST CHECK THE MAINTENANCE MANUAL. YOU MIGHT FIND WHAT YOU NEED IN THE GENERAL AIRCRAFT TMS.**

CHECK THEM FIRST **BEFORE** ORDERING ANY PARTS!

Dear Editor,

While searching for replacement parts for our aircraft grounding cables, we did a lot of wheel spinning looking in the maintenance manuals. Finally, we checked out the *PS* website and found an article that led us to the general aircraft TMs.

Turns out, that's where the parts list for the grounding cables is. Can you let Soldiers know about the grounding cable parts and the wealth of other good aviation information that's found in the general aircraft TMs?

CW2 Aaron Comps  
A Co, 1-169th AVN REGT  
Ft. Bragg, NC

**Editor's Note:** Yes and it's always great to hear from anyone who has found what they need in *PS*.

To recap, those grounding cable parts can be found in Fig 3-1 of TM 1-1500-204-23-1 (Jul 92, w/Ch 8, Dec 12). Here's what you need:

- Plug tip (consisting of cap, plug and set screw), NSN 5935-00-572-5174

- Wire rope (coated), NSN 4010-00-286-2681

- Wire rope (non-coated), NSN 4010-01-145-8455

- Electrical clip, NSN 5999-00-134-5844

When it comes to the general aircraft TMs, always remember: Not everything you need for your CH-47s, OH-58s, UH-60s and AH-64s is included in their maintenance manuals. There's always more helpful information in the general aircraft TMs.

Because of high op-tempo, constant deployments and contractor maintenance, some may have forgotten about the general aircraft TMs. New mechanics may not even know about them. So when you can't find something in your regular maintenance manuals, don't forget to check out the general aircraft maintenance TMs.

You'll find information about corrosion, parts, components, cannon plugs and wiring. They also provide a treasure trove of hardware and consumables, shop practices, tools, ground support equipment and much more.

Get to know this list of general aircraft TMs:

- **TM 1-1500-204-23-1**, AVUM and AVIM Manual for General Aircraft Maintenance, (General Maintenance and Practices), Volume 1.

- **TM 1-1500-204-23-2**, AVUM and AVIM Manual for General Aircraft Maintenance (Pneudraulics Maintenance and Practices), Volume 2.

- **TM 1-1500-204-23-3**, AVUM and AVIM Manual for General Aircraft Maintenance (Maintenance Practices for Fuel And Oil Systems), Volume 3.

● **TM 1-1500-204-23-4,**  
*AVUM and AVIM Manual for General Aircraft Maintenance (Electrical and Instrument Maintenance Procedures and Practices), Volume 4.*

● **TM 1-1500-204-23-5,**  
*AVUM and AVIM Manual for General Aircraft Maintenance (Propeller, Rotor, and Powertrain Maintenance Practices), Volume 5.*

● **TM 1-1500-204-23-8,**  
*AVUM and AVIM Manual for General Aircraft Maintenance (Machine and Welding Shop Practices), Volume 8.*

● **TM 1-1500-204-23-9,**  
*AVUM and AVIM Manual for General Aircraft Maintenance (Tools and Ground Support Equipment), Volume 9.*

● **TM 1-1500-204-23-6,**  
*AVUM and AVIM Manual for General Aircraft Maintenance (Hardware And Consumable Materials), Volume 6.*

● **TM 1-1500-204-23-7,**  
*AVUM and AVIM Manual for General Aircraft Maintenance (Nondestructive Testing and Flaw Detection Procedures and Practices), Volume 7.*

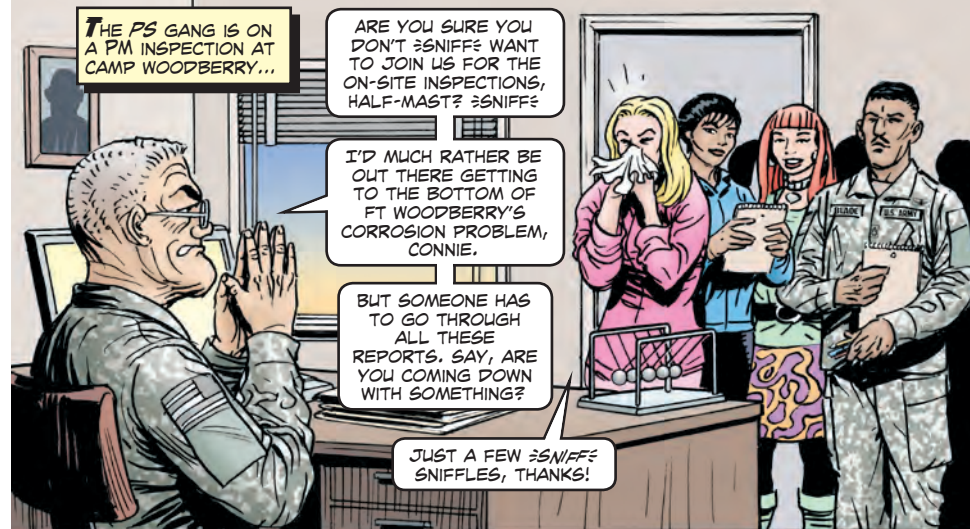
● **TM 1-1500-204-23-10,**  
*AVUM and AVIM Manual for General Aircraft Maintenance (Sheet Metal Shop Practices), Volume 10.*

● **TM 1-1500-204-23-11,**  
*AVUM and AVIM Manual for General Aircraft Maintenance (Advanced Composite Material General Maintenance and Practices), Volume 11.*

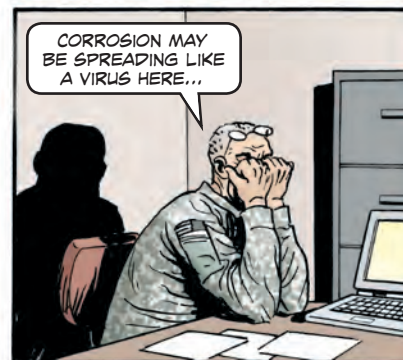




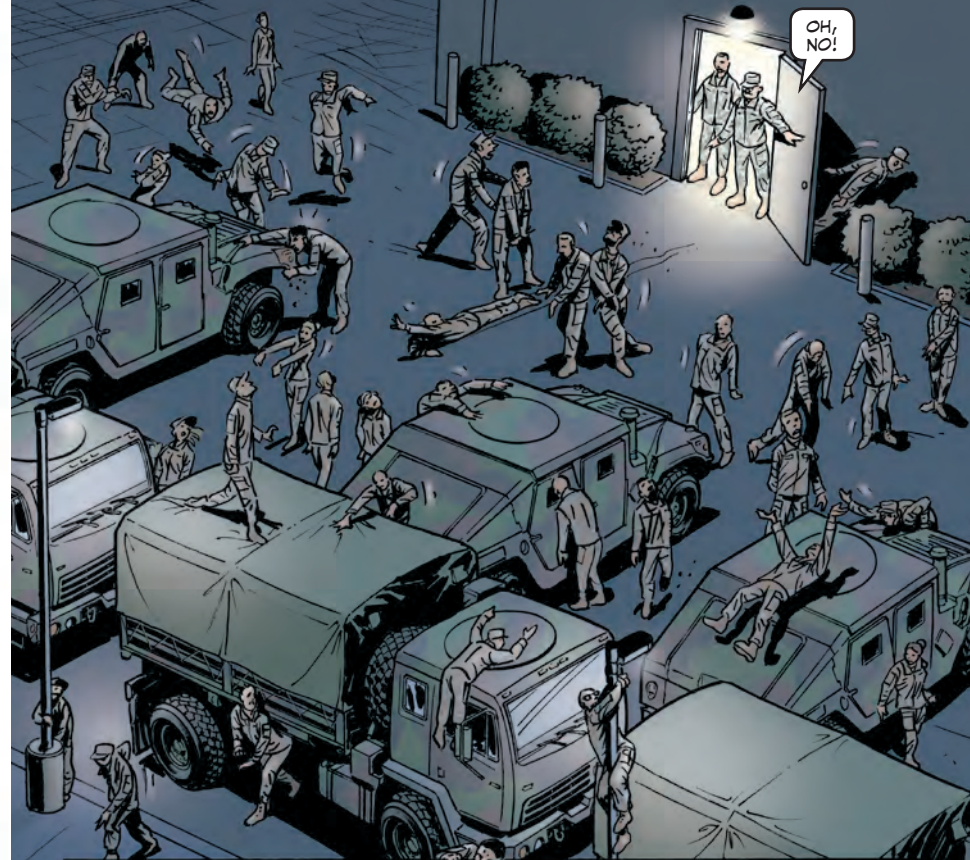
THIS NEW COAT OF PAINT WILL HELP KEEP CORROSION AT BAY!



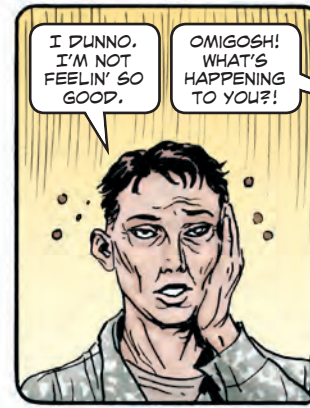
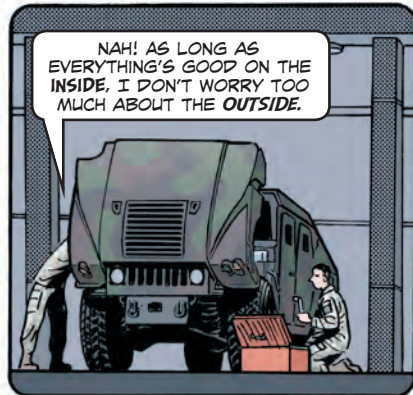
## ATTACK OF THE CORROSION ZOMBIES PART 1



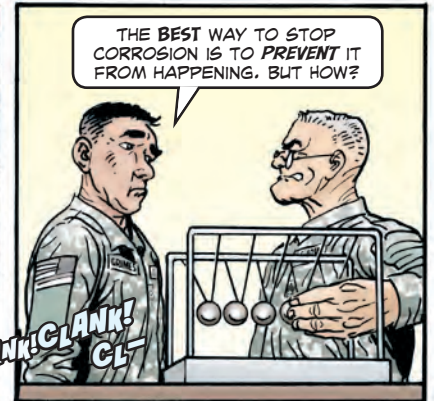
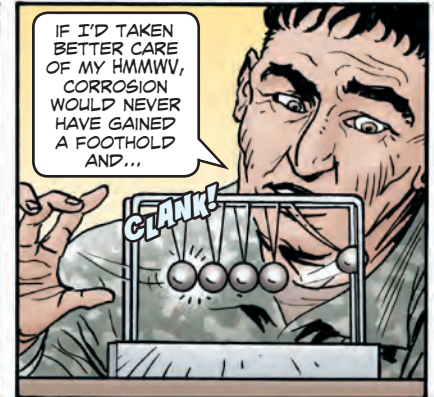
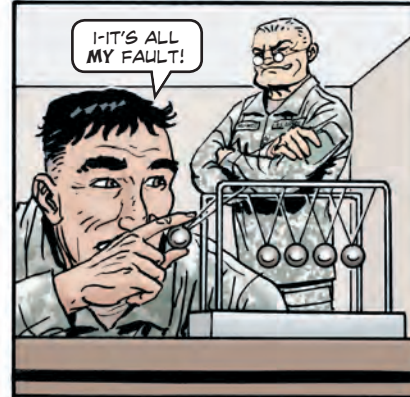




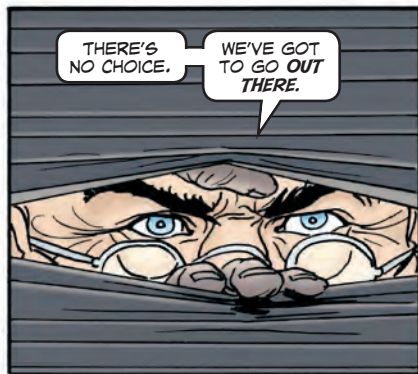












THERE'S NO CHOICE.

WE'VE GOT TO GO OUT THERE.

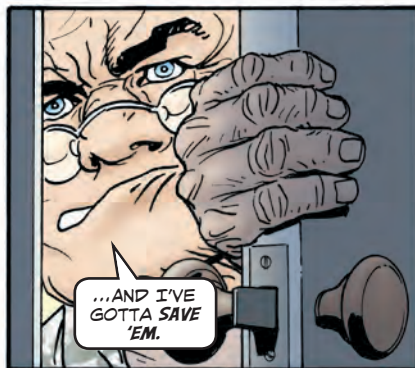


WHAT?! BUT THEY'LL TURN US INTO CORROSION ZOMBIES, TOO!

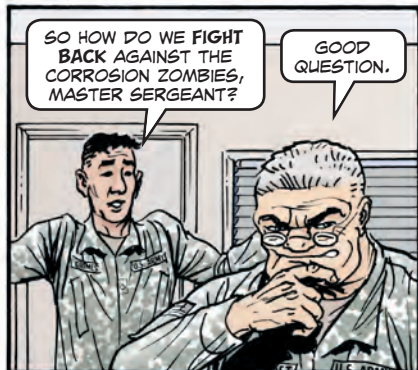


MAYBE, BUT MY TEAM IS OUT THERE SOMEWHERE...

CRRREEEK!



...AND I'VE GOTTA SAVE 'EM.



SO HOW DO WE FIGHT BACK AGAINST THE CORROSION ZOMBIES, MASTER SERGEANT?

GOOD QUESTION.



AND I THINK I JUST MAY HAVE THE ANSWER...

**NEXT  
ISSUE:**

HALF-MAST'S PLAN! WHAT OF CONNIE AND THE OTHERS? THE FATE OF CAMP WOODBERRY. FIND OUT *ALL* OF IT IN THE *THRILLING CONCLUSION* TO:

**ATTACK OF THE CORROSION ZOMBIES!**

All Aircraft/Missile...

# NEED HELP WITH CORROSION?

LET'S EAT 'EM ALIVE!

I'VE GROWN STRONG! LEMME GO FIRST!

I LOVE FABRIC FOR DINNER!

NO ONE CAN WITHSTAND ME!

HERE COMES TROUBLE!

UH-OH! CORROSION. FUNGUS, MILDEW AND RUST?! I'D BETTER RADIO THE AMCOM CORROSION TEAM FOR HELP!

HERE WE COME!

LOOK OUT, MONSTERS!

MY TEAM IS READY FOR A FIGHT!

YOUR RESISTANCE TO CORROSION PREVENTION IS FUTILE!

PS MORE



**CORROSION IS AN ONGOING BATTLE FOR ALL EQUIPMENT.**

**YOU NEED TO CAREFULLY WATCH FOR CORROSION BECAUSE IT CAN ULTIMATELY LEAD TO EQUIPMENT FAILURE.**

**THE GOOD NEWS IS YOU'RE NOT ALONE IN THIS BATTLE!**

THE AMCOM CORROSION PROGRAM OFFICE (CPO) IS STANDING BY TO HELP.

THEY HAVE SEVERAL TEAMS AVAILABLE THAT CAN PROVIDE SUSTAINMENT SUPPORT FOR JUST ABOUT ANY PROJECT.

- The Corrosion Prevention and Control Center of Excellence (CPC CoE) team. This team provides training and eyes-on program support to ensure maintenance personnel have all the knowledge necessary to sustain their equipment.
- The Nondestructive Testing Center of Excellence (NDT CoE) team. This team serves as the technical POC for nondestructive testing (NDT) for all aviation and missile programs. It provides engineering support and maintainer training to develop and sustain critical skills.
- The Missile Corrosion Service (MCS) team. This team works with Soldiers to identify and repair existing corrosion and prevent future corrosion for the Patriot and THAAD missile systems.

FOR MORE DETAILS, CHECK OUT THE CAC-ENABLED AMCOM CORROSION WEBSITE:  
<https://amcomcorrosion.army.mil>

THERE, YOU'LL FIND A HOST OF CORROSION INFORMATION, INCLUDING LAB ASSISTANCE, COATINGS, PAINTS, NON-DESTRUCTIVE TESTING, CORROSION REPORTS, NEWSLETTERS AND MORE.

FREE CLASSES ARE ALSO AVAILABLE AT REDSTONE ARSENAL, AL, INCLUDING THE CORROSION MONITOR COURSE AND LEVEL I AND II NDT TRAINING.

QUESTIONS? CONTACT THE AMCOM CPO AT DSN 746-7472, (256) 876-7472 OR EMAIL: [amcomcorrosion@amrdec.army.mil](mailto:amcomcorrosion@amrdec.army.mil)

**URGENT PROBLEMS OR ISSUES CAN BE ADDRESSED BY CALLING THE CORROSION CENTER OF EXCELLENCE HOTLINE AT DSN 897-0209, (256) 313-0209, (866) 222-2364 (TOLL-FREE) OR (256) 313-3221 (FAX).**

FOR NDT ASSISTANCE, CONTACT THE NDT HOTLINE AT DSN 788-8211 OR (256) 842-8211.



M119A2 Howitzer...

JUST A LITTLE BIT OF CORROSION THROWS OFF YOUR GUNNER'S QUADRANT! HARD TO BELIEVE.

**BELIEVE IT!**

**CORROSION UNDER QUADRANT KILLS ACCURACY**

Dear Editor,

We've found that even a thin layer of corrosion under the M119A2 howitzer's gunner's quadrant can hurt accuracy.

To keep the M119A2 on target, units should inspect the tube quadrant plane and pads (shoes) on the M1A1 gunners quadrant monthly and check for corrosion. If any is found, clean with abrasive cloth, NSN 5350-00-221-0872, and CLP. Then wipe dry.

Find corrosion? Clean it off with a green pad and CLP

What you *don't* want to do is rub off any metal. That just provides a foothold for even more corrosion and ruins the quadrant's precision machined surface.

Charles Woodham  
Logistics Readiness Center  
Ft Polk, LA

**Editor's note:** Your suggestion rubs us the *right* way. Thanks for the tip!

# CAREFUL WITH CLEANING TANKS

AHH... THAT  
CLEANING HIT THE  
SPOT! BUT WE'RE  
NOT DONE YET!

I STILL NEED TO  
BE **COMPLETELY**  
**LUBED** BEFORE I  
GO INTO STORAGE!

WITHOUT LUBE,  
I'D BE **DEFENSE-**  
**LESS** AGAINST  
**CORROSION!**

Units would be better off never using cleaning tanks for their weapons, mainly because it's too easy to mix up bolts when many weapons are run through the tanks. If a bolt is used with a weapon it wasn't headspaced for, the barrel can rupture during firing.

There are two **nevers** on cleaning tanks: **Never** use an ultrasonic cleaning system. It can completely remove a weapon's protective coating, which leaves the weapon defenseless against corrosion. And **never** use a water-based cleaning fluid. That can also lead to corrosion.

But cleaning tanks aren't going away, especially at posts that are dealing with large numbers of weapons during training.

Here are a few precautions to help your weapons survive cleaning tanks:

- Use only dry cleaning solvent Type II (81349), MIL-PRF-680. This is the only solvent authorized for small arms. NSN 6850-01-474-2316 brings 55 gallons, NSN 6850-01-474-2317 5 gallons, and NSN 6850-01-474-2319 1 gallon.

I'M THE  
**ONLY**  
SOLVENT  
YOU CAN  
USE ON  
SMALL  
ARMS!

- Don't clean small arms in the same cleaning tank you use for things like vehicle parts. They may have contaminants that could damage weapons.

**WHOA!**  
YOU JUST  
CLEANED  
HMMVV  
PARTS IN  
THERE...

YOU'RE  
**NOT**  
GONNA  
PUT **ME**  
IN THERE,  
**TOO!**

- Protect yourself from solvent. It's strong stuff. Wear goggles, rubber gloves, and coveralls with the sleeves rolled down.
- Remember that some weapon parts should never be dunked in solvent. Examples are the M2 and M48 machine gun back plates, the MK 19 bolt assembly and anything plastic. Solvent will eat up these parts. Check the operator TMs for info on what parts to keep away from solvent.
- Use a metal basket in the tank to ensure no parts disappear during cleaning.
- When the weapons come out of the tank, they must be completely wiped clean of solvent and allowed to thoroughly dry. But here's the important part: The weapons must then be completely lubricated before storage.

Solvent removes every bit of lubrication from weapons. If weapons are stored without being re-lubed, they will be ruined by corrosion.

Tactical Vehicles...

# 3 ITEMS PREVENT BATTERY CORROSION

CORROSION IS ONE OF THE **TOP KILLERS**  
OF TACTICAL VEHICLE BATTERIES.

BUT JUST A **FEW EXTRA STEPS** WHEN INSTALLING A NEW  
BATTERY WILL HELP **STOP CORROSION** IN ITS TRACKS.

**First**, put a felt insulator washer, NSN 5970-01-101-4147, over the battery post. Those washers are treated to help stop corrosion. You'll get 100 washers with that NSN.

**Second**, install a rubber cover on each terminal. The covers keep moisture away from the terminals and stops accidental arching from dropped tools.

NSN 2530-01-089-4992 brings a single one-piece boot that covers the entire terminal. NSN 5940-00-738-6272 gets a package of 10 terminal covers. Each cover has a hole in one end that fits over the terminal and then folds over the top of the cable connector.

**Third**, give the battery post a light coat of silicone compound. When applied, the silicone runs down around the battery post and terminal to completely seal out moisture. Get a 3-oz tube with NSN 8040-01-331-7133 or a 1-pint can with NSN 8040-01-331-7134.

## Putting It All Together

Combine all three items for maximum corrosion protection. Slip the felt washer over the terminal, followed by the bottom of the rubber cover.

Tighten the cable connector in place. Then hold back the top of the cover and apply a light coat of silicone compound to the post. Let the top of the connector cover fold into place and you're all set.

Use rubber covers on terminals

# TAKE THE BITE

THE ARMY HAS A FOE THAT FIRES NO WEAPON BUT IT **IS** AN ENEMY THAT CAN STILL LEAVE REPAIR PARTS AND EQUIPMENT IN RUINS.

# OUT OF CORROSION

IN 2012, CORROSION ACCOUNTED FOR 662,649 NON-AVAILABLE DAYS FOR ARMY EQUIPMENT.

BETWEEN 2004 AND 2012, CORROSION ATE **\$9 BILLION DOLLARS** OF ARMY EQUIPMENT.

PUT ANOTHER WAY, THAT \$9 BILLION DOLLARS COULD HAVE PURCHASED MORE THAN **2,000 M1A2 TANKS** OR GREATLY CURTAILED REDUCTIONS IN FORCE.

**CORROSION IS A RELENTLESS FOE; WORKING 24/7 TO RUST AND ROT YOUR EQUIPMENT.**

**YOU HAVE THE ABILITY TO CUT BOTH NADS AND CORROSION COSTS!**

Corrosion can never be defeated in the sense that it can never again challenge equipment readiness. It is a constant force of nature. Heat, cold, moisture, arid conditions, salts, acids, and electrochemical reactions all feed corrosion's natural erosion of the metals used in Army equipment.

Preventive measures such as painting exposed metals, or using corrosion prevention compounds or lubricants can reduce corrosion. These coatings work well until they crack from heat or are gouged, dinged and scratched, exposing minute portions of metal. Once the elements of corrosion find a way to metal, corrosion will begin to eat away at steel, aluminum, and alloys.

So how do you tell whether corrosion is at work and how do you recognize the type of corrosion so you can attack and correct it?

THERE ARE **NINE BASIC TYPES OF CORROSION.**

HERE'S WHAT THEY ARE...

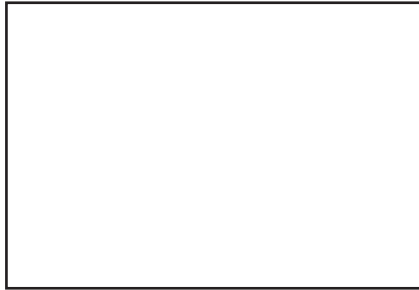
...ALONG WITH SOME HELPFUL ADVICE.

## UNIFORM (or general attack):

Affects a large area of exposed metal surface, like rust on steel or iron. It gradually reduces the thickness of the metal until it fails. Uniform corrosion is electrochemical, but it is also manageable and preventable.

## CREVICE:

Occurs in crevices created under rubber seals, gaskets, bolt heads, lap joints, dirt or other surface deposits. It will develop anywhere moisture or other corrosive agents are trapped and unable to drain or evaporate. Much of the damage can be hidden under small surface corrosion.



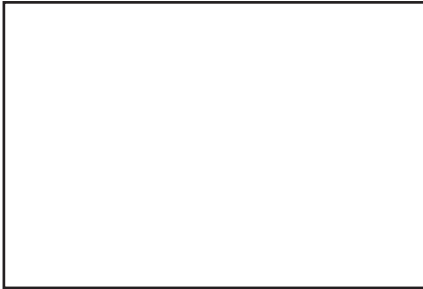
## EROSION:

Results when a moving fluid (or gas) flows across a metal, particularly when solid particles are present in the fluid. Corrosion actually occurs on the surface of the metal, but the moving fluid washes away the corrosion and exposes a new metal surface, which also corrodes.



## SELECTIVE LEACHING:

One element, usually the anodic element of an alloy, corrodes away, leaving the cathodic element. This can create holes in metal. A common type occurs in brass as zinc is corroded away, leaving the remaining copper porous.



## FRETTING:

Occurs between two pieces of weight-bearing metal in contact with each other. It's usually identified by a black powder corrosion product or pits on the surface. It can be found as pits and grooves in rotation or impact machinery and bolted assemblies.



## INTERGRANULAR:

Metal deterioration caused by electrochemical corrosion of the bonds between or across the grain boundaries of a metal. The metal will appear to be peeling off in sheets, flaking, or being pushed apart by layers. A particular type of intergranular corrosion is exfoliation.



## GALVANIC:

Occurs when two different kinds of metal come in electrical contact with each other, like steel bolts on aluminum, for example, and electrolyte introduces negative and positive ions. One of the metals suffers faster deterioration. This is a common problem on aircraft because of their mix of metals.



## PITTING:

This can result from conditions similar to those for crevice corrosion. Pits can develop on various materials due to their composition. Rifle bores are big victims of pitting. Pitting is difficult to detect, it can burrow deep into metal creating structural weakness.



## STRESS:

Term used to describe corrosion cracking caused by extreme stress along grain boundaries which subject the metal to further corrosion. It can lead to metal fatigue failure. If you'd like this as an 8 1/2 x 11 chart, go to our blog: <https://halfmastpsmag.wordpress.com/>



## Reach for Rust Inhibitor

YOU CAN **CURB** THE AFFECTS OF RAIN, SALT, WIND AND SAND AND LOWER REPAIR COSTS BY USING A RUST INHIBITOR LIKE CORROSION PREVENTIVE COMPOUND (CPC).

JUST WIPE OR SPRAY CPC ON THE INSIDE AND UNDERNEATH YOUR VEHICLES EVERY EIGHT MONTHS.

CPC won't harm painted surfaces, plastics, rubber, glass or wiring, but it'll make them shine for a week or two. That defeats the purpose of camouflage, so keep it off exterior paint on your equipment.

CPC is petroleum-based and contains no hazardous material. Nevertheless, the headshed recommends that you wear a respirator, goggles and gloves when applying it because it could irritate your respiratory tract or skin.

## Counteract Corrosion

YOU CAN CUT BACK ON EQUIPMENT CORROSION BY...

- Painting or lubing unprotected surfaces.
- Keeping your equipment clean.
- Applying lube orders instructions for preventing rust.
- Keeping drain holes unclogged so water will not collect on or in your equipment.

## Helpful Pubs

TB 43-0213, *CORROSION PREVENTION AND CONTROL (CPC) FOR TACTICAL VEHICLES*, COVERS HEAVY TACTICAL VEHICLES (SUCH AS THE HEMTT, HET, AND PLS), MEDIUM TACTICAL VEHICLES (SUCH AS THE FMTV AND ASV), HMMWVs, AND A VARIETY OF HEAVY, MEDIUM AND LIGHT TACTICAL TRAILERS.

For more corrosion prevention info, check out these websites:

DOD Corrosion: <https://www.corrdefense.org/>

Eyeball a copy on LOGSA's ETM Online website:

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



### Small arms:

- M16/M4 new cleaning kit
- M16/M4 no cotton swabs
- New small arms dummy rounds
- Safety board
- Add BFA PM to your SOP



# THERE'S A NEW CLEANING KIT AVAILABLE!

I WISH WE DIDN'T  
HAVE TO ORDER  
THE CLEANING  
KIT COMPONENTS  
INDIVIDUALLY!

YEAH!  
WHAT'S UP  
WITH *THAT*?

YOU TWO CAN  
**STOP** YOUR  
COMPLAINING.  
THERE ARE NOW  
**TWO CLEANING  
KITS** AVAILABLE.

SOLDIERS NOW HAVE  
A **NEW CLEANING KIT**  
**CHOICE** FOR THEIR  
M16/M4S!

THE INDIVIDUAL  
CLEANING KIT, NSN  
1005-01-624-1673,  
COSTS \$88 AND  
INCLUDES THE  
FOLLOWING...

Item	NSN
Swab patch holder, slotted tip	1005-01-449-9315
5.56mm slotted patch	1005-01-449-9257
Chamber brush	1005-01-544-7698
Double-ended toothbrush	1005-01-578-9925
Multi-purpose tool	5110-01-394-6252
Cleaning rod handle section	n/a
Cleaning rod section	1005-01-113-0321
NATO adapter	1005-01-449-9674
30-in rifle/machine gun cleaning cable	1005-01-449-8934
Bore brush	1005-01-449-8980
Refillable bottle	1005-00-242-5687
5.56mm ripcord	1005-01-629-3981

Individual cleaning kit costs \$88

THE MUCH MORE EXTENSIVE **AND**  
EXPENSIVE **IMPROVED CLEANING KIT** IS  
STILL AVAILABLE WITH NSN 1005-01-  
562-7393 FOR \$354. IT INCLUDES:

Item	NSN
Carrying case	n/a
Alice clip	n/a
Cotton swabs	6515-01-234-6838
Lens cleaner, 1/2 ounce	1005-01-523-9988
Lens brush	1005-01-445-6798
Lens cloth	6640-01-630-0080
NATO adapter	1005-01-449-9674
.22-cal obstruction remover (2)	1005-01-449-9672
.22-cal slotted tip	1005-01-449-9315
.30-cal slotted tip	1005-01-449-9254
Blackened brass scraper	1005-01-452-6373
Straight locking lug pick	1005-01-449-9943
Black locking lug scraper	n/a
5.56mm bore brush	1005-01-449-8980
7.62mm bore brush	1005-01-449-8999
9mm bore brush	1005-01-449-9159
.45-cal bore brush	1005-01-449-9282
5.56mm chamber brush	1005-01-544-7698
8-in flexible cable with .30-cal slotted tip	n/a
Curved locking lug pick	1005-01-581-8143
T-handle bar	1005-01-581-8146

Item	NSN
2-in cleaning patches	1005-01-449-9257
Panoply cleaning patches	1005-01-445-6728
Multi-tool	5110-01-394-6252
Refillable bottle	1005-01-487-0045
Shoot-through dust cap	5340-00-880-7666
30-in flexible cable (2)	1005-01-449-8934
M16 solid rod obstruction remover with T-handle	n/a
Blue A/P brush	1005-01-578-9925
Dust brush	1005-01-629-3982
Pipe cleaners	9920-00-292-9946

Improved  
cleaning kit  
costs \$354

NONETHELESS, THE **CHEAPEST** WAY TO TAKE CARE OF YOUR M16/M4 IS TO ORDER THE CLEANING TOOLS LISTED IN THE -10 TM BY **INDIVIDUAL NSNs...**

Item	NSN
Maintenance equipment case	8465-00-781-9564
Cleaning rod handle section	1005-01-113-0321
Cleaning rod section	1005-00-050-6357
Swab holder	1005-00-937-2250
Bore brush	1005-00-903-1296
Chamber brush	1005-00-999-1435
Toothbrush	1005-00-494-6602
Cleaning brush	7920-00-205-2401
CLP, 1/2-oz bottle	9150-01-102-1473
Pipe cleaner	9920-00-292-9946
Small arms swab	1005-00-912-4248

Order cleaning items individually for \$58

PS END

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

## Won't Extract? Could Be a Hearing Problem

**DARN IT!**  
ANOTHER COTTON  
SWAB! WHEN WILL  
THEY LEARN?

Dear Editor,

Over the years I have had many Soldiers turn in their rifles after a trip to the range tagged "Will not extract."

Often when I try to run a pipe cleaner through the bolt carrier key I find the key plugged up. Why? Because Soldiers have used cotton swabs to clean the carrier key. The cotton comes off and plugs the key. Then the rifle can't extract.

Soldiers should save cotton swabs for their ears and keep them away from their weapons.

Jon Lewis  
Armorer, 18th Med Bn  
Ft Sam Houston, TX

**Editor's note:** This problem has been around as long as the M16. We're puzzled why it continues.

The **only** way to clean the carrier key is with a pipe cleaner and CLP.

Small Arms... **NEW DUMMY  
ROUNDS ARE  
ONLY ONES  
AUTHORIZED!**

TO PREVENT MIXUPS IN THE FIELD, THE ARMY IS FIELDING NEW SMALL ARMS DUMMY ROUNDS THAT CAN BE EASILY IDENTIFIED AS DUMMY ROUNDS.

THESE NEW ROUNDS ARE THE ONLY DUMMY ROUNDS AUTHORIZED FOR TRAINING, WEAPON CYCLING, OR ANY OTHER SITUATION REQUIRING INERT ROUNDS.

There is one temporary exception, the A159 7.62mm linked dummy rounds. They can continue to be used until new 7.62 linked rounds are available.

The new dummy rounds are completely nickel plated. The 9mm dummy round has two holes drilled in the cartridge case, while the 5.56mm, 7.62mm and .50-cal rounds have fluted cartridge cases to make them easy to ID in the dark.

Here are the new dummy rounds and their NSNs:

Caliber	Model	DODIC	NSN 1305-
9mm	M917A1	AB45	01-568-5691
5.56mm	M199A1	AB46	01-568-5686
7.62mm	M63A1	AB47	01-568-5689
.50-cal	M2A1	AB48	01-568-5696
.50-cal linked	M2A1	AB36	01-557-7022

The NSN for the M242 machine gun dummy round remains NSN 1305-01-356-0187 and the NSN for the M230 machine gun dummy round remains 1305-01-268-7273.

Using the old dummy rounds requires approval by HQDA G3.

Turn in all old dummy rounds except the A159 to your ammo supply points (ASP) and request the new dummy rounds.

Installations should coordinate turn-in of old dummy rounds and requests for new dummy rounds with the JMC Munitions Sustainment Planning Division. The POC is Keith Edwards, DSN 793-3515, (309) 782-3515, or email: [usarmy.ria.jmc.mbx.amsjm-pd@mail.mil](mailto:usarmy.ria.jmc.mbx.amsjm-pd@mail.mil)

Include "ATTN: Keith Edwards" in the subject line.

Direct all technical questions to Robert Weissman, DSN 880-3056, (973) 724-3056, or email:

[robert.j.weissman.civ@army.mil](mailto:robert.j.weissman.civ@army.mil)

For more information, see ammunition information notice (AIN) 022-15. Go to:

<https://mhp.redstone.army.mil>

Log in with your email certificate and request access.

# Need a Safety Board? Here Are Your Options

UNSURE HOW TO PREPARE A SAFETY BOARD FOR YOUR UNIT? HERE ARE SOME OPTIONS!

Dear Editor,

Every repair facility should have a safety board nearby in case of accidents. TB 385-4, *Safety Requirements for Maintenance of Electrical and Electronic Equipment* (Jul 08), gives you the basics on what's needed on the board. I thought it might be helpful to share how we constructed our safety board.

We cut a 1/2-in thick piece of plywood to 3 x 4 feet. We painted a 2-in green border around the entire board. We used 2-in self-adhesive letters to put "SAFETY BOARD" at the top. You can also stencil it if you prefer. We used a label maker to print 3/4-in lettering for each item on the board.

Here are the items for the board that can be ordered by NSN:

Item	NSN	Price
Hearing protection	4240-01-538-7970	18.20
3,000V electrical gloves (size 11)	8415-01-158-9451	68.92
Rope (210-ft coil)	4020-00-599-7529	16.29
Goggles	4240-00-052-3776	3.69
M6 LED Pelican Flashlight	6230-01-523-4709	60.59
First aid kit	6545-01-433-8399	32.46
Tourniquet	6515-01-521-7976	48.39
Fire extinguisher	4210-01-245-9850	32.66
Lithium batteries (12)	6135-01-554-0864	19.38

We've found size 11 gloves fit almost everyone. You'll also need a copy of FM 4-25.11, *First Aid* (Dec 02).

We couldn't find NSNs for the following items, so we ordered them from *Grainger.com*. Most big box stores would also have these items.

Item	Part Number	Cost
Woodscrews (250)	5ZVN6	14.72
Ground wire	9EWL4	42.80
Eye wash station	22FX22	29.35
Static discharge stick	3GY63	617.00
6-ft rescue hook	3GY61	533.00
Reclosable cinch strap, 1 x 8 inches (10 pack)	5JLG7	48.30
Reclosable cinch strap, 1 x 12 inches (10 pack)	5JLG8	48.25
Reclosable cinch strap, 2 x 24 inches (10 pack)	5JLH0	79.00

We've found the cinch straps work great to hold equipment on the board. Here's what the finished product looks like:

Steve Kirkpatrick  
1st Bn, 10th Special Forces Group  
Germany

## Editor's note:

*Excellent information, Steve.*

*SFC William Lawrence of the 94th BSB at Ft Polk pointed out to PS that there's a ready-made safety board available with NSN 4910-01-618-4321 that costs \$2,880.*

*It contains:*

- 4x8-ft safety board with graphics
- Rescue stick with 6-ft pole
- Discharge tool with 6-ft ground
- Ear plugs and dispenser
- First aid kit
- Hard hat
- Safety glasses
- Flashlight
- Grounding cable
- Linesman gloves
- 25-ft halyard rope
- Ear muff

*In addition, you can save money by fabricating a safety hook, grounding stick, and grounding cables. Instructions are in Figs 3-1 and 3-2 in TB 385-4, Safety Requirements for Maintenance of Electrical and Electronic Equipment.*

*Pages 40-43 of PS 644 (Jul 06) lists NSNs for alternate or additional items for your safety board. It also lists NSNs for items you can use to restock the first aid kit. You can find the article online:*

<https://www.logsa.army.mil/psmag/archives/PS2006/644/644-40-43.pdf>

*Other things you might consider around or on the board are a resuscitator, a portable defibrillator and hazard signs.*

*Don't stack things in front of the board, though. If you can't get to the board in an emergency, that defeats its purpose. And make sure the board is located in a central location so that Soldiers can get to it as quickly as possible.*

*Inspect the board each month to make sure all items are on-hand and in good shape.*

*Make safety board training SOP. Everyone working in the area should know each piece of equipment and how to use it.*

# Make BFA PM SOP

Dear Editor,

If you expect to train successfully with your rifle or machine gun, you must make blank firing attachment (BFA) preventive maintenance (PM) part of your SOP. A bad BFA makes for a bad training day.

**Before** you go to the field, check BFAs for gas ports that are elongated, egg-shaped, or even rectangular. They should be round. Also inspect BFAs for dents or any other damage. If you find problems, get a new BFA from your armorer.

If your machine gun fires only one shot at a time, suspect the BFA. It's either damaged or installed wrong. Get it checked out.

HEY, WHY ARE YOU FIRING ONLY **ONE SHOT** AT A TIME?

'CAUSE YOU'VE PUT A **BAD BFA** ON ME!

In addition, you need to make sure you have the right BFA. Some machine guns use a different BFA depending on which barrel you're firing. It's easy to mix up the M16 rifle and M4 carbine's BFAs. In some cases, you can damage the weapon using the wrong BFA. At the very least, you'll have firing problems.

Scott Wayne Taylor  
Small Arms Repairman  
Ft Benning, GA

Check BFA gas ports for irregular shapes



## Editor's note:

Excellent points, Scott. Here are the NSNs for the BFAs for each weapon:

**M2 machine gun.** Use the M19 BFA, NSN 1005-01-091-7510.

But remember that before you can install the M19 (BFA) on the M2A1, you must first remove the M2A1's flash suppressor and install a barrel cap in its place. The procedure is in WP 0002 in the M19's TM 9-1005-314-13&P.

**M16-series rifle,** NSN 1005-00-118-6192; **M4/M4A1 carbine,** NSN 1005-01-361-8208.

The M16 and M4 BFAs look alike, except for one big difference: The M16 BFA is red and the M4's is yellow. If you switch them, you'll have firing problems.

M4/M4A1  
BFA is **yellow**,  
the M16's is **red**

**M249 machine gun,** NSN 1005-21-912-8997 (standard barrel), NSN 1005-01-537-0491 (short barrel). If you use the standard barrel BFA with the short barrel, you can damage the M249.

**M240B, M240D, M240H, M240N and M240L machine guns.** Use the M24 BFA, NSN 1005-01-480-0289, for the standard barrel. For the M240L short barrel, use the M26 BFA, NSN 1005-01-565-6693. Using the wrong BFA can damage the M240L.

M249 standard barrel BFA is **red** and **screws in**

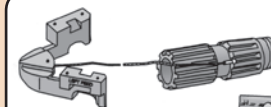
M249  
short barrel BFA is  
**yellow** and **clamps on**

M26 BFA should be used  
with M240L short barrel

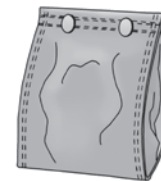
Use M24 BFA for standard barrel

The M24 has two repair parts: the shaft, NSN 5340-01-481-8127, and pull ring, NSN 5325-01-480-6849.

**M240, M240C, and M240E.** Use the M21 BFA. The M21 has three separate components: chamber and discriminator assembly, NSN 1005-01-142-2841; weapons spare parts ordnance bag, NSN 8105-01-147-9841; and the M1-series tank firing attachment adapter, NSN 1005-01-218-0693. They must be ordered separately.



Use M21's chamber  
and discriminator  
assembly and  
ordnance bag with  
M240, M240C and  
M240E



## Get PS Outta the Office and Back Into the Motor Pool!

SERGEANT M IS GONNA BE BUMMED THAT HE MISSED MY ARTICLE ON THE M1G/M4 IMPROVED CLEANING KIT.

*PSST* LOTS OF SOLDIERS ARE MISSING OUT ON MY CARGO COVER NSNS.

HEY, HERE'S 10 WAYS I CAN WEAR MY HAIR TO LOOK YOUNGER!

HATE TO BREAK IT TO YOU, BUDDY, BUT YOU DON'T HAVE ANY HAIR.

RATS! COME TO THINK OF IT, I **ALREADY** READ THIS ONE IN MY DOCTOR'S OFFICE.

**W**e hear from some Soldiers who desperately need and want to read *PS*, but they tell us they haven't seen a copy for months. Their units have current subscriptions, but *PS* never made it to the motor pool.

Seems that when *PS* arrives at some units, it never travels beyond the front office. Or if it does, it ends up in a black hole.

Big deal, someone might say. Yep, it sure is! That's because equipment maintenance is firmly back in Soldiers' laps after years of AMC and contractors doing maintenance support. This means more Soldiers are turning wrenches again.

The Command Maintenance Discipline Program (CMDP) is proof the Army's serious about getting maintenance back on track. CMDP went into effect with DA Pam 750-1, *Commanders' Maintenance Handbook* (Dec 13). CMDP isn't a "nice to do" option; it's mandatory. The Army's holding Soldiers and commanders accountable for results.

So if you find an issue of *PS* chillin' somewhere it doesn't belong, take it to the folks who *really* need it. They'll be grateful and so will we.

For instructions on how to get *PS* every month, go to:  
<https://www.logsa.army.mil/psmag/dist.cfm>

### Scan these articles on:

- Getting *PS* back in the motor pool
- Updating M1117 ASV data plates
- Filing PQDRs the right way

# Update the Plate!

## Data Plate Fix for M1117 ASV

HEY, WHY'D WE  
COME BACK TO  
THE MOTOR POOL  
SO SOON?

JUST GOT  
WORD THAT  
YOUR NEW  
PLATE CAME  
IN. WE GOTTA  
PUT IT ON!

AWESOME!  
WE DIDN'T  
EVEN HAVE  
TO WAIT IN  
LINE AT THE  
DMV!

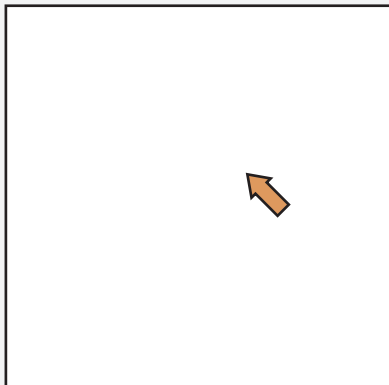
NOT THAT KIND  
OF PLATE, BUDDY.  
YOU MUST BE  
HANGIN' AROUND  
POVS TOO MUCH.

Good news! New data plates are available for M1117 Armored Security Vehicles (ASVs). If your unit has one or more of these vehicles, you'll need to get new data plates for all of 'em.

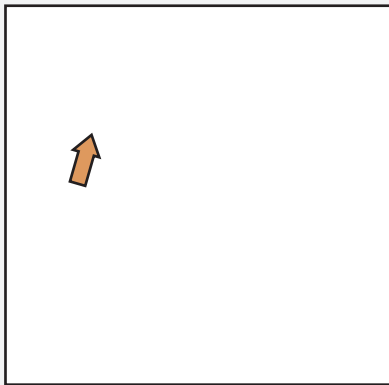
The data plate update fixes a serial number (SN) problem. The old M1117 ASV data plates didn't display vehicle SNs correctly because they left off "ASV" before the SNs. Entering wrong vehicle SNs in PBUSE or SAMS-E can cause property accountability issues. We explained the problem on Pages 12-13 of PS 686:

<https://www.logsa.army.mil/psmag/archives/PS2010/686/686-12-13.pdf>

The **old** data plate is also tucked behind the vehicle's fire suppression system. That makes it difficult to see.



The **new** data plate will be easier to read because it's put in a better location, right on the panel next to the driver's side door.



All M1117 ASVs must be updated with the new data plates. Fielding is ongoing through TACOM's logistics assistance representatives (LARs). However, property book officers (PBOs) who want new data plates sooner can call (586) 467-6267. Or PBOs can email TACOM a list of their UICs, POCs, ship-to addresses and vehicle SNs. TACOM will ship back new data plates with mounting instructions. Email:

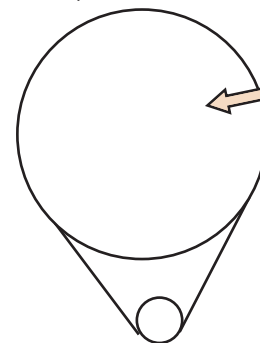
[usarmy.detroit.tacom.mbx.ilsc-mft-asv@mail.mil](mailto:usarmy.detroit.tacom.mbx.ilsc-mft-asv@mail.mil)

CADILLAC GAGE-ARMORED VEHICLE ASV-WITH FRAG KIT 1 AND KIT 2			
MODEL	M1117ASV	CUSTOMER	TACOM
VEH. SERIAL NO.	ASV002	DATE OF	
REGISTRATION NO.	MY01DN	MANUFACTURE	
SHIPPING WT.	29,115 LB.	GROSS VEHICLE WT.	32,517 LB.
OVERALL HEIGHT	102 IN.	WIDTH	101 IN.
		LENGTH	237 IN.
WARRANTY	N/A	MO. OR	N/A
		MI.	DATE SHIP
<b>TEXTRON</b> Marine & Land Systems			
Textron Marine & Land Systems Division of Textron, Inc.			

New data plate shows SN in correct format with ASV prefix

TO REPLACE  
AN M1117 ASV'S  
DATA PLATE,  
FOLLOW THESE  
STEPS...

1. Check that the SN on the new data plate matches the SN on the old data plate. The chassis number on the old plate is the vehicle's SN. The letters "ASV" come just before the SN (chassis number) on the new plate. Make sure the numerals match on both old and new plates.



2. Visually confirm that the SN on the new data plate matches the SN stamped on the steel lifting eye on the driver's side of the vehicle.

3. The new data plate has a self-adhesive backing. Simply "peel and stick" it on the panel just inside the door on the driver's side of the vehicle. For best results, clean the panel before putting on the plate. A clean cloth and a touch of isopropyl alcohol will work. Technical isopropyl alcohol, NSN 6810-00-753-4993, is best for cleaning because it's 70 percent isopropyl and 30 percent water.
4. Once the new data plate's on, remove the old one. The only tool you'll need is a small screwdriver to remove the four screws holding the old data plate in place.



# PQDRs: Take Time

# to Do 'Em *Right!*

ENGINE  
BROKE, FOR  
THE *THIRD*  
TIME!

**DING**

PQDR Delayed:  
Insufficient Data.  
Have a *nice* day!

WHEN YOU  
SUBMIT A PQDR,  
BE SURE TO  
INCLUDE SPECIFIC  
DETAILS ABOUT  
WHAT'S WRONG.

THE MORE DATA  
YOU INCLUDE,  
THE FASTER THE  
SYSTEM CAN  
WORK FOR YOU.

WHEN YOU GET A **BAD PART**,  
IT'S NATURAL TO WANT A  
REPLACEMENT, FAST. BUT  
AS FAST AS YOU WANT  
A NEW PART, YOUR UNIT  
WANTS TO BE REIMBURSED  
FOR THAT DEFECTIVE PART  
JUST AS QUICKLY.

THE **BEST** WAY  
TO SOLVE BOTH  
PROBLEMS IS TO  
SUBMIT A PRODUCT  
QUALITY DEFICIENCY  
REPORT (PQDR).

**PQDR!**

YOU SHOULD FILE  
A PQDR FOR **EVERY**  
MALFUNCTIONING OR  
DEFECTIVE ITEM, PART  
OR TOOL YOU FIND.

FROM AIRCRAFT TO  
VISE GRIPS, NO ITEM  
IS TOO BIG OR TOO  
SMALL FOR A PQDR!

**ANY** ITEM THAT  
**DOES NOT** MEET  
THE "FORM, FIT, OR  
FUNCTION" CRITERIA  
IS A CANDIDATE  
FOR A PQDR.

## When PQDRs *Aren't* the Answer

PQDRs **do not** apply in the following situations:

- Failure due to improper or inadequate maintenance or operation
- Failure with normal use within reasonable range of life expectancy
- Receipt of incorrect material or non-receipt, shortages/overages, and discrepancies in preservation, packing or marking (Supply Discrepancy Report [SDR] applies). For a how-to on filing SDRs, see Pages 58-60 in PS 745 (Dec 14). View it here:

<https://www.logsa.army.mil/psmag/archives/PS2014/745/745-58-60.pdf>

- Transportation discrepancies (DD Form 361 applies)
- Deficiencies in Foreign Military Sales (FMS) under the Security Assistance Program (SDR applies)
- Subsistence material deficiencies (DD Form 1608 applies)
- Medical materiel deficiencies (SF-380 applies)
- Malfunctions with ammunition or explosives (DA Form 4379, *Ammunition Malfunction Report*, or DA Form 4379-1, *Missile and Rocket Malfunction Report*, applies.) For more info, see AR 75-1, *Malfunctions Involving Ammunition and Explosives* (Dec 12). Download the pub at: [http://www.apd.army.mil/pdf/files/r75\\_1.pdf](http://www.apd.army.mil/pdf/files/r75_1.pdf)

WE KNOW IT'S A  
**HASSLE** TO FILL  
OUT FORMS WHEN  
YOU ALREADY HAVE  
**LIMITED TIME** AND  
**LOTS OF WORK** ON  
YOUR PLATE.  
BUT THIS IS  
**IMPORTANT!**



With PQDRs, problems are resolved through the parts replacement or reimbursement processes and your unit isn't throwing money down the drain.

PQDRs also help item managers spot fault patterns so they can investigate any issues with manufacturers.

Reporting items that fail to meet quality standards helps reduce the amount of defective materiel sent out. That translates into saving money and maybe even lives.

PQDRs are the best way to alert the Army about deficient products, **unless** your report itself is deficient. If you don't give enough info to investigators, your PQDR might not go anywhere or fix anything.

How well you fill out a PQDR has a lot to do with how quickly a refund or replacement happens. Incomplete PQDRs may mean preventable defects happen again, your unit doesn't get credit or replacement of defective items, or critical materiel can fail after installation.

### Avoid Pitfalls of Filing Puny PQDRs

Be sure you include the following details in your PQDR:

- NSN of defective item
- complete narrative of problem
- original unit requisition number
- supplier name.
- contract number

Make sure your own contact info is current and accurate, too. That way, investigators can contact you if they need more info, like photos. If they can't find you, the investigation might stall.

NOW YOU KNOW WHAT TO DO... HERE'S WHERE TO DO IT.

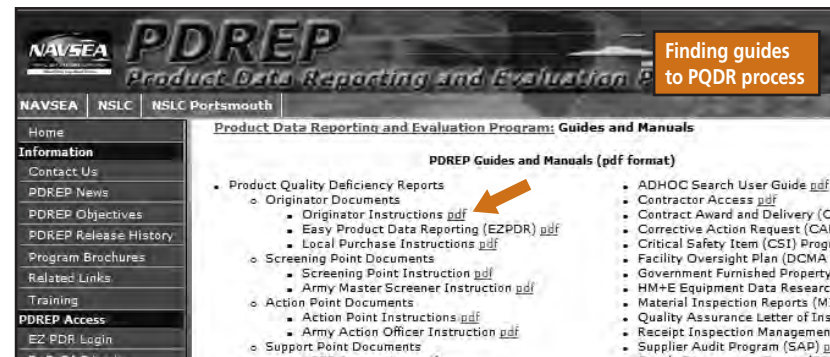
FILE PQDRs THROUGH THE PRODUCT DATA REPORTING AND EVALUATION PROGRAM (PDREP). ACCESS PDREP AT: <https://www.pdrep.csd.disa.mil/>



**Submit all Army PQDRs at**  
<https://www.pdrep.csd.disa.mil/>

First-time PDREP users need to submit a user access request form. Under the PDREP Access tab on the left side of the page, click on User Access Request Form, download the form and follow the directions on it.

You'll find user access and login instructions in the PDREP guide. Look under the PDREP References tab on the left side of the main page. Click on Guides and Manuals. Choose the "Originator Instructions" pdf. Check out the other guides there, too.



**Finding guides to PQDR process**

FOR HELP WITH PDREP OR FILING PQDRs, CONTACT CUSTOMER SUPPORT AT DSN 684-1690, (207) 438-1690, OR EMAIL: [webptsmh@navy.mil](mailto:webptsmh@navy.mil)



### GCSS-Army Reminder

Remember to check the GCSS-Army website for alerts, updated fielding and training schedules and other important info. Visit: <https://gcss.army.mil/>  
Or sign up to get automatic notifications at: <https://gcss.army.mil/Support/register.aspx>

DISTRIBUTION: To be distributed in accordance with the initial distribution number (IDN) 345239, requirements for the TB 43-PS-Series.

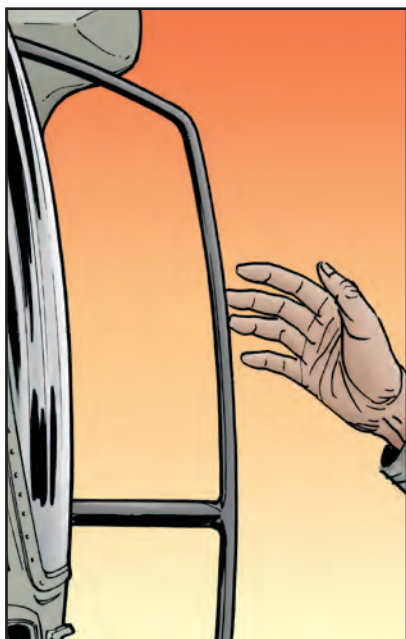
**Would You Stake Your Life *right now* on the Condition of Your Equipment?**

# PREVENTIVE MAINTENANCE

Keep your  
*feet OFF*  
aircraft NO  
STEP ZONES



and your  
*hands OFF*  
NO  
HANDHOLDS.



Check your TMs for  
*where* to step, walk,  
and *what* to hold!