

Issue 456

PS

November
1990

THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-456

HEY, SOLDIERS,
DON'T MISS
**DR. DIODE'S
COMPUTER SHOW!**
FEATURING **D-2000**
WITH **MEGABYTES**,
**A THOUSAND
SPREAD SHEETS**
**A MINUTE, A
MILLION D.R.'S**
AERO SPACE ROBOTICS
TECHNO-POOLES
CAPTAIN WHIR BANG
TECNO RINGS
BLAH BLAH BLAH

DO YOU
THINK HE CAN
CROSS-REFERENCE
NSN'S
AND **PART
NUMBERS?**

LET'S
CHECK
IT OUT!

SEE PAGE 27 - AMDF BY PHONE

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In the Combat K...

One of the big differences between combat exercises and the real thing is that an exercise usually has a known termination date. This little bit of knowledge can become a dangerous thing when it tempts players to take actions they would never consider in combat, which seldom has a foreseeable end.

Take maintenance, for example. Some participants figure that since the training time is so limited, tactical operations are paramount. They know their equipment needs maintenance but they're willing to sacrifice endurance for the sake of a sprint-type goal. After all, they say, we can always pull maintenance after the exercise is over.

There's No Finish Line

But maintenance is not the rival of training—it's part of training. If operators and mechanics don't get a chance to pull maintenance under exercise conditions, how are they going to learn to cope with the real battlefield?

Units that build up a maintenance debt are like long-distance runners who don't pace themselves and create an oxygen debt. Sooner or later they hit "heartbreak hill," and the agony begins. Runners have a name for it: they call it "dying."

MY OIL'S LOW
AND MY FILTERS ARE CLOGGED!
I NEED **PM** NOW!

LET'S MOVE!
MAINTENANCE CAN
WAIT TIL THIS EXERCISE
IS OVER!

NO MATTER HOW URGENT THE
TRAINING,
ALLOW ENOUGH TIME FOR
MAINTAINING:
THE WEAR AND THE TEAR
WILL NEED SOME REPAIR—
EQUIPMENT IS NOT
SELF-SUSTAINING!

PS

THE
PREVENTIVE
MAINTENANCE
MONTHLY

TB 43-PS-456, 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

FAX: DSN 745-3855
or Comm 606-293-3855

By Order of the Secretary of the Army:

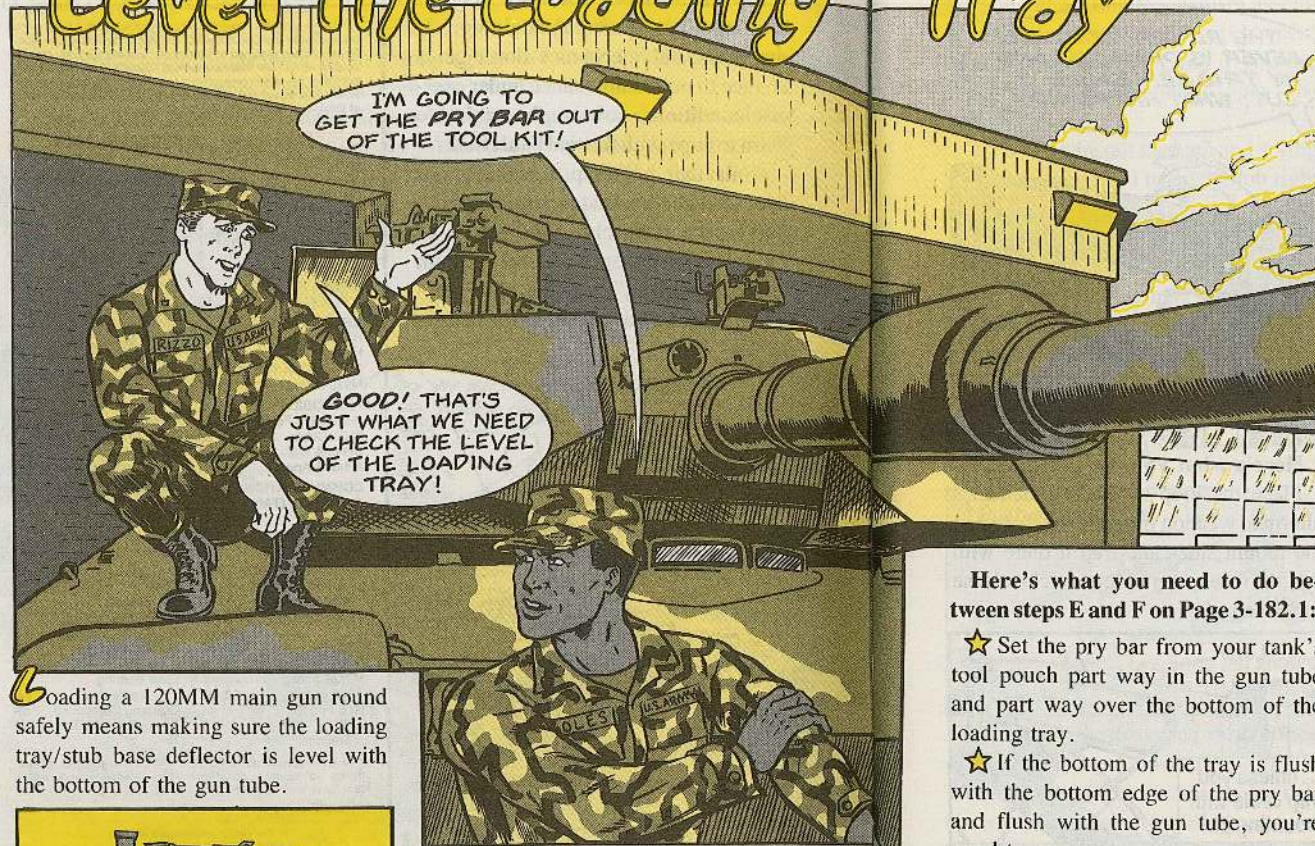
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Level the Loading Tray



Loading a 120MM main gun round safely means making sure the loading tray/stub base deflector is level with the bottom of the gun tube.



If the tray is not level, the round chambers at an angle. That shaves off part of the combustible case, and increases the chances of a flashback in the gun tube—or maybe in the turret.

TM 9-2350-264-10-3 does not mention checking for a level tray when inspecting the stub base deflector, but it's being added to the procedure.

Here's what you need to do between steps E and F on Page 3-182.1:

- ★ Set the pry bar from your tank's tool pouch part way in the gun tube and part way over the bottom of the loading tray.

- ★ If the bottom of the tray is flush with the bottom edge of the pry bar and flush with the gun tube, you're good to go.

- ★ If the pry bar does not lie flat on both the gun tube and loading tray, let your mechanic hear about it now. He'll use the info on Page 8-53 of TM 9-2350-264-20-2-4 to even up things.

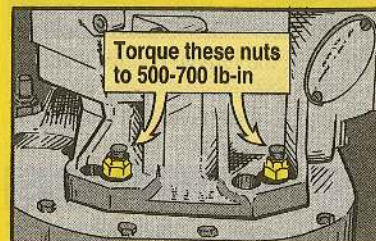
- ★ If the tray does not raise and lower smoothly during operation, your mech can fix that, too, with the info in the -20-2-4.

EMFS Nuts Get Torque



Electro-mechanical fuel system (EMFS) flanges can't take a lot of banging around before they wear and break.

But the flanges get banged around because there are no torque values called out for the gearbox nuts that mount the EMFS.



As the nuts loosen, the EMFS shim-mies in its mount, wearing on the flanges. Eliminate the wear by torquing the nuts to 500-700 lb-in.

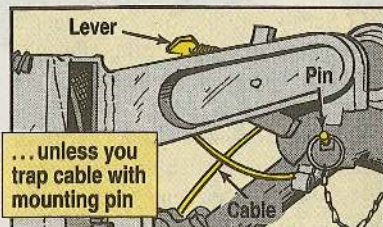
Prevent even more damage to the EMFS flanges by making sure the component is handled with care during transport to and from your DS exchange point. Depot rebuild can't do much with flanges that are broken or wallowed out.

Stow Remote Control Lever



Here's what you do:

Place the loop of the commander's alternate weapon trigger cable between the mount sides and trap it there with the M2 machine gun rear quick-release mounting pin.



Since the cable is attached to the lever, trapping it in the mount keeps a light tension on the lever so it can't swing free.

If you need to take slack out of the cable, loosen the wing nut, pull the cable tight and screw down the nut. Reverse this process before you install the machine gun.



Once you remove the machine gun from the mount, the lever swings free where it can be trapped between the mount and periscope when the mount is elevated—unless you stow the lever.

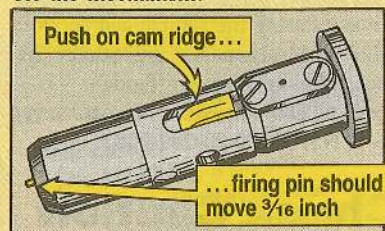
Install Cam, Spring Right

If you put a firing mechanism assembly together wrong, bad things happen! You'll break the firing pin if you fire the cannon or manually open the breech.

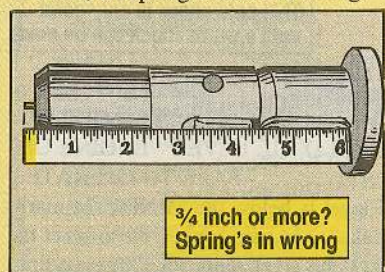
It's easy to install the cam and spring wrong, so you need to do the job right the first time.

Using Pages 3-178 and 3-179 of TM 9-2350-264-10-3 as a guide, make sure you do this:

1 Check the assembled mechanism by pushing down on the cam, Item 24 on Page 3-179. If the firing pin moves out about $\frac{3}{16}$ inch, the cam is installed right. If the pin doesn't move, reassemble the mechanism.



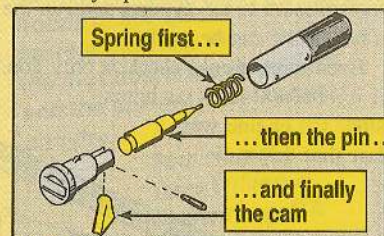
2 Measure the distance from the face of the firing mechanism to the tip of the firing pin. If the distance is $\frac{3}{4}$ inch or more, the spring is installed wrong.



IMPROPER INSTALLATION IS EASY! BUT A LITTLE EXTRA EFFORT CAN PREVENT A BIG HEADACHE!



Disassemble the mechanism and make sure the spring is installed **BEFORE** the firing pin when you put the mechanism back together. If the spring is installed after the firing pin, the pin will break during firing or when you manually open the breech.



3 Use no oil when you assemble the mechanism, and dry off all parts before assembly.

KEEP SMOKING WITH PM



If your survival depended on your Bradley making a good cloud of smoke right now, would you survive?

Not if the smoke generator adapter is clogged.

The adapter must let fuel into the exhaust pipe to make smoke. No fuel into the pipe, no smoke.

To help keep the adapter clean, ream it out during the semiannual service. TM 9-2350-252-20-1-3 (for M2/M3 and M2A1/M3A1) and TM 9-2350-284-20-1-3 (for M2A2/M3A2) are both short on cleaning information, though.

Ream the adapter with a stiff wire or metal rod about the size of a coat hanger or brazing rod. A new adapter, if needed, is NSN 4730-00-289-0383.

Cold Trans Oil Check Caution

A cold oil level check on a Bradley transmission is good for only one thing—making sure there's enough oil in the transmission to safely start and run the vehicle until a hot check can be made.

Even then, a cold check is only good if it's been at least six hours since the engine was last shut down.

This cold check is only good until a warm check can be made

Use only the side of the dipstick marked "MINIMUM COLD OIL LEVEL - ENGINE OFF - SAFE TO OPERATE."

If the oil level is below the MINIMUM mark, check for leaks. No leaks? Add just enough oil to meet the mark. After warm-up, check the level again for a true reading.

Keep Muffler Clamps Tight

Getting a louder than usual roar from your Bradley's muffler? Does the smell of exhaust fumes seem stronger in the turret or cargo area?

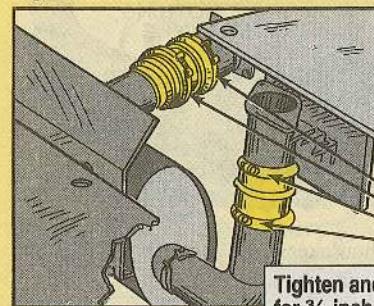
Chances are the exhaust system clamps are loose and the joints are leaking.

Mechs, here's how to tighten up those clamps:

Get at the clamps using the information on Pages 6-764 through 6-768 in TM 9-2350-252-20-1-3 (M2/M3, M2A1/M3A1) and on Pages 6-635 through 6-641 in TM 9-2350-284-20-1-3 (M2A2/M3A2).

Tighten the clamps until a $\frac{3}{8}$ -in gap is left between the clamp ends.

If a clamp is damaged and cannot be reused, replace it with NSN 5340-01-116-3443.



M242 Automatic Gun...

Cover Barrel Problem

Dear Editor,

The M242 has a plastic plug that's stuck in the barrel when the Bradley is parked. The plug is supposed to keep out rain and dirt that can cause corrosion and firing problems.

We've found the plug doesn't do a good job of sealing the barrel, especially from water. Our solution was to have our canvas shop make canvas hoods for the barrels. The hoods should be 10-inches x $2\frac{3}{4}$ -inches. We

had drawstrings put in the hoods to secure them on the barrels. Just slip them over the muzzles, snug them tight and the barrels will stay clean and dry.

Sam Harvel
Gary Williams
Ft Benning, GA

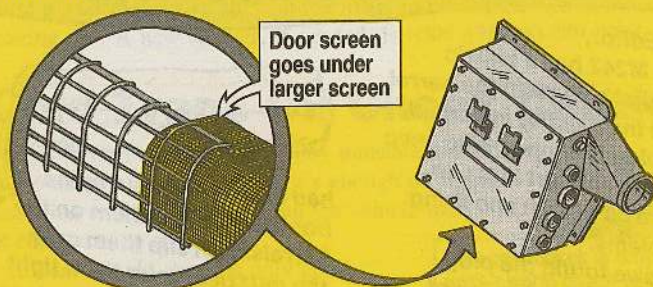
(Editor's note: Glad to give your idea a plug. Thanks.)

Clear Intake for Heater Output



How well you MLRS crews do your "housekeeping" chores will go a long way toward making sure you have heat when you need it.

Paper and trash on the floor get sucked into the personnel heater air intake. The intake on the underside of the cab power distribution box has a screen over it, but the openings are too large to trap some trash.



Once trash blocks the air inlet, the heater cannot breathe. It goes out. You're left in the cold until you remove the blockage, which can be anywhere in a long air inlet hose running from the cab to the heater under the cab.

You can prevent the discomfort and work by keeping a cleaner cab, or by having your mechanic cover the air inlet with a piece of common door screen.

If your mechanic doesn't have screen on-hand, he can check with the installation's self-service supply center. NSN 5335-00-889-3281 will get a 100-ft roll of 16x18 mesh 30 inches wide.

Hatch Latch Catch

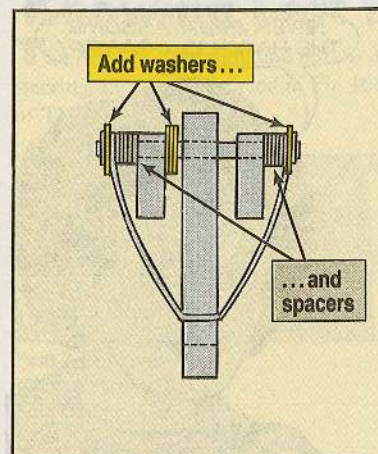


Different sleeve spacers are needed in one of the two quick fixes for the hatch latch on your M109 SP howitzer.

To make sure the commander's hatch stays latched open—and off your head—here's how to do the work:

X Add new sleeve spacers, NSN 5365-01-295-8128, under the latch spring on both sides of the mount brackets. You may need a couple of flat washers, NSN 5310-00-080-6004, to hold the spacers in place. The spacers keep the spring from losing its shape and the ends from slipping off the latch bracket.

X Using the same flat washers, shim the space between the brackets so there's only about a 3/8-in gap. More space than that lets the latch move too freely and can keep the hatch from locking right.



Uncover Dangerous Hatch Covers

There are some dangerous M901 and M981 hatch covers in the field that can unexpectedly fall and flatten heads and chop off fingers because of faulty handle assemblies.

All of the bad handles are marked "MFR 4L516." Check all your unit's M901A1 or M981s for these handles. If you spot any, make sure the hatches are always tied back in the open position with web strapping or something similar.

Direct Support should stop doing MWO 9-2350-200-30-1 until the faulty handles are replaced.

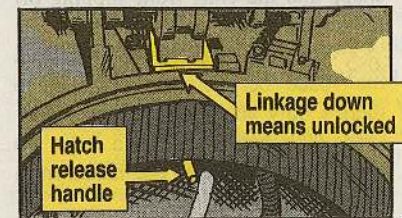
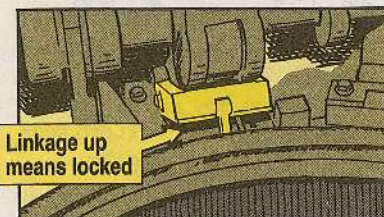
See your local TACOM Logistics Assistance Representative for details on turning in and replacing faulty handles, NSN 5340-01-240-7321.



Hatch Lock Check

Unless the hatch release handle works smoothly and releases the spring-loaded stop completely, your hatch may only look like it's locked open.

Cast an eye at the linkage. If the linkage is up, you're in good shape. If it's down, pull the hatch down and release it again. If the linkage still won't pop up, call in your trusty mechanic.



NEVER EVER ASSUME
THE HATCH IS LOCKED!



Transmission Oil Light Flicker

CONNIE,
MY TRANSMISSION
OIL LIGHT IS
ON!

JUST SHIFT INTO
NEUTRAL AND REV
YOUR ENGINE
TO 1400
RPMs!



If the transmission low oil pressure light comes on when you slow down and apply the brakes on M113A3 and M730A2 carriers, don't automatically think you've got transmission problems.

Oil pressure to the switch is lowered enough to make the light come on when

the brakes are applied.

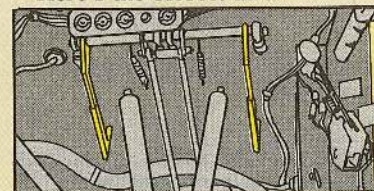
Make sure that's the only problem by shifting into neutral and revving the engine to 1,400 RPM. If the light goes out, continue your mission. If the light stays on, shut down and check the fluid level before calling in your mechanic.

M113-Series FOV...

Knowing Left from Right, in TM

The NSNs for the right and left pivot steering levers are reversed in Fig 168 of TM 9-2350-261-20P.

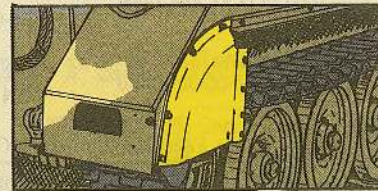
Here's the correct info:



Item 3, left lever—
NSN 3040-00-862-2615
Item 5, right lever—
NSN 3040-00-864-2905

The NSNs are also reversed for the right and left rear track covers in Fig 180.

Here's the correct info:

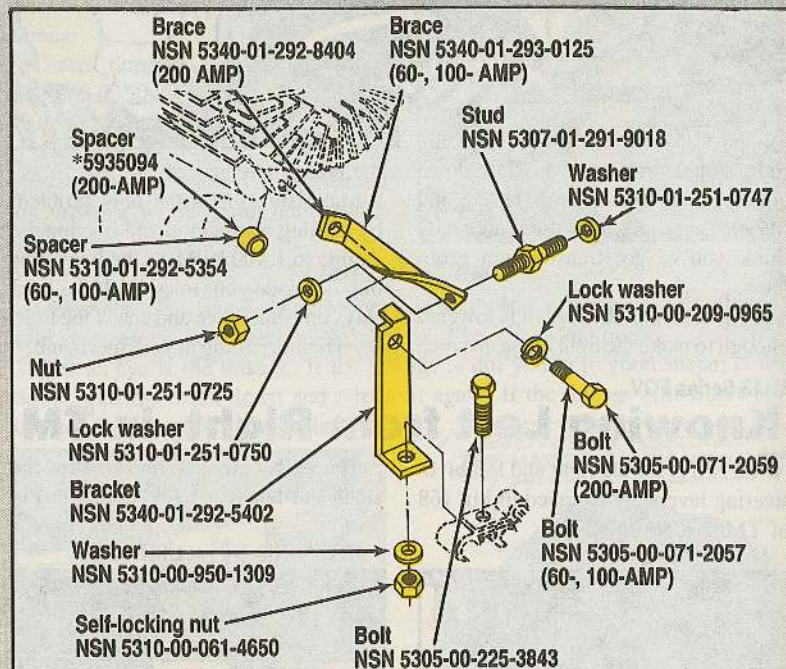


Item 3a, left cover—
NSN 5340-01-102-4624
Item 3b, right cover—
NSN 5340-01-102-4625

Brace Blocks Broken Bracket Bolts

Good news, mechanics! You can now help prevent broken bolts in the alternator bracket on your HMMWVs.

A new bracket assembly and improved mounting hardware comes in kit, NSN 2540-01-288-5240, for 60- and 100-amp alternators, while 200-amp HMMWVs use kit, NSN 2540-01-288-8567. The kits include a better rear support brace and an additional bracket that help hold the alternator steady.

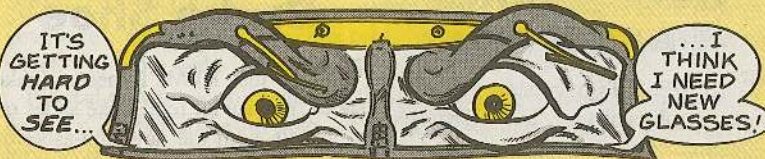


*Order on DD Form 1348-6 using CAGE 34623 from RIC AKZ

The rear brace runs from the back of the alternator to the exhaust manifold. Be sure to replace all the old hardware when you change the brackets.

The authority for the kits is TACOM Msg AMSTA-MTA 251600Z Apr 90. If you do not have a copy, see your Tank-Automotive Command Logistics Assistance Representative, or write Half-Mast.

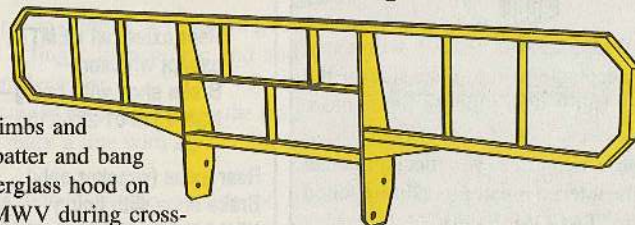
Clean Wipers Stop Scratches



Drivers, don't forget to clean the windshield wipers when you give your HMMWV a bath. Road grit and grime build up along the long, thin edge until it no longer fits tight against the windshield.

A couple minutes of cleaning will help you see much clearer down the road.

Brush Guard Stops Abuse



Brush, limbs and branches batter and bang up the fiberglass hood on your HMMWV during cross-country driving. Too much rough stuff and the hood can crack or break.

You can stop all that by getting your DS folks to make a brush guard to protect the hood and lights. The instructions are on Pages 3-34 thru 3-57 of TB 43-0001-39-3 (Jul 88).

No copy of the TB? See your TACOM Logistics Assistance Representative or write to Half-Mast.

Ground Flyaway Fan Shroud

The fan shroud bracket on the HMMWV's engine has a tendency to loosen and fly off. Then the fan hits the shroud and shreds it.

To make sure the bracket stays in place, rivet it to the shroud. Use a pop rivet with NSN 5320-01-258-2576.





Old Slave Receptacles Dangerous

Early HEMTTs have slave receptacles on the battery box. They're dangerous. If you slave start with those receptacles, a fire can start in the battery box



MWO 9-2320-279-20-3 will move the receptacle to the other side of the truck. But it won't hit the field before 1991.

In the meantime, you mechanics can use the interim repair procedure spelled out in TACOM Safety of Use Msg AMSTA-MTC 012100Z Nov 85 that will let you safely use the slave receptacles. If your local TACOM Logistics Assistance Representative doesn't have a copy, write Half-Mast.

Non-Asbestos Brake Shoe

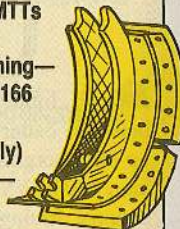
When the HEMTT needs brake shoes, replace all four brake shoes on each axle with the new non-asbestos shoes.

Order four shoes for each axle:



Front axle (All HEMTTs)
Brake shoe with lining—
NSN 2530-01-287-2167

Rear axles (all HEMTTs
except wrecker)
Brake shoe with lining—
NSN 2530-01-287-2166

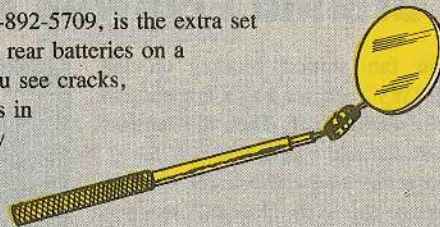


Rear axles (wrecker only)
Brake shoe with lining—
NSN 2530-01-287-2165

The new brake shoes have the part number stamped on the back of each shoe, while the old ones are plain. That's how you tell the difference.

Mirror for Battery Check

Hand mirror, NSN 5120-00-892-5709, is the extra set of eyes you need to check the rear batteries on a HEMTT. The mirror helps you see cracks, leaks and the electrolyte levels in the filler holes. Your authority for ordering the mirror is Appendix A of CTA 50-970.



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

Gage Makes Difference

Many 2 1/2- and 5-ton trucks are running around with overfilled differential gear boxes. An overfilled gear box builds up pressure. This causes overheating, which will blow seals.

It's real easy to overfill a differential. The LO tells you the lube level should be at the bottom of the fill hole—if the oil is hot. The problem with checking lube level in a hot box is that a soldier can get burned.

So it's best to check the level when the differential is cold—if you can hold your hand on the box, it's OK. Level should be 1/2 inch below the lip of the fill plug.

To measure this, stick your little finger in to the first joint and bend it down. If you touch oil, the level's OK.

But not all fingers are equal. Some big little fingers won't even fit in the hole.

To even things up, make a finger equalizer.

Here's how:

- ✓ Cut an 8-in piece of 1/8-in welding rod.
- ✓ Bend a finger loop in one end and a 1-in leg on the other.
- ✓ Measure down 1/2 inch from the inside angle and mark a line with a pencil or felt tip pen.
- ✓ File a notch on the outside of the "dipstick" so it's easy to see.



Transmission Dipstick



The PMCS in TM 9-2320-273-10 does not tell you everything you need to know about checking the transmission fluid level in these trucks. A wrong turn of the dipstick gives you a bum reading.

Measure the fluid level while the transmission's cold before you start your truck or wait at least five minutes after you shut it off. Never just pull the dipstick out. Instead, turn the dipstick handle counterclockwise to loosen the dipstick. Pull it out, wipe

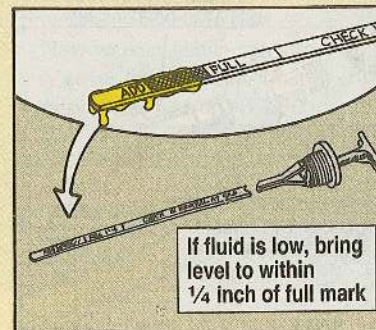


it off and then slowly slide it all the way down in the tube.

Stop! Do not tighten the handle down. That throws off the reading.

Tips

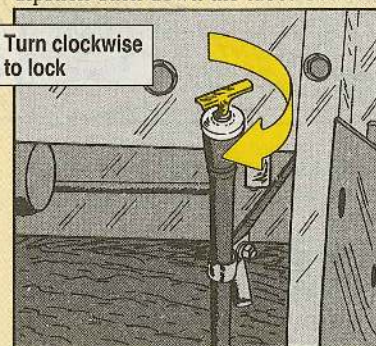
Pull the dipstick out again. Make sure the oil level is between the add and full marks. If the fluid level is low (below the add mark) add about 3 quarts of fluid to bring the level to within 1/4 inch of the full mark. Do not



fill it all the way to FULL. The fluid expands when it is hot. Filling it all the way overfills the transmission and blows the seals.

After the level is checked, slide the dipstick back down the tube. Turn the

Turn clockwise to lock



handle clockwise to lock it. This keeps the dipstick in and dirt out of the transmission.

Coolant Filter Cleans System

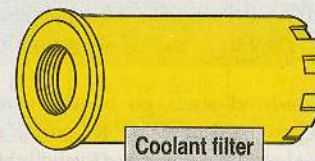


Give your M915's engine a longer life span by installing a coolant filter kit like the one on the M915A1s.

The coolant filter keeps the cooling system clean and helps prevent corrosion.

Order the filter kit with NSN 2930-01-184-1877. Get replacement filters with NSN 4330-00-274-4712.

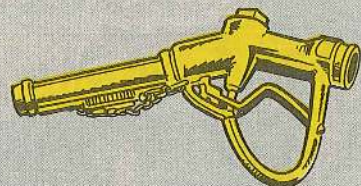
Installation instructions come with the kit.



Skinny Fuel Nozzle Hookup

The 1½-in fuel nozzle on fuel tankers is too fat to slip past the filler neck flange on M880 trucks. You can order a skinnier 1-in nozzle with NSN 4930-00-360-0611. Use CTA 50-970 as your authority to order.

Here's what you need to hook it up:



Quick-disconnect coupling
1-in male to 1½-in female
NSN 4730-00-889-2382

Quick-disconnect coupling
1-in male to 1-in female
NSN 4940-00-360-0710

Big Difference in Wheel Studs



The left and right-hand stud bolts may look alike on medium and heavy tactical trucks, but there's a B-I-G difference. They go on different sides. Put 'em on the wrong side and the wheel can run off.

Left-hand studs have left-hand threads that tighten to the left, or counterclockwise. They have an "L" stamped on the end and go on the driver's side of the truck.

Right-hand studs go on the curbside wheels. They tighten to the right, clockwise, and have an "R" on the end.

It only takes a minute to eyeball the bolts and keep 'em straight. It could keep lots of trouble from rolling down the road.

Battery Cover

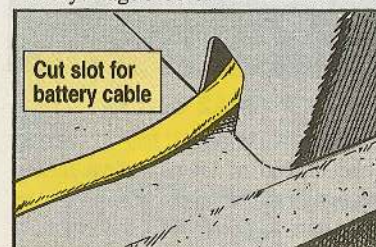
You're in for a real shocker if you happen to drop a wrench or other metal object across the terminals of the battery on this 5,000-gal tanker.

The battery is in the front of the curbside cabinet. There's nothing to protect the battery.

Now you mechanics can install a battery cover from a Gama Goat over the battery. Page 3-55 of TB 43-0001-39-1



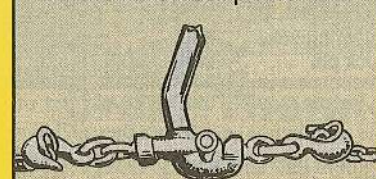
(Apr 90) has all the info. If you don't have a copy, write to Half-Mast.



Load Binder NSNs

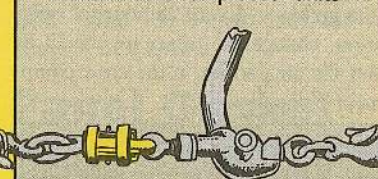
Two kinds of double hook load binders are available for securing loads on semi-trailers.

Binders without compressor units



Model	Chain Size	NSN
R-30	1/4-, 5/16-, 3/8-in	-0880
R-40	3/8-, 7/16-, 1/2-in	-0881

Binders with compressor units



Model	Chain Size	NSN
R-35	1/4-, 5/16-, 3/8-in	-1239
R-45	3/8- to 1/2-in	-1746

The compressor unit acts as a shock absorber. That helps save the binder when strapping down rigid loads with a steel chain.

New Versions Require New PM

THERE ARE A FEW DIFFERENCES BETWEEN THE OLD AND NEW CHAPARRALS THAT REPAIRMEN NEED TO NOTE:



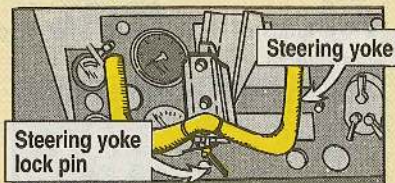
FLIR

The Forward Looking Infrared Radar (FLIR) added to the M48A2 and M48A3 is extremely sensitive to moisture. Moisture causes double images on the FLIR screen and can even cause it to go black. Every 28 hours of operation, change the filters for the FLIR and the air purifier in the crew equipment compartment.



M730A2 Carrier

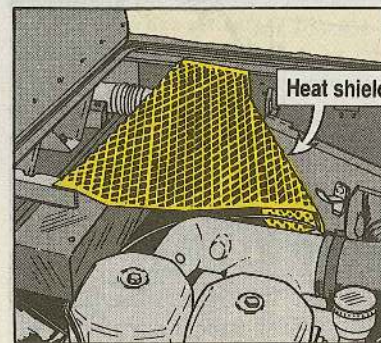
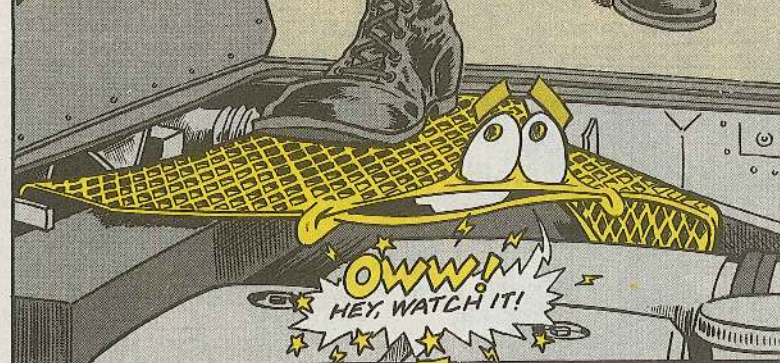
The new M730A2 has a steering yoke instead of laterals. That makes for one big difference: M730A2s can pivot steer—even when the engine's in neutral—if the yoke's locking pin is not in place. Someone standing in the wrong place would be crushed.



Before you let the M730A2s out of the motor pool, make sure they all have locking pins, NSN 5315-01-230-3705. And tell the crews to keep the yokes locked when they're not driving.

M730A2s use different oils: 15W-40 carrier engine oil instead of 30W and 15W-40 oil for the carrier transmission instead of 10W. Stock up on the new oil before your M730A2s arrive. Get 15W-40 with NSN 9150-01-152-4119.

Heat Shield Available



The exhaust pipe heat shield in the Chaparral's system engine compartment gets stepped on and damaged. Then it's taken off. It's not safe to work around the engine without the shield.

There is no NSN for it in TM 9-1440-1585-24P. But you can order a shield on a DD Form 1348-6, using CAGE 18876 and PN 13220526 from RIC B64. Write TM 9-1440-1585-24P in Block 6 of the form.

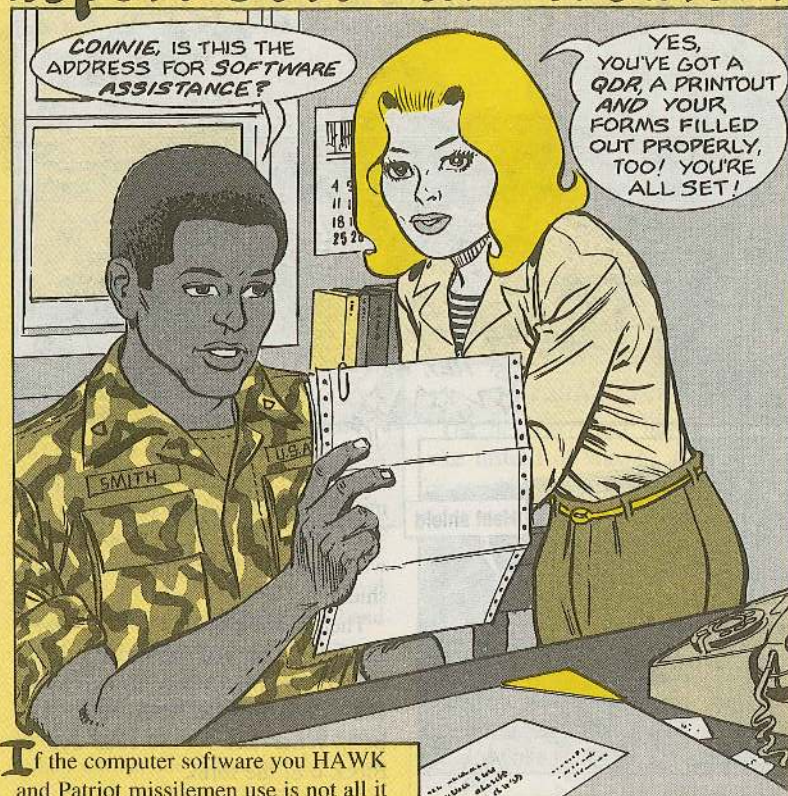
Order Thermo Panel Gasket

If the rubber gasket that runs along the opening in the Chaparral's thermo panel wears out, you don't need to order a whole new panel.

Instead, order gasket material, NSN 5330-01-172-6466, and fabricate the gasket. If you don't have a pop rivet gun, have your Support rivet the gasket on the panel.



Report Software Problem



If the computer software you HAWK and Patriot missilemen use is not all it should be, the Army wants to know.

If the software doesn't do what it's supposed to or doesn't always lead to the correct troubleshooting conclusion, send in a Quality Deficiency Report (SF 368) to:

Commander
MICOM
ATTN: AMSMI-QA-CF
Redstone Arsenal, AL 35898-5290

At the top of the form, write SOFTWARE. Write the name of the software in Block 6. Write the end item the software is used with in Block 16a.(1). Attach a printout from the software if possible. Do not send classified material.

For more info on QDRs, see DA Pam 738-750.

To check on the status of your QDR, call (205) 876-3810, DSN 746-3810.

Send in Cables



HAWK and Patriot cables and other components of end item (COEI) are worth big bucks. When something like the Engagement Control Station goes to depot for overhaul or upgrade, it can't go back to the field unless it has all of its COEI. Plus it's hard for depot repairmen to do their jobs without cables.

That means if you repairmen do not send in the cables with the component, the Army has to buy new ones. A big waste of money. Save by sending in all COEI.

M9 Bayonet Scabbard...

Parts Now Available

Armorers, you can now order and replace the studs, NSN 5325-00-842-1879, and screws, NSN 5305-00-455-2549, on the M9 scabbard.

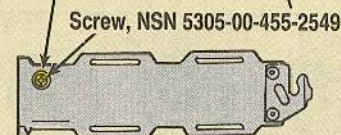
Just place the stud over the old stud hole and screw the screw in with a Phillips screwdriver to hold the stud in place.

Support can replace snaps and rivets on the attaching load assembly and snaps and buttons on the scabbard end attaching assembly. You can find more info on Page 3-5 of TB 43-0001-36-3 (Oct 89).

M9 Scabbard



Stud, NSN 5325-00-842-1879



Screw, NSN 5305-00-455-2549

Armorers can replace these studs and screws

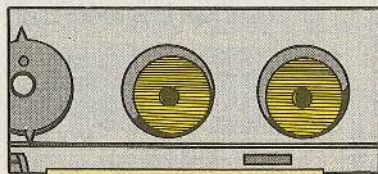
Battery and Water Don't Mix



Even a small amount of moisture can short out your STINGER's Tracking Head Trainer (THT) batteries. That's a \$600 per-battery replacement.

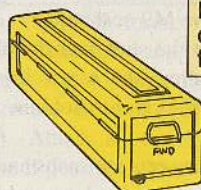
Keep your batteries high and dry like this:

Before you charge or install a battery, eyeball the wells in the battery carrying case and the THT container for moisture... especially after rain or high humidity. If you spot any, wipe it away with a dry cloth.



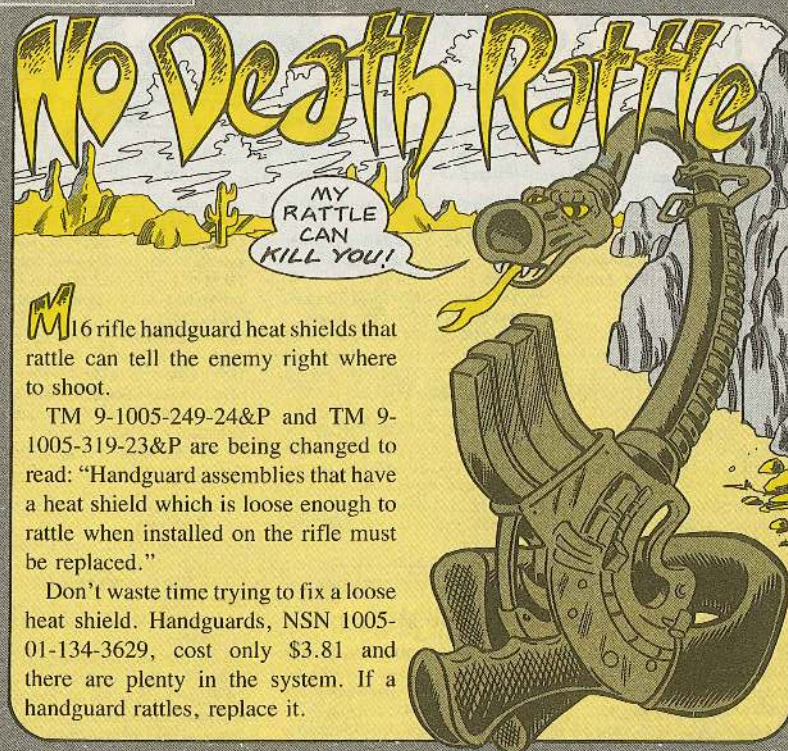
Never put a damp battery in the charger, either. That damages the battery and charger. Always wipe off a battery before putting it in the charger.

Keep the THT's container lid closed in the field, even when you're using the THT. That seals out moisture. If



Keep case closed in field

the inside of the container does get wet, drain any standing water and wipe the container dry.



M16 rifle handguard heat shields that rattle can tell the enemy right where to shoot.

TM 9-1005-249-24&P and TM 9-1005-319-23&P are being changed to read: "Handguard assemblies that have a heat shield which is loose enough to rattle when installed on the rifle must be replaced."

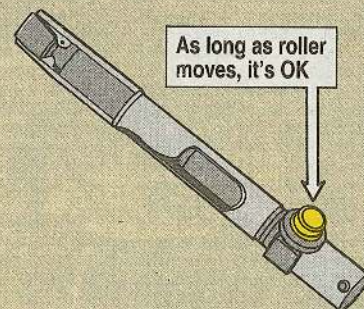
Don't waste time trying to fix a loose heat shield. Handguards, NSN 1005-01-134-3629, cost only \$3.81 and there are plenty in the system. If a handguard rattles, replace it.

It's Got to Move

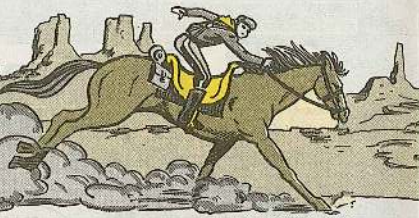
When it comes to the M60's cam actuator roller, armorers, it's usually not how much it moves that matters, but whether it moves at all. As long as the roller moves, it's OK.

But if the roller's frozen, the M60 will fire sluggishly and the cover will wear out fast. Replace the cam actuator assembly.

Replace it, too, if the roller's so loose it can come off.



PUBS



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 9-6115-655-14 Nov 89 120/208 V, 60HZ, three-phase, 15 KW commercial trailer-mounted generator set assembly, model CTMGSA-15 (LT) and model CTMGSA-15 (HY)
 TM 10-3930-638-24P Mar M4K 4,000-lb RT forklift
 TM 10-3930-643-12-HR Apr M10A 10,000-lb RT forklift
 TM 10-3930-643-20 Jan M10A 10,000-lb RT forklift
 TM 10-3930-643-24P Jan M10A 10,000-lb RT forklift
 TM 10-3950-263-24P Feb Crane,

truck mounted, container handling, 140 ton capacity
 TM 10-4510-206-24P Apr Bath unit, portable, automated, multi-head, model PBU100
 TM 11-5805-262-12 Jun SB-22/PT and SB-22A/PT switchboards
 TM 11-5820-890-20-2 Oct 89 AN/VRC-87, AN/VRC-88, AN/VRC-89, AN/VRC-90, AN/VRC-91, and AN/VRC-92 radio sets and AN/VIC-1(V) intercom
 TM 11-5820-890-20P Oct 89 AN/PRC-119, AN/VRC-87, AN/VRC-88, AN/VRC-89, AN/VRC-90 and AN/VRC-91/92 radio sets
 TM 11-5841-294-30-1 Mar Radar signal detecting set AN/APR-39A(V)1
 TM 11-5895-1196-13-2 Mar AN/GSC-52(V)1 fixed medium satellite

Maintenance & Safety-Of-Use Messages

AMCCOM SOU-MSG-27-90—Advisory, Operational, 105MM cartridge APFSDS-T M900, AMSMC-DSM-MG 272305Z Aug 90.
 CECOM SOU-MSG—Update to SOU-MSG 90-06-01, BB-542/U nickel-cadmium batteries, AMSEL-SF-REE 301800Z Jul 90.
 CECOM SOU-MSG-90-08-01—Advisory, Stay winds for the AB-1342/G nine meter mast and the AB-1339/G fifteen meter mast used with mobile subscriber equipment, AMSEL-SF-SEP 091800Z Aug 90.
 CECOM SOU-MSG—Follow-up to update message on SOU-MSG 90-06-01, BB-542/U nickel-cadmium batteries, AMSEL-RD-SOF-TM-1 101630Z Aug 90.
 CECOM SOU-MSG-90-08-02—Mandatory, AN/ASM-146C electronic maintenance shelters, AMSEL-SF-SEC 211800Z Aug 90.
 TACOM SOU-MSG-90-31—Advisory, Technical/Maintenance, M106 series, M113 series, M125 series, M577 series, M981 series, M1059, M667, M741 series, M730 series, M548 series, and M105 series vehicles, AMSTA-M 051300Z Aug 90.

TROSCOM SOU-MSG-16-90—One-time inspection-limited, 4.2KW GED generator set, AMSTR-MES 141832Z Aug 90.
 TROSCOM SOU-MSG-19-90—Operational, 600 GPH reverse osmosis water purification unit, grounding procedures, AMSTR-MES 162030Z Aug 90.
 TROSCOM Maintenance Advisory MSG-90-27—PU-405A/M, PU-406B/M, PU-650B/G, PU-707A/M, PU-732/M, PU-760/M, AN/MJQ-10A, AN/MJQ-12A, AN/MJQ-15, PU-495B/G trailer mounted generators, AMSTR-MES 022000Z Aug 90.
 TROSCOM Maintenance Advisory MSG-90-28—Wheatley high pressure pump on 600 GPH reverse osmosis water purification unit, AMSTR-MES 172000Z Aug 90.
 TROSCOM Maintenance Advisory MSG-90-24—Amertek model 2500L firefighting vehicle, AMSTR-MES 221600Z Aug 90.

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

communications terminal
 TM 11-5895-1197-13-11 Feb AN/GSC-52(V)2 vanized medium satellite communications terminal
 TM 11-6825-3085-23P Mar RPSTL for AH-64A electronic equipment test facility (EETF)
 TM 11-6625-3205-13 Jun Modem TS-4295/G test set
 TM 11-6940-213-12 Mar SM-674A/UPM radar signal simulator set and MX-9648A/APR-39(V) radar signal test adapter
 TM 55-1510-204-23P-4 Mar OV-1B/C/D and RV-1D, OV-1C, OV-1D, RV-1D
 TM 55-1520-210-CL Apr UH-1H/V op/crew checklist
 TM 55-1520-214-CL May OH-6A op/crew checklist
 TM 55-1520-234-23P-1 Feb AH-1S (MOD) tools
 TM 55-1520-234-23P-2 Feb AH-1S (MOD) tools
 TM 55-1520-237-23P-5 May UH-60A, EH-60A and UH-60L tools
 TB 43-0216 Oct Safety and hazard warnings for operation and maintenance of TACOM equipment
 TB 55-1510-217-20-10 Apr OV-1D/RV-1D inspect ele trim tabs, rud trim tab
 TB 55-1520-228-20-52 Mar OH-58A/C landing/search light
 TB 55-1520-228-20-53 May OH-58A/C rail rotor yoke
 TB 55-1520-241-20-52 May CH-47C/D pitch link retaining hardware
 SB 38-102 May End item codes

AUDIO-VISUAL STUFF
 Available at battalion or Post Learning Center

Films, TV Tapes
 TVT 7-22 M249 squad automatic weapon
 TVT 7-24 M60 machine gun mechanical training
 TVT 21-213 Boreighting the M1/M1A1 tank with MILES
 TVT 11-285 Amplifier group OG-181/VRC
 TVT 17-62 Auxiliary power unit on M1 tanks

AMDF by Phone



SOLDIERS,
 IF I CAN HAVE
 A MOMENT TO
 DEMONSTRATE
 A MIRACLE
 OF MODERN
 TECHNOLOGY!

HMM... WE'VE BEEN
 RECEIVING A LOT OF
 COMPLAINTS ABOUT THIS
 CAGEY CHARACTER.

LET'S TAKE A
 CLOSER LOOK!



NOV 90

28

PS MORE

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS

SMART
U.S. ARMY LOGISTICS CENTER
FORT LEE, VIRGINIA 23801-6000

(TAPE OR STAPLE HERE)

REFERENCES (if any): _____

CURRENT PROBLEMS/PROCEDURES: (Print) _____

RECOMMENDATION FOR IMPROVEMENT: (Print) _____

FULLNAME	RANK
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MILITARY ADDRESS (city, state, zip code)

AUTOVON PHONE NUMBER	COMMERCIAL PHONE NUMBER

LOGC SMART USE

IDEA CONTROL NUMBER

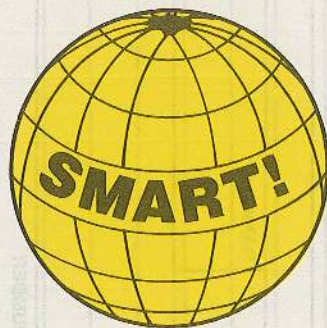
Reverse of DA FORM 5533, OCT 86

***Mail this form FREE! Official mail is authorized. SEND it through your unit or mail room.**

PROJECT SMART

SUPPLY and MAINTENANCE ASSESSMENT and REVIEW TEAM

For use of this form, see HQDA LTR 700-86-1, the proponent agency is DCSLOG.



STOP, BE SMART:

- HAVE YOU INCLUDED A FULL ADDRESS (Rank, APO, Etc.)?
- HAVE YOU INCLUDED ONLY ONE IDEA ON THIS FORM (Multiple ideas on a single form delays your getting an answer)?
- DO YOU KNOW THAT DA FORM 2028 IS THE WAY TO GO IF YOU WANT TO CHANGE A PUBLICATION, AND SF 368 IS ANOTHER WAY TO IMPROVE EQUIPMENT (EIR's)?
- DOES THE IDEA APPLY TO A SUPPLY, MAINTENANCE OR TRANSPORTATION IMPROVEMENT? IT CAN BE ANY LEVEL.
- HAVE YOU RE-READ YOUR IDEA TO INSURE IT SAYS WHAT YOU WANT IT TO SAY?
- HAVE YOU INCLUDED DIMENSIONS, IF APPROPRIATE?
- DO YOU KNOW THAT YOU DON'T HAVE TO USE THIS FORM? YOU CAN SEND US A LETTER IF YOU WANT TO GIVE US MORE INFO THAN THE FORM PERMITS OR TO SEND PHOTOS.
- MOST OF ALL, DO YOU KNOW THAT THE FOLKS AT SMART CARE ABOUT YOUR IDEA?

DA FORM 5533, OCT 86



BUT *CONNIE*, WE DON'T HAVE ANY FUNDS OR TIME FOR TRAINING!

YOU CAN TEACH YOURSELF HOW TO USE RTAIS IN LESS THAN FOUR HOURS USING CDA PAM 18-5, WHICH EXPLAINS THE SYSTEM AND ITS COMMANDS!

DRAT!

HOW CAN WE SIGN UP FOR RTAIS?

...YOU CAN ALSO CALL CDA FOR HELP!

THE CDA PAMPHLET 18-5 DESCRIBES THE SYSTEM, TELLS WHAT EQUIPMENT YOU NEED AND INCLUDES AN APPLICATION FORM. READ THROUGH THE PAMPHLET AND COMPLETE THE FORM AND SEND IT IN. TO GET THE PAM, WRITE TO:

Commander
USAMC Catalog Data Activity
ATTN: AMXCA-PP
New Cumberland Army Depot
New Cumberland, PA 17070-5010

OR CALL:

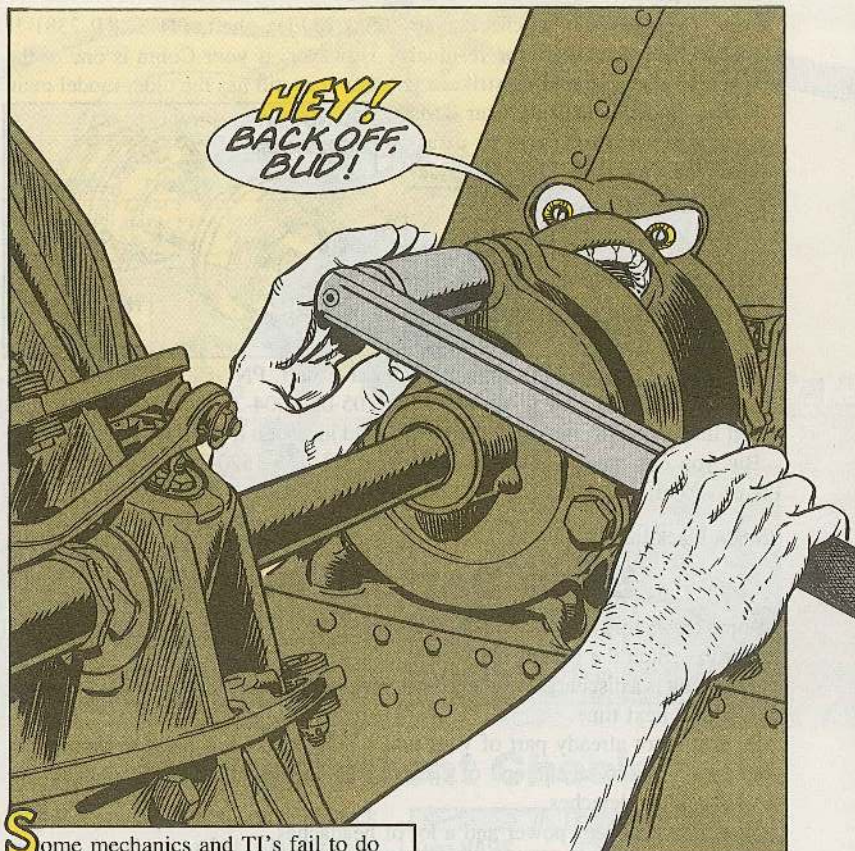
DSN 977-7136/6643
Commercial (717) 770-7136/6643.

TO CANCEL EXTRA AMDF SETS, WRITE TO: CATALOG DATA ACTIVITY, NEW CUMBERLAND ARMY DEPOT, INCLUDING YOUR CUSTOMER ACCOUNT NUMBER. CANCEL OTHER MICROFICHE USING DA FORM 12-99, WITH THE 12-SERIES FORM AND BLOCK NUMBERS. SEND IT TO THE ADDRESS ON THE FORM.

MMM... MAYBE I SHOULD HAVE STUCK TO SNAKE OIL!

R retorquing Fasteners...

Back Off First



Some mechanics and TI's fail to do the right thing when checking torque on fasteners.

They set their torque wrench at the minimum torque called for by their TM and then attempt to turn the fastener. If it doesn't turn, they sign it off in the log book as a retorque.

To get a good torque reading, the fastener must be in motion.

There's only one way to retorque a fastener:

Back off the fastener one-half to one full turn.

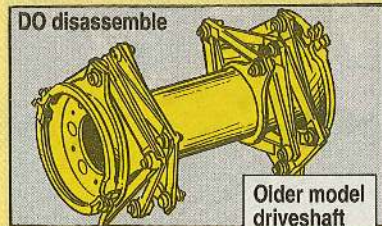
Then retighten the fastener to the torque called for in your TM.

If your TM calls for slippage marks, remove the old marks and make new ones each time you retorque.

No Disassembly Required

Your TMs tell you to check your Cobra's main driveshaft for residual magnetism after a lightning strike.

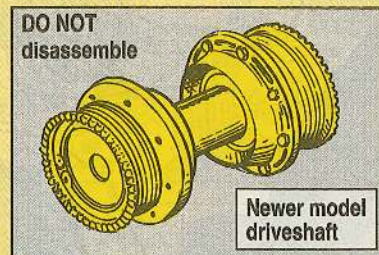
If you find magnetism, your TMs inspection checklist says to disassemble the driveshaft for a more de-



tailed inspection of the short shaft.

But you don't need to disassemble the driveshaft to inspect it if your bird

has K Flex shaft, PN SCKP 2381-1. However, if your Cobra is one of the few that still has the older model main



driveshaft, PN SCKP 2281-103 or PN 205-040-004-21, disassemble the shaft and inspect it like it says in Para 6-19.5 of TM 55-1520-236-23-1 or Para 6-7d.2 of TM 55-1520-234-23-1.

UH-60A Black Hawk...

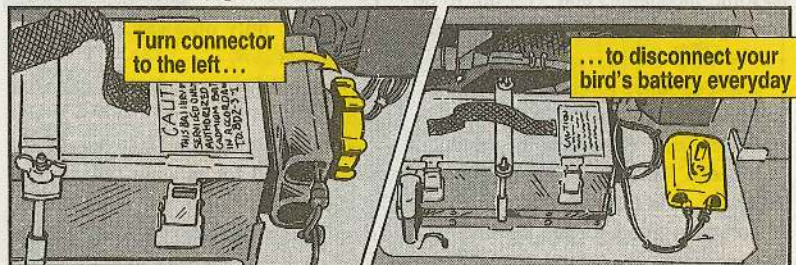
Save Battery Power

Some crews forget to turn off their cockpit utility lights after a mission. Others forget to switch the battery off.

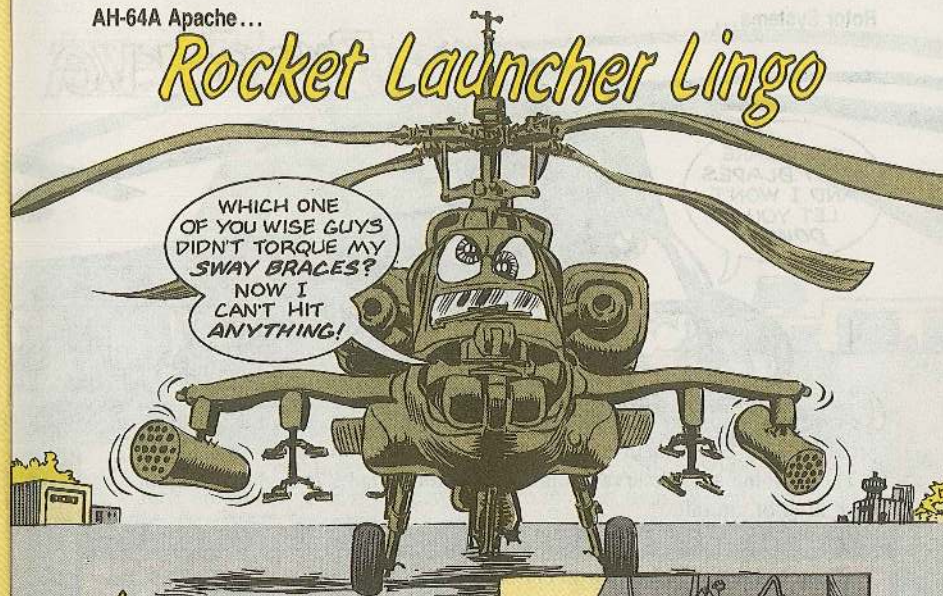
The result is a discharged battery that won't start the APU's electronic sequence unit (ESU) next time.

So if it's not already part of your unit's SOP, make it a habit to disconnect your bird's battery at the end of each day by turning the battery connector to the left until it detaches.

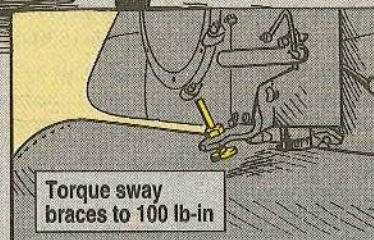
You'll save battery power and a lot of headaches.



Rocket Launcher Lingo



Loose sway braces on your Apache's HYDRA 70 lightweight rocket launchers cause the launchers to move during firing. That means erratic rocket trajectories and missed targets. So torque the sway braces to 100 lb-in to keep the launchers from moving during firing.



Firing Current Check

When you do a firing current check on your Apache's rocket launchers like it says in Para 3-9b(1)(a) of TM 9-1055-460-13&P, you have to turn on all power necessary to fire the rockets. The switches are listed in Paras 2-1-2 and 2-2-2 of TM 9-1090-208-23-2.

You also have to have a Heading Altitude Reference System (HARS) line replaceable unit (LRU) present or you won't get a pulse on your multimeter.



There's no mention of the HARS in the firing instructions on Page 2-7 of TM 9-1090-208-23-2, so make a note until the TM's updated.

Preserve the Blades

TAKE CARE
OF MY BLADES
AND I WON'T
LET YOU
DOWN!

Corrosion feeds on dirt and grime and moisture, so be sure to clean and preserve your bird's main rotor blades when you remove and store them.

The cleaning and preservation process for rotor blades is slightly different for each kind of aircraft.

AH-1

Clean Cobra rotor blades with dry cheese cloth, NSN 8305-00-267-3015, like it says in Para 5-32 of TM 55-1520-236-23-1.

Remove stubborn deposits with a cloth dampened with P-D-680 drycleaning solvent. But don't get solvent on the blade erosion boot. Use only cleaning compound, NSN 6850-01-184-3182, on the boot.

Grease root
fitting bolt hole



Apply aircraft grease, NSN 9150-00-478-0055, to the root fitting bolt hole, drag brace bolt hole and exposed unpainted surfaces.

UH-1

Clean Huey blades with a mild soap and water solution, like it says in Para 5-34.1 of TM 55-1520-210-23-1. Cleaning compound, NSN 6850-01-184-3182, will do fine.

Then apply corrosion preventive compound, NSN 6850-00-142-9582, or primer coating, NSN 8010-00-835-2114.

Protect the blade's main bolt bushing, drag brace retention bolt hole bushing and any exposed bare metal—like grip and drag pads—with a light coating of CPC, NSN 8030-00-231-2353.

Protect bolt
bushings with CPC

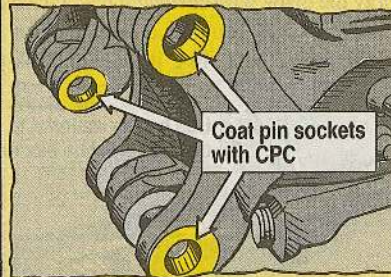


UH-60

Clean Black Hawk blades with cleaning compound, NSN 6850-00-935-0995. If water's not available or if temperatures are too low to use water, clean them with waterless cleaner, NSN 8520-00-527-9942.

Then coat the blade pin sockets with CPC, NSN 8030-00-231-2345, like it says in Appendix E-5 of TM 55-1520-237-23-6 and Task 1-4.2.4 of TM 55-1520-237-23-1.

Remove the lubricant from the blade pin sockets before installing the blades.



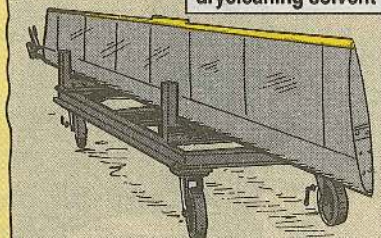
Coat pin sockets
with CPC

CH-47

Wipe the surface of each Chinook blade with a cleaning cloth, NSN 8305-00-753-2967, soaked in a solution of water and soap, NSN 8520-00-228-0598. Then wipe off the soapy solution with a clean cloth, NSN 8305-00-753-2967, soaked in clean water. Dry the blade with another dry cloth.

Remove stubborn deposits with a clean cloth dampened with drycleaning solvent, like it says in Task 5-63 of TM 55-1520-240-23-4.

Remove stubborn
deposits with
drycleaning solvent



OH-58

Clean OH-58A/C blades with dishwashing compound, NSN 7930-00-880-4454. Rinse with water and dry with soft cloth, NSN 7920-00-044-9281.

Then apply an even coat of nonsilicone wax. If wax is not available use corrosion preventive compound, NSN 8030-00-838-7789.

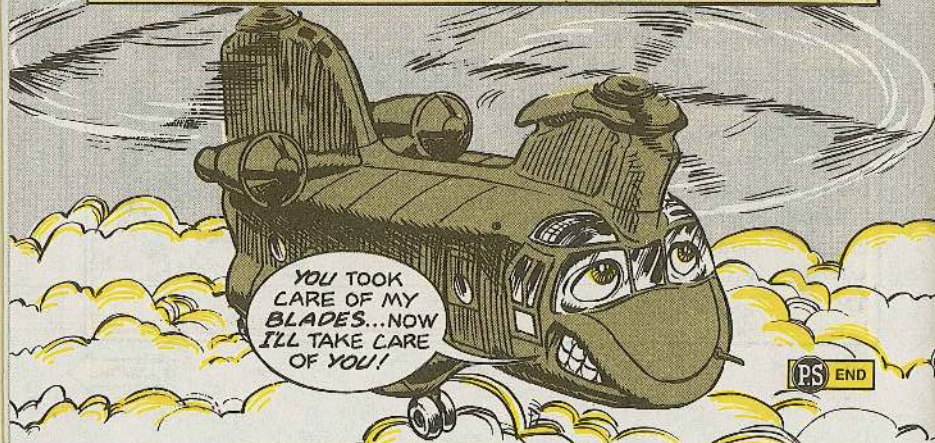
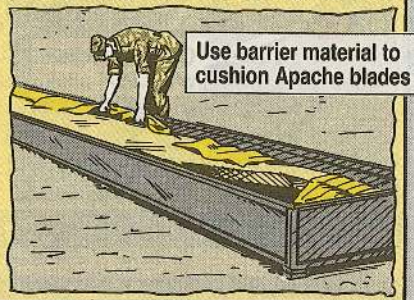
Clean the OH-58D blade grip, bolt and expandable bolt with solvent, NSN 6850-00-274-5421, and wipe dry with rag, NSN 7920-00-205-1711. Then apply corrosion preventive compound, NSN 8030-00-231-2345, to blade bolts and faying surfaces of blade and grip like it says in Task 5-1-5, TM 55-1520-248-23.

AH-64A

Apply a thin coat of corrosion compound, NSN 8030-00-938-1947, to remove grime, oil, grease, dust and water saturation from Apache blades. Then wipe with a clean cloth, NSN 8305-00-641-5606, to remove the compound along with loosened soil and other residue.

To remove salt or salt water, flush the blade thoroughly with fresh water. Then blow dry with compressed air and spray the blade with corrosion preventive compound, NSN 8030-00-938-1947. Remove excess compound with a clean cloth, NSN 8305-00-641-5606, to avoid attracting dust, like it says in Task 1-5-42 of TM 55-1520-238-23-1.

Before you place an Apache blade in its storage container, apply corrosion solvent, NSN 8030-00-244-1297, to the mating surfaces of the blade. Then wrap the surface of the blade that contacts the box support with barrier material, NSN 8135-00-282-0565, and secure with tape, NSN 7510-00-079-7905.



Aviation Ground Power Unit...

Hydraulic Fluid Level Is Critical

A lot of aviation ground power units (AGPU) are being turned in for repair with burned-out hydraulic pumps.

You operators can avoid many high-dollar replacements simply by checking the level of the hydraulic fluid reservoir before and during operation.

If you run the AGPU without enough hydraulic fluid, you'll burn up the pump.

Before you switch on your AGPU, make sure the hydraulic reservoir is at least $\frac{3}{4}$ full. Low fluid level could result in hydraulic pump damage. If it's below that level, add fluid.

Make sure the hydraulic module reservoir selector is set to AGPU position.

During operation, check the level often to make sure it does not fall below $\frac{3}{4}$ full. If the fluid falls below that level, switch off the unit and add fluid.



Aviation Messages

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

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

AH-1-90-05, SOF, Maint Mandatory, AH-1 inspect swashplate and support assemblies, 022200Z Jul 90.

AH-1-90-06, Maint Mandatory, AH-1 inspect and replace nuts, P/N AN320-6, NSN 5310-00-176-8110, 052230Z Jul 90.

OH-58-90-08, SOF, Tech, rev to ref D(1) and D(2) SOF Msg T63-A-700/720 turbine engine recall, 102130Z Jul 90.

OH-6-90-06, SOF, Tech, rev to ref D(1) and D(2) SOF Msg T63-A-

700/720 turbine engine recall, 102130Z Jul 90.

UH-1-90-05, SOF, Maint Mandatory, UH-1H/V, inspect improved particle separator, 121900Z Jul 90.

U-8-90-02, SOF, Maint Mandatory, U-8F, BE-65, BE-A65, BE-65-80, and BE-65-B80, amended inspect mod fuel filler and cap, 201930Z Jul 90.

BE65-90-02, SOF, Maint Mandatory, U-8F, BE-65, BE-A65, BE-65-80, and BE-65-B80, amended inspect/mod fuel filler

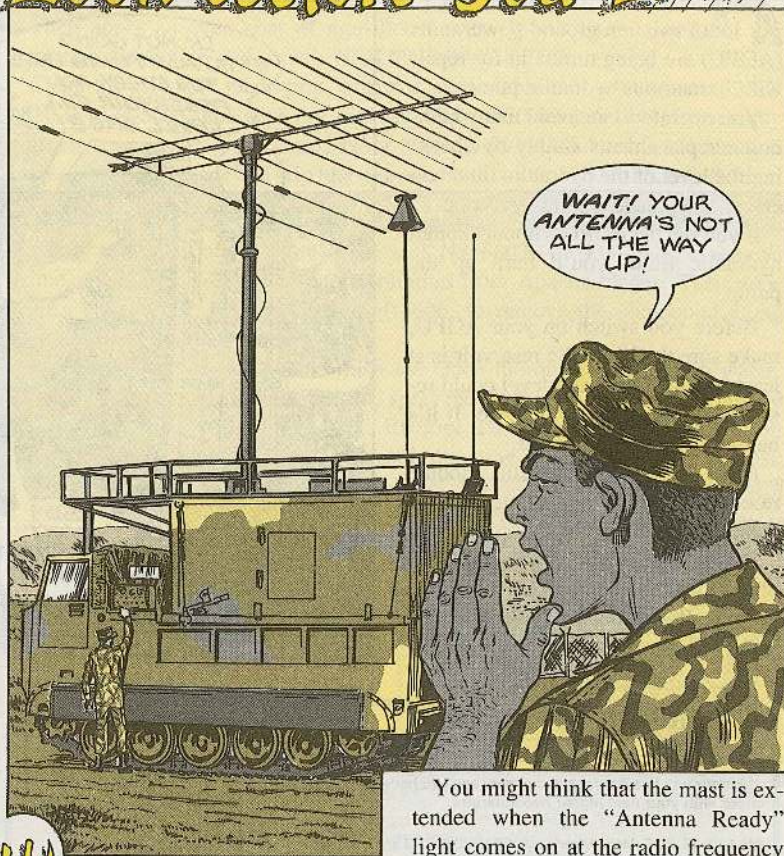
cap, 201930Z Jul 90.

CH-47-90-11, SOF, Maint Mandatory and operational, inspect fuel pump ground for CH-47D only and rev fuel system emergency procedures for all CH-47C/D, 312030Z Jul 90.

UH-1-90-ASM-06, ASM, UH-1H/V and EH-1H/X, cold weather use of hub moment spring and hub restraint, 172030Z Jul 90.

AH-1-90-ASM-05, ASM, AH-1 canopy removal system, 241900Z Jul 90.

Look Before You Leap



When you extend the antenna mast on your AN/MLQ-34 Signal Intelligence/Electronic Warfare shelter, make sure it's all the way up before you move anything.

If you move the azimuth or log periodic antenna (LPA) before the mast is extended, you'll damage the W411 and W412 cables and connectors.

You might think that the mast is extended when the "Antenna Ready" light comes on at the radio frequency control unit. But that light only means that the LPA elements have extended.

You need to make sure the mast is completely extended by looking at it. That extra second or two you take to look up will save your shelter antenna from being not mission capable because of damaged cables and connectors.

Rhombic Antenna Resistor

Dear Macon,
FM 24-18 gives guidance on construction and erection of rhombic antenna systems. The FM states that the resistor used on these systems needs to be rated at least one half the wattage output of your transmitter so the resistor doesn't burn out. However, I'm having trouble locating NSNs for a 35- to 50-watt resistor to use with AN/VRC-12 series radio sets and a 100- to 200-watt resistor to use with the AN/GRC-106 radio. Can you help?

Mr. J. N.

Dear Mr. J.N.,
You can use one 600-ohm, 50-watt resistor, NSN 5905-00-683-2198, for the AN/VRC-12 expedient antenna application.



The resistor must be rated at least one-half the wattage output of your transmitter

Since the AN/GRC-106 radio has a wattage output of 400, at least a 200-watt rating is required for the resistor. You can use four of the same resistors used in the AN/VRC-12 application. Connect two sets of two resistors in parallel, then connect the two sets of paralleled resistors in series. This gives you 600-ohms at 200-watts.

Macon

Handle With Care



Dirt, oil or fingerprints on the eyepiece lens make for dim viewing. But if you're not careful, you could damage the eyepiece lens when you clean it.

☛ Dampen a cotton pad, NSN 8320-00-299-8625, with cleaning solution, NSN 7930-00-880-4454. These items are part of the lens cleaning kit, NSN 5855-01-143-4488.

☛ Using the damp pad, start at the center of the lens and clean in a circular motion working out toward the edge of the lens.

☛ Repeat this process a second time with a clean, damp pad.

☛ After the lens is dry, check to see if all dirt is cleaned off the lens surface. If not, repeat the process above, using a clean pad moistened with distilled water.

☛ Dry the lens with a clean, dry cotton pad.

Take a good look at the lens. If it's chipped, cracked, scratched or broken, send the system to DS to replace the lens.

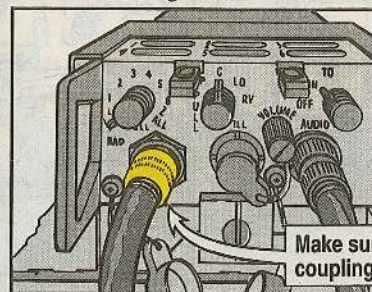


Keep Conduit Nut Tight

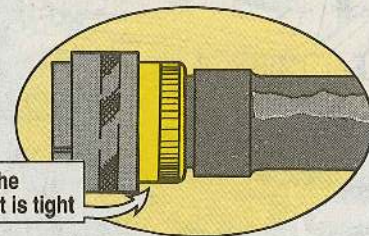


When you connect the KY-57 security equipment to your AN/PRC-77 radio, keep the conduit nut on the CX-12991/U cable assembly, NSN 5995-01-058-2513, tight.

A loose coupling nut lets the connector and wires move when the radio and security equipment are on the backpack frame. The twisting and turning of the cable causes the internal wires to break. If the wires break, your communication is out!



Make sure the coupling nut is tight



DAS-3 Computer Belt Substitute

Get a cheaper drive belt for your DAS-3 computer's magnetic tape unit with NSN 3030-00-878-6620. The NSN listed as Item 38 in Fig 8 of TM 11-7010-203-23P and Item 39 in Fig 10 of TM 11-7010-205-23P costs a lot more. Make a note until the TMs are updated.

TRANSFER BOX

ARE
YOU READY TO
TRANSFER POWER
TO ME?

NO!
THERE'S WATER
IN THE
POWER TRANSFER
BOX!

Rainwater gets trapped in the power transfer box on the AN/MJQ-10A power plant. This standing water causes corrosion and electrical shorts.

If the steel box is corroded, clean the surface and spot paint.

Wipe clean all screw holes and side seams, then seal them with silicon sealant.

Protect the hinge joints with adhesive sealing (weatherstripping).

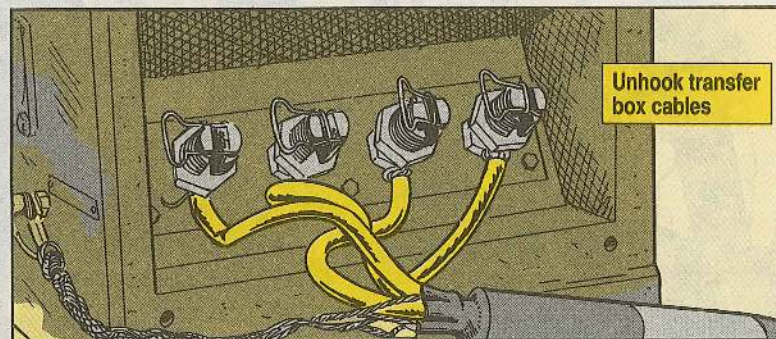
DRAIN SOLUTION

Since most of these generators are stored outside, there's still the problem of condensation forming inside the box, no matter whether it's steel or aluminum.

Solve this problem by drilling drain holes in the power transfer box.

Here's how:

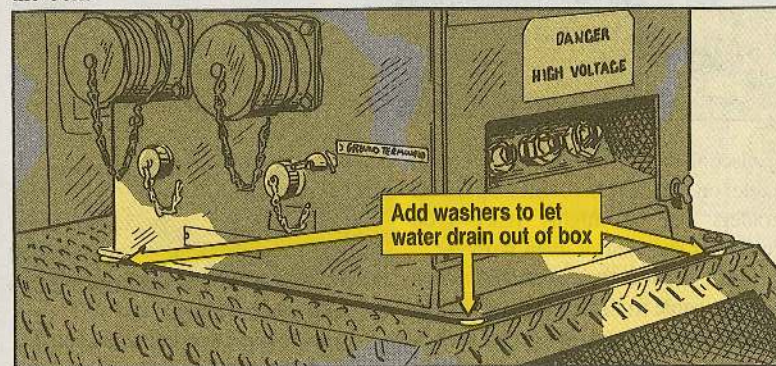
- 1 Disconnect the cables from the power transfer box.



- 2 Remove the power transfer box from the trailer fender.

- 3 Drill a 1/4-in hole in the lower corners of the box.

- 4 Put the box back on the fender, adding flat washers, NSN 5310-00-080-6004, to lift the box about 1/4 inch off the trailer. That lets water drain out of the box.



- 5 Re-connect the cables to the power transfer box.

A Safe Way to Disconnect Cables



That alone would not be a problem. But the supplemental steering motor circuit complicates matters. When the disconnect switch is closed, completing the ground circuit, the supplemental steering motor cycles on for a three-second self-test.

If you remove the negative battery cable first and the wrench you use to loosen the clamp touches the battery hold-down assembly, you complete the ground circuit. The steering motor starts its self test, and you get sparks ... and a hot wrench!

So pay close attention when you disconnect the battery cables to remove the batteries.

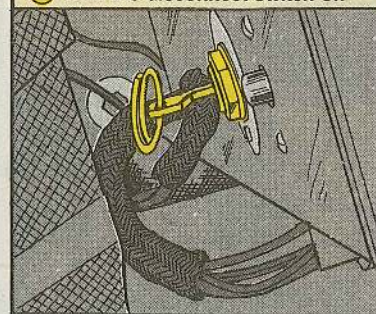
Disconnecting the battery ground cable on the left side first on 130G graders can be mighty risky—you could get shocked or even burned.

That's because the disconnect switch is in the cable from the battery negative to the frame ground. When the switch is open, the batteries are not connected to ground.



Follow these steps to safety:

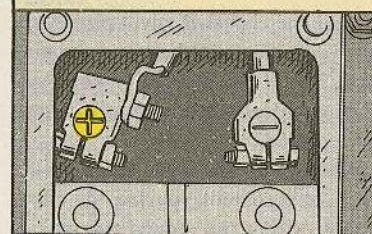
① Turn the disconnect switch off



② Take the right side battery cover off.

③ Remove the four nuts and battery hold-down assembly.

④ Disconnect the right side positive (+) cable first, and keep it away from the battery terminal.



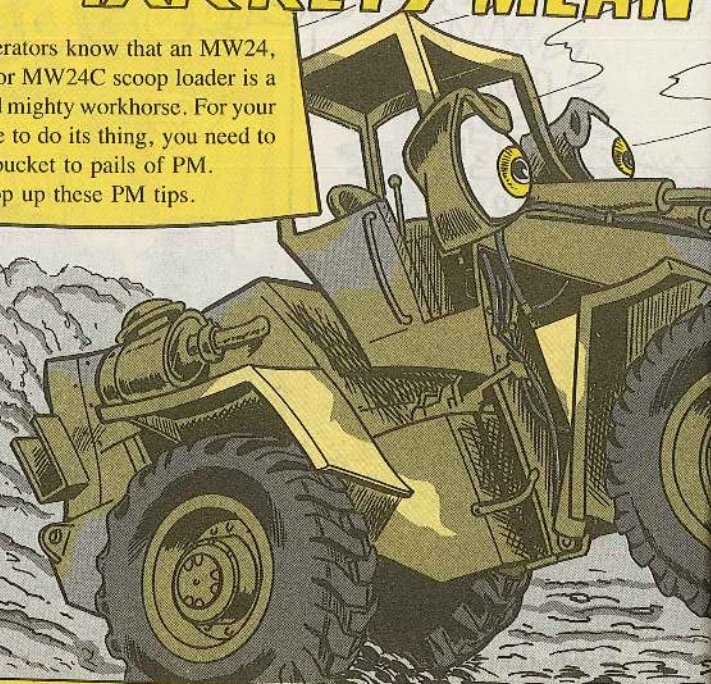
⑤ Disconnect any other battery cables necessary, and lift out the left or right battery.

Reverse the disconnect procedure to replace a battery. Always hook up the right side positive cable last.

BUCKETS' MEAN BUSINESS'S

You operators know that an MW24, MW24B or MW24C scoop loader is a useful and mighty workhorse. For your workhorse to do its thing, you need to treat the bucket to pails of PM.

So scoop up these PM tips.



HEY, SOLDIER!
FOLLOW THESE TIPS OR
I'LL GIVE YOU THE
BUSINESS!

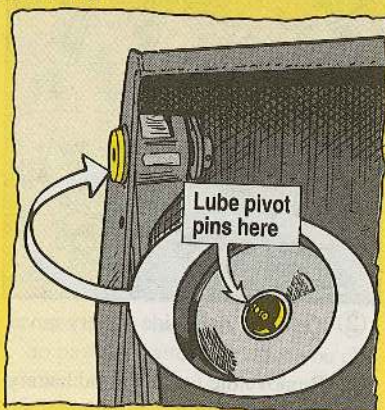
OKAY,
WHAT'S THE
SCOOP?

Lube Pivot Pins

Lube the clamshell pivot pins every day you operate. Otherwise, the pins bind. You'll end up with broken pins. Then your loader's down until the pins are replaced.

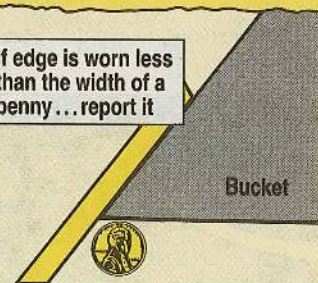
When you lube, pump grease in the pin's fittings until you see the clean grease oozing out around the pin... about 6-8 strokes of the grease gun handle.

If the fitting gets clogged and won't take grease, report it. Do not operate until your mechanic replaces it with a new fitting, NSN 4730-00-050-4208.



Cutting Edge

If edge is worn less
than the width of a
penny...report it



Keep cutting edges cutting. If you let the cutting edge wear down too far, the bucket begins to wear. A damaged bucket means a trip to DS for repair or replacement.

Eyeball the cutting edge and end bits on the blades and buckets before operation. If the edge is worn less than $\frac{3}{4}$ inch—about the width of a penny—report it.

Mechanics, before replacing a worn edge, try to reverse it. If you can't, replace it.

RTL10 Forklift Tire NSN

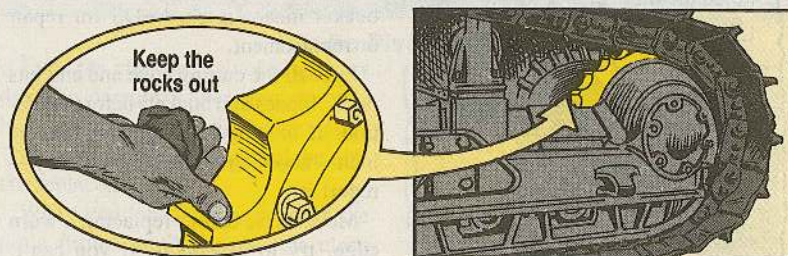
NSN 2610-00-726-5168 gets the 20.5x25L2 rough terrain tubeless tire for this forklift. The NSN listed for Item 1 in Fig 70 of TM 10-3930-243-20P is for the wrong size tire.

Prevent Rock Damage



A rock lodged between your tractor's sprocket segment gear mounting bolts and the final drive housing can wear a hole in the housing PDQ. Then you'll really be between a rock and a hard place! Your tractor loses oil and your unit loses the equipment for a bunch of days.

So keep the rocks out. When you're working in sticky, heavy dirt, clean out the crud around the track after each operation.



Never let your tractor sit around idle with packed-in mud, rocks and debris. This stuff hardens, then you can't get it out. You tear up more track parts.

Dirty Working Tip

When operating in heavy mud or clay with few rocks, take off the roller guards. While they keep rocks out, roller guards keep a lot of mud and clay in.

Socket Set Detailed

The $\frac{3}{8}$ -in square drive socket wrench set, NSN 5120-00-322-6231, is included in several tool outfits. But the components of the set are not listed.

Here're the items in the set:

Items	Size
Socket, Socket wrench, regular length, 12-pt	
NSN 5120-00-227-6702	$\frac{3}{8}$ -in
227-6703	$\frac{7}{16}$ -in
237-0977	$\frac{1}{2}$ -in
227-6704	$\frac{9}{16}$ -in
237-4973	$\frac{5}{8}$ -in
232-5706	$1\frac{1}{16}$ -in
227-6705	$\frac{3}{4}$ -in
235-5807	$1\frac{3}{16}$ -in
242-3330	$\frac{7}{8}$ -in
Socket, Socket wrench, long length, 12-pt	
NSN 5120-00-241-3185	$\frac{1}{2}$ -in
239-0017	$\frac{9}{16}$ -in
239-0018	$\frac{5}{8}$ -in
277-4252	$1\frac{1}{16}$ -in
235-5879	$\frac{3}{4}$ -in
596-0836	$1\frac{3}{16}$ -in
U-joint Sockets	
NSN 5120-00-242-3355	$\frac{1}{2}$ -in
237-0978	$\frac{9}{16}$ -in



Regular length sockets



Deep sockets



U-joint sockets

Hinged handle



Ratchet handle



Speeder handle



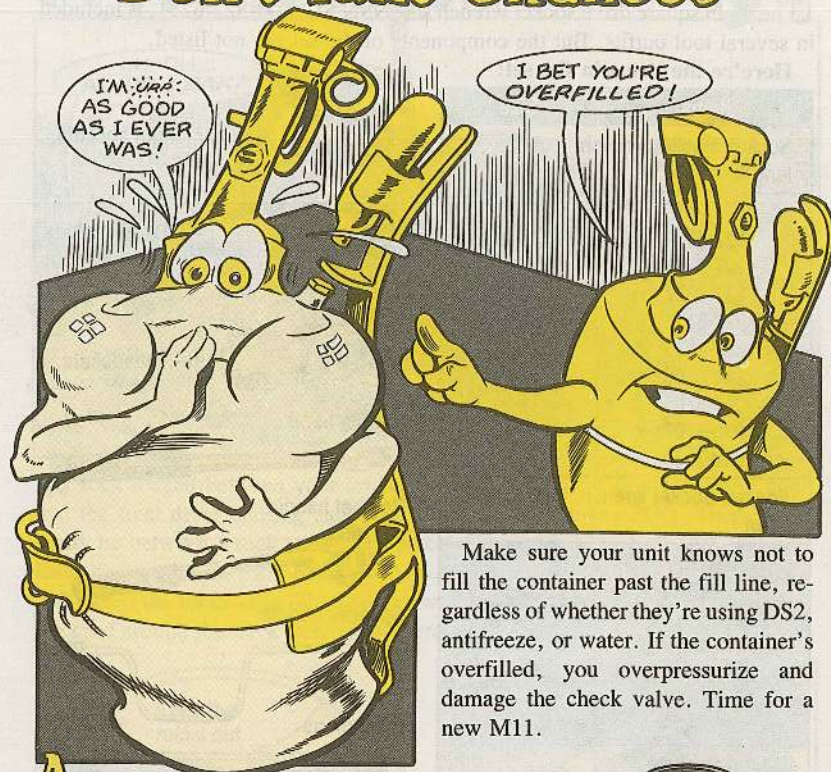
Extensions



Item	NSN 5120-00-
U-joint, $\frac{3}{8}$ -in drive	224-9215
Hinged handle	240-5396
Ratchet	240-5364
Brace-type speeder handle	237-4969
Extension, 6-in	227-8107
Extension, 12-in	243-1691

THIS SHOULD COMPLETE YOUR SET!

Don't Take Chances



Make sure your unit knows not to fill the container past the fill line, regardless of whether they're using DS2, antifreeze, or water. If the container's overfilled, you overpressurize and damage the check valve. Time for a new M11.

A few words to the wise to prevent M11 container problems, NBC NCOs:

If you have any doubts about whether a container is still in good enough condition to do the job, replace it. Pitting and rust weaken the container and it's not worth taking that chance of it not working in the field.

When you order the container, NSN 4230-00-775-7541, you must also order the stick-on identification label, NSN 9905-01-135-6952.



If your container has no line painted on it, fill it to the bottom of the lip in the fill hole

MOPP up Packing, Carrying Problems

When you get your new NBC bags, you may be left scratching your head over how to pack them and where to carry them. The bag's not covered in the NBC FMs.

Here's the scoop:

Leave the chemical protective suit in its protective bag or bags. Put the suit in the NBC bag first, then the overboots, then the gloves.

With the ALICE fighting load, wear the bag on the lower back attached to the equipment belt with a slide keeper and to the suspenders with hooks.

With a backpack, attach the bag to the pack the same way you'd attach a sleeping bag or mat: on the top of the ALICE pack or in the bottom compartment of the new internal frame field pack.

Wearing NBC bag on ALICE fighting load



Wearing NBC bag on ALICE pack

Gloves for Gloves

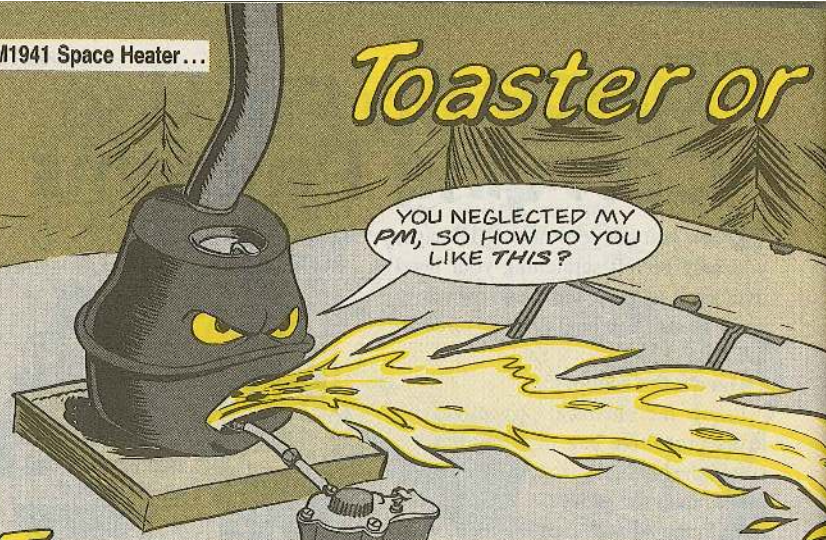
Fuel and petroleum cause the material in chemical gloves to swell. The gloves can no longer protect against nerve agent.

That's why if you have a job where you handle fuel, lubes or oils you need to protect your NBC gloves with heavy duty work gloves. Use these NSNs to order your size. Remember they must fit over your NBC gloves.



Size	NSN 8415-00-268-
1	7871
2	7872
3	7869
4	7870
5	7868

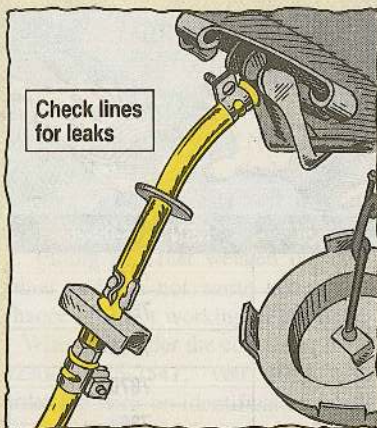
Toaster or Flame Thrower?



The M1941 space heater can keep your tent toasty warm on cold nights. But neglect PM and your heater can turn into a fire-breathing monster!

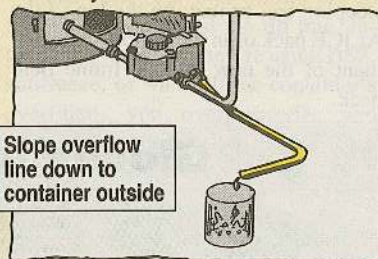
Fuel Lines

Before lighting your heater, check the fuel lines and connections for leaks. Fix any leaks before lighting up.



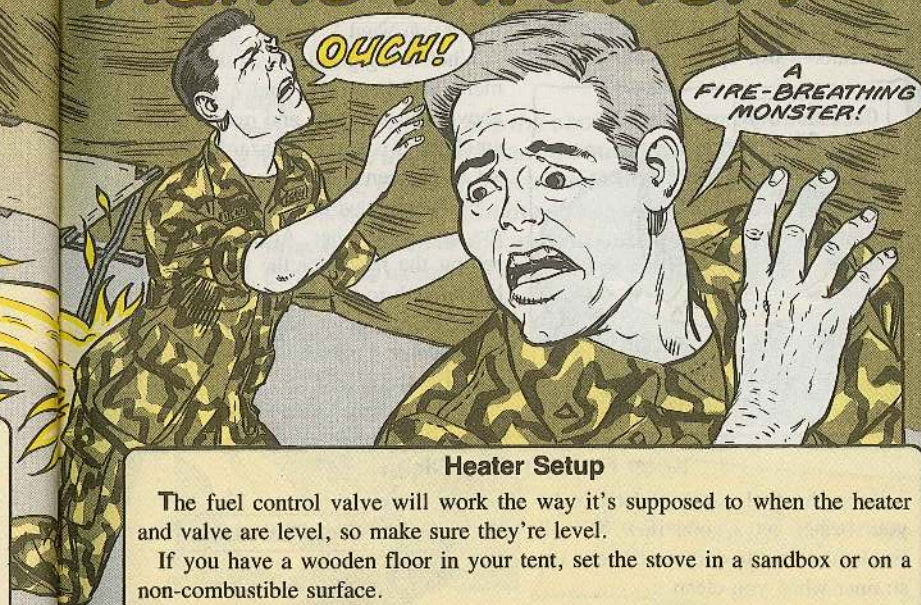
When you hook up the overflow line, remember to:

🔥 Keep the hose lower than the fuel overflow connection on the float valve assembly.



- 🔥 Keep kinks out of the line.
- 🔥 Keep the line out of the way of big feet.
- 🔥 Keep the line running downward, outside and away from the tent, like it tells you on Page 2-7 of TM 10-4500-200-13.
- 🔥 Keep a container to catch the overflow fuel to guard against an unwanted blaze.

Toaster or Flame Thrower?



Heater Setup

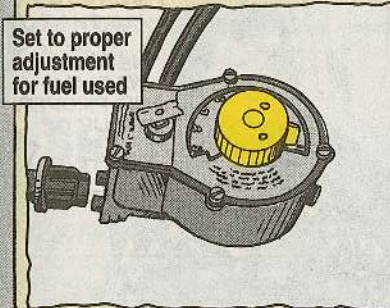
The fuel control valve will work the way it's supposed to when the heater and valve are level, so make sure they're level.

If you have a wooden floor in your tent, set the stove in a sandbox or on a non-combustible surface.

If you're setting the heater on top of snow, use a sandbox or non-combustible panel, too. Otherwise, the hot heater will melt its way into the snow.

Firing It Up

When starting the heater on oil or diesel, turn the ON-OFF valve to ON. Set the adjustment knob to 9.



When the bottom of the burner is wet with fuel, turn the adjustment knob to 0.

Drop a small wad of lighted paper or a lighted oily rag into the burner.

If you're burning gasoline, begin by dropping a lighted match or burning paper into the burner. Then turn the ON-OFF valve to ON with the adjustment knob set to 0.

Keep your face and hands away from the opening!

Replace the top lid when the bottom of the heater is full of fire.

Adjusting the Flame

Wait five minutes when gasoline is used—fifteen minutes for oil—to let the heater warm up. Then set the ad-

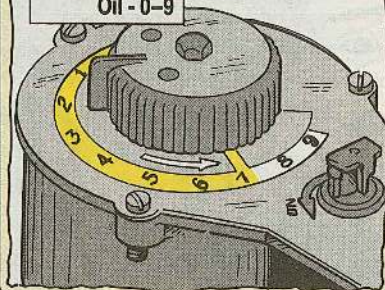
justment knob to regulate the size of flame you want.

When using gasoline, set the adjustment knob between 0 and 7. Setting it above 7 wastes fuel and makes heavy smoke and is a safety hazard. For oil, set it between 0 and 9.

But never leave the knob at 9, even in the coldest weather. At the maximum setting the heater or the flue can get hot enough to set your tent on fire.

If you get heavy, black smoke from your heater, turn the adjustment knob to 0. Let the excess fuel burn off, then reset the control knob.

Gasoline - 0-7
Oil - 0-9



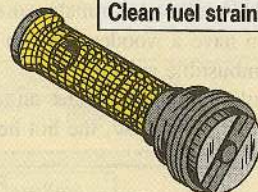
Keep Fuel Strainer Clean

Keep the fuel strainer clean to let your heater get a good flow of fuel. But be sure not to damage or bend the strainer when you clean it.

A damaged strainer can let unfiltered fuel into the system that can clog the float valve assembly.

If the strainer is damaged, replace it with NSN 5410-01-231-1754.

Clean fuel strainer



Load Bearing Equipment...

The Ties that Bind

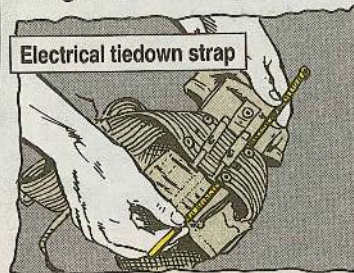
Dear Editor,

In field training, things like the canteen or ammo pouch can come loose from the load bearing equipment (LBE).

We've stopped that with electrical tiedown straps, NSN 5975-00-984-6582. Run the straps through the back sides of the different pouches and around the belt. Lock the ties in place. Cut off the excess strap, making sure there are no sharp edges left.

SGT James J. Smith
Hingham, MA

Electrical tiedown strap



(Editor's note: You've certainly tied down and strapped up that problem. Thanks.)

Cleaning Compound...

A Quicker Picker-Upper

Next time you spill oil, fuel, acid, or grease, clean the spot with absorbent compound. NSN 7930-01-145-5797 gets a 25-lb bag. Sprinkle the area with the absorbent compound and use a broom and dust pan to sweep it up.

Slow Moving Vehicle Sign NSN

Get a slow-moving-vehicle sign for the rear of your vehicles with NSN 9905-01-057-3894. It's required by Para 3-13 of AR 385-30 for slow-moving vehicles operating 25 MPH or less on public highways in CONUS. Use Appendix A of CTA 50-970 as your authority to order it.

NOV 90

59





Supply Excellence Awards

Here are the winners and runners-up of the FY90 Army Chief of Staff supply excellence competition:

ACTIVE ARMY MTOE UNITS

Company, Battery or Troop

Winner—552d MP Co, Pusan, Korea (EUSA)
 Runner-Up—2d Maint Co, Waegwan, Korea (AMC)

Battalion or Squadron

Winner—1st Bn, 21st Inf Reg, Schofield Barracks, HI (WESTCOM)
 Runner-Up—29th Sig Bn, Ft Lewis, WA (FORSCOM)

ACTIVE ARMY TDA ORGANIZATIONS

Company, Battery or Troop

Winner—US Military Community, Zweibrücken, Germany (USAREUR)
 Runner-Up—A Co, US Army Support Command, Schofield Barracks, HI (WESTCOM)

Battalion or Squadron

Winner—United Nations Command, Joint Security Area, Demilitarized Zone, Camp Bonifas, Korea (EUSA)
 Runner-Up—751st MI Bn, Pyongtaek, Korea (INSCOM)

ARMY RESERVE MTOE UNITS

Company, Battery or Troop

Winner—481st Trans Co (Heavy Boat), Rio Vista, CA (Sixth Army)
 Runner-Up—HHC, 325th Support Group, Kansas City, KS (Fifth Army)

Battalion or Squadron

Winner—1st Bn, 158th Avn Reg, Grand Prairie, TX (Fifth Army)
 Runner-Up—854th Engr Bn, Combat Heavy, Newburgh, NY (First Army)

ARMY NATIONAL GUARD MTOE UNITS

Company, Battery or Troop

Winner—1022d Medical Detachment, Cheyenne, WY
 Runner-Up—257th MP Co, Cottage, MN

Battalion or Squadron

Winner—2d Bn, 20th Special Forces Group, Jackson, MS
 Runner-Up—1st Bn, 115th FA, Winchester, TN

TDA Company

Winner—HQ Detachment, State Area Command, Richmond, VA
 Runner-Up—HQ Detachment, State Area Command, Charleston, WV

Would You Stake Your Life *right now* on

Pre-combat Checklists for M1s, M2/M3

Combat vehicle pre-combat checklists for M1-series Abrams tanks and M2/M3-series Bradley fighting vehicles are available through your unit's pubs clerk.

Here is the vehicle-to-PCL breakdown so you get the right checklist:

M2/M2A1, M3/M3A1—

TM 9-2350-252-PCL

TM 9-2350-284-PCL

M1/IPM1—TM 9-2350-255-PCL

M1A1—TM 9-2350-264-PCL

There are four PCL cards in each tank package and three cards in each fighting vehicle package. You need one package for each tank or vehicle in your unit.

Equilibrator Mount Bolt Lubing

Never overlook the equilibrator mount bolts on your M110A2 howitzer at quarterly lube time. Lube each fitting with a little GAA. Not enough lube causes fast wear in the equilibrator mount bearings.

Send Covers and Cases

When you send the power supply, receiver or transmitter on your AN/TLQ-17A(V) countermeasures set for repair, be sure to send the cover and transit case. Then if DS cannot make the repairs, they have the covers and cases needed to ship the item back for repair.

Bad Chaparral Shock Isolators

When you Chaparral repairmen pull the power unit during quarterly service, eyeball the unit's shock isolators, NSN 5340-01-094-1081. If they're coming apart or are crushed, they're bad. Replace them or vibration will loosen air and fuel line connections.

CUCV Transmission Service Change

Page 2-22 of TM 9-2320-289-20 is wrong when it tells you to change the fluid and filter in a CUCV transmission every year. The schedule is 2 years or 24,000 miles, except when the truck sees severe service, like extreme cold or dust, trailer towing, taxi or police duty. Then you change oil and filter every 12 months or 12,000 miles.

Well Drilling System Cautions

The truck carrying the LP-12 rotary well drilling system is equipped with a NATO slave receptacle. Problem is the truck has a 12-volt electrical system. If you try to slave start it using a truck with a 24-volt system, you will damage the drilling rig truck's electrical system. TROSCOM Safety of Use Message 15-90 AMSTR-MES 271440Z Jun 90 has the word to remove the positive cable from the slave receptacle and the battery. You might want to consider removing the ground cable, too.

the Condition of Your Equipment?

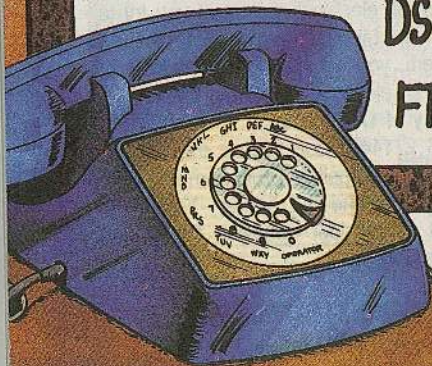
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