

Issue 521

PS

April
1996

THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-521

Has your
buddy read
this issue?
Pass it along!

NEXT
TIME IT
RAINS, WE'LL
USE YOUR PONCHO
TO PROTECT
OUR MACHINE
GUN!

TUZLA
5km

Approved for
Public Release;
Distribution Is
Unlimited

Special Machine Gun Section
... See Page 27

Just Do It!

It's tough!

How can they expect you to keep your equipment ready when...
...they keep pulling you off the job to attend training?
...they don't give you the tools to do your job right?
...you have to spend part of every day exercising?
...you can't get the repair parts you need?
...you don't have any admin support?
...it's freezing outside and there's snow on the ground?

Tough?

Sure, it's tough. Nobody ever said it wouldn't be.

But consider the consequences if you don't get it done and the balloon goes up tomorrow. Who you gonna blame then?

Just Do It!

IT'S
UP TO
YOU!



THE
PREVENTIVE
MAINTENANCE
MONTHLY

ISSUE 521 APRIL 1996



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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:

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Shaft Tracks on Fuel Tank?



You've probably seen rub marks on a HMMWV's plastic fuel tank, just above the propeller shaft.

What's going on?

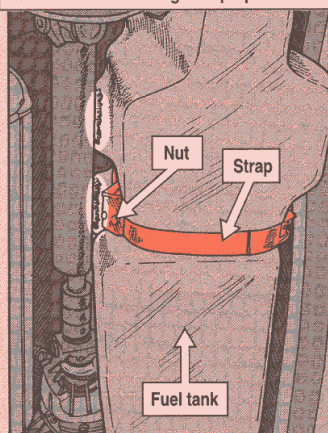
Fuel tank strap locknuts and body mount locknuts vibrate loose. When that happens, the straps can loosen, too. The tank then drops down enough that the prop shaft hits it when the truck's traveling over rough terrain.

To stop all this, torque the strap locknuts to 23-27 lb-in and the body mount locknuts to 90 lb-ft. If there's damage to straps or mounts, replace 'em. If the fuel tank is damaged, replace it, too.

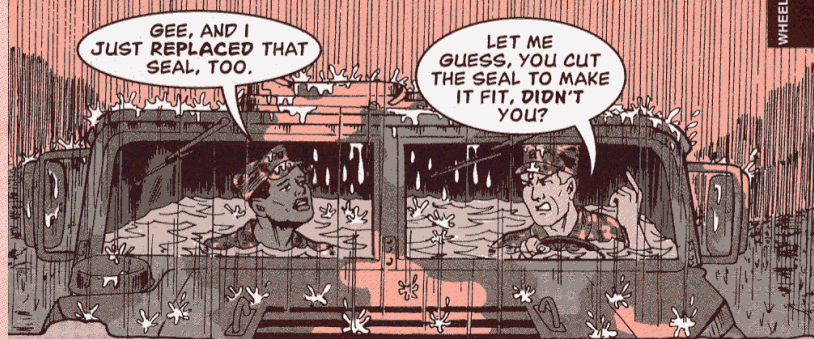
You may need to replace the fuel tank vent line filter. A plugged filter can't balance the pressure inside and outside the fuel tank. The expansion and contraction caused by a plugged filter loosens the straps and hardware.

A semiannual PMCS check, with this information, is coming, but don't wait. Use it now.

Loose fuel tank rubs against propeller shaft



TURRET SEAL TIP



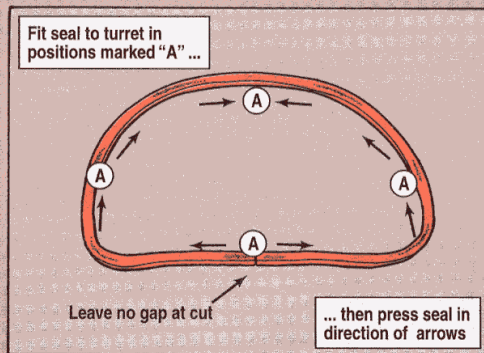
Resist the urge to cut the weapons station turret seal on the armored HMMWV when you're trying to install it.

TM 9-2320-280-20P calls for 100 inches of seal, NSN 5330-01-202-8360, and that's what you need. The stuff shrinks in use just enough that you'll get leaks if you cut off too much.

Here's an installation tip from SFC John Jessee of the Michigan National Guard:

Be patient. Push in about a foot of seal at the top of the turret opening. Then work more seal in, pushing against the seal you've already installed.

It may take a couple of tries to get the seal in place, with both ends butting together, but it can be done. Once the seal's in place, you won't have any leaks caused by gaps.



2¹/₂-ton Trucks ...

Hand Brake Lever Check

From where you sit, drivers, you can tell a lot about the condition of the hand brake lever on your deuce-and-a-half.

Like, when your seat is moved forward as far as it'll go, can you lift the brake lever into the locked position without hitting the seat position adjustment handle?

If the lever hits the handle, it's either installed wrong or bent. The parking brake will not engage completely, and your truck could roll off without you.

Let your mechanic know if there's any interference between the brake lever and the seat handle. If the lever or mounting brackets are bent, he'll replace the parts with these NSNs:

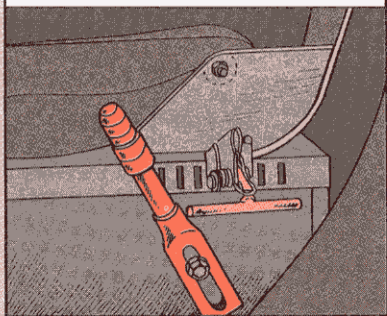
Hand brake lever assembly, NSN 2530-00-040-2401

Angle bracket, NSN 5340-00-740-9361

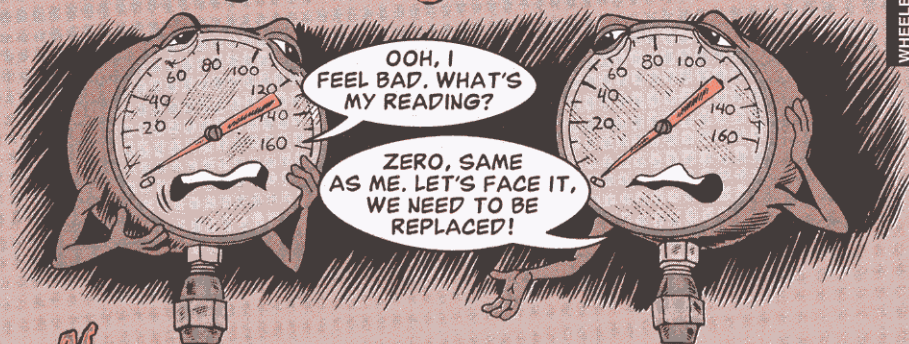
Angle bracket, NSN 5340-00-480-7608

If nothing's bent, but there's interference, your mechanic needs to contact your local TACOM Logistics Assistance Representative or, if you're in the National Guard, the state surface maintenance manager. They have the info needed to get your hand brake lever installed the right way.

Check that seat adjustment lever doesn't interfere with brake handle travel



Stronger Gauges to Gaze At



Mechanics, faulty differential pressure gauges, NSN 6685-01-158-9427, on your M978 HEMTT tankers giving you a headache? Forget the aspirin and order new, more durable gauges.

When an old gauge fails, replace it with the new differential pressure gauge, NSN 6685-01-362-4272. It's Item 12 in Fig 291 of TM 9-2320-279-20P (Jun 94).

Make sure you've got a bum gauge, of course.

The gauges show the difference in pressure before and after the tanker's filter separator. As the filter gets dirty, the pressure differential should increase. That's normal. At 15-20 PSI, your tanker is NMC, but the gauge is probably OK.

If the gauge reads zero or less, replace the gauge.

If the pressure drops suddenly, suspect bad filters. Get them checked out ASAP, because you're pumping unfiltered fuel.

HEMTT ...

A Little Lube Will Do

Take the bind out of two HEMTT shift levers with a squirt of the oil can.

Once a month, squirt OE-HDO on the transfer and self-recovery winch shift levers. That'll loosen up corrosion that can eventually make the levers "shiftless."

Make a note until these oil can points are added to the lube order.

Use Matching Hubs

YOU MEAN BECAUSE THE HUB ON THE OTHER SIDE IS BAD, I'VE GOT TO GO, TOO?

YEP.

Hubs for early model M747 semitrailers (serial numbers 1-200) are no longer available. If one goes bad, you have to order two complete new hub and wheel assemblies—one for each side of the axle. The new hub is the “B” type, used on M747s that are numbered 201 and higher.

You can't run the old wheel and hub assembly on the same axle with the new one. But you can run both types on the same trailer.

HERE'S WHAT YOU NEED...

Item	Quantity Per Axle	NSN
Hub	2	3040-00-351-2581
Brake drum	2	2530-00-319-5720
Wheel studs	20	5306-01-014-7481
Lug nut	20	5310-00-538-0800
Wheel assembly	4	2530-00-355-7763

OTHER PARTS—BEARINGS, SEALS AND BRAKE COMPONENTS—ARE THE SAME FOR BOTH DRUMS.

Fuel Transport . . .

M1061A1 Trailer Available

Back in the mid-80s, you were promised a new flatbed trailer to haul 600-gal fuel pods. The 5-ton M1061A1 trailer is now available with NSN 2330-01-207-3533.

Check your requisitions to make sure you still have valid ones on file. If you're authorized the M1061A1, but haven't ordered it, do it now.

If you're not authorized the trailer, but would like to have it, get your unit to update its MTOE to include LIN T96883.

Those of you using approved interim haulers such as M796-series trailers should get requisitions in also.

TM 9-2330-376-14&P covers the new trailer.

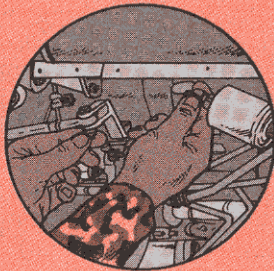
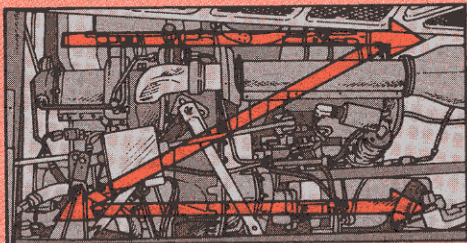
The Mark of Z



Dear Editor,

Most new crewmen open an engine compartment to check hoses, wiring, and hydraulic lines and just see a mass of stuff. Unless their PMCS says to look at a particular hose or line, they tend to give everything a general look and go on.

To add structure and thoroughness to their inspection, I teach them what I call the Z method.



Beginning at the top left corner of the engine, I use my eyes—and hands—to work my way across the top third of the engine. I check for leaks, tightness of fittings, lines, and wiring connections and for broken or frayed wiring.

Then I move diagonally—like a Z—to the left and work my way across the middle part of the engine. I finish with the bottom third.

My Z system doesn't take that long and ensures every bit of the engine is covered.

SFC Paul Prusak
Schofield Barracks, HI

FROM THE DESK OF THE Editor



Your system sounds eaZy, but detailed. And it should work for any engine. It should help soldiers do more thorough PMCS.

Wire Rope Needs PM

As common as winches and cranes are on Army equipment, you'd think wire rope would get common cleaning and lubing.

You'd be wrong.

Wire rope life is shortened by the very things that common cleaning and lubing will take care of—dust, rust and grit, among others.



Here's some PM that'll get the most out of winch and crane wire rope:

Before you do any work with wire rope, be sure you're wearing a pair of leather gloves. They'll protect your hands from broken wires.

Clean and oil winch cables after every operation. Crane cables usually stay cleaner during operation, so clean them only when they need it.

Unreel the cable and stretch it out straight. It's best if you can keep the cable off the ground so it stays clean after you've cleaned it.

Use a wire brush, like the one in the Common shop sets, to remove old lube,

Use wire brush



dirt, and corrosion. Clean the entire cable.



While you're cleaning, look for broken wires, kinks and other damage. Replace the cable if you find kinks. Broken wires can KO the cable, too. TM 5-725, Rigging, and TB 43-0142, Safety Inspection and Testing of Lifting Devices, as well as vehicle TMs, have details about kinks and broken wires.

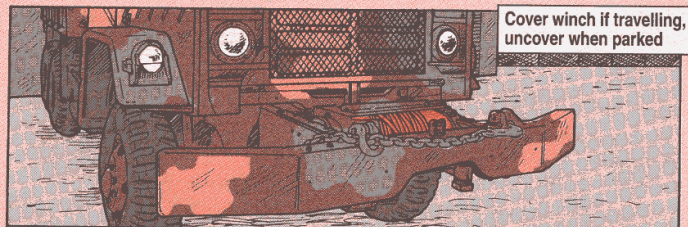
For instance, some TMs call wire rope NMC if there are more than three broken wires per inch on one strand, or more than six on all strands within one inch. Also the maximum number

of broken wires must not occur in any two consecutive inches of rope.

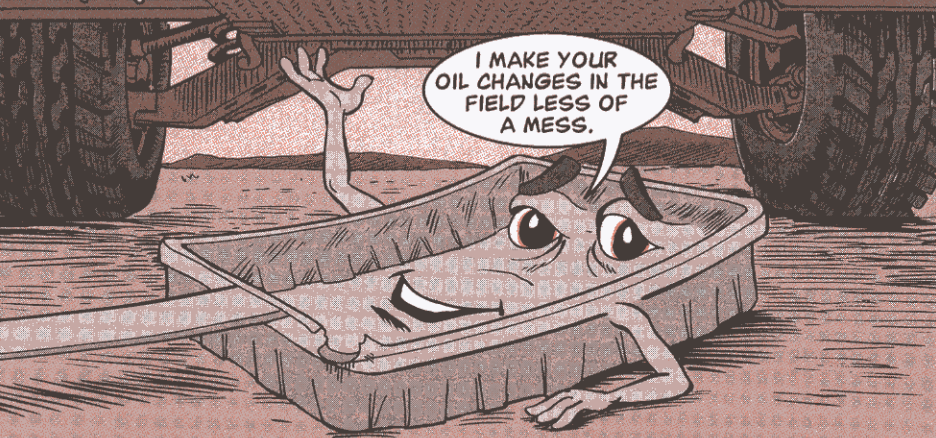
Lube the wire rope according to the LO for your gear. If the LO doesn't cover it, here's what to do:

- ☞ Coat the cable with clean OE-HDO 30 engine oil if the cable gets a lot of use.
- ☞ Forget used oil. It has acid in it that weakens wires fast.
- ☞ 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.

Here's a real important point: Covering a winch is OK for travel, 'cause it keeps lots of dirt and dust (and mud) off the cable. But **don't** leave the cover on when your vehicle is parked, especially if it's parked for weeks or months at a time, because it traps moisture around the cable. That leads to the biggest killer of wire rope—corrosion.



USED DRIP PANS



When you go to the field, be sure you take some drip pans. These pans make changing the oil in your vehicle easier and faster, plus they keep oil spills to a minimum.

There are a couple of drip pans available in the Army supply system. They come with a long handle you can use to push the pan under the vehicle. There are also carrying handles on the pan and a pouring lip to make it easier to dump the old oil in a waste oil container.

Here's what you can get:

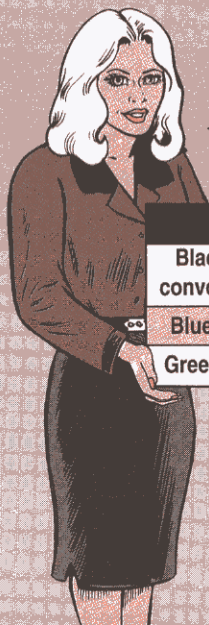
NSN 4910-00-	Capacity
387-9592	4 gal
287-2944	6 gal

You can also use the empty tray-pack meal trays for drip pans. Field mess teams can clean and save the trays for the maintenance section.

Be sure you dispose of any oil caught in the drip pans in accordance with your local hazardous waste SOP.

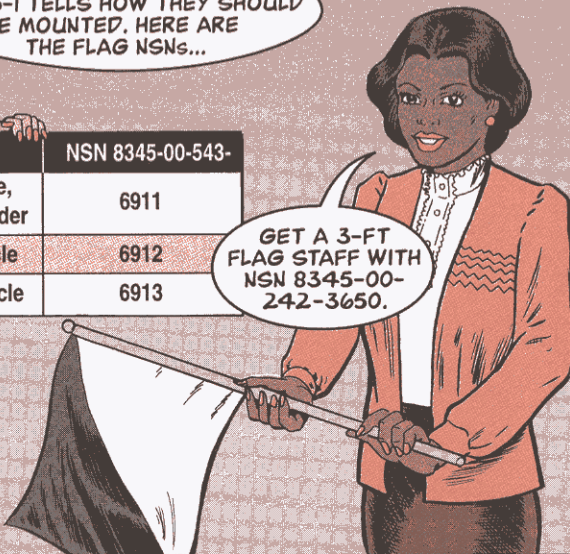
Flag Your Vehicles

WHEN YOUR CONVOY
PULLS OUT, MAKE SURE YOUR
VEHICLES ARE PROPERLY FLAGGED.
PARA 7A OF AR 55-29
CALLS FOR THE FLAGS, AND
AR 746-1 TELLS HOW THEY SHOULD
BE MOUNTED. HERE ARE
THE FLAG NSNs...



Flag	NSN 8345-00-543-
Black and white, convoy commander	6911
Blue, lead vehicle	6912
Green, rear vehicle	6913

GET A 3-FT
FLAG STAFF WITH
NSN 8345-00-
242-3650.



Tactical Trucks ...

Wipers Wiped Out

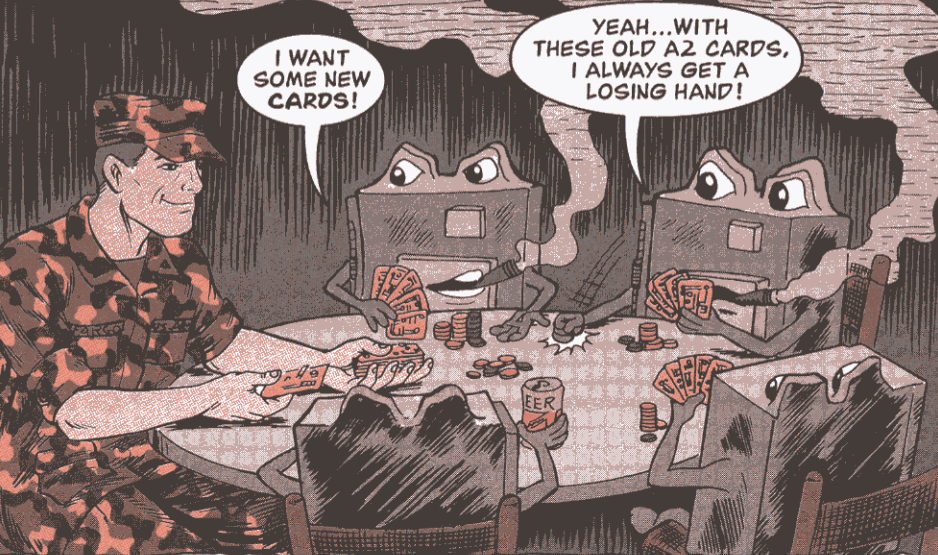
If your vehicle uses Trico parts, and any part of the wiper or washer goes bad, you'll have to order a complete kit to replace it.

The following kits are available:



Truck	Kit	NSN 2540-01-
HEMTT	wiper	313-4307
HEMTT	washer	313-4308
M915-series	wiper	312-4718
M915-series	washer	312-4719
M939-series	wiper	303-0600
M939-series	washer	101-0010

GET THE RIGHT CARD



Need a new A2 circuit card for the hull networks box (HNB) in your Abrams tank? MWO 9-2350-200-30-8 (26 Jan 93) modified the HNB with a new A2 card, NSN 5999-01-343-4203. Problem is, the parts TMs don't show it.

The old A2 card, NSN 5999-01-151-2759, is still listed in the TMs. Install it in a modified HNB, though, and the card burns up.

That A2 card controls the fire extinguisher second shot and automatic shut-down of the turbine engine during an engine fire. If the card's burned out, you'll have to do all of that manually.

Save yourself some time, money—and the risk of personal injury. Make a note until the TMs can be updated. The old cards are Item 22 in Fig 148 of TM 9-2350-255-24P-1 (M1/IPM1) and Item 7 in Fig 146 of TM 9-2350-264-24P-1 (M1A1).

Once the new A2 card is installed, the NSN for the HNBs change, too. The M1/IPM1's HNB is NSN 6110-01-344-0468. The M1A1's HNB is NSN 6110-01-344-0469.

Use these NSNs to replace Item 3 (PN 345085) in Fig 147 of TM 9-2350-255-24P-1 (M1/IPM1) and Item 7 (PN 12345084) in Fig 145 of TM 9-2350-264-24P-1 (M1A1).

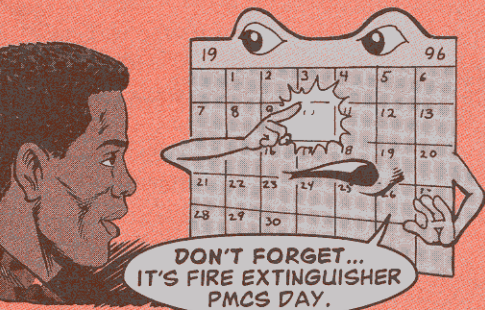
Waste Not, Want Not



Halon 1301, which is used in your combat vehicle's portable and automatic fire extinguisher systems, is a scarce resource.

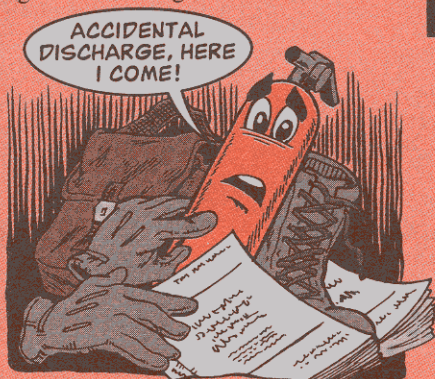
The best way to conserve Halon 1301 is to take care of what you have:

- 🔥 Keep extinguishers and fire sensors clean.
- 🔥 Perform all fire extinguisher PMCS on schedule.



🔥 Follow all TM procedures for operation, maintenance, repair and testing of your fire extinguisher. That'll reduce the number of accidental discharges.

🔥 Never stack gear or equipment against fire extinguisher bottles.



If you still have accidental discharge problems—even after troubleshooting—take a look at TACOM ground precautionary messages #94-08 (IPM1, M1 and M1A1) and #94-13 (M1A2). They provide additional troubleshooting procedures that may help.

If you need a copy of the messages, see your TACOM LAR or write to Half-Mast.



Hands Off!

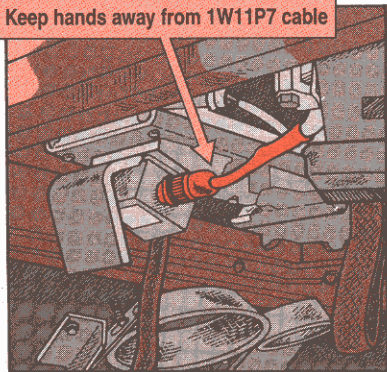


Kee your hands to yourself when entering through the rear door of that Bradley, soldier.

The 1W11P7 cable for the fire suppression system loops down from the top of the ramp opening. Your immediate reaction is to grab it as you duck through the opening.

Trouble is, once the cable's been tugged a few times, the internal wiring

Keep hands away from 1W11P7 cable



weakens and the connection is broken. When that happens, the fire extinguishers discharge.

Being in the vehicle when the extinguishers discharge is never fun, but it's not dangerous as long as you open the hatches and turn on the vent fans. Even so, you should limit your exposure to halon to no more than five minutes.

Why go through that hassle?

Keep your hands in your pockets, cross your arms, do whatever you have to. Just keep your hands off that cable.

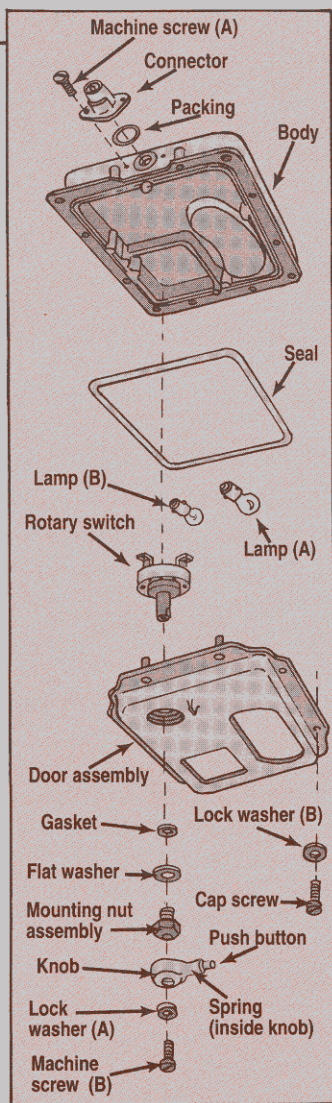
See the Light



Dome light, NSN 6220-00-337-7463, is used on several combat vehicles—the M992-series ammo carrier, M973A1 SUSV, M113A3 FOV, M110A2 SP howitzer, M578 and M88A1 recovery vehicles, and the M728 combat engineer vehicle—yet most repair parts are not in the vehicle TMs.

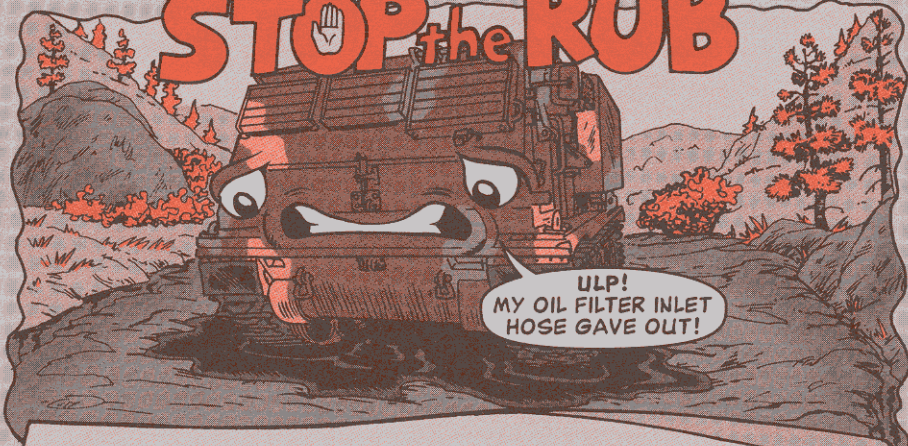
Until the TMs are updated, here is a list of all the dome light repair parts:

Item	Qty	NSN
Machine screw (A)	2	5305-00-984-6189
Connector	1	5935-00-622-4948
Packing	1	5330-00-796-2251
Body	1	1015-00-796-2250
Seal	1	5330-00-796-2254
Lamp (A)	1	6240-00-295-2668
Lamp (B)	1	6240-00-019-3093
Rotary switch	1	5930-00-732-0651
Door assembly	1	1025-00-796-2240
Gasket	1	5330-00-732-0655
Flat washer	1	5310-00-732-0654
Mounting nut assy	1	5310-00-732-0652
Knob	1	5355-00-732-0656
Spring	1	5360-00-705-7189
Push button	1	5930-00-705-7187
Lock washer (A)	1	5310-00-579-0079
Machine screw (B)	1	5305-00-054-6654
Cap screw	4	5305-00-068-0500
Lock washer (B)	4	5310-00-543-2410



MLRS ...

STOP the RUB

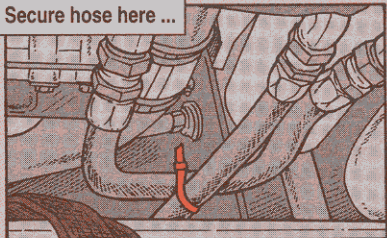


Dear Editor,

Constant vibration lets the inlet hose, NSN 4720-01-305-9812, that's attached to the engine oil filter housing rub against the MLRS frame.

The hose will take a lot of abuse, but eventually it will leak. If enough oil leaks, the engine seizes up.

Secure hose here ...



... and here to prevent vibration damage



We fixed the problem with two wire ties, NSN 5975-00-570-9598. Put the first tie around the long and short hose a few inches down from the filter housing. The second tie secures the long hose to the cooling tube ear the retaining clamp.

With the hose tied down, vibration is no longer a problem.

SFC Jeffery Begin

6/27th FA

Ft Sill, OK

FROM THE DESK OF THE



Looks like you've tied up the loose ends on that problem. Good job!

Generator Headache Remedy

BATTERY GENERATOR
PM GIVING YOU A PAIN? I'M
THE CURE FOR THAT
HEADACHE!

COMBAT VEHICLES

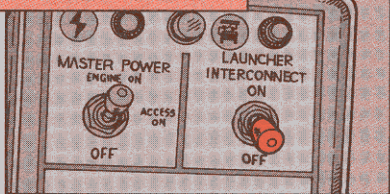
Dear Editor,

Battery charging problems on the MLRS usually mean a bad generator. Since both generators are hard to get to, finding the bad one can be a real headache.

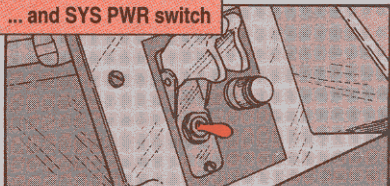
A simple voltmeter test makes finding the bad generator easy. Here's how:

1. Turn off the LAUNCHER INTERCONNECT switch and the fire control's SYS PWR switch.

Shut off LAUNCHER INTERCONNECT switch ...

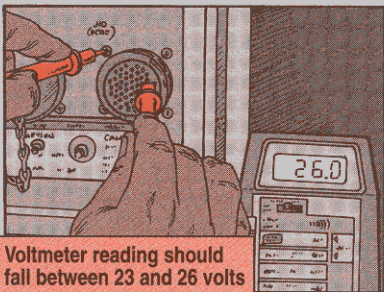


... and SYS PWR switch



2. Remove the J10 cannon plug cover in the vehicle distribution box (VDB).

3. Check the front generator by inserting the voltmeter's red probe into the J10's N receptacle and the black probe against one of the screws in the VDB.



If you get a reading of 23 to 26 volts, the generator is OK.

4. Test the rear generator the same way using the R receptacle.

If you get no generator output at all, you could have a bad VDB.

SSG James Barnes
OKARNG
Ft Sill, OK

FROM THE DESK OF THE Editor

A simple solution to a difficult problem! Thanks!

DISPOSE OF DRAIN PAIN

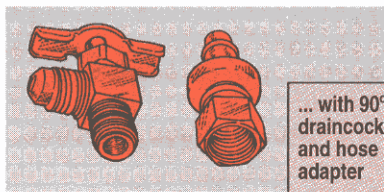
Dear Editor,

Draining the antifreeze from your M113A2 carrier's thermostat housing is a real problem.

There's no room to slip a pan under the housing's straight petcock, so when it's opened, antifreeze runs out all over the engine.

I've come up with a way to fix that. Replace the straight petcock with a 90° draincock, NSN 4820-00-293-3669, and hose adapter, NSN 4730-00-555-1152.

Replace old
petcock ...



... with 90°
draincock
and hose
adapter

Then, when you're ready to drain the housing, attach a 5- to 6-ft piece of rubber tubing, NSN 4720-00-847-1710, to the adapter and open the drain valve. The antifreeze flows through the hose and stays off the engine.

Make sure you drain the antifreeze into a suitable container and dispose of it properly, though.

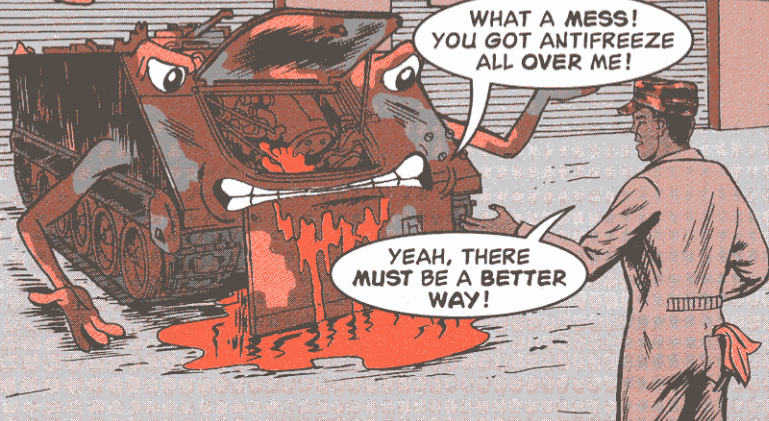
David Hinkson
ECS #33
Ft Riley, KS

FROM THE DESK OF THE Editor 

That's one sure way to tame that antifreeze mess! Good job!

WHAT A MESS!
YOU GOT ANTIFREEZE
ALL OVER ME!

YEAH, THERE
MUST BE A BETTER
WAY!



A Turn for the Worse

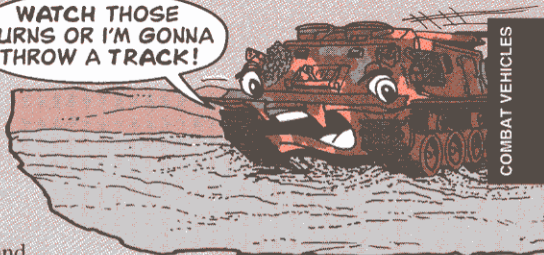
Drivers, imagine the embarrassment of being sent out on a recovery job in your M88A1 only to call in for help yourself because of a thrown track.

That's just what happens when you make sharp turns while driving in first gear on sand or mud.

The debris sprays onto the track and, when enough accumulates, the track works free of the sprocket. End connectors break, center guides bend and you're stuck out in the middle of nowhere.

Keep your vehicle on its tracks by taking those turns in second or third gear. That keeps buildup to a minimum and you well on the way to completing your mission.

WATCH THOSE
TURNS OR I'M GONNA
THROW A TRACK!



AVLB ...

A Riveting Experience

When corrosion begins showing up on your MLC60 AVLB, you've got serious trouble.

Corroded rivets at the bridge's high stress areas can break during a crossing, causing the bridge to collapse. That's real bad news if you happen to be the one doing the crossing.

Protect yourself and others by paying special attention to the PMCS in TM 5-5420-203-14. Then go one step further:

Before each operation, take a close look at the center panel hinges and the upper and lower connectors on the center and end panels. If you notice a broken or missing rivet, look for a white powder residue in the rivet hole or on the remaining portion of the rivet.

If you find any corrosion, your AVLB is NMC until the panel can be replaced.

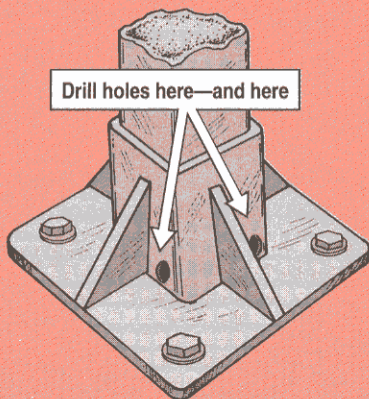


Know Your Enemy

The canister support brackets in your M992 ammo carrier have an enemy—water.

Moisture from condensation and washing out the inside of the vehicle collects in the bottom of the support brackets. With nowhere to go, the water begins to rust the metal. Eventually, the support brackets are weakened enough that they have to be replaced.

A couple of 1/4-in drain holes will prevent that problem. Drill two holes as close to the bottom of the bracket as possible. That lets water run out as soon as it appears. No water, no rust.



M109-Series SP Howitzer . . .

A Turn for the Better

Operators, driving your M109-series SP howitzer in convoy can be hazardous to the panoramic telescope's ballistics shield.

**OOCH! OW!
HEY, SOMEBODY TURN
ME AROUND!**

Rocks and other debris are going to be tossed up by the vehicle in front of you. Some are thrown hard enough to break the glass in the ballistics shield. You can prevent that if you swivel the shield around so the glass faces the back of the howitzer and lock it in place.

The only hard part is remembering to do it.


Looking for Leaks

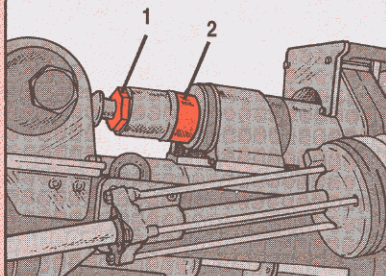
If you spot what appears to be a Class III leak on your M119A1 howitzer's recuperator, your first reaction should be to report it. After all, that's what you've been taught.


But **whoa!** That recuperator assembly is **supposed** to leak!

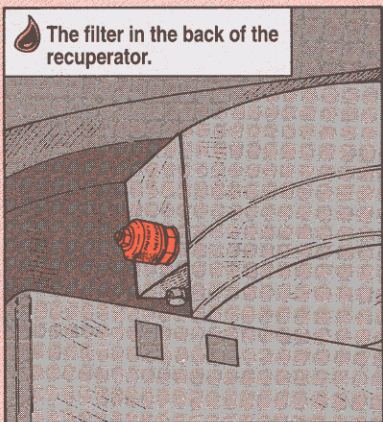
It was designed that way to provide lubrication for the seals.

The recuperator is working properly **ONLY IF** it leaks OHT in these locations:

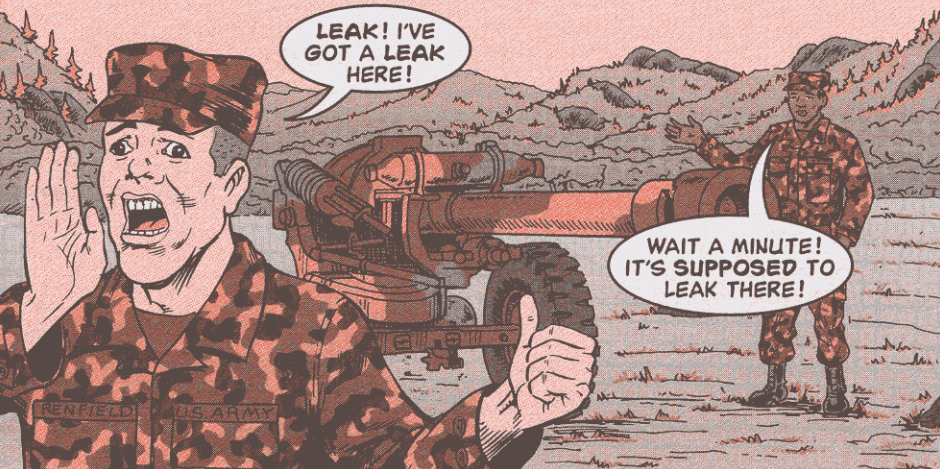
 The stuffing box wiper ring (1) and the recuperator cylinder (2). The felt wiper ring on the floating cylinder wipes OHT off the recuperator cylinder each time the howitzer is fired.



 The filter in the back of the recuperator.



If you see leaks anywhere else, though, report 'em.



DON'T DOZE THROUGH PM

STAY ON TOP OF
DOZER PM TO KEEP YOUR
DOZER PLOWING ROADS
AND MOVING DIRT.

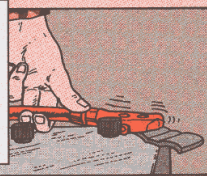
Always do your PMCS, of course, and report anything you can't fix. Then keep the following checks in mind while you're getting ready for a day's run:

Battery Clamp Lowdown

All that bouncing around in the rough stuff loosens battery clamps. A loose connection keeps your battery from recharging. It also keeps your dozer from starting.

Play it safe. Before the day's run, eyeball and feel battery clamps to make sure they're tight. Likewise, gently test the tightness of the clamp on the terminal.

Using your thumb and two fingers, try to move cable-to-clamp connections. If they're loose, report them

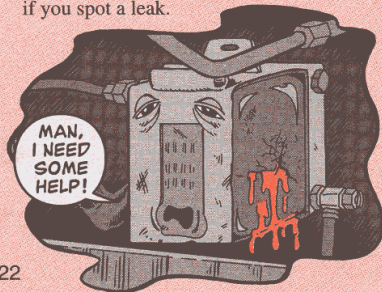


Always make sure the battery indicator or ammeter gauge is in the CHARGE range before you go, too.

Fuel-Water Separator

Bulldozing through heavy brush can damage the fuel-water separator's glass bowl. Limbs dent the bowl's protective cage, then crack or break the bowl. Fuel leaks out and the engine shuts down.

Eyeball the bowl for cracks or leaks before starting. Call in your mechanic if you spot a leak.



Warm Up, Cool Down

Running your dozer is a lot like running a race. An easy warmup, then a hard workout, and finally a little time to cool down.

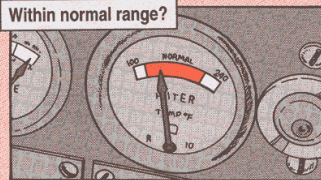
Here's how:

After start-up, make sure you have oil pressure. Then run the engine at low idle—1/4 to 1/2 throttle—for five minutes. That gives the oil time to lubricate the parts.

It also lets the engine warm up enough to boil off condensation caused by normal engine breathing. That way you don't have to worry about condensation mixing with the oil and forming a sludge that'll clog the engine.

Once the dozer's warmed up, eyeball the gauges, especially the water temperature and engine oil pressure gauges. They should be within the normal operating range.

Within normal range?



After you've run the dozer hard, idle it five minutes before shutdown. The engine needs to cool down slowly, or the sudden jump in temperature can crack the block, warp a head or valves, or bake the oil until it's not slick enough to lube the bearings.

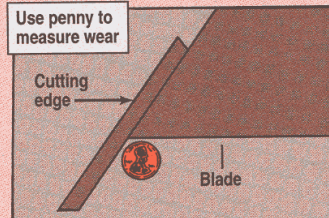
PS 521

A Keen Edge

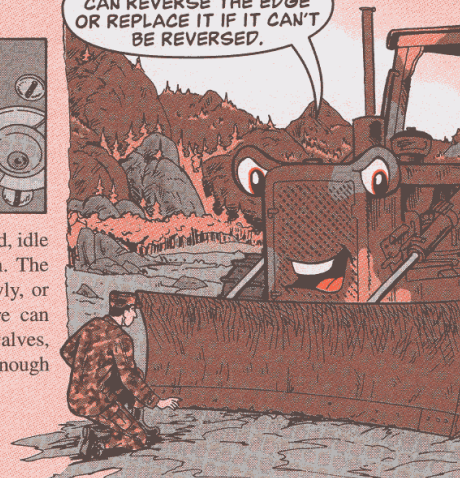
The dozer blade cutting edge protects the moldboard. If the edge wears down too far, the blade is damaged ... and has to be replaced or sent to DS for repair.

Get down on your knees and eyeball the blade's cutting edge. If the edge is worn to less than 3/4-inch—that's about the diameter of a penny—report it.

Use penny to measure wear

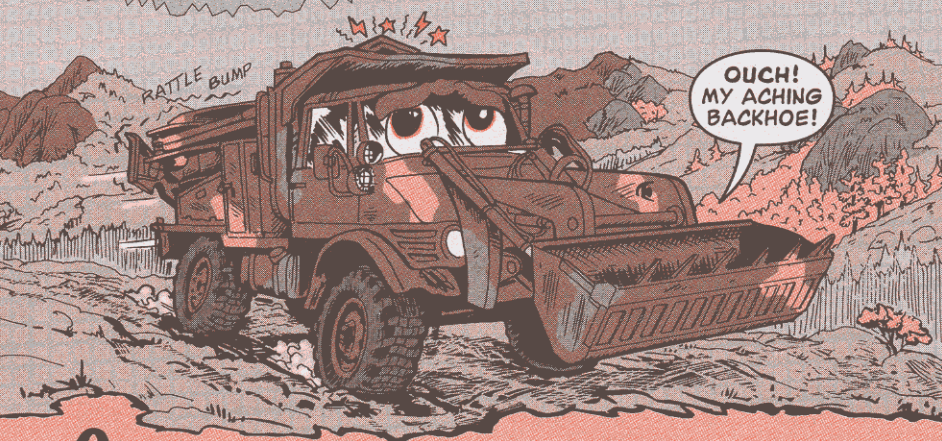


YOUR MECHANIC
CAN REVERSE THE EDGE
OR REPLACE IT IF IT CAN'T
BE REVERSED.



SEE...

Knock-Knock Goes Backhoe Lock



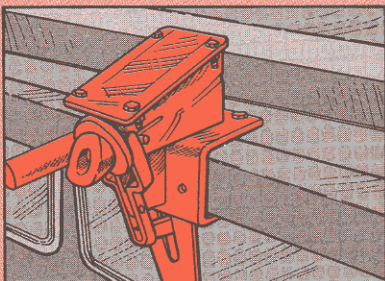
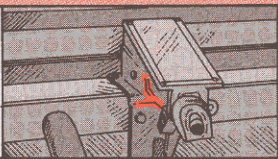
Operators, the backhoe travel lock on the small emplacement excavator does its job only when the backhoe is properly placed in the transport position.

That means making sure the backhoe is firmly engaged by snapping into the boom lock following the procedures in the -10 TM.

If you forget, the backhoe bangs up and down during transport, breaking the lock along its welds.

If the lock's welds are already broken, replace it with a newer wrap-around lock.

Travel lock's bracket will break along its welds



NSN 3815-01-285-2300 gets you the travel lock with its mounting hardware, bail and pail pad, latch and installation instructions

621B Scrapper...

Latch on to Latch NSNs

The NSN for tool box latches for the 621B is not in TM 5-3805-248-14P&4. It's 5348-01-160-2469. The NSN for the air filter latches in the 621B's cab isn't in the TM either. That NSN is 5340-00-830-3471.

Switch Switches

Moisture does a real number on the remote switches on SEEs and HMMHs. They corrode and short out. Bad switches mean no remote operations.

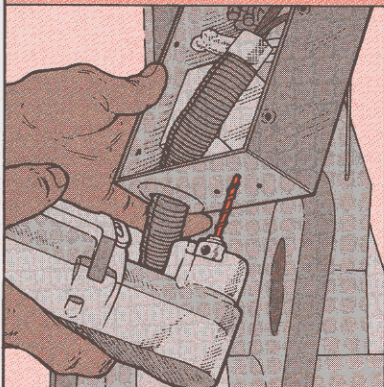
Here are two PM tricks to protect switches from moisture damage.



Remote Switch	NSN 5930-01-395-
Bucket	2849
Engine RPM	2850

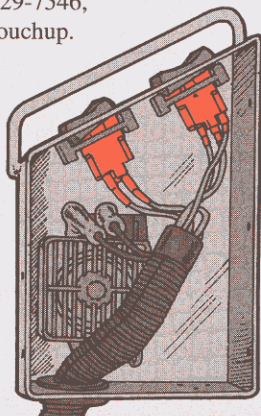
Order each switch on a DD Form 1348-6. In the Remarks block write, "NSN not on the AMDF." Page 4-151 of TM 5-2420-224-20-2 tells how to replace the SEE's switches. Page 4-156 has HMMH info!

First, drill three 1/8-in holes in bottom of switch box tower for drainage



Use random pattern for holes

Use green CARC paint, NSN 8010-01-229-7546, for touchup.



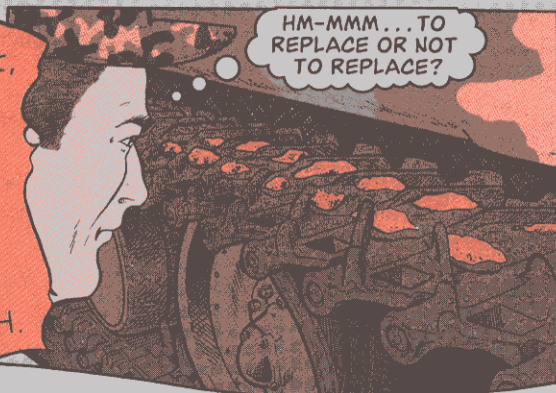
Then put silicone adhesive, NSN 8040-00-833-9563, on switch eyelets and terminals

M9 ACE...

NEED TRACK PADS?

Dear Half-Mast,
Some of the track pads on our M9 ACE are missing or are in rough shape. Do we have to replace them?

SGT R.G.H.



Dear Sergeant R.G.H.,

That depends. According to Tank-automotive and Armaments Command, the ACE needs track pads only when it's on improved roads. It gets better traction during operation without pads, because the track sits right on the dirt or sand.

If you can get your ACE to the job, or your transporter, without driving it on an improved road, save your pad money. Spend it for other maintenance items.

Half-Mast

Reuse 'em or Lose 'em?

Dear Half-Mast,

Can we reuse the roadwheel nuts on the M9 ACE? I haven't been able to find an answer in the TM.

SGT K.B.

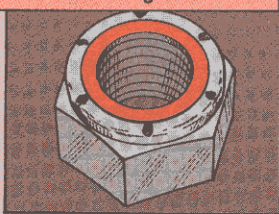
Dear Sergeant K.B.,

Yes, the M9's roadwheel nuts **are** reusable.

Just make sure you keep an eye on the gasket inside the nut. Once it begins to wear out, you'll have problems keeping the nut in place. Replace worn nuts with NSN 5310-01-123-1421.

Half-Mast

Reuse nut until gasket is worn

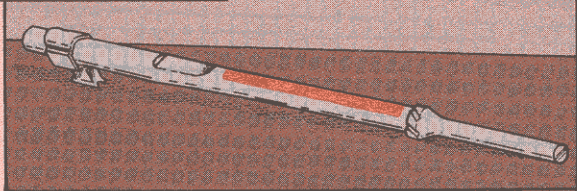


PULL IT ALL THE WAY!

When you fire your M60 machine gun, pull the trigger all the way back and release it.

If you don't pull the trigger completely to the rear, the sear puts pressure on the bottom of the operating rod.

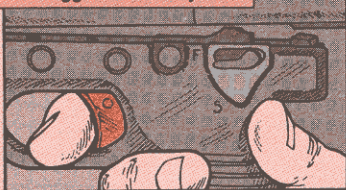
Sear wears operator rod



That slows your cyclic rate of fire, and more importantly, wears the sear, operating rod and operating rod notch.

Feathering the trigger—moving it back and forth rapidly—causes the same wear problems, plus it flattens the lip of the operating rod notch.

Pull trigger all the way back



This wear can result in a runaway gun, or even a misfire because of the slowed rate of fire.

If the weapon jams and the temperature is over 80 degrees, or if you've fired 200 rounds within two minutes, the gun is hot enough to cause a cook-off. Wait 15 minutes until it's cool.

If you open the cover of a hot M60, you'll probably have an open-cover cook-off. The least that could happen is serious injury. So don't open the cover until the weapon cools off.

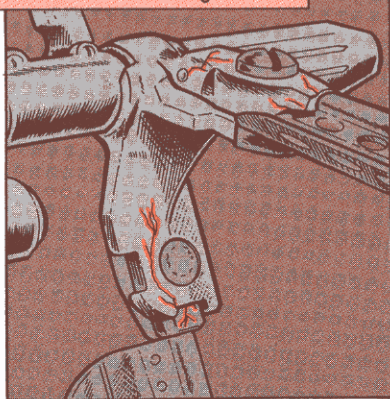


Without PM, your M60 and M249 machine guns don't have a leg to stand on.

Bipods often get no attention during PMCS. They crack, won't stay in position or get bent, but no one notices. Next thing you know, you either can't set up to fire...or the legs collapse during firing. Give your machine gun good legs to stand on like this:

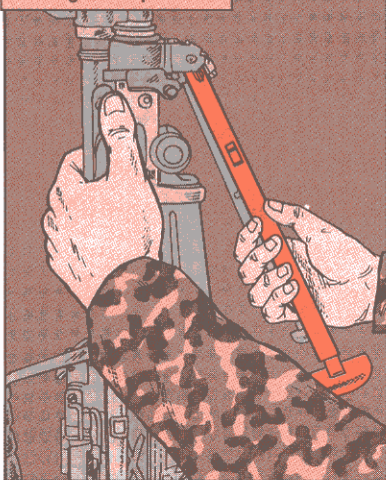
Eyeball the bipod where it locks onto the yoke. That's usually the first place legs crack or spread or wear. If you find cracks or heavy wear, your armorer needs to know.

Look for cracks and signs of wear



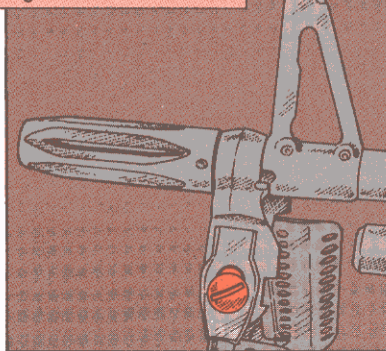
Test the legs in the stow position and all firing positions. If a latch won't hold, bending it won't help. That weakens the latch. Support can fix a latch that won't latch.

Test legs in all positions



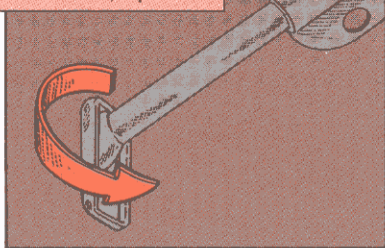
If the M60's legs are shaky, tighten bipod screws with your combination tool. If the screws keep loosening during firing, your armorer can stake them. M249 legs will need to go to support.

Tighten loose M60 screws



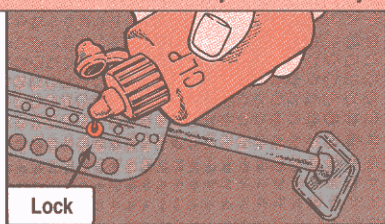
On the M60 only, turn the feet. If they move in a complete circle, they will be too unsteady for firing. Support can weld or replace loose feet.

If M60 foot moves more than 1/4 turn, replace it

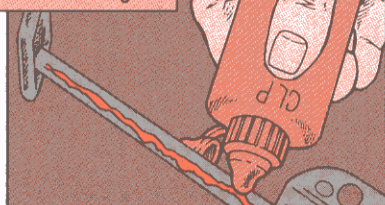


If the legs on either the M60 or M249 move stiffly, they need cleaning and lubing. With the legs fully extended, clean off dirt and grease with a rag.

Put a few drops of CLP on leg locks and move them in and out until they move smoothly



Draw a line of CLP down each leg



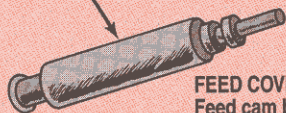
Work legs up and down until they slide easily

If the legs still have trouble moving, test your armorer.

Be Your Own Inspector

Use this handy guide to check out your M60 machine gun before you go to the field:

BUFFER: Dented, cracked, leaking? Plunger weak, dry?



FEED COVER ASSEMBLY: Feed cam bent, burred, missing spring? Front and rear cartridge guides stick. Feed tray rollers bind? Cartridge guide shaft missing cotter pin?

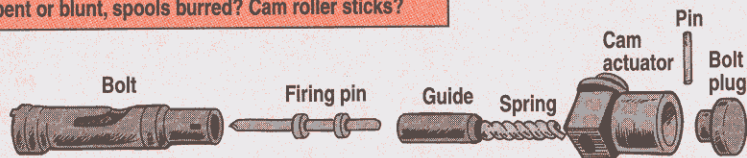
SHOULDER STOCK: Releasing latch doesn't hold? Rivets loose, missing?

REAR SIGHT: Bent, sticks, markings hard to see, knobs loose?

CARRYING HANDLE: Won't hold in all three positions?

TRIGGER ASSEMBLY: Sear chipped, cracked, worn? Sear hump not to rear? Sear plunger not on top of spring? Leaf spring under sear pin?

BOLT: Face cracked, pitted? Lugs chipped? Ejector or extractor weak? Bolt plug pin missing? Firing pin bent or blunt, spools burred? Cam roller sticks?



FRONT SIGHT: Out of line, loose?

BARREL: Twisted, bulged, cracked? Socket area cracked, badly worn? Bore pitted (don't forget spare barrel)?

GAS CYLINDER: Plug and washer not safety-wired? (New plug with lock washer doesn't need safety wire.) Piston doesn't slide quickly? Piston holes don't match cylinder holes? Nut, rivets loose? Key washer not seated?

FLASH SUPPRESSOR: Cracked, turns more than 1/16 inch, has any movement side-to-side?

BIPOD: Won't lock in stowed and working positions? Bipod screws loose? Legs won't lock in all four positions? Pads loose? Leg locks move hard?

OPERATING ROD: Bent, cracked? Roller moves hard? Sear notch worn? Driving spring weak, kinked, has flat spots?

C'MON—
YOU SHOULD'VE
DONE THAT BEFORE
WE LEFT!

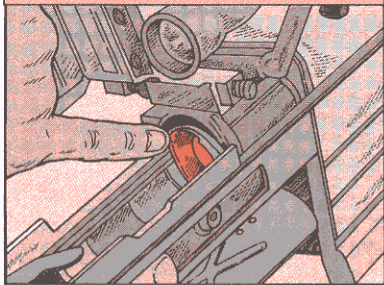
ARMORERS, MAKE COPIES OF THIS ARTICLE
AND GIVE THEM TO ALL YOUR M60 GUNNERS.

Good Extracting

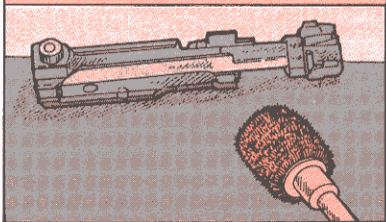
IF YOUR M249
IS HAVING TROUBLE EXTRACTING,
HERE'S WHAT TO DO...



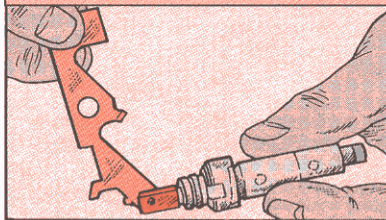
Look for a stuck cartridge case in the chamber. Remove a stuck case with a cleaning rod like it says in TM 9-1005-201-10.



Check the chamber, bolt, and slide assembly for carbon buildup. Clean them if necessary with your chamber brush and CLP.



Look for carbon in the gas cylinder and gas regulator. Clean out carbon with your scraper.

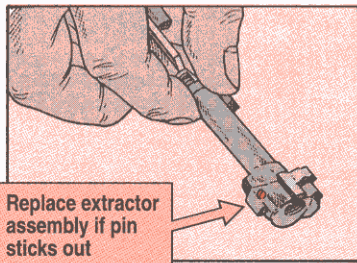


If your M249 still has extracting problems, it's time to call in your armorer.

Armorer Help

Armorers can replace the extractor with the extractor parts kit, NSN 1005-01-383-0168. Pages 2-22.1 through 2-25 in TM 9-1005-201-23&P tell how.

Anytime the extractor pin is sticking out, replace the extractor, extractor pin, extractor spring, and guide pin. Replace those parts anytime you disassemble the bolt to prevent future extractor problems.



Latch onto Right Spring



Some M2 flex and M48 machine guns have the wrong spring for the latch lock lever on the back plate.

It's easy to ID the spring. The ends are bent at a 90-degree angle and are inserted into the holes at the center of the latch lock lever.

The correct latch lock lever spring is flat. It's held in place by a small pin that goes through the center of the latch lock lever.

WRONG SPRING



RIGHT SPRING



If you have the wrong spring, get it replaced. The flat spring is NSN 5360-00-624-3607 and the pin is NSN 5315-00-526-2799.

It's OK to keep firing with the wrong latch lock lever spring until you get the right one. The old spring is just not as reliable as the new spring.

THE LINE ON UNLINED BARRELS

There are still some unlined M2 machine gun barrels in the field.

A metal lining was added to most M2 barrels years ago to make them last longer.

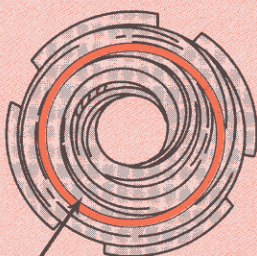
While unlined barrels work fine with .50-cal ammo and can be used for training, they do not work fine with the new XM903 and XM962 sabot light armor penetrator (SLAP) ammo. SLAP ammo loses accuracy when fired through unlined barrels.

Armorers, check your M2 barrels.

Hold the barrel up to the light and look through the breech. If you have a lined barrel, there will be a gap in the lining 8-10 inches from the breech. No gap means an unlined barrel.

If you find unlined barrels, it's OK to continue to use them, except with SLAP ammo. If your unit fires SLAP, exchange the unlined barrels for lined ones.

M2 machine gun



Ring groove visible in bore

M240 Machine Gun . . .

Deflect Crushed Covers

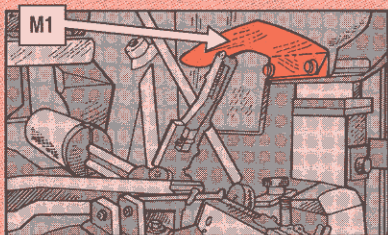
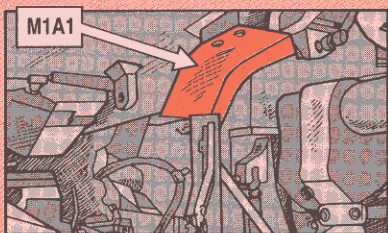
If the M240 machine gun cover is up when the M1 turret traverses, the cover's crushed. A simple deflector can prevent that.

The deflector's installed on the tank's turret ceiling. It pushes an open M240 cover down as the turret turns.

All you need to make the deflector is sheet metal, a drill, and a bench grinder. It costs pennies to make.

For deflector plans, write:

USALAO
Attn: AMXLS-F-KN (ACALA LAR)
PO Box 59
Ft Knox, KY 40121-0059



Use the Right Tool

JUST USE A SCREWDRIVER!

YOU NEED A ROD END CENTERING FORK!

A screwdriver is a tool to turn screws, not a tool to do the job of a rod end centering fork.

And yet, spot an Apache getting a main rotor blade phase adjustment and you just might see a screwdriver jammed in next to the damper rod. It's stuck there doing the job of the rod end centering fork tool, but not doing it well.

A screwdriver damages the key washer. A screwdriver lets you get the wrong torque on the jam nut.

A rod end centering fork is easy to make. Fig D-444 of TM 1-1520-238-23-9 has the instructions. Most shops have them made, but too often they're shelved and not used. Then the temptation is strong to grab a screwdriver.

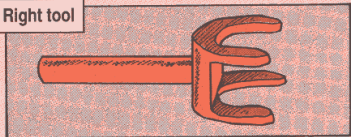
But don't!

Use the centering fork to avoid damage and to get the right torque.

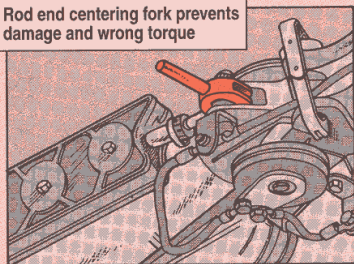
Wrong tool



Right tool



Rod end centering fork prevents damage and wrong torque



A KNOWN

Dear Windy,

To test our Apaches' Automatic Direction Finding system (ADF), we needed a strong radio signal. Unfortunately, our transmitter was miles away and the signal was too weak to do an adequate job.

We solved the problem by using a radio beacon set, AN/TRN-30(V)1, to generate the signal.

Use radio beacon set



Our Pathfinders use the set, so we were able to borrow one from our brigade S-3.

We put the set next to our airfield. With the beacon on a safe frequency, we've got a known good signal to test our ADF system.

This might work for others with the same problem.

SGT Anthony Baker
SSG Timothy Vaught
Ft Campbell, KY

PUT THE
SET NEXT TO YOUR
AIRFIELD...

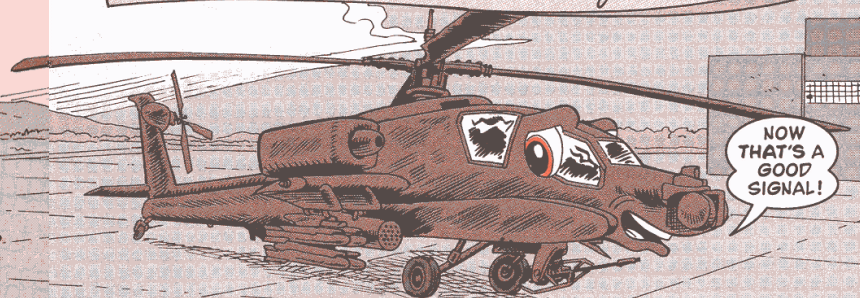
...AND SET THE
BEACON ON A SAFE
FREQUENCY.

Good Signal

Dear Sergeants Baker and Vaught,

We hear you loud and clear and we bet a lot of other avionics technicians do, too. But use a local signal as called for in Para 26b of TM 11-5826-227-20, if possible. If you can't get the required signal strength from local signals, you might give this solution a try.

Windy



No Starch, Please

To get that sharp, squared-away look, some soldiers starch their BDUs.

But unless you want that crispy, burned appearance, don't starch your ABDUs!

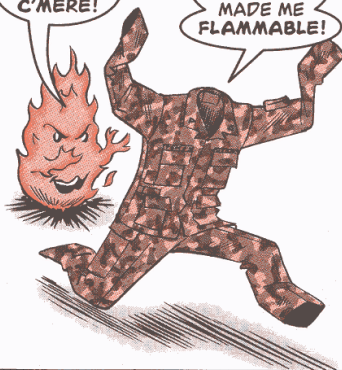
ABDU's are made of Nomex. Nomex is highly flame resistant. It will protect you from fire and heat when normal clothing won't.

But if you starch Nomex—*whoosh!* You've defeated its protection and changed flame resistant into flammable.

So—if you're Nomexed, then no starch.

HEY,
STARCHY!
C'MERE!

YIKES!
STARCH HAS
MADE ME
FLAMMABLE!



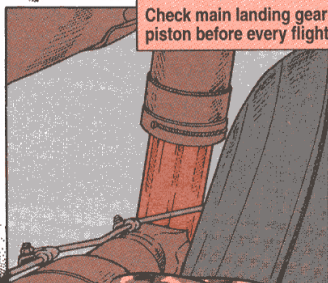
Keep Sand Out

When you're operating in the desert, PMCS at normal intervals may not be good enough. Sand gets in everything, so you have to increase your PMCS effort.

Hydraulics are particularly sensitive to sand and dust. Lubed surfaces that are exposed pick up sand and dust like a magnet.

Before each flight, wipe down the main landing gear pistons to remove excess lube and collected sand.

Check main landing gear piston before every flight

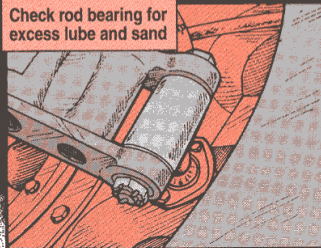


AFTER THAT, CLIMB UP TOP AND CLEAN THE PRIMARY SERVO PISTONS, THE DAMPER ASSEMBLY AND THE ROD BEARINGS.

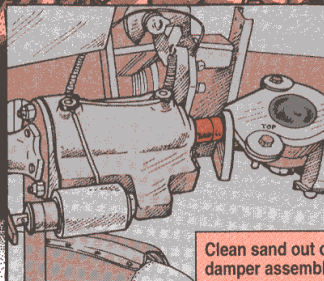
Keep primary servo pistons free of sand



Check rod bearing for excess lube and sand



Clean sand out of damper assembly

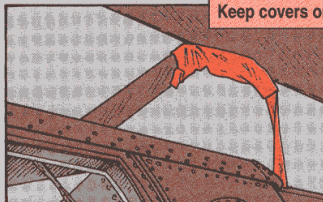


All these areas collect sand when they're exposed to the blowing dust—which is most of the time.

Keep covers on

The best bet is to keep all available covers on your bird when it is sitting on the ready line.

Keep covers on



Blowing sand will destroy aircraft windshields, optics, avionics and engines. You can minimize the damage by keeping things covered when your bird is parked.

Before you cover windshields, clean 'em. Even fine dust can scratch the windshield when the wind moves the cover.

If possible, keep covers from touching windshields. Put styrofoam, newspapers, cardboard or other non-abrasive material between the two.

When you attach the cover, make sure it's snug. Otherwise the wind will blow sand under the edges.

Keep covers on windshield



Your engine can also fall victim to sand. Keep the engine inlet cover on and on tight. If it blows off or up, lots of that sand ends up in the engines.

Flight Suit News

Fire resistant, summer, flyers coveralls, NSN series 8415-01-351-0316, is now the standard flight suit for all services. NSN series 8415-01-043-8376 and 8415-01-291-1227 are no longer good for ordering flight suits.

Use these NSNs to order the new flight suit:

Size	NSN 8415-01-351-
32 Short	0316
32 Regular	0317
34 Short	0318
34 Regular	0319
36 Short	0320
36 Regular	0321
36 Long	0322
38 Short	0323
38 Regular	0324
38 Long	0325
40 Short	0326
40 Regular	0327
40 Long	0328
42 Short	0329
42 Regular	0330
42 Long	0331
44 Short	0332
44 Regular	0333
44 Long	0334
46 Short	0335
46 Regular	0336
46 Long	0337
48 Regular	0338
48 Long	0339

It Takes Two, Baby

Some jobs need a backup.

In aircraft maintenance, your backup is a second wrench. You need it for the installation and removal of oil and hydraulic lines and other fittings.

Here are three specific examples:

- **The hydraulic hoses that attach to the cyclic control irreversible valve on the Huey flight control system.**

When removing or installing them, if you don't use two wrenches to tighten or loosen each hose, you'll kink, twist or break the hose internally.

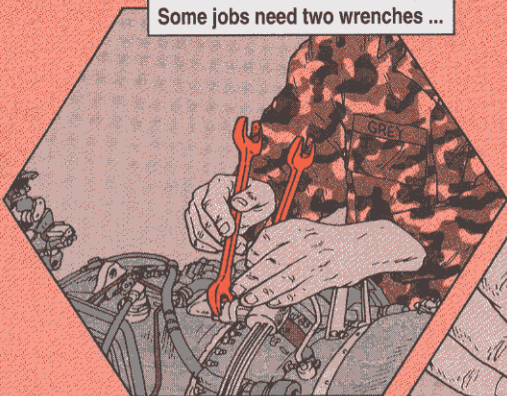
Two wrenches will help you seat the hydraulic fittings to avoid leaks when the hoses are under pressure.

- **The connector assembly on the variable inlet guide vane assembly on the T53 engine on Hueys and Cobras.**

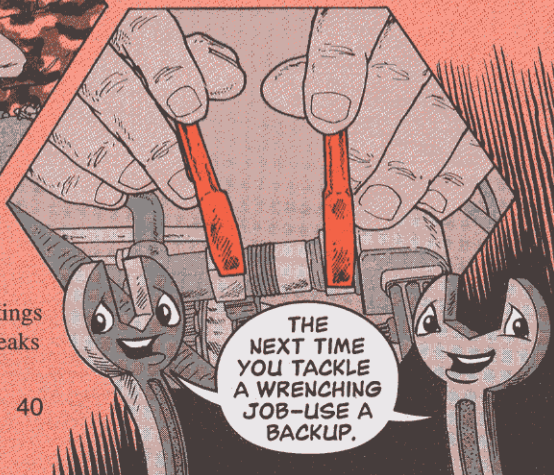
A broken connector rod could keep the vanes from opening. A broken rod is often the result when only one wrench is used to install or adjust the connector assembly. When you loosen or tighten the jam nut, use another wrench to keep a backup force on the self-aligning bearing. Otherwise, the force you put on the jam nut will twist and weaken the connector rod.

If it doesn't break right away, it will eventually, maybe during flight.

Some jobs need two wrenches ...



... like fittings on Black Hawk engines



- **The fuel lines and fittings on a Black Hawk engine.**

Without a backup wrench, fittings will strip, lines will rotate and leaks will happen.

Slingloading ...

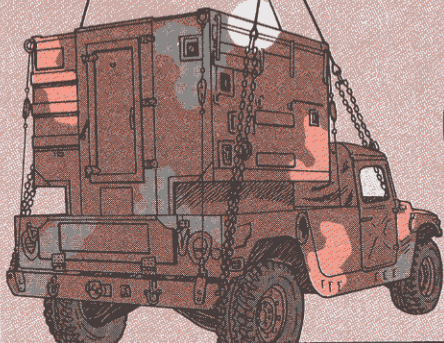
GET AN EXTENSION

Like a football player clipping a defender, some loads are making a bad hit on the sling.

Take a load like a HMMWV with an S-250 or LMS shelter. That load is so tall that the sling legs rest on the top edge of the shelter. Shelter and legs meet where the legs are nylon. The legs chafe and then get cut.

You can solve this problem by making sling leg extensions on all legs. Just make two sling legs into one. Take the chain portion of the 25k sling leg, NSN 4010-01-058-4771, and add it to the chain part of the other leg.

Shelter
without
extensions



Shelter with extensions



Longer legs will reduce the sling angle so there's not as much rubbing. Also, if the legs and shelter do meet, it's metal-to-metal instead of metal-to-nylon.

OUCH!!
THAT'S
GONNA LEAVE
A MARK!

CRASH

Generator PM:

EVEN THE WORLD'S BEST COMMO GEAR IS ONLY AS GOOD AS ITS POWER SOURCE. IF THE POWER GOES DOWN, THE COMMO GOES SILENT.



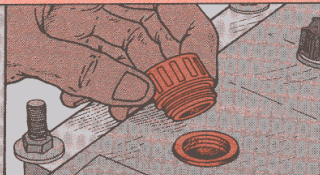
That makes basic PM for the PU-751 and PU-753 power units vital to the operation of your mobile subscriber equipment.

Batteries

When the weather's hot, water in the batteries dries up. Check the electrolyte level in each cell with a flashlight. It should be about 3/4 inch above the top of the plate. If it's low, fill the cell to the bottom of the filler cap neck

with distilled water. Get six 1-gal jugs of distilled water with NSN 6810-00-682-6867. NSN 6810-00-356-4936 brings a 5-gal container.

Check electrolyte level daily in hot weather

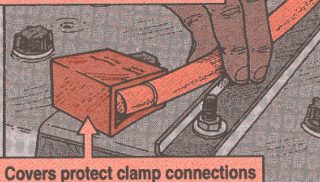


Out of distilled water? Use rain water or even tap water, but filter it through a clean cloth.

Remember to use the gravity battery filler or syringe from the No. 1 Common shop set when adding water. They'll help prevent accidentally flushing out electrolyte.

Make sure battery connections are tight. With your thumb and two fingers, try to twist the cable clamps on the posts. Also wiggle the cable to see if it's tight on the clamp. Go easy on the muscle or you could break a clamp or even a post. If any connections are loose, tell your unit maintainer.

Wiggle cable to test tightness



Covers protect clamp connections

A Study in Power

Make sure all clamp connections have rubber covers. They protect against dropped tools or other metal that might cause a short circuit across the battery. If covers are worn or missing, ask your unit maintainer to replace them with new ones, NSN 5940-00-738-6272.

Loose batteries crack and leak acid. They need to be snug in the mount. Grip the batteries and try to move them. If they're loose, get the holddown tightened.

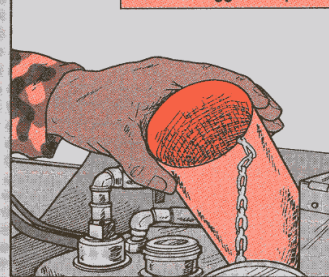
Look for corrosion—fluffy, caked white stuff. It comes from battery acid, and it eats up metal parts and discharges batteries.

If the corrosion's light, wipe it off the batteries, terminals and mount with a clean rag. If it's too heavy to wipe away, let unit maintenance clean it.

Fuel Strainer

Fuel gradually eats away the rubber lining inside metal fuel cans. Rubber bits end up floating in the fuel. Pour

Strainer clogged? Report it!



that fuel into your generator's fuel tank, and those rubber bits can clog the tank's strainer.

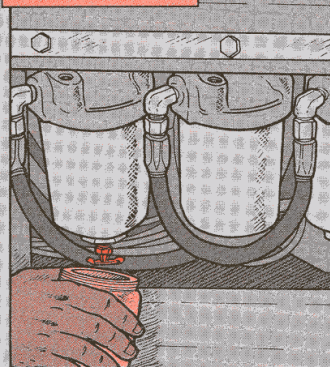
If your strainer's clogged, have your unit maintainer clean it. He'll use compressed air to blow out the larger rubber pieces, then wash the strainer in drycleaning solvent.

Fuel Tank and Filters

Water and sediment in the fuel clogs filters. Clogged filters choke off fuel to the engine. Without fuel, the engine coughs, sputters and dies.

After each mission, open the drain at the base of the fuel tank and drain

Drain strainer and filters

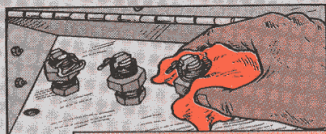


out about one-quarter cup to check for water and sediment. Drain the fuel into something you can see through, like a clear, plastic bottle. If you find water or sediment, continue draining until the fuel runs clean.

Also drain the strainer and the primary and secondary fuel filters. Start with the strainer; that's the one on the far left. Drain it until the fuel runs clean. Then move to the right of the strainer and drain the primary fuel filter. Finally, drain the secondary fuel filter. If you're still getting water and sediment, report it to your unit maintainer.

Load Terminals

Look for dirt, grease, corrosion and paint on the load terminals. They interfere with a good connection, and your commo gets intermittent power or none at all. Remove dirt and grease with solvent, NSN 6850-00-281-1985. Use sandpaper or a wire brush to get rid of any corrosion or paint.



Clean load terminals with solvent

When you connect a power cable to a terminal, hand tighten the top nut. Then hold the bottom nut firm with an adjustable wrench while tightening the top nut another one-half to three-quarters turn with the generator's lug wrench.



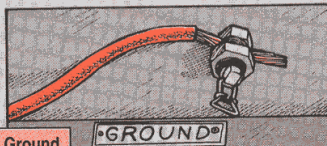
Hold bottom nut firm while tightening top nut

Make sure there are safety clips on the terminals. They keep the nuts from getting lost.

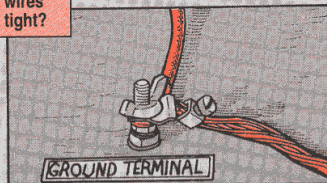
Grounding

Dirt, grease, corrosion or paint on the generator's and trailer's ground terminals prevent a good ground. Clean them the same way you'd clean load terminals.

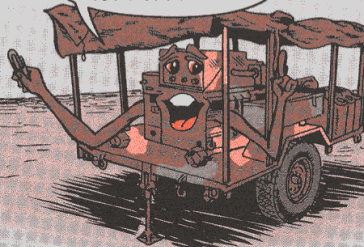
Make sure the ground wires are connected tightly to both ground terminals.



Ground wires tight?



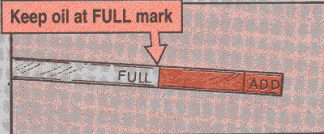
THE GENERATOR'S GROUND TERMINAL SHOULD HAVE A SAFETY CLIP. IF IT'S MISSING, A PAPER CLIP MAKES A GOOD TEMPORARY FIX.



Engine Oil

Too much or too little oil can ruin an engine. Too much oil leads to sticky piston rings, fouled spark plugs and carbon build-up. Too little causes friction, heat build-up and power loss.

Check the oil according to your operator/crew PMCS. If the oil level's low, add enough to keep it at the FULL mark on the dipstick.



Remember to measure the oil level only after the engine's cooled. That gives oil a chance to drain off working parts and back into the crankcase, where you can accurately measure it.

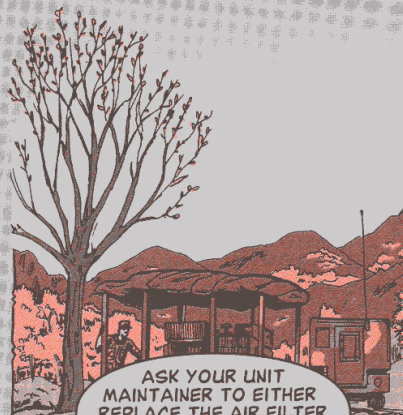
Change the oil and filter after every 100 operating hours, according to the lube order.

Air Cleaner

A dirty air cleaner hinders the flow of air and chokes the engine. Look at the air restriction indicator during operations. If red shows, then the air cleaner filter's clogged and the engine's not getting enough air.



Indicator red? Report it!



ASK YOUR UNIT MAINTAINER TO EITHER REPLACE THE AIR FILTER OR CLEAN IT WITH WATER OR COMPRESSED AIR.

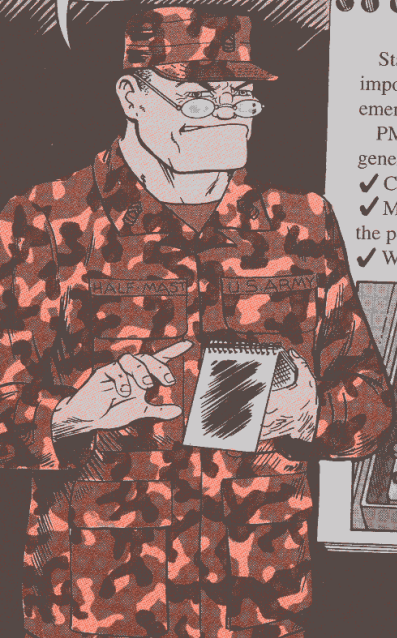


Shelter Needs PM, Too

WHEN IT COMES TO MAINTAINING YOUR MSE's AN/TRC-190 LINE-OF-SIGHT RADIO AND -191 RADIO ACCESS UNIT, GENERATOR PM IS ONLY HALF THE JOB.

THE OTHER HALF INCLUDES PM ON THE SHELTER AND ITS COMMO GEAR.

FOLLOW THESE TIPS TO MAKE YOUR PM COMPLETE.

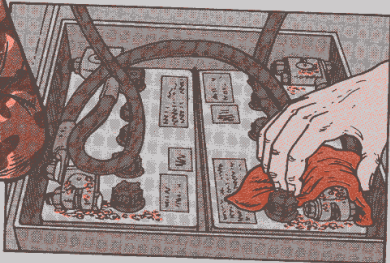


Batteries

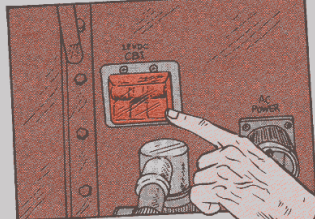
Start with the shelter's batteries. They're too important to neglect. They provide temporary emergency power if primary power goes down.

PM for shelter batteries is the same as for generator batteries. It includes:

- ✓ Checking for the correct electrolyte level.
- ✓ Making sure the cable clamps are snug on the posts.
- ✓ Wiping off corrosion.



TURN OFF THE POWER BEFORE WORKING ON BATTERIES.

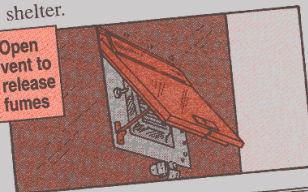


Just make sure to turn off the power before you work on the batteries. That includes both powering down the shelter and setting the power entry panel 28 VDC CB1 switch to OFF.



The batteries give off hydrogen fumes that can ignite if not vented. So keep the battery box exhaust vent open. And make sure the battery box fan is running. If it's not, report it. The vent and the fan work together to draw fumes away from the battery to the outside of the shelter.

Open vent to release fumes

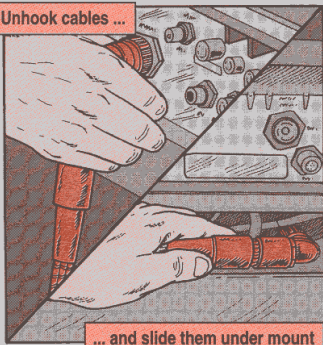


Cables

When it's time to pack up and move on, take a few minutes to protect cables. Gear piled on the floor of the shelter can damage cables connected to equipment front panels. Insulation gets cut and connectors break.

Unhook all cables before you stow your gear. Tuck them under the equipment mounts and out of the way. Or put them in the storage cabinets at the front of the shelter.

Unhook cables ...



... and slide them under mount

AC Voltage

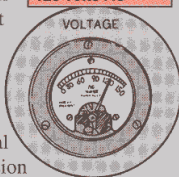
Once your equipment's up and running, keep an eye on the AC voltage meter on the power control panel. Your system operates at 120 volts AC.

Make sure it stays there.

Low voltage weakens the signal or stops transmission altogether. High voltage can blow the AC fuse in the AN/GRC-226 radio. Either way, you're not talking.

If the voltage gets too far out of line, chances are the problem's with your generator. Ask your unit maintainer to take a look.

Meter should read 120 volts AC

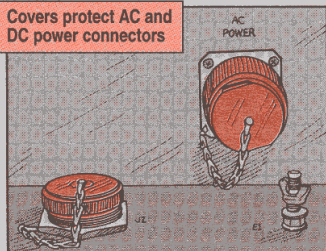


Power Entrance Panel

Protect the AC and DC power connectors in the power entrance panel. When connectors are left exposed, dirt and grime clog their contacts. Moisture corrodes them. Fouled contacts mean loss of power.

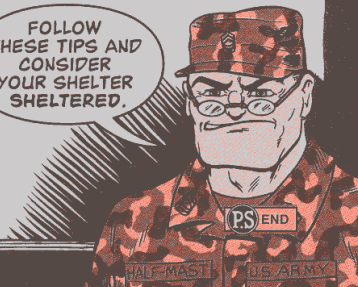
When you're not using the connectors, put metal covers over them. NSN 5935-00-114-5781 brings a cover for the AC connector, while NSN 5935-00-926-7423 gets you the DC connector cover.

Covers protect AC and DC power connectors



Without a clean ground lug you don't have a good grounding connection. Keep the ground lug free of dirt, grease, corrosion or paint. Clean up dirt and grease with solvent, NSN 6850-01-371-8049. Use sandpaper or a wire brush to get rid of corrosion or paint.

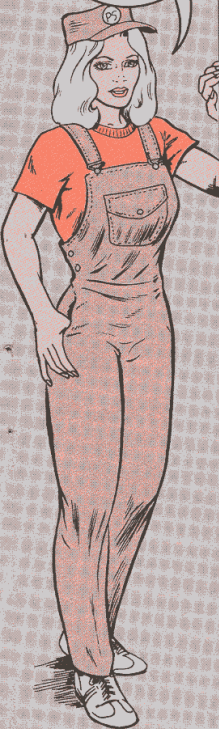
FOLLOW THESE TIPS AND CONSIDER YOUR SHELTER SHELTERED.



USE DECALS INSTEAD OF PAINT

Painting numbers and letters on camouflaged equipment is messy and takes lots of time.

IF YOU CAN, USE PRESSURE-SENSITIVE DECALS ON YOUR CAMOUFLAGED EQUIPMENT INSTEAD OF PAINT.



LUSTERLESS WHITE DECALS, NSN 7690-00-

Letter	1-in	1½-in	2-in	3-in	4-in
A	857-9664	857-9615	858-3367	310-9617	329-0212
B	857-9665	857-9616	858-3368	310-9619	329-0215
C	857-9666	857-9617	858-3369	310-9632	329-0216
D	857-9667	857-9618	858-3370	310-9750	329-0217
E	857-9668	857-9619	858-3371	310-9751	329-0218
F	857-9669	857-9620	858-3372	311-0639	329-0219
G	857-9670	857-9621	858-3373	311-2088	329-0220
H	857-9671	857-9622	858-3374	311-2365	329-0221
I	857-9672	857-9623	858-3375	311-2368	329-0222
J	857-9673	857-9624	858-3376	311-3249	329-0226
K	857-9674	857-9625	858-3377	311-3593	329-0228
L	857-9675	857-9626	858-3378	311-3937	329-0231
M	857-9676	857-9627	858-3379	311-5760	329-0232
N	857-9677	857-9628	858-3380	311-5768	329-0236
O	857-9678	857-9629	858-3381	311-6923	329-0239
P	857-9679	857-9630	858-3382	311-6929	329-0243
Q	857-9680	857-9631	858-3383	311-6941	329-0252
R	857-9681	857-9632	858-3384	311-6954	329-0257
S	857-9682	857-9633	858-3385	311-6955	329-0262
T	857-9683	857-9634	858-3386	311-6956	329-0265
U	022-9764	857-9635	858-3387	311-6964	329-0309
V	857-9684	857-9636	858-3388	311-6966	329-0311
W	857-9685	857-9637	858-3389	311-6973	329-0346
X	857-9686	857-9638	858-3390	311-6981	329-0353
Y	857-9687	857-9639	858-3391	311-6992	329-0363
Z	022-9768	857-9640	858-3392	311-6995	329-0364



LUSTERLESS WHITE NUMERALS, NSN 7690-00-						
Number	1-in	1½-in	2-in	3-in	4-in	
1	857-9688	857-9641	858-3393	311-7002	329-0365	
2	857-9689	857-9642	858-3394	311-7032	329-0371	
3	857-9690	857-9643	858-3395	311-7088	329-0396	
4	857-9691	857-9644	858-3396	311-7089	329-0397	
5	857-9692	857-9645	858-3397	311-7128	329-0400	
6	857-9693	857-9646	858-3398	311-7140	329-0403	
7	857-9694	857-9647	858-3399	311-7148	329-0442	
8	857-9695	857-9648	858-3400	311-7149	329-0443	
9	857-9696	857-9649	858-3401	311-7164	329-0445	
0	857-9697	310-6605	858-3402	311-7228	329-0456	

MISCELLANEOUS LUSTERLESS WHITE DECALS, NSN 7690-00-						
Emblem	1-in	1½-in	3-in	4-in	6-in	
MAX SPEED	857-9660	857-9611	-	-	-	
NO SMOKING	857-9662	857-9613	310-6627	-	-	
US ARMY	857-9663	857-9614	310-9208	329-0206	-	
FLAMMABLE	-	-	-	-	329-0876	

MISCELLANEOUS LUSTERLESS BLACK DECALS, NSN 7690-01-						
Emblem	1-in	1½-in	2-in	3-in	4-in	6-in
MAX SPEED	032-3713	032-3715	-	042-0671	-	-
NO SMOKING	032-3714	032-4602	032-4604	036-4777	-	-
US ARMY	-	032-4603	032-4605	032-4607	032-4609	-
MIL POLICE	-	-	032-4606	032-4608	-	-
FLAMMABLE	-	-	-	-	-	047-6457

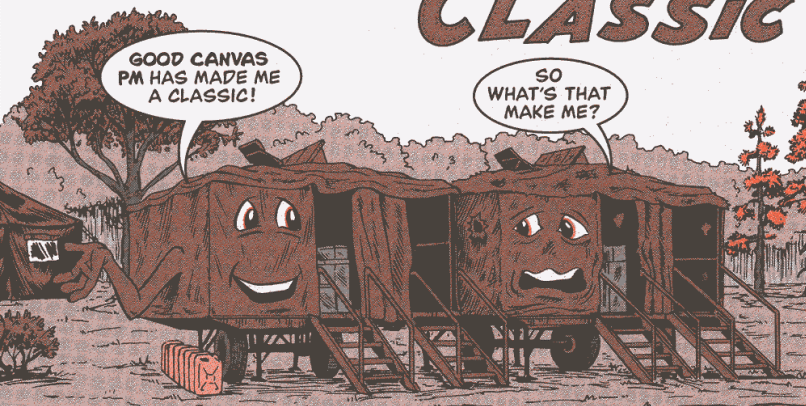
LUSTERLESS BLACK PRESSURE-SENSITIVE DECALS, NSN 7690-01-						
Letter	1 inch	1½ inches	2 inches	3 inches	4 inches	
A	030-7126	031-4660	031-9543	031-9559	032-4595	
B	030-5778	031-4661	031-5535	031-9560	032-4596	
C	030-5779	031-5221	032-2428	031-9561	032-4597	
D	030-5780	031-6394	032-2430	031-9562	032-4598	
E	030-5781	031-5523	031-9544	031-9563	032-4599	

Letter	1 inch	1½ inches	2 inches	3 inches	4 inches	
F	030-5782	031-5524	031-5537	031-9564	032-4600	
G	030-5783	031-4662	031-5538	031-9565	032-4601	
H	030-5784	031-4663	031-5539	031-9566	032-2452	
I	030-8542	031-4664	031-5540	031-9567	032-2453	
J	030-5785	031-4665	031-5541	031-9568	032-2454	
K	030-5786	031-4666	031-5542	032-0739	032-1404	
L	030-8543	031-4667	031-5543	032-0740	032-1405	
M	030-7816	031-4668	031-5544	031-9545	032-2438	
N	030-8544	031-4669	031-5545	031-9546	032-1406	
O	030-8545	031-4670	031-5546	031-9547	032-3712	
P	031-6395	031-5525	031-5547	031-9548	032-2439	
Q	030-8546	031-5526	031-5548	031-9549	032-2441	
R	030-8547	031-5527	031-5549	031-9550	032-1407	
S	030-8548	031-5528	031-5550	031-9551	032-2443	
T	030-8549	031-5529	031-5551	031-9552	032-2445	
U	030-8550	031-5530	031-5552	031-9553	032-2447	
V	030-8551	031-5531	031-5553	031-9554	032-2449	
W	030-8552	031-5532	031-5554	031-9555	032-1408	
X	030-8553	031-5533	031-5555	031-9556	032-2451	
Y	030-8554	031-4671	032-1400	031-9557	032-4593	
Z	030-8555	031-4672	032-0727	031-9558	032-4594	
No.	1 inch	1½ inches	2 inches	3 inches	4 inches	
1	030-8556	031-4673	032-0728	031-9559	032-4595	
2	030-8557	031-4674	032-0729	031-9560	032-4596	
3	030-8558	031-4675	032-2421	031-9561	032-4597	
4	030-8559	031-4676	032-2422	031-9562	032-4598	
5	030-8560	031-4677	032-1401	031-9563	032-4599	
6	030-8561	031-5534	032-2423	031-9564	032-4600	
7	030-8562	031-4678	032-2424	031-9565	032-4601	
8	030-8563	031-4679	032-2425	031-9566	032-2452	
9	030-8561	031-4680	032-0730	031-9567	032-2453	
0	030-8565	031-4681	032-0731	031-9568	032-2454	

CHECK THE FEDLOG OR ARMYLOG BEFORE YOU ORDER TO FIND OUT EXACTLY HOW MANY YOU'LL GET WITH EACH NSN.



Classic



The canvas covers on your Mobile Kitchen Trailer (MKT) have lots of enemies.

Heat, dirt, dust, water, and mildew are working every day to put those covers out of commission.

With a heaping helping of PM, though, the sun will shine on, not through, your kitchen's covers.

Here's how to take care of it:

Clean mildewed canvas before using it. Use the wire brush in your fabric repair kit, NSN 8340-00-262-5767, to brush mildew, dirt, sand and dust off the canvas.



Remove oil and grease from the canvas by scrubbing with a soft bristle brush and a mixture of mild soap and water.

Rinse well with clean water and hang it in the sun to dry. Make sure it's completely dry before folding it up.



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CANVAS CARE



Waterproof!

When the canvas leaks, but you can't find any holes, it needs retreating. Before you start, read Chap 14 of FM 10-16.

Be sure you use the retreating solution in a well-ventilated area away from any heat source that would cause it to ignite. Use safety equipment such as a respirator to avoid breathing the fumes.

Never put re-treating solution on the MKT's over-the-road travel covers. It makes the nylon fabric gummy.

Use an equal mix of preservative, NSN 8030-00-281-2346, and dry cleaning solvent, NSN 6850-00-264-9038.



Spray, brush or roll on the mixture.



If a spray gun is used, be sure to wear protective clothing, a respirator, and a helmet liner.

One gallon of mixture covers about 90 square feet of canvas.

Make sure you put extra coating on patches and repaired areas. Place the canvas outside or in a well-ventilated area to dry.

Be careful when setting up or dismantling the MKT. Poles can tear holes in canvas.

Loosen the canvas when it rains. It shrinks as it gets wet and that makes it hard to tie down.

Never store damp, wet or dirty canvas.

Stow canvas in a well-ventilated area, but never on the ground or in the open where there's dew.

PS 521

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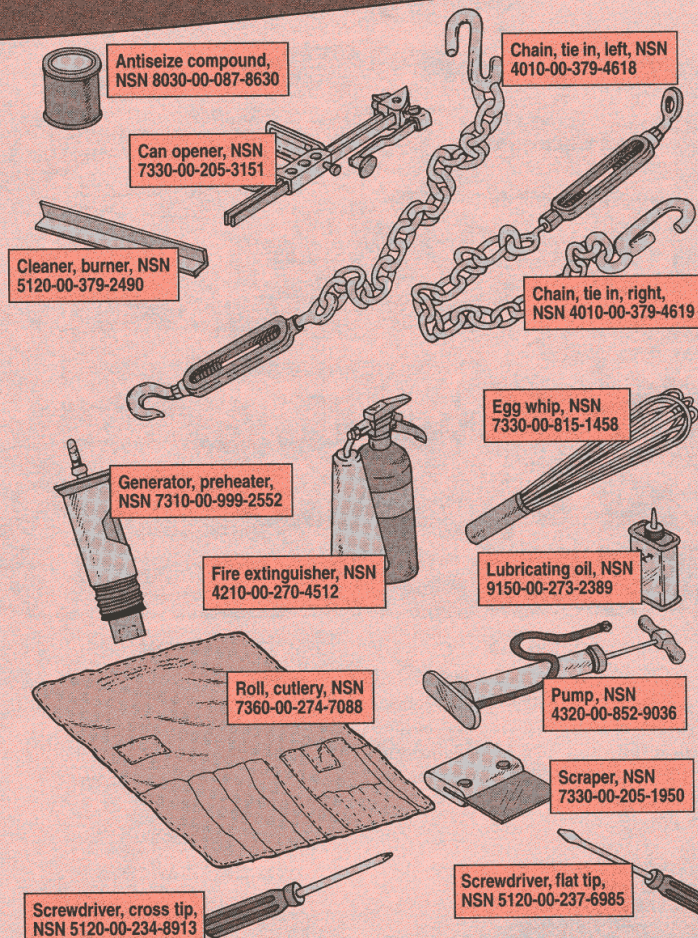
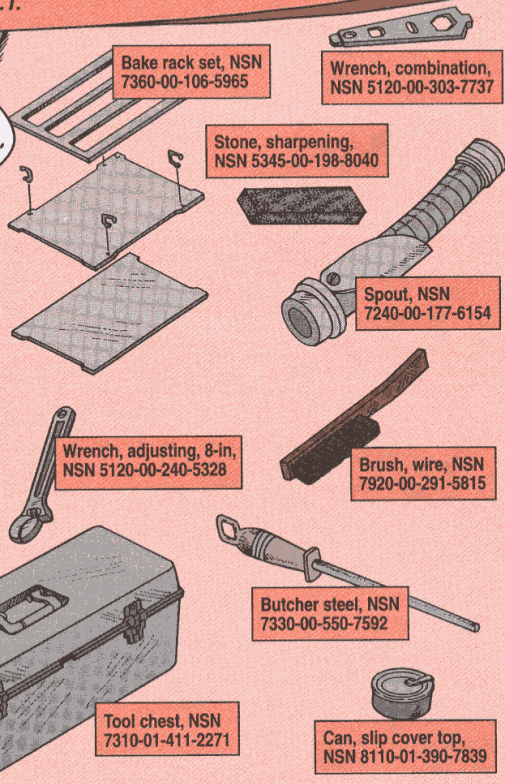
Range Accessory Outfits

Dear Half-Mast,

TM 10-7360-204-13&P authorizes us to have one accessory outfit, NSN 7360-00-187-4757, for every one to four M59 ranges. But, some of our outfits have more items than others. Could you tell me what items are supposed to be in the outfits?

SGT A.T.

CHANGES HAVE BEEN MADE TO THE ACCESSORY OUTFIT, WHICH IS WHY SOME OF YOUR OUTFITS ARE DIFFERENT. HERE'S WHAT YOUR OUTFIT SHOULD HAVE...



GET TRAINING ON TRACK

COMMANDERS, GET YOUR ENVIRONMENTAL TRAINING ON TRACK BY USING THESE CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE (CHPPM) PRODUCTS.



Lending Library

CHPPM has an audiovisual lending library with more than 100 videotapes on environmental awareness, hazardous waste management, pollution prevention, personal protective equipment, and underground storage tanks.

To get a catalog, write:

USACHPPM
ATTN: MCHB-DE-HM (Ms Toscano)
Bldg 1677
Aberdeen Proving Ground,
MD 21010-5422

CD-ROM

Another useful tool for BMOs and S4 shop personnel is CHPPM's Military Item Disposal Instructions CD-ROM. It gives disposal guidance and other environmental information.

To get on the mailing list for this CD-ROM, fax your request to:

DSN 565-2835
Commercial (804) 444-2835

Or call:

DSN 565-9192
Commercial (804) 444-9192

World Wide Web

CHPPM now has an Internet web site for their hazardous and medical waste program. You can access things like:

Information papers on the disposal of oil filters, CARC paint, antifreeze and other items.

Technical Guide No. 126, Waste Disposal Instructions. This guide can even be downloaded so you can print out the information.

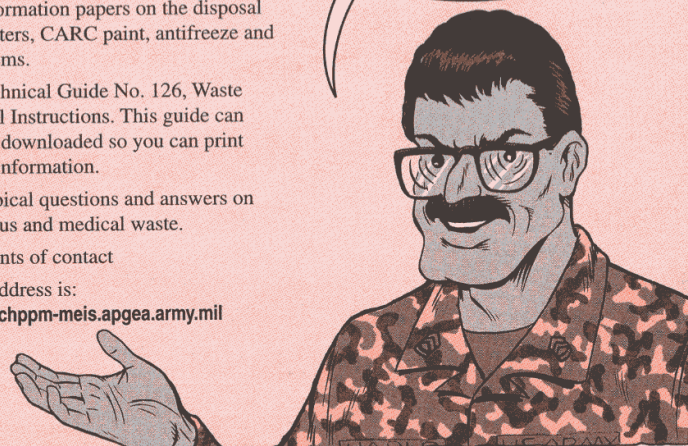
Typical questions and answers on hazardous and medical waste.

Points of contact

The address is:

<http://chppm-meis.apgea.army.mil>

IF YOU'RE NOT HOOKED UP TO THE WEB, CHECK WITH YOUR LOCAL INFORMATION MANAGEMENT FOLKS ABOUT GETTING HOOKED UP.



ODC Confusion

Confused about solvents containing ozone-depleting chemicals (ODCs)? No wonder.

On one hand, you're told that the Army has banned the use of solvents containing ODCs. On the other hand, you still get them through supply. Be patient! The Army is replacing ODC products as fast as it can. In many cases, alternative products are already in the supply system. You get them automatically—as you order the old ones.

But until an alternative is available, ODC products ordered through the Army supply system can still be used. Don't buy solvents, cleaners and supplies outside the system unless they are ODC-free, though.

If you have questions on ODCs or any other environmental issues, call your local environmental office.

Keep Computer Keyboard Clean

When you operate your ULLS computer in sandy areas, sand gets in between the keys on the keyboard.

This causes the keys to stick and you wind up putting the wrong letter or number in an important document.

KEEP
YOUR KEYS FROM
STICKING BY BRUSHING
OFF THE KEYBOARD
DAILY. IT'S AS EASY
AS 1-2-3.

1. Hold the keyboard upside down.



2. Gently tap the bottom of the keyboard. That gets rid of all the loose particles of sand.

3. Use a soft brush to get the rest of the sand from between the keys.



FOR TEMPORARY PROTECTION IN EXTREMELY SANDY AREAS, WRAP PLASTIC LOOSELY AROUND THE KEYBOARD. KEEP THE PLASTIC IN PLACE BY TAPING IT ON THE BACK OF THE KEYBOARD. BE SURE TO TAKE THE PLASTIC OFF EVERY DAY OR TWO TO LOOK FOR MOISTURE.



Publications ...

File Manuals in Envelopes

Dear Editor,

Some of the small manuals, such as the M16 rifle operator's manual, do not have holes for filing. So, they normally wind up piled on a table or desk. When you need them, you have to sort through all of them. Sometimes they even sprout legs and walk away!

To take care of this problem, we file our small manuals in a packing envelope, NSN 8105-00-334-4120. The envelope has holes that allow it to fit on two rings of the three-ring binders. Now not only are the TMs protected, but we can find them when we need them.

SSG Emmanuel I. Macute
304th MMC
Los Angeles, CA

FROM THE DESK OF THE Editor 

Sounds like you filed away that problem.

SOLDIER SUPPORT

DRMO's the Way to Go!



NOW I HAVE
ALL THE STORAGE
SPACE I NEED!

Dear Half-Mast,

We've found that our local Defense Reutilization and Marketing Office (DRMO) saves us money and helps solve our equipment problems. We always look there when we need parts, material or equipment.

For instance, when we needed more storage space, drawers from an unserviceable expando van filled that need.

The drawers work beautifully as counters and file storage. Since they open from either end, you can get into the files from both sides of the counter. Now I have a lot more storage space.

Most of the items we get at DRMO are in like-new condition and they are FREE! You could say that DRMO is our gold mine.

Ssg Corinne Patrick

11th ACR

Ft Irwin, CA

Now there's a way to counter your storage problems. DRMO is definitely the way to go. Good job!

Half-Mast

Free Tools

The troop drawdown in Europe has created a surplus of hand and power tools, as well as an excess of Class II and Class VII end items.

You can get them free if your unit is authorized to have them. Transportation within CONUS is also free.

To find out what tools are available, call the Tank-automotive and Armaments Command—Armaments and Chemicals Acquisition and Logistics Activity (TACOM-ACALA). Call DSN 793-3354 or commercial (309) 782-3354.

For more information on Class II and Class VII items, call the Aviation-Troop Command (ATCOM) at DSN 693-5276/5269 or commercial (314) 263-5276/5269.

SUPPLY EXCELLENCE AWARDS

HERE ARE THE
WINNERS AND RUNNERS-UP
OF THE FY95 ARMY SUPPLY
EXCELLENCE AWARDS
COMPETITION...

ACTIVE ARMY MTO&E UNITS

Company, Battery or Troop

Winner—19th Sig Co, Ft Huachuca, AZ
Runner-up—Battery A, 1st Bn, 7th ADA, Kaiserslautern, Germany
Honorable Mention—72d Ord Co, Pusan, Korea

Battalion or Squadron

Winner—14th Engr Bn, Ft Lewis, WA
Runner-up—3d US Inf (The Old Guard), Ft Myer, VA
Honorable Mention—532d MI Bn, Yongsan, Korea

ACTIVE ARMY TDA ORGANIZATIONS

Company, Battery or Troop

Winner—US Army Garrison, Ft Riley, KS
Runner-up—NCO Academy, Ft Richardson, AK
Honorable Mention—US Army Cold Region Test Center, Ft Greely, AK

Battalion or Squadron

Winner—Red River Army Depot, Texarkana, TX
Runner-up—10th Area Support Group, Torii Station, Okinawa, Japan
Honorable Mention—Womack Army Medical Center, Ft Bragg, NC

ARMY RESERVE MTO&E UNITS

Company, Battery or Troop

Winner—646th QM Co, Kingwood, WV
Runner-up—24th Tactical Support Co, Aurora, CO
Honorable Mention—4th Tactical Support Co, (Psyops), Sacramento, CA

Battalion or Squadron

Winner—135th MI Bn, Olathe, KS
Runner-up—HQ, 353d Psyops Bn, Moffett Federal Field, CA
Honorable Mention—6th Bn, 159th Avn Bn (RS), Ft Benning, GA

TDA Company

Winner—HHC, 89th ARCOM, Wichita, KS

ARMY NATIONAL GUARD MTO&E UNITS

Company, Battery or Troop

Winner—Co A, 67th Support Bn (Forward), York, NE
Runner-up—1454th Trans Co, Concord, NC
Honorable Mention—HHD, Engr Bde, 42d AD, Buffalo, NY

Battalion or Squadron

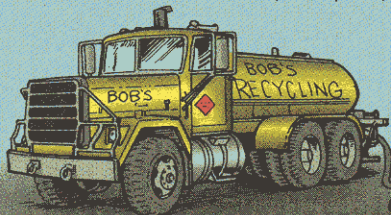
Winner—2d Bn, 157th FA, Colorado Springs, CO
Runner-up—107th Engr Bn, Ishpeming, MI
Honorable Mention—1092d Engr Bn, Parkersburg, WV

TDA Company

Winner—Equipment Maintenance Center, Johnston, IA
Runner-up—90th Troop Command, Oklahoma City, OK
Honorable Mention—Detachment 2, STARC, Elliott, MS



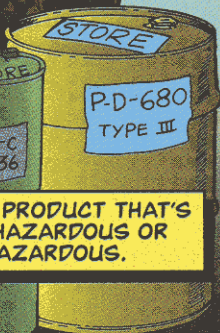
FOUR WAYS YOU CAN HELP REDUCE HAZARDOUS WASTE



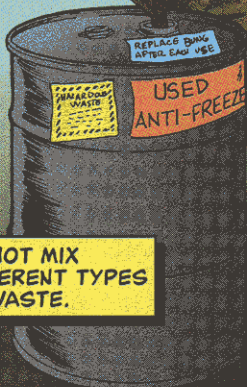
1. SEGREGATE AND RECYCLE USED OILS, SOLVENTS AND ANTI-FREEZE.

2. ORDER ONLY WHAT YOU WILL USE BEFORE SHELF-LIFE EXPIRES.

RECYCLING
HAZARDOUS
WASTE



3. USE A PRODUCT THAT'S LESS HAZARDOUS OR NON-HAZARDOUS.



4. DO NOT MIX DIFFERENT TYPES OF WASTE.

TO PROTECT AND SAVE **OUR** ENVIRONMENT
TAX DOLLARS