

Issue 540

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November
1997

THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-540

ARE
YOU UP TO
SPEED WITH
ULLS?



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ULLS Well That Ends Well
... See Page 55

SMART Thinking

The number 13428 means a lot to SFC Cornell Williams. That's the number that was assigned to his SMART suggestion.

The number 2450 means even more to him. That's the number of dollars he could receive as the result of a SMART suggestion.

Sergeant Williams noticed that two different TMs contained identical information. Why not just have one TM, he thought? He then took a few minutes to put that suggestion on paper and mail it to the SMART program. With no more effort than that, Sergeant Williams could find himself \$2,450 richer.

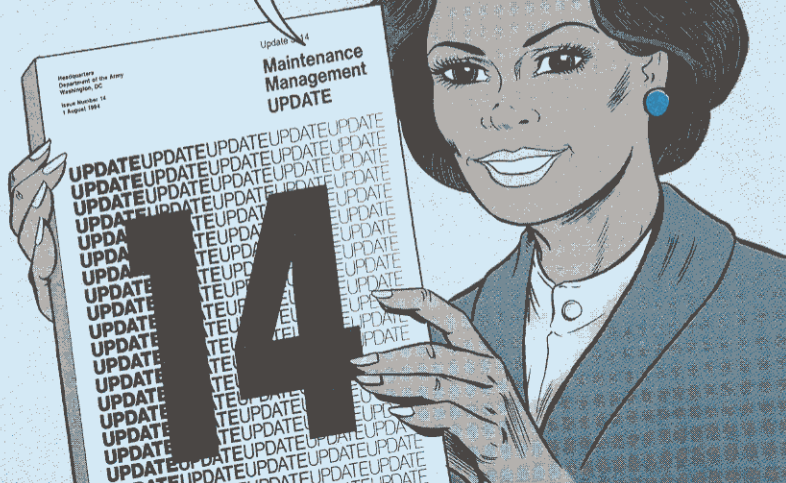
If you have a good idea that would improve the Army's maintenance or logistics system, be like Sergeant Williams. Jot it down on DA Form 5533 or a piece of paper.

Be sure to include your name, address and telephone number.

Send your SMART suggestion to:

Project SMART/TIPS
DCD CSS
3901 A Ave, Suite 220
Ft Lee, VA 23801-1809

CHECK OUT CHAPTER
10 OF DA PAM 738-750 IN THE
MAINTENANCE MANAGEMENT
UPDATE FOR MORE INFORMATION
ABOUT SMART.





**THE
PREVENTIVE
MAINTENANCE
MONTHLY**

TB 43-PS-540, 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.

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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
The Preventive Maintenance Monthly
LOGSA, Bldg. 5307
Redstone Arsenal, AL 35898-7466

Or E-mail to:

psmag@logsa.army.mil

Internet Address:

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By Order of the Secretary of the Army:

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Make Slave Starts

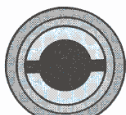
Slave starts are, unfortunately, common in freezing weather. Doing the job right will keep you healthy and your equipment on the job.

HEED THESE PRECAUTIONS.

THANKS FOR THE JUMP.

VROOOM

- Never stand between vehicles being slaved and never position them nose-to-nose.
- Make sure the electrolyte in all battery cells is above the plates.

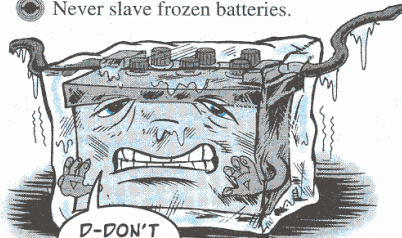


Electrolyte level low



Electrolyte level OK

- Never slave frozen batteries.



D-DON'T D-DO IT!

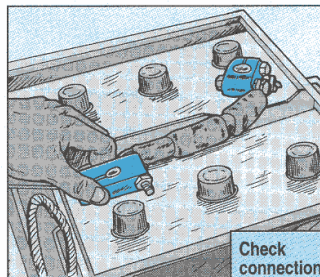
Safe Starts



THEN DO THESE THINGS IN ORDER.



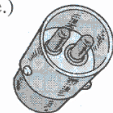
- Make sure all cables and terminals on the dead vehicle's batteries are tight and free of corrosion.



Check connections

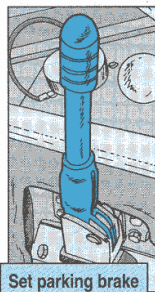
- Connect the slave cable to the dead vehicle's slave receptacle. The connection should be tight.
- If either vehicle has the old 2-pin slave receptacle, use the NATO adapter. (Put the adapter on the receptacle and then connect the cable.)

Slave adapter

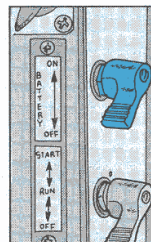


- Push the slave cable connector into the slave receptacle on the live vehicle.
- Wait at least one minute, but no more than three, before trying to start the dead vehicle.
- Push to start the dead vehicle. Step on the clutch if the vehicle has one, to cut down on engine drag.

Never run the starter for more than 30 seconds at a time. Let the starter cool off for two or three minutes between tries or you'll burn it up. If it won't start in three tries, give up. The vehicle has a bigger problem.



Set parking brake



Battery switch OFF in dead vehicle

- Keep the slave cable connected until the vehicle starts. Never unhook a slave cable while the starter is engaged, or you'll get arcing and burned-out cables and slave receptacles.

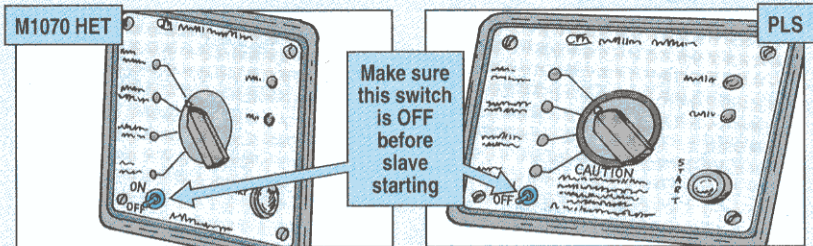
Once the slaved vehicle is started, pull the cable off that vehicle and then remove it from the other one. Let the engine run at fast idle after it starts.

- Read the slave-starting steps in your vehicle's operating instructions.

READ THE TMs BEFORE SLAVING!

Slave Starting Update

Drivers, before you slave start your M1070 HET tractor or M1074/M1075 PLS truck, turn the CTIS controller switch OFF. If you don't, the surge of high voltage during slaving can damage the CTIS controller.



A bum controller means you can't regulate tire air pressure. That's bad news when you need that extra traction in rough or sandy terrain.

Make a note of this change on Page 2-218 of TM 9-2320-360-10 (HET) or on Page 2-369 of TM 9-2320-364-10 (PLS).

All Vehicles . . .

Take Exhaust Outside

Closing shop doors to keep the cold out is smart—if you also make sure to vent exhaust fumes outside.

Running vehicles indoors without proper venting is asking for trouble, and courting death.

Run the exhaust fumes safely outside by using flexible exhaust extensions.



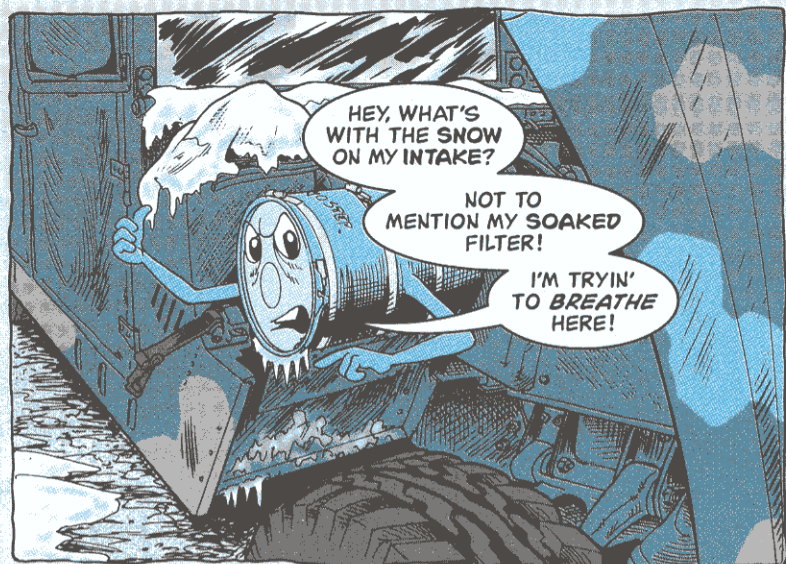
NSN 4720-00-	Inside diameter
174-4668	1 inch
278-8030	1 1/2 inches
278-8027	1 3/4 inches
278-8031	2 inches
174-6818	2 1/2 inches
174-4664	3 inches
174-4671	4 inches

The unit of issue is feet, so order the length you need.

Keep Air Filters Unplugged

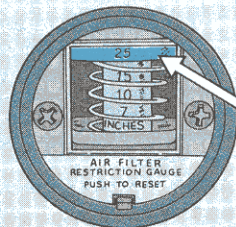
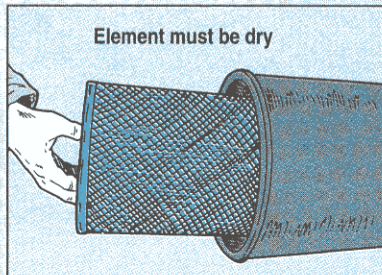
Ice and snow can turn your vehicle's air filter into an air block just as fast as dirt can. And they'll do it to a brand new filter, too.

Moist air or snow sucked into the filter can freeze on the element. Once the filter element's coated with ice, air can't get through.



Keep an eye on your vehicle's air filter restriction indicator. On some vehicles, once the indicator shows red, the filter's plugged. On others, once the indicator reaches the red level, the filter is plugged. Get the element cleaned, dried out or replaced.

Always keep snow cleared away from the air intake. In damp, cold weather, it's a good idea to have a clean, dry element on hand for a quick switch.



Red indicates plugged filter

Waterless Fuel Keeps Flowing

If there's water in your vehicle's fuel lines, it'll be ice once the thermometer dips below freezing. And ice stops fuel flow cold.

Here's how to keep the fuel flowing, and your vehicle going:

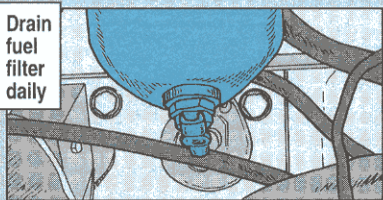
Fill fuel tanks to within two inches of the bottom of the filler neck (or to the mark painted or stenciled on the tank). When you fuel your vehicle, keep ice and snow away from the tank opening.

Stencil tanks



Drain fuel filters every day you operate. If you get more water than usual, report it.

Drain fuel filter daily



If needed, add icing inhibitor to the fuel. Make sure, though, that it hasn't already been added. More than one pint per 40 gallons can cut performance and damage engines.

Add the inhibitor first, so it can mix properly. Use this much inhibitor:

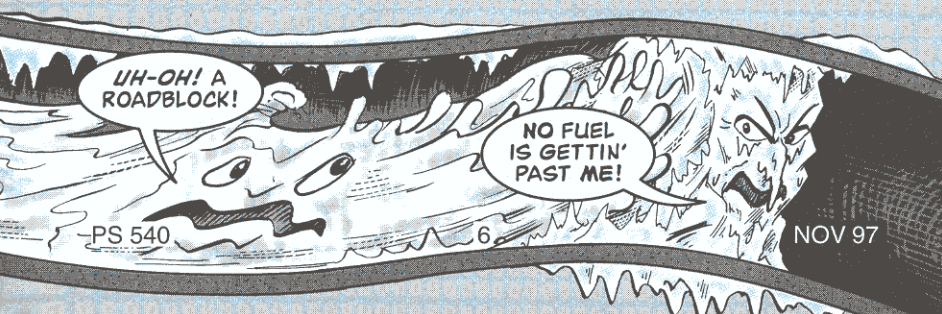
Fuel	Inhibitor
40 gallons	1 pint
30 gallons	3/4 pint
20 gallons	1/2 pint
10 gallons	1/4 pint

Here's the stuff to use:

Diesel fuel inhibitor	
NSN 6850-01-	Size
377-5074	5-gal can
089-5514	55-gal drum

Gasoline inhibitor	
NSN 6810-00-	Size
597-3608	1-gal can
275-6010	5-gal can

JP-8 jet fuel comes with an inhibitor, so don't add any. Jet A-1 fuel does not. Treat it like diesel fuel.



Usage Info Wrapup



Tire chain use is generally ruled by FM 21-305, Manual for the Wheeled Vehicle Driver (Aug 93).

For your specific vehicle, open your -10 TM. Rules found there may not mirror those in the FM. If there's a difference, follow the -10.

Having said that, here are those drafted "exceptions" to the chain rules:

● **M939A1- and M939A2-series 5-ton trucks**—use chains on the intermediate axle only. CTIS doesn't prohibit the use of chains on the intermediate axle.



● **Palletized loading system (PLS)**—use chains only on axles No. 3 and 4. Don't use chains when driving on hard surfaces where there is no wheel slippage. Chains can cause severe component damage under "no-slip" conditions.

Also, set the CTIS to CROSS COUNTRY and proceed at a highway PS 540

speed of 10 mph max or off-highway at 15 mph.



● **HEMTT**—use chains only on both rear axles. On M978 tankers, never use chains when driving on paved surfaces. They could cause sparks.



● **HMMWV**—although TM 9-2320-280-10 says to use chains on all four wheels, you can also use chains on the front wheels as a set, or on the rear wheels as a set. It's OK to use chains on runflat tires, too.

Remember, it's still important to select the right transfer range for driving conditions.

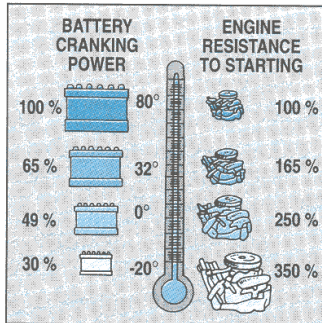


WEAKNESS SHOWS IN THE COLD

Mix cold weather and weak batteries and you're gonna spend a lot of time slave starting or not starting at all.

A fully charged battery loses a third of its cranking power at 32°F. At 0°F, it has less than half its power, and at -20°F, it has only 30 percent.

Making it worse, at -20°F, engines can be 3 1/2 times as hard to turn over as they are at 80°F because the oil is stiff and increases drag on moving parts.



So it should be no surprise that a weak battery can't do the job in the cold.

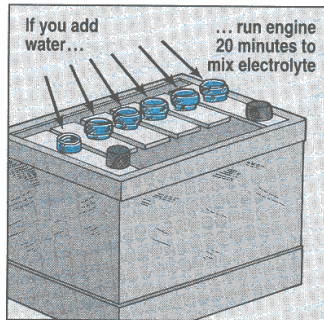
Here's how to determine if your battery is strong enough for the cold.

Make sure you've got a copy of TM 9-6140-200-14, the battery bible.

If you've just added distilled water to a battery, start the vehicle's engine and let it run at fast idle (1,000-1,200 rpm) for at least 20 minutes. That gives the charging system a chance to mix the water and electrolyte. If you don't let 'em mix, you'll be testing water only.

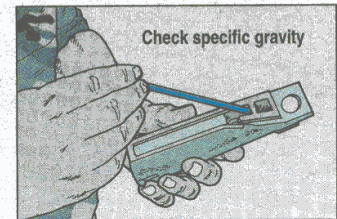


This mixing also helps keep plain water from freezing, saving cracked battery cases.



Eyeball Chapter 3 of the battery pub for the testing procedures. That means using the optical battery/anti-freeze tester in the Common shop sets.

Using the info in Para 3-6 of the battery TM, test the battery's specific gravity. If any cell's specific gravity is less than 1.045, or if there is a difference in specific gravity between cells of more than .025, turn in the battery.



Check specific gravity

Keep in mind, it's a good idea to run the specific gravity test on a "new" battery from supply, too. It could save you from being stranded in the cold.

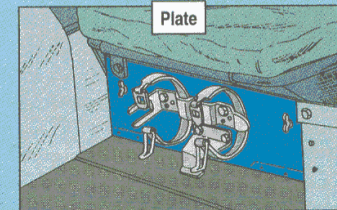
HMMWV . . .

Fire Extinguisher Plate

Finding the metal plate that the HMMWV's fire extinguisher mount attaches to is no easy task.

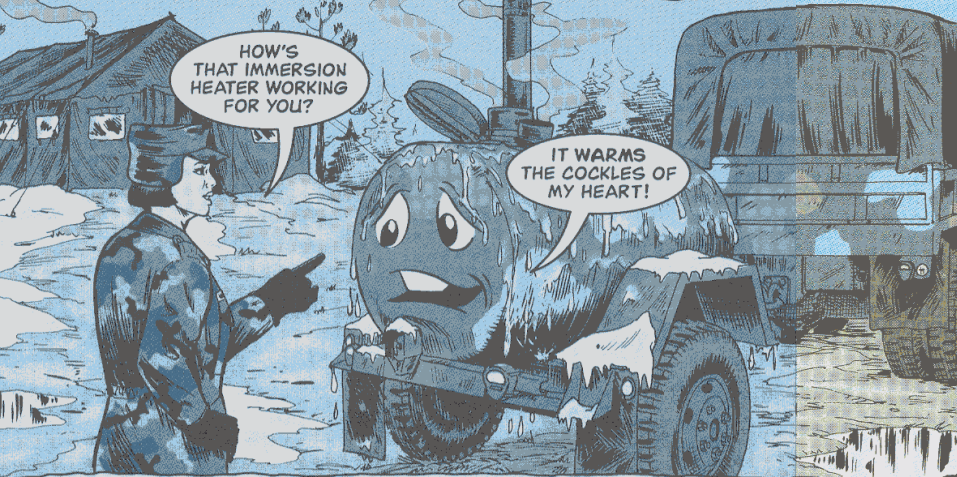
The plate's not identified in the TM figure showing the fire extinguisher and its mount. But it is identified in Fig 164 of TM 9-2320-280-24P-1, left-hand body assembly components.

Item 2, vehicular front seat support, NSN 2540-01-197-5448, is what you need.

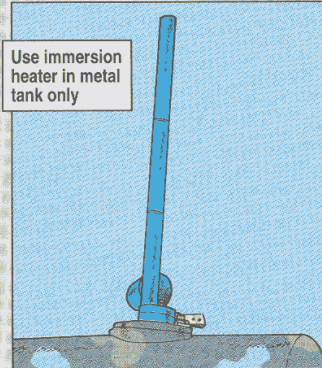


ICE CUBES

NOT NEEDED



Use an immersion heater only in the metal tank. Never use it in the fiberglass tank. Heat will melt the fiberglass.



If you already have an M67 immersion heater, use it. Just follow the instructions on Pages 2-18 through 2-20 of TM 9-2330-267-14&P (Jul 91) to adjust the heater bracket to make it fit the tank.

If you have an M149A2 with a new 400-gal insulated tank, and you operate in arctic conditions, you can use the swingfire heater, NSN 2990-01-202-4128. It'll take an immersion tube, part number 11668949, to make it work.

Order on a DD Form 1348-6 using CAGE 19207 from RIC AKZ.

The best immersion heater for the job is NSN 4540-00-266-6834. It has a steel disk that's used as a cover for the tank and as a support for the heater assembly. The heater's in Chapter 5 of TM 10-4500-200-13.

M129A3 Hub Gasket

NSN 5330-01-280-5827 gets a hub assembly gasket for the M129A3 12-ton semitrailer. The NSN shown for Item 4 in Fig 20 of TM 9-2330-374-14&P gets the wrong gasket.

M871A2 Hand Crank

The hand crank that came with your M871A2 semitrailer may be too short to let you raise and lower the landing legs. If you have clearance or operating problems, order a longer crank on DD Form 1348-6 with PN LG0083-05 and CAGE code 99411 from RIC S9I.

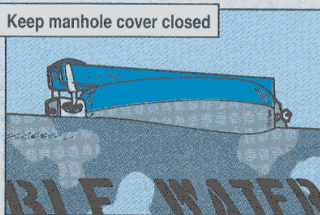
Common sense and preventive maintenance can keep the pipes and faucets on your M149-series or M625 400-gal water trailers from freezing.

Park the water trailer in a shelter, especially if the temperature is below 0°F. A warm tent—where there's a field range operating—is best. If a shelter's not available, cover the trailer with canvas and keep warm air circulating with a Herman-Nelson heater.

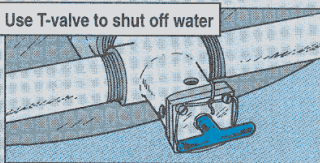
Keep the manhole and filler covers tightened. That keeps the heat in the tank and freezing cold air out.

After each use, drain the pipes by shutting off the water with the main T-valve in front of the tank. Then open all faucets. Prop them open with a piece of wood. If there's no water in the faucets or pipes, they can't freeze.

Keep manhole cover closed



Use T-valve to shut off water

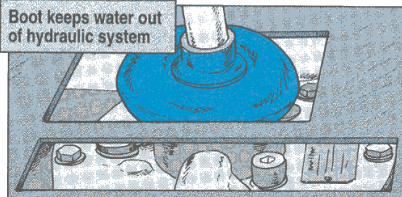


Quick MICLIC Answers

Here are the answers to some MK-155 mine clearing line charge (MICLIC) questions from the field:

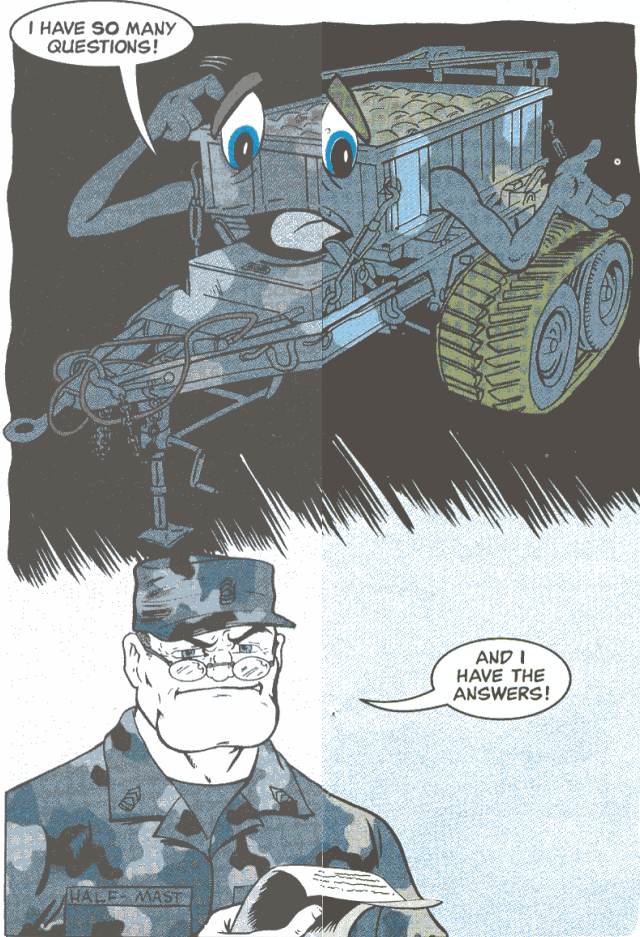
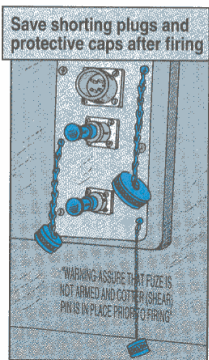
Question: How do we get the boot for the hydraulic pump arm? Without the boot, water gets in the hydraulic system.

Answer: The boot is called protective plug cap, NSN 5340-01-240-7911. Use a clamp, NSN 4730-00-908-3194, to hold the boot in place.



Question: Are there NSNs for the protective caps and shorting plugs that go on the rocket electrical connections on the linear charge box? The plugs let you make a system continuity check. The caps protect the receptacles.

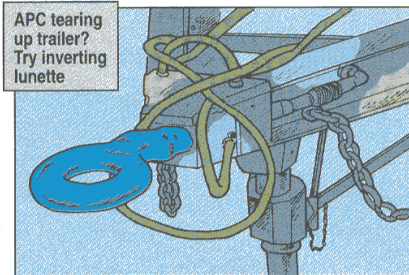
Answer: No. The M58A4/A5 linear demolition charge should come with the protective caps and shorting plugs. If it doesn't, exchange it at the ammo supply point for a charge that does have the caps and plugs. Save the M58 caps and plugs after firing and use them with the M68A2 inert charges.



Question: Is there a longer lunette we can use for towing the MICLIC with an APC? The APC external fuel tanks are shearing the intervehicular cables and ripping off the trailer legs.

Answer: No. TACOM is aware of the problem and is looking for solutions. You might try inverting the lunette. Instructions are on Page 2-58 in TM 9-1375-215-14&P and Pages 2-94 and 2-95 in TM 9-1375-215-13&P.

Also, take it easy driving. Make gradual—not sharp—turns. Avoid dips if at all possible. If you can't avoid a dip, take it slow and easy.



Question: Is there a time limit for how fast the launcher must go into firing position? We have one that takes 20 seconds.

Answer: It should take at least 10 seconds for the launcher to reach firing position—20 seconds is OK. If your launcher is a lot slower, you may have a hydraulic or lubrication problem. Check the hydraulic fluid levels and re-lube the MICLIC according to the LO. Support needs to change the hydraulic fluid yearly.

Question: Where do we find info on adjusting the track?

Answer: See Para 4-34 in TM 9-2330-389-14&P, the trailer TM.

M9 ACE . . .

Engine Compartment Cleanup

Mechanics, the fan shroud inside the ACE's engine compartment makes a convenient shelf for tools and coffee cups.

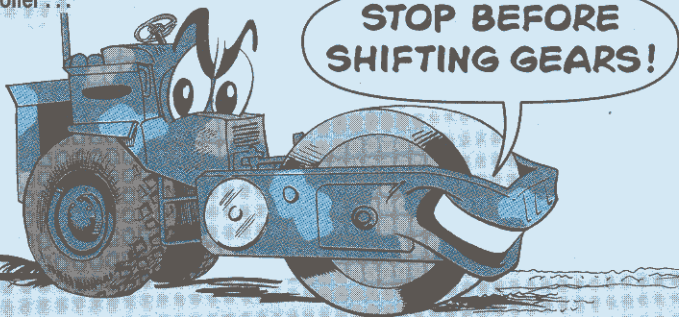
No sweat, unless you leave those items sitting there when you close the hoods.

Anything left behind bounces off the shelf . . . then ends up hitting the fan blades after the engine starts and the vehicle starts moving. Broken fan blades let the engine and transmission overheat.

Before you hop out of the engine compartment, take a quick look to make sure nothing gets left behind. It can make the difference between a completed mission and waiting for help to arrive.



RS28 Tampro Roller . . .



Operators, it's easy to get into the hard and fast mode of shifting gears when operating the RS-28 roller. After all, you're on the move, shifting into forward and reverse as the roller compacts a gravel bedding.

But, every time you shift in or out of gear without stopping, you're putting unnecessary stress on the roller's hydrostatic transmission. That's bound to shorten its life.

Plain and simple: bring your roller to a complete stop before shifting.

HEATER HINTS

TAKE THE TIME NOW TO TREAT YOUR PERSONNEL HEATER RIGHT, OR THE NEXT TIME YOU NEED IT YOU'LL BE LEFT OUT IN THE COLD.



✓ Set the personnel heater on LO when temperatures permit. Using the HI setting warms the vehicle faster, but it gets so hot you'll find yourself turning the heater on and off to stay comfortable. That burns up the flame detector switch and igniter.

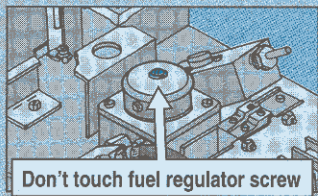
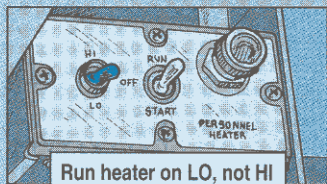
Heating on LO takes longer to warm the vehicle, but you're less likely to turn the heater off before it's run for 5-10 minutes. If it doesn't run that long after startup, the heater floods and won't start next time.

✓ The heater will also flood if you don't purge excess fuel at shutdown. Some vehicles have electrical circuitry that lets the heater run and purge itself even with the master switch off. Others don't. On those, you have to leave the master switch on after shutting down the vehicle. That keeps power flowing to the heater so it can purge excess fuel.

Guessing which type of heater you have will only get you into trouble, so check out your vehicle's -10 TM and follow instructions.

✓ If the heater won't start, call your mechanic. Increasing or decreasing the fuel flow rate yourself won't help. That's why you should forget the screw on top of the fuel regulator. Only support is authorized to adjust the fuel flow rate.

For more information, check out the personnel heater manual, TM 92540-205-24&P (Apr 92).



BOOST PROTECTION AGAINST RUST

In the good old days, coolant in combat and tactical vehicles was replaced every year. So, you never had to worry about freeze and corrosion protection.

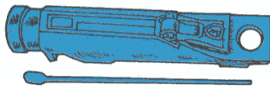
Money's a lot tighter these days and coolant is used a lot longer. So, over time, the coolant's corrosion inhibitor and freeze protection can lose their effectiveness. That's when your cooling system suffers, big time.

Here's how to make sure your coolant is up-to-snuff:

Non-arctic Military Antifreeze

- Check the freeze protection. Use the battery/antifreeze tester, NSN 6630-00-105-1418, from the Common shop sets.

Check freeze protection with tester



CORROSION AND COLD CAN THREATEN YOUR MISSION.

MY COOLANT HAS COOLED TO ICE!



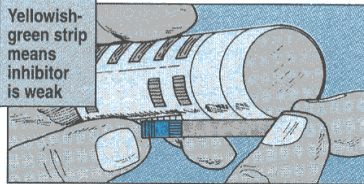
A LITTLE PM WILL GIVE YOUR VEHICLE'S COOLANT THE STRENGTH AND PROTECTION IT NEEDS.

If you're in an area where the temperature falls below 32°F, you'll need freeze protection that exceeds the lowest expected temperature. Always use a 60/40 mix of antifreeze to water.

- Use antifreeze test kit, NSN 6630-01-011-5039, to make sure the reserve alkalinity (corrosion protection) levels are normal.

Dip a test strip into the coolant. A blue strip is OK. A green strip means the coolant is marginal, but is OK to use until the next service. A yellowish-green strip means the coolant needs a shot of inhibitor right away.

Yellowish-green strip means inhibitor is weak

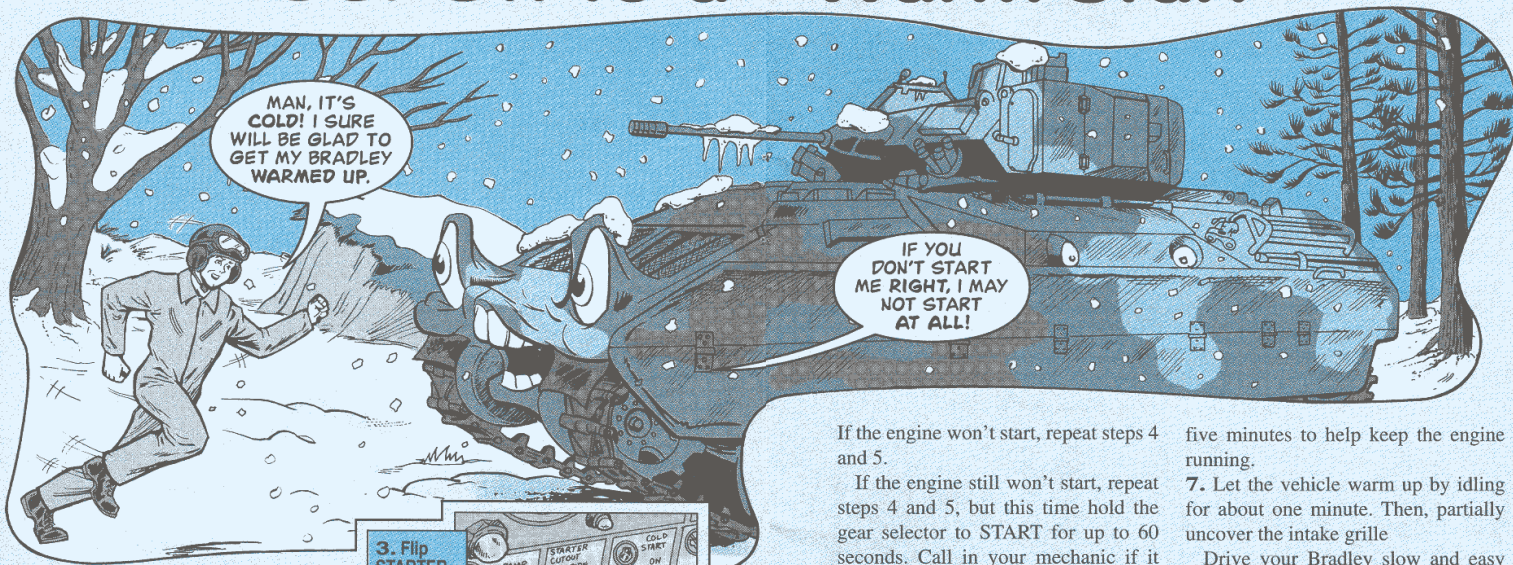


Arctic Antifreeze

Things are a bit different if your vehicle uses arctic antifreeze.

Ordinarily, your vehicle will use full strength arctic antifreeze during the winter months in extremely cold climates (-50°F and lower). When the weather gets warmer, you switch back to non-arctic military antifreeze. The rotation between the two types of antifreeze will ensure your coolant's corrosion protection stays in good shape.

Get Off to a Warm Start

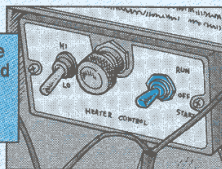


When those cold, north winds start to blow, it takes a little extra know-how to get your Bradley started without damaging the engine.

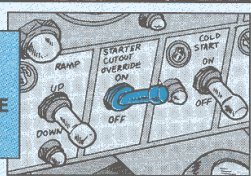
Follow these steps to a smooth start:

1. Unfold the grille cover to expose the exhaust grille only. Leave the intake grille covered.

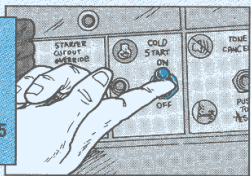
2. Make sure personnel and winterization heaters are turned off



3. Flip STARTER CUTOUT OVERRIDE switch to ON



4. Move COLD START switch to ON and hold for 15 seconds

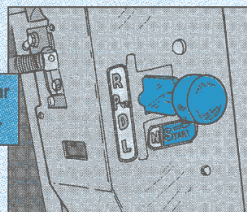


5. With the COLD START switch held to ON, move the gear selector to START. Hold it there until the engine starts, but no longer than 30 seconds.

If the engine won't start, repeat steps 4 and 5.

If the engine still won't start, repeat steps 4 and 5, but this time hold the gear selector to START for up to 60 seconds. Call in your mechanic if it still won't start.

Move gear selector to START



6. If the engine starts, move the STARTER CUTOUT OVERRIDE switch to OFF and release the COLD START switch. If it's **really** cold outside, the COLD START switch can be held in the ON position for up to

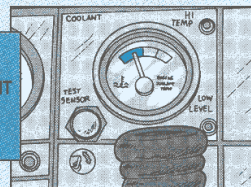
five minutes to help keep the engine running.

7. Let the vehicle warm up by idling for about one minute. Then, partially uncover the intake grille

Drive your Bradley slow and easy for the first mile or so. Running it at high speed right after a cold start can damage the engine.

Keep an eye on the ENGINE COOLANT TEMP gauge. If it moves into the yellow or red zone during operation, completely uncover the intake grille to allow more air flow.

Keep ENGINE COOLANT TEMP gauge in green



Drivers, your SUSV is a rugged, cold-weather machine. To keep it going when you don't want it to stop takes good PM and top-notch operation.

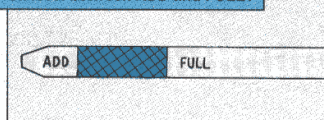
Follow the procedures in TM 9-2320-285-10 and use these cautions to keep your SUSV on the go in the snow:

Before Heading Out

- Use only approved diesel fuel. Never add anything to the fuel to try to enhance performance. All you'll do is burn up pistons and pre-chambers.

- Check the oil. Make sure the oil level is between the ADD and FULL mark on the dipstick once the engine has warmed up. An oil level above the FULL mark can blow seals. Oil levels below ADD can lead to friction damage.

Oil level between ADD and FULL?



- Heed the word on Page 1-9 of the operator's manual about payload limitations. An overloaded vehicle puts too much wear and tear on the engine.

Good Housekeeping

Stop fires like this:

- Make sure the parking brake is released before you drive off. An overheated brake system can cause fires.

Be careful when you're driving while wearing oversized cold-weather footgear. The parking brake is only



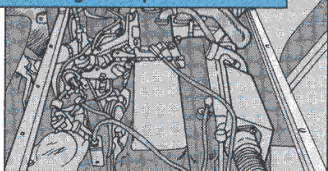
eight inches from the service brake. If you hit the parking brake, it will be partially set. That overheats the brake system, too. You can also hit the service brake and accelerator at the same time.



- Eyeball the engine/transmission compartment for fluid leaks or debris before every operation.

If you find trash, clean it up. If you find leaks, let your mechanic know ASAP. To keep the compartment clean,

Check engine compartment for leaks



steam clean it (or clean with dry-cleaning solvent and water) at every semiannual service.

If a cleaning job can't be done with the powerpack in place, your mechanic will have to pull the pack.

Cold Weather Running

- In sub-zero weather, use the swing-fire heater to preheat the engine before starting. Page 2-35 in the -10 TM tells how.

- Do not use canned ether. Ether can clog or burn fuel injector tips and ruin cylinder heads.

- Warm up your SUSV this way:

1. Idle the engine for five minutes after startup.
2. Then, with the brakes engaged, slowly shift the gear selector twice through all gears.

Shift twice through all gear reductions



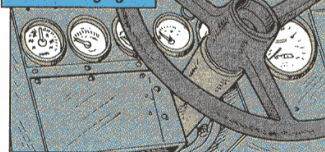
3. Let the SUSV warm up for a total of 15 minutes before heading out.

Shutdown Tips

Let the SUSV engine cool down slowly. Once the engine's off, there is no way to carry away heat. The sudden rise in heat can crack the block, warp a head or valves, or bake the oil until it's not slick enough to lube the bearings.

- Give the engine at least three minutes at idle to cool off before shutdown. Let it idle while you eyeball the gauges, switches and warning lights.

Check gauges and warning lights



- A SUSV with a full payload runs even hotter. Before shutdown, idle the engine at 1400 rpm for 30 seconds, then at 900 rpm for at least three minutes.

Primed for Trouble

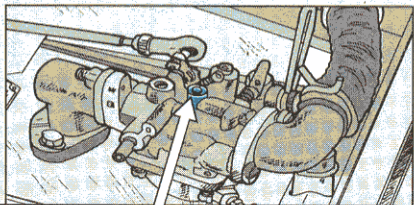
When your M577 command post carrier needs power for commo, the last thing you need is a balky 4.2-KW generator.

If the generator doesn't start right away, a lot of operators try priming the carburetor. They remove the screw on top of

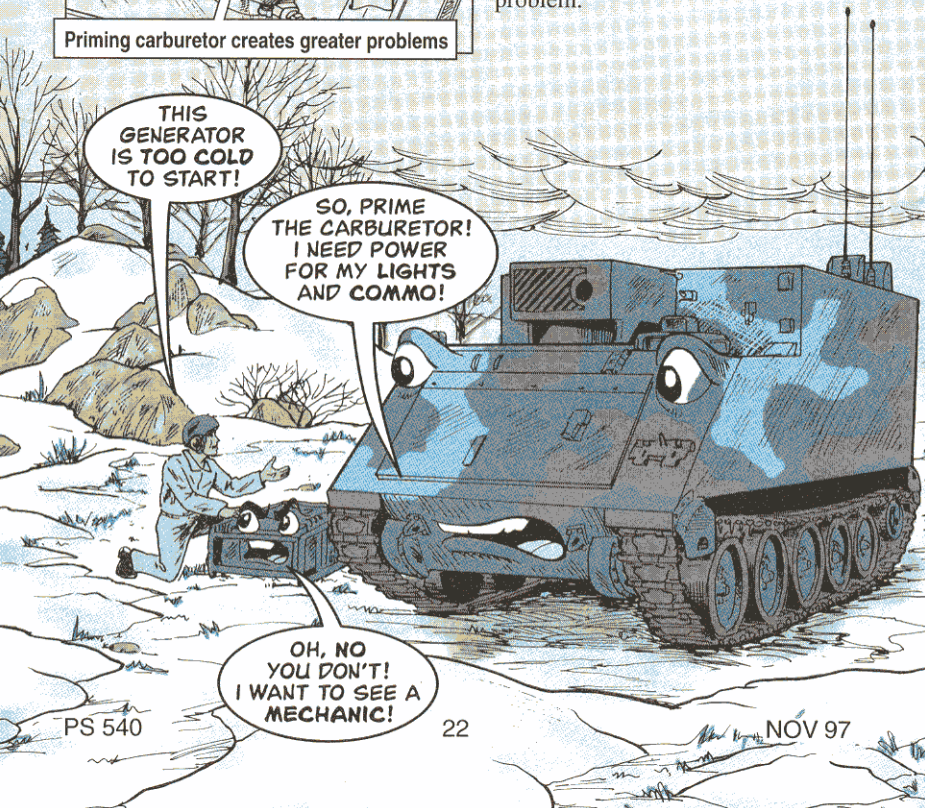
the carburetor and put in a few drops of gas.

Unfortunately, that solution just creates another problem. Priming the carburetor may help start a cold engine, but the excess gas also makes its way into the crankcase. Diluted engine oil means less lubrication.

So, never prime the carburetor. If you've tried both the start switch and the manual starting rope, but the generator still won't start, call in your mechanic. He'll troubleshoot the problem.



Priming carburetor creates greater problems

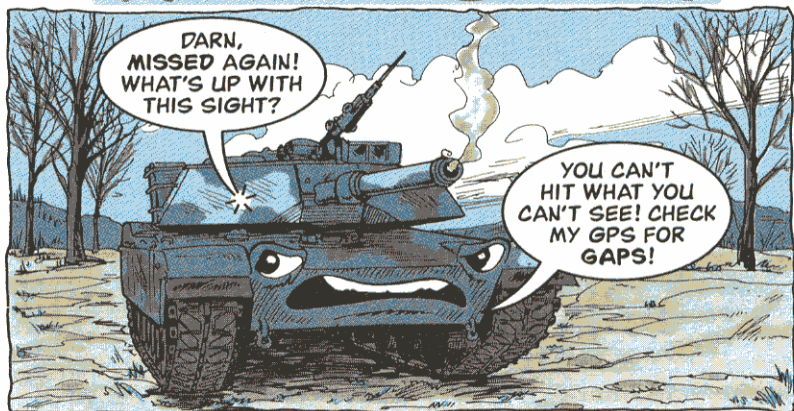


THIS GENERATOR IS TOO COLD TO START!

SO, PRIME THE CARBURETOR! I NEED POWER FOR MY LIGHTS AND COMMO!

OH, NO YOU DON'T! I WANT TO SEE A MECHANIC!

WHAT A SIGHT!

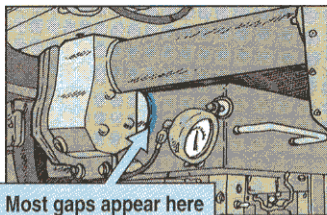


If you tank commanders and gunners can't see clearly through the commander's sight extension, chances are you need a visit to your mechanic instead of the eye doctor.

Just a tiny slip during installation of the sight extension will bump it against the mounting hole on the gunners's primary sight (GPS) body. A hard enough bump will cause chipping. That leaves gaps where the sight extension and GPS body make contact.

Even the tiniest gap can let in enough dust and light to cause fuzzy spots and white streaks. If you can't see the target clearly, your chances of hitting it are pretty slim.

Take a close look at the GPS right now. If you see gaps between the extension and body seal, tell your mechanic. He'll cover 'em with RTV-1473, NSN 8030-01-202-3962.



Most gaps appear here

Coolant System Flushing Kit

Got a problem with rust and sediment buildup in the coolant system of your combat or tactical vehicle? Fix the problem with coolant system flushing kit, NSN 6850-00-598-7328. The kit is authorized by TB 750-651. Instructions come with the kit.

BE SAFE OR SORRY!

The MLRS is an extremely powerful system. If safety procedures are ignored, the MLRS can instantly destroy expensive components...and you.

Be safe with these rules:

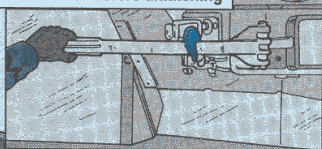
Use Hooks

Never—*ever*—unlatch the launcher latch handles without first connecting the safety hooks. A handle may be under tremendous tension. Without the

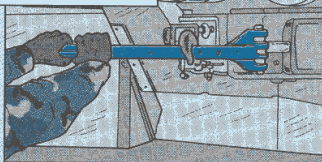
hook in place, the handle can explode out and crush your skull.

Even if the hook is on, it's a good practice after unlatching the handle to push on it. If you can't budge the handle, it's under too much tension. Hit the HOOK DOWN button on the boom controller to relieve the tension. Push on the handle again. It should go back easily. It's now safe to unhook the hook.

Install hook before unlatching



Test handle tension



Remember to hook up the hook in the handle bracket when you're done. If it's left dangling, it catches on the fender when the launcher traverses and causes all sorts of damage.

Secure hook in handle bracket

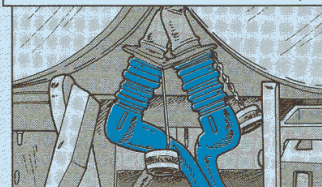


Get a Load on

After loading rockets in the launcher loader module, connect the W19 and W20 umbilical cables to the rocket pod. If the cables are left unconnected or connected to the short no-voltage tester (SNVT), the hoist can be used even with the pods latched in place. That damages the hoist carriage and hold-down latches.

Connect and disconnect the W19 and W20 with their adapters. They prevent bent pins in the expensive cable heads.

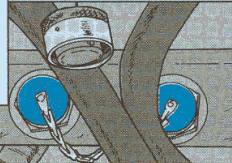
Connect W19 and W20 cables to rocket pod



Keep adapters on connectors at all times

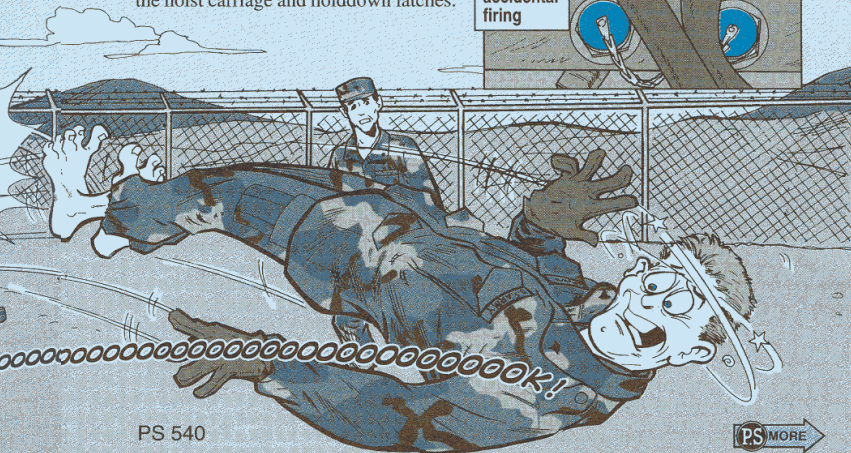
When the connectors aren't hooked up, put on their covers. The covers act as shorting plugs and prevent stray voltage from igniting rockets.

Connector covers prevent accidental firing



DON'T FORGET THE...

...SAFETY HOOK

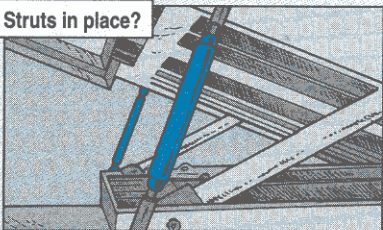


Always Struts

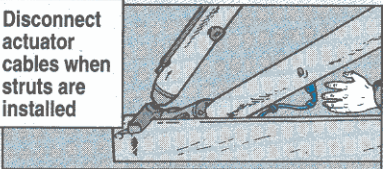
Any time you or your repairman are working under the launcher, put on the struts. That way the launcher can't take a sudden fall and crush someone. Para 3-6 in TM 9-1425-646-10-1 tells how to install the struts. Remember to always use **both** struts. One alone will collapse, and so will the launcher.

After the struts are installed, disconnect the elevation actuator cables. That prevents the launcher from being moved. Crews often forget the struts and try to activate the launcher. That destroys the strut ports or the ball screw actuator support housing.

Struts in place?



Disconnect actuator cables when struts are installed



PS END

Readers Quiz

HERE ARE SOME QUESTIONS ABOUT THE EQUIPMENT FEATURED IN THIS ISSUE OF PS. SEE IF YOU KNOW THE ANSWERS.



WHEELED VEHICLES—What happens when you try to jump a frozen battery? (Pages 2-3)

COMBAT ENGINEERING—Where can you find the procedure for adjusting the MICLIC's track? (Page 12)

COMBAT VEHICLES—What's the best setting for your combat vehicle's personnel heater? (Page 15)

SMALL ARMS—Why is it important to check the headless pin for the trigger assembly on the M249 machine gun? (Page 38)

AVIATION—How clean is clean enough for the chain in the Apache's 30mm gun track assembly? (Pages 44-45)

COMMO—What components of the AN/VIC-1 intercom do operators neglect when they pull PM? (Pages 48-49)

SOLDIER SUPPORT—Name five environmentally compliant solvents (ECS) that clean as well as P-D-680, Types I and II. (Pages 50-51)

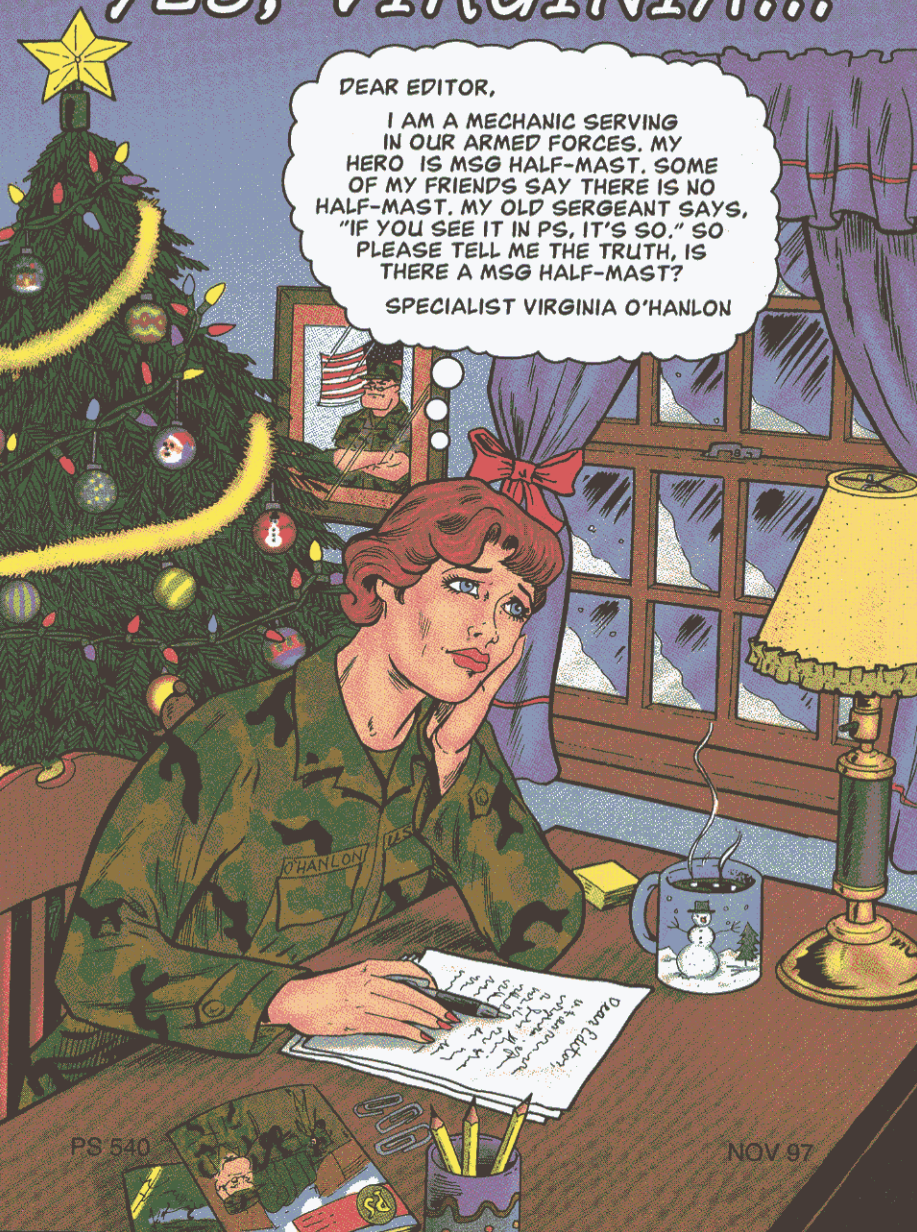
LOGISTICS MANAGEMENT—Name 10 reference publications that PLL clerks need to do their job. (Pages 55-60)


"YES, VIRGINIA..."

DEAR EDITOR,

I AM A MECHANIC SERVING
IN OUR ARMED FORCES. MY
HERO IS MSG HALF-MAST. SOME
OF MY FRIENDS SAY THERE IS NO
HALF-MAST. MY OLD SERGEANT SAYS,
"IF YOU SEE IT IN PS, IT'S SO." SO
PLEASE TELL ME THE TRUTH, IS
THERE A MSG HALF-MAST?

SPECIALIST VIRGINIA O'HANLON






*Dear Specialist O'Hanlon,
Yes, Virginia, there is a
heart and soul of every
preventive maintenance-minded
soldier. He has lived there since
World War II and he will
live there long after you and
I are gone. To see him, just
look around you.*




**SERGEANT,
DO YOU THINK MY
VEHICLE NEEDS SPOT
PAINTING?**

**TOUCH-UP PAINTING
IS DONE TO PREVENT CORROSION,
NOT TO MAKE YOUR EQUIPMENT LOOK
BETTER. IF THE PAINT IS MARRED, BUT
NOT DEEP ENOUGH TO SEE BARE
METAL, YOU DON'T NEED TO PAINT.
SO, DOES YOUR VEHICLE NEED
SPOT PAINTING?**



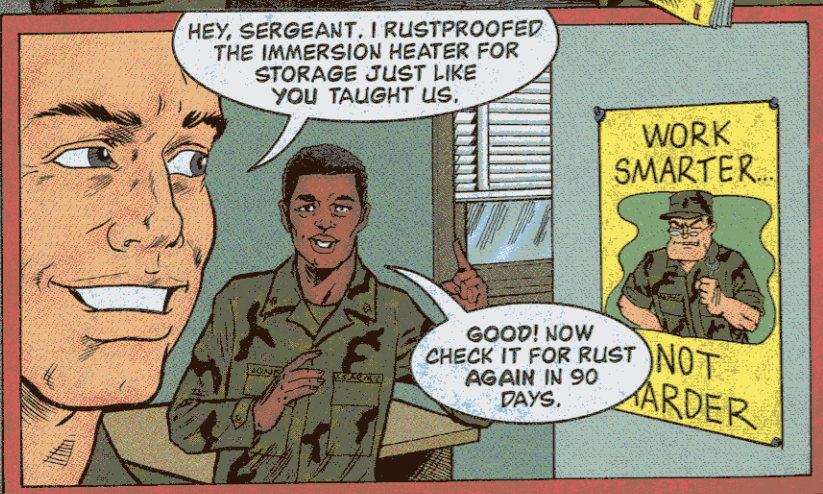
LET'S GET
THAT HOOD UP
AND CHECK THE FAN
SHROUD BRACKETS
FOR CRACKS.

RIGHT, SERGEANT,
JUST LIKE YOU TAUGHT US.
WITHOUT THE FAN SHROUD IN
PLACE THE FAN CAN TAKE A HIT,
WHICH MAY CAUSE OVERHEATING.
SO, CHECK THE SHROUD
BRACKETS OFTEN.



IF DIRT AND MOISTURE GET INTO THE AVENGER'S STANDARD VEHICLE MOUNTED LAUNCHERS, YOU'RE SURE TO HAVE FIRING PROBLEMS.

RIGHT, SERGEANT. THAT'S WHY WE'RE USING THE REAR, FRONT AND PRESSURE GAUGE HOLE CAPS.



HEY, SERGEANT. I RUSTPROOFED THE IMMERSION HEATER FOR STORAGE JUST LIKE YOU TAUGHT US.

GOOD! NOW CHECK IT FOR RUST AGAIN IN 90 DAYS.



WORK SMARTER...
NOT HARDER




D RAT! THAT WRENCH IS A GONER. INTO THE GARBAGE IT GOES.

ONE MINUTE, SOLDIER. MOST NEW AVIATION TOOLS HAVE A LIFETIME OR EXTENDED WARRANTY.

BUT HOW DO I KNOW?

LET'S CHECK THE SUPPLY CATALOG TO SEE IF THIS TOOL IS UNDER WARRANTY AND WHAT TO DO ABOUT IT IF IT IS.



**WE ALREADY
KEEP UP WITH THE
PMCS SCHEDULE FOR
CLEANING AND REPLACING
FILTERS. WHAT ELSE
CAN WE DO?**

**DUST AND DIRT
DON'T PAY ATTENTION
TO SCHEDULES. WATCH
ENGINE PERFORMANCE AND
KEEP AN EYE ON THE AIR
CLEANER CLOGGED
LIGHT BETWEEN
CLEANINGS.**

HEY, SERGEANT. WE'RE
USING A TIRE INFLATION CAGE
JUST LIKE YOU TAUGHT US.

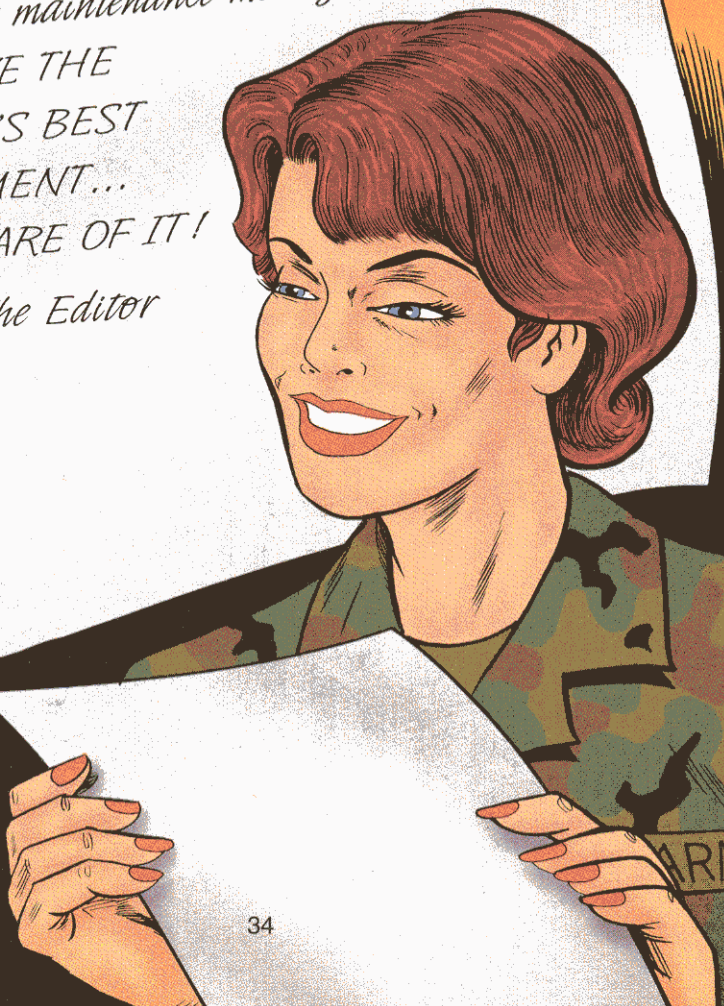
GOOD JOB. IT LOOKS
LIKE YOU MADE YOUR OWN CAGE.
DID YOU GET IT INSPECTED
AND CERTIFIED?

YOU
BET WE
DID!

No Half-Mast? Thank heavens he lives and lives forever. A thousand years from now, Virginia, nay, 10 times 10,000 years from now, he will continue to spread the preventive maintenance message that

WE HAVE THE
WORLD'S BEST
EQUIPMENT...
TAKE CARE OF IT!

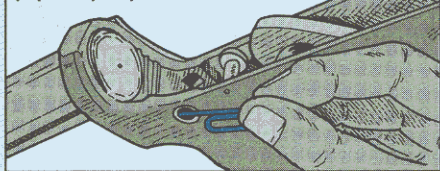
The Editor



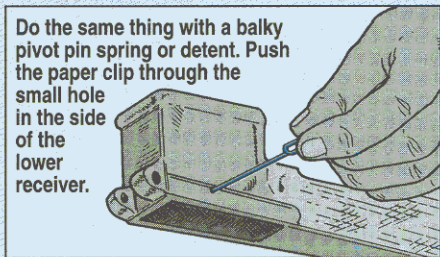
Take Down Stubborn Takedown

Removing or installing stubborn M16 rifle takedown and pivot pin detents and springs is the stuff that sends armorers to early retirement.

If a takedown pin spring or detent won't come out, use a straightened paper clip to push it out.

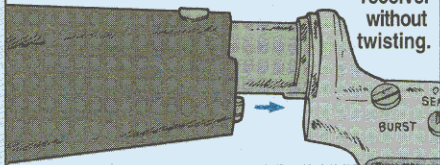


Do the same thing with a balky pivot pin spring or detent. Push the paper clip through the small hole in the side of the lower receiver.



When you reinstall the buttstock, be very careful not to bend the takedown pin's helical spring.

Carefully push the buttstock straight into the receiver without twisting.



If you kink the spring despite your efforts, get a new one, NSN 5360-00-992-6655, and try again. A kinked spring will let the takedown pin work out.

I WILL NOT LET YOUR TAKEDOWN PIN DEFEAT ME!



DON'T GET EXCITED. IT'S NOT AS HARD AS YOU THINK. TRY A PAPERCLIP.

The Buttstock Stops Here

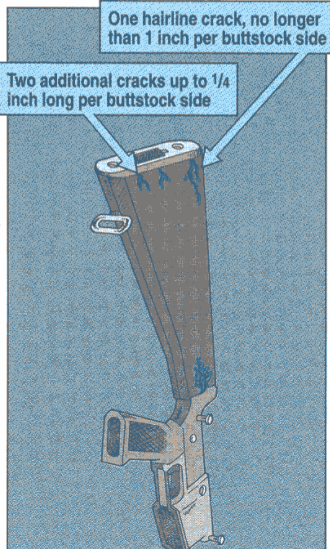
ARMORERS, SPOTTING M16 BUTTSTOCK CRACKS, DECIDING IF THE BUTTSTOCK'S SHOT, REPLACING THE BUTTSTOCK, AND MARKING THE BUTTSTOCK ARE ALL YOUR JOBS. HERE'S SOME INFO TO MAKE THE JOB EASIER...

Cracks Allowed

No chipped-away areas are allowed. Up to three hairline cracks per buttstock side—if starting from the butt plate end—are OK under some conditions:

One hairline crack, no longer than 1 inch per buttstock side

Two additional cracks up to 1/4 inch long per buttstock side



No cracks are allowed in the front end of the buttstock. If you find any cracks there, replace the buttstock



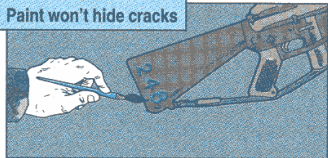
Marking

You're allowed to mark M16s any way you want, as long as you don't scar the buttstock by cutting or stamping it.

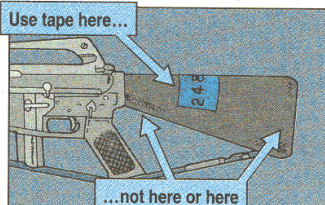
It's a bad idea, though, to use tape at the front or rear of the buttstock. That's where you worry most about cracks, but tape hides them.

The best bet is to paint ID numbers on the buttstock. Paint doesn't hide cracks.

Paint won't hide cracks



If you do use tape, put it on the middle of the buttstock where cracks are rare.

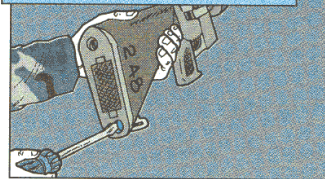


When you replace a buttstock, take it easy with the butt plate screws. Just one turn too many cracks the butt plate or distorts the liner.

Turn the screws until you feel resistance. Make one more quarter turn.

Stop. Remember, any time the buttcap screw, NSN 5305-01-147-8585, is removed, its nylon insert is ruined and the screw must be replaced.

Turn screws until resistance is felt, then make only one more quarter turn



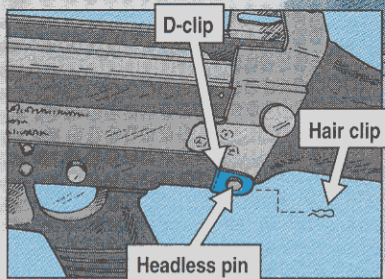
You can save money and buttstocks by drilling on something besides concrete. M16 buttstocks aren't made to be slammed against concrete.

Run Down Runaways

If the M249 machine gun's trigger assembly works loose from the receiver, you've got a runaway gun. The trigger assembly can easily work loose if the receiver's headless, grooved pin is loose.

Armorers, keep the pin tight with a few quick checks.

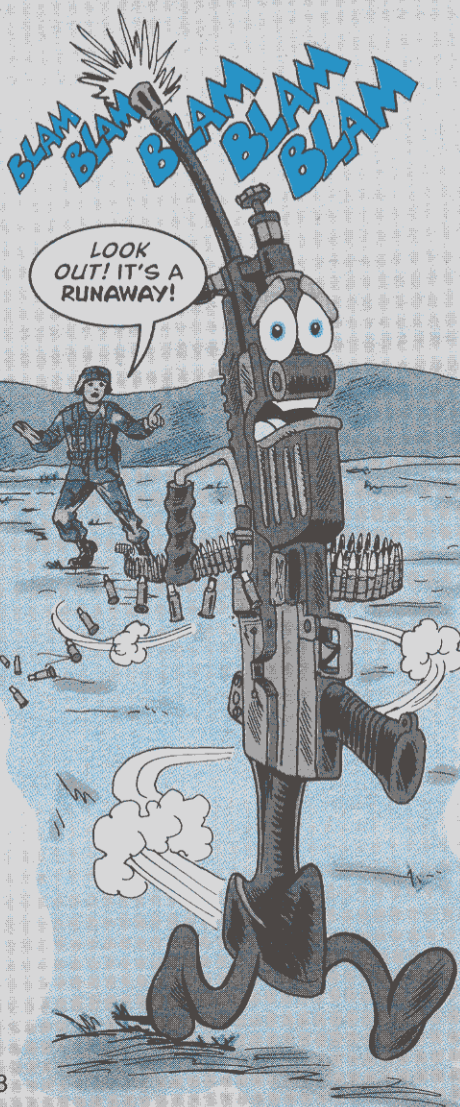
Look for bent, broken, or missing hair clips for the headless pin. Make sure the clips are installed so they fit in the pin's groove. The D-clip's closed end should point toward the barrel and fit tight on the front of the receiver tang.



Even if everything looks OK, give the headless pin a tug. If you feel any looseness, replace the hair clips, NSN 5340-01-128-5607.

Hair clips cost less than \$1 each, so any time you remove the headless pin, put on new clips to ensure the headless pin stays tight. Order extra clips so you'll have them handy.

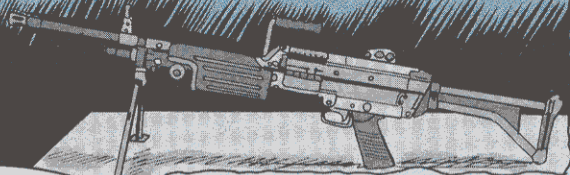
Tell your gunners to leave the hair and D-clips alone. There is no need to remove them for cleaning and lubing.



New Parts Are Here



NEW PARTS ARE AVAILABLE THAT INCREASE THE M249 MACHINE GUN'S EFFECTIVENESS.

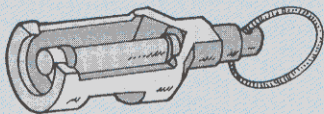


-10 authorizes six magazines for each gun. Order additional magazines with NSN 1005-01-334-1507. Loading instructions for the magazine begin on Page 2-41 of Change 1.

Blank Firing Attachment (BFA)

The new BFA is designed specifically for the M249. It's being free-issued on a one-per-gun basis. If you need extras or replacements, order them with NSN 1005-21-900-9739. Change 1 (Nov 96) to TM 9-1005-201-10 adds the BFA to the TM's additional authorization list (AAL). Installation instructions begin on Page 2-42.12 in Change 1.

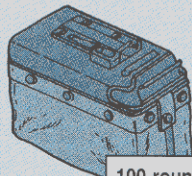
BFA



100-round Assault Pack

The new magazine is reusable and has sides made of camouflaged canvas. It doesn't replace the 200-round case and it's not authorized for the M249's light machine gun mode. Two magazines are being free-issued for each M249 authorized for use in the automatic rifle mode. Change 1 to the

PS 540

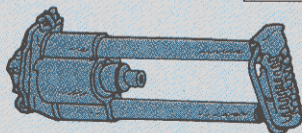


100-round assault pack

M5 Collapsible Buttstock

The new buttstock shortens the M249 by 5³/₄ inches and makes the gun easier to carry. It is being free-issued to airborne, air assault, and special forces units. M5 installation instructions begin on Page 2-42.2 in Change 1 to the 10. Maintenance and repair instructions are in Change 6 to TM 9-1005-201-23&P. Order replacement buttstocks with NSN 1005-01-411 1264.

M5 buttstock



Cold Weather Protection

Doing flightline maintenance on a cold-soaked bird in the whipping wind and swirling snow is no fun, but often necessary.

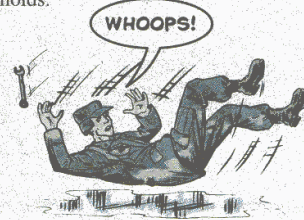


TAKE SOME OF THE STING OUT OF OLD MAN WINTER BY PROTECTING YOURSELF AND YOUR AIRCRAFT.



H-HURRY UP! I'M TURNING INTO A GLACIER HERE!

Check the soles of your boots. If the tread is worn, it's a good time for a new pair. Winter weather makes many surfaces slippery. That includes roads and walkways, as well as aircraft footholds.



Protect Your Equipment

Be careful not to exceed standard or published torques on bolts, nuts, cables or similar items when making repairs on equipment exposed to cold. Metal can become a bit more brittle in cold weather and snap while you're working on it.

INSPECT THE ENTIRE AIRCRAFT FOR SNOW, FROST OR ICE. ICE CAN FORM ON INSIDE SURFACES AS WELL AS ON THE OUTSIDE. CHECK VENTS, DRAINS AND BREATHERS.



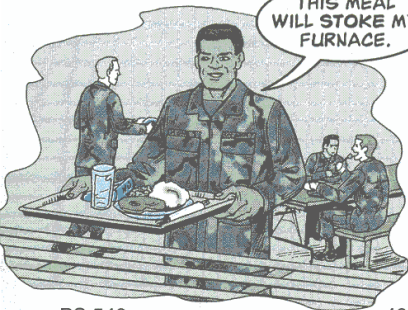
All deicing fluids are toxic. Get training on what protection you need to wear, how to safely handle the fluids and how to safely dispose of them.



Protect Yourself

Before you hit that flightline, feed your face. Food in your belly turns your body's furnace on and that internal warmth will help you survive the external cold.

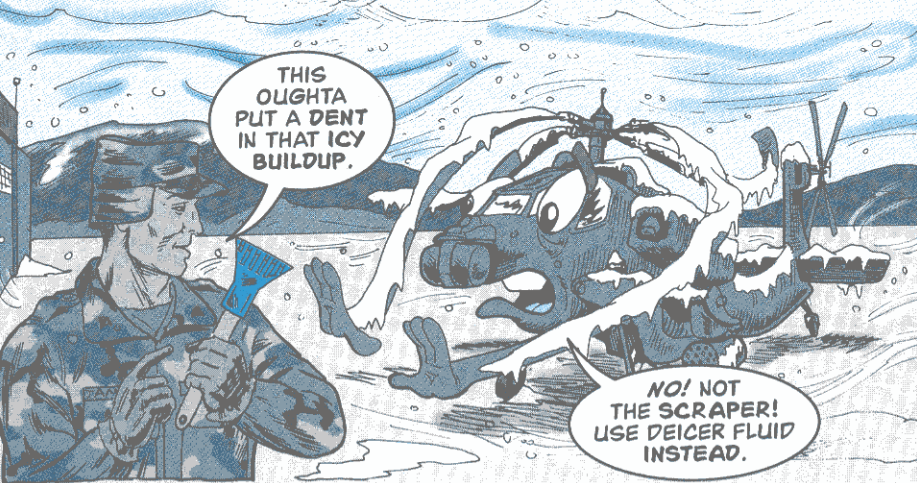
THIS MEAL WILL STOKE MY FURNACE.



Dress like a five-minute maintenance job is going to take an hour. The key to winter dressing is to wear layers of clothing. Layers not only let you add and subtract, but the air between them insulates against the cold.

WHADDAYA THINK?
TOO MANY LAYERS?

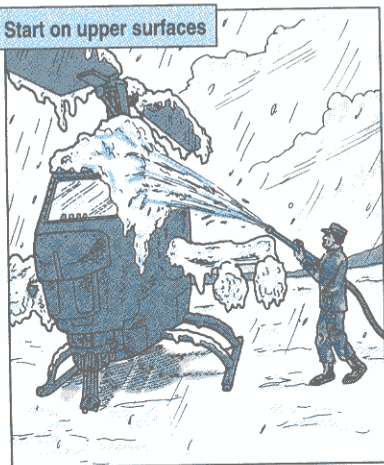




Don't use scrapers, picks or other sharp objects to free your bird from ice and snow. Use anti-ice and deice fluids like your TMs tell you. Start on upper surfaces and work your way down.

areas, mop it up immediately. To limit your need to deice, use aircraft covers.

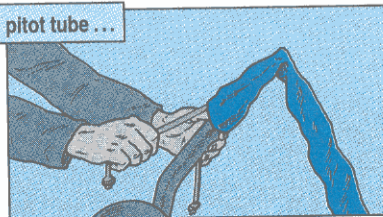
Start on upper surfaces



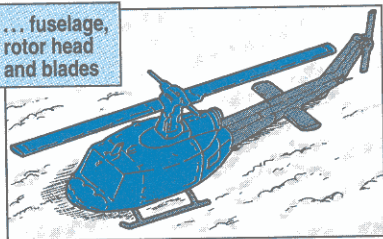
Use covers on air inlet ...



pitot tube ...



... fuselage, rotor head and blades



As the melting starts, watch where the water flows. Keep it away from areas where freezing might restrict movement of light controls and air flow. When water flows toward any of these

Aerial Recovery ...

Nylon Out, Polyester On

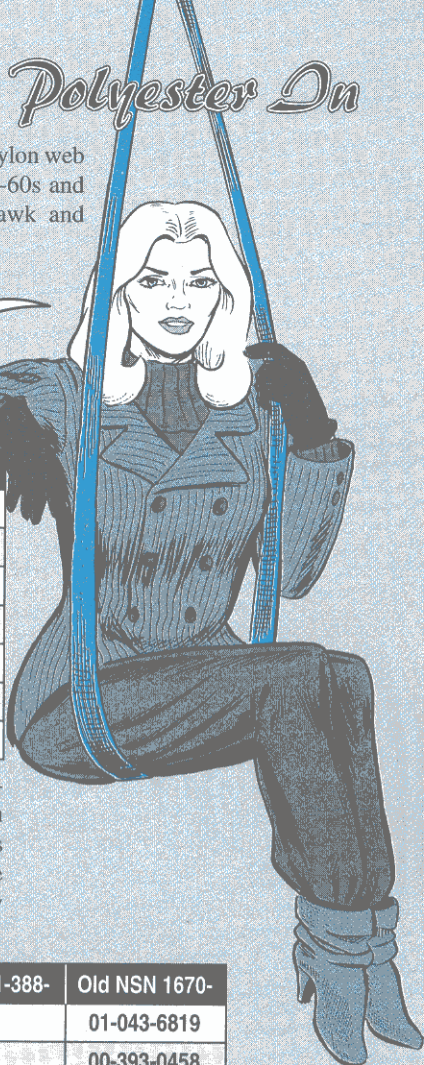
Polyester roundslings are safer than nylon web straps and sling legs for hoisting UH-60s and for aerial recovery of the Black Hawk and other aircraft.

**YOU CAN
GET REPLACEMENT
POLYESTER ROUNDSLINGS
FOR THE I-UMARK RECOVERY
KIT, NSN 1670-01-414-8114,
WITH THESE NSNs...**

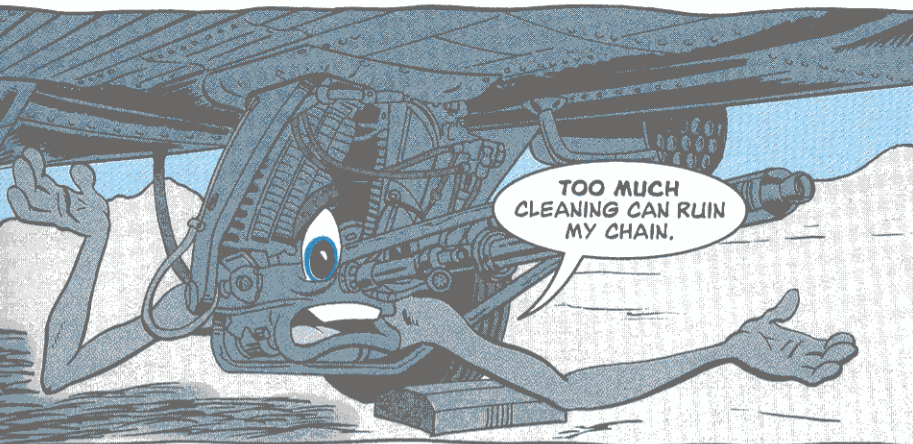
Length/capacity	NSN 1670-01-388-
8-ft, 5,300-lb	6789
17-ft, 5,300-lb	3845
8-ft, 8,400-lb	8480
17-ft, 8,400-lb	8479
30-ft, 13,200-lb	3917
65-ft, 21,200-lb	3901
70-ft, 21,200-lb	3965

If you're still using the ARK recovery kit, NSN 1670-00-264-8941, you can replace the flat, nylon web straps with polyester roundslings. Here are the available slings and what they replaced:

Sling	New NSN 1670-01-388-	Old NSN 1670-
Rotor head sling	6789	01-043-6819
Bellyband strap	3845	00-393-0458
Hoisting assy strap	8480	00-393-0466
UH-60 pendant	8479	00-391-8493
CH-47 pendant	3917	00-391-8495
Bellyband assy	3901	00-574-8051
Bellyband assy	3965	00-574-8051



Clean the Chain, Lube the Rails



Some of you are giving your Apache's 30mm gun too much of a good thing. Over-cleaning is causing a problem with the chain in the gun's track assembly.

When the chain gets dirty, some of you are tackling the grit with P-D-680 and other cleaning fluids. Soon the chain shines, but the cleaning fluid has removed the hot-dipped lube and preservative that keeps the chain in shape.

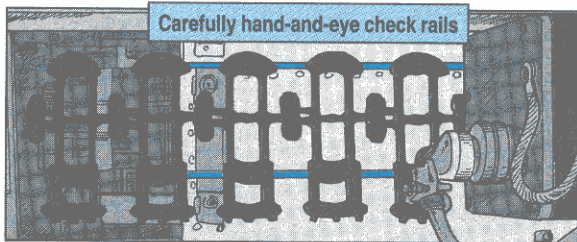
That means you'll soon be filling out a supply request for a new chain!

So keep the chain clean, but only with a dry, lint-free cloth. Leave the cleaning fluid on the shelf where it belongs.

During assembly of the gun, generously lubricate the chain with grease, MIL-G-21164. Use an acid swabbing brush, NSN 7920-00-514-2417.

Lube the ammunition handling system rails, too, with a light coat of GIA, MIL-G-23827, before firing and semi-annually. Coat more often if you think it needs it.

Do a hand-and-eye check on the rails as you do other work on the ammo conveyor assembly. But be careful when you feel the rails. Due to wear they can become razor sharp and slice your finger.



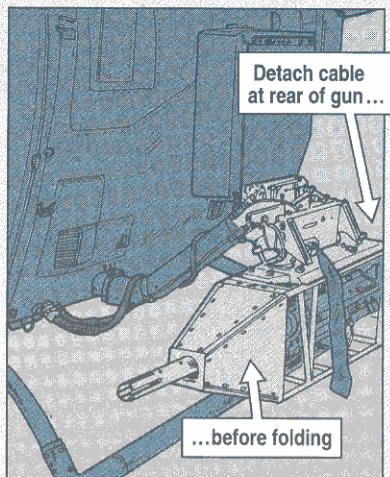
You've Got To Know How to Fold 'em

Some Kiowa Warrior's .50-cal guns are suffering from cable strain. A strained cable will soon become a damaged cable.

The problem starts when you fold the universal weapon pylon without removing the .50-cal gun and detaching the weapon's umbilical cable. The cable is just not long enough to cover the added distance created by a folded-up gun.

To make matters worse, the cable is usually wrapped around the pylon mounting arm to keep it out of harm's way. This wrap makes the cable even shorter!

The solution is simple. **Before you fold, disconnect the power cable.**



Mirror Image

On the Kiowa, the AN/ALQ-144 countermeasure set sits smack-dab in the middle of the engine exhaust flow.

One long trip and the mirrors are covered with soot. Soot-covered mirrors overheat the ALQ-144 and the mirrors crack. Now the ALQ-144 is down, your mission is scrubbed, and Uncle Sam is out a chunk of change.

To help prevent this damage, clean the mirrors before takeoff and after landing. Follow the cleaning info in your TM. Don't think a short flight saves you from cleaning. Even a short flight coats the mirrors in fine soot, laying the foundation for later buildup.



Slick Tricks

GET
THE KNACK,
JACK!



There's a knack to adding just the right amount of oil to the antenna drive gear box on your AN/TPN-18A radar set.

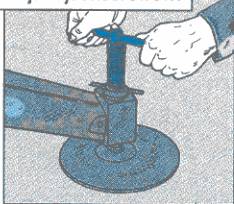
Too much oil in the gear box creates pressure that can force an oil leak or blow out a seal during operations. Too little oil can't protect against friction.

To add just the right amount, follow these slick tricks of the oil business:

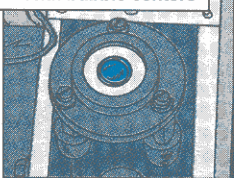
- Make sure the radar set is level.

Adjust the leveling jackscrews on the set's legs until the bubble in the level on the elevation antenna drive is dead center.

Adjust jackscrews...

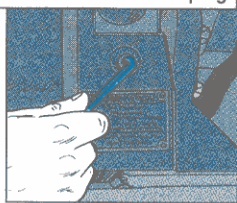


...until bubble centers



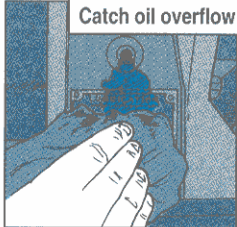
- Use a hex wrench from your TK-101 tool kit to remove the overflow plug from the gear box. Unscrew the vent cap.

Remove oil overflow plug



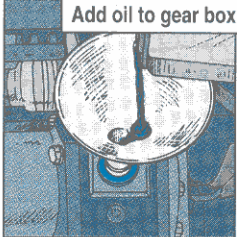
- Hold a rag under the overflow port to catch any oil that spills out.

Catch oil overflow



- Add oil, NSN 9150-00-223-4129, to the gear box until it starts running out of the overflow port. It'll stop in a few moments.

Add oil to gear box



- Insert the overflow plug and tighten it.

Screw in the vent cap with the side that says VENT facing you. That helps equalize pressure inside the gear box, preventing blown seals. Use the ringed gasket along with the cap to prevent leaks.

Repair Parts Update

A FEW OF THE PARTS FOR THE RL-39 REEL HAVE GONE TERMINAL AND BEEN REPLACED. HERE'S THE UPDATED UNIT-LEVEL PARTS LIST FOR THE REEL...



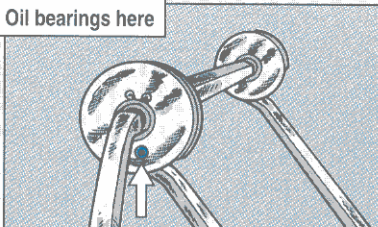
Item	NSN
Crank and handle	5340-01-142-9478
Handle	3895-01-135-2538
Cotter pin	5315-00-842-3044
Sling strap	8465-00-269-0682

Here are some other parts that your support can replace for you:

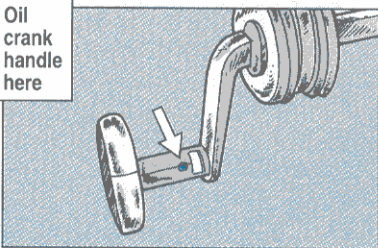
Item	NSN
Bearing	3895-01-133-9995
Housing assembly (with bearing)	5805-01-151-9929
Stop	3895-01-134-0308
Plate assembly (with stop)	3895-01-151-9928
Retaining ring	5365-00-803-7306

Once you have the reel in good shape, maintain it. Keep it lubed with oil, NSN 9150-00-273-2389, unless you have the new reel that has nylon bearings. (Including some reels on contract DAAB07-91-C-H072 and all reels on later contracts). They don't need oil.

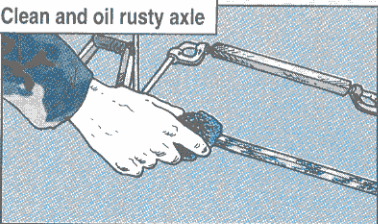
Oil bearings here



Oil crank handle here

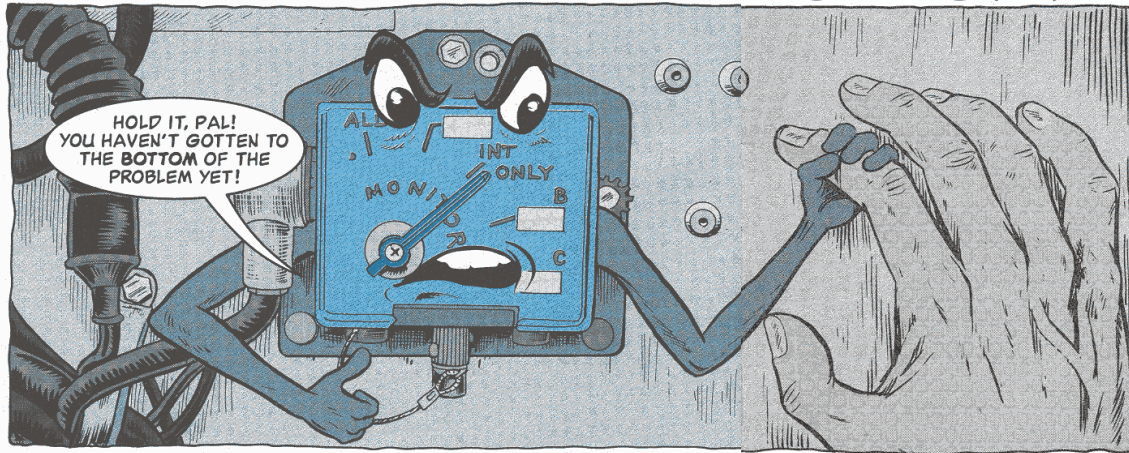


Clean and oil rusty axle



Keep it rust-free with steel wool, NSN 5350-00-242-4404, or fine sandpaper, NSN 5350-00-193-7211.

START AT THE BOTTOM

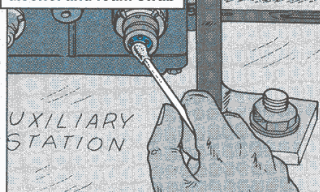


The bottom is a good place to start when it comes to operator PM for your AN/VIC-1 intercom control boxes.

The audio connectors on the bottom of each box are neglected because they're out of sight. But they need PM, too.

Look at the connectors for dirt and corrosion. If you find any, wipe it off with a foam swab, NSN 7045-01-154-

Clean connectors with alcohol and foam swab



1317, dampened in isopropyl alcohol, NSN 6810-00-753-4993. Then apply a light coat of silicone compound, NSN 6850-00-880-7616, to the pins and threads. That'll help prevent corrosion.

Silicone also makes handset or headset connections tight and moisture-proof. Just lightly lube the cable connector's O-ring. Be careful because too much lube can insulate the connection.

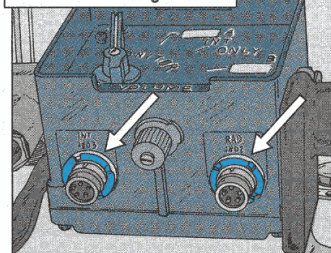
Vibration loosens the audio connector's locknuts. A loose locknut allows the connector to turn when you attach a cable. When the connector turns, it twists the wiring inside. Sooner or later the wiring breaks.

Snug up loose locknuts with the spanner wrench set in the TK-101 electronic tool kit. If locknuts are missing,

ask unit maintenance to replace them with NSN 5310-01-062-6473.

It's your job to tighten locknuts on the power and commo cable connectors on all control boxes and the AM-1780 audio frequency amplifier. But it's unit maintenance's job to replace missing locknuts.

Locknuts loose? Tighten 'em!



Oil Filtering Changes

When it comes time to change the oil filter elements on small generators, you order spin-on filter, NSN 2940-00-832-6054 or NSN 2940-00-586-4792.

That's because there are no more cartridge-type elements available—and your 6-, 10-, 14- and 20-hp Mil Std engines have been converted to accept the spin-on filters.

If you still have a small generator with a cartridge-type element, you need to convert it ASAP. Here's what you need:

Gasket, NSN
5330-00-073-3038



Cover assembly, NSN
2940-01-264-2105



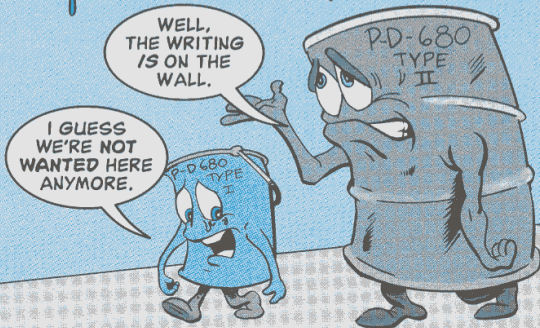
Pipe nipple, NSN
4730-01-198-8624



You also know that on some generators, the 5 1/2-in to 5 7/8-in long filter, NSN 2940-00-832-6054, is too long or crowds the engine muffler. In that case, you use the 4 9/32-in long filter, NSN 2940-00-586-4792.

Larger Mil Std or diesel engines on big generators come with spin-on filters as original equipment.

P-D-680's Out the Door



The handwriting is on the wall and you're not going to wash it off with P-D-680, Types I or II.

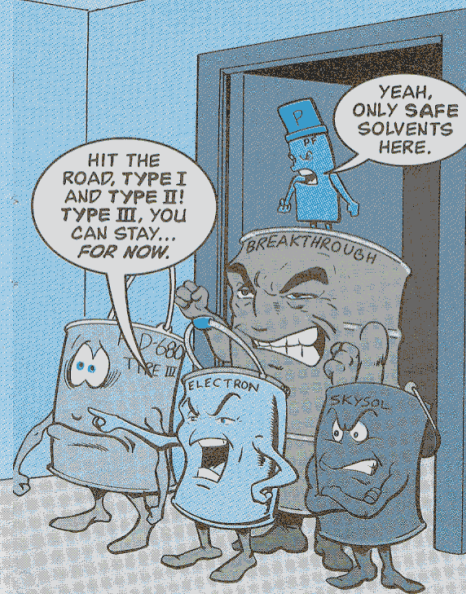
P-D-680 dry-cleaning solvent, a staple cleaner in the Army's inventory for many years, is going the way of all environmentally hazardous solvents—out the door. P-D-680 is hazardous waste, it's flammable and it's toxic. Three strikes and you're out!

Marching in the door are five environmentally compliant solvents (ECS) that clean as well as P-D-680, Types I and II.

Here they are in 5-gal cans and 55-gal drums:

Product	NSN (5-gal)	NSN (55-gal)
Breakthrough	6850-01-378-0679	6850-01-378-0666
Electron 296	6850-01-375-5553	6850-01-375-5555
Skysol 100	6850-01-381-4423	6850-01-381-4401
Skysol	6850-01-381-4420	6850-01-381-4404
PF	7930-01-328-2030	7930-01-328-4058

Breakthrough is odorless. The rest have a lemon odor.



The cheapest of the lot is PF. It also comes in several other sizes:

Container/Size	NSN
Can, aerosol (12/case)	7930-01-398-1026
Bottle, pint (12/case)	7930-01-328-5959
Bottle, quart (12/case)	7930-01-330-0187
Bottle, gallon (6/case)	7930-01-328-5960
Can, 3-gal	7930-01-398-1027
Bottle, spray (12/case)	8125-01-336-2854

Type III OK For Now

If your TM calls for you to use P-D-680, Type III, you can continue to use it. It's more environmentally compliant, has less odor and is not as flammable as Type I or II. Order a 5-gal can of P-D-680, Type III, with NSN 6850-01-331-3349. NSN 6850-01-331-3350 brings a 55-gal drum.

But Type III will be out the door eventually, too. An approved substitute for it is already available. It's called 134 Hi-Solv. Get five gallons with NSN 6850-01-277-0595; a 55-gal drum is NSN 6850-01-244-3207.

These cleaners can be used on weapons, ground vehicles, support equipment and aviation equipment.

They are the only ones authorized at this time to replace P-D-680 Types I and II. So if you're using something else, stop.

Some of you—with the best of intentions—have been substituting for P-D-680 with water-based, enzyme solvents. But they do not provide the corrosion protection nor do the degreasing job needed.

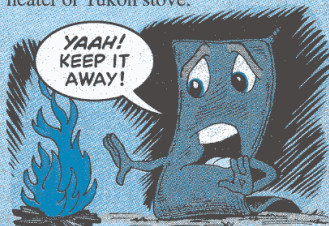
So your commander to give you the OK to stop using P-D-680 and start using some of these substitutes.

zzZZZleep a Little Easier

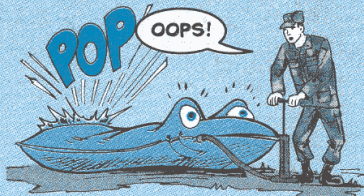


Here's how to keep your mat in good shape, and your backside nice and warm:

zzZ Keep the mat away from open fires. Never use it as a pad under your camp heater or Yukon stove.



zzZ Never inflate the mat with a pump or other device. Over-inflation can pop the mat like an overstretched balloon.



zzZ Never leave the mat inflated in a vehicle on a hot day. The air inside the mat expands as it gets hotter. That could cause a rupture.

zzZ Open the mat valve before boarding an aircraft. That allows for changes in atmospheric pressure that could otherwise rupture the mat.

zzZ Don't expose the mat to continuous sunlight for days at a time. The mat's color will fade and the mat may lose some of its waterproofing properties.

a Little Easier



zzZ Pick up any thorns, splinters or other sharp objects on the ground before using the mat.

If the mat gets punctured, a piece of duct tape makes a good field fix. When you return from the field, use the repair kit that comes with the mat for a more permanent fix.

For extra protection, use your shelter half or poncho as a ground cover under the mat. That'll also keep the mat clean and dry.

Cleaning

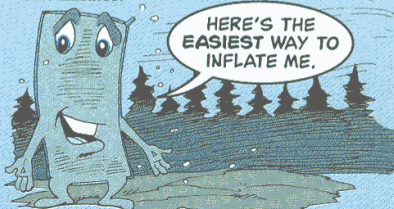
Immediately remove any strong solvents, oils, or insect repellents that are spilled on the mat. General purpose detergent, NSN 7930-00-357-7386, and a clean rag will do the job. For tougher stains, use a soft bristle brush with the detergent.

You can also immerse the mat in warm, soapy water for cleaning. Just make sure you close the valve first.

Rinse the mat with warm water and let it air dry thoroughly before rolling it up or storing it.

Cold Temperature Inflation

The insulation qualities of the mat make it ideal for use in extreme temperatures (-40°F). However, the colder it is, the slower the foam inside the mat inflates.



1. Carry the mat in your pack next to your body or unroll the mat and lie down on it for a few minutes before inflation. Your body heat will warm the foam, allowing it to inflate quicker.

2. Open the valve and let the mat inflate as much as possible.

3. Close the valve, fold the mat two or three times and sit on it. Your weight stretches the foam, increasing its ability to self-inflate.

4. Open the valve and let the mattress fully inflate.

If you're going to be sleeping on snow, over-inflate the mat a bit. Blow an extra breath into the mat after it self-inflates.

The mat will be a little firmer, but the added air increases the loft of the foam and provides better insulation. As the air in the mat cools, it also contracts. The extra air will compensate for that.

A long night in the field will seem even longer if you haven't taken good care of your self-inflating sleeping mat, NSN 8465-01-393-6515.

The self-inflating mat replaces the old, green polypad mat. But one thing has not changed—PM.

A poorly maintained mat won't provide enough insulation between you and the ground. Body heat leeches away and you wake up half-frozen—if you get to sleep at all.

When subfreezing temperatures are the norm for several weeks, stop using breath inflation.

Condensation from your breath will accumulate inside the valve and form an ice plug. The mat can't be inflated or deflated. Ice can also form inside the mat and tear the foam core.

Deflation

The quickest and easiest way to deflate the mat is to open the valve, fold the mat over two or three times, and then sit on it. When the flow of air stops, close the valve.

Next, unfold the mat and roll it up either full width or by folding it one time along its length first. As the last bit of air is forced forward, open the valve to let it escape. Close the valve when the mat is completely rolled.

Use a piece of 550 cord, NSN 4020-00-240-2146, or a standard cargo strap, NSN 8465-00-001-6477, to secure the rolled-up mat. If you roll the mat full

width, it can be secured under the two straps at the top of your ALICE pack.

Storage

zZZ Leave the mat unrolled for long time storage. The foam inside the mat "remembers" the shape it holds for long periods of time.

zZZ Leave the valve open. That lets moisture evaporate from inside the mat.

zZZ Allow wet mats to air dry thoroughly before storage. That prevents mold and mildew damage.



Arctic Mitten Set . . .

Liner Replacements

DON'T WASTE MONEY BUYING NEW MITTENS. GET NEW LINERS INSTEAD WITH THESE NSNS...

The nylon liners in your arctic mitten set, NSN 8415-00-782-6715 through -6717, can wear out faster than the mittens themselves.

NSN 8415-01-323-	Size
2174	Small
2175	Medium
2176	Large

A new drawstring harness for the mittens comes with NSN 8415-01-323-2177.


NOV 97

ULLS Well That Ends Well

The Unit Level Logistics System (ULLS) has been around for several years, but lots of folks, including some commanders, still don't fully understand it.



HERE ARE SOME QUESTIONS YOU HEAR OVER AND OVER.



HOW OFTEN DO YOU GET A RECONCILIATION LISTING FROM YOUR SUPPORTING SSA? WHAT DO YOU DO WITH IT? HOW LONG DO YOU KEEP THEM?

Your Supply Support Activity (SSA) probably provides a reconciliation listing every two weeks. If your SSA is not yet on Standard Army Retail Supply System-Objective (SARSS-O), the listing is produced by Direct Support Unit Standard Supply System (DS4) and probably comes to you through your SSA on a floppy disk. If your SSA is on SARSS-O, the SSA produces the reconciliation. It comes in document number sequence.

Be sure that each new status and receipt has been posted before comparing the reconciliation listing to the ULLS Document Control Register (DCR).


The first thing you should do with the reconciliation listing is check each Non-Mission Capable Supply (NMCS) request against the ULLS-G Non-Mission Capable Report. If all components of the ULLS/SARSS are working together correctly, this check really isn't necessary. Still, it's a good double-check on the most important requisitions (those deadlining reportable stuff), and it doesn't take long.

You should also check all open entries in the ULLS DCR by printing the DCR and comparing it to the reconciliation listing. Follow the SSA external SOP and your ULLS SOP for handling and reporting discrepancies.

What you thought was due-in and what the reconciliation says is due-in should be checked personally with your SSA.

ULLS also offers a follow-up feature, which generates requests for status on all or selected open DCR entries. The status is then posted to the DCR.

Keep your reconciliation listings for at least one quarter. One year is better.



LET ME SEE A COPY OF YOUR PLL. HAS THE UNIT COMMANDER SIGNED IT? DO YOU HAVE ANYTHING IN YOUR PLL THAT IS NOT DEMAND SUPPORTED? IF SO, SHOW ME WRITTEN APPROVAL FROM THE FIRST GENERAL OFFICER IN YOUR CHAIN OF COMMAND AUTHORIZING IT TO BE STOCKED ON YOUR PLL. WHEN DID YOU LAST INVENTORY YOUR PLL? WHO CHECKS IT?

The PLL can be printed in the motor pool as often as you like. Print the list whenever it changes, or quarterly, whichever comes first. If you run the demand analysis monthly, the PLL will likely change, so your commander

should be reviewing the changes and signing them monthly. Para 2-21c of AR 710-2 requires that the PLL be reviewed quarterly by active Army units and semiannually by National Guard and Army Reserve units, and be signed by the unit commander.

Parts that are not demand-supported must be justified individually to the first general officer in your chain of command. Stockage of non-demand-supported repair parts is limited to no more than 10 percent of the total lines stocked in the PLL.

Remember, it takes nine demands in 180 days to add a part to an active Army PLL and six demands in 180 days to keep it there.

For the Army Reserve, the add/keep criteria is six demands and two demands in a 360-day period. The requirements for the National Guard is three and one in a 360-day period.

Because of their unique joint operational agreements, the US Army Information Systems Command (USAIC), the US Army Space Command (USARSPACE), the US Army Intelligence and Security Command (INSCOM) and US Army Medical Activities may use an add/keep criteria of three demands and one demand in a 180-day period.

Keep these authorization statements on file.

Active Army PLLs should be inventoried quarterly. For Reserve and Guard units, Table 201 of AR 710-2 calls for a semiannual inventory. Inaccuracies should be corrected immediately on the PLL file in ULLS.

WHO SIGNS
COMMANDER'S EXCEPTION
REPORTS? HOW
OFTEN?



Use of priority designator codes 01-10 on requisitions and high dollar requisitions require the unit commander's OK. With ULLS, there is no document register to sign. Instead, ULLS creates a Commander's Exception Report each day, listing **high priority** (01-10) requisitions. It also lists requests which exceed \$500.

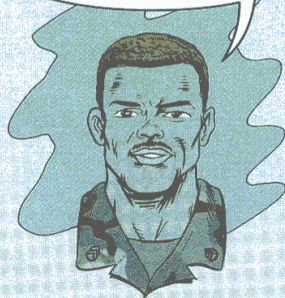
This report should be signed by your commander or his designated representative **before** the requisitions are sent to SARSS or Objective Supply Capability (OSC), now called SARSS Gateway.

Keep copies of the Commander's Exception Report on file for two years, along with the closed DCR.

A handy by-product of the Commander's Exception Report is the Commander's Financial Transaction Report. It tells you the cost of requisitions created that day. **All** requisitions are listed, not just those that exceed \$500. That way, you'll know where you stand on your budget.

PS 540

ARE YOU GETTING
SUPPLY STATUS BACK FROM
YOUR SSA EACH DAY? IF NOT,
WHAT HAVE YOU DONE ABOUT
IT? WHAT DO YOU DO ABOUT
REQUISITIONS FOR WHICH
THE SYSTEM HAS
NO RECORD (STATUS CODE
BF), OR REQUISITIONS THAT ARE
REJECTED (STATUS BEGINNING
WITH THE LETTER C)?



When you take a Class IX transaction disk to your SSA (which should be daily), the SARSS operator will read the transactions (requisitions, cancellations, follow-ups, etc.) from it. Each requisition on the disk will generate status, which should be available to you no later than the next day.

Multiple disks daily **can** mean multiple status disks daily—your supporting SARSS operator controls how often status is reported back to you.

There's a **lot** riding on floppy disks. So, since they are cheap, regularly check and format the disks, and discard bad ones.

When you log onto the OSC, you will get status back on all requisitions accepted by the OSC gateway computer—if you used the SEND/RECEIVE TRANSACTIONS option.

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The STATUS process updates the DCR—and if any request has a status that's bad (no records or cancellations), it prints the requisitions with bad status in a hard copy "Exception Status Report."

All requisitions with bad status should be researched (NSN checked on the FED LOG, for example) **before** reordering. If you're confused by a particular status, ask your MMC or DSU for assistance.

WHEN DID YOU
LAST RUN CATALOG
LOAD? WHY IS THIS
IMPORTANT?



This process should be run monthly; it is **extremely** important. The Catalog Load/Update process updates the AMDF in your ULLS computer, which helps you catch NSN errors and ensures that unit of issue and other data fields are current and correct. Many canceled requisitions are a result of a unit's failure to run the process.

If you have SCP-06, the latest software change to ULLS, and a CD-ROM drive in your ULLS computer, you can use SCP 06's interactive CD-ROM capability. This eliminates the need to do catalog updates.

When you use the "Update Catalog By CD-ROM" process, the system will

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query the AMDF for all NIINs on the PLL file, merge user-created lines back into the new catalog and remove the rest of the records. It saves space and increases system speed.

Any time an NSN is requested and not found in the catalog, ULLS will search FED LOG and revise the catalog with the current information. So it eliminates errors and cuts rejection rates.

If your system can't interface with FED LOG and you are supported by SARSS-O, you should receive catalog updates on individual NSNs during the month with the daily status from SARSS. If something happens to your catalog file in ULLS, your SSA can help you replace it.

LET ME SEE YOUR
PARTS RECEIVED/NOT
INSTALLED REPORT.
HOW OFTEN DO YOU
USE THIS REPORT?



Your commander may ask to see this report whenever he visits the motor pool. It lists all parts requests with a **DATE COMPLETED** and **PART INSTALL** field set to (N)o on the DCR.

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Don't fall into the bad habit of automatically recording installation of parts when you get them from the SSA, rather than doing it when the part is actually used to repair a vehicle. A lot can happen to a part or vehicle before the part gets installed.

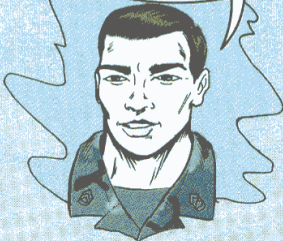
WHAT IS A DA 5988-E, AND WHY IS IT IMPORTANT?



This is the ULLS-G automated version of the DA Form 2404, Equipment Inspection and Maintenance Worksheet. Every piece of equipment in the ULLS-G Equipment Data File has one. It can be printed on demand, and even mass-printed for all equipment by DODAAC of FSC. It is used exactly like the DA Form 2404, but what's really nice about it is that it contains all uncorrected faults for the piece of equipment (like the DA Form 2408-14 does), and all parts on requisition not yet installed.

All vehicle subsystems (radios, weapons) also have a 5988-E and their forms need to be checked, too. The 5988-E is the link between operators and the PLL/TAMMS clerk in the motor pool.

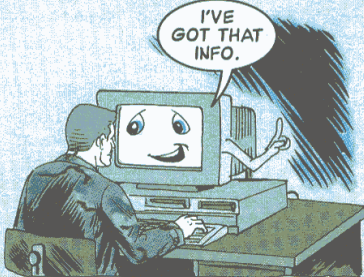
LET ME SEE YOUR SCHEDULED SERVICES REPORT. HOW DO YOU ENSURE THAT SERVICES ARE PERFORMED ON TIME? DO OPERATORS/CREWS PARTICIPATE IN SERVICES? ARE ALL ITEMS THAT REQUIRE SERVICES LOADED INTO THE ULLS?



The Scheduled Services Report is also printed on demand in the motor pool. The battalion S3/unit training NCO needs a copy at least once each month so that he can ensure scheduled services are posted to the battalion training schedule.

This allows commanders to monitor services better. All items that once required a DD Form 314 are now scheduled through ULLS.

I'VE GOT THAT INFO.



DOES YOUR LIBRARY CONTAIN A CURRENT ULLS END USERS MANUAL? DA PAM 710-2.01? AR 710-2? AR 735-5? MAINTENANCE MANAGEMENT UPDATE? CURRENT FED LOG? AMDF CODE REFERENCE GUIDE? UNIT MANAGEMENT SOP? SSA EXTERNAL SOP? SUPPORTING DS MAINTENANCE UNIT SOP? COMMANDER'S GUIDE TO ULLS AND AOAP? ETC.



Without these basic references, ULLS may seem mysterious. But with the right publications, ULLS is really pretty simple. It can be learned OJT. The ULLS-G End Users Manual (EUM) is now in the ULLS program, and can be printed from there. On-line help keys make the manual easy to use.

Your ARs, DA Pamphlets and Maintenance Management UPDATES come from the St Louis Publications Center. The AMDF references are on the FED LOG CDs that come from the Logistics Support Activity at Redstone Arsenal, AL. LOGSA has a hotline for general questions. Call DSN 645-0499, (205) 955-0499 or 1-800-878-2869. Or send e-mail to:

amxls-ml@logsa.army.mil

Write to:

Executive Director
USAMC LOGSA
ATTN: AMXLS-ML
Redstone Arsenal, AL 35898-7466

If you have questions concerning your FED LOG account, call DSN 645-0782, (205) 955-0782.

PLL clerks cannot do their jobs well without these references. Motor sergeants, motor officers, and other unit leaders should at least know where they are.

The Supply UPDATE 14 used to contain DA Pam 710-2-1, the bible of PLL operations. This pam, along with the other publications in UPDATE 14, are being printed as separate publications.

The Maintenance Management UPDATE (current version is UPDATE 14) has DA Pam 738-750.

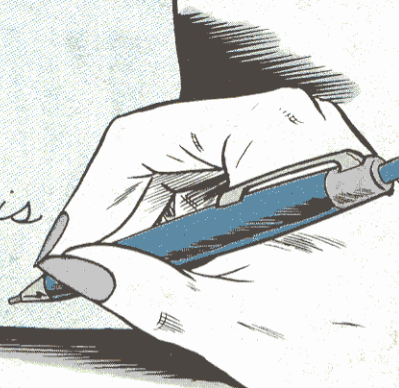
The FED LOG CD-ROMs are key to ensuring your requisitions are good the first time.

The code reference guide (which comes on the FED LOG CD-ROM) explains in detail every code on the AMDF, like AAC (Acquisition Advice Code). It's the least understood code on the AMDF, and the one that causes the most "bad" requisitions.

LIKE I SAID, ULLS WELL THAT ENDS WELL.



P.S.
yes, Virginia, there is
a Connie, too!



M915A1 Spindles as Sets

The only way to get front axle wheel spindles for M915A1 trucks is to order by the set. NSN 2530-01-333-3852 gets a set of right-side and left-side spindles. Make a note in Fig 77 of TM 9-2320-283-24P that spindles are no longer available separately.

Propane Lantern Fuel

Propane lantern, NSN 6260-01-124-7467, doesn't come with fuel. Get a 14.1-oz bottle of gas with NSN 6830-00-584-3041. NSN 6830-01-386-1396 gets a dozen 16.4-oz bottles.

Packard Connector Correction

We listed the wrong NSN for the Y connector adapter on Page 8 of PS 538 (Sep 97). Use NSN 5935-00-900-6281 to get the adapter.

M240 Charging Cable

If the rubber grip on the M240 machine gun's charging cable wears out, don't worry about fixing it, armorers. The cable assembly costs less than \$4, so it's more economical to order a new one with NSN 1005-01-032-8145. If your unit fires M240s frequently, order extra cables. The grip wears out fast.

PLGR HMMWV Mounting

Need installation instructions to mount the Precision Lightweight Global Positioning System Receiver (PLGR) accessory kit, NSN 2590-01-429-3007, on the 1 1/4-ton XM1114 HMMWV. Write or e-mail PS for a copy.

Turn In Excess AEU's

If you've got excess or unserviceable Kiowa Warrior armament electronics units (AEU), NSN 1055-01-338-5385, turn them in. Your excess is keeping others from meeting their need. See your ACALA LAR or call ACALA at DSN 793-6530 for disposition instructions.

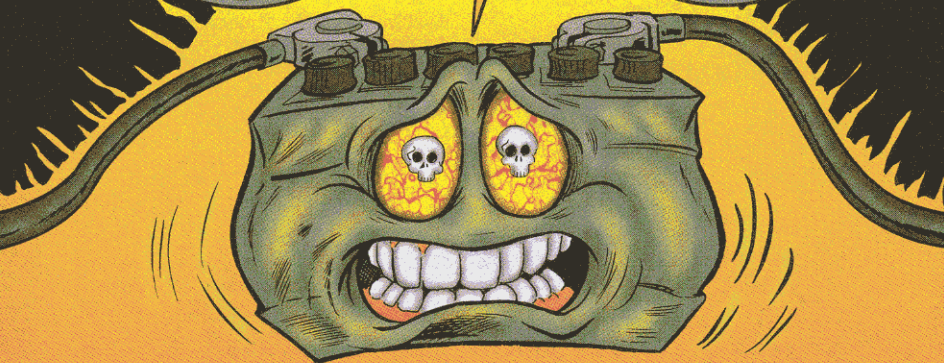
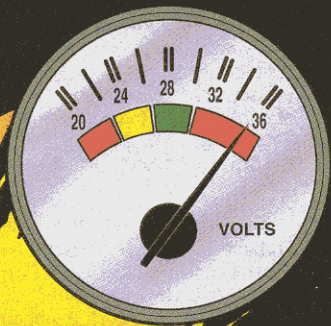
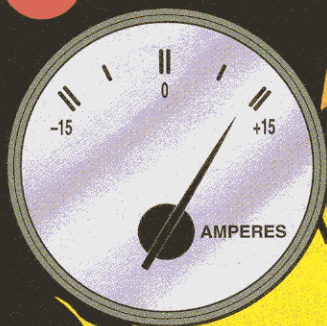
Ordnance Help Lines

The US Army Ordnance Center and Schools now have 24-hour help lines. If you have questions about trucks, tracks, or weapons systems, call (410) 278-5542, DSN 298-5542. If you have questions about missiles, munitions, or electronic maintenance, call (205) 876-6627, DSN 746-6627. For all questions, you can e-mail: ordnance@ocs2.apg.army.mil.

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Would You Stake Your Life ^{right now} on
the Condition of Your Equipment?

OVERCHARGING



KILLS BATTERIES!
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