Issue 479

PS

October 1992

THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-479

Has your buddy read this issue? Pass it along!

From the Maine woodlands to the Alaskan tundra, from the Appalachians to the Great Plains, winter's fury is unforgiving.

Cold weather plays havoc with you and your equipment. Lubes get stiff. Condensation freezes in fuel tanks, filters and lines. Batteries become sluggish. Engines are hard to start.

Arctic blasts slow people down, and simple tasks stretch into all-day chores. Frostbite attacks the unwary.

In the dead of winter — more than any other time — your mission and your life may depend on the warmth of a parka, a fully charged battery, the heat from a tent stove, or a vehicle that keeps on rolling.

As the temperature drops, the need for preventive maintenance rises. But don't wait for the first snowfall to begin planning your equipment's winter PM. Prepare now. These safeguards will help you weather the coming storm:

- Read your TMs. They have the word on cold-weather operation. Get familiar with FM 31-70, Basic Cold Weather Manual. Knowledge is your strongest ally against the big freeze.
- When your LO calls for a seasonal oil change, switch to winter-weight engine oil.
- Make sure snow removal equipment is available and working.
- Get familiar with cold-weather starting procedures.
- Know the rules for driving safely on ice and snow.
- Learn how to prevent cold injuries and carbon monoxide poisoning.
- Put your tent stove through a hot run. Make sure it's heating — and safely.
- Learn to use slave cables and jumper cables correctly.
- Order the winterization equipment authorized for your outfit.

Surviving a harsh winter calls for planning. Today's preventive maintenance sets the stage for success during those frigid months ahead. Start your winter PM now. It's never too early!

PS THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-479, 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.

ISSUE 479 OCTOBER 1992

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

MSG Half-Mast
The Preventive Maintenance Monthly
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By Order of the Secretary of the Army:

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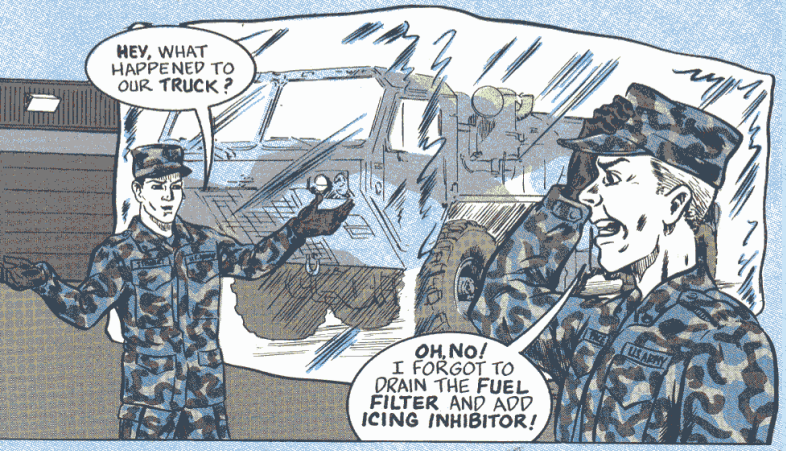
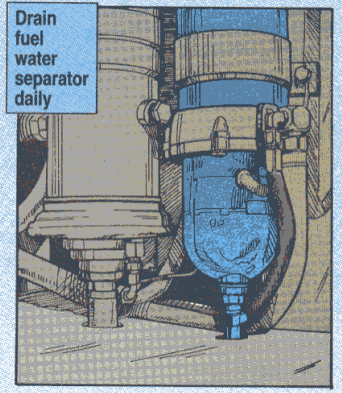
$H_2O + 32^\circ F = N^o\ G^o$



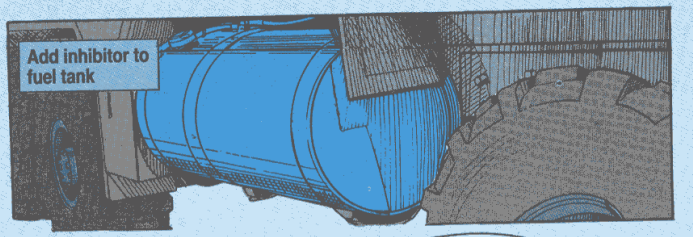
Ice on the road can make you go when you want to stop. Ice that forms in fuel tanks and fuel lines stops you when you want to go.

It starts harmlessly enough. Condensation forms inside fuel tanks when temps rise and fall. Trouble starts when that moisture pools in the low spots of tanks and lines.

- Keep fuel tanks filled to the full mark. This reduces condensation.
- Refuel with care. Don't let water or snow fall into the fill pipe.
- Drain fuel filters every day.



- If you're getting more water than usual when you drain the filter, consider having the fuel tank cleaned out.
- Add icing inhibitors to the fuel. There are two kinds: One for diesel and Jet A-1 fuel, and one for gasoline.

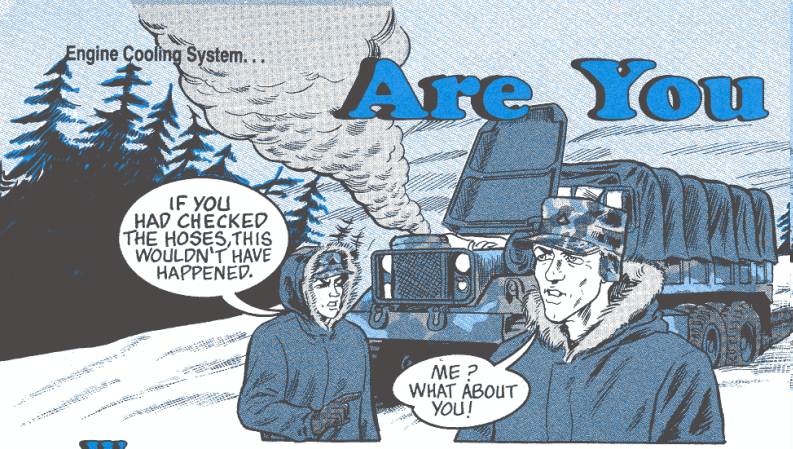


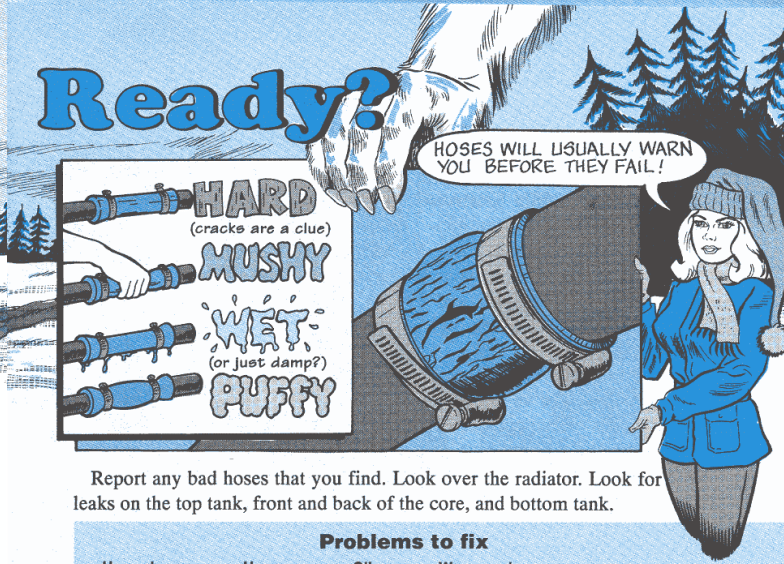
Diesel (Ethylene Glycol Monomethyl Ether)	
5-gal can	NSN 6850-00-753-5061
55-gal drum	NSN 6850-00-060-5312
(Diethylene Glycol Monomethyl Ether)	
55-gal drum	NSN 6850-01-089-5514
Gasoline (Methanol)	
1-gal can	NSN 6810-00-597-3608
5-gal can	NSN 6810-00-275-6010

Engine performance also suffers when too much additive is used. If you're using JP-8 Jet fuel, don't add icing inhibitor — it's already in there. Jet A-1 doesn't have the inhibitor, so treat it just like diesel fuel.

Engine Cooling System. . .

Are You Ready?





Winter weather won't forgive if you forget to do PM on your vehicle's cooling system.

And remembering doesn't count if it happens after your vehicle overheats and quits . . . and you're coasting to a stop . . . on the shoulder of the road home . . . which is 10 miles away.

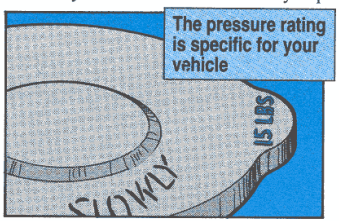
Maintain that cooling system now, before cold weather sets in.

Here's how:

Eyeball your engine's operating temperature. A cooling system should be able to reach 160° F to 180° F no matter how cold it is outside. If yours won't, have the thermostat checked. It may be stuck open and need replacing.

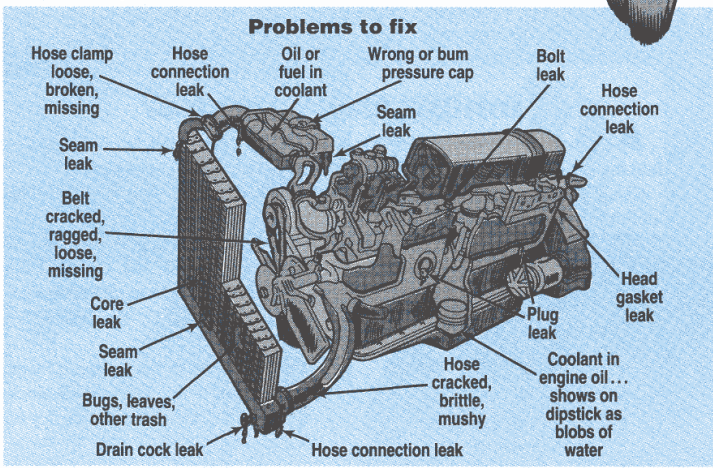
Systems that always run at more than 200° F also need attention. They might have a bad thermostat, a clogged radiator, a bad radiator cap or filthy coolant. The air flow may even be blocked.

Air-cooled systems don't need much attention. All they need is a good flow of air with all the airflow shrouds in place.



Look at your radiator cap. It should be the one your TM calls for. Just any cap won't do. The pressure rating of the cap is vital. Too low cuts the boiling point of your coolant. Too high builds up pressure that'll pop radiator seams or blow hoses.

Hoses need to be touched as well as looked at. They have to withstand heat, pressure and vibration. They're rubber, so they rot, harden and crack with age. Report any bad hoses that you find. Look over the radiator. Look for leaks on the top tank, front and back of the core, and bottom tank.



Leaks may not show up when your engine's cold. Look for rust or odd-colored dribbles where coolant has leaked and dried. Later, when you've got the engine running at operating temperature and pressure, check those places again for wet spots. Use a flashlight during both inspections.

Finally, take the radiator cap off. If the cooling system is hot, open the filler cap slowly until all pressure is gone. Use a rag or glove to protect your bare hand from the hot cap.

The coolant should be at least over the top of the core. It should be almost clear—it'll be colored by the antifreeze. If your coolant is muddy-looking or has bits of junk in it, your cooling system needs draining and flushing—maybe even cleaning. Report it.

If you see a rainbow of oil slime on top of the coolant, you've probably got a leak inside your engine. Exhaust gas or oil is getting into your cooling system. Pull the crankcase dipstick and check for water in the oil. Little blobs will show on the dipstick. Either way, report it.

Inhibit this Inhibitor

A bad batch of corrosion inhibitor, NSN 6850-01-160-3868, has found its way into the supply system and maybe into your equipment cooling systems.

Check your stock for contract number DLA 400-91-C-0642, Lot 32091C1. That inhibitor was not properly mixed or labeled.

If you have some but haven't used it, get it on its way to your DRMO. Then, send an SF 364, Quality Deficiency Report, to Defense General Supply Center, ATTN: DGSC-QED, Richmond, VA 78241-5000.

That'll make sure you get credit for the bad inhibitor. In the REMARKS block, refer to PDI (Production Deficiency Investigation) 2-1-92.

If you have used the bad inhibitor in a vehicle, drain the cooling system and fill it with a fresh mix of MIL-A-46153 antifreeze and water.

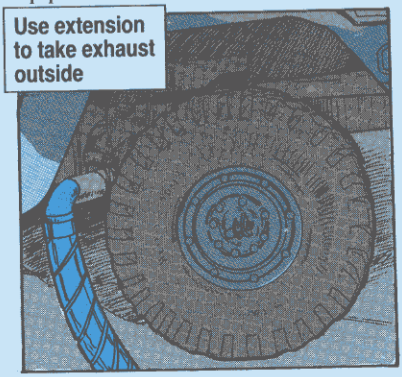
Exhaust Goes Outside

When you close the doors to your maintenance shop to keep out the cold, you also keep in dangerous exhaust fumes from running vehicles.

Run that exhaust safely outside by using a flexible exhaust extension.

A snug fit over the exhaust pipe is needed to prevent leaks. Here is a list of flexible tubes to fit some common-size tailpipes:

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

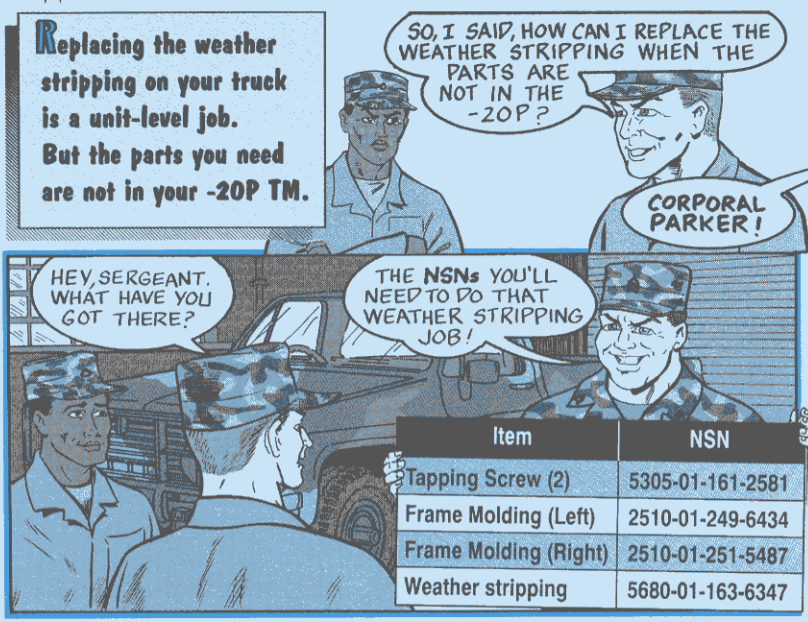


The unit of issue is feet, so order the length you need.

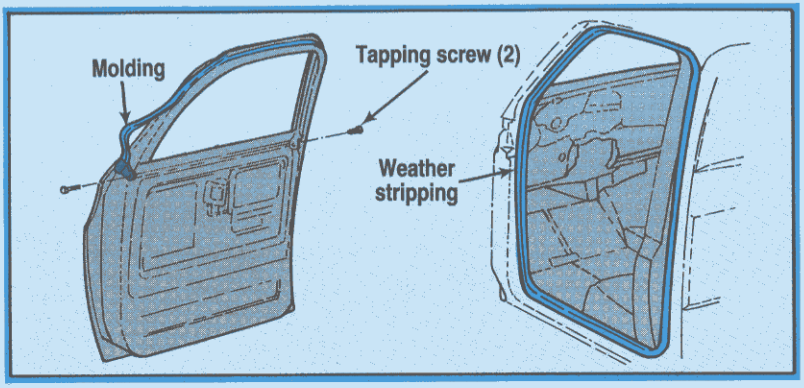
CUCV. . .

WEATHER STRIP IT YOURSELF

Replacing the weather stripping on your truck is a unit-level job. But the parts you need are not in your -20P TM.



Item	NSN
Tapping Screw (2)	5305-01-161-2581
Frame Molding (Left)	2510-01-249-6434
Frame Molding (Right)	2510-01-251-5487
Weather stripping	5680-01-163-6347

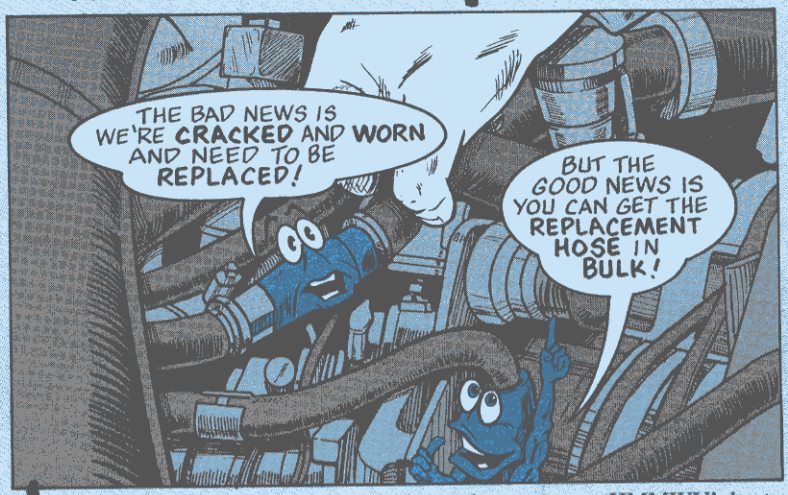


. Be sure to remove all the old weather stripping. Use a cleaning compound to get rid of any residue. NSN 7930-01-331-1507 brings a 32-oz spray bottle and 7930-01-336-7197 brings a gallon.

To glue in the new weather stripping, use adhesive NSN 8040-00-455-5359.

HMMWV . . .

Heater Hose Replacement



It's no news that you must replace the heater hoses on your HMMWV's heater inlet tubes when the rubber becomes cracked and worn. What is news is that there is bulk hose in the supply system from which to make the four 2 1/2-in pieces.

Order bulk rubber hose, NSN 4720-00-241-4435, and cut it to fit. Make sure to replace any broken or worn-out hose clamps with NSN 4730-01-088-7798.

Sub-Zero? Sub OEA

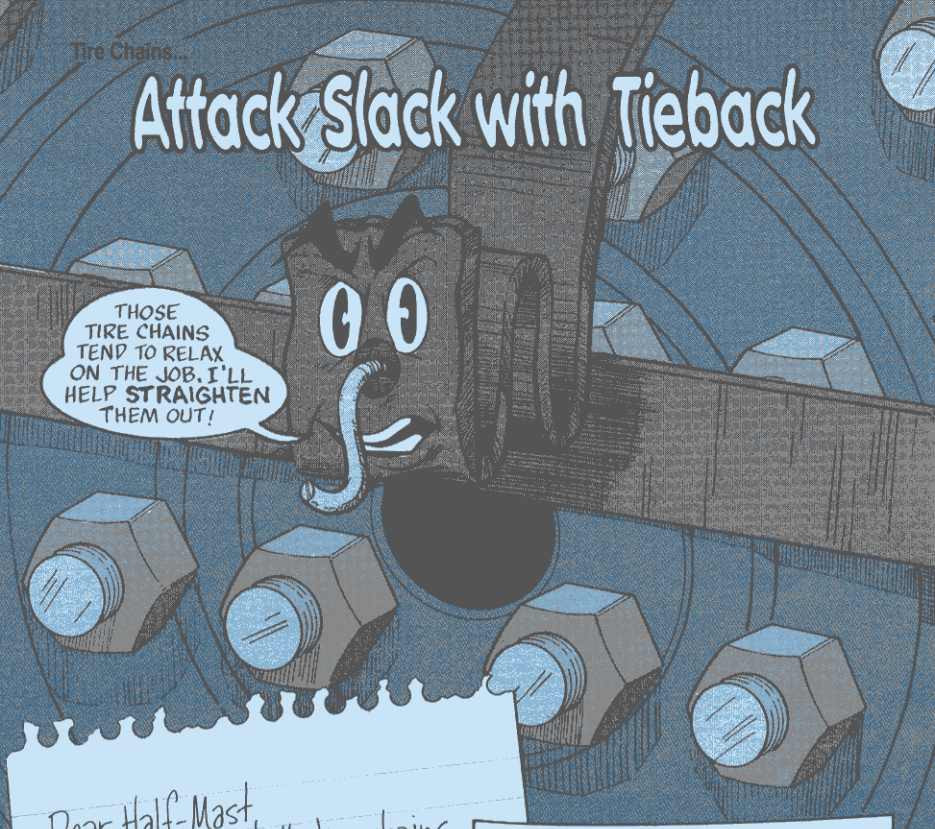
Yes, Virginia, transmissions do overheat when temps go polar.

Why? Dexron II transmission fluid freezes in cooler lines.

The solution? Swap OEA lubricating oil for Dexron when the mercury will be hitting 30 below or so.

OEA is NSN 9150-00-402-2372 for five gallons and NSN 9150-00-491-7197 for a 55-gal drum.

Attack Slack with Tieback



Dear Half-Mast,

When we install tire chains on our HMMWVs and other vehicles, we find that they have several inches of slack. I've heard it's OK to use elastic tiedowns to take up the slack. Is that true?

2LT S.E.M.

Dear Lieutenant S.E.M.,

Yes, Sir. You can use rubber straps, normally used as tiedowns, to keep tire chains snug.

Get the straps with these NSNs:

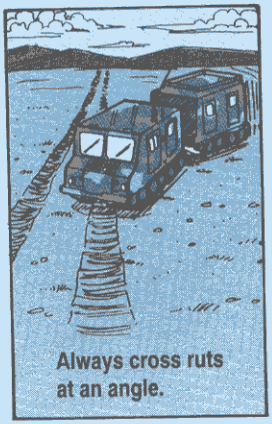
NSN 5340-01-	Length (inches)	Stretch (inches)
029-9084	15	20-30
030-3098	21	26-42
029-9085	31	36-42

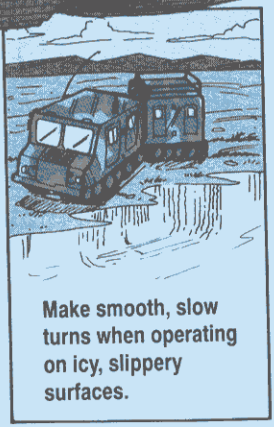
Your authority to order these items is CTA 50-970, Appendix A.

Half-Mast

Small Unit Support Vehicle . . .

No Turnovers Wanted





Most obstacles can be overcome if you think about them before crossing. Using the right methods will avoid track damage and you'll stay upright.

SUSV Brake Light Switch NSN

The NSN for the brakelight switch on your SUSV is a bummer. Use NSN 2540-01-350-5233 to get a replacement.

Maintain Power Through PM

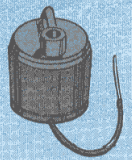
Keep battery plates covered with electrolyte by adding water.

Batteries die from thirst. Give 'em that drink with distilled water. Get a gallon with NSN 6810-00-682-6867, five gallons with NSN 6810-00-356-4936.

If you're out of distilled water, rainwater or air conditioner condensation will do. Filter it, though, through a clean cloth.

Fill the battery with battery filler, syringe, NSN 6140-00-808-7325.

Carry a supply of water in gravity battery filler, NSN 6140-00-635-3824.

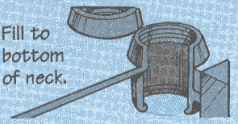


Both items are in the No. 1 Common shop set.

Make sure you don't overfill a battery. If you do, you'll flush out some of the electrolyte. Once the electrolyte is gone, the battery can't be recharged. Fill the battery about 3/8-inch over the plates. Or, if your battery has filler cap necks, fill to the bottom of the necks.

Power Through PM

If you fill it to the top, the electrolyte will boil out the vented caps during charging.



Even with the syringe, you can overfill, so be careful.

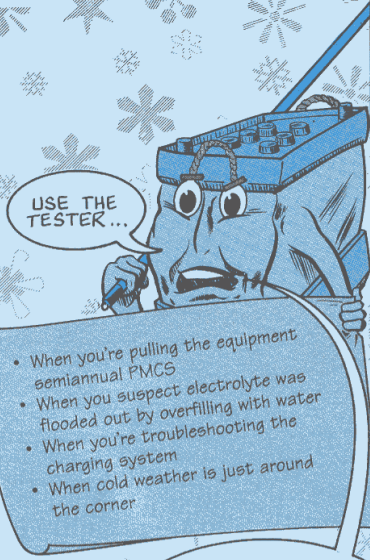
Never add water at freezing temperatures unless you can run the engine for 15 minutes afterwards. The vehicle's charging system will mix the water and electrolyte.

CHECK THE CHARGE

Since a fully charged battery won't freeze down to –90°F, you need to know how much charge a battery has. You do that by measuring the electrolyte specific gravity.

Make the measurement with tester, antifreeze and battery, NSN 6630-00-105-1418.

The right charge is shown by a specific gravity reading of 1.280.



KEEP DIRT AND CORROSION OFF

Corrosion eats up metal parts on and around batteries. Also, dirt and corrosion hold moisture. This moisture could close the circuit between the positive and negative terminals and discharge the battery until it goes dead.

PS MORE

Power Through PM

Wipe off light dirt and corrosion with a cloth. For heavy corrosion, take out the battery and any metal parts that can be removed.

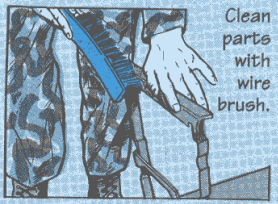
Scrub the battery with a baking soda and water mix.

Use a half-pound of baking soda to a gallon of water. Get a pound of soda with NSN 6810-00-264-6618 or 100 pounds with NSN 6810-00-290-5574.

Use a bristle brush on the battery, never a wire brush.

Soak metal parts in the mix, then use the wire brush to scrape off rust and old paint. Use a torch and scraper if necessary, but only on the metal parts you've removed.

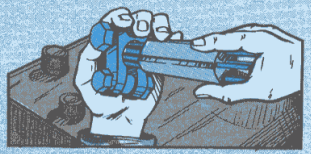
Work with the torch only in places where there's no danger of fire and away from the battery.



Clean parts with wire brush.

After cleaning, rinse metal parts with lots of clean water and dry well with clothe. Protect bare metal with coating compound — either epoxy, NSN 8010-00-959-4461, or bituminous, NSN 8030-00-290-5141.

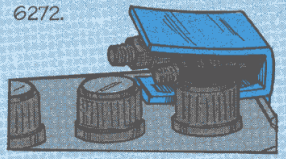
Clean the battery posts and clamps with blade-type cleaner, NSN 5120-01-256-9187.



PROTECT AGAINST DAMAGE

Snug the battery hold-down tight enough to keep the battery from banging around, but not enough to crack it.

Protect the clamp-and-post connections with single terminal cover, NSN 2530-01-089-4992, or dual terminal cover, NSN 5940-00-738-6272.

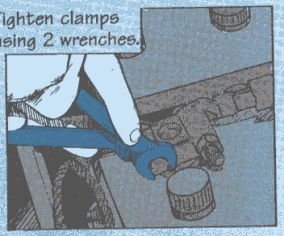


Protect battery connections with covers.

Power Through PM

Get the clamps all the way down on the posts. Install cable terminals under the head end of the bolt—not the nut end—if possible. Tighten nuts enough so that clamps do not turn on the posts.

Tighten clamps using 2 wrenches.



M1A1 Tanks . . .

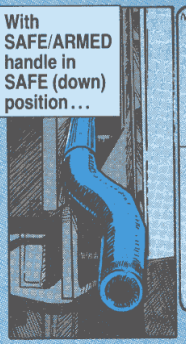
Adjust Now or Pay Later

If you buy a new piece of equipment, you expect it to work right. But don't bet your favorite M1 tanker's life on it. Take the tank's main gun safety switch, NSN 6150-01-187-9719, for example. New switches are not adjusted properly. That means the SAFE/ARMED handle appears to operate normally, but the ARMED light on the loader's panel stays lit—even when the handle is in the SAFE position.

Play it safe, mechanics. Every time you install a new switch, adjust it like it says on Pages 4-121 and 4-122 of TM 9-2350-264-20-2-3. Follow the instructions to the letter. Too much adjustment can cause the switch to stick or jam in the armed position.

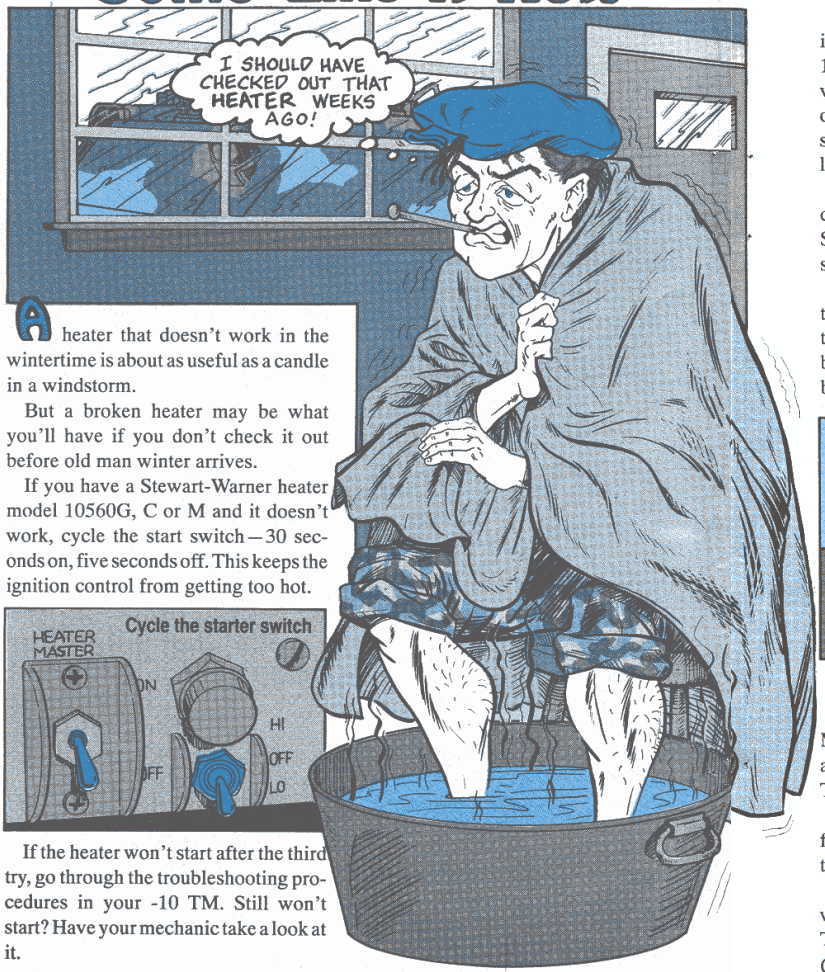
Crewmen, get your mechanic to adjust the switch before you fire again. The scoop's in AMCCOM Safety-of-Use Msg 92-09, AMSMC-MA 171845Z Apr 92.

With SAFE/ARMED handle in SAFE (down) position . . .



. . . SAFE light on loader's panel should come on

Some Like It Hot!



A heater that doesn't work in the wintertime is about as useful as a candle in a windstorm.

But a broken heater may be what you'll have if you don't check it out before old man winter arrives.

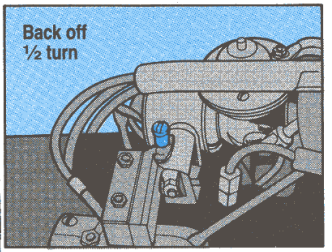
If you have a Stewart-Warner heater model 10560G, C or M and it doesn't work, cycle the start switch—30 seconds on, five seconds off. This keeps the ignition control from getting too hot.

If the heater won't start after the third try, go through the troubleshooting procedures in your -10 TM. Still won't start? Have your mechanic take a look at it.

Mechs, voltage to the igniter is very important—it should register between 10 and 12 volts. A reading below nine volts and visible hot spots are sure signs of a shorted igniter. Replace it. If you still don't get the required 10-12 volts, let support check it out.

While the cover is off, check the flame detector switch. On newly installed Stewart-Warners, the flame detector switch will probably need adjusting.

Make sure the heater is off and cool, then turn the adjustment screw out until the blower comes on. Slowly turn it back in till the blower goes off, then back it off 1/2 turn more.



Hupp Heaters

Your Hupp MF510B, MF510C, MF60A-24V and MF60B-24V heaters are different from a Stewart-Warner. That means they start differently, too.

Let the heater stay in the start mode for four minutes. That's how long it takes a Hupp igniter to get hot.

If the heater doesn't start right off, wait 15 minutes before trying a restart. That's a long time to wait when you're cold, but any sooner and you risk fuel flooding the heater.

If the heater still refuses to start, get your mech to check the incoming voltage. It should read between 24-28 volts.

Heater Shutdown

Take the time to shut down your heater right, or the next time you need it you'll be left out in the cold.

Once you've got the heater started, let it run for at least five minutes. If you shut down before then, the heater may flood. Then you won't be able to start it again for a long time.

Give your heater a chance to purge itself at shutdown. Some vehicles have electrical circuitry that lets the heaters run and purge themselves even with the master switch off. Others have to run until purging is finished before you hit the master switch.

Guessing will only get you into trouble, so check out your vehicle's -10 TM and follow the instructions there.

For more information on personnel heaters, check out TM 9-2540-205-24&P.

Personnel Heater Fire Safety

Cold weather's coming and so is a rash of combat vehicle fires—unless . . .

. . . Unless you keep loose items like field jackets, gloves, aerosol spray cans, TMs, ammo bags and anything else that can burn or explode away from the personnel heater's outlets and exhaust duct.

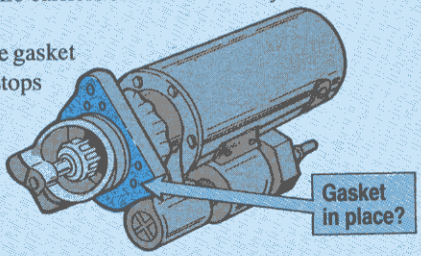
Your vehicle could end up as a death trap if those flammables get in the way of outlets or exhausts, where temperatures reach nearly 300° F.

Starter–Gasket=Frozen

Starters that freeze up in cold weather on M113-series carriers, M109-series or M110A2 SP howitzers, M992 ammo carriers or M578 recovery vehicles are often victims of missing gaskets.

Water gets inside the starter if the gasket is missing. That water freezes and stops the starter cold.

Mechanics, next time you pull the powerpack, make sure the starter has the gasket, NSN 5330-00-980-1546.



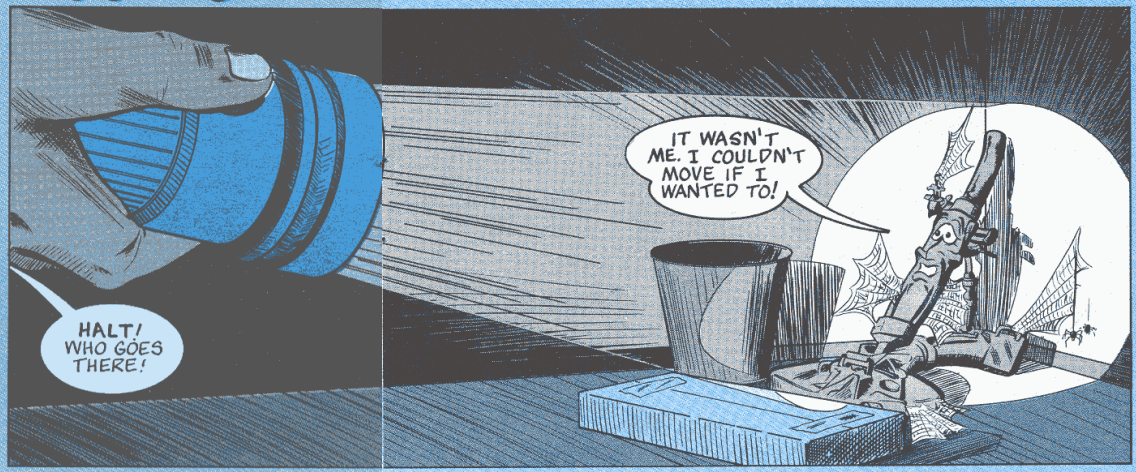
Litter Kit for M113A3

Once you've installed the hospital litter kit in your M113A3 personnel carrier, there's no room to put back the spall liners like it says on Page 26–103 of TM 9-2350-277-20-2. So, store the liners. Reinstall 'em when you remove the litter kit.

M578 Key Case NSN

Get the plastic bag to hold the hex-head key set that's part of the BII for your M578 recovery vehicle with NSN 5140-01-289-7087. It will keep the keys together.

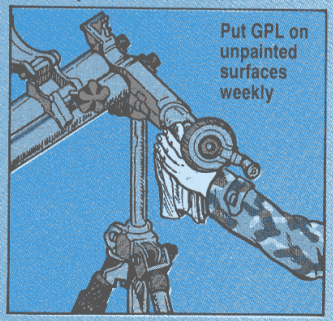
Stopping the Corrosion Freeze



M224 mortars don't receive their PM due. They sit forgotten in the corner of the arms room. Moving parts start to bind and soon freeze from corrosion. And then they give you the big freeze when you need to fire. Here's how to stop the corrosion freeze:

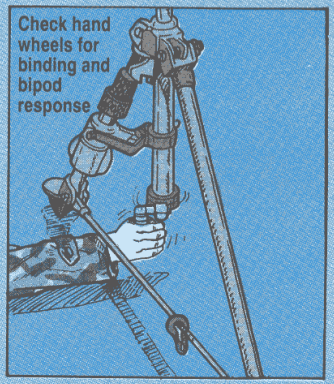
Lubing is the main thing. Follow the lubrication instructions beginning on Page 3-0 in TM 9-1010-223-10. But pay special attention to the bipod. It's where problems usually occur.

Weekly, lubricate the bipod's unpainted parts with general purpose lubricant (GPL). That includes pulling the left leg all the way out and running both the traversing and elevation mechanisms through their full range so you can catch unpainted areas with GPL.

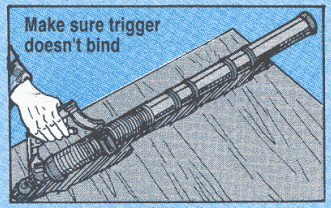


The bipod is only supposed to go to support every 12 months for cleaning and lubrication. But if its elevation, cross level, or traversing mechanisms bind, tell your armorer. They need attention now.

Also report it if the handwheels can be turned more than 1/8 of a turn without the bipod responding. Something's wrong.

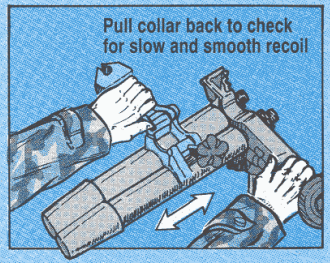


Weekly, lube the firing mechanism with LAW through the fitting on the top of the handle. Lube the trigger and firing selector with LAW and move the trigger back and forth until it moves freely.



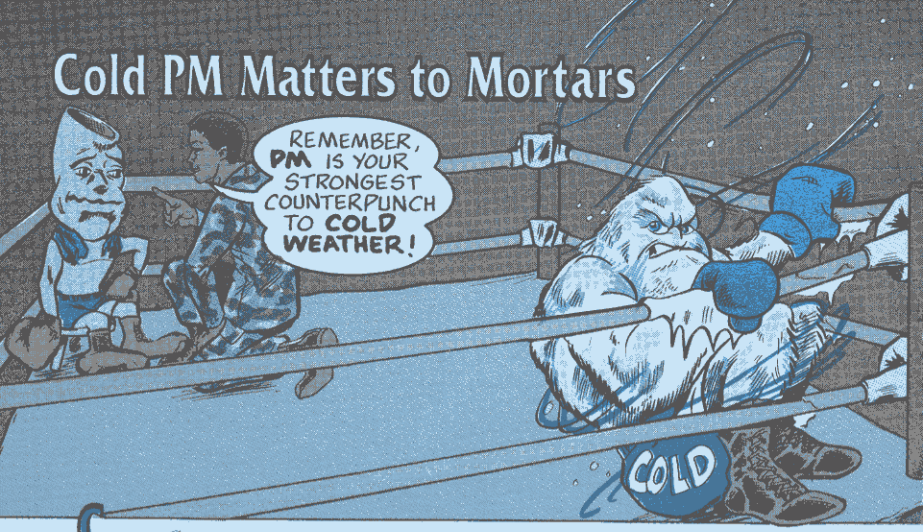
If the trigger binds, your armorer should send the M224 to support. They, not the armorer, decide if the firing mechanism's repairable or needs to be replaced.

Push the collar shock absorber assembly back and release it. It should return slowly and smoothly. If it doesn't, the shock absorber assembly needs to be cleaned and lubed by support.



Test the M7 baseplate for 360° rotation and the M8 baseplate latch for smooth operation. If they bind, lube them with GPL.

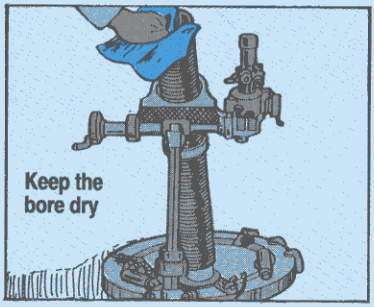
Cold PM Matters to Mortars



Cold can KO your mortar when it comes to firing . . . unless you counterpunch with this PM:

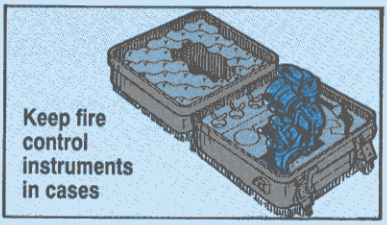
Lube with LAW instead of GPL when the temperature drops below 10° F. LAW does not get as stiff as GPL in cold weather.

Wipe the inside of the bore dry before you go into the cold. That removes moistrure and helps prevent ice from forming.



Cover cartridges until they're ready to be fired. That stops ice from coating them.

Keep fire control instruments in their cases. The cases cushion the instruments' delicate optics against the shock of the cold.

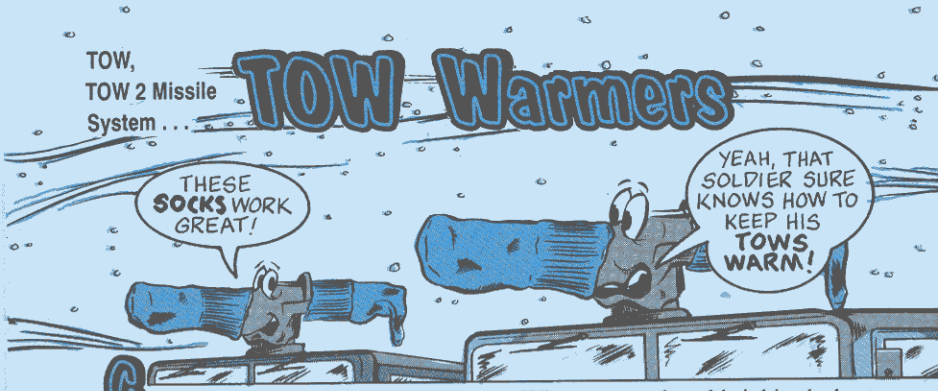


Never bring fire control instruments directly from the cold into a warm place. The sudden change in temperature cracks optics and lets condensation form inside the instruments. Leave the instruments some place sheltered—but unheated—where they can gradually warm before you bring them inside.

When you bring your mortar inside, wait at least an hour before cleaning and lubing it. That lets the mortar stop sweating from condensation and lets you wipe out all moisture.

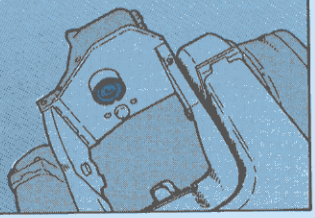
TOW, TOW 2 Missile System . . .

TOW Warmers



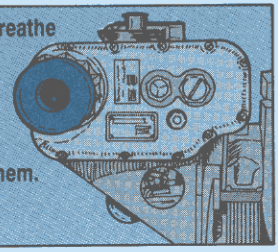
Cold weather can bring your TOW low if you don't warm up to PM. Include these TOW warmers in your PMCS:

Keep ice and snow off electrical connectors on the traversing unit, sights, and the missile. They prevent a good electrical connection.



Rubber eyeshields on the day and night sights freeze and eventually crack. That leaves the delicate optics vulnerable to ice and snow. Report cracked eyeshields, NSN 5855-01-070-4072.

Do not breathe on optics in cold weather. That will fog and ice them.

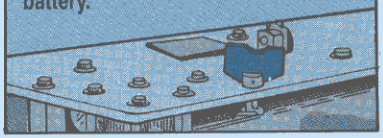


When extremely cold air hits the heat rising from the vehicle engine on mounted TOWs, the night sight's vision is distorted.

Beat night vision distortion by parking your vehicle so you're aiming away from the heat of the engine.

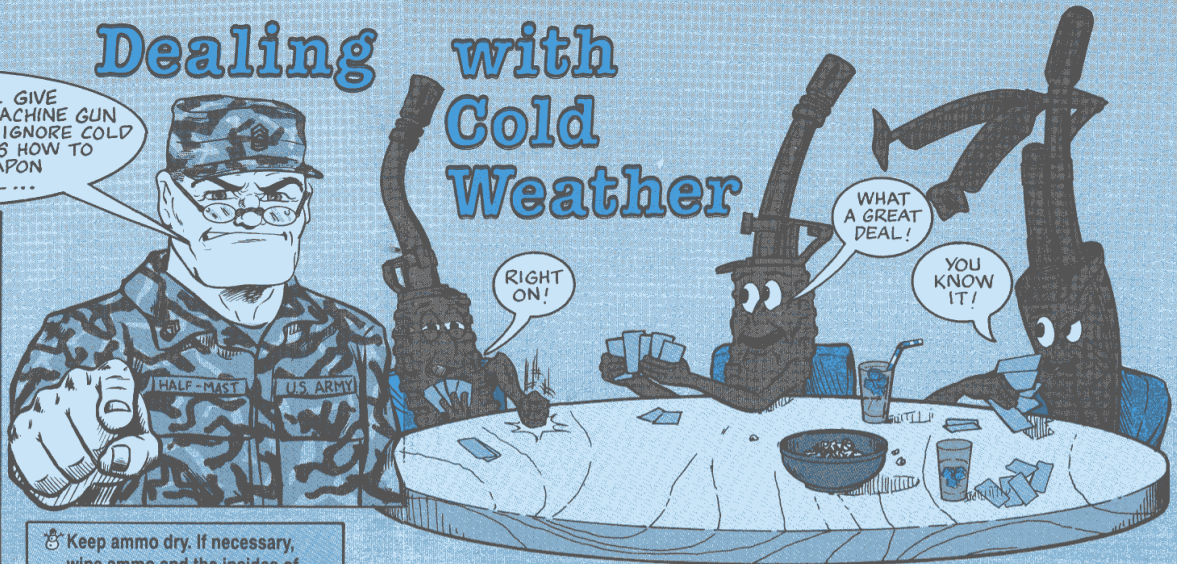
The wing nuts on the battery for the missile guidance set (MGS) seize and then pop off when the battery is loaded in the MGS. If there're fewer than four wing nuts, your MGS is NMC.

Prevent seized nuts by loosening each one before you load the battery.

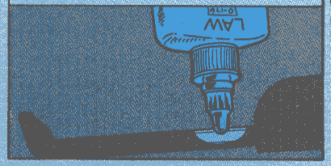


Your repairman can order extra wing nuts, NSN 5325-01-148-8601, and retainer rings, NSN 5365-00-298-6564.

Dealing with Cold Weather

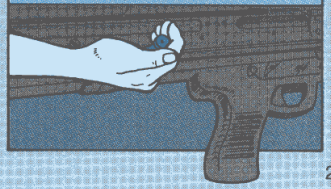


- Use rifle bore cleaner, NSN 6850-00-224-6663, to remove carbon. Use LAW, NSN 9150-00-292-9689, to lube your weapons when temperatures drop below 10° F. LAW helps moving parts slide easier in cold than CLP or LSA does. (For the M249 machine gun, CLP is used in all weather.)

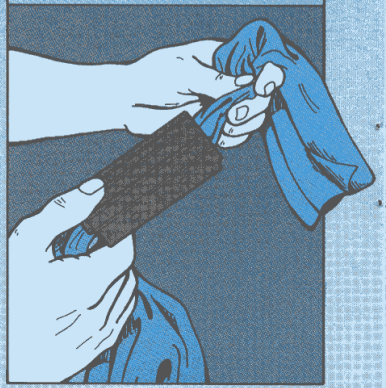


- Prevent condensation from forming inside weapons by keeping them covered when you move from cold to warmth. That lets the weapon warm gradually.

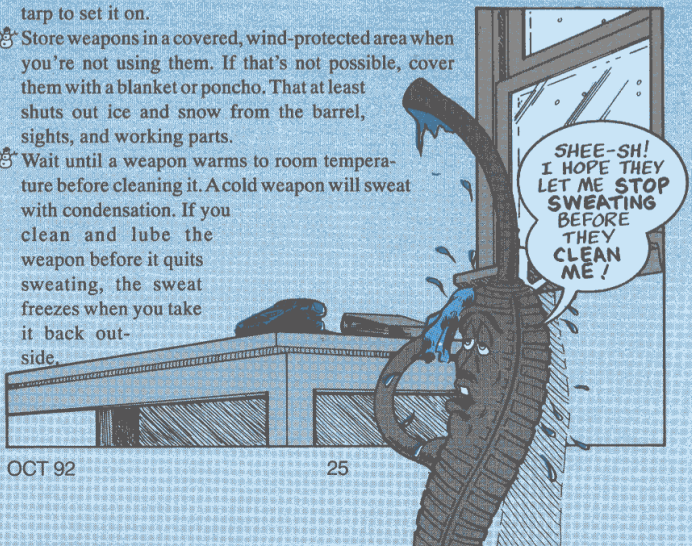
- Hand function the weapon every 30 minutes to keep parts from freezing. If parts do freeze, move them slowly and gently until they move smoothly again. Forcing things breaks parts.



- Keep ammo dry. If necessary, wipe ammo and the insides of magazines dry before loading. That wipes out moisture that will freeze and jam your weapon.



- Never lay a hot weapon or barrel on the snow. Use a tarp to set it on.
- Store weapons in a covered, wind-protected area when you're not using them. If that's not possible, cover them with a blanket or poncho. That at least shuts out ice and snow from the barrel, sights, and working parts.
- Wait until a weapon warms to room temperature before cleaning it. A cold weapon will sweat with condensation. If you clean and lube the weapon before it quits sweating, the sweat freezes when you take it back outside.



This is a selected list of recent pubs of interest to organizational maintenance personnel. This list was made from a computer printout produced by the Adjutant General's Office.

TM 5-2350-262-10 Jun M9 ACE

TM 5-3805-212-24P Jun Model 4262 intrenching machine

TM 5-3895-224-24P Jun Garwood model M5-8FT, spreader, aggregate

TM 5-3895-346-24P Jun Tampo model RS-28 vibratory roller

TM 5-3895-362-24P Jun Rumbler SM54A vibratory towed roller

TM 9-1430-601-24P-1 Mar AN/MPQ-53 radar set (Patriot missile system)

TM 9-1430-602-24P-1 May AN/MSQ-116 Patriot missile information and coordination central.

TM 9-1450-646-24P May M993 MLRS

TM 9-2320-285-24P Jun M878A1 Tractor Truck

TM 9-2320-363-20-1 Jun M915A2, M916A1 Tractor Trucks

TM 9-4120-403-14 Apr Model JHAA/C6V1 Air conditioner

TM 9-4935-454-24P Apr AN/TAM-6 Night sight maintenance facility

TM 9-6115-465-24P Jun 30KW DED Generators

TM 10-3930-657-24P Jun MHE 265, Hyster model H40XL-MIL fork lift

TM 10-3930-658-24P Jun MHE 266 fork lift

TM 10-4130-237-14 Jun Model LCW 2685 Small mobile water chiller

TM 11-5805-799-24P-1 Oct 91 AN/TYC-39(V)6 Central message switching

TM 11-5805-799-24P-2 Oct 91 AN/TYC-39(V)6 Central message switching

TM 11-5820-938-12-1 May AN/TRQ-37 Radio receiver set

TM 11-5865-302-12-1 May AN/ULQ-19(V)3 Communications jamming system

TM 11-5865-302-12-2 May AN/ULQ-19(V)3 Communications jamming system

TM 11-5895-1215-10 May TD-1389(P)(V)1/G and TD-1389(P)(V)2/G Multiplexers/demultiplexers

TM 11-7025-215-23P Jan AN/USC-43(V)2 Digital voice terminal

TM 11-7025-279-12&P Mar LID TACFIRE

TB 9-4120-403-24 May Warranty program, JHAA/C6V1 6,000 BTU air conditioner

TB 43-0201-1 Jun Delayed desert damage special maintenance procedures for M578 recovery vehicle, M109A2/3/4 howitzer, M102 howitzer, M198 howitzer

LO 5-2420-222-12 Apr JD410 loader backhoe

LO 5-5420-202-12 Mar M60A1 AVLB chassis

Maintenance Advisory and Safety-of-Use Messages

AMCCOM SOU MSG 92-18—Operational, Modified M198 155MM howitzer, AMSMC-MA 071602Z Jul 92.

AMCCOM SOU MSG 92-19—Advisory, M1A1 collimator, AMSMC-MA 081842Z Jul 92.

AMCCOM Maintenance Advisory MSG 92-23—M1A1 tank, AMSMC-MA 291510Z Jun 92.

ATCOM Aviation Safety Action MSG—Maintenance Mandatory, UH-1 series aircraft, AMSAT-C-XS 231850Z Jul 92.

CECOM SOU MSG 92-06-01—One-Time Inspection, Advisory, AN/TRQ-32(V) radio receiving set, AMSEL-SF-SEC-V 251400Z Jun 92.

CECOM SOU MSG 92-06-02—Follow-up to CECOM SOU MSG 92-06-01 on AN/TRQ-32(V) radio receiving set, AMSEL-SF-SEC-V 292000Z Jun 92.

MICOM SOU MSG 92-06—Operational, Avenger weapon system, AMSMI-MMC-AM 071230Z Jul 92.

MICOM SOU MSG 92-07—Advisory, Dragon missile system, AMSMI-MMC-AM 071315Z Jul 92.

TACOM SOU MSG 92-14—Limited One-time Inspection, Bradley FVS, M2, M2A1, M2A2, M3, M3A1, M3A2, and M993 MLRS carrier, AMSTA-M 092000Z Jul 92.

TACOM SOU MSG 92-15—Limited One-time Inspection, M915A1 vehicles, AMSTA-M 161200Z Jul 92.

Your Direct Support or Logistics Assistance Office (LAO) can provide you with more information.

AUDIOVISUAL

Available at Battalion or Post Learning Center

IVD 21-1 TACCS: Set-up, take-down and system maintenance

IVD 3-3 M12A1 Decontaminating apparatus

IVD 9-3 Diagnose models 4A084-2 and 4A084-3 gas engine faults

TVT 9-226 M157 smoke generator organizational PMCS

TVT 9-227 M3A4 Smoke generator operation and PMCS

Columbus's Greatest Discovery

On Christmas Eve, 1492, the good ship Santa Maria rammed a reef, split apart and sank off the coast of Haiti. A soggy Christopher Columbus was fished from the sea by the crew of the Nina. He returned to Spain where Queen Isabella put him on trial for the loss of the ship.

Columbus claimed an inexperienced helmsman had sent the Santa Maria to its watery grave. A crafty lawyer (show me one that isn't) got him off by citing a clause in the law that said, "If you weren'ta drivin', it weren'ta your fault." (This legal defense became well known as the Santa Clause, but that's another story for another time.)

Columbus's explanation has stood for five hundred years, but a recently discovered journal, hidden in a hermetically sealed mayonnaise jar on the back porch of the ancestral home of MSG Half-Mast, reveals a different story—a story that begins two months before the December accident, on October 12th on the shores of San Salvador.

PS MORE


SANTA MARIA
I'VE FOUND IT! THE EAST INDIES! MY JOURNEY IS OVER! WE CROSSED THE WIDE OCEAN AS WIDE AS A DESERT. STORMS PLAGUED US, BUT WE WERE TRIUMPHANT!
OUR JOB IS DONE!
CAPTAIN COLUMBUS.
SHOULD I GET THE MEN STARTED ON THEIR PREVENTIVE MAINTENANCE FOR THE TRIP BACK?
RELAX, SAILOR, WE KICKED THE OCEAN'S TAIL. WE WON! WE'LL GET STARTED ON PREVENTIVE MAINTENANCE TOMORROW.


READ MY LIPS! THIS IS INDIA! THAT MAKES YOU INDIANS!
THIS GUY'S BEEN OUT IN THE SUN TOO LONG!
SIR, IF WE DON'T DO PREVENTIVE MAINTENANCE SOON, IT WILL BE TOO LATE!
LOOK, THE BIG JOB IS OVER. DID YOU SEE HOW SMOOTHLY WE SAILED OVER HERE? THAT OCEAN WAS JUST NO MATCH FOR US. IT'S NOT GOING TO BE A PROBLEM ON THE WAY BACK EITHER.

IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BULLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.


COLUMBUS BEGINS THE LONG JOURNEY HOME...
SNAP
CRACK
THE SHIP IS LEAKING, OUR SAILS ARE RIPPED, AND OUR RUDDER IS BROKEN! WE'RE IN BIG TROUBLE!
OH BOY! WHY WASN'T PREVENTIVE MAINTENANCE DONE?

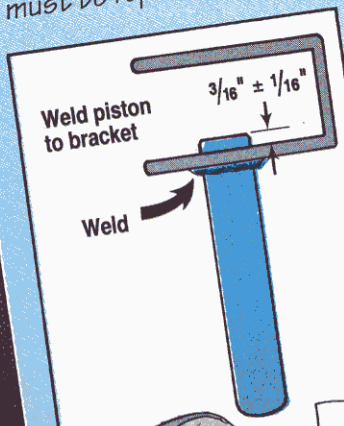

WHO'S RESPONSIBLE FOR THIS?


The Santa Maria sinks and Columbus sails for home on the Nina.
MASTER SEAMAN BEFORE-THE-MAST, SOMEDAY YOU'LL HAVE YOUR OWN SHIP. REMEMBER WHAT I'VE DISCOVERED THE HARD WAY...
...PREVENTIVE MAINTENANCE MUST START AT THE TOP AND NEVER CEASE!
AYE-AYE SIR. I'LL ENTER IT IN MY JOURNAL SO I'LL NEVER FORGET!
END

HAND PUMP HELP

Dear Editor,

The piston assembly on the hydraulic hand pump, NSN 4320-01-198-4551, is a press fit in the bracket. Sometimes the piston breaks free, causing the pump to fail. The $100 pump body must be replaced.



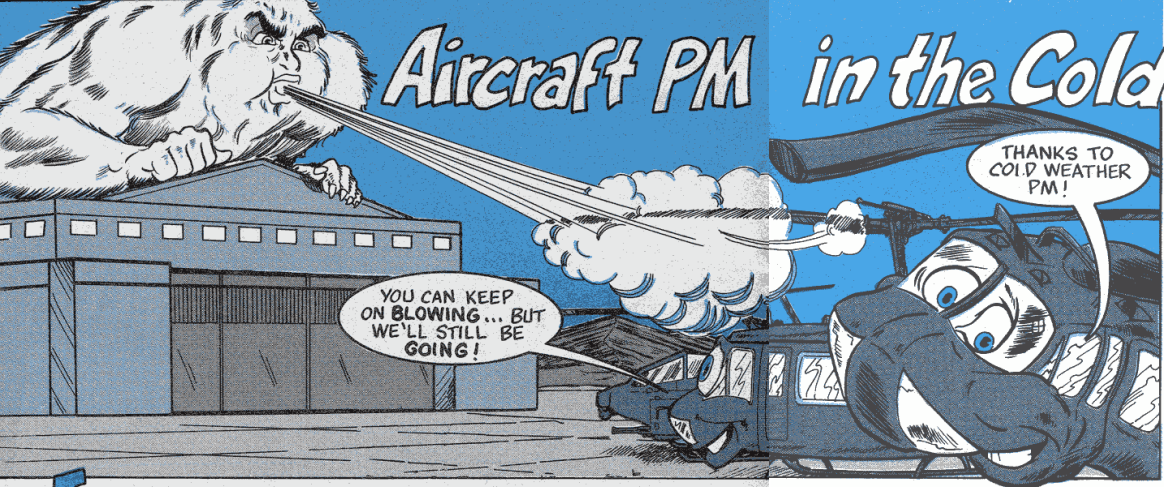
To save the pump and the money, rejoin the separated pieces by hard brazing or welding the piston to the bottom of the bracket. This added bond will hold the piston in place.

Dalfino Serna
CCAD, TX

FROM THE DESK OF THE *Editor*

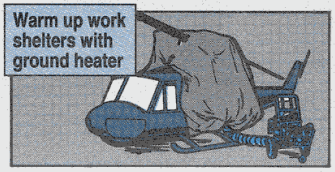
Saving money is always a fitting idea.

Aircraft PM in the Cold



It's a time consuming, patience-tasking job to keep 'em flying when the temperatures plummet and snow, wind and ice attack. But top-notch preventive maintenance on your aircraft is critical in cold weather.

Start your maintenance procedures by moving your aircraft inside. If you can't, and you're faced with some extended maintenance, use a maintenance shelter or rig a temporary shelter out of tentage, other canvas, or a salvaged cargo parachute canopy. Warm your shelter with a ground heater. A warm, ventilated area will let you work without bulky clothing and heavy gloves.



Here are some of the areas you should concentrate on:

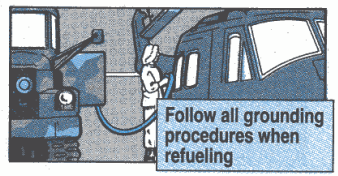
FUEL—Water in your fuel can turn to ice that will block fuel lines. Keep your fuel tanks topped off. The gap between the top of the tank and the fuel is full of cold moist air. That air causes condensation. That condensation drips into your fuel. When you take fuel samples, drain enough fuel to get rid of all the water. Drain the sumps daily.

When you refuel a bird outside in subzero temperatures, always check the fuel level outside. When a full aircraft is moved into the hangar, the fuel level will rise with the higher temperature. Opening the filler cap will give you a fuel spill to clean up.

Static electricity can warm your winter real fast, but you won't be around to enjoy the warmth, so be extra careful during refueling. The colder it is, the drier the air is; the drier the air is, the more static electricity becomes a hazard.

Static can result from the aircraft moving through the air, or by brushing frost or snow off the aircraft. Fuel flowing through the filler neck can also generate a spark that ignites fuel.

Good grounds are hard to find, but the aircraft must be grounded. Make sure the aircraft and tanker are bonded together, and the nozzle is bonded to the bird before you remove the cap. When you're freezing while refueling you might be tempted to neglect a ground, but don't! Follow all your grounding procedures and take no shortcuts.

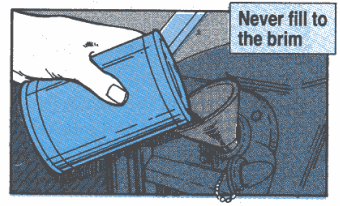


If you're not using a closed circuit fueling nozzle, put the regular nozzle in all the way. That'll keep static down and lessen the chance for a fuel spill.

Use extra care if you have to take fuel out of an aircraft. Spilled fuel can cause instant frostbite.

OIL AND GREASE—Fuel is not the only fluid affected by the cold. Most fluids get stiffer as temperatures fall; oil thickens, fuel's harder to ignite, and grease gels. You must use the right fuel and lube for cold weather. The lube chart in your TM lists the fuel, oil and grease to use.

When you service an oil tank on a cold-soaked aircraft, never fill it to the brim. Otherwise, when the oil heats up, the tank will overflow.

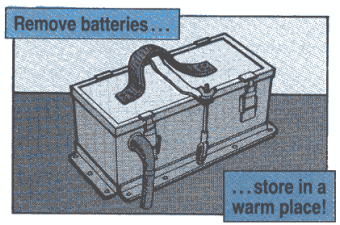


Oil leaks are a chronic problem in cold weather. Check connections, joints and seals regularly.

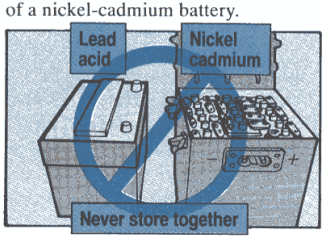
SEALS—Cold weather is hard on gaskets and seals. They contract and that leads to leaks. Moisture can seep in around seals and freeze and form ice that will cut seals. Make a list of your aircraft's seal and gasket potential trouble spots. Post that list next to these tips on your bulletin board.

PS MORE

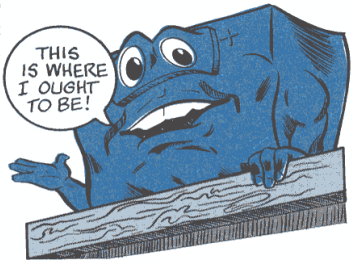
BATTERIES – Unless you're in the deep freeze for a long string of days, your nickel-cadmium batteries will do their job well in cold weather without too much extra effort on your part. However, every cold start shortens their life. So, if possible, bring your batteries indoors when the weatherman predicts several days of sub-freezing temperatures. If it's not possible, turn on the landing lights, searchlight or other equipment for 30 seconds before an engine start. That "load" will warm up the battery a bit. Always use an auxiliary power unit on the first start of the day. It saves a lot of drain on cold batteries.



Lead-acid batteries should also be kept warm. Cold weather saps their charge much faster than the nickel-cadmium battery. If you bring your batteries in, never store nickel-cadmium and lead-acid in the same area. Fumes from a lead-acid battery can cause a discharge of a nickel-cadmium battery.

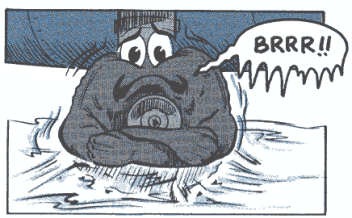


Place the batteries on a shelf or on dunnage, not on a bare floor.

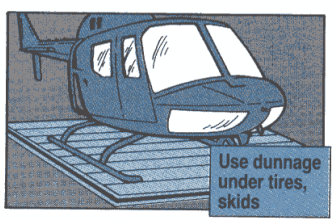


TIRES – Air pressure drops with the temperature, so check your bird's tire pressure often.

Tires frozen to the ground can be freed with liquid deicer. Move the aircraft immediately to keep tires from freezing again as the slush formed by the deicer refreezes.



Use boards, dunnage or something similar under tires and skids to keep them off snow or ice.

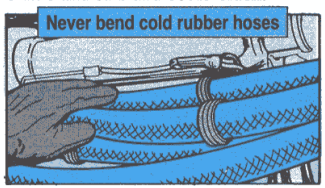


ALUMINUM AIRFRAME – A bolt that is overtorqued on a warm day could shear off as the bolt shank contracts.

LANDING GEAR – Use a clean rag dampened with hydraulic fluid to remove ice, dirt and grit from struts and pistons.

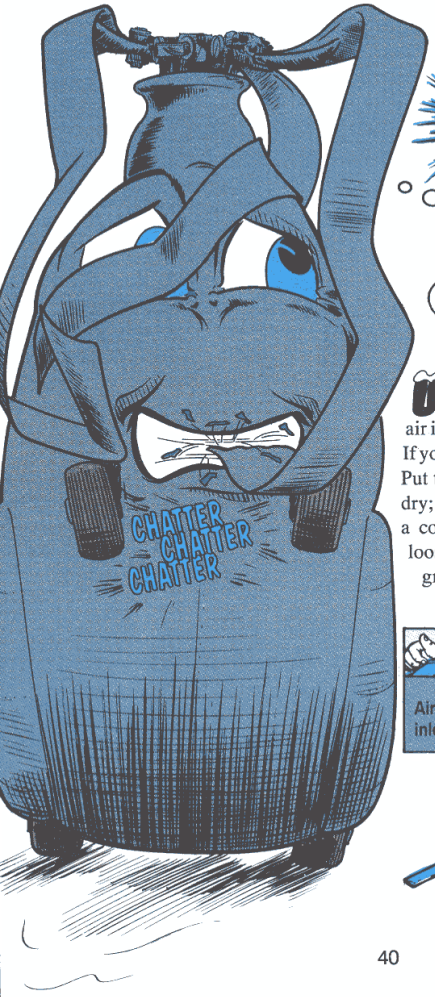
PRESSURE SYSTEMS – Service according to the instructions in each aircraft maintenance manual. Remember that any moisture present will freeze into ice crystals and damage seals.

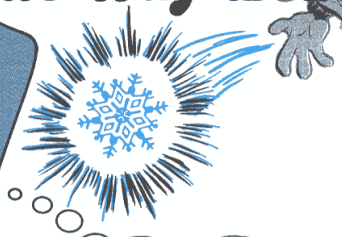
RUBBER HOSES OR RUBBER COVERED WIRES – Never bend when they're cold soaked. Rubber gets brittle and stiff and could crack.



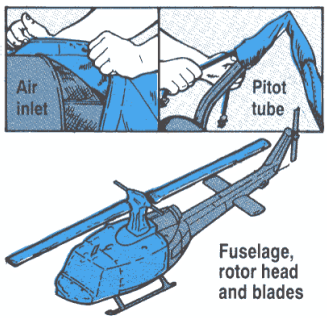
COLD WEATHER GUIDES – For more information on winter maintenance operations, check out TC 1-12 and FM 31-71.

The Way to Go In Frost, Ice & Snow





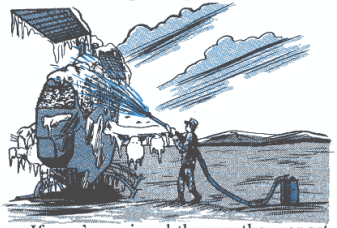
Use the standard covers at the engine air inlet and exhaust, and the pitot tube. If you have all-weather covers, use 'em. Put the covers on when your aircraft is dry; otherwise, they'll freeze in place. If a cover does freeze on your aircraft, loosen an edge and use heat from a ground heater to melt it loose.



Coating your aircraft when frost or ice is heading your way is also a good idea. Coat with anti-icing and defrosting fluid. NSN 6850-00-558-1248 brings a 55-gal drum; NSN 6850-00-901-0591 gets a 5-gal can. Spread the fluid on all surfaces except wiper blades and glass windows.

Coat the aircraft late in the day. If it rains, coat it again. Coat it even if you're using covers. The coating will prevent the covers from sticking.

Coat the blades and glass windows with isopropyl alcohol. NSN 6810-00-855-6160 brings a 5-gal can.



If you've missed the weather report and your aircraft is covered with ice or frost, spray the aircraft with anti-icing fluid. If you can, dilute and heat the fluid. Heated fluid makes ice removal faster. Diluted fluid saves bucks. Table 2-3 of TM 55-1500-333-24 gives the dilution percentages. Para 2-23c gives heating instructions.

If it's just a light coat of frost you're facing, defeat it with a spray of cold, undiluted anti-icing fluid.

Never use water—hot or cold—to clean a windshield. Hot water will crack a windshield. Cold water will freeze.

Deice glass windshields and blades with isopropyl alcohol.

Remember, though, not all anti-icing and deice fluids are good for all aircraft. Some areas on some aircraft, like Teflon-lined bearings, need special treatment. Read your aircraft TM. Each one has a section on deicing. And right now, before bad weather hits, review Section IV of TM 55-1500-333-24, on removal of snow, ice and frost.

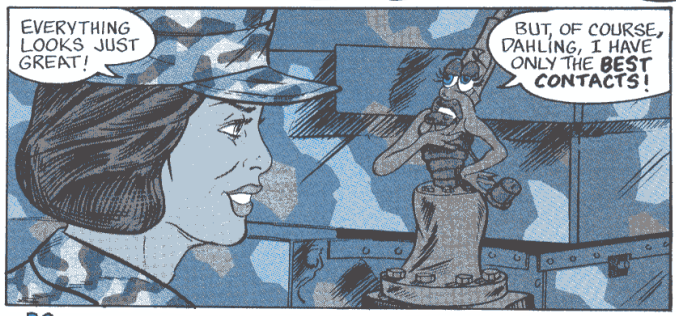
Also, remember all deicing fluids are toxic. Follow all safety precautions in the TMs and any local environmental restrictions.

When snow is coming, the only real protection is to cover your aircraft. If you can't cover it, grab a broom and

sweep the aircraft during snowfall to keep accumulation down.

Don't use the anti-icing fluid to protect against snow. The fluid is diluted by the melting snow and the diluted solution forms a slush that freezes into a hard coating; or worse, the slush can ooze down into the controls and freeze there.

Close Contact

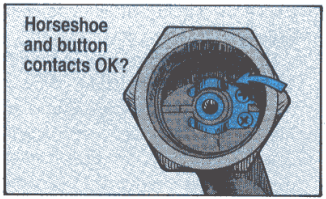


Keep in touch. That's the word on your AS-1729 antenna. A good contact between the whip antenna and the MX-6707 matching unit means a strong signal.

A bad contact causes intermittent or broken traffic. Worse yet, it can lead to high reflected RF power that'll knock out the receiver-transmitter.

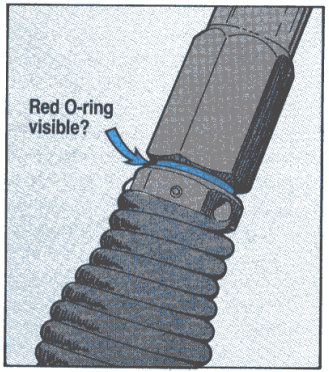
Here's how to keep your contacts in touch:

Look at the threaded ring inside the base of the AS-1730 element. Is the horseshoe contact broken or missing? Get a new one with NSN 5999-00-921-0630. Screws gone? Order them with NSN 5305-00-054-5635.

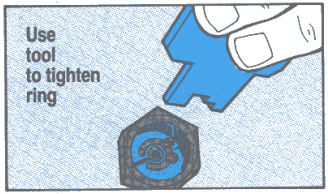


Work the button contact. It should push in easily. Then it should return until it sticks out about 1/8 inch from the threaded ring.

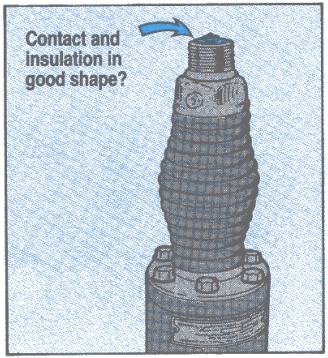
If it doesn't, the threaded ring is probably loose and the button contact won't mate with the matching unit. A tell-tale sign is a visible red O-ring when the whip is screwed down on the matching unit.



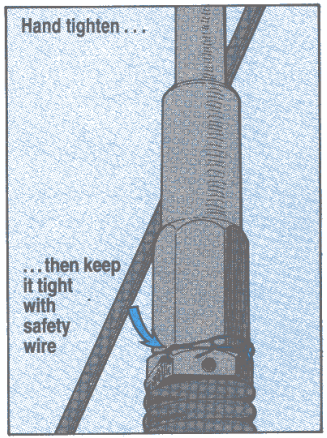
Adjust the threaded ring with load tightening tool, NSN 5120-01-172-8079. The tool has a notch to tell you when the ring is tightened right. When servicing the ring, apply silicone compound, NSN 6850-00-880-7616, to the threads. The silicone protects the ring from corrosion.



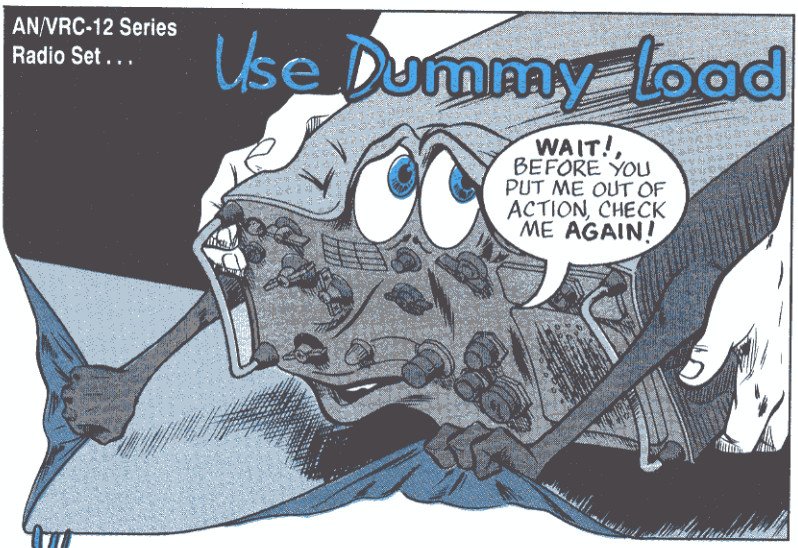
A loose contact ring in the AS-1730 antenna element can lead to more serious problems—like letting the horseshoe contact screws scratch off the metal coating on the MX-6707's insulator. With the coating gone, reflected RF power zaps your receiver-transmitter.



Never overtighten the AS-1730 on the matching unit. That can scratch the insulator or break the horseshoe contacts. No need to overtighten the antenna anyway. Safety wire, NSN 9505-00-293-4208, keeps your whip secure no matter how rough the ride.

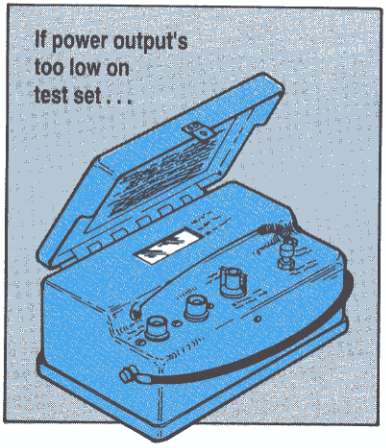


And finally, keep contacts clean and shiny with cleaner, NSN 6850-00-003-1194, applied with a soft cloth.



When your RT-524 or -246 receiver-transmitter fails the AN/PRM-34 test set's power output test, don't be too quick to pull your RT for repairs.

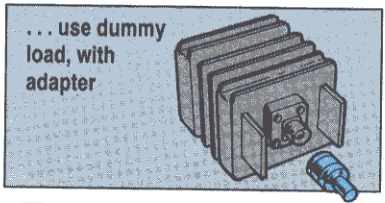
Make sure that a bad RF cable or an antenna contact or element is not the cause of low or high output power readings.



Give your RT a double check with a dummy load. Here's how:

- ✔ Unhook the RF antenna cable from the test set.
- ✔ Hook up a dummy load to the test set. Use CG-409()/U cable. NSN 5995-00-985-8287 is for a 1-ft cable and NSN 5995-00-235-5048 is for a 1 1/2-ft cable.

If you use a DA-437/U dummy load, NSN 5985-00-089-8990, you'll need a BNC female-to-Type C-male adapter, NSN 5935-00-557-9862.



The problem's in the RF antenna cable or in a part of the antenna if the power test is good.

AN/VIC-1 Intercom System . . .

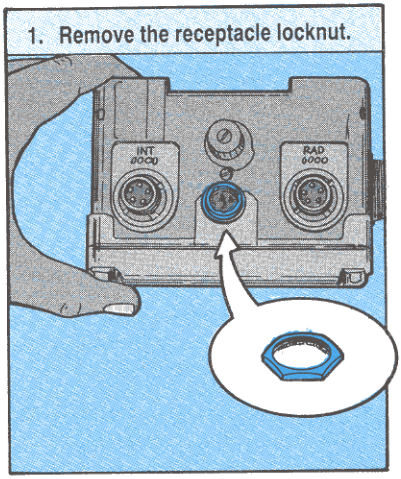
CAP OFF CONTROL BOX

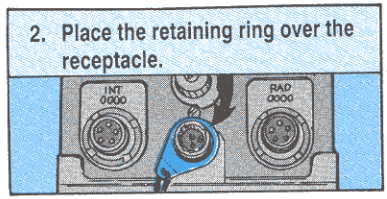
You've got to start at the bottom when you want top-notch performance from your AN/VIC-1's C-10456 control box.

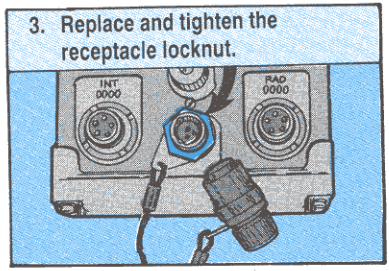
If the remote keying connector's not hooked up to the center receptacle on the bottom of the control box, you must have the P805 dummy plug in place. That completes the circuit and allows the control box to function. It also keeps dirt and moisture out of the receptacle.

If you've lost the dummy plug, get a new one with NSN 5935-01-260-2822. And take the time to install the new assembly when it comes in. If you just plug it in, you'll lose the cover the next time you take it off.

Attach it like this:



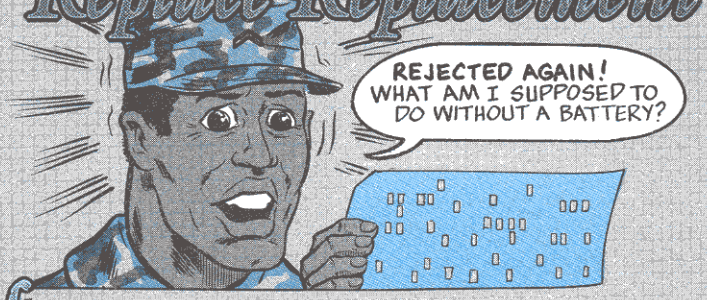




When handling the dummy plug, always remember to hold it by the body. Holding it by the black cap will break the plug.

BA-5598/U Lithium Battery . . .

Replace Replacement



Chances are, if you put in an order for a BA-5598/U lithium battery, NSN 6135-01-034-2239, your order will be rejected.

That's because the BA-4386, NSN 6135-00-926-8322, works just as well as the BA-5598—except in extremely cold weather—and costs much less.

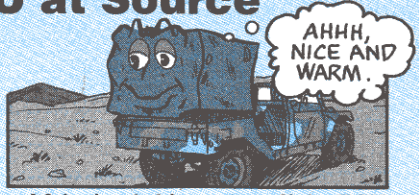
If, because of cold weather or an equipment or operational requirement, you must have only BA-5598s, you can still get 'em. Use project code EJ1 in Card Columns 57-59 of your supply request.

MSE Shelters . . .

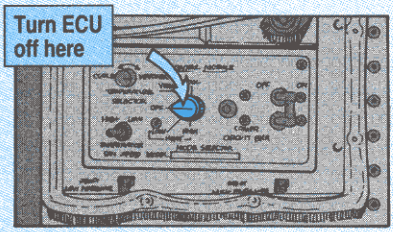
Turn Off ECU at Source

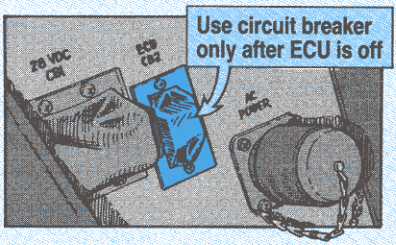
The environmental control unit (ECU) in your Mobile Subscriber Equipment (MSE) shelter keeps you and your equipment warm or cool depending on the season.

But you could both be left out in the cold if you use the ECU circuit breaker as the ON/OFF switch. Flipping the circuit breaker while the ECU is still on causes damaging power surges.



Make it a habit to turn off the ECU before leaving the shelter. Then you can safely flip the circuit breaker off as you leave and back on again when you return.

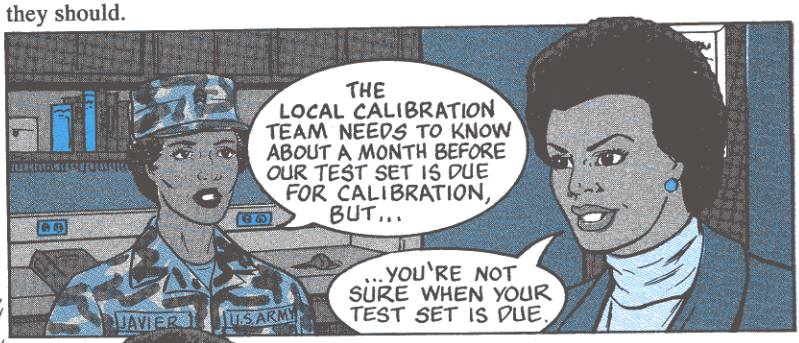




Night Vision Goggles . . .

Get Test Sets Calibrated

Night vision goggles test sets need to be calibrated to keep them testing the way they should.



Test Set	Calculate initial turn-in by:
TS-3895A/UV	Subtracting 6 months from the warranty expiration date.
TS-4348/UV	Subtracting 12 months from the warranty expiration date.
TS-3895/UV	Not calibrated, but calibration folks will put a Calibration Not Required sticker on it.

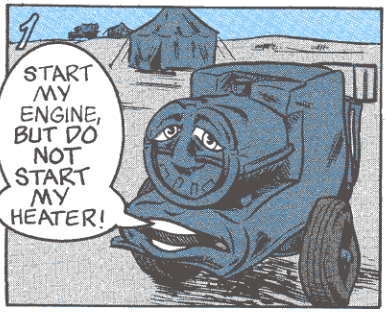
If your test set has no warranty sticker, get it calibrated as soon as possible.

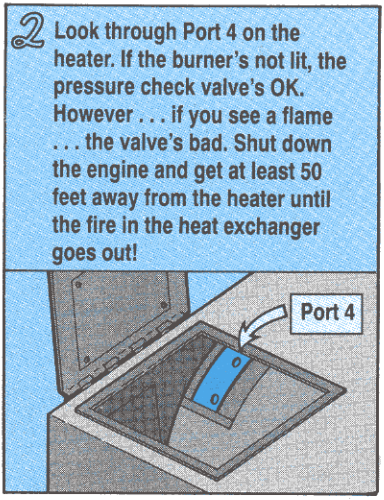
Once the initial calibration is done, the calibration folks will put a DA Form 80 on the test set that gives the next calibration due date.

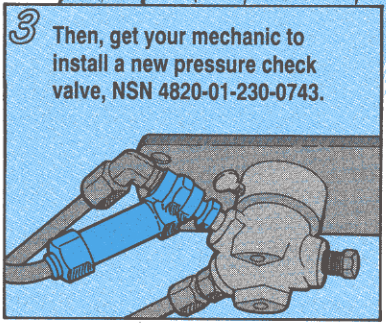
Bum Valves = Safety Problems

Some pressure check valves on the 400,000 BTU heaters are safety hazards. The bum valves leak fuel in the combustion chambers of the heaters. When the engine is started, the fuel can pre-ignite and cause the heater to explode.

Never inspect your heater in a building or tent . . . only outside.







To make sure the new valve's not leaking, do steps 1 and 2 again.

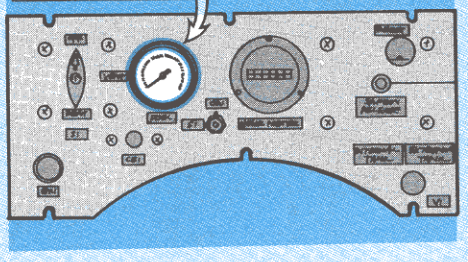
If you see no flame, the heater's good to go. Follow the instructions in Para 2-7b(2) of TM 5-4520-251-14 to start and operate the heater.

Heater, Duct-type . . .

KEEP GAUGE SEALED

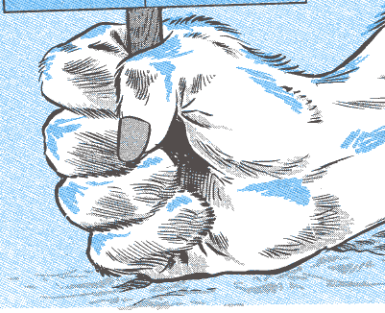
Weather stripping around the fuel pressure gauge on the 120,000 BTU heater dries out. Then water, dust and dirt get inside the gauge. Soon the gauge stops working.

To stop moisture damage, run a bead of silicone adhesive around the lip of the gauge.



GET THE ADHESIVE WITH THESE NSNs.

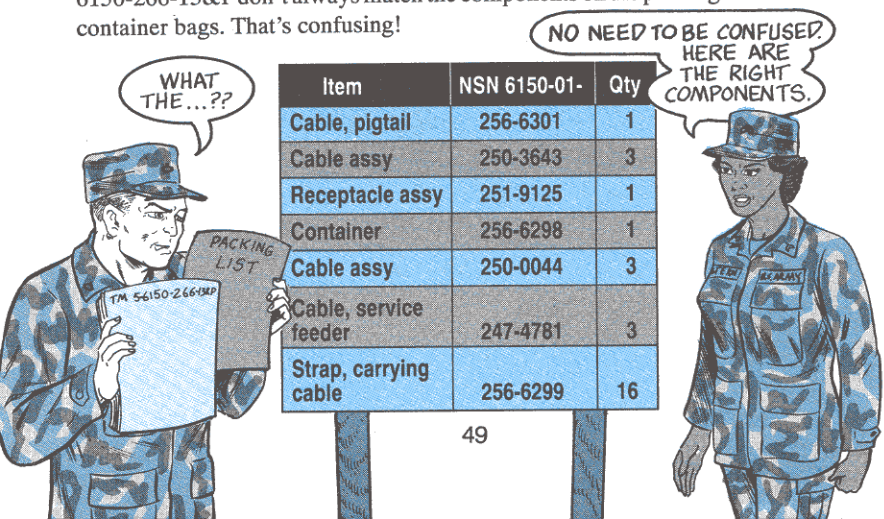
Adhesive	NSN 8040-
White	00-225-4548
Black	00-865-8991
Clear	01-010-8758



Electrical Distribution System . . .

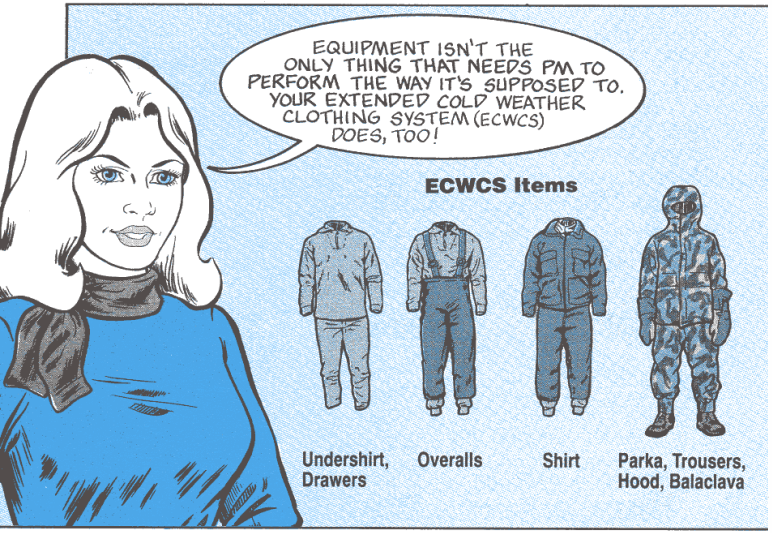
Components Can Be Confusing

The components for the M40 electrical distribution system listed in TM 5-6150-266-13&P don't always match the components on the packing lists of the container bags. That's confusing!



Item	NSN 6150-01-	Qty
Cable, pigtail	256-6301	1
Cable assy	250-3643	3
Receptacle assy	251-9125	1
Container	256-6298	1
Cable assy	250-0044	3
Cable, service feeder	247-4781	3
Strap, carrying cable	256-6299	16

Keep Cold Out With Good PM



Care and Cleaning

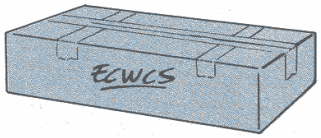
Brush your clothing often in the field. Dirt ruins ECWCS insulation by filling up the little air spaces between fibers in the garments that provide insulation to keep the cold out.

Keep clothing dry. Wet clothing is cold clothing. Dampness also increases body heat loss.

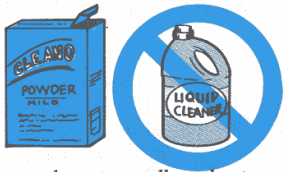
If any of your ECWCS gets wet, hang it to dry on a non-metallic hanger—but not so close to a stove as to burn it.

To prevent mildew during storage, brush and air-dry the clothing before packing it.

Always wrap the clothing in paper and place it in a heavy cardboard box when storing. That way sharp objects won't tear it.



The parka and trousers are water repellent and need extra care when you wash and dry them. If they let water through, check for rips or tears. If you can't find any, wash the garments using mild powdered detergent (NOT a liquid detergent). Liquid detergents leave a residue that can let water through.



Restore the water repellency by steaming the parka and trousers. Set your iron on STEAM. Hold it about 1/2 inch above the garment.

Steam all over, but DO NOT PRESS!

The polypropylene long underwear needs extra care when you wash and dry it. Begin by washing the underwear in COLD water using any cold water detergent. Rinse in cold water, too. Do not use bleach or starch. Drip drying is the best method. To drip dry, wring out all the water you can, then hang the underwear on a rust-proof hanger.

Never dry the polypropylene long underwear in front of a fire or stove or in a hot dryer. It shrinks when it gets hot. If you must use a dryer, tumble dry at the LOWEST heat setting. Keep a close eye on your underwear and remove it as soon as it's dry.

Wash the other items like you do the underwear.

For instructions on stain and spot removal, eyeball Appendix D of FM 21-15, Care and Use of Individual Clothing and Equipment.

You'll find repair information in a handy pamphlet on the ECWCS prepared by the Natick RD&E Center. A copy of this pam comes along with your ECWCS.

For replacement copies, order "Use and Care of the ECWCS," using item number AD 187998 from:

Defense Technical Information Center
National Technical Information Service
US Department of Commerce
Springfield, VA 22161

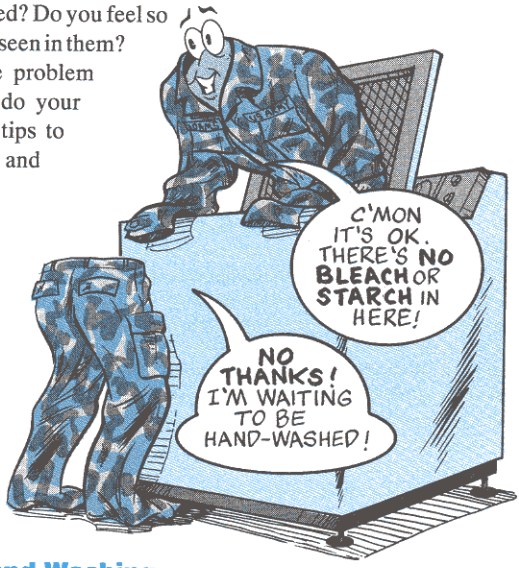
For more repair info, eyeball Chapter 20 of TM 10-8400-201-23.

BDUs . . .

WASH 'EM RIGHT

Are your BDUs fading, wearing thin? Have the pockets frayed? Has the stitching come all unraveled? Do you feel so raggedy that you're ashamed to be seen in them?

Don't blame your BDUs. The problem could be you and the way you do your laundry. Follow these wash-day tips to keep your uniform looking better and lasting longer.



Machine Washing

Wash on the permanent press setting, using warm water and a mild detergent. NSN 7930-00-929-1221 is a mild soap that cleans well.

Steer clear of chlorine bleach. And never starch your BDUs. Bleach and starch can fade your uniform and break down the fabric.

Hand Washing

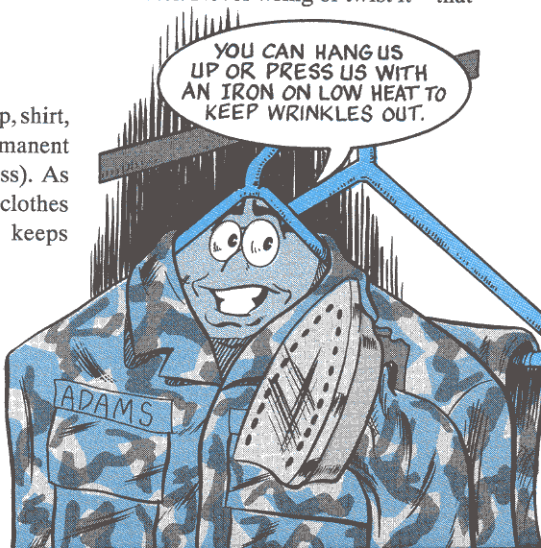
Wash using warm water and mild detergent. Rinse thoroughly in clean, warm water. Squeeze the uniform to get out excess water. Never wring or twist it – that strains the fabric.

Drying

It's OK to machine dry your cap, shirt, and trousers. Set the dryer on permanent press cycle (130 degrees or less). As soon as the cycle stops, take your clothes out and hang them up. That keeps wrinkles from setting in.

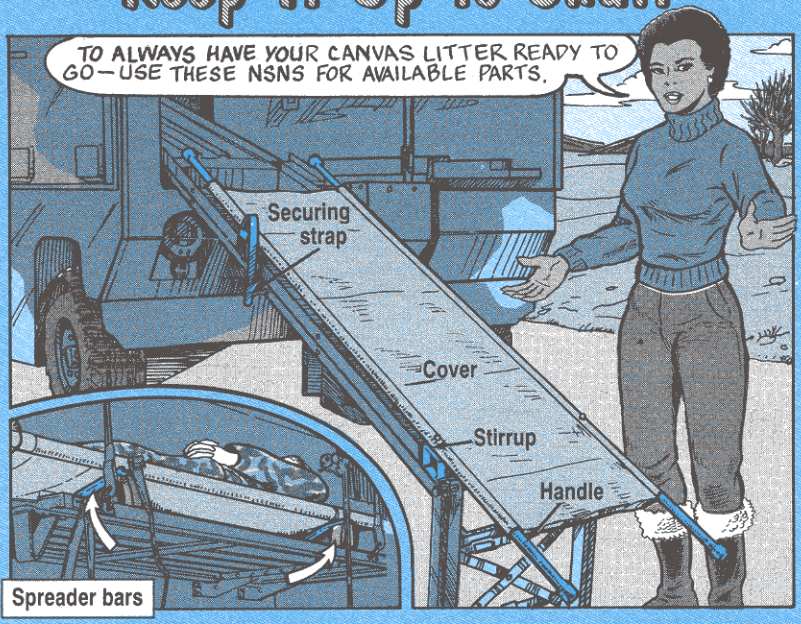
Ironing

If you press your uniform, set the iron on a permanent-press or low-heat setting.



Canvas Litters . . .

Keep It Up to Snuff



Item	NSN 6530-00-784-	Used on: Folding pole litter NSN 6530-00-783-7205	Used on: Rigid pole litter NSN 6530-00-783-7905
Cover	1035	X	
Cover	1250		X
Spreader bar/stirrup	3450	X	X
Securing strap	4105	X	
Securing strap	4335		X
Securing strap w/quick release	4205	X	X
Headless nail	2170	X	X
Handle	6530-01-247-7157	X	X

Appendix A of CTA 50-970 is your authority to order these repair parts.

Primed to Decon

A little PM goes a long way toward keeping your M11s primed to decon, NBC NCOs. For instance:

RUST—If you beat rust, you've already won the big PM battle. Rust is what usually kills M11s. And there is a weapon many NBC NCOs don't know about: Dry cleaning solvent, NSN 6850-00-274-5421.

After you wash the container with soap and water, rinse it with dry cleaning solvent. Stuff a rag in the container and work it around until the inside's completely dry. That does a much better job of cleaning out rust and drying up moisture than the old air-drying method.

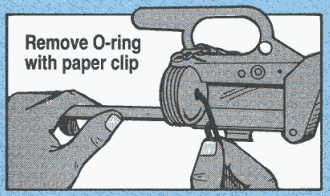
You still need to add 1/2 teaspoon of corrosion inhibitor to the container and lightly coat the container and drain plug threads with silicone compound before you store the M11. And be sure to screw in the head and plug tight. Otherwise, rust can still do a number on the M11.

Sad to say, rust will still appear sometimes. But that doesn't mean it's won. As long as rust can't flake off and block the siphon tube, the M11's usable. Just shake out the rust flakes. Then clean and dry the container.

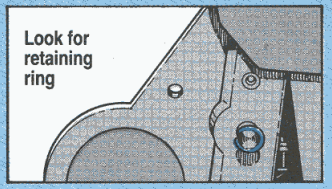
Pitting's a different story. If the container's pitted, turn it in and order a new one. Remember you must also order a new stick-on ID label, NSN 9905-01-135-6952.

RINGS—A bad O-ring won't let an M11 pressurize. And as few as six charges can wear out an O-ring. That's why you need to eyeball every O-ring before you send M11s to the field.

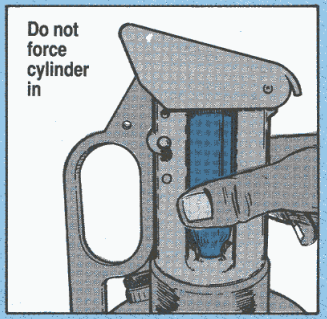
If an O-ring's split, cracked, or loose, replace it. But never use a screwdriver or knife to take it out. That damages the cylinder piercing pin. Use a taped screwdriver or paper clip.



Retaining rings disappear. Without the ring, the handle locking pin falls out. Check for and replace missing rings.



CYLINDERS—Some nitrogen cylinders don't want to fit. Try slowly turning the cylinder in the head assembly to make it fit. Do not use muscle. You will only pierce the cylinder. If a cylinder won't fit, get another.



FILLING—Make sure all your M11s have clearly marked fill lines. Paint new ones if necessary.

Educate your unit not to fill an M11 past the fill line, regardless of what they're filling it with. If it's overfilled, the check valve will be ruined when the M11's pressurized. Time for a new M11.

KNOWING UOC STOPS NMC

Your unit has an M1008 truck that's NMC because it's got a bum brake booster.

You check the part number in TM 9-2320-289-20P like a good PLL clerk's supposed to. There it is, first thing on Page 84-1: PN 2770317. You look up the NSN and order it.

But, when it's received, your mechanic tells you it's the wrong part. It's a brake booster for an M1009, not an M1008.

What went wrong?

You went wrong. You didn't look at the Usable on Code (UOC) that tells you what models a part fits. Now you have to reorder the right part, plus fill out paperwork to turn in the excess part. And your unit has to eat at least part of the cost of the wrong brake booster.

But it's easy to stay out of that trap by just paying attention to the UOC.

Most major equipment items come in several models. Parts that fit one model may not fit others. That's why there's a UOC—to identify what parts fit what models.

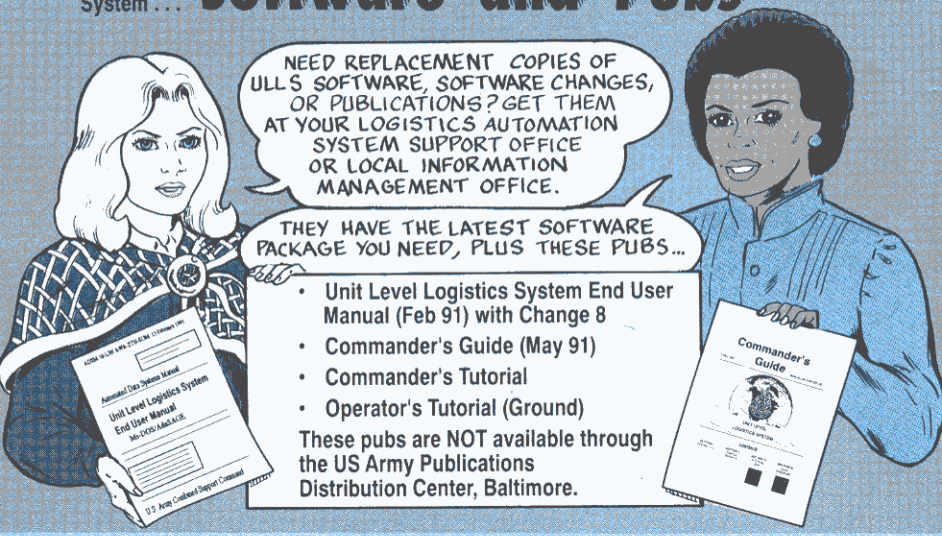
When you look up the part, check the UOC. It will be a series of numbers or letters next to the part. If there is a UOC, go to the Special Information section in the TM's introduction. It will tell you what models the letters or numbers represent. If no UOC's listed, the part fits all models.

For the M1008 brake booster, for instance, the M1008's UOC is 194. When you turn to Page 84-1, you see the second brake booster, PN 2771250, has a UOC of 194. That's the booster you should have ordered.

Usable on Code	Used On
194	Model M1008, Type "B" Cargo, Shelter
208	Model M1008A1, Type ""B" Cargo, Troop Seat
209	Model M1009, Type "A" Utility
210	Model M1010, Type "C" Ambulance
230	Model M1028, Type "E" Shelter Carrier
252	Model M1028A1, Type "F" Shelter Carrier w/PTO
254	Model M1028A2, Type "F" Shelter Carrier w/PTO
231	Model M1031, Type "D" Chassis

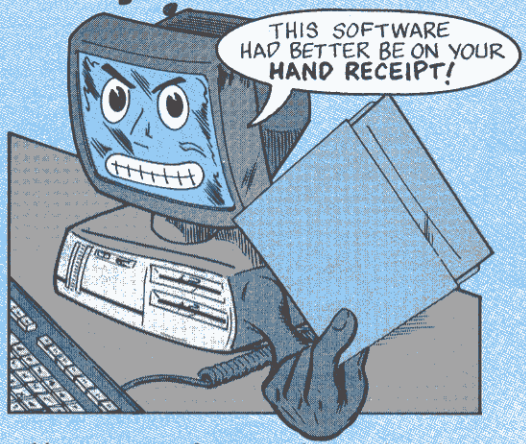
Unit Level Logistics System . . .

Software and Pubs



Computer Software . . .

Accountability Is a Must



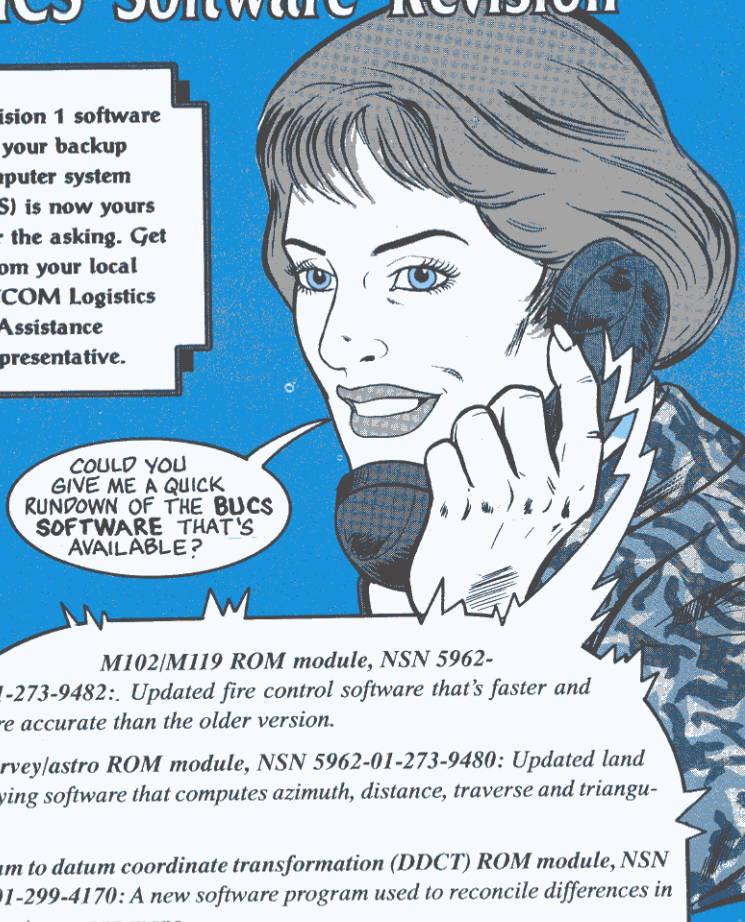
What does computer software and hardware have in common? Dumb question, huh? But beside the fact that it takes both to make up an operating computer, both are also accountable items.

Para 2-32i(1) of AR 710-2 now says all original software, **no matter what its value,** needs to be accounted for by normal hand receipt procedures.

Keep yourself in the clear by making sure any software you have on hand has been hand-receipted to you by the unit information management officer. Then sub-hand receipt it to your individual users. Same thing with the documentation (software books). Keep track of them, too.

BUCS Software Revision

Revision 1 software for your backup computer system (BUCS) is now yours free for the asking. Get it from your local AMCCOM Logistics Assistance Representative.



M102/M119 ROM module, NSN 5962-01-273-9482:. Updated fire control software that's faster and more accurate than the older version.

Survey/astro ROM module, NSN 5962-01-273-9480: Updated land surveying software that computes azimuth, distance, traverse and triangulation.

Datum to datum coordinate transformation (DDCT) ROM module, NSN 5962-01-299-4170: A new software program used to reconcile differences in coordinates among maps.

Reserve component/modified armament system (RC/MAS) ROM module, NSN 5962-01-299-4171: A new software program that provides fire control support for the M109A5 howitzer. Available only to Army Reserve and National Guard Units.

National Guard units need to contact their State Supply Management Officer for information.

MAINTENANCE EXCELLENCE AWARDS

LIGHT UNIT WINNERS
Active MTOE, 188th MP Co, Taegu, Korea
TDA, Joint Security Area Bn, UN Security Force, Panmunjom, Korea
Reserve MTOE, HHC, 363d Spt Gp, San Marcos, TX
National Guard MTOE, B Co, 228th S&T Bn, Pine Grove, PA

★

LIGHT UNIT RUNNERS-UP
Active MTOE, 95th Maint Co (TMDE), Ft Ord, CA
TDA, 54th Sig Co, Vicenza, Italy
Reserve MTOE, C Co, 1st Bn, 314th Inf (M), Gettysburg, PA
National Guard MTOE, 1168th Trans Co, Red Oak, IA

★

INTERMEDIATE UNIT WINNERS
Active MTOE, 429th Medical Co, Ft Bragg, NC
TDA, AMSA 154G, Tuscaloosa, AL
Reserve MTOE, 994th Engr Co (Panel Bridge), Grand Junction, CO
National Guard MTOE, HQ & A Co, 728th Maint Bn, Lock Haven, PA

★

INTERMEDIATE UNIT RUNNERS-UP
Active MTOE, 167th Sig Co, Vicenza, Italy
TDA, Rotary Wing Priority Air Transport Div, Ft Belvoir, VA
Reserve MTOE, 25th MASH, St Louis, MO
National Guard MTOE, C Co, 216th Combat Engr Bn (Corps), Felicity, OH

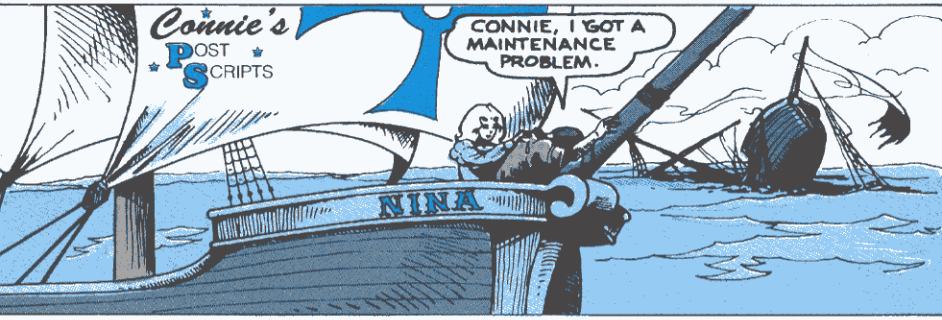
★

HEAVY UNIT WINNERS
Active MTOE, 3d US Inf (The Old Guard), Ft Myer, VA
TDA, 1st Bn, 29th Inf Regt, Ft Benning, GA
Reserve MTOE, 936th Maint Co (ND/DS), Wood River, IL
National Guard MTOE, HHC, 2d Bn, 112th Inf, Lewistown, PA

★

HEAVY UNIT RUNNERS-UP
Active MTOE, 2d Squadron, 7th US Cavalry, Ft Carson, CO
TDA, 59th Sig Co, Camp Darby, Italy
Reserve MTOE, A Co, 319th Sig Bn, Fresno, CA
National Guard MTOE, 3673d Maint Co (FWD/DS), New Orleans, LA

DA Cir 750-91-1 has the word on the FY92 competition.



M747 Valve Handle

Parts are available for your trailer's air control valve (Item 15 in Fig 45 of TM 9-2330-294-24P). The handle is NSN 2540-01-211-8375. The lock washer is NSN 5310-00-194-9209 and the machine screw is NSN 5305-00-954-3487.

Filler Bleeder TM

Need a repair part or maintenance info on the hydraulic brake system filler bleeder in your No. 1 Common shop set? It's in the book—TM 9-4910-709-14&P. Your pubs clerk can order one for you.

HMMWV Turnbuckle NSN

NSN 5340-01-277-2460 gets the suspension tiedown turnbuckle that's shown as Item 19, Page B-6, in TM 9-2320-280-10. The NSN in the TM is wrong.

Blasting Cap Crimpers NSN

Make sure you use blasting cap crimpers, NSN 5120-01-313-6937, from now on. The old crimper does not crimp the blasting caps to the time fuse correctly. Turn in the old crimpers so they can be disposed of through your local DRMO.

LRT-110 Crane

There is no NSN for the generator on the LRT-110 crane. Order the generator on a DD Form 1348-6 using CAGE 24975 and part number 9DB3GB3A58 from RIC S9C.

OH-58 Battery Basics

The Kiowa's BB-558 battery, NSN 6140-01-186-8802, can be repaired. Order the harness assembly with NSN 6150-01-272-4997 and a cell with NSN 6140-01-211-9906. If the battery can be repaired, do it. It's a lot cheaper than buying a new battery.

Fuel for Lantern

When you order propane lantern, NSN 6260-01-124-7467, all you'll get is the lantern. To get the 14-oz disposable bottle of propane gas that's needed to operate the lantern, use NSN 6830-00-584-3041.

Keep Placard in Sight

Use NSN 9905-01-328-8134 to get an aluminum frame to hold cargo placards. Order frames on DD Form 1348-6. Note in the REMARKS block that the NSN is not on the AMDF. The source of supply is GSA.

Distribution: To be distributed in accordance with DA Form 12-34-C-R, for TB-43-Series

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

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For sale by the Superintendent of Documents, U.S. Government Printing Office Washington, DC

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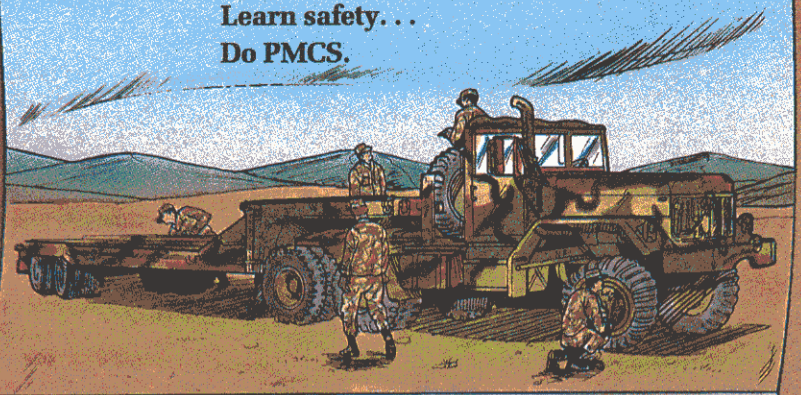
Learn safety. . .
Do PMCS.



Simply choose the training course you want:

- **TC 21-305-1** Heavy Expanded Mobility Tactical Truck (HEMTT)
- **TC 21-305-2** Night Vision Goggles: Training Program for Night Vision Goggle Driving Operations
- **TC 21-305-3** 5-Ton Tactical Cargo Vehicle (M923, M924)
- **TC 21-305-4** High Mobility Multipurpose Wheeled Vehicle (HMMWV)
- **TC 21-305-5** Equipment Transporters (C-HET, MET, LET)
- **TC 21-305-6** Tractor and Semitrailer (M915, M931, M932)

For details, see your NCO

PIN: 064836-000