



**THE  
PREVENTIVE  
MAINTENANCE  
MONTHLY**

TB 43-PS-584, The Preventive Maintenance Monthly, is an official publication of the Department of the Army, providing information for all soldiers assigned to combat and combat support units and all soldiers with unit maintenance and supply duties. All information published has been reviewed and approved by the agency responsible for the equipment, publication or policy discussed. Application of the information is optional with the user. Masculine pronouns may refer to both genders.

**ISSUE 584 JULY 2001**



**WHEELED VEHICLES**

Cooling System Hoses	2-3
Lead-Acid Batteries	4
FMTV Brake Gladhands	5
HMMWV A2-Series Transmission Tools	6-7
HMMWV Air Cleaner Clamps	8
Armored HMMWV Insulation Liner	8
M917A1 Dump Truck Spring Hanger Bolts	9
HEMTT Water Pump, Pintle, Axle Seals	9
M915A2, M196A1-Series Truck Slave Receptacle	10
M149A2 Water Trailer Drain Plug	11
M1000 HET Semitrailer Ramp Lube	11
Wire Rope Cleaning, Inspection, Lubing	12-13



**COMBAT VEHICLES**

M1A1/M1A2 Tank Main Gun Elevation Lock	14-15
M1-Series Tank Thermal Receiver Unit Cooling	15
M2/M3-Series Bradley M242 Gun Feeder	16-17
M2/M3-Series Bradley Ramp Light Switch	17
M113-Series FOV Seat Belt	18
AVLB Lubing	19
Combat Vehicle Chock Blocks	20
M90 Radar Chronograph	20-21
M109A6 Paladin Roadwheel Relief Fittings	21
M992A2 Ammo Carrier Roadwheel Relief Fittings	21



**COMBAT ENGINEERING**

SEE Air Filter Cleaning	22-23
MICLIC Lubing, Lines, Painting, Knobs	24-26



**AVIATION**

AH-64A Hydraulic Servicing	35
OH-58D Kiowa M296 MG Stop Lock	36-37



**MISSILES**

Avenger Battery	38-40
MLRS Launcher LRU Mounts	41



**SMALL ARMS**

MK 19 MG Firing Stoppages	42-43
M24 Sniper Weapon Barrel Replacement	44-45
MILES Transit Case Foam Inserts	45



**NBC**

M157-Series Smoke Generator	46-47
Fog Oil Pumps	
M157 Smoke Generator Control Panel Bulb	47



**COMMUNICATIONS**

Generator Fuel Problems	48-49
2-KW Generator Fuel Filtering	50
2-KW Generator Control Lever Damage	51
PLGR Warranty Extended	52
CVC Helmet Headset-microphone	53



**SOLDIER SUPPORT**

SMART Awards	54-55
Key Ring, ID Tags	55
Security Pens	55
Maintenance Excellence Awards	56
Computer Networking Cable	57
Usable On Code (UOC)	58-59
Fire Extinguishers	60

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-LP)  
5307 Sparkman Circle  
Redstone Arsenal, AL 35898-5000

Or e-mail to:

psmag@logsa.army.mil

Internet address:

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

By order of the Secretary of the Army:

**ERIC K. SHINSEKI**

General, United States Army Chief of Staff

Official:

**JOEL B. HUDSON**

Administrative Assistant to the Secretary of the Army

0113801

PS, The Preventive Maintenance Monthly (ISSN 0475-2953) is published monthly by the Department of the Army, Redstone Arsenal, AL 35898-5000. Periodical postage is paid at the Huntsville, AL post office and at additional mailing offices.

Postmaster: Send address changes to PS, The Preventive Maintenance Monthly, USAMC-LOGSA (AMXLS-LP), 5307 Sparkman Circle, Redstone Arsenal, AL 35898-5000.



HM-MMM...  
IF I  
REMEMBER  
RIGHT, THIS  
WRENCH WILL  
DO THE TRICK.

**AIRCRAFT PM BEGINS WITH  
THE #1 TOOL—YOUR TMS!  
NEVER DEPEND ON YOUR MEMORY,  
WHEN IT COMES TO PM!**



Issue 584

**PS**

July  
2001

**THE  
PREVENTIVE  
MAINTENANCE  
MONTHLY**

TB 43-PS-584

Approved for  
Public Release;  
Distribution is  
Unlimited

WHEW! I'M  
GLAD THAT  
JOB'S DONE.

TAKE IT FROM  
YOUR FAIRY  
FODMOTHER...

YOU'RE NOT  
THROUGH UNTIL  
YOU'VE PICKED  
UP YOUR AREA!

See  
Page  
27

NOE  
RUBEN



Activity in every unit's maintenance facility gets chaotic just before the unit deploys. Piles of non-working equipment clutter the floor as operators line up to turn in more gear that "suddenly" stopped working.

Repairers need track shoes as they run from vehicle to shop to get the unit's equipment field-worthy. Midnight oil is burned by maintainers who get burned out.

All the chaos can be avoided if you operators **regularly** and **honestly** fill out DA Form 5988-E, the Equipment Maintenance and Inspection Worksheet. Your TAMMS clerk prints them out for you to fill out while you inspect your equipment.

In the middle of the form is a Fault Description column. That's where you list your equipment's problems, but a lot of you are not doing it! You write, "No Faults" and turn the form back in. Then, when your unit is told to deploy, you turn in non-working equipment with problems that could have been solved long before.

So, operators, what's the problem? Are you failing to do PMCS? Or are you simply not taking the time to fill out the form? Whatever the problem, correct it now!



**THE  
PREVENTIVE  
MAINTENANCE  
MONTHLY**

TB 43-PS-584, The Preventive Maintenance Monthly, is an official publication of the Department of the Army, providing information for all soldiers assigned to combat and combat support units and all soldiers with unit maintenance and supply duties. All information published has been reviewed and approved by the agency responsible for the equipment, publication or policy discussed. Application of the information is optional with the user. Masculine pronouns may refer to both genders.

**ISSUE 584 JULY 2001**

<b>WHEELED VEHICLES</b>	<b>2</b>		<b>AVIATION</b>	<b>35</b>
Cooling System Hoses	2-3		AH-64A Hydraulic Servicing	35
Lead-Acid Batteries	4		OH-58D Kiowa M296 MG Stop Lock	36-37
FMTV Brake Gladhands	5		<b>MISSILES</b>	<b>38</b>
HMMWV A2-Series Transmission Tools	6-7		Avenger Battery	38-40
HMMWV Air Cleaner Clamps	8		MLRS Launcher LRU Mounts	41
Armored HMMWV Insulation Liner	8		<b>SMALL ARMS</b>	<b>42</b>
M917A1 Dump Truck Spring Hanger Bolts	9		MK 19 MG Firing Stoppages	42-43
HEMTT Water Pump, Pintle, Axle Seals	9		M24 Sniper Weapon Barrel Replacement	44-45
M915A2, M196A1-Series Truck Slave Receptacle	10		MILES Transit Case Foam Inserts	45
M149A2 Water Trailer Drain Plug	11		<b>NBC</b>	<b>46</b>
M1000 HET Semitrailer Ramp Lube	11		M157-Series Smoke Generator	46-47
Wire Rope Cleaning, Inspection, Lubing	12-13		Fog Oil Pumps	47
			M157 Smoke Generator Control Panel Bulb	47
<b>COMBAT VEHICLES</b>	<b>14</b>		<b>COMMUNICATIONS</b>	<b>48</b>
M1A1/M1A2 Tank Main Gun Elevation Lock	14-15		Generator Fuel Problems	48-49
M1-Series Tank Thermal Receiver Unit Cooling	15		2-KW Generator Fuel Filtering	50
M2/M3-Series Bradley M242 Gun Feeder	16-17		2-KW Generator Control Lever Damage	51
M2/M3-Series Bradley Ramp Light Switch	17		PLGR Warranty Extended	52
M113-Series FOV Seat Belt	18		CVC Helmet Headset-microphone	53
AVLB Lubing	19		<b>SOLDIER SUPPORT</b>	<b>54</b>
Combat Vehicle Chock Blocks	20		SMART Awards	54-55
M90 Radar Chronograph	20-21		Key Ring, ID Tags	55
M109A6 Paladin Roadwheel Relief Fittings	21		Security Pens	55
M992A2 Ammo Carrier Roadwheel Relief Fittings	21		Maintenance Excellence Awards	56
			Computer Networking Cable	57
<b>COMBAT ENGINEERING</b>	<b>22</b>		Usable On Code (UOC)	58-59
SEE Air Filter Cleaning	22-23		Fire Extinguishers	60
MICLIC Lubing, Lines, Painting, Knobs	24-26			

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-LP)  
 5307 Sparkman Circle  
 Redstone Arsenal, AL 35898-5000

Or e-mail to:  
[psmag@logsa.army.mil](mailto:psmag@logsa.army.mil)

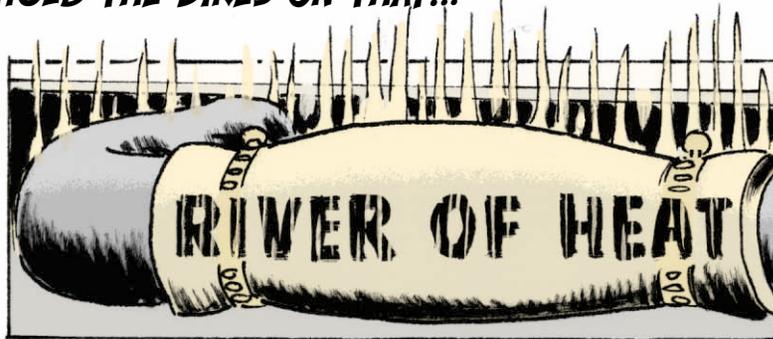
Internet address:  
<http://www.logsa.army.mil/psmag/pshome.html>

By order of the Secretary of the Army:  
**ERIC K. SHINSEKI**  
 General, United States Army Chief of Staff

Official:  
  
**JOEL B. HUDSON**  
 Administrative Assistant to the Secretary of the Army  
 0113801

PS, The Preventive Maintenance Monthly (ISSN 0475-2953) is published monthly by the Department of the Army, Redstone Arsenal, AL 35898-5000. Periodical postage is paid at the Huntsville, AL post office and at additional mailing offices.  
 Postmaster: Send address changes to PS, The Preventive Maintenance Monthly, USAMC-LOGSA (AMXLS-LP), 5307 Sparkman Circle, Redstone Arsenal, AL 35898-5000.

## HOLD THE DIKES ON THAT...



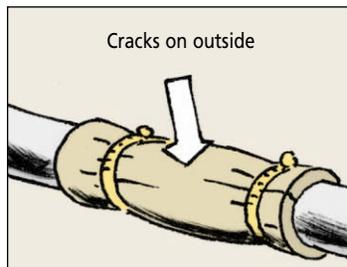
No doubt about it—your engine's cooling system's got a man-sized job. The close tolerances of your engine should be held within three degrees of operating temperature for best results.

In the liquid-cooled engine, the thermostat controls the heat's lower limit while the upper limit depends on its radiator, oil and water pumps. Depending on the engine, those water pumps must circulate from 4,000 to

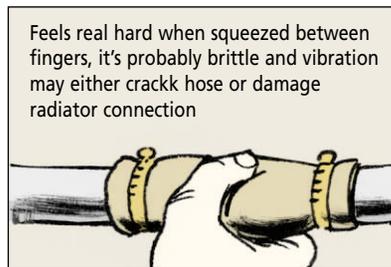
10,000 gallons of coolant an hour—enough to fill an average-size swimming pool in just a couple of hours.

Anything that'll interrupt the flow of coolant can make the engine overheat. If that happens for only a little while, you're headed for trouble. And one cause for overheating is a bad radiator or heater hose. Just one partly clogged or leaking hose can slow down or stop the coolant's flow.

This shouldn't happen to you. Check the hoses closely, 'cause often it may seem OK, but is actually rotting away on the inside or is about to crack. Look for these trouble signs:

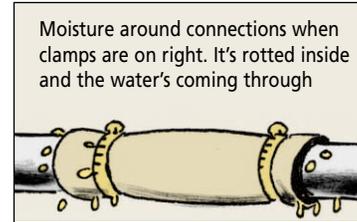


Cracks on outside

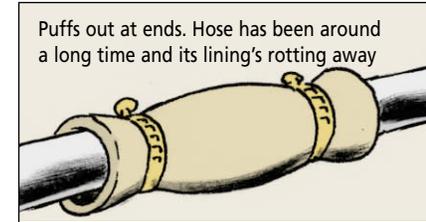


Feels real hard when squeezed between fingers, it's probably brittle and vibration may either crack hose or damage radiator connection

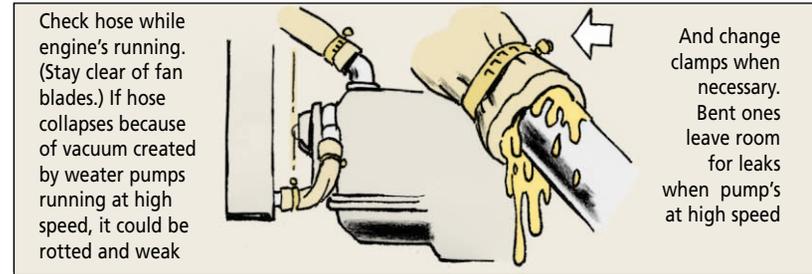
If it feels real soft, it's probably rotting out. This can fill the cooling system with small particles of rubber which can clog and overheat the engine.



Moisture around connections when clamps are on right. It's rotted inside and the water's coming through



Puffs out at ends. Hose has been around a long time and its lining's rotting away



Check hose while engine's running. (Stay clear of fan blades.) If hose collapses because of vacuum created by water pumps running at high speed, it could be rotted and weak

And change clamps when necessary. Bent ones leave room for leaks when pump's at high speed

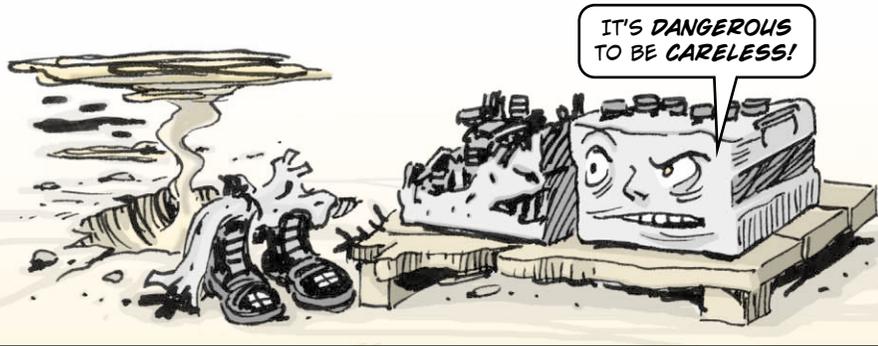
- If the hose is worn or frayed on the outer layer, it can rupture at any time.
- Don't forget the bottom radiator hose. It takes more of a beating from rocks and bushes than the other hoses and it's often the first one to go bad. Eyeball it when the engine's running. If it's collapsing, it's too weak to do the job.
- Keep the hoses clean. Oil eats rubber, so a dirty, oily hose is in trouble. The best way to clean hoses is to scrub them good with detergent and water. NSN 7930-00-282-9699 gets a gallon of detergent for lifting off oil.

Never clean hoses with dry cleaning solvent or petroleum-based cleaners. The solvent is flammable and the petroleum-based cleaners eat hoses, too.



Lead-acid Batteries...

## IS THAT GAS YOU SMELL?

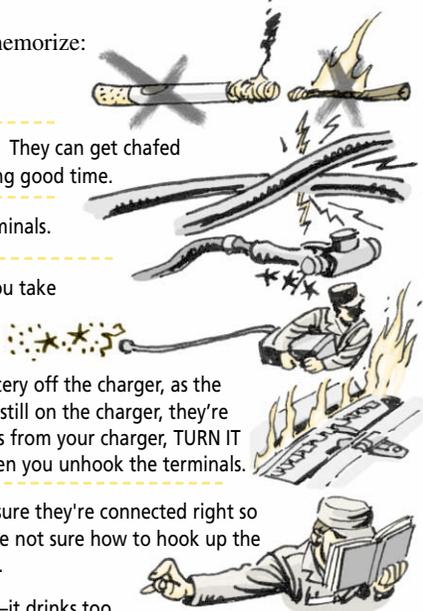


In this case, it's what you can't smell that can hurt you—hydrogen gas escaping from your lead-acid batteries. Don't do anything foolish that would make this stuff flare up.

The smallest of sparks can set off an explosion that could make the battery act like a bursting hand grenade.

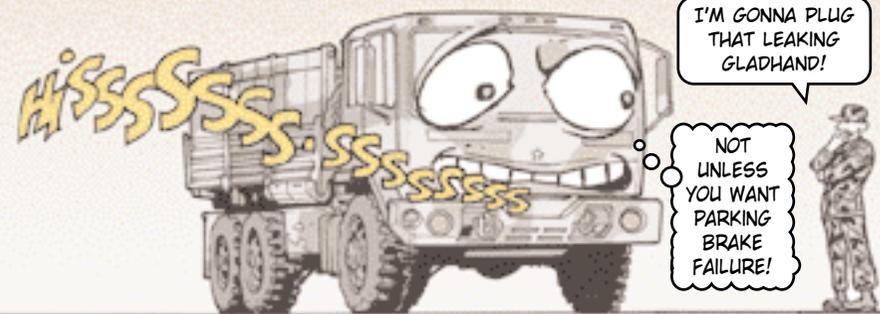
Here are some tips for everybody to memorize:

- Never, never light a match or smoke while working around batteries.
- Keep a watchful eye on battery cable wear. They can get chafed until a short-circuit is started and has a sparking good time.
- Do not jerk or pull on battery cables or terminals.
- Always remove the ground clamp before you take the battery out and always put it on after you put the battery back in.
- Be 'specially careful when you take the battery off the charger, as the fumes'll be greater. Natch, if the batteries are still on the charger, they're doubly dangerous. Before unhooking batteries from your charger, **TURN IT OFF**. This'll lessen the possibility of a spark when you unhook the terminals.
- When you put batteries in a vehicle, make sure they're connected right so you get the right voltage and polarity. If you're not sure how to hook up the cables, dig out the vehicle's TM and look it up.
- At the first sign of an overcharged battery—it drinks too much water (more than an ounce a week per cell)—get the generator/alternator checked for putting out too much juice.



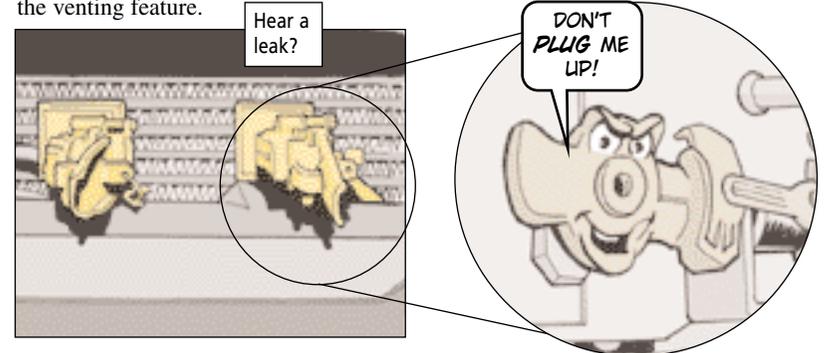
FMTV...

## PLUGGED GLADHAND CAN FOIL BRAKE



Resist the quick-fix urge to plug a leaking front air system gladhand. If you do, the FMTV's parking brake won't be able to lock the spring brakes on the rear wheels.

The gladhands must vent as designed when the truck is placed in SYSTEM PARK so that it won't roll away. Any plug used to seal off a gladhand takes away the venting feature.



And if the spring brake doesn't work right, the truck will roll when put in SYSTEM PARK. That truck you thought would stay where you put it may end up real close to you—maybe too close.

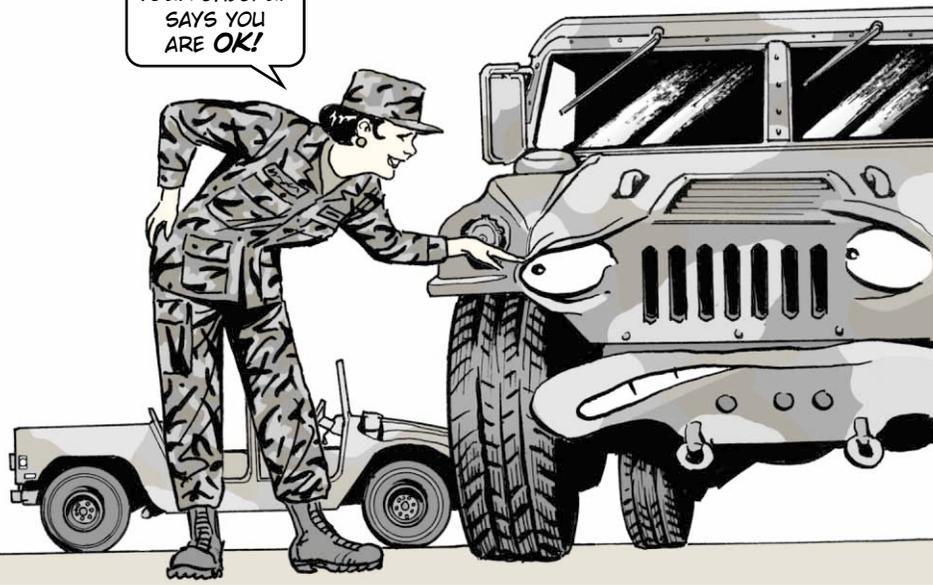
So, when you have a front gladhand leak, don't plug it. Get a mechanic to fix it. Most times the problem can be fixed by servicing or replacing the one-way check valve inside the front gladhands.



HMMWV...

DON'T WORRY.  
YOUR CHECKUP  
SAYS YOU  
ARE OK!

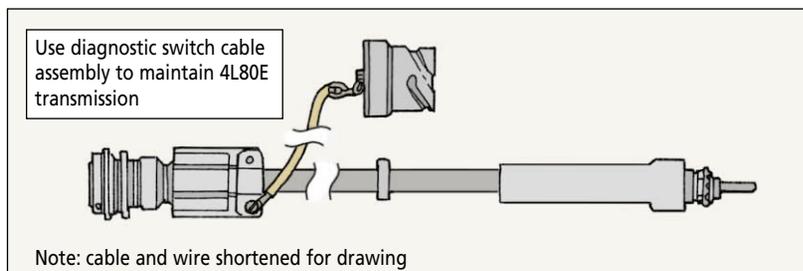
# M998A2



**M**aintaining the 4L80E transmission used in the M998A2-series HMMWVs, the M1113, M1114 and the M1123 is a bit different than working on the 3L80 used in the basic and A1-series trucks.

Without specific tools and training, you will have problems.

First of all, you need the diagnostic switch cable assembly and case from the special tools kit, NSN 5180-01-410-8467, that should have been fielded with your truck. The assembly and case are Items 32 and 33 in Fig 439 of TM 9-2320-280-24P-2. Without the assembly, you will not be able to diagnose the fault codes.



PS 584

6

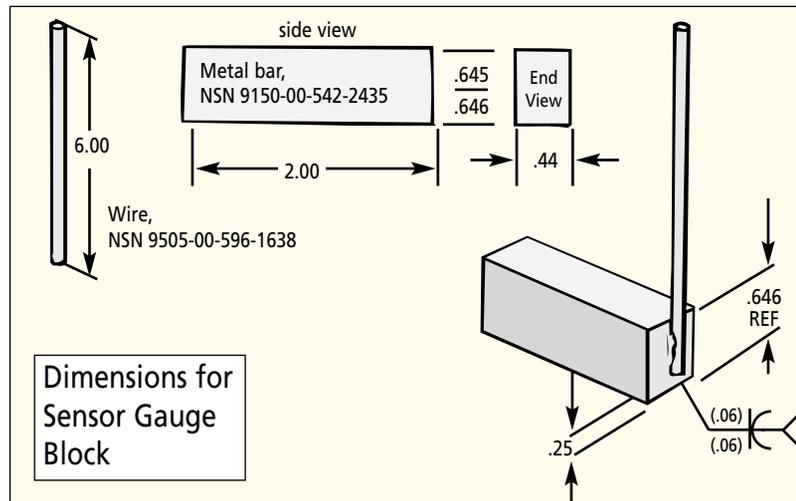
JUL 01

# Transmission Update

You also need throttle positioning sensor gauge block, NSN 4820-01-179-4869, which is not shown in the TM at all. You can make your own block, though, and save some money. Here's the info:

You'll need a 6-in piece of wire, NSN 9505-00-596-1638, and a piece of metal bar, NSN 9510-00-542-2435, that's 2 inches long.

Once the wire and bar have had all burrs and sharp edges removed, weld the wire to the bar as shown.



To help you through the maintenance process, you also need a training tape, TVT 55-62, *HMMWV A2 Electronic 4-speed Transmission*, available from your local TSC. It can also be ordered over the Internet from the Defense Automated Visual Information System/ Defense Instructional Technology Information System (DAVIS/DITIS).

Go to their web site at <http://dodimagery.afis.osd.mil/>. Once there, click on DODVI Productions/IMT Products (DAVIS/DITIS). Then click on PIN/ICN Search. Do an ICN search for TVT 55-62, and follow the ordering info.

You can also order by:  
E-mail: [vibuddy@hq.afis.osd.mil](mailto:vibuddy@hq.afis.osd.mil)  
Fax: DSN 795-6106, (717) 895-6106  
Mail:

**Joint Visual Information Services  
Distribution Activity  
Warehouse 3/Bay 3  
11 Hap Arnold Blvd  
Tobyhanna, PA 18466-5102**

Include your name, full military mailing address, the title and PIN (711363) of the film, format (VHS) and the quantity of films you need. APO addresses must include a unit/box number, CMR box number or PSC box number.

HMMWVs...

# Cut Down on Clamp Cuts

I'M BEING CUT TO PIECES BY CLAMPS!

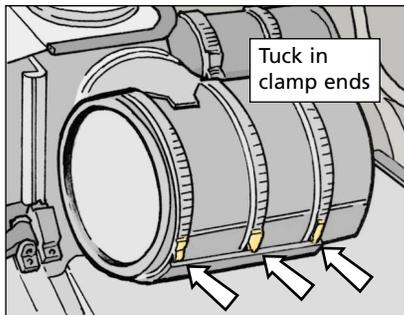


When you move the clamps on the HMMWV's air cleaner so the bolts won't rub holes in the hood, make sure **you** don't get cut.

John F. Tipword, Jr. of AMSA 45G, Orland Park, IL, offers this approved SMART suggestion:

Tuck the loosened clamp straps in between the air cleaner shield and the air cleaner body. Then tighten the clamp bolts.

That way the clamp straps won't be as likely to cut, rip and tear at your hands and clothes while you're pulling PMCS or maintenance in the engine compartment.

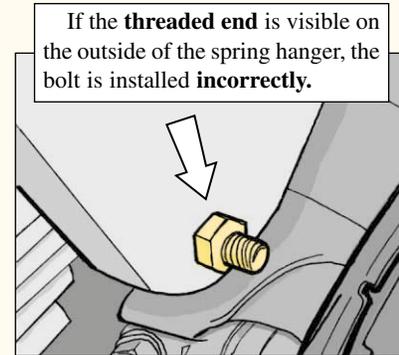
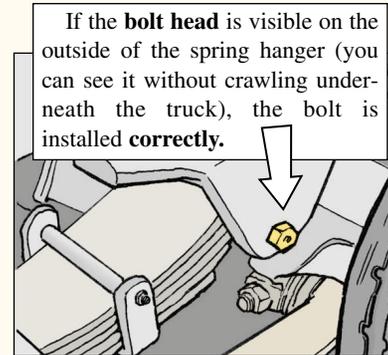


M917A1 Dump Truck...

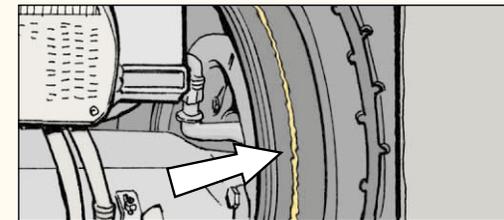
# EYEBALL SPRING HANGER BOLTS



TAKE A LOOK RIGHT NOW, DRIVERS, TO SEE IF THE **SPRING HANGER BOLTS** ON YOUR M917A1 DUMP TRUCK HAVE BEEN INSTALLED CORRECTLY.



It may have already caused some tire damage because the tire rubbed against the bolt end when the truck was heavily loaded.



Let your mechanic know if the threaded end is visible so the problem can be corrected. Let him know if there is tire damage, too.

# Stick 'em Up!

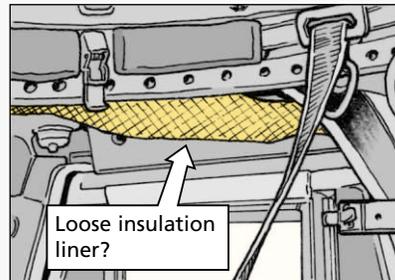
We're not talking about a bank holdup here.

We're talking about an armored HMMWV's insulation liner that loses its stickum. Over time, the self-stick backing on the headliner turns loose and the liner droops.

Eyeball the inside roof of your hard-shell HMMWV to see if the liner has any loose spots.

Glue them back in place with primer adhesive, NSN 8040-00-826-3535. Hold the liner against the roof for about 3 minutes while the adhesive dries.

When you have to replace entire liner pieces, spray the adhesive on the roof to make sure the liner stays put.

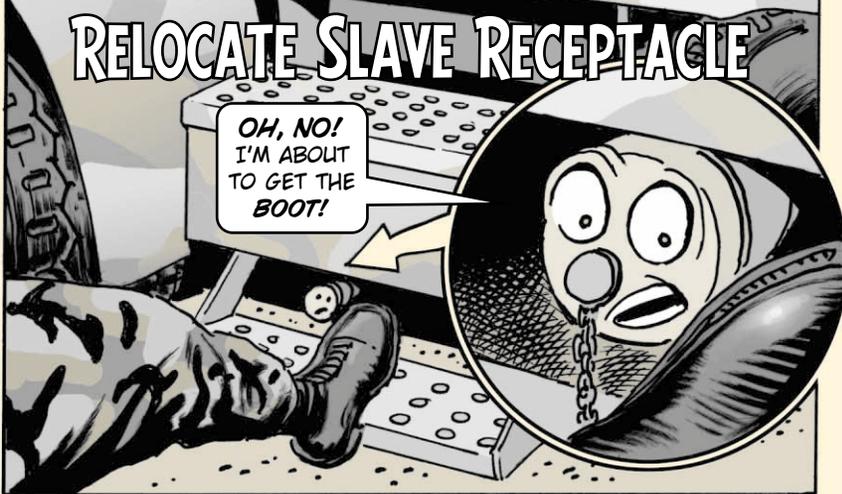


# HEMTT Parts Update

Note these changes to your HEMTT's TM 9-2320-279-24P. The water pump, Item 1 in Fig 63, is now NSN 2930-01-354-9202. The pintle assembly, Item 1 in Fig 238, was changed to NSN 2540-01-475-9206. The front (double-lipped) axle seal, Item 11 in Fig 181, is NSN 5330-01-236-2179.

M915A2-Series, M916A1 Trucks...

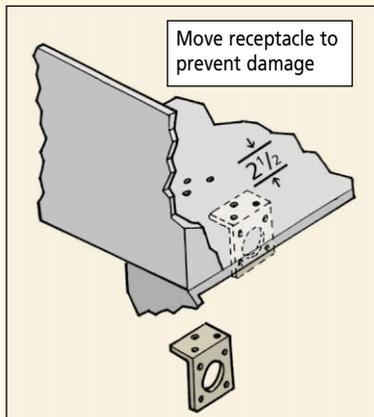
## RELOCATE SLAVE RECEPTACLE



The original versions of M915A2-series and M916A1 trucks have the NATO slave receptacle mounted at the edge of the battery box, right where drivers can step on it.

Here's how to get the receptacle out of harm's way and still have it right where you need it:

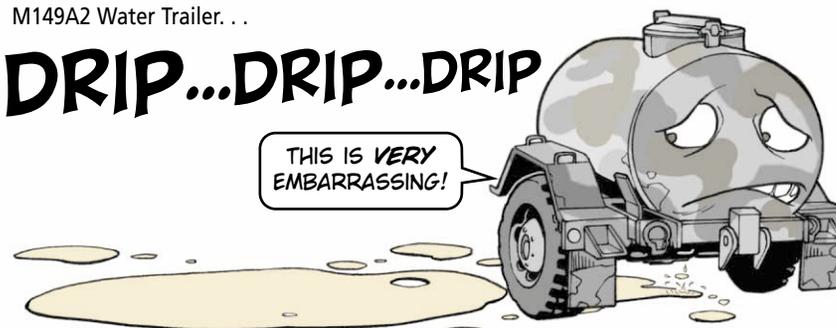
1. Disconnect battery cables and remove the batteries. See Page 2-29 in TM 9-2320-363-20-1 to disconnect the cables, and Pages 4-256 and 4-257 in the -20-2 to remove the batteries.
2. Remove the NATO slave receptacle from the battery box. See Page 4-270 in the -20-2.
3. Remove the receptacle bracket by cutting or grinding it off the battery box.
4. Use a new angle bracket, NSN 5340-01-391-1349, as a template to locate and drill three 1/2-in diameter holes in the bottom of the battery box about 2 1/2 inches inward from the old bracket's location.
5. Install the new bracket using three screws, NSN 5305-00-225-3843; six washers, NSN 5310-00-809-4058; and three nuts, NSN 5310-00-088-1251.



Once you've finished the job, replace the slave receptacle cover to protect the receptacle from dirt and water. If you need a new cover, use NSN 5340-01-315-7223.

M149A2 Water Trailer . .

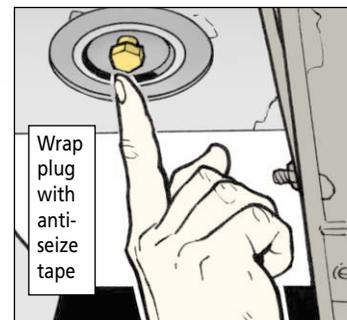
## DRIP...DRIP...DRIP



Leaks around the plastic plug, NSN 4730-01-086-1620, under your water trailer probably means it was overtightened when it was first installed.

Overtightening strips threads, causing leaks. It also makes the plug hard to remove.

So head off leaks and removal problems by wrapping every new plug's threads with anti-seize tape, NSN 8030-00-889-3535, and by lightly snugging it in place. That way, the plug can be used several times.



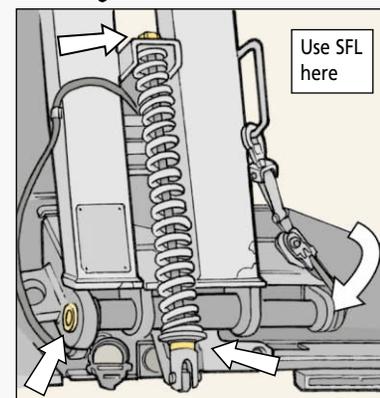
M1000 HET Semitrailer...

## Ramps Get Dry Lube

Solid film lubricant (SFL), not grease, is the required lube for the ramp pivot shafts and spring rod guides on M1000 HET semitrailer ramps.

SFL lubes the shafts and guides, without attracting dirt, grit and sand like grease. The grease-dirt-grit-sand combination works like sandpaper to score the surface of ramp pivot shafts and guides.

If your semitrailer's pins or guides now have grease on them, remove it with dry cleaning solvent. Then use SFL, NSN 9150-00-754-0064.





# KEEP WIRE

# ROPE CLEAN AND LUBED

### Inspect

While you're cleaning, look for broken wires, kinks and other damage. Replace the cable if you find kinks. Broken wires KO the cable, too. See your vehicle TM for inspecting details. FM-25, *Rigging Techniques, Procedures and Applications* and TB 43-0142, *Safety Inspection and Testing of Lifting Devices* has more good info.

### Lube

Lube the wire rope according to the lubrication instructions for your equipment. There are some other things you can do to keep the rope mission-ready. If the cable gets lots of use, coat it with clean OE-HDO 30 engine oil. Stay away from used oil. It has acid in it that weakens rope strands.

In dry, dusty areas, the cable doesn't need oil. In fact, oil just collects more dust and dirt.

If the wire rope isn't used much, or if conditions are damp or salty, give it extra protection with MIL-G-18458 wire rope grease. Get a 35-lb can with NSN 9150-00-530-6814.

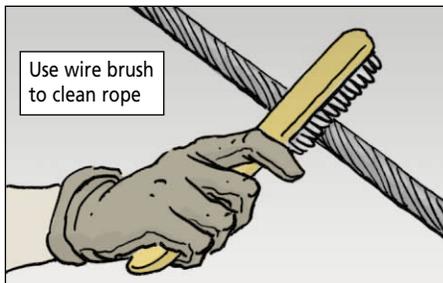
**W**ire rope hates four-letter words: dust, grit, rain, snow, and rust to name a few. These are the elements that shorten wire rope life.

Wire rope loves some longer words. Its favorites are preventive and maintenance. Try some on the wire rope on your equipment winches after a muddy or dirty operation, or whenever you think it's needed.

But, before you do any PM, be sure to put on leather gloves. They'll protect your hands from any broken strands or wires.

### Clean

Unreel the wire rope and stretch it out straight on a clean surface, like a paved motor pool. Use a wire brush, like the one from your No. 1 Common shop sets, to remove old lube, dirt and corrosion. Clean the entire cable. Grit and corrosion get buried among strands.



G  
if

M1A1/A2 Tanks...

# DON'T ROLL THE DICE



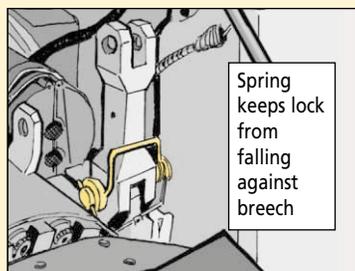
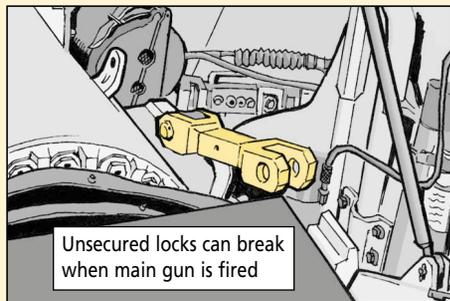
Tankers who forget to pin the main gun elevation lock to the gun mount assembly before firing their M1A1/A2 tank risk some expensive damage.

If the lock is loose, where it will end up is a roll of the dice. Sometimes the lock falls forward out of the way and sometimes it falls against the breech.

The problem comes when the lock ends up on the breech. When the gun is fired, the breech recoils and snaps back against the lock, breaking it and shearing off part of the bracket.

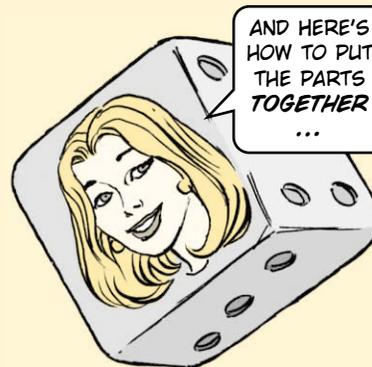
That little slip-up will cost a lot of downtime while DS repairs or replaces the gun mount assembly.

Mechanics, you can stop that roll of the dice by adding a spring to the lock. The spring automatically forces the lock forward and away from the breech.



Here are the parts you'll need:

ITEM	NSN
Spring	5360-01-384-5338
Washer	5310-01-384-4231
Pin	5315-01-385-7871
Cotter pin	5315-01-378-7858



1. Remove the old cotter pin and straight-headed pin.
2. Place the new spring over the elevation lock.
3. Slip a washer over the new pin and slide the pin through the spring and lock.
4. Place another washer over the open end of the pin.
5. Secure the pin in place with the new cotter pin.

When you're finished, make sure the chain attached to the lock's quick-release pin is short enough to keep the pin from getting caught under the lock. Remove a few links if necessary.

M1-Series Tanks...

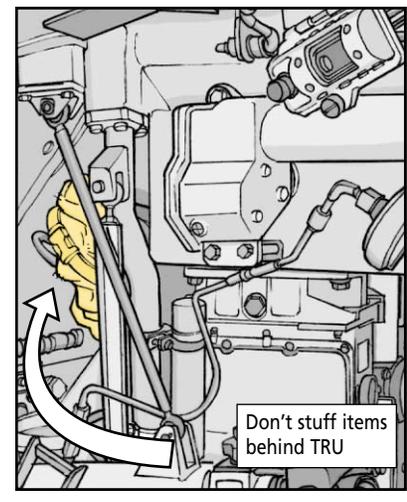
# Give TRU Its Space

One of the universal questions for tankers is, "Where do I store my stuff?" TMs, helmets, tools, microclimatic vests, MREs—all of that stuff has to be stored somewhere.

One place that seems ideal is the open area behind the thermal receiver unit (TRU). It's amazing how much stuff an industrious tanker can get into such a small space. But don't do it!

That space is there for a reason. The fan on the back of the TRU needs room to draw in cooling air. Without it, the TRU burns up and has to be replaced. And the price tag is a whopping \$98,000!

So don't store your stuff behind the TRU. Find somewhere else to put it.



M2/M3-Series Bradleys...

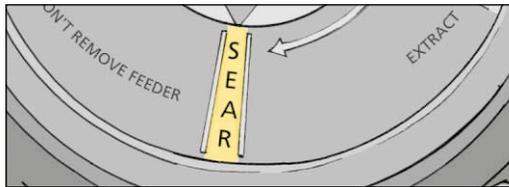
# Food for M242 Feeder Thought



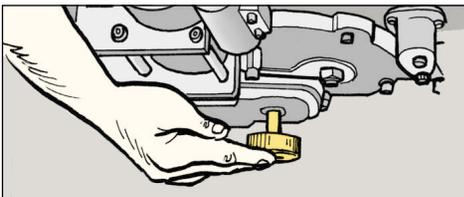
If you don't take it easy installing the feeder on the Bradley's M242 cannon, the gun will starve for ammunition. Jamming the feeder on the receiver mangles the solenoid and motor connectors.

But if you remember just four easy steps, you'll do the job right every time:

**1** Make sure both the receiver and feeder are locked in SEAR. The bolt position indicator should point to SEAR.



**2** Push the feeder all the way forward on the receiver. Press the release button and push the drive shaft handle up into place. If the handle won't easily push up, reposition the feeder and try again. Once the handle is locked in, it shouldn't rotate more than 1/2 inch right or left. If it does, tell your repairman.

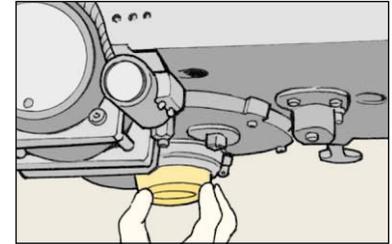


**3** Press the feeder handle latch down and push the feeder handle down. If it locks down full against the receiver, you're set.



**4** If you get any resistance when you push down on the handle, **STOP** pushing.

Press the release button on the drive shaft, pull the drive shaft down, and reposition the feeder. Lock in the drive shaft and try again to lock down the feeder handle. If you still get resistance, have your repairman check the alignment of the connectors.



# LEAVE LIGHT SWITCH ALONE!

*OH, GREAT! WITH MY RAMP LIGHT SWITCH TAPED UP, I'M A SITTING DUCK OUT HERE!*

Crewmen, the ramp light switch on your Bradley has a job to do—if you'll let it. The switch is released when the ramp is lowered. That turns off the interior dome lights and keeps you from being an easy target on a dark battlefield.

Using tape, cargo straps, rubber bands or anything else to keep the switch depressed—and the light on—not only blows your light security, but causes damage as well.

The extra layers on the switch make it stick out too far. When the ramp closes, it crushes the switch and shorts out the 1W19 cable. Not only do you lose the ramp switch, but the headlights won't work, either.

A new cable will cost you a bundle, so let the switch do its job. Keep the tape and other stuff away.



IF YOU  
ER JUST  
EASY  
YOU'LL DO  
RIGHT  
TIME...



M113-Series FOV...

# Buckle Down on Buckle PM

I THOUGHT YOU WERE A GONER!

THANK GOODNESS I PULLED PM ON MY SEATBELT THIS MORNING!

**F**or safety's sake, it's a good idea to buckle up before taking your M113-series carrier for a run.

'Course, all the buckling in the world won't help if the seat belts don't work.

Dirt, sand and other gunk collect inside the seat belt's latch mechanism. Eventually the mechanism freezes and you can't latch or unlatch the seat belt.

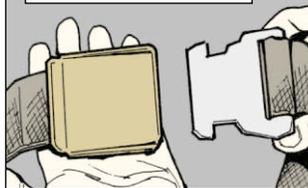
A little PM will keep you safely buckled in place. First, pull back the latch cover and use a clean cloth to wipe any dirt out of the mechanism. Use a toothbrush to get the crud out of nooks and crannies.

Next, put a few squirts of CLP, NSN 9150-01-054-6453, on the latch mechanism hinge. Then open and close the latch cover several times to work the oil in.

Finally, wipe the belts with a clean, damp cloth. That gets rid of dirt that could end up inside the latch mechanism when you adjust the seat belt.

Once the seat belts are clean, make sure you use them **every time** you drive the vehicle.

Crud collects inside and freezes latch mechanism



A few drops of oil here keeps belt buckling



AVLB...

# FOCUS ON THE SQUEAKS



YEOW! WHERE'S THAT NOISE COMING FROM?

AVLB crews often complain about loud squeaks when they launch or retrieve their bridge. But they shouldn't. Squeaks are an early warning signal that something needs lube.

Those squeaks come from areas near grease fittings. If you don't lube those areas, bearings soon burn out or seize. If a bearing seizes, something breaks.

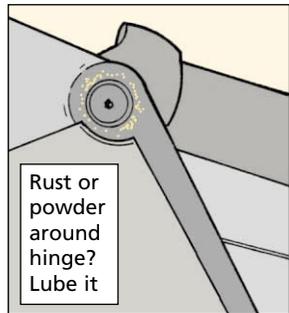
So keep your AVLB lubed and get rid of those loud squeaks. Follow LO 5-5420-202-12 to the letter—and then some.

LO lube intervals were set by assuming that an AVLB normally launches its bridge about four times a month.

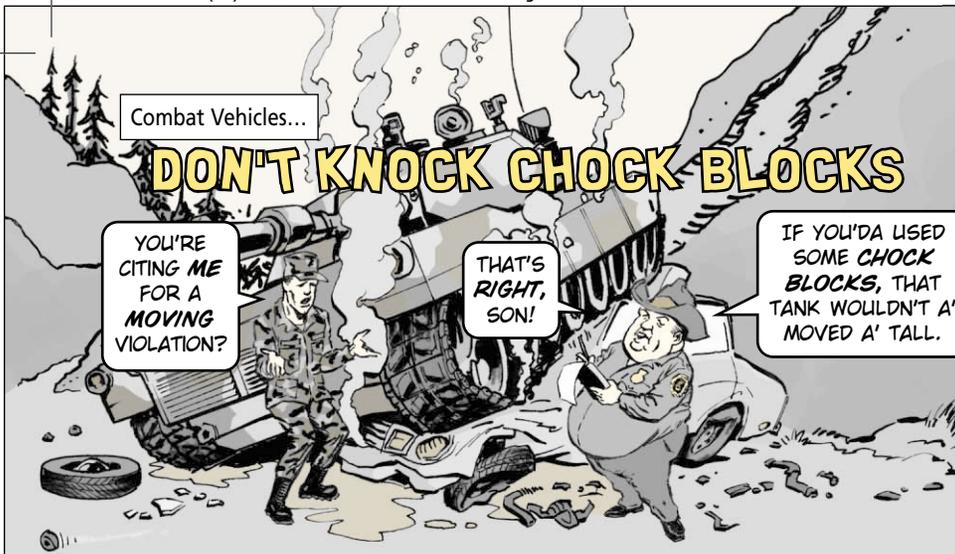
If you launch your bridges more often, you need to shorten lube intervals. Eyeball the lube points more often with more launches, or if the weather's been rainy, or hot and dusty.

Any time a hinge point badly needs lube, you'll see a rusty color or powdery substance around it. Any squeaking of the bridge during launching or retrieving means the inner and outer center hinge pins need lube.

Before operation is the best time to do the extra check. If you see rust, or the fitting appears dry, lube it. Always wipe off excess lube so it won't collect dirt and sand. After lubing, launch the bridge to evenly distribute the lube—then lube again.



Rust or powder around hinge? Lube it



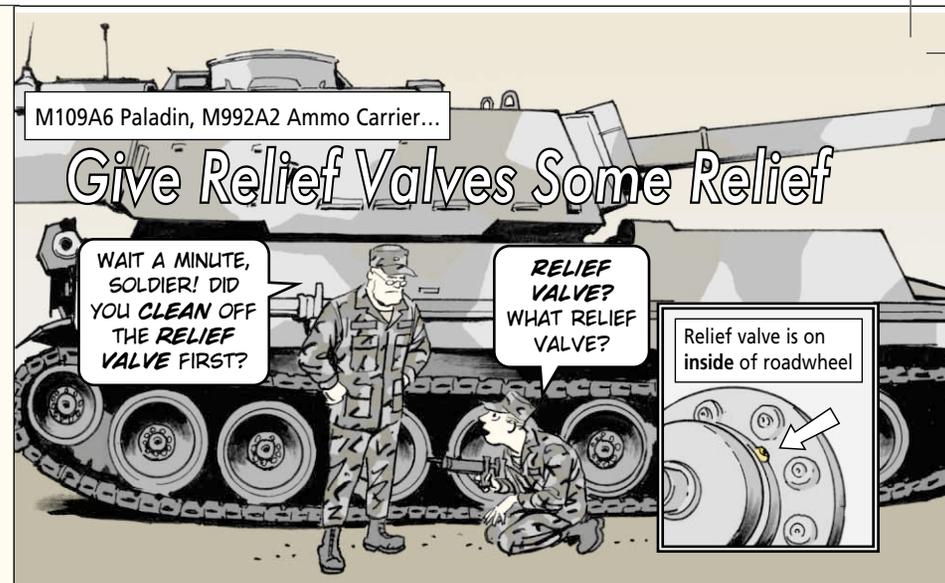
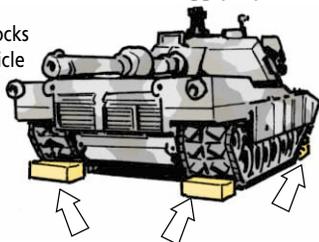
Crewmen, it's always a good idea to chock the tracks on your combat vehicle, particularly when you have to park on an incline. After all, there's nothing worse than several tons of metal rolling down a hillside when you happen to be at the bottom!

You won't find chock blocks for your tracked vehicle in the supply system, though. You'll have to make your own.

Most units make the chock blocks out of 4x4-in lumber. Treated wood works best because it's less likely to crack or rot.

Cut each block about 18 inches long. You'll need four per vehicle. Put blocks under each track at both ends.

Chock blocks keep vehicle from moving



Crewmen, you know that you're supposed to clean mud and dirt off the relief valve before pumping new grease into the roadwheels of your Paladin or M992A2 ammo carrier. Otherwise, the grease has nowhere to go except past the roadwheel seal.

So why are so many of those vehicles ending up with blown roadwheel seals anyway?

It's a simple case of out-of-sight, out-of-mind. The relief valves are located on the **backside** of each roadwheel. That makes them hard to see and reach, so many crewmen forget them.

Don't let your vehicle fall victim to blown roadwheel seals. Use a cloth to wipe those relief valves clean first. Then have someone eyeball each relief valve to make sure old grease is coming out while you're pumping in new grease.

Wipe off the relief valves again when you're finished to avoid attracting dirt.

Howitzers...

# You Repair the M90



If your howitzer's M90 radar chronograph, NSN 1290-01-073-0764, is down for the count, **don't** send it back to the manufacturer for repairs!

The M90 is being replaced by the M93 muzzle velocity system (MVS), NSN 1290-01-412-5759, for the M109A6 Paladin and the M94 MVS, NSN 1290-01-412-5760, for all other howitzers. The manufacturer, Borish Manufacturing, now repairs the **new** MVS only.

Until you receive a replacement MVS through free issue, keep your M90 running by cannibalizing repair parts from existing unissuable M90s in the supply system. Just order an M90 through the supply system and use the parts you need.

After you receive your new MVS, contact the item manager, Pressie Beckett, at DSN 793-3096 or (309) 782-3096. She'll provide disposition instructions for your old M90 so that other units can keep their chronographs in service.

SEE...

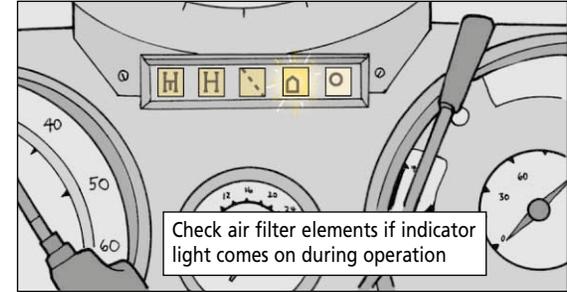
I DON'T MIND GETTIN' DOWN 'N' DIRTY...

# Air Filter

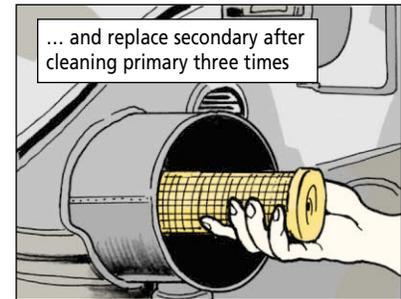
... AS LONG AS YOU KEEP MY FILTER CLEAN!

# Brush-Off

Your second job is to keep an eye on the vehicle exhaust and the air cleaner indicator lamp on the dash. When the lamp lights, or when you see black exhaust, call in your mechanic to service the filters.

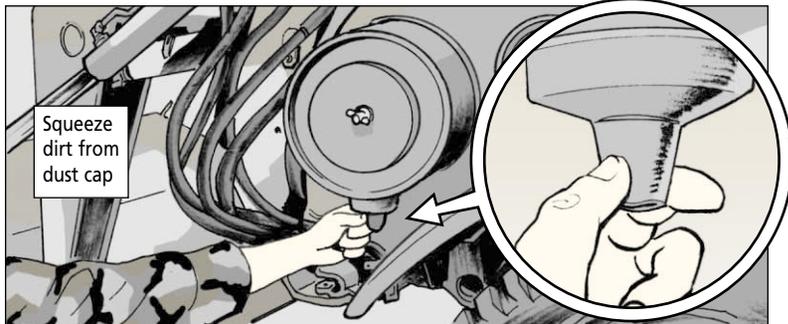


Mechanics, clean the primary filter element with 30 psi compressed air, blowing from the inside out. Replace the secondary filter after cleaning the primary three times.



**T**he SEE's air cleaning system is its first line of defense against dirty air. It's up to you to make sure the system works.

Operators, your first task is to squeeze dirt out of the dust cap on the bottom of the air canister weekly, or daily if you're working in a dusty or sandy area.



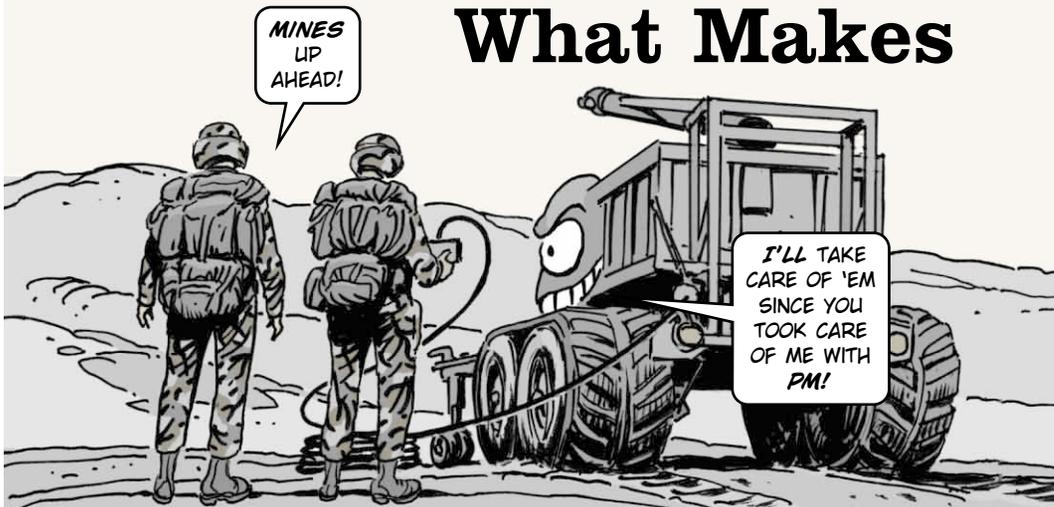
Squeezing gets rid of dirt or sand in the canister. Dirt that's left in the canister will end up clogging filters.



Mine Clearance Line Charge...

# What Makes

# MICLIC Tick?

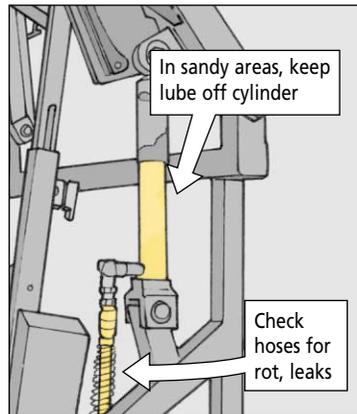
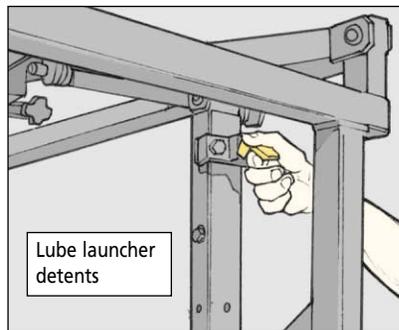


**PM**, that's what makes the MICLIC tick. If you forget PM, you can forget clearing mines.

## To Lube or Not to Lube

Of course, you want to follow the complete lubing schedule in Para 3-1 of TM 9-1375-215-13&P. But pay particular attention to the launcher's detents. If they become corroded and stick, you'll have trouble locking the launcher in firing position. Lube the detents after operations with OE-HDO-10 oil, NSN 9150-01-177-3988.

But in a sandy environment especially, keep lube off the accumulator cylinder. Lube attracts sand, which ruins the cylinder's seals. Soon you'll have hydraulic leaks and trouble raising and lowering the launcher.

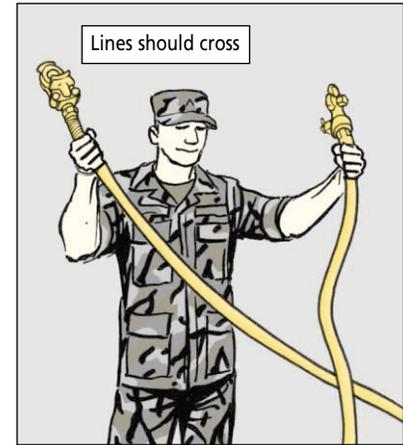
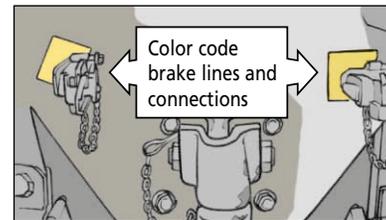


## Hoses and Lines

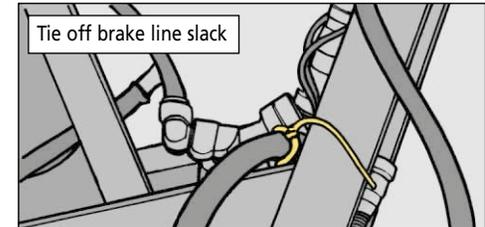
Before you take your MICLIC out of the motor pool, eyeball the hydraulic hoses for cracks, dry rot and leaks. The MICLIC sits for long periods with the hoses exposed to the elements, which shortens the life of a hose. A bad hose deadlines the MICLIC. Get it replaced.

red for emergency and blue for service, for example. If the brakes lines are connected correctly, they cross.

Make sure you hook up the brake lines correctly. If you reverse them, the trailer brakes can lock up. Most units color code the lines and connections:

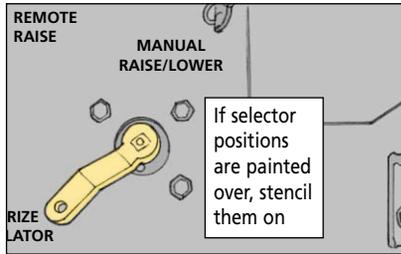


Take up any slack in the brake lines by tying them to the trailer frame. If the lines are left dangling, they can be damaged or ripped off. Either way, you have no brakes.



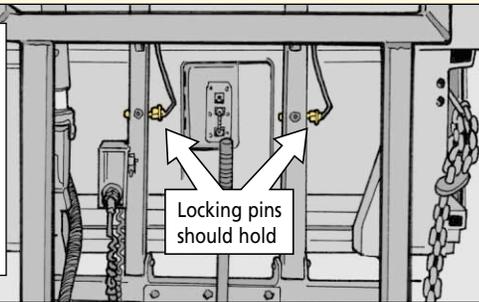
### Painting

Before the MICLIC goes to the paint shop, cover the markings for the hydraulic control selector valve. If the markings are painted over, you'll be guessing what you're selecting. The settings are already painted over? Have your repairman stencil them on. See Fig 1.29 in the TM for the settings.

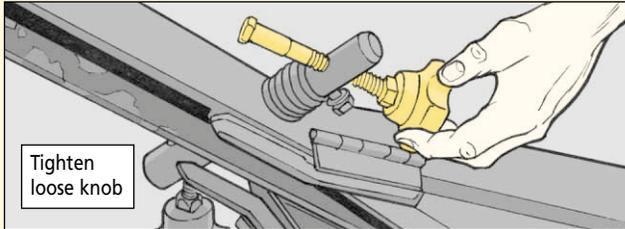


### Pins and Knobs

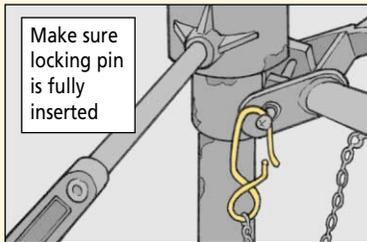
Test the strength of the launcher locking pins by gently pulling on them. If a pin's spring is worn out, the locking pin will come out. A weak pin lets the launching arm fly out of position during firing. That's dangerous.



Feel the locking knobs on the rails for looseness. If the knobs become too loose, they come off and so does the rocket. Tighten loose knobs with a wrench.



During setup, make sure the locking pin for the landing leg is fully inserted. If the pin is missing or it works out, the leg can collapse.



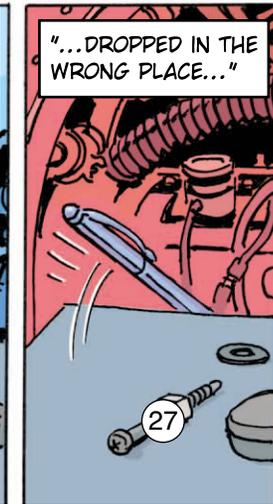
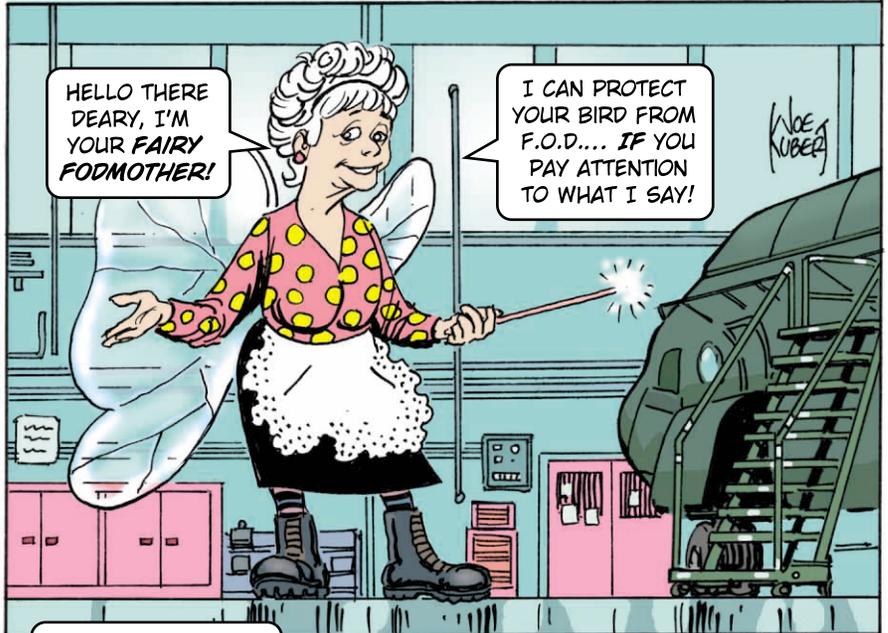
HOPE WE  
CLEARED UP  
YOUR MINE-  
CLEARING  
PROBLEMS!



PS END

PS 584

# THE FAIRY FODMOTHER



R



WHEN YOU FINISH WORKING ON EQUIPMENT... **CHECK YOUR STUFF!**

MAKE SURE YOU PICK IT ALL UP...



...AND MAKE SURE EVERYTHING YOU BROUGHT WITH YOU GOES BACK WITH YOU!



"MISLAID CLOTHES-HATS, GLOVES, SHIRTS..."



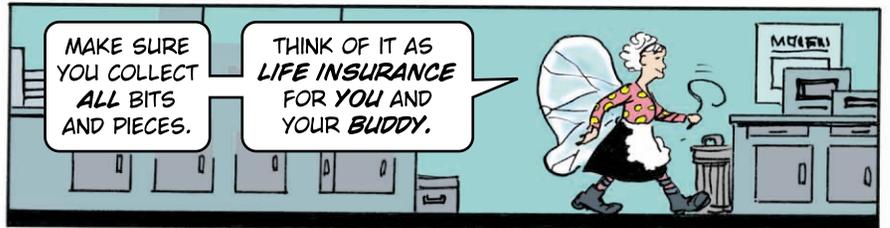
...THESE CAN BE A PROBLEM, TOO!



"YOU NEVER KNOW WHAT A SWEATSHIRT CAN GET INTO..."

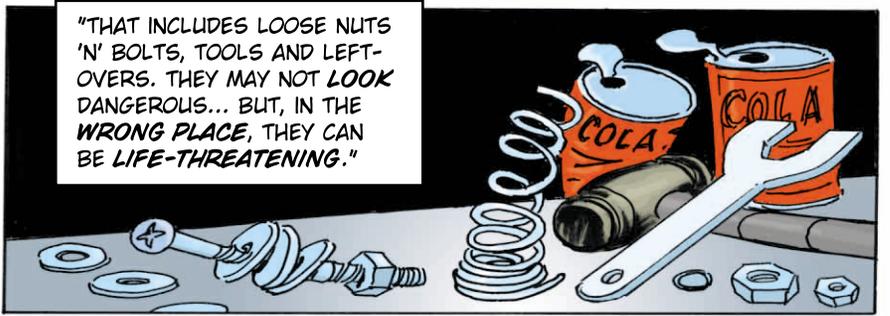


IF YOU GIVE BAD THINGS A CHANCE TO HAPPEN, THE ODDS ARE THEY WILL.

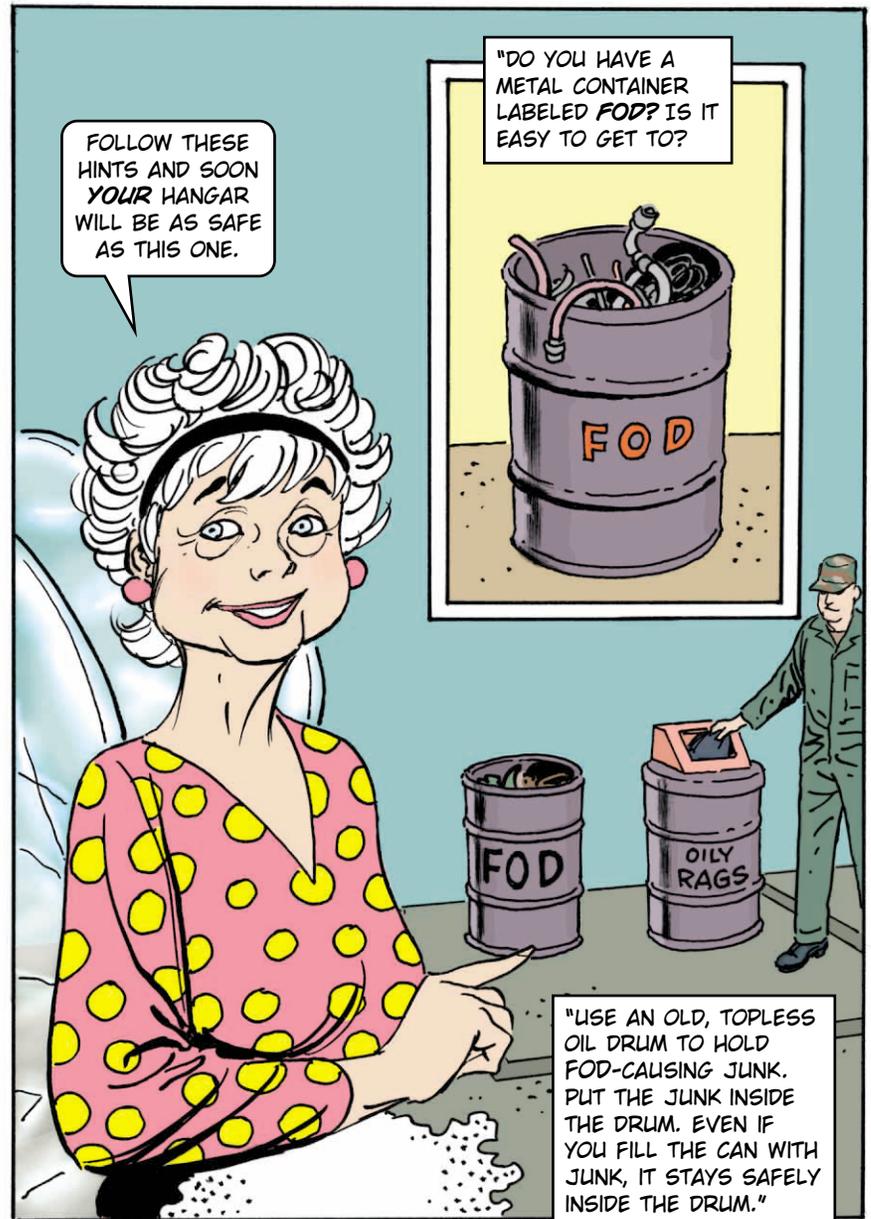
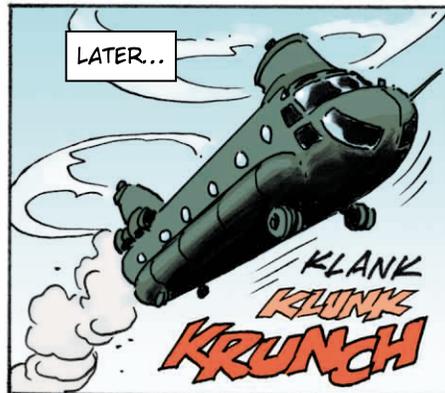
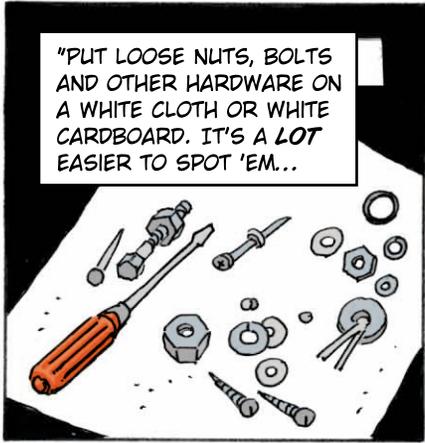


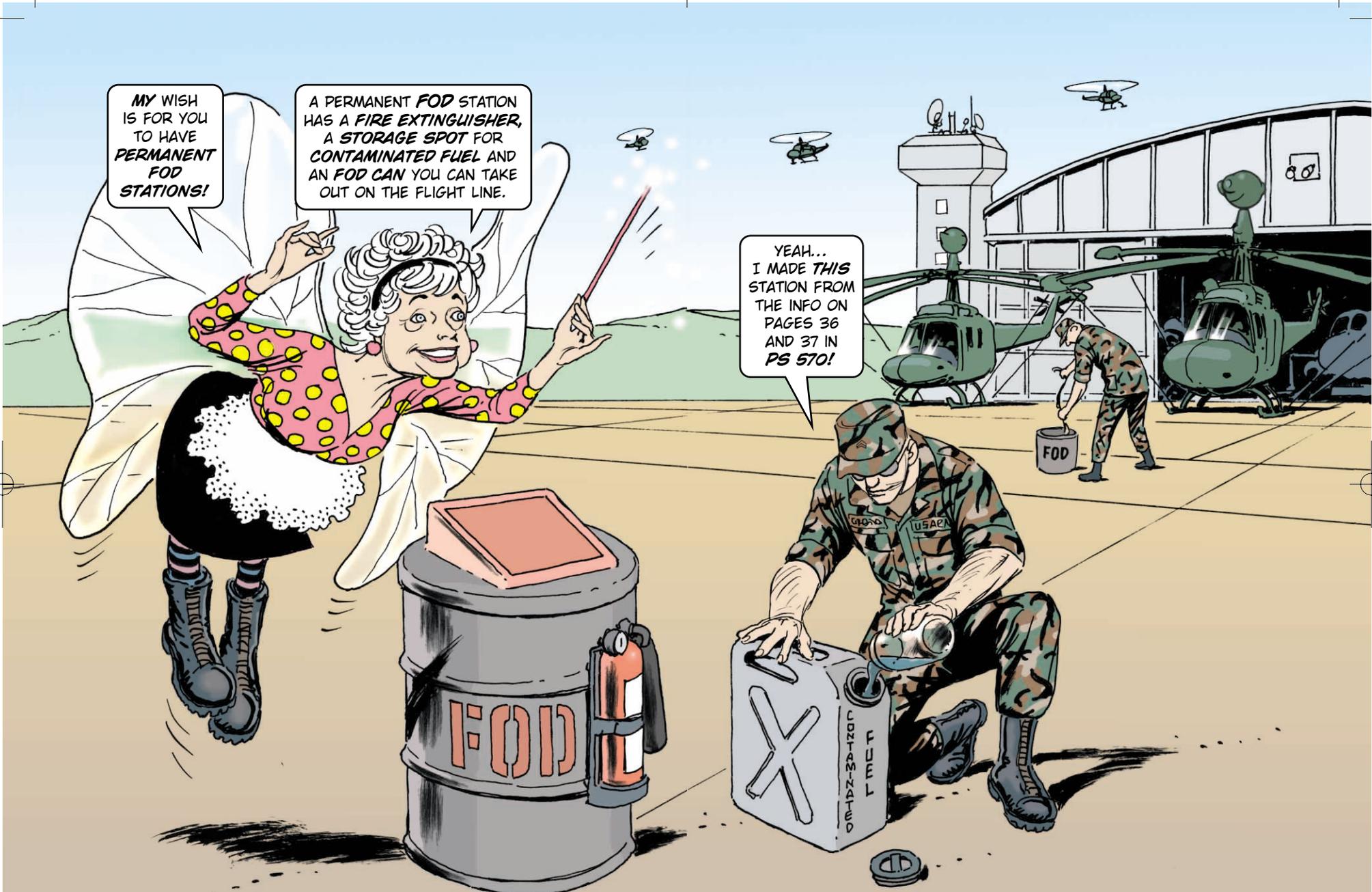
MAKE SURE YOU COLLECT ALL BITS AND PIECES.

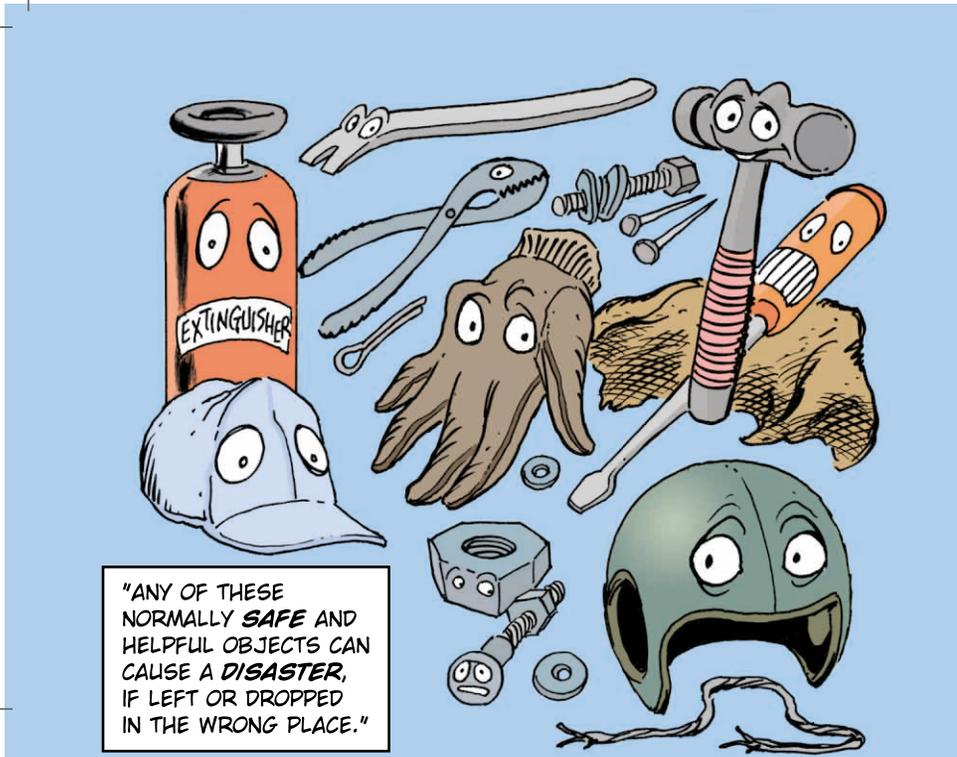
THINK OF IT AS LIFE INSURANCE FOR YOU AND YOUR BUDDY.



"THAT INCLUDES LOOSE NUTS 'N' BOLTS, TOOLS AND LEFT-OVERS. THEY MAY NOT LOOK DANGEROUS... BUT, IN THE WRONG PLACE, THEY CAN BE LIFE-THREATENING."







"ANY OF THESE NORMALLY **SAFE** AND HELPFUL OBJECTS CAN CAUSE A **DISASTER**, IF LEFT OR DROPPED IN THE WRONG PLACE."

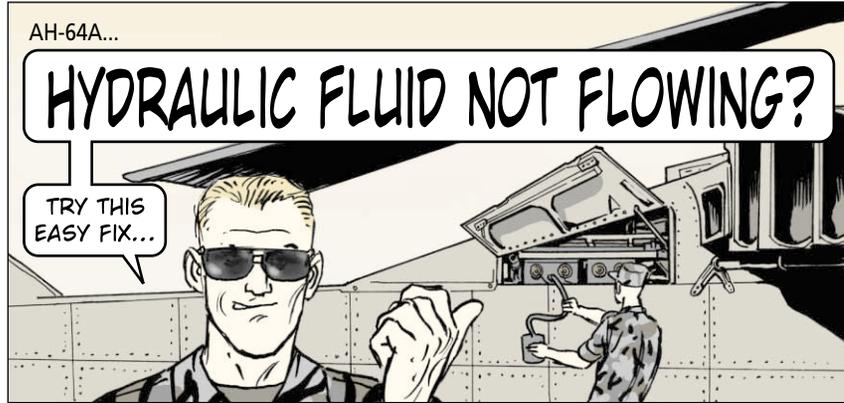


JUST LISTEN TO YOUR **FAIRY FODMOTHER** AND YOU'LL HAVE A LONG, HEALTHY LIFE... **BELIEVE ME!**

AH-64A...

# HYDRAULIC FLUID NOT FLOWING?

TRY THIS EASY FIX...



**M**echanics, when it's time to service the Apache's hydraulic system but the fluid won't flow, check the in-line filter behind the servicing connection.

If you remove the filter, you may find a small ball of rubber. That ball started out as a sliver of rubber cut from the servicing tube.

Here's the bounce on the rubber ball:

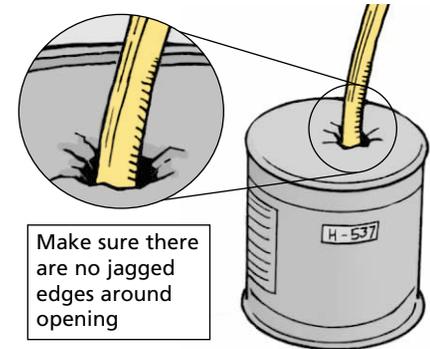
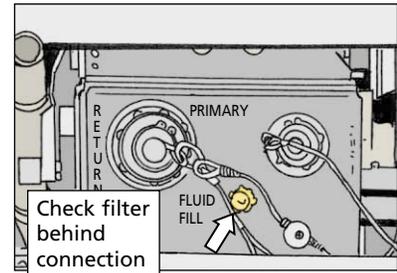
When you grab a can of hydraulic fluid and punch holes in the lid with a screwdriver, then bend in or pull out the lid with pliers, you create sharp, jagged edges around the can's opening.

As you insert or remove the servicing tube, the edges slice off bits of rubber that drop into the fluid. There, they lodge in the filter and block the flow of fluid.

Using a metal braided hose instead of a rubber hose is not the solution, either. The braided hose gets raked by the jagged edges and pieces of metal wind up in the hydraulic system, too.

The only solution is to not create jagged can edges and to be extra careful when you place the hose or tube in the can.

During the next scheduled service, open the can with a can opener, then bend the sharp edges inward and under. If you don't have a can opener handy, create a wide opening so the tube can be inserted without scraping the sharp edges.



OH-58D Kiowa Warrior...

# Lock In Safe Firing

HEY, BUDDIES!  
MY ACCELERATOR  
STOP LOCK LETS  
ME KEEP FIRING  
AND FIRING!

WE  
HEAR  
YOU.

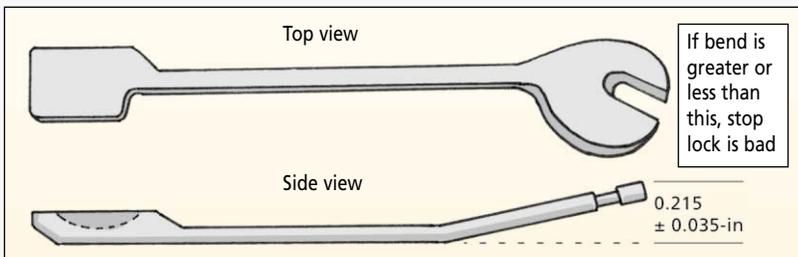
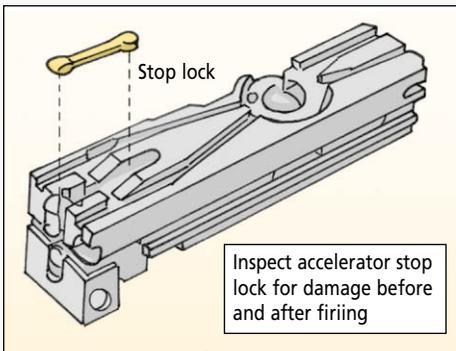
WE'VE BEEN  
FIRING UP A  
STORM, TOO.

DON'T WORRY,  
GUYS... ONCE WE  
GET NEW **STOP  
LOCKS**, WE  
**WON'T** BE JUST  
SHOOTING OFF AT  
THE **BARREL**.

**GOOD!** NO MORE  
UNCOMMANDED  
FIRINGS WITHOUT  
WARNING!

**A** worn out or defective accelerator stop lock on the Kiowa Warrior's M296 .50-cal machine gun can let the gun fire on its own during reloading. That's scary!

So check the accelerator stop lock right now, armorers! Lay the stop lock on a flat surface. If the bend of the stop lock is less than .18 in. or greater than .25 in, then the stop lock is bad.



- Is it wedged against the sear?
- Does it have improper bends?
- Has it straightened out or lost its allowable bend?
- Is it twisted down and out?

If any of these conditions exist, the gun is NMC until you replace the lock.

Details on the lock inspection are in TACOM-RI MAM (Maintenance Advisory Message)-00-009. Get a copy from your local TACOM-RI LAR or contact Scott Johnson, at DSN 793-2364, (309) 782-2364 or e-mail [johnson@ria.army.mil](mailto:johnson@ria.army.mil). You can also access MAMs on the Army Electronic Product Support web page. Go to <http://aeps.ria.army.mil/aepspublic.cfm>. If you don't have a password, you'll have to request one.

After you get your password, log on to and click on [Safety First](#) and scroll down to [Maintenance Advisory Msg](#) or do a site search using the MAM number.

Check **all** accelerator stop locks, including new locks you have on hand. If you have locks stamped with CAGE code 14677, Defense Supply Center Columbus (DSCC) says do not use them! They're defective.

Even though your PMCS in TM 9-1090-214-23&P tells you to check the accelerator stop locks quarterly, repairmen, you must now inspect them prior to reloading and before and after each firing. Replace bad stop locks. Once the bad locks are purged from the system, another MAM will be published ending the more frequent inspections.

If you find other defective stop locks, contact your LAR or Teresa Perry at the Defense Supply Center in Columbus at DSN 850-3814, (614) 692-3814. Her e-mail address is [teresa.perry@dscclia.mil](mailto:teresa.perry@dscclia.mil).

Avenger Missile System...

I JUST *DON'T* SEEM TO HAVE ANY *STRENGTH!*

I THINK SOMEBODY FORGOT *BATTERY PM.*

# C-H-A-A-R-

# R-R-G-G-E!

If you don't respect your Avenger's batteries at PMCS time, don't expect to do much firing. To do their job, Avenger batteries must be in peak condition.

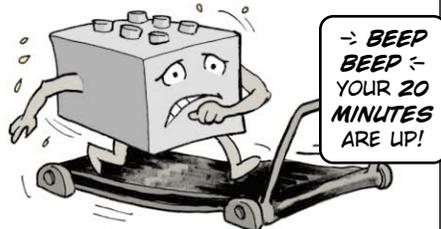
Keeping Avenger batteries strong takes the efforts of both repairmen and operators.

### Repairmen

Repairmen, check the batteries with the hand-held battery load tester, NSN 6130-01-447-7294. It will tell you the battery's state of charge or if it's bad. To charge a battery, start the HMMWV and run it for 20 minutes at 1,200-1,500 rpm. Then test the battery again and charge longer if necessary. If a battery is badly discharged, it will be easier to charge it with a battery charger.

If you add distilled water to a battery, charge the battery before you test it. That mixes the water and electrolyte so that you get a good reading.

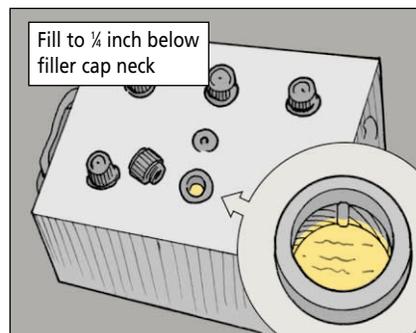
Once the Avengers are properly charged, have the operators charge the batteries for 20 minutes during weekly services.



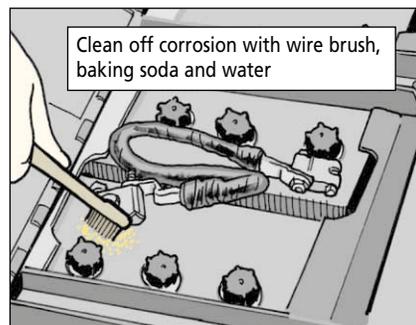
Every 6 months, test the HMMWV charging system to make sure the electrical system's working. Para 2-29 in TM 9-2320-280-20-1 has the instructions.

### Operators

Check the batteries weekly. Take off the battery caps and make sure the electrolyte is ¼ inch below the filler neck or ledge. Add distilled water if necessary.



If corrosion has formed around the terminals, clean it off with the wire brush in your tool kit or a scouring pad. Neutralize any corrosion on top of the batteries with a mixture of ½ pound of baking soda to 1 gallon of water.



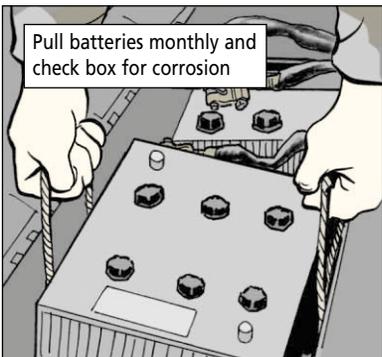
# FTOOOM

# FTOOOM

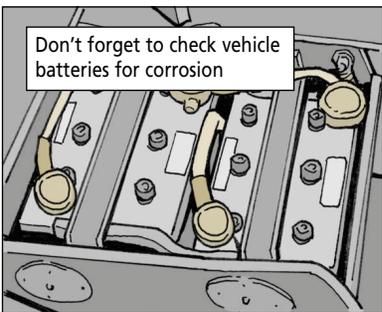


GOOD PM GIVES ME POWER THAT GIVES YOU POWER!

Monthly, pull the batteries and check the battery box for corrosion. If you find any, remove it with your wire brush and the baking soda-water solution. If corrosion has eaten off the battery box paint, repaint with the paint, NSN 8030-00-290-5141, listed as Item 29 in TM 9-1425-433-10's expendable/durables list in Appendix D.

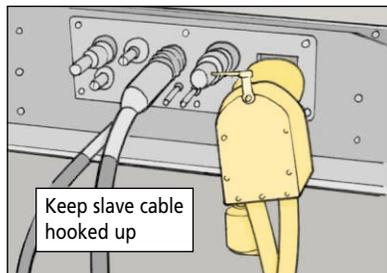


Of course, if the vehicle's batteries are in bad shape, you'll have trouble charging the Avenger batteries. So, when you do system battery services, pull the seat and check the HMMWV's batteries for corrosion. Your repairman services the vehicle batteries.

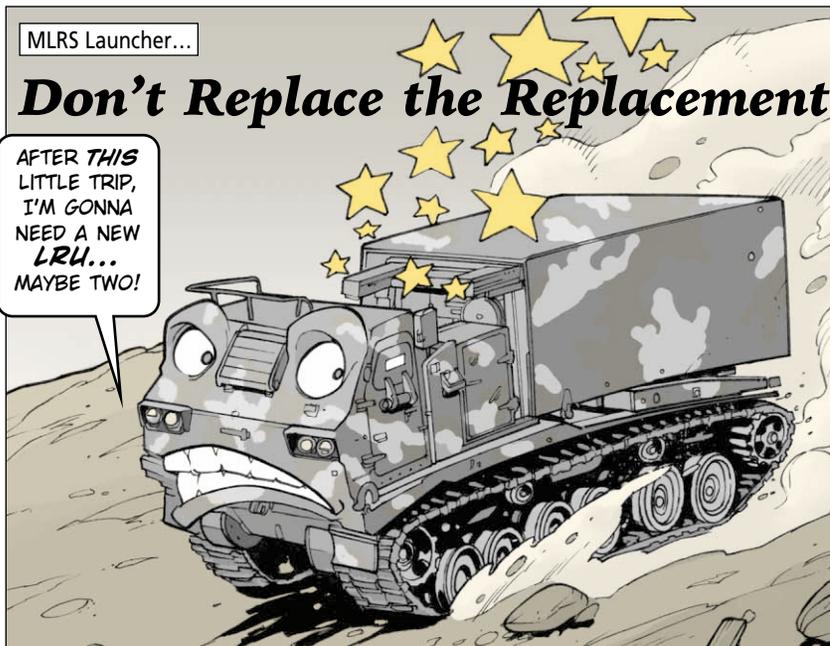
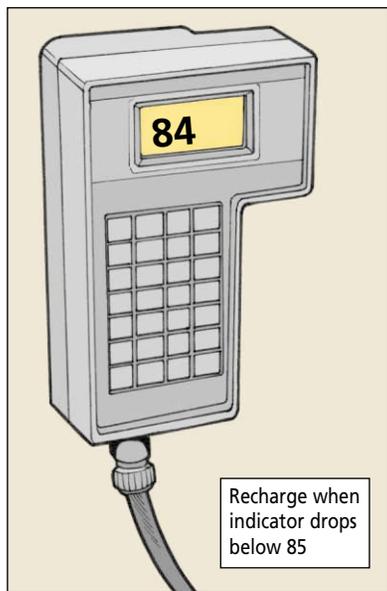


### In the Field

Keep the slave cable connected at all times. The Avenger runs on both the system and vehicle batteries.



If you must operate with the truck shut off, keep an eye on the Avenger battery indicator. Once it shows below 85 percent, start the truck and recharge the batteries.

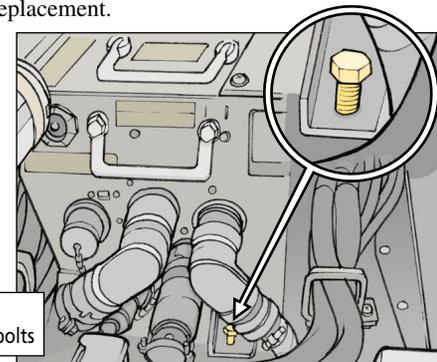


Crewmen, the idea behind the MLRS' line replaceable units (LRU) is a good one. Instead of significant downtime to troubleshoot and repair a particular equipment failure, you simply pull the affected LRU and replace it—usually with a rebuilt one. To keep that system working, though, you've got to properly mount the replacement LRU.

Some crewmen put off snugging down the LRU mounting bolts because they're hard to reach. They figure if the rebuilt LRU is defective they will save time when they have to pull it out for another replacement.

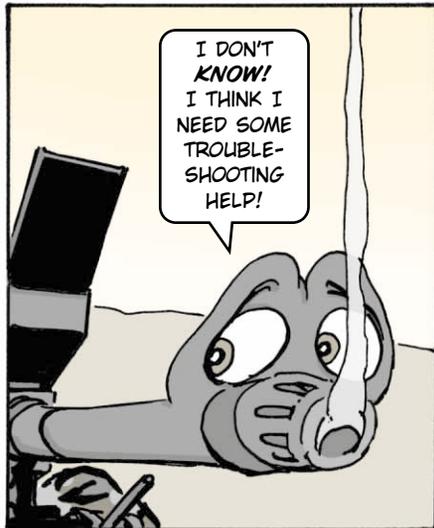
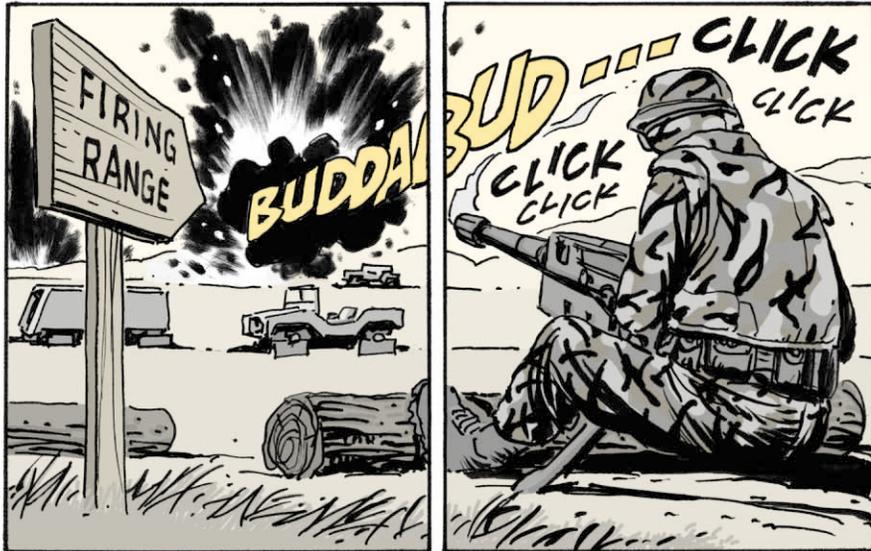
But if you don't bolt down the LRU, it gets bounced around during operation. That damages the circuit cards inside and then it's time to replace the LRU yet again.

Save yourself a headache and your unit some significant repair costs. Always snug down the LRU mounting bolts **before** operating the vehicle.



MK 19 Machine Gun...

# Stop Those Firing Stoppages



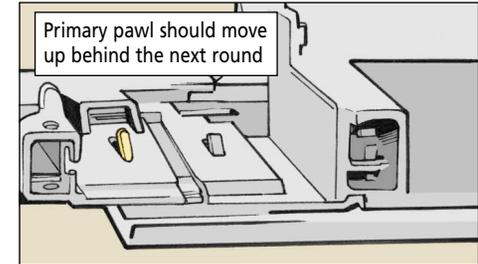
PS 584

42

JUL 01

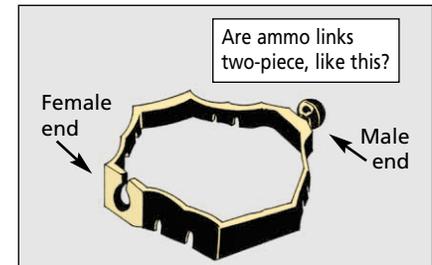
Some MK 19 machine guns have suddenly quit firing on the range. The Army thinks the problem could be one-piece ammo links. But they need your help to make sure.

If your MK 19 stops firing, follow the procedures in Para 4-1 of TM 9-1010-230-10 to clear the jammed round and make sure there is no bore obstruction. Then charge the gun. See if the primary pawl has clicked up behind the next round. If it has, return to firing.



If the pawl hasn't moved to the next round, tell your armorer. He should check out the MK 19 using the PMCS and troubleshooting steps in TM 9-1010-230-23&P. Support also needs to check the feed slide assembly and adjust it if necessary.

If nothing appears to be wrong with the MK 19, your armorer should file a malfunction incident report. It should include the type of ammo fired, the ammo lot number, the number of rounds fired, the gun's serial number, whether the ammo was linked with one-piece or two-piece links, and anything done to correct the problem.



Armorsers, for assistance filing the report, contact your local TACOM-Rock Island logistics assistance representative (LAR).

FOR MORE INFORMATION, SEE TACOM MAINTENANCE ADVISORY MESSAGE 00-021.



M24 Sniper Weapon System...

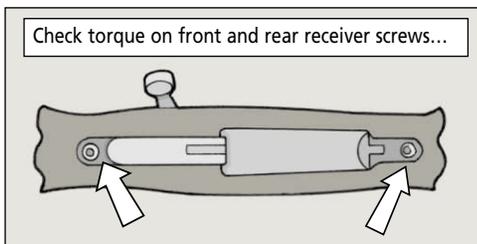
# WHEN TO REPLACE BARREL



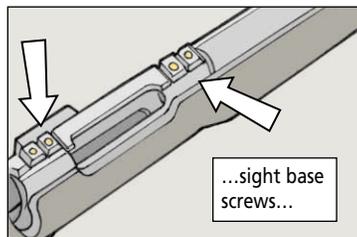
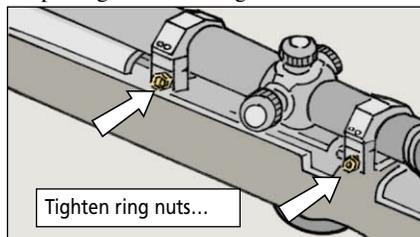
**FM** 23-10 says that M24 sniper rifle barrels should be replaced after 5,000 rounds. Forget that! Most M24 barrels can fire almost twice that many rounds before they need replacing.

The best way to determine when a barrel should be replaced is by monitoring accuracy. Once that starts to suffer, as indicated by a wider shot group, the barrel may be worn out. But before you blame the barrel, first:

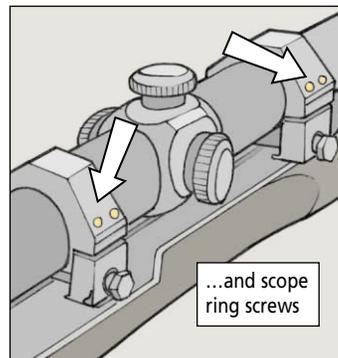
Check with your rifle's torque wrench that the front and rear receiver screws are torqued to 65 lb-in +/- 5 lb-in, especially if you have recently removed the barrel assembly from the stock for cleaning.



Check that the front and rear ring nuts, the sight base attaching screws, and the scope ring screws are tight.



# BARREL



If everything checks out, it's probably time for a new barrel. Most M24 barrels start to have problems after 9,000 to 10,000 rounds.

When you ship the M24 to Remington for repair, the manufacturer is supposed to repair and return it within 22 days after receiving it (shipping time to and from Remington is not counted towards this). If it takes longer, TACOM-Rock Island's Linda Noe would like to know about it. Contact her at DSN 793-6396, (309) 782-6396, or e-mail [noel.ria.army.mil](mailto:noel.ria.army.mil). For M24 technical questions, contact TACOM-Rock Island's Doug Carlstrom at DSN 793-2361, (309) 782-2361, or e-mail [carlstromd@ria.army.mil](mailto:carlstromd@ria.army.mil). Remington's shipping address is on Page 3-18 in TM 9-1005-306-10.

# MILES Inserts Crumbling?



If the transit case inserts for the cases for your multiple integrated laser engagement system (MILES) start to crumble into powder or melt into a gooey mess, get them replaced ASAP.

Not only will bad inserts not protect MILES equipment, they can harm you. If foam powder gets into your lungs, it can cause breathing problems. So, if you must handle crumbling inserts, wear a dust mask, gloves, goggles and protective clothing, and work in a well-ventilated area.

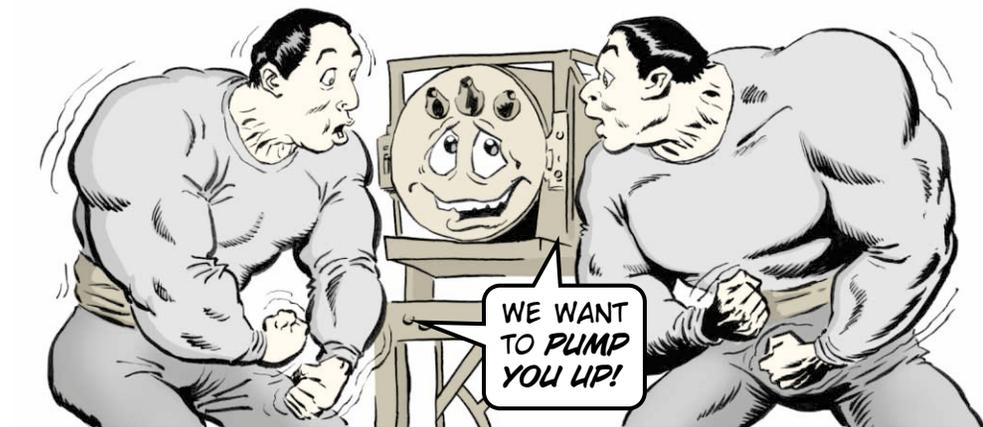
'Course, your best bet is to not handle the inserts at all. Tag the case as unserviceable and have your training support center (TSC) ship it off for repair.

For more information, see ground precautionary message GPM-STRICOM-00-001.

If you don't have a TSC or you would like a copy of the message, contact Conrad Ortega at DSN 970-3766, (407) 384-3766, fax -3777, or e-mail [Conrad\\_Ortega@stricom.army.mil](mailto:Conrad_Ortega@stricom.army.mil).

M157-Series Smoke Generator...

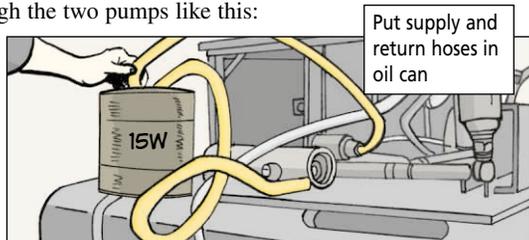
# KEEP YOUR OIL PUMP PUMPED



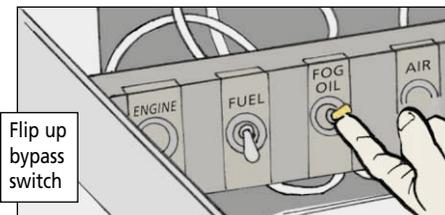
A fog oil pump that can't pump will surely stop an M157 from smoking. So, if you don't keep the pump pumped with PM, you and your M157 will soon be going cold turkey.

Most M157s sit for long periods without use. That lets corrosion form in the fog oil pumps and lock them up. If your M157 is going to sit for more than 20 days, run light oil—like 15W—through the two pumps like this:

1. Disconnect the fog oil pump supply and return hoses and stick them in the 15W oil container. That keeps 15W oil from getting mixed up with fog oil in the fog oil tank.



2. Remove the M157's equipment container right side panel and put the FOG OIL bypass switch in the up position. Turn on the control panel and flip the FOG OIL switch to RUN. You do not need to turn on the FUEL or ENGINE switches.



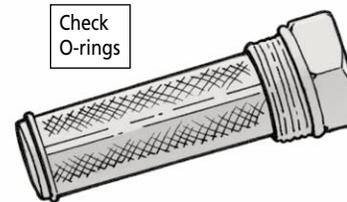
3. Run the pump for 2-5 minutes. Reconnect the supply and return hoses. Do the same procedure with the other pump. The oil protects the pumps from corrosion for 20 days. If you're still not smoking after 20 days, repeat the procedure.

If, despite your best efforts, a fog oil pump seizes in the field, don't try to free the pump by tapping it. That knocks corrosion loose that can score and ruin the insides of the pump. Trying to run a seized pump can also damage the pump motor.

Your repairman can take the pump apart like it says in Para 4-34 in TM 3-1040-279-12&P. He should clean out corrosion with clean rags, paying special attention to the gear rotor set. Then he needs to lubricate the parts with 15W oil before putting the pump back together.

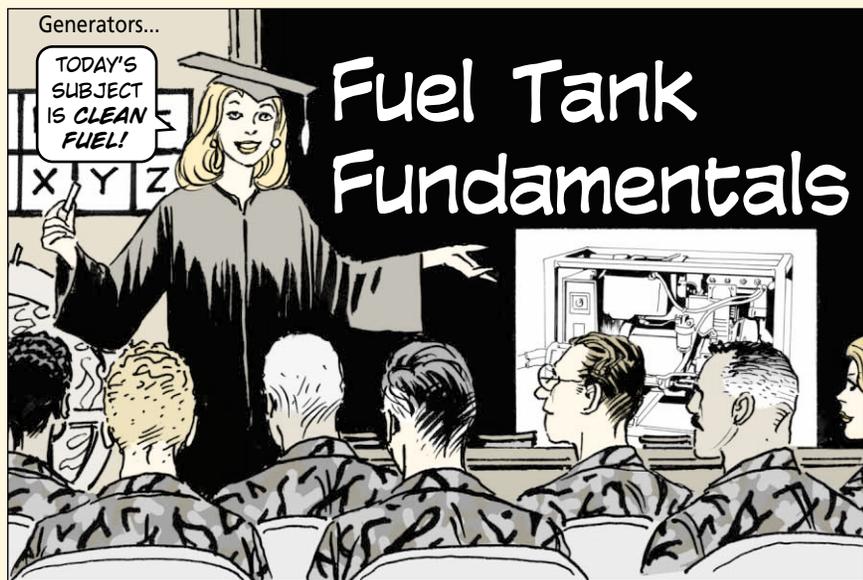
If that doesn't get the pump pumping, you need a new pump.

Before you go to the field, make sure both fog oil pump strainers have O-rings and that they are in good shape. Without a good O-ring, strainers will leak. Your repairman can replace an O-ring with NSN 5331-00-835-8974.

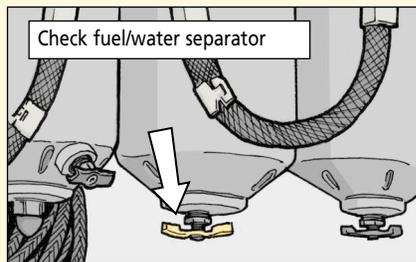


## M157 Smoke Generator Bulb

The NSN listed for the M157-series smoke generators' control panel bulbs in TM 3-1040-283-20&P is no good. The correct NSN for Item 9 in Fig C-3-1 is 6240-00-155-7836.



One of the things the diesel engine in your generator needs is clean fuel. So the PMCS in your TM calls for checking the fuel-water separator for water and other contaminants and to drain them.

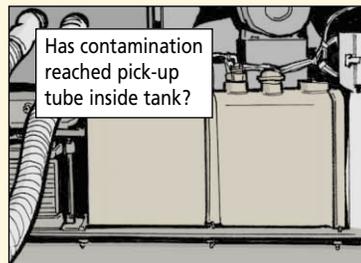


A small amount of contamination is normal, but it needs to be removed just the same. Frequently occurring contaminants (once a day or more) in your fuel-water separator may indicate severe fuel contamination.

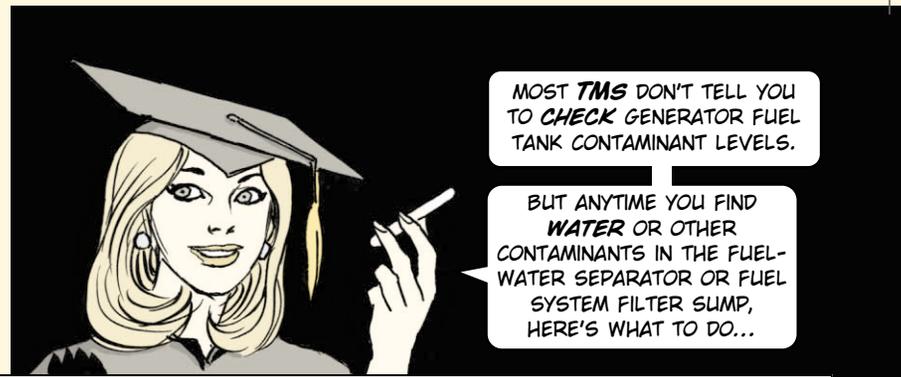
Fuel contaminants accumulate in the bottom of your fuel tank. You won't know it right away because the fuel pick-up tube

for your fuel system is a few inches above the tank bottom and the fuel will float on top of most contaminants.

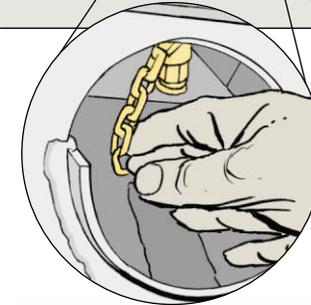
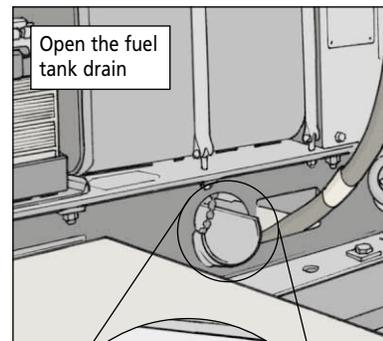
The problem becomes noticeable when the contaminant level rises to the level of the pick-up tube. By then you have severely contaminated fuel!



In a diesel system, fuel transfer pumps, injection pumps and fuel injectors have parts that rely upon the fuel for lubrication. Water and other contaminants can permanently damage these parts.



- \* Open the fuel tank drain cock and drain a small amount of fuel into a container that will let you see the fuel.
- \* If the fuel is free of contaminants and water (water will appear as various-sized beads in the container bottom) close the drain cock. If contaminants and water appear, continue to drain the fuel until samples are not contaminated. Then, close the drain cock.
- \* In cases of severe contamination it will be necessary to de-fuel the system, replace all filters and clean all strainers. Follow the TM instructions for this job. Fuel filters may have to be replaced two or three times after severe contamination.



If you found contaminants in the fuel-water separator or fuel tank and you get rid of them, you're done, right?

Wrong!

That contamination had to come from somewhere so you need to find out where. It could be a fuel truck or an external fuel tank or anything else in your fuel pumping chain. Get other users to help you. It's in their interest to find the source of the contamination, too.

Find contamination source



2-KW Generators...

# Keeping the Fuel in Line

**H**ow clean is the diesel fuel that's poured or pumped into your MEP-531A or MEP-501A 2-KW generator engine?

Depending on where you're operating and under what conditions, the answer to that question can vary from real clean to real dirty.

To clean all fuel before it reaches the diesel engine, your generator uses a two-filter system.

The first filter, a plastic-mesh strainer, NSN 4240-01-328-4878, sits just inside your fuel tank, right under the cap. There's good news and bad news about this strainer.

The good news is, it's removable. That makes it easy for you to keep it clean and replace it when it's damaged. The bad news is, it's removable. That means you can take it out and lose it or just forget to put it back in. It's a good strainer, but only when it's in place and kept clean.

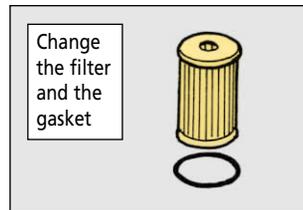
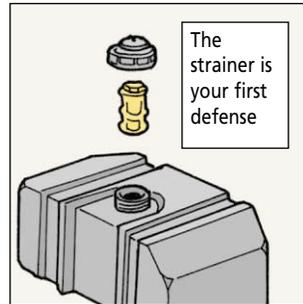
The second line of defense is the fuel filter mounted between the fuel tank and the engine. Replacing the filter element, NSN 2910-01-420-9067, in this filter is a 100 run-hours task. But if the fuel you're using is really dirty or has a great deal of water in it, the interval between changes should be much shorter.

If your gas-colored filter has turned black with dirt or is swimming in water, replace it.

Also replace the gasket, NSN 5331-01-431-7566, that holds the bowl to the filter head. Otherwise, it won't be long until you have a fuel leak around the filter head.

One more thing: The lines that run to and from your fuel filter need to be made from clear, plastic hose, NSN 4720-01-464-0400. Some of you are using standard black hose, but you need to be able to see the fuel flow. That way, you can spot dirt, water bubbles, and blockages.

Also, don't paint the fuel hoses. Paint not only prevents you from seeing the fuel, it rots your plastic hose and leads to leaks.



2-KW Generator Set...

**TAKE A HIKE, BIG FOOT!**

YOU AIN'T GOT NOTHIN' ON ME, BIG BOY!



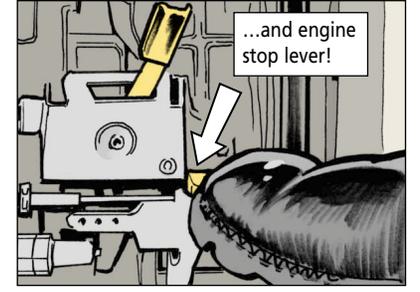
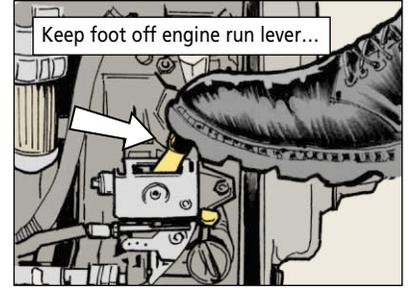
**H**ey, Big Foot, Army boots were made for marching—not for tripping the governor control levers on MEP-531A and MEP-501A 2-KW generator sets.

I know what you're thinking. Why break your back bending over to use your hand on the black engine RUN lever or the red engine STOP lever when a pull or push with your boot will do the job?

The problem is, it does another job, too. It screws up the governor linkage and spring!

How? Every time you put a boot on the red or black lever, you bump the governor regulator bracket. That bracket houses the governor lever, thrust plate and springs. It doesn't take many bumps until they're out of adjustment.

Now you have a throttle that no longer correctly regulates the flow of fuel! So, Big Foot, take a knee and get handy with the RUN and STOP levers.



Global Positioning System...

## PLGR Warranty Extended

Ignore the warranty expiration sticker on your AN/PSN-11 (V) precision lightweight GPS receiver (PLGR), NSN 5825-01-374-6643 and NSN 5825-01-395-3513. The warranty on all PLGRs has been extended indefinitely.

Ignore the date



THAT MEANS ALL PLGRS IN NEED OF REPAIR GO TO **ROCKWELL COLLINS, INC.** AT THIS ADDRESS:

**DODAAC EZ7415**  
 Rockwell Collins, Inc  
 ATTN: Rockwell Collins Service Center  
 MS 139-141  
 (M/F AN/PSN-11 warranty)  
 855 35th St NE  
 Cedar Rapids, IA 52402-3613

FOLLOW THE MAILING AND PACKAGING INSTRUCTIONS IN PARA 8.2 OF TM 11-5825-291-13.



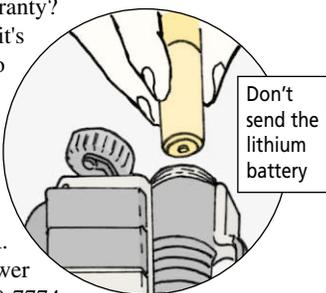
Not sure a repair is covered under the warranty? Send in the busted PLGR anyway. Chances are it's covered. And if not, they'll still repair it at "no cost" to your unit. CECOM will pick up the bill!

When you send your PLGR in for repair, **do not remove** the LS6 lithium storage memory battery, NSN 6135-01-301-8776. The memory battery preserves fault codes the manufacturer needs in order to diagnose and repair your PLGR.

But don't send the BA-5800 lithium main power battery, NSN 6665-99-760-9742 or 6135-01-440-7774.

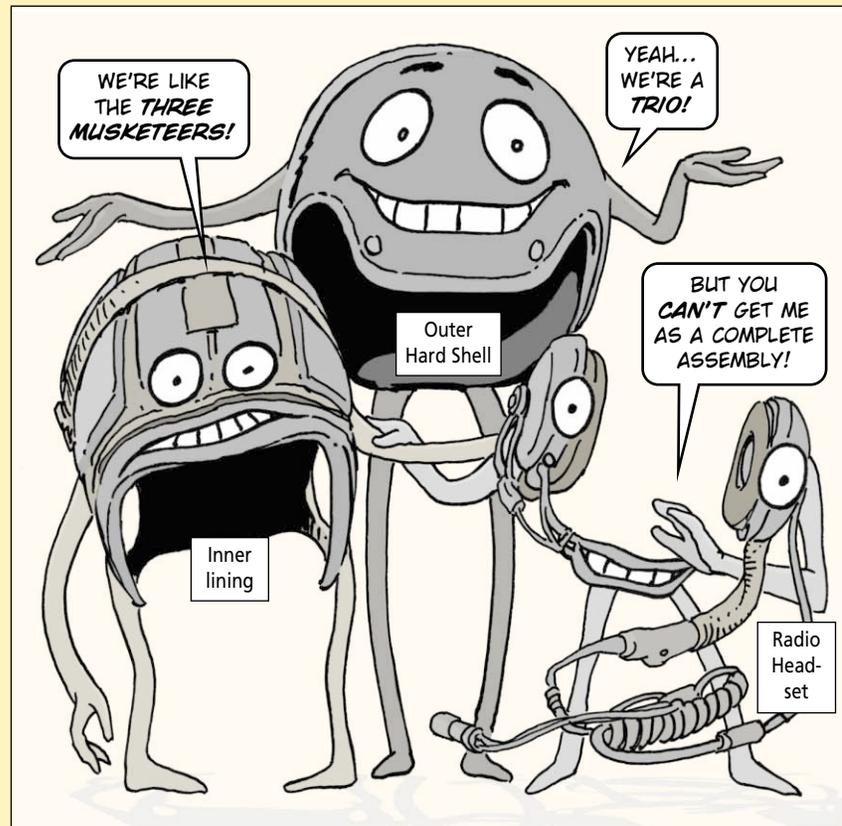
It's hazardous material and has special shipping requirements.

The PLGRs will be relabeled when they go through depot repair. A PLGR coming back from repair will carry a new label that indicates the PLGR is warranted, but does not carry an expiration date. For more information, check out the PLGR website at: <http://army-gps.robins.af.mil>.



CVC Helmet...

## HEADSET UPSET



If you're trying to order a complete MK-1697/G headset-microphone, forget it. You're not going to get one. The complete unit is a terminal item.

You can, however, still order repair parts as listed in TM 11-5965-286-23P, and when you order a new CVC helmet it comes equipped with an MK-1697/G.

Here are the sizes and NSNs for complete CVC helmets:

Size	NSN 8470-01-130-
Small	8180
Medium	3794
Large	3795

Smart...



## It Pays to Be 'SMART'

NAME	SUGGESTION	RECOMMENDED AWARD
Charles Johnson Ft Bragg, NC	Designed new template used to install 3-pt seatbelt kit MWO on non-armored HMMWV's rear seat.	\$5,000
SFC Jeffery Hazel Johnston, IA	Improved hydraulic hand pump hose for M1/IPM1 tank's elevating mechanism.	\$100
Peter Kohler Vilseck, GE	*Add OPEN/CLOSE drain decal to 88A1 RPSTL.	\$50
	*Change stowage box locking clamps on M88A1 recovery vehicle from replacement item to repair item.	\$40
	*Identify port for adding damper fluid to M1-series tank's manual elevation hand pump.	\$100
	*Change the SMR code for the M88A1 recovery vehicle's oddment tray plate, NSN 4940-01-421-0639, to PAOZZ.	\$75

NAME	SUGGESTION	RECOMMENDED AWARD
Don McDonald Dan Johnsen Roxanne Port Ft Wainwright, AK	Modify HMMWV's arctic cover to replace zipper without removing cover from vehicle.	\$500
SGT A. Chamorro Otis ANGB, MA	Use standard 10-ton floor jack to lift external fuel tank from UH-1 for maintenance.	\$500
SFC John Burgo Brockton, MA	Install AOAP oil sampling valves to transmission and engine assembly of M915A1 like those added to M915.	\$450
SFC James Williams Ft Polk, LA	When M551 Sheridan lap belt is damaged, replace just the lap belt rather than the entire seat belt assembly.	\$250
SGT Tonya Hazel Camp Dodge, IA	Change SMR code on Items 4, 5, 9, 10, 20, 39, 40, 40A and 54 of TA-312A/PT telephone's TM 11-5805-201-23P to unit level (from separate suggestions).	\$200



**SUBMIT YOUR AWARD-WINNING IDEAS ONLINE:**  
<http://aeps.ria.army.mil/SMART/smartidea.cfm> OR  
[www.cascom.lee.army.mil/multi/Project\\_SMART/index.cfm](http://www.cascom.lee.army.mil/multi/Project_SMART/index.cfm)  
**FOR INFO OR ASSISTANCE, CALL DSN 687-2435/2406,**  
**(804) 734-2435/2406 OR E-MAIL:**  
**SMART@lee.army.mil.**

### Key Ring, ID Tags

Key rings and ID tags help identify keys and keep them from getting lost. For key rings, use a 3/4-in diameter flat ring. NSN 5365-00-933-3596 brings 100. For ID tags, NSN 9905-00-245-7826 brings 100 blank key tags with snap hooks.

### New Pen Stays Put

Security pen, NSN 7520-01-448-4362, puts a stop to runaway writing instruments. It's attached to a permanently-mounted base by a 20-in vinyl-covered steel cable. The base attaches to a counter with self-adhesive tape or hidden screws. Appendix A of CTA 50-970 is your authority to order the pen.

# MAINTENANCE EXCELLENCE AWARDS



HERE ARE THE WINNERS AND RUNNERS-UP OF THE FY00 ARMY AWARDS FOR MAINTENANCE EXCELLENCE.



## ACTIVE ARMY MTOE ORGANIZATIONS

**LIGHT CATEGORY**  
 Winner: HHC, 7<sup>th</sup> Sig Bde (FORSCOM)  
 Runner-up: 159<sup>th</sup> Trans Det (FORSCOM)

**INTERMEDIATE CATEGORY**  
 Winner: 58<sup>th</sup> Sig Co (FORSCOM)  
 Runner-up: 235<sup>th</sup> Sig Co, 67<sup>th</sup> Sig Bn (FORSCOM)

**HEAVY CATEGORY**  
 Winner: 297<sup>th</sup> MI Bn (INSCOM)  
 Runner-up: 6<sup>th</sup> Bn, 32<sup>nd</sup> FA (FORSCOM)

## ACTIVE ARMY TDA UNITS

**LIGHT CATEGORY**  
 Winner: AMSA 121-G (USARC) (FORSCOM)  
 Runner-up: US Army Garrison, Camp Page (EUSA)

**INTERMEDIATE CATEGORY**  
 Winner: 206<sup>th</sup> MI Bn (FORSCOM)  
 Runner-up: 58<sup>th</sup> Trans Bn (TRADOC)

**HEAVY CATEGORY**  
 Winner: 527<sup>th</sup> MI Bn (FORSCOM)  
 Runner-up: 1110<sup>th</sup> Sig Bn (FORSCOM)

## U.S. ARMY RESERVE MTOE UNITS

**LIGHT CATEGORY**  
 Winner: HHD, 394<sup>th</sup> QM Bn (FORSCOM)  
 Runner-up: 414<sup>th</sup> Trans Co (FORSCOM)

**INTERMEDIATE CATEGORY**  
 Winner: 425<sup>th</sup> Trans Co (FORSCOM)  
 Runner-up: HHC, 397<sup>th</sup> Engr Bn (FORSCOM)

**HEAVY CATEGORY**  
 Winner: HHC, 489<sup>th</sup> Engr Bn (FORSCOM)  
 Runner-up: 818<sup>th</sup> Maint Co (FORSCOM)

## U.S. ARMY NATIONAL GUARD MTOE UNITS

**LIGHT CATEGORY**  
 Winner: HHD, 540<sup>th</sup> QM Bn, NCARNG  
 Runner-up: 242<sup>nd</sup> Engr Co, KSARNG

**INTERMEDIATE CATEGORY**  
 Winner: HHB, 113<sup>th</sup> FA Bde, NCARNG  
 Runner-up: None Selected

**HEAVY CATEGORY**  
 Winner: HHC, 1<sup>st</sup> Bn, 133<sup>rd</sup> Inf, IAARNG  
 Runner-up: 731<sup>st</sup> Maint Co, NCARNG

Computers...

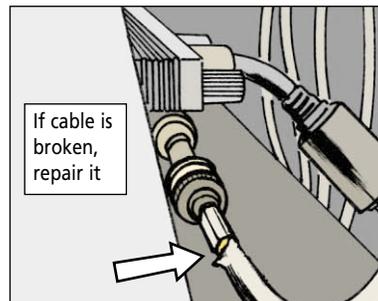
# You Abuse, You Lose



If your computer suddenly loses data or locks up, the culprit may be a worn out or damaged LAN (local area network) data coax cable—one that's been abused during one too many computer moves.

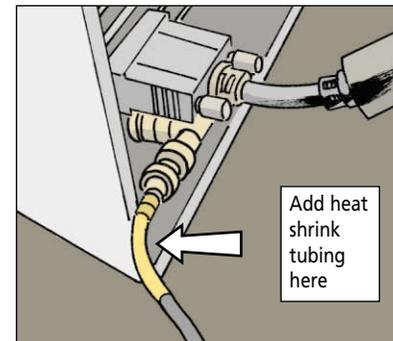
So don't roughhouse the computer during spring cleaning, office and workstation moves or trips to the field.

If your cable isn't damaged yet, do a little PM and have your support shop add some heat shrink tubing, NSN 5970-00-032-0291, where the connector and the cable meet.



It's that bent, broken or twisted coax cable that links you to the network server and the information highway.

It gives you access to vital army information on publications, supply and maintenance, and to your e-mail.



If the cable is already damaged, get it repaired or local purchase a new 10 base-2, 50-ohm coax cable assembly.

Supply...

# BEAT NMC BY KNOWING THE UOC

YEAH! THIS OIL PAN IS TOO SMALL FOR THE M1025A2. WHAT GIVES?

THIS GOES TO THE M1025A1, NOT THE M1025A2!



GOOD QUESTION. I LOOKED UP THAT NSN MYSELF.

YOU GOT INTO TROUBLE BECAUSE YOU DIDN'T CHECK OUT THE UOC (USABLE ON CODE) FOR THE M1025A2 BEFORE YOU ORDERED THE PART.

BONNIE, WHAT DID I DO WRONG?

I'LL SHOW YOU WHAT I MEAN IN THE PARTS MANUAL—TM 9-2320-280-24P-1—THAT COVERS MANY MODELS OF THE HMMWV. ONCE WE ID THE UOC FOR THE M1025A2, WE'LL BE READY TO GO TO THE PARTS LIST FOR THE OIL PAN.

OROAD

AUTOB



UOCS ARE SHOWN IN THE SPECIAL INFORMATION SECTION AT THE FRONT OF THE PARTS TMS. IN THIS CASE, PARAGRAPH 5A LISTS UOC B17 FOR THE M1025A1 AND UOC C17 FOR THE M1025A2.

NOW WE'RE READY TO CHECK OUT FIG 4 FOR THE OIL PAN FOR UOC C17.

## 5. Special Information TM9-2320-280-24P-1

Use the Code. The source on code appears in the lower left corner of the Description column heading. Usable on codes are shown as "UOC:..." in the Description Column. Usable on codes on the first line applicable from description/parameters. Usable items are applicable to all models identified in the title of the vehicle manual given in the PPT, are:

Code	Used On	Code	Used On
AVY	M1037A1	B17	M1025A1
A11	M996A1	C17	M1025A2
A12	M1025A1		



THE OIL PAN IS ITEM 22 OF FIG 4. LOOK, ITEM 22 IS LISTED TWICE, AND HAS TWO SIZES AND TWO LISTS OF UOCS THAT ARE DIFFERENT FROM EACH OTHER. UOC B17 USES THE 6.2-LITER OIL PAN (THE FIRST ENTRY) AND UOC C17 USES THE 6.5-LITER PAN. YOU ORDERED THE FIRST OIL PAN YOU FOUND, RIGHT?

YES, MA'AM. IF I HAD KNOWN ABOUT THE UOC I WOULD HAVE ORDERED THE 6.5-LITER OIL PAN BECAUSE IT'S USED ON THE M1025A2, UOC C17.

## SECTION II TM9-2320-280-24P-1

22 PAOFF 34623 5588022 OIL PAN 6.2 LITER.....1  
UOC: AVY, A11, A12, A14, A15  
A26, A27, B16, B17, B18, H4Y

22 PAOFF 11862 12551755 OIL PAN 6.5 LITER.....1  
UOC: B4Y, B15, B20, B24, C17  
•PLUG, MACHINE THREAD...  
•GASKEY



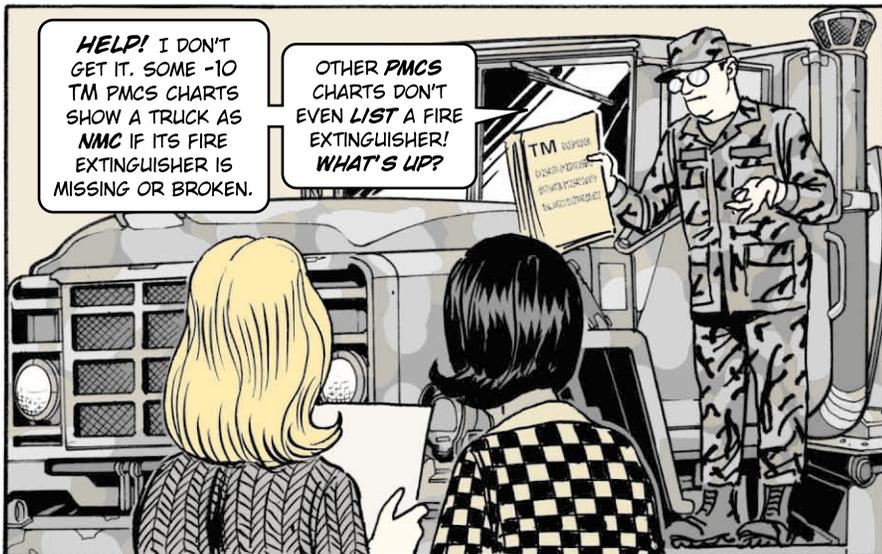
MANUALS THAT COVER MORE THAN ONE MODEL OF A VEHICLE FAMILY USE THE UOC TO ID PARTS FOR SPECIFIC MODELS. SO MAKE SURE YOU KNOW THE UOC FOR YOUR VEHICLE BEFORE YOU LOOK UP THE PART YOU NEED.

AND BE SURE YOU KNOW THE VEHICLE UOC WHEN SIGNING FOR IT ON A TM-GENERATED PREPRINTED HAND RECEIPT. OTHERWISE, YOU COULD END UP SIGNING FOR THINGS THAT DON'T GO WITH THE VEHICLE.

IT PAYS TO KNOW HOW AND WHEN TO USE THE UOC.



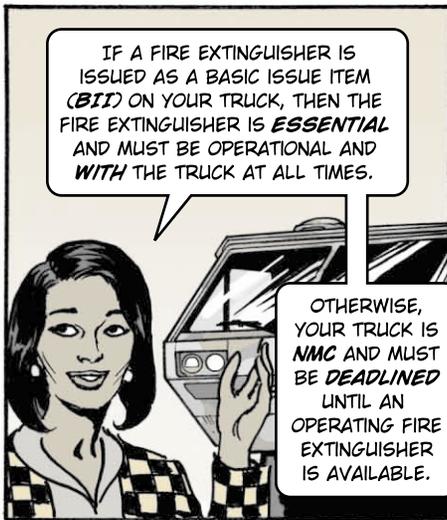
# Fire Extinguishers: Essential or Not?



**HELP!** I DON'T GET IT. SOME -10 TM PMCS CHARTS SHOW A TRUCK AS **NMC** IF ITS FIRE EXTINGUISHER IS MISSING OR BROKEN.

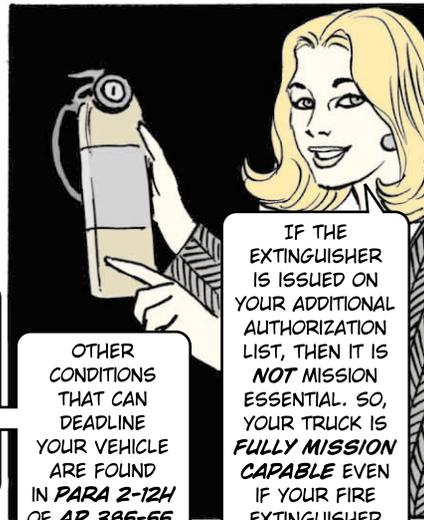
OTHER **PMCS** CHARTS DON'T EVEN **LIST** A FIRE EXTINGUISHER! **WHAT'S UP?**

TM 9-2320-272-24-2



IF A FIRE EXTINGUISHER IS ISSUED AS A BASIC ISSUE ITEM (**BIT**) ON YOUR TRUCK, THEN THE FIRE EXTINGUISHER IS **ESSENTIAL** AND MUST BE OPERATIONAL AND **WITH** THE TRUCK AT ALL TIMES.

OTHERWISE, YOUR TRUCK IS **NMC** AND MUST BE **DEADLINED** UNTIL AN OPERATING FIRE EXTINGUISHER IS AVAILABLE.



IF THE EXTINGUISHER IS ISSUED ON YOUR ADDITIONAL AUTHORIZATION LIST, THEN IT IS **NOT** MISSION ESSENTIAL. SO, YOUR TRUCK IS **FULLY MISSION CAPABLE** EVEN IF YOUR FIRE EXTINGUISHER IS MISSING OR NOT WORKING.

OTHER CONDITIONS THAT CAN DEADLINE YOUR VEHICLE ARE FOUND IN **PARA 2-12H OF AR 385-55.**

## CORRECTION: M915 WEB PAGE

We printed a bad web site address in PS 581 for the M915 Family of Vehicles. The correct address is <http://www.tacom.army.mil/dsa/pms/fp/m915/index.htm>. Use the site for info on training, operation, maintenance and fielding of these trucks.

## 5/10-KW TQG Selector Knob

Don't order the entire phase selector rotary switch, NSN 5930-01-386-0543, Item 36, Figure 13 in TM 9-6115-641-24P and Item 38, Figure 13 in TM 9-6115-642-24P, just to get the knob you grab to turn it. Order just the knob with NSN 5355-01-321-5354, instead of the entire switch, and save your unit \$400!

## CP-1252C Front Panel

Apache and Blackhawk mechanics, forget about sending in your CP-1252C/ASN-128B computer display unit (CDU) to depot for a new front panel assembly. The headshed has decided it costs too much. Now you can get a new front panel, NSN 1680-01-454-5154, and replace it at unit level. This info will be added to a TM to be published.

## M936 Wrecker Hydraulics

You can service the hydraulic system of your M936/A1/A2 wrecker **without draining the reservoir** by installing shutoff modification kit, NSN 2590-01-415-9496. Instructions and drawings come with the kit. Repair and replacement instructions for kit components are found in TM 9-2320-272-24-2 (Jun 98) on Page 3-1154.

## AN/PRC-104B INSTRUCTION CARD

Need the operator instruction card for the AN/PRC-104B radio? CECOM has a limited supply and will send you one as long as they last. Send an E-mail to: [gloria.richardson@mail1.monmouth.army.mil](mailto:gloria.richardson@mail1.monmouth.army.mil)

## Avenger RCU SMR Change

The SMR codes for the Avenger remote control unit's (RCU) mechanical sight and shoulder shafts (Items 7 and 9 in Fig 114 of TM 9-1440-433-24P) have been changed from XDOZZ (not stocked) to PAOZZ (stocked). That means you can now order them and you don't need to hold them back when you turn in an RCU. If you don't turn in all the parts with a broken RCU, it can't be repaired at depot until the missing parts are replaced. That wastes time, costs money, and hurts Avenger's readiness. Until the NSNs are assigned, order the sight with part number 219F650 and the shaft with p/n 157D3327 on a DD Form 1348-6 with CAGE 05606 and RIC B64.

## Compressed Air Cans

Need a quick, simple way to clean dust off your optics while avoiding the risk of scratches? Compressed air is the answer. Get cans of compressed air with these NSNs:

NSN 7930-01-	Size	Qty
411-9794	8-oz can	1
450-4378	10-oz can	1
398-2473	10-oz can	6
406-4055	12-oz can	1

Order the cans on a DD Form 1348-6 and put "NSN not on AMDF" in the REMARKS block.

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