

Issue 644

PS

July  
2006

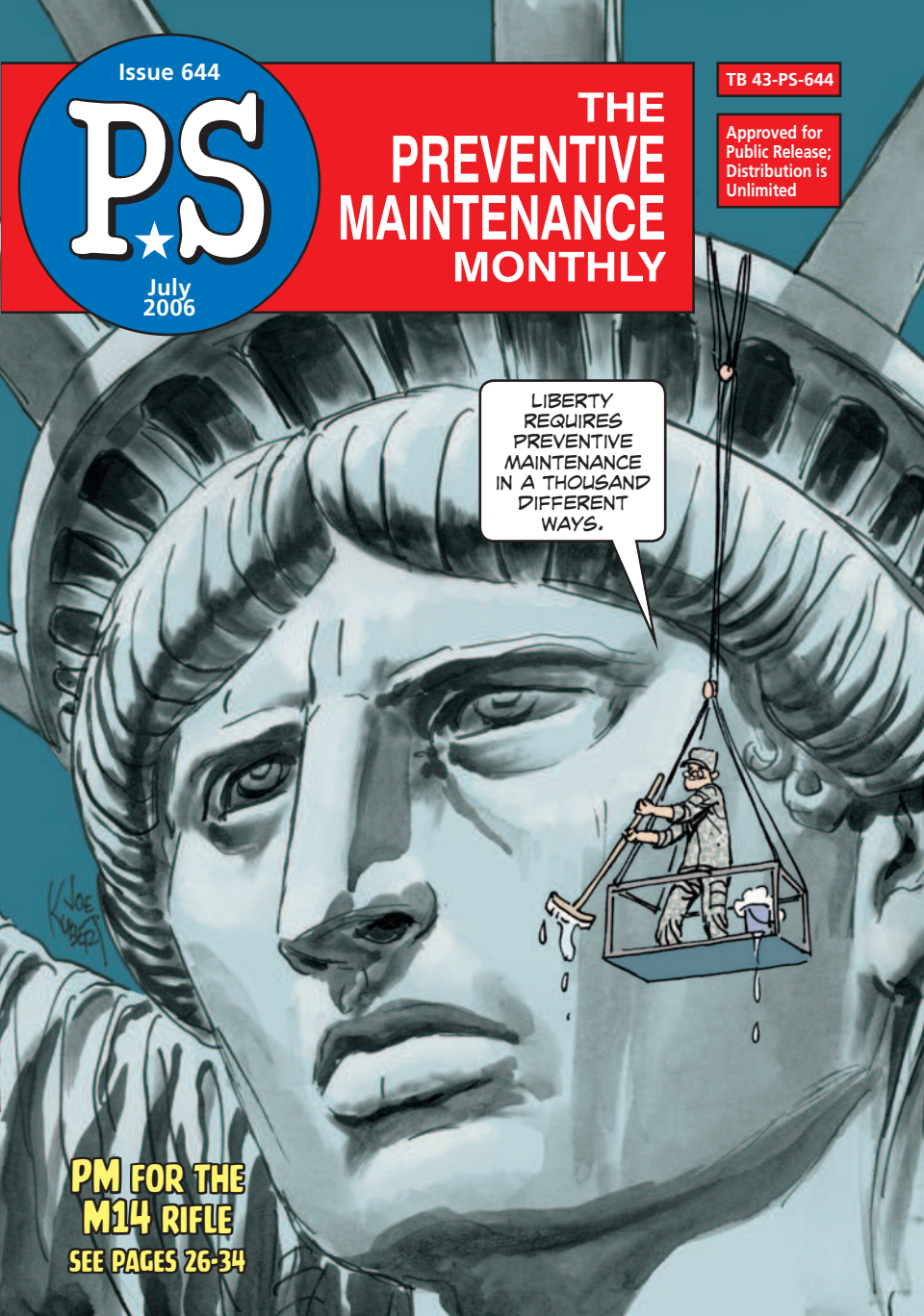
# THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-644

Approved for  
Public Release;  
Distribution is  
Unlimited

LIBERTY  
REQUIRES  
PREVENTIVE  
MAINTENANCE  
IN A THOUSAND  
DIFFERENT  
WAYS.

PM FOR THE  
M14 RIFLE  
SEE PAGES 26-34



# The Rest of the Story

HEY, THERE'S A LOT MORE TO THIS MANUAL THAN THE PMCS TABLES!

YOU GOT THAT RIGHT.

MOST OF YOU OPERATORS ARE (OR SHOULD BE) VERY FAMILIAR WITH THE PMCS CHART IN YOUR -10 TM.

AFTER ALL, YOU SHOULD BE USING IT *EACH* TIME YOU DRIVE YOUR VEHICLE.

BUT DO YOU KNOW THE *REST* OF THE STORY?

THE -10 TM IS SO MUCH MORE THAN A PMCS TABLE. IT ALSO SHOWS...

- What the equipment looks like.
- How tall, long, and wide it is.
- What kind of oil it uses.
- What each button, knob or switch does.
- How to operate the equipment in cold and heat.
- NSNs for needed cleaning and maintenance supplies.
- A step-by-step troubleshooting guide for when the gear is acting up.

IT TAKES AN INTIMATE KNOWLEDGE OF *ALL* PARTS OF THE -10 TM TO KEEP YOUR VEHICLE UP AND RUNNING.

AND NOW YOU KNOW... THE *REST* OF THE STORY!

HARLEE

US ARMY



# THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-644, 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 644 JULY 2006



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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:

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

Internet address:

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

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General, United States Army Chief of Staff

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**JOYCE E. MORROW**

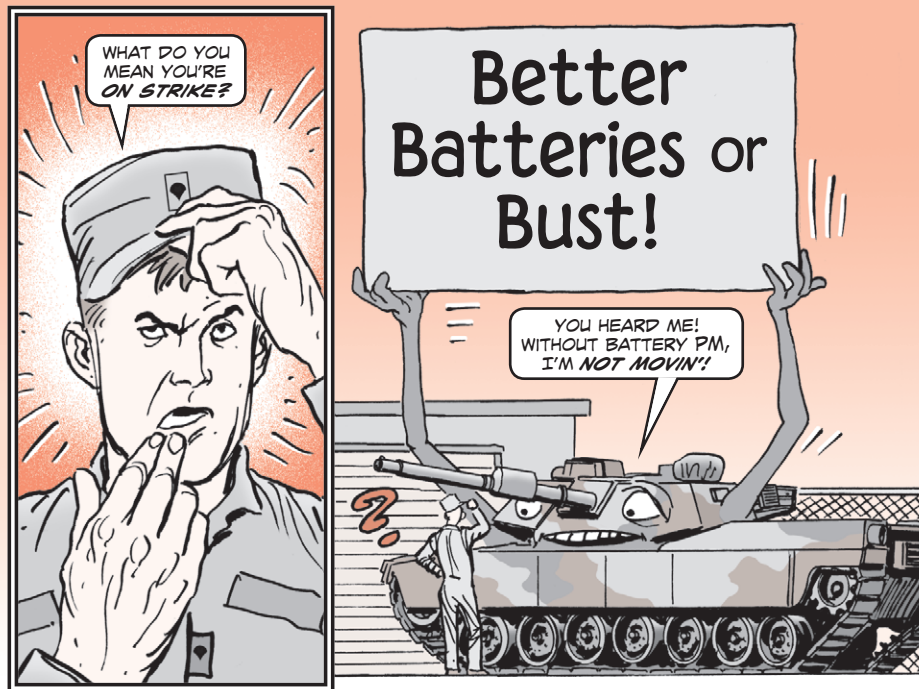
Administrative Assistant to the Secretary of the Army

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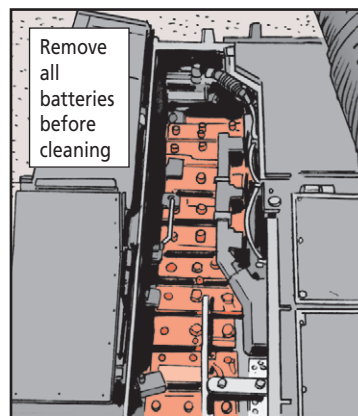


Ignoring the batteries in your tank is bad business, crewmen. Neglect leads to corrosion, corrosion to damaged cables and damaged cables to a tank that's got no get-up-and-go!

So inspect the batteries during PMCS and report any corrosion to your mechanic.

Mechanics, Pages 3-16 through 3-24 of TM 9-6140-200-14, *Operator's, Unit, Direct Support and General Support Maintenance Manual for Lead-acid Batteries* (Sep 98), have the complete scoop on cleaning and maintaining batteries. If you get a report of corrosion, remove the batteries according to the vehicle TM and get started.

Make sure you clean the battery, battery cables, battery box, and hold-down supports. Skip any of these items and you won't do a complete job.



## Battery Clamps and Terminals

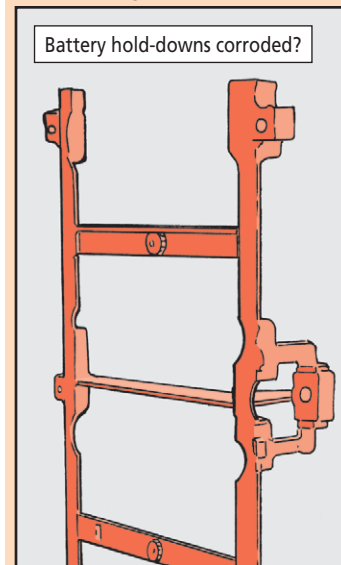
Carefully scrape away heavy corrosion from the battery clamps and terminals with battery terminal cleaner, NSN 5120-01-430-1993. Then clean with a solution of two pounds of baking soda to one gallon of water. Just be careful about getting any of the baking soda solution IN the batteries. That'll ruin 'em. Get one pound of baking soda with NSN 6810-00-264-6618 or 100 pounds with NSN 6810-00-290-5574.

Use the battery terminal brush, NSN 5120-00-926-5175, for the best results.

After cleaning, inspect and replace any clamps that will no longer fit the battery posts or whose ends touch when the clamp nut is tightened.

## Battery Hold-downs

Use a wire brush, NSN 7290-00-291-5815, to clean as much corrosion, cracked paint and dirt as you can from the battery hold-downs. Then soak the hold-downs in the baking soda solution.



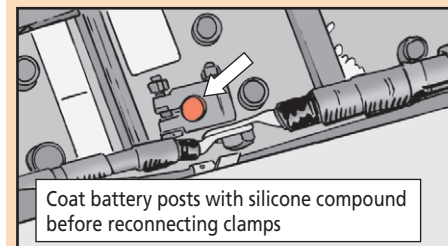
Rinse the hold-downs thoroughly. After they've dried, apply epoxy coating, NSN 8010-01-313-8702, to each of the hold-downs. You can also use bituminous coating, NSN 8030-00-290-5141, if the epoxy is not available.

## Battery Tray

Wash the battery tray with the baking soda solution. Rinse thoroughly and allow it to dry. Apply a 1/32- to 1/8-in thick coating of epoxy or bituminous to the box.



When everything's dry, reinstall the batteries. Before you reconnect the battery clamps, put a light coat of silicone compound on the tops and sides of each of the battery posts. When applied, this special compound runs down around the battery post and terminal to completely seal out moisture.



Get a 1-pt can with NSN 8040-01-331-7134 or a 3-oz tube with NSN 8040-01-331-7133.



# Software Shenanigans



Dear Editor,

A lot of crewmen are having problems with the new software upgrade on their A3 Bradleys. For version 7.01 or higher, the software has a new option that allows maintenance personnel to conduct on-board diagnostic training at the unit level.

The problem occurs when mechanics leave the turret in maintenance mode after training or crewmen accidentally access the embedded maintenance trainer (EMT) software. When that happens, the turret will not return to COMBAT STATE and will only operate in *degraded mode* or *limited operations*. Crewmen won't have full turret operation.

If the turret is left in maintenance mode or a crewman inadvertently selects EMT from the maintenance menu, **do not** cycle power to clear the fault or to get out of EMT software. Instead, return the turret to COMBAT STATE like this:

1. Move the cursor over the flashing blue banner that reads **SELECT HERE TO EXIT TRAINING**.

2. When the banner flashes on, press to select it. Note that the banner will flash on for four seconds and off for eight seconds.

3. The next screen you see will include a red bordered pop-up that reads **SCENARIO ABORTED, CYCLE POWER**. When this screen appears, turn off turret power. This will terminate the scenario and allow the turret to return to COMBAT STATE at the next power cycle.

4. When you power up the turret, the flashing blue banner should be gone. The turret is now fully operational.

Bob Fulkerson  
1/81st Armor Regiment  
1st AR Training Bde  
Ft Knox, KY

MBL 4	01 0004-167 JAN 04	165 EG 92740E 95863N CEP 999n ALT 1200n
SELECT HERE TO EXIT TRAINING		
SUBSYSTEM SAFETY	TEST STATUS SAFETY	Click on SELECT HERE TO EXIT TRAINING banner
WEA	IN COMBAT STATE	
FINE		
TUR		
GUNNER SIGHT	GO	
COM SIGHT	DEGRADED	Enter DIG 01 0000 04 2 ? 04
COMMUNICATION	GO	

MBL 4	01 0004-167 JAN 04	165 EG 92740E 95863N CEP 999n ALT 1200n
SELECT HERE TO EXIT TRAINING		
SCENARIO ABORTED, CYCLE POWER.		Turn off turret power when red-bordered pop-up appears

*Editor's note: Thanks for the info, Mr. Fulkerson. That'll prevent a lot of headaches for Bradley crewmen!*

## Bradley Gun Gyros Needed

The gun gyro assembly, NSN 1005-01-095-5205, for the M2/M3-series Bradley is in short supply. If you have any unserviceable gun gyro assemblies, turn them in immediately for repair to Tobyhanna Army Depot (RIC BY6). Questions? Contact TACOM's Danielle Porter at DSN 793-0963/(309) 782-0963 or email: [@ria.army.mil](mailto:@ria.army.mil)

## STE-M1/FVS Component Repair

According to TM 9-4910-751-14&P, field-level repair on the STE-M1/FVS test set's vehicle test meter (VTM), NSN 6625-01-271-7842, and set communicator assembly, NSN 4910-01-239-1634, should be performed whenever possible. If you can't repair the items, send them through normal supply channels to Red River Army Depot (BR4) for repair.

LET ME BE PERFECTLY BRIEF...



# PAY ATTENTION!

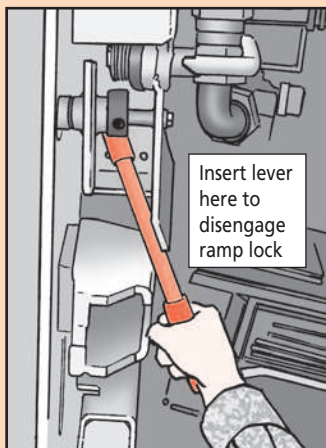


**S**oldiers, a short attention span is a dangerous thing when the ramp on a Stryker is opening or closing.

The cams inside the ramp locks are moving, so anything that gets in their way ends up mangled. That includes your fingers, a rifle barrel, and anything else accidentally stuck in the locks.

Also, the additional weight of slat armor sometimes means there's not enough pressure available to disengage the ramp locks. When that happens, you'll need to insert the manual control lever from the side of the lock into the cam and manually free each lock.

Those levers often come up missing. If that happens to you, order a new one with NSN 5340-21-914-6268. But **don't** try to disengage the cams with your fingers.



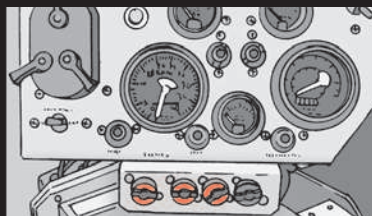
# See (and Replace) the Light

GAHH,  
AN EASY  
TARGET!

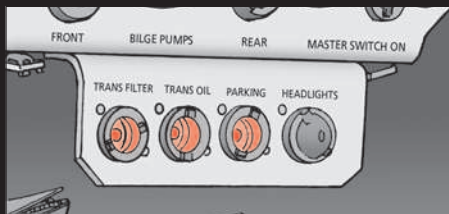
**W**hat kind of lights and lenses do you have on the instrument panel of your M113A3 vehicle, drivers?

Specifically, take a close look at the TRANS FILTER CLOGGED, TRANS OIL LOW PRESS, and PARKING BRAKE lights. These lights and lenses have been changed on some vehicles from a white incandescent bulb and red lens to a red light-emitting diode (LED) and clear lens during rebuild and repair. Problem is, the LED and clear lens are not yet listed in the parts manual.

The red LED comes with NSN 5980-01-285-6688 and the clear lens with NSN 6220-01-423-0209.



White incandescent bulbs and red lenses...



...have been replaced with red LEDs and clear lenses

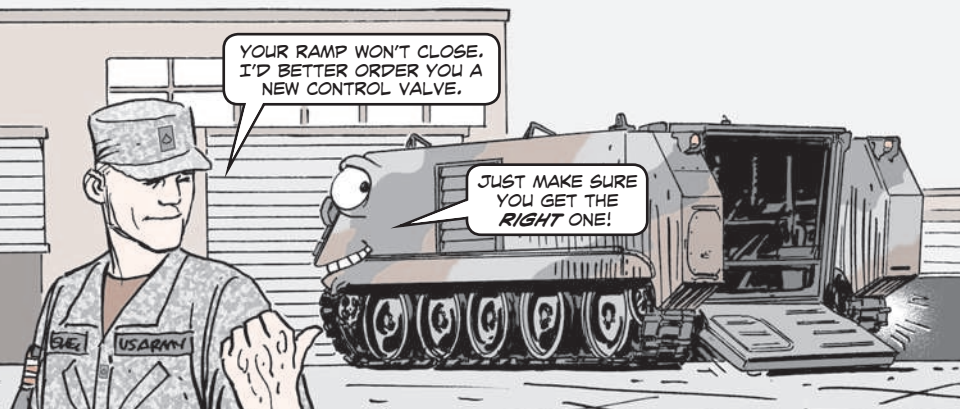
## CAUTION!

**Do not** replace a failed LED with a regular incandescent bulb. Since the lens is now clear, that bulb will emit a white light that will destroy light discipline at night and give away your location.

It's a good idea to keep a few extra LEDs on-hand to use as replacements. That way you're not tempted to use the wrong light.



# RAMP UP ON CONTROL VALVE SOLUTION



**M**echanics, replacing a failed ramp control valve on an M113A3 vehicle can cause even more problems if it's not done right. That starts with getting the *right* replacement valve.

## The Problem

The old-style ramp control valve, NSN 4820-00-158-5411, had an external relief valve and was replaced in the early '90s. The replacement valve, NSN 4820-01-411-1225, has an internal relief valve built into it.

The old-style valve was deleted from the supply system and parts manuals. Trouble is, there are still some vehicles that have these valves installed.

When these valves fail, some mechanics find it easier to pull the part number from the failed valve and use it to order a new one.

Big mistake. The old part number crosses to a yet *another* relief valve, NSN 4820-00-825-5720. This is an adjustable valve that has a pressure limit ranging from 2,300 to 3,800 psi.

You won't get instructions on how to adjust the valve. Most mechanics won't even realize the valve has to be adjusted to 2,300 psi to work.

The result? Ramp failure due to the extreme hydraulic pressure that exceeds what the ramp cylinder can handle.

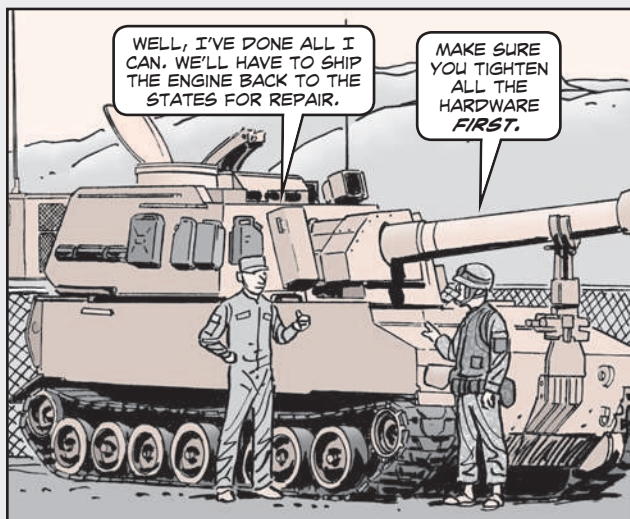
## The Solution

Mechanics, break the habit of ordering from part numbers on failed parts. If you go to the parts TM, you'll find the most up-to-date and approved parts for your repair job.

It's also a good idea to go ahead and replace *all* those old external valves now to head off problems later.

Order the correct ramp control valve, NSN 4820-01-411-1225. Then turn to WP 0660 00 in TM 9-2350-277-20-5. It tells how to remove the old hydraulic ramp control handle, hydraulic lines, and external relief valve first. Then it explains how to install the new ramp control valve.

# Tight Engine Bolts a Must

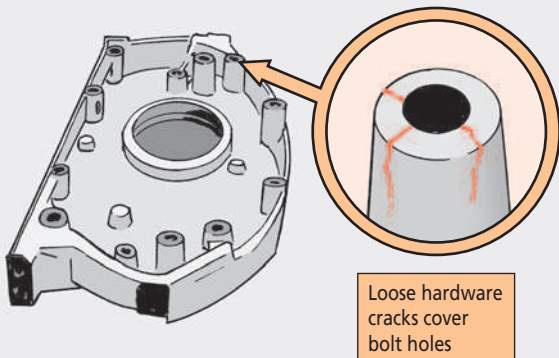


**S**hipping a component back for repair means more than just sticking it in the shipping container and making sure you have the right postage. That's especially true when it comes to Paladin and M992A2 engines, NSN 2815-01-335-4579.

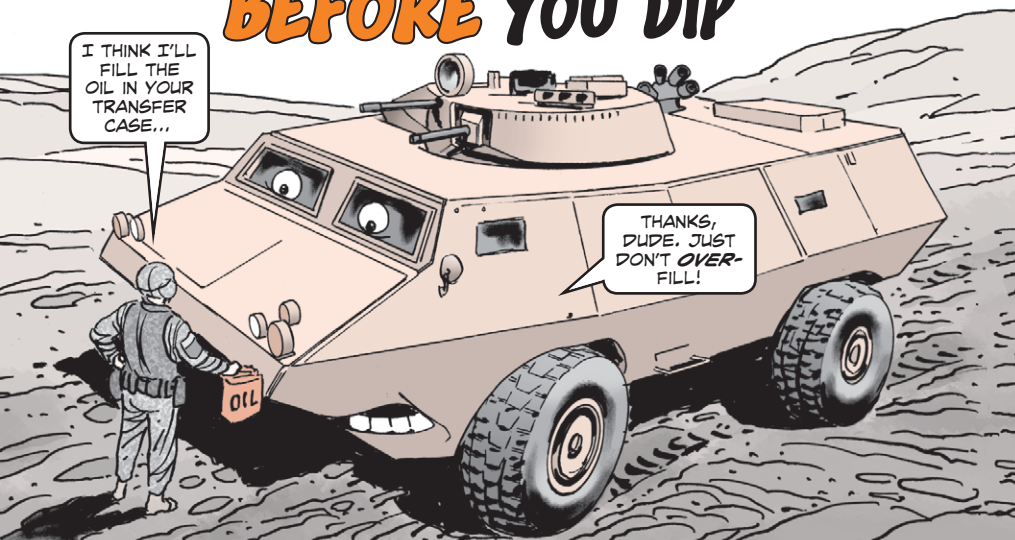
Far too many of these engines are arriving at depot with more damage than they started with. The greatest damage is to the engine's lower front cover, NSN 2815-01-081-9234.

Loose mounting bolts allow the cover to shift around during transit. That results in cracks to the cover's bolt holes. The cover has to be replaced.

So, torque those loose bolts to 31-37 lb-ft before shipping the engine. That'll save repair costs and get the engine back into the system faster.

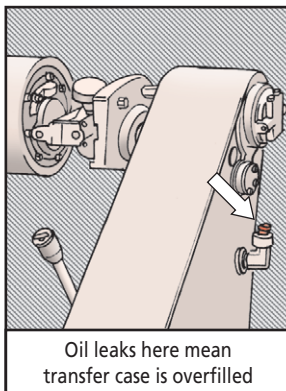


# NOTE THIS TIP BEFORE YOU DIP



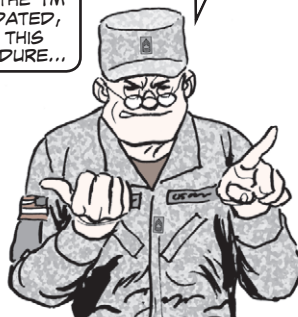
Is oil leaking from the transfer case oil fill plug of your M1117 armored security vehicle (ASV)?

That's what happens when you overfill the transfer case.



PAGE 3-5 OF TM 9-2320-307-10 IS A LITTLE MISLEADING ON HOW TO CHECK THE TRANSFER CASE LEVEL.

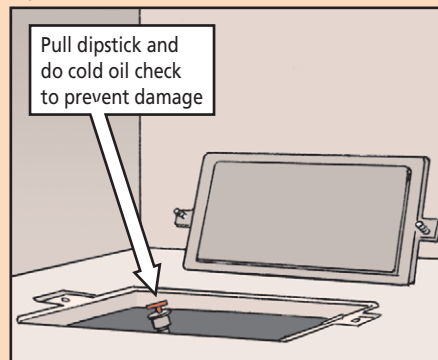
UNTIL THE TM IS UPDATED, USE THIS PROCEDURE...



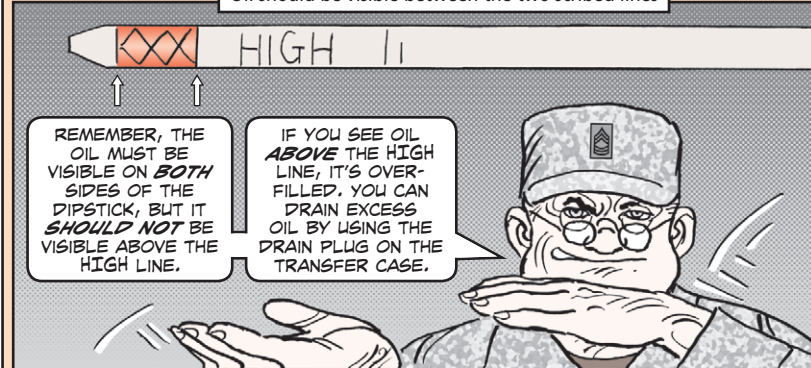
1. Park the vehicle on level ground.
2. Chock the vehicle's wheels.
3. Wipe the dipstick off and insert it fully into the tube.
4. Pull the dipstick out and check for oil on both sides. Make sure the dipstick registers some oil **before** the engine is started. This cold oil check ensures there's enough oil in the transfer case to prevent damage during steps 6-8.

At this point, the oil level indication doesn't have to show it's full (HIGH level on dipstick) as long as oil is visible. If you don't see oil, add 15W40 oil, a little at a time, until the dipstick registers oil.

5. Disengage the transfer case and release the parking brake.
6. Start the engine.
7. Run the engine in DRIVE at idle for two minutes. To be safe, remain in the vehicle with your foot on the brake while you do this.
8. Stop the engine and set the parking brake.
9. Pull the dipstick.



Oil should be visible between the two scribed lines



10. If the oil doesn't register above the lower scribed line, then slowly add 15W40 oil until it does.

## M1000 Semitrailer Lug Nut

Use NSN 5310-01-270-5463 to get a left-hand lug nut for the M1000 HET semitrailer. This NSN replaces the one shown as Item 8, Fig 26 of TM 9-2330-381-24P.

## M871A2 Air Brake Chamber NSN

Use NSN 2530-01-026-9361 to get the air brake chamber for the M871A2 semitrailer. The information for Item 3 on Page 14-1 of TM 9-2330-386-14&P doesn't apply now, since that part is no longer available.



HMMWVs...

# NEED PARTS FOR YOUR GUNNER SHIELD?

IF YOU HAVE THE  
NEW GUNNER  
SHIELD KIT, NSN  
2510-01-498-  
4996, FOR YOUR  
M1114 UP-ARMORED  
HMMWV OR M1025/  
M1026 HMMWV...

...YOU WILL  
EVENTUALLY  
NEED REPAIR  
PARTS. HERE  
THEY ARE...

Gunner shield, NSN  
2540-01-500-3446

Locking handle  
assembly, NSN  
1010-01-447-2983

Gunner shield  
support bracket, NSN  
1005-01-500-3744

Pintle adapter, NSN  
2540-01-500-0309

Screw, NSN  
5305-01-514-0237

8 Screws, NSN 5305-01-436-6377

8 Washers, NSN 5310-01-442-1109

8 Lock washers, NSN 5310-01-417-7273

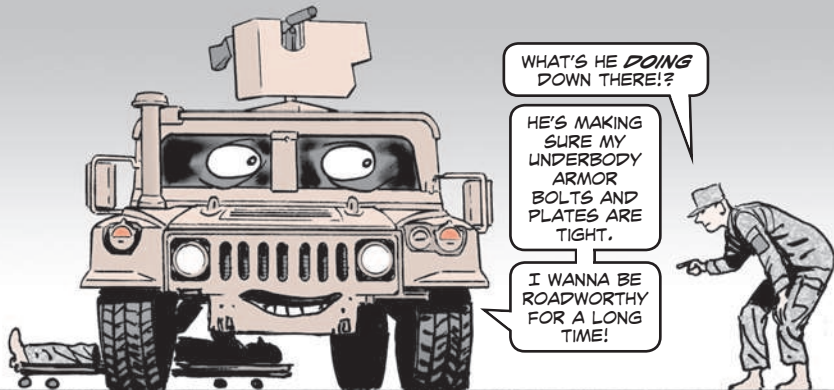
8 Nuts, NSN 5310-01-439-8177

Clamping pawl, NSN  
5315-01-518-0027

Split sleeve, NSN  
5325-01-447-2281

HMMWVs...

# UNDERBODY ARMOR CAN MAKE TRUCK NMC

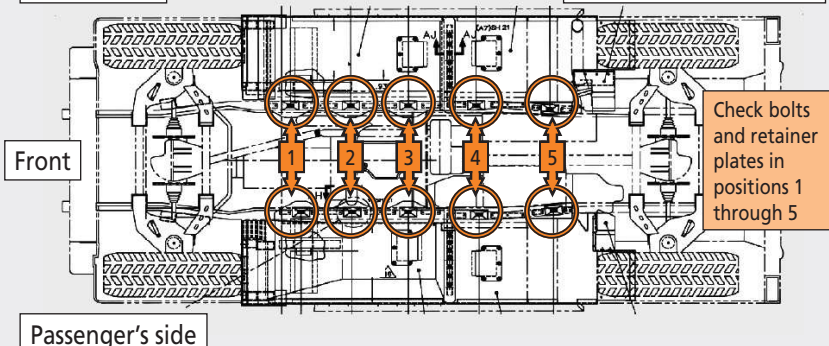


When the mission requires you to take your M1113, M1114, M1116, or M1145 HMMWV into hostile territory, you don't want any problems! That means a careful PMCS using TM 9-2320-387-10.

But, there's been a change to NMC criteria for the underbody armor. On Page 2-54, Table 2-2, Item 44g, the **Not Fully Mission Capable If** column should be changed to say: "Vehicle has a loose or missing retainer plate or bolt in positions 1 and 5 from either side. Loose or missing more than three bolts in positions 2, 3, and 4 from either side or missing more than one retainer plate in positions 2, 3, and 4 from either side." Make a note of the new NMC criteria until the TM is updated.

Driver's side

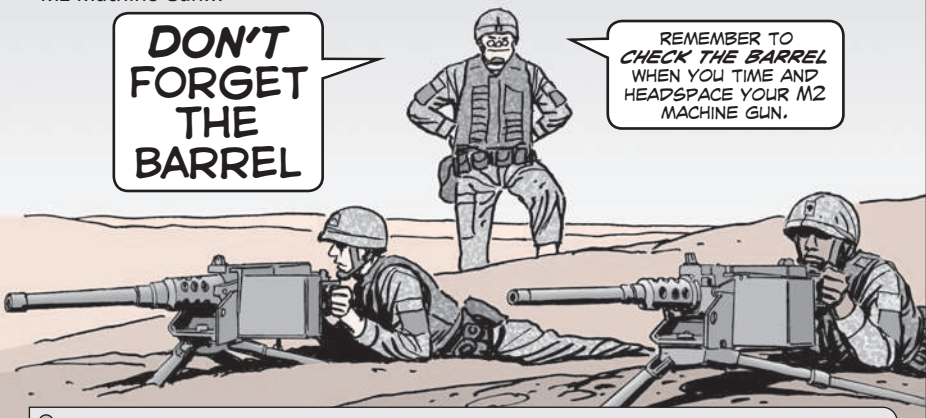
View from underneath



The TM also tells you that PMCS intervals must be performed **more frequently** when operating under unusual conditions. What's more frequently? It's recommended that **Before and After** PMCS inspections be done for the underbody armor before and after **every** trip outside the fence! Take the time to do so, and you'll be safer.

**DON'T  
FORGET  
THE  
BARREL**

**REMEMBER TO  
CHECK THE BARREL  
WHEN YOU TIME AND  
HEADSPACE YOUR M2  
MACHINE GUN.**



Dear Editor,

I found your article in PS 634 (Sep 05) on headspacing and timing the M2 machine gun helpful. I hope Army gunners pay attention to it. But through my experience as a warrant officer and now an armament repair technician, there was one check I thought should have been included: the barrel.

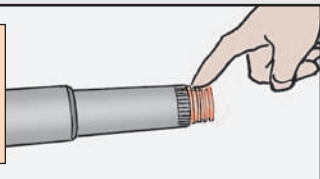
When we check M2s, we often find the locking grooves that are machined around the barrel just ahead of the threads are worn. If they're too worn, the barrel locking spring can't hold the barrel in place, which means loose headspace. No M2 should be fired in that condition.

If you have doubts about the condition of the barrel, try to turn it with the bolt in the forward position. If it turns at all, either the barrel or the barrel locking spring is shot. You should always make sure the barrel doesn't turn when you headspace your M2.

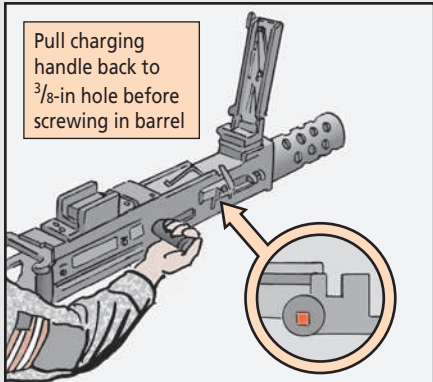
To prevent barrel wear, gunners need to remember to pull the charging handle back to the  $\frac{3}{8}$ -in hole in the receiver before screwing in the barrel. If you repeatedly force the barrel on without doing that, its locking grooves eventually will wear off.

CW3 William Oxx (Ret)  
Aberdeen Proving Ground, MD

Eyeball  
locking  
grooves  
for  
wear



Pull charging  
handle back to  
 $\frac{3}{8}$ -in hole  
before  
screwing in barrel



**Editor's note:** Good point, Chief. Thanks for alerting gunners to a dangerous problem.



# MORE USES FOR THE BANDOLEER

HERE ARE A  
COUPLE MORE  
TIPS ON USING  
YOUR AMMO  
BANDOLEER.



Dear Editor,

Thanks for the article in PS 637 (Dec 05) about removing the white slip stitching at the bottom of the M16 rifle or M4/M4A1 carbine's bandoleer to turn it into a carrier for eight magazines. Many soldiers didn't know about that handy trick.

There are a couple of other things soldiers need to remember about the bandoleer:

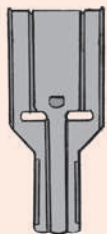
**Keep the speedloader that comes with the bandoleer.** It will make loading magazines in the field much easier.

**Don't throw away the bandoleer's safety pin, either.** The safety pin is provided to attach the bandoleer to your uniform so it doesn't bounce around. But in the field you'll find it's also handy for temporarily fixing tears in your clothing or holding the camo band to your helmet.

Hope this helps other soldiers.

SSG Robert Jones  
Directorate of Combat Development  
Ft Benning, GA

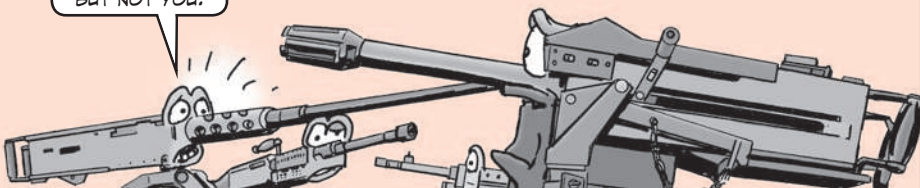
Speed  
loader  
makes  
magazine  
loading  
easier



**Editor's note:** I'm sure this will help other soldiers. Thanks for sharing the tips.

SORRY, GUYS.  
THERE ARE  
COVERS FOR US,  
BUT NOT YOU.

YOUR CREWS WILL HAVE TO USE A  
TARP OR SOMETHING TO COVER YOU.



## COVERS FOR MACHINE GUNS?

Dear Half-Mast,

Are there covers we can order for our machine guns to protect them from the sands of Southwest Asia?

MSG S.H.

Dear Master Sergeant S.H.,

There **are** some covers available. Here they are:

**M249 machine gun**—NSN 1005-00-809-2190 brings the cover used with the M16 rifle, but it also works with the M249. You can also order a protective dust cap for the barrel with NSN 5340-00-880-7666.

**M2 machine gun**—Order a machine gun cover with NSN 1005-00-781-9108 and a spare barrel cover with NSN 1005-00-796-4436.

*Half-Mast*

For other weapons, there are no covers. Cover them with a tarp.

M240 Machine Gun...

## HOW DO YOU MOUNT AMMO 'CAN'?

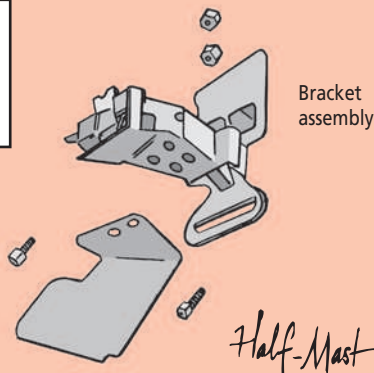
Dear Half-Mast,

When you're firing an M240 machine gun on an M197 mount, is there any way to mount an ammo can?

SFC C.G.

Dear Sergeant,

You can use an ammo adapter bracket assembly, NSN 1005-01-468-0552, which holds the 100-round cardboard ammo carton, or you can use the machine gun ammunition pouch, NSN 1005-01-529-8411.

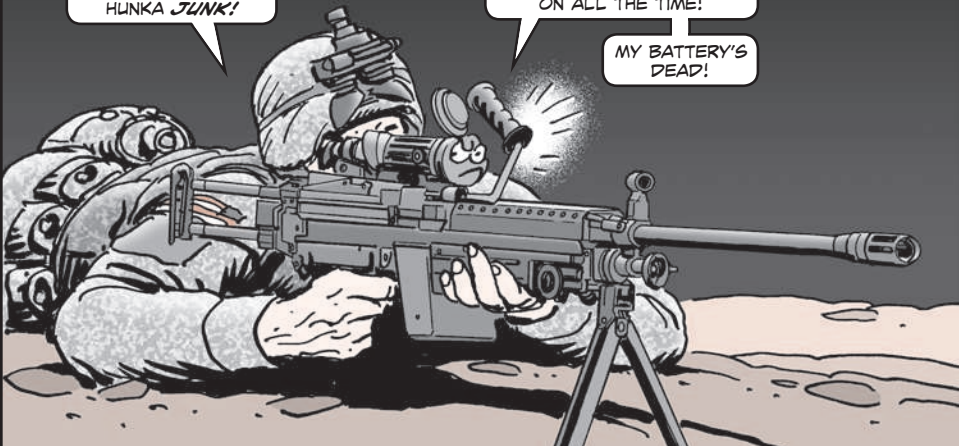


# Keep Your M145's Light Shining

HEY, THIS M145  
OPTIC LIGHT *ISN'T*  
LIGHTING. WHAT A  
HUNKA *JUNK!*

WHAT DO YOU EXPECT  
WHEN YOU LEAVE MY LIGHT  
ON ALL THE TIME!

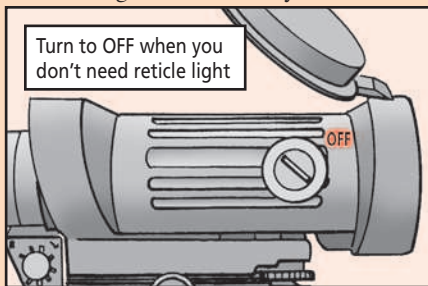
MY BATTERY'S  
DEAD!



**T**oo many machine gunners haven't discovered that the M145 machine gun optic on their M249 or M240B machine gun has an illuminated reticle for low-light sighting. As a result, they don't realize the reticle light must be turned off when it's not needed, like in daylight or for storage.

So the reticle light is left burning, which drains the battery. Then when you do need the reticle lit, you're out of luck. Keep your M145's reticle light shining by remembering to turn the rotary switch to OFF when you don't need the reticle lit.

Turn to OFF when you  
don't need reticle light



Before you go to the field, turn the rotary switch one click counterclockwise. That puts the reticle light on the brightest setting. Look through the rear lens and make sure the reticle is lit. If it's not, replace the battery.

Remember, the reticle light has nine settings. As you turn the rotary knob clockwise from OFF, the light gets brighter.

Want more info on the best ways to operate and take care of the M145? Get a copy of TM 9-1240-415-13&P. That has all the M145 info you'll need.



# DON'T FORGET TO CHECK FOR *MILDEW*



Dear Editor,

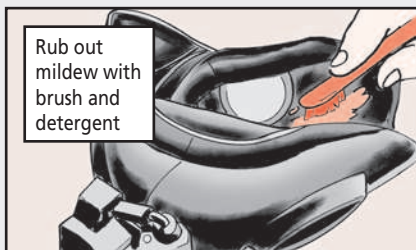
We've discovered in highly humid areas—like here in Louisiana—mildew can attack your M40- and M42-series masks. Even if you clean your mask like it says in the -10 TMs and let it completely air dry before you store it, sometimes mildew forms inside the facepiece, particularly around the drink tube coupling. And the PMCS doesn't really talk about checking for mildew.

So in humid weather we suggest soldiers check the inside of the facepiece for white mildew spots before they go to the field. You don't want to be wearing a mask that has mildew—it won't smell good and it's not healthy.

Rub out any mildew spots with your mask's brush, NSN 7920-00-205-0565, and a solution of water and the detergent used with the mask. Your NBC NCO should have a gallon of the detergent, NSN 8520-00-228-0598. Wipe the mask clean with a cheesecloth dipped in water and then wipe it dry with cheesecloth. Let it air dry if possible.

If humidity is a constant problem at your post, consider getting a dehumidifier for the NBC room. Buy one locally or get one for around \$150 with NSN 4440-00-566-0616.

SGT Carolyn Teachey  
83d Chemical Bn  
SPC Joshua Lyman  
51st Chemical Co  
Ft Polk, LA



*Editor's note: Excellent idea! Soldiers don't want to smell and inhale mildew.*

# A GOOD MEASURE OF HELP

I DON'T THINK I MEASURED YOUR PANTS RIGHT.

BETTER CHECK WITH HALF-MAST ON THIS!



Dear Half-Mast,

We are confused about how to measure a soldier for JSLIST pants. Do you measure the soldier with or without boots and where do you measure to on the inseam? Also, can you order JSLIST replacement parts, like the coupling for the hood drawstring? And does a broken coupling make the jacket NMC?

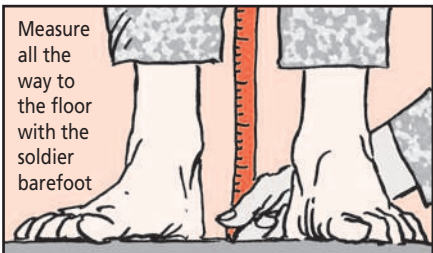
SSG J.G.

Dear Sergeant J.G.,

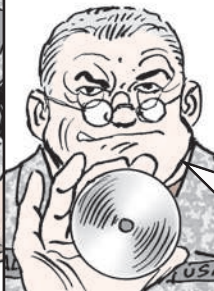
You measure the soldier without boots. Ask the soldier to place the measuring tape along the inside of his leg as high as possible. Have the soldier stand straight up with feet together, then measure to the floor. Use Table 2-3 in TM 10-8415-220-10 to find what size trousers the soldier should wear.

There are no replacement parts for JSLIST. If something is damaged, the trousers or jacket is considered NMC and can be used only for training.

Measure all the way to the floor with the soldier barefoot



IF YOU WOULD LIKE MORE INFO ON USING AND TAKING CARE OF JSLIST, THERE IS A TRAINING CD AVAILABLE THAT WILL HELP.



TO GET A COPY, CONTACT SARAH MORGAN-CLYBORNE AT DSN 654-3826/(703) 704-3826 OR EMAIL:

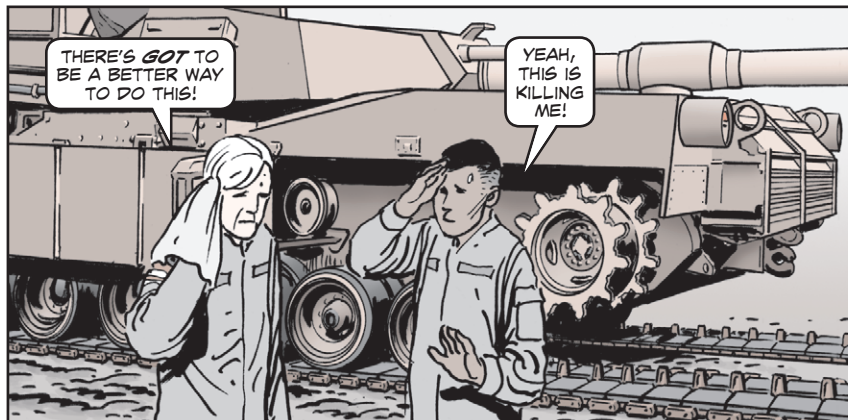
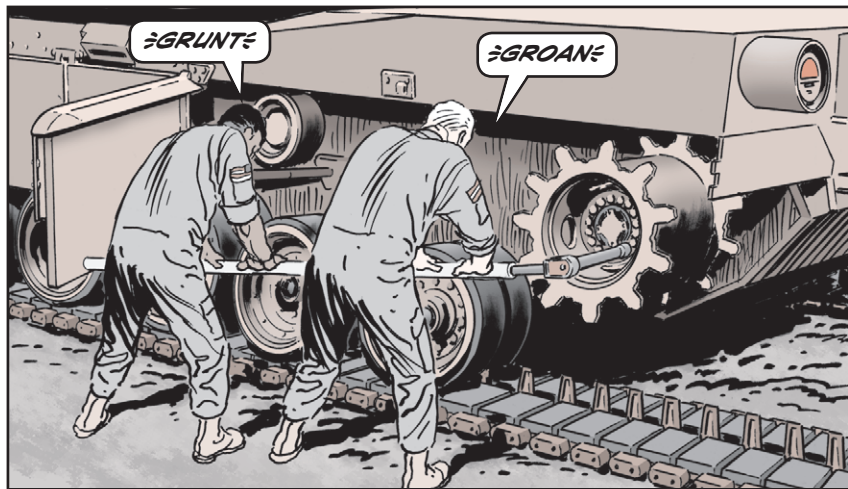
[us.army.mil](mailto:sarah.morgan@us.army.mil)







# Wrench Makes a BIG Impact



**W**hen it comes to breaking loose stubborn or high-torqued nuts, bolts and screws, you've got to have the right tools to do the job quickly and safely.

For example, M1-series tank sprocket screws are torqued to 700-750 lb-ft. The on-board electric impact wrench can't loosen the torque on these screws. So many units use two or three soldiers, a wrench, a breaker bar, breaker bar extension, lots of muscle, and about 45 minutes of exertion to break the screws loose.

That's not only a lot of work, but it's dangerous, too. If any of the tools slip, you can be hurt.

When it's time to break loose tough hardware, nothing does the job better than a manual impact wrench. It's relatively small, compact, requires no external power, and can be operated by one person in tough environments. And yet it breaks loose high-torque components safely and easily. Here's how it works:

A heavy rotary hammer inside the wrench head turns until the nut offers enough resistance to hold the hammer stationary against a strong spring located inside the handle.

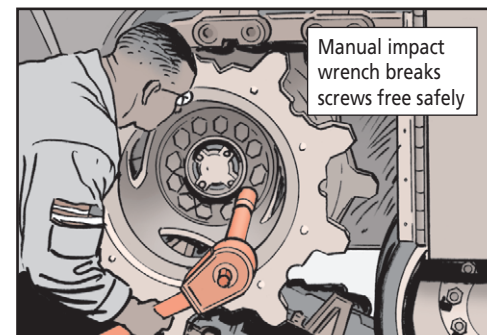
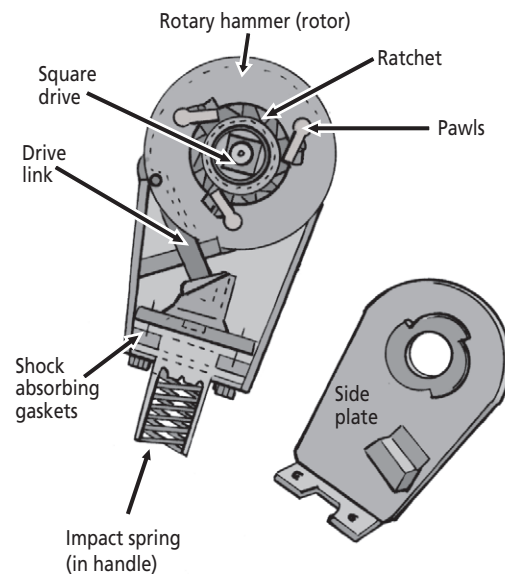
As the handle advances, a drive link begins compressing the spring. A set of cams attached to the side plates of the wrench raise three pawls from where they are engaged with the ratchet teeth.

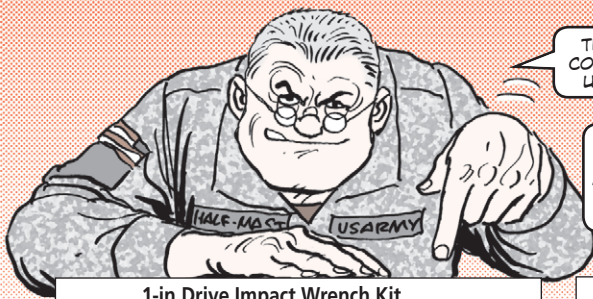
When the handle is advanced enough, the pawls are suddenly released from the ratchet teeth. Driven by the spring, the rotary hammer snaps forward. The pawls engage the next set of ratchet teeth and deliver all of the momentum of the spring-driven rotor.

The result is a tremendous, sharp torsional blow equal to many times the force applied to the wrench handle itself. This is transmitted directly to the hardware as pure torque, breaking it free.

Once the hardware is loose, you can finish removing it with the wrench's ratcheting feature or with a standard electric impact wrench.

The manual impact wrench combo set, NSN 5120-00-961-9815, is part of the No. 2 Supplemental shop set. This set is currently being replaced by the Standard Automotive Tool Set (SATS). Units identified in the SATS basis of issue plan (BOIP #0059-AA, Module 1-AB, Module 2-AC) will be turning in their No. 2 Supplemental shop set, but will be allowed to keep their manual impact wrench set.



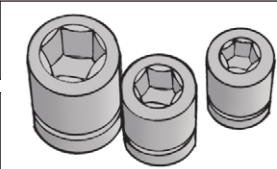
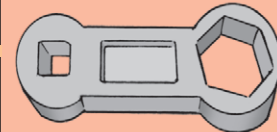
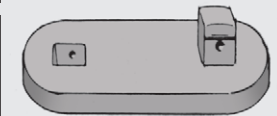
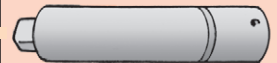


THE MANUAL IMPACT WRENCH COMBO SET IS ACTUALLY MADE UP OF TWO SEPARATE KITS—

A 1-IN DRIVE IMPACT WRENCH KIT, NSN 5120-00-961-9814, AND A 3/4-IN DRIVE KIT, NSN 5120-00-961-9813. HERE ARE THE COMPONENTS...

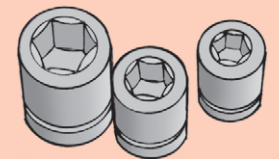
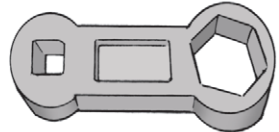
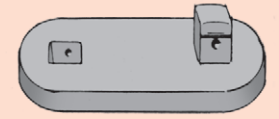
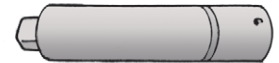
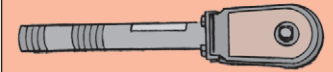
### 1-in Drive Impact Wrench Kit, NSN 5120-00-961-9814

Component	NSN
Wrench, 1-in drive, 2,000 lb-ft	5120-00-440-8011
Extension, 7-in	5130-00-449-6658
Extension, 8-in	5120-01-164-1455
Extension, 12-in, for Budd wheels	5120-01-164-7328
Extension, 13-in	5130-00-449-6659
Extension, 20-in, for Budd wheels	5120-01-164-7327
Offset link, 1 3/4-in long	5120-01-164-7329
Offset link, 4 1/4-in long	5120-01-163-9689
Box end wrench, 1 1/2-in hex	5120-01-170-3275
Box end wrench, 2 1/4-in hex	5120-01-163-9690
Impact socket, 1 9/16-in	5130-00-684-0919
Impact socket, 1 5/8-in	5130-00-221-8023
Impact socket, 1 11/16-in	5130-00-221-8024
Impact socket, 1 3/4-in	5130-00-684-0918
Impact socket, 1 13/16-in	5130-00-221-8025
Impact socket, 1 1/4-in	5130-00-189-7917
Impact socket, 1 15/16-in	5130-00-684-0917
Impact socket, 2-in	5130-00-235-5881
Impact socket, 2 1/16-in	5130-01-166-6465
Impact socket, 2 1/8-in	5130-01-166-6466
Impact socket, 2 3/16-in	5130-00-293-1375
Impact socket, 2 1/4-in	5130-00-293-1374
Impact socket, 2 5/16-in	5130-01-167-6632
Impact socket, 2 3/8-in	5130-00-293-1373
Impact socket, 2 7/16-in	5130-01-166-6467
Impact socket, 2 1/2-in	5130-01-170-3274
Tool box, portable	5140-01-163-9699



### 3/4-in Drive Impact Wrench Kit, NSN 5120-00-961-9813

Component	NSN/PN
Wrench, 3/4-in drive, 800 lb-ft	5120-00-440-8047
Extension, 7-in	5130-00-449-6656
Extension, 10-in	5130-00-723-2896
Extension, 13-in	5130-00-449-6657
Offset link, 1 1/4-in long	5120-01-151-1823
Offset link, 3 3/4-in long	5120-01-151-1824
Box end wrench, 1 1/8-in hex	5120-01-154-5137
Box end wrench, 1 1/4-in hex	5120-01-151-1805
Box end wrench, 1 7/16-in hex	5120-01-154-5138
Impact socket, 3/4-in	5130-00-227-6701
Impact socket, 13/16-in	5130-00-227-6676
Impact socket, 7/8-in	5130-00-227-6677
Impact socket, 15/16-in	5130-00-293-1411
Impact socket, 1-in	5130-00-227-6679
Impact socket, 1 1/16-in	5130-00-293-1412
Impact socket, 1 1/8-in	5130-00-227-6681
Impact socket, 1 3/16-in	5130-00-293-1413
Impact socket, 1 1/4-in	5130-00-227-6683
Impact socket, 1 5/16-in	5130-00-227-6684
Impact socket, 1 3/8-in	5130-00-227-6685
Impact socket, 1 7/16-in	5130-00-227-6686
Impact socket, 1 1/2-in	5130-00-236-3979
Impact socket, 1 7/8-in	5130-00-235-5880
Tool box, portable	41-81099-00
Maintenance manual	41-22121-34

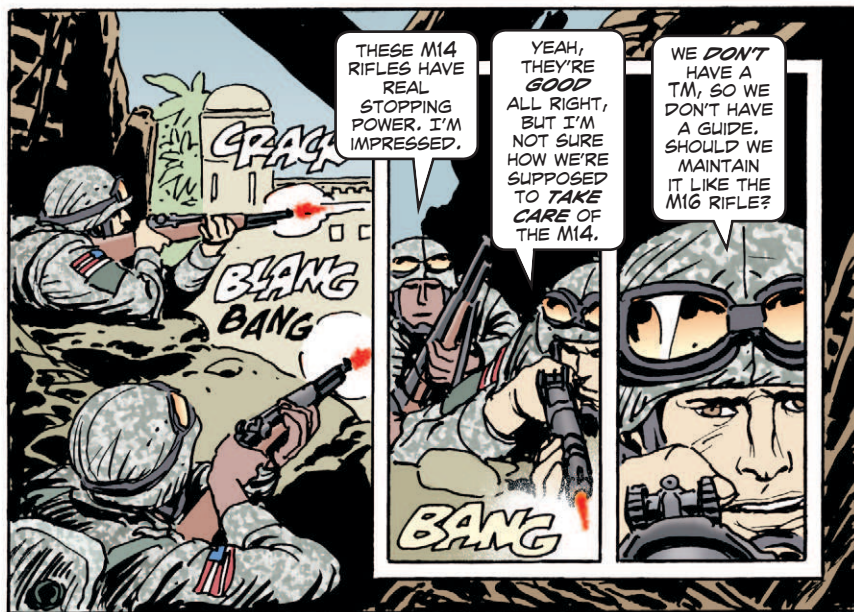


THOUGH NOT PART OF THE KIT ABOVE, YOU CAN ALSO GET A SMALLER 3/4-IN DRIVE, 500 LB-FT IMPACT WRENCH WITH NSN 5120-00-871-2592.

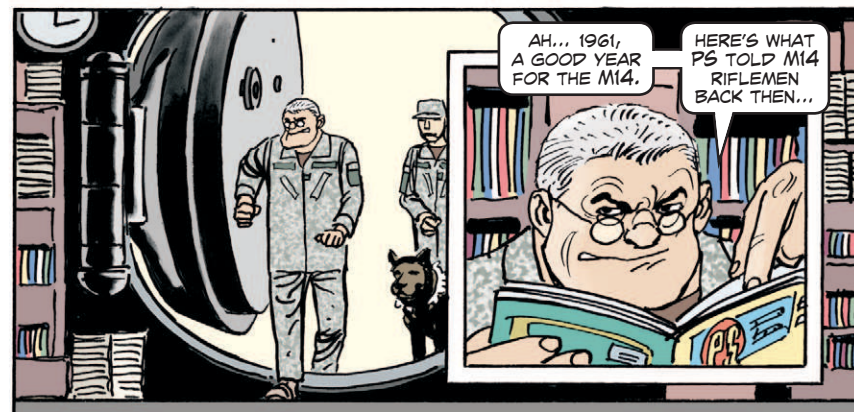
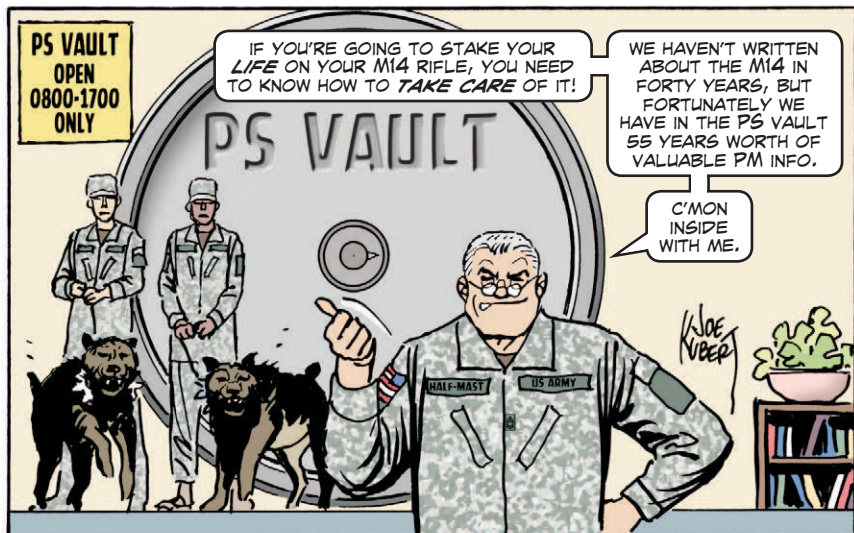
HOWEVER, YOU MUST ORDER THIS WRENCH ON A DD FORM 1348-6 AND PUT "NSN NOT ON AMDF" IN THE REMARKS BLOCK.



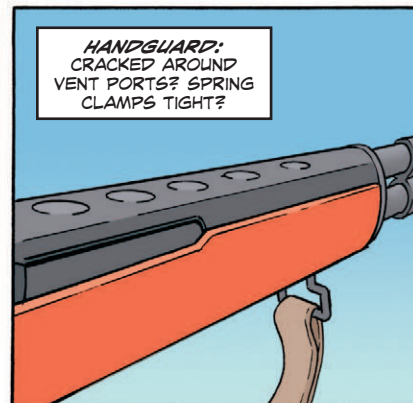
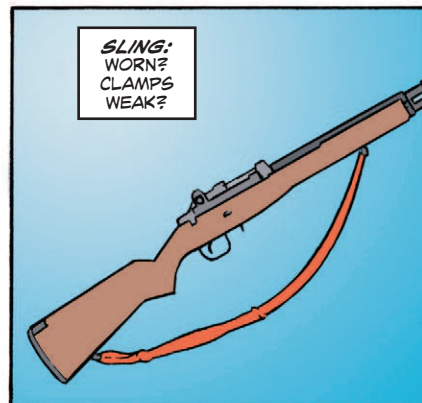
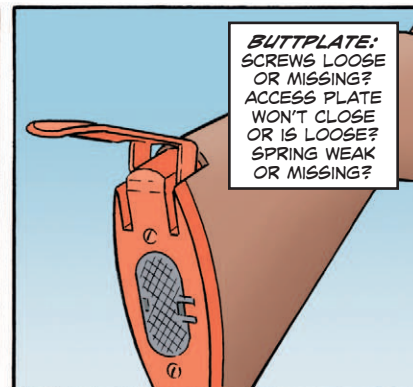
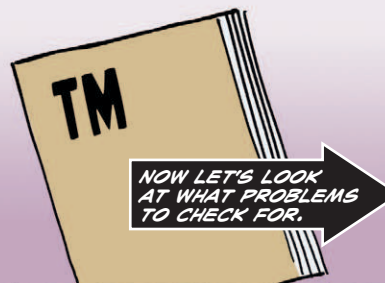




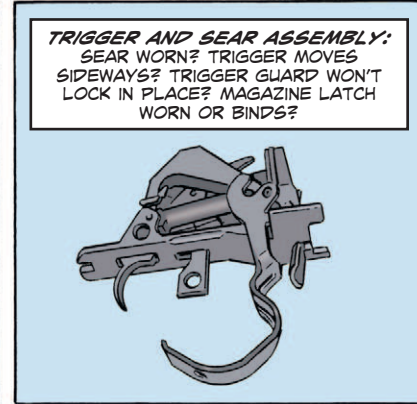
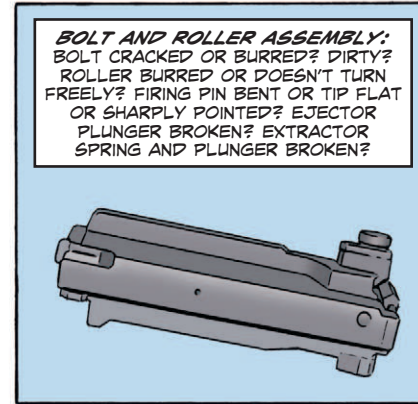
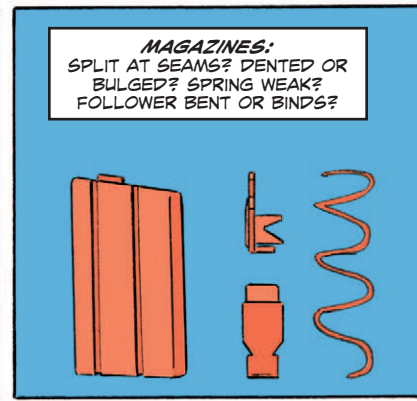
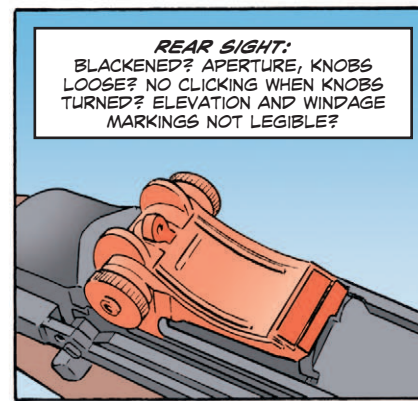
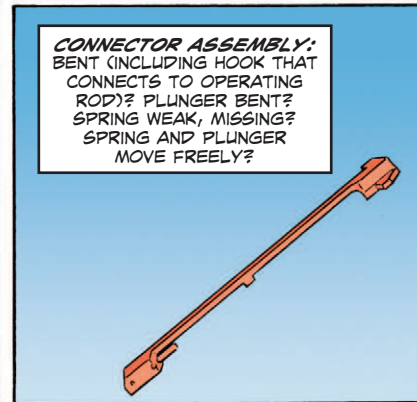
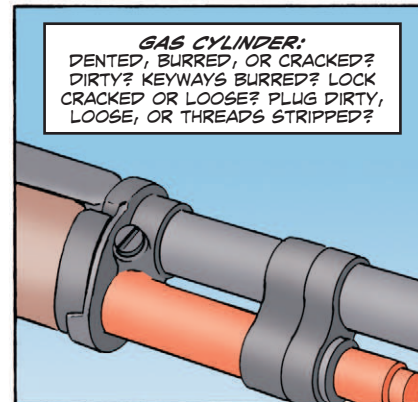
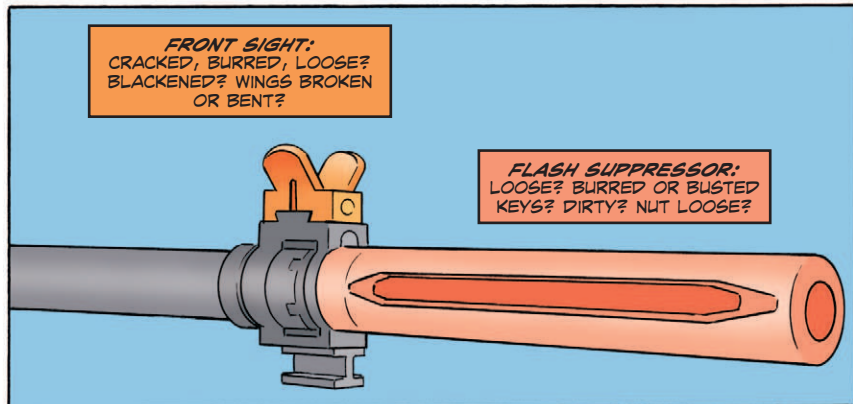
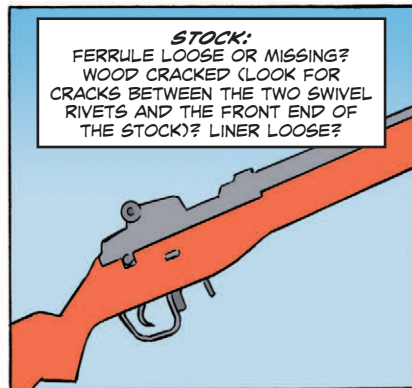
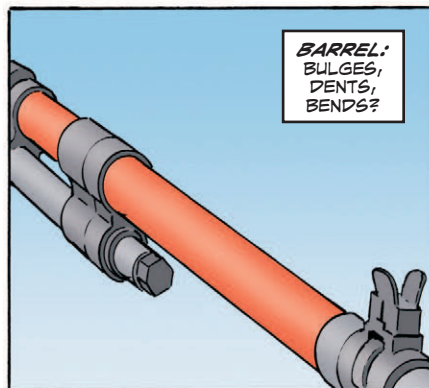
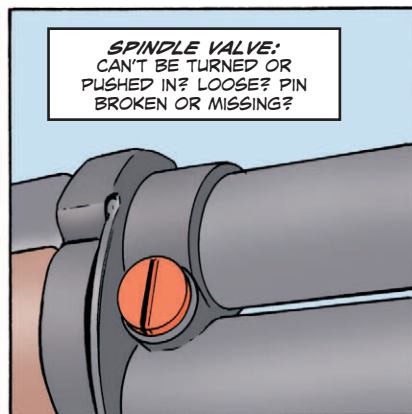
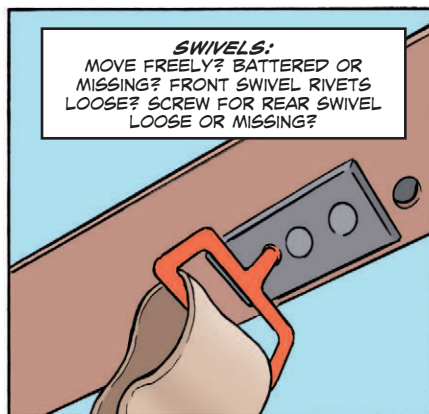
## M14 RIFLE IS BACK - AND PS IS READY TO HELP!



BUT FIRST, YOU NEED TO ORDER THE M14'S TM 9-1005-223-10 AND -20. THEY'RE ON THE ETM SITE AT <https://www.logsa.army.mil/etms/online.htm>

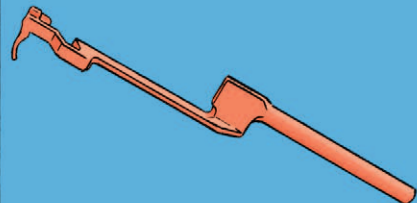




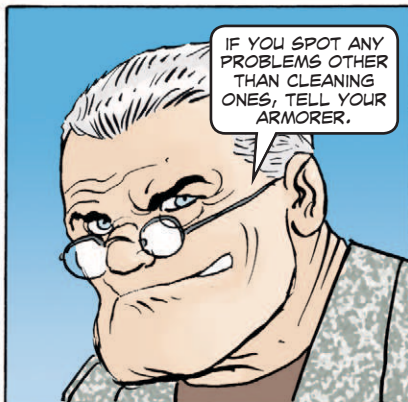




**OPERATING ROD:**  
BOLT ROLLER INTERFERES  
WITH BOLT MOVEMENT?  
BENT, CRACKED, BURRED?

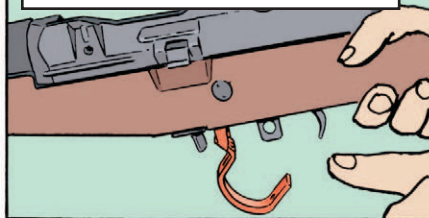


IF YOU SPOT ANY  
PROBLEMS OTHER  
THAN CLEANING  
ONES, TELL YOUR  
ARMORER.

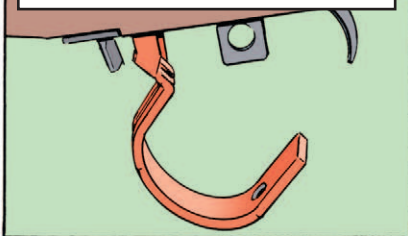


## MAKING THINGS EASIER

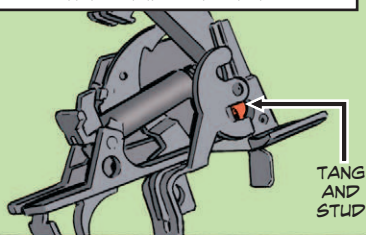
IF YOU HAVE TROUBLE UNHOOKING  
THE LOCKING HOOK ON THE TRIGGER  
GUARD, REMEMBER THAT YOU CAN  
ROTATE THE GUARD DOWN AND THEN  
REMOVE THE FIRING MECHANISM  
HOUSING.



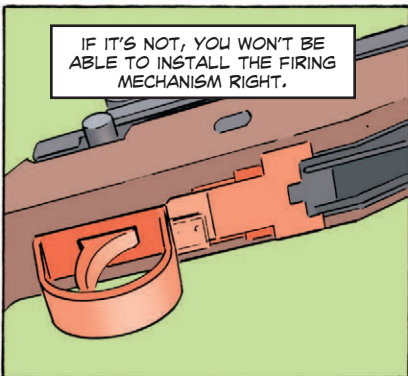
BUT DON'T PULL THE GUARD DOWN  
MORE THAN 90°. IF YOU FEEL METAL-  
TO-METAL CONTACT, STOP OR YOU'LL  
DAMAGE THE HOUSING WHEN YOU  
PULL IT OUT.



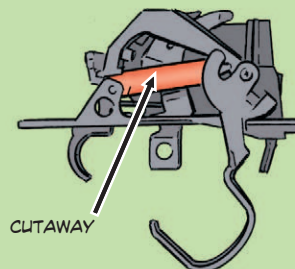
WHEN YOU ASSEMBLE THE FIRING  
MECHANISM, MAKE SURE THE BOTTOM  
POINTED END OF THE HAMMER-THE  
COCKING TANG-IS **FORWARD** OF  
THE INSIDE OF THE COCKING STUD  
ON THE TRIGGER GUARD.



IF IT'S NOT, YOU WON'T BE  
ABLE TO INSTALL THE FIRING  
MECHANISM RIGHT.

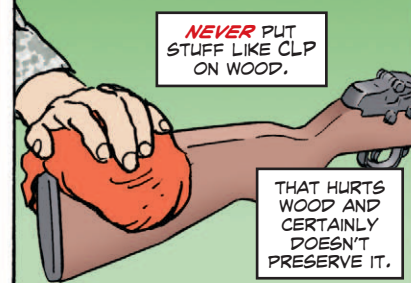


INSTALL THE HAMMER SPRING HOUSING  
SO THE CUTAWAY PART FACES THE  
SAFETY. THE HOUSING IS OPEN THAT  
WAY SO THE SAFETY WILL WORK.



TO PREVENT THE WOODEN STOCK  
FROM DRYING OUT AND SPLINTERING,  
RUB RAW LINSEED OIL, NSN 8010-00-  
221-0611, ON IT AT LEAST MONTHLY.

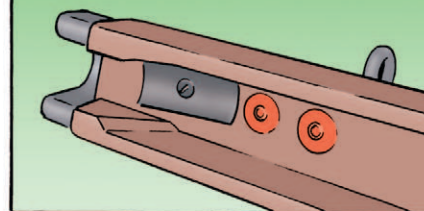
**NEVER** PUT  
STUFF LIKE CLP  
ON WOOD.



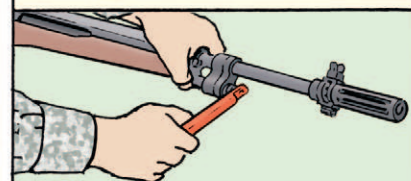
THAT HURTS  
WOOD AND  
CERTAINLY  
DOESN'T  
PRESERVE IT.

DO NOT TRY  
TO TIGHTEN  
THE RIVETS  
IN THE STOCK  
THAT HOLD  
THE SWIVEL.

DIRECT SUPPORT  
HAS THE RIGHT TOOL  
TO DO THAT JOB. IF  
YOU USE THE WRONG  
TOOL, YOU RUIN THE  
RIVETS.

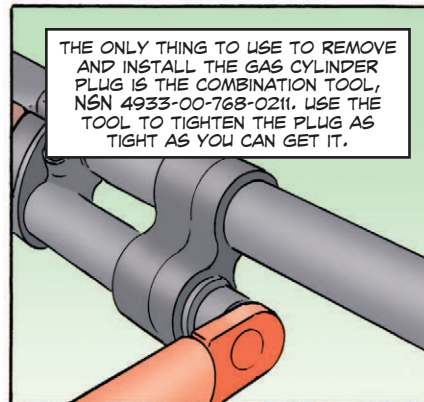


DO NOT HOLD ONTO THE HANDGUARD  
WHILE YOU TIGHTEN OR LOOSEN THE  
GAS CYLINDER PLUG. THAT DAMAGES  
THE HANDGUARD.

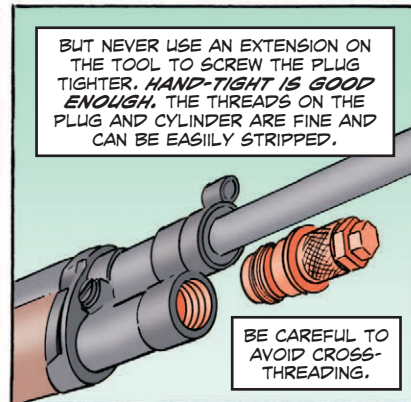


THE RIGHT WAY IS TO HOLD ONTO THE  
BARREL AND GAS CYLINDER. IF THE  
BARREL'S TOO HOT TO TOUCH, STICK A  
SCREWDRIVER BETWEEN THE BARREL AND  
CYLINDER FOR LEVERAGE.

THE ONLY THING TO USE TO REMOVE  
AND INSTALL THE GAS CYLINDER  
PLUG IS THE COMBINATION TOOL,  
NSN 4933-00-768-0211. USE THE  
TOOL TO TIGHTEN THE PLUG AS  
TIGHT AS YOU CAN GET IT.



BUT NEVER USE AN EXTENSION ON  
THE TOOL TO SCREW THE PLUG  
TIGHTER. **HAND-TIGHT IS GOOD  
ENOUGH.** THE THREADS ON THE  
PLUG AND CYLINDER ARE FINE AND  
CAN BE EASILY STRIPPED.



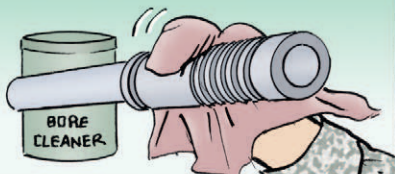
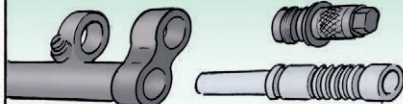
THE ONLY THING TO USE TO CLEAN THE GAS PISTON, GAS CYLINDER BORE AND GAS CYLINDER PLUG IS BORE CLEANER, NSN 6850-00-224-6656. SOAK THE PISTON AND PLUG IN BORE CLEANER AND THEN WIPE THEM WITH PATCHES OR A CLEAN CLOTH SOAKED WITH BORE CLEANER. CLEAN THE GAS CYLINDER WITH PATCHES SOAKED WITH BORE CLEANER.

**NEVER** USE AN ABRASIVE LIKE CROCUS CLOTH. ABRASIVES CAN RUIN SOMETHING LIKE THE PISTON. IT'S NORMAL FOR THE GAS SYSTEM PARTS TO DISCOLOR AFTER REPEATED FIRINGS.

DON'T TRY TO SHINE THEM UP. IT IS OK TO CLEAN THE GAS CYLINDER PLUG AND INSIDE THE PISTON WITH THE BORE BRUSH AND BORE CLEANER.

GAS CYLINDER

GAS PISTON



BECAUSE THE PARTS OF THE GAS SYSTEM ARE MADE OF CORROSION-RESISTING STEEL, THEY AREN'T GOING TO RUST. SO ASSEMBLE THE GAS SYSTEM DRY.

ONLY THE **OUTSIDE** OF THE GAS SYSTEM GETS A SLIGHT COAT OF OIL.

IF YOU PUT OIL ON THE INSIDE OF THE CYLINDER, ON THE PISTON, OR ON THE PLUG THREADS, YOU'LL GET A FASTER BUILD UP OF CARBON, WHICH MAKES CLEANING NEXT TIME THAT MUCH **HARDER**.

ASSEMBLE DRY

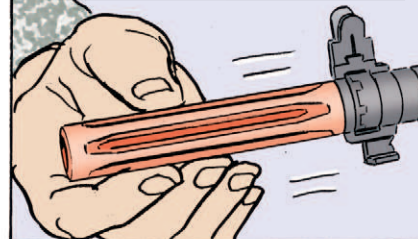
TWO PLACES YOU DO WANT TO LUBE ARE THE INSIDE OF THE OPERATING ROD TUBE AND THE SPRING AND THE PLUNGER FOR THE CONNECTOR ASSEMBLY.

LUBE INSIDE THE TUBE WITH A PATCH AND YOUR CLEANING ROD.

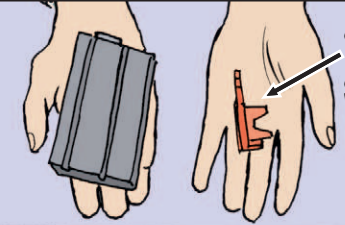


## QUICK CHECKS

GIVE THE FLASH SUPPRESSOR AND FRONT SIGHT A COUPLE OF SHAKES. IF EITHER MOVES, YOUR ARMORER NEEDS TO KNOW ABOUT IT.



IF THE BOLT DOESN'T STAY LOCKED TO THE REAR AFTER THE LAST ROUND IS SHOT, CHECK THE FOLLOWER IN THE MAGAZINE. IT SHOULD BE CATCHING THE BOLT LOCK TO KEEP THE BOLT BACK.



IF THE EXTRACTOR KEEPS JUMPING OUT OF THE BOLT, THE EXTRACTOR SHAFT, SPRING AND PLUNGER ARE PROBABLY WORN OUT. THEY SHOULD BE REPLACED.

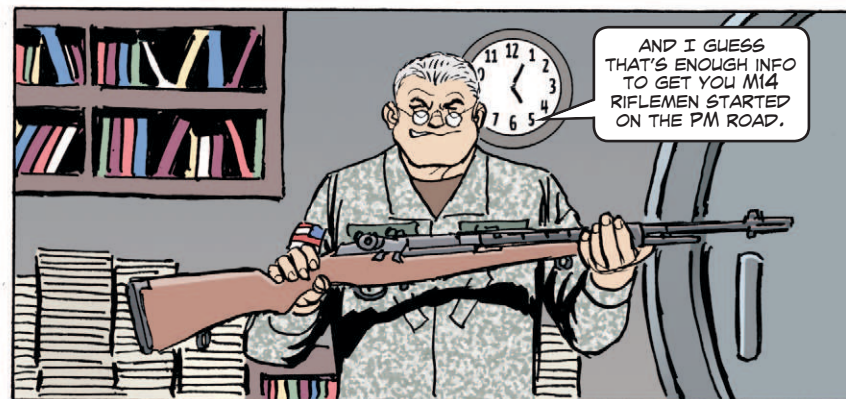


PS VAULT  
OPEN  
0800-1700  
ONLY

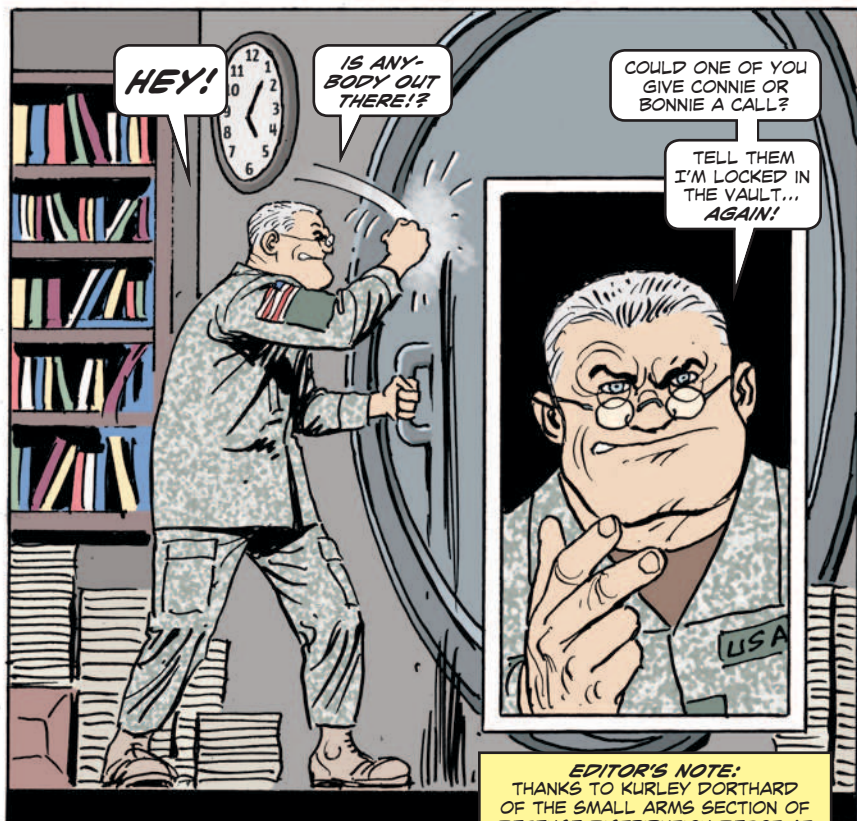
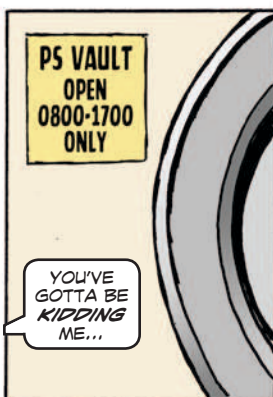
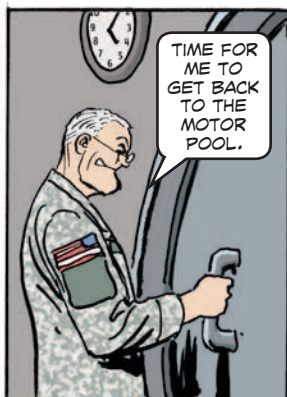
PS VAULT

THAT ABOUT COVERS THE ESSENTIALS FOR THIS RIFLE.

AND I GUESS THAT'S ENOUGH INFO TO GET YOU M14 RIFLEMEN STARTED ON THE PM ROAD.

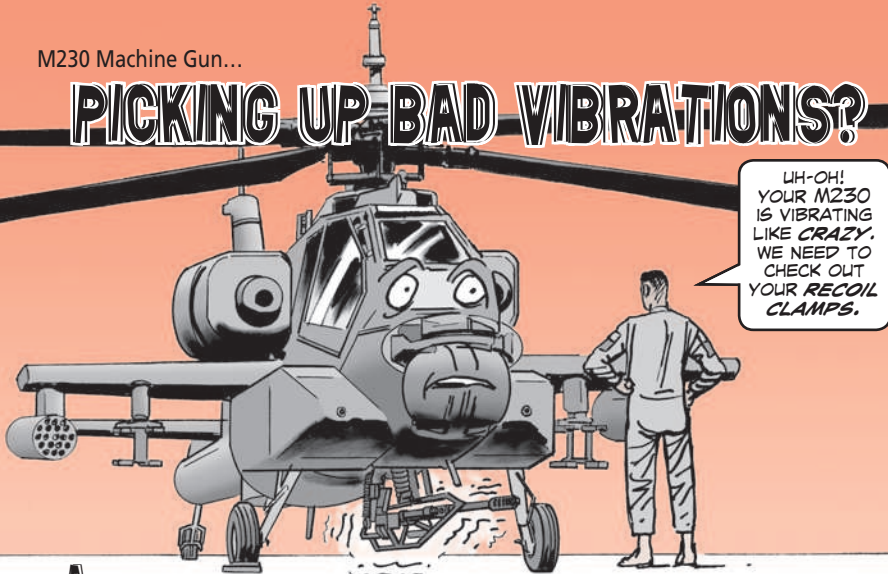






**EDITOR'S NOTE:**  
THANKS TO KURLEY DORTHARD  
OF THE SMALL ARMS SECTION OF  
DEFENSE DISTRIBUTION DEPOT AT  
ANNISTON, AL, FOR HELP WITH THE  
PICTURES FOR THIS ARTICLE.

# PICKING UP BAD VIBRATIONS?



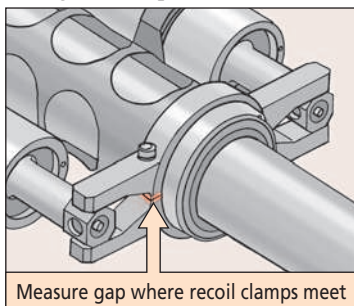
Aircraft crews have reported their M230 machine guns are vibrating too much when the gun is moved or fired. The vibration can cause M230 gun and cradle components to wear out fast, leading to expensive repairs.

Investigation has revealed the main culprit is Rev-C recoil clamps. Some of the recoil clamps were manufactured incorrectly. Other recoil clamps were installed wrong. Excessive wear on the shoulder pins and piston rod on the recoil mechanism can also cause vibration.

The torque on the recoil clamps was increased from 50 to 85 lb-in. This can make it difficult to remove the barrel without first loosening the clamps.

If an M230 is vibrating, a repairman should measure the gap where the recoil clamps meet. If the gap exceeds .01 inch, replace the recoil clamps, NSN 1005-01-182-4045, and file a quality deficiency report.

If vibration still occurs, verify that the shoulder pins are installed correctly and seated securely. If they're not, send the recoil mechanism to AVIM for disassembly and inspection of the recoil mechanism shoulder pins and piston rod.



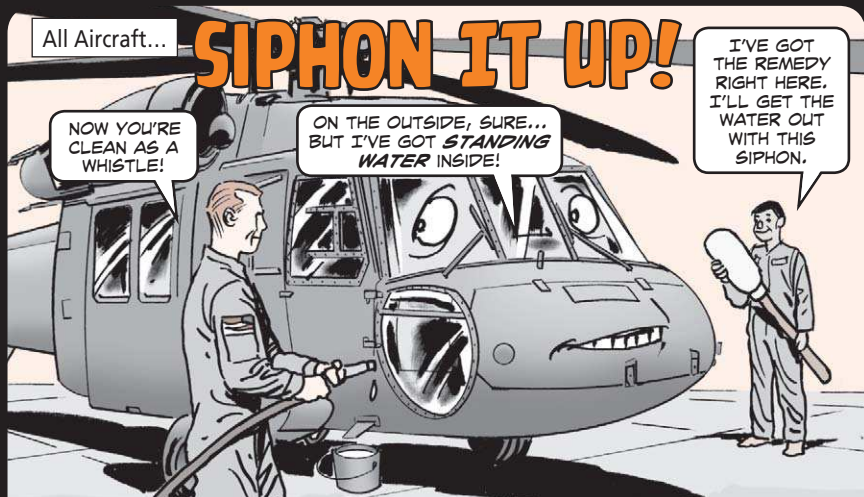
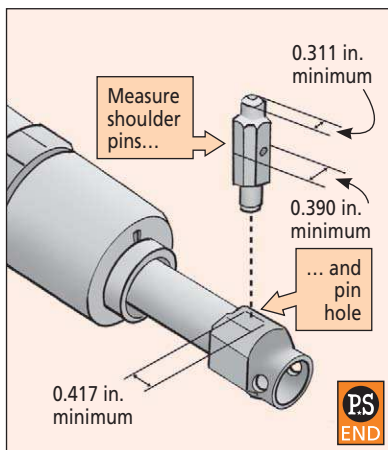
The shoulder pins should measure a minimum of .39 inches, measuring from one flat surface to the parallel flat surface, excluding corners. The end diameters should measure a minimum of .311 inches. If the pins aren't within tolerance, they should be replaced.



The maximum width of the square hole on the piston rod where the shoulder pin sits is .417 inch. If it's more than that, replace the piston rod.

This information can be found in TACOM maintenance advisory message 06-017. The MAM contains changes to TM 9-1090-208-23-1-1, TM 9-1090-208-23-1-2, TM 9-1090-208-23-2, and IETM 1-1520-Longbow/Apache that will help pinpoint the causes of excessive M230 vibration. See your TACOM logistics assistance representative for the MAM or get a copy of it:

[https://aeps2.ria.army.mil/commodity/mam/tacom\\_wn/06/mam06-017.html](https://aeps2.ria.army.mil/commodity/mam/tacom_wn/06/mam06-017.html)



**M**echanics, now that you've finished cleaning and washing your bird, how do you get excess water out of those tight spots and hard-to-reach places?

Low pressure air usually works, but in those tight nook and crannies of your bird low pressure air might not get the job done.

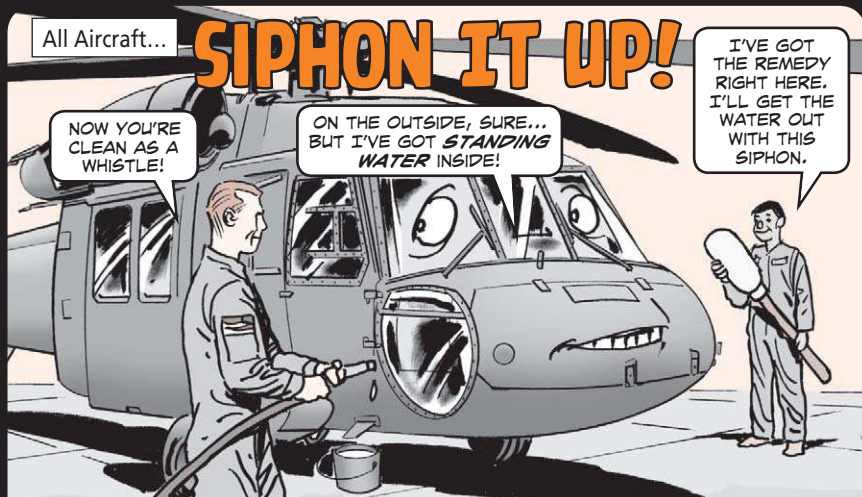
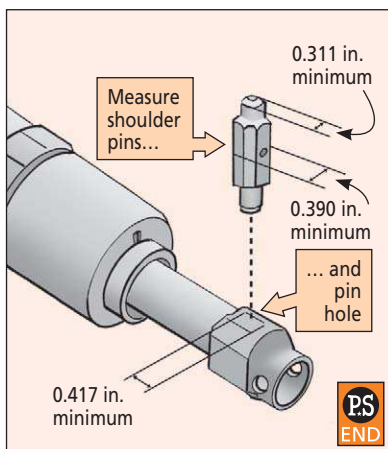
Get the trapped water out with a plastic irrigating syringe, NSN 6515-01-497-0437. That'll bring you a package of 50 disposable sterile syringes.

If you leave standing water in your bird, like in the accessory gear box, that creates an environment for corrosion.

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# LOCK IN HANDLE BEFORE PUMPING UP

YOUR APU  
NEEDS  
PUMPING.

WE'LL BOTH GET A  
WORKOUT! I'LL GET  
SOME PSI, AND YOU'LL  
GET SOME MUSCLE!



YOUR BLACK HAWK IS  
EQUIPPED WITH AN  
AUXILIARY POWER UNIT  
(APU) TO GET THE ENGINES  
GOING WHEN YOU'RE OUT IN  
THE BOONIES AND GROUND  
POWER IS NOT AVAILABLE.

AND THE APU  
HAS A PRESSURE  
ACCUMULATOR TO  
GET IT STARTED.

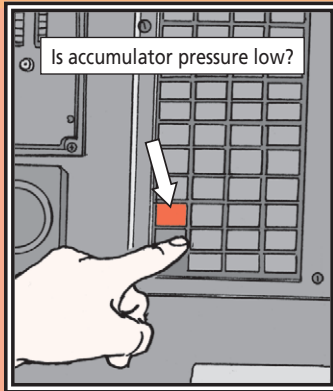




BUT WHAT DO YOU DO WHEN THE ACCUMULATOR PRESSURE IS LOW?



Is accumulator pressure low?



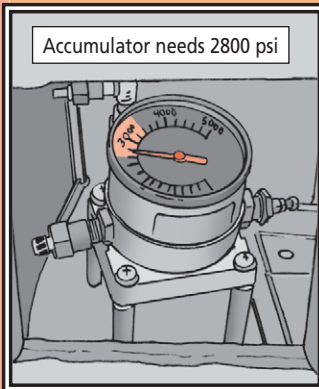
DOESN'T THE ACCUMULATOR GET RECHARGED WHEN THE APU IS UP TO OPERATIONAL SPEED?



NORMALLY, THAT'S THE CASE. THEN THE BACKUP SYSTEM PUMP RECHARGES THE ACCUMULATOR TO AT LEAST 2800 PSI.



Accumulator needs 2800 psi



BUT IF THAT *DOESN'T* HAPPEN... WELL, THEN I'M IN TROUBLE. I HAVE *NO IDEA* HOW TO GET A START.



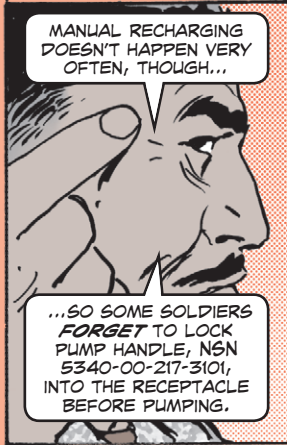
ALL IS *NOT* LOST.



THE ACCUMULATOR CAN BE RECHARGED USING THE *HAND-PUMP*.

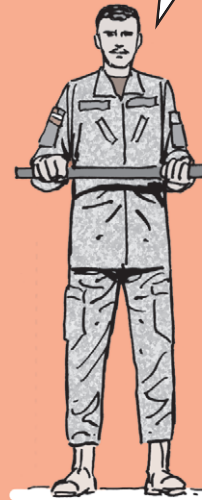


MANUAL RECHARGING DOESN'T HAPPEN VERY OFTEN, THOUGH...

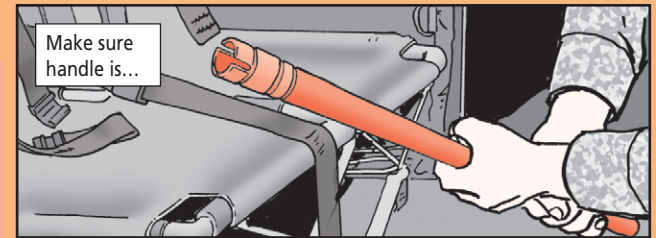


...SO SOME SOLDIERS *FORGET* TO LOCK PUMP HANDLE, NSN 5340-00-217-3101, INTO THE RECEPTACLE BEFORE PUMPING.

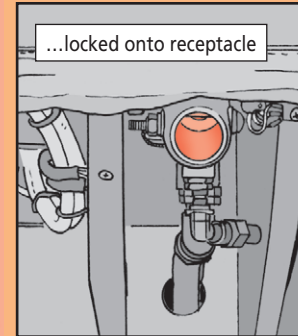
HERE'S WHAT YOU NEED TO DO...



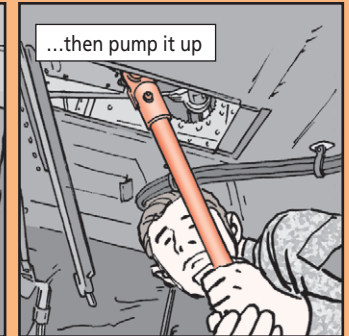
Make sure handle is...



...locked onto receptacle



...then pump it up



IF THE HANDLE SLIPS OUT WHILE YOU'RE PUMPING, THE EARS ON THE EDGE OF THE PUMP HANDLE CAN BE BROKEN.

THEN IT'S *UNUSABLE*. YOUR BIRD COULD BE NMC IF YOU CAN'T PUMP UP THE ACCUMULATOR WHEN NEEDED.



SO, REMEMBER TO LOCK THE HANDLE *BEFORE* YOU START PUMPING!

HOW'S THAT?

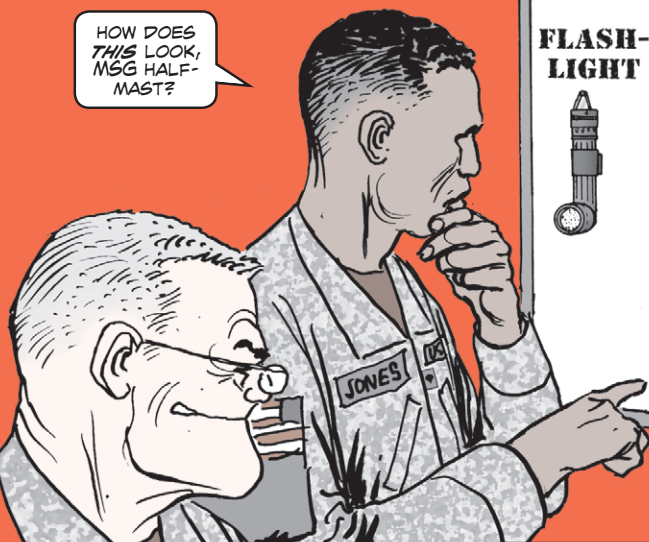
GREAT! NOW WE'RE *BOTH* PUMPED UP!



PS  
END

# WHAT SHOULD BE ON IT?

HOW DOES THIS LOOK, MSG HALF-MAST?



Dear MSG Half-Mast,  
Every time I PCS to a new duty station, my new unit has an electrical safety board that has different things on it than my last unit. Is there anything in writing that says what should be on an electrical safety board?

SGT K.W.

Dear Sergeant K.W.,

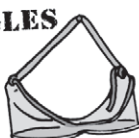
Yes . . . and no. Pages 3-1 and 3-6 of TB 385-4, *Safety Requirements for Maintenance of Electrical and Electronic Equipment* (Aug 92), makes some recommendations on what a good electrical safety board should have, but leaves the door open for some deletions and additions.

## SAFETY BOARD

GLOVES



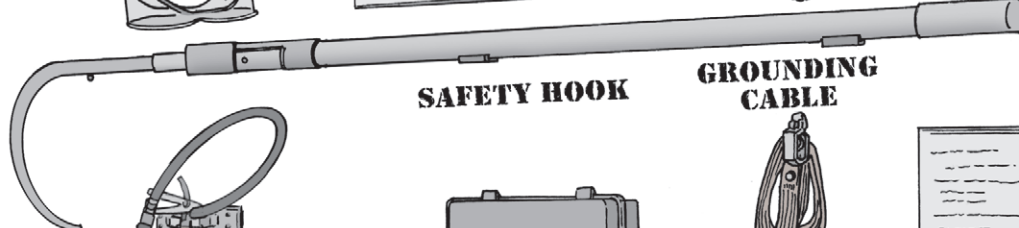
GOGGLES



ROPE



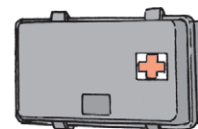
SAFETY HOOK



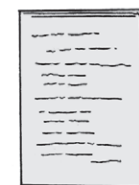
GROUNDING CABLE



FLASH-LIGHT



FIRST AID KIT



EMERGENCY CONTACTS

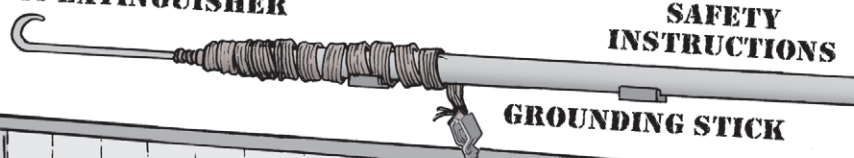
CO<sub>2</sub> EXTINGUISHER



SAFETY INSTRUCTIONS



HEARING PROTECTION



GROUNDING STICK

These additions or deletions would be made by your commander or safety office based on your mission and work environment. Check with your local medical authority and get approval for the items.

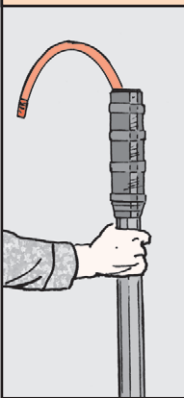
Each maintenance facility in which soldiers are exposed to 70 volts or higher should maintain safety boards in accessible and conspicuous locations.

Safety boards should be as big as needed to hold all the items your unit requires. One of the critical factors for the safety board is location. Decide where your electrical danger areas are. Centrally locate your board to cover these areas. Safety boards should be painted white with a two-inch green border. The words "Safety Board" should be painted in white letters on a green rectangle. The size of this title is your call.

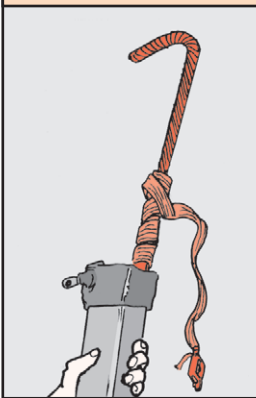


Three things need to be fabricated by your unit for the board. They're...

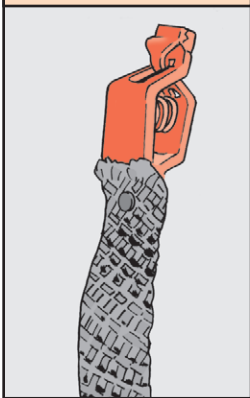
... a safety hook...



... a grounding stick...



...and grounding cables



Information on how to fabricate these items is in TB 385-4 in Figs 3-1 and 3-2.

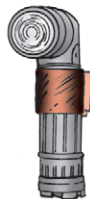


- FM 21-11, First Aid for Soldiers
- Local safety instructions
- Emergency procedures and emergency telephone numbers
- Location of power kill switches

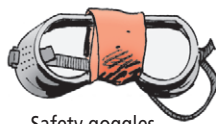


- Rope,  $\frac{3}{8}$ -in, 25-ft, NSN 4020-00-174-3031. Or 25 feet of rope, NSN 4020-00-599-7529. (It's thinner, stronger, cheaper and orange!)

- Gloves, rubber, 3,000 volts, sizes 9-12 respectively, NSN 8415-01-158-9449/50/51/52



- Flashlight, NSN 6230-00-264-8261



- Safety goggles, NSN 4240-00-052-3776

— General purpose first aid kit, NSN 6545-00-922-1200.  
It's a good idea to inventory your kit regularly, because items from it seem to disappear.



HERE'S WHAT SHOULD BE IN THIS FIRST AID KIT...



Item	Qty Per Kit	NSN	Qty Per Each NSN
Iodine	10 packets	6505-00-148-7096	144
Field dressing	3 ea	6510-00-159-4883	1
Field compress	1 ea	6510-00-200-3075	1
Gauze bandage, 3-in x 18-ft	2 ea	6510-00-200-3185	12
Triangle bandage, 37-in x 37-in x 52-in	1 ea	6510-00-201-1755	1
Adhesive bandage $\frac{3}{4}$ -in x 3-in	18 ea	6510-00-913-7909	300
Rolled elastic bandage, 2-in x 12-ft	1 ea	6510-00-935-5820	10
Surgical tape, 1-in x 54-in	3 ea	6510-01-060-1639	100
Petrolatum gauze, 3-in x 36-in	3 ea	6510-01-112-6414	12
Surgical blade	1 ea	6515-00-754-0426	5
Scissors	1 pr	6515-00-935-7138	12
Exam glove	4 ea	6515-01-364-8554	100
Dental bag	1 ea	6520-00-926-9041	100
Eye dressing	1 ea	6545-00-853-6309	12
Case	1 ea	6545-00-113-3722	1

Some other things you may consider around, or on the board, are a resuscitator, a fire extinguisher, a portable defibrillator and hazard signs, but resist the urge to make the board for general safety by adding non-electrical safety related items. Other safety items can fit into another presentation.

Don't stack things in front of the board. In an emergency, even the few moments it takes to move clutter could cost a life.

Inspect the board each month to make sure all items are on hand and in good shape. No matter how well-equipped the board is, it's of little use if it's not maintained.

Finally, make board training SOP. Everyone working in the area should know each piece of equipment and how to use it and understand that the equipment is for emergency use only.

Half-Mast





# It's an O-ring Thing



Dear Editor,

I have inspected many night vision devices (NVDs) and have been surprised at how many of these NVDs don't have their O-rings. When, where and how they get lost is a mystery to me, but NVDs are NMC without them. O-rings let NVDs hold their purge and keep moisture out of the device.

Armorers need to make sure every time they purge an NVD that the O-rings are put back in place. NVD users need to understand that there is no unit maintenance on these NVDs that require them to take a device apart down to an O-ring.

SFC (Ret) David A. Jones  
Lear Siegler Services  
Ft Drum, NY

**Editor's note:** O-rings are often small, but always do a big job. Thanks, Sergeant Jones, for this important reminder. Armorers, never let an NVD leave your arms room without its O-rings in place!

# HAS YOUR BATTERY BEEN RECALLED?

DO YOU HAVE ONE OF THESE MODELS OF DELL LAPTOP COMPUTERS?

## Latitude

D410, D505, D510,  
D600, D610, D800,  
D810;

## Inspiron

510M, 600M, 6000,  
8600, 9200, 9300;

## XPS Gen 2 Precision

M20, and M70

IF SO, YOU  
NEED TO CHECK  
THE BATTERIES...

...BECAUSE  
THEY COULD  
**OVERHEAT  
AND CATCH  
FIRE!**

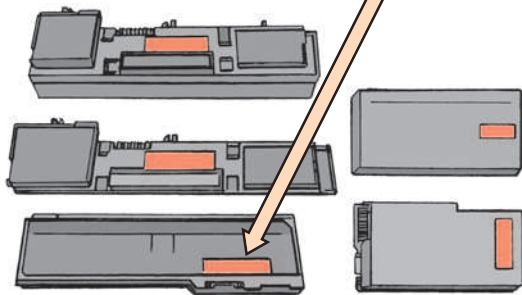
**A**ffected batteries were shipped between 05 Oct 04 and 13 Oct 05. The batteries were bundled with Dell notebooks and also sold as add-ons.

These batteries are now being recalled by Dell. To find out if you have a battery subject to this recall go to website:

<http://www.dellbatteryprogram.com/batterymodels.ASPX>

At that website, you'll find instructions on how to find your battery pack ID number. The batteries with the following pack ID numbers need further checking:

3K590, C5340,  
X5308, F5132, U5882,  
U5867, 6P922,  
C5446, C2603



Your battery pack will  
look like one of these.

Follow the recall instructions at the website to see if your battery has been recalled. If your battery is not listed, you are not affected.

If you need more help, contact the PEO EIS OMSD POC:

[@">us.army.mil](mailto:us.army.mil)

Or call DSN 656-3112 or  
(703)806-3112.

# DON'T BE *FAKED* OUT\*

HEY!  
CHECK IT  
OUT...

SLICK EDDIE'S ARMY SURPLUS  
SUPER STORE

...THE NEW  
ARMY COMBAT  
UNIFORM!  
SWEET! I'M  
GONNA BUY  
ME ONE.

NOT SO  
FAST. WHAT  
MAKES YOU  
SO SURE  
THIS IS  
AUTHENTIC?

GOOD  
QUESTION,  
SOLDIER.

"KNOCK-OFF" ACUs  
ARE SHOWING UP  
IN ARMY SURPLUS  
CLOTHING STORES.

OTHER THAN  
THROUGH A  
DEPLOYMENT,  
HOW DO WE  
GET THE ACU?

ANOTHER GOOD QUESTION!  
THE ARMY BEGAN PUTTING  
ACUs IN THE CLOTHING BAG  
IN FY 06. AND IN JANUARY  
2006 AAFES MILITARY  
CLOTHING STORES STARTED  
SELLING ACUs.

AAFES WILL BE THE ONLY  
STORES AUTHORIZED TO SELL  
AUTHENTIC ACUs, THE ONES  
THAT COMPLY WITH SPECS.

THE ACU'S UNIVERSAL  
CAMOUFLAGE WILL GRADUALLY  
REPLACE THE WOODLAND AND  
DESERT CAMO ON CLOTHING  
AND EQUIPMENT.

THE ARMY WILL PHASE IN THE  
UNIVERSAL CAMO THROUGH  
MAY 2008. DURING THIS TIME,  
SOLDIERS MAY HAVE CLOTHING  
AND GEAR WITH A MIX OF  
CAMO PATTERNS.

\*ACU-  
REAL OR  
FAKE?

WHEN YOU LOOK  
OVER A UNIFORM,  
HERE'S HOW TO TELL  
IF IT'S THE **REAL**  
**DEAL** OR A **CHEAP**  
**KNOCK-OFF...**

I'M THE  
REAL DEAL!

NO, YOU'RE  
NOT! I AM!

LOOK FOR **TWO TAGS**  
SEWN INTO THE UNIFORM.

ONE NEAR THE  
COLLAR TELLS  
THE **SIZE**.

ANOTHER TAG  
SOMEWHERE  
ELSE ON THE  
UNIFORM GIVES  
A GOVERNMENT  
CONTRACT  
NUMBER, NSN  
AND CARE  
INSTRUCTIONS.

VALID CONTRACT NUMBERS  
START EITHER WITH THE  
LETTERS **SPO** OR WITH THE  
LETTERS AND NUMBERS  
**WS11QY**.

THEY MAY LOOK LIKE THE REAL  
THING, BUT THEY'RE FAKE. BECAUSE  
THEY DON'T MEET THE ARMY'S  
SPECS, THEY'RE CONSIDERED  
UNAUTHORIZED UNIFORMS.

SO, BEFORE YOU SPEND  
YOUR HARD-EARNED  
DOLLARS ON WHAT  
LOOKS LIKE AN ACU,  
CONSIDER THIS...

- The uniform may not meet appearance standards and specs set forth in AR 670-1, Wear and Appearance of Army Uniforms and Insignia.
- It may not meet durability and wear specs. Seams might fail. Colors might fade. Substandard fabric might tear or rip.
- ACU knock-offs are not made under government contracts. When they wear out, the Army or AAFES isn't obliged to sustain or exchange them.
- You'll be spending your own money on an unauthorized uniform. You'll get the real ACU issued to you at no cost if you deploy to Southwest Asia.





Modern Burner Unit...

# IF YOU CAN'T TAKE THE HEAT...

THIS STEAK IS RAW!

THE FLAME KEEPS GOING OUT!

MOO-O-O!

If you've ever worked inside a field kitchen, you know how hot it can get. A combination of summer sun and lots of cooking can make the kitchen a sweltering furnace, with the heat sometimes topping 120°F.

These high temperatures can play havoc with older versions of the modern burner unit (MBU) or MBUs that haven't been upgraded by MWO 7310-281-55-1. They can cause the flame sensor to fail. You need to replace the original sensor with an upgraded version that can withstand high kitchen temperatures.

The NSN for the flame sensor hasn't changed. It's still NSN 7310-01-462-4918. When you use this NSN to order, you'll get the upgraded sensor.

HERE'S HOW TO TELL IF YOU HAVE A BAD FLAME SENSOR...

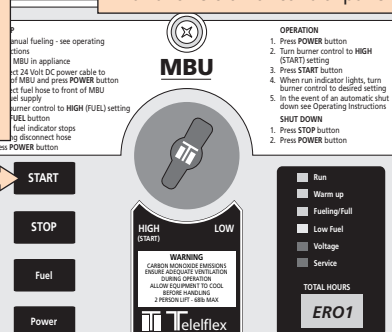
1. After running for 45 minutes or so in the heat, the MBU suddenly shuts down. Error code **ER01** appears on the TOTAL HOURS display.

2. Try to restart by pressing the MBU's START button.

3. At first the burner will light, but the flame will go out within eight seconds.

4. Repeated tries at starting the MBU get the same result.

Flame sensors may fail on MBUs with this version of control panel



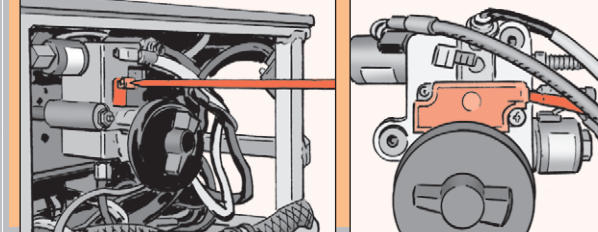
AND HERE'S HOW TO REPLACE THE ORIGINAL FLAME SENSOR WITH THE UPGRADED ONE...



1. Cut off power to the MBU. Make sure the MBU is cool.

2. Open the control panel.

3. Using a cross tip screwdriver, remove the two screws and lock-washers holding the flame sensor to the fuel delivery block.



4. Unplug the sensor's wiring harness connector. Remove the sensor.

5. Install the replacement sensor on the fuel delivery block. Tighten the two screws and lock washers.

6. Plug in the sensor's wiring harness connector.

7. Close the control panel.

FOR MORE ON TESTING AND REPLACING THE FLAME SENSOR, SEE WP 0025 00-20 IN TM 10-7310-281-13&P.



HAS YOUR MBU HAD MWO 10-7310-281-55-1 APPLIED TO IT?

YEP!

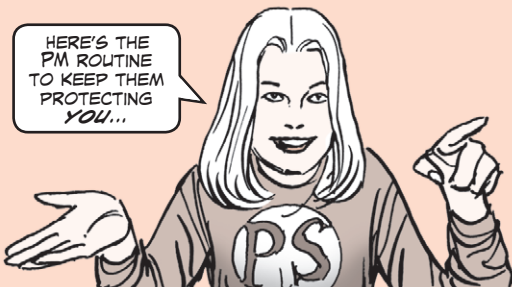
NEW FLAME SENSOR

THEN **DON'T** BOTHER TO REPLACE THE FLAME SENSOR. THE MWO **ALREADY** INCLUDES AN UPGRADED SENSOR.

# Keep SAPI Happy



The small arms protective inserts (SAPI) that fit into your Interceptor body armor (IBA) vest will protect you from multiple hits by rounds as large as 7.62mm. But even though the SAPI are rugged, they still need tender loving care.



## Cleaning

DIRTY, GRIMY INSERTS NEED A GOOD CLEANING, ESPECIALLY BEFORE YOU TURN THEM IN TO THE CENTRAL ISSUE FACILITY (CIF). CIF EXPECTS IT.

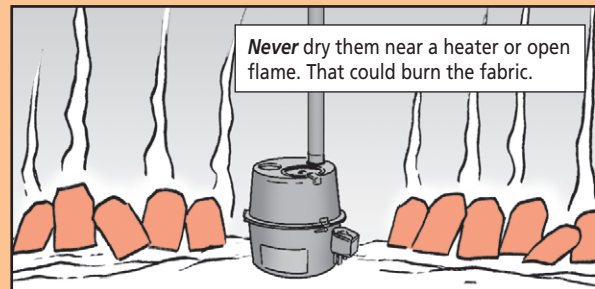


- Never machine wash or dry. That causes too much wear and tear on the SAPI, not to mention the washer and dryer.
- Use a cloth or soft brush to remove loose dirt or lint from the surface. Never use a stiff-bristled brush. You could tear the fabric.



- Wet the SAPI with some warm (**not hot**) water. Hand wash with a mild detergent and a cloth or soft brush.
- To clean heavy grease and oil, apply a mix of detergent and dry cleaning solvent directly on the spots and scrub with a soft brush.

- After washing, rinse with clean, warm water until all suds are gone.
- Lean the inserts against a post or wall and let them air dry.



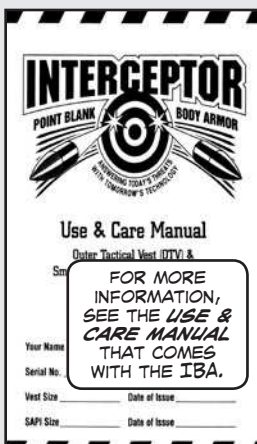


**ALWAYS  
CLEAN THE  
SAPI BEFORE  
STORING.**

## Storage



- Put the inserts into the IBA vest pockets—just like you were going to wear them. That way you'll know exactly where they are.
- Put the vest in a plastic bag to keep out dirt, dust and moisture.
- Store the vest as flat as possible to keep the materials from bunching.



THE VEST HAS A POCKET INSIDE THE LEFT FRONT PANEL DESIGNED TO HOLD THE MANUAL.



ALSO SEE CHAPTER 25 OF TM 10-8400-203-23, **GENERAL REPAIR PROCEDURES FOR INDIVIDUAL EQUIPMENT.**





Tools...

MY GOSH,  
YOU'RE  
HEAVY!

I'M  
SORRY!  
MY  
WHEELS  
HAVE  
BROKEN!

# BETTER WHEELS FOR GMTK

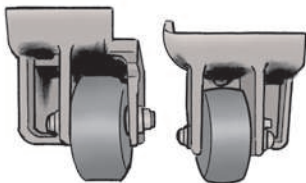
KLUNKETY  
KLUNK

The toolbox wheels for the general mechanics tool kits (GMTK) and multi-capable maintainers tool kit (MCMTK) have been breaking when the toolbox is rolled over rough ground. Then broken wheels make it a chore to move the toolbox to a new spot.

**Good news!** There are sturdier wheels available for the toolbox. The wheels have these improvements:

- harder and more durable
- larger diameter, which increases stability and ground clearance
- sealed bearings, which keep out sand and dirt
- wheel brackets spaced farther apart, which helps stability
- stronger brackets that can better withstand jolts and bumps

These new wheels are more durable



If your toolbox's wheels or the wheels' bracket has broken because they're defective, you can get new wheels for free by filing a warranty claim:

<http://pmskot.army.mil>

You will need the wheels' part number GMTKWHEELS2.4, your DODAAC, shipping address, email, and a brief explanation of what happened to the wheels or bracket.

If you have questions about how to file a claim, call (877) 476-7568 or email:

[@ria.army.mil](mailto:ria.army.mil)

If your toolbox wheels haven't broken but you would like the new wheels, order the wheels directly from Kipper Tools by calling (800) 295-9595. The wheels cost \$25 a pair.

Here's how  
to put on the  
new wheels:

1. Remove old wheels and brackets from the tool box.
2. Stick the template that comes with the new wheels on the wheel mount fin.
3. Mark the center of each of the five holes on the template.
4. Drill a  $\frac{1}{4}$ -in diameter hole at each marked spot. The holes will not weaken the toolbox.
5. Align the mounting screws provided with the new wheel bracket with the holes. Place the wheel bracket firmly against the wheel mount fin and press the fasteners through the holes. Secure the fasteners with the flat washers, lock washers and nuts that come with the bracket.

SMALL  
ITEMS  
WITH BIG  
INFO!

# CONSTRUCTION

## SEE BII Tools Update

Use NSN 5120-01-398-9391 to get a pair of pliers and NSN 5120-01-430-1504 to get a 17 x 19-mm box wrench for the small emplacement excavator. These tools are shown in the Basic Issue Items as Items 13 and 17 of TM 5-2420-224-24P.

## SEE Fire Extinguisher

Use NSN 4210-01-133-9053 to get a fire extinguisher for the small emplacement excavator. This NSN replaces the extinguisher shown as Item 2.1 in the Basic Issue Items List of TM 5-2420-224-10.

## SEE Tool Box Latch

You can now order the latch for the excavator's tool box door with NSN 5340-01-259-8969. The latch is shown in Figs 216 and 217 of TM 5-2420-224-24P-2, but not as a separate item.

## SEE Backhoe Knob NSN

Use NSN 5355-01-484-8572 to get a knob for the controls on backhoe on the small emplacement excavator. The NSN shown as Item 1, Fig 255 of TM 5-2420-224-24P-2 is wrong.

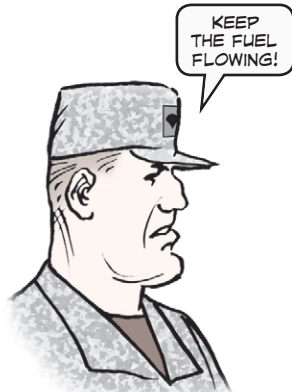


## 350 GPM Fuel Pump Gauges

Use NSN 6685-01-455-4828 and NSN 6685-01-455-4826 to get the compound and pressure gauges for the 350 GPM fuel pump. These NSNs replace the parts info shown as Items 28 and 29, Fig 49 of TM 10-4320-324-24P.

## 350 GPM Fuel Pump

Use NSN 4320-01-526-0433 to get a centrifugal pump for the 350 GPM fuel pump (Models AHS, FSSP, TPT and WSDS). This NSN is missing from Item 9 in Fig 37 of TMs 10-4320-226-24P and 10-4320-343-24P.



# EQUIPMENT TIDBITS

## LRT-110 Crane Tire

Order NSN 2610-01-465-5823 when you need a tire for the 7 1/2-ton rough terrain crane. This NSN replaces the parts info shown for Item 1, Fig 9-11 of TM 5-3810-305-24P.

## CS-563D Roller Final Drive

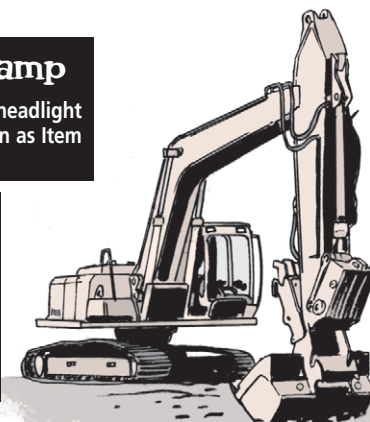
Tell your buddies in support that NSN 2520-01-496-0713 gets the final drive for the CS-563D self-propelled vibratory roller. This NSN replaces the parts info shown as Item 5, Fig 121 of TM 5-3895-383-24P.

## RS28 Vibratory Roller Lamp

Use NSN 6220-01-029-8295 to get the roller's headlight assembly. This NSN replaces the parts info shown as Item 1, Fig 51 of TM 5-3895-346-24P.

## RS28 Vibratory Roller Cables

Use NSN 3040-01-227-7370 to get the control assembly (forward/reverse cable) for the RS28 vibratory roller. The NSN for Item 1 in Fig 58 of TM 5-3895-346-24P is no longer available.



## HYEX Dipper Arm

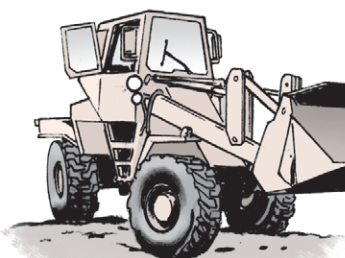
Use NSN 2590-01-474-9308 to get the dipper arm assembly for the hydraulic excavator that's shown as Item 00, Page 3340-2 of TM 5-3805-280-24P. The complete assembly (shown as Item 70 on the same page), which includes the cylinder, line and bucket linkage, is no longer available.

## MW24C Oil Filter

NSN 2940-01-011-9260 gets the oil filter for the MW24C scoop loader. What's shown as Item 13 in Fig 12 of TM 5-3805-262-24P is no longer available.

## MW24C Alternator NSN

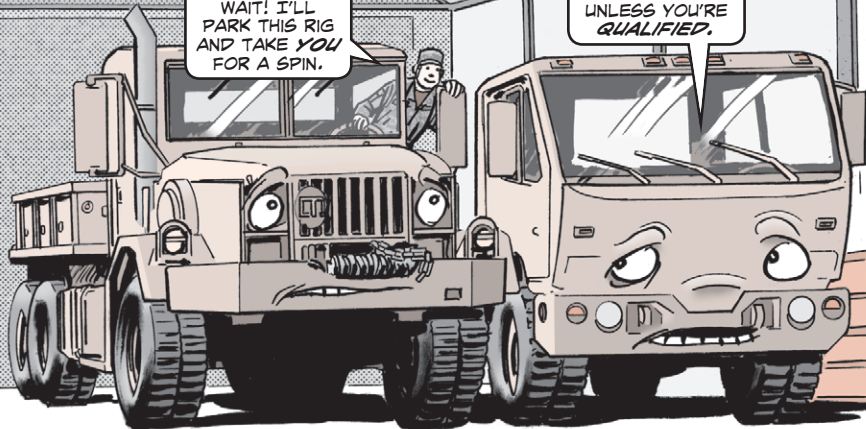
Use NSN 6115-01-440-7397 to get an alternator for the MW24C scoop loader. This NSN replaces the parts info shown as Item 2, Fig 32 of TM 5-3805-262-24P.



# APPLYING OPERATOR QUALIFICATION RECORDS

YOU JUST WAIT! I'LL PARK THIS RIG AND TAKE YOU FOR A SPIN.

NUH-UH. NOT UNLESS YOU'RE QUALIFIED.



Dear Half-Mast,

Can a unit still use the qualification code "2-1/2 ton" or "5-ton and below" on DA Form 5984-E? Just because a soldier can drive an M936 doesn't mean the soldier can drive an MTV or LMTV.

CW3 D.F.M.

Dear CW3 D.F.M.,

Qualifications for 2 1/2-ton or 5-ton and below can still be listed on DA Form 5984-E.

However, note how the sample DA Form 5984-E from Page 18, Fig 2-5, DA Pam 750-8 lists them.

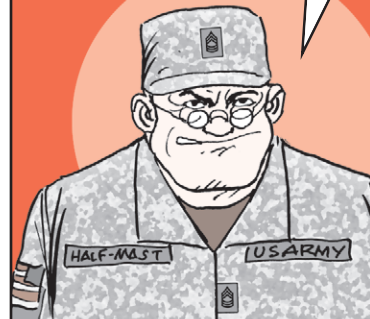
Among the qualifications are:

- LMTV M1078 2 1/2 [TON] CARGO TK
- 2 1/2 TON AND BELOW
- 5 TON AND BELOW

The MTV and LMTV series of vehicles are listed separately from qualifications for the older 2 1/2 and 5-ton vehicles. Dispatchers must understand there is a difference in the vehicle **families** and **series**. Operators must be qualified for the specific vehicle they are to drive.

Also note that the sample makes the distinction of using LMTV and the truck series number M1078. A driver isn't qualified to drive all trucks in the LMTV family with a single entry. Drivers should be qualified on each vehicle series they are likely to use in the unit. The LMTV family includes the M1078, M1079, M1081, and M1082. All four could be listed on the DA Form 5984-E.

THESE FAMILIES OF VEHICLES AND THE TRUCK SERIES WITHIN THOSE FAMILIES HAVE UNIQUE HANDLING CHARACTERISTICS, NEED UNIQUE TRAINING AND REQUIRE UNIQUE QUALIFICATION ENTRIES ON RECORDS AND PERMITS.



OPERATOR'S PERMIT DA FORM 5984-E

U.S. ARMY MOTOR VEHICLE OPERATOR'S IDENTIFICATION

Name of Operator

Height Weight Date of Birth

Color of Hair Eyes

Name and Issue Unit

SIGNATURE OF OPERATOR

CPT. S. SZYMANSKI

COMMANDER

NOT TRANSFERABLE: CARD REQUIRED TO OPERATE GOV'T VEHICLE  
PRIVACY ACT OF 1974 APPLIES

QUALIFICATIONS / RESTRICTIONS

F/L RT 10000 LB G BELOW FORKLIFT ELECTRIC, ALL  
TLRL PINTLE TOWED ACCIDENT AVOIDANCE CLASS  
M958 TRUK UTIL LMTV M1078 2 1/2 CARGO TK  
M1114T 2 - 1/2 TON AND BELOW  
5 TON AND BELOW AOAP QUALIFIED  
PMCS QUALIFIED TNG/W PVSTA&D  
INCIDENTAL LISCENSE IRAQ

Supply...

## What Is a Fringe Part?

HEY, MISTER K! I GOT THE ULS SECTION TO ORDER THAT PART, BUT THEY SAID IT'S A FRINGE ITEM...

...WHAT THE HECK IS A "FRINGE ITEM"?

DO I LOOK LIKE HALF-MAST? GO ASK HIM.

Dear Half-Mast,

We are trying to find the definition of "fringe" as it relates to supplies/materials. I can't find fringe anywhere. Can you help?

Mr. G.K.

Mr. G.K.,

Fringe is supply world slang.

Para 5-11e(4)(a), AR 710-1, states: "...Stocked and **non-stocked (fringe)** items represent materiel which has been requisitioned by the ordering (using) activity but is not immediately available for issue and is recorded as a commitment for future issue."

So fringe is simply slang for non-stocked items.

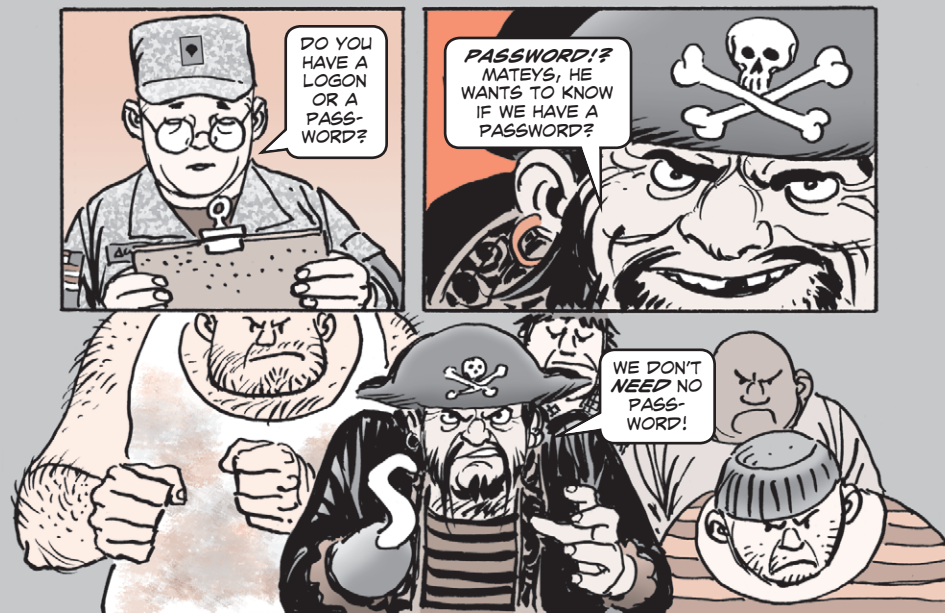
Half-Mast



# PASSWORDS PROTECT POWER



# FROM PIRATES, PREDATORS AND PESTS



Libraries are wonderful places! A lot of people remember when they got their first library card. It gave them the freedom to check out novels, biographies, reference books, atlases, and how-to books.

Today, libraries are still around, but the Internet brings a wealth of data to your desktop at work, school, or home...even on vacation.

The old library card served the purpose of protecting library assets from theft and even from some vandalism.

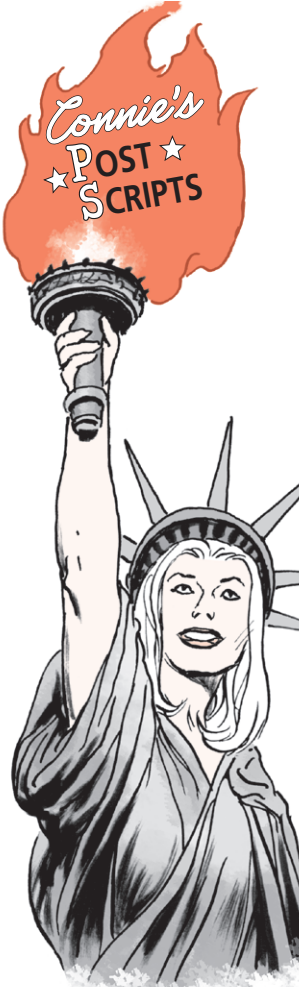
The Internet is much the same. Hackers seek access to everything, even things they shouldn't see. For some hackers, simply seeing data isn't enough; they have to mess with and change data to suit their warped thinking. Others plant viruses and Trojan horses to destroy data simply because they feel like it. Enemies would take our data and twist it to harm both us and others.



So the next time you go searching for information on AKO, LOGNet, AEPS, or LIW, just remember all those logons and passwords are like your library cards. They are meant to protect you and the data you need. The extra effort is worth the memory needed to keep track of multiple passwords.

Information is power, and it must be protected to be preserved. However, for information to be energized, you have to access it and use it.





## New M58 Smoke Generator Bearings

The ball bearings for the M58 smoke generator's grinder spindle tend to rust. Then the grinder spindle freezes and you can't make infrared blocking smoke. The only fix previously was replacing the whole grinder spindle at a cost of \$6,000. But now you can order ball bearings made of stainless steel that can be installed in the spindle by your direct support. Order the bearings with NSN 3110-01-537-8113 and NSN 3110-01-537-8117. If your support is unsure how to replace the bearings, they should contact their local TACOM logistics assistance representative.

## TENT POLES, LINES AND PINS

Looking for poles, lines and pins for your tents? Go online to the Defense Supply Center Philadelphia's Base Camp website:

<http://warfighter.dla.mil/special/basecamp/index.jsp>

From the home page, click on **SEARCH PAGE FOR POLES, LINES, PINS, COVERS OR TARPAULINS**. It's your gateway to links and NSNs for the accessories you need.

## M1-Series Tank Gun Tubes Revisited

Page 4 of PS 642 (May 06) listed the Industrial Operations Command as the POC for disposal instructions of gun tubes with depleted uranium residue. That's changed. The Army's Radioactive Waste Disposal Office is currently in the Army Field Support Command (AMSF-SF). Call DSN 793-0338 or (309) 782-0338 for help. Or email: [afsc-ofc-sf@afsc.army.mil](mailto:afsc-ofc-sf@afsc.army.mil)

## CH-47D Lower Rescue Hatch Nut

Item 45, NSN 5306-00-156-2341, in Fig 62 of TM 55-1520-240-23P-1 for the lower rescue hatch door of the CH-47D shows the correct bolt, but the attaching nut, Item 37, NSN 5310-00-660-3381, is too small. The correct nut for Item 37 is NSN 5310-00-903-8282. Make a note until the TM is updated.

## Bandages For Air Warrior Vest

For those who need to know what type of bandage to carry in the vest, PM Air Warrior recommends using NSN 6510-01-521-1308 because it's less bulkier. Make a note until TM 1-1680-377-13&P is updated.

## HEMTT Slobber Kit

Got a HEMTT engine with a slobbering problem? Clean up that unburned fuel and oily mess by getting your support to install an air box drain parts kit (slobber tube), NSN 2815-01-210-0374. It's the same kit used on the M911 HET. Just don't use the kit if your HEMTT is still under warranty. That voids the warranty.

## NSN CHANGE FOR M24 RIFLE

Page C-16, Change 7, of TM 9-1005-306-10, lists NSN 6650-01-456-9093 for the anti-reflection device (ARD) used on the M24 sniper weapon's day optic sight. That's wrong. Fact is, *that* NSN gets the ARD for the M22 binoculars. Use NSN 6650-01-456-6515 to get the ARD for the M24's optic sight. Jot down the right NSN until the TM is updated.

## Update on SARET

PS 643 (June 06) told you about the Small Arms Readiness and Evaluation Teams (SARET) that will help deploying units with their small arms. The teams do inspections and repairs on site.

Now there is more news about SARET. All travel and labor costs for SARET will be paid for by TACOM and units will be reimbursed for repair parts by FORSCOM. So SARET and their work costs units nothing! And you can now access the SARET POCs, schedule, and memorandum of understanding for the visits on the SARET website:

<https://aeps.ria.army.mil/aepspublic.cfm>

Log in with your AEPS password and then click on **SARET** in the lower right corner.

## TURN IN AVENGER STC

Avenger missile system slew-to-cue (STC) secondary items have transferred from free issue to an organic supply system. STC items are in short supply so if you have any that need repair, turn them in ASAP. Use an ARIL of BK5 for the following STC items like you do for other Avenger secondary items:

- Avenger fire control computer with fan housing, NSN 5975-01-499-4052 (turn-in credit \$45,680)
- slip ring assembly, NSN 3040-01-495-3603 (credit \$6,825)
- land navigation system-IRU, NSN 1430-01-505-0681 (credit \$12,490)
- targeting console, NSN 1430-01-494-2685 (credit \$6,636)
- cab interconnect panel, NSN 5999-01-499-9238 (credit \$5,972)

## Abrams/Bradley Newsletters Revisited

The URL on Page 61 of PS 640 (Mar 06) for the Program Executive Office-Ground Combat Systems (PEO-GCS) website has changed. In order to access the links that provide instructions on how to get the Abrams Tank Information Paper (A-TIP) and Bradley Bits newsletters through the Army Knowledge Online (AKO) website, go to:

<http://www.peogcs.army.mil/pmo-hbct.html>

and click on the newsletter links at the bottom of the page.

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?**

# ELECTROSTATIC DISCHARGE "ESD"

DEGRADES  
OR DESTROYS  
ELECTRONIC  
DEVICES



Download MIL-HDBK-773 on  
ESD Protective Packaging at:

[http://www.supply.dla.mil/  
PDFs/mil-hdbk773.pdf](http://www.supply.dla.mil/PDFs/mil-hdbk773.pdf)