

 
 EQUIPMENT
 AUTOVON
 COMMERCIAL

 Chemical Nuclear weapons Combat vehicles & artillery Individual & crew-served weapons Shop equipment, tool sets & training devices Air defense gun systems Mortars
 584-3681 880-3619 793-2366/1525
 301-671-3681 201-724-3619 309-782-2366/1525

 793-2366/1525
 309-782-2366/1525

 309-782-1921
 309-782-1921

 309-782-2735/2779 309-782-1789 309-782-1176

These are duty-hours-only numbers. Before you call, check out local sources of help, including your DS unit, MAIT/LAIT and Logistic Assistance Representatives.



FIREPOWER

THERE ARE SOME PROBLEMS YOU JUST CAN'T SOLVE

ON YOUR

OWN.

## THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-435, The Preventive Maintenance Menthly, is an official publication of the Department of the Army, prov/sing information or 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:

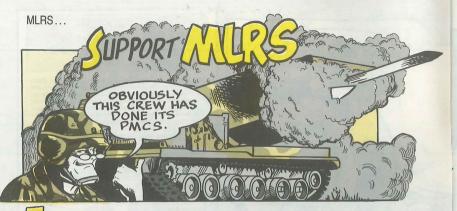
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The difference between an MLRS that sends a hail of rockets at the enemy and one that can't manage a drizzle can come down to something as simple as a lifting cable.

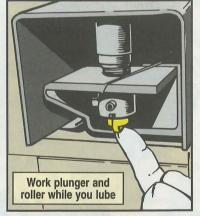
Wipe off lifting cables daily. Sand and corrosion wear cables out fast. But don't spray CLP—or any lubricant—on the cables. That leads to slipping cables.



#### **Limit Limit Switch Problems**

Sand and corrosion freeze the limit switch's plunger and roller. That means no firing.

Weekly push all 10 limit switch plungers in and out to make sure they move freely. Clean sticking plungers per Para 3-9 in TM 9-1425-646-10. Push the switch plunger in and out while you lube until the plunger moves easily. In humid, sandy areas, lube the



switches more often. And lube 'em again after you wash the vehicle.

As part of your BEFORE PMCS, make sure all the limit switches are safety wired. Safety wire keeps the switches from getting out of adjustment. Vibration during travel breaks safety wire.

# WITH PM

#### **Boom Control**

Before loading and unloading the Launcher Loader Module (LLM), make sure the boom control cable is routed tight through the brackets on the rear of the LLM. If the cable's slack, it catches on the rear of the vehicle and snaps off.



## **Washing Up**

Wash carefully. Water is poison to parts of your MLRS...like the Electronic Unit (EU) or other electronic components. Keep water away from them. Cover the EU with plastic during cleaning.

Use high pressure water to clean the tracks only. For the rest of the vehicle, use water at 50 PSI or less.



To clean the vehicle, park on an incline with the front up so water drains to the rear and out the drain holes.

To clean the launcher, elevate the module to 200 mils and open the three rear doors. That keeps water from collecting inside the launcher that will short out electronic units.



Turn the MLRS around to clean the engine compartment so water drains to the front.



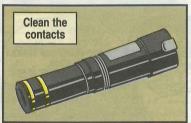


t's pretty simple.

A dead battery means no power. No power means no Redeye.

That's why you've got to keep an eye on Redeye batteries. Like so:

Before you go to the field, eyeball the contact rings on battery coolant units (BCU) for discoloration and corrosion. Corrosion can strike even while BCU's are stored in their protective plastic bags. Corrosion kills good BCU contact with the launcher and can damage the battery and the contacts in the launcher.



Wipe off corrosion with a typewriter eraser. Clean off residue with alcohol. Dry the contact rings. Apply drying compound, NSN 8030-00-838-7789,

Follow the same procedure for the M49 tracking head trainer (THT) batteries. They get corroded, too.

Before you stick BCU's in the tactical rounds or batteries in the THT or charger, eyeball the BCU, THT, or charger battery wells for corrosion on the contacts that will prevent a good electrical connection.



Clean off corrosion the same way you did with the BCU's. If you can't get it all, tell your unit repairman.

## **Hot Stuff**

**B**e careful changing BCU's during firing. You can get severe burns if you grip the BCU anywhere but on its heatinsulated cap. The BCU's heat up to temperatures as high as 400 degrees F.



Hold BCU by cap only

When you're through firing, put the used battery back in the container for turn-in.

If you've finished using the THT, push the battery contact shields to the down position and stick the batteries in the charger. That pushes the battery off the charger contact and protects the contact against corrosion.



## **TOW Protection**

There's a protective guard, NSN 4935-01-193-6655, for the TOW missile tube that will stop a lot of electrical connector damage. Look at your missile tubes for the guard. No guard, send it to DS. They'll put one on for you using the procedure on Page 5-173 in TM 9-4935-474-14-2-2.

## **Chaparral Cable Keepers**

Dangling Chaparral cables that run out the rear access door of the master control panel get pinched when the door's slammed shut. Stop that by tying cables back. A box of a hundred 6½-in tiedowns comes with NSN 5975-00-074-2072 and a box of 13 ¼-in ones comes with NSN 5975-00-156-3253.

HEY, PON...
ARE YOU REAPY
TO BREAK
LOOSE
THAT
BALKY
HUB?

ou can break loose a balky hub from the final drive with a little help from a few sprocket bolts.

Here are the details of a SMART tip from Richard Kimball and Donald Harris of the Combat Systems Test Activity at Aberdeen Proving Ground:

If your tank still has track retainer wheels on the outer sprockets, you have

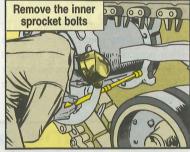


the right bolts. Otherwise, order four or five with NSN 5306-01-120-4339.

Remove two or more of the short bolts that hold on the inner sprocket and put in the longer bolts. Tighten the bolts evenly until they are tight against the final drive housing. If one of the "jack bolts" pushes against a final drive bolt head, move it to another location.

ANYTIME YOU ARE,

As you tighten each bolt, the bolt will press against the housing and force the hub off.





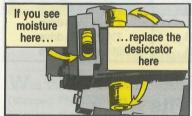
After the hub's been removed, reinstall the original "short" bolts. Never use the long bolts on the inner sprocket wheel, or on the outer wheel unless your tank has the retainer rings.

## Give Collimator the "Fix"



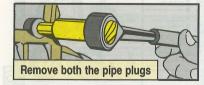
Drying out a gun tube collimator (or muzzle reference sensor) used to be a job for support.

Not so any more, though, because you can wipe out moisture in the collimator and replace the desiccator, NSN 6850-01-081-4193, every 6 months or as needed.

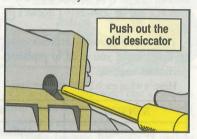


Here's how:

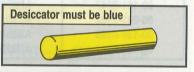
• Use a 3/8-in socket head screw key to remove both of the pipe plugs on the barrel of the collimator.



• Push out the old desiccator with a ¼-in drive pin punch and throw the desiccator away.



- Scrape any adhesive off the plugs and threads with a knife. Then clean them with P-D-680 dry cleaning solvent and clean rags.
- Unwrap a new desiccator and check its color. If it's blue, use it. If it's some other color, turn it in and get another.



- Push the desiccator into the barrel hole.
- Wrap the two pipe plugs with antiseizing tape, NSN 8030-00-889-3534, and install them.



Torque the plugs to between 120 and 130 lb-in.

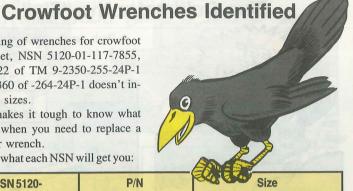
M1-Series Tanks...

clude the sizes.

## The listing of wrenches for crowfoot wrench set. NSN 5120-01-117-7855, in Fig 322 of TM 9-2350-255-24P-1 and Fig 360 of -264-24P-1 doesn't in-

That makes it tough to know what to order when you need to replace a particular wrench.

Here's what each NSN will get you:



NSN 5120-	P/N	Size	
00-541-4074	AN8508-9	9/16-in, 1/4-in drive	
01-007-8286	AN8508-11	11/16-in, 3/8-in drive	
00-189-7895	AN8508-13	13/16-in, 3/8-in drive	
00-181-6765	T1270-14	7/8-in, 3/8-in drive	
00-181-6759	AN8508-20	11/4-in, 1/2-in drive	
00-181-6755	AN8508-24	1½-in, ½-in drive	
00-293-1284	AC48	1½-in, ½-in drive	
00-181-6753	AN8508-26	15/8-in, 1/2-in drive	
01-111-0773	AN8508-30	17/8-in, 1/2-in drive	
00-181-6747	AN8508-32	2-in, ½-in drive	
00-293-2562	AC68	21/8-in, 1/2-in drive	
00-184-8385	AN8508-36	21/4-in, 1/2-in drive	
00-184-8381	AN8508-34	21/2-in, 1/2-in drive	

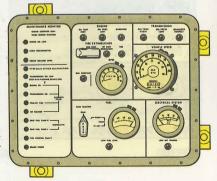
Make a note until TM 9-2350-255-24P-1 and -264-24P-1 are updated.

## One DIP Fits All

No need to wonder about mixing and matching M1-series tank driver's instrument panels (DIP) and mounting kits—now one panel and one kit do it all.

Use DIP, NSN 2540-01-179-7523, and mounting kit, NSN 2540-01-249-9720, for all M1's.

The mounting kit gives more shock protection and makes the gages easier for the driver to read at speed.





about a shock absorber sight glass (the



over because someone took the wrong approach to cleaning it.

That's because the glass is useless as a checkpoint for oil in the shock housing when you can't see in it.

Wire brushes, screwdrivers and knife blades do not appear in the "approved" list of cleaning items. In fact, no tool appears on the list. All you need is your hand and a piece of cloth.

Easy on the rough stuff. Keep that "eye" open.

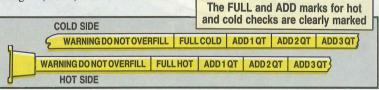
## **Using the New Engine Dipstick**

With the new engine oil dipstick (stamped PN 12284782), you won't have any trouble taking hot and cold oil level readings.

You can find info for the new dipstick in LO 9-2350-255-12 with Change 6 (Jul 87) and LO 9-2350-264-

12 with Change 2 (Aug 87). The LO has a good drawing of the dipstick, too.

If you have not received a new dipstick yet or if you need a replacement, get it with NSN 6680-01-249-9763.



**FEB 89** 

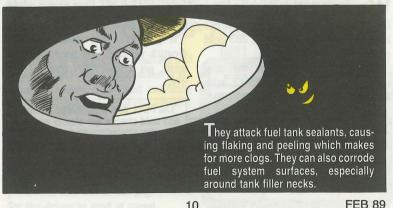






hen maybe you've got crud growing in your fuel tanks. The sludge and slime come from gradual oxidation of the fuel, from microbial growth, or from both.

Whenever water gets into the diesel fuel system of a vehicle that's stored for a long time or out of operation for a long time, those little microbes go to work in the fuel. As they multiply, they clump together and plug up fuel lines, injectors, pumps and filters.





Once you get a bad case of fuel sludge and slime, all you can do to get rid of it is send your vehicle to your support unit for a complete cleaning of your fuel tanks.

Once your system's clean, you can keep it that way with diesel fuel stabilizer additive, MIL-S-53021.

Available under NSN 6850-01-246-6544 (5-gal can) and NSN 6850-01-246-6545 (55-gal drum), the stabilizer slows fuel breakdown, kills microbial growth and inhibits corrosion.





It's used at the rate of one gallon of additive per 3,500 gallons of fuel. That works out to about 31/2 ounces per 100 gallons. A foam coffee cup halffull is about right.

This additive will not remove existing sludge and microbial growth from a storage tank or fuel tank. It's to prevent more sludge from forming and to kill all microorganisms.

Never add the product to an empty tank. It's most effective when added to a half-full tank just before the tank's filled.

If you use the additive without first cleaning the fuel tanks, keep a close eye on your fuel filters. As the sludge and slime break loose, filters can plug up real quick. Clean or change them often until the sludge and slime disappear.

Follow the instructions that come with the additive. Always use protective gloves and goggles when handling fuel additives.



**FEB 89** 

11

## YOU'D BETTER



Or else your M1-series or M60A3 TTS tank or M2/M3 Bradley's thermal imaging sight won't be much use to you.

The coating on the external optical window must be clean—and cleaned right—so you'll get the most from your night sight.

Cleaning the window right means that you:







**FEB 89** 

## TO WILLDOWS !

Complete cleaning details are in the TM's for each vehicle. Remember these points:

THERMAL IMAGING SIGHT Cleaning Procedure

- Never wipe off dried mud or dirt without wetting the surface first. That'll scratch the surface.
- Never scrape ice off the window or put any kind of tape directly on the window surface. Again, you'll scratch the window or peel off the reflective coating.
- Leave dirty rags and cloths a long way from the windows.
- Forget about spraying high pressure water on the window during vehicle cleaning.



## **Breech Guide Pin**

The breech guide pin can work loose and disappear. If you fire the M242 without the pin, you'll ruin the barrel. Look for the guide pin before you issue the gun and as part of your semiannual service. The pin's at the 11 o'clock position when you look down the barrel support tube. No pin? Send to DS!



**FEB 89** 

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M102 Towed Howitzers...

M 9-1015-234-20 is a whole lot short on the right way to remove the M134A1 telescope mount from the M102 howitzer.

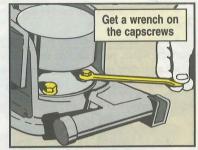
If you go by the TM, you can trash a mount trying to remove the capscrews and lockwashers, which you must save for installation. Then, you'll destroy the replacement mount's accuracy trying to install the screws and washers.



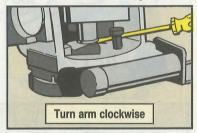
Here's exactly what you do to remove the mount and the screws and washers:

O Rotate the mount so you can get

a wrench on the screws. Have a buddy hold the mount as you loosen all four screws. They won't come out, so don't try to force them out. The mount will lift off.



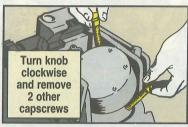
Using a screwdriver and a mount capscrew, turn the arm assembly clockwise as far as it will go.



Turn the crosslevel knob counterclockwise as far as it will go. Remove the two screws and washers that you can now get to.



Turn the crosslevel knob clockwise as far as it will go. Remove the other two screws and washers.





EXPLOSIVES SAFETY CENTER NOW OPEN!

The US Army Technical Center for Explosives Safety is open and ready for business.

They can help with:

Site and construction plans for ammo and explosives storage and handling;

Safety standards development; Safety technical info and assistance:

Assistance visits to organizations responsible for maintenance, use, etc., of ammo and explosives;

Assistance in accident and mal-

function investigations.

TO GET MORE INFO CALL AUTOVON 585-8801 OR COMMERCIAL 815-273-8801 OR WRITE:

U.S. ARMY TECHNICAL CENTER FOR EXPLOSIVES SAFETY ATTN: SMCAC-ES SAVANNA, IL 61074-9639



Your job is not finished when you remove a component for return to support until you protect it from dirt, moisture and damage.

Take your basic alternator-generator on M1-series tanks. As long as it's installed right on a tank, the generator is waterproof. Removed from the vehicle, it must be stored in a dry place with all openings covered or it'll arrive at support full of water and corrosion.

It's the same with many other components you handle day-in and dayout. Ordinary rebuild or repair work at support becomes an expensive job because of a lack of coverup once they're out of service.

You can prevent this damage simply by covering openings and protecting threads with plastic caps and plugs.

NSN 5340-00-450-5718 gets you 156 caps and plugs in different sizes.

Need only certain sizes? Check the Identification List (IL) microfiche under FSC-5335/40. Look under Cap,

Protective, Dust and Moisture Seal, or Cap, Plug, Protective, Dust and Moisture Seal.

NEED CAPS?
NSN 5340-00-450-5718
WILL GET YOU
MANY SIZES!



If you have to cover large openings, and there are no covers specifically for them in your TM's, use whatever's handy. Sometimes plastic coffee can tops work well. At the least, cover the openings with good ol' Army green

Any water or dirt you keep out of components, or any threads that you keep from being damaged, means less repair needed to get those components back in your hands—or those of somebody who just might need them more.

THANKS FOR TAPING

M60A3 Tanks...

tape.

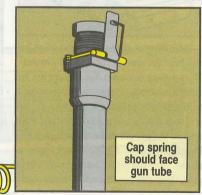
## Save the Mast Cap

It takes a tight fit on your M60A3's wind sensor mast cap to keep dust and water out.

If the cap has a weak spring, it can pop up and get knocked off when you're moving through tall brush.

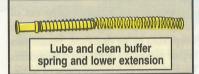
Stop that from happening by getting your mechanic to rotate the mast cap until the hinge points toward the gun tube. Then anything hitting the cap slips on by. Use 4 new lock washers, NSN 5310-00-933-3118, to attach the hinge to the mast.

If the cap's already missing, order a new one with NSN 1220-01-018-9175.



pirt and sand can cause your M16's springs to lose their spring. Your rifle will have trouble going into battery, feeding, extracting, and ejecting.

So after every firing, clean and lubricate the buffer, spring, and lower receiver extension. Run a pipe cleaner through the butt cap screw drain hole so water can't collect and corrode the extension.



Eyeball the buffer spring for flat spots and breaks. Get a new spring if you spot any.

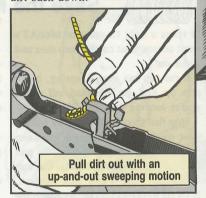


Take dirty magazines apart and clean and lube the spring, tube, and follower. That makes it easier for the spring to push up rounds. If the magazine won't feed, tell your armorer.

Use a pipe cleaner to carefully clean around the trigger and hammer springs. Bend the end of a pipe cleaner into a circle. Wet the pipe cleaner with lubricant. Use the circle end to clean with

I'VE GOT PLENTY OF SPRING NOW!

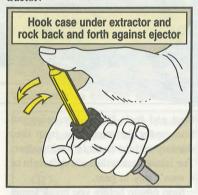
an up-and-out, sweeping motion. If you clean up-and-down, you just push dirt back down.



If you can't get all the dirt, tell your armorer. He can use dry cleaning solvent to flush out the dirt.

**FEB 89** 

Press the ejector in with a dummy round. It should spring back quick. The same thing should happen with the extractor.



If the ejector's sluggish, lube like it says on Page 24 in TM 9-1005-319-10. If that doesn't put spring back in the ejector, tell your armorer.

If the extractor's slow, its spring may be weak. Tell your armorer.



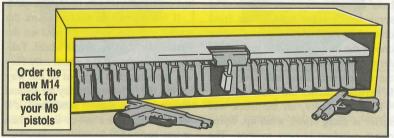
M9 Pistol ...



f you armorers didn't get an M14 rack with your new M9 pistols, order one with NSN 1095-01-236-2203. The rack holds 16 pistols.

You can now remove and replace the four grip screws, washers, both grips, and the magazine catch assembly. The word's on Page 3-216 in TB 43-0001-36-5 (Apr 88).

NSN's and instructions are in TM 9-1005-317-23&P.



FEB 89

19



BAD DRIVING
HABITS, MAKES THE
SPRAG CLUTCH GRAB
THE FRONT DRIVE SHAFT
AND HAVE A
TUG-A-WAR WITH
THE REAR WHEEL
DRIVE.

ad driving habits are hard to break, like letting a truck coast backwards when the transmission is in a forward gear. Or, failing to come to a dead stop before shifting from reverse to first gear.

You can get away with these bad habits in some vehicles, but not an M35 or M35A1 2½-tonner. These trucks have an automatic sprag clutch. The sprag clutch grabs hold of the front drive shaft and locks on when you pull one of the bad moves. The rear-wheel drive is thrown into a tug-of-war with the front-wheel drive and everything in between catches the strain.

If you're lucky, all the truck will suffer is sprag clutch wind-up. Sprag clutch wind-up is easy to spot. The front end feels like it is coming out from under the truck. The front tires shimmy and the truck is hard to steer. The transmission doesn't shift right or it won't stay in gear.

Stop pronto before you break something.

If you're unlucky, you could bust the transfer, prop shaft, or the front axle.

### Getting an Unwind

Sometimes it's easy to get the sprag clutch to release its hold on the front drive shaft. If you coasted backward in a forward gear, drive forward in 1st gear the same distance you went backward.

If that doesn't do the trick, park the truck, shut the engine off and set the handbrake. Jack up a front wheel. Taking the weight off the wheel may cure the problem. But stay out of the way of the tire. The sprag may be wound tighter than a rubber band, and it'll whirl the tire like a son-of-a-gun when it lets go.

**FEB 89** 

Shift the transmission into reverse.

Try turning the wheel in both directions. It should turn backward easily, but not forward at all.

R

2

5

Front wheel jacked up

If the sprag clutch fails these tests, tell your mechanic, now!

Front

Now, shift into first gear.

The wheel should turn forward, but not backward.

P

The wheel should turn forward, but not backward.

The wheel should turn forward, but not backward.

Front

This procedure works on the M35- and M35A1,  $2\frac{1}{2}$ -ton trucks. Later models of  $2\frac{1}{2}$ -tonners have a positive locking transfer instead of a sprag clutch. You can spot the newer trucks by the air actuated transfer control switch for the front-wheel drive in the cab.

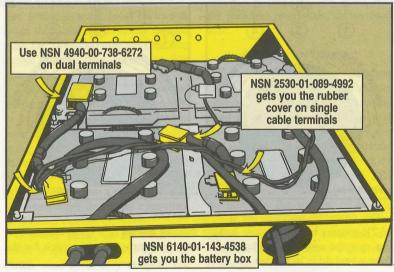
M939/M939A1-Series Trucks...



little PM and some battery terminal covers can save you mechanics a lot of time and trouble.

Since the batteries are under the passenger seat and battery box cover, sparks fly if the cover gives way and the metal lid touches the battery posts. Rubber covers on the terminals keep the spark from flying. Put 'em on like

Remove all the cables—ground cable first—and terminal clamps.



**FEB 89** 





Make sure the batteries are seated and clamped down.

To prevent corrosion, put on treated felt washers, NSN 5970-01-101-4147.

Put rubber cover, NSN 2530-01-089-4992, on all posts with single cable terminals and cover, NSN 4940-00-738-6272, on posts with two terminals.

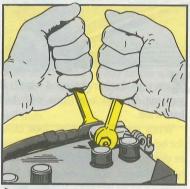


Push the terminal clamps all the way down on the battery posts and tighten them.

Mount the cable to the clamp with the cable terminal under the head of the bolt. Then it won't loosen up when the cable bounces. If you've got 2 cables going to one clamp,

Lay the cable flat against the battery before tightening the bolts.

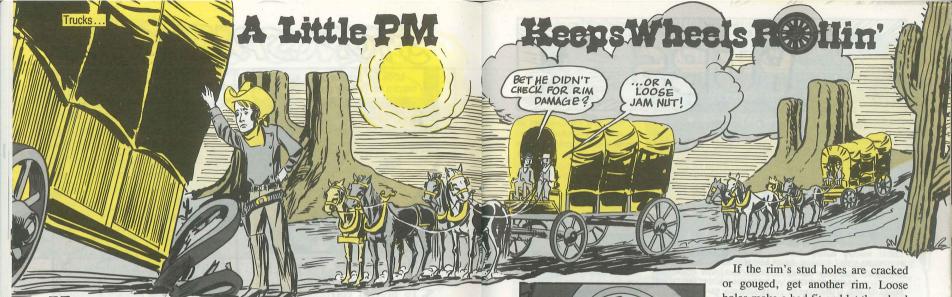
Tighten the clamp-to-clamp bolt and nut using two wrenches of the right size—never an adjustable wrench. Tighten the nut snug, then give it 1/4 turn more. Test by pressing and lifting the clamp with your thumb and forefinger.



Give the clamp and post a coat of GAA.

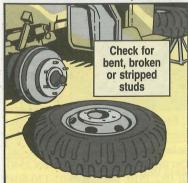


Eyeball the battery box cover during every scheduled service for any cracks or breaks. Replace any part that's bad. Get the passenger seat with NSN 2540-01-082-7510. NSN 2590-01-130-8045 gets the cover, and the battery box is NSN 6140-01-143-4538.



Wew tires don't make good wheels if you put 'em on bum rims with bad hardware.

When you change a tire, look close for bent, broken or stripped studs, bent or dented rims, worn stud holes, damaged flanges and sprung side lock rings, or loose jam nuts. Replace any of these that are bad. Don't try to fix 'em.

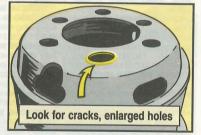


A close look calls for a little brush work. Make sure everything is clean before you mount a tire on the rim.

Scrub the studs with a wire brush to get dirt and rust off the threads. Then use the brush on the rim-to-rim mating surfaces on duals to get rid of loose paint, dirt and rust. This keeps the metal-to-metal seat tight.



If the rim's stud holes are cracked or gouged, get another rim. Loose holes make a bad fit and let the wheel wobble. A wobbly wheel cracks more stud holes and breaks or strips studs and nuts.



Use a torque wrench any time you tighten lug nuts. Too much torque is just as bad as not enough. The right torque varies from one type of truck to another. So, play it safe. Take a second to look up the right torque for your vehicle's lug nuts in its TM.

It takes only a few extra minutes to do the job right and it pays off in the long run.

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#### Maintenance & Safety-Of-Use Messages

AMCCOM Maintenance Advisory—Faulty M1, IPM1, M1A1 tank elevation rod end bearing, NSN 3120-01-145-8982, AMSMC-MAW 011300Z Nov 88.

CECOM SOU-MSG-88-10-01— Advisory, Gives maximum safe towing speed for AB-1309(V)4/ TRC antenna mast, AMSEL-SF-SEP 1418007 Oct 88

CECOM SOU-MSG-88-10-03— Advisory, Possible venting of BA-1090/U mercury battery, NSN 6135-00-835-1023, manufactured by Alexander Corp under contract number DAAB07-87-D-C023, AMSEL-SF-REE 171800Z Oct 88.

CECOM SOU-MSG-88-10-02— Mandatory one-time inspection of tactical Army combat computer (TACCS), AN/TYQ-33(V), remote logic module, NSN 5895-01-236-9868, AMSEL-SF-SEC 171800Z Oct 88.

CECOM SOU-MSG-88-11-01— Mandatory, Operational, Potential safety hazard of PU-405 generator power transfer switch used with AN/ TSC-85A TACSAT terminals, AMSEL-SE-SEC 021800 Z Nov 88.

MICOM SOU-MSG-88-07—Operational, Gives brake verification procedure for multiple launcher rocket system (MLRS), AMSMI-LC-AM 071415Z Nov 88.

TACOM SOU-MSG-88-49—Advisory, Technical/Maintenance, Inspect M1/M1A1 tank steer/throttle housing assembly, AMSTA-M 081230Z Nov 88.

TACOM SOU-MSG-88-50—Advisory, Technical/Maintenance Inspect M796 bolster trailers for cracked or broken reach tubes, AMSTA-M 081930Z Nov 88.

TACOM SOU-MSG—M195series vehicle service interval for the bendix air dryer desiccant cartridge assembly, NSN 4440-01-087-7216, AMSTA-MTC 152000Z Nov 88.

**TRADOC SOU-MSG**—Advisory, Suspends testing of M72E4 rockets, ATOS 251200Z Oct 88.

TROSCOM Maintenance Advisory MSG-88-39—Cleaning of 600 GPH reverse osmosis water purification unit (ROWPU), NSN's 4610-01-039-2380 and 4610-01-113-8651, AMSTR-MES 081300Z Nov 88.

TROSCOM Maintenance Advisory MSG-88-38—States that fire extinguisher recharger, NSN 4210-01-176-3511, is not portable, AMSTR-MES 082100Z Nov 88.

TROSCOM Maintenance Advisory MSG-88-41—Modification kit for fire truck, NSN 4210-01-249-2110, LIN X44701, AMSTR-MES 151900Z Nov 88.

TROSCOM Maintenance Advisory MSG-88-44—Defective second stage regulator diaphragms on Mark 1 Mod 0 lightweight diving outfit, NSN 4220-01-064-0608, AMSTR-MES 172100Z Nov 88.

TROSCOM Maintenance Advisory MSG-88-36—Testing and overloading military generator sets, AMSTR-MES 211900Z Nov 88.

TROSCOM Maintenance Advisory MSG-88-43—Pressure gage on the 3,000 (NSN 5430-01-181-4071) and 5,000 (NSN 5430-01-120-7823) gallon water tanks gets damaged when the tank is being filled, AMSTR-MES 212359Z Nov 88.

TROSCOM SOU-MSG-22-88— Advisory, Motor vehicle 7-ton capacity safety stand, NSN 4910-00-251-8013, cracks at weld on an upper collar strap, AMSTR-MES 011805Z Nov 88.

TROSCOM SOU-MSG-23-88— Emergency, Deadlines all Army procured interim ram air parachute systems (IRAPS), MT1-XX, NSN 1670-01-212-3335, that are suspected of coming in contact with any type of moisture, AMSTR-MES 032130Z Nov 88.

Your Direct Support or Logistic Assistance Office (LAO) can provide you with more information. 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 11-5895-1196-23P-1** Aug 88 Antenna group OE-371/G (NSN 5895-01-205-6213)

TM 11-5895-1215-10 Dec 87 Multiplexers/demultiplexers TD-1389(V) series

TM 55-1520-237-23-1 May 88 UH-60A/EH-60A wiring

SB 700-20 Mar 88 Army adopted/ other items selected for authorization/list of reportable items

> AUDIO-VISUAL STUFF Available at battalion or Post Learning Center

(For AVLB's and CEV's, from Cdr, USATSC, ATTN: ATIC-ET-AVID, Ft Eustis, VA 23604-5168, AUTOVON 927-4861, comm 804-878-4861, Ms Castonguay)

TEC Lessons
483-091-1400-A Troubleshoot
M728 CEV main gun firing assy
499-091-7000-A M728 CEV turret
components
499-091-7001-A Replace turret hv-

draulics M728 CEV 499-091-7002-A Troubleshooting

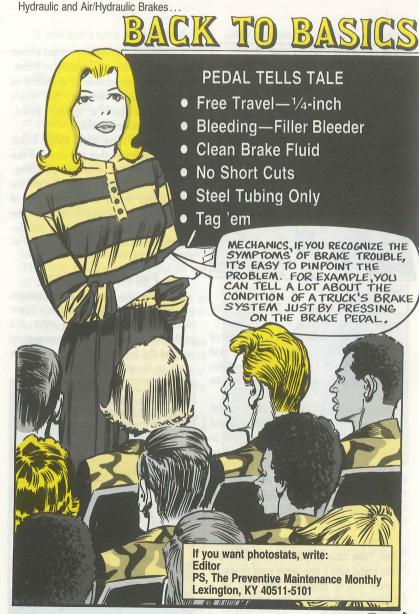
procedures M728 CEV 499-091-7003-A Disassemble/ assemble M728 CEV breechblock 499-091-7005-A Main, equilibrator

accumulator charging M728
499-091-7006-A Troubleshoot
main gun equil. hydraulics M728
499-091-7007-A Lube procedures
turret, main gun mount M728
499-091-7008-A Troubleshoot

475-091-1943-A Troubleshoot boom/winch malfunctions M728
475-091-1930-A Troubleshoot Troubleshoot

launcher hydraulic malfunc M48A5 475-091-1941-A Troubleshoot hull hydraulic malfunc M728 475-091-1936-A Inspect M728

475-091-1936-A Inspect M728 moldboard hoses, lines, fittings







The pedal should be firm once you pass the free travel.

A sinking brake pedal is the sign of a leak. If you can't find a leak, and the fluid level in the master cylinder stays up, the master cylinder may be bad.\*

There is air in the lines if the pedal feels soft or spongy. Air gets trapped when the fluid level drops too low in the master cylinder, or the brakes weren't bled properly the last time they were serviced. Bleed all the lines and then pump the brakes several times. If the pedal starts to soften again, there is a leak.

\*NOTE: HMMWV's and CUCV's are different. They have a hydro-booster that lets the pedal sink if you apply hard pressure while you're stopped. This can be a fooler, so check out the brakes if the driver reports it.

A spongy pedal usually means a hose has gotten weak and is ready to burst. Brake hose inspection is required at each semiannual service, but don't wait if you have a spongy pedal. Eyeball all hoses, pronto!

Replace any hose with a bulge. Look close at the hoses that run close to the frame. Check for wear and pinching. If a hose is worn or cracked thru the outer cover down to the first ply of fabric, or if it's crimped, replace the hose. Get the whole scoop on mandatory brake hose inspection in TB 9-2300-405-14.

### **Painless Bleeding**

Bleeding the lines is a snap when you have the right tool... that's filler/bleeder, NSN 4910-00-273-3658. It's in the No. 1 and No. 2 Common shop set and the instructions on how to use it are in the truck's -20 TM.



**FEB 89** 

If you don't have a filler/bleeder, it takes two to bleed the hydraulic brake lines. Here's how it goes:

Round up a 12 inch long piece of clear plastic tubing—NSN 4720-00-964-1433 will do—and a clear glass or plastic container to catch the fluid. Put about an inch of brake fluid in the jar.

Fit the tubing over the bleeder valve on the wheel farthest from the master cylinder. Put the loose end of the tubing down inside the jar into the fluid. Always start with the longest line when you bleed the system. That's the one with the most air trapped inside. That way you get most of the air out of the system right off the bat.

Make sure the master cylinder is full of fresh, clean fluid and the cap is on before you bleed each line.

Have your buddy pump the brake pedal at least three times and then hold the pedal down until you say Whoa! That will keep the brake fluid coming while you bleed.



Open the bleeder valve. Watch the fluid as it flows thru the tube. When you no longer see air bubbles, or when the flow stops, tighten the valve and holler Whoa!



If the fluid stopped flowing before all the bubbles were out, have your buddy pump up the pressure and bleed again until you see a steady flow of fluid.

Move to the next longest line and bleed that wheel cylinder. Work your way down to the shortest line.

Get rid of the old fluid according to your SOP.

## **Good Housekeeping**

Hold one, before you open the master cylinder cap! The cylinder is under the trap door in the floorboard on 2½-and 5-ton trucks with air/hydraulic brakes. There is usually a lot of dirt, water and other junk you don't want in the master cylinder on the floorboard.

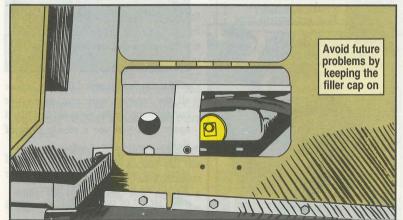
Give the floorboard a good sweeping before you open the trap door. Then



use an air hose to clean the area around the filler cap. Of course, you always wear goggles when you clean with compressed air. A LITTLE HOUSEKEEPING
CAN PREVENT BRAKE PROBLEMS
WHEN YOU OPEN THE
MASTER CYLINDER!



If you need to add brake fluid, put the cap back on while you go get the fluid and funnel. Just a couple grains of sand or few specks of dirt inside the brake system causes major problems down the road. A few minutes of housekeeping is one of the most important things you can do to prevent problems with your truck's brake system.



### **Testing**

Test the brakes in the motor pool, not on the road. If anything feels wrong or looks out-of-place, take time to check it out by the brake troubleshooting section in the truck's -20 TM.

Wrong hookups on any of the lines messes up the whole system. If you have to take anything in the system apart, make sure everything goes back like it's supposed to. The maps you need to trace the lines and pinpoint the connections are also in the -20 TM's.

Always—everytime you break a line to replace a component—bleed the entire brake system.

## **Dragging Shoes**

Take the truck out on the road and hit the brakes. If the truck pulls to one side, the brake shoes are probably dragging on the brake drum.

Adjust the shoes and try the road test again. If the truck still pulls one way or the other when you hit the brake pedal, it could be either a rusted or sticking wheel cylinder, or glazed or oily brake shoes.

Brake shoes are cheap and trucks are expensive... and you can't put a price on a life. Forget shortcuts like sanding a glazed brake shoe lining. If a shoe is glazed, worn, or has grease or brake fluid on it, don't try to clean it up. Replace it along with all the other brakes shoes on that axle. This keeps the brakes working evenly.



FEEL HOW IT
PULLS TO THE RIGHT
WHEN I BRAKE? LET'S
CHECK THE BRAKE
SHOES, MAYBE THEY'RE
DRAGGING!





Take a look at brake lining any time you have the wheel off. If the lining is worn to within 1/2-inch of the rivet heads; or for bonded linings, beyond the specs called for in your -20 TM, replace the brake shoes.

#### No Solvent on Brake Shoes

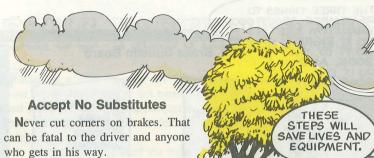
When brake shoes get covered with dirt or mud, clean 'em with compressed air, water and a brush. Never use drycleaning solvent. It breaks down the material in the lining. Replace the shoes if there's anything on 'em that air and water won't take off.

#### Do Not Touch!

Look, but don't touch the master cylinder dust boot. If you don't see brake fluid on the boot, leave it alone.

When you pull the boot back to look for fluid, you can let dirt and grit get on the rod. Then when you use the brakes, the dirt on the rod rubs like sandpaper on the seal, and before long, you've got to replace it.





Master cylinders, wheel and air/hyd-raulic cylinders are not repairable. When you find a bad master or wheel cylinder, order a new one. Parts from a can point may look OK, but they can fail as soon as the truck gets on the road.

### Stick with Steel Tubing

Copper tubing is not for hydraulic brake lines. Copper tubing won't hold up to the high pressure in hydraulic brakes. It can rupture at a crucial moment, leaving the vehicle without any way to stop. Stick with steel!

Some lines are foolers. When you're not sure if a line is steel or steel plated copper, use a magnet. The magnet will stick to a steel line. No magnet? Take a pocket knife and try to nick the tubing. Steel is tough to cut, so if it nicks easily, it's copper. And remember, double flare all brake lines.

### 21/2- and 5-ton Clevis Pin

And mechanics, you can get somebody killed if you use a nut and bolt instead of a clevis pin at the truck's master cylinder. The nut vibrates off a standard bolt, and Wham! No brakes.

All M44-, M39-, and M809-series trucks have the right pin listed in their

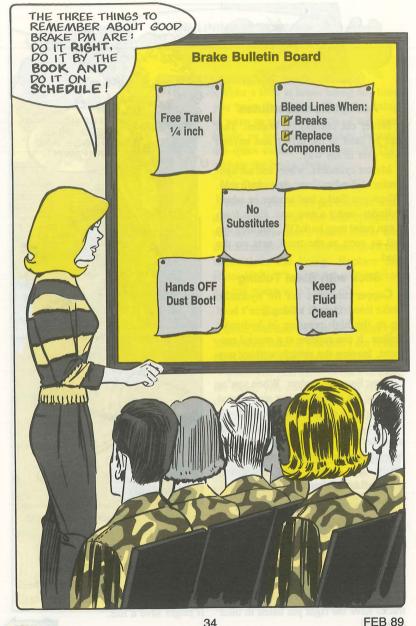
**FEB 89** 



-20P TM's. Its easier to find and use the clevis pin than to explain after an accident why you used a substitute.

## **Tagging Saves Lives**

Slap a red tag on the steering wheel while a truck is NMC for brake work. It might save a life.



## DZUS FASTENER TIPS

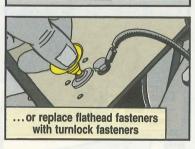
astening a dzus fastener can ruin your whole day if you're not careful and patient. It helps if you put just a touch of aircraft grease in the female receptacle.

It also helps if you used the right tool on flathead dzus fasteners-either screwdriver bit, NSN 5120-00-321-4508, or cowl fastener key, NSN 5120-00-604-5007. The bit is part of your general mechanic's aircraft tool kit. The cowl key-also known as a "Snoopy Tool"—is authorized by Appendix A of CTA 50-970. Another solution is to replace the flathead dzus fasteners with stud assembly, turnlock fastener, NSN 5325-00-839-2517. It has a wing tip that's much easier to push and turn. It's a lot safer, too.













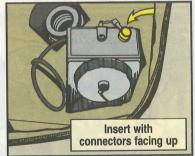
here's not much you can do to maintain your aviator's night vision imaging system, AN/AVS-6. Most unit maintenance is done by trained technicians.

But there are some things you should not do:

Never clean the lenses of your goggles with anything but lens paper, NSN 6640-00-240-5851. Anything else could scratch the lenses.



Never bend or crimp the cable that connects the power pack to the goggles when you put the power pack into the carrying case. The best way to avoid damaging the cable is to insert the power pack with the power connector facing up. Then you can place the cable



in the excess area within the power pack cell.

<u>Never</u> forget to turn off system power when you're through using the goggles. If you forget, the 2 lithium batteries that power the system will run down and have to be replaced.

**FEB 89** 

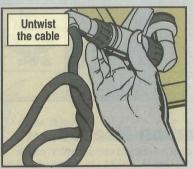
AH-64A Apache...

# DELIGATE DAMINOS

Dear Editor,

The cathode ray tube (CRT) of the helmet display unit (HDU) on our Apaches is a very delicate piece of equipment that gets damaged easily. But if you follow these handling tips, you can't go wrong.

Unwrap the tube and cable assembly—just like you unwrap a phone cord—before using the CRT.



O Store the HDU in its holster assembly on the cockpit floor. Use care not to jam the base of the CRT into the pilot seat or the floor.



Wrap electrical tape around the cable at the back of the CRT to give it some strain relief.





Never flex the cable at the 90-degree bend. If you do, you'll overstress the cable and shorten it's life.

When you put maps or the logbook into the pocket, be sure not to jam them down on top of the HDU and push the CRT into the floor.

CWO Larry J. Simone Ft Hood, TX

(Editor's note: Tips like yours keep us all going in the right direction!)

AH-64A... EASY ON THE FORGUES

Too much torque on the nuts on your Apache's engine inlet coupling causes failed and cracked couplings.

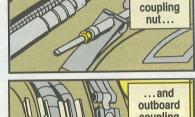
And the torque called out in TM 55-1520-238-23-3 is wrong!

Para D-1 of Sec 4 in Chap 4 says to torque the nuts to 35 lb-in. Para 2 in Sec 2 says to torque the very same nuts to 65 lb-in.

Don't believe either one.

The correct torque is 25 lb-in. You'll find that torque imprinted on each coupling.

Make a note in your TM until it's updated.



**Torque** 

inboard

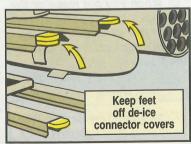
...and outboard coupling nut to 25 lb-in

Hellfire Missile . . .

## **Launcher Salvation Needed**

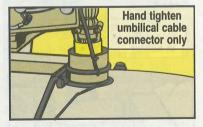
Big feet and rough handling are sending Hellfire launchers straight to youknow-where. Save launchers by following these commandments:

Never use launcher rails as steps. If you happen to step on a de-ice connector cover, you'll bend it and maybe break the electrical connector.

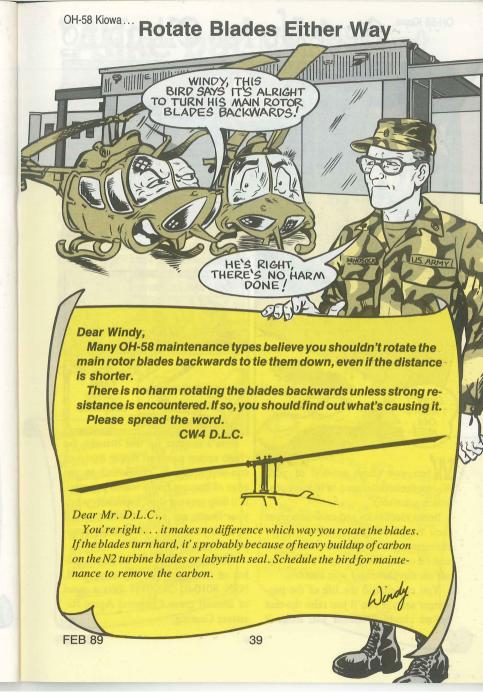


Use a ladder to climb up your Apache, not launcher rails.

If a de-ice connector cover is bent, replace it with the new, stronger cover, NSN 1440-01-162-5266.



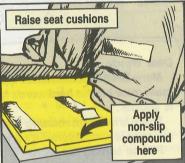
Also take it easy when connecting the umbilical cord from the aircraft to the launcher. Tighten too hard and you break wires in the launcher.



## OH-58 Kiowa... Seat Up for Climbing



part of your post-flight inspection to raise the passenger seats.



hen you climb on top of your Kiowa for maintenance or inspections, watch your step.

DON'T

TREAD

Some mechanics and crewmen plant their first foot right smack on top of the nearest passenger seat. Dirt, grease and oil on the bottom of their boot rubs off on the passenger seat cushion.

You can extend the life of the passenger seats if you'll just raise the seat before climbing. Better yet, make it Here's another tip that'll make the climb up top painless: Apply a coat of non-slip walkway compound to the edge of the seat frame where you step. It'll help prevent slips, especially when your boots are wet. 'Course, you'll have to paint over the non-slip compound with CARC.

NSN 5610-00-641-0428 gets a gallon of dark gray non-slip compound. NSN 8010-01-246-0717 gets a quart of aircraft green Chemical Agent Resistant Coating.

**FEB 89** 

Avionics...

## Alike but Different



Careful, Kiowa mechanics, when you replace the VHF and UHF AM radios following maintenance.

It's easy to get the radios mixed up since they look alike. When that happens, bye-bye commo.

Before you slide your radios back into the instrument panel, eyeball the data plates to make sure which radio is which.

Then eyeball the radio cables before you hook 'em up. The cable for your





VHF radio will have AN/ARC-115 stamped on it. The cable for the UHF radio will have AN/ARC-116 stamped on it.

OH-6A...

## **Greasy Substitutes**

Dear Windy,
I have not been able to get
Mobil 28 grease for the
swashplate bearing or the
overrunning clutch bearing in
our OH-6A's with NSN 9150our OH-6A

Dear J.H.,
Mobil 28 and WTR are very
similar Products. The headshed
purchase Mobil 28, since WTR is
Belvoir Research, Development,
helicopters. WTR is a NATO
Product and readily available.

Windy

FEB 89

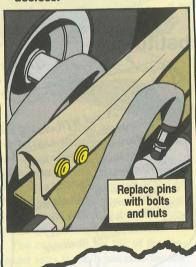
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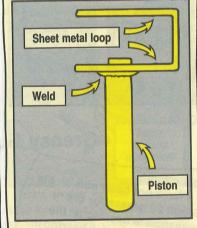
Dear Editor.

We've had problems with our Huey ground handling wheels, P/N 61286. The pins that attach the pump handle to the pump body fall out and the handle bends. When that happens, the user can fall and be injured.

Also, when the handle fails. the piston assembly can break, leaving the wheels useless.



We solved the problem by replacing the pins with common bolts and nuts and welding the loop and piston together, like so:



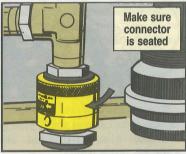
SGT Perry Coleman Ft Gordon, GA

(Editor's note: Your temporary fix is OK for P/N 61286, but you shouldn't have any looseness in the pump handle on new pumps, NSN 4320-00-133-6823.)



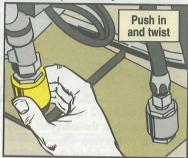
Quick disconnect fittings on aircraft fuel, oil and hydraulic lines are real handy when you're changing a part.

But if you don't reconnect the line securely, fluid can leak out. Then you've got big problems. You can get someone killed-or an aircraft downed.



To seat a quick disconnect firmly,

push in and twist. When the pins pop out and stay out, the job's done.



But if the pins don't pop out, or if they don't stay out, start over.

Don't rely on a visual check alone. The pins may look like they're out when they're not. To make sure, feel for them. That's the only way to be sure the line is tight.

## **Aviation Messages**

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

tory, all aircraft, revision to GEN-88- revision to UH-60-86-18, imme-02. inspection of portable fire extindiate restriction of rappelling operaquisher, 032000Z Oct 88.

UH-60-88-10, SOF, Maint Manda- T-42-88-03, SOF, Technical, Tand three man medevac seat upper aluminum support installation assembly. 062100Z Oct 88.

tory, H-6 series, inspection of P/N tion of all AN/PVS-5B and 5C series GEN-88-MIM-05, Conservation of AN320-5, NSN 5310-00-176-8109 night vision goggles, 242100Z Oct T53, T55, T63 and T-700 engines. nuts until replacement, 131900Z 88. Oct 88.

GEN-88-03, SOF, Maint Manda- UH-60-88-11, SOF, Operational, GEN-88-MIM-04, Storage of bulk tions, 172330Z Oct 88.

tory, all UH-60, troop/gunner seat 42A, inspection and installation of 172000Z Oct 88 elevator 192200Z Oct 88.

GEN-88-04, SOF, Maint Manda-OH-6-88-07, SOF, Maint Manda- tory, all aircraft, distortion inspec- 251640Z Oct 88

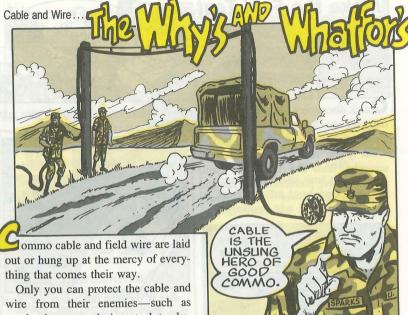
CAT 1 EIR Phone: AUTOVON 693-2066 (24 HOURS)

items of hardware at the user level. 052100Z Oct 88.

UH-1-88-MIM-06, Hub moment spring and hub restraint retrofit kit,

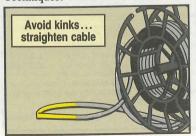
fittings, AH-64-88-MIM-14, Advance notice of manual change to inspect the auxiliary power unit truss welds.

272200Z Oct 88



Only you can protect the cable and wire from their enemies—such as combat boots, truck tires, tank tracks, camouflage paint and careless operators who put connectors in water puddles.

Before you lay the cable on the ground, be sure the cable will not be in the path of vehicles. If the cable must cross a traffic route, bury it, put logs beside it or run it overhead, using methods described in FM 24-20 (Dec 85), Field Wire and Field Cable Techniques.



If there's a kink or twist in the cable, straighten the cable or you'll wind up with binds when it's stretched. This will break inside wiring.

Eye your cable for cracks or cuts. If there are only a few cracks or the cuts are small, wrap the cable with electrical tape, NSN 5970-00-685-9059. If there are many cracks or the cuts are deep and expose the wire, replace the cable.

When it's time to paint your vehicle, take out those cables or mask 'em so they won't get painted. Paint ruins the rubber insulation.

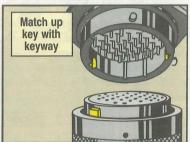
When you hook up a cable to electronic gear, such as an AN/GRC-142 radio teletypewriter set, make sure the equipment is grounded. Electrical spikes will damage connectors.

**FEB 89** 

of Galor Carro

## **Connectors Count, Too**

Use care when you put a connector and receptacle together. Forcing them



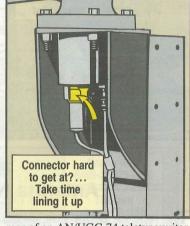
will bend or break pins. Line up keys and keyways before sliding the connector into the receptacle.



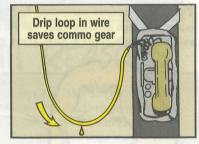
Make sure an O-ring is in a connector. If the O-ring is cracked or missing, get it replaced. Without an O-ring, moisture will get inside the connector and short out your commo equipment.

Never tug on a cable to test the tightness of a connector. You will tear out the wiring. Do your test by gripping the connector and turning the locking device.

If a connector is in a hard-to-get-at place, such as on the base of an MX-6707 antenna matching unit or in the

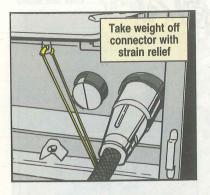


rear of an AN/UGC-74 teletypewriter, take time to hook up or unhook. Otherwise, you'll get broken pins or cracked receptacle inserts.



Put a drip loop in your outside cable. This sag will keep water out of a connector and your equipment.





To keep the weight of the cable from pulling out of a connector, use a strain relief such as the PF-211/G, NSN 5975-00-563-0229. The relief takes the cable's weight off the connector.

If an installation kit calls for grommets and strapping on cables, use 'em. The kit items protect the cables from sharp metal corners. The strapping also allows you to have slack in the cable to take the strain off a connector or receptacle.



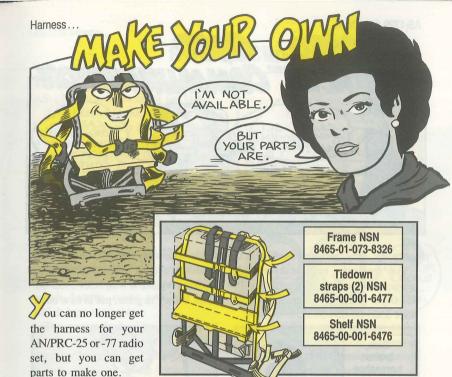
## **Antenna NSN Wrong**

The NSN for the AB-1339 antenna mast that's listed on the cover of TM 11-5985-384-10-HR is wrong. NSN 5985-01-248-4760 is correct.

## Keep AN/VRC-12-Series Radio Set Dry

Keep high pressure water away from your RT-524. Washing a receiver-transmitter with high pressure water will put it down quicker'n a wink. Water gets on switches and other critical parts. When juice is turned on—ZAP—they short out.





O-RINGS FOR All REASONS



**FEB 89** 

oring kit, NSN 5330-00-966-8657, has many of the O-rings you need to hook up cable connections.

The kit has 382 rings with 30 different sizes that range from ½-inch to 1¾-inch inside diameter. A sizing gage is included to help you decide which O-ring you need.

None of the O-rings in the kit will fit an FM audio connector, tho. When you need an O-ring for your H-250, H-189 or M-80 accessory, get it with NSN 5330-00-905-6032.



ruddy, dirty, corroded contacts in the antenna base will put a radio on the fritz. You repairmen need to eyeball the horseshoe contact when your favorite radioman comes in with a problem. If it's broken, replace it with NSN 5995-00-921-0630. If the screws are loose, tighten 'em. If they're gone, put in new ones, NSN 5305-00-054-5635.



If the contacts are corroded, shine 'em up with a pencil eraser.

The ring with the horseshoe contact must be threaded into the antenna element to the right depth. Use a load tightening tool, NSN 5120-01-172-8079, to make sure the ring is seated at the correct depth.

While you're right there, take a closer look between the element and the MX-6707 matching unit. If you see red, it's the O-ring. This means the spring contact is not touching. All you need to do is tighten the antenna element.





## No Slip Clip

Before heading out, make sure your AS-1729 antenna is under the clip.

If the antenna's not under the clip, it slips out and gets broken off when it hits something like a tree. Or it can hit an overhead power line and jolt you or your passenger(s).



IM-174A, B Radiacmeter...

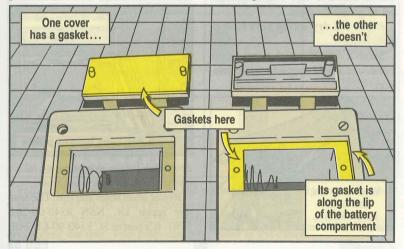
## Twins—But Not Identical

Watch out! Both the IM-174A and B radiacmeter can have either of two base assemblies—and it makes a difference which battery cover you use with which base assembly.

The covers look alike outside, but they're different. One has a gasket and the other has no gasket. The gasket for it is along the lip of the battery compartment.



Never put the cover with no gasket on the base assembly with no gasket. Moisture gets in and causes corrosion. Then you've got to have your radiacmeter repaired.



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here's no excuse for letting a tent mildew. They're treated to be mildew resistant, but that doesn't mean they'll win the fight without your help.

Mildew grows on dirty tents that have been folded and stored wet . . . or stored with tree sap, bird droppings, oil or grease on them.

Clean and dry are the keys to stopping mildew.

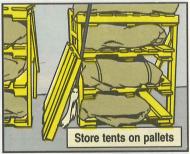
Scrub a dirty tent with a soft bristle brush and a mild soap and water solution.



Hang it to dry in the sun. Never spread it on the ground. It'll pick up surface moisture and never completely

It's dry when the seams are dry.

A clean, dry tent stored on pallets in a well-ventilated area will not mil-



dew. But before you store it, take a careful look for holes and tears.

Repair small holes and rips. Use tentage repair kit, NSN 8340-00-262-5767. It's part of SC 8340-90-CL-P01.

## **Tentage Repair Kit**



Follow the instructions for sewing and patching small rips and holes in Chapters 6 and 9 of FM 10-16. The FM comes with the kit.

Stop holes before they start. Be careful with the tent poles when erecting and dismantling the tent. Tent poles can poke holes in the canvas.

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## **Tents Need Love Too!**

If you need to route a wire or cable through the tent, put in a grommet from the repair kit. Never just poke a hole in the canvas and leave it.



Loosen tent lines when it rains. Water puts additional weight on the tent. Tight, strained lines tear canvas.

THANKS CONNIE!



contains zinc, which will irritate your skin and eves. Take care of the lines, too. They wear with use and rot from weather. Wash them in clean water and hang them up to dry. Check the seam and grommet areas for signs of splitting. Loosen lines when it rains



If your tent leaks and there are no

holes, treat it with a 50/50 mix of can-

vas coating preservative, NSN 8030-

00-281-2346, and dry cleaning sol-

A gallon of this preservative will

cover about 90 square feet of canvas. You can spray, brush or roll it on. Follow the warning in Para 4-29c in TM 10-8340-211-13. The preservative

vent, NSN 6850-00-264-9038.

Keep slide fasteners sliding with luoricant, NSN 9150-00-999-7548.

> ON TENT MAINTENANCE READ TM 10-8340-211-13 AND FM 10-16 IF YOU'RE HEADING INTO COLD WEATHER READ FM 31-70, TOOI

Expandable Frame Tent-COULD YOU GET NSN 8340-00-782-I'M SORRY ... SNORT SNORT THAT NUMBER IS NOT IN SERVICE!

Here's what you need...

QTY	ITEM	NSN 8340-00-
1	End frame section Expandable frame	234-4708
18	section 9-in aluminum	234-4712
	tent pins	261-9749
6	12-in steel tent pins	823-7451
10	16-in wood tent pins	261-9750
1	Tent canvas w/cover	782-3425

The lightweight expandable frame tent is identified by NSN 8340-00-782-3232. But you can't order that NSN and get a complete tent. To get the tent, order by components. TM 10-8340-220-23P does not show which components to order.

Tent Pole Repair Kit

Missing the locking clips or retaining rings for the poles on your M1950 lightweight hex tent or Arctic tent? A tent repair kit, NSN 8340-01-176-6404, gets you both an upper and lower locking clip and two retaining rings.





The kit is a local purchase item, so order it with CAGE 63422, PN 8413-UL2R from:

Flagpoles, Inc. 95 Gnarled Hollow Rd PO Box GG East Setauket, NY 11733-1908

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flashback in a welding hose can cause an explosion or fire in the regulators or tanks.

Check valves can stop a backflow of gas, but may not act quick enough to stop a flashback.

Flashback arrestors are now in the system for the acetylene and oxygen lines. Get them with:

4820-01-270-2166 Acetylene 4820-01-270-6039 Oxygen

In addition to stopping the flashback flame, arrestors also:

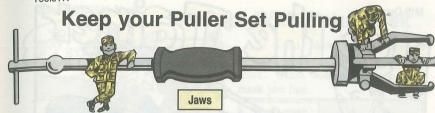
- \* Prevent the backflow of gases.
- \* Cut off the flow of gas after a flashback.

Install the flashback arrestor between the gas regulator and the hose. You can use them with any reverse flow check valves already installed on the hoses or torch.



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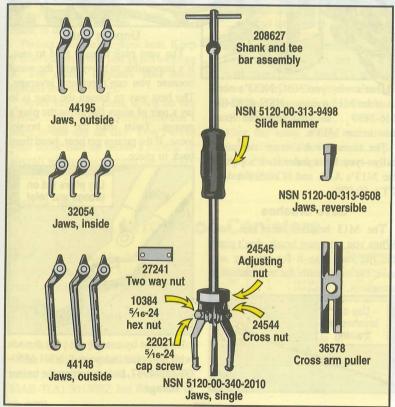
Tools...

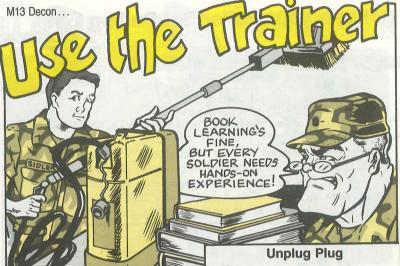


ere's a rundown of the components in universal puller kit, NSN 5180-00-313-

This list shows the latest set from the manufacturer. Older sets may have additional jaws that are not included in the current set. If you have extra jaws, don't trash 'em. Use 'em. But there's no requirement to replace them.

Several items are listed with a part number only. There are no NSN's assigned to them, so order by part number and CAGE 45225 from RIC A35.





That's why you NBC NCO's need to order M13 trainers, NSN 4230-01-136-8889...so your unit can learn how to use M13's.

The trainer won't come automatically-you must order it. It's part of the M13's AAL and is authorized by CTA 50-970.

#### Save Brushes

The M13 brushes wear out fast. When you get a new brush, don't pitch the old one. Use it for training and save the new brush for real chemical situations.



The vent plug threads tend to rust. It's impossible to move with the wand because you can't get any leverage. The best way to loosen the plug is to lay a pair of pliers flat along the plug's prongs. Twist until the plug breaks loose. If the prongs get bent, bend them back in place.



Stop rust by coating the plug threads with antiseize compound, NSN 6850-00-753-4967, before putting the trainer in storage.

M24, M25/M25A1 Masks...

**Be Cool With Your Mask** WON'T LOSE IF I STAY COOLI mask just fine. Wash mask with warmnot hotwater...

Heat ruins your mask. Temperatures above 120°F crack the lenses and the rubber of the faceblank and hose. Your mask is done for.

Protect your mask against heat. Keep it in its carrier when you're not wearing it. The carrier insulates your mask against the sun's rays.

Never lay your mask down on hot metal . . . like the hood of a truck that's been in the sun all day. Don't leave your mask shut up inside a vehicle or aircraft where temperatures can quickly become oven-like.

Use warm (below 120°F)—not hot -water and detergent to wash your mask. Warm water will clean your



If your mask does get hot, put it in a cool place for at least 15 minutes before you try to flex it or stow it in the carrier. That gives some flex back to the rubber and lenses.

After the mask cools, eyeball the lenses and faceblank for cracks, especially around the edges. Report any to your NBC NCO.

M24/M25A1 Mask

## **TM Wrong on Canisters**

M 3-4240-280-10 (Mar 88) has some bad info on the M10A1 canister chart on Page 2-64. Change the chart like so:

Hot-dry—24 months

Constant high humidity—4 months Variable high humidity—4 months

The word's in AMCCOM Maintenance Advisory Msg 88-11 AMSMC-MAR-T(A) 301300Z Jun 88.

Climate	Climate Category*	Climate Description	Replacement Intervals (Months)**
Hot	1 2	Hot-dry Hot-humid	24 A
Basic	1 2 3 4	Constant high humidity Variable high humidity Basic hot Basic cold	4 24 4 24 24 24
Cold	2 3	Cold Severe cold	24 24

\*Climate categories are defined by AR 70-38.
\*\*Filter elements that exceed these intervals remain serviceable for TRADOC training activities only.

round Flying Cylinders M11 Decon...

INSTALL ME WRONG AND I'M OUTTA HERE 副

ou've got to use a little care when you install a nitrogen cylinder or it can suddenly go flying. Here's how to keep those cylinders earthbound:

Lock the handle down before you stick in the cylinder. If the handle's partly up, the cylinder can be pierced and shoot off.



Slip the cylinder into the hole. It doesn't take much effort. If it won't fit, don't force it. You'll pierce the cylinder. Get another cylinder and try again.



Watch it, tho. The cylinder should fit in the hole snug. If the cylinder wiggles, something's wrong with your M11. Turn it in.

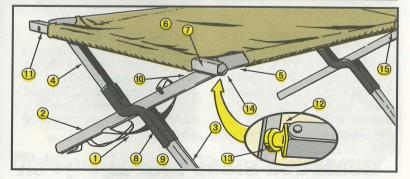
Just to be safe, always point the M11 away from you and away from anyone else while putting in the cylinder to prevent a DS2 shower.

Pull up the handle to pressurize your M11. You'll hear a hissing noise and feel resistance on the handle. That's what's supposed to happen. Don't let that stop your pull up on the handle to the top locking position.





ITEM	NSN 7105-00	ITEM	NSN 7105-00
1. Folding cot strap 2. Leg, folding cot 3. Lower half-leg 4. Upper half-leg 5. Side rail	-113-0003 -935-0425 -935-0427 -935-0426 -935-0423	9. Cross leg support (right) 10. Top leg support (right) 11. Top leg support (left) 12. Dowel plug	-935-0429 -935-0430 -935-0431 -935-0433
6. Cover 7. End stick 8. Cross leg support (left)	-935-1845 -935-0424 -935-0428	Spacing plug     End plug     Top leg support     (center)	-935-0434 -935-0435 -935-0432



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### M16A2 Changes Listed

Armorers, you need to check out Pages 3-122 through 3-133 in TB 43-0001-36-7 (Oct 88). It lists many changes to M16A2's TM 9-1005-319-23&P that have resulted from DA Form 2028's from the field.

#### Track Pad Info for M113's

Pages 10-11 of PS 432 suggest removing, with your unit CO's approval, every fifth track pad to improve traction on ice. DO NOT remove any track pads on M113-series vehicles. Also, do not mix T130 and T130E1 pads on the same track. The vibration set up by missing or mixed pads can cause hull cracks and other damage. Prevent the pad swap problem by using NSN 2530-01-130-3366 only. It replaces both T130 and T130E1 pads.

## 1½-Ton Trailer Torque Change

There's been a change in the wheel lug nut torque shown on Page 3-5 of TM 9-2330-213-14&P. Now you torque the nuts to 340–370 lb-ft.

## **Antifreeze Testing**

Use NSN 6630-01-011-5039 to order the reserve alkalinity test kit to check antifreeze reserve alkalinity and protection levels in engine cooling systems. Perform this test during service of equipment as stated in TB 750-651. This NSN gets a kit containing 50 test sticks.

### **M102 Breech Assembly Error**

Item 11 on Page 3-36 of TM 9-1015-234-10 is wrong when it tells you to turn the breech closing spring adjustor clockwise. To get the right closing tension for the breechblock, you must turn the adjustor **counterclockwise**. Then you can set the adjustor at the first, second or third detent notch.

## **SPH-4A Microphone Switch**

If the selector switch on your SPH-4A helmet microphone breaks, order a new one with PN MJS-103, CAGE 28986, on a DD Form 1348-6 from RIC S9E.

#### **Aviation 3-Level Maintenance**

Aviation maintenance will continue under a 3-level maintenance system instead of changing to 4 levels.

The 3 levels are:

- Aviation unit (operator/crew and organizational) maintenance (AVUM)
- Aviation intermediate maintenance (AVIM)
- Depot maintenance

### No. 1 on the HIT Chart

When the outside air temperature falls dead center between 2 temperature marks on your Health Indicator Test (HIT) chart, always round up, not down. This reverses the info on Page 38 of PS 429, which says you should round down.

## Would You Stake Your Life jight on

#### M796A1 Wheel NSN

The wrong NSN and PN for the wheel on the M796A1 bolster trailer is listed in TM 9-2330-287-14&P. Use NSN 2530-00-178-0720 to get the wheel, shown as Item 18 in Fig 15 of the TM. This wheel is the same one used on the M796.

#### 6-K and 10-K Forklift Tires

The tire NSN's in the TM's for the MLT-6, MLT-6W, MLT-6CH, MLT6-2 and ARTFT-6 6,000-lb and RTL 10 and RTL 10-1 10,000-lb forklifts are wrong. Get the tire used on all of the 6,000-lb forklifts with NSN 2610-00-726-5164. Use NSN 2610-00-726-5168 for the tire used on the 10,000-lb forklifts.

## M101A2 Trailer Lug Nut and Stud

The NSN's for the stud and lug nuts shown as Items 11 and 15 of Fig 20 in TM 9-2330-202-14&P are wrong. Use NSN 5310-01-149-0868 to get the lug nut and NSN 5306-01-237-6844 to get the stud for your M101A2 trailer.

### M816 Data Plate NSN

The NSN for the rear throttle data plate for the M816 wrecker's winch crane is not in TM 9-2320-260-20P. If you need one, order it with NSN 9905-01-108-1033.

#### **Camshaft Snapring NSN**

M172A1 semitrailer camshaft snapring, items 3 and 5 on page 4-87 of TM 9-2330-211-14&P, is not called out in the parts list in Appendix F. Order it with NSN 5365-00-803-7299.

### **Emergency Towlight NSN**

Drivers, you no longer have to tow in the dark with your 5-ton wreckers. Have your mechanic order emergency tow-light, NSN 6220-01-217-8316, and wiring harness, NSN 6150-01-180-6035, to hook it up. It's the same towlight used with the HEMTT wrecker. The Tank-Automotive Command has added it to the Additional Authorization List (AAL) for all 5-ton wreckers.

#### 6.000-lb RTFL Brake Line Elbow

Use NSN 4730-01-158-3253 to get the elbows in the lines to the transmission disconnect valve on the MLT-6, MLT-6CH and ARTFT-6 forklifts. The NSN listed for Item 22 in Fig 78 of TM 10-3930-242-20P gets an elbow that's too big.

### **Troubleshooting TM Binders**

Caught in a bind without binders for those long aircraft troubleshooting and fault isolation procedures TMs? Get a box of 25 11x17-in pressboard binders with NSN 7510-00-281-4310.

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

## the Condition of Your Equipment?

U.S. GOVERNMENT PRINTING OFFICE: 1989 — 648-004/00002

