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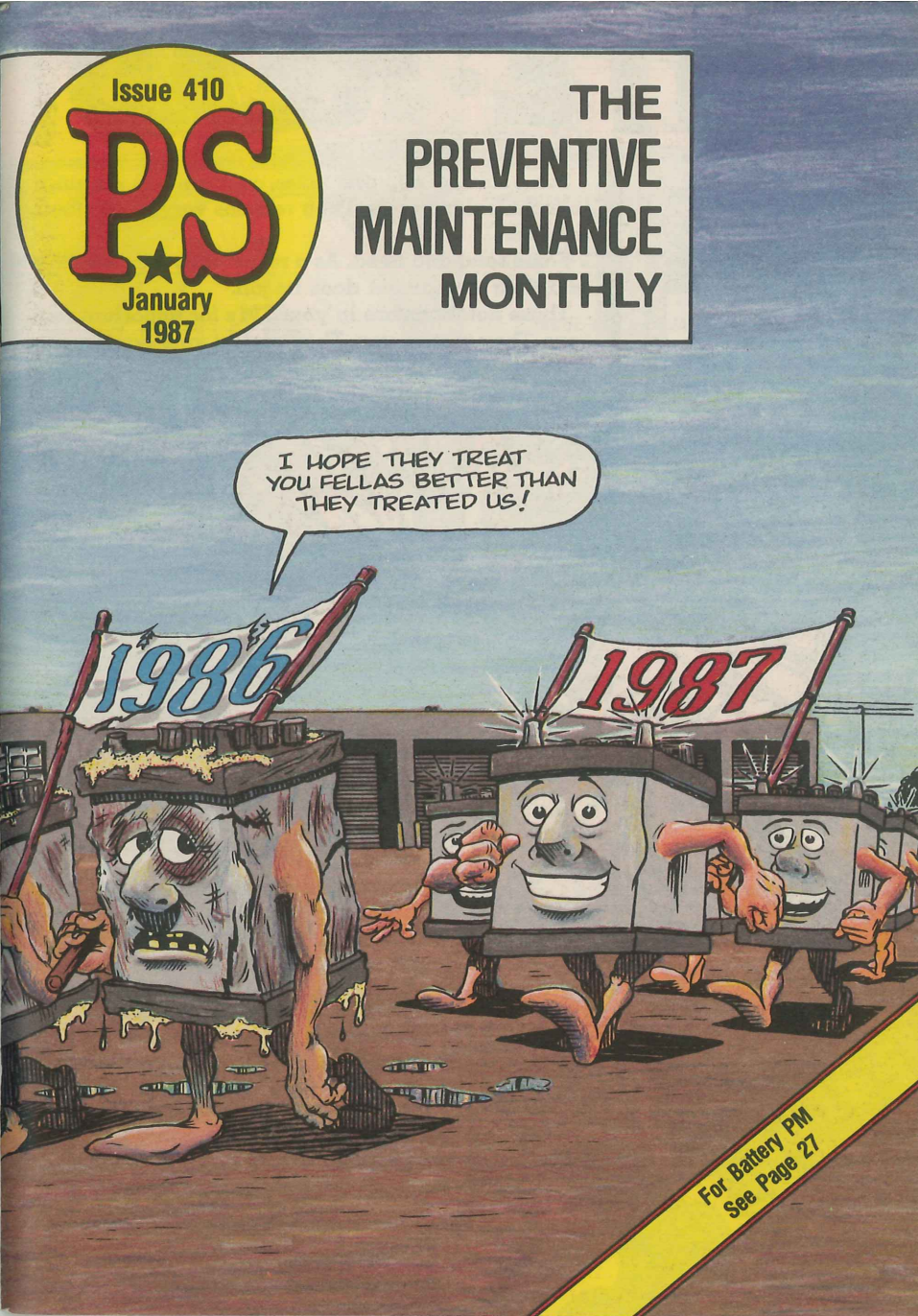
January
1987

THE PREVENTIVE MAINTENANCE MONTHLY



For Battery PM See Page 27

NOTE: READ THIS!

Some soldiers skip over notes, cautions and warnings in technical manuals. Their reasons vary. So do their injuries.

Some read and heed. As a result, they stay healthy and their equipment does its job.

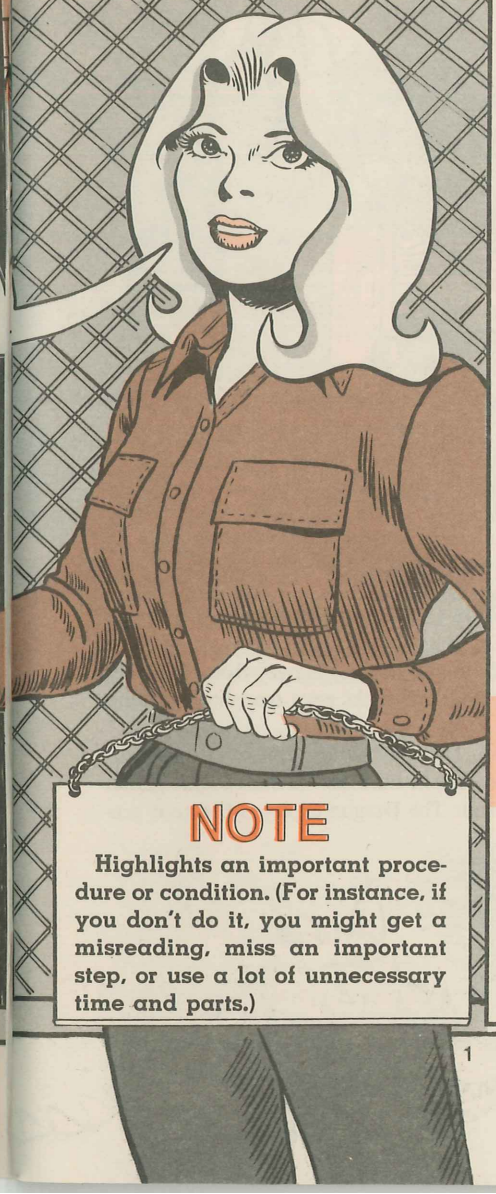
Those notations are in your TM's for important reasons. They protect you. They protect your equipment.

WARNING

Describes an operation or maintenance procedure or condition which, if not strictly followed, could injure or kill you.

CAUTION

Describes an operation or maintenance procedure or condition which, if not strictly heeded, could damage or destroy your equipment.



NOTE

Highlights an important procedure or condition. (For instance, if you don't do it, you might get a misreading, miss an important step, or use a lot of unnecessary time and parts.)

PS THE PREVENTIVE MAINTENANCE MONTHLY

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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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Dragon Missile...

Lock Up for Travel

Moving on down the road with the M175 Dragon missile mount out of travel lock can put out your Dragon's fire PDQ.

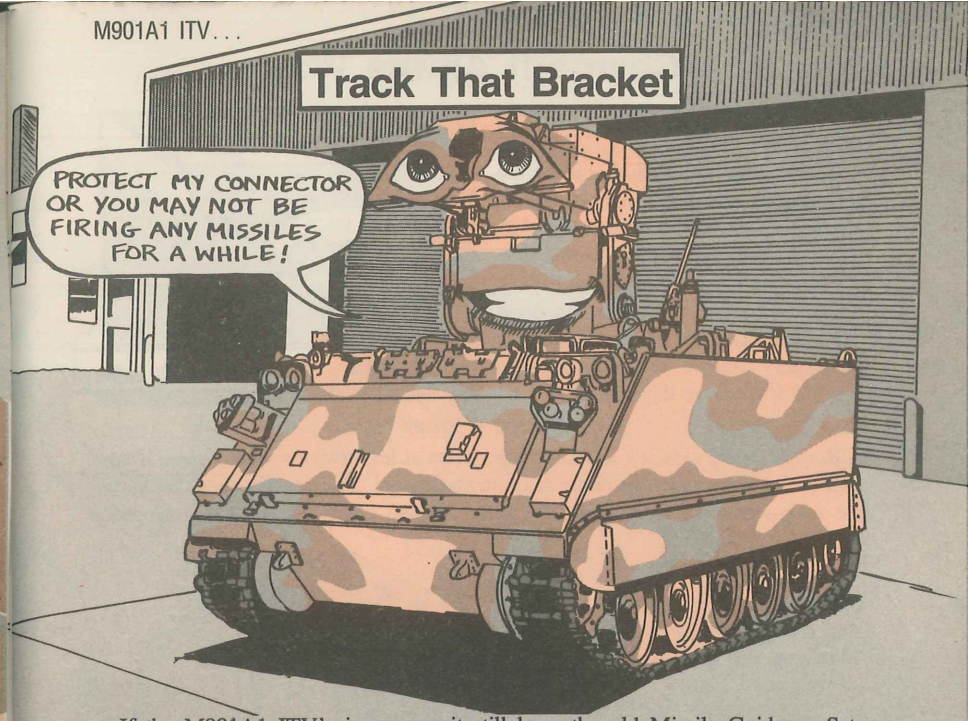
Out of travel lock, the mount swings from side-to-side...away from the safety of the protective shield. Tree limbs, dirt clods and rocks get a free shot at putting the mount down.

A badly dented mount can't be loaded. Damaged wiring can cause misfires.

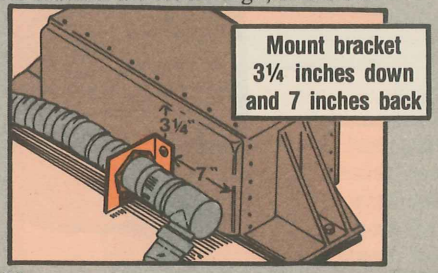
If the missile is in the mount, the missile can be hurt, too. A blow to the missile nose could damage its crush switch. Result: The Dragon explodes before it gets to its target.

Lock up, then move out.

Track That Bracket



If the M901A1 ITV's in your unit still have the old Missile Guidance Sets (MGS), you mechs need to check the position of the W1J1 cable connector bracket on the MGS emergency battery box. Some brackets are set too high, so the connectors are damaged by heavy boots. If the connector adapter breaks, you'll be in for a long wait—replacements are in short supply.



That bracket should be 3¼ inches from the top of the battery box and 7 inches from the front.

If it's not, do this:

- Remove the battery.
- Remove the bracket. Save the screws.
- Move the bracket so it's 3¼ inches from the top and 7 inches from the front. Mark the two screw holes.
- Use the 90° angle drill in your No. 1 Common shop set and a .272-in twist bit (drill size I) to drill the screw holes.
- Install the bracket, connector and the battery.

If you need replacement screws, order them with NSN 5305-00-059-3660. NSN 5310-00-844-3302 gets the nuts.

Charge It All the Way

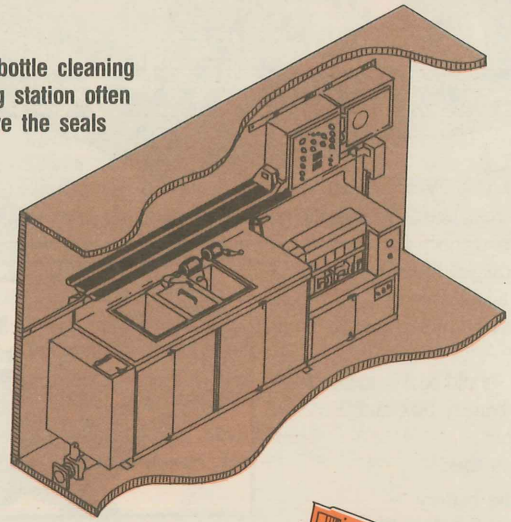
You can't fool the TOW Missile Guidance Set (MGS) battery's memory. If you mechs don't fully discharge the battery before charging...or don't fully charge it...the battery can never be fully charged again. Its memory won't let it.

Once you begin charging the battery, you must complete the charging cycle. The green FULLY CHARGED light on the battery charger will come on when it's OK to remove the battery.

Twice a Week

Run the bottle cleaning and charging station at least twice a week—even if you don't have any coolant cartridges to clean and charge. This regular operation keeps the seals lubricated. Otherwise, the seals dry and crack and must be replaced.

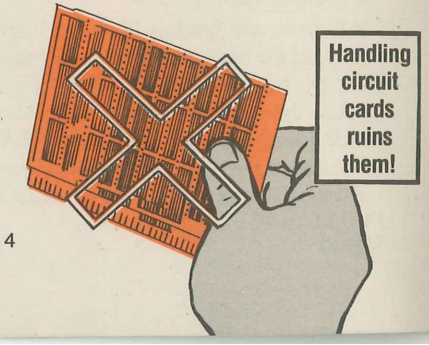
Operate the bottle cleaning and charging station often to preserve the seals



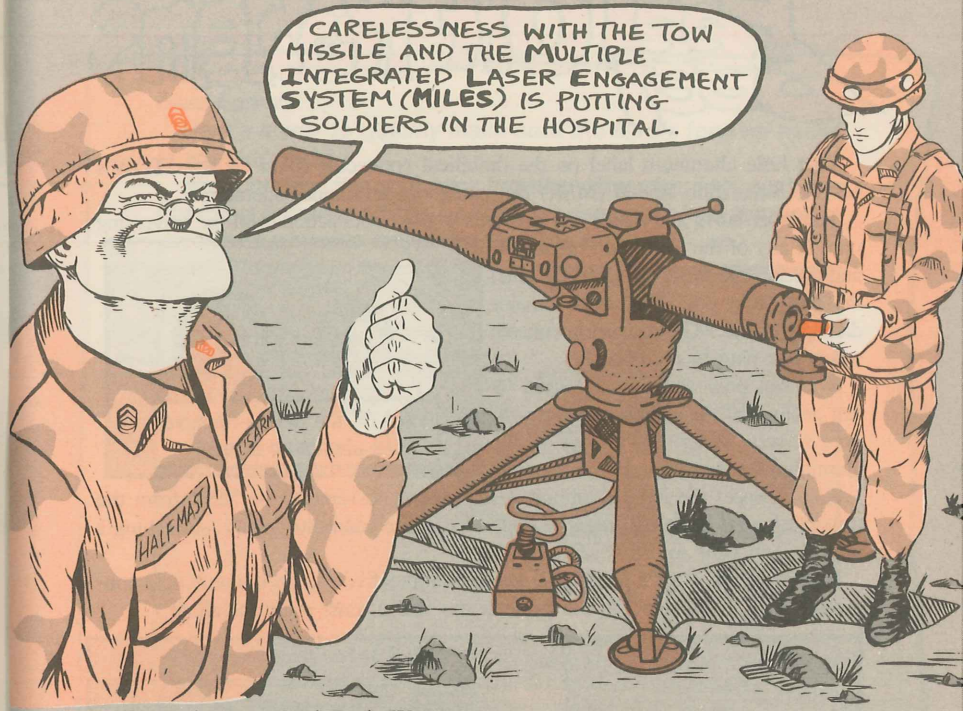
Hands Off

MGS circuit cards are static sensitive. If you handle them without special anti-static equipment, you ruin them.

So never touch the circuit cards. If a card needs to be replaced, tell DS. They have the equipment to do the job right.



No Smiles at MILES

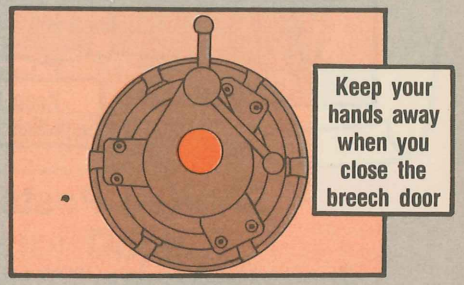


If you load an Anti-Tank Weapon Effect Simulator System (ATWESS) cartridge in a TOW/MILES with a damaged firing pin, the cartridge could explode when you close the breech door.

Every time—before you load an ATWESS cartridge—open the breech door as wide as possible to see if the firing pin is sticking out. Feel for it with your fingers. If the pin's sticking out, tag your TOW/MILES UNSAFE and turn it in. Never stand behind the ATWESS when you load and fire the TOW/MILES. The ATWESS cartridge can explode just from an accidental bump. And its backblast burns.

Stand to the right of the launcher while you load and fire. Also, keep your hands away from the breech door's hole while you close and lock the door.

And make sure no one is closer than 50 meters behind the launcher.



Peel Off Problems Beef

That little aluminum label on the umbilical connector cover of your TOW's Missile Simulation Round (MSR) can cause big problems, operators.

The label burrs and bends and prevents a good connection with the traversing unit. If any of the aluminum breaks off and touches the MSR's connecting pins, the pins short out. That causes major damage to the M70 instructor console when you plug in the console.

Peel off the label—Remove all aluminum scraps!

You can prevent all that trouble by just peeling off the aluminum label with your fingers. Make sure you get all the aluminum scraps off the connector seal.

Also, inspect the MSR's umbilical seal after you remove the MSR from the traversing unit. If the seal remains depressed in the connector cavity, something's wrong. Tell your mech.

Whenever the MSR's not in use, keep the protective cap on the umbilical connector. That keeps dirt out and protects the seal against rough handling.

Keep the protective cover on the umbilical seal when the MRS's not in use

Shorted Posts Cause Trouble

Shorted-out binding posts on TOW Missile Simulation Rounds (MSR) are damaging circuit cards in Missile Guidance Sets (MGS). Then the MGS is out of action until DS replaces the card.

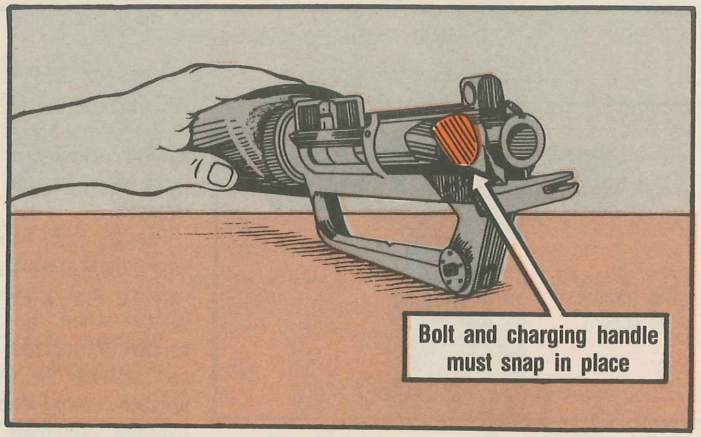
DS should check all your MSR binding posts for at least 5 megohms resistance. Any MSR showing less than 5 must be turned in. MICOM Msg AMCPM-TO-R-FL 231955Z Jul 86 has the info for DS.

Forward Assist Quick Test

Dear Editor,

Here's a way to quickly make sure the M16's forward assist is working right.

When putting the M16 back together after cleaning, push the charging handle and the bolt carrier assembly into the upper receiver just up to the point that the bolt locks up.



Bolt and charging handle must snap in place

Hit the forward assist with the palm of your hand.

If the forward assist's OK, the bolt carrier and charging handle will snap in place. If they don't snap in, tell the armorer.

SP4 Dwayne Kelley
Ft Stewart, GA

(Editor's note: Sounds like good assistance.)

M16 Deflector Dope

If your left-handed soldiers need brass deflectors for their M16-series rifles, armorers, get them from your local Training and Audio-Visual Support Center. The deflectors don't have an NSN. If your local support center is out of deflectors, get more by sending a request to: US Army Training Support Center, ATTN: ATIC-LOM, Ft Eustis, VA 23604. The price will be forwarded to you.

Fire Extinguisher Seals, Tags

Use the Right Handle Seal

Use only copper seal wire, NSN 5340-00-902-0426. **Do not** use safety wire or lockwire, or add extra loops or runs for strength.

Rigging the handles wrong leads to equipment damage and personnel injury—when the pull needed to break the seal and activate the extinguisher is more than the average crewman can exert.

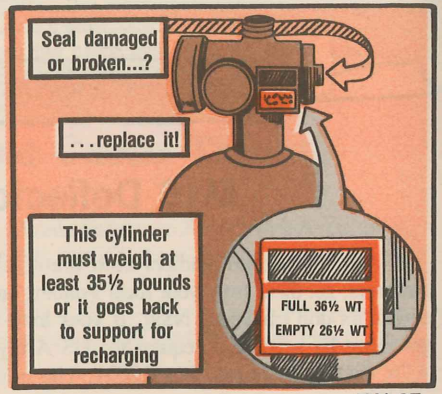
Seal Cylinders Right

Don't forget the shrink tubing and seal on the cylinder itself.

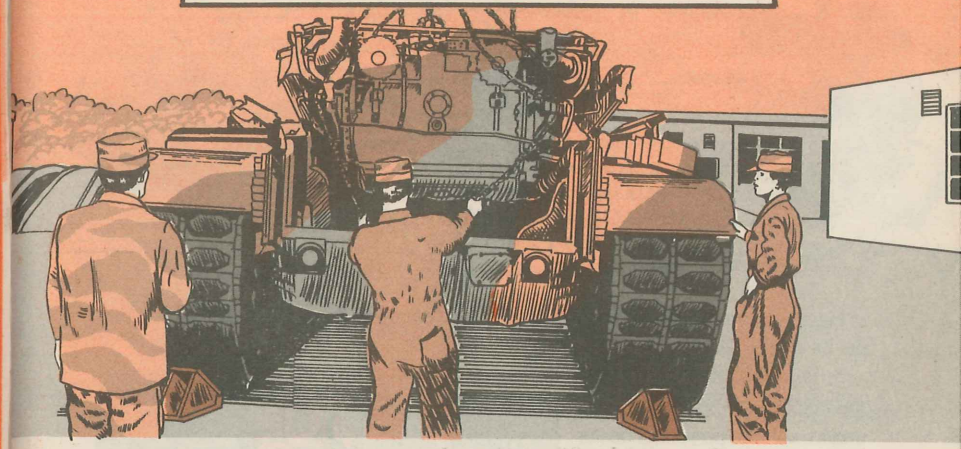
If the tubing or seal is missing or broken, your vehicle is NMC. Just running a piece of wire through the vent valve is not good enough.

Have the cylinders weighed to make sure they're serviceable. Reinstall them with new shrink tubing and wire.

Your life depends on the condition of the fixed fire extinguishers, so your interest in their condition is critical.



Powerpack Sling Repair Parts



Repair parts are now available for the engine and transmission sling, NSN 4910-01-048-8706, used on M48A5 and M60-series tanks.

Here is the info you need to go along with the repair info found in TB 43-0001-39-5 (Apr 85) on Pages 2-26 through 2-30:

① **Chain assembly**
NSN 4010-01-213-5242

② **Bolt**
NSN 5306-01-213-5240

③ **Spacer***
NSN 5310-01-037-8937

④ **Nut**
NSN 5310-00-877-5795

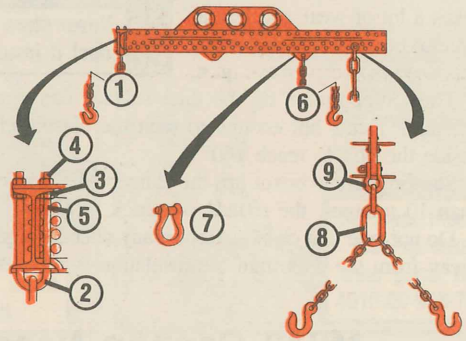
⑤ **Jam nut**
NSN 5310-00-834-8734

⑥ **Chain assembly**
NSN 4010-01-219-4020

⑦ **Shackle assembly***
NSN 4030-01-115-6660
size ½, Type IV, Class 4

⑧ **Chain assembly**
NSN 4010-01-218-9955

⑨ **Shackle assembly**
PN RR-C-271
size ¾, Type IV, Class 1



Order Item 9 on a DD Form 1348-6, using FSCM 81348 and RIC S9I.

If you don't have a copy of the TB, ask your local TACOM Logistic Assistance Representative for the info.

*These NSN's are not on the AMDF, so order on a DD Form 1348-6.

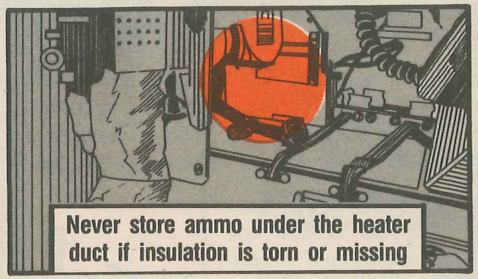
25MM Ammo Stowage Danger

Heat and ammo don't mix. If it gets hot enough, ammo will cook off—fire on its own.

So you M2 IFV crewmen will be interested in this item:

Do not store 25MM ammo underneath the personnel heater duct if there is damage to the duct, insulation or strapping. The damage might let bare metal touch the ammo box.

The heater duct insulation takes a lot of wear and tear as ammo boxes are loaded and unloaded, so keep an eye on it.



The temperatures on the duct surface can reach 600°F if the insulation is missing. That's hot enough to melt the plastic ammo box and cause the ammo inside the box to reach 160°F.

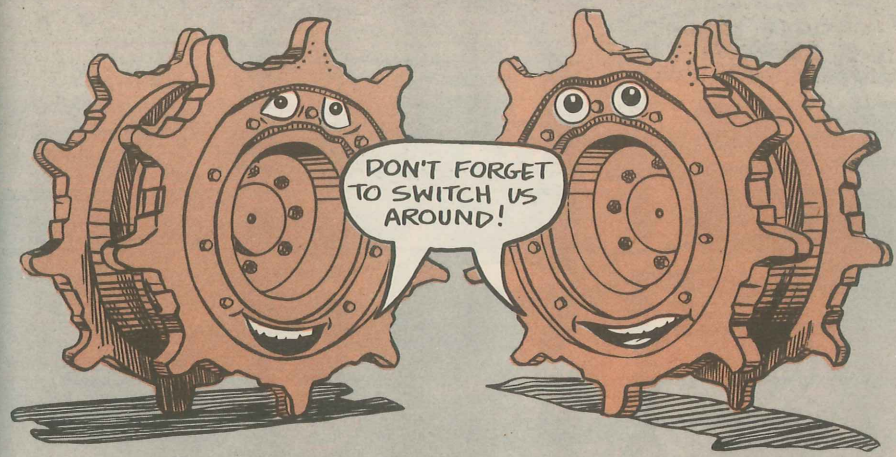
Stacking ammo boxes ups the danger—the closer the hotter. At 300°F for more than 10 minutes, the rounds can cook off!

Do not take that chance. Report any duct damage to your mech and keep ammo away from the duct until the insulation is repaired or replaced.

M242 Cannon Needs 2408-4

Don't forget, M2/M3 types, that you must keep a DA Form 2408-4, Weapons Record Data, on the M242 25MM cannon. Your safety depends on it! The firing pin must be replaced after 8,000 rounds and the breech after 25,000 rounds. You need to keep the 2408-4 so you'll know when to do it! If you don't, firing pin or breech failure will put you and your gun out of action.

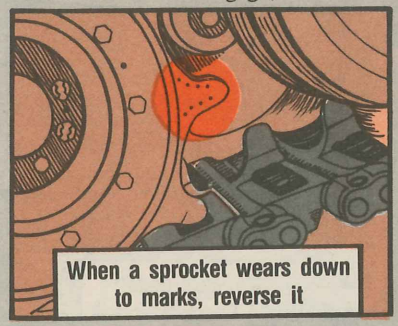
Sprocket Wear, Not Wearout



Worn out before their time—so worn that the sprockets can't be reversed for their second "lives."

That's the story, crews and mechs, of drive sprockets on M109-series SP howitzers and M992 field artillery ammo supply vehicle.

And the reason they're worn out early is lack of attention to wear marks or failure to use a wear gage, NSN 4910-00-908-7344.



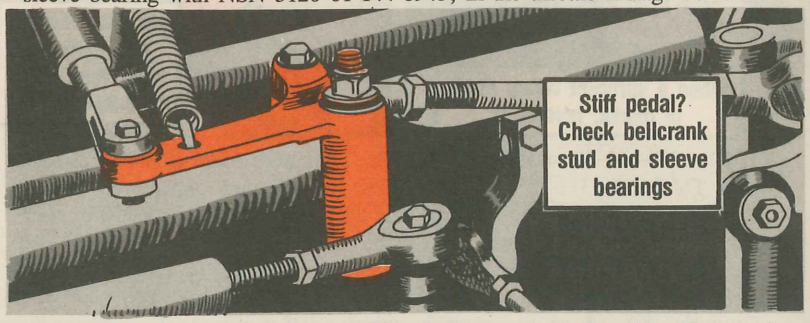
TM 9-2350-311-10 and TM 9-2350-267-10 require monthly sprocket wear checks. TM 9-2350-311-20-2 and TM 9-2350-267-20 require annual wear checks.

If you don't make the checks and reverse the sprockets when indicated by wear mark or wear gage, the sprockets wear too far into one side of the teeth. That causes the sprocket to "hook" track end connectors during operation. The connectors are damaged, track life is reduced and sprockets are broken.

Do your job and keep an eye on the sprockets. If they are reversed when the PMCS says, you'll get a full lifetime of wear from them.

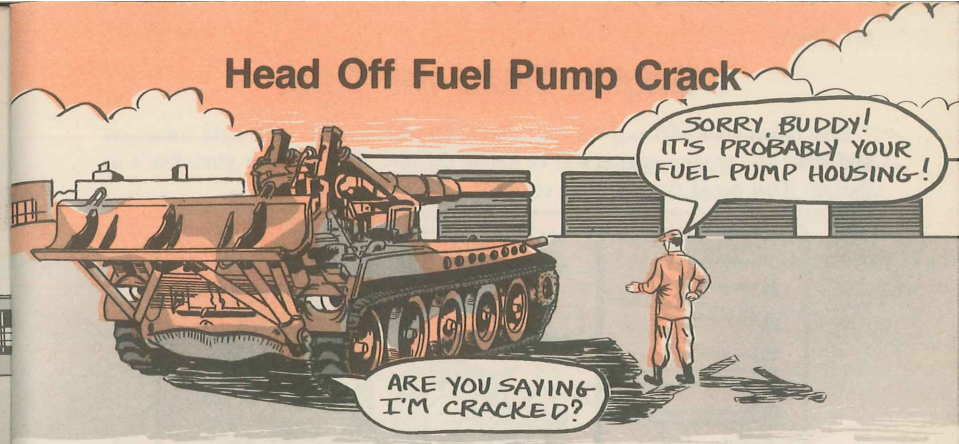
Pedal Won't Hit the Metal?

Replace the old shouldered stud with NSN 3040-01-138-6930, and the old sleeve bearing with NSN 3120-01-144-8943, in the throttle linkage bellcrank.



The top section of the old stud can bend, causing the bellcrank to bind on the bearing. That's what gives the driver his trouble.

Head Off Fuel Pump Crack

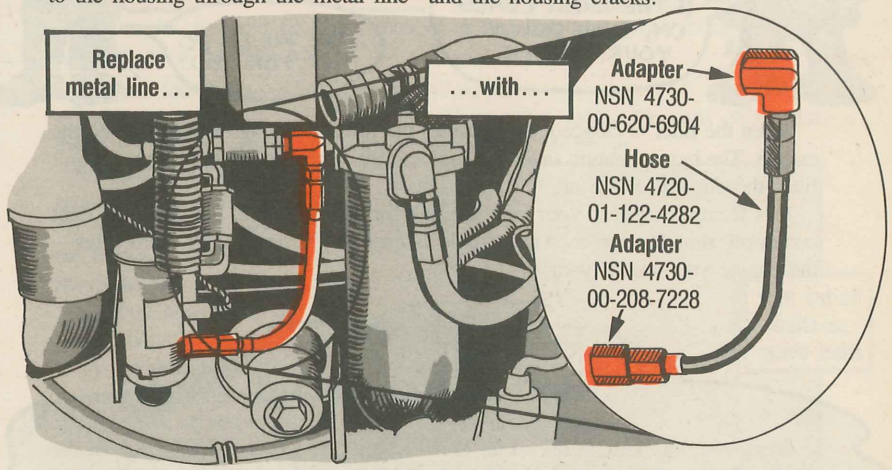


Cracked fuel pump housings can cause problems with your M110A2 howitzers and M578 recovery vehicles.

The engine will run poorly or lope at speeds above idle.

If the pumps are on clean-air engines (model 7083-7395) installed with conversion kits, here's why the pump housings are cracking:

The conversion kit installation moved the fuel pump to the engine/transmission support beam. The pump is connected to the low pressure fuel filter by a rigid metal fuel line. The filter vibrates in operation, and that vibration is transmitted to the housing through the metal line—and the housing cracks.

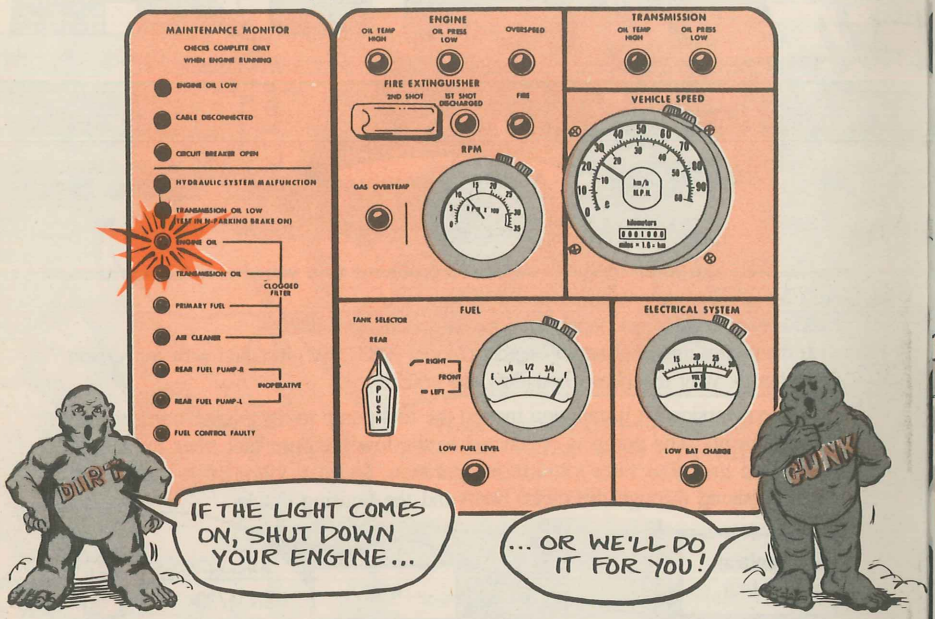


Your mech can solve your problems by installing a flexible rubber hose in place of the rigid metal line. This job is done when the cracked pump housing is replaced.

It takes two adapters—NSN 4730-00-620-6904 and NSN 4730-00-208-7228—and hose assembly, NSN 4720-01-122-4282.

Engine Bites the Dust

Shut down your engine if the engine's oil CLOGGED FILTER light comes on and stays lit—or your engine will be eating the dirt, sand or other gunk that's in the oil. That could destroy your engine!



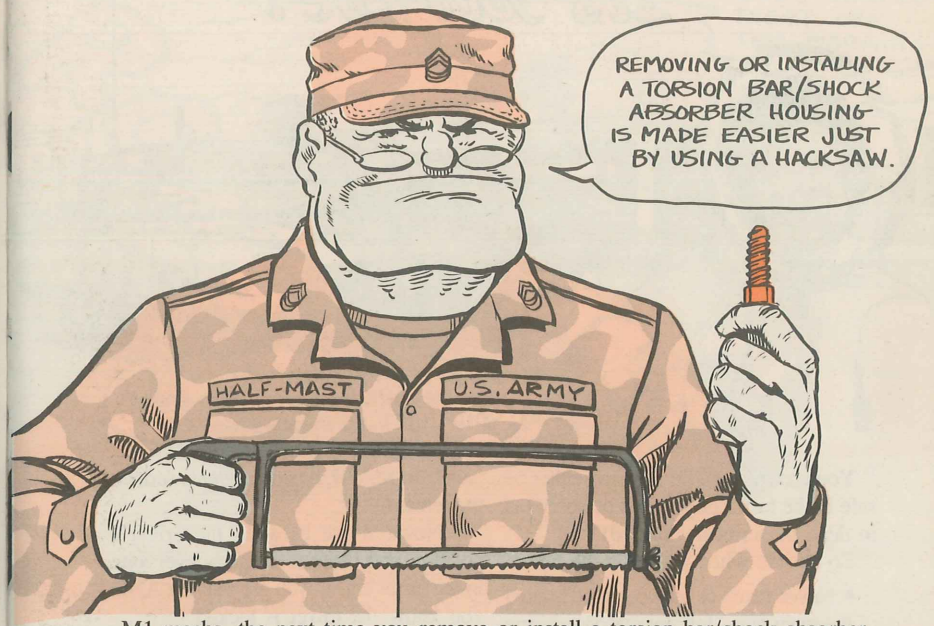
When the filter is clogged, oil bypasses the filter, carrying dirt with it into the engine. The bypass feature saves the engine from seizing up on-the-spot but won't filter the dirt out of the oil.

This feature will keep your engine going for a short while, but when the light comes on, shut down as soon as possible and report it! Immediately. Remember—the engine you save **is** your own.

Bolt Removal Aid

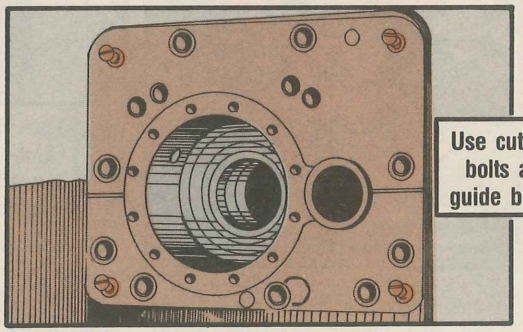
Removing the deck plates on an M109-series howitzer or M992 FAASV can be a real bear if the deck plate bolts are corroded. Make the job easier. The next time you have the deck plates off, coat the deck bolt threads with anti-seize compound, NSN 8030-00-087-8630, before putting them back. This'll keep corrosion to a minimum.

Housing Job Made Easy



M1 mechs, the next time you remove or install a torsion bar/shock absorber housing, do it the easy way:

- Order four bolts—NSN 5305-00-947-4364.
- Cut the heads off with a hacksaw. Then either square the ends off or slot them, so you can install 'em with a wrench or screwdriver.
- Replace the four corner mounting bolts with the cut-off bolts. They'll support the housing while you remove the other nine bolts.



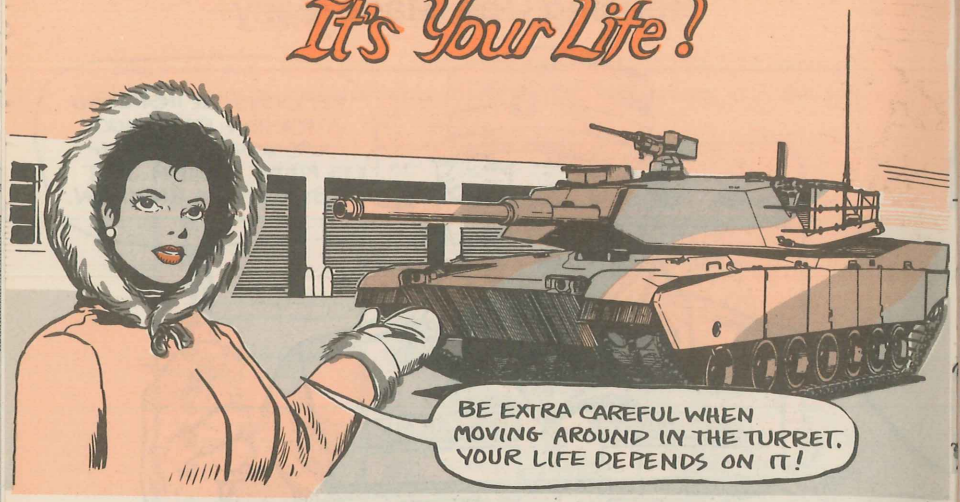
Slide the housing off the cut-off bolts and lower it to the ground.

Leave the cut-off bolts in place. Then, when you're ready to put the housing back on, slide it over the bolts. Everything lines up and the housing goes on evenly.

Replace the cut-off bolts with the original corner mounting bolts.

Para 2-5b of TB 43-0001-39-4 (Oct 86) has more info on this.

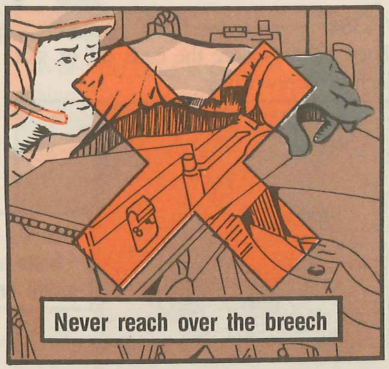
It's Your Life!



You crewman and mechs can either be safe in the turret or you can be sorry (as in dead or seriously injured).

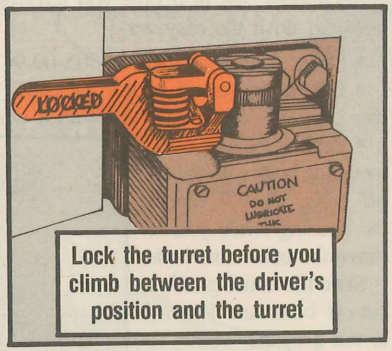
To be safe when you're in the turret:

- Never reach or lean over the breech of the main gun—for any reason—during operation.



If you're a mech working on the gun, be sure ALL unnecessary power is off and stays off. Keep the turret and gun locked if possible. On the M1 tank, use the gun/turret drive switch on the loader's panel. In MANUAL, it prevents sudden movement.

- Never move between the driver's position and the turret unless everyone in the turret knows you are moving AND you know the turret is locked.



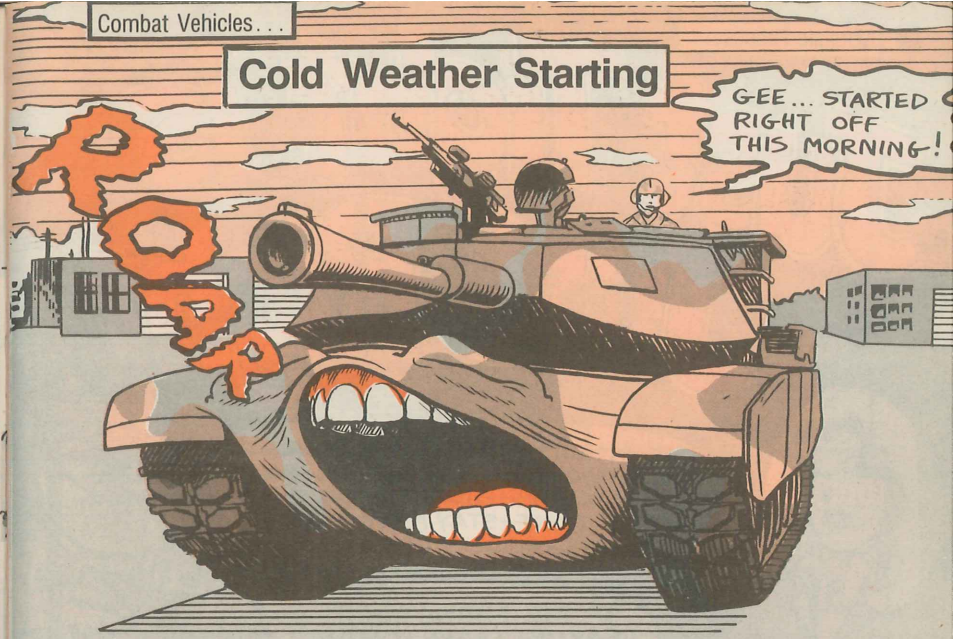
Lock the turret before you climb between the driver's position and the turret

The list of soldiers killed or badly hurt in accidents caused by violating these rules is already too long.

But, turret accidents cannot be prevented unless you think safety every single minute you're in the turret.

It's your life!

Cold Weather Starting



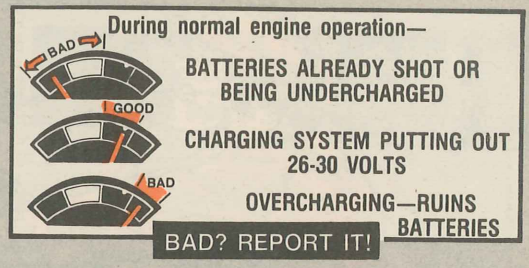
Nothing beats the feeling you get when you hit the starter switch and your engine roars into life. It's the start of a good day!

Hard starting happens only if you let it happen.

You let it happen by not giving the batteries enough time to recharge after a cold weather start.

Any time you start your vehicle in cold weather, charge the batteries by running your engine about 15 to 30 minutes. Set the throttle at high idle.

You can tell when your batteries are charged by watching the Batt-Gen indicator. As the battery recharges, the indicator needle will move from high charge to the normal charging rate on the scale.



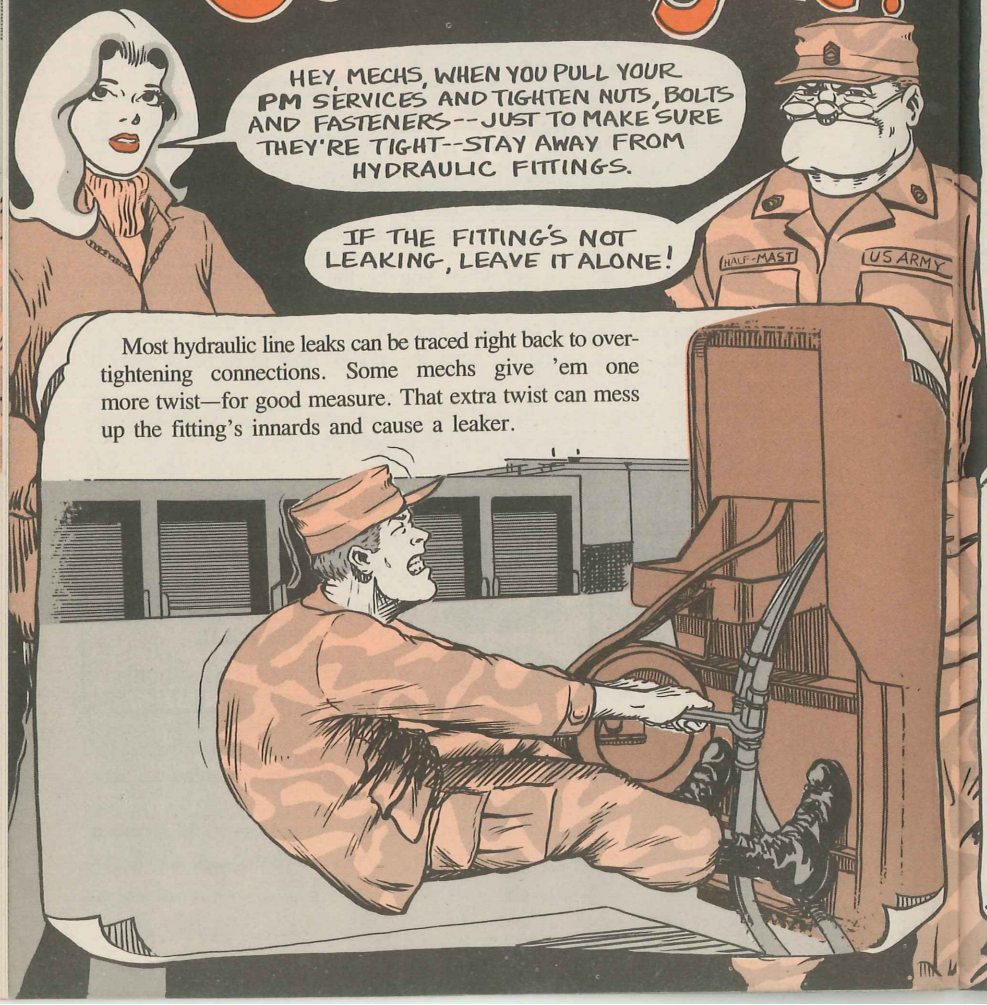
Keep an eye on the indicator. If it shows a low charging level, report it.

If the indicator shows in the overcharge range for more than 5 minutes, shut down pronto and report it. You'll ruin the battery.

If your engine's been running 30 minutes or so and the indicator still shows a high rate of charge, but not in the red, report it. Your mechanic can check out the charging system.

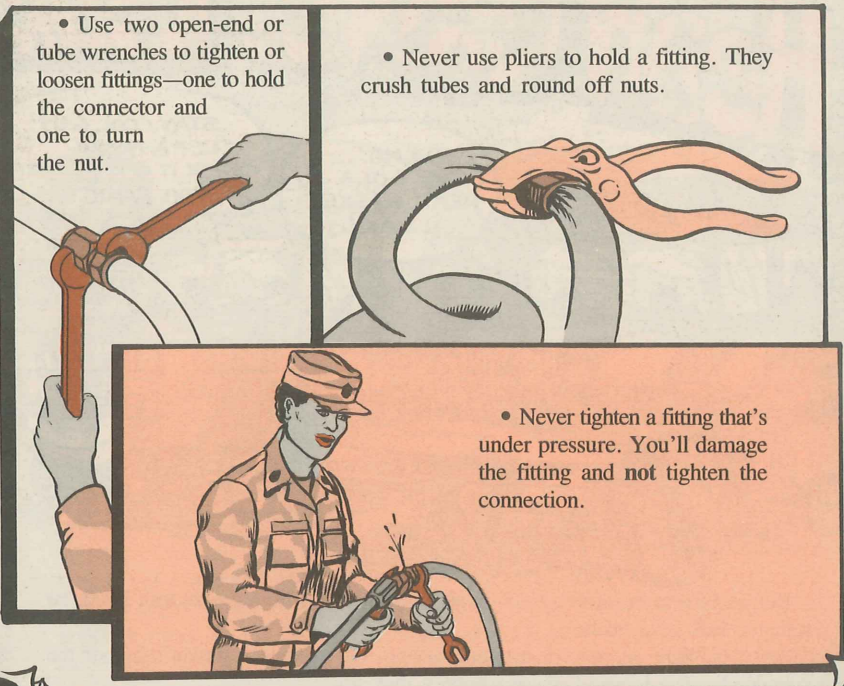
Hydraulic Fittings...

Just Tight is Just Right!



Most hydraulic line leaks can be traced right back to over-tightening connections. Some mechs give 'em one more twist—for good measure. That extra twist can mess up the fitting's innards and cause a leaker.

Here are tips on tightening fittings



- Use two open-end or tube wrenches to tighten or loosen fittings—one to hold the connector and one to turn the nut.
- Never use pliers to hold a fitting. They crush tubes and round off nuts.
- Never tighten a fitting that's under pressure. You'll damage the fitting and **not** tighten the connection.

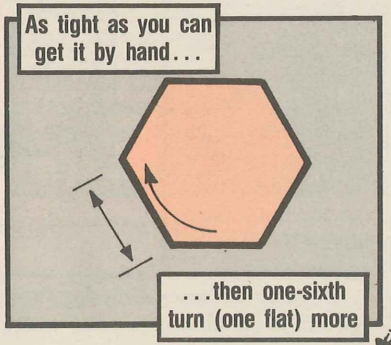
Installing Fittings

When putting a fitting back together or replacing one, get it tight...just right.

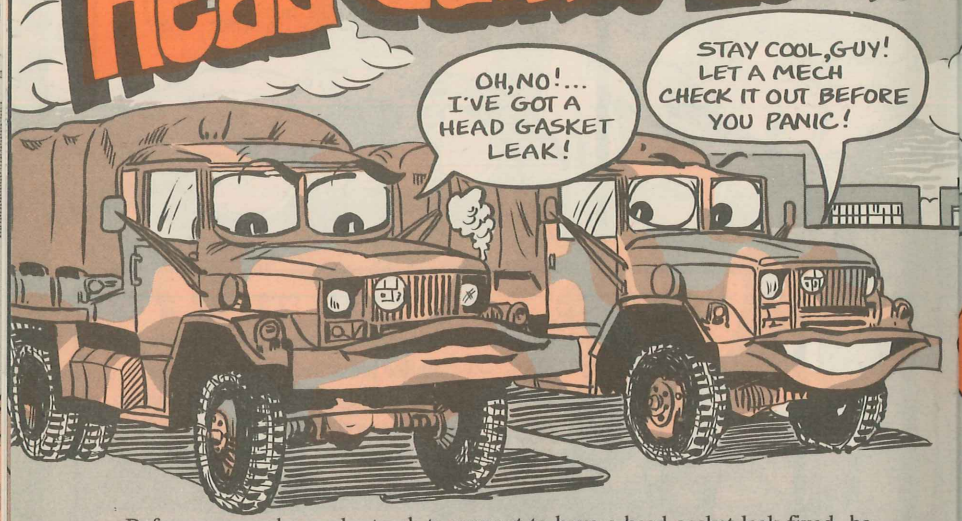
Make sure the tube is square with the connector and that there is no pressure between the tube and nut.

Tighten the nut by hand as tight as you can get it. Then tighten the nut another 1/6 to 1/3 turn—one or two flats on the hex nut—using two wrenches.

Pressurize the system. If you get a leak, depressurize the system, then tighten the nut another 1/6 turn, but no more. Repressurize the system. If everything's OK, you've got a leak-free connection. If not, take the connection apart and start again.



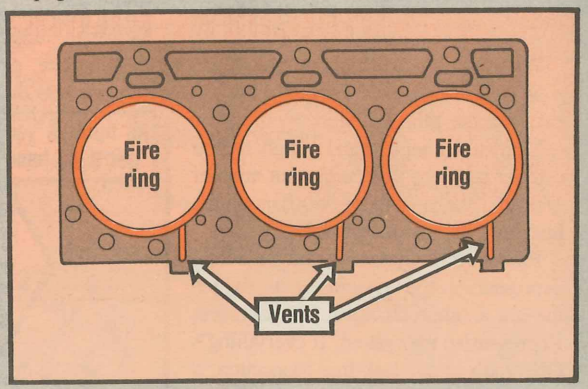
Head Gasket Leaks? Maybe Not!



Before you mechs send a truck to support to have a head gasket leak fixed, be sure the leak's for real.

Small bubbles, seepage or a hissing sound may mean the gasket's bad or the cylinder head is loose. Then again, they may not.

Hissing and slight seepage can be normal for multifuel engines, especially on the right side where there are head gasket vents.



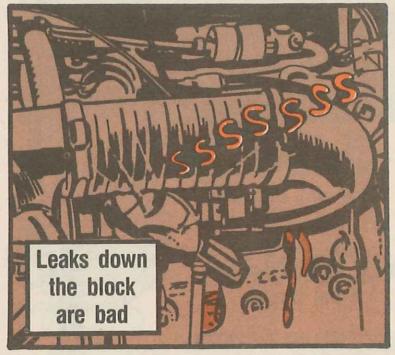
These vents are open at the edge of the cylinder head. Moist air may be sucked in when the engine cools. Then condensation—water—will be forced out and can make a hissing sound as the engine heats up.

If that's the cause of hissing, it'll stop in a short time as the engine heats up. But if the hissing pulsates or the seepage doesn't stop, check it out.

√√Do it Yourself Checks √√

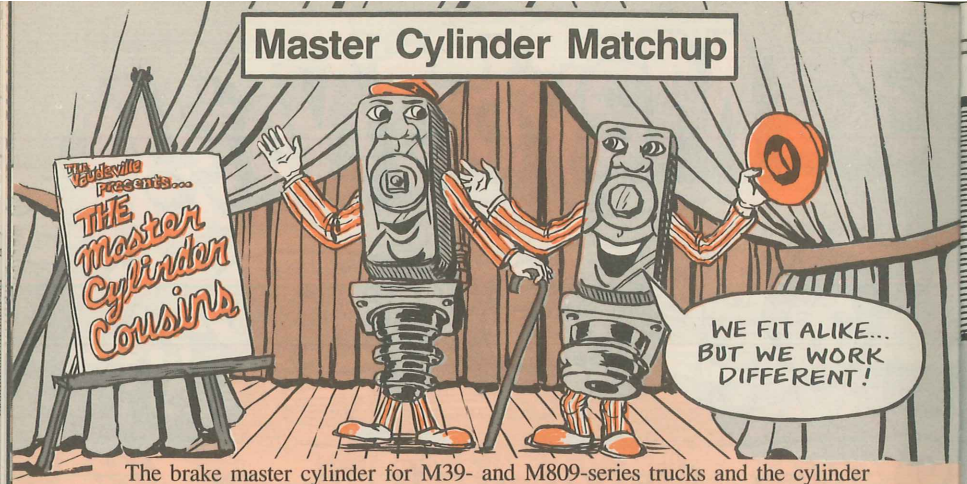
Here are some checks to see if you've got leaks—oil or coolant—inside or out. If the engine is OK on these points, it has no head gasket leaks.

- No hydrostatic lock in the engine when you're starting it. Coolant that's leaked into a cylinder may even keep your engine from turning over. If this check's not spelled out in the -10 TM, see Page 3-4 of FM 21-305.
- No engine oil in the coolant. Check the cooling system when it's cold. Oil floats on water, so it's easy to find when you stick your finger in the radiator or surge tank. You may be able to see the oil as a slime or rainbow color on top of the coolant, too.
- No coolant in the engine oil. Water will show as blobs on the dipstick.
- Engine is not misfiring. The engine should sound smooth when you get it up to its normal operating temperature.
- No loss of power. Make this road test when the engine's up to normal operating temperature.
- No excessive leaks between the cylinder head and the block. Excessive means oil or coolant is running down the engine.



Remember, engine lube and cooling systems are under pressure when the engine is running, so doublecheck any damp spots or streaks when the engine's running at normal operating temperature. Leaks may not show up until the pressure's on.

Master Cylinder Matchup



The brake master cylinder for M39- and M809-series trucks and the cylinder for M60 tanks fit alike...but there's a big difference in the way they work!

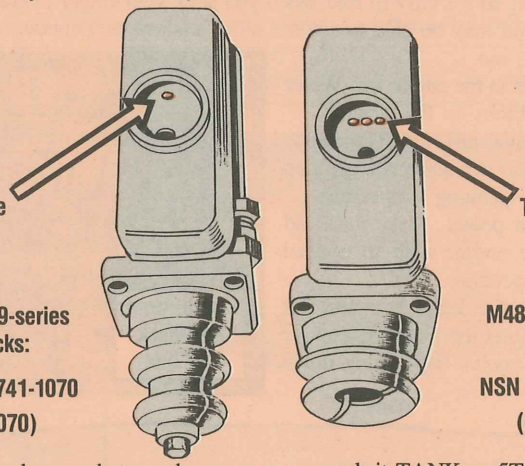
If you put a truck master cylinder in a tank or a tank cylinder in a truck, brake trouble's a sure thing!

Make sure you have the right cylinder before you install it. New cylinders for 5-tonners have "5 Ton Only" stamped on the top.

New cylinders for M60's are marked "Tank" on the mounting flange.

If the master cylinder's not marked, remove the fill plug.

Look at the holes in the bottom of the reservoir. If you see three holes, it's a tank master cylinder. Truck cylinders have only one hole.



M39- or M809-series 5-ton trucks:

NSN 2530-00-741-1070

(PN 7411070)

M48- and M60-series tanks:

NSN 2530-00-978-2068

(PN 10916089)

Once you know what you have, you can mark it TANK or 5T TRK with the metal stamping die kit, NSN 5110-00-289-0007, in the No. 2 Common shop set. Don't stamp hard enough to damage the cylinder, tho. Or, you can paint the ID on.

Air Hose Tie-up

Dear Editor,

Air hoses on M149-series water trailers are sliced in half during towing operations. The hoses get caught between the truck's back bumper and the trailer's frame when drivers turn too short while backing, causing the trailer to jackknife.

We've come up with a fix that prevents the damage:

- ***Lay the air hoses to the inside of the safety chain eyebolts.***

- ***Tie the hoses in place with nylon ties, NSN 5975-00-156-3253. Thread the ties through the eyebolts and pull them snug around the hoses. That saves the price of a new air hose, and saves downtime, too!***

SSG Russell E. Babcock
Omaha, NE

(Editor's note: That's a great idea! The fix works on many other pintle-towed trailers.)

DOWN...IN THE MOTOR POOL!

With a little care, your small trailer will follow you everywhere when you need it. But ignore it and it may not be ready for you the next time you're ready to go.

Here're some tips to help you keep trailers freight-haulin' ready:

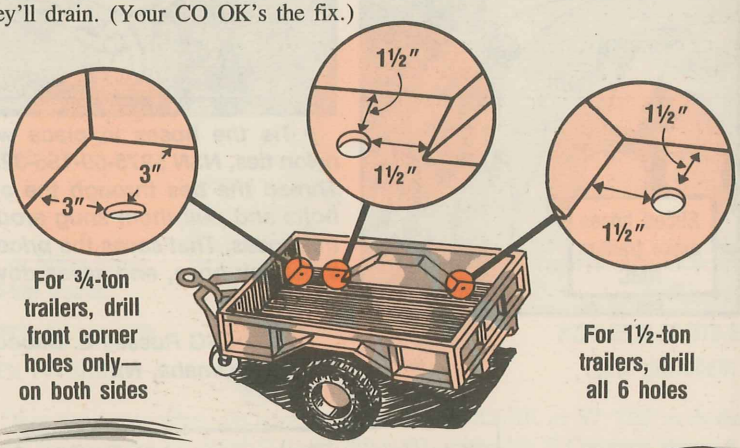
Standing water will rust the trailer box and rot the canvas. So. . .

• Park ¾- and 1½-ton trailers with the front end higher. Put a block behind each wheel. Set the caster wheel or landing leg on a block about 6 inches high and open the tailgate.

• Chock the wheels and release the handbrakes so the brakes won't be stuck on when you need the trailer.

• Park the ¼-ton trailer level and open the drain valves. Be sure to close the valves before you float the trailer.

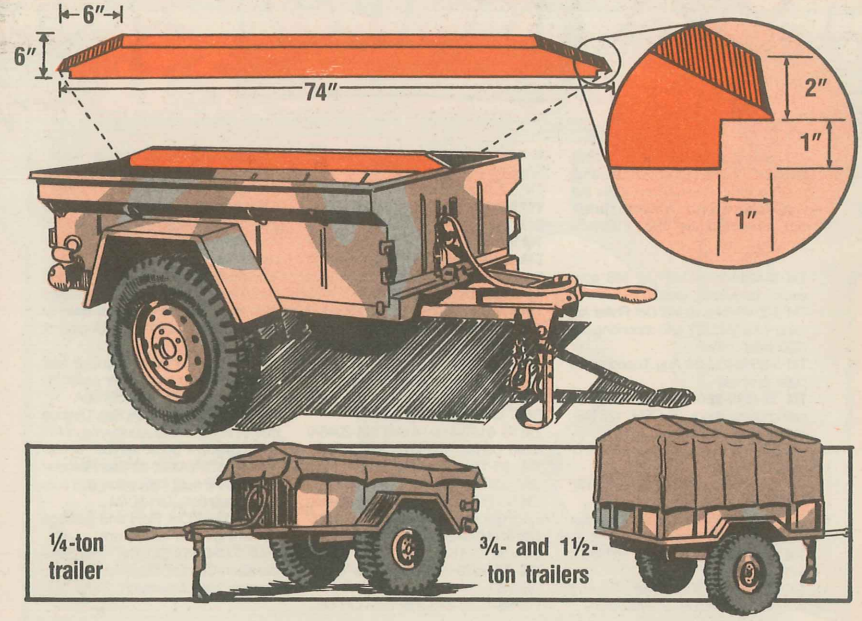
• Have your mechanic drill ½-in drain holes in ¾- and 1½-ton trailers so they'll drain. (Your CO OK's the fix.)



Canvas Care

Dry and fold the canvas, then store it in a clean, dry place. If you keep the canvas on, get your mech to rig a slat board to put under it so water will run off.

• For a ¼-tonner, you'll need a 2×6-in board about 74 inches long.

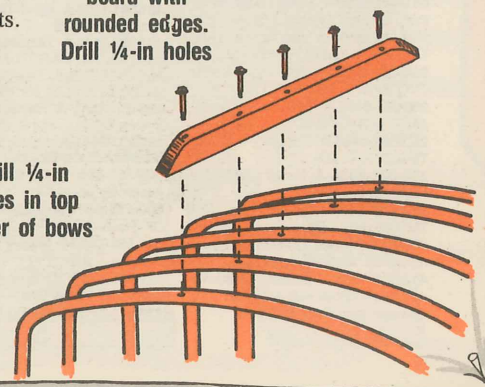


• For a ¾- or 1½-ton trailer, use a 1 × 2-in board long enough to reach from the top of the front bow to the rear bow. Slant the ends and round the edges so the board won't dig into the canvas.

Drill ¼-in holes in the top center of each bow. Drill matching holes in the edge of the board. Mount the board with ¼-in carriage bolts, washers and nuts.

• Even when the trailer is covered, eyeball it for rust. The best-rigged shelter can't head off all rust. Report rust and chipped paint.

• Check air hoses, electrical cables and safety chains. Keep them off the ground. Working lights and chains are required by Para 2-16b of AR 385-55.



PUBS

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

TM 3-4240-299-23&P Jul MS converter, frequency static
TM 5-2590-214-10-HR Oct Roller kit, mine 13222E0327 and mounting kit, M60 mine roller
TM 5-3610-259-14 Aug Topographic plate process
TM 5-4310-380-23P Sep Reciprocating compressor, 25 CFM, 175 PSI, electric motor driven
TM 5-4540-202-12&P Sep M67 immersion heater
TM 5-5430-212-13&P Sep Tank, 5,000-gal
TM 9-1240-778-20 Aug AVUM mast mounted sight subsystem
TM 9-1425-386-10-1 Jun Pershing II missile
TM 9-1427-779-20 and -30 Aug AVUM control/display subsystem
TM 9-2350-252-20-1-2 Nov M2/M3 Bradley
TM 9-2350-253-20P-2 Jul M60A3 tank
TM 9-2350-255-20P-1 Sep M1, IPM1 tank
TM 9-2350-272-24P Jul M973, SUSV
TM 9-4935-451-24P Sep TOW 2, Dragon and TOW subsystem Bradley fighting vehicle system
TM 9-4935-780-13 Aug AN/TSM-173
TM 11-5805-722-24P Aug RT-1287/TSC order wire receiver-transmitter
TM 11-5805-732-23P Sep AN/FCC-100(V)1 & 1X multiplexer set
TM 11-5985-371-12&P Sep AS-3577/GRC antenna
TM 11-6130-415-14 Jun MK-2046A/MSM power protection kit
TM 55-1500-335-23 Jun 84 Nondestructive inspection methods
TM 55-1520-248-23 Oct Preparation for shipment, OH-58D
TM 55-1520-248-10 Oct Operator's manual, OH-58D
TM 55-1520-248-23-1 thru 5 Nov OH-58D
TM 55-1520-248-23P Nov OH-58D
TM 55-1520-248-CL Oct OH-58D
TM 55-1520-248-MTF Oct OH-58D
TM 55-1520-248-PM Oct OH-58D
TM 55-1520-248-PMS Oct OH-58D
TM 55-2840-256-23P Sep AVUM and AVIM RPSTL for engine, aircraft, turboshaft, T703-AD-700
TB 55-1500-307-24 Sep Aircraft components requiring maintenance management and historical data
TB 55-1520-237-20-75 Sep Ungrounding of UH-60A
TB 55-1520-237-20-76 Sep One-time staking of bearings on lever assembly PN 70400-02623-041, UH-60A
TB 55-1520-237-20-78 Sep Change out of listed serial numbered YAW and collective boost servos, UH-60
TB 55-1520-242-20-23 Sep Removal of AN310-8 nuts from pylon and control installation, UH-1C/M
CTA 50-909 Oct Field and garrison furnishings and equipment
PAM 710-2-119 Oct The Army Standardized Combat PLL/ASL Program Consolidated Mandatory Parts List

AUDIO-VISUAL STUFF

Available at battalion or post Learning Center

TEC Lessons

011-331-4346-F Operate a US M19 60-MM Mortar and M4 Sight, Part I
030-051-6479-F Class 60 Bridge, Part I
041-441-5908-F Vulcan Daily Armament System Checks, Part III
250-061-6461-A Set Up an AN/TVQ-2 (G/VLLD), Part I
250-061-6462-A Set Up an AN/TVQ-2 (G/VLLD), Part II
250-061-6463-A Operational Test for AN/TVQ-2 (G/VLLD)
250-061-6464-A Ranging the AN/TVQ-2 (G/VLLD)
250-061-6465-A Install AN/TAS-4 Night Vision Sight
250-061-6467-A Setting Up AN/TVQ-2 (G/VLLD)
250-061-6468-A Operator Maintenance for AN/TVQ-2 (G/VLLD)
412-061-9030-A Service Theodolite
471-091-1221-A Adjust M901 ITV Erection Arm Cam Switches
476-091-1550-A Troubleshoot M109A2/A3 Cab Power Pack Circuit
476-091-1208-A Troubleshoot M110A2 Turret Hydraulic System
479-091-1694-A Troubleshoot M12 Decon Heater
481-091-1300-A M911 Truck, Tractor Quarterly PMCS
481-091-2144-A Troubleshoot Electrical System on the M911 Truck, Tractor
481-091-2159-A Troubleshoot Hydraulic System on the 4000-lb RTFL
499-091-1012-A Replace M577A1 Generator
499-091-2341-A Adjust M113-Series Steering Brake Bands
600-551-8883-F Replace Tailboom Assembly on UH-1
600-552-8898-A Inventory Aircraft DA Form 2408-17
811-551-7860-F Making Anchors for Recovery Vehicle
821-101-8122-F Maintain and Operate Tank and Pump Unit
939-071-0215-F Zeroing M16A1 Rifle
940-071-0228-F Sighting the M203 Grenade Launcher

Films, TV Tapes

TF 11-2851 Fundamentals of Radio Troubleshooting, Part I
TF 11-3296 Use of Switchboards SB-22A/PT for Switching
TF 11-3401 Radio Set Control Group AN/GRA-39
TF 44-4468 Improved HAWK System, Part I, Introduction
TF 44-4542 NIKE Hercules with SAMCAP Operation in an ECM Environment (U)
TF 44-4838 Forward Area Alerting Radar (FAAR), Part I, Operation and Support of Air Defense Units
TF 44-6002 Chaparral Air Defense System, Airlift by CH-47 Helicopter
TF(VT) 44-6316 Introduction to the Improved HAWK Air Defense System
TVT 20-626 SMA Morrell on Safety
TVT 44-108 Forward Area Alerting Radar (FAAR) Operation with Interrogator Set AN/TPX-50

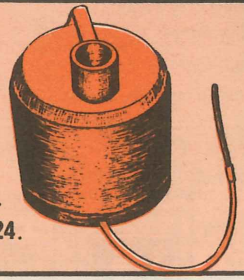
Lead-Acid Batteries...

One: Keep Plates Covered With Electrolyte By Adding Water

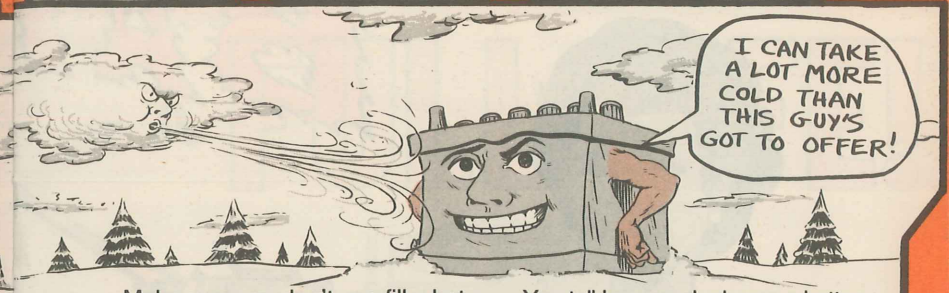
Batteries die from thirst! Quench that thirst with distilled water. Get a gallon with NSN 6810-00-682-6867. Get 5 gallons with NSN 6810-00-356-4936.

Fill the battery with battery filler, syringe, NSN 6140-00-643-4492.

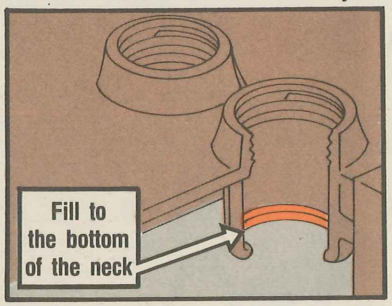
Carry a supply of water in battery, filler, gravity, NSN 6140-00-635-3824.



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



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



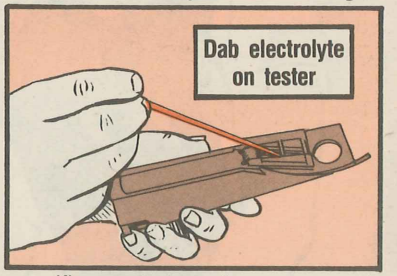
fill it to the top, the electrolyte will boil out the vented caps during charging.

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

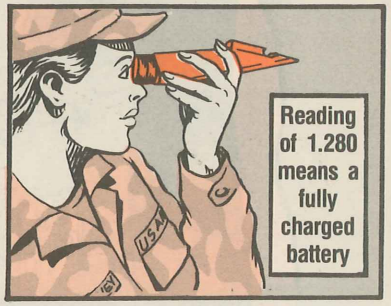
Never add water at freezing temperatures unless you can run the engine for 15 minutes afterwards. The charging system will cause the water and acid to mix. A fully charged battery won't freeze down to -90° F.

You tell how much charge a battery has by measuring electrolyte specific gravity.

So, make sure you have the right



specific gravity by using tester, antifreeze and battery, NSN 6630-00-105-1418. The right charge is shown by a specific gravity reading of 1.280.



GIVE YOUR BATTERIES A FULL LIFE!

ALWAYS . . .

- ★ KEEP PLATES COVERED WITH ELECTROLYTE BY ADDING WATER
- ★ KEEP DIRT AND CORROSION CLEANED OFF
- ★ PROTECT AGAINST DAMAGE

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

Put the battery tester to work when . . .

. . . you're pulling the equipment semiannual PMCS.

. . . you suspect acid was flooded out by overfilling with water.

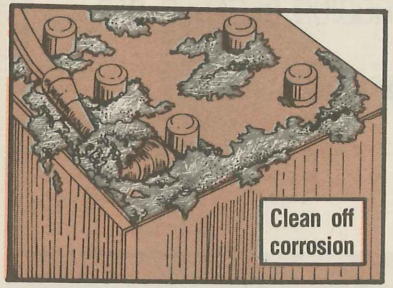
. . . you're troubleshooting the charging system.

. . . cold weather is just around the corner.

Instructions are on the tester, but there're more details on Pages 3-2 through 3-4 of TM 9-6140-200-14 for lead-acid batteries.

Two: Keep Dirt and Corrosion Cleaned Off

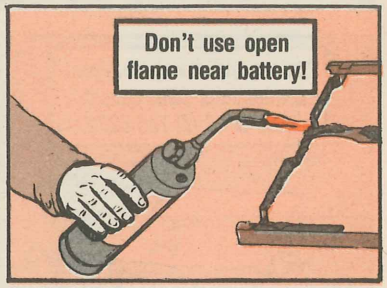
Corrosion eats up metal parts on and around batteries. Also, dirt and corrosion hold moisture. This moisture could close the circuit between the positive and negative terminals and discharge your battery until it goes dead.



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

Scrub the battery with a baking soda and water mix. Use a half-a-pound of baking soda to a gallon of water. Get a pound of baking soda with NSN 6810-00-264-6618. Get 100 pounds with NSN 6810-00-290-5574.

Soak metal parts in the mix, then use a wire brush to scrape off rust and old paint. Use a torch and scraper if necessary, but only on the metal parts you've removed. Work with the torch only in places where there's no danger of fire and away from the battery.

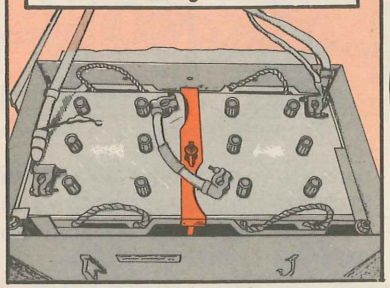


After cleaning, rinse with lots of clean water and dry well. Protect bare metal with coating compound—either epoxy, NSN 8010-00-959-4661, or bituminous, NSN 8030-00-290-5141. Shine up battery posts and clamps with brush, battery terminal, NSN 5120-00-926-5175.

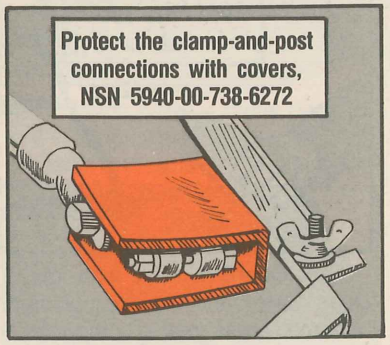
Three: Protect Against Damage

If you follow these three steps . . . if you troubleshoot and correct charging problems . . . if you follow through on problems reported by the operator . . . those batteries will never meet an early death.

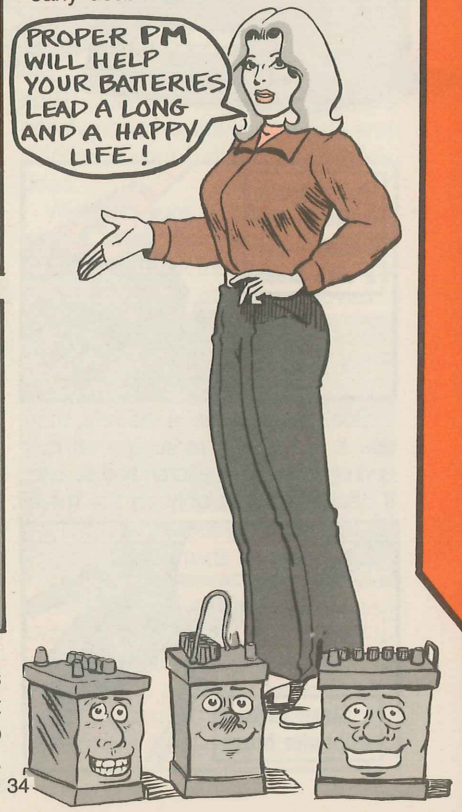
Snug down the battery hold-down tight enough to keep the battery from banging around but not enough to crack it



Protect the clamp-and-post connections with covers, NSN 5940-00-738-6272



Get the clamps all the way down on the posts. Install cable terminals under the head end of the bolt—not the nut end—if possible. Use two wrenches to tighten nuts and bolts.



Maintenance & Safety-of-Use Messages

AMCCOM SOU-MES— Noise hazard for TCE and others outside tank. AMSMC-MA221200Z Oct 86.

TACOM SOU-MES-86-76— M992 FAASV hazard due to upper rear door actuator bracket weld cracks. AMSTA-MCC 031600Z Oct 86.

TACOM SOU-MES-86-75— M109 SPH FOV and M992 FAASV cooling fan temporary guard fabrication. AMSTA-MCC 032100Z Oct 86.

TACOM SOU-MES-86-74— M109 SPH FOV and M992 FAASV personnel heater exhaust leak. AMSTA-MCC 031900Z Oct 86.

TACOM SOU-MES-86-73— M109 SPH FOV and M992 FAASV steering linkage binding problem. AMSTA-MCC 032000Z Oct 86.

AMCCOM Maint-advisory MSG 86-24— Offensive and defensive chemical information POC changed to Edgewood Arsenal, MD. AMSMC-MAR-C 071700Z Oct 86.

MICOM Main-advisory— Maintenance Engineering Directorate technical letter.AMSMI-LC-ME Oct 86.

MICOM Maint-advisory SIL 3-86— Supply information letter. AMSMI-LC-MM Sep 86.

MICOM SOU-MES— M151/ HMMWV TOW system firing hazard. AMSMI-LC-AM 091230Z Oct 86.

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

M109 Danger

Mechs, the warning on Page 6-7 of TM 9-2350-303-20-2 is wrong! Never try to remove the recuperator rod nut and cotter pin when the tube is out-of-battery. You'll damage equipment and maybe hurt youself. Keep this in your noggin until the TM is changed.

M1009 Wrench NSN's

Use NSN 5120-02-219-6753 to get a front wheel bearing nut wrench for your 1985 and later model M1009 CUCV. NSN 5120-01-170-6664 gets the wrench for 1984 model M1009's.

2½-Ton Nuts, Bolts

Stock numbers for wheel lug nuts in Fig 108, Page 231 of TM 9-2320-209-20P are wrong. Instead, get the left front lug nuts with NSN 5310-00-518-5566. The right front lug nuts are NSN 5310-00-594-8038. Use NSN 5306-00-206-6339 for the left hand lug bolts and NSN 5306-00-170-0141 for the right hand bolts.

M915 NSN Change

To get a speedometer shaft assembly for your M915-series truck, use NSN 6680-01-147-3611. NSN 3040-01-078-3784, listed on Page 475 of TM 9-2320-273-20P for the shaft, has been discontinued.

AVLB Wrench NSN

Get the 1¼-in cylinder rod flats wrench for your M48A5 or M60 AVLB chassis with NSN 5120-00-277-1246. This replaces NSN 5420-00-542-3114 called out in TM 5-5420-202-10-HR and in TM 5-5420-226-10-HR. Until the NSN makes the hand receipts, use Appendix A of CTA 50-970 as your authority.

Keep 'em Clean

If you put off your cleaning chores too long, dirty airborne deposits attack your bird's thin skin. That leads to corrosion. 'Course, spilled oil and fuel really do a number on the bird's infrared-reflective paint, too.

How often your bird needs a bath depends on the environment, weather and how you use the aircraft.

For example, if you're located in a coastal area, your birds need a good scrubbing more often than aircraft assigned to inland posts.

Likewise, they need more attention if they're flying in a desert...or where it's dry and dusty...or where the air is extremely polluted.

TM 55-1500-333-24, Cleaning Procedures for Army Aircraft, recommends a minimum cleaning cycle of 30 days. But TM 43-0105, Corrosion Control for Army Aircraft, calls for **weekly** cleaning in coastal areas where salt-laden air and rain play the devil on exposed metals.

Cleaning Materials

Your TM's tell what to use for cleaning your birds. Alkaline, waterbase cleaning compound, NSN 6850-00-935-0995, is one of only three cleaning formulas approved by the headshed. It comes in a 55-gal drum and should be used whenever possible.

When it's too cold or when you don't have the right equipment to use alkaline waterbase compound, use drycleaning solvent. NSN 6850-00-285-8011 gets 55 gallons, while NSN 6850-00-274-5421 gets 5 gallons.

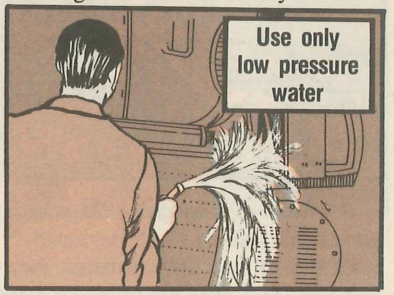
At temperatures below 32°F, use low-temperature cleaning compound, NSN 6750-00-682-7533. It comes only in 55-gal containers.

Other consumable materials you need are listed in Table 2-1 of the cleaning TM.

Warnings and Cautions

Among the most important precautions you need to take during cleaning operations are:

- Ground your bird to guard against the danger of static electricity.



- Never use compressed air to remove dirt and debris.
- Reduce to a minimum the time cleaning solutions come in contact with plastic or rubber components.
- Never mix the drycleaning solvent with the alkaline waterbase cleaning compound.
- Any time you use drycleaning solvent, observe all safety precautions listed in Para 2-15 of the cleaning TM.
- Protect lubricated parts from contamination by covering them with masking tape.

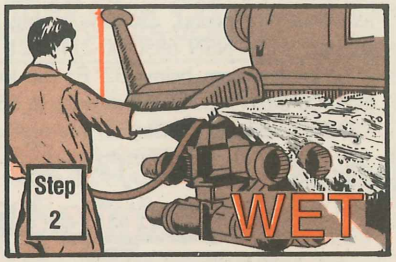
PS MORE

4-Step Washing Procedures

Mix one part cleaning compound to 7-10 parts water. Wet your bird's skin thoroughly to slow down the drying process. Then apply the cleaning solution by spraying, or with a mop, sponge or soft brush. Start at the lowest surface of the aircraft to be cleaned and work up. Allow the solution to remain on the surface for 5 to 10 minutes while you agitate it with a brush or mop.

Never use the same mop or brush on Plexiglas windows that you use on the bird's skin. You'll scratch the plastic. Instead, use a flannel cloth or a different mop or brush to wash those plastic windows.

You also need a different washing compound for plastic windows. Use P-D-410 in the gallon container, NSN 7930-00-880-4454, or the 50-lb powdered form, NSN 7930-00-281-4731.



Don't try to blast grime off with high-pressure water. It'll penetrate access panels and seals.

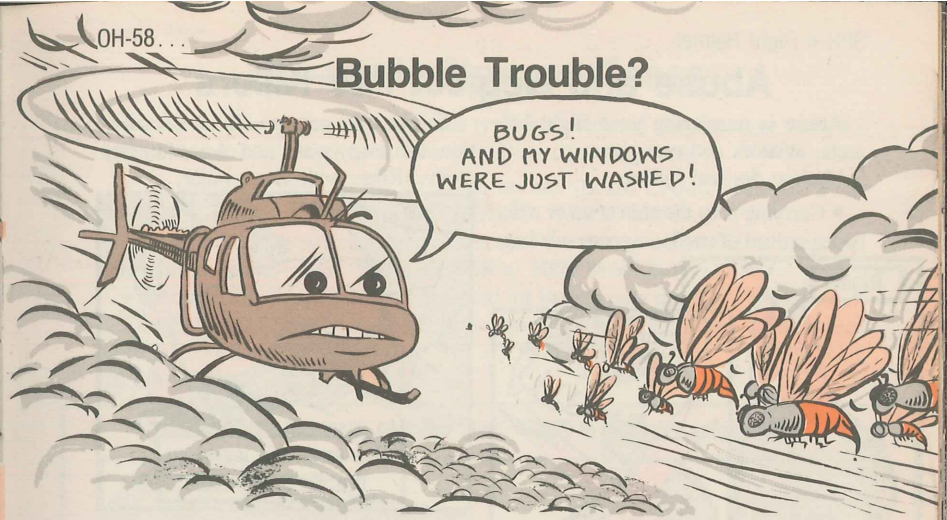
Be sure to rinse off suds before they dry or you'll wind up with white streaks and have to do the job over. To avoid water spots on your windshields, use chamois, NSN 8330-00-965-1725, or soft tissue to dry them.

When you finish washing your bird, remove all masking tape you used to protect lubricated parts. Also check the RT-1193/ASN-128 antenna of the doppler navigation set. Water seepage into the antenna can result in transmitter and receiver failures.

Drain any trapped water you find.

Washing your aircraft is essential to good maintenance. Do it regularly and by the book and you can reduce corrosion and deterioration.

Bubble Trouble?



Cleaning Kiowa windshields can be a tough job, especially getting rid of dried bugs.

Use a lot of mild soap, NSN 8520-00-531-6484, in your water and a soft, clean cloth, like flannel, NSN 8305-00-641-5606. Some crew chiefs also use nylon sponges for the toughest jobs. You'll have to pay for them out of your own pocket tho, 'cause they're not in the supply system.

Be sure you rinse off the suds before they dry or you'll leave streaks on the windshield. Dry the plastic with a damp chamois, NSN 8330-00-965-1725, tissue paper or a soft clean cloth to prevent water spots.

Remove minor scratches or crazing with polishing compound, NSN 7930-00-634-5340.

Clean your bird's greenhouse windows with soap and water, too. Then remove minor scratches and mild distortion with a small pad of cheesecloth, NSN 8305-00-267-3015, and a little Brasso. Never clean any of the other windows with Brasso, though.

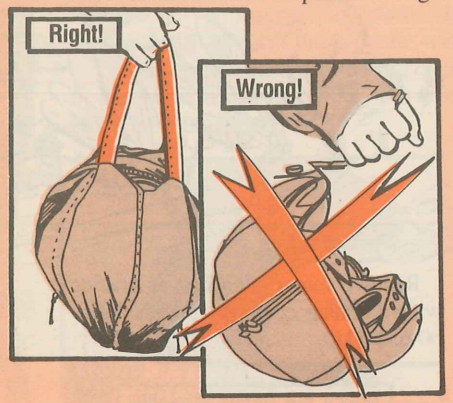
Your best references for cleaning Plexiglas and other aircraft windows are Para's 1-18 and 2-127 of TM 55-1520-228-23-1 and Para 2-37 of TM 55-1500-333-24.

Abuse and Neglect Are Killers

Abuse is murdering your flight helmets, aviators and crewmen.

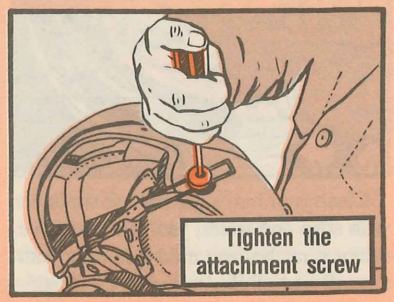
Here're the real killers:

• Carrying it by the chin strap or mike boom instead of inside its protective bag.



• Tossing it into the cockpit before you climb in.

• Continuing to rotate the mike's adjustment knob without first tightening the attachment screw.



• Sitting on your helmet.

Neglect can also kill your "brain bucket." It may take longer than abuse, but it's murder all the same.

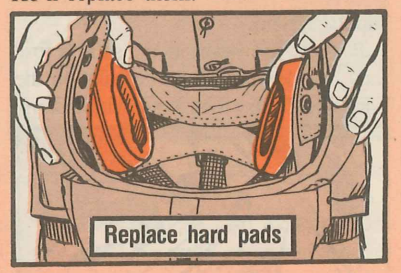
So keep your helmets clean, birdmen. Use a clean, water-dampened cloth to get dirt and dust off the outer shell and visor.

To remove grease, oil or perspiration, use soapy water and clean, lint-free cloths. Rinse with clean water.

On the inside of your helmet, use a hand cleaner towelette, NSN 8520-00-782-3554, to clean the headband, crown pad and ear cup seals.

Never put bubble polish on the visor. You'll distort the plastic, and you may have to replace it.

When the ear pads get hard and uncomfortable, tell your ALSE technician. He'll replace them.



The same goes if you find a crack in the shell, an adjustment screw that won't tighten, or anything else you find wrong with the helmet. Tell your ALSE technician. That's why he's there. You and he together can stop the senseless destruction of a sensitive and expensive piece of equipment.

Re-mark Storage Cases

It's not surprising that some aviation types are confused about storage cases for 10,000-lb capacity cargo nets. Consider these confusing facts:

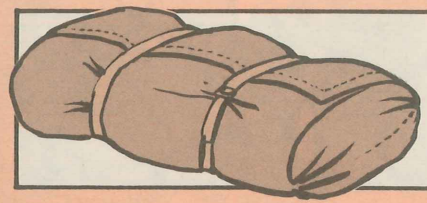
• Most storage cases for the 10,000-lb net are marked CAMOUFLAGE SYSTEMS, SCREEN, RADAR, SCATTERING, WOODLAND.

• Some of the camouflage screen cases used for storing the 10,000-lb cargo net are marked wrong—KIT, BAG, FLYER's, NSN 8460-00-606-8366.

• The real Kit, Bag, Flyer's, is designed for storing only the 5,000-lb cargo net.

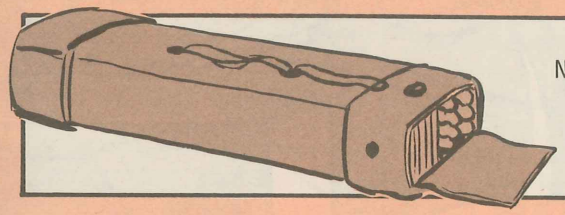
To set things straight, re-mark all camouflage screen storage cases issued with 10,000-lb cargo nets to read HELICOPTER EXTERNAL CARGO NET 10,000-lb CAP.

Need a replacement case for your 10,000-lb capacity cargo net?



Order case,
NSN 1080-00-108-1155

or



case,
NSN 1080-00-107-8580

AVIATION MESSAGES

CAT 1 EIR Phone AUTOVON 693-2066 (24 hours)

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

AH-1-86-05, SOF, Maint Mand, TH-1S/AH-1E (ECAS)/AH-1F (MC), Inspect M97-series turret saddle shaft mounting bolts, 102100Z Sep 86.

AH-64A-86-15, SOF, AH-64A, One-time inspection of driveshaft couplings for proper assembly 112130Z Sep 86.

OH-6-86-11, SOF, One-time inspection of tail rotor assembly, 102030Z Sep 86.

OH-58-86-07, SOF, OH-58C, Changes to operators manual and crew checklists, 151330Z Sep 86.

OH-58-86-08, SOF, OH-58A/C, One-time inspection of aircraft modified with MWO-50-26, 241500Z Sep 86.

MIM-AH-1-86-MEM-06, Inspection of installation of loop clamp, 181830Z Sep 86.

MIM-AH-64-ME-02, Fire control computer battery replacement/time change, 051530Z Sep 86.

MIM-AH-64-86-ME-03, Valve markings fuel crossfeed shutoff valves, 101600Z Sep 86.

MIM-CH-47-86-MEM-01, Rotor head attachment LVGS, 242030Z Sep 86.

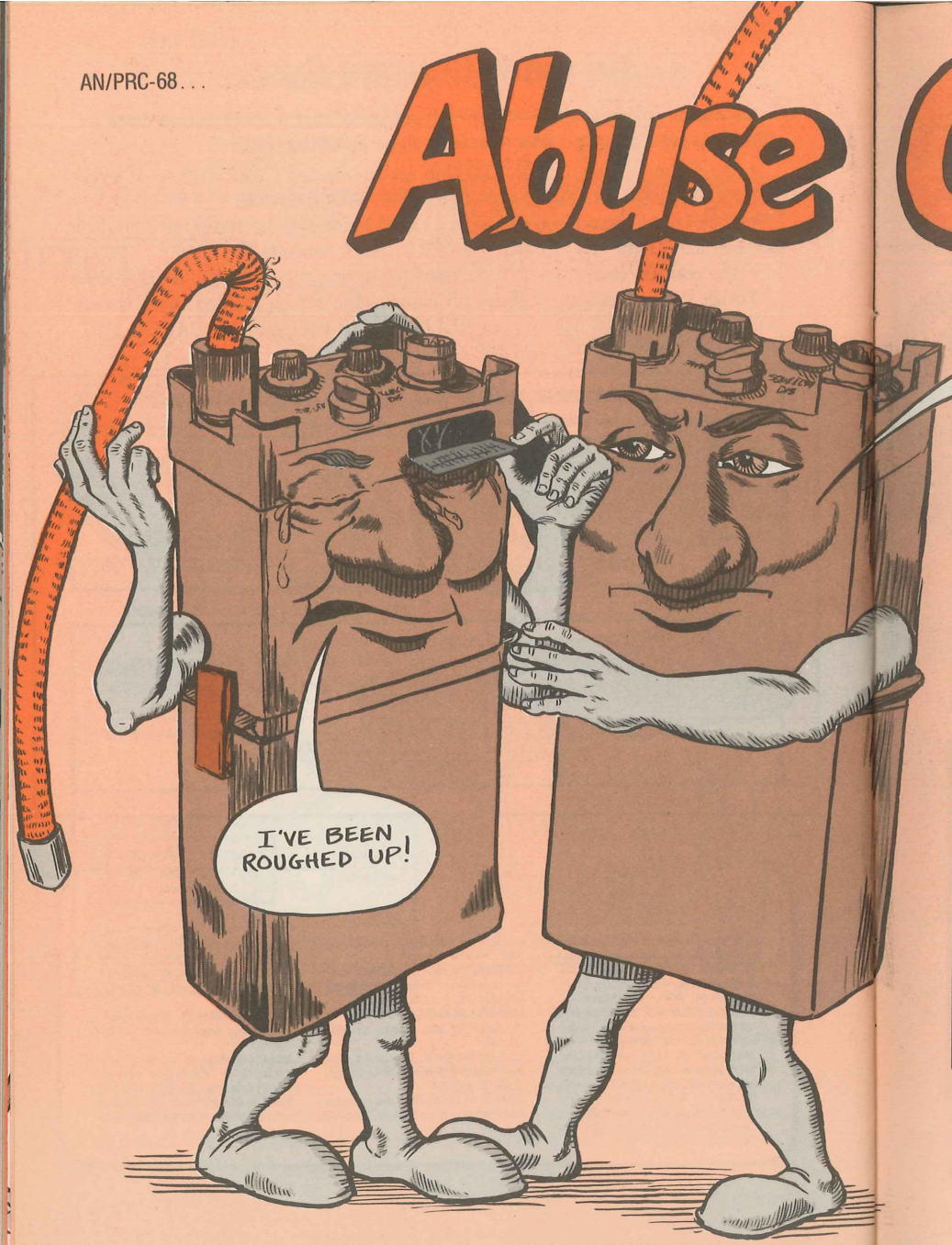
MIM-OH-58-86-ME-02, OH-58A and C, hydraulic reservoir cover, 102000Z Sep 86.

MIM-UH-60-MEM-11, UH-60A stabilator actuator serial numbers, 101500Z Sep 86.

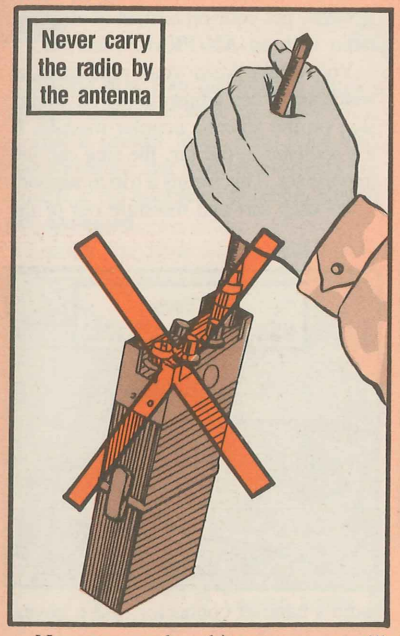
MIM-UH-60-MEM-12, UH-60 contractor inspection of T700 engine midframe casing assembly, 051930Z Sep 86.

MIM-UH-60A-MEM-13, Use of stabilator amplifiers, 101400Z Sep 86.

Abuse Cripples Use



Rough treatment is silencing a lot of radio sets!



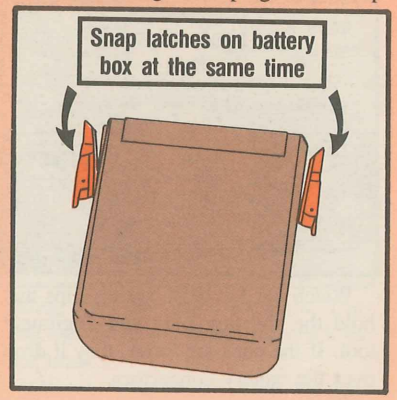
Never tug on the whip antenna—you'll break the control panel of your radio. Always grab the radio itself, not the antenna.

That also goes for the handset, such as the H-250. Never dangle the radio from the auxiliary control. Keep your receiver-transmitter in your pocket or carry it in your hand.

If you need a carrying case for the RT, get it with NSN 8465-01-157-1157.

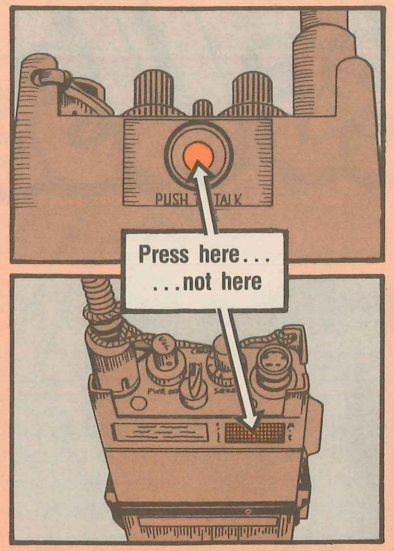
Battery Case Care

Before you fasten the battery case to the RT unit, make sure the battery connectors are snug in the plug. Then snap



the case latches at the same time. Tightening one latch and then the other can break the latch or case.

PS MORE



When you press the push-to-talk switch, keep your thumb off the speaker/microphone screen on the opposite side. Too much rubbing on the screen will work it loose. The screen will come off, leaving your set open to moisture and dust.

Watch out for those spring clips that hold the shorting plug and alignment tool. If the clips are loose, they'll drop over the battery connectors.

Closing the case with a clip on the connectors will short out the battery. It'll cause an explosion from gassing.

Battery Care

Before an FTX, give that battery the once-over. The battery should give you close to 24 hours of service. As long as the BA-1588/U, NSN 6135-01-094-6536, reads no less than 12 volts, it's OK.

Use a multimeter, such as an AN/PSM-45, NSN 6625-01-139-2512, and a 44.2-ohm resistor, NSN 5905-01-102-3406, as a load across the battery, to test the battery.

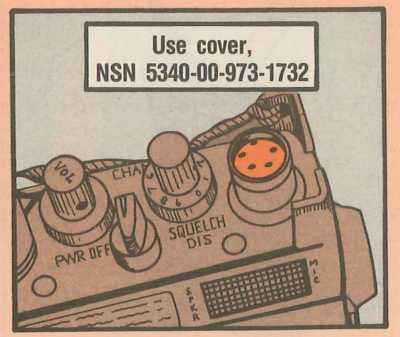
A BA-5588/U lithium battery, NSN 6135-01-088-2708, will power your battery longer than a mercury battery.

Remember to take out the battery when your set's idle.

If the battery's strong but your signal is weak, get your repairman to align the radio with an AN/PRM-34 test set.

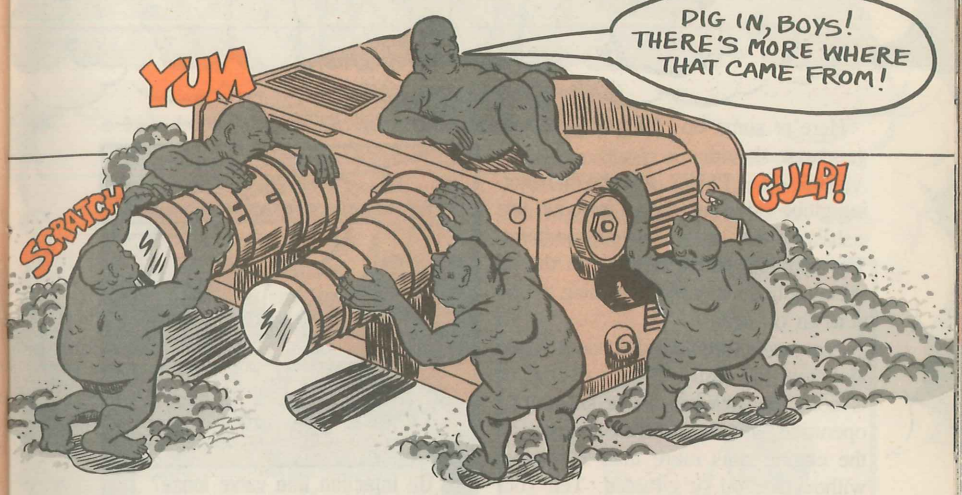
You might warn your repairman to watch out when adjusting the L1 tuning slug on the antenna coupler module. If it's screwed in too far, the slug can fall into the set. This means a trip to support.

To keep dirt and moisture out of the



radio's handset connector, use a cover, NSN 5340-00-973-1732. Cut the double cover in half to make two covers. Of course, it's up to your local command to get the cover.

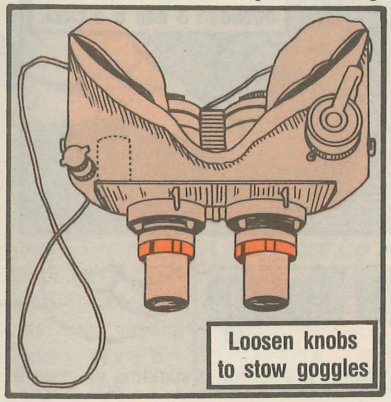
Night Goggle Goodies



Always stow your night vision goggles in their case when your mission's over.

That'll protect them from dust, dirt and accidents. But if the monoculars are stowed in the **operating position, they'll get damaged.**

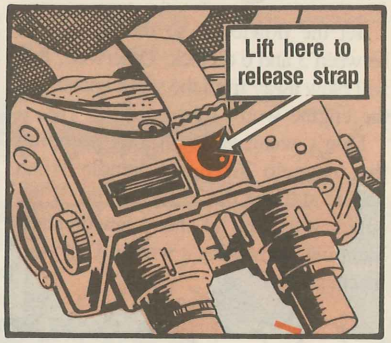
Loosen the lever clamp and clamp



knobs before you stow your goggles. It takes the stress off while you fasten the lid on the case.

Also use the focus knobs to draw the objective lenses back into the set as far as they'll go before closing up.

When you take the goggles off your helmet, release the V-strap assembly by



pulling up at the snap's dot mark. Tugging elsewhere will strain and crack the face mask.

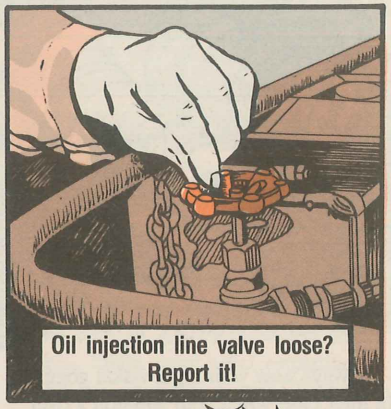
'Course, you should keep the lens caps on when you're not using your goggles. That'll save 'em from scratches and damaging bright light.

SMOKING AWAY PROBLEMS

Here're some tips for you operators to keep your M3 smokin' good—like a generator should

While doing PMCS, give the oil metering globe valve and the oil injection line a shake. If they move, tell your mechanic. The coupling nut at the base of the oil injection line may need tightening to prevent an oil leak.

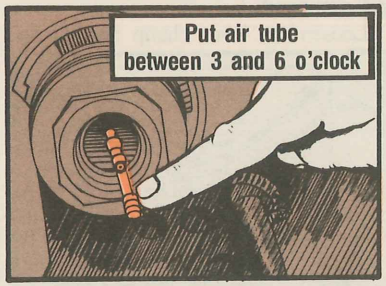
Also make sure the valve doesn't open and close too easily. If the valve screw is loose, the valve can vibrate shut during operation, shutting off the oil supply. If the engine runs more than 2 minutes without fog oil, it's ruined. Tell your mechanic about a loose screw.



3 to 6 O'clock

Set the flowjector so the air tube is between 3 and 6 o'clock. Otherwise, fuel will blow away from the spark igniter and the engine won't start.

Don't wear yourself out pumping the magneto air pump handle when you're starting the M3's engine. If the engine won't fire up after a few minutes' pumping, something's wrong. Call your mechanic.



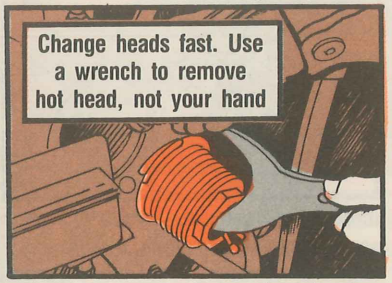
Hump to Pump

If your M3's on the ground, crouch to pump. If you pump standing up, you'll bend the magneto rack.

Pump with short, vigorous strokes. If you pull the handle all the way out or push it all the way in, you can break things like the magneto tube or magneto clamp.

Hands Off

If you have to change engine heads after the M3's hot, do it quickly. Cold air rushing into the hot engine chamber can cause a fire flashback. Purge gas fumes by following the procedures on Page 3-11, TM 3-1040-276-10. Then unscrew the head with your open end wrench. **Never touch the hot head with your hand.** Use the prong of the wrench to pull the head out. With your other hand, immediately screw in the other head.



Never put on a dirty head assembly. That stops the engine in its tracks. Clean the head assembly components with a rag soaked in drycleaning solvent, NSN 6850-00-281-1985. Dry all parts completely with a dry rag.

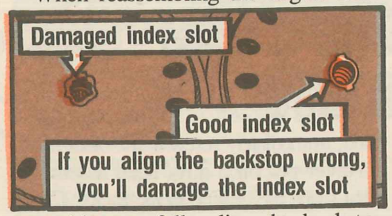
Unstick Valves

The head's valve seating face and the engine valve need cleaning, too. A dirty valve sticks to the engine head and the engine won't run. Clean valves with fog oil, NSN 9150-00-261-7895, and your lapping board. Wipe dry with a rag.

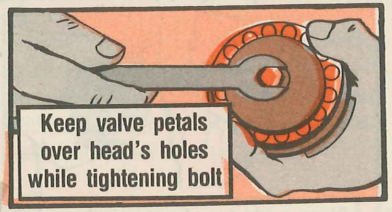
Clean new valves, too. They come with a protective coating that makes valves stick if the coating's not cleaned off with a lapping board and fog oil. Wipe dry with a rag.

PS MORE

When reassembling the engine head

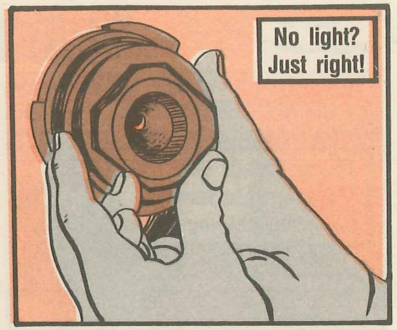


assembly, carefully align the backstop with the valve and head. If they're not aligned, the valve and the head's indexing slots will be damaged. Fire can result because the valve petals won't fully cover



the engine head posts.

Give the backstop a slight twist after you align it. If it doesn't move, the backstop's seated right. With your thumb and index finger, hold the valve petals over the head's holes as you tighten the bolt. After the bolt's tight, doublecheck by holding the head up to the light. Looking



through the front of the head, you should see no light if everything's right.

Never operate the M3 on uneven ground or while you're moving. That can start a fire and damage your generator.

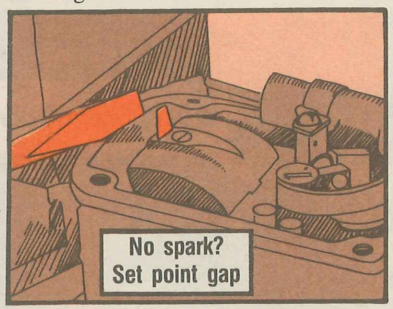
Keep the outside of the exhaust and inlet fog oil hoses clean. Dirt builds up on the hoses and can come loose in the fog oil drum, contaminating fog oil, and then can be drawn into the fog oil pump. That shuts you down.

Organizational Info

Here're more tips:

Inspect new M3A3 sparkplugs and air hoses for protective tips. The tips keep the sparkplug from firing and the air hose from blowing enough gas to the engine chamber. Break the tip off with needle-nosed pliers.

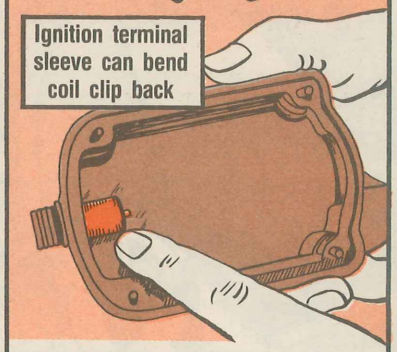
If the engine's not firing, here's how to make sure the spark is getting through the magneto:



- Remove the magneto cap. (Remember any time you handle the magneto's lead gasket, you must wash your hands when you finish to avoid lead poisoning.)
- Hold a screwdriver 1/8-in from the coil clip.
- Pump the magneto air pump handle. Spark should jump from the clip to the screwdriver.

If it doesn't, adjust the points. Page 2-58 of TM 3-1040-276-23 tells how.

Clip up



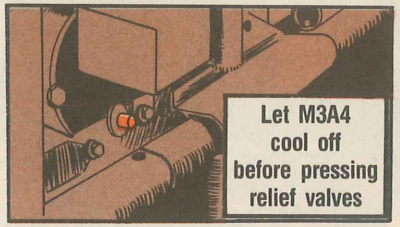
Also, make sure the coil clip is straight up. If it's bent back, the spark can't go to the ignition cable and the engine won't run. That's why you should be careful putting the ignition terminal sleeve back in. If you push it in too far, you'll bend the coil clip back.

Do It By the Book

If you're not careful while draining the M3A4's fog oil pump, you operators may be in for a hot surprise.

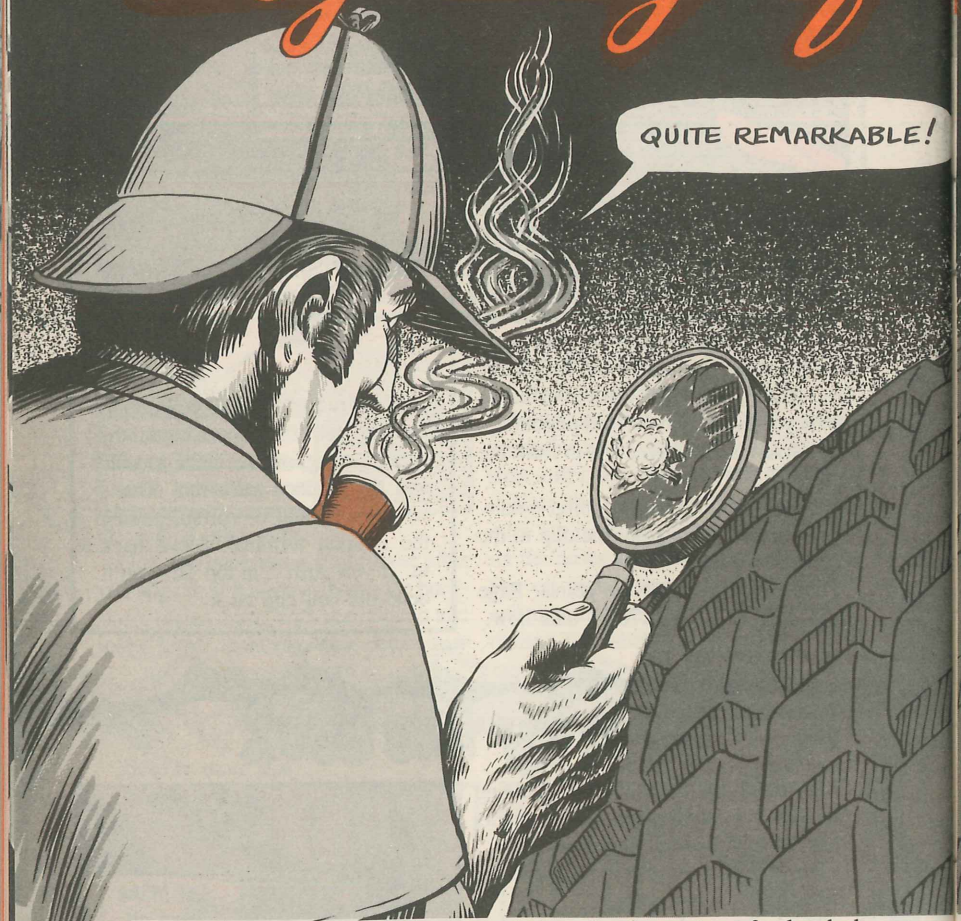
Hot fog oil can ignite if it comes in contact with a hot engine.

That's why, whenever possible, you should let the generator cool down before pressing the relief valve at each end of the fog oil pump to drain the oil during shutdown. In very hot weather, you may need to let your generator sit 24 hours before draining the oil.



When you can't let your M3A4 completely cool down, drain the oil very carefully—just like it says on Page 2-17 of TM 3-1040-276-10.

Mystery of Missing Air



Sometimes it can be a real challenge, mechs, to solve the mystery of a slow leak.

Just when you think it's fixed, the tire shows up in your shop, flat again.

Finding a slow leak takes Sherlock Holmes-type detective work and patience, because lots of things can go bad.

F'rinstance, the valve core is loose or held open by dirt...or the valve stem is cut...or the bead's not sealed tightly against the rim...or the tube has a pinhole or....

Here are some tips for finding that slow leak:

All Tires

• Be sure there's a cap on the valve stem. It's a second airtight seal, protects the stem's threads and prevents dirt and water from getting into the valve core.

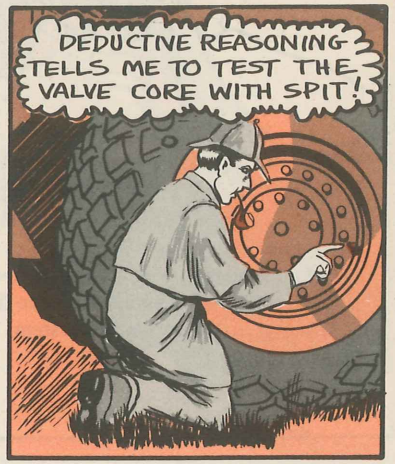
Here are available caps and where to use them:

Cap Type	Where used	NSN 2640-
Plain	Rubber-covered valve stems	00-255-9346
Screwdriver	Metal or rubber-covered stems	00-060-3550
Plastic	Flight-line vehicles	01-098-2029

• Clean dirt out of the valve by letting a little air out of the tire.

• Test the valve. Dab soapy water—or spit—on the opening. If it bubbles, tighten the core with the valve core remover, NSN 5120-00-308-3809. It's in your No. 1 Common shop set. Or use a screwdriver valve cap. If a tight core still leaks, replace it and test again.

• On tubeless tires, watch for leaks where the valve stem goes into the wheel. If you find a leaker, break the tire down and replace the stem. Stems are listed in



P/S MORE

the vehicle's TM. Not listed? See Pages 3-1 thru 3-5 of TM 9-2610-200-24 (Care, Maintenance and Repair of Pneumatic Tires and Inner Tubes).

• Have the operator keep an eye on the tire pressure for a few days.

If the tire still leaks, it's time to give the tire and rim (and tube, if it's got one) a closer inspection. Take the tire off the rim.

Examine the tire for punctures or cuts. A rock embedded in a cut can be tough to find, yet cause a leak. Look for nails and such, too.

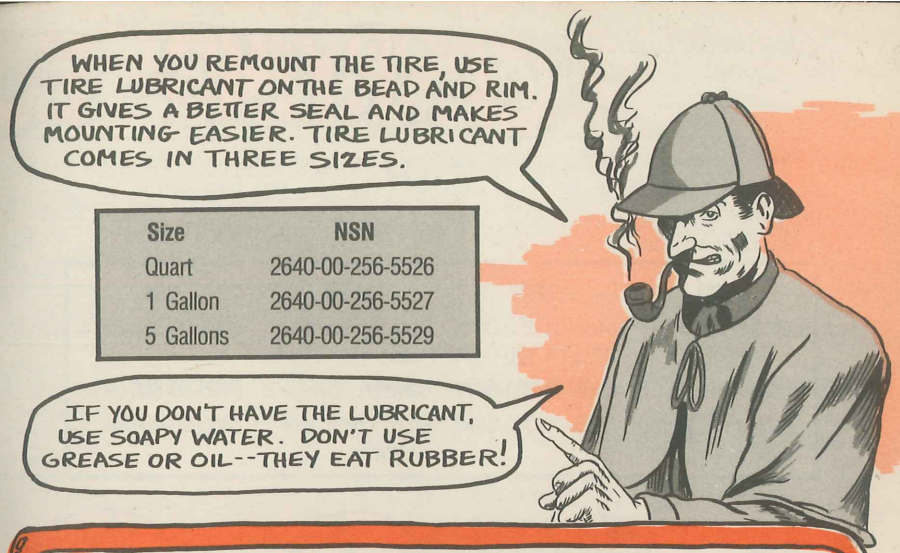
Tubeless Tires

Look for an uneven tire bead, or bent rim that may prevent an airtight seal.

Eyeball the rim's bead seat for rust, gravel or clumps of hard dry dirt that may have worked between the rim and the tire bead. Clean the bead seat with a wire brush.

Before mounting a new tire, eagle-eye the tire's bead. Look for rough spots, small pinholes or irregular surfaces that can cause a bad bead seal.

When you replace the valve stem, make sure the angle matches the one you removed.



Size	NSN
Quart	2640-00-256-5526
1 Gallon	2640-00-256-5527
5 Gallons	2640-00-256-5529

Tube-Type Tires

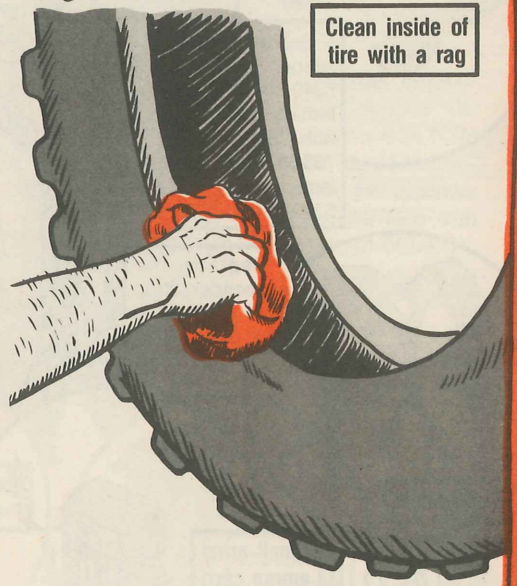
Find holes in a tube by airing it up, holding it under water and watching for bubbles.

Look for cracks and cuts or areas in the tube that are rubbed thin or pinched.

Repair tubes like it says on Pages 3-42 thru 3-45 of the tire TM. Replace tubes you can't repair.

When you remount tube-type tires, put the tube in the tire and add enough air to inflate the tube a bit. Make sure there are no wrinkles in the tube, then mount the assembly on the wheel.

Use rubber lubricant when you remount tube-type tires, too. That'll help seat the bead right.



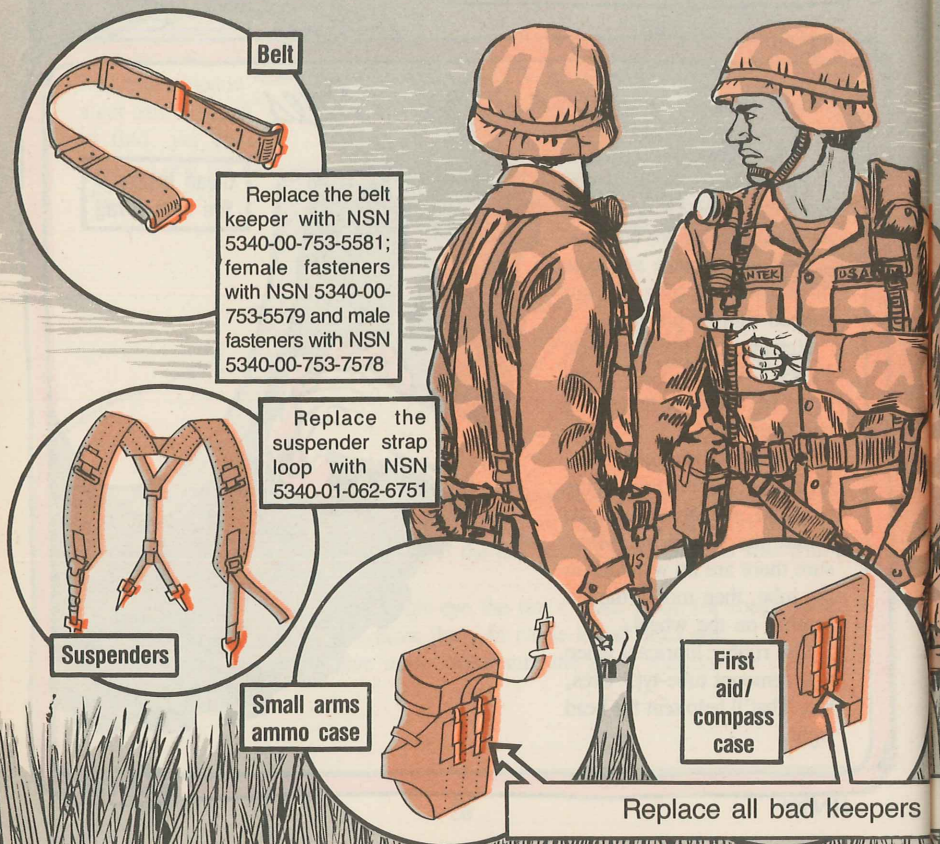
P.S END

CARRYING EQUIPMENT CARE

Poor maintenance of the fighting load carrying equipment can make a 5-mile hike seem like a 100-mile crawl. Good PM can turn that hike into a walk in the park.

The fighting load is:

ITEM	NSN	ITEM	NSN
Belt (large)	8465-01-120-0675	First aid/compass case	8465-00-935-6814
(medium)	8465-01-120-0674		
Suspenders	8465-00-001-6471	Canteen cover	8465-00-860-0256
Small arms ammo case	8465-00-001-6482	Entrenching tool carrier	8465-00-001-6474



Cleaning

Here's how to clean and repair the gear.

First, scrape off all loose dirt and mud. Then hand-wash with warm water and detergent, NSN 7930-00-252-6797.

Rinse well in warm water.

Dry in the shade to avoid fading and shrinking.

Repairs

You, the user, can repair small rips, tears, and loose seams on the canteen cover, the ammo case and the compass case.

If the tear is less than an inch long, repair it with tape, NSN 8315-00-958-0744, or safety pin, NSN 8315-00-787-8000.

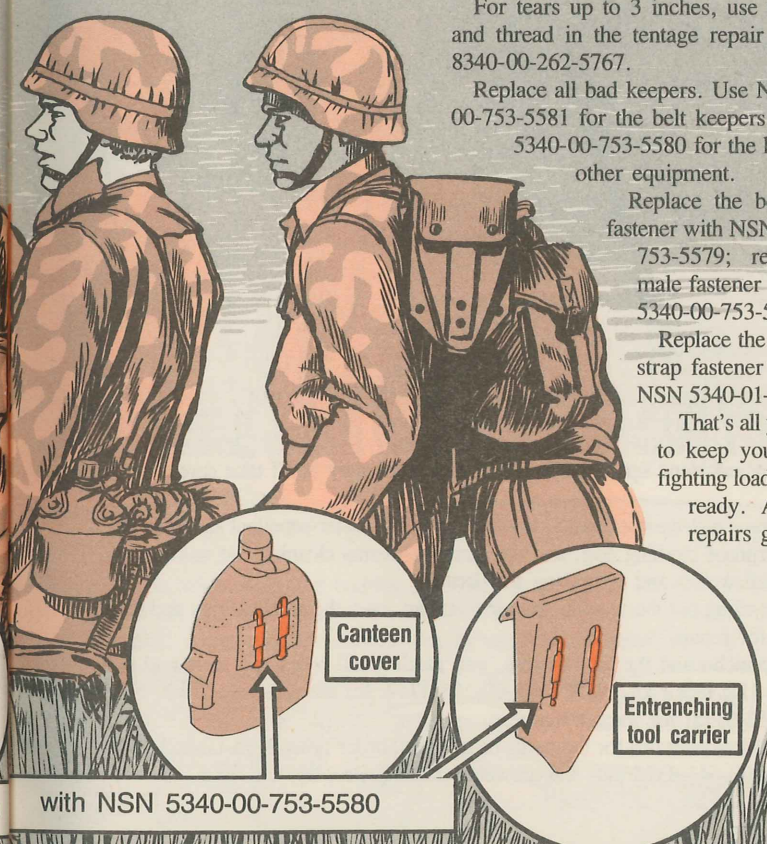
For tears up to 3 inches, use the needle and thread in the tentage repair kit, NSN 8340-00-262-5767.

Replace all bad keepers. Use NSN 5340-00-753-5581 for the belt keepers and NSN 5340-00-753-5580 for the keepers on other equipment.

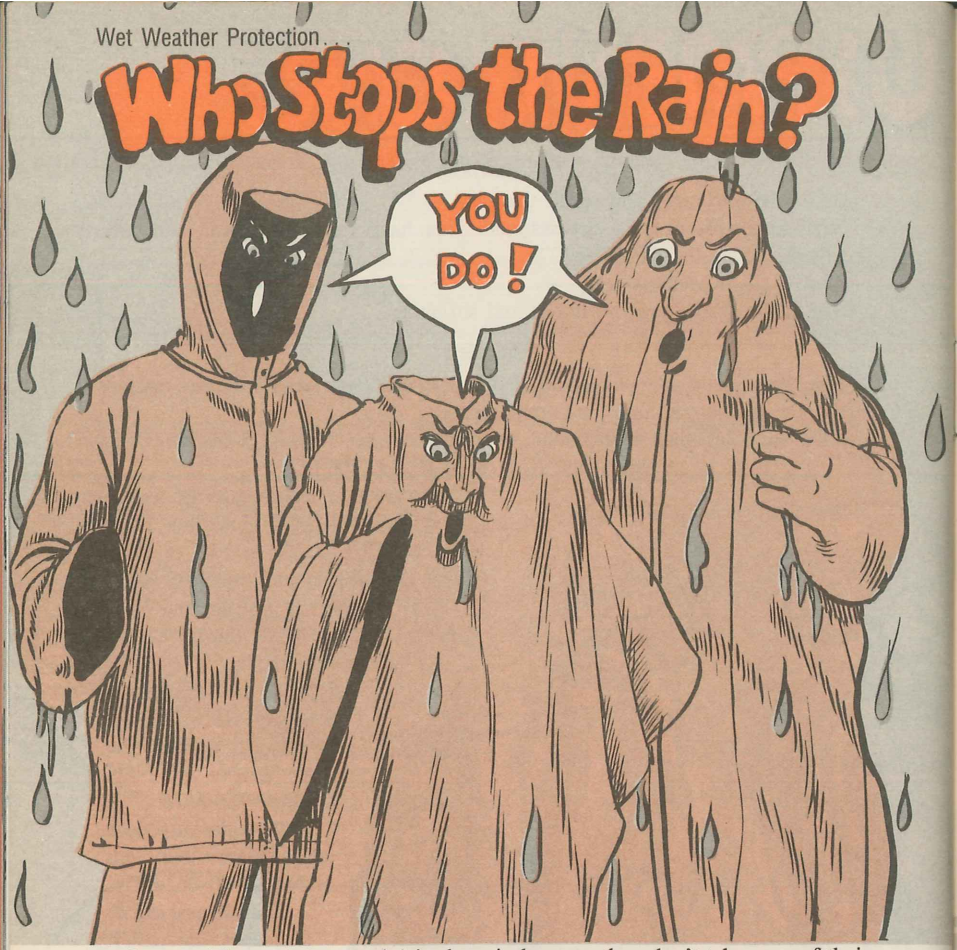
Replace the belt female fastener with NSN 5340-00-753-5579; replace the male fastener with NSN 5340-00-753-5578.

Replace the suspender strap fastener loop with NSN 5340-01-062-6751.

That's all you can do to keep your ALICE fighting load clean and ready. Any other repairs go to DS.



Who Stops the Rain?



Some soldiers wind up cryin' in the rain because they don't take care of their rain gear.

PM on your wet-weather parka, trousers, poncho, water-repellant sleeping bag case, waterproof clothing bag, and air mattress means cleaning the mud off... drying when wet...and inspecting for damage.

For everything but the poncho and air mattress, even the smallest rips and tears go to DS for repair.

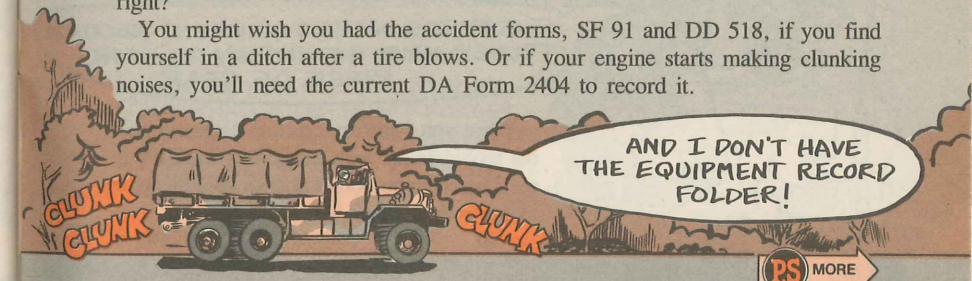
On the poncho and the air mattress, you patch small holes and tears and seal the seams. Use repair kit, NSN 8405-00-198-3747, for the poncho and kit, NSN 8465-00-753-6335, for the air mattress.

If you need a drawcord for the parka or trousers, order NSN 8315-00-262-2784. NSN 8315-00-641-8328 gets the drawcord for the sleeping bag case.

IMPORTANT! TO THE MISSION

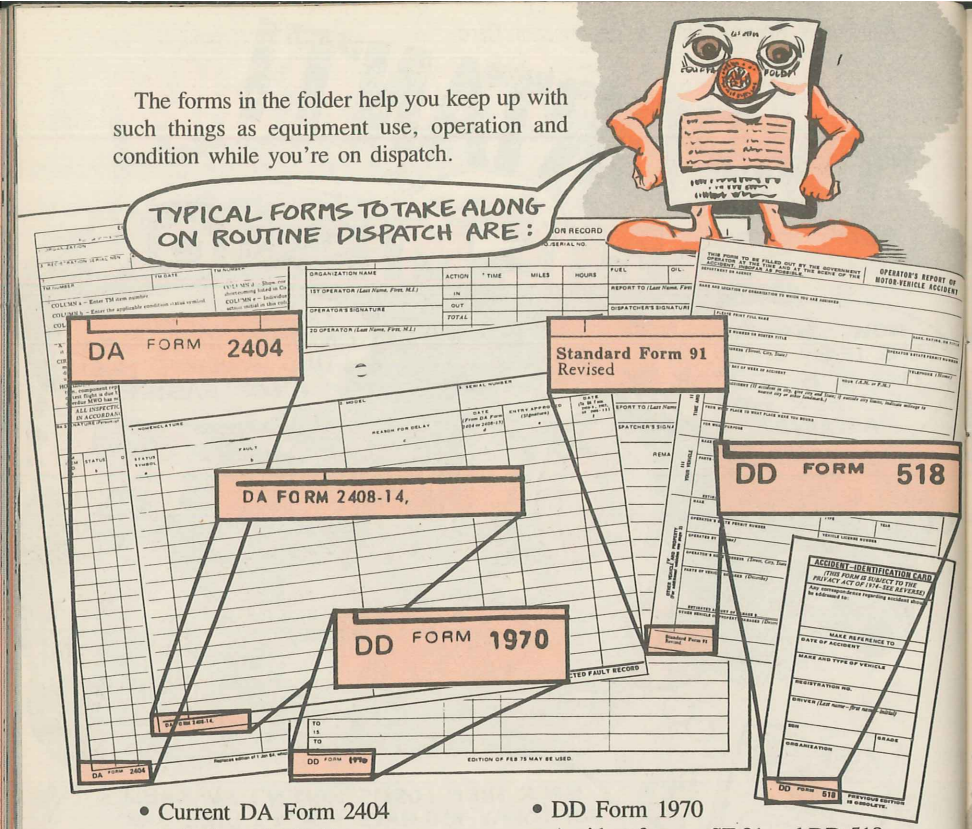
You're on a routine dispatch, so there's no need to take all those forms along, right?

You might wish you had the accident forms, SF 91 and DD 518, if you find yourself in a ditch after a tire blows. Or if your engine starts making clunking noises, you'll need the current DA Form 2404 to record it.



PS MORE

The forms in the folder help you keep up with such things as equipment use, operation and condition while you're on dispatch.

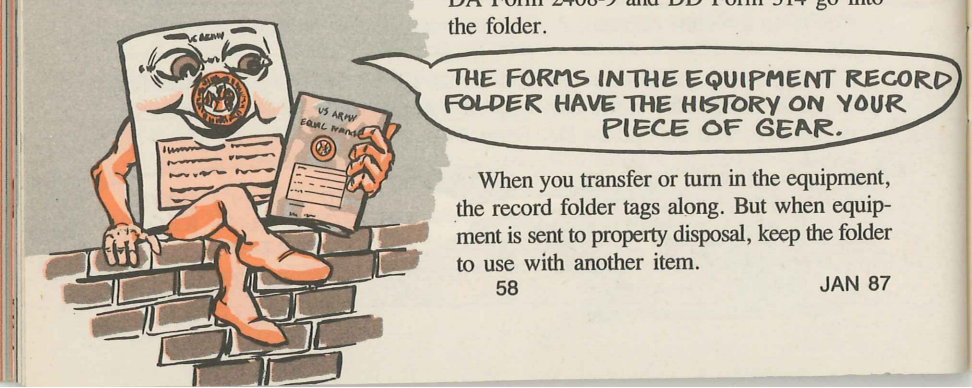


- Current DA Form 2404
- DA Form 2408-14
- DD Form 1970
- Accident forms—SF 91 and DD 518

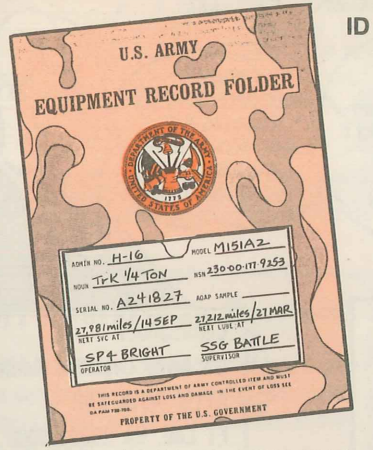
Besides Dispatch . . .

A DA Form 2408-4 goes in the folder when the weapon is fired, serviced or repaired.

When the equipment is sent to support maintenance, all the forms except the DA Form 2408-9 and DD Form 314 go into the folder.



When you transfer or turn in the equipment, the record folder tags along. But when equipment is sent to property disposal, keep the folder to use with another item.



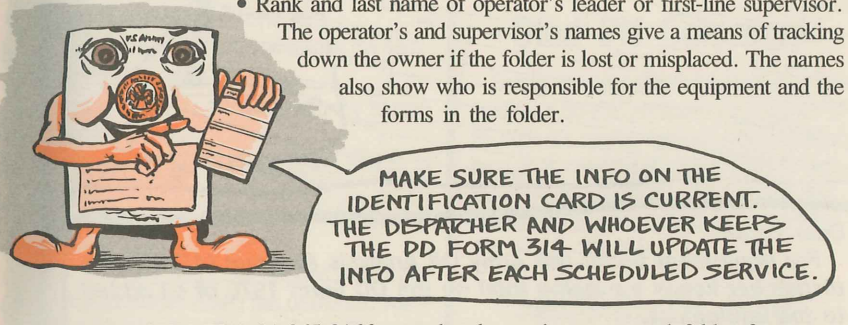
ID Card?

Equally important is the identification card on the front of the folder. This card ties the folder to the equipment.

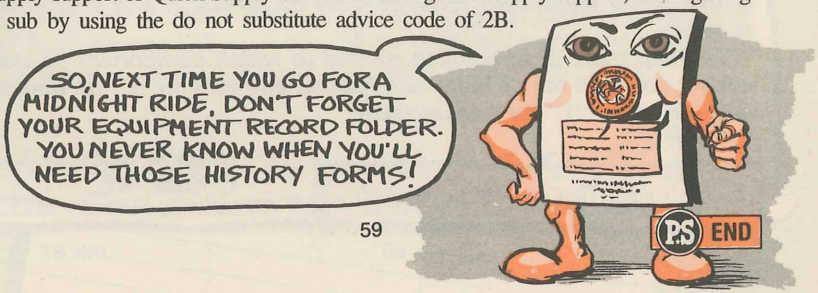
The identificaiton card is made locally and has info to identify your equipment. Entries should include:

- Administration number or bumper number of the item
- Model Number
- Noun
- NSN
- Serial or Registration Number
- Penciled-in date and hour of next AOAP sample. (This entry is for equipment under AOAP only.) DD 314 has this info.
- Date and miles, kilometers or hours of next scheduled service. This entry is penciled on the card from DD 314.
- Penciled-in date and miles, kilometers or hours when next lube service is due. DD 314 has this info.
- Rank and last name of operator. Leave blank if more than one operator is assigned to the equipment.
- Rank and last name of operator's leader or first-line supervisor.

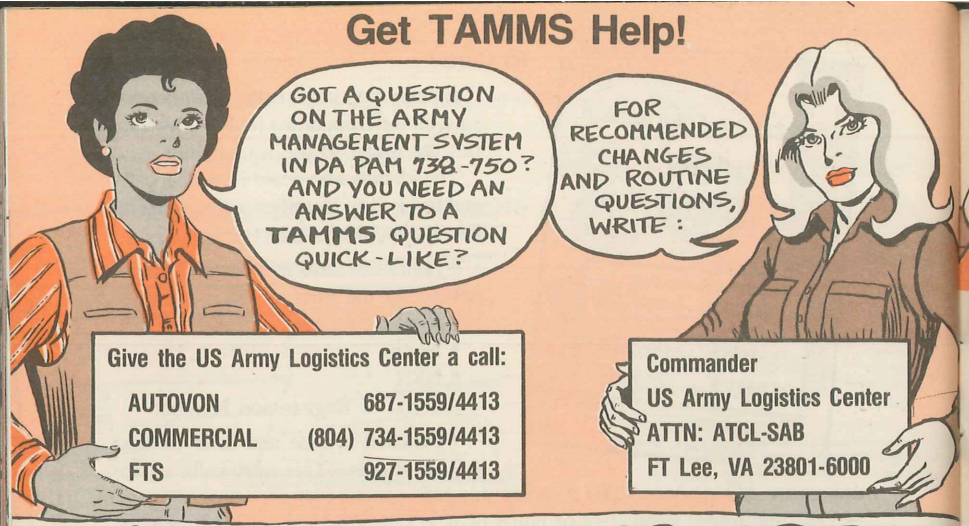
The operator's and supervisor's names give a means of tracking down the owner if the folder is lost or misplaced. The names also show who is responsible for the equipment and the forms in the folder.



Use NSN 7510-01-065-0166 to order the equipment record folder from your supply support or Quick Supply Store. If ordering from supply support, avoid getting a sub by using the do not substitute advice code of 2B.



Get TAMMS Help!



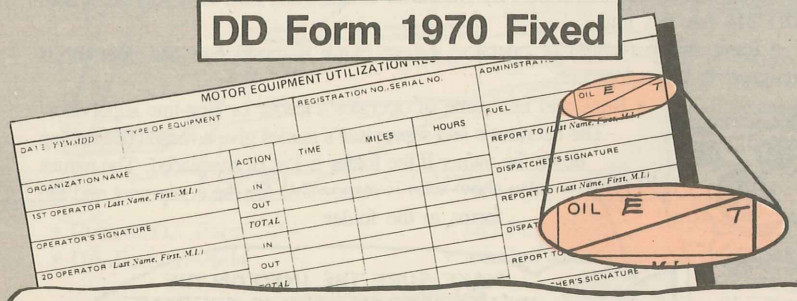
Give the US Army Logistics Center a call:

AUTOVON	687-1559/4413
COMMERCIAL	(804) 734-1559/4413
FTS	927-1559/4413

Commander
US Army Logistics Center
ATTN: ATCL-SAB
FT Lee, VA 23801-6000

AOAP...

DD Form 1970 Fixed



Dear Editor,

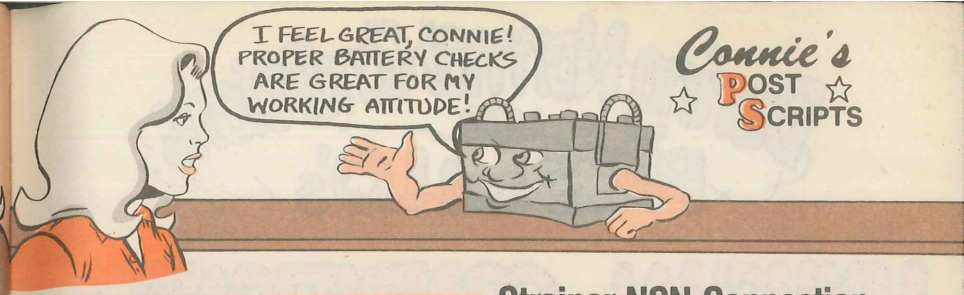
For equipment under the Army Oil Analysis Program (AOAP), the dispatcher keeps a running total on the DD Form 1970 of oil added to the equipment.

The form has only one block for oil entries. The problem with that is that some equipment requires both transmission and engine oil samples.

To keep track of how much oil and to which component oil was added, I divided the oil block and labeled one section "E" for engine and the other "T" for transmission.

Hugh A. Kail
Ft Knox, KY

(Editor's note: That's a real super idea!)



M1 Ammo Door Dangers!

M1 tank ammo compartment ready doors are dangerous. You can lose a handful of fingers if you don't load or transfer ammo by the book!

Every time you load or transfer rounds, reread the procedures and warnings in your operator's manual. The M1's TM 9-2350-255-10-2 and the M1A1's TM 9-2350-264-10-2 give you the procedures for loading rounds in the semi-ready compartment and transferring rounds between the semi-ready and ready compartments.

Remember, before you unlock the semi-ready door, do this:

- De-energize the ready door by turning off turret power.
- Flip up the knee activation switch to its stowed postion.
- Remove the release pin from the hydraulic actuator shaft.

You local AMCCOM Logistic Assistance Representative (LAR) has distributed warning decals. Put the decal on the ready ammo compartment door pronto and read it before you load or transfer ammo.

No decal? See your LAR.

Strainer NSN Connection

That NSN we had on Page 60 of PS 408 won't get you a strainer for your M1941 space heater's float valve assembly. Use NSN 5411-01-231-1754 instead.

Probes Come Up Short

Make these changes in "Probes Come Up Short" on Pages 54 & 55 of PS 403: The 22, red, male is NSN 6625-01-159-7960; the 20, black, female is NSN 6625-01-051-3428.

Stud PN Corrected

Forget the info about the load terminal stud for a 60-KW generator on Page 54 of PS 401. It's wrong. Instead, order the stud by part number on DD Form 1348-6, with FSCM 74159, PN SCS5-5A1. Use RIC S9G. The stud's shown as Item 14 in Fig 29 of TM 5-6125-202-20P.

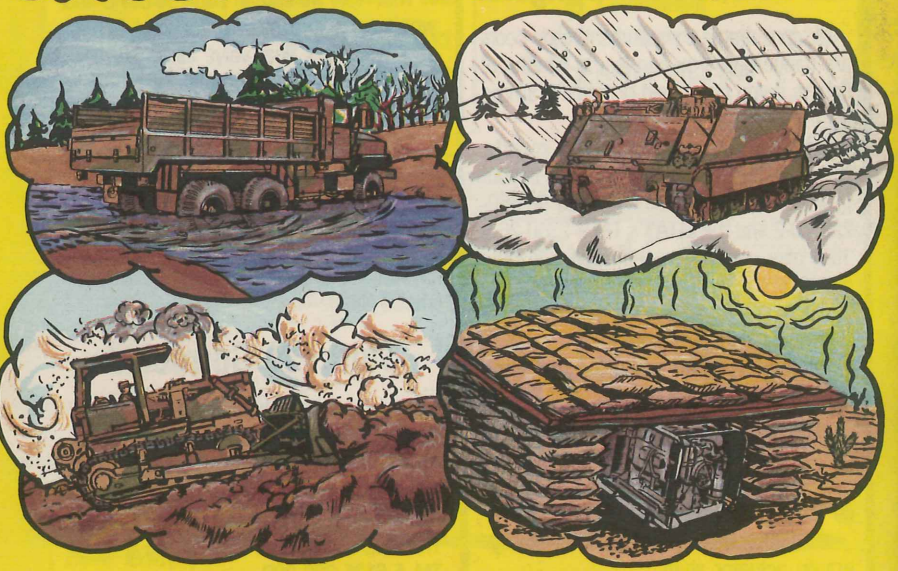
M939-Series Filter

When you need a transmission oil filter only—without the cover—for your 5-tonners, get it with NSN 2940-01-110-2489. It'll be added to TM 9-2320-272-20P.

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

During Normal Conditions use PMCS and LO's

UNUSUAL CONDITIONS...



... DEMAND MORE ...

... LUBING - CLEANING
INSPECTIONS - CARE

plus...

... a dab of common sense!