

Issue 652

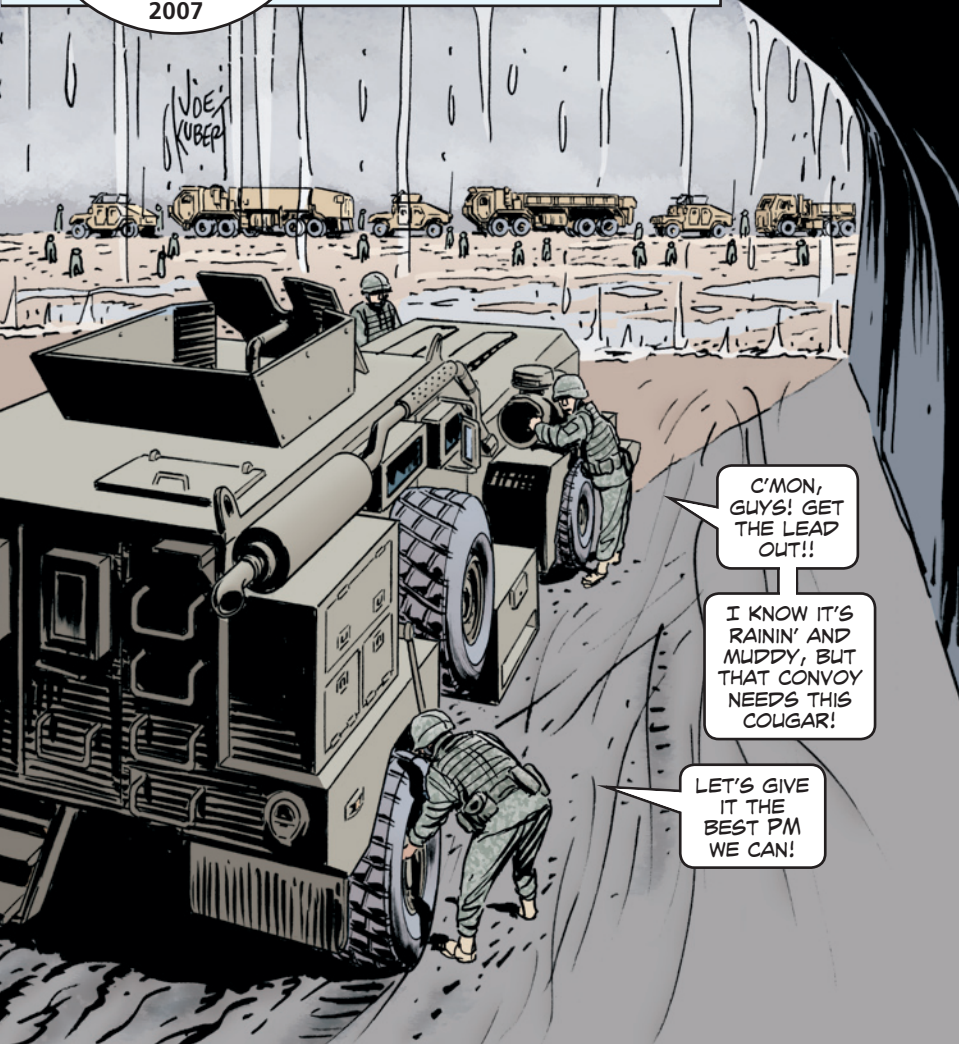
PS

March  
2007

# THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-652

Approved for  
Public Release;  
Distribution is  
Unlimited

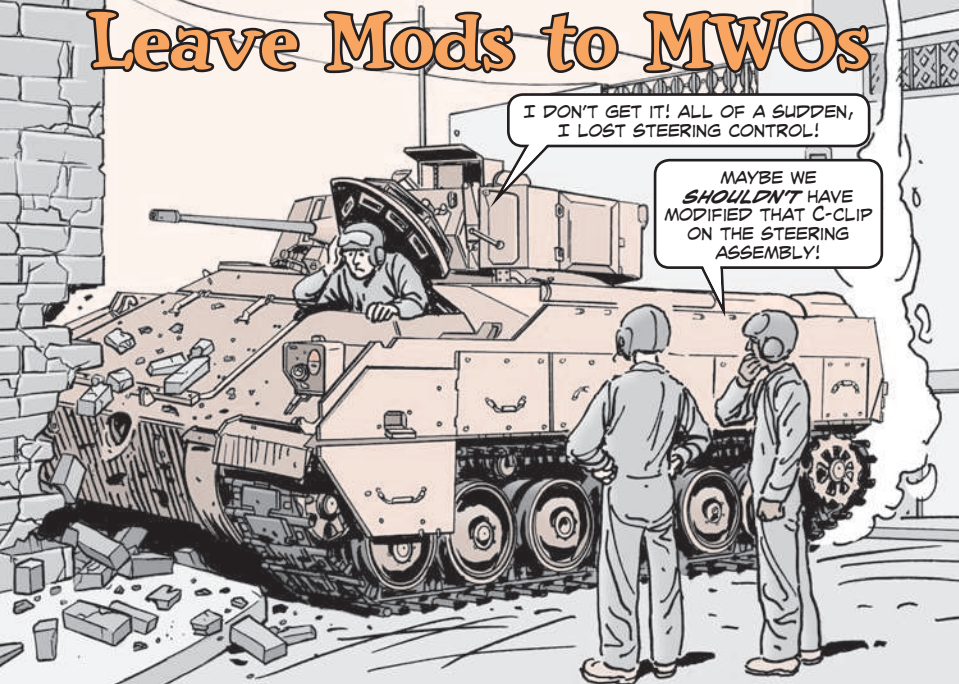


C'MON,  
GUYS! GET  
THE LEAD  
OUT!!

I KNOW IT'S  
RAININ' AND  
MUDDY, BUT  
THAT CONVOY  
NEEDS THIS  
COUGAR!

LET'S GIVE  
IT THE  
BEST PM  
WE CAN!

# Leave Mods to MWOs



I DON'T GET IT! ALL OF A SUDDEN,  
I LOST STEERING CONTROL!

MAYBE WE  
**SHOULDN'T** HAVE  
MODIFIED THAT C-CLIP  
ON THE STEERING  
ASSEMBLY!

FOR MANY YEARS, SOLDIERS  
HAVE PROUDLY BOASTED THAT  
THEY HAVE THE WORLD'S BEST  
EQUIPMENT.

UNFORTUNATELY, THERE ARE A  
FEW THAT FEEL EVEN THE BEST  
CAN BE IMPROVED UPON.

AND THEY TRY TO DO  
JUST THAT THROUGH  
**UNAUTHORIZED  
MODIFICATIONS.**

In one instance, a unit felt they could get a better fit by grinding down the C-clip on their Bradley's steering assembly. The clip broke during operation and the Bradley lost its steering.

Fortunately, no one was injured in this accident. But other soldiers who insist on doing unauthorized modifications might not be so lucky.

According to AR 750-1, *Army Materiel Maintenance Policy*, equipment modifications are only to be made through modification work orders (MWO). That's especially important when it comes to safety-related equipment such as steering and braking.

If you have equipment that you feel needs modification, check with your logistics assistance representative, field service representative, or appropriate commodity command for help.

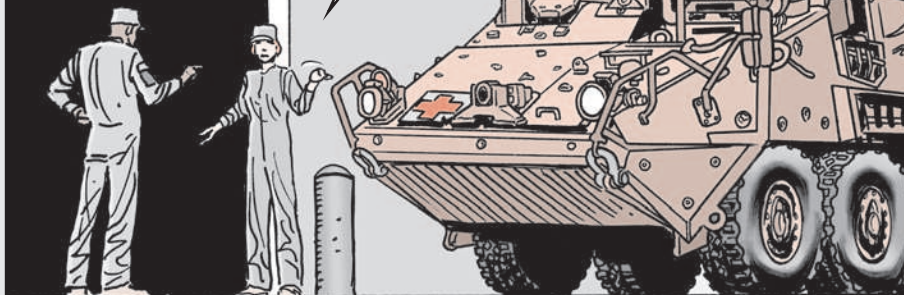
You really do have the world's best equipment. Let's keep it that way.

Stryker...

# Make the Engine Oil Filter Switch

TIME FOR AN OIL CHANGE! THAT MEANS WE'LL HAVE AN OIL FILTER TO *CLEAN!*

HAVEN'T YOU HEARD? WE GET TO USE DISPOSABLE OIL FILTERS NOW!

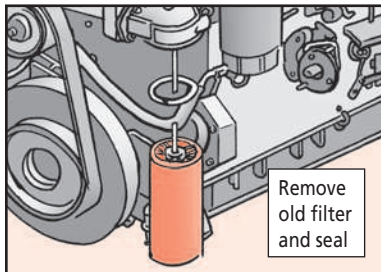


**M**echanics, the cleanable engine oil filter currently used on Stryker vehicles is being replaced with a disposable paper filter, NSN 2910-01-519-3768. That means you'll need to make the switch during each vehicle's next scheduled semiannual service.

The procedures will be added to IETM 9-2355-311-13&P. Until then, follow these removal and installation instructions.

## Removal

1. Chock the vehicle's wheels.
2. Open the engine hatch.
3. Place a suitable drain pan in position to catch engine oil drainage from the filter element.
4. Remove the cleanable filter element, NSN 2940-01-494-8456, and the base face seal, NSN 4330-01-514-9571, from the mounting base. Dispose of the filter element and seal in a proper container.

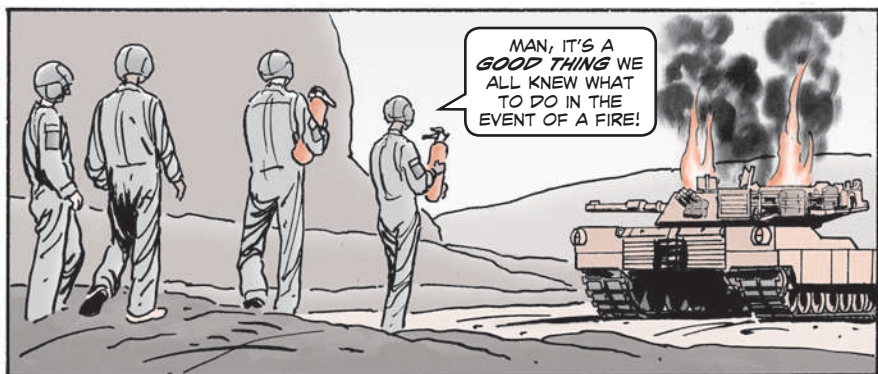
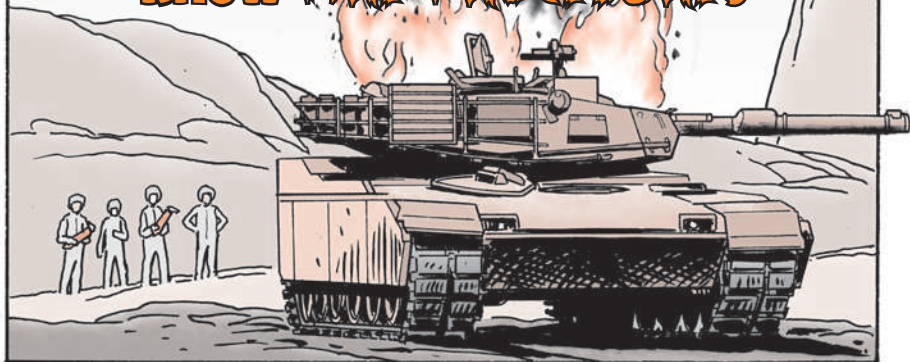


## Installation

1. Apply a thin coat of engine lubricating oil, NSN 9150-01-518-9477, to the new filter element's seal and fill the element with oil through the outer holes.
2. Screw the new filter element in place by hand until it is snug against the mounting base. Turn the filter element an extra 1/4 turn by hand.
3. Close the engine hatch.
4. Remove the wheel chocks.



# Now's the Time to Know FIRE PROCEDURES



Do you know what to do if your tank catches fire? If you don't, you're not only a danger to yourself, but other crewmen as well.

## All Crewmen

MAKE SURE  
YOU AND YOUR  
CREW KNOW  
AND PRACTICE  
THESE  
PROCEDURES...



Once a fire is detected, all crewmen should hold their breath and speak only to give commands or responses. Breathing smoke or fumes from a tank fire will slow you down and can result in injury or death.

Make sure that all hatches are in the open-lock position before exiting. You don't want a hatch crashing down on you or someone else while you're trying to get away from a fire.



EVERY MEMBER OF THE CREW HAS SPECIFIC RESPONSIBILITIES IN THE CASE OF A FIRE...

## Commander

Traverse the turret so the gun tube is over the left side of the tank. Be prepared to override the driver's hatch interlock (DHI) if the driver tries to open his hatch before or while the turret is traversing. Turn off turret power.

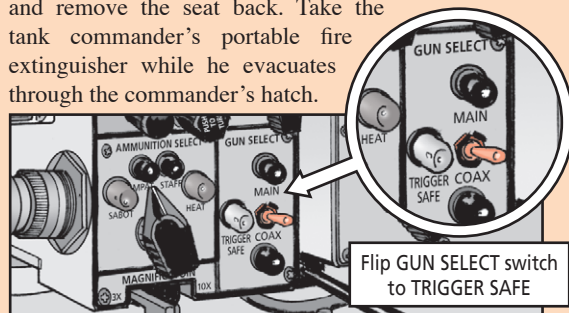
Shout the command, "EVACUATE!" Let the gunner take your portable fire extinguisher while you open the commander's hatch and evacuate. Take back the portable fire extinguisher and help the gunner move to safety through the commander's hatch. Then move to the front slope of the tank to help the driver evacuate.

Assemble the crewmen at least 30 meters (about three tank lengths) from the left rear of the tank. Then you must decide if it is safe and possible to return to the tank to put out the fire with the portable fire extinguisher.

## Gunner

Turn and face the turret wall as much as possible to limit your exposure to heat and fire.

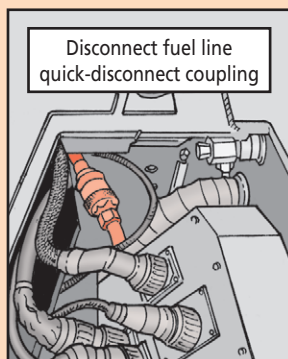
Set the GUN SELECT switch to TRIGGER SAFE. Then pull the pins holding your seat back posts in place and remove the seat back. Take the tank commander's portable fire extinguisher while he evacuates through the commander's hatch.



Flip GUN SELECT switch to TRIGGER SAFE

Pass it back to him and exit through the commander's hatch. Go to the rear deck and help the loader disconnect the fuel line quick-disconnect coupling.

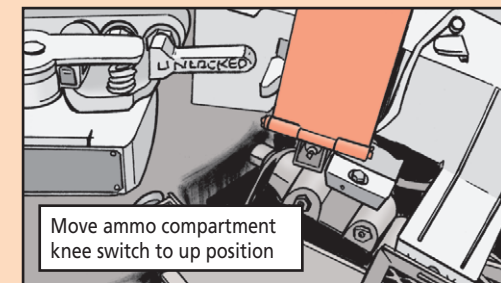
Report to the assembly area 30 meters to the left rear of the tank and stand by to fight the fire as directed by the tank commander.



Disconnect fuel line quick-disconnect coupling

## Loader

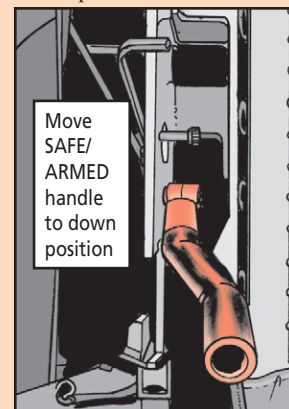
Then move the ammunition compartment knee switch to the up (stowed) position.



Open the loader's hatch and exit. Then remove the loader's portable fire extinguisher from the left cargo rack box. Meet the gunner at the rear deck and disconnect the fuel line quick-disconnect coupling. Report to the assembly area 30 meters to the left rear of the tank. Stand by to fight the fire as directed by the tank commander.

## Driver

Turn and face the turret wall to limit your exposure to heat and fire. Move the SAFE/ARMED handle down to the SAFE position.

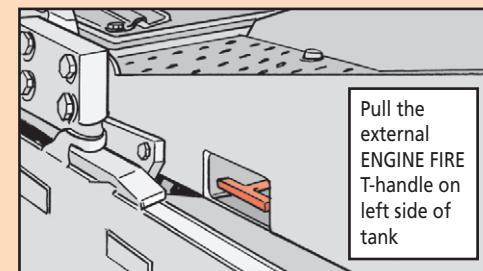


Stop the tank and move the shift select to neutral. Pop up the driver's hatch to allow fresh air inside, but **do not** open the hatch until the tank commander has finished traversing the turret and you hear the EVACUATE! command. Opening the hatch too soon could result in serious injury or even death.

Pull the CREW FIRE T-handle or ENGINE FIRE T-handle depending on the fire's location. Set the parking brake and shut down the tank by holding the ENGINE SHUTDOWN switch to SHUTDOWN. Stow the steer-throttle control and remove your night vision device if it's installed.

After the commander gives the EVACUATE! command, press the tank reset push button on the hull power distribution unit (HPDU) to interrupt electrical power for M1A2 tanks. For M1A1 tanks, shut off the VEHICLE MASTER POWER switch. Open your hatch and evacuate.

Once outside, pull the external ENGINE FIRE T-handle on the left side of the tank. Report to the assembly area 30 meters to the left rear of the tank. Stand by to fight the fire as directed by the tank commander.



Pull the external ENGINE FIRE T-handle on left side of tank

# HOPING FOR A GROUND HOP KIT

I'VE HAD NO LUCK  
FINDING THE NSN  
FOR THAT GROUND  
HOP KIT.

ME, EITHER!  
MAYBE WE  
SHOULD ASK  
HALF-MAST.

Dear Half-Mast,

I'm having trouble finding the NSN for the M270A1 MLRS ground hop kit.  
Can you help me out?  
SSG R.A.F.

Dear Sergeant R.A.F.,

Sure can! The ground hop kit comes with NSN 4910-01-131-1934. You'll find it listed in Fig 218 of TM 9-1055-647-13&P. However, there are two things you need to know when ordering.

First, the supply system hasn't quite caught up to the provisioning changes in the ground hop kit, so some kits are being received without the 1W133, 1W36X, and the 1W5X wiring harnesses. If any of these wiring harnesses are not in the ground hop kit when you receive it, order them separately through the supply system.

Get the 1W133 harness with NSN 6150-01-478-8518, the 1W36X harness with NSN 6150-01-488-7730, and the 1W5X harness with NSN 6150-01-521-1841.

Second, when you receive the ground hop kit, check the length of the 1W133 CENTRY cable, NSN 6150-01-478-8518. This wiring harness should be either 10 or 15 feet long. If the one you receive is only three feet long, report it on an SF 364, Report of Discrepancy.

*Half-Mast*

# Grille Removal Made Easy

I'D *LIKE* TO REMOVE YOUR GRILLE... BUT SOMEONE REMOVED THE PROCEDURE FROM THE TM!



**M**echanics, the procedures for removing and installing the M113A2's power plant grille were accidentally left out of TM 9-2350-261-20-3.

Until the TM is updated, use the procedure in WP 0465 00 of TM 9-2350-277-20-4 or follow these steps:

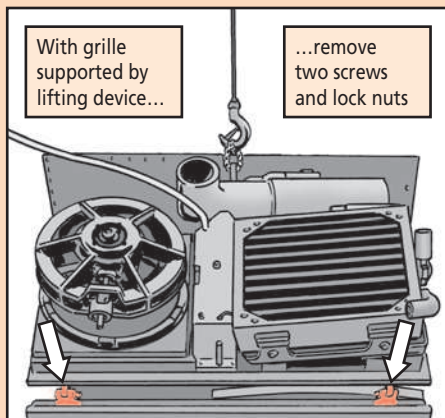
## Removal

1. Support the grille assembly with a lifting device. The chain and lifting device must be capable of supporting 2,000 pounds securely. Never use a damaged lifting sling.
2. Remove the two screws and locknuts from the two lugs at the bottom of the opened grille assembly. Discard the locknuts.

### WARNING

**The grille and access cover are very heavy and will swing when the screws are removed. To avoid injury, do not stand in front of or behind the grille assembly.**

3. Slowly lift the grille assembly free of the vehicle. If necessary, use extra helpers and straps or chains to guide the assembly as it is moved. To prevent damage to the fan, radiator and elbows, lower the assembly onto wood blocks or a suitable frame that will support the edge of the grille.



## Installation

1. Lift the grille assembly from the wood blocks or frame and lower it into place on the vehicle. Have helpers assist.
2. Secure the grille to the vehicle with the two original screws and new locknuts, NSN 5310-00-269-4040.

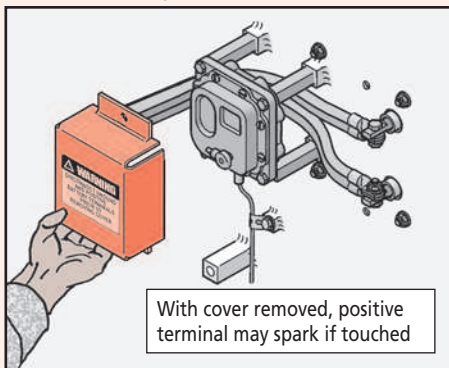




**M**echanics, a little sparking from an ammo carrier's auxiliary power unit (APU) junction box may make you jump, but it won't shock you.

Even if the ground has been disconnected at the batteries, there may still be a little voltage present at the APU junction box positive terminal. So when you remove the terminal cover for maintenance, you may see a little spark if you accidentally touch the terminal.

Don't worry. That spark isn't enough to injure you or cause damage to your vehicle. In fact, a new note is being added to TM 9-2350-372-20 that reads:

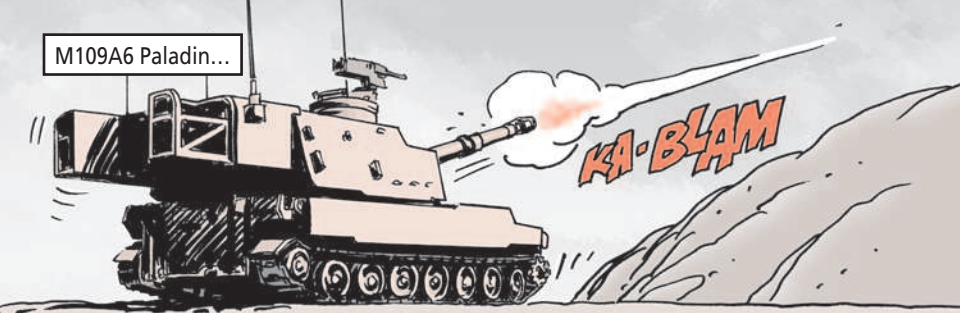


### NOTE

The APU junction box positive terminal may retain voltage when vehicle ground has been disconnected at the batteries. Accidentally touching or grounding the positive and negative terminals together with a metal object may result in small sparking at the APU junction box terminals, which will not cause any harm to personnel or damage to equipment.



M109A6 Paladin...



## SET UP TO SHOOT STRAIGHT

**H**aving backup systems can be vitally important on the battlefield. If your Paladin's electronic digital fire control system goes down, you're going to need to use the manual fire control system.

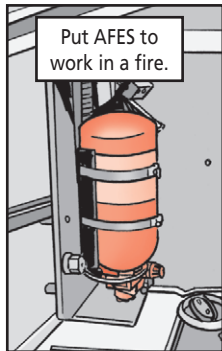
Unfortunately, some units aren't prepared. It's not unusual to have a little movement of the M145A1 telescope mount due to the interface of the mechanical parts. But over time, the mounts will continue to loosen until the movement becomes excessive. That makes hitting targets manually a real problem.

Don't make manual firing a hit-or-miss proposition. Follow the procedures on Pages 3-137 through 3-139 of TM 9-2350-314-10 to determine if your M145A1 is ready for action.

Testing should  
be done:

- Once each year if the cannon is used for non-firing training.
- Once every three months if the cannon is fired.
- Prior to manual firing missions.
- As soon as possible after extensive use.
- Following any accident that might jar the system.
- After traveling over extremely rough terrain.
- When fire control mounts have been replaced.
- Whenever the gun tube or cannon is replaced.
- Whenever the cannon fires inaccurately for no apparent reason.

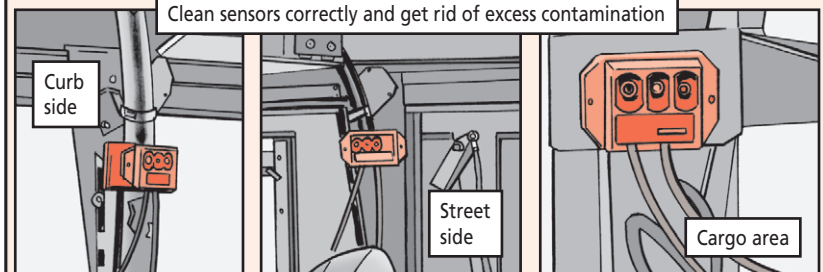
# FIRE SAFETY BEGINS WITH YOU!



Word from the field is that soldiers have been prematurely using and improperly testing the AFES for the M1114 up-armored HMMWV. And premature use of this system can lead to unnecessary wear and tear, which can lead to it not working during an actual fire.



- Be careful when using the manual activation switch on the control module. Flipping up the guard (thus breaking the lock-wire) and activating the switch will cause the AFES to discharge both extinguishers. That can cost you money and downtime. The system will not protect you until charged extinguishers are installed. **Don't** attempt this to "test" the system.
- If you don't clean the optical fire sensors correctly, you'll decrease their ability to quickly and correctly identify a fire and activate the AFES. An unreliable AFES puts you and other soldiers in your M1114 in danger.



When you do your daily PMCS cleaning on the optical fire sensors, be sure to get rid of any contamination, such as dirt, oil, and grease, on the optic lens. Use a clean, damp, non-abrasive cloth when wiping the lens. **Never** use a wire, metal or stiff-bristled brush! That will damage the sensors.

- The functional test verifies proper installation and operation of the AFES configuration B, NSN 4210-01-542-1128, on your M1114. This test should be performed **after** the installation of the AFES and should be repeated during scheduled maintenance. Use the M1114 AFES test set, NSN 4210-01-543-5510, and the AFES test set operational instructions for the M1114 HMMWV to conduct these tests.
- **Before** testing the AFES, cables from both extinguishers must be disconnected and the valve simulators must be installed. If not, the system will discharge both extinguishers, and your AFES will be extinguished!
- Once the AFES has been discharged, it can't protect you from a fire again until it's serviced and full extinguishers are installed.
- AFES should react to fires automatically in milliseconds.

EYEBALL THE PM-LTV'S PUBLIC ACCESS AREA ON THE AKO WEBSITE AT THIS ADDRESS FOR MORE INFORMATION ON PMCS, MAINTENANCE, TROUBLESHOOTING AND TESTING OF THE AFES.

<https://www.us.army.mil/suite/folder/197841>





# FINDING PARTS TO REPAIR ARMOR, COOLING

FINDING THE *RIGHT*  
PARTS FOR YOUR M1083  
AND M1088 FMTVs IS  
JUST A *CLICK* AWAY!



Dear Half-Mast,

Our unit has new up-armored M1083 and M1088 FMTVs. After eyeballing the electronic technical manuals (ETMs) on EM 0122, I didn't find a thing on the factory-installed air conditioner, not even a picture! I couldn't find parts for the armor components either.

How can we find the NSNs that we need?

SSG A.C.

Dear Sergeant A.C.,

You have two problems! The FMTV models you named are -A1 models, not basic models. You won't find what you need in EM 0122 because it covers the basic model FMTV. See EM 0195 for information on -A1 models—except for the armor and AC info!

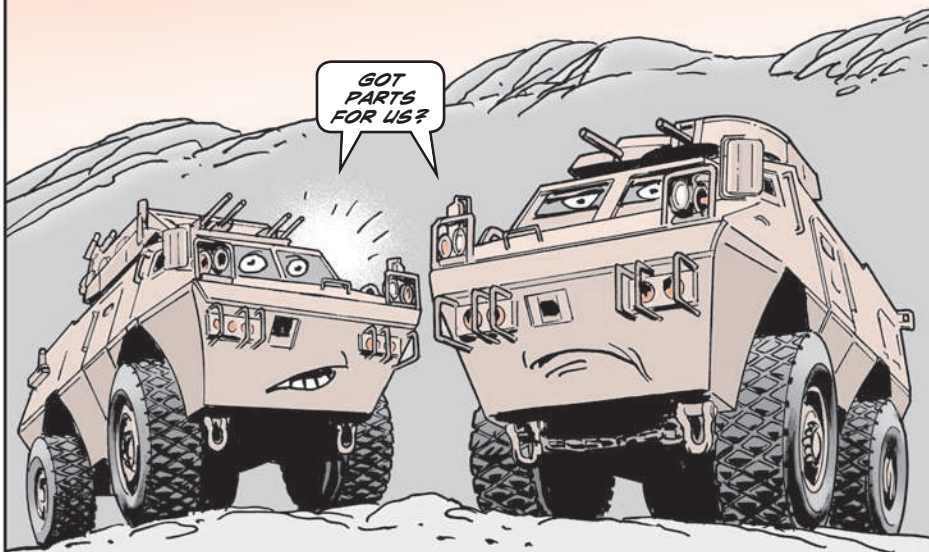
The armor and air conditioning information is **only** available in TB 9-2320-320-13&P (Jul 05) for the low signature armor cab (LSAC) and TB 9-2320-316-14&P (Oct 05) for the cab add-on armor (AOA) kit.

You can access these technical bulletins online:

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

*Half-Mast*

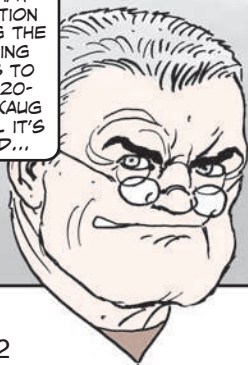
# CORRECTIONS TO PARTS MANUAL



**I**magine this. You need parts for your M1117 armored security vehicle. You look in TM 9-2320-307-24P to find the NSNs, but the numbers aren't listed, or don't show up in FED LOG. Or you order the parts and the order arrives, but the parts you ordered aren't the parts you see in front of you.

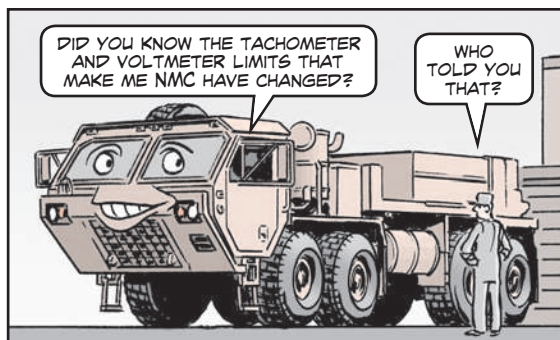
That's what happens when parts information changes, and you don't know about it.

AVOID THAT  
FRUSTRATION  
BY NOTING THE  
FOLLOWING  
CHANGES TO  
TM 9-2320-  
307-24P (AUG  
05), UNTIL IT'S  
UPDATED...



- The ASV power pack assembly listed as Item 1 in Fig 1-1 can't be ordered now, even though an NSN is listed. Mark out the NSN and order the engine and transmission separately.
- For the diesel engine in Fig 1-1, change the part number to 136849, the NSN to 2815-01-533-1155, and the SMR code to PAOHD.
- Change the NSN for the filter separator element listed as Item 5 in Fig 3-10 to 2910-01-192-4622.
- Use NSN 6110-01-534-8626 to get the hull power distribution unit in Fig 6-9. The TM doesn't give an NSN.

# TM Changes to Tachometer and Voltmeter Readings

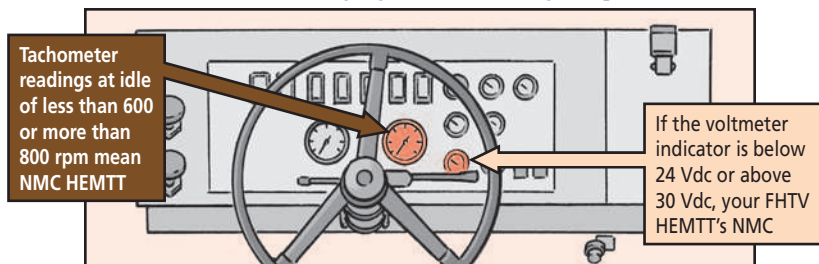


DRIVERS, THE TRUCK ENGINEERS HAVE RE-THOUGHT THE ACCEPTABLE ENGINE RPM AND VOLTAGE READINGS IN THE PMCS TABLE IN YOUR HEMTT'S -10 MANUALS.

BUT THE INFORMATION ISN'T IN THE TMS YET, SO GET OUT YOUR STUBBY PENCIL SO YOU CAN MAKE THE FOLLOWING CHANGES.

Go to **Item 13b.** on **Page 2-41** of **TM 9-2320-279-10-1**. The acceptable idle speed for FHTV\* models has been expanded. Change the Not Fully Mission Capable If column to say: "Tachometer indicates less than 600 rpm or more than 800 rpm when engine is hot."

Then go to **Item 13g.** on **Page 2-44.1** of **TM 9-2320-279-10-1**. Change the outdated voltage output information in the Crewmember Procedure column so that it says: "Non-FHTV or FHTV BATTERY gauge indicates voltage output (24 to 30 Vdc)."



And the Not Fully Mission Capable column should be changed to say: "Non-FHTV BATTERY Gauge indication is below 24 or above 28 Vdc, or FHTV Battery gauge indication is below 24 or above 30 Vdc."

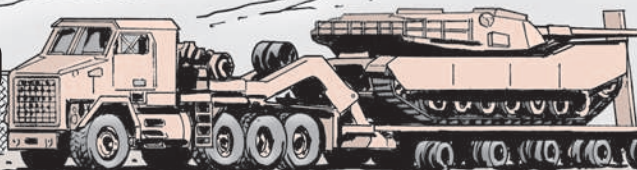
\*Note that FHTV stands for the family of heavy tactical vehicles. That includes -A2 and -A2R1 HEMTTs.



# NEW VENT KEEPS YOU COOL

LOOKS LIKE  
ANOTHER  
HOT DAY IN  
OUR TRUCK!

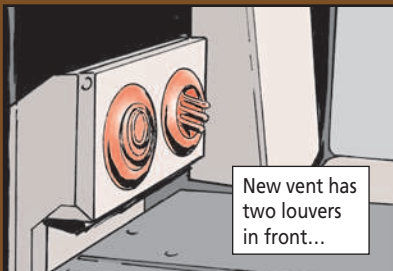
NOT  
TODAY!



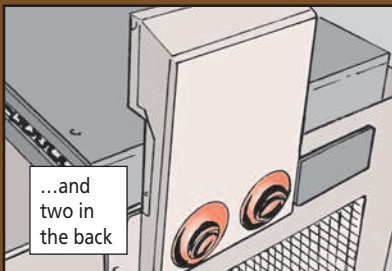
THEY INSTALLED A NEW  
AIR CONDITIONING VENT  
IN OUR HET YESTERDAY!



**D**rivers, a new air conditioning vent is now available for your M1070P1 HET. With two round, directional louvers on the front and two on the back, the new vent makes it easier to provide cool air where **you** want it to go.



New vent has  
two louvers  
in front...



...and  
two in  
the back

The vent comes with NSN 2540-01-538-4848 and is being added to the HET's additional authorized list. You can mount one on each side—or on either side of the rear—of the dog house. Just use the existing bolts. Installation instructions come with the vent.

Questions? Contact the TACOM HET team, DSN 786-8920 or (586) 574-8920. Or send an email: [het@tacom.army.mil](mailto:het@tacom.army.mil)

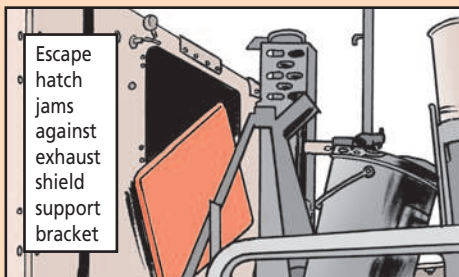
M1070P1 HET Tractor...

WAIT! WE'VE GOTTA  
MODIFY THE ESCAPE  
HATCH FIRST!



**A**n escape hatch that you can't escape through is a real problem, operators. But if you've got an M1070P1 armored HET, that's exactly what you have.

The rear escape hatch can wedge against the exhaust shield support bracket when you try to open the hatch. That leaves only a partial opening that's not large enough for you to escape through. That means if you're involved in an accident or incident and the escape hatch is the only way out, you could be trapped.



To eliminate the interference with the escape hatch, remove the exhaust shield support and antenna, modify the support and reinstall it to the top of the stowage box. Modification requires cutting the existing support, welding a new mounting plate to the cut end and then spot painting the plate.

You'll find complete instructions on how to modify and move the mount at the AEPS website:

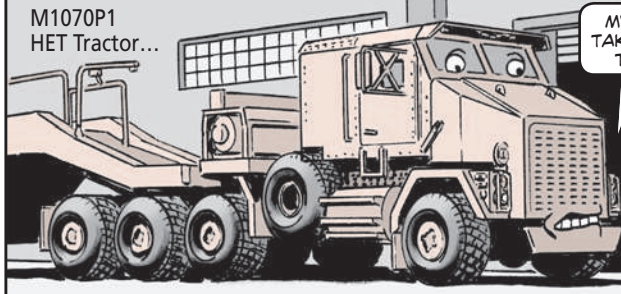
[https://aeps2.ria.army.mil/commodity/soum/tacom\\_wn/06/M1070P1-exhaust-spt-mod.pdf](https://aeps2.ria.army.mil/commodity/soum/tacom_wn/06/M1070P1-exhaust-spt-mod.pdf)

You'll need your AKO login and password to access the site.

You can also get a copy of the plans by writing to Half-Mast:

[logsa.psmag@conus.army.mil](mailto:logsa.psmag@conus.army.mil)

M1070P1  
HET Tractor...



MY CTIS MANIFOLD IS  
TAKING A BEATING FROM  
THIS ARMOR PLATE!

I'VE GOT  
A HANDFUL  
OF FLAT  
WASHERS  
THAT'LL  
STOP THAT!

## Remove the Rub

**M**echanics, you need to do a little modification to the armor kit installed on M1070P1 HETs to prevent damage to the CTIS manifold under the driver's seat.

There's not enough clearance between the manifold and the armor plate. The two vibrate and rub against each other until the manifold finally fails.



1. Remove the driver's seat following the instructions starting on Page 16-54 of TM 9-2320-360-20-2.

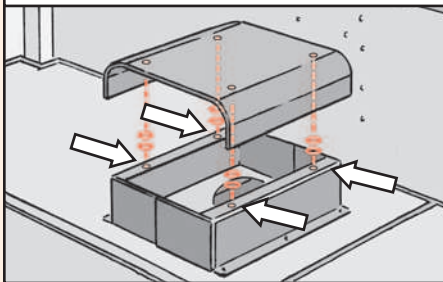
2. Remove the armor panel. See Fig 3-88 in TB 9-2320-360-13&P-2 for help.

3. Install two flat washers, NSN 5310-00-081-4219, on top of each of the seat support's four mounting holes.

4. Reinstall the armor plate using new locking nuts, NSN 5310-00-814-0673.

5. Reinstall the driver's seat.

Put two flat washers on each mounting hole  
between armor plate and seat support



The washers provide enough clearance between the armor plate and the CTIS manifold to prevent the rubbing problem.

The complete scoop's in TACOM maintenance advisory message #07-001. Get a copy at the AEPS website:

[https://aeps2.ria.army.mil/commodity/mam/tacom\\_wn/07/mam07-001.html](https://aeps2.ria.army.mil/commodity/mam/tacom_wn/07/mam07-001.html)

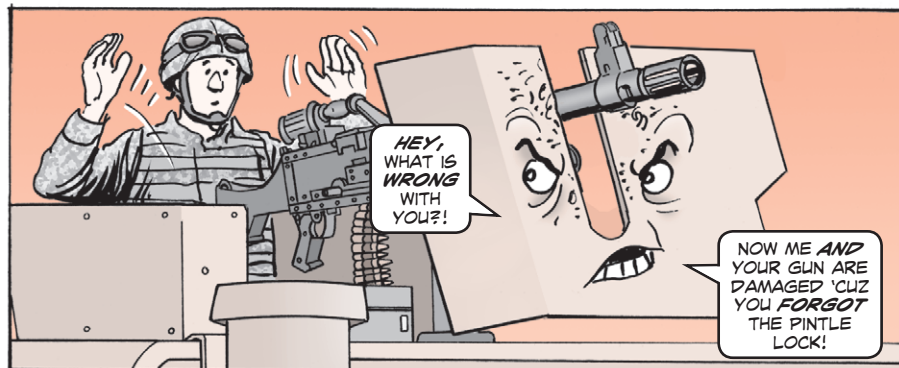
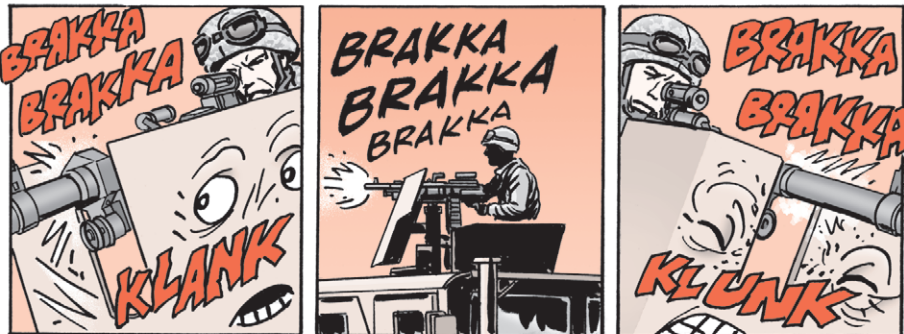




# Weapon Shield

## *Dangerous*

# Without Lock



If you fire your M240B or M249 machine gun on the M197 mount with the weapon shield without the pintle lock, you risk harming yourself and your weapon.

Without the pintle lock, the mount is not synchronized with the shield. When you swing the machine gun, the barrel bangs against the shield, damaging the barrel and the shield. If the weapon is rotated and brought to the full down position, the muzzle will be behind the shield, which could result in a ricochet. **Very dangerous stuff!**

Right now, check all your M197 mounts that have the weapon shield for the pintle lock. If any mount doesn't have the lock, don't use it until you install a pintle lock, NSN 5340-01-500-5572. You will also need two hexagon head screws, NSN 5305-00-685-3511, and two lock washers, NSN 5310-01-433-0941.

Install it like so: With the pintle mounted and facing forward, remove the screw and lanyard from the right side.

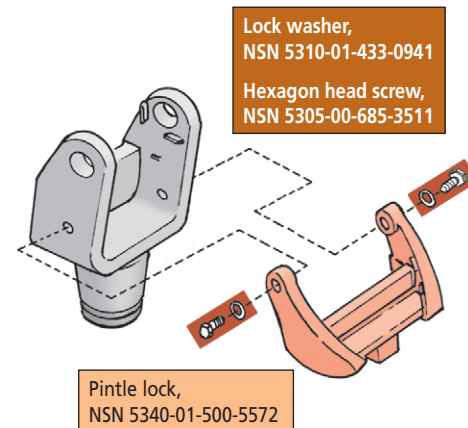
Slide the pintle lock over the outside of the pintle, aligning the two tapped holes on the sides with the holes in the lever. On the right side, insert the hexagon head screw with the lock washer through the lanyard tab and pintle lock and into the pintle.

Tighten the screw to 10 lb-ft. Insert the other hexagon head screw with lock washer through the pintle lock and into the pintle on the left side. Tighten it to 10 lb-ft.

Do a function test to make sure the square protrusion on the bottom of the pintle lock seats snugly into the groove of the M197 pintle adapter.

For more info, see TACOM ground precautionary message 06-017:

[https://aeps2.ria.army.mil/commodity/gpm/tacom\\_wn/06/gpm06-017.html](https://aeps2.ria.army.mil/commodity/gpm/tacom_wn/06/gpm06-017.html)



## Small Arms...

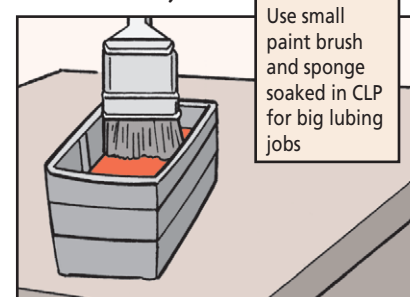
# BRUSH UP ON LUBING

Dear Editor,

When armorers have to lube several weapons in the arms room, they usually squirt CLP or one of the other approved lubes on the weapon and then spread the lube with a rag. That's not very effective at catching all spots on the weapon and it wastes CLP and is messy.

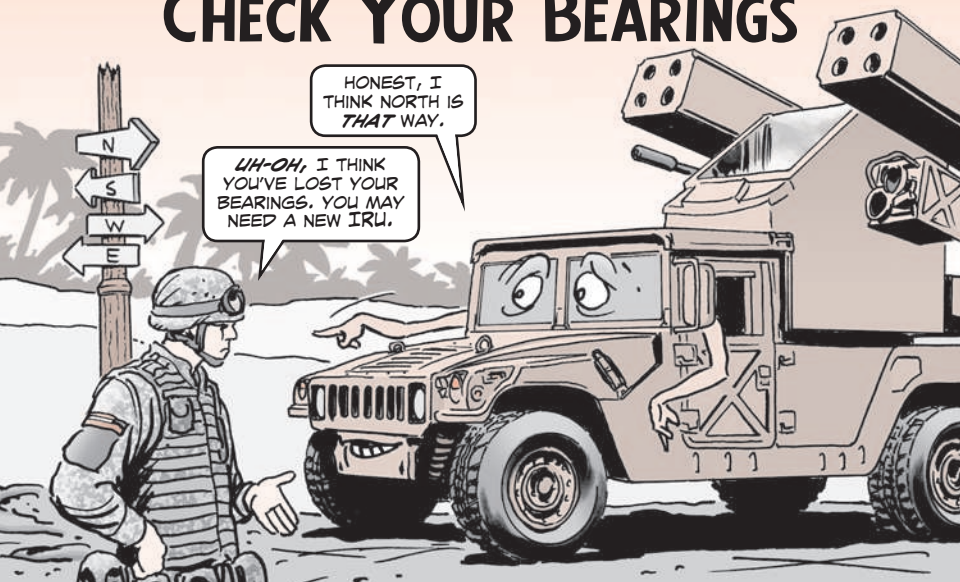
We've discovered it's more efficient to put a sponge in a dish and soak the sponge with CLP. Then use a small painter's brush to apply the CLP to the weapon, wetting the brush from the sponge after every few strokes. The brush spreads the CLP evenly and lets you get onto and into all areas on the weapon. And there's little mess.

Chuck Dutton  
Directorate of Logistics  
Ft Leonard Wood, MO



**Editor's note:** Anything that makes the armorer's job easier is great. Thanks, Chuck.

# CHECK YOUR BEARINGS



The newer slew-to-cue Avengers can lose their bearings when they operate for long periods in one spot, which they often are required to do nowadays.

The Avenger's north reference drifts sometimes. As a result, what the system thinks is north isn't. That could spell trouble when the Avenger is trying to knock down enemy aircraft.

TO HELP THE SYSTEM  
KEEP ITS BEARINGS,  
THE FOLLOWING CHECK  
IS BEING ADDED AS  
STEPS 9-12 IN STEP B  
IN PARA 2-37 IN  
TM 9-1425-1433-10...

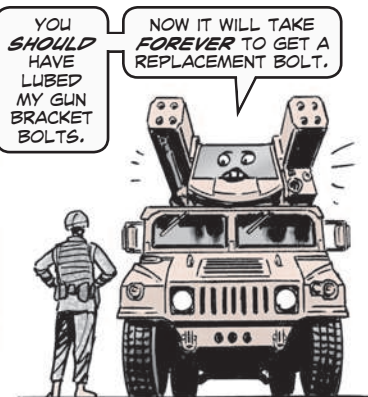
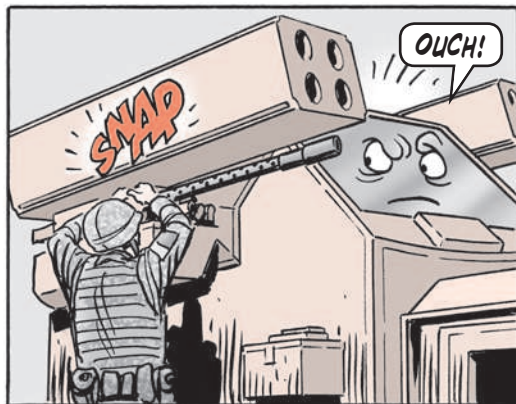


WHEN YOUR AVENGER  
STAYS IN ONE SPOT, DO  
THIS CHECK AT LEAST  
EVERY 12 HOURS TO  
MAKE SURE IT'S NOT  
LOSING ITS BEARINGS.



- With the fire unit stationary, run the North Reference Alignment. Record the heading as \_ \_ \_ 001. (Put the actual heading in the blank—062 for example.)
- Wait two hours.
- Run North Reference Alignment again. Record the heading as \_ \_ \_ 002.
- If there is a difference of more than one degree between headings 1 and 2, tell your repairman. The inertial reference unit probably needs to be replaced.

# Smoothing M3P Gun Adjustment

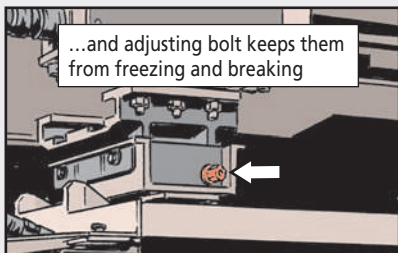
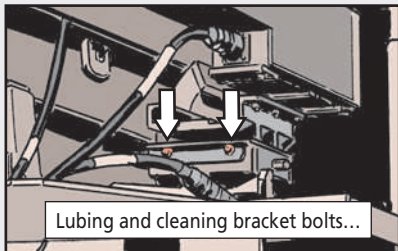


Dear Editor,

The bolts that hold the Avenger's M3P machine gun mounting bracket in place and the adjusting bolt for the bracket tend to freeze from corrosion. Then when you try to loosen the bolts, they snap. Unfortunately, it's very difficult to get replacements and it's difficult to drill out broken bolts.

You can avoid broken bolts by applying a light coat of oil to the bolts a few minutes before trying to turn them. The oil helps them turn. And you can make sure they don't freeze by removing the bolts during semiannual maintenance and cleaning them with carbon cleaner or dry cleaning solvent.

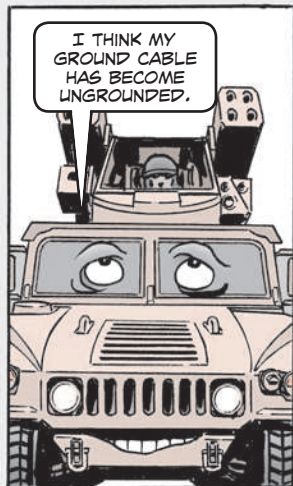
SGT Morgan Kinney  
SPC Michael Stetz  
F Co, 1/44 AMD  
Phillip Tausch  
Logistics Assistance Office  
Ft Bliss, TX



**Editor's note:** You've melted the frozen bolt problem. Thanks for the tip.



# Keep ECU/PPU on Solid Ground



Dear Editor,

We had trouble with the ground cable connecting the environmental control unit (ECU) and primary power unit (PPU) not making good contact. Corrosion around the connector was the main problem, but there was also arcing at the connection, due to poor contact.

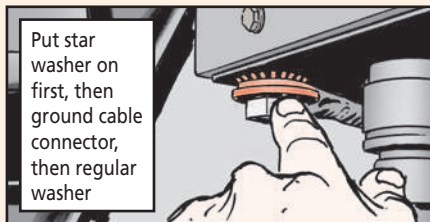
Without a good ground, the ECU/PPU wouldn't start.

We solved the problem with a star washer like the one used with the Avenger antenna. Your commo shop should have plenty of them since they're a common item.

Start by cleaning the stud and ground cable with a wire brush. Put the star washer on the stud first, followed by the ground cable. Then add the normal washer and tighten them together. The star washer helps the ground cable keep a good connection. Of course, it's a good idea to clean off any corrosion monthly.

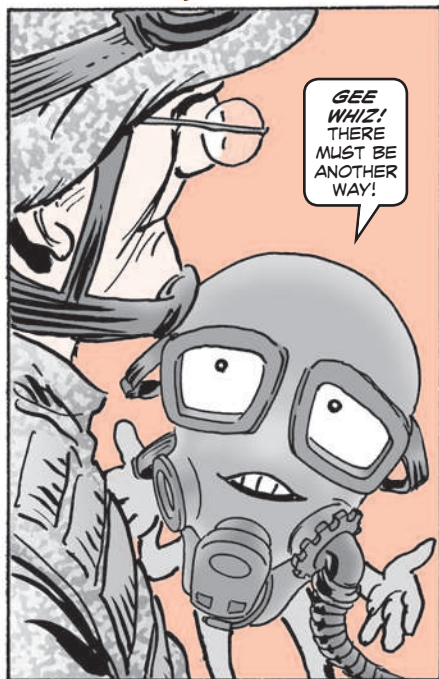
WO1 Anthony Harding  
3-4 ADA  
Ft Bragg, NC

**Editor's note:** Your suggestion rates you a gold star. Thanks for helping other Avenger units with grounding problems.





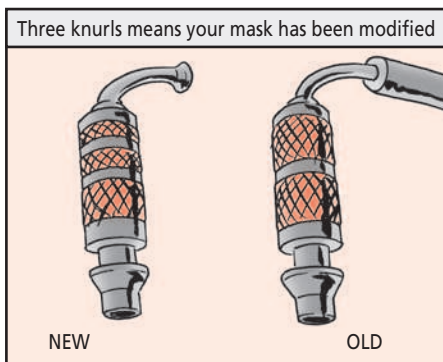
# Choices for the CHQD MWO



**MWO** 3-4240-346-20-3 replaces all the old CHQDs (coupling half, quick disconnect) on M40/M42-series masks because some of the CHQDs may leak. Leaks let chemical agent in the mask.

To see if your masks have had the MWO applied, check for knurling stripes (or raised ridges) on the coupling. If there are three stripes, your mask is good to go. Two stripes mean you need to get a new CHQD immediately.

Your local MWO officer can help CBRN specialists get the MWO kit. The CBRN specialist can replace the CHQD if it's not glued to the external drink tube.



To replace the CHQD, grasp the external drinking tube where it joins the CHQD with one hand and with the other grasp the CHQD. Pull the CHQD off with a twisting motion. Insert the new CHQD into the external drinking tube and with a twisting motion press the drinking tube in place. Make sure the tube extends over the nipple end of the quick disconnect by  $\frac{5}{8}$  to  $\frac{3}{4}$  inch. Water can be used as an aid in inserting the CHQD into the external drinking tube.



**Replace the whole facepiece.** New facepieces have the new CHQD already installed. Order a small with NSN 4240-01-415-4517, medium with NSN 4240-01-415-4518, and large with NSN 4240-01-416-0430.

If your mask has a glued-on CHQD, you must either get a new facepiece or ask for a JEAP visit



BUT IF YOU HAVE SEVERAL MASKS WITH GLUED-ON CHQDS, YOU MAY WANT TO CONSIDER OPTION TWO, SINCE THE FACEPIECES COST ABOUT \$125...



**Schedule a visit with Joint CBRN Equipment Assessment Program (JEAP) representatives.** They will teach CBRN specialists how to replace the glued-on CHQD without damaging the facepiece, plus check your unit's masks for problems.

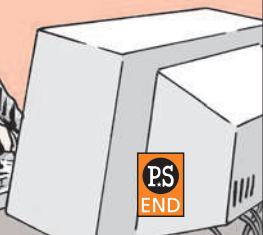


TO SCHEDULE A JEAP VISIT, CONTACT MANDI YOCUM AT DSN 584-5406, (410) 436-5406, OR EMAIL: [amanda.lyocum@us.army.mil](mailto:amanda.lyocum@us.army.mil)

While you wait for the MWO to be done or for a new facepiece to arrive, it's OK to continue to use a mask with the old CHQD as long as it passes the drinking system function test in Para 2-9 in TM 3-4240-346-20&P.

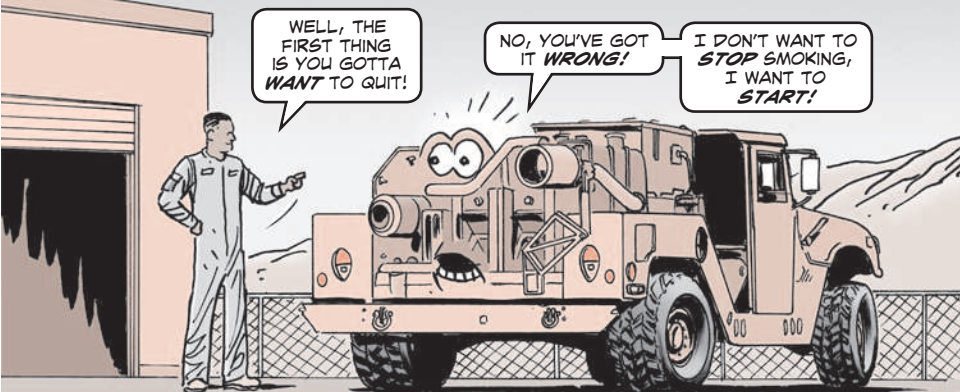
FOR MORE INFO, SEE TACOM MAINTENANCE ADVISORY MESSAGE 06-047, AS WELL AS MWO 3-4240-346-20-3.

YOU CAN FIND THE MAINTENANCE ADVISORY MESSAGE ON AEPS: [https://aeps2.rja.army.mil/commodity/mam/tacom\\_wvn/06/mam06-047.html](https://aeps2.rja.army.mil/commodity/mam/tacom_wvn/06/mam06-047.html)



PS  
END

# WAYS TO START SMOKING



Dear Editor,

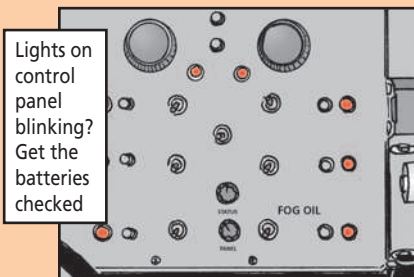
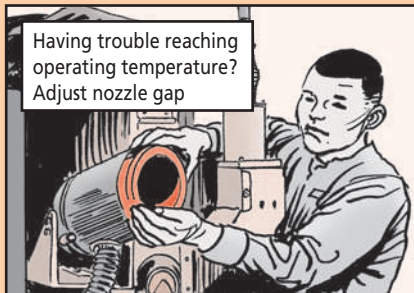
We think these tips will help M56 smoke generators not quit smoking:

- Some M56 operators aren't aware that you can adjust the ejector nozzle gap to make starting easier. Any time you have trouble getting the **ENGINE TEMP** light to come on within five minutes, try adjusting the gap slightly up or down until the light comes on. You may have to increase or decrease the gap according to the outside temperature. There's a chart on Page 2-44 in TM 3-1040-282-10 that will help.

Be sure to shut down the engine before doing this. Otherwise, you could be toasted by backfire.

- If you notice the lights on the control panel are blinking when they should be burning steadily, you may have a battery problem. Ask your mechanic to test the batteries ASAP to avoid an M56 that stops running.

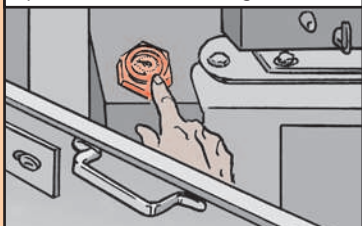
It helps during start up of your M56 to rev the truck engine a bit. That gives more voltage to the M56's turbine.



• Remember the M56 now has a fuel gauge and you need to pay attention to it. Keep your eye on the control panel's turbine fuel alarm, too. If you let the smoke generator run out of fuel, you have to purge the whole system to get the air out. That can take 20 minutes. When the M56 is blowing smoke, it can run through a tank of fuel in 60 to 90 minutes. So even if the tank is full at the beginning of a smoke operation, you may need to re-fuel during the mission, which is much easier than purging.

Bobby Miller  
Leon Offutt  
Directorate of Logistics  
Ft Leonard Wood, MO

Check fuel gauge before and during operations to avoid running out of fuel



*Editor's note: Thanks guys. This is good advice for smokers.*



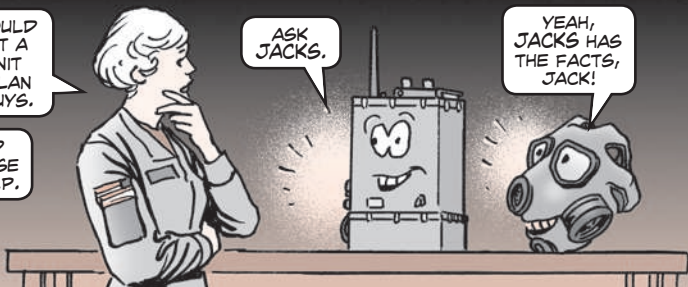
## See JACKS for CBRN Info

I WISH I COULD FIGURE OUT A BETTER UNIT TRAINING PLAN FOR YOU GUYS.

I COULD REALLY USE SOME HELP.

ASK JACKS.

YEAH, JACKS HAS THE FACTS, JACK!



Dear Editor,

Thanks for the info in PS 636 (Nov 05) on where to go on the Internet to check the shelf life for chemical/biological/ radiological/nuclear (CBRN) items.

Another good source for CBRN info is JACKS—Joint Acquisition Chemical Biological Radiological Nuclear Knowledge System. This Internet site has a wealth of information on all areas of CBRN that will help CBRN specialists and company commanders.

Access JACKS at

<https://jacks.jpeocbd.osd.mil>

You will need a DoD PKI Client Certificate or CAC (common access card) to use the site. You can also use your AKO login.

William Whipple  
HQ, 21st TSC  
Panzer Kaserne, Germany

*Editor's note: Thanks for giving us another excellent source for CBRN help. If you need to see the the PS 636 article, you can access it:*

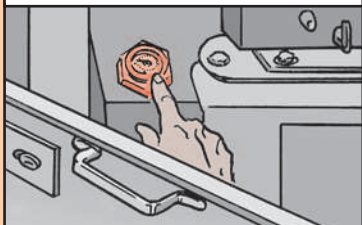
<https://www.logsa.army.mil/pub/psissues/636/636-24.pdf>



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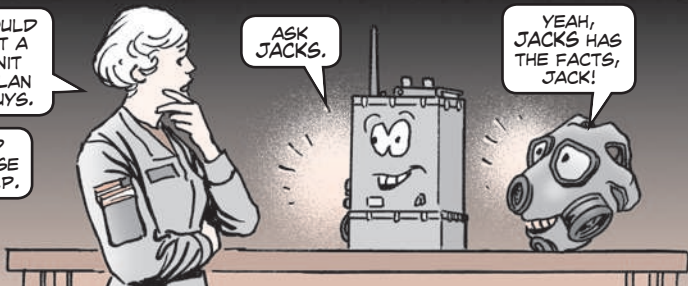
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<https://www.logsa.army.mil/pub/psissues/636/636-24.pdf>

# THE SHOEMAKER AND THE ELVES OF PM

IT WAS A PERFECT SPRING DAY IN THE SMALL TOWN OF HEELSBORO. BUSINESS WAS BOOMING FOR ALL THE SHOPKEEPERS IN TOWN...  
SAVE ONE.



SAM'S HAND-MADE SHOES  
HADN'T SEEN A CUSTOMER IN A DOG'S AGE.

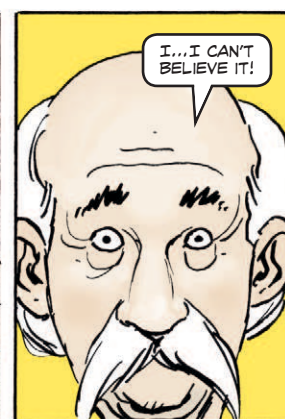
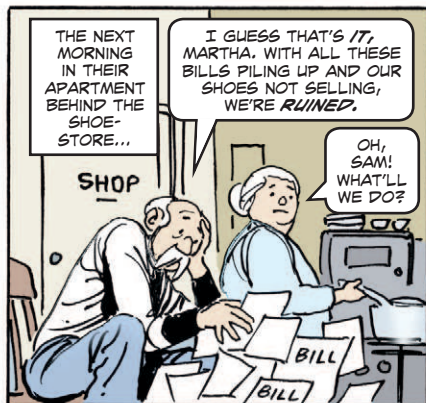
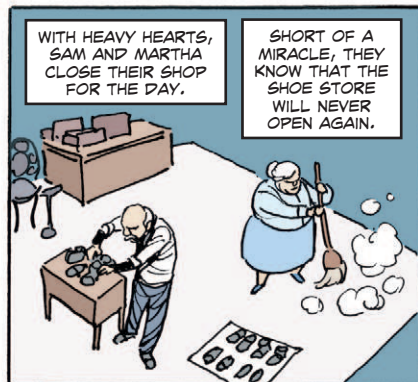
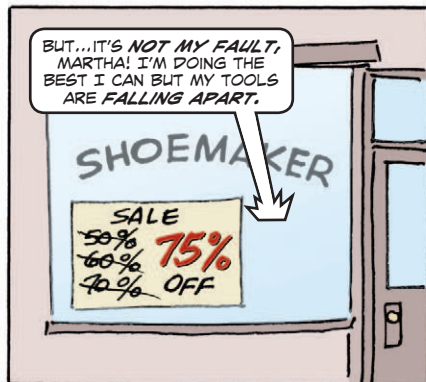
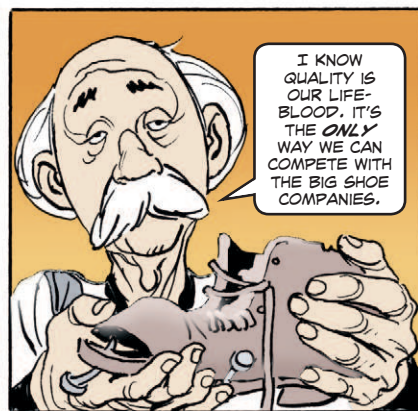
SHOEMAKER  
SALE  
~~50%~~  
~~60%~~  
~~70%~~  
**75%**  
OFF

THAT'S IT, MARTHA!

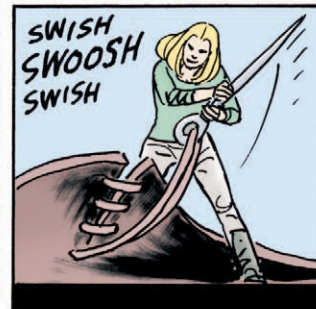
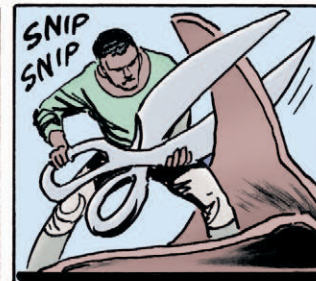
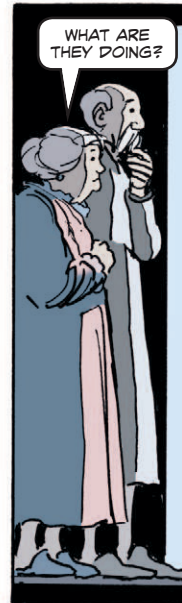
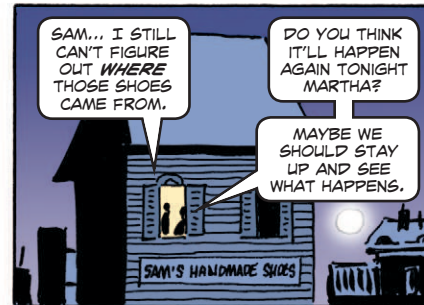
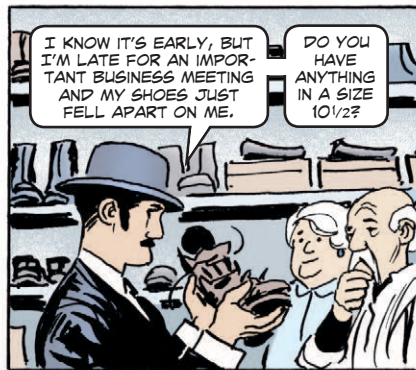
IF WE DON'T SELL SOME SHOES SOON... WE'LL BE OUT OF BUSINESS!



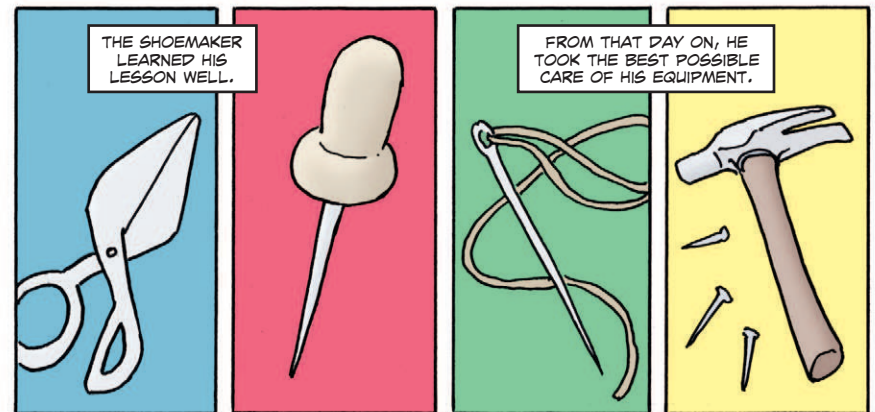
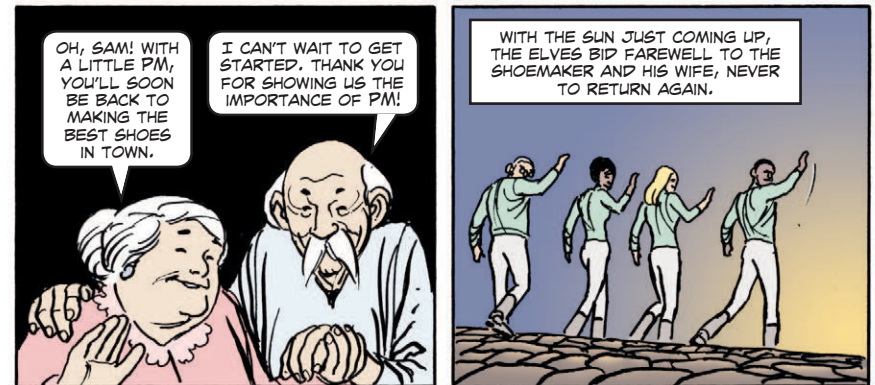
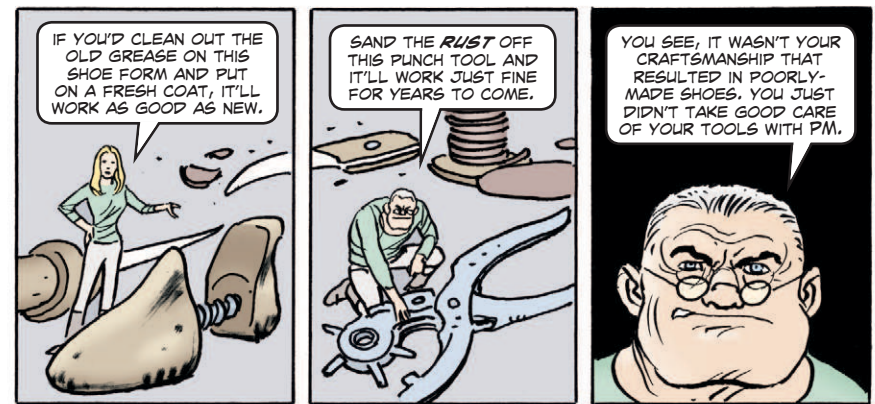
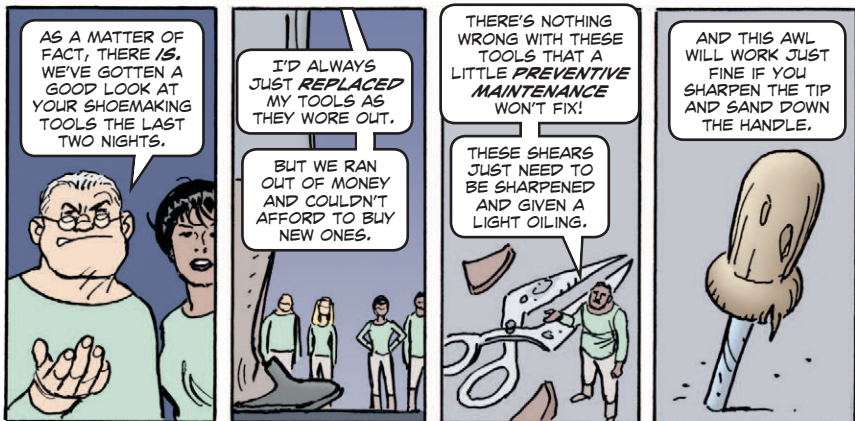
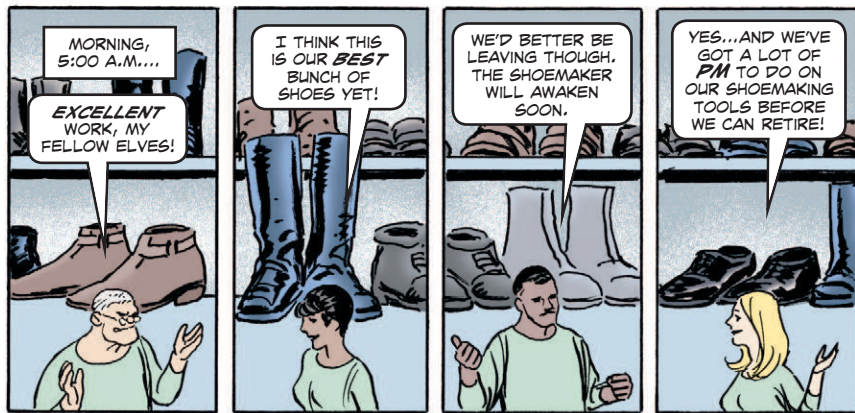


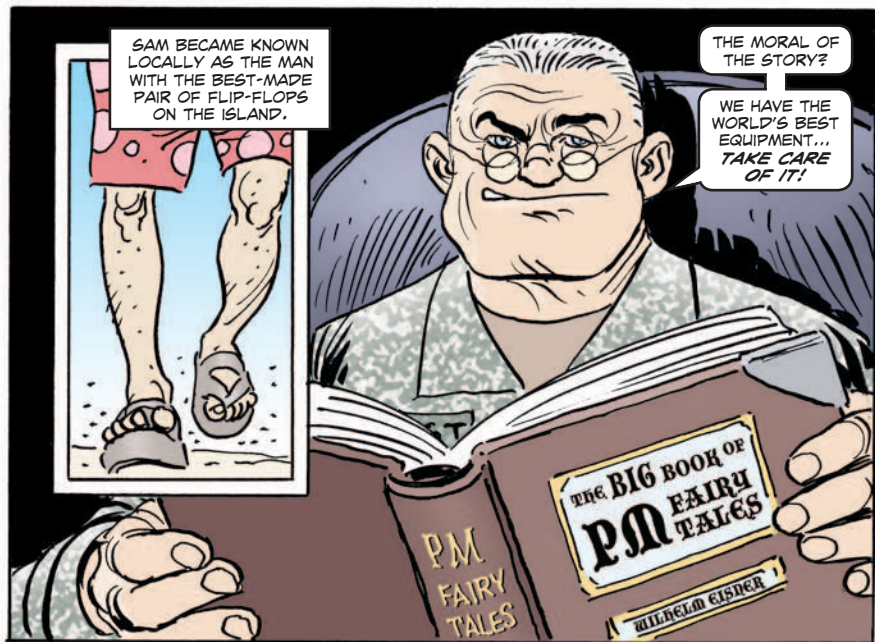










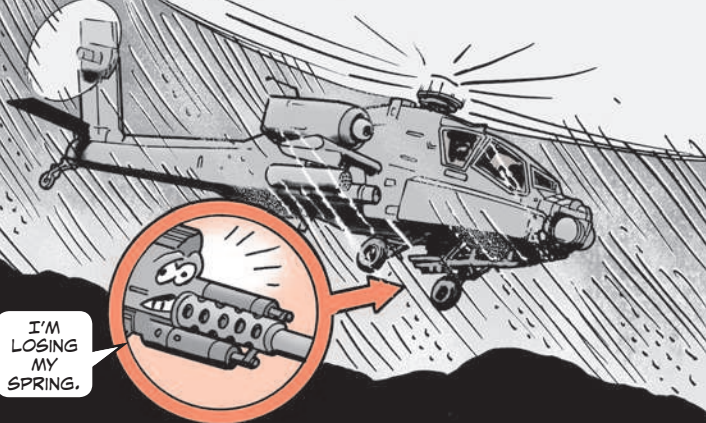




AH-64A/D  
Aircraft...

**SURPRISE**  
THIS WET  
WEATHER IS  
GIVING ME  
REAL MOISTURE  
PROBLEMS IN  
MY RECOIL.

I'M  
LOSING  
MY  
SPRING.



## Keeping the M230 Recoiling

**W**ater is shortening the life of M230 machine gun recoil mechanisms. Water gets in the recoil after the AH-64A/D is flown in wet weather and causes serious corrosion. But a bit of PM can dry up moisture problems for the recoil.

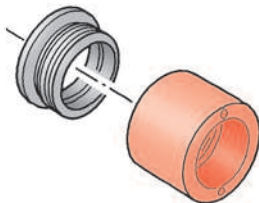
After flying through the rain, check inside the spring retaining cap for standing water. If you find any, mop it up with a clean cloth and then blow dry inside the cap with an air hose set to 30 psi. This will keep water from seeping inside the piston rod housing.

When AVIM does the annual maintenance on the M230, they should replace all the O-rings and wiper rings. Over time both rings become brittle or cracked and let water leak inside the recoil.

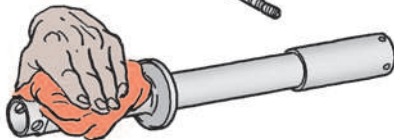
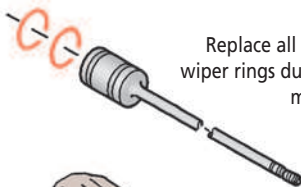
Before reassembling the recoil, they should lightly coat the recoil spring, piston rod, sleeve spacer, spring washers, the interior of the spring retaining cap, and the interior of the piston rod housing with corrosion preventive compound, NSN 8030-00-938-1947.

This will keep the recoil in the recoil assembly.

Wipe out  
spring  
retaining  
cap with  
dry, clean  
cloth



Replace all O-rings  
and wiper rings during annual  
maintenance



Lightly coat all recoil parts with  
corrosion preventive compound

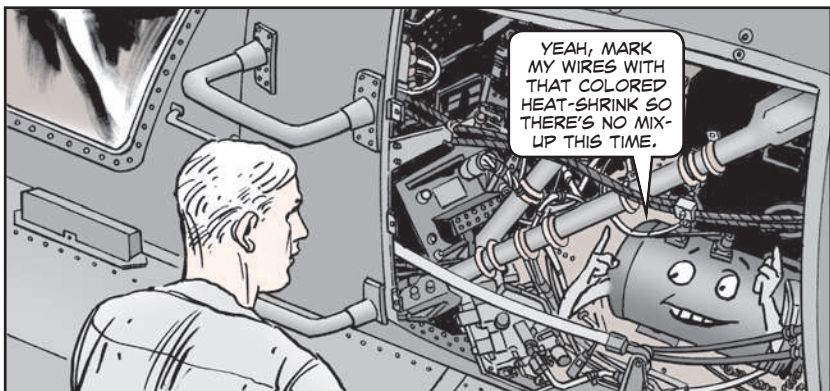


# No *Fried* Generators

IT'S TIME TO  
CHECK THE  
GENERATOR,  
TOO.



YEAH, MARK  
MY WIRES WITH  
THAT COLORED  
HEAT-SHRINK SO  
THERE'S NO MIX-  
UP THIS TIME.



**E**verybody loves fried chicken. But nobody loves fried generators on an AH-64D helicopter. And that's what happens when the wires are put on backwards.

You need to be sure the No. 1 and No. 2 generator wire leads are marked so that they can be easily reinstalled correctly after maintenance.

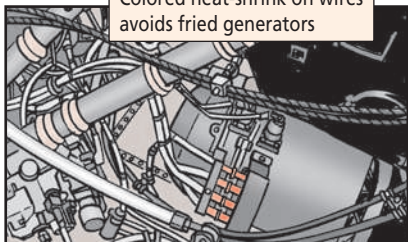
The procedure in TM 1-1520-238-23-5 says to identify wires as they are removed.

But grease pencils don't work because oil smudges the markings and they rub off. If tape is used, heat will cause it to fall off.

The best way to mark the generator wires during maintenance and ensure they go back on the generator correctly is to use heat-shrink bands.

Order an assortment of different colored heat-shrink bands with NSN 9390-01-494-3834. The kit has stamped stud numbers around the wire leads to avoid the wrong hookup.

Colored heat-shrink on wires  
avoids fried generators



UH-60  
Series...

SORRY ABOUT THAT  
LOSS OF ENGINE  
POWER... I BIT  
OFF MORE THAN I  
COULD CHEW...

THAT'S WHAT  
HAPPENS WHEN YOU  
DO IT *YOUR* WAY.

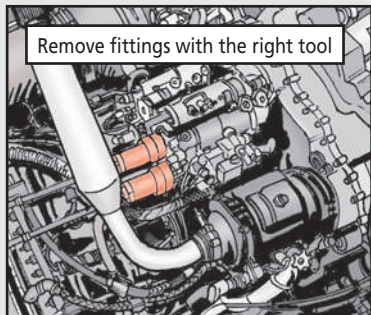
NOW YOU  
KNOW...

...THE *RIGHT* WAY  
IS THE *ONLY* WAY!

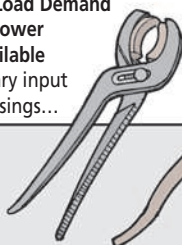
Mechanics, ingenuity in performing Black Hawk maintenance is normally a good thing. But not in all cases.

If you're removing or installing the load-demand and the power-available rotary input housing, use the required cannon plug pliers—not channel locks or vise grips. That's because all you'll get from using the wrong tool is an unserviceable housing and no engine power.

Remove fittings with the right tool



Use cannon plug pliers  
on Load Demand  
or Power  
Available  
rotary input  
housings...



...NOT channel locks

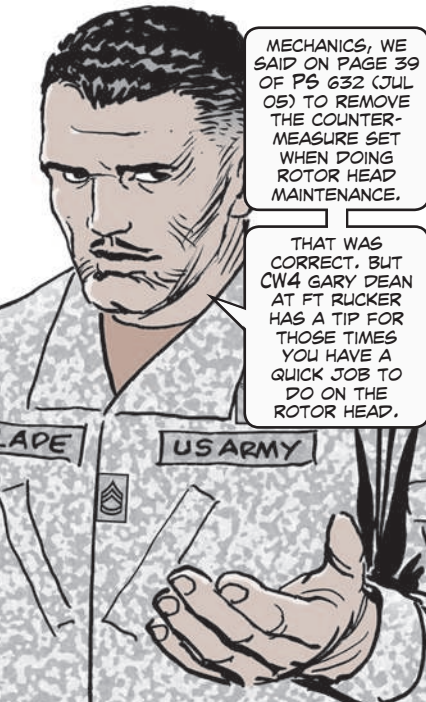
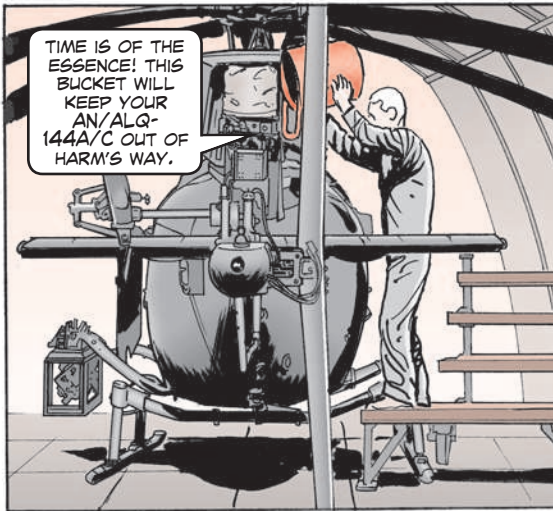
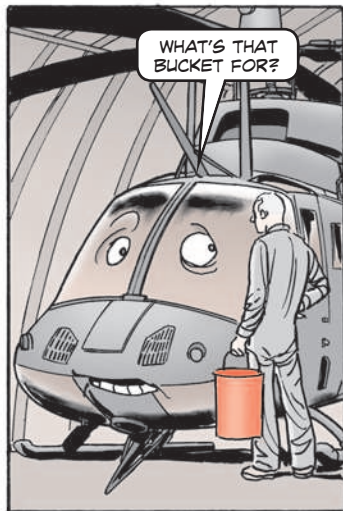
REMOVING THE  
FITTINGS REQUIRES A  
**TORQUE WRENCH** AS  
LISTED IN THE INITIAL  
SETUP IN WP 0498  
AND WP 0499 OF  
TM 1-1520-237-23-3.

IF NO PLUG  
PLIERS ARE  
AVAILABLE,  
TRY USING  
A STRAP  
WRENCH.

BUT WHATEVER YOU  
DO, PERFORM MAINTENANCE BY THE BOOK  
**NOT** FROM THE HIP.



# COUNTERMEASURE SET PROTECTION



He suggests placing a standard 5-gal plastic bucket, NSN 7240-01-094-4305, over the set instead of removing it. Make sure the set cover, NSN 5865-01-109-1800, is on, then turn the bucket upside down and put it over the transmitter. Or you can local purchase a bucket from any hardware store.

Add a REMOVE BEFORE FLIGHT streamer.

With the bucket in place, an accidentally dropped tool means the countermeasure set will be protected.

Using a bucket means it's not necessary to remove the set from the aircraft. And maintenance operational checks (MOCs) for reinstallation of the countermeasure set will not be needed.

So when you're top-side on a bird and about to go the work on the rotor head, grab a bucket to cover the set.



# Tie It Down and Moor-It!



**M**ake sure your birds are properly secured to the ground so they won't fly away on their own when high winds kick up.

First, check out your -23 TMs for typical blade tie-down instructions and aircraft mooring procedures.

Second, check out TM 1-1500-250-23, *Aviation Unit and Aviation Intermediate Maintenance for General Tie-Down and Mooring On All Aviation Army models AH-64, UH-60, UH-1, AH-1, AND OH-58 Helicopters*. It gives procedures and hardware to keep birds anchored in heavy winds.

If there are any conflicts between the TM and the tie-down manual, the TM takes precedence.

# TRAIN TO MAINTAIN



Dear Editor,

Force XXI Battle Command Brigade and Below (FBCB2) is a command and control tool to help maintain situational awareness. But I've noticed that much of the FBCB2 equipment is not being maintained like it should be.

Preventive maintenance is not being done and I think part of the problem is a lack of trained soldiers. A solution is to send more soldiers, not just 25Us, to the unit level maintenance (ULM) course.

The POC for ULM FBCB2 training is the Battle Command Systems Directorate at Ft Gordon. They can be reached by calling DSN 780-0871/6856 or (706) 791-0871/6856. Training can also be set up through Battle Command Training Centers online at:

<https://BCTC.army.mil/>

Your CAC is required for access.

The program manager website can be found at

<https://fbc2.army.mil>

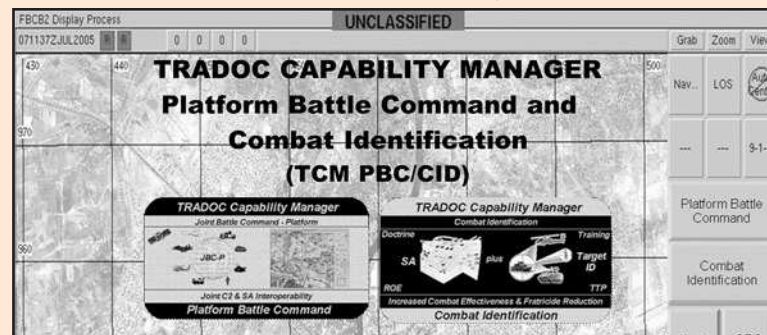
The website contains the following:

- the latest computer-based training
- programs of instruction
- tactics, techniques and procedures handbooks
- installation kit technical bulletins
- software user manuals

Contact Dan Quinn,  
DSN 987-2045, (732)  
427-2045, email  
[daniel.j.quinn@us.army.mil](mailto:daniel.j.quinn@us.army.mil)  
if you have problems  
accessing this site or  
need additional training  
or technical information.

You can also get an illustrated handbook, *Tactics, Techniques and Procedures*, by contacting the TRADOC capability manager for FBCB2. Call him at DSN 464-4009 or (502) 624-4009. Or email:

[TCMPBCCID@knox.army.mil](mailto:TCMPBCCID@knox.army.mil)



Also, you can get access to the most current FBCB2 parts list—EPLRS and BFT—on the TRADOC Capabilities Manager website:

<http://www.knox.army.mil/center/tcmpbccid/index.htm>

Go to the website and click on **Platform Battle Command**, then click on the link toward the bottom of the page. It takes you to our AKO knowledge center. (You'll have to use your AKO login.) From there you can select the folder with the parts list.

SFC Christopher Whitaker  
Ft Knox, KY

*Editor's note: Thank you, Sergeant Whitaker, for being concerned about maintenance on the FBCB2 and for putting this information together. Unit commanders and NCOs, it's now up to you to get your soldiers trained.*

Tactical Command System...

## Warranty Covers Repairs

The joint tactical terminal (JTT), AN/USC-62(V)1-14, which is integrated into several host weapons systems platforms such as the Patriot, is under warranty until 2010. All repair work is done by the manufacturer.

So, if you have an unserviceable JTT, submit it for repair or replacement under the manufacturer's warranty.

This advice is different than that given in the Army Master Data File (AMDF) which gives an invalid automatic return item (ARI) code of "E" which instructs you to return it to depot.

Warranty information is outlined in the TM or you can call Raytheon, 1-800-313-1828. In OCONUS and SWA, Army spares are available with the regional support center.

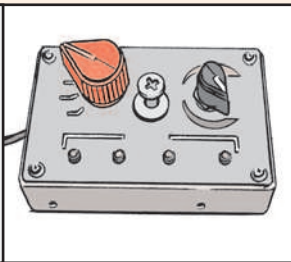
18,000 BTU  
Horizontal  
MPI ECU...

**HEY, MISTER!  
NEED A  
THERMISTOR?**



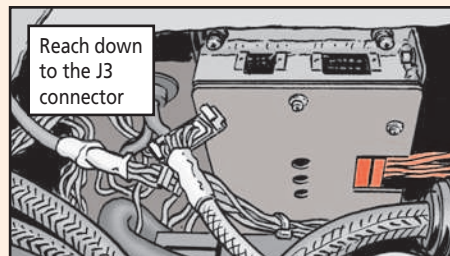
**I**n need of a thermistor, NSN 5905-01-399-4390,  
for your 18K environmental control unit (ECU)?  
Not sure?

Can you  
control the  
heating and  
cooling by  
using the  
temperature  
select switch  
on the control  
box?



If you answered, "not really," grab a multimeter,  
set it to measure ohms, and make this check:

Put one multimeter lead on pin 1 and the other  
on pin 2 of the J3 connector on the logic box.



Reach down  
to the J3  
connector

If you get a reading of about 8K-  
to 10K-ohms, verify the thermistor  
is functional by placing your fingers  
gently on the bulb. It's located in the  
return air duct adjacent to the fan  
shrouds for the vent motor.

The reading should change be-  
cause your skin temperature differs  
from the outside temperature. As  
you move your fingers off the bulb,  
the reading should return to the  
original setting. In SWA, you may  
need to cool your fingers with some  
ice before making this test.

**REMEMBER,  
THE THERMIS-  
TOR RESISTANCE  
IS *INVERSELY*  
PROPORTIONAL  
TO THE OUTSIDE  
AMBIENT AIR  
TEMPERATURE.**

**IF YOU GET  
EITHER A  
READING OF  
ZERO OHMS  
OR INFINITY,  
REPLACE THE  
THERMISTOR.**

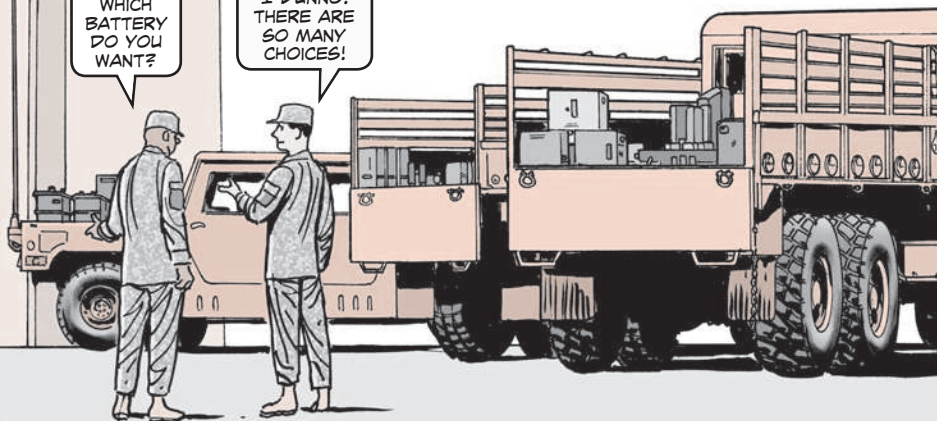




# THERE ARE CHOICES TO MAKE

OK...  
WHICH  
BATTERY  
DO YOU  
WANT?

I DUNNO!  
THERE ARE  
SO MANY  
CHOICES!



THERE ARE **TRUCK-LOADS** OF EQUIPMENT IN THE ARMY INVENTORY POWERED BY ONE OF THESE LITHIUM BATTERIES...



Battery	NSN
BA-5390/U	6135-01-501-0833
BA-5390A/U	6135-01-517-6060
BA-5590A/U	6135-01-523-3037
BA-5590B/U	6135-01-438-9450
BB-2590/U	6140-01-490-4316

## Characteristics Data

Lithium Sulfur Dioxide;  
15/30 Volts; 185 Watt-hours;  
Weight: 2.33 lbs;  
Used for manportable electronic equipment

## Characteristics Data

Battery output = 16.5/33 Volts (OCV) and 12/24 Volts (NOM);  
Cutoff voltage = 8.0 volts;  
Battery capacity = 6.2 amp hours at 2 amps discharge;  
Battery chemistry is lithium ion;  
Operating temps = -20°C to +50°C (-4°F to 122°F)

SOME OF THAT EQUIPMENT IS...

AN/PRC-119	AN/PPN-19(V)2	AN/PRC-117F
EPLRS RTs	AN/PSC-5	AN/TMQ-30
AN/GSQ-187	M-22	AN/PRC-150

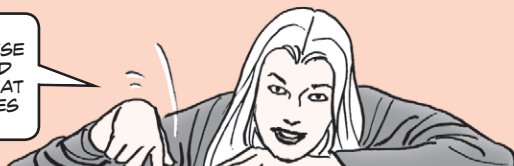
EQUIP REM  
C-10377/GTC COMSEC MODE  
SELECTOR CTRL  
TSEX/KY-99 MINTERM  
AN/MST-20 PLUS M/PAC UHF  
SAT TRANSCEIVER  
AN/VSC-7 NET CONTROL STA  
MANPACK RADIO  
AN/URC-100 MANPACK RADIO SET  
AN/URC-101 MANPACK RADIO SET  
AN/GRC-213 IHFR RADIO SET  
AN/URC-104 MANPACK RADIO SET  
AN/GRC-193 IHFR RADIO SET  
RT-1175A/GSQ RADIO REMBASS  
REPEATER



WHICH OF  
THESE LITHIUM  
BATTERIES  
IS RIGHT FOR  
YOUR NEEDS  
DEPENDS ON  
YOUR MISSION.

AN/PRC-119 MANPACK RADIO SET  
SINCGARS  
MANPACK RADIO SET  
Multiple Integrated Laser  
Engagement System)  
J-1A SPEC OP FORCES  
LASER MARKER  
AN/GSQ-18 SENSOR  
MONITOR SET  
(REMBASS)  
RT-1343/TSQ129  
AN/PPN-19(V2) RADAR SET  
AN/PPN-19(V1) RADAR SET  
AN/PPN-19(V1) RADAR SET

HERE ARE SOME  
CHARACTERISTICS OF THESE  
BATTERIES THAT SHOULD  
HELP YOU DETERMINE WHAT  
YOU NEED IN WHICH PIECES  
OF EQUIPMENT.



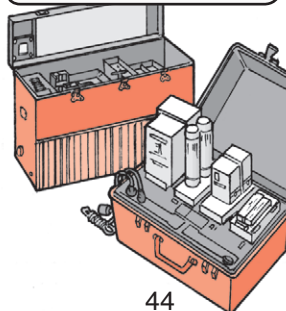
Battery	NSN	Unit of Issue	Features	Energy (Watt-Hours)	SINCGARS ASIP Runtime
BA-5390/U	6135-01-501-0833	PG (4)	Plain	250 W-hrs	47 hrs
BA-5390A/U	6135-01-517-6060	PG (4)	SOCI*	250 W-hrs	47 hrs
BA-5590A/U	6135-01-523-3037	PG (4)	SOCI*	185 W-hrs	33 hrs
BA-5590B/U	6135-01-438-9450	PG (4)	Plain	185 W-hrs	33 hrs
BB-2590/U	6140-01-490-4316	EA (1)	Recharge-able, SOCI	175 W-hrs	30 hrs

\*SOCI=State of Charge Indicator

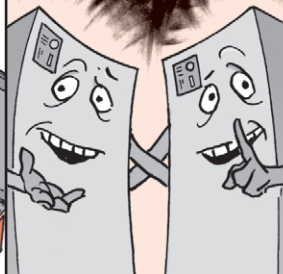
THE BB-2590/U  
IS RECHARGE-  
ABLE. TO USE IT,  
YOU WILL NEED A  
BATTERY CHARGER  
WHICH ALREADY  
HAS ADAPTERS.



YOU HAVE A *CHOICE*  
IN CHARGERS:  
THE PP-8498/U,  
NSN 6140-01-495-2839,  
OR THE PP-8481B/U,  
NSN 6130-01-527-2726,  
CHARGER ON THE MOVE.



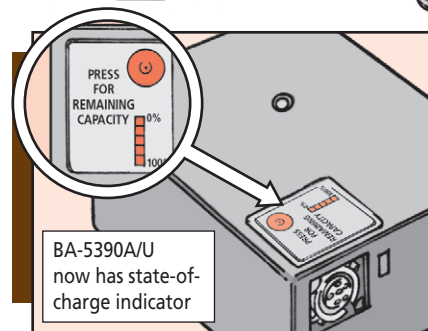
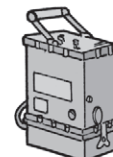
WE WORK  
OFF OF AC OR  
VEHICLE DC!



THE BA-5390A/U IS AN  
*UPGRADED* BA-5390/U.

A STATE-OF-CHARGE  
INDICATOR HAS BEEN  
ADDED.

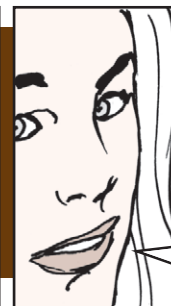
THE LIFE VARIES BY THE  
PIECE OF EQUIPMENT IN  
USE, BUT AS A RULE OF  
THUMB, THE BA-5390A/U  
WILL GIVE YOU ABOUT  
40 PERCENT MORE RUN-  
TIME THAN EITHER THE  
BA-5590B/U OR THE  
BA-5590A/U.



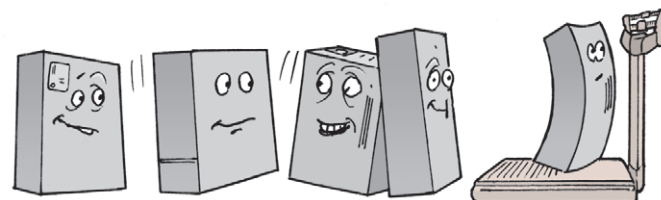
BA-5390A/U  
now has state-of-  
charge indicator

THE BB-2590/U  
WILL RUN ABOUT  
90 PERCENT AS LONG  
AS THE BA-5390/U  
OR BA-5390A/U.

OF COURSE, WHEN  
THE USE-'EM-UP AND  
THROW-'EM-AWAY  
BATTERIES ARE LONG  
GONE, THE BB-2590/U  
WILL *STILL* BE  
DOING ITS JOB.



ALL THE  
BATTERIES  
WEIGH BETWEEN  
TWO AND THREE  
POUNDS... SOME  
A FEW OUNCES  
BELOW AND  
SOME A FEW  
OUNCES ABOVE.

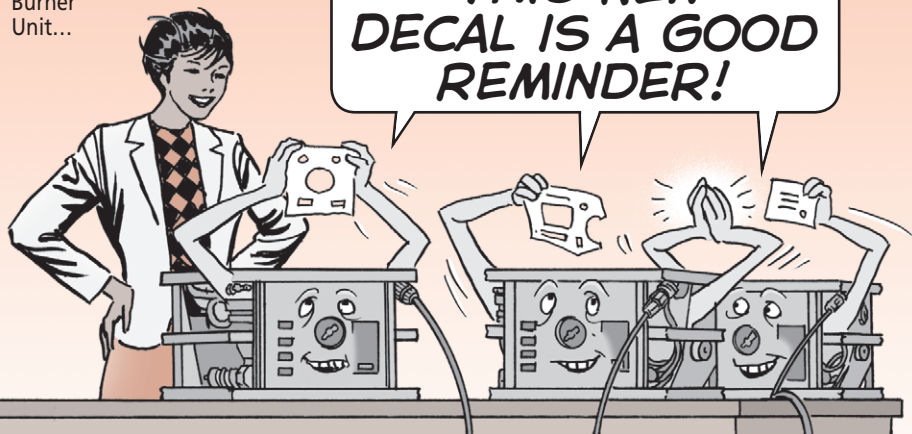


TAKE THESE  
CHARACTERISTICS  
AND LOOK HARD  
AT MISSION AND  
BATTERY USE.

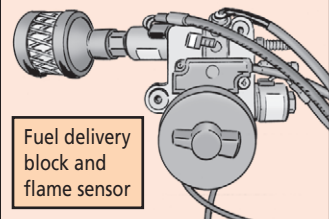
ONE OF THESE  
BATTERIES WILL  
PROBABLY MAKE  
MORE SENSE THAN  
THE OTHERS.



**THIS NEW  
DECAL IS A GOOD  
REMINDER!**



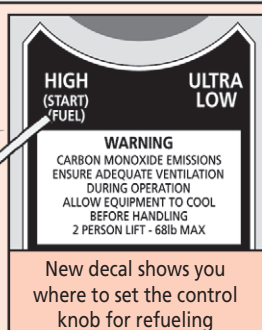
NEW MODERN BURNER UNITS (MBU) AND MBUS WITH MWO 10-7310-281-55-1 APPLIED COME WITH SOME NEW FEATURES...



Fuel delivery  
block and  
flame sensor

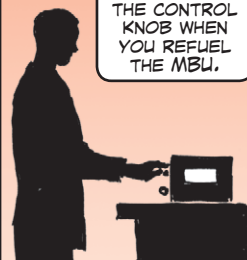
- an upgraded fuel delivery block and an upgraded flame sensor
- a new NSN, model number, and part number
- new decals

PAY ATTENTION TO THE NEW DECAL UNDERNEATH THE CONTROL KNOB, ESPECIALLY THE PART THAT LOOKS LIKE THIS...



New decal shows you where to set the control knob for refueling

IT'S THERE TO REMIND YOU WHERE TO SET THE CONTROL KNOB WHEN YOU REFUEL THE MBU.



HERE'S HOW TO REFUEL THE MBU USING THE POWERED REFUELING FEATURE...



Push the POWER button...

START

STOP

Fuel

Power

...and the TOTAL HOURS meter will show how long the MBU's been in operation.

Voltage

Service

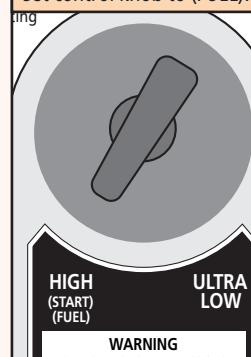
TOTAL HOURS

12

THE INDICATOR LIGHTS WILL FLASH ON AND OFF FOR THREE SECONDS, AND THE TOTAL HOURS METER BACKGROUND LIGHT WILL LIGHT UP.

THE TOTAL HOURS METER WILL DISPLAY A SERIES OF CHARACTERS. IT WILL THEN SHOW THE NUMBER OF HOURS THE MBU HAS BEEN IN OPERATION.

Set control knob to (FUEL)...



THIS SETTING DRAWS MORE AIR OUT OF THE FUEL TANK, SO FUEL FLOWS IN AT A FASTER RATE.

LOWER SETTINGS DRAW LESS AIR OUT OF THE TANK, LOWERING THE RATE OF FUEL FLOW.

...and push FUEL button

START

STOP

Fuel

Power

THE FUELING/FULL INDICATOR LIGHT BLINKS GREEN AS THE TANK FILLS.

WHEN THE TANK IS FULL, THE LIGHT STOPS BLINKING AND REMAINS CONSTANTLY LIT.

FOR MORE ON REFUELING THE MBU, SEE **POWERED FUELING** IN WP 0005 00-18 IN TM 10-7310-281-13&P.

ALSO SEE MBU OPERATING PROCEDURES IN WP 0005 00-22.





# REFUSING TO REFUEL

THE PREFERRED WAY TO REFUEL YOUR MODERN BURNER UNIT (MBU) IS BY USING THE BUILT-IN POWERED FUELING FEATURE.

THAT'S WHERE YOU CONNECT A FUEL CAN TO THE MBU'S FUEL TANK BY MEANS OF A CAN ADAPTER AND A HOSE.

AN AIR COMPRESSOR DRAWS AIR OUT OF THE MBU'S TANK AND ALLOWS FUEL TO FLOW IN.

YEAH, THAT'S HOW IT'S *SUPPOSED* TO WORK.

BUT WHAT IF YOU SET UP THE EQUIPMENT AND FOLLOW THE STEPS—JUST LIKE IT SAYS IN THE TM—AND THE MBU STILL DOESN'T REFUEL OR REFUELS VERY SLOWLY?

FIRST OFF, CHECK INSIDE THE 5-GAL FUEL CAN. MAKE SURE IT'S NOT DRY.

IF THE CAN HAS PLENTY OF FUEL, THEN SOMETHING'S PREVENTING THE FUEL FLOW, AND YOU NEED TO HUNT DOWN THE CULPRIT.

HERE'S HOW TO GET HOT ON THE TRAIL...

HEE-HEE

## Troubleshooting

START BY WORKING YOUR WAY THROUGH THE TROUBLESHOOTING FLOWCHARTS IN WP 0008 00-4 AND WP 0019 00-3 IN TM 10-7310-281-13&P.

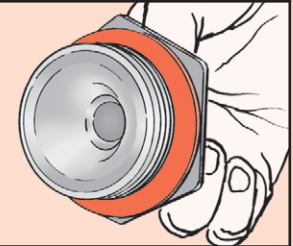
THEY COVER REFUELING PROBLEMS IN DETAIL.

IF THE FLOWCHARTS DON'T SOLVE THE PROBLEM, FOLLOW THESE STEPS...

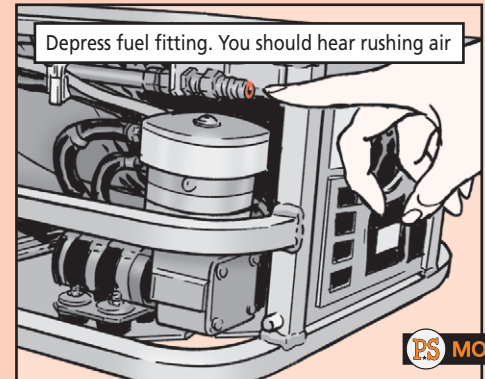
1. Look at the fuel tank cap on the side of the burner. Make sure its gasket is in good shape. If it isn't, replace it with NSN 7310-01-462-4867. (A missing or leaking gasket allows air instead of fuel to flow into the tank.) Tighten the cap on the tank.
2. Disconnect the 5-gal can fuel hose from the MBU's fuel fitting.
3. Power up the MBU. Then press the FUEL button. The air compressor will start to run and draw air out of the fuel tank.
4. After a few seconds, depress the middle of the fuel fitting. You should hear a hiss as air rushes into the tank. That rushing air tells you the MBU can draw fuel. It also means something **outside** the MBU is blocking fuel.

If you depress the middle of the fuel fitting and you **don't** hear rushing air, chances are the MBU has a **stuck check valve**. The stuck valve prevents the MBU from drawing fuel.

Make sure gasket's in good shape



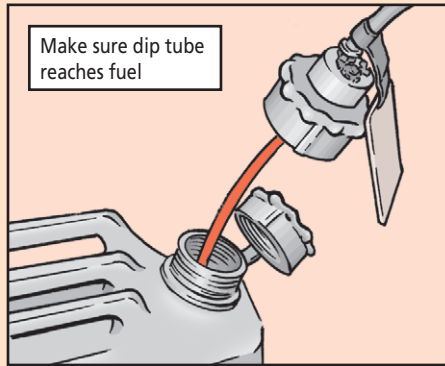
Depress fuel fitting. You should hear rushing air



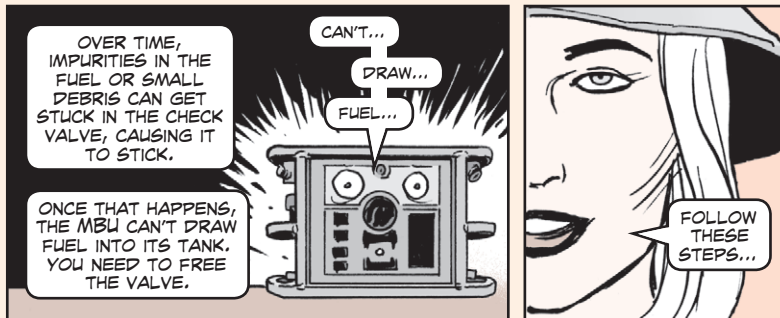
## Fuel Block Outside the MBU

If you suspect a fuel block outside the MBU, you can narrow it down to two sources: the fuel can adapter or the 20-ft fuel hose.

- Look at the fuel can adapter. Make sure its dip tube is in place and it reaches the fuel.
- Inspect the quick disconnect couplings on the adapter and the fuel hose. Clean them if they're dirty.
- Run high-pressure air through the adapter and hose to unblock them. If that doesn't do the trick, get a new adapter with NSN 7310-01-455-3736. Get a new hose with NSN 7310-01-455-3735.



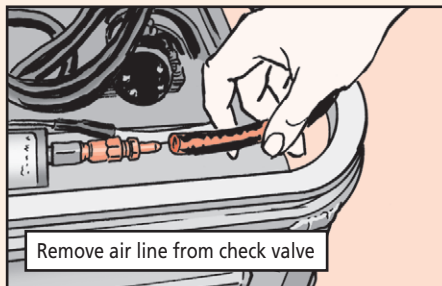
## A Stuck Check Valve



1. Remove the four  $\frac{7}{16}$ -in nuts that hold down the MBU's top pan. Lift the top pan up and out of the way of the check valve.

2. Disconnect the air line from the check valve.

3. Test the air line by pressing the FUEL button. (DO NOT press the START button.) The MBU should draw air through the air line. Put your finger over the end of the line. You should feel suction. This means the air line is open and drawing air.



4. Remove the check valve from the solenoid. You'll need two  $\frac{9}{16}$ -in wrenches or two adjustable wrenches. Hold the solenoid firm with one wrench while loosening the check valve with the other wrench. Take care not to turn the fitting on the solenoid valve.

5. Reconnect the air line to the check valve.

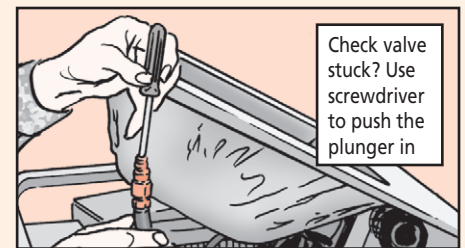
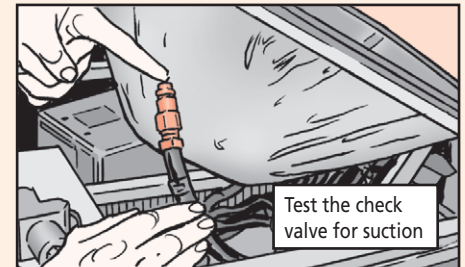
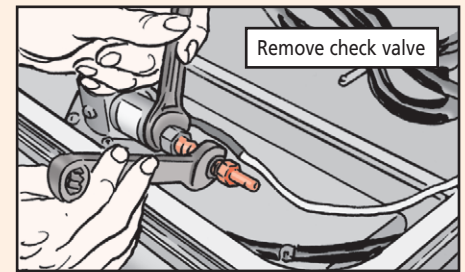
6. Test the check valve by putting your finger over the end of the valve. You should feel suction. This means the valve is working.

7. If you don't feel any suction, the check valve is stuck closed and you need to un-stick it. Look for the spring-loaded plunger inside the threaded end of the valve. Use a pin punch or a small screwdriver to gently push the plunger in. It should take only slight pressure to free it. Make sure the plunger moves in and out freely. Make sure you feel suction at the end of the check valve.

8. Disconnect the air line from the check valve.

9. Reconnect the check valve to the solenoid and the air line to the check valve.

10. Reinstall the MBU's top pan and tighten the four  $\frac{7}{16}$ -in nuts.



## The Hose and the Adapter



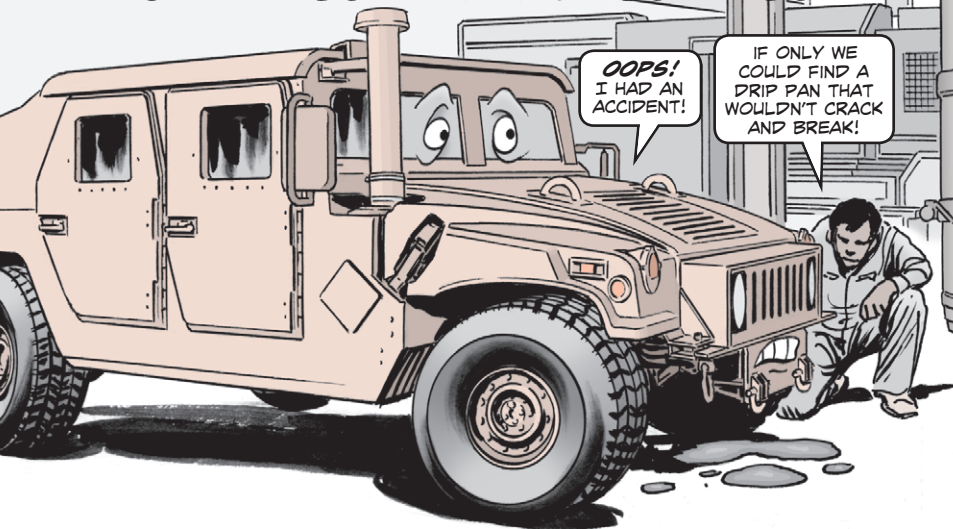
1. Connect the fuel hose to the MBU's fuel fitting and to the fuel can adapter. Don't screw the adapter into the fuel can just yet.

2. Press the FUEL button and put the adapter's dip tube into the fuel. Within a few seconds, the MBU should pull fuel through the fuel hose.

3. If it does, screw the adapter onto the fuel can. Your MBU is back in service.



# DRIP PAN WITH A PLAN

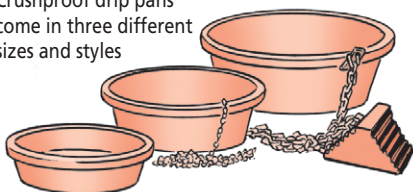


Drip pans are a motor pool must if you plan to keep hazardous waste such as oil, fuel, hydraulic fluid and antifreeze from contaminating the ground.

Crushproof rubber drip pans do the job and snap back to shape if you accidentally run over them.

The drip pans come by themselves, with a 6-ft chain and clip for attaching it to your equipment, or with the chain and an attached chock block.

Crushproof drip pans come in three different sizes and styles



Rubber Drip Pan w/6-ft Chain

Size	NSN 4940-01-	Qty
3.5 gal	504-5270	10-pack
6.5 gal	504-5273	10-pack
15 gal	505-0680	5-pack

Rubber Drip Pan

Size	NSN 4940-01-490-	Qty
3.5 gal	2455	10-pack
6.5 gal	2463	10-pack
15 gal	2470	5-pack

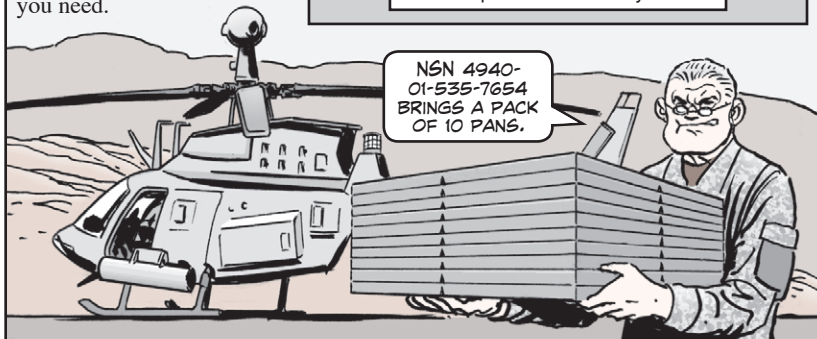
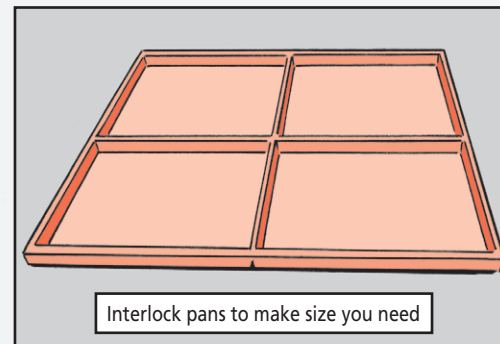
Rubber Drip Pan w/Chain and Chock Block Combo

Size	NSN 4940-01-535-	Qty
3.5 gal	7651	10-pack
6.5 gal	7652	5-pack
15 gal	7653	10-pack

## Aircraft Drip Pan

Need something bigger for aircraft use? The interlocking containment pan is just the ticket.

The interlocking containment pan is made up of 36x36x2-in square pans with interlocking sides that allow you to make the over-all pan in different shapes and as large or as small as you need.



## Look Up Item Managers by NIIN

You can locate the item manager for a NIIN by going to the AEPS restricted website. On AEPS, scroll down to and click on [Item Manager Look-up](#), click on [Look Up An Item Manager By NIIN](#), enter the NIIN and click [GO!](#) Click [Analyst Code/POC](#). (Only where the SOS says YES.) You'll get the manager's name, office symbol, phone numbers and email address. The AEPS restricted webpage is: <https://aeps2.ria.army.mil/aepshome.cfm>

## Washer NSNs



FINDING THE WASHER YOU NEED FOR A JOB JUST GOT EASIER WITH THIS LIST...

Style	NSN 5310-	Size	Qty
Lock washer	00-209-2312	Asst	100
Flat washer	01-268-2735	Asst	100
Flat washer	00-809-4058	1/4-in	100
Flat washer	00-809-3078	5/16-in	100
Flat washer	00-584-7762	3/8-in	1
Flat washer	00-809-5998	1/2-in	100



'COURSE, IF YOUR PARTS™ CALLS FOR A SPECIFIC WASHER, YOU USE IT.



# Keep Deficiencies Out of the PQDR Process

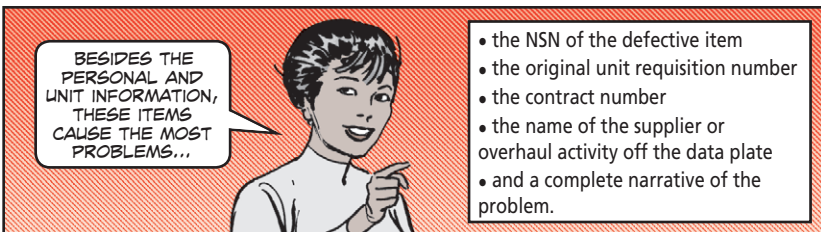


The Product Quality Deficiency Report (PQDR) is great for letting the Army know about deficient equipment—unless the report itself contains deficiencies.

When you get bad parts, or have problems with new or refurbished equipment, you and your commander want it replaced—fast. And, your commander wants the unit to be reimbursed for the defective items.

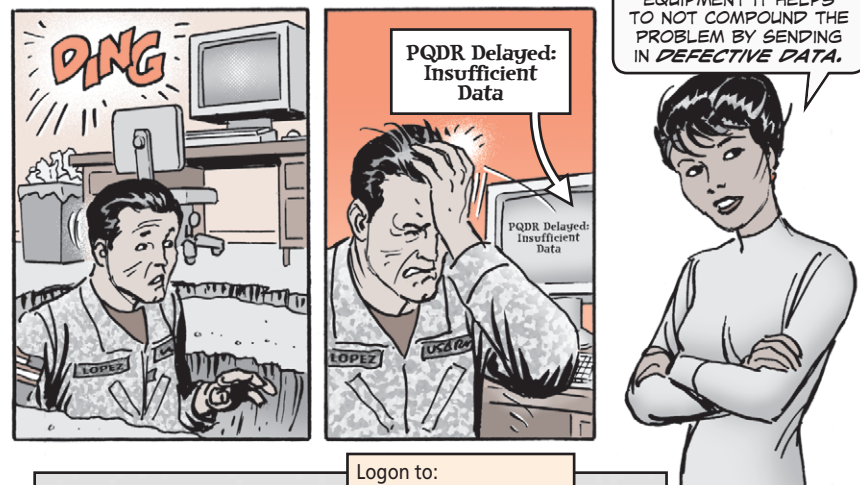
How you fill out the SF 368, PQDR, has a lot to do with how quickly the replacement occurs and whether your unit gets its money back. It's worth your time to do it right.

Here are some of the things you can do to avoid the pitfalls of PQDR filing. The biggest deficiency of all when filling out the SF 348 is leaving data blocks blank or incomplete. Be sure to include all the information called for on the form.



Anything less than full and complete entries results in delays as PQDR reviewers have to request additional information—provided they can get in touch with the unit!

The data obtained from the PQDRs must be complete enough to identify the specific defective part, the actual problem and whether the problem might extend to other units using the same part/equipment.



Electronic Deficiency Report

★ Select the report as a PQDR, EIR, or WCA:

☐ Product Quality Deficiency Report (PQDR) ☐ Equipment Improvement Recommendation (EIR) ☐ Warranty Claim Action (WCA)

★ ☐ Category I ☐ Category II

Initial Failure ☐ Yes ☐ No

NOTE on Marking Report as an Initial Failure

LAO:  Not Used

Office:

DSN:

FAX:

1a. ★ Originating Address:

Organization:

Street/Office:

City:  State:

Zip Code:  DODAAC:

1b. Originator's Name, Phone, E-Mail and Fax

★ First Name:

★ Last Name:

★ Duty Phone:

(Indicate if DSN by entering DSN in front of number.)

★ E-Mail:

Fax:

(Indicate if DSN by entering DSN in front of number.)

Local QDR Coordinator's Email Address:

(Separate individual emails with commas)

Loton to:  
<https://aeps.ria.army.mil>

Click on Submit Quality Deficiency Reports.

AR 700-138 and DA Pam 750-8 provide guidance on passing PQDRs through LAO offices.

A LAR's approval is required for initial failure claims.

You can click on an item number to get instructions.

Duty phone is used to get additional info.

EMAIL ADDRESSES MUST BE ACCURATE BECAUSE THAT IS WHERE REIMBURSEMENT CONFIRMATION WILL BE SENT.



Your description must give the reviewer an understanding of the actual problem and a place to begin his or her investigation. The following description was actually submitted on a PQDR:

"For the third time....  
Engine Broke."

That description didn't provide any info about what was broken on an engine that has hundreds of parts. The description also failed to describe what the symptoms were. The specific faulty part(s) are not identified and the PQDR couldn't be investigated.

**2. Screening Point:**  
"This system will automatically forward your deficiency report to the responsible agency within the Army."

**3. \* Report Control Number:** [Field]

**4. Date Deficiency Discovered:** [Field]

**5. \* National Stock Number (NSN):** [Field]  
Only NSNs go here. Part numbers are entered in Item 8 below.

**6. Nomenclature:**  
Name: [Field]  
City: [Field]  
State: [Field]  
CAGE Code: [Field]  
DODAAC Repair Site Code: [Field]  
ISM Repair Point: [Field]

**7. Manufacturer:**  
Manufacturer's Part Number: [Field]  
Serial/Lot/Batch No.: [Field]

**8. Manufacturer's Part Number:** [Field]  
Only NSNs go here. Part numbers are entered in Item 8 below.

**9. Serial/Lot/Batch No.:** [Field]

**10. Contract Information:**  
"Filling in Block 10 will expedite investigation and disbursement of credit"  
Contract Number: [Field]  
"Original" Requisition Number: [Field]  
GBL Number: [Field]  
Turn-In Document Number: [Field]

**11. \* Was Item**  
☐ New  
☐ Repaired or Overhauled?  
☐ Unknown

**3. The RCN is your unit DODAAC followed by a two digit year and a four digit number showing this PQDR in sequence for the number of PQDRs filed during the calendar year.**

**7-9. Providing all the manufacturer info speeds PQDR processing and gets reimbursement faster.**

**10. Original Unit Requisition Number is required for your unit to get reimbursed.**

**11. Default is Unknown. Select the right category.**

The following example actually defines a problem and offers an idea on how the failure may be corrected.

Ref: TM 9-2320-255-34P, Figure 36. After opening can and inspecting the rear [module], it was determined that the power shaft rubs on the housing when rotated. The cause is unknown. The part needs to be replaced. The rear module will be stored in can until further instructions are received. This is the initial failure claim.

REMEMBER, ONLY YOU CAN PREVENT PROCESSING AND REIMBURSEMENT DELAYS CAUSED BY INCOMPLETE PQDRS.

So, when you have a need to file a PQDR remember that **missing data means processing delays** and the potential for losing reimbursable dollars. The more data you include, the faster the system can work for you.

**12. Date Manufactured/Repaired/Overhauled:** [Field]  
{Use mm/dd/yyyy format}

**13. Operating Time at Failure:** [Field] None

**14. If you are a contractor:**  
Was this item provided to you as GFM?  
☐ Yes  
☐ No

**15. Quantity Information**  
Received: 0 Inspected: 0 Deficient: 0 In Stock: 0

**Deficient Item Works on/with:**

**16a. End Item**  
Type/Model/Serial Number  
End Item NSN

**16b. Next Higher Assembly (NHA)**  
NHA Nomenclature  
NHA Serial Number  
NHA National Stock Number (NSN)  
NHA Part Number

**17. Unit Cost:** [Field]

**18. Estimated Repair Cost:** [Field]

**19. a. Is the equipment under warranty?** Unknown  
**b. Expiration Date:** [Field]

**20. WUC/EIC: (Navy and Air Force Only):** [Field]

**21. \* Action/Disposition:**  
☐ Holding Exhibit for 60 days.  
☐ Returned to Stock  
☐ Disposed of  
☐ Repaired  
☐ Other (Specify in Details)

**22. Details:**  
(Describe, to best ability, what is wrong, how and why, circumstances, description of difficulty, cause, action taken including disposition, requisition, and recommendations.)  
(You may enter up to 4000 characters.) 4000 characters left

**23. Location:** [Field]

**24. E-mail addresses:**  
If you wish to send a copy of your submission to others, please enter their e-mail addresses here. Separate each e-mail address with commas:  
[Field]

**Submit Report** **Reset Form**

**The End Item info is crucial to improving overall equipment design.**

**Click on the number for Item 22 to get full description of essential information.**

**Emotion conveys no meaning in the Details section. Facts and logical discussion will go much further toward resolving equipment deficiencies.**

**Send a copy to yourself, LARs, etc.**



# ORDERING PARTS USING PART NUMBERS



ORDERING BY  
PART NUMBER  
REQUIRES  
EXTRA CARE.

HERE  
ARE SOME  
WAYS TO  
HELP...

Ordering parts isn't always easy. Sometimes a TM doesn't use an NSN and you get a part number instead. The trouble is making sure the part number actually leads to the part you want.

For instance, you have a 5-KW tactical quiet generator. In TM 9-2815-252-24P you want Item 8 of Figure 7, the oil filler cap. The figure gives you a part number of 186-6023.

SO YOU GO TO FED  
LOG INTERACTIVE AND  
ENTER 186-6023 AS  
YOUR PART NUMBER.

HERE'S  
WHAT YOU  
GET...

- PN 1-86602-3, NSN 5305-01-235-2944, CAGE 00779, screw
- PN 186-6023, NSN 2930-01-528-1963, CAGE 44940, cap, filler opening

IF YOU AREN'T PAYING  
ATTENTION, YOU'LL WIND  
UP ORDERING THE SCREW  
INSTEAD OF THE CAP YOU  
REALLY NEED.

HERE ARE A  
COUPLE OF THINGS  
TO LOOK FOR...

- Pay attention to how the PN is displayed. FED LOG may list any PN that has all the letters and numbers in the right order, even if they are hyphenated differently.
- Look at the **Item Name**. Is it even close to what you need? There could be a big difference between items, as in the example above—a screw and a cap, filler opening.
- Look at the management view options available for each PN listed. If the **FLIS Management** view isn't available and the **FLIS History** view is your only choice (PN 1-86602-3), then the item is obsolete and is probably not what you're looking for.
- If the PN and item name seem to match, click on the **FLIS Management** icon and you'll find which government agencies/DOD services use the part. You'll also get the source of supply, the acquisition advice code and cost among other data. Click on **Characteristics** to ensure it meets your needs.
- If the item isn't listed as an Army part, you'll have to order the part on a DD Form 1348-6 and include in the REMARKS block "NSN not on the AMDF."
- Finally, on the 1348-6, be sure that you include the PN as shown in the TM (and verified on FED LOG), **as well as** the CAGE Code. The CAGE code identifies the manufacturer, just as the PN identifies the actual part. A PN without a CAGE code is useless. Both are needed to ensure you get the right part.



## AGPU Test Stands

Hydraulic test stand, NSN 6685-00-133-7711, for the AGPU listed in TM 55-4920-341-14 cannot be supported. Turn it in to AMCOM ASAP. Use either NSN 4920-00-882-6401, 4920-00-144-4481, or 4920-01-119-8795 to get a replacement hydraulic test stand for the AGPU.



## QDR, WCA Email Address Changes

The email address for QDRs (quality deficiency reports) or WCAs (warranty claim actions) sent to TACOM-Rock Island has changed to [ROCK-QDRS@conus.army.mil](mailto:ROCK-QDRS@conus.army.mil). The best way to submit QDRs and WCAs, though, is through the AEPS website <https://aeps.ria.army.mil>. Just click on Electronic Deficiency Reporting System, then New Report. Fill in at least the mandatory fields. If you are notified with a blue star, then click on Submit Report.

## MOSSBERG SHOTGUN WARNINGS

If you use the M500/590 Mossberg shotgun, heed these two warnings:

- Never use Wiley-X XL-1 ballistic goggles for door breaching operations. What you should use are ESS Land Operations Goggles, which come in foliage green, NSN 4240-01-540-5576, and desert tan, NSN 4240-01-540-5580. The ESS goggles provide far greater protection than the Wiley-X goggles do.

- When using #9, 2<sup>3</sup>/<sub>4</sub>-in, "00" buckshot to blow a door lock or hinge, keep your eye on the target to make sure the barrel stays pressed to the target. If the barrel isn't directly on the target, the pellets could miss the target and ricochet. If you have something like a pry bar, it's much safer to use it instead of your shotgun.

## CBRN Hotline Becomes CBRN-IRC

The CBRN Hotline has changed to the CBRN-IRC (Joint Acquisition CBRN-D Knowledge System Information Resource Center). But it is still the best place to go with questions about any CBRN defense equipment, such as protective masks, chemical alarms, and decon systems. Contact the CBRN-IRC at:

- DSN 793-7349/(309) 782-7349
- (800) 831-4408 (toll free)
- 0130810280 (Germany toll free)
- 0078-14-800-0335 (Korea toll free)
- DSN 793-7162/(309) 782-7162 (fax)
- [ROCK-CEH@conus.army.mil](mailto:ROCK-CEH@conus.army.mil)

Go to the CBRN-IRC website: <https://jacks.jpeocbd.osd.mil> and click on CBRN-IRC for even more info.

## M1082/M1095 FMTV Trailer Crank

In TM 9-2330-394-13&P, WP 0174 00-5 lists the wrong handle for Item 8, the landing gear crank. The information should be changed to show crank handle, NSN 5340-01-484-2957, PN LG0176, CAGE 74410, and quantity 1, as shown in Item 44 of WP 0151. Make a note until the TM is updated.

## M1114 SMART Card Update

In PS 647 (Oct 06), we told you that the M1114 combined safety smart card was available on AKO. But the link we provided doesn't take you straight to the card anymore. So do a search for the SMART cards on AKO, or use this link on the US Army Combat Readiness Center's website to get to it:

<https://irc.army.mil/Guidance/coi.asp?Cat=632&Channel=15&nChannel=Guidance>

## M109A6 Fire Extinguisher Gasket

Use NSN 5330-01-397-5049 to get a gasket for the fixed-fire extinguisher system on the self-propelled howitzer. The NSN shown as Item 19 in Fig 236-1 in C/3 of TM 9-2350-314-24P-1 is wrong.

## 250M TOWING DEVICE RECOVERS ARMORED TRUCKS

Need a way to recover disabled armored trucks, but all you have are armored M931A1/A2s or M932A1/A2s and a 250M fifth-wheel towing device? Well, the Army recently gave the green light for armored M939s using the 250M model fifth wheel towing device (FWTD) to tow other armored M939s. And armored M931A1/A2s and M932A1/A2s can use FWTDs to tow other disabled vehicles as well. The next update to TM 9-2510-247-13&P will include these changes. Questions? Contact TACOM's Pamela Vick, DSN 786-8152, or [vickp@tacom.army.mil](mailto:vickp@tacom.army.mil)

## DENIX Website Correction

On Page 37 of PS 650 (Jan 07), we gave you the web address for DENIX as:

<https://www.denix.osd.mil/denix/public/news/dla/ods/tpreface.html>

That address is incorrect because the address to the ozone depleting substances site is case-sensitive. Use instead: <https://www.denix.osd.mil/denix/Public/News/DLA/ODS/tpreface.html>

## M985 HEMTT GVWR Change

The M985's gross vehicle weight rating (GVWR) with self-recovery winch on Page 1-17 of TM 9-2320-355-10 should read 68,000 pounds. If you have an M985-series HEMTT with a data plate showing a different GVWR, have the plate changed or replaced.

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

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

## IHMEE Solenoid Failure

Field reports say there's a high failure rate with the hydraulic system and transmission remote shift solenoids on the excavator. Don't toss out a bum solenoid. The vehicle's program management office (PMO) wants to take a closer look at what's causing the problem. Send the solenoid to the following mailing address:

US Army TACOM  
6501 E Eleven Mile Rd  
ATTN: SFAE-CSS-CM, MS 401 (Ms. Gerych)  
Warren, MI 48397-5000

## HELMET INSPECTION INTERVAL CHANGE

The inspection interval for the aircrew integrated helmet and display sighting system (IHADSS) is now 180 days, not 120 days. Make a note until TM 9-1270-233-23&P and IETM EM 0126 (TM 1-1520-Longbow/Apache) are updated.

**CAN YOU BELIEVE THIS!?!**



FOR THE FOURTH MONTH IN A ROW WE HAVEN'T GOTTEN PS. WHO KNOWS WHAT WE'VE *MISS*ED!

NO PROBLEM. YOU CAN ACCESS MORE THAN 200 ISSUES OF PS ON THE INTERNET...

...AND THE ARTICLES ARE INDEXED BY SUBJECT.

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**PS****THE  
PREVENTIVE  
MAINTENANCE  
MONTHLY****ISSUE 652 MARCH 2007****COMBAT VEHICLES**

Stryker Engine Oil Filter  
 M1-Series Tank Fire Procedure  
 M270A1 MLRS Carrier Ground Hop Kit  
 M113A2 FOV Power Plant Grille  
 M992A2 Ammo Carrier APU Junction Box  
 M109A6 Paladin Manual Fire Control System

**WHEELED VEHICLES**

M1114 HMMWV Fire Safety  
 M1083/M1088 FMTV Air Conditioner, Armor  
 M1117 ASV Parts Manual Corrections  
 HEMTT Tachometer/Voltmeter Changes  
 M1070P1 HET Air Conditioning Vents  
 M1070P1 HET Tractor Escape Hatch  
 M1070P1 HET Tractor CTIS Manifold

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

Just write to:

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

Or e-mail to:

**logsa.psmag@conus.army.mil** or  
**half.mast@us.army.mil**

Internet address:

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

By order of the Secretary of the Army:

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 General, United States Army Chief of Staff

Official:

*Joyce E. Morrow*  
**JOYCE E. MORROW**

Administrative Assistant to the Secretary of the Army

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