

Issue 447

PS

February
1990

THE
PREVENTIVE
MAINTENANCE
MONTHLY

TB 43-PS-447

WHAT COULD BE
WRONG WITH THAT
TRUCK?

IF YOU'RE
HAVING PROBLEMS,
DON'T WAIT...
CALL THE HOTLINE!

SHOUT it Out with an SF 368

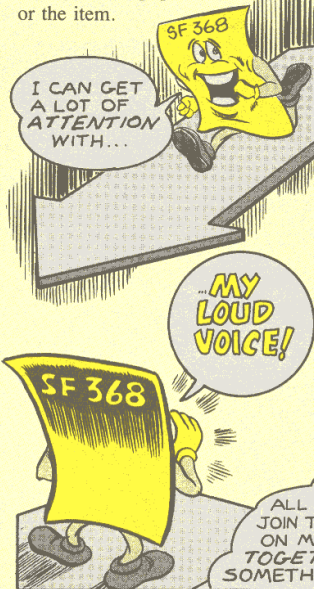
Every Army mechanic or repairman who's not still as green as grass knows the problems you run into with parts and equipment.

Once a defective item's in the system, it's difficult to get it replaced or corrected. But it's downright impossible unless you in the field—the ones who actually work with the equipment—get the ball rolling by sending in SF 368's (Quality Deficiency Reports). This form has a LOUD voice that gets the attention of managers of equipment or the item.

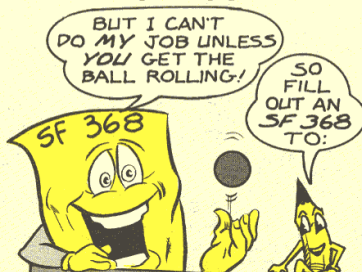


Here's a case where more is better. The more SF 368's an equipment manager receives, the easier it is to solve the problem. Managers can take that fistful of complaints and use them to get something done.

WE HAVE STRENGTH IN NUMBERS!



So part of the solution. Send in an SF 368. Report quality deficiencies; problems with design, manufacture, overhaul or maintenance of equipment; or to suggest ideas or make recommendations to improve equipment.



- Report conditions dangerous to operators/crews or other equipment.
 - Ask for instructions to get credit, replacement items or to repair defective items.
 - Halt further shipments of defective items.
 - Suggest equipment improvements.
 - Suggest a better way to maintain equipment.
 - Report an item that doesn't work right or last as long as it should.
 - Report an item that doesn't meet design specifications.
 - Report problems that prevent use or maintenance of equipment.
- Info on filling out an SF 368 is in Chapter 11 of DA Pam 738-750 in the Maintenance Management Update.

PS THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-447. The Preventive Maintenance Monthly, is an official publication of the Department of the Army, providing information for all soldiers assigned to combat and combat support units and all soldiers with unit maintenance and supply duties. All information published has been reviewed and approved by the agency responsible for the equipment, publication or policy discussed. Application of the information is optional with the user.

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

MSG Half-Mast
The Preventive Maintenance Monthly
Lexington, KY 40511-5101

By Order of the Secretary of the Army:
CARL E. VUONO
General, United States Army
Chief of Staff

Official:
WILLIAM J. MEEHAN II
Brigadier General, United States Army
The Adjutant General

PS, The Preventive Maintenance Monthly (ISSN 0475-2953) is published monthly by the Department of the Army, Lexington, KY 40511-5101. Second Class Postage is paid at the Lexington, KY post office and at additional mailing offices.
Postmaster: Send address changes to PS, The Preventive Maintenance Monthly, US Army Pubs Ctr, 2800 Eastern Blvd, Baltimore, MD 21220-2896.

Give LANCE A Chance

YOUR LANCE CAN DELIVER A PUNCH... IF YOU GIVE IT A CHANCE WITH PM!



Selector Levers

Springs for the selector control valve levers weaken or break and let the boom engage on its own. An out-of-control boom can take out the driver, plus do major damage to the LT. Move the levers back and forth. The levers should spring right back to NEUTRAL. Get your mechanic to replace shot selector valves.

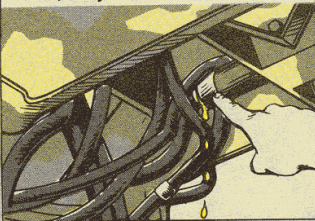


ALSO MAKE SURE THE LEVERS ARE COMPLETELY DOWN BEFORE YOU PULL OFF THE CANVAS. IF THE LEVERS ARE STICKING UP, THE CANVAS RIBS CAN CATCH A LEVER AND ACTIVATE THE BOOM!

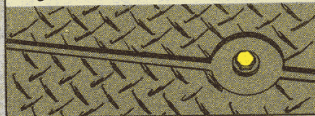


Loader-Transporter

The loader-transporter (LT) vibrates like a Model T. That loosens the hydraulic lines, which causes leaks. Things like the boom will not operate. Eyeball for leaks during PMCS. If you spot any, follow the procedure on Page 3-15 in TM 9-1450-486-12 to fix them. If that doesn't stop leaks, tell your mechanic.

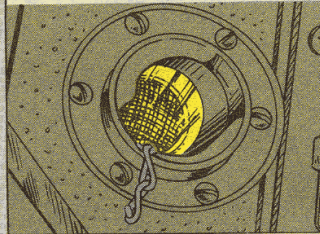


Vibration also causes the LT deck plate bolts under the boom base to back out. A loose deck plate can shear hydraulic lines. Eyeball for shiny or rusty areas around bolts. Tighten loose bolts.



Hydraulic Help

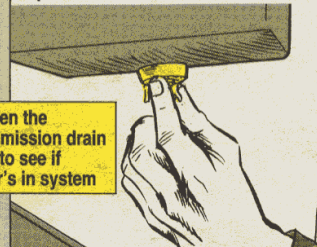
Before you use the hydraulic system hand pump, pull the top off the reservoir and make sure hydraulic fluid covers the screen. If the fluid level's low, you pump air in the system and you must bleed it.



If your LANCE has the reservoir with a drain valve on the bottom, open the valve before pumping to get rid of water. Close the valve before pumping.

Transmission Troubles

The seal on the LT's boom transmission goes bad and lets water in that collects in the base of the boom. Water and transmission fluid bust the transmission and oil pan seals as the transmission heats up during operation.



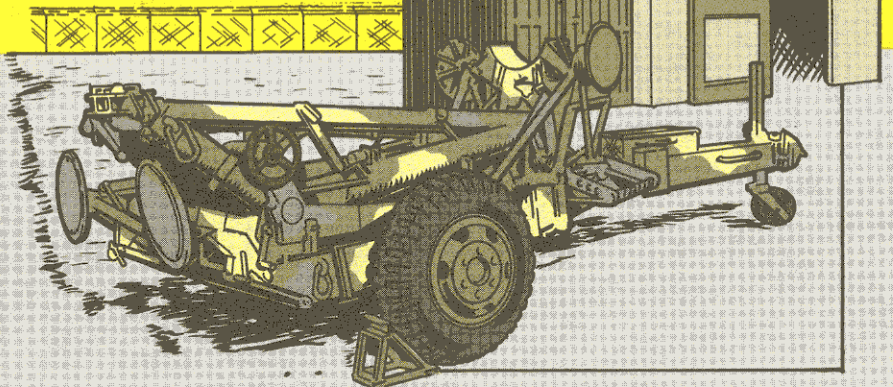
Loosen the transmission drain plug to see if water's in system

Help keep water out of the transmission by not spraying water upwards from underneath the base assembly.

When you unwind the boom cable, leave at least 1½ coils of cable on the drum. Otherwise, you risk reverse winding.

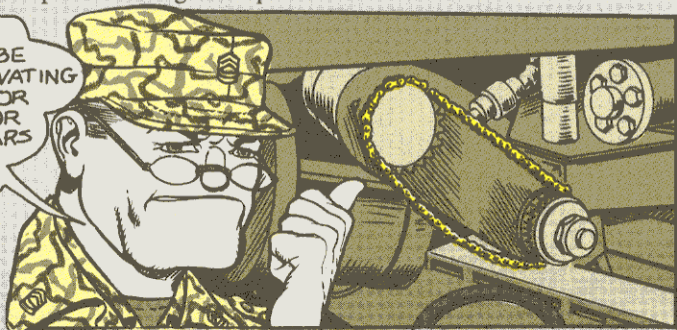
Zero Length Launcher

Most launchers spend a lot of time sitting . . . sometimes months. Without PMCS, brake shoes freeze on anchor pins and camshaft rods freeze in their bearings. At least semiannually, hook up the launcher to a truck and exercise the brakes several times.



Take it easy lubing the launcher's elevating actuator chain. If you give the chain more than a light coat of preservative lubricating oil, the oil saturates the torque limiter pads and the gears slip. You can't elevate the launcher.

**NEVER
OVERLUBE
THE ELEVATING
ACTUATOR
CHAIN, OR
THE GEARS
WILL
SLIP!**



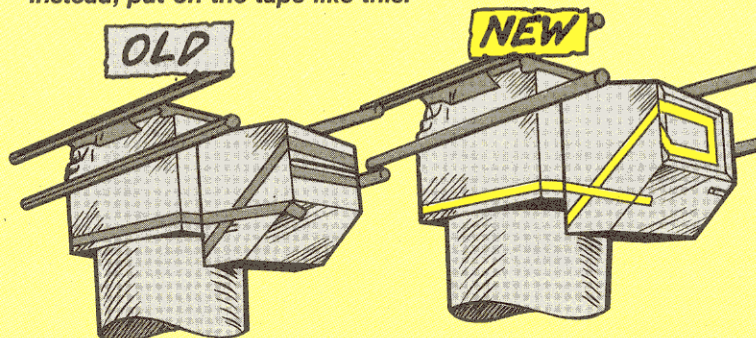
Tow the launcher only if absolutely necessary. The launcher's light and jackknives easily, tearing up the bell crank assembly. If you have to tow, use ground guides and drive slow.

Reroute MILES Tape

Dear Editor,

If the Chaparral turrets have been modified to include the NBC purification system, you won't be able to put on the Multiple Integrated Laser Engagement System (MILES) fastener tape like it shows on Page 2-19 in TM 9-1265-208-10. The detector belt is too short for that.

Instead, put on the tape like this:



That leaves all four detectors in the correct spots when the MILES belt's installed.

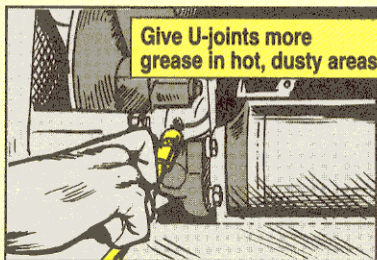
SPC Ernest De La Cruz
APO San Francisco

(Editor's note: Your belt suggestion should be a cinch. Looks like the reroute to go.)

More Lube Needed

LO 9-1450-585-12 says to lube the fan drive shaft and universal joints every six months. But sometimes that won't cut it, especially in harsh conditions like hot, dusty areas.

If you're operating in harsh conditions, check the fan drive shaft and universal joints every 400 miles or six weeks. Lube 'em if they need it.



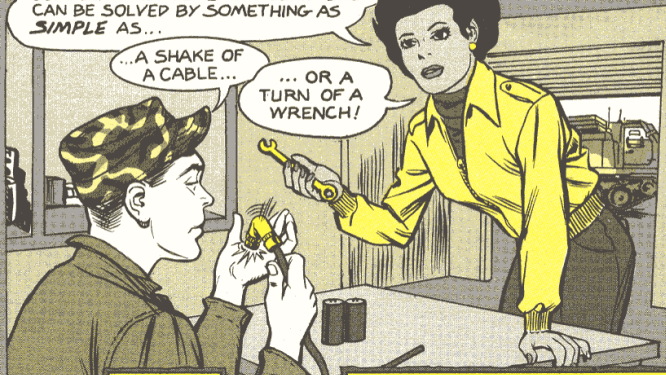
Just Clean

...and Tighten!

SOMETIMES THE MOST TECHNICAL, COMPLEX PROBLEMS IN YOUR MLRS CAN BE SOLVED BY SOMETHING AS SIMPLE AS...

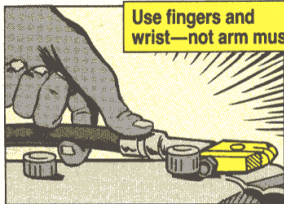
...A SHAKE OF A CABLE...

... OR A TURN OF A WRENCH!



Batteries

Many problems on the fire control panel are caused by loose connections to the launcher batteries. If nothing seems to be working right, feel for loose connections at all six batteries.



Use fingers and wrist—not arm muscle

Grab the clamp with your thumb and two fingers. Try to twist the clamp on the post. Look to see that the clamp is all the way down on the post. Loose? Installed only part way down? Report it.

Non-volatile Memory Batteries

Losing firing grids, getting unusual prompts, or having trouble with short-term memory? Suspect the non-volatile memory batteries. The warning indicator doesn't always show when the batteries are going out. Unscrew the battery cover and look for corrosion, swelling, and moisture. See any of that? Report it. If everything looks OK, have your repairman do a voltage check with his multimeter just to be sure.



Eyeball NV batteries for swelling, corrosion, and moisture

Cables

Dirt gets inside the connections. Electrical connections are poor. You think a component's gone out.

Before you call a repairman, unscrew each of the component's cables, being careful to hold the connector head firmly so you don't bend pins. Shake the cables to shake off dirt. Tap the connectors against your palm or heel of your hand to knock out dirt. Never bang a connector against metal. Hook the component back up. Make sure you align the keyway before pushing the connector in place.

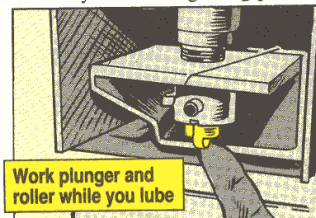
Tap cable connector to knock out dirt



Limit Switches

Dirty limit switches stick and cause bad prompts and prevent firing. The cage down limit switch sticks the worst. If you're having firing problems, push all 10 limit switch plungers in and out to see if they're moving freely.

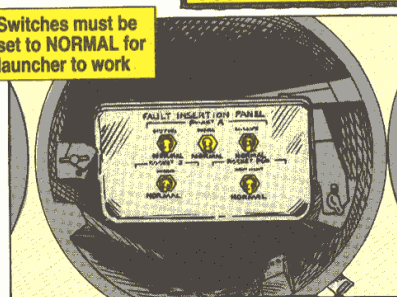
The best way to clean a limit switch is to work its plunger in and out while you squirt on lubricant, NSN 9150-00-823-7860. An artist's brush can help clean out all the dirt, too.



Work plunger and roller while you lube

Fault Insertion Panel

Switches must be set to NORMAL for launcher to work

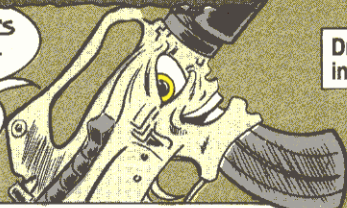


If the launcher won't work and you've followed your troubleshooting procedures and nothing helps, pull the cover off the No. 4 launch tube and eyeball the fault insertion panel switches. All switches must be set on NORMAL. Otherwise, the launcher won't respond.

HOT ROD POINTERS

THE CLEANING ROD KNOCKS OUT BARREL CRUD FAST... IF YOU KNOW ALL THE INS AND OUTS OF USING THE ROD.

FOR INSTANCE, IT'S EASIER TO *PULL* RATHER THAN *PUSH* THE CLEANING ROD THROUGH THE BORE.

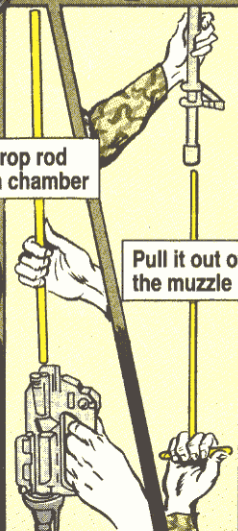


Pulling the rod lets the bore brush turn more easily and lowers the chance of damage to the rod.

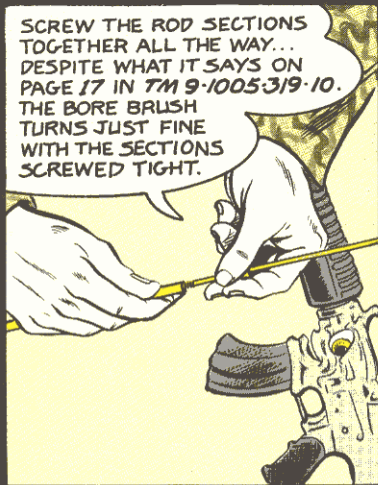
Drop the cleaning rod down the chamber with the bore brush end in last. Attach the handle. Pull it out the muzzle. Once you start pulling the rod, don't stop. If you jerk the rod back and forth inside the bore, you ruin the bore brush.

Drop rod in chamber

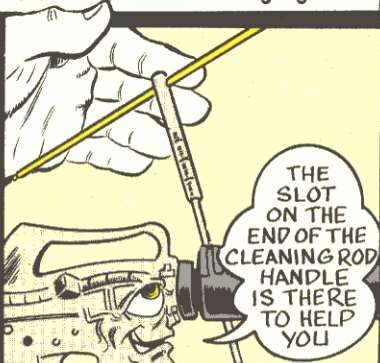
Pull it out of the muzzle



SCREW THE ROD SECTIONS TOGETHER ALL THE WAY... DESPITE WHAT IT SAYS ON PAGE 17 IN TM 9-1005-319-10. THE BORE BRUSH TURNS JUST FINE WITH THE SECTIONS SCREWED TIGHT.



Stick a section of the cleaning rod through the slot to make a handle. You'll get better cleaning action in the chamber and in the locking lugs.



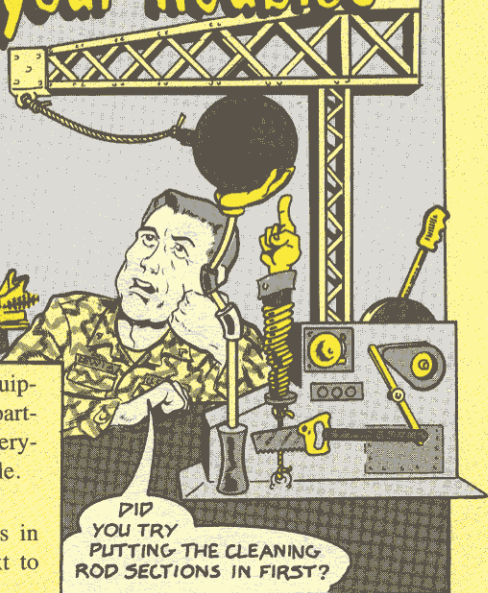
THE SLOT ON THE END OF THE CLEANING ROD HANDLE IS THERE TO HELP YOU

If the rod tip won't screw in the rod—or the rod bends at the joints—don't use it. It could scratch the bore. Ask your armorer for another cleaning rod section.

Pack up your Troubles



SO
WHAT DO
YOU
THINK?



DID
YOU TRY
PUTTING THE CLEANING
ROD SECTIONS IN FIRST?

Getting your M16's cleaning equipment in the buttstock storage compartment is tricky. Unless you have everything just right, you'll have trouble.

Try this fitting solution:

1. Put the cleaning rod sections in first with the longest section next to the case's side.

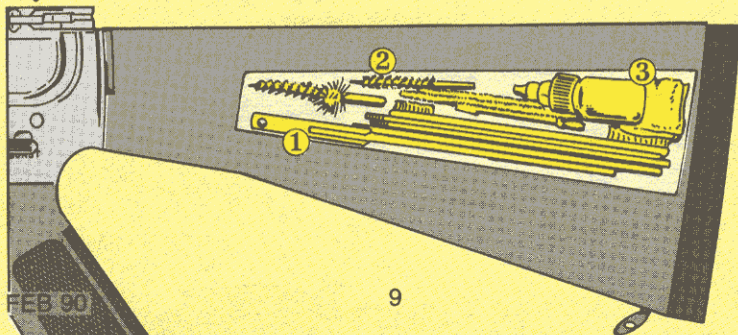
2. Next put in the toothbrush, chamber brush, cleaning rod tip, pipe cleaners, bore brush, and CLP bottle.

3. Lay the cleaning patches underneath the bottle.

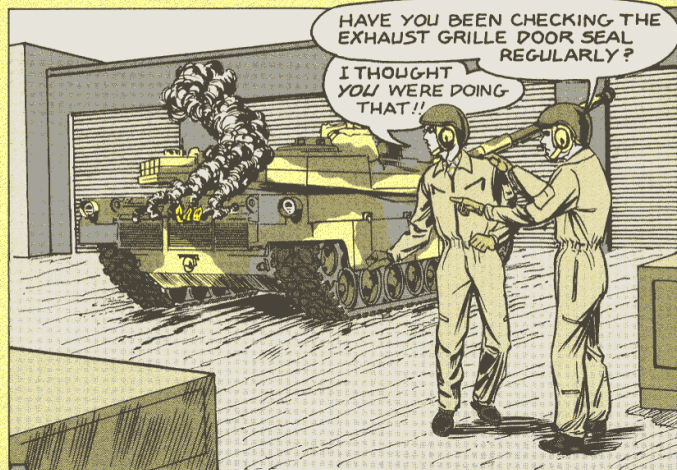
4. Hold the case's open end up and insert the case halfway in the buttstock.

5. Fold the case flap in a triangle and close the flap.

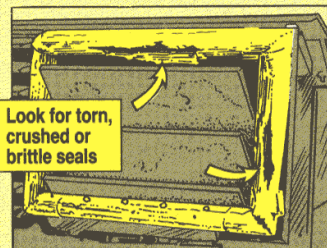
6. Push the case the rest of the way in the buttstock.



Bad seal can lead to fires



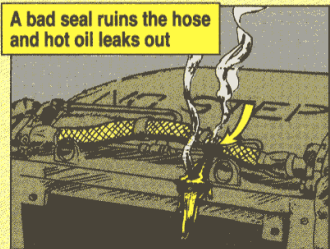
A torn, crushed or brittle seal on your M1-series tank's exhaust grille door does very little to protect the oil coolers and oil cooler crossover hose from heat damage.



That heat damage can cost you an engine or transmission as oil breaks down and loses its ability to lubricate moving parts.

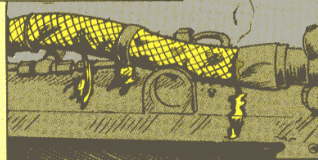
That's bad news, but not as bad as what can happen if the top portion of the seal is damaged. The top seal protects the oil cooler crossover hose from heat.

The hose is tough, but if the seal is shot, the hose is no match. It eventually fails and spills hot oil over the powerpack. That's a fire waiting to happen.



Keep an eye on the seal, NSN 5340-01-099-6331, and replace it when it's damaged.

Check crossover hose for abrasions and leaks



Make these checks only when the engine is cool enough to touch. You'll be burned badly if you try to make these checks on a hot engine.

Make sure the hose doesn't touch the exhaust duct. To adjust it, loosen the mounting bolts and rotate the hose so it doesn't touch. Wet torque the bolts to 46-58 lb-ft.

Start the engine and check for leaks at the clamps. Replace the preformed packing, NSN 5330-00-165-1944, if you find a leak where the hose mounts to the oil coolers.

KEEP AN EYE ON THE EXHAUST SEALS AND CROSSOVER HOSE AND YOU'LL AVOID PROBLEMS AND FIRES!



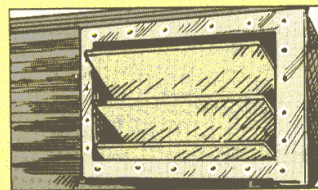
Make Seal Screw Removal Easier

Removing the screws that hold the exhaust grille door seal in place is often an adventure filled with bad breaks.

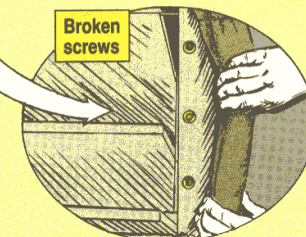
The engine exhaust temperature is so high that the screws tend to become very brittle—they break real easy at the head.

Then, do this once you're down to bare metal and are ready to install the seal. Coat the new screws with anti-seize compound, NSN 8030-00-597-5367, as you install them. Snug the screws, but don't overtighten.

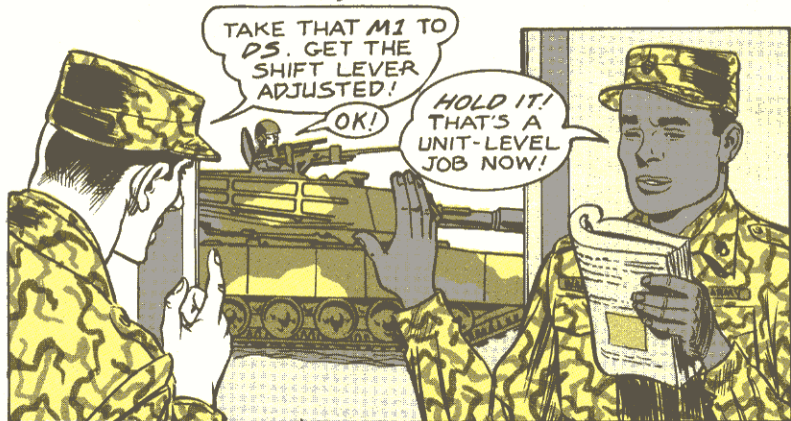
Next time you need to replace the seal, the screws will come loose without breaking.



So, replace those old screws with PN 12345995, CAGE 19207, RIC AKZ. This stainless steel screw can take the heat. Order it on a DD Form 1348-6.



Shift Lever Now Unit Work

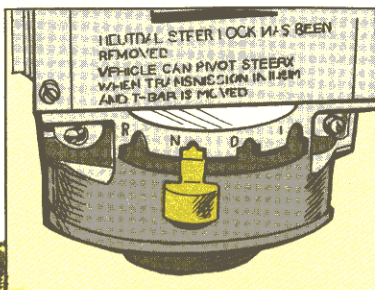


Replacing and adjusting the external shift select lever on M1-series tanks is now a unit-level job.

Repair parts affected by the SMR and maintenance category change are Items 1-9, 17 and 29 of Fig 225 in TM 9-2350-255-24P-1 (for M1/IPM1 tanks) and Items 1-9, 17 and 29 of Fig 239 in TM 9-2350-264-24P-1 (M1A1 tanks).

Ask your DS to lend you copies of Pages 9-2 through 9-4 in the -34-1-2 TM for the tanks you have. That's where you'll find replacement and adjustment instructions.

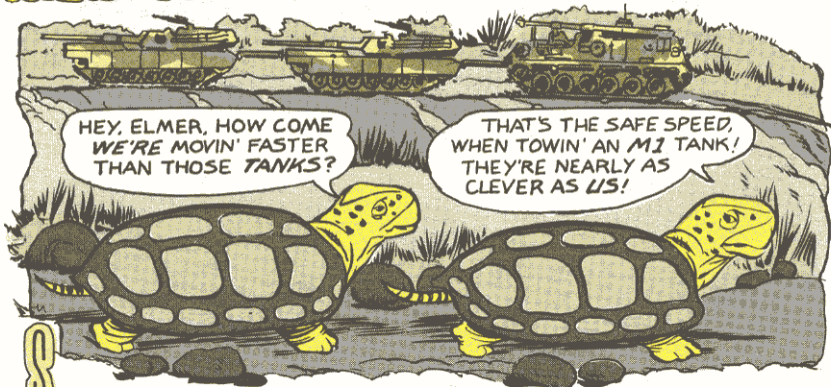
Repairing the shift control assembly is still a support job, so if your work on the external shift lever doesn't fix what's ailing your M1, call on DS.



SEE, THE CODE HAS CHANGED FROM PAFZZ TO PAOZZ!

SECTION II			
(1) ITEM NO	(2) SMR CODE	(3) FSCM	P NU
1	PAOZZ	96906	MS 5
2	0ZZ	96906	MS2
107			

TANK TOWING DEMANDS ATTENTION!!



Sixty-plus tons of M1 tank should get your attention any time, but be sure to give the tank all your attention when you're towing one.

That's because the tank weighs more than the M88A1 recovery vehicle, and that creates safety problems.

PAY ATTENTION TO THESE TIPS, AND ALSO TO THOSE IN TM 9-2350-256-10, AND YOU'LL BE CLEVER, TOO!

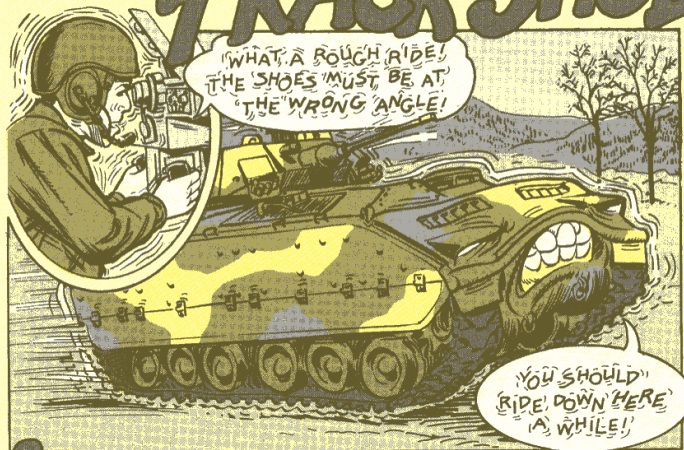


TIPS

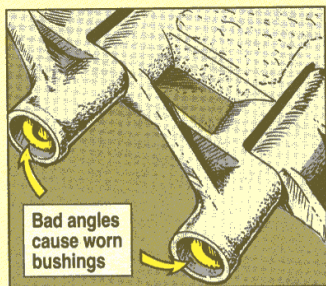
- ✓ Always use a similar weight class vehicle as a hold back vehicle when you tow an M1-series tank, even if you use a tow bar.
- ✓ Allow no one to ride in or on an M1 while it is being towed.
- ✓ On hard, level, smooth roads, tow at 5 MPH or slower using a tow bar.
- ✓ For cross-country, tow at 2 MPH or slower using tow cables only.
- ✓ Never make sharp turns or sudden stops. Make gradual wide turns in first gear.

If you don't pay attention to these tips, the tank you're towing may push you sideways, may run up over your rear, may ruin your 88's transmission or brakes and might even flip you over.

TRACK SHOE ANGLE VITAL



Do your track shoe bushings wear out or fail fast? Does your vehicle ride rough? Is it almost impossible to keep track tension set right?

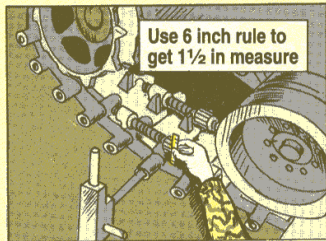


Could be one or more of your vehicle's track shoes were installed at the wrong angle.

You can't just join Bradley or MLRS track any old way and do the job right.

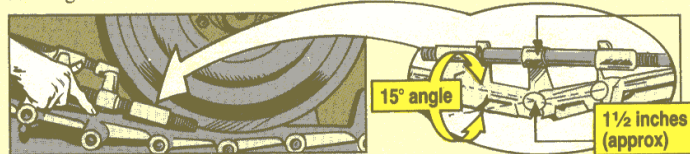
That's why there's a set procedure laid out for you in your -10 TM's.

Page 3-52 of TM 9-1450-646-10 for the MLRS tells you to use a crowbar to pry down and hold the joined track 1 1/2 inches while you drive in the track pin. Page 3-57 in TM 9-2350-252-10-1



says the same thing for M2/M3 and M2A1/M3A1 Bradleys. Page 3-40 in TM 9-2350-284-10-1 has the word for M2A2/M3A2 Bradleys.

The prying gives about a 15-degree angle on the bushings of the shoes being joined. That lets the bushings fit right on the track pin and "spring" the track as designed.



Put the track together any other way and you cause the pin to wear on the bushings, which leads to bushing wearout and failure. It also causes track shoes to ride high at the joint, which gives a rough ride. And, since shoes tend to move apart as bushings wear out, you'll have a heck of a time keeping track tension set.

Playing angles can get you in trouble in some business dealings, but it's the only way to fly in track connection.

New Track Standards

TM 9-2530-200-24, Standards for Inspection and Classification of Tracks, Track Components and Solid-Rubber Tires, has been updated (Jun 89). It includes, for the first time, points of reference and wear limits for M1-series tank track and M9 ACE track.

If you didn't get a copy in initial distribution, get your pubs folks to order it NOW! You need this TM to know when track has reached the end of its useful life, but still can be rebuilt, or when components are worn out.

Soldering Flux for Small Jobs

You can get a 4-oz plastic container of lead-tin alloy soldering flux paste with NSN 3439-00-255-4566. This size container of paste is perfect for small jobs joining common metals except aluminum.



FIREPOWER BRIEFS

M113 Ramp Breather

Orders NSN 2940-00-773-8022 to get the correct ramp hydraulic reservoir breather for your M113-series carrier. NSN 2520-00-839-1055, shown as the breather, Item 3, in Fig 287 of TM 9-2350-261-20P, is wrong.

M113A3 Oil Filter

Use NSN 2940-01-197-7106 to get a spin-on engine oil filter for your M113A3. The NSN shown in TM 9-2350-277-24P for Item 9 in Fig 55 is wrong.

Air Box Drain Hose

Here are the correct NSN's for engine air box drain hoses for M113-series FOV:

For M741A1 carriers only—NSN 4720-00-812-0877 (38-in)

For all other M113-series vehicles—NSN 4720-01-157-3800 (54-in)

M203 GL Change

You can now replace the M203 grenade launcher's mounting bracket screw and bushing halves, armorers. The SMR code for Items 8 and 10 on Page C-2-1 in TM 9-1010-221-24&P is being changed to PAOZZ. The mounting bracket itself is still DS's job.

FAAR Clamp

If you need a clamping catch for the FAAR transmitter's plastic cover, order it with NSN 5340-00-909-1955. The NSN is being added to TM 9-1430-588-24P.

Slaving Dust Cap

The dust cap for your M1-series tank's NATO slave receptacle is now available as a separate part. Order it with NSN 5340-01-296-8605.

Top Deck Needs Non-Skid Paint



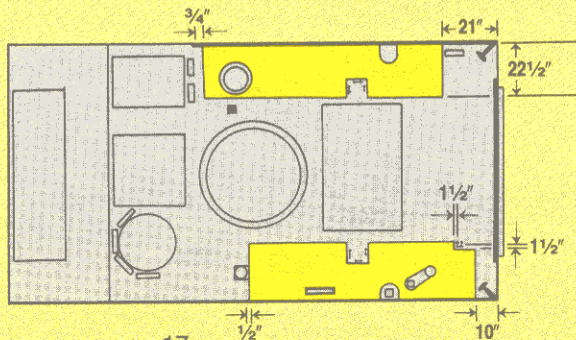
Some M981 FISTV's hit the field missing the non-skid compound that should have been applied to the top deck.

Any FISTV in your unit that does not have the non-skid compound applied as shown below should be painted.

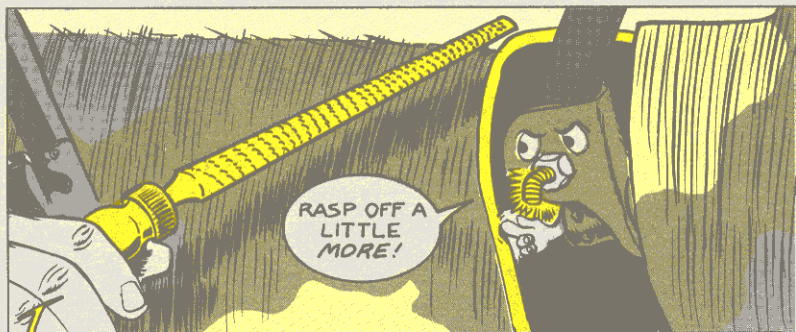
Use the design and measurements shown when you apply non-skid compound, NSN 5610-00-141-7838. When that's dry, paint over it with Green No. 383, NSN 8110-01-162-5578, which is a two-part CARC.

Painting information is found in TB 43-0209, Color, Marking and Camouflage Painting of Military Vehicles, Construction Equipment and Material Handling Equipment, and in TM 43-0139, Painting Instruction for Army Materiel. You'll have to apply more CARC as it wears off underfoot, so check it periodically.

All dimensions are $\pm \frac{1}{2}$ inch



Trim Hood to Fit



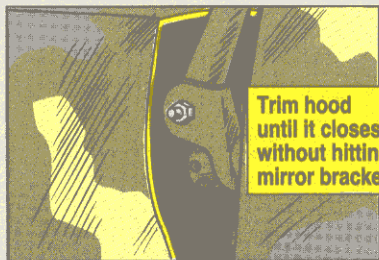
The fiberglass hood on some HMMWV's does not fit right. It smacks the left mirror bracket everytime you open or close the hood. Enough smacking and the fiberglass cracks and cracks until it shatters.

Try to adjust the hood at the front hinges. If the hood still bumps the bracket, trim about $\frac{1}{4}$ inch off the left corner and edge. Use a wood rasp, NSN 5110-00-233-9718. It's authorized by Appendix A of CTA 50-970. In a pinch, one of the files in the General Mechanics tool kit will do.

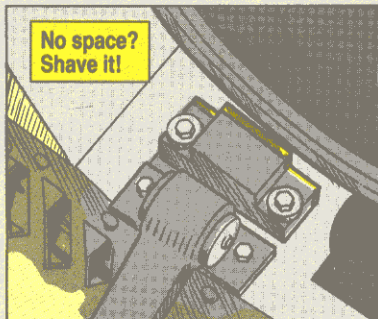
until the hood closes without hitting the mirror bracket.

Touch-up the trims with green paint, NSN 8010-01-229-7546. That NSN gets a quart can.

While you're under the hood, eyeball the hood rest next to the end cover on the air cleaner. The hood rest is too wide on some trucks and it gets in the way when you remove the air cleaner cover.



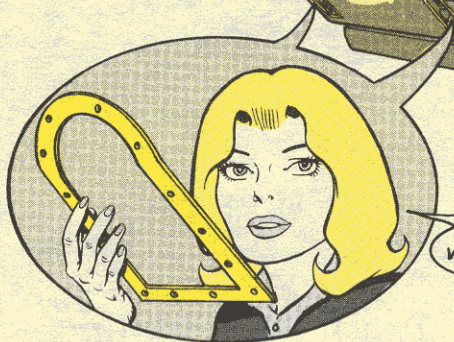
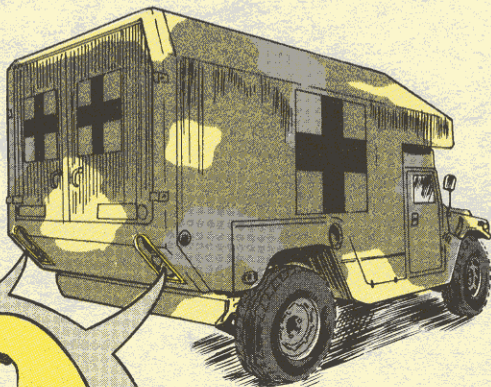
How much you trim off depends on the hood. They're not all the same. Trim, close the hood and trim again



If that's the case, remove the hood rest and shave about $\frac{1}{4}$ inch off the edge nearest the air cleaner. Put it back, turned the same way it came out.

BACK-UP LIGHT BRACKET BUMMER

The brackets around the tail and back-up lights stick out like sore thumbs on HMMWV ambulances. That explains why they're usually the first things broken when an ambulance bumps or gets bumped. If you need a bracket, go ahead and order it. Until it comes, patch up the old bracket with fiberglass repair kit, NSN 2090-00-372-6064. Remember, always use a ground guide when backing up your ambulance.



THE GOOD NEWS IS...
YOU CAN GET A
REPLACEMENT BRACKET
WITH NSN 5340-01-297-4127

THE BAD NEWS IS
IT'LL TAKE A
L-O-O-N-G TIME
TO GET ONE!

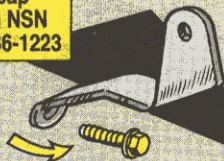
Lost Is Found

The socket head cap screw that goes into the rear alternator support bracket in the front of the left-hand exhaust manifold is missing from the -20P TM.

The support bracket's listed as Item 13, Fig 29 of TM 9-2320-280-20P. It needs two screws—an upper one and a lower one. The upper screw's shown as Item 11 of Fig 29. Order the lower one (socket head cap screw) with NSN

5305-01-186-1223. Get the flat washer with NSN 5310-01-135-6039.

Get lower cap
screw with NSN
5305-01-186-1223



Mirror Bracket

The NSN for the HMMWV's right-hand mirror arm bracket is not listed in TM 9-2320-280-20P. You can order it with NSN 2540-01-291-9738.

Door Latch Spring

The spring for the door latch on a HMMWV is not shown in Fig 144 of TM 9-2320-280-20P. You can order the spring with NSN 5360-01-282-9316.

HMMWV Wiper Motor Knob

The NSN for the knob on the windshield wiper motor is not listed in TM 9-2320-280-20P. You can get the knob with NSN 5355-01-290-6368.

Air Cleaner Clamp

You can order a clamp for your HMMWV's air cleaner cover with NSN 5340-01-190-0402. This NSN is not in TM 9-2320-280-20P and the part number listed for the clamp, Item 23 in Fig 10, is wrong. The right PN is L-2234C24.

HMMWV Hood Screen Self-locking Nut

The part number and NSN are listed wrong in TM 9-2320-280-20P for the self-locking nut used on the front hood screen. The correct part number is 551957 for Item 22 in Fig 106. That crosses to NSN 5340-01-213-4662.

M872 Pin & Clip NSN

The bulkhead pin and clip for the M872-series semitrailers is not in TM 9-2330-359-14&P. Use NSN 5315-01-270-1875 to get the pin and NSN 5315-01-231-5983 to order the clip.

M880 Instrument Panel NSN

The NSN is wrong for the 1/4-ton truck's instrument panel listed as Item 27 on Page 52 of TM 9-2320-266-20P. Order the panel with NSN 2510-01-066-1729. Make a note in your TM until it's updated.

M353 Trailer Brake Cable

The hand brake cable used on the M353 3½-ton trailer comes in two sizes. Measure the cable before you order. Early models take a 50-in long cable, NSN 2530-00-777-3069. Later models get an 89-in long cable, NSN 2530-01-155-3798.

M939 Shiftless Transfer

A frozen transfer linkage joint will stop an M939-series 5-ton truck cold. Test the linkage by shifting the transfer controls when you have the truck in for semiannual service. If it's hard to shift, lube the joints.

M39A2-Series Fuel Tank

NSN 2910-00-410-5765, shown as Item 1 of Fig 28 in TM 9-2320-211-20P for the left 78-gal fuel tank assembly, is no good. To get the left fuel tank, order it with NSN 2910-00-911-5671.


Get a Handle on the JACK

The NSN for the M939-series 5-ton truck's hydraulic jack handle is not shown in the Basic Issue Items list in Appendix B of TM 9-2320-272-10. Order a handle with NSN 5120-00-357-6106.

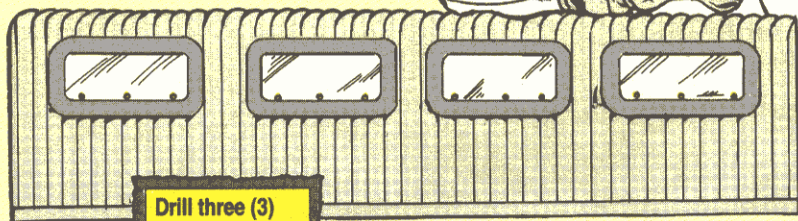


Rain and moisture gets trapped between the plastic windows in the arctic cover. When the water freezes, the window panes get cracked or broken.

Here's how to let the water out:

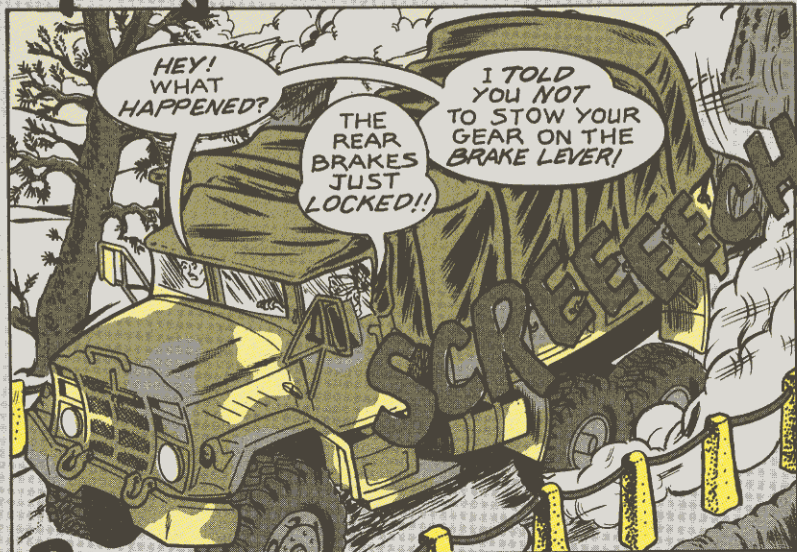
 Drill three evenly spaced 3/16-in holes at or above the bend in the outer acrylic window.

CAREFUL!
DO NOT
DRILL THE
INNER
WINDOW.

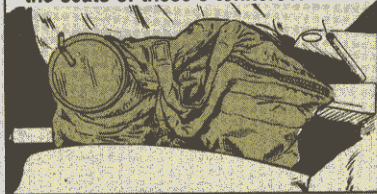


**Drill three (3)
3/16-in dia holes**

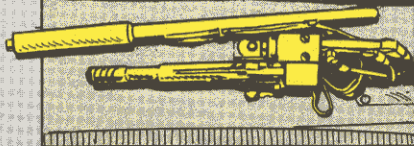
Spring Brake Lever Litter



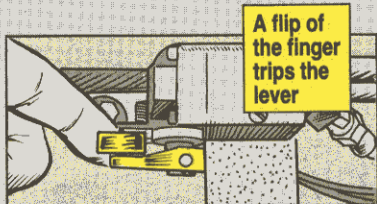
Drivers, you're in for a wheel-locking experience if you pile your pack, helmet or other gear between the seats of these 5-tonners...



... that hole was made for the levers on the floorboard and nothing else.



The spring brake lever is easy to trip. Just a flip of a finger will set the spring brakes. Anything on or near the lever can trip it when you hit a bump.



Locked brakes are bad news if you're wheeling down the interstate, in a convoy or on a narrow bridge loaded with traffic. Somebody could get killed when the truck screeches to a halt.

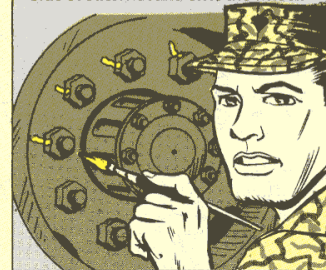
Play it safe—keep everything away from the spring brake lever.

LUG NUT TORQUING TIPS



Here's a handy way to tell drivers when lug nuts are coming loose:

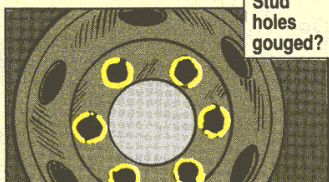
1. Make sure the lug nuts are tight.
2. Paint a white mark down the side of each nut and onto the wheel.



Drivers, eyeball the stud and nut about once a week to see if the lines meet. If they don't, the lug nuts are loose and need tightening.

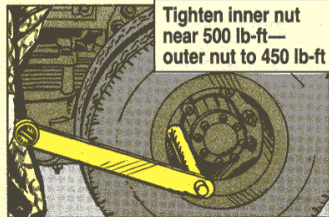
Loose nuts let the wheel wobble on the stud and that gouges the stud hole on the rim. It also strips studs. Worse, loose nuts come off, and let the wheel come off, too.

Stud holes gouged?



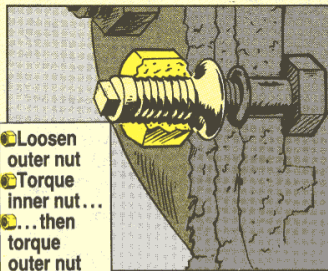
You mechanics can help prevent all that by grabbing a torque wrench and torquing each nut on each wheel—even the inner nuts on the dual wheels—to 450-500 lb-ft (dry torque) the next time a truck is in for service.

Tighten inner nut near 500 lb-ft—outer nut to 450 lb-ft



On dual wheels, take the outer wheel nut off before you torque the inner wheel nut. Then put the outer nut back on and torque it. Never try to torque the inner nut while the outer one is tight. Use an alternating pattern to tighten the nuts.

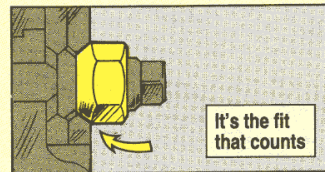
- 1. Loosen outer nut
- 2. Torque inner nut...
- 3. ...then torque outer nut



If you need to replace a lug nut, don't look for one in a junk box full of lug nuts. You might find a nut that seems like it holds the wheel tight, but don't trust it—even though it screws onto the stud.

Grab either TM 9-2320-273-20P or TM 9-2320-283-20P and order the lug nut called out in the book. The right

lug nut seats snug all the way around and puts the most pressure against the wheel.



It's the fit that counts

Medium/Heavy Equipment Transporters...

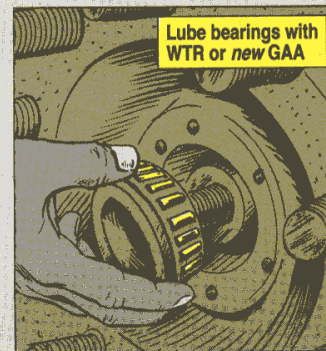
Bearings Need Better Lube

Hold one, mechanics, before you lube the wheel and beam bearings on your tractor truck or semitrailer with GAA.

GAA is what's called for in the LO's but it will not hold up. Heat softens GAA until it gets like oil and leaks out past the seals. This leaves the bearings dry and they burn out.

Lube wheel bearings and ball and sockets with WTR aircraft grease, NSN 9150-00-935-5851, or the new GAA, NSN 9150-01-197-7692. They're made to take the heat.

Lube bearings with WTR or new GAA





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 5-3820-239-24P Sep Ingersoll-Rand drill, pneumatic
TM 5-4520-241-24P Oct Hunter UH-68F 60,000 BTU space heater
TM 5-6115-630-14&P Oct Power unit, PU-751/M MEP 002A, 5 KW, 60 HZ generator set, M116A1 2-wheel, 2-tire, modified trailer
TM 9-1010-231-13&P Jun MK 64 machine gun mount

TM 9-1430-2528-12-2-1 Nov 88 AN/MPQ-62 radar set (HAWK missile)
TM 9-2320-279-10-HR Sep Hand receipt (Bil), (AAL) for M977 series trucks (HEMTT)
TM 10-3930-620-24P Sep MHE-214 forklift
TM 10-3930-660-24 Oct Forklift, model 6000M
TM 10-3930-660-24P Oct Forklift, model 6000M
TM 11-5820-520-20P-2 Aug AN/GRC-106A radio set
TM 11-5820-898-20P Oct AM-1780A/VRC radio frequency amplifier
TM 11-5820-1028-20P Aug 88 AN/GRC-222 radio set

TB 5-6115-585-23-2 Oct 10KW, 400 HZ generator set warranty
TB 10-3930-660-14 Oct Forklift warranty
TB 11-5820-1028-12 Sep AN/GRC-222 radio set warranty
TB 55-1520-237-20-108 Aug In-spect fuel boost pump hose
TC 1-213 Aug AH-1 aircrew training manual
UNIT SUPPLY UPDATE 12 Oct LO 5-4210-220-12 Oct Truck, firefighting, model 2500L
PAM 750-1 Feb Leader's unit level maintenance handbook
PAM 750-10 Nov Index of modification work orders
SB 700-20 Mar Army adopted/other items selected for authorization/list of reportable items

Maintenance & Safety-Of-Use Messages

AMCCOM SOU-MSG-05-90—Operational, M739/M739A1 Fuze, PD, AMSMC-DSM-MG, 162230Z Nov 89.

CECOM SOU-MSG-89-11-01—Advisory, Power cable for the TD-1234(P)/TTC remote multiplexer-combiner (RMC) used with mobile subscriber equipment (MSE), AMSEL-SF-SEP 131800Z Nov 89.

CECOM SOU-MSG-89-11-02—Advisory, Maintenance, AN/PMQ-3, AN/PMQ-3A, AN/PMQ-3B, AN/PMQ-3C and AN/PMQ-3D wind measuring sets, AMSEL-SF-SEC 221700Z Nov 89.

MICOM SOU-MSG-90-03—Operational, Multiple Launch Rocket System (MLRS), AMSMI-LC-AM 211530Z Nov 89.

TROSCOM SOU-MSG-25-89—One-time inspection limited, 600 GPH Reverse Osmosis Water Purification Unit (ROWPU), Mechanical Equipment Company (MECO) model, AMSTR-MES 142200Z Nov 89.

TROSCOM SOU-MSG-27-89—Emergency, M85 trailer mounted laundry unit, AMSTR-MES 201630Z Nov 89.

TROSCOM SOU-MSG-29-89—Advisory, Operational, M-80 water heater used on the M-532 single trailer mounted laundry unit, AMSTR-MES 282100Z Nov 89.

TROSCOM Maintenance Advisory MSG-89-46—Portable gasoline heater, trailer mounted, 400K BTUH, AMSTR-MES 021345Z Nov 89.

TROSCOM Maintenance Advisory MSG-89-48—Replacement round-head bolt, to be used on the type V cargo air delivery platform, AMSTR-MES 031500Z Nov 89.

TROSCOM Maintenance Advisory MSG-89-49—Latch assembly adapter of extraction force transfer coupling used on cargo parachute operations, AMSTR-MES 031530Z Nov 89.

TROSCOM Maintenance Advisory, MSG-89-52—Static exciters for the 15/30-KW generator sets, AMSTR-MES 151415Z Nov 89.

TROSCOM Maintenance Advisory, MSG-89-50—Tank and pump unit blocking instructions, AMSTR-MES 151910Z Nov 89.

TROSCOM Maintenance Advisory, MSG-89-53—150 KW gas turbine generator set, bearing pins on the regenerator discs, AMSTR-MES 211905Z Nov 89.

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

SMART Message

SMART MSG #83—Info on protecting excess property.

SMART MSG #84—Info on protecting the connector center pin on the AS-3438/G high gain antenna for AN/MS-64(V) system.

THERE'S
HELP
BY PHONE

HOTLINE TELEPHONE DIRECTORY

IF YOU'VE EXHAUSTED YOURSELF TRYING TO SOLVE EQUIPMENT AND SUPPLY PROBLEMS, CALL THESE HOTLINE NUMBERS FOR HELP!

MAKE SURE FIRST, THAT YOU'VE CHECKED WITH LOCAL MAIT, DS, AND LAO PERSONNEL. THEY'RE YOUR FIRST LINE OF ASSISTANCE.

- Tanks, small arms, missile guidance/control systems for LCSS, ground and air TOW, Dragon, LANCE, Shillelagh (Anniston)
AUTOVON 571-6582
COMM 205-235-6582
- Aircraft engines (Corpus Christi)
AUTOVON 861-2651
COMM 512-939-2651
- Cat 1 EIR (Aircraft) (duty hours
AUTOVON 693-1687) (AVSCOM)
AUTOVON 693-2066
(after duty hours)
COMM 314-263-2066

☎ HOTLINE TELEPHONE DIRECTORY

- Aircraft Vibrex balancing kit (AVSCOM)
AUTOVON 693-1742
COMM 314-263-1742
- M113 FOV (incl Vulcan, Chaparral), M2/M3-series Bradley (Red: River)
AUTOVON 829-3100
COMM 214-838-3147
- Power generation eqpt, wheeled vehicles, brake problems, Redeye, topo eqpt (Tooele)
AUTOVON 790-2129
COMM 801-833-2129
- All howitzers, M578, FAAR, FADAC, ground guidance and shop/test eqpt for I-HAWK, and Nike-Hercules (Letterkenny)
AUTOVON 570-9693
COMM 717-267-9693
- Commo/Electronics (Sacramento)
AUTOVON 839-2839
COMM 916-388-2839
- Commo/Electronics (Tobyhanna)
AUTOVON 795-7900
COMM 717-894-7900
- Commo/Electronics (Ft Monmouth-CECOM)
AUTOVON 992-3266
COMM 201-532-3266
- Computer software (Ft Monmouth-CECOM)
AUTOVON 995-2980
COMM 201-544-2980
- Belvoir R & D Combat Engr Dir (Ft Belvoir)
AUTOVON 354-2654
COMM 703-664-2654
- Fuels/lubes (Ft Belvoir)
AUTOVON 354-4594
COMM 703-664-4594
- Supply distribution eqpt, water/fuel supply systems, marine craft, support eqpt, electric power systems, heaters, air conditioners (Ft Belvoir)
AUTOVON 354-5120
COMM 703-664-5120
- Supply, maintenance policy guidance for AR's 750-1, 710-2 and 735-5; DA Pam 710-4, TB 710-5, TC 43-4 (Log Eval Agency)
AUTOVON 977-6842
COMM 717-770-6842
- Warranty (TACOM)
AUTOVON 786-7537
COMM 313-574-7537

☎ HOTLINE TELEPHONE DIRECTORY

- Defense Construction Supply Center (for ROD's)
AUTOVON 850-3413
COMM 614-238-3413
(For non-NSN requisitions)
AUTOVON 850-2841
COMM 614-238-2841
- Food service eqpt, individual eqpt (clothing), aerial delivery, tentage and shelter (Natick)
AUTOVON 256-5341
COMM 617-651-5341
- CARC (Chemical Agent Resistant Coating) General (AMC)
AUTOVON 284-9436
COMM 202-274-9436
Supply Source (GMPA)
AUTOVON 977-7741/7031
COMM 717-782-7741
- AMCCOM maintenance, supply of managed items, location of nearest LAR, NIPC, NMP
AUTOVON 793-2666
COMM 309-782-2666
- Maintenance Mgt UPDATE publications (USALC)
AUTOVON 687-2849/2390
COMM 804-734-2849/2390
FTS 927-2849/2390
- Substitute NSN's, part number cross reference to NSN, item ID, price questions and AMDF code problems (MIRAC)
AUTOVON 977-7431
COMM 717-770-7431
- AMDF Code Guide (USAMC Catalog Data Activity) (mailing info)
AUTOVON 977-6608/6741
COMM 717-770-6608/6741
- Packaging/storage problems, hazardous materials packaging (AMCPSCC)
AUTOVON 795-7682
COMM 717-894-7682
- SF 364 packaging ROD's
AUTOVON 795-7685
COMM 717-894-7685
- Equipment Historical Records—DA Form 2408-9, etc—missing information (USAMRSA)
AUTOVON 745-3957/4256
COMM 606-293-3957/4256

WHAT'S THE PROBLEM?

I CAN'T FIGURE IT OUT!

I'M HAVING THE SAME PROBLEM. I HAVE A HOTLINE DIRECTORY INSIDE! LET'S CHECK IT OUT!!

- **TMDE (Test Measurement and Diagnostic Eqpt):** Test equip clearing house for technical, logistics know-how (TECH-TALK); any TMDE problem (USACTA)
AUTOVON 745-4104
TOLL FREE 1-800-451-3428
- **GSA-managed items quality complaints (Fed Supply Srv Quality Assurance Div)**
AUTOVON 286-2486
COMM 703-557-1368
FTS 557-1368
- **Armament, Munitions and Chemical Command managed end item supply, maintenance (duty hours only)**
Chemical—AUTOVON 584-3681
COMM 301-671-3681

Nuclear weapons—AUTOVON 880-3619, COMM 201-724-3619

Combat vehicles, artillery—
AUTOVON 793-2185/1525
COMM 309-782-2185/1525

Individual/crew-served weapons—
AUTOVON 793-1695
COMM 309-782-1695

Shop eqpt, tool sets—
AUTOVON 793-2735
COMM 309-782-2735

Training devices—
AUTOVON 793-2779
COMM 309-782-2779

Air defense gun systems—AUTOVON 793-1789, COMM 309-782-1789

Mortars—AUTOVON 793-1525, COMM 309-782-1525

EOD/EOD gear—AUTOVON 793-8055
COMM 309-782-8055

MRSA HOTLINE

- **The USAMC Materiel Readiness Support Activity (MRSA) has a lot of field assistance programs to help you do your job better. They are:**

Tool Improvement Program Suggestion (TIPS)

Reverse Support List Allowance Computation (SLAC)

Consolidated PLL Mandatory Parts List (MPL)

Combat ASL/PLL

Equipment Oriented Publication Data Base (EOPDB)

Army Oil Analysis Program (AOAP)

Peacetime Prescribed Load List/ Authorized Stockage List (PLL/ASL)

End Item Application File (EIAF)

Army Warranty Program

Standard Army Maintenance System (SAMS)

Work Order Logistic File (WOLF)

The Army Maintenance Management System (TAMMS)

Army Vehicle Registration Program

Modification Work Order (MWO) Status

Sample Data Collection (SDC)

Army Readiness Reporting

Force Mod Lessons Learned

National Training Center (NTC) Lessons Learned

AUTOVON 745-3082/3083
COMM (606) 293-3082/3083



You can head off equipment problems by training your eyes to watch gages for changes and tuning your ears to listen for unusual noises.

By looking and listening, you head off such problems as engine overheating and brake air line connections leaking.

UNUSUAL NOISES!

HERE ARE SOME SOUNDS THAT CAN BE IDENTIFIED AS TROUBLE SIGNALS.

**snick
snick**

Electrical short—
loose or
bare wire
arcing.

**Chirp
Chirp**

Loose or worn V-belt
or dry bearing (such
as U-joint bearing).

Fut-f-f-f-f

Overheated or leaking
cooling system hose, spewing
radiator cap.

Squeeeal

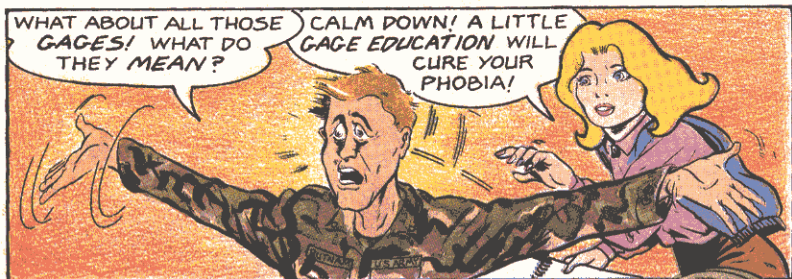
Worn brake shoe
or rivets cutting into drum.

Hssssss

Air leak—
A tire or
something in
the brake air system (split
hose, hose connection).

WHAT ABOUT ALL THOSE GAGES! WHAT DO THEY MEAN?

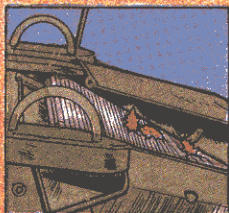
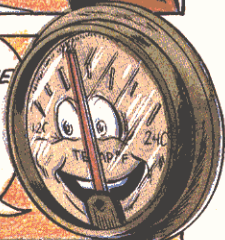
CALM DOWN! A LITTLE GAGE EDUCATION WILL CURE YOUR PHOBIA!



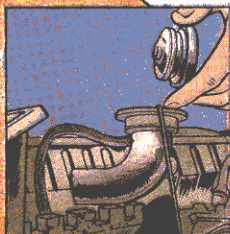
Engine Temperature

Check engine temperature often—especially when it's working hard, like when you're driving in soft dirt, sand or mud or going up steep hills. If the engine overheats, check:

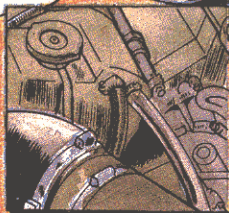
YOU SHOULD CHECK THE ENGINE TEMPERATURE GAGE OFTEN TO MAKE SURE NOTHIN' IS BURNIN' WHEN THE ENGINE IS CHURNIN'!



✓ RADIATOR FOR CLOGS. If clogged with bugs, leaves and other junk, clean.



✓ COOLANT LEVEL. Fill to 1-inch below filler neck

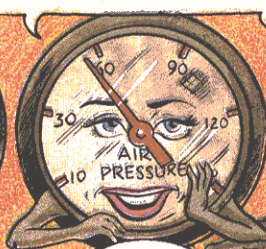


✓ FOR LEAKAGE from hoses and hose connections. If loose, get 'em tightened.

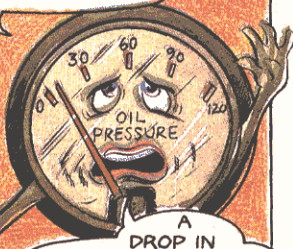
DON'T FORGET TO CHECK US!



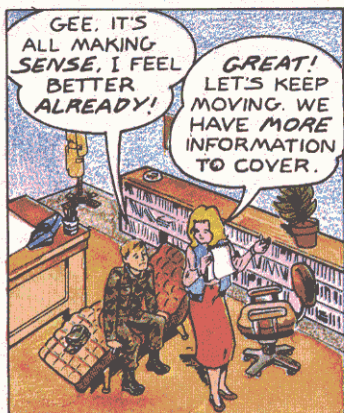
REMEMBER, ONLY GREEN IS GOOD TO GO!



A DROP IN AIR PRESSURE COULD SIGNAL A LEAK IN A BRAKE AIR LINE!

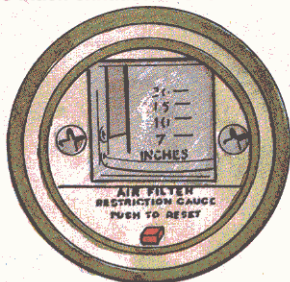


A DROP IN OIL PRESSURE COULD CAUSE SERIOUS DAMAGE. YOU SHOULD CHECK ME EVERY FEW MINUTES!

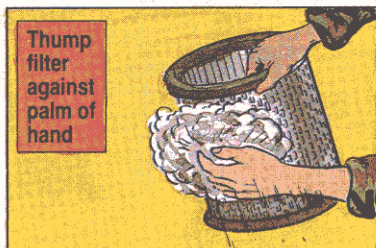


Air Cleaner

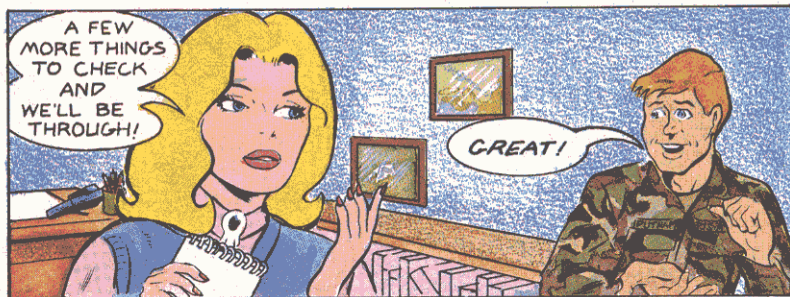
The air cleaner indicator shows if the element is plugged with dirt. Another sign of a plugged air cleaner is black exhaust smoke.

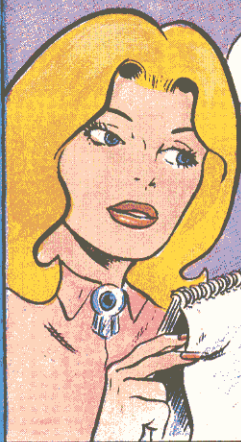


Remove the dust from the element by thumping it against the palm of your hand—not against a tree, rock or the side of your truck. If the dust isn't knocked loose, get the element replaced.

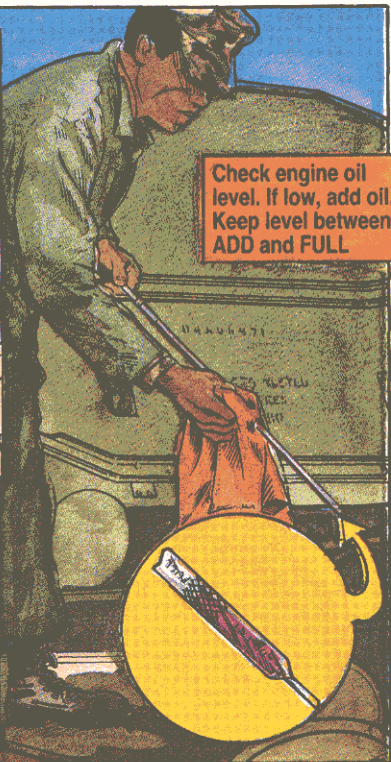
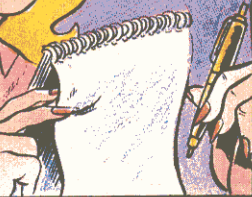


Make sure the element is installed right to prevent dirty air from bypassing it. Keep leaves, snow or anything else from blocking the air cleaner intake.

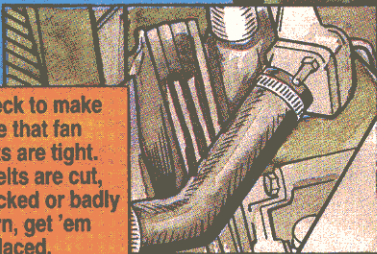




HERE ARE A COUPLE OF **OTHER** THINGS TO KEEP AN EYE ON:



Check engine oil level. If low, add oil. Keep level between **ADD** and **FULL**.



Check to make sure that fan belts are tight. If belts are cut, cracked or badly worn, get 'em replaced.



IT LOOKS AS THOUGH YOU'RE READY TO HEAD BACK TO YOUR UNIT!

THAT'S RIGHT, CONNIE! I'LL **NEVER** BE AFRAID **AGAIN**, NOW THAT I KNOW WHAT TO **LOOK** AND **LISTEN** FOR! **THANKS!**

LOCK AND LOAD



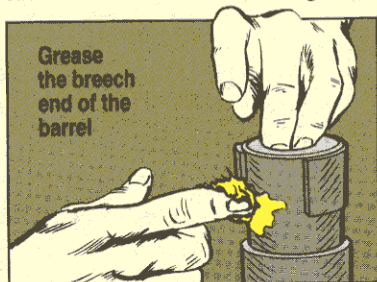
Locking the barrel of an Apache's 30-MM cannon into position sounds simple.

It's not.

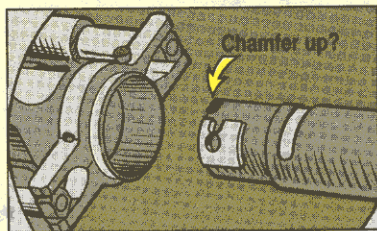
But if you armament mechanics don't make sure it's locked in place, you lose a barrel.

Before you install the barrel, dab a thin layer of grease, NSN 9150-00-223-4004, around the breech end of the barrel and around the flange. That

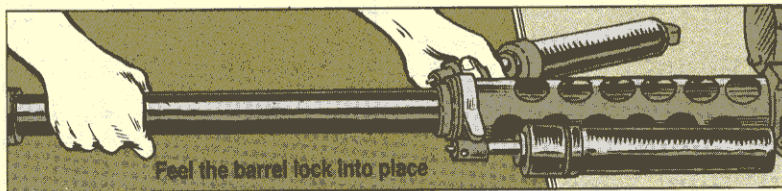
reduces some of the friction between the barrel and the gun and makes it easier to slide the barrel into the gun.



When you slide in the barrel, position it so the chamfer on the breech end faces up.



Grasp the barrel firmly and twist it clockwise until you feel the barrel lock release handle lock into place.



Then try to twist the barrel in each direction. If it's locked, it won't move in either direction. If it turns in either direction, remove the barrel and start over.

BAGS AND TAGS

Dear Editor,

I've found that it's almost impossible to keep hardware and personal items in my pockets when I'm crawling in and out around aircraft. So now I put everything in a 4 x 4 ziplock bag and put the bag in my pocket. If the bag falls out, nothing's lost that could cause FOD.

I've also found that many labels and tags won't stick to oily, dirty or textured surfaces. So I attach the label to a piece of lead-foil tape and then attach the tape to the oily/dirty/textured surface. It works great.

David L. Stanton
APO San Francisco



THANKS FOR SHARING YOUR IDEAS! GET THE 4x4 ZIPLOCK BAGS WITH NSN 8105-00-837-7753 AND A ROLL OF LEAD-FOIL TAPE WITH NSN 7510-00-664-0001.

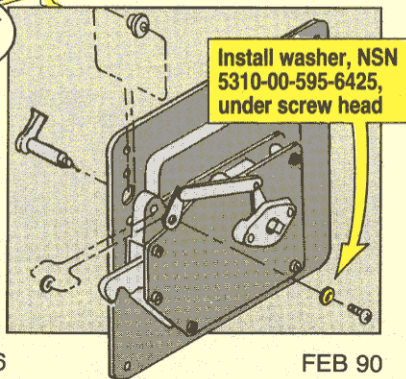
UH-60A Black Hawk...

Cargo/Troop Door Latch Fix



Could be the reason your Black Hawk's cargo/troop door won't close or won't stay open is because the handle won't turn the latch assembly.

If so, install washer, NSN 5310-00-595-6425, under the latch crank screw. Eyeball Fig 2-175 on Page 2-492 of TM 55-1520-237-23-2 for door latch assembly instructions.

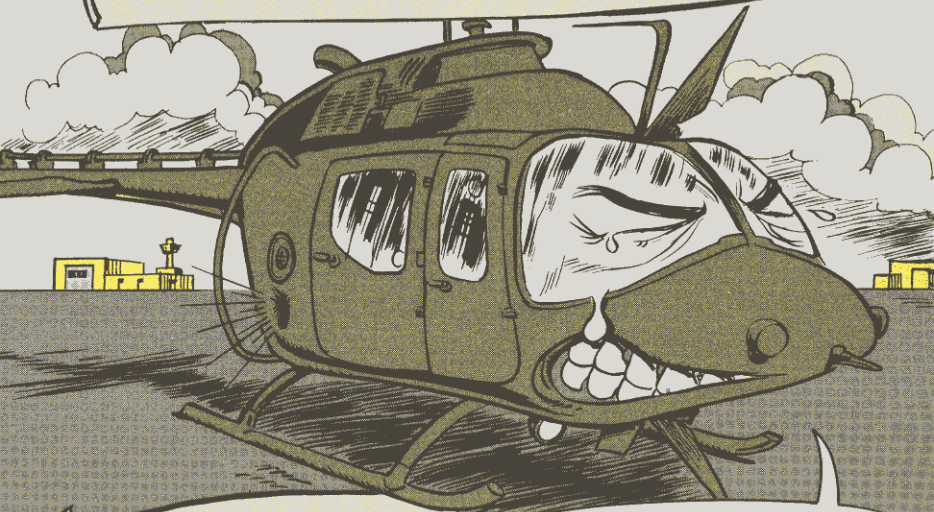


Bumper Pool Breakdown

Dear Windy,

A few years ago, AVSCOM approved a rubber bumper for our Kiowas as protection against the fuel filler cap banging into the honeycomb panel below the fuel port. Our birds are getting banged up pretty bad, but we can't locate the message that has the materials we need. Can you help?

CW3 R.N.



Dear Mr. R.N.,

You betcha! Project SMART Msg 64 approved the fix and listed the materials you need. Here they are:

Item	NSN
Rubber sheet, 1/8-in	9320-00-059-6504
Rubber strip	9320-00-122-5447
Adhesive	8040-00-165-8614
Sealant, Proseal or	8030-00-685-0915 8030-00-735-5006
Cleaner	6810-00-281-2785

WHEN THAT CAP FALLS,
WOW! DOES THAT SMART!

But you won't need a rubber bumper if you make sure the cap is locked tight during preflight inspections and if you caution your POL folks to lower the cap slowly instead of letting it fall free when they remove it from the fuel receptacle.

Windy

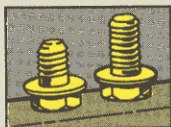
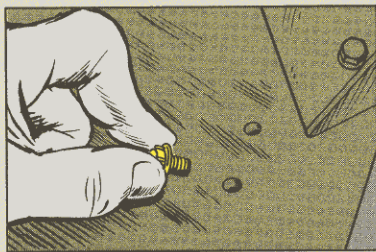
UH-1...

FRAGILE! HANDLE WITH CARE

The armor plating on your Huey's crew seats is pretty tough stuff, but it's not indestructible.

Fact is, one little bolt—if it's not the right length—can crack the ceramic-like armor plating on the co-pilot's seat back.

Self-locking bolt, NSN 5306-00-932-5198, connects the co-pilot's armor seat back to the seat frame. It's only $\frac{5}{16}$ -in long. The $\frac{1}{2}$ -in long bolts from the same seat just won't work. They'll crack the plating.



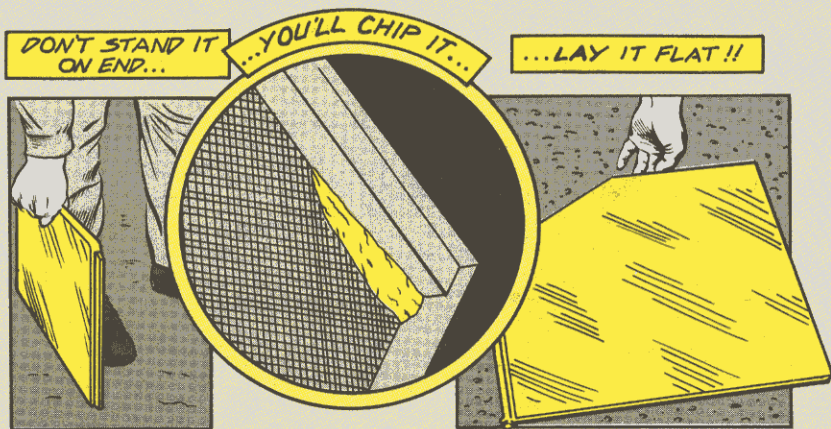
So always keep the shorter bolts separate from the longer bolts when you remove the co-pilot's seat frame from the armor seat shell.

If the screws get mixed up, measure 'em before you reinstall 'em.

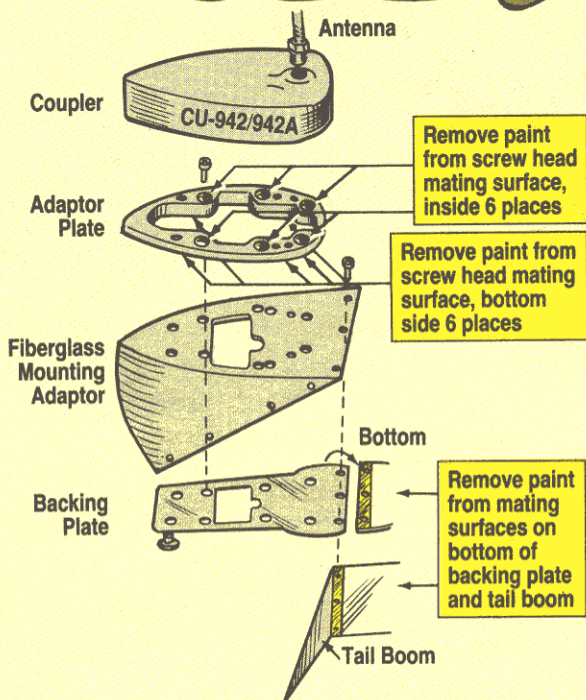
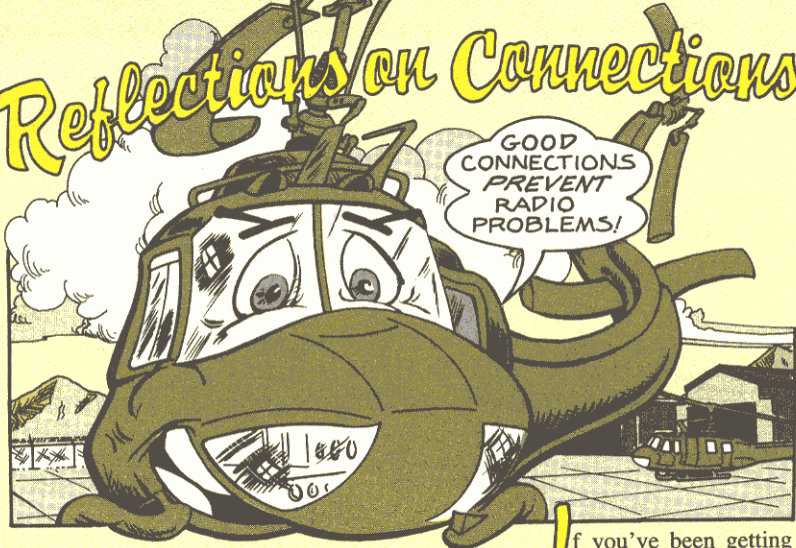
Here's another no-no that happens if you get careless or in too big a hurry when you remove the armor plating. If you set it down hard on end—OUCH! Another chip or crack.

You have to handle the plating very carefully. Lay it down flat on a soft surface—like a mattress—when possible. If you can't find some kind of matting, lay the plating down flat on the floor.

And never stack other components on top of it. If you do, you're bound to damage the plating.



Reflections on Connections



If you've been getting a high voltage standing wave ratio (VSWR) from your No. 1 FM antenna system, it could be due to a grounding problem.

Since the antenna and coupler are mounted on a fiberglass adaptor, you have to make sure your connections are good. Otherwise, too much voltage is reflected back into the FM radio and the result is a high VSWR.

The way to prevent that is to sand all mating surfaces of the adaptor plate and backing plate to bare metal. Then coat the exposed metal with corrosion resistant compound, NSN 8030-00-142-9272, to help prevent corrosion.

SAMPLING INTERVALS



NOW, LET'S SEE...

DEAR Windy,
 If your oil lab requests a special sample from your bird, do you reschedule all other sample dates from the date you take the special sample?
 SSA D.A.

Dear Sergeant D.A.,
 No. A request for one extra oil or grease sample does not alter your bird's sampling schedule. But if your lab tells you to submit samples more often than required by Appendix A of TB 43-0106, set up a new sampling schedule with the lab's prescribed shorter intervals.

Windy

IT'S MY ANSWER FROM WINDY, GREAT!



Know When to Say When

Dear Windy,
 When your local oil lab requests a drain and flush on an aircraft component, what should the entry be on our DA form 2408-13?
 J.P.

THE CORRECT ENTRY IS A RED DIAGONAL (/) UNLESS THE LAB PROVIDES SPECIFIC INSTRUCTIONS NOT TO FLY THE AIRCRAFT. IN THAT CASE THE CORRECT ENTRY WOULD BE A RED X.

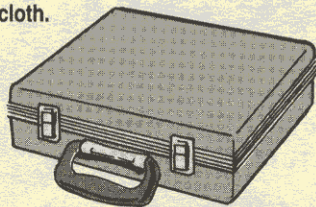


1. DATE		2. MODEL	
15 FEB 90		UH-1H	
STATUS TODAY			
AIRCRAFT		ELEC. TRONIC	ARMA-MENT
1	4		
2	5		
3	6		
FUEL (Gals)			

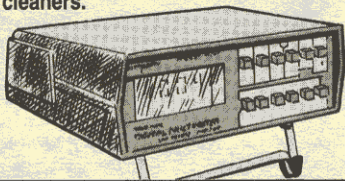
Keep a Clean Machine

Dirt and grime and grease and oil will knock out your multimeter in a heartbeat if they get the chance.

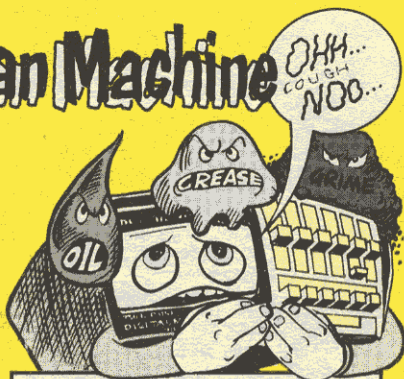
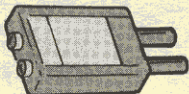
CARRYING CASE—Remove all components from the case and brush or vacuum it on the inside. Wipe the outside with a clean, damp cloth.



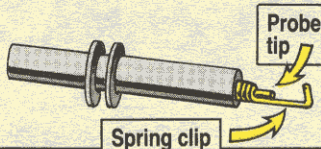
DISPLAY WINDOW—Use only lens tissue paper, NSN 6640-00-240-5851, to clean the display window. Clean the rest of the outside surface with a clean cloth moistened with soap and water. Never use abrasive materials, dirty cloths or harsh cleaners.



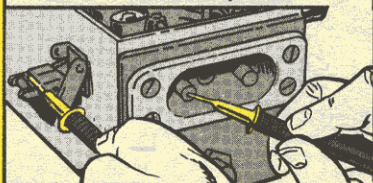
CURRENT SHUNT—Wipe it with a clean cloth moistened with soap and water. Let it air dry.



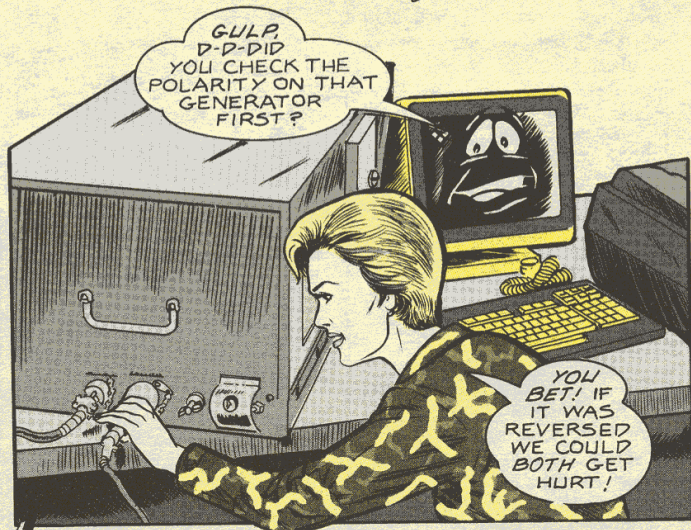
HIGH VOLTAGE PROBE—Pull the spring clip from the probe tip with a clockwise twisting motion. Then clean the metal probe tip and spring clip with solvent, NSN 6850-00-105-3084. (Be sure there's adequate ventilation any time you use a solvent.) Clean the probe body with a soft cloth dampened with soap and water. Wipe with a cloth moistened with clean water and let it air dry.



TEST LEADS AND ALLIGATOR CLIPS—Clean the clips and test lead tips with solvent. Clean the boots and test leads with soap and water. Rinse with a cloth dampened with clean water and air dry.



Make Generator

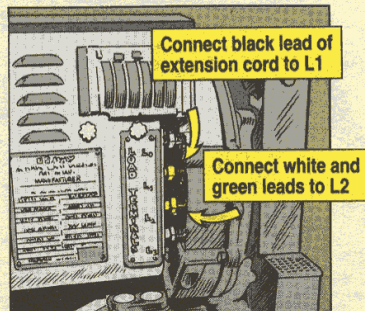


If the polarity is reversed in your MEP106 3-KW generator set's convenience receptacle, you and your TACCS (Tactical Army Combat Computer System) can get hurt. You can get an electrical shock and the TACCS power supply can be damaged.

Block the zappin' before you hook up your computer by running a polarity test on the generator power with a tester, NSN 6625-01-012-1452, like it says in USATSG Msg AMXTM-OI 051500Z Aug 88.

If the polarity is reversed, get an extension cord, NSN 6150-00-682-3460, and make a generator hookup to bypass the convenience receptacle.

Fix the cord like this:
 ✂ Cut off the male plug.
 ✂ Strip away about one foot of the outer sheathing.



Power Safe

✂ Strip two inches of insulation off each wire. It's a good idea to tin the ends of each wire with solder to reduce fraying.

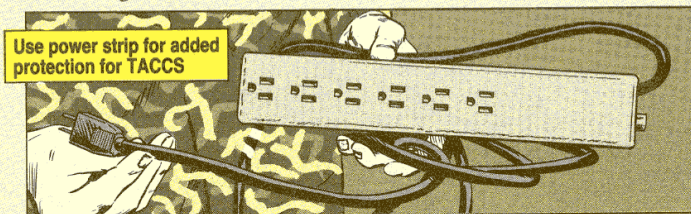
✂ Connect the white and green wires to the generator's grounded L2 terminal lug.

✂ Connect the black wire to the L1 terminal lug.

Then, run a polarity test again to be sure it's right.

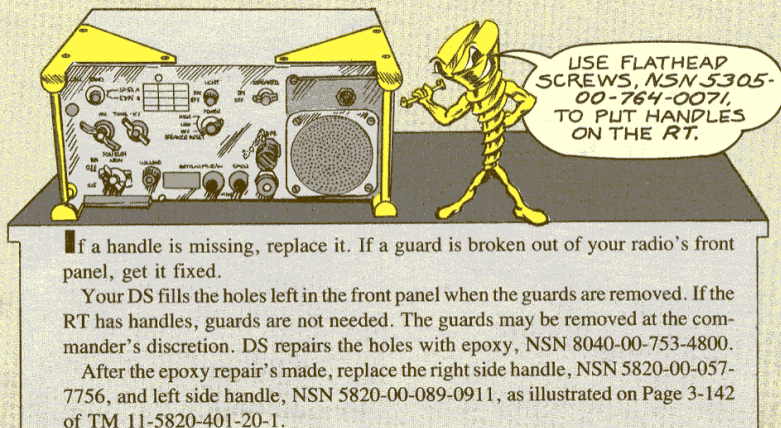
Give your TACCS added protection by using a multi-outlet power strip. Order it on a DD 1348-6, using CAGE 81774 PN 20362, with RIC S9G.

This strip can be used with either commercial or generator power.



RT-524 Receiver-Transmitter ...

Handle Replacement



If a handle is missing, replace it. If a guard is broken out of your radio's front panel, get it fixed.

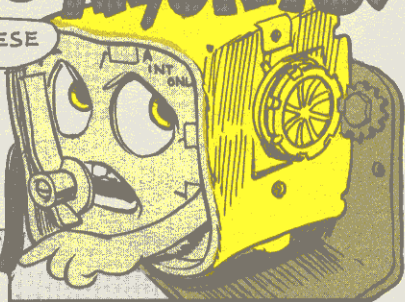
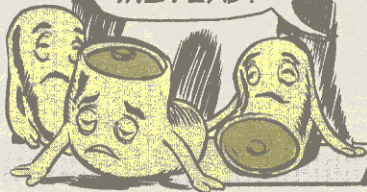
Your DS fills the holes left in the front panel when the guards are removed. If the RT has handles, guards are not needed. The guards may be removed at the commander's discretion. DS repairs the holes with epoxy, NSN 8040-00-753-4800.

After the epoxy repair's made, replace the right side handle, NSN 5820-00-057-7756, and left side handle, NSN 5820-00-089-0911, as illustrated on Page 3-142 of TM 11-5820-401-20-1.

Intercom Hookup...

Substitute for AN/GRA-39

ARE YOU USING TOO MANY OF THESE IN YOUR GRA-39? USE ME INSTEAD!



If remote operations use up BA-3030 batteries too fast in your AN/GRA-39 radio control set, you may want to bypass the GRA-39 hookup.

There's another way to remote operate the radios in an M577 command post carrier from an associated Tactical Operations Center (TOC).

Here's what you need:

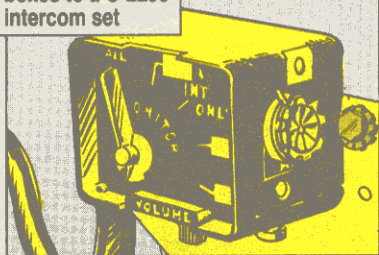
Item	NSN	Qty
C-2298 Intercom control set	5830-00-892-3339	3
CX-4723 cable assembly—		
20-ft	5995-00-889-0757	1
8-ft	5995-00-823-2835	1
3-ft	5995-00-823-2831	1



Here's how to make the hookup:

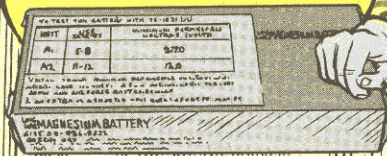
- 1 Install one C-2298 on the Operation Sergeant's desk and the others on the table of the Officer in Charge (OIC).
- 2 Connect the 8-ft cable to the J504 connector on the AM-1780 audio frequency amplifier. Run the cable to the C-2298 on the Operations Sergeant's desk.
- 3 Next, connect a 20-ft CX-4723 to this C-2298. Hook the other end of the cable to a C-2298 on the OIC's table. This is in the TOC extension.
- 4 Then, to complete the hookup, connect the 2-ft cable to the other C-2298 on the OIC's table.

Hook up control boxes to a C-2298 intercom set



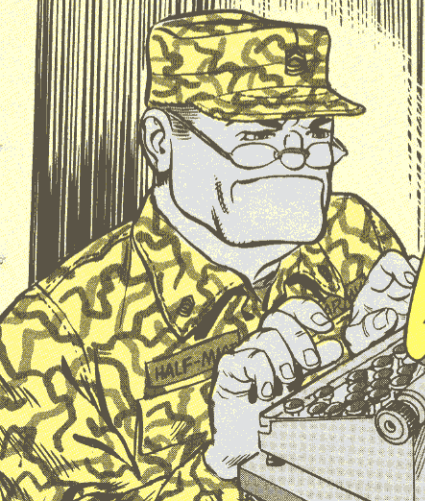
Lithium Battery is Taboo

Dear Half-Mast,
 My AN/PRC-25 radio set's
 RT-505 receiver-transmitter
 won't transmit when I use a
 BA-5598 lithium battery.
 However, when I use a
 BA-4386 magnesium battery,
 everything's OK. Is something
 wrong with my RT or should
 circuitry be changed before
 using the lithium battery?
 SSG L.Y.



**Use magnesium battery
 in AN/PRC-25 radio...**

... not lithium battery



Dear Sergeant L.Y.,
 Nothing's wrong with your
 RT-505. It's the lithium battery,
 which causes the voltage to drop
 too low to operate the radio. This
 RT has a tube which needs more
 power. Stick with the BA-4386
 magnesium battery.
 It's OK to use the BA-5598 with
 an AN/PRC-77 radio set. This
 radio's RT-841 doesn't have a tube.
 Half-Mast

Splice Tool...

U1R FIXES FIELD WIRE



The splice of life can make the difference between a dead circuit and a live wire, when a U1R splice is used to hold the wire together.

The U1R, NSN 5940-00-935-8262, is self-sealing, quick to install and easy to use.

After you have cut off the damaged or broken WD-1 or WF-16 field wire, tie the two ends of the wire with a single sheet bend knot.

Leave 6 inches of insulated wire on each end to take the splice. The knot makes the wire take the pressure on the line and off the splice.

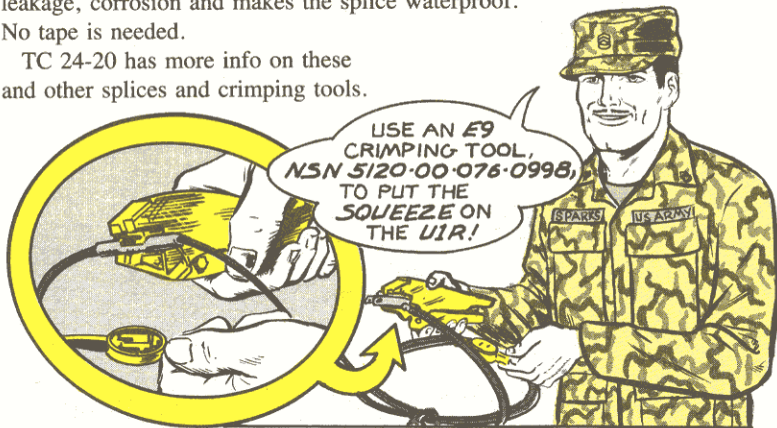
Use an E9 crimping tool, NSN 5120-00-076-0998, to put the squeeze on the U1R.

Be sure to center the U1R in the crimper's jaws. This will let the metal teeth inside the splice bite through the insulation and get a firm grip on the wire.

Leave the insulating grease alone inside the splice. It guards against electrical leakage, corrosion and makes the splice waterproof.

No tape is needed.

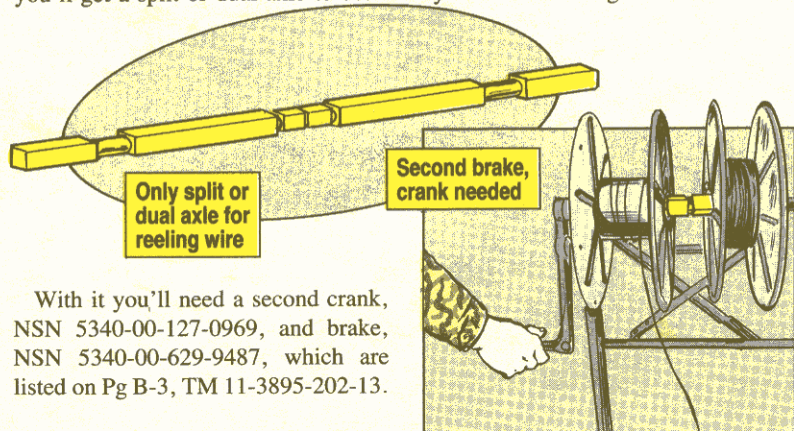
TC 24-20 has more info on these and other splices and crimping tools.



RL-31 Reel...

Double Cranks and Brakes

When you need to replace the axle, NSN 3895-00-301-5885, on your RL-31, you'll get a split or dual axle to use with your mounted single or double reel.



With it you'll need a second crank, NSN 5340-00-127-0969, and brake, NSN 5340-00-629-9487, which are listed on Pg B-3, TM 11-3895-202-13.

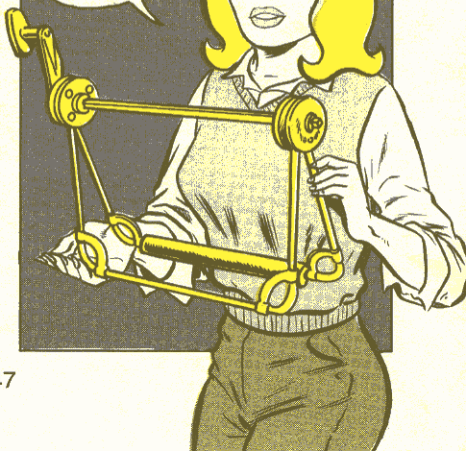
RL-39 Reel...

Parts Patter

Item	NSN
Crank	5340-00-127-0999
Handle w/o crank	3895-01-135-2538
Bearing	3895-01-133-9995
Housing	3895-01-133-9996
Plate	3895-01-134-7147
Stop	3895-01-134-0308
Housing Assembly w/bearing	5805-01-151-9929
Plate Assembly w/stop	3895-01-151-9928
C-ring	5365-00-803-7306
Cotter Pin	5315-00-842-3044

Straps are on Page 5 of TM 11-3895-203-24P.

IF YOU'RE LOOKING FOR PARTS FOR YOUR CE-11 REEL EQUIPMENT'S WIRE HANDLING REEL, TAKE A LOOK RIGHT HERE!

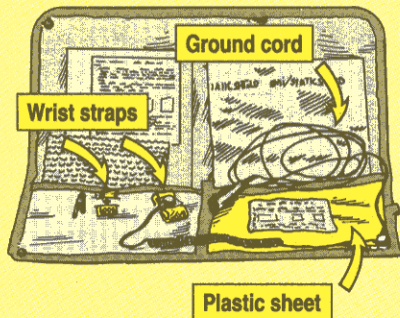


PCB vs ESD



If printed circuit boards or cards had to go it alone in a tussle with electrostatic discharge, they'd come out second. 'Cause ESD would chew 'em up and spit 'em out with the first touch.

But PCB's or PCC's, like those in an SB-3614 switchboard, have help that'll fizzle ESD's sizzle. That help is spelled K-I-T-S.

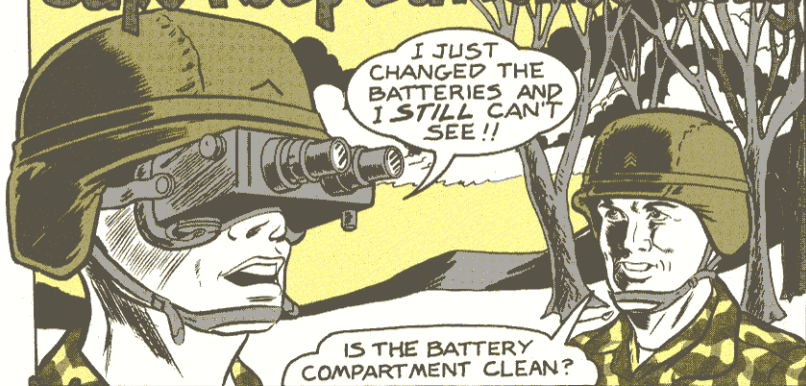


Any time you have to handle PCB's at your electronic repair facility work station, you will need an ESD grounding protection kit:

Item	NSN
Service grounding kit	6626-01-168-2044
Consisting of:	
Wrist strap, lg	4240-01-165-8865
Wrist strap, sm	4240-01-165-8866
Ground cord, 15-ft	None
Plastic sheet, 10-mil, conductive, 24-in by 24-in work surface, with two storage pouches	None

Use Appendix A of the CTA as your authority for ordering.

Caps Keep Batteries Snug



Whether it's AN/PVS-5 night vision goggles or AN/PVS-4, AN/TVS-5 individual weapons sight, you need good batteries in place and snug to see what you're looking at.

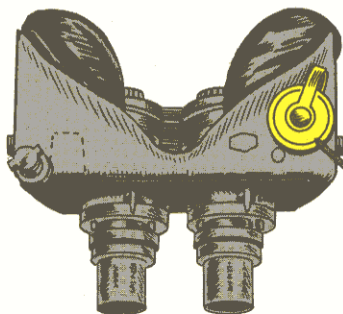
When you install or replace batteries, make sure the battery compartment is clean. If there's corrosion, wipe it out with a clean, dry cloth.

Also, tighten the covers. If a cap or gasket is missing, replace it.

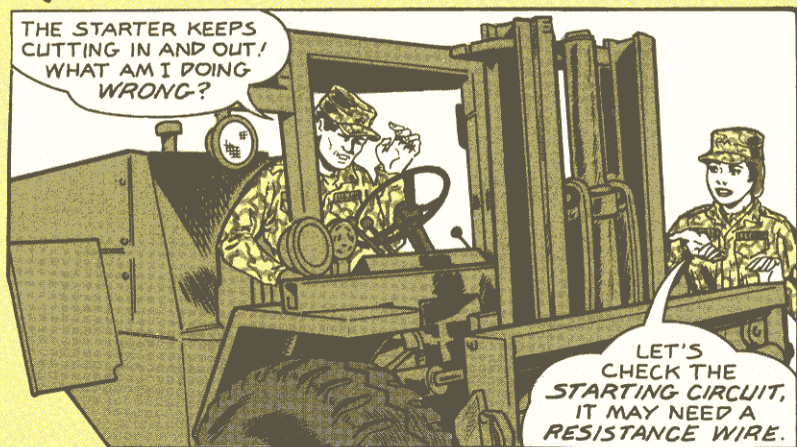
On the PVS-5, get the cap on the bottom of the goggles with NSN 5855-00-125-0398 and the gasket with NSN 5330-00-625-3876.

For the AN/PVS-5C goggle's two type-AA battery compartments, get the cap by PN 300528-1 and the gasket by PN 300529-1. Order on a DD Form 1348-6 using CAGE 66868. The RIC is B16.

For the PVS-4 or TVS-5 sight, use NSN 6135-01-039-2905 for the battery cap and NSN 5330-01-043-5819 for the gasket.



Starter Engagement Revisited



Some M4K forklifts have a problem with the starter cutting in and out during starts.

If your forklift starter circuit checks out using the info on Page 52 of PS 433, it needs a resistance wire spliced in the starter motor circuit.

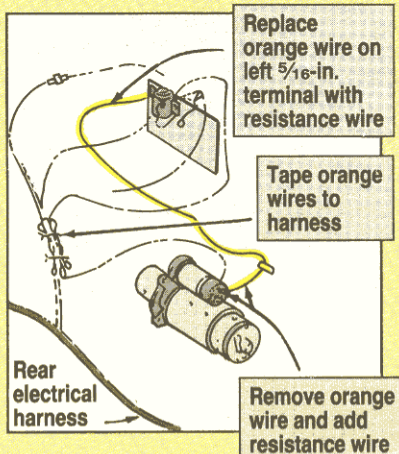
Order the wire with CAGE 10988, PN L118165, on a DD Form 1348-6 from RIC S9C.

When you get the wire, disconnect the orange wire, circuit #932, from the starter relay and the S terminal on the starter solenoid.

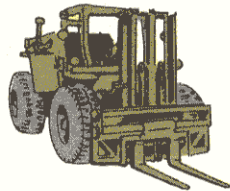
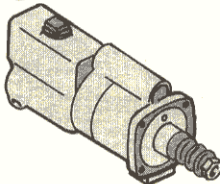
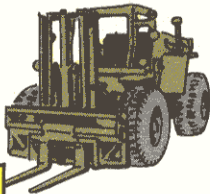
Fold the wire back against the rear wiring harness and tape the orange wire to the wiring harness.

Fasten one end of the resistance wire to the $\frac{5}{16}$ -in threaded terminal on the left side of the starter relay. The other end goes to the S terminal on the starter solenoid.

If your M4K still has problems with the wire installed, fire off a Quality Deficiency Report on an SF 368, detailing the problem you're having. Call your TACOM Logistic Assistance Representative for help, too.



Master Cylinder Snafu



Would you believe that supply got a hydraulic brake lock mixed up with a master cylinder? For the M4K forklift, it did.

When you order NSN 2530-01-222-5523, you may get a brake lock instead of a master cylinder. To get a master cylinder, order on a DD Form 1348-6 using the NSN.

RE-REQUIRED DELIVERY DATE	ADVICE CODE	BLANK
2 63 64	65 66 67 68 69	
	2B	

Put 2B in card columns 65 and 66

Write in the Remarks Block

10. REMARKS

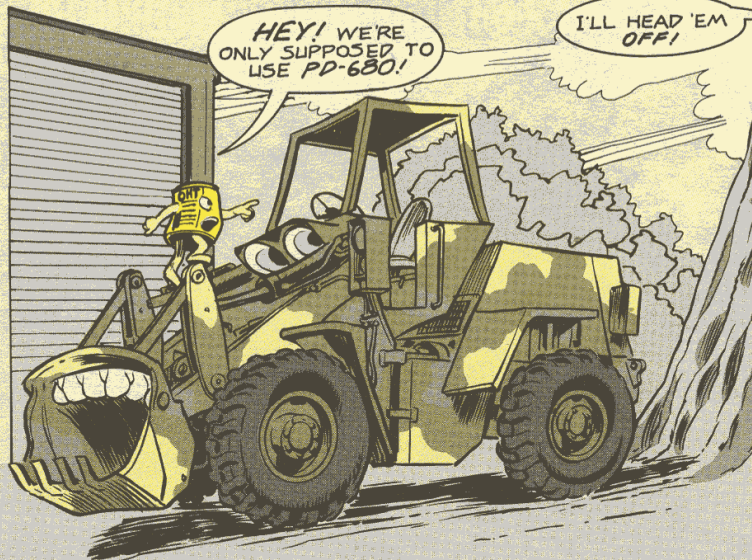
DO NOT FILL WITH
CONTRACT
DLA 700-89-P-5119

DD FORM 1 APR 77 1348-6



IT WILL TAKE LONGER FOR THE PAPERWORK TO GO THROUGH, BUT YOU'LL GET THE PART YOU WANT.

Hydraulic Systems



HEY! WE'RE ONLY SUPPOSED TO USE PD-680!

I'LL HEAD 'EM OFF!

for systems with small reservoirs, or for topping off reservoirs between changes.

You can also get a one-pint spray can of OHT with NSN 9150-00-159-4472. It's handy for lubricating seals as you reassemble hydraulic components. Use it on the exposed struts of aircraft shocks. The OHT will prevent rust.

It's a good idea to wear gloves when handling hydraulic fluid, and to avoid inhaling or swallowing any fluid. And don't reuse the empty cans.

Fuel...

Fuel Indicating Paste

I'M LOW ON INDICATING PASTE!

HALF-MAST SENT THE NSN...

Dear Half-Mast,
How can we get the fuel indicating paste to check fuel quantity in our fuel tanks. You smear it on a rod or stick and insert it into the tank. When the paste comes in contact with gasoline or diesel, it turns from green to reddish/orange. You can easily see how much fuel you have in the tank.

CW2 C. R. G.

Dear Mr. C. R. G.,
You can get the gasoline indicating paste with NSN 6850-00-270-5526. It also works for diesel and JP-8.

Half-Mast



A spray can is handy for lubing seals

POL HOTLINE

If you have questions on hydraulic fluid or other POL products, call the POL HOTLINE at AUTOVON 354-4325, Commercial (703) 664-4325.

New, Smaller Cans

You can now get OHT hydraulic fluid in one pint cans using NSN 9150-01-290-2943. This is just the right size

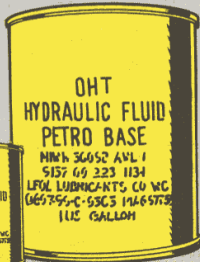
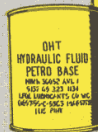
Your hydraulic systems pack a lot of power, but they need some TLC to work their best. Here are some things to keep in mind.

Cleaning fluids

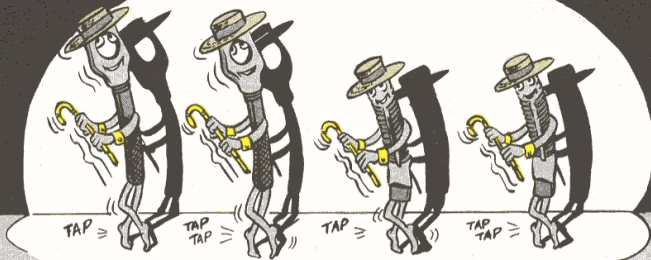
Use only P-D-680 drycleaning fluid to clean hydraulic components. Other cleaning fluids, such as isopropyl alcohol, leave a sticky mess.

Chlorinated solvents, like Freon and 1,1,1 trichloroethane, should never be used, either. Any solvent left in the system makes for a big corrosion problem.

Get a pint can if you just need a little



TAP INTO A COMPLETE SET!



With metric fasteners showing up on a lot of new equipment, you need a complete metric tap and die set handy to fix damaged threads.

There's a metric set, NSN 5136-01-119-0005, in the No. 2 Common shop set. There's a listing in SC 4910-95-CL-A72, but there are a few taps and dies missing from the list.

Here's a complete list of the taps and dies, keying them to the manufacturer's part numbers that are stamped on the taps and dies.

Thread size	Taps PN	NSN 5136-	Dies PN	NSN 5136-
3-0.50 mm	T305M	01-294-3896*	D305M	none*
4-0.50 mm	T407M	01-045-8592	D407MA	01-046-4954
4-0.75 mm	T4075M	01-045-8593	D4075M	01-046-4956
5-0.80 mm	T508M	01-045-8594	D508MA	01-045-8577
5-0.90 mm	T509M	01-045-8595	D509M	01-045-8578
6-1.00 mm	T610M	01-045-8596	D610MA	01-045-8579
7-1.00 mm	T710M	01-045-8597	D710M	01-045-8580
8-1.00 mm	T810M	01-045-8598	D810M	01-045-8581
8-1.20 mm	T812M	01-045-8599	D812M	01-045-8582
9-1.00 mm	T910M	01-045-8600	D910M	01-045-8583
9-1.20 mm	T912M	01-045-8601	D912M	01-045-8584
10-1.20 mm	T1012M	01-045-8602	D1012M	01-045-8585
10-1.50 mm	T1015M	01-045-8603	D1015M	01-045-8586

*The NSN for the 3-0.50 mm tap is not on the AMDF. Order it using the NSN on a DD Form 1348-6 from RIC G O. There's no NSN for that size die, so order using CAGE 55719 and PN D305M on a 1348-6, too.

Thread size	Taps PN	NSN 5136-	Dies PN	NSN 5136-
11-1.50 mm	T1115MA	01-045-8604	D1115M	01-045-8587
12-1.20 mm	T1212M	01-045-8605	D1212M	01-045-8588
12-1.50 mm	T1215M	01-045-8606	D1215M	01-045-8589
12-1.70 mm	T1217M	01-045-8607	D1217M	01-045-8590
14-1.20 mm	T1412M	01-118-4055	DR1412M	01-117-0463
14-1.50 mm	T1415M	01-113-1566	DR1415M	01-113-8071
14-2.00 mm	T1420M	01-113-1567	DR1420M	01-120-0612
16-1.50 mm	T1615M	01-113-1568	DR1615M	01-113-4346
16-2.00 mm	T1620M	01-113-1569	DR1620M	01-115-1143
18-2.50 mm	T1825M	01-114-1522	DR1825M	01-113-9580
20-2.50 mm	T2025M	01-119-2515	DR2025M	01-113-4348
22-1.50 mm	T2215M	01-113-1571	DR2215M	01-119-0008
24-2.00 mm	T2420M	01-113-1572	DR2420M	01-113-4349
24-3.00 mm	T2430M	01-116-7830	DR2430M	01-113-8070
Die Stocks		Tap Wrenches		
01-028-5221	TD3	01-109-4788	TD4	
01-028-5222	TD10	01-028-7078	TD50	
01-116-1650	TD35	00-277-4064	TD88	
01-115-4739	TD40	00-277-4065	TD98A	

OIL FILTER STRAP WRENCH NEEDED

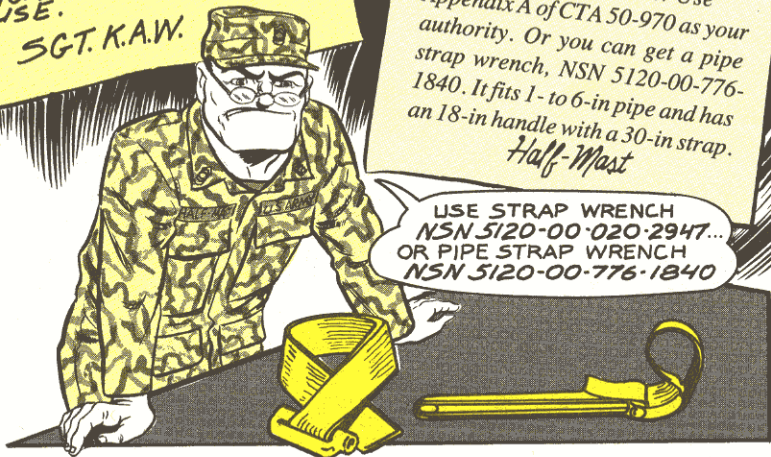
DEAR HALF-MAST,
I'M ALWAYS NEEDING A
WRENCH FOR DIFFERENT
SIZE FUEL, HYDRAULIC
AND OIL FILTERS.
THERE'S NOTHING IN
MY TOOL BOX OR THE
NO. 1 COMMON I CAN
USE.

SGT. K.A.W.

Dear Sergeant K. A. W.,
Use strap wrench, NSN
5120-00-020-2947. It'll fit 1- to
6-in diameter filters. You use a 3/8-
or 1/2-in square drive handle or
ratchet with the wrench. Use
Appendix A of CTA 50-970 as your
authority. Or you can get a pipe
strap wrench, NSN 5120-00-776-
1840. It fits 1- to 6-in pipe and has
an 18-in handle with a 30-in strap.

Half Mast

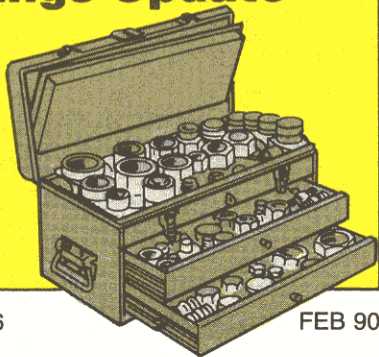
USE STRAP WRENCH
NSN 5120-00-020-2947...
OR PIPE STRAP WRENCH
NSN 5120-00-776-1840



HSTRU Fittings Update

TM's 9-4940-468-14 and -24P do not have the latest numbers to get replacement fittings for the troubleshooting adapter kit in the hydraulic system test and repair unit.

Instead, use SC 4940-95-CL-BO7 to order the NSN's you need. The troubleshooting adapter kit begins with the last frame of the first fiche.



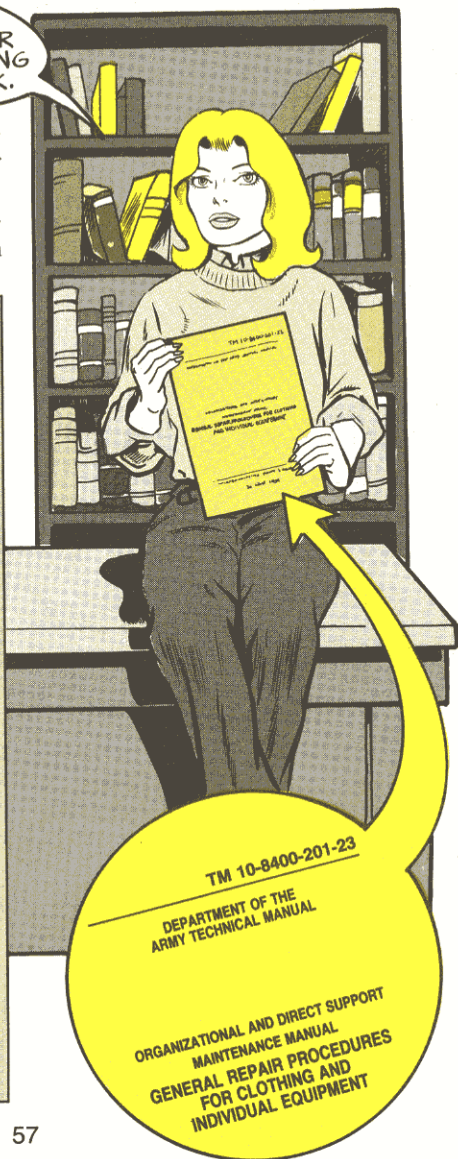
Make Repairs by the Book

WHEN IT COMES TO MAKING REPAIRS TO CLOTHING OR OTHER INDIVIDUAL EQUIPMENT, NOTHING BEATS GOING BY THE BOOK.

The book in this case is TM 10-8400-201-23, General Repair Procedures for Clothing and Individual Equipment.

In it you'll find the word on inspecting and repairing all types of uniform clothing, as well as:

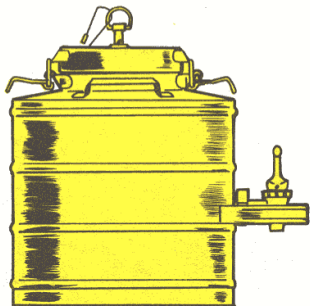
- sleeping bags
- body armor vests
- combat vehicle crewman's helmet, DH-132
- load carrying equipment, rucksacks and pack boards
- aviation and combat vehicle crewmen's Nomex clothing
- cold weather clothing, liners and boots
- food handler's clothing
- caps of all kinds
- all kinds of coats
- barracks and duffel bags
- steel helmets and liners and Kevlar helmets
- protective clothing for rocket fuel and other hazardous materials
- grenade carrying vests
- skis, snowshoes and accessories
- ice and mountain climbing equipment
- parachutist's pack, weapons harness assembly and weapons case
- combat chemical protective clothing
- women's uniform clothing



Bits and Pieces

Repair parts for vacuum jugs are not listed in any TM. The jugs are made by different manufacturers.

If you have a Suparchef jug made by the American Production Co., repair parts fit 2-, 3-, 5-, and 10-gal jugs. Order the parts on DD Form 1348-6 from GSA. Use CAGE 02707 and these part numbers:

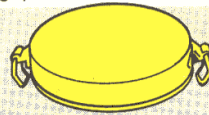


Item	Part Number
Vacuum seal with O-ring and strap	700
O-ring	701
Lid with clamps	615
Lid gasket	503

Item	Part Number
Stainless steel faucet assembly which consists of:	504
Handle	13SLBE
Handle Pin	8-S-3
Nylon bonnet (metal threads)	2-5SMB
Steel spring	7SJT
Chromed brass stem	4-S
Seat cup	510
Gasket	509
Plastic faucet assembly which consists of:	505
Handle	13SLBE-1
Bonnet	2-5SSB-3
Spring	7SJT-L
Slotted stem	4SC-1
Seat cup	510
Gasket	509

If you have jugs made by the Vacuum Can Co, here're the repair parts you need.

Item	NSN
Faucet assembly	4510-00-961-7571
Faucet bonnet	7330-00-051-1493
Faucet stem	7330-00-051-1494
Faucet spring	*7330-00-051-1492
Faucet washer	*7330-00-051-1497
Faucet tube	7330-00-051-1499
Faucet handle pin	7330-00-051-1496
Handle	7330-00-965-4685
Air vent closure	*7330-00-051-1501
Seat cup	7330-00-051-1495
Cover (3- & 5-gal)	7330-00-051-1498
Cover (10-gal)	7330-01-071-7680
Cover gasket (3- & 5-gal)	7330-00-051-1502
Cover gasket (10-gal)	7330-01-071-7679



*Local purchase item.





M16A1 Grips Gone

There are no more M16A1 rifle grips, NSN 1005-00-056-2250. Order M16A2 grips, NSN 1005-01-148-4805, for the M16A1.

Dangerous Dragons

You may have a bum Dragon firing mechanism that will let the missile fire without the safety plunger being released. Look at all Dragons for RANAD stamped next to the part number on the side of the firing mechanism housing. No RANAD? Turn in the Dragon to support. Safety of Use Msg AMC AMCSF-E 89-09 has the word.

5-Ton's Data Plate Wrong

The data plate on M931A1, M932A1 and M929A1 5-ton trucks lists the wrong tire pressure for highway driving. Data plate, NSN 9905-01-210-0217, says inflate tires to 55 PSI/380 KPA. That's too low. The correct highway pressure is 80 PSI/551 KPA.

2 1/2-Ton Tach Shaft Pin NSN

If tachometer adapter, NSN 6620-00-995-1811, made by Stewart Warner Corp under Contract DLA 700-87C-0951, comes without the drive pin, order NSN 3040-01-151-2746, to make it work.

Semitrailer TM Correction

Tire pressure in TM 9-2330-238-14&P is wrong for the M295A1, M313, M447, M447C, M749 and M750 6-ton semitrailer. Para 3-18b(6) should read 48 PSI for highway and 40 PSI for cross-country. The 32 PSI for driving in soft sand is not changed.

5-Ton Wrecker LO Change

The LO's for the M543, M816 and M936 5-ton wreckers are wrong where they tell you to use 3.0 or 3.3 pints of oil in the rear winch. It takes 7 pints of oil to keep the rear winch working.

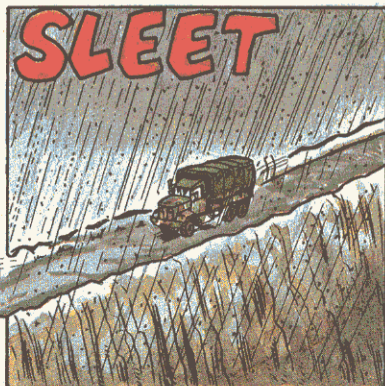
Check M1A1 Bore Evacuators

Heads up, M1A1 tankers. Before firing, make sure the cannon's bore evacuator is serviceable. Eyeball the maintenance instructions on Pages 3-180 and 3-181 of TM 9-2350-264-10-3, especially the word on packings. Make sure packings are in place and not damaged or missing. DO NOT fire if they need replacement. Your mechanic will install new packings, NSN 5330-01-280-6787. More new info: These packings must be replaced during the semiannual service. See AMCCOM Maintenance Advisory, AMSMC-MAW-VA 142215Z Dec 89.

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

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

BAD WEATHER = REDUCED VISIBILITY



1. Clean Windows
2. Go Slow
3. Tap-Tap Brakes
4. Be Alert
5. Increase Following Distance