

Issue 395

PS

October 1985

# THE PREVENTIVE MAINTENANCE MONTHLY



LOOKS LIKE  
WE MADE IT  
IN TIME!

Cold Weather—  
Are you ready for it?

# Pubs and Posters

## PUBS

## SUBJECT

FM 9-207	Operation and Maintenance of Ordnance Materiel in Cold Weather
FM 31-70	Basic Cold Weather Manual
FM 31-71	Northern Operations
SB 9-16	Personnel Heater, Winterization Kit Policy (Construction and MHE)
SB 11-576	Cold Weather Batteries for AN/PRC Radios
SB 38-100	Preservation, Packing, Marking
TB 750-651	Use of Antifreeze Solutions and Cleaning Compounds in Engine Cooling Systems
TC 21-3	Individual Operations, Survival in Cold Weather Areas
TM 9-247	Materials and Chemicals used for Cleaning, Preserving, Abrading, Cementing Ordnance Materiel
TM 9-2540-205-24&P	Personnel Heaters For Combat Vehicles
TM 9-6140-200-14	Lead-Acid Batteries
TM 750-254	Cooling Systems: Tactical Vehicles

IF YOU NEED A POSTER, HAVE YOUR PUBS CLERK SEND IN A DA FORM 4569!



## DA POSTER

750-52  
750-70  
750-71  
750-72  
750-73  
750-76

## SUBJECT

Optical Antifreeze/Battery Tester  
Is Your Radiator Ready for Winter?  
Engine Coolant Up-to Snuff?  
Keep Batteries Fully Charged  
Drain Multifuel Filters  
Give Your Batteries a Full Life

TO GET A WARM START ON COLD WEATHER, ORDER THESE PUBS AND POSTERS...



THE  
**PREVENTIVE  
MAINTENANCE**  
MONTHLY

Published by the Department of the Army for the information of all soldiers assigned to combat and combat support units, and all soldiers with organizational maintenance and supply duties.

Within limits of availability, older issues may be obtained direct from Editor, PS Magazine, c/o US Army Materiel Readiness Support Activity, Lexington, KY 40511-5101.

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PS wants your ideas and contributions, and is glad to answer your questions. Name and address are kept in confidence. Just write to:

MSG Half-Mast  
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# Beat the Odds!

You're playing against a stacked deck when Ol' Man Winter deals the cards. There's no mercy in cold weather. Just one slip can be fatal—for both you and your equipment.

Be prepared... stay alert—or you'll lose. You can bet on it!

## Rules for Survival

- 1 Know what your TM's say about winter operations.
- 2 Lube according to the temperature guide in your equipment's LO.
- 3 Have all the special lubes and winterization equipment you need and are authorized for the average temperature range in your area on hand before cold weather arrives.
- 4 Protect delicate and vital parts of all equipment and keep electronic gear under cover or out of the weather altogether.
- 5 Cold is hard on you—it's hard on your equipment. Keep that in mind and give your equipment a little extra attention—and PATIENCE! Never force a cold, stiff or frozen item of equipment.
- 6 Brush snow or wipe water from the tops of fuel and lube containers and away from spouts and plugs.
- 7 Practice the buddy system. Since jobs take longer in the cold, a buddy speeds up the work. But a buddy also helps you guard against frostbite.

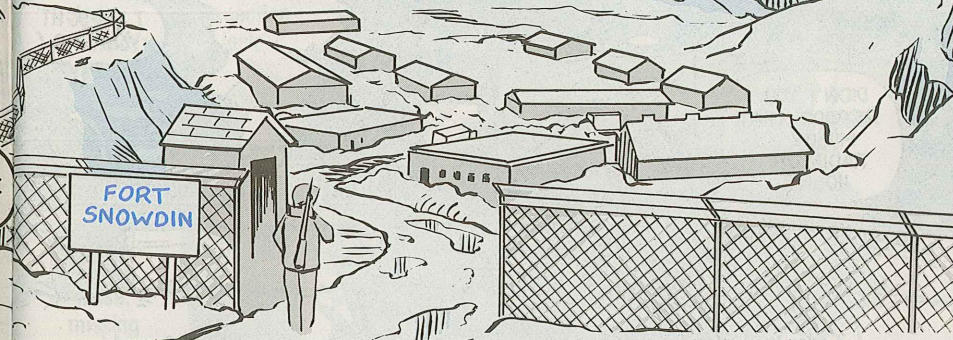


## Keep Breathing

When Winter's breathing down your neck, keep warm. But not so warm you won't be around next spring.

Closing all the doors and windows keeps the heat in. It also keeps in carbon monoxide and other equipment engine fumes.

So when you're holing up for the winter, give yourself a little breathing space. Leave a vehicle window or hatch cracked open—at least an inch or 2. Never, never take a nap while a vehi-



cle heater or engine is running—even with a cracked window.

When operating equipment inside, always pipe the exhaust to the outside or keep doors in work bays or shops wide open.

Test fuel-burning heater exhausts and couplings for leaks.

You can't see or smell carbon monoxide—but it'll still do a job on you. A permanent job!

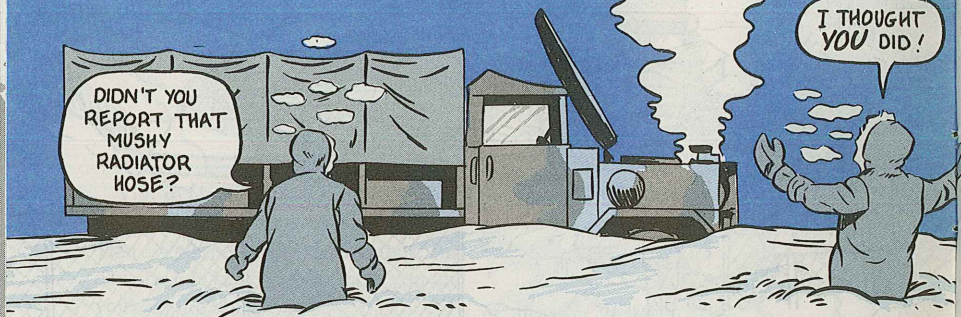
## Winter Problems

- ❄ Lubes get thick and hard to use.
- ❄ Metals contract. With different metals, you get different rates of contraction so parts that usually slide smoothly begin to bind and rub together.
- ❄ Plastic and rubber get stiff and brittle. Even a slammed door on a truck can shatter a door seal. A sharp bend may snap a cable.
- ❄ Gages and dials stick and give bum readings. A gentle tap usually frees 'em tho.
- ❄ Water collecting in tanks, filters and lines may freeze. That goes for engines and components turned in for repair, too. Water left in a turned-in

engine may freeze and bust the block. Remember, fiberboard boxes and plastic foam packing are not waterproof. In fact, they hold water.

- ❄ Linkages stiffen and slow the equipment's response.
- ❄ Paint becomes brittle and cracks easily.
- ❄ Battery efficiency drops.
- ❄ Engines are hard to start. Check your TM for ways to avoid hydrostatic lock.
- ❄ Drain cocks and plugs freeze tight so draining becomes a real chore. Keep at it, anyway—putting that job off just makes it tougher.
- ❄ Snow and slush clog breathers and vents.
- ❄ Windshields crack easily from a sharp blow or blast of hot air.
- ❄ Frigid blasts of air slow people down to a crawl. Nearly every job takes twice as long—so leave plenty of time to do those jobs right!
- ❄ Tools and parts dropped into the snow can stay lost until spring. Tools can also slip from a mittened or numb hand and add to a repair job—on your equipment or you!

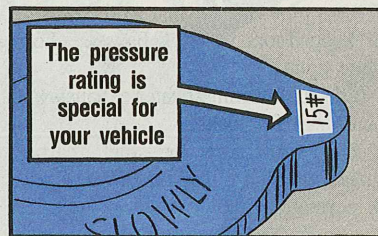
## Learn the Easy Way!



Today's the day for getting your engine's cooling system in top shape for cold weather. A few minutes of eyeballing now can save you from hours of headaches later.

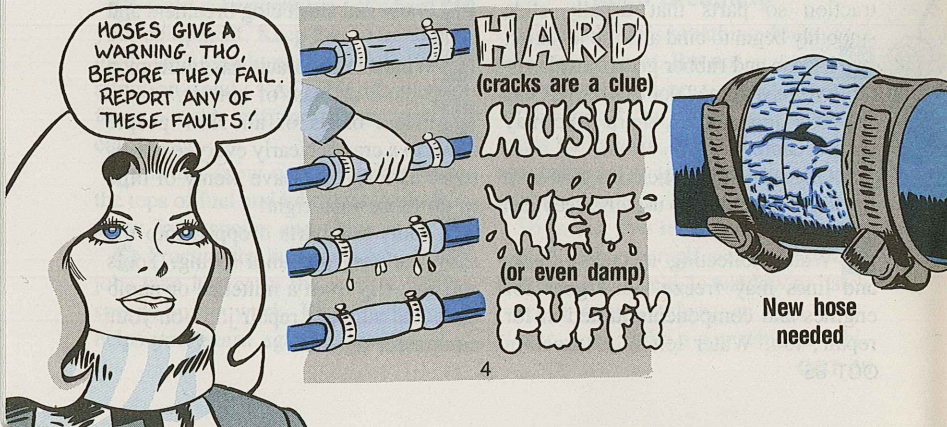
### Radiator Cap

Make sure you've got the cap the TM lists for your cooling system—not some cap you've scrounged from the junk yard or grabbed off some other equipment. The pressure rating of the cap is No. 1 important! Too low cuts the boiling point of your coolant. Too high can build up pressure that'll pop the seams in your radiator and blow hoses.

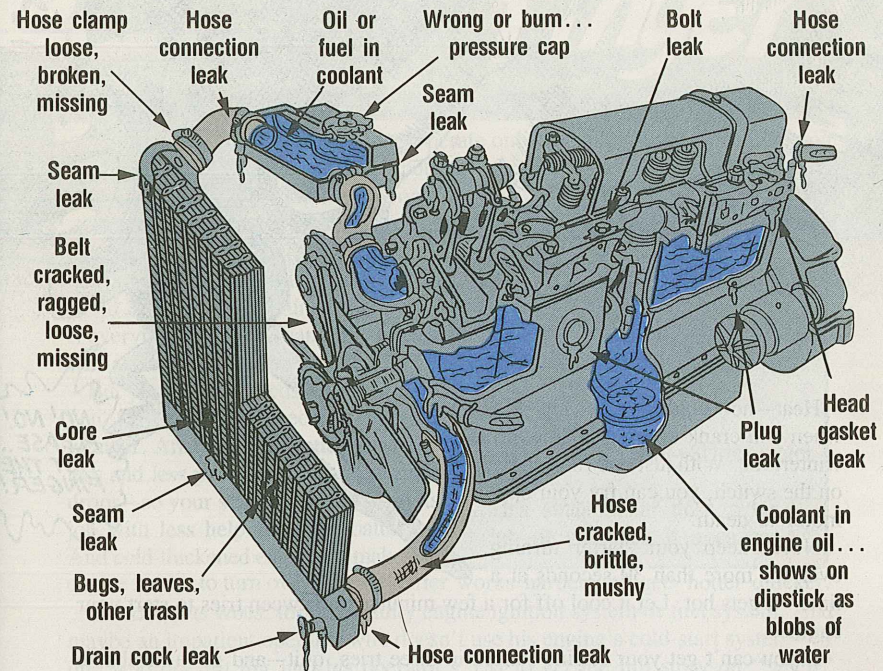


### Hoses

Hoses also need a close look. They have to handle heat, pressure and vibration. Hoses rot, harden or crack as they age.



### Problems to Fix or Report



Look over your radiator for leaks—top tank, front and back of core, bottom tank. Leaks may not show up wet when your engine's cold. Look for rust or odd-colored dribbles where coolant has leaked and then dried up. Then later, when you've got your engine running at operating temperature and pressure, check these places again for wet leakage. Use a flashlight for both hot and cold inspections.

### Coolant

Take the cap off. If the cooling system is hot, open the filler cap slowly until all the pressure is gone. Don't touch a hot cap with your bare hand. The coolant should be at least over the top of the core.

Your coolant should be almost clear—it'll be colored by the antifreeze. If your coolant's muddy-looking or has bits of junk in it, your cooling system may need draining and flushing—maybe even cleaning. Report it.

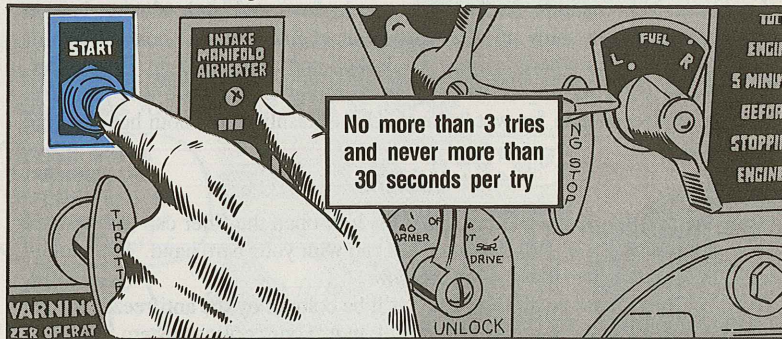
If you see a rainbow of oil slime on top of the coolant, you've probably got a leak inside your engine. Exhaust gas or oil is getting into your cooling system. Pull your crankcase dipstick and check for water in your engine oil—little globs on the dipstick. Either way, report it.

# Death by Finger!

Heat—not cold—is the big threat when you crank up your engine in the wintertime. With just one finger asleep on the switch, you can fry your starter motor to death!

Never keep your starter turning over for more than 30 seconds at a time—it gets hot. Let it cool off for a few minutes in between tries to start your engine.

If you can't get your engine started in three tries, quit—and get a mechanic to find out what's wrong.



Too many people don't even know what their starter is—and that's the start of so many starter burn-outs in every cold season.

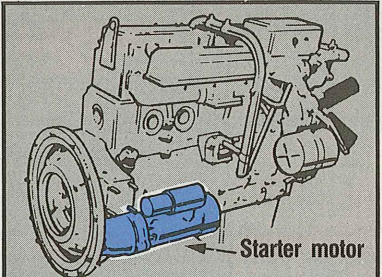
Your starter is an electric motor—operated by your batteries. But this motor is a lot different from the motor that runs your electric shaver, fan or shop equipment.

Your starter motor is designed to operate only for a short time each time you hit the button or turn the switch. It puts out a lot of horsepower for such a small-size motor. It's a workhorse in pony size!

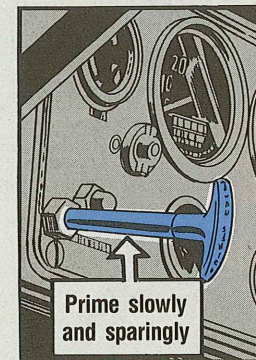
This little electric motor has to turn over a big engine until the engine's ignition system and fuel system take hold and the engine runs on its own. If everything's in top shape, the engine will start within a few seconds.

But your starter needs all of the help you can give it—especially in cold weather. After all, your batteries put out less and less power as the temperature drops—so your starter's trying to do its job with less help from the batteries. And cold-thickened engine oil makes the engine harder to turn over—so the starter works harder and gets hotter quicker.

To add to its woes, toss in a faulty engine ignition system or fuel system. And maybe an impatient operator who doesn't use his engine's cold-start system—or one who doesn't dig into his operator's TM to get the full story on “when” and “how.”



This small motor does a big job—if you give it a chance



## COLD WEATHER STARTING

1. OPEN FOOT THROTTLE ONE-THIRD.
2. TURN ON PRE-HEATER SWITCH - WAIT 30 SECONDS.
3. PUMP PRE-HEATER PRESSURE TO 60 PSI AND TURN IGNITION SWITCH TO “START”.
4. KEEP 30-60 PSI PRESSURE WHILE CRANKING.
5. WHEN ENGINE STARTS, OPERATE AT 600-1000 RPM. PUMPING 30-60 PSI FOR 2-3 MINUTES.
6. IF ENGINE DOES NOT FIRE IN 30 SECONDS CRANKING. REPEAT STEP 2 THROUGH 5.
7. LOCK PUMP AND TURN PRE-HEATER SWITCH OFF.

Many operators over-prime. This leads to hydrostatic lock and crankcase oil dilution. Before turning the engine over—prime 2 or 3 slow strokes—no more. Then turn over the engine and prime sparingly until the engine'll run on the choke and throttle settings alone.

GO OR NO-GO...  
IT'S ALL  
UP TO **YOU!**

**Keep Your Finger  
on Problems**

**YOUR STARTER WILL  
DO ITS JOB IF YOU  
DO *YOURS!***

MUST BE  
SOME KINDA  
MESSAGE...

YEAH,  
HEADS UP!

Use the antifreeze and  
battery tester to make  
sure your batteries  
are fully charged

Keep  
batteries fully  
charged.

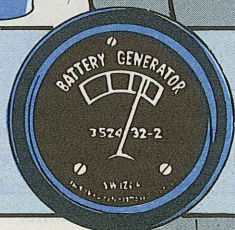
Your starter  
can't get  
full power  
when battery  
connections  
are loose

Make sure  
all electrical  
connections are  
clean and tight.

Use the right  
weight oil in your engine. Go  
by the LO!

Your battery generator indicator  
tells you if your batteries are  
being kept up to snuff by  
the charging system—mighty  
important for starter operation

Report any  
engine trouble  
that makes your  
starter's job  
harder.



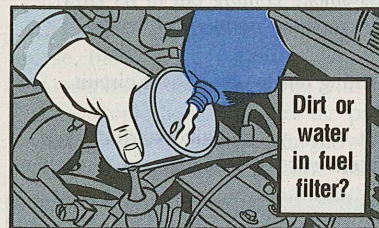
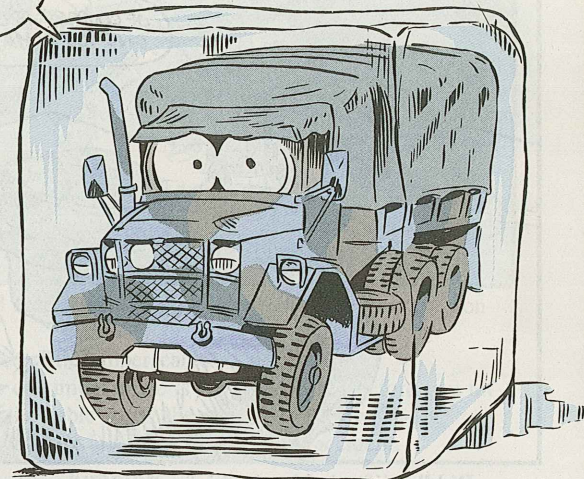
Diesel/Multifuel Engines...

## Ice Puts Chill on Fuel & Air

HELP, I'M NOT ONLY COLD,  
I'M STARVING AND  
SUFFOCATING!

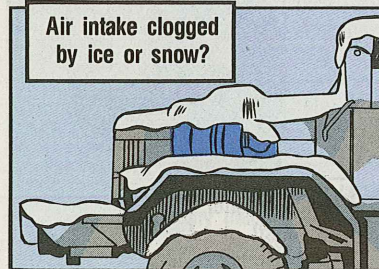
Think filters—fuel filter and air cleaner. Fuel and air can't get thru filters that're plugged with dirt or ice. Yes, ice... frozen water!

Try to drain the filter. If nothing comes out, the filter's probably frozen... plugged by ice... water that should've been drained out before. Your mechanic will have to take the filter apart, clean it and maybe even put in a new filter element.



Dirt or  
water  
in fuel  
filter?

But fuel's not enough. Your engine needs air—lots of it. You know dirt can plug your air cleaner, but did you ever



Air intake clogged  
by ice or snow?

think of ice or snow shutting off your engine's air supply?

Moist air or snow sucked into your cleaner can freeze on the element. Air can't get thru!



Flag up?  
Air cleaner's  
plugged!

Eyeball that air cleaner indicator. If the colored flag is locked up in view, your air cleaner's plugged. Get the element cleaned, dried out or replaced.

Keep snow cleared away from the air cleaner intake.

# A Helping Hand—With Claws!



**Riddle:** What's blue in the face and has smoke coming out of its ears?

**Answer:** A soldier who screwed up with slave or jumper cables!

Why the blue face and smoking ears?

It could be from frustration... or from getting burned by a short-circuit... or from being blasted by a battery explosion!

Slave cables and jumper cables are great when your engine starting system needs a helping hand. But you can make matters worse if you don't use 'em right.

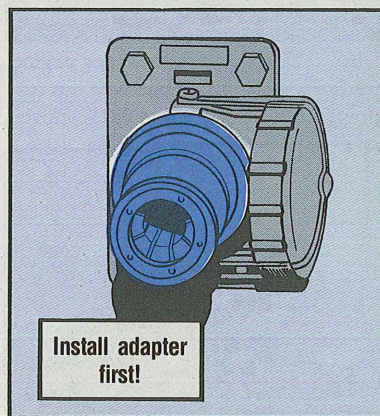
## Slaving

You can get a bad burn if your NATO slave cable short circuits.

This can happen if the vehicle slave receptacle outer shell makes contact with the pins of the NATO cable adapter.

To keep this from happening, first push the NATO adapter onto the vehicle slave receptacle. Then you can connect the cable to the adapter without any danger of a short circuit between the adapter and the vehicle slave receptacle.

Never disconnect the slave cable while the starter is turning. Arcing



burns up the connectors and receptacles. Then you'll have to replace the connector or receptacle.

The same thing can happen with jumper cables.

Make sure the slave cable or jumper cable is fully connected before you hit the starter. Then don't pull the cable when the starter is engaged.

Be careful around the cable, too. Don't knock it out by accident.

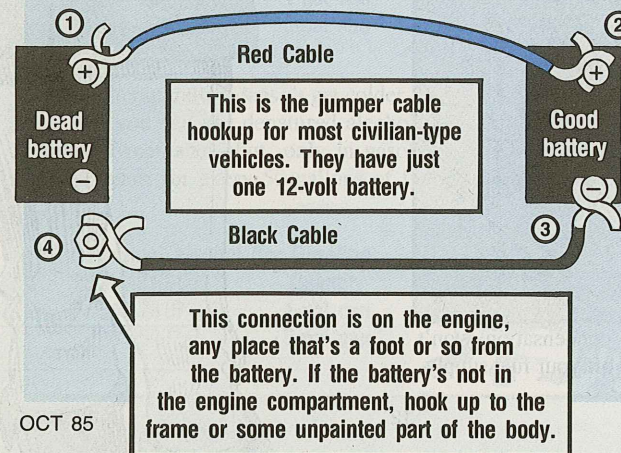
## Jumping

If you hook up jumper cables wrong, you could screw up an alternator, or, worse, blow up the battery.

An explosion can shower you with acid and blast you with pieces of the battery.

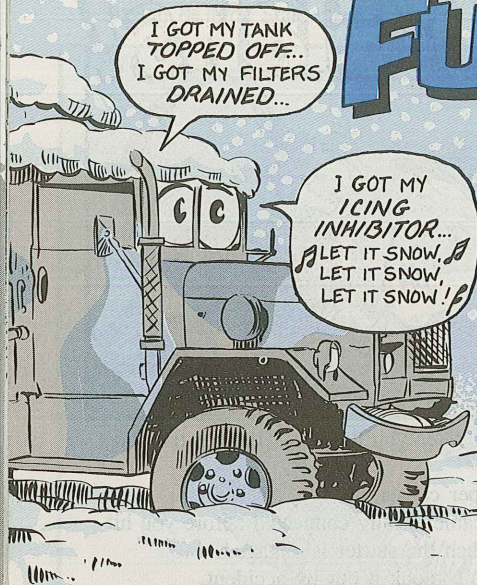
This simple hookup makes the point:

Never connect the black (negative) cable to the negative (-) post of the dead battery. You can make a spark—and cause an explosion!

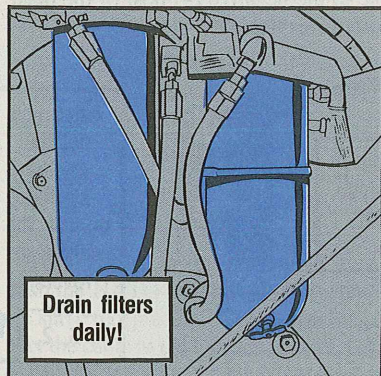


When you get the engine started unhook the cables in reverse order—4, 3, 2, 1.

# Fuel Icing Inhibitors



Cold weather can mean condensation—water—in your fuel system. Topping off your tank and keeping your filters drained, like it says in your TM, go a long way toward preventing problems.



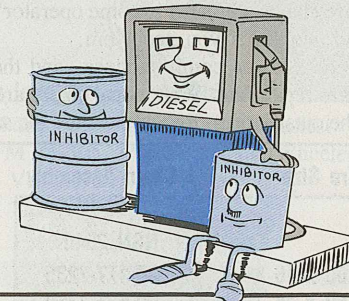
To make sure condensation won't turn to ice and cut off your fuel supply, use icing inhibitor.



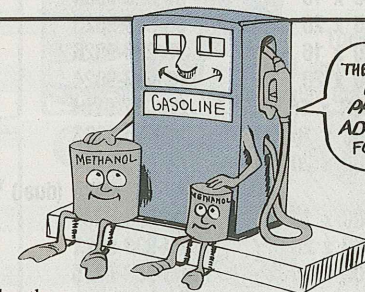
FM 9-207 HAS  
THE INFO ON  
FUEL ADDITIVES!

Use one pint of icing inhibitor to each 40 gallons of fuel, as it says on Page 2-7 of the FM. Too much makes bum fuel for your engine.

**Diesel**  
**Fuel System Icing Inhibitor**  
NSN 6850-00-  
753-061 5-gal can  
060-5312 55-gal drum

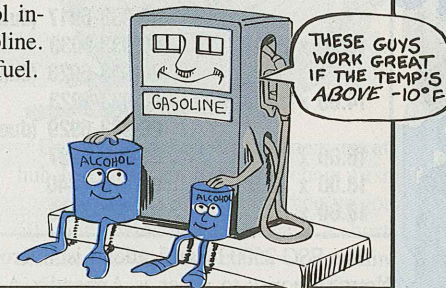


**Gasoline (MOGAS)**  
**Methanol**  
NSN 6810-00-  
597-3608 1-gal can  
275-6010 5-gal can



If the temperature doesn't get colder than -10°F, you can use denatured alcohol instead of methanol—but, only in gasoline. Use a quart for every 50 gallons of fuel.

**Denatured Alcohol (for Gasoline)**  
NSN 6810-00-  
543-7415 1-gal can  
201-0907 5-gal can



For Driving  
Traction...

# Wrap Your Vehicle in Chains

When you're driving on slick and hazardous roads, tire chains are the way to go. They keep you on the straight and narrow—on ice or in snow.

You'll need to take care of your chains, tho. Neglected, they can break and wipe out a brake line or tear up the vehicle.

Tire chains are listed in some operator's manuals, but not in others. Your command decides if you need 'em.

Here're some common sizes—and the cross chains and swivel hooks you'll need to repair 'em. Where dual chains are not listed for your size tires, use singles on the outside tires. Repair parts are the same for same-size single and dual chains.

Tire Size	Chain Assembly (Pair)	Cross-Chains	Swivel Hooks
	NSN 2540-	NSN 2540-	NSN 2540-
7.00 x 16	00-177-7235	00-933-6960	00-937-0405
7.50 x 16	00-528-7360	00-933-6960	00-937-0405
8.25 x 20	00-933-9025	00-933-6959	00-937-0404
9.00 x 16	00-933-9026	00-933-6916	00-937-0404
9.00 x 20	00-933-9024	00-933-6916	00-937-0404
9.50R x 16.5D	00-057-0204	00-933-6916	00-937-0404
10.00 x 15	01-185-8306	00-933-6916	00-937-0404
10.00 x 20	00-933-9034	00-933-6916	00-937-0404
	00-933-9020 (dual)	00-933-6916	00-937-0404
11.00 x 18	00-933-6933	00-933-6915	00-937-0404
11.00 x 20	00-933-9022	00-933-6915	00-937-0404
11.00 x 24	00-933-6935	00-933-6915	00-937-0404
12.00 x 20	00-933-6922	00-933-6915	00-937-0404
	00-933-6917 (dual)		
14.00 x 20	00-933-9033	00-933-6992	00-937-0404
	00-933-6928 (dual)		
14.00 x 24	00-933-9023	00-933-6992	00-937-0404
	00-933-6929 (dual)		
16.00 x 20	00-933-6937	00-933-6914	00-937-0403
18.00 x 22.5	01-024-4440	00-933-6913	00-937-0403
18.00 x 33	01-079-3143	01-104-9022	

The FSG 2500 Identification List microfiche has other tire chains not listed here. Your authority to order is Appendix A of CTA 50-970.

GET A STEER FROM  
FM 21-305, PAGE 19-6  
ON TIRE CHAINS!

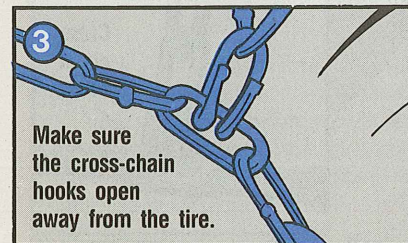
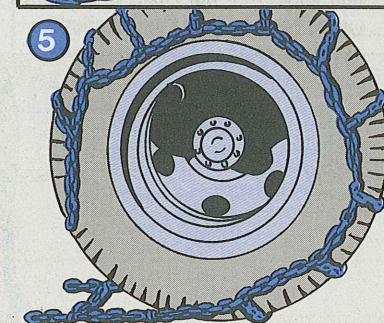
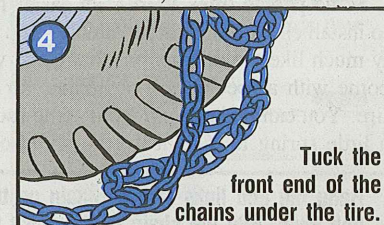
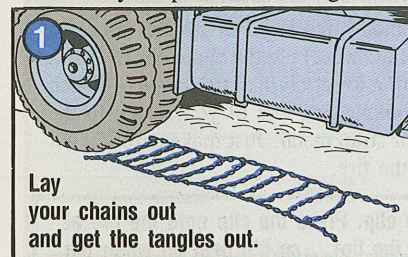
I'LL NEVER  
FIGURE THIS  
OUT!



## Putting 'em On

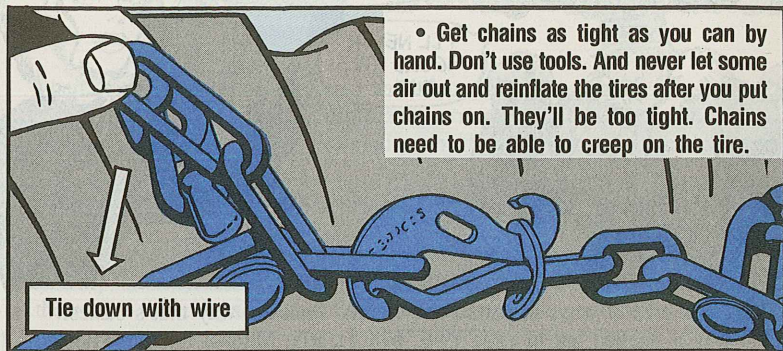
There are several ways to install tire chains. Pick the way that's easiest. One way is spelled out in Page 19-6, FM 21-305, Manual for the Wheeled

Vehicle Driver, like so:



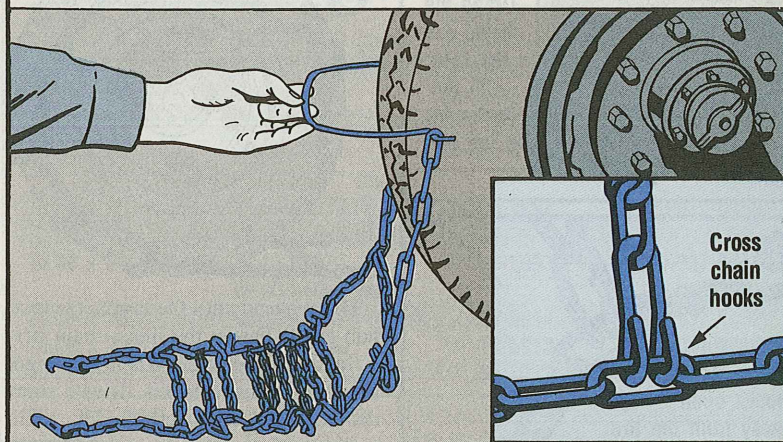
Drive ahead until the fasteners are at hub level. Fasten the inner chain first ... and then the outer. When you've got all your chains installed, drive a short distance and then check for chain tightness.

You can also lay your chains out in front of your vehicle and drive on the chains. Then fasten the chains. Remember, fasteners to the rear, cross-chain hooks away from the tires.

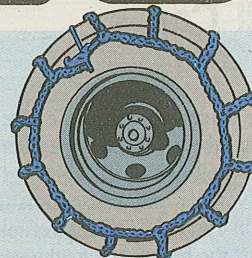


Some people think there's an easier method—the way FM 21-305 tells you to install chains on a mired vehicle. You let the wheel put the chain on. It's pretty much like the instructions that come with a lot of civilian tire chains—which come with a special clip or applier for hooking one end of your chain to the tire. You can make a clip from some rod or strap metal. Just make sure it's got a little spring to it so it'll grab ahold of the tire.

Hang the end links of your chain on the clip. Press the clip onto the tire at hub level. Pile the chain neatly close to the tire...so it'll peel off when the wheel goes around.



Make sure the cross-chain hooks face up...so they'll face away from the tire when the chain's installed.



Drive ahead until the wheel makes a complete turn. Pull the clip off. Connect the chain ends.

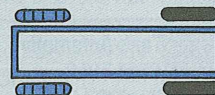
### Chain Positions

Chains in the wrong places won't do much good—and can cause damage. Best for traction, starting and stopping is chains all around, even on non-driven front wheels.

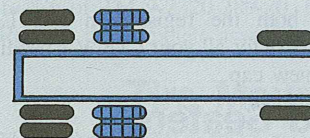
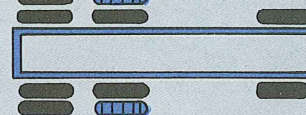
THE NORMAL SETUP WILL BE LIKE THIS, BUT FUEL TANKERS, DO NOT USE CHAINS!



If your vehicle has a non-drive axle, put chains on the drive axle or axles.

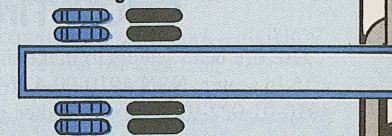


If you've got only single wheel chains, put 'em on the outside tires on dual-wheel axles.



If you have a tandem drive rig, but you have chains for only 1 axle, put them on the front tandem axle.

Trailers don't usually get chains, but you may need them if roads are real slick. Put them on the rear axle if the trailer's got tandem axles.



### Maintenance

Check your chains before you pull out of the motor pool. Repair any broken or worn cross-chains.

Check your chains before you put 'em on. You'll save taking them off for repair.

At the end of the season, clean the chains with a wire brush to get off dirt and rust. Soak them in cleaning solvent to loosen stubborn gunk. After cleaning, dunk 'em in used crankcase oil, and drip dry. Store chains in burlap or a canvas bag—like the one they came in—and put them in a dry place.



## Get Vented Oil Cap



HM-M-M...

Before winter arrives, make sure your CUCV has the new vented oil filler cap, FSCM 11862, PN 25060118.

Cold weather may cause moisture to freeze in your CUCV's crankcase system. If the freeze blocks the ventilation tube, the pressure created could blow seals and ruin your engine.

A warming engine will quickly melt the blockage, but not before the pressure builds up.

The new vented oil filler cap, with a relief valve, eliminates the pressure.

New caps are being shipped to using units. If you haven't received yours, contact your local TACOM Logistic Assistance Representative or write:

**US Army Tank-Automotive Command**  
**ATTN: AMCPM-TVLC**  
**Warren, MI 48397-5000**

Include your full name, unit address, and both the registration and LIN numbers for all your CUCV's needing the new cap.

I MAKE A GREAT STOCKING STUFFER AS WELL AS PREVENTING PRESSURE BUILD-UP IN THE CRANKCASE!



## CUCV Tire Bead Seaters

Use tire bead seaters to make tire mounting easier on your CUCV. You need a 15-in seater, NSN 4910-00-437-7215, for M1009 tires, and a 16-in one, NSN 4910-01-022-9721, for all other model CUCV's.

M1009 CUCV...

## Key to Removing Key



When you mechs service the front wheel bearings on the M1009 CUCV, you'll need a special tool to remove the locking key.

The special tool's not included in the special tools list, but you can make one. Weld a 5-in long T handle to the head of a 4-40 screw, NSN 5305-00-984-4976. Then screw the tool into the threaded hole in the key and pull it out.

## Filter Out Some

What's going on out there?

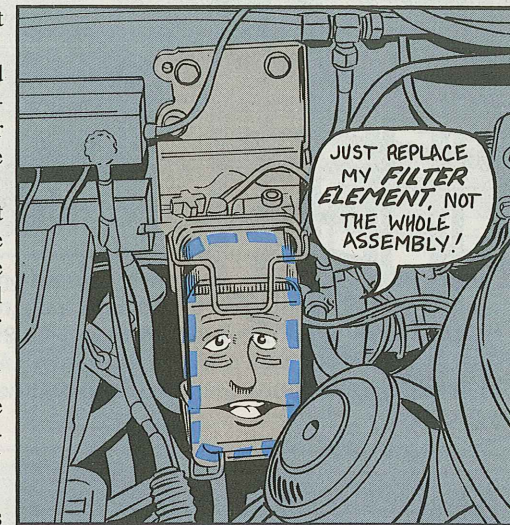
The supply headshed says there's a real big demand for the fuel filter assembly used on the CUCV.

But mechs, you don't need to blow a bundle replacing the complete filter assembly when all you need is a filter element.

The element, NSN 2910-01-156-8361, is one tenth the price of the complete assembly, NSN 4930-01-156-0045.

Changing the element is all that's needed to keep clean fuel flowing. This isn't spelled out real clear in Para 5-6 of TM 9-2320-289-20, but the filter element's listed in the -20P.

Replace the complete assembly only if the housing is damaged or leaking.

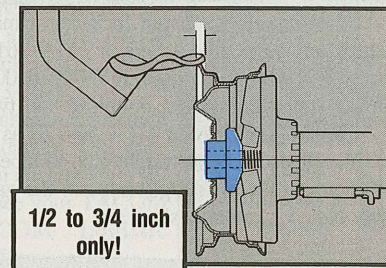


## Tire Mounting Simplified

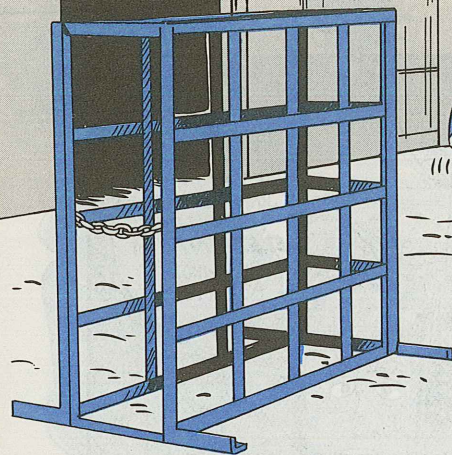
The Bishman 931 or 931A tire mounter/demounter won't work on CUCV wheels... as it comes. It needs a little machine work on the chucking cone. The chucking cone is PN 3020 in TM 9-4910-707-14&P or PN 9620 if you have the 931A commercial manual.

Your support can machine the cone using instructions from the AMCCOM Logistic Assistance Representative.

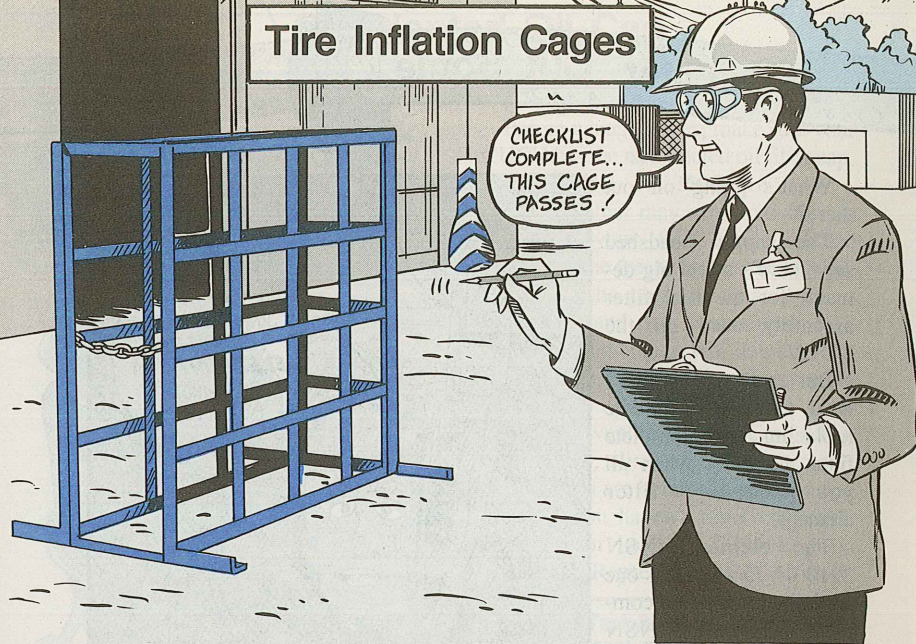
When you're mounting or demounting a CUCV tire, put the mount-demount shoe so it overlaps the rim 1/2 to 3/4 inch. That prevents stretching the tire too much. The chucking pressure for the CUCV wheels is 400-500 PSI.



## Tire Inflation Cages



CHECKLIST  
COMPLETE...  
THIS CAGE  
PASSES!

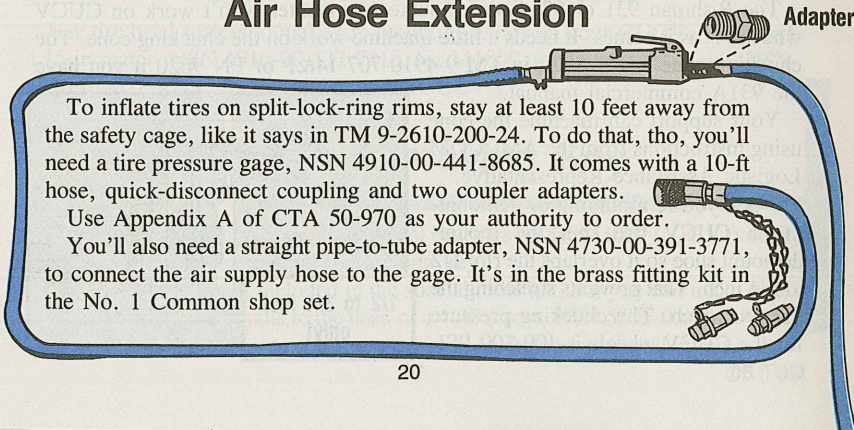


Use 2x2x1/4-in angle iron, NSN 9520-00-277-4913, when you build tire inflation cages. This is the new size called for in Para 2-20 of TM 9-2610-200-24.

Use an arc welder to build the cage.

Get your Safety folks to inspect the completed cage in accordance with Para (d)(3)(iv) of OSHA Standard 1970.177.

## Air Hose Extension



Adapter

To inflate tires on split-lock-ring rims, stay at least 10 feet away from the safety cage, like it says in TM 9-2610-200-24. To do that, tho, you'll need a tire pressure gage, NSN 4910-00-441-8685. It comes with a 10-ft hose, quick-disconnect coupling and two coupler adapters.

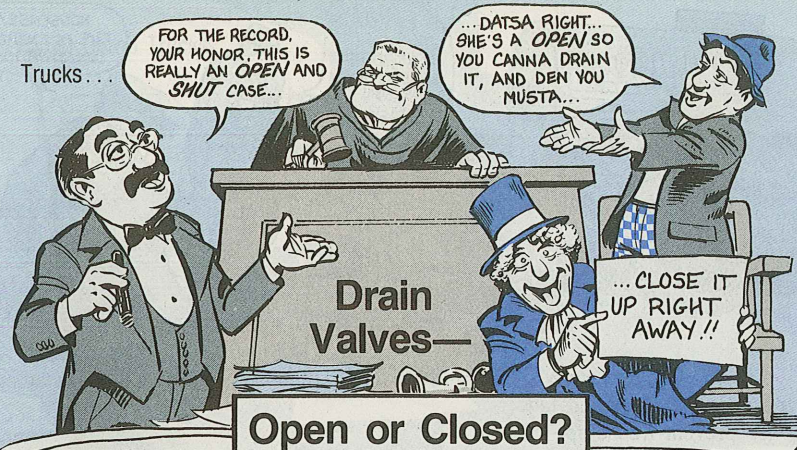
Use Appendix A of CTA 50-970 as your authority to order.

You'll also need a straight pipe-to-tube adapter, NSN 4730-00-391-3771, to connect the air supply hose to the gage. It's in the brass fitting kit in the No. 1 Common shop set.

Trucks...

FOR THE RECORD,  
YOUR HONOR, THIS IS  
REALLY AN *OPEN* AND  
*SHUT* CASE...

...DATSA RIGHT...  
SHE'S A *OPEN* SO  
YOU CANNA DRAIN  
IT, AND DEN YOU  
MUSTA...



## Open or Closed?

Dear Half-Mast,

Once more for the record. When you drain the air tanks on a truck after operation, do you close the drain valve or leave it open? Only TM 9-2320-209-10-2 says to close the valve after draining. TM's for other trucks either say to make sure the valve is closed before the next operation or say nothing about closing the valve.

SGT J.C.L.

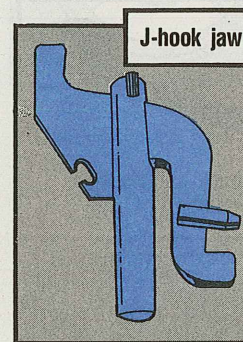
Dear Sergeant J.C.L.,

Close the valve after draining the air tanks. You don't gain anything by leaving it open overnight. By closing it, you eliminate the chance of someone driving off with the valve open... or having water freeze in the valve so you can't close it.

Half-Mast

M915A1 Wheels...

## Help Bishman Break

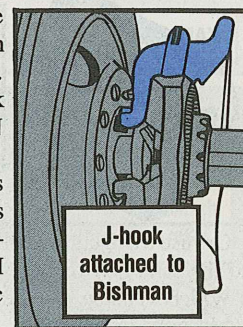


J-hook jaw

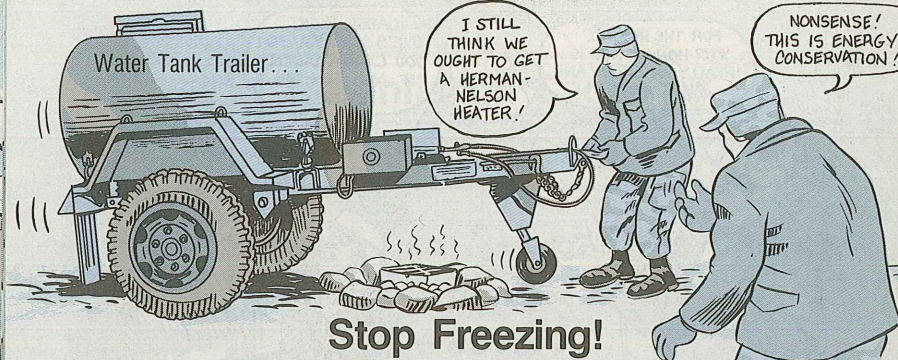
A Bishman 931A tire machine won't break down an M915A1 wheel without help.

To do the job, order J-hook jaws (chuck rod), NSN 4910-01-183-2670.

New Bishman manuals cover the adapter. Old ones don't. If you need adapter instructions, see your TACOM or AMCCOM Logistic Assistance Representative.



J-hook  
attached to  
Bishman



## Stop Freezing!

You can foul up your M149, M149A1 or M625 water trailer by letting water freeze in the pipes and faucets.

To prevent freeze-up:

—Shelter the tank, especially if the temperature is below 0°F. If you can't shelter it, cover it with a canvas and keep air circulating with a Herman-Nelson heater.

—Keep the manhole cover closed.

—After each use, close the valve at the front of the tank and drain the pipes through the faucets.

—Use the M67 immersion heater in the steel tank. Never use it in the fiberglass tank. You could melt the tank.

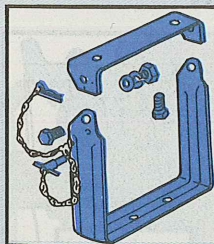
Follow TM 9-2330-267-14&P for the tank, TM 5-4540-202-12&P for the heater, and FM 21-305 for extreme cold weather use.

2 1/2- & 5-Ton Trucks...

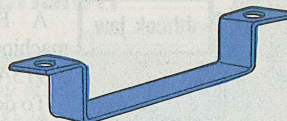
## A Step Up on Your Truck

No need to slip, slide and bang your shins climbing up on the front bumper. A bumper step makes that first step up a lot safer.

NSN 2540-01-149-1389 gets a step kit, with installation instructions.



Get a  
step kit,  
NSN 2540-  
01-149-  
1389 or...

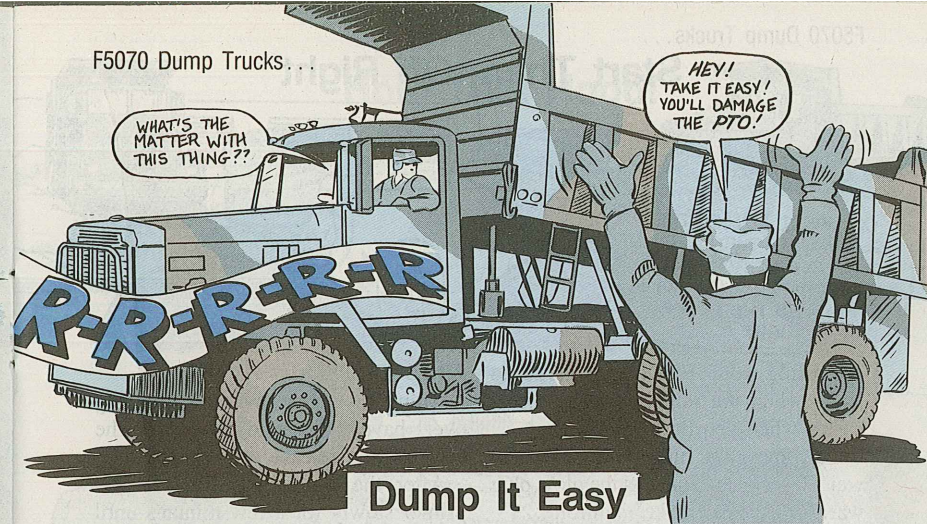


...use truck tailgate step,  
NSN 2510-00-119-3903

Or, use truck tailgate step, NSN 2510-00-119-3903, on the front bumper. It'll do the same job for less money.

Whichever step you use, put skidproof paint, NSN 5610-00-141-7838, where you'll be stepping.

F5070 Dump Trucks...

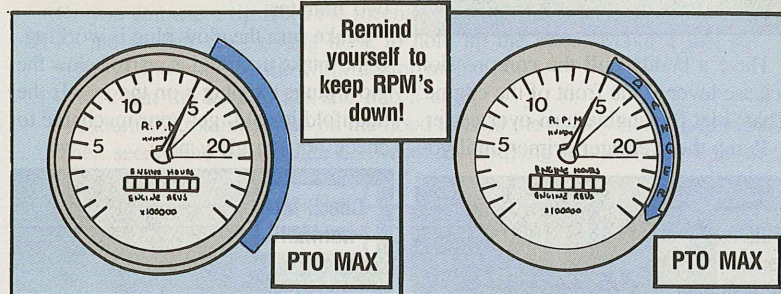


## Dump It Easy

If your 20-ton dump truck is sluggish when dumping, resist the temptation to rev up the engine.

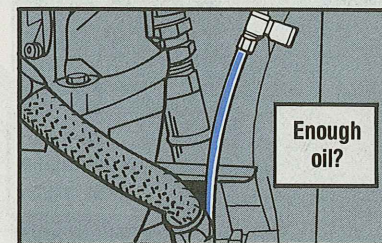
High revving—over 1,500 RPM—damages the PTO. It also makes for higher pressure in the hydraulic systems and leaks!

Here are two reminders to keep your RPM's down: First, either paint a red band around the gage or get a danger decal, NSN 7690-00-924-4318. Second, attach a "PTO MAX" label next to the danger area.

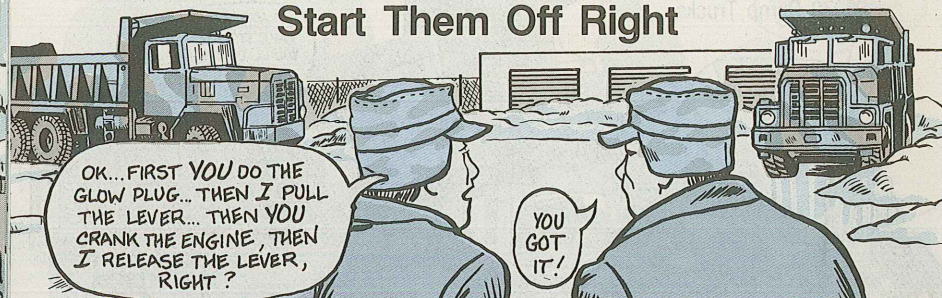


If dumping gets slow at 1,500 RPM, check the hydraulic oil level. With the body down, the sight tube should be full. Add oil until it is.

If you have enough oil, could be a clogged hydraulic filter. That blocks the oil from the pump and slows the dump. Get your mechanic to check.

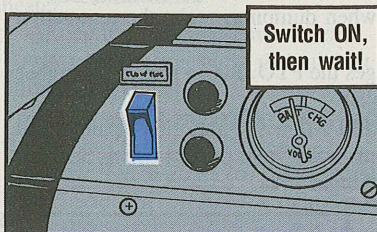


## Start Them Off Right



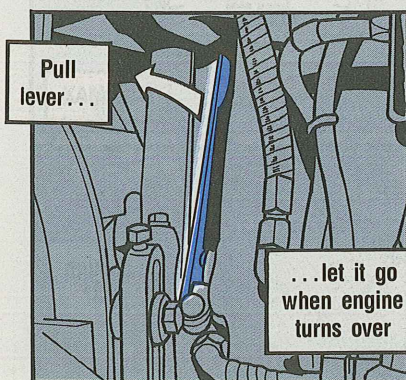
Starting your F5070 20-ton dump truck when the temperature drops is easier when you do it right.

Turn the glow plug switch ON and wait 20 seconds. That lets the glow plug warm up in the intake manifold.



Have a buddy pull the compression release lever at the front of the engine. That'll let the engine turn over easier.

Pump the preheater primer until you



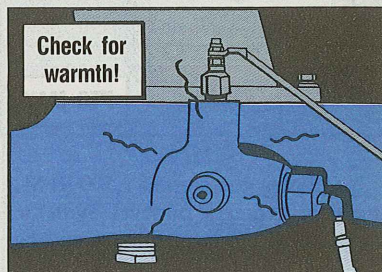
get 80-100 PSI.

Crank the engine. When it's turning over, have your buddy let go of the compression release.

After the engine starts, pump the primer slowly for a few minutes until the engine warms up and runs smoothly. Then push the primer handle in and lock it. Turn the glow plug OFF so it'll be ready for next time.

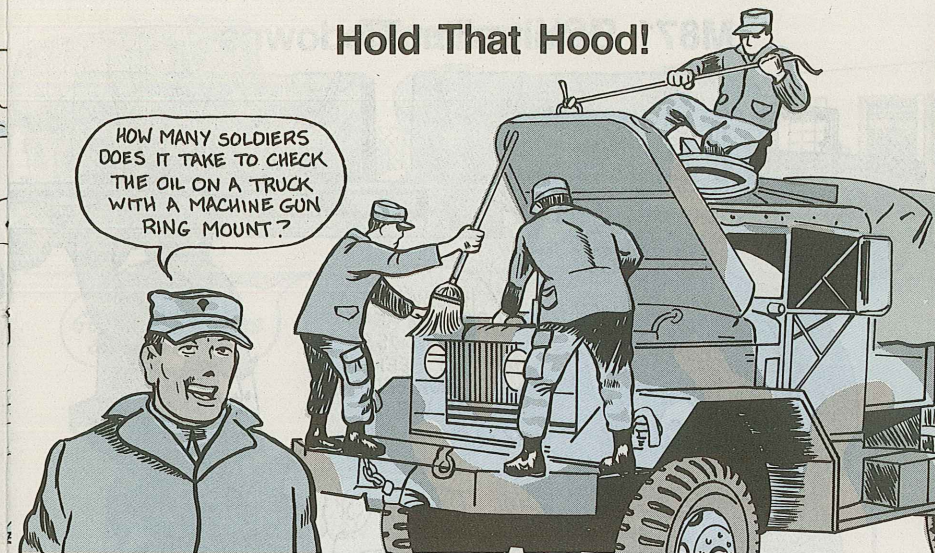
If the engine doesn't start after 30 seconds, stop cranking and stop pumping the primer. Let the starter cool for two minutes.

Make sure the glow plug is working. If the intake manifold is warm below the glow plug, the plug's on the job. If the manifold is cold, get your mechanic to check out the glow plug.



If the plug's working, try the starting routine again. If you can't get the engine started after three attempts, stop and call your mechanic.

## Hold That Hood!



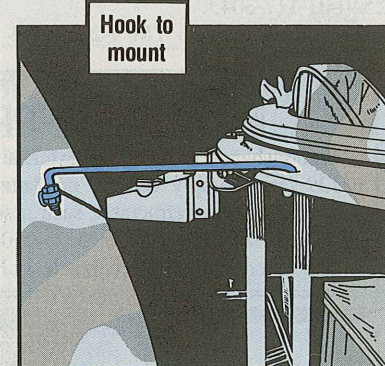
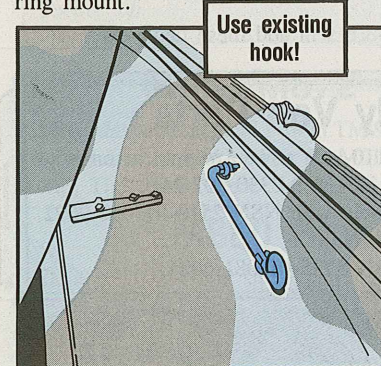
If your M44-series 2 1/2- or M39-/M809-series 5-ton truck has a machine gun ring mount, there's no way to keep the hood up. The hook won't reach.

Your support can make a hood holdup, tho. The instructions are on Pages 4-36.2 and 4-37 of TM 43-0143 w/Change 1.

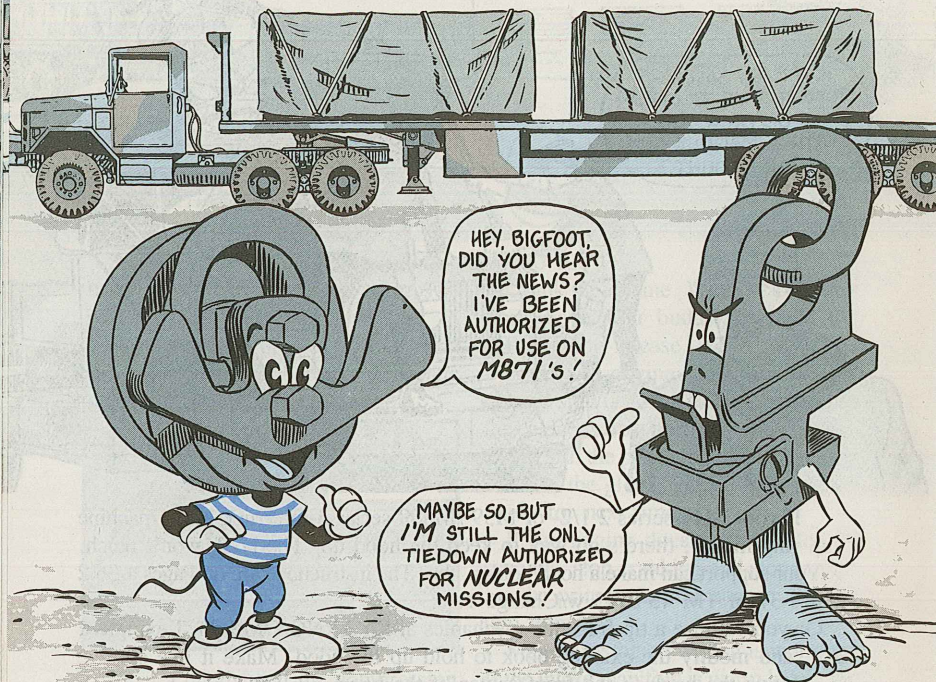
Or you can use a tip from the mechanics at KYARNG OMS #3, Lexington, KY, and modify the existing hook to hold up the hood. Make it like so:

- Move the hook to the front center of the hood.
- Re-form the loop at the end into a hook.
- Mount the retaining clip on the hood to hold the hook when it's not in use.

Then secure the hood when it's raised by hooking it to a handy hole in the ring mount.



## M871 Semitrailer Tiedowns



Vehicular tiedown, NSN 2540-01-112-1732, used on your M872 semitrailer is now OK for your M871, too.

If your M871 hauling mission is nuclear, use the "Big Foot" tiedown, NSN 2540-01-117-3043.

The next update to TM 9-2330-358-14&P will add these tiedowns.

## M129 Supply Van Parts

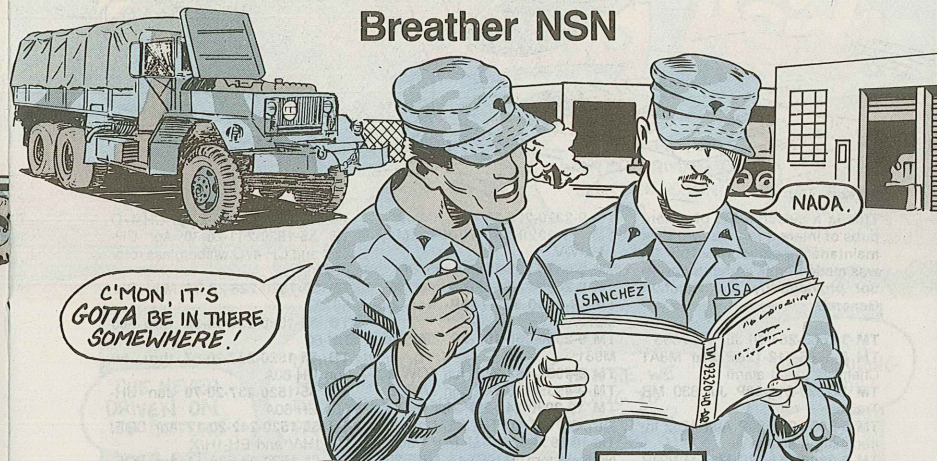
The sash assemblies and external 110-volt power receptacle on your M129-series supply van are not listed in TM 9-2330-207-24P.

You can get a retractable sash assembly with NSN 2510-01-042-9692. The fixed sash is NSN 2510-01-070-9499.

The external power receptacle is NSN 5935-01-081-5484.

M809-Series...

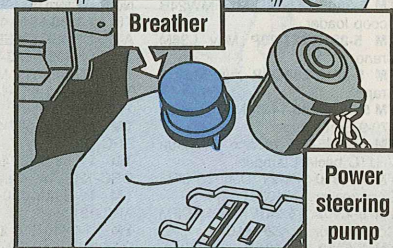
## Breather NSN



Dear Half-Mast,

I can't find an NSN for the breather for the 5-ton truck's power steering pump in TM 9-2320-260-20P. Do I have to order a new pump to get a breather?

SSG S.B.



Dear Sergeant S.B.,

No.

Even tho the TM doesn't show an NSN, you can order a breather with NSN 2920-01-094-0791. It may not look exactly like the old one, but it'll do the job.

Half-Mast

## M915/M872 TM Correction

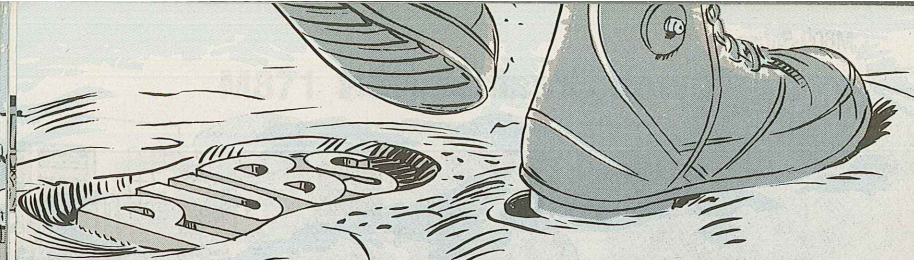
Forget the poop on Page 1-14 in TM 9-2320-273-10 where it says 86,170 pounds is the maximum towed load for the M915/M872 tractor-trailer combination. That's wrong. The correct figure is 54,000 pounds.

## M880 Brake Cable NSN

TM 9-2320-266-20P shows only one NSN for your M880-series truck's intermediate brake cables—but there are two. Trucks built before 1 April 1977 use NSN 2530-01-032-9855. Trucks made after that date use NSN 2530-01-050-1037. Check the data plate for the year your truck was built.

OCT 85

27

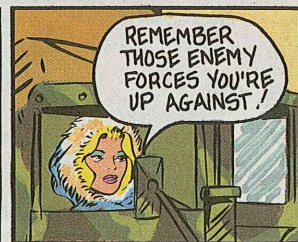
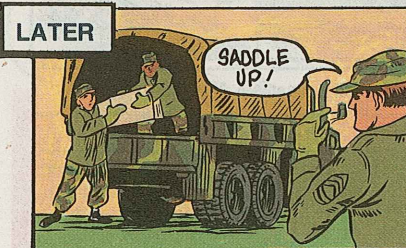
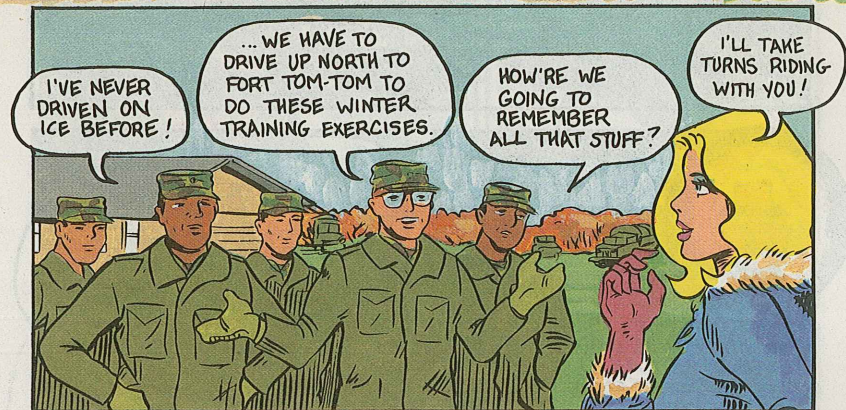
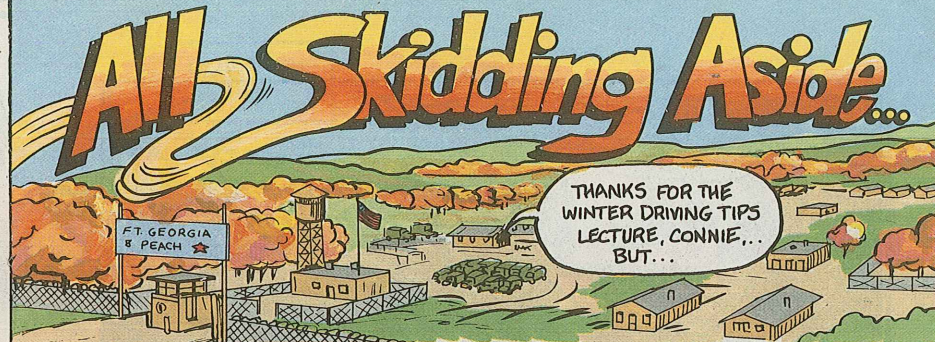


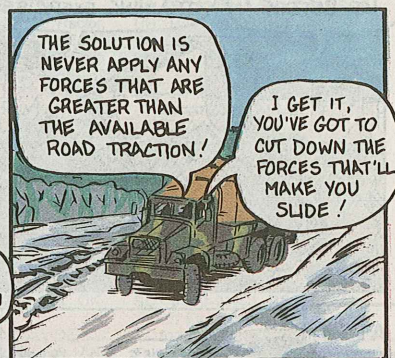
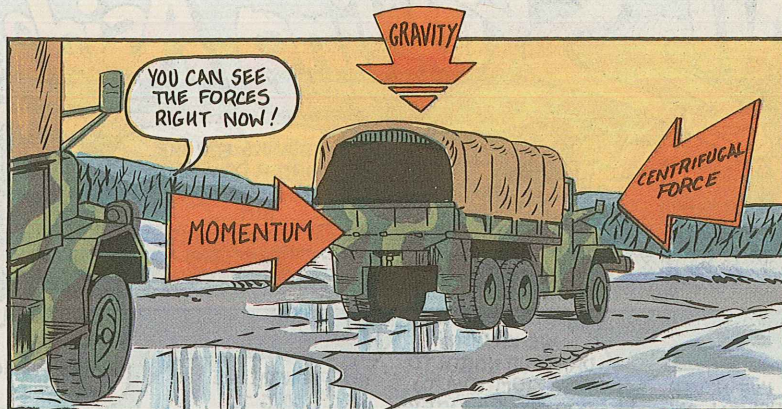
This is a selected list of recent pubs of interest to organizational maintenance personnel. This list was made from a computer print-out provided by The Adjutant General.

TM 3-6665-264-10 Jul MX-7338  
 TM 3-6665-312-12&P Mar M8A1  
 Chemical agent alarm  
 TM 5-2420-213-20P Jul 830 MB  
 Tractor  
 TM 5-3805-212-20P Aug 4262 In-  
 trenching machine  
 TM 5-3805-251-20P May MW24B  
 Scoop loader  
 TM 5-3810-287-20P May L36M  
 Crane  
 TM 5-3810-288-20P Jun M320T  
 Crane  
 TM 5-3820-245-14&P May Texoma  
 270-9 Earth Auger  
 TM 5-3895-360-14 and 24P Jun  
 VR11C backfill tamper  
 TM 5-4310-374-24 Dec 26-CFM  
 Compressor, D340STLC-1  
 TM 5-4310-375-24P Feb 15-CFM  
 Compressor, R122RAAB  
 TM 5-6130-301-13&P Jul Battery  
 charging distribution panel  
 TM 5-6675-238-14 Aug AN/  
 USM-427  
 TM 5-6675-308-12 Apr AN/USM-70  
 TM 5-6675-309-14 Aug AN/USM-48  
 TM 5-6675-313-14 May ADC-TSS-1  
 TM 5-6675-314-14 May ADC-TSS-2  
 TM 5-6675-321-14 Jun ADC-  
 TSS-10  
 TM 5-6675-328-14 May ADC-TSS-7  
 TM 9-1005-224-10 Jul M60, M122,  
 M60D  
 TM 9-1005-231-10-HR Feb M85  
 TM 9-1015-234-10 Aug M102  
 TM 9-1290-359-12&P Apr M90  
 TM 9-1410-530-24P Jul HAWK  
 TM 9-1425-425-L Apr Redeye  
 TM 9-1425-429-L Mar Stinger  
 TM 9-1425-470-L Mar TOW  
 TM 9-1425-473-24P Mar TOW  
 airborne  
 TM 9-1425-485-24P Jul LANCE  
 TM 9-1450-486-20P Jul LANCE  
 TM 9-1450-646-20-1 thru -5 May  
 M993  
 TM 9-2300-422-23&P Feb AOAP  
 sampling valves  
 TM 9-2320-242-20P Mar Gama  
 Goat  
 TM 9-2320-258-20P May M746  
 truck  
 TM 9-2320-260-10 May M809-  
 series truck

TM 9-2320-280-10 May HMMWV  
 TM 9-2320-280-10-HR May  
 HMMWV  
 TM 9-2320-285-10 Jun M87A1  
 TM 9-2330-227-14&P Jun M146  
 TM 9-2330-371-14&P Dec 84  
 M270A1  
 TM 9-2350-266-10, -20, -24P Apr  
 M981  
 TM 9-4935-452-24P Jun TOW 2  
 TM 9-4935-485-24P Jun LANCE  
 TM 10-3930-242-20P Apr MLT-6,  
 MLT-6CH, ARTFT-6, RTFL  
 TM 10-3930-636-14&P Mar Tractor,  
 Northwestern JG40PT-15, MHE 251  
 TM 10-3930-651-14&P May Forklift,  
 A-C ACE-45K-EV-EE36V, MHE-257  
 TM 10-3930-653-14&P Forklift,  
 TCM FG30N7(T), MHE-259  
 TM 11-5805-681-12-HR Aug AN/  
 TTC-39  
 TM 11-5820-667-20P May AN/  
 PRC-77  
 TM 11-5815-334-10 Mar AN/  
 GRC-122, -142 Teletypewriter sets  
 TM 11-5820-670-12 May AN/  
 ARC-131  
 TM 11-5840-355-20P Jul OY-72,  
 OA-9018  
 TM 11-5840-364-20P Jul OK-  
 398/TPQ  
 TM 11-5985-370-20P May OE-303  
 TM 11-7035-202-23P May AN/  
 UYQ-10  
 TM 55-1510-219-CL May RC-12D  
 TM 55-1520-217-CL-1 Jun CH-54A  
 TM 55-1520-217-CL-2 Jun CH-54B  
 TM 55-1520-217-MTF-1 Jun  
 CH-54A  
 TM 55-1520-217-MTF-2 Jun  
 CH-54B  
 TM 55-1520-238-23-7, -MTF, -PM,  
 -PMD Mar AH-64A  
 TM 55-1905-219-14-11, -14-12 Apr  
 LCU 1667-1670  
 TM 55-1905-220-14-11, -14-12 Apr  
 LCU 1671-1679  
 TB 9-380-101-1 May TOW  
 TB 9-1425-600-14 Aug Patriot  
 TB 9-1425-625-10 Dec 84 Roland  
 TB 9-2300-295-15/26 May AVCO  
 Agt 1500 engine  
 TB 9-2300-295-15/28 Mar X1100-  
 3B Transmission/final drive  
 TB 55-1510-201-20-17 Apr U-8  
 TB 55-1510-208-20-3 Jun T-42A  
 TB 55-1510-209-20-23 Jun U-21/  
 RU-21  
 TB 55-1510-218-20-2 Jun C-12/  
 RC-12  
 TB 55-1520-217-20-26, -27 May  
 CH-54B

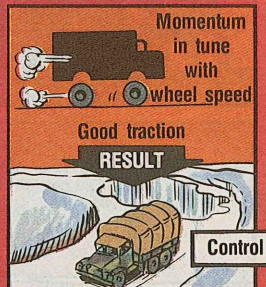
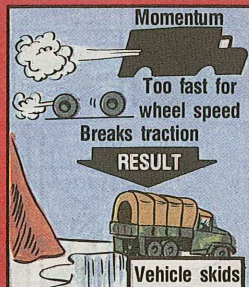
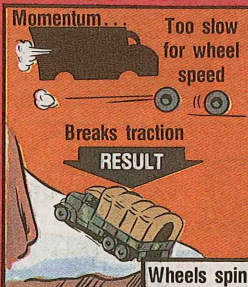
TB 55-1520-240-20-2 Apr CH-47D  
 TB 55-1520-241-20-30 Apr CH-  
 47D and CH-47C w/fiberglass rotor  
 blades  
 TB 55-1520-228-20-34 May OH-  
 58A/C  
 TB 55-1520-237-20-62 thru -65  
 UH-60  
 TB 55-1520-237-20-67 thru -69  
 Jun UH-60A  
 TB 55-1520-237-20-70 Jun UH-  
 60A/EH-60A  
 TB 55-1520-242-20-12 Apr SOF,  
 UH-1H/V and EH-1H/X  
 TB 55-1520-242-20-14 Apr SOF,  
 UH-1D/H/V and EH-1  
 TB 55-1520-242-20-15 May  
 UH-1D/H/V/C/M and EH-1H/X  
 TB 55-2305-001-24 May LACV-30  
 SC 5180-95-CL-B19-HR May BFV  
 45T Turret mechanic's tool kit  
 SC 2090-97-CL-E04 Jan Aluminum  
 craft repair kit  
 SC 4910-95-CL-A72 Dec 84 No. 2  
 Common shop set  
 SC 4910-95-CL-A74 Dec 84 No. 1  
 Common shop set  
 SC 5180-91-CL-R48 May TK-187  
 Electronic equipment tool kit  
 SC 5180-91-CL-R48-HR May  
 TK-187 Electronic equipment tool kit  
 SC 5180-91-CL-R54 Jul TK-169/GG  
 Teletypewriter repair tool kit  
 SC 5180-99-CL-A01 Apr General  
 aircraft mechanic tool kit  
 SC 5180-99-CL-A01-HR Apr  
 General aircraft mechanic tool kit  
 SC 5180-91-CL-R56 Jan TK-224  
 TACFIRE tool kit  
 SC 5180-91-CL-R56-HR Jan TK-  
 224 TACFIRE tool kit  
 SC 5180-95-CL-B19 May BFV 45T  
 Turret mechanic's tool kit  
 LO 5-2330-305-12 May TSS semi-  
 trailer chassis  
 LO 5-4310-374-12 Feb Compressor  
 D340STLC-1  
 LO 5-6115-600-12 Feb 100KW  
 DED gen MEP-007B  
 LO 5-6115-604-12 May 750KW  
 DED gen MEP-206A  
 LO 9-2350-217-12N May M109A1,  
 M109A3 SP howitzer  
 LO 9-2350-266-12 Apr Carrier,  
 FISTV, M981  
 LO 9-2350-303-12 May M109A2 SP  
 howitzer  
 LO 10-3930-624-12 Mar 84 6,000-lb  
 Forklift AC, MHE-212  
 MWO 9-2350-259-20-1 May ITV



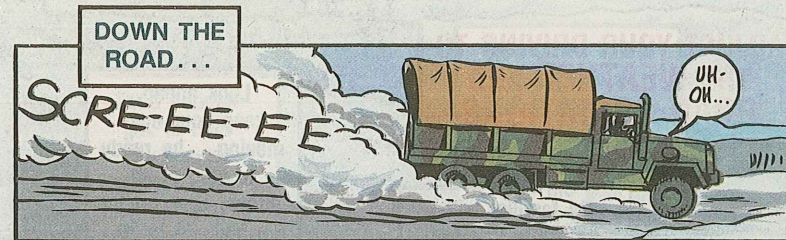


You must be in **CONTROL** of traction and momentum ALWAYS

# IT WORKS LIKE SO...



EASY speed changes and EASY braking keep momentum from canceling traction...and you don't skid.



TURN YOUR STEERING WHEEL IN THE DIRECTION YOUR REAR IS SKIDDING AND TAKE YOUR FOOT OFF THE GAS...





**ADJUST YOUR DRIVING TO  
THE WEATHER AND  
ROAD CONDITIONS**

Be familiar with  
the route you are  
traveling...but maps  
aren't enough!

Look ahead,  
keep your eyes  
moving...be ready  
to stop at all  
times, ease up to  
a halt, 20 to 30  
feet short. That  
extra room is  
for unexpected  
trouble!

Feed enough  
gas to help  
you around  
curves, and  
to hold traction,  
easy...no jerking.

Slow down before  
going into a  
curve or downgrade.  
Engine drag helps,  
too, just ease off  
on the gas!

Watch those  
sharp curves  
and frozen  
bridges!

Bridges and over-  
passes are usually  
slick. Cold air passes  
under them and water  
will freeze fast. Easy  
on the gas, no jerks,  
roll thru, keep traction.

Watch shaded  
areas that  
stay icy!!

IF YOU'RE DRIVING ON ICE AND SNOW...  
CAUTION IS THE WAY TO GO...  
GIVE BRAKES JUST A TAP,  
TO PREVENT A MISHAP,  
SO TAPS (FOR YOU) THEY DON'T BLOW!

**WE HAVE THE WORLD'S BEST EQUIPMENT ...*Take care of it***

KEEP YOUR EYES MOVING—  
BE READY TO STOP AT ALL  
TIMES, EASE UP TO A HALT,  
20 TO 30 FEET SHORT. THAT  
EXTRA ROOM IS FOR  
UNEXPECTED  
TROUBLE



## ON THE ROAD...

REMEMBER... IN CLIMBING A HILL  
THERE'RE ONLY TWO BIG FORCES  
TO HELP... **MOMENTUM AND  
TRACTION (GRIP)**... THE MORE  
MOMENTUM YOU HAVE THE  
LESS TRACTION  
YOU NEED!

Good idea to lay back and let  
the trucks ahead make it first  
to avoid getting STOPPED  
halfway up... AND...

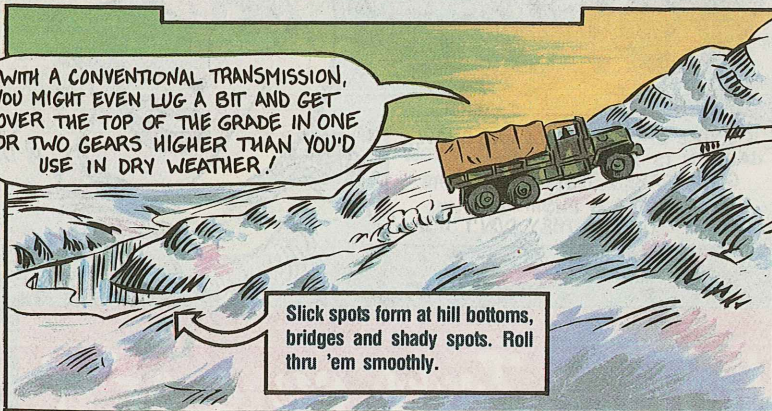
...keep  
your  
distance

Hit the foot of the hill as fast you  
can safely go, so when you  
reach the peak—you've got  
enough momentum left to get  
you over.

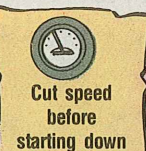
Watch that shift... particularly the downshift. It  
can break your grip on the road. Make each shift  
as smooth as possible.

WITH A CONVENTIONAL TRANSMISSION,  
YOU MIGHT EVEN LUG A BIT AND GET  
OVER THE TOP OF THE GRADE IN ONE  
OR TWO GEARS HIGHER THAN YOU'D  
USE IN DRY WEATHER!

Slick spots form at hill bottoms,  
bridges and shady spots. Roll  
thru 'em smoothly.



GET TO THE TOP OF THE HILL  
IN ONE SMOOTH UNINTERRUPTED  
FLOW OF POWER... JUST  
MAKING THE CREST...

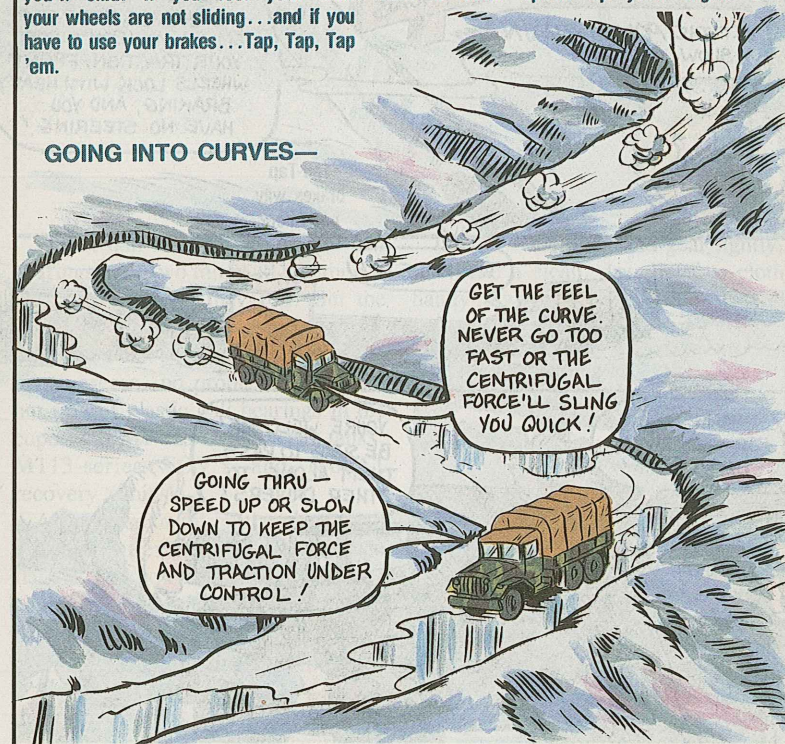


When you're on a dry road you can shift down to as low a gear as you like, going down in that gear using your engine as a brake... But on ICE, remember that the engine holding back your wheels is applying force to 'em just as brakes do. If this holding force exceeds your road grip, you'll skid. If you feel your truck start to slide—speed up your engine until your wheels are not sliding... and if you have to use your brakes... Tap, Tap, Tap 'em.

## GOING INTO CURVES—

GET THE FEEL  
OF THE CURVE.  
NEVER GO TOO  
FAST OR THE  
CENTRIFUGAL  
FORCE'LL SLING  
YOU QUICK!

GOING THRU —  
SPEED UP OR SLOW  
DOWN TO KEEP THE  
CENTRIFUGAL FORCE  
AND TRACTION UNDER  
CONTROL!



## STOPPING...

Under icy conditions  
it takes 3 to 12 times as far to stop! So watch it!

UNDER  
NORMAL  
CONDITIONS

Hit brakes

LET THE **POWER-TRAIN**  
SLOW YOU DOWN...

UNDER  
ICY  
CONDITIONS

**NEVER SLAM ON  
THE BRAKES!! TAP-TAP  
'EM SO YOU DON'T LOSE  
YOUR TRACTION. FRONT  
WHEELS LOCK WITH HEAVY  
BRAKING, AND YOU  
HAVE NO STEERING!**

Tap-Tap  
brakes way  
back here

WE MADE IT!

FT.  
TOM-TOM

THANKS AGAIN  
FOR THE DRIVING  
TIPS, CONNIE!

YOU'RE WELCOME!  
BE SURE TO PASS  
THEM ALONG TO  
OTHER DRIVERS!

Combat Vehicles...

## Don't Lube Plastic

KEEP GREASE AND  
OIL OFF US PLASTIC  
BEARINGS

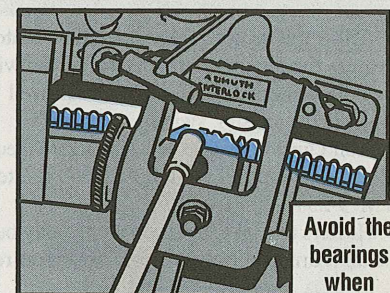
Plastic ball bearings and metal ball bearings have two things in common—they're round and they roll. But the similarity ends there.

You can lube metal ball bearings with oil or grease—no problem. But that's not true of plastic ball bearings in the cupolas of M1 and M60-series tanks, M113-series FOV's and M88A1 recovery vehicles.

Any grease or oil on the plastic ball bearings causes them to get soft and go flat. When crewmen try to rotate the cupola, it rattles and drags. Worse yet, it may not move at all. This sends the vehicle to DS for repair.

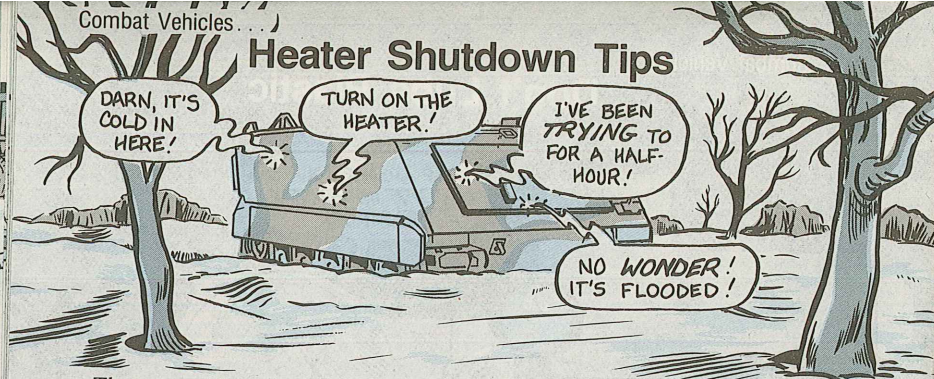
Mechs, be careful when you oil the azimuth interlock or grease the ring gear. Don't get any on the bearings.

Lube the interlock and gear lightly, and have a clean, dry, lint-free cloth handy to wipe off excess oil or grease.



Avoid the bearings when lubing the azimuth interlock or the ring gear

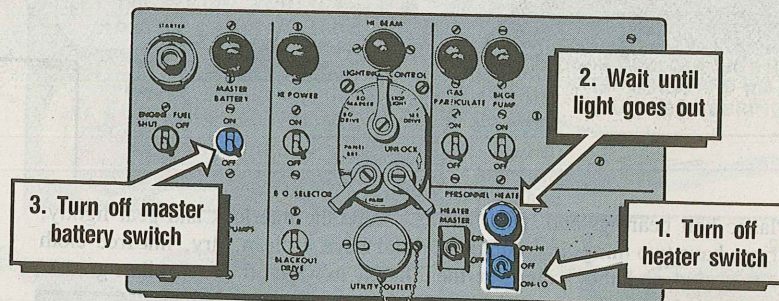
## Heater Shutdown Tips



There are a few things you need to remember, crewmen, when it comes to shutting down your vehicle's personnel heater.

If you don't remember all of them, you'll face some cold days and nights without heat. Once you've started a personnel heater, let it run for at least five minutes.

If you shutdown before then, the heater may flood. You won't be able to restart it for a long time.



Allow the heater to purge itself at shutdown. Some vehicles' circuitry lets the heaters run and purge themselves even with the vehicle master switch off. Other vehicle heaters **MUST** be allowed to run until purging is finished before you hit the master switch.

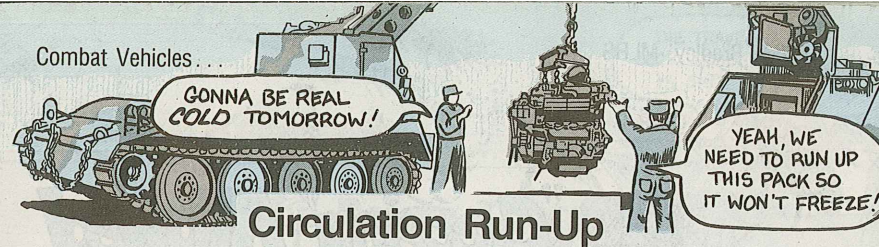
Don't guess how the heater works! Check out your vehicle's -10 TM and follow the instructions to the letter. You maintenance types check out the new heater TM 9-2540-205-24 & P.

Heaters that aren't purged completely build up carbon and flood easily. Flooded heaters are fire traps. Either way you're out at least a heater.

## Heater Hotline Change

Here're the new **hotline** numbers for the TACOM vehicle personnel heaters listed on Page 1 of PS 391:

**AUTOVON 786-7369/6998/6993**  
**COMM 313-574-7369/6998/6993**  
**FTS 973-7369/6998/6993**



## Circulation Run-Up

When you install a water-cooled powerpack, make sure it's protected from freezeup.

Once the pack's in place and you've hooked up all the hoses and lines, fill the cooling system with the right antifreeze water mixture for your location. Use TB 750-651, Use of Antifreeze Solutions and Cleaning Compounds in Engine Cooling Systems, for the right mix.

Then run the pack long enough to circulate the coolant throughout the system. If you don't do that, the unmixed coolant can freeze.

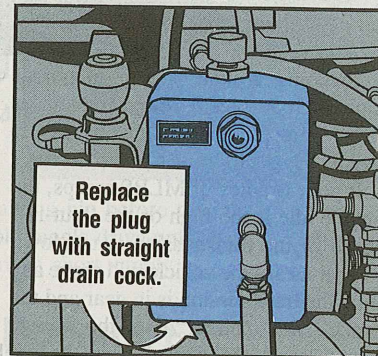
## Ramp Reservoir Draining

Dear Editor,

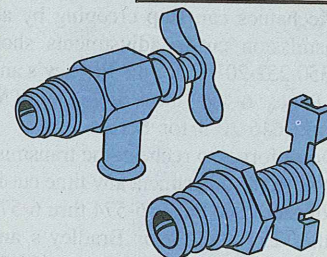
Draining the ramp hydraulic reservoir on M113-series carriers can be a tough job if the drain plug has been rounded off with the wrong tools or tightened too much.

I've solved the problem by replacing the plug with straight drain cock, NSN 4820-00-849-1220. Whenever you need to drain the reservoir, you just catch the fluid in a small can. This also saves making a mess in the engine compartment when the plug is unscrewed.

Michael A. Borba  
 Ft Benning, GA

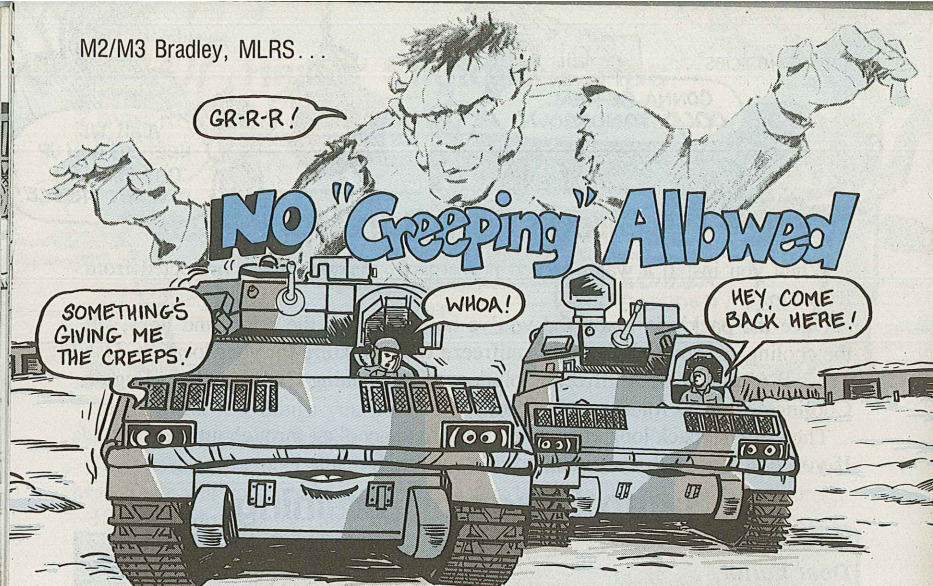


Angled drain cock,  
 NSN 4820-00-845-1096



Straight drain cock,  
 NSN 4820-00-849-1220

(Editor's note: Speaking of valves, SGT Joseph L. Mattas, APO New York, suggests using the angled oil analysis drain cock, NSN 4820-00-845-1096. Either option can be used with your commander's approval.)



Creeping around is fine in horror movies, but when your Bradley or MLRS creeps while idling in gear, it makes for a different sort of horror.

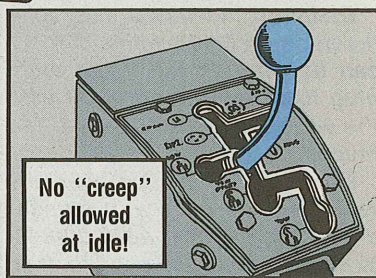
If your Bradley or MLRS creeps, the engine idle is too high or the "cut-in" speed of the transmission is too low.

That means the vehicle will move any time the transmission is in gear and the brake's not applied. Also, the vehicle won't slow down as much when the accelerator is released. Either condition makes for accident possibilities that you don't need.

Engine idle speed is 775-825 RPM. Transmission cut-in speed varies from just under 850 RPM for older transmissions to 900 RPM.

Mechanics can stop creeping by adjusting engine idle speed or making the transmission cut-in adjustments shown on Pages 6-569 thru 6-573 of TM 9-2350-252-20-1-3 for the Bradley's and on Pages 6-461 thru 6-464 of TM 9-1450-646-20-3 for MLRS.

Don't forget to recheck the transmission schedule adjustment any time cut-in is adjusted. See Pages 6-574 thru 6-576 in the -252-20-1-3 for Bradley's and Pages 6-465 thru 6-467 of the -646-20 for MLRS.



## Lock Top Before Tow

One thing leads to another...

Towing an M198 without the top carriage locking in place leads to more than \$11,000 in damage...

Which leads to a demand for four parts that are in short supply...

Which leads to as much as 18 months' downtime for your howitzer!

So, gunners, never let this chain of events get started. Make sure the locking



pin's in place and secured with its retaining pin before towing.

That will save the travel lock assembly, angle drive unit, eccentric adjusting ring and internal gear—all of which are in short supply.

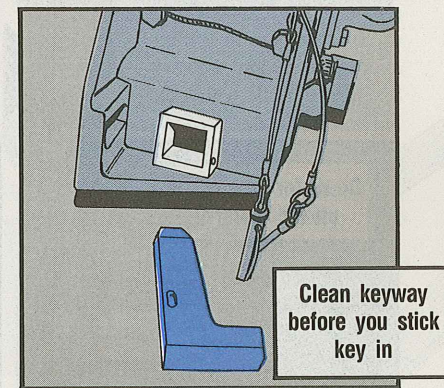
## If the Key Doesn't Fit

Don't go after it with a sledgehammer! That's the word when trying to install the spade key on your M198.

There's a tight fit on some 198's between the key and the spade. The fit gets even tighter if there's mud or crud jammed under the trail.

You can cut down on the effort needed to make the installation by making sure the keyway is clean.

What you don't need to do is use a sledgehammer as a persuader. That just messes up the key or wedges it so tight you'll have to pry it out.



# Chaparral in Season

KEEP YOUR  
PM COOL  
IN SUMMER!

Summer heat and winter cold demand different settings for some of the components in your Chaparral missile system.

If the settings aren't right, parts of the system will have poor air circulation, overheat, leak oil...or just won't work.

The oil pan baffle on your main power unit (MPU) should be open, or down, for temperatures above 0°F. The baffle is up for temperatures that average 0°F and below. Secure the baffle with lock wire.

The MPU's carburetor air inlet WINTER/SUMMER valve must be in SUMMER, or full right position, for temperatures above 35°F. Winter setting is full left.

Down for summer  
up for winter

Baffle

SUMMER

Move the air inlet valve  
full right to the summer  
position

WARM UP TO  
WINTER PM!

No. 1 and No. 2 ducts on the MPU air duct must both be open in sub-zero weather, and both must be closed above 35°F. No. 1 stays open and No. 2 is closed between 0° and +35°F.

Set the battery box WINTER/SUMMER valve on WINTER during battery warm-up when the temperature is below 35°F. Keep it on that setting for 5 to 60 minutes, depending on the temperature. Battery heater warm-up time is spelled out in Para 2-37, TM 9-1425-2586-10. After battery warm-up, switch the battery box valve to SUMMER position.

Set the oil sump WINTER/SUMMER valve to WINTER when it's below 35°F.

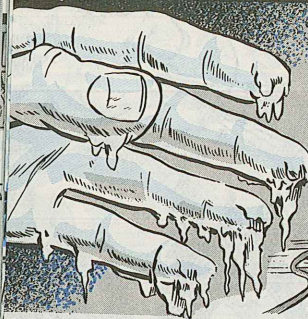
Then, go throw a snowball...or take a swim. You're ready.

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Open for  
sub zero

Set  
battery  
box valve  
to winter  
for  
starting

# Block Chill with Warm PM

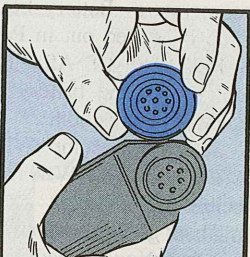
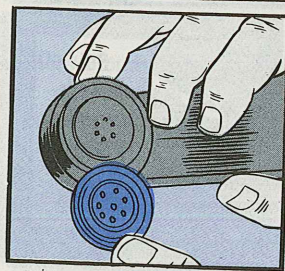
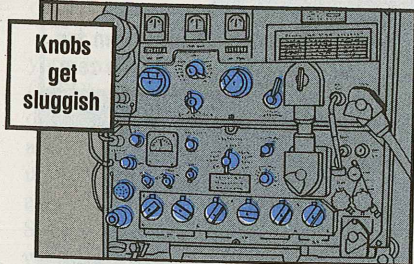


Winter's icy fingers can chill your communications quick-like unless you warm up to cold-weather PM.

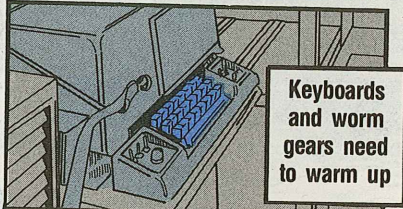
Commo gear in shelters needs looking after for sure, but care is critical for gear going outside.

Radio sets, like the AN/GRC-106, need time to warm up after they're turned on. Wait 10 to 15 minutes before you transmit.

Cold makes control knobs sluggish and shock mounts rigid and brittle.

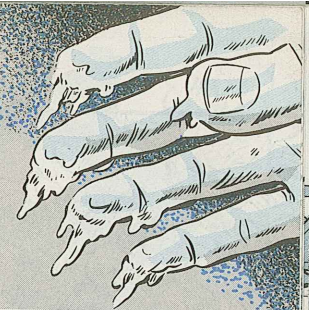


Warm up gear that gets grease, like teletypewriter sets. Keyboards and worm gears need time to shake the chill.



Handsets, headsets and microphones moved inside and outside and back again will sweat. Condensation is their worst enemy. Keep commo accessories wrapped in something woolen, like a scarf, or carry them inside your clothing whenever you can.

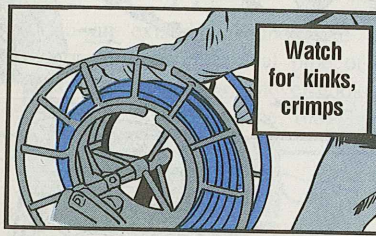
Another moisture build-up villain is your breath. Make sure the de-icing shield is in place on the transmitting part of your handset or mike.



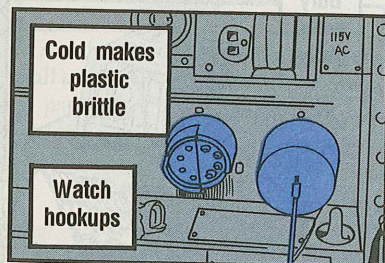
If the shield is missing, make a temporary one out of a cellophane wrapper or a plastic wrap from a dry-cell battery.

A frozen handset can be a real pain if your lip or ear locks onto it. Either hold the handset away from your skin or put cloth between you and it.

Cables get stiff and brittle, too. Head



off cracks or breaks by using care when you're hooking up or unhooking connectors. Keep caps on receptacles when they are not in use.

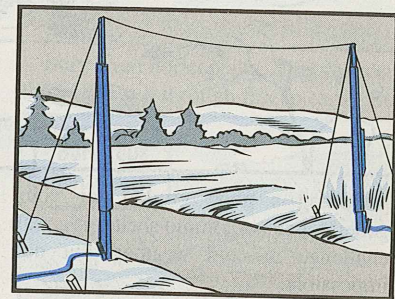


Before unreeling cold cable or wire, warm it up if you can. Store it inside

shelters, too, because cold cable holds its coiled shape.

Cold-molded crimps and kinks can crack the rubber insulation and snap wiring inside when you unreel cable.

Keep cable and wire out of the way of big feet, vehicles and cargo areas when possible. You might even run it overhead—out of the way and off the frozen ground.



Always leave slack in the cable or wire, since rubber and metal shrink in freezing temperatures. Pull wire or cable too tight and it will break.

When wire needs to be repaired or spliced, use cold weather electrical tape TL-600. Get a 30-foot roll with NSN 5970-00-240-0620.



# Get Grounding Down Cold



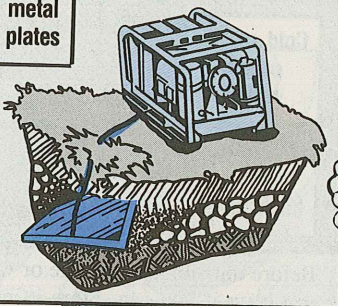
Getting a good ground for your generator set or commo shelter is a real challenge in cold weather—but not impossible.

HERE'RE A FEW THINGS YOU CAN DO TO OUTSMART OL' MAN WINTER!

▲ Buddy up with TC 11-6, Grounding Techniques. It has lots of hot info on cold-weather grounding.

▲ If you use an area in winter as well as summer, bury a 3-ft square metal plate below the moisture line. Mark it, of course, so you can hook up to it when the earth is frozen and covered with snow.

Bury metal plates

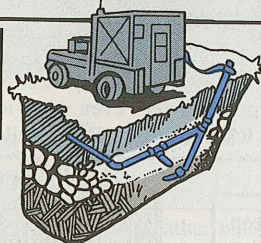


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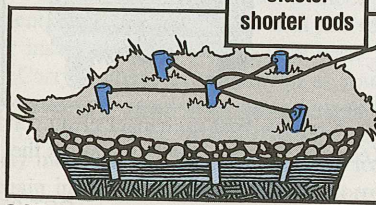
Use an existing ground, like an underground buried metal pipe or a building ground. Never, never hookup to a gas or other fuel pipe, tho.

Use existing grounds



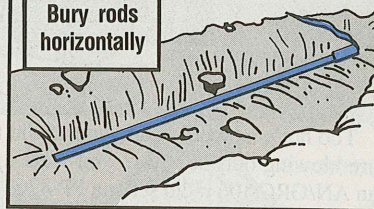
Another way to beat the cold is to install a cluster of shorter rods connected in parallel.

Cluster shorter rods



Bury a rod horizontally. This is easier than driving it through frozen earth. Be

Bury rods horizontally



sure you get the rod below the frost. If it's not, you get a poor ground.

Whenever possible, drive your ground rod near a heat source. A building or generator set's exhaust are both good.

Since a salt solution improves a ground, dissolve a pound of table salt in a gallon of water and pour it around the rod.

Be sure the ground strap is making good contact with the commo gear and ground rod.

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AN/GRC-142, -122...

**Air It Out**

WHAT DO YOU  
THINK THIS IS?...  
A SAUNA??

WHEW! HOW IRONIC  
TO ROAST IN THE  
DEAD OF WINTER!

AAHH... SURE  
GLAD I'M IN THIS  
NICE WARM  
SHELTER!

Too hot's not cool inside your radio teletypewriter set—even when icy winds are blowing outside. Sure, you want to stay warm as toast. But you'll burn up an AN/GRC-106 radio set or a PP-4763 power supply if you keep temps too high inside your shelter.

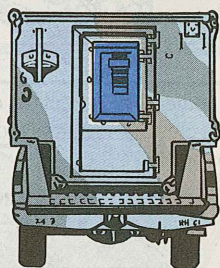
That gear puts out as much heat in winter as it does in summer. So it still needs moving air to stay in good shape.

Keep the shelter door inlet cover open enough to let cooling air into the shelter.

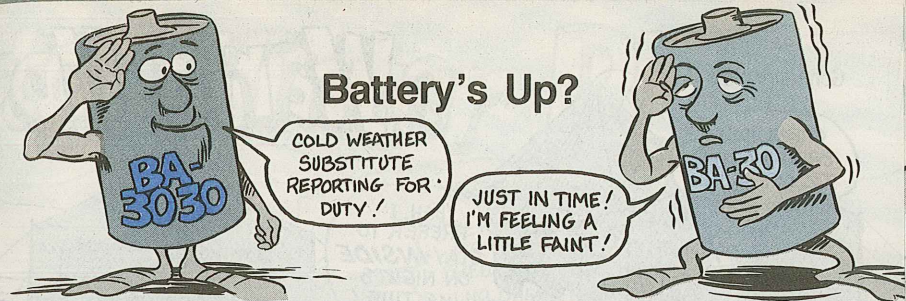
Likewise, don't plug exhaust vents behind the radio or power supply. They let hot air out.

Give your -106 a little extra cooling help. Keep the heat exchanger clean per the instructions in TM 11-5820-520-10. Keep the clothes and other gear off the set, especially its blower vent.

**Keep  
inlet  
cover  
OPEN**



## Battery's Up?



When cold weather sets in, your dry-cell batteries need a little extra attention to make sure they deliver the punch you expect from them.

You're supposed to replace some batteries with cold weather substitutes. Check your TM's and SB 11-6 to find out which ones. For instance, most of your BA-30-using gear take a BA-3030 alkaline battery when temps dip below freezing.

TABLE 1. PRIMARY BATTERY USING EQUIPMENT  
SECTION 1. ALPHA-NUMERICALLY DESIGNATED ARMY EQUIPMENT (CONTINUED)

ITEM NO.	TYPE	DESCRIPTION	BATTERY TYPE NO. (FOR TROPICAL & TEMPERATE ZONES)	NO. IN USE	MONTHLY CONSUMPTION RATE (NUMBER USED BASED ON 30 DAYS OPERATION)				ARCTIC ZONE 32 DEGREES F	
					TEMPERATE ZONE 70 DEGREES F		TROPIC ZONE 113 DEGREES F		COMBAT	NORMAL
					COMBAT	NORMAL	COMBAT	NORMAL		
636	SM-454/TAQ-1A, ST-17A	REQ. SIGNAL	BA-2 MAL TR-234R	1						
638	T2		BA-30							BA-3030/U
639	T-16		BA-30							BA-3030/U
640	T-22		BA-30							BA-3030/U
641	T-23		BA-30							BA-3030/U
642	T-297/G		BA-30							BA-3030/U
643	T-359		BA-30							BA-3030/U
644	T-430		BA-30							BA-3030/U
645	TA-4		BA-30							BA-3030/U
646	TA-21		BA-30							BA-3030/U
647	TA-22		BA-30							BA-3030/U
648	TA-261		BA-30							BA-3030/U
649	TA-264		BA-30							BA-3030/U
650	TA-287/G		BA-30							BA-3030/U
651	TA-312/PT		BA-30							BA-3030/U
652	TA-341/TT		BA-30							BA-3030/U
653	TA-341/TT		BA-30							BA-3030/U
654	TA-388		BA-30							BA-3030/U
655	TE-49	TOOL TA-1228-B WESTON 564-3C	BA-30							BA-3030/U

Of course, even cold-weather batteries need a hand to keep their punch until you need them.

Store them between 35° and 70°F. When they're warmer than that they start to lose their power.

Once you take the batteries outside, protect them until they're in your equipment. Keep dry cells warm until you're ready to use them. Inside your clothing or inside a shelter or vehicle is best.

Carry as many extra batteries as you can. Then you can swap them with the ones in your gear when those lose their zip.

If you warm up batteries in a heated place, watch for sweating. Wipe away any moisture you find or it'll turn to ice in the cold. Then it'll turn to moisture again inside your gear—and start corroding.

# Warm Up to Winter PM

GREAT IDEA, BRINGING THE TV OUT HERE!

YEAH, I PREFER TO STAY *INSIDE* ON NIGHTS LIKE THIS!

CHATTER

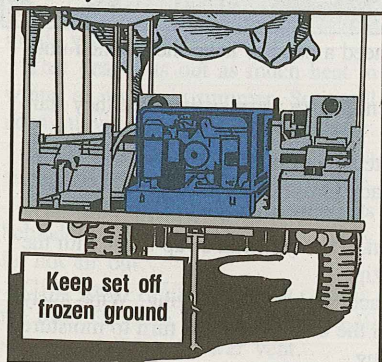
CHATTER

When the wind chill has blown all the humor out of "Hey, is it cold enough for ya?", it's time to get hot on your small engine PM.

After all, the engine that starts and powers your generator has to sit outside while you warm your tootsies inside.

Here's a double gloveful of PM hints that will keep the volts coming:

- + Keep the set off snow or ice. Use a wooden pallet or a trailer so the set won't freeze to the ground. You can also use vehicles, tents or buildings to shelter your set.



- + Keep ice and snow off the battery, engine and away from the fuel tank and filler cap. Be sure battery cap vent holes are not plugged.

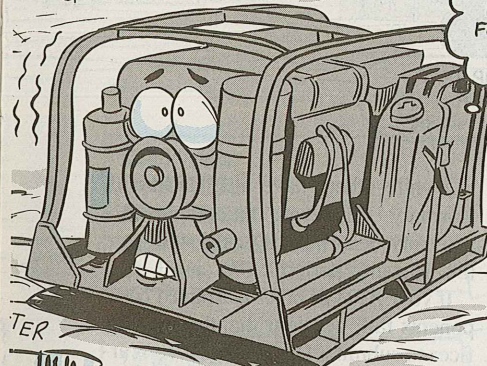


- + Move the air filter's intake shutter to WINTER when temps dip below freezing. That lets warm air from the manifold keep the carburetor from freezing up.



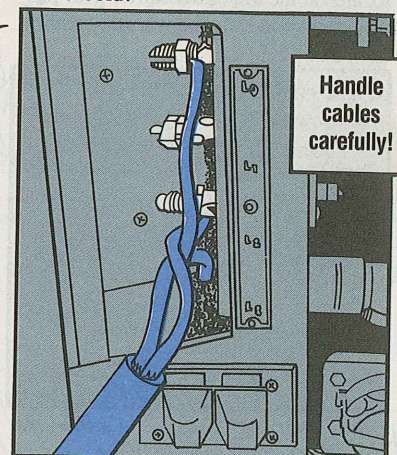
- + Preheat the rest of the set according to TM directions.

CHATTER



THEY'VE FORGOTTEN ALL ABOUT ME. THEY'VE LEFT ME TO FREEZE ON THE GROUND WITH NO SHELTER OR ICING INHIBITOR!

- + Handle cables and wiring as little as possible. Insulation becomes brittle in the cold.



- + Store bulk oil and lube inside to make them easier to pour. Lube according to the LO and the temperature range you're in.

- + Keep the fuel tank full to head off condensation that can freeze in the fuel line.

- + Use the right fuel icing inhibitor. Gas uses technical methanol; diesel fuel takes fuel system icing inhibitor. The ratio for both is 1 pint per 40 gallons of fuel. Inhibitor comes in 5-gal cans, NSN 6850-00-753-5061 and 55-gal drums, NSN 6850-00-060-5312. Methanol is NSN 6810-00-597-3608 for 1 gallon and NSN 6810-00-275-6010 for 5 gallons.

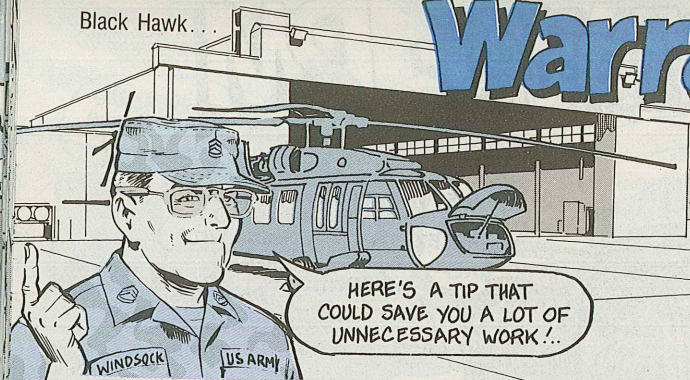
- + Keep batteries fully charged. Water added to a battery will freeze if the battery isn't charged for at least an hour.

- + Warm your set before you put it into operation. Run it—at rated speed—until it hits operating temperature. No idling, tho.

- + Check your sets frequently for unusual noises or gage readings.

- + Read your TM's for additional cold weather information.

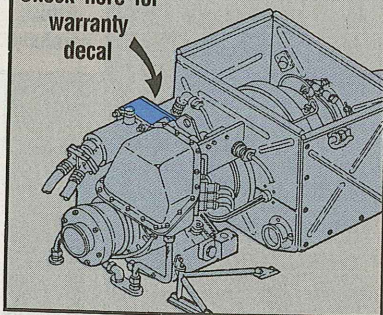
# Warranty for APU's



Next time your bird's auxiliary power unit fails, think twice before you grab a wrench and start working. That APU may be covered by AVSCOM's new Warranty Program.

Look for the warranty decal. It is located at the top of the starter gear pad. The decal will state the warranty expiration date.

Check here for warranty decal



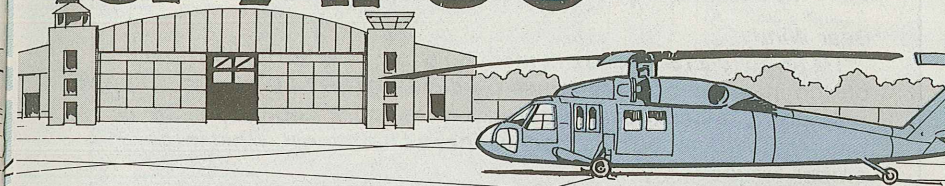
No warranty decal? Check the historical records logbook for a warranty identification card (DA Form 2408-15 Overprint 2).

The warranty period for the APU and most components covered by AVSCOM's new program is 24 months or 240 flight hours, whichever comes first. But some components have a 24-month or 200-flight hours war-

anty, while others have a 13-15 month warranty. Whatever, the component's warranty decal and ID card will state the warranty period.

If your APU or other warranted components fail, get your maintenance officer to submit a DA Form 2407, Warranty Claim, like it says in Para 2-11 of DA Pam 738-751. The words "warranty claim action" go in Block 16a with a brief description of the failure.

MAINTENANCE REQUEST									
For use of this form, see TM 38-750; the proponent agency is DCS LOG.									
CONTROL NUMBER <b>290605</b>		WORK ORDER NUMBER							
SECTION I - EQ		SECTION II - EQ							
<input type="checkbox"/> WORK REQUEST <input type="checkbox"/> MWO <input type="checkbox"/> WARRANTY CLAIM		1a. ORGANIZATION							
2. SERIAL NO.		3. NOUN NOMENCLATURE		4. LINE		5. UNIT IDENT CODE		6. LOCATION	
7. MAINTENANCE ACTIVITY		8. LEVEL		9. UTILIZATION CODE		10. MCSR ITEM		11. ERC	
14. FAILURE DETECTED DURING (Select one - use / or X)		15. FIRST		16. DESCRIBE DEFICIENCIES OR SYMPTOMS ON THE BASIS OF COMPLETE CHECK		17. PRESCRIBE REPAIRS		18. OTHER	
<input type="checkbox"/> Scheduled Maintenance		<input type="checkbox"/> Test		<input type="checkbox"/> Storage		<input type="checkbox"/> Flight		<input type="checkbox"/> Other	
<input type="checkbox"/> Handling		<input type="checkbox"/> Normal Op		<input type="checkbox"/> Inspection		<input type="checkbox"/> Other		<input type="checkbox"/> Other	
16a. REMARKS		Warranty Claim							
JULIAN DATE		JULIAN DATE							
DA FORM 2407		MAY 81							
EDITION OF JUL 79 IS OBSOLETE.									



Commander  
USAAVSCOM  
ATTN: AMSAV-OR  
4300 Goodfellow Blvd.  
St. Louis, MO 63120-1798

Turbomach  
Division of Solar Turbine, Inc.  
4400 Ruffin Road  
San Diego, CA 92123

SEND  
COPY 2  
TO  
AVSCOM!

COPY  
2  
DA FORM  
2407

COPY  
5  
DA FORM  
2407

...COPY 5 IS SHIPPED  
WITH THE BUM COMPONENT  
TO TURBOMACH!

COPIES  
1,3,4  
DA FORM  
2407

KEEP COPIES 1, 3 AND 4  
OF THE DA FORM 2407  
FOR YOUR USE!

PAGE NO.		NO. OF PAGES		REQUIREMENT CONTROL SYMBOL	
EQUIPMENT DATA		PD AUTHENTICATION		CSGLD-1047(R1)	
ORG PD		PD AUTHENTICATION		e. UNIT IDENT CODE	
b. LOCATION		c. MODEL		6. NATIONAL STOCK NUMBER	
NO. 5. MODEL		10. HOURS		11. MILES	
PACING ITEM		12. ROUNDS		13. STARTS	
INDICATION OF TROUBLE (Select one - use / or X)					
Inoperative		298 Overheating		299 Out of Adjustment	
Noisy		387 Low Performance		Other	
CROUT AND DIAGNOSTIC PROCEDURE IN EQUIPMENT TM 120 do not					
OBSOLETE.					
RECEIPT COPY 1					

## No Torque on Torque Knees

Dear Windy,

TM 55-1510-213-23 doesn't mention a torque value for the nuts on the main gear torque knees on our OV-1D/RV-1D aircraft.

Some folks here say the nut has to be loose enough for the washers to rotate, but the manual doesn't mention it. What is the proper torque?

SGT R.L.S.

Dear Sergeant R.L.S.,

There is no specified torque for the nuts on the main torque knees on your aircraft. But the NOTE on Page 3-46 of TM 55-1510-213-23-1 states that the nut must be tightened until there is a clearance of less than 0.019 inch between the nut and the knee bolt.

Use thickness gage, NSN 5210-00-221-1999, from your AVUM No. 2 tool set to measure the gap.

That is the **only** requirement for tightening the nut. At the minimum clearance, the washers should not rotate, but they **may** rotate at the maximum clearance.

Windy



## Aviation Messages

If your unit has not received a message you have an interest in, check with your next higher headquarters.

U-8-85-02, SOF, Technical, U-8 One-time inspection for installation of stall strips, 101405Z Jun 85.

U-8-85-03, SOF, Technical, U-8 One-time inspection for installation of stall strips, 251945Z Jun 85.

OV-1, RV-1 series, One-time inspection of AC generator, 151530Z Jun 85.

C-12-85-01, SOF, Technical, C-12, One-time inspection for installation of stall strips, 101400Z Jun 85.

U-21-85-01, SOF, Technical, One-time inspection for installation of stall strips, 181300Z Jun 85.

CH-54-85-04, SOF, Maintenance Mandatory, CH-54A bracket, rotor hub torque tube assembly, 182130Z Jun 85.

CH-47-85-06, SOF, Maintenance Mandatory, CH-47D (ONLY) forward and aft transmission government contractor team inspection and subsequent aircraft release for flight requirements, 142000Z Jun 85.

CH-47-85-07, SOF, Technical, One-time inspection of pitch link connecting bolts on CH-47B/C/D helicopters, 180130Z Jun 85.

CH-47-85-08, SOF, Maintenance Mandatory, CH-47D ungrounding authorization procedures, 182115Z Jun 85.

AH-64A-85-02, SOF, Technical, AH-64A One-time inspection and correction of backup control system (BUCS), 291415Z Jun 85.

UH-60A-85-14, SOF, Maintenance Mandatory, UH-60A, One-time inspection of main rotor shaft, 021400Z Jun 85.

UH-60A-85-15, SOF, Maintenance Mandatory, UH-60A One-time records inspection of main rotor hub, 021600Z Jun 85.

UH-60A-85-16, SOF, Maintenance Mandatory, UH-60A Correction to one-time records inspection of main rotor hub, 042120Z Jun 85.

UH-60A-85-17, SOF, Technical Maintenance Mandatory, Black Hawk engine output shaft, recurring inspection and vibration limits, 081600Z Jun 85.

UH-60A-85-18, SOF, Technical, UH-60A Inspection requirement

Cat 1 EIR Phone:  
AUTOVON 693-2066  
(24 hours)

and modification for ungrounding, 101501Z Jun 85.

UH-60A-85-19, SOF, Maintenance Mandatory, UH-60A, Correction to one-time records inspection of main rotor shaft, 081015Z Jun 85.

UH-60A-85-20, SOF, Maintenance Mandatory, UH-60A, Main rotor spindle retirement life change, 292200Z Jun 85.

UH-1-85-05 & AH-1-85-03, SOF, Technical, One-time inspection of all UH-1C/M/U/V, EH-1 and AH-1 series aircraft for defective tension torsion (TT) straps, 212200Z Jun 85.

T42-85-01, SOF, Technical, T42 One-time inspection for installation of stall strips, 101410Z Jun 85.

MIM-UH-1-MEM-85-05 & MIM-AH-1-MEM-85-02, TB 55-1520-243-20-6, Inspection of UH-1/AH-1 engine mount fitting, P/N 204-060-152-1, 201615Z Jun 85.

MIM-UH-60A-MEM-85-01, Inspection of sequence valves, UH-60A, 281700Z Jun 85.

MIM-UH-60A-MEM-85-02, Wiring error in CH-47D, ALQ-156/XM-130 Installation, 081015Z Jun 85.



## Tool Makes Seat Adjustment Easier

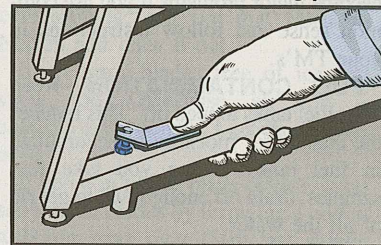
Dear Editor,

Our unit came up with an idea to make the adjustment of passenger seats in U21 and C12 aircraft easier.

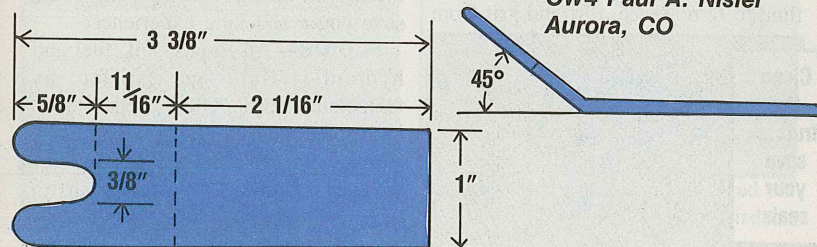
When adjusting the position of these seats, two spring-loaded locking pins must be pulled up to let the seat leg pins move in their tracks. The locking pins are very hard to hold. They also have a drift pin at the top which can cut your fingers if the locking pin slips.

We made a metal lifting tool to help prevent injury. The tool is placed around the locking pin and under the drift pin. The tool's bent so that when it's pressed down toward the leg brace, it lifts the pins and allows easy movement of the seat.

To make two lifting tools, you need a 6 3/4-in piece of flat iron stock 1/8 inch thick and one inch wide. We leave one pair of tools in the aircraft for use on the road and another pair in the maintenance area for use during inspections.



CW4 Paul A. Nisler  
Aurora, CO



(Editor's note—Thanks for the uplifting experience!)

# COLD WEATHER



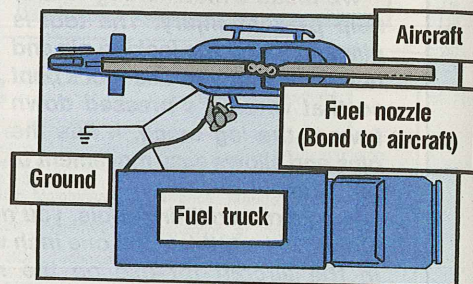
Sub-freezing temperatures, snow and ice make maintenance problems for you bird mechs. But minor problems won't become major problems if you use common sense and follow instructions in your TM's.

**FUEL CONTAMINATION**—Keep your fuel tanks topped off. This reduces the chance for moisture to accumulate in fuel tanks. When you take fuel samples, drain off enough fuel to get rid of all the water.

**SEALS**—Cold weather is hard on gaskets and seals. Moisture can freeze and cut seals on landing gear shock struts and pistons. Check them often and use a clean rag dampened with hydraulic fluid to remove ice, dirt and grit from

struts and pistons.

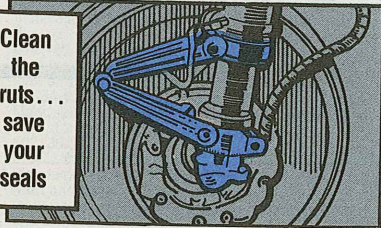
**STATIC ELECTRICITY**—The colder the weather, the dryer the air; the dryer the air, the more static electricity generated. Proper grounding is critical.



Make sure you bond the fuel nozzle to the aircraft during refueling. This could save you a shocking experience.

**FLUIDS**—All Fluids—oil, fuel and hydraulic fluid—get stiffer as temperatures drop. Oil thickens—fuel's harder to ignite—grease gels. So make sure you use the right fuel and lube for weather conditions. The lube chart in your maintenance manual lists the fuel, oil and grease to use.

Clean the struts... save your seals



DON'T GET STUCK ON WINTER WORRIES... USE YOUR NOODLE!



**ICE & SNOW**—Use engine inlet and exhaust covers to keep ice and snow out of your engine. This prevents snow and ice from freezing in the engine compressor, causing damage when you start up.

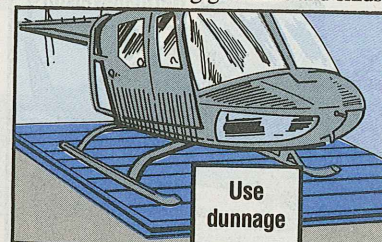


If snow and ice freeze on an engine compartment, roll out that Herman-Nelson and thaw it out.

Keep rotor blades free of ice and snow, too. Otherwise, air flow is changed and you won't get the lift you need.

If you don't have blade covers, clear snow from blades by throwing a cotton webbing strap over them and slowly working it down to the blade tips.

Make sure landing gear tires and skids



are not frozen to the ground. Head off that problem by parking your bird on planks, boards or suitable dunnage.

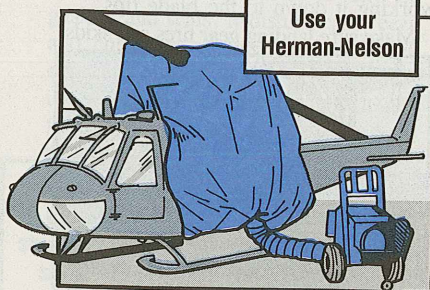


**BATTERIES**—Your bird's nickel-cadmium batteries require special attention during cold weather.

If possible, bring batteries indoors. Warm, fully charged batteries give you good cranking power and lots of spark for a good start.

**SHELTERS**—If there's no hangar space available, rig a maintenance shelter around the work area. Use a

Use your  
Herman-Nelson



salvaged cargo parachute shroud and a Herman-Nelson heater to inflate and warm the shelter. Sure beats frostbite.

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



COLD-WEATHER  
GUIDES MAKE YOUR  
JOB EASIER AND  
SAFER IN THE COLD  
MONTHS AHEAD

Maintaining your bird during cold weather takes more effort and more time. But if you know about problem areas and how to handle them, pulling maintenance and inspections can be almost routine, even in severe weather.

58

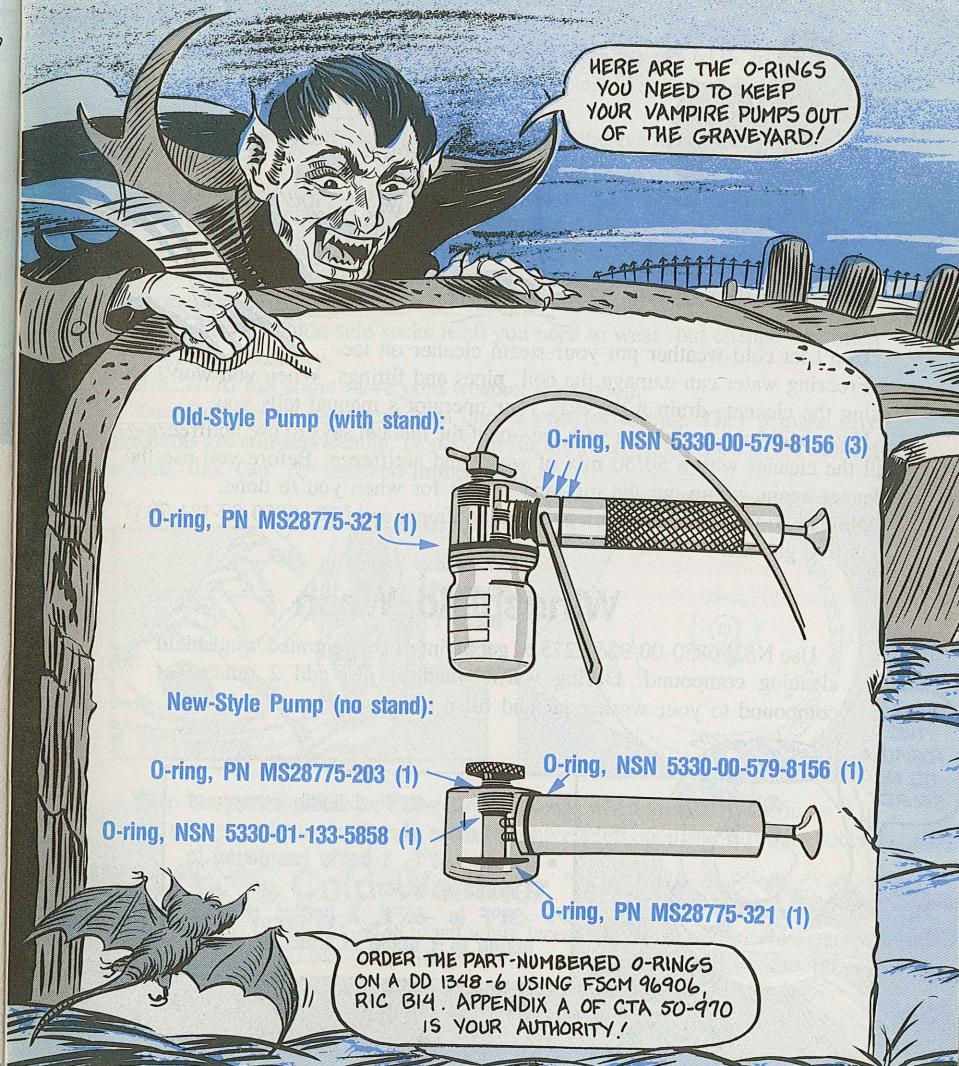
PS END

AOAP Non-Aeronautical...

## Vampire Pump Change

The design of the AOAP sampling pump, NSN 4930-01-119-4030 has changed. The pumps are now made without support stands. Also, the new pumps have a coupling assembly that you remove only if you're using 1/2-in OD tubing.

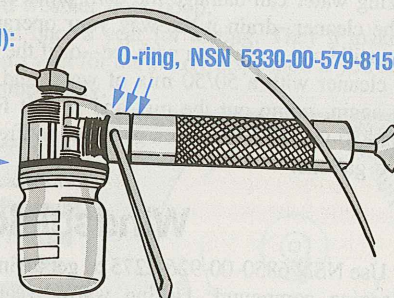
The NSN for the pump hasn't changed. When you order, you could get either style until the supply of pumps with stands is gone. Both styles use sampling bottle, NSN 8125-01-082-9697.



Old-Style Pump (with stand):

O-ring, NSN 5330-00-579-8156 (3)

O-ring, PN MS28775-321 (1)



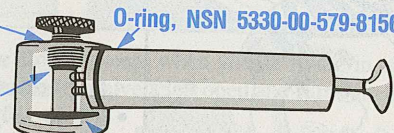
New-Style Pump (no stand):

O-ring, PN MS28775-203 (1)

O-ring, NSN 5330-00-579-8156 (1)

O-ring, NSN 5330-01-133-5858 (1)

O-ring, PN MS28775-321 (1)



ORDER THE PART-NUMBERED O-RINGS  
ON A DD 1348-6 USING FSCM 96906  
RIC B14. APPENDIX A OF CTA 50-970  
IS YOUR AUTHORITY!

# Steam Cleaner Care

HEH-HEH!  
ANOTHER  
FROZEN STEAM  
CLEANER FOR  
MY COLLECTION!



Don't let cold weather put your steam cleaner on ice.

Freezing water can damage the coil, pipes and fittings. When you won't be using the cleaner, drain it the way your operator's manual tells you.

If you still have a problem with ice—or if the manual says to use antifreeze—fill the cleaner with a 50/50 mix of water and antifreeze. Before you use the cleaner again, pump out the mix and save it for when you're done.

NSN 6850-00-181-7929 gets a gallon of antifreeze and NSN 6850-00-181-7933 gets five gallons.

## Windshield Wash

Use NSN 6850-00-926-2275 to get a pint of concentrated windshield cleaning compound. During warm weather, just add 2 ounces of compound to your washer jar and fill it with water.

HERE'S  
THE  
FORMULA,  
IT'S NO  
SECRET!



- +40°F to -10°F, 1 bottle compound to 2 bottles of water;
- 0°F to -40°F, 1 bottle compound to 1 bottle of water;
- -30°F to -65°F, 2 bottles of compound to 1 bottle of water.



## Like a Puppy—Warm But Tender

Your boots can't take a lot of abuse. One puncture—either on the outside or inside—puts 'em out of action... for good.

Use cold-weather boot maintenance kit, NSN 8465-00-753-6335, to repair small holes. The patches are only good for emergencies. They won't hold up long in the field.

The patches stick on better if you apply the adhesive to both the boot and the patch.

Use soap and water to clean your boots. A spray on/wipe off general purpose detergent—NSN 7930-00-357-7386 f'rinstance—takes care of tough stains. Never dry boots near a fire or other heat source.

Watch out for concertina wire. One touch can be the kiss of death to your extreme cold-weather boots.

One pair of cushion sole socks is all you need to wear, but change 'em often to keep your feet dry.

FM 31-70 has some more cold-weather boot poop.

Turn boots in to support at least once a year for testing. They'll make sure the boots are still serviceable. Don't wait for the yearly inspection if you suspect a leak, tho. Get 'em checked immediately.



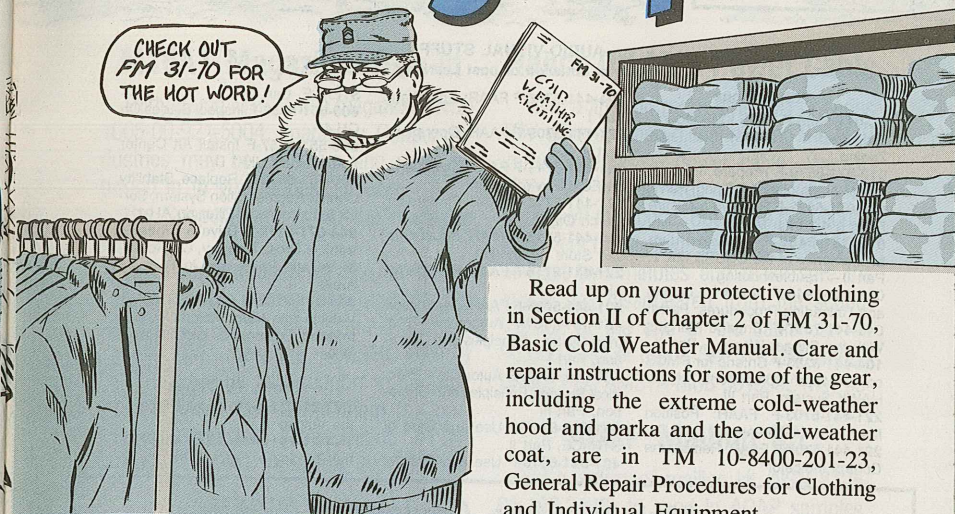
Keep the pressure release valve closed except when you're flying in an Air Force transport. Moisture gets in when the valve's left open and ruins the boots.

## Cold Weather Tie-Up

Use NSN 8335-00-131-6538 to get white laces for your extreme cold-weather boots. NSN 8335-00-945-3969 brings you black laces for the cold-weather boots. Chap 21 of TM 10-8400-201-23 is your authority.

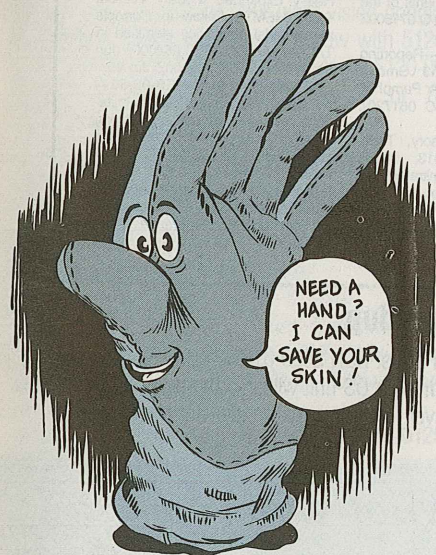
# Cold-Weather

# Clothing Tips



Read up on your protective clothing in Section II of Chapter 2 of FM 31-70, Basic Cold Weather Manual. Care and repair instructions for some of the gear, including the extreme cold-weather hood and parka and the cold-weather coat, are in TM 10-8400-201-23, General Repair Procedures for Clothing and Individual Equipment.

## Skin Savers



Icy-cold metal can freeze to your skin the instant you touch it. But sometimes cold-weather mittens or gloves get in the way when you're working.

Prevent a painful injury with thin anti-contact gloves that keep your hands from sticking to metal in temperatures as low as -60°F:

NSN 8415-00-  
227-1220  
227-1221  
227-1222

SIZE  
Small  
Medium  
Large

You'll find them listed as LIN J66420 on Page 02-039 of CTA 50-900.

The gloves are cotton with deerskin palms, so they can't take a lot of heavy-duty use. Don't wear them longer than you have to—they won't protect your hands from cold air. Replace them when they get frayed, worn or torn.

The best defense against cold air is layers of...air?

That's right. Your extreme cold-weather protective clothing is designed to trap warm, dry air between your body and the harsh environment. The idea is to keep you from losing body heat—to prevent cold injury—without making you too warm.

You'll stay snug if you remember a few pointers:

- Wear several layers of clothing. That way, if you start to perspire, you can take off the extra layers.

If the clothes next to your skin get wet from perspiration, they can't trap air. You'll chill in a hurry, especially if the wind's blowing.

Shake off any snow, ice or water droplets that get on your outer clothing. Even though the gear's water-repellent, brush off snow and ice before you enter a warm shelter.

- Keep the clothing clean. Dirt and grease, like water, cut out air space and reduce insulation. Brushing your clothing while you wear it helps keep it clean.

- Make sure your clothing fits loosely. It's designed so you can leave some parts open—such as the neck and cuffs—to let cold air in if you get too warm.

**AUDIO-VISUAL STUFF**  
Available at battalion or post Learning Center

**TEC Lessons**

2C-011-5335-F AH-1S KMS Operation, Part II Turn-On Test and Zoning  
010-071-6670-F Prepare 4.2 Inch Mortar Ammunition for Firing, Part II  
010-071-6672-F Remove a Misfire From a 4.2 Inch Mortar  
030-051-6432-F Preventive Maintenance of the USCSB MK 1: Part II—Troubleshooting  
041-441-5946-F Vulcan Loading and Unloading Procedures, Part II  
043-441-7897-F Engage Targets With the Stinger Weapon, Part II  
104-441-6353-F Criteria for PMCS on Electrical Components of the HAWK System, Part III  
221-441-5703-F FAAR: Position Mast - Install Antenna  
221-441-5707-F FAAR: Remote the Control Indicator

221-441-5708-F FAAR: Operation, Part I  
221-441-5709-F FAAR: Operation, Part II  
221-441-5711-F FAAR: Operate in an ECM Environment  
221-441-5712-F FAAR: Prepare for March Order  
221-441-5715-F FAAR: Shut Down and Store Equipment  
221-441-5716-F FAAR: Prepare for Airlift, Part I  
221-441-5725-F FAAR: Destruction  
481-091-1181-F Automotive Electrical System, Principles and Operation, Part I  
481-091-1183-F Automotive Electrical System, Principles and Operation, Part III  
481-091-6317-F Use and Care of STE/ICE, Part II  
481-091-6318-F Use and Care of

STE/ICE, Part III  
600-551-8852-F Inspect Blades On CH-47  
600-551-8857-F Install Aft Center Fuel Cell on UH-1 D/H  
600-551-8872-F Replace Stability Control Augmentation System, Servo Actuator, and Filter on AH-1  
944-071-0112-F Drive a Wheeled Vehicle Cross Country, On Roads, In Vehicle Parks and In Built Up Areas  
944-071-0130-F Drive a Tracked Vehicle with Night Vision Devices, Infrared Equipment, and Blackout Drive

**Films, TV Tapes**

TVT 21-72 How to Install MILES on the Vulcan  
TVT 21-74 How to Install MILES on the Bradley

**Maintenance Advisories**

AMCCOM MA 85-29—Generator/Pulley problem on the M12A1 decon apparatus, AMSMC-MAR-C 301640Z Jul 85.

AMCCOM MA 85-30—Revision of MA 85-17, 221300Z May 85, Filter, Canister Insert, NSN 4240-01-177-2675, used on M24/25 series mask, chemical-biological (aircraft and tank), AMSMC-MAR-C 301815Z Jul 85.

AMCCOM MA 85-31—Replacement parts for M8/M8A1 Chemical Agent Alarm (CAA) AMSMC-MAR-C 021735Z Aug 85.

AMCCOM MA 85-32—M3A3 Smoke Generator, NSN 1040-00-587-

3618, NSN's for components of the M2 mount, AMSMC-MAR-C 071500Z Aug 85.

AMCCOM MA 85-33—Reporting requirements of M3A3 Smoke Generator (SG) IAW DA Pamphlet 738-750, AMSMC-MAR-C 061720Z Aug 85.

TACOM SOU—Advisory, Technical/Maintenance, M313, M447, M447C, M749, M750 semitrailer, van, 6-ton, 4-wheel, Asbestos in lining of heat and ventilation ducts of trailers manufactured before 1979, AMSTA-M 012100Z Jul 85.

TACOM SOU—Operational,

Heavy Expanded Mobility Tactical Truck (HEMTT) Follow-up, Corrects the material deficiency identified in TACOM, AMSTA-MTC 062000Z Jun 85, AMSTA-MTC 152000Z Jul 85.

TROSCOM SOU-MES-03-85—Advisory, Technical, Depth Limitations of ANU Scuba regulators, buoyancy compensators, and open circuit scuba diving to 190 FSW, AMSTR-MES 021700Z May 85.

If you need a maintenance advisory, contact your direct support unit or your Logistic Assistance Office (LAO).

**Idler Arm Roundup**

Mechs, turn in any busted M60-series tank idler arms, NSN 2530-01-042-4047, you've got lying around the motor pool. They're needed! Your DS unit will ship them to depot for rebuild. The arms are in short supply, so never let your arms be idle—move them out now!

*Would You Stake Your Life <sup>right now</sup> on*



**M16A1 Magazine Turn-in**

Thirty-round M16A1 rifle magazines, NSN 1005-00-921-5004, made by Cooper Industries may be defective and must be turned in to your supply support.

The Cooper name is on the magazine base.

The Cooper magazines do not fit the magazine well, double feed, and will not feed the last five rounds when fully loaded.

AMCCOM message AMSMC-MML-S 201545Z Jun 85 tells support to package the magazines and return them to Commander, Anniston Army Depot, ATTN: SDSAN-DSP-PPC, Anniston, AL 36201.

**AN/PVS-5 Key**

The socket head key you use to snug the rotary switch on your night vision goggles has a new NSN. Order it now with 5120-00-781-8977. That NSN replaces 5120-00-044-2391 shown on Page 31 of TM 11-5855-238-10.

**All Aboard for Good Connections**

Keep your power on track on its trip from generator to commo gear.

The "ticket" is TB 43-0125.

It's your guide to power requirements for commo sets, generator and cable needs, pin arrangements, proper hookups and more.

Get your pubs clerk to order TB 43-0125.

**Hands Off M19 Power Cable**

Take a little bit more time, M113-series FOV drivers, when disconnecting the M19 infrared periscope power cable. The -10 TM's tell you to wait one minute after turning off the scope. But that's not enough to prevent high voltage burns or death. Wait at least two minutes and make sure the image has disappeared from the scope. Voltage at the end of the cable can be 16,000 volts or more. See TACOM Safety-of-Use Msg AMSTA-MCB 081900Z May 85.

**AOAP Mailing Kit**

Get a leakproof mailing kit, NSN 8125-01-193-3440, to send in AOAP samples. Each kit has 24 non-aeronautical sampling bottles, plastic shipping sacks and mailing cartons. Use Appendix A of CTA 50-970 as authorization.

**Wrecker Crane Hook Latch**

Get a safety latch for the hook on your 5-ton wrecker's crane with NSN 2590-01-201-0968. It's used on all 5-ton wreckers. The latch is required by safety regulations and keeps cables from slipping off the hook.

**TA-312 De-icing Screen**

The microphone protector on your telephone's H-60 handset is NSN 4130-00-392-7628. It's in the handset's TM 11-5965-224-14P.

*the Condition of Your Equipment?*

# Antifreeze All Right?

TB 750-651  
TELLS THE STORY!



Freeze  
Protection  
OK?

Corrosion  
Protection  
OK?

Clean?

If so,  
Don't Drain!