

Issue 450

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May
1990

TB 43-PS-450

THE PREVENTIVE MAINTENANCE MONTHLY



SEE, CONNIE...
HE LEFT THE
PARKING
BRAKE ON!

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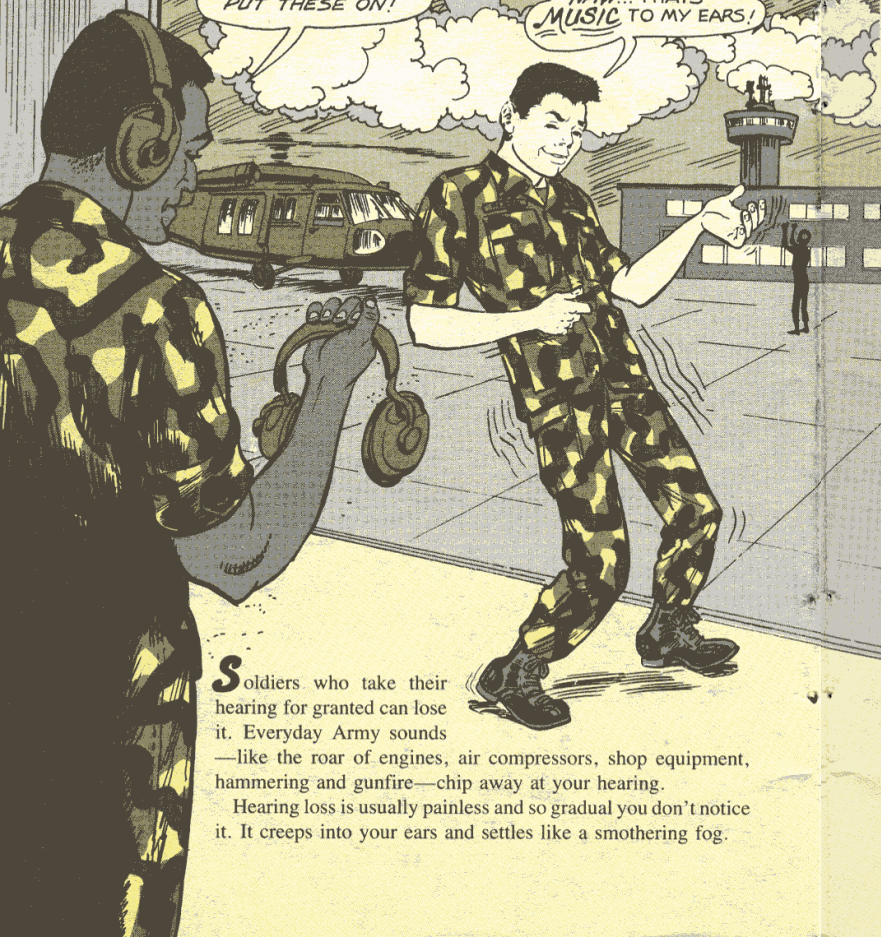
For More HMMWV Respect...
See Page 27

Not All Silence Is Golden

CAUTION
HEARING
PROTECTION
REQUIRED

THE NOISE OUT THERE
IS DEAFENING...
PUT THESE ON!

NAW... THAT'S
MUSIC TO MY EARS!



Soldiers who take their hearing for granted can lose it. Everyday Army sounds—like the roar of engines, air compressors, shop equipment, hammering and gunfire—chip away at your hearing.

Hearing loss is usually painless and so gradual you don't notice it. It creeps into your ears and settles like a smothering fog.

One day your stereo is not as sharp as it once was. You adjust the controls but it doesn't help. Neighbors complain you're playing your TV too loud. People speak to you but their words blur into jumbled sounds. You ask them to speak up, but they still whisper or talk like they have a mouthful of oatmeal.

It gets worse until there are only the muffled, monotone sounds of functional deafness.

Noise pollution is your enemy. It's the Army's enemy. In dollars, the Army paid out \$132 million in FY 88 for treatment and compensation to soldiers and DA civilians for hearing lost.

Fight back! Have a buddy stand about five feet away and talk normally. If you cannot hear or understand him, get your hearing tested.

If your hearing has been damaged, sound off—make some noise! Let your post safety or preventive medicine office know about it. They'll check the noise levels in your work area and issue ear plugs, helmets or ear muffs. All the particulars are spelled out in TB Med 501 and AR 40-5.

Hearing loss is the most preventable occupational hazard. Find out the facts in Technical Guide 170, Hearing Conservation. Get it through your safety office or order it from:

**US Army Environmental Hygiene
Agency, ATTN: HSHB-CI-O
Aberdeen Proving Ground, MD
21010-5422**

MAY 90



THE
PREVENTIVE
MAINTENANCE
MONTHLY

TB 43-PS-450. The Preventive Maintenance Monthly, is an official publication of the Department of the Army, providing information to 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.

ISSUE 450 MAY 1990

FIREPOWER		TOW/TOW 2	
M2/M3 Bradley	2-3, 4	M301 ITV	12-13
M113	4, 5, 6-7	M249 MG	14
Ammo Hauling	7	M2 MG	15
M113-Series	8	M9 M1911A1 Pistols	16
M1 Tank	9	Dragon	17
Dragon	10-11		

GROUND MOBILITY		Ammo Trailer	
CUCV	18-19, 20	HMMWV TLC	24-25
HMMWV	21, 22	PM	27-34
M44, M39, M309-Series Trucks	23		

AIR MOBILITY		Maintenance Stands	
OH-58D Kiowa	35	7.5-KW APU	40-41
UH-60A Black Hawk	36-37	Pilot/Static Ports	42
CH-47 Chinook	38-39	Aviation Messages	39

COMMUNICATIONS		M157 Smoke	
AN/PRC-25, -77	44-45	Camera/Ret Set	48
Radio PW	46-47	Night Vision Goggles	49

TROOP SUPPORT		M80DA1 Semitrailer	
New Pubs, SCU's	26	Intrenching Tool Tips	53
Tank and Pump Units	50	Carbide Drill NSN's	54
Air Compressor	51	Plug Receptacle NSN's	55
ROWPU's	52	Electrical	56-59
M870A1 Semitrailer	52	Connectors	60
Bumper Markings	53	AMDF Distribution	80
M270A1 Relay Valve	53		

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:

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By Order of the Secretary of the Army:

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THE REAL TOW TEST!

THESE TOWS JUST WON'T GO!

SEMIANNUAL TESTING ONLY

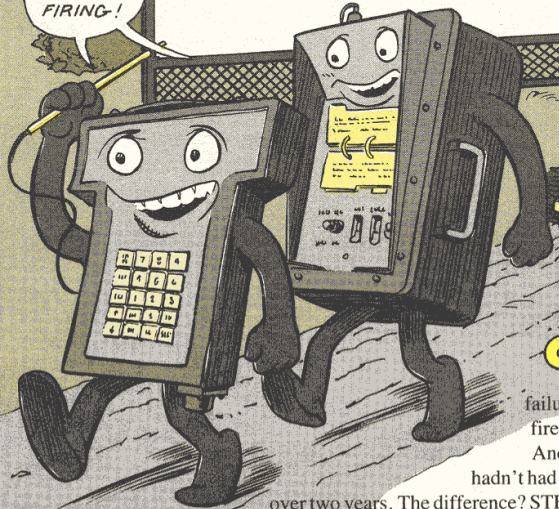
FREQUENT STE-M1/FVS TESTING

NEVER FAIL FIRING

STE-M1/FVS TESTING DONE

- ✓ AT THE SEMI-ANNUAL SERVICE
- ✓ WHENEVER AN ELECTRICAL COMPONENT IS REPLACED
- ✓ WHENEVER A SELF-TEST FAULT NEEDS TRACING
- ✓ BEFORE FIRING TOW 2s IN THE FIELD

LET US LEAD THE WAY TO NO-FAIL FIRING!

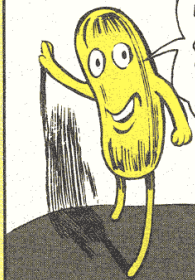


One Bradley unit had a 50 percent failure rate when they fired TOW 2 missiles. Another Bradley unit hadn't had a TOW 2 failure in over two years. The difference? STE-M1/FVS testing. The unit that failed half the time only did STE-M1/FVS testing at the semi-annual scheduled service. The rest of the time they relied on the TOW self-test to catch faults. The unit with the perfect record did STE-M1/FVS testing!



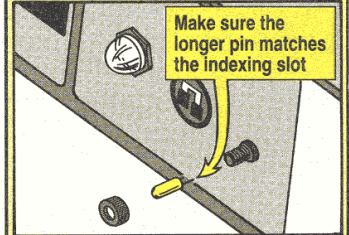
The TOW self-test works fine for tracking faults when the TOW is operating on its own. But when the TOW is part of a larger system like the Bradley the self-test will not catch faults in subsystems like the TOW resolvers or the gunner's hand stations. That's why you Bradley mechanics need to do the STE-M1/FVS tests—particularly 2500 and 2501—before TOW's are fired to be sure all the turret subsystems are working correctly. The test procedures begin on Page 3-583 in TM 9-2350-252-20-2-1 and Page 3-359 in TM 9-2350-284-20-2-1.

Only One Way in for LED



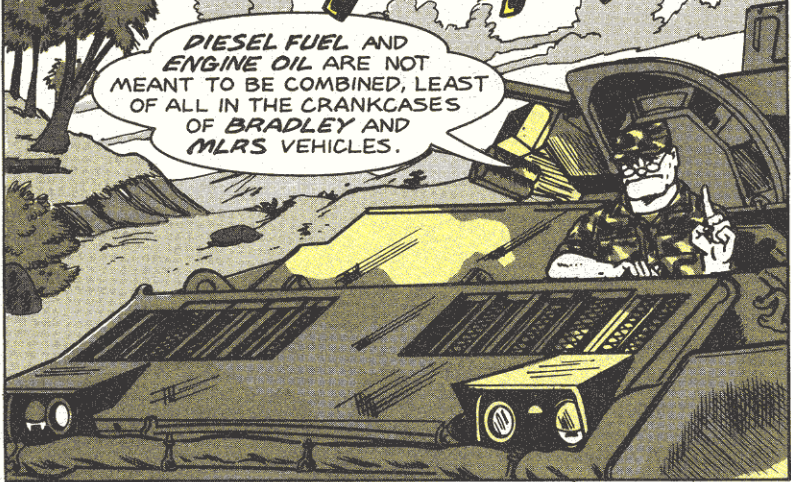
I HAVE ONE LEG SHORTER THAN THE OTHER FOR A GOOD REASON, SO THAT I'M INSERTED RIGHT!

Replacing that broken light-emitting diode (LED) on your Bradley's vehicle distribution box is not just pull-push. There's only one way for the LED to "go in" and work right. **Here's what you need to know:** The LED has two pins. One is longer than the other.



Align the LED so the longer pin matches the indexing slot on the box socket. Push in the LED. That's it... nothing else needed. Do it the wrong way, though, and you get no light.

Fuel Drip Thins Oil

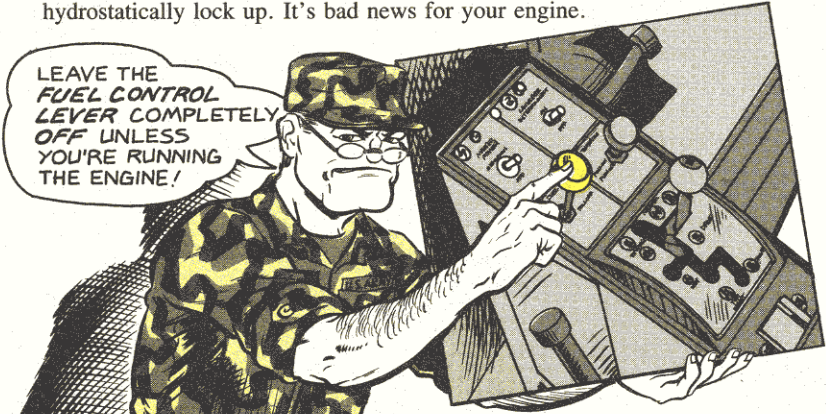


DIESEL FUEL AND ENGINE OIL ARE NOT MEANT TO BE COMBINED, LEAST OF ALL IN THE CRANKCASES OF BRADLEY AND MLRS VEHICLES.

Trouble's what you'll get, drivers, if you leave the fuel control lever at any position other than full OFF when you're not operating.

Fuel continues to flow through the fuel lines into the engine cylinders, then past the piston rings and into the oil.

Thinned-out oil does not lube well, so parts wear quicker. Your engine can hydrostatically lock up. It's bad news for your engine.



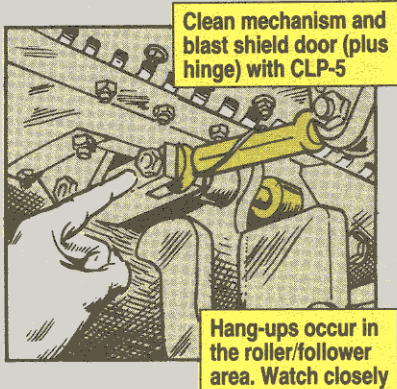
LEAVE THE FUEL CONTROL LEVER COMPLETELY OFF UNLESS YOU'RE RUNNING THE ENGINE!

Cam Follower Follow-Up

Running the loader boom in and out with an empty and elevated launcher/loader module (LLM) begs for a broken cam follower.



CLP-5, NSN 9150-01-054-6453. The cleaning instructions are on Page 3-25 of TM 9-1425-646-10.



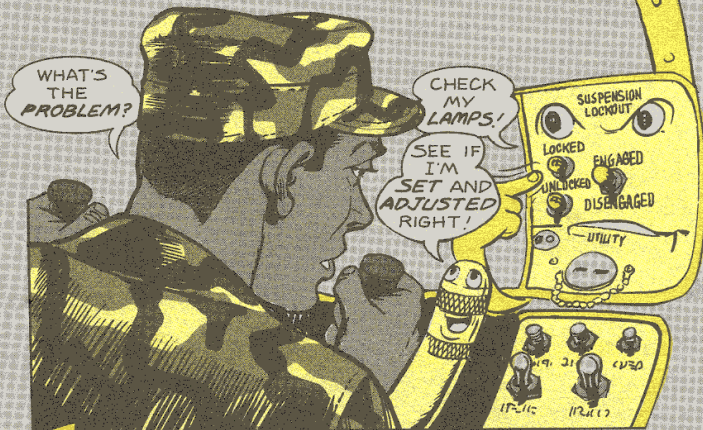
As the boom extends and retracts, the cam roller and follower open and close the blast shield. With the LLM elevated and empty, the follower can hang up on the roller, either breaking it off or jamming it to the roof of the LLM.

To prevent the damage, keep an eye on the roller, link and follower. If the mechanism needs adjustment, get it done.

If the mechanism and blast shield door hinges are coated with rocket exhaust deposits, clean them with

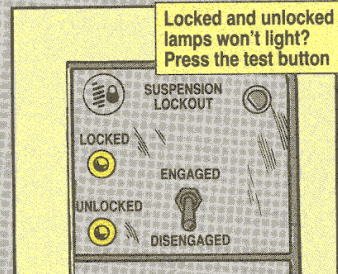
The instructions lack info on cleaning the blast shield door. What's needed is a good soaking of the hinge so that the support brackets don't break.

Lockout Trouble shooting Tips



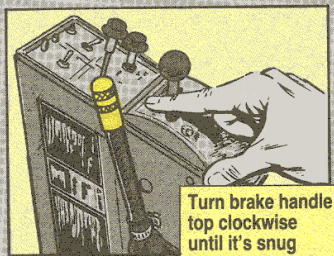
Troubleshooting the suspension lockout on your MLRS can be tricky.

Keep these tips in mind next time the instrument panel LOCKED and UNLOCKED lamps won't light.



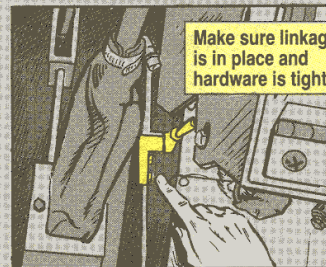
Hit the lamp test button to make sure the lamps are working. If they light, move on to the next tip. If they're burned out, replace 'em.

Make sure the handbrake is set and adjusted right. Turn the top part of the handle clockwise until it's snugly tight. If the handle is loose, the electrical circuit that verifies that the brake is set may be broken.



If the lamps still don't light, turn off the master switch and raise the cab. Check the gear selector interlock linkage and sensitive switch.

Make sure all the linkage hardware is in place and tight. Make sure the switch is secure and not damaged. Loose hardware or a bum switch can prevent the lamps from lighting.

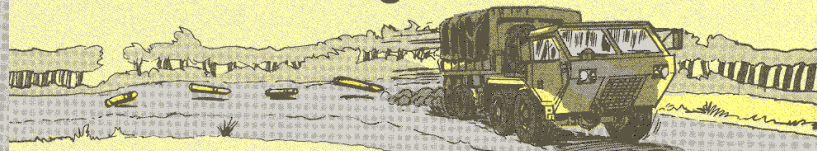


Lower the cab and turn on the master switch. The UNLOCKED lamp should come on. Pump up the system until the UNLOCKED lamp goes out and the LOCKED lamp comes on.

If the lights still don't work right, let your mechanic hear about it. There's more troubleshooting info for him in TM 9-1450-646-20-1.

Ammo Hauling...

Load Shifting Is Bad News



A shifting ammo load on a cargo truck or trailer can ruin your day. The sidewalls, front wall and endgate may not be strong enough to hold the load.

That can mean ammo scattered down the road!

Keep truck- or trailer-loaded ammo in place with web strap tiedowns or wood blocking and bracing.

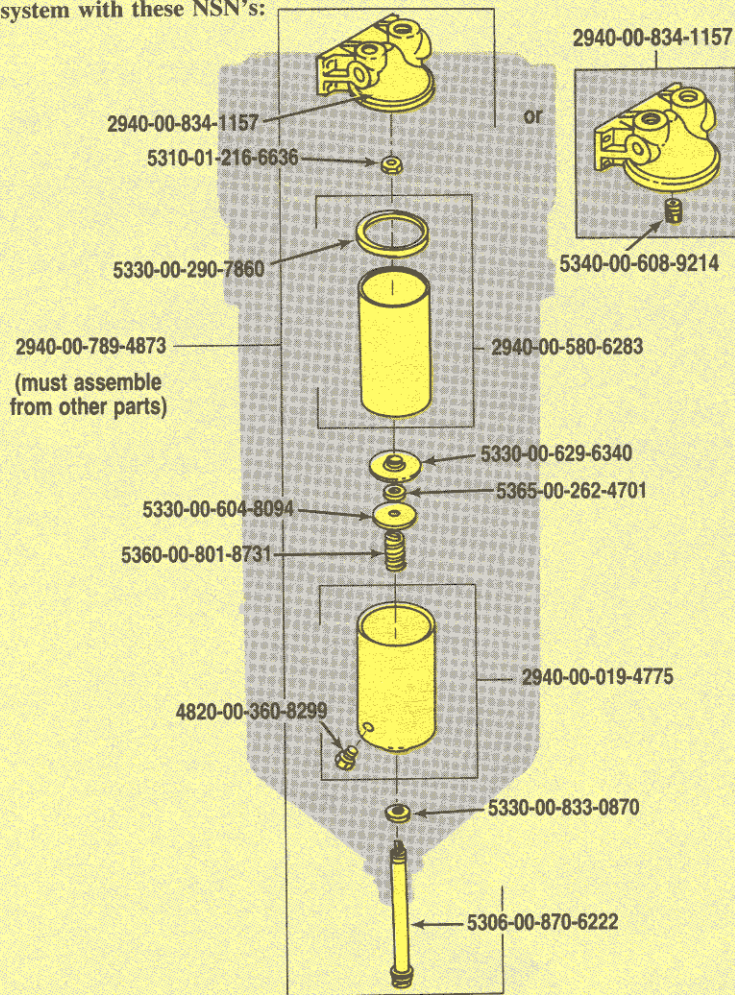
Get the word on how to do it right from:

US Army Defense Ammunition Center and School
ATTN: SMCAC-DEO
Savanna, IL 61074-9639
 Or call AUTOVON 585-8071
 Commercial 815-273-8071

M113-Series FOV...

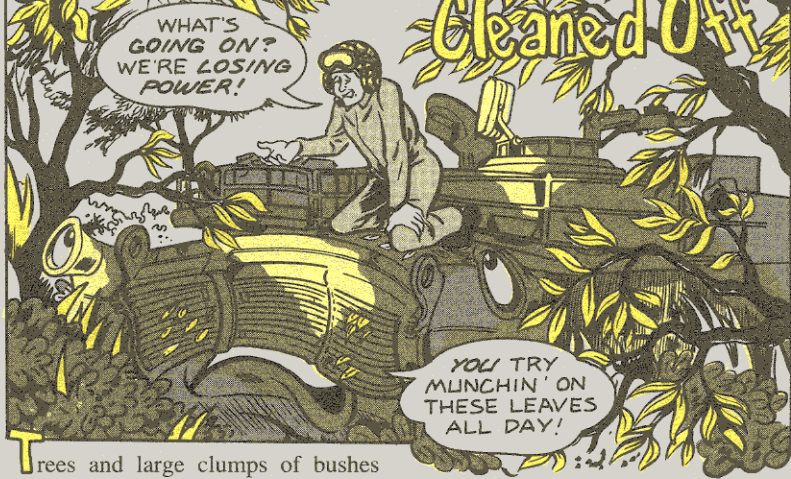
Engine Oil Filter NSN's

Get all the right parts for your M113-series vehicle's engine oil filter system with these NSN's:



Make a note on Fig 8 of TM 9-2350-261-20P until you get a copy of the new parts manual, TM 9-2350-261-24P.

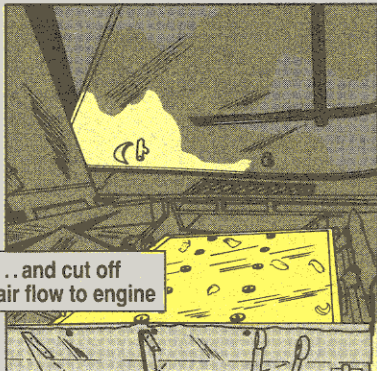
Keep Pre-cleaners Cleaned Off



Trees and large clumps of bushes make good hiding places for your tank. They also make for clogged air pre-cleaners.

Mix trees and bushes with plenty of leaves, no matter how green they are, with the high temperatures of the M1's exhaust and you get dried leaves on the deck.

Leaves that fall on or near the air inlets get sucked down onto the pre-cleaner.



Enough leaves on the pre-cleaner will cut off airflow to the engine, lowering power output.

Since you drivers know when you've been parked in a tree line or bush clump, you also know when you need to eyeball the pre-cleaner. Don't wait for the power loss to let you know.

Don't LET up on PM

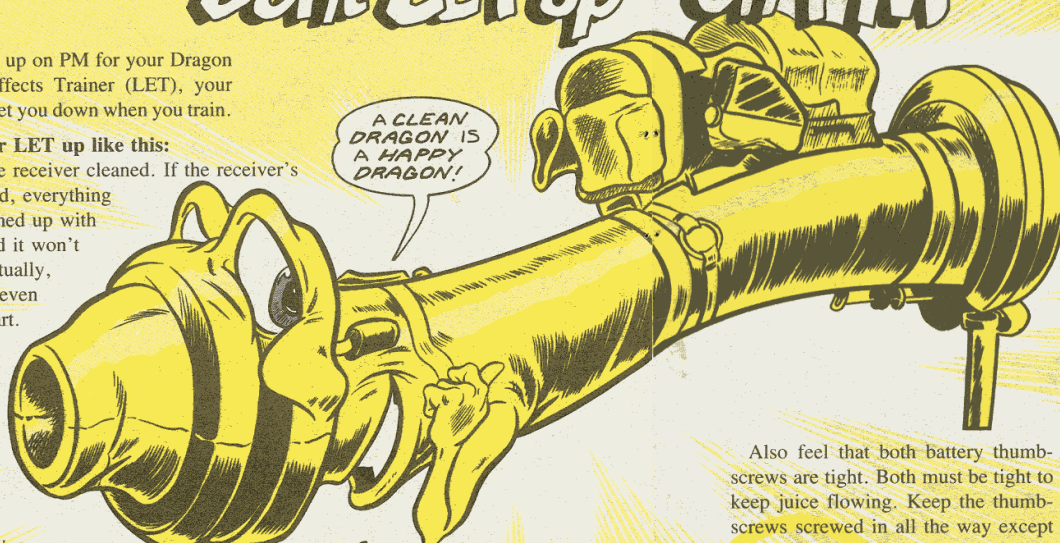
If you let up on PM for your Dragon Launch Effects Trainer (LET), your LET will let you down when you train.

Keep your LET up like this:

Keep the receiver cleaned. If the receiver's not cleaned, everything gets gummed up with carbon and it won't fire. Eventually, you can't even take it apart.

After training, pull the receiver out and clean the cartridge chamber with soapy water and a small arms chamber brush. Clean the rest of the receiver with soapy water and an acid swabbing brush. If soap won't get rid of carbon, use cleaning solvent, NSN 6850-00-224-6658, instead. Wipe the receiver dry.

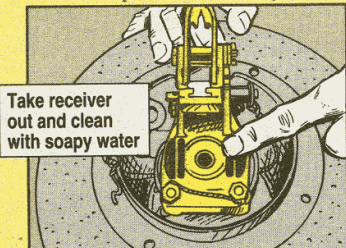
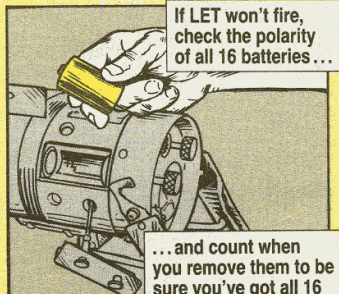
A CLEAN DRAGON IS A HAPPY DRAGON!



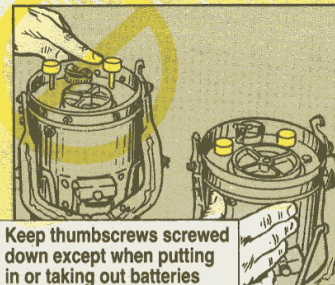
Batteries

If the LET won't fire, look at the batteries before you call your repairman. If even one of the 16 batteries is reversed, the LET gets no juice.

If LET won't fire, check the polarity of all 16 batteries...



Also feel that both battery thumbscrews are tight. Both must be tight to keep juice flowing. Keep the thumbscrews screwed in all the way except



when you're installing or taking out batteries. If the screws stick out, they get bent and can't screw in to connect to the batteries. Then, support has to disassemble the whole LET to replace the thumbscrews.

When you remove the batteries, count them. Eight should come out of each compartment. The last battery often sticks and you think you've gotten all the batteries. The battery's left in and it swells and bursts. DS must replace the whole tube assembly.

Tracker Latch

Easy does it on the latch. It's only held on by two rivets. If you jerk it back, the latch is bent. Then you can't lock the tracker in place. The whole mounting assembly has to be replaced. Pull the latch back just far enough to release the tracker.



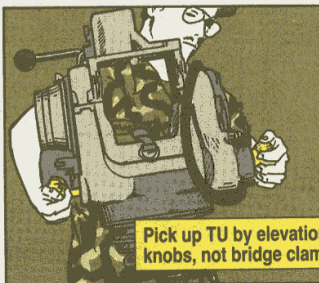
Putting It All Together

Assembling the TOW is no slap-and-snap job. Its components are heavy and hard to maneuver. If you don't have your act together, you can easily damage things like cables and latches.



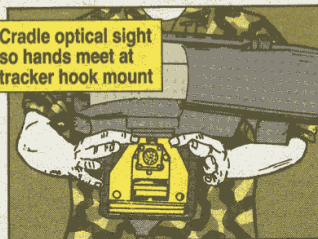
Get it together like this:

X Traversing unit. Hoist it onto the tripod using the elevation knobs as handles. The bridge clamp may look like a great handle, but if the clamp comes unlocked the TU takes a dive. After you have the TU locked on, twist the TU to make sure it's secure.



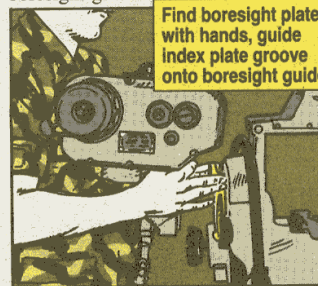
X Optical sight. Push the sight latch all the way down. Pick up the sight with both hands so it's in the position it will lock onto the TU. Your arms should cradle the sight so that your hands meet at the tracker hook mount.

Cradle optical sight so hands meet at tracker hook mount



Use both hands to feel for the boresight plate and as a guide to slide the sight index plate groove onto the boresight guide.

Find boresight plate with hands, guide index plate groove onto boresight guide

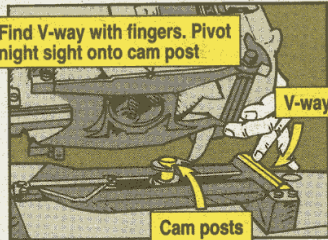


Support the sight with your left hand while you lock down the latch with your right. Hold the sight with your left hand while you wiggle the sight to make sure it's locked on tight.

X Night sight. Gently shake the night sight's mounting bracket to make sure it's tight. If it's loose, let your repairman know. The bracket's screws need tightening.

Push the night sight's locking handle all the way to the rear. Grasp each end of the sight with your fingers wrapped on the bottom. Use two fingers of your left hand to find the day sight's V-way.

Find V-way with fingers. Pivot night sight onto cam post



Pivot the night sight onto the day sight's cam post. Lock the sight on by pulling its handle all the way forward. Support the sight while you try to wiggle it to make sure it's secure.

MAKE SURE ALL PARTS ARE SECURE!



STOP CABLE CRUNCH

HEY!
DON'T
CRUNCH MY
CABLE!

When you unplug the W2J1 cable from your M901's Missile Guidance Set (MGS), stow it out of harm's way. You need a pair of electrical tiedown straps, NSN 5975-00-111-3208, and a 10-in rubber tiedown strap, NSN 5340-00-340-0980 or prom bulk elastic cord, NSN 8305-00-267-3114.

Here's how:

Remove the hook from each end of the rubber strap.

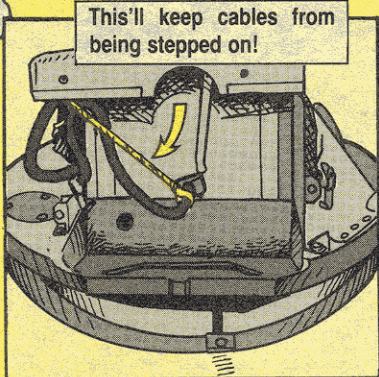
Thread one electrical tiedown strap through the cable's loop in the MGS housing cover and through the hole in the end of the rubber strap. Pull the tiedown tight.

Wrap the other electrical tiedown strap right below the connector and push it through the hole in the other end of the rubber strap. Lock it tight.

WHEN YOU UNPLUG THE W2J1 CABLE, THIS FIX PULLS THE CABLE UP TO THE HOUSING COVER AND OUT OF THE WAY!



This'll keep cables from being stepped on!



Drawing Blanks on Blank Firing



If you don't want to draw a blank when it's time to fire blanks out of your M249, you need to fill in the blanks like this:

☉ Use the M15A2 blank firing adapter (BFA), NSN 1005-00-118-6192, instead of the old M15. The M15A2, which has a ring handle, stays on better.

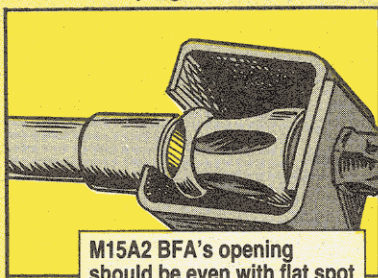
☉ Put the M15A2 on so its opening is even with the suppressor's flat spot. This helps the BFA seal better and prevents firing stoppages.

☉ Fire only M200 blank cartridges and use only the 200-round ammo box. Never mix live and blank rounds. That will damage your M249.

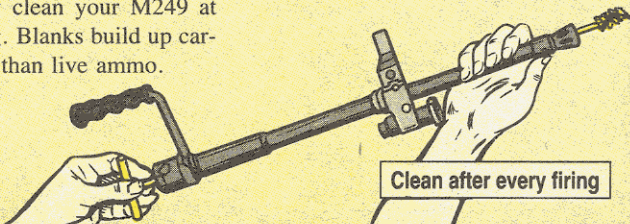
☉ After firing 50 rounds, check to see if the BFA is tight. If not, tighten it.

☉ Thoroughly clean your M249 at the end of firing. Blanks build up carbon even faster than live ammo.

☉ Screw the M15A2 on hand-tight only. If you force it tighter, it spreads and won't stay tight.



During every break, feel the BFA for looseness and retighten if necessary.

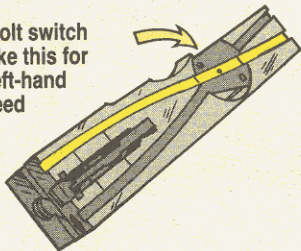


GET IT STRAIGHT

HERE'S HOW TO GET IT STRAIGHT WHEN YOU PUT YOUR M2 TOGETHER.

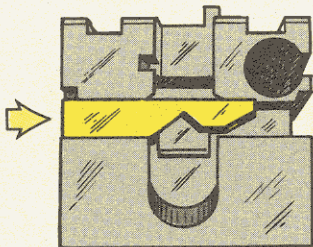
Bolt switch. Put the bolt switch in so the left-hand groove beginning at the bolt's base is unblocked. That's for left-hand feed. Do it the opposite for right-hand. If the switch's backwards, the feed lever lug and bolt switch are damaged.

Bolt switch like this for left-hand feed



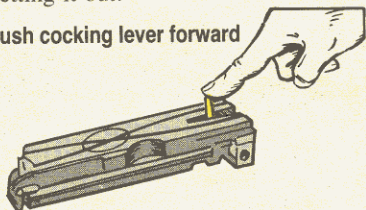
Sear slide. Always slide the sear slide in the bolt left-to-right. From the right is wrong. Your M2 won't fire.

Left to right



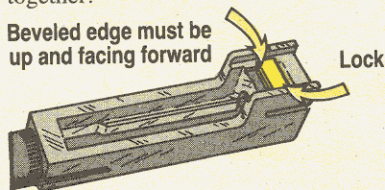
Cocking lever. Slide the bolt forward in the receiver with the cocking lever forward. If the lever's back, the bolt's stuck in the receiver and your armorer's stuck with the tough job of getting it out.

Push cocking lever forward



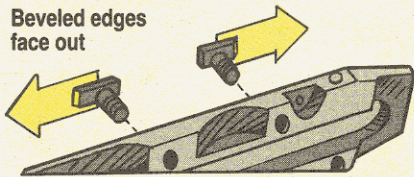
Breech lock. Stick the breech lock in the barrel extension so its beveled edge is up and facing the front of the gun. If the lock's backwards, the barrel extension and barrel buffer won't fit together.

Beveled edge must be up and facing forward



Shoulder bolts. Screw them in so their beveled edges point in opposite directions. If the edges face each other, the slide plate works loose and breaks the charging handle's bolt stud.

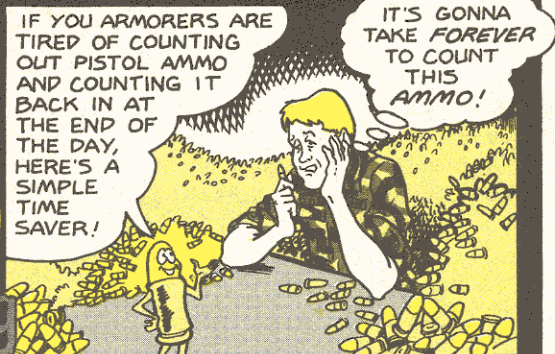
Beveled edges face out



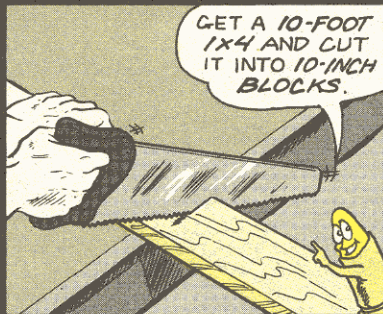
Take Counting Out of Accounting

IF YOU ARMORERS ARE TIRED OF COUNTING OUT PISTOL AMMO AND COUNTING IT BACK IN AT THE END OF THE DAY, HERE'S A SIMPLE TIME SAVER!

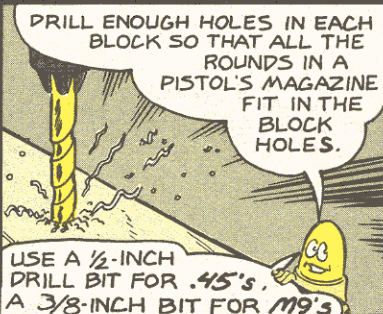
IT'S GONNA TAKE FOREVER TO COUNT THIS AMMO!



GET A 10-FOOT 1x4 AND CUT IT INTO 10-INCH BLOCKS.



DRILL ENOUGH HOLES IN EACH BLOCK SO THAT ALL THE ROUNDS IN A PISTOL'S MAGAZINE FIT IN THE BLOCK HOLES.

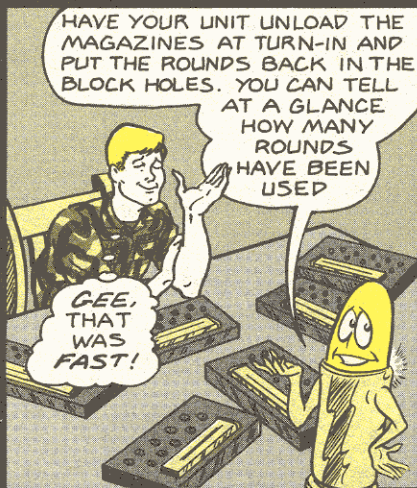


USE A 1/2-INCH DRILL BIT FOR .45's. A 3/8-INCH BIT FOR M9's.

CUT A SLOT THAT THE MAGAZINE WILL FIT IN. EACH BLOCK HOLDS A BASIC LOAD FOR ISSUE. JUST FILL ALL THE HOLES WITH ROUNDS AND PUT A MAGAZINE IN THE SLOT.



HAVE YOUR UNIT UNLOAD THE MAGAZINES AT TURN-IN AND PUT THE ROUNDS BACK IN THE BLOCK HOLES. YOU CAN TELL AT A GLANCE HOW MANY ROUNDS HAVE BEEN USED

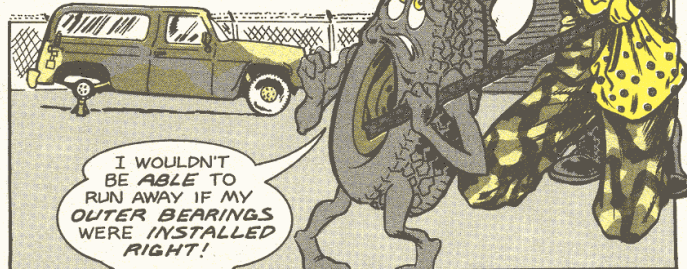


GEE, THAT WAS FAST!

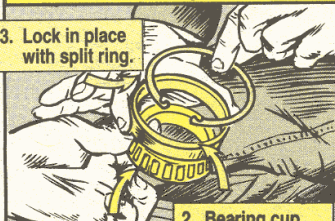
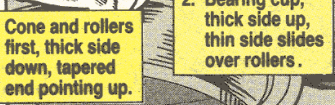
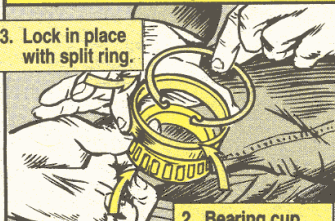
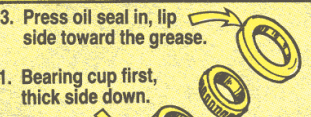
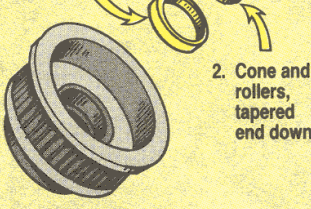
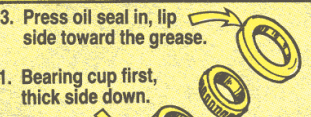
Rear Wheel

Never let your point of view confuse you on how to reassemble a CUCV's rear drum, hub and wheel bearings. Put the bearings in wrong, and the wheel will run off.

It's easy to get confused, especially if you follow the picture on Page 8-12 of TM 9-2320-289-20. The outer wheel bearings go on the inside, not the outside of the hub, like the picture shows.

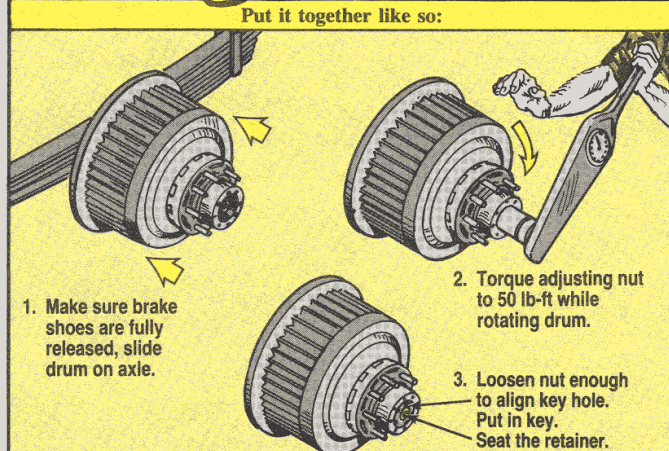


Here's the simple way to do the job right:

Outer Bearing First	Inner Bearing Next
<p>3. Lock in place with split ring.</p>  <p>2. Bearing cup, thick side up, thin side slides over rollers.</p>  <p>1. Cone and rollers first, thick side down, tapered end pointing up.</p> 	<p>3. Press oil seal in, lip side toward the grease.</p>  <p>2. Cone and rollers, tapered end down</p>  <p>1. Bearing cup first, thick side down.</p> 

Bearing Review

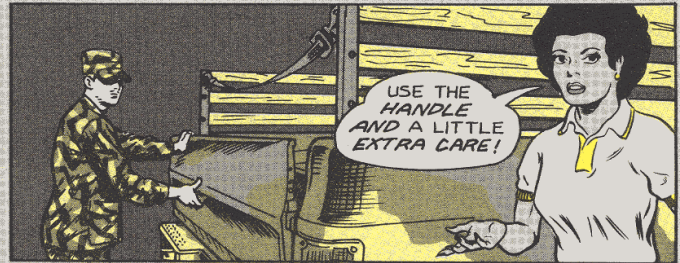
Put it together like so:



1. Make sure brake shoes are fully released, slide drum on axle.
2. Torque adjusting nut to 50 lb-ft while rotating drum.
3. Loosen nut enough to align key hole. Put in key. Seat the retainer.

M1008 CUCV...

No Wham, Bam or Slam!



You can mess up the tailgate on your cargo truck by slamming it shut. Pieces of the latch break off inside the tailgate when it's slammed shut. The latch rods come loose and the tailgate jams.

To close the tailgate, pull back on the handle with one hand and grip the top of the tailgate with the other. Then shut it—don't slam it.

A little extra care will save time and the cost of a repair job later.

CUCV...

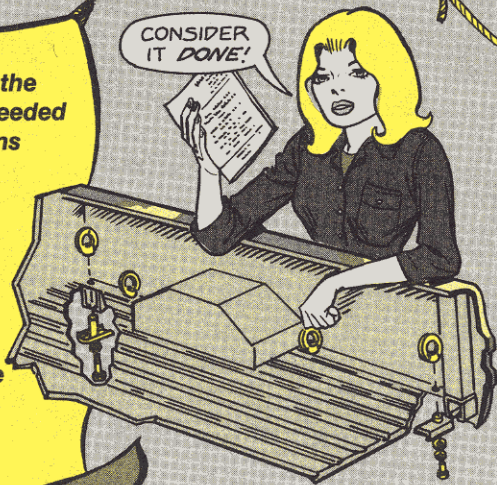
Cargo Tiedown Parts

Dear Connie,
Please help me pass the word that everything needed to install cargo tiedowns is listed in Fig 146 of TM 9-2320-289-20P.

Most CUCV's do not have cargo tiedowns in the bed. Unsecured cargo bangs against the bed, damaging both the cargo and the truck.

Sue Heath
Equip Spec
TACOM

CONSIDER
IT *DONE!*



Sticky Wheel Gets Grease

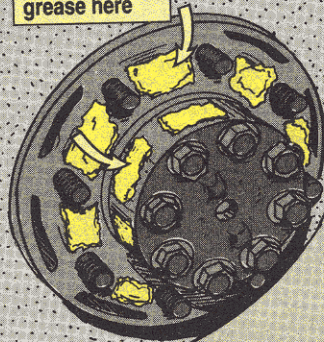
Dear Editor,

The rear wheels corrode and stick to the axle hubs of our CUCV's. The only way to break 'em loose is with a sledgehammer. This presents a real problem if you have a flat in the middle of the boonies.

I've stopped corrosion cold by putting a light coat of graphite grease on the hub. It keeps corrosion from building up. I haven't had one frozen wheel rim since I started using it.

SSG Thomas N. Rennar
NJARNG

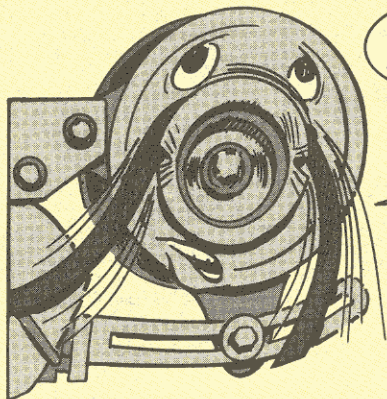
Apply graphite
grease here



(Editor's note: Sounds like you've greased your wheel problem. Get graphite grease with NSN 9150-00-257-5370.)

HMMWV...

Alternator Bolt Lockup



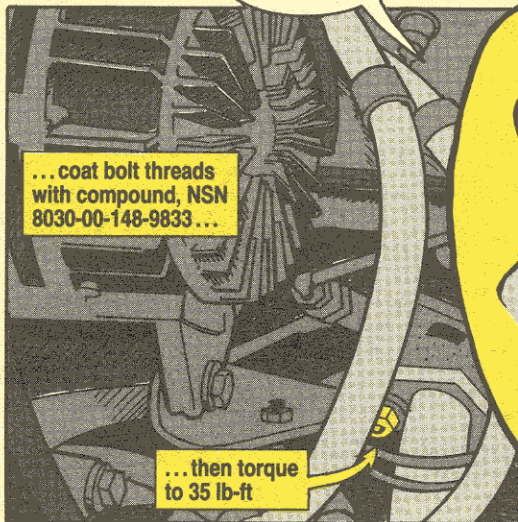
EVERYBODY KNOWS
ONE BAD APPLE CAN
SPOIL THE BARREL.

BOLTS ARE LIKE
APPLES—ONE FAILED
BOLT CAUSES OTHERS
TO FAIL!

The bolt that holds the alternator support bracket to the exhaust manifold vibrates loose. Then flopping drive belts work the alternator back and forth. This puts stress on the main bracket and bolts. The bracket cracks and mounting bolts snap off. It's no easy job getting the broken studs out of the engine.

YOU CAN KEEP THE BOLT
IN THE SUPPORT BRACKET
FROM VIBRATING LOOSE!

REMOVE
THE BOLT...



... coat bolt threads
with compound, NSN
8030-00-148-9833 ...

... then torque
to 35 lb-ft



Homemade Filter Bleeder Tool

Dear Editor,

One person cannot bleed the fuel filter on the HMMWV. Step 4 of Para 3-32 of TM 9-2320-280-20 says to crank the engine until fuel comes out the bleed screw.

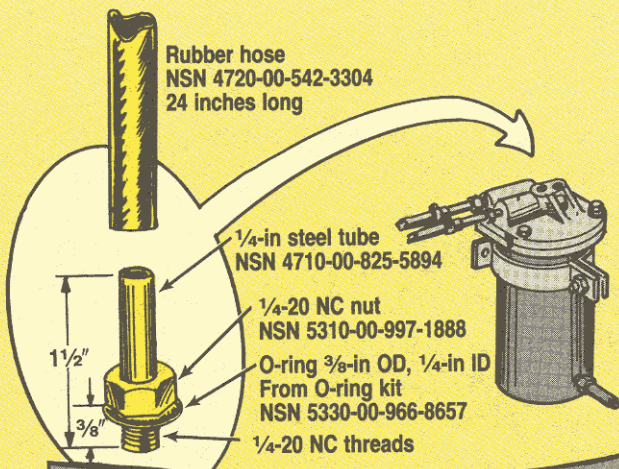
You can't crank the engine and watch the bleed screw at the same time. Fuel spills on the engine. It makes a mess that can cause a fire. And, since you can't see when fuel starts flowing, extra fuel bleeds out, causing a bigger mess.

I made a bleeder tool out of bench stock to solve the problem.

I remove the bleed screw and screw the bleeder in the hole before doing Step 4. The other end of the hose goes in a clean, clear container. Crank the engine and watch the fuel. When air bubbles stop coming through the line, remove the bleeder and replace the bleed screw.

Here's how I made the bleeder tool.

SPC Michael W. Ladroga
Columbus, OH

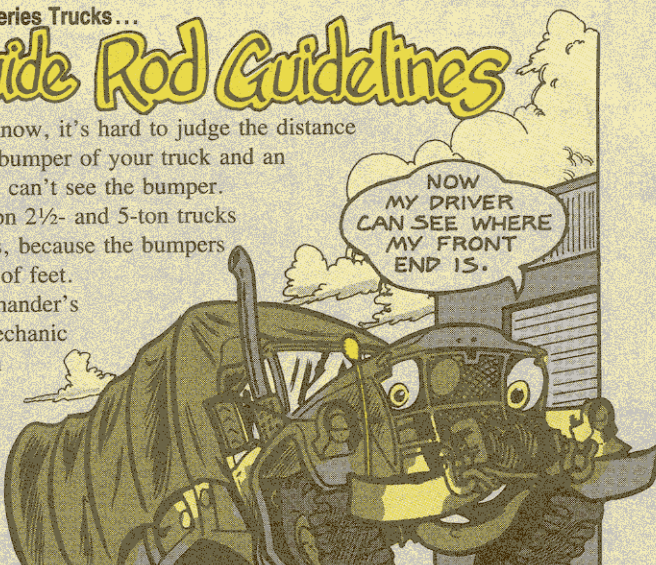


(Editor's note: Sounds like a clean way to handle a messy job.)

A Guide Rod Guidelines

As you drivers know, it's hard to judge the distance between the front bumper of your truck and an obstacle when you can't see the bumper. It's even tougher on 2½- and 5-ton trucks with front winches, because the bumpers stick out a couple of feet.

With your commander's OK, have your mechanic put a guide rod on the curb side of your bumper.



NOW
MY DRIVER
CAN SEE WHERE
MY FRONT
END IS.

Here's how:

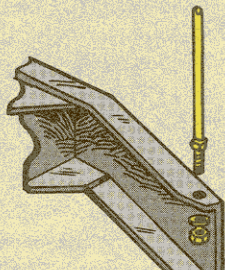
Start with a 3-ft long piece of 3/8-in rod, NSN 9510-00-189-0652.

- Thread about 3½ inches of one end with a 3/8-16 die, NSN 5136-00-189-3217. The die is in the No. 2 Common shop set.
- Drill a 7/16-in hole about two inches from the right end of the bumper.
- Run a nut, NSN 5310-00-989-5956, all the way up on the threads.

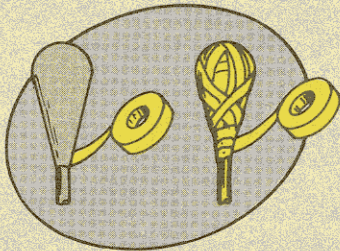
• Then put the rod in the bumper hole. Secure it with a lock washer, NSN 5310-00-984-7042, and a second nut.

• For safety's sake, cover the rod tip with an antenna cap, NSN 5985-00-930-7223. Tape it in place with electrical tape, NSN 5970-00-816-6056, like so:

Tape it like so:



Drill bumper,
add rod and
then secure it



The cap keeps anyone who might fall on the rod from getting speared.

PM Spells R-E-S-P-E-C-T



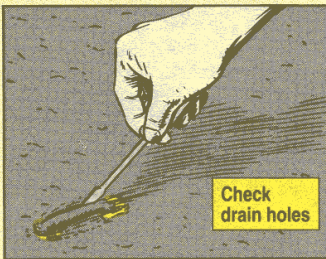
It's hard for the little 1½-ton M332 trailers to get any respect. They're used as pack mules to haul heavy boxes of ammo to the field.

Soldiers load 'em up, head 'em out, and when they're done, unhitch 'em back at the motorpool. There they sit and wait in the rain, sleet and snow until it's time to load 'em up and head 'em out again.

The trailers never complain. They take it and take it until their get-up-and-go is gone. It's a shame, because a little respectful care will keep them packing the load.

Poke Plugged Holes

Little things like plugged drain holes in the bed damage these trailers. Water collects in the metal bed everytime it rains. It doesn't take long for rust and corrosion to set in.



Dirt and leaves plug the holes. Check the holes in the front corners and around the ammo tiedowns every time a trailer comes back from the field. It only takes a minute to run the tip of a ballpoint pen or a small screwdriver through the holes to keep them open.

The holes also get clogged—covered up with paint—at the paint shop. Unless you unplug 'em, water will stand in the bed.

Lube it—or Lose it

Moving parts and cables rust and seize up during long, lonely waits. Everything that moves on a trailer needs a protective coating of lube before it's parked out in the weather. Squirt oil on all linkage pins, clevises, exposed adjusting threads and cables.

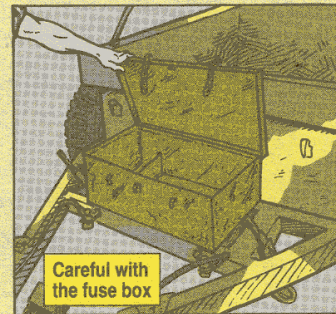
The handbrake handle needs special attention. The lube instructions in Chapter 4 of TM 9-2330-231-14&P do not tell how to lube the knob. If the



knob threads are not lubed—inside and out—the adjustment knob seizes up.

Fuse Box Fix

The fuse box is not fragile, but it's always in harm's way. A damaged fuse box is tough to replace because the TM short-changed you on NSN's.



Order a new box assembly with NSN 5920-01-268-3551. Mount it on the trailer with carriage bolt, NSN 5306-00-088-5742. Use flat washer, NSN 5310-00-584-7981 and self-locking nut, NSN 5310-00-241-6640. The rubber lid seal comes with NSN 9320-00-067-4120.



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

TM 3-4230-229-10 Oct 89 M291 decontaminating kit
TM 5-2420-224-10 Dec 89 Small emplacement excavator and high mobility material handler
TM 9-1090-208-23P Apr Armament subsystem, helicopter: M139 gun, automatic, 30-MM: M230 rocket management subsystem, inventory-deployment: M140
TM 9-1430-604-24P-2 Oct 89 AN/MRC-137 communications relay group (Patriot missile system)
TM 9-1440-485-24P Nov 89 M752 launcher, M234 mobility kit, M91 firing device (Lance missile system)
TM 9-2350-300-20P Mar M163A1 Vulcan

TM 9-2350-311-20P-2 Nov 89 M109A2/A3 SP howitzer
TM 9-4935-474-24P-2 Dec 89 M2 Bradley TOW 2 test set
TM 9-4935-600-24P Oct 89 AN/TSM-164 (Patriot missile system)
TM 11-5805-769-24P Feb C-11878/T orderwire control
TM 11-5805-770-24P Feb TD-1426(P)/T multiplexer
TM 11-5820-1023-13-2 Feb Line-of-sight multichannel radio terminal AN/TRC-190(V)1, AN/TRC-190A(V)1, AN/TRC-190(V)2, AN/TRC-190A(V)24, AN/TRC-190(V)3, AN/TRC-190A(V)3, AN/TRC-190(V)4, AN/TRC-190A(V)4 MSE
TM 11-5895-1348-20P Feb Tactical computer processor AN/UYQ-43(V)1
TM 55-1930-202-14 Nov 89 Barge, deck or liquid cargo, non-propelled
TB 9-352 Sep 78 Load-testing wrecker: M62; M543-series and M816 truck tractor, M246 and M819
TB 55-1510-213-20-8 Nov 89 Conversion OV-1D(C)/RV-1D, inspect fuselage station 146.111

TB 55-1520-20-2 Dec 89 Adjust retirement life of components for UH-1M
TB 55-1520-237-20-109 Dec 89 In-spect H-60 oil cooler axial fan
TB 55-1520-237-20-112 Jan Rappelling, parachuting and transportability tiedown fitting assembly, P/N 70700-20433-045
TB 55-1520-238-20-74 Jan AH-64A main rotor strap pack inspection
TB 55-1520-240-20-40 Nov 89 CH-47D ungrounding requirements
TB 55-1520-240-20-41 Dec 89 CH-47D ungrounding requirements
TB 55-1520-242-20-46 Nov 89 UH-1H cold weather
TB 55-1520-242-30-1 Feb Inspect UH-1H tail rotor yoke, P/N204-011-722-5
TB 55-1520-243-20-13 Jan Inspect UH-1/AH-1 transmission
TB 55-1520-243-30-1 Nov 89 AH-1/UH-1 service/shelf life for tail rotor hanger bearings
PAM 740-1 Mar Guide to preservation and packing

Maintenance & Safety-Of-Use Messages

CECOM SOU-MSG-89-12-01—Advisory, Operational, AN/PRC-104A manpack radio, AMSEL-SF-SEP 061700Z Dec 89.

CECOM SOU-MSG-89-12-04—Advisory, DC power cables found in the main shelter and maintenance shelters 1 and 2 used with mobile subscriber equipment (MSE), AMSEL-SF-SEP 221800Z Dec 89.

CECOM SOU-MSG—Advisory, Maintenance, Correction to CECOM SOU-MSG 89-11-02, Wind measuring sets, AMSEL-SF-SEC 101800Z Jan 90.

CECOM SOU-MSG-90-01-04—Advisory, AN/TRC-170(V)2 and (V)3 digital troposcatter radio terminals, ASME-SF-SEP 221800Z Jan 90.

CECOM SOU-MSG-90-02-01—Operational, Mandatory, OA-9054 (V)4/G part of the OE-349/MRC antenna mast group, AMSEL-SF-SEC 051800Z Feb 90.

PM TRADE ORLANDO FL SOU-MSG-90-01—Operational, Morse mission trainer (MMT) AMCPM-TND-SP 261801Z Jan 90.

TACOM SOU-MSG-90-01—Advisory, Technical/Maintenance, M1009 CUCV tires, AMSTA-M 121819Z Feb 90.

TACOM SOU-MSG-90-02—Advisory, Technical/Maintenance, M172A1 25-ton semitrailer, AMSTA-M 161600Z Feb 90.

TACOM SOU-MSG-90-07—Operational, Armored vehicle launched bridge (AVLB), AMCPM-MI/3/M60 162222Z Feb 90.

TROSCOM SOU-MSG-28-89—Advisory, Operational, M2 and M2A burner units, AMSTR-MES 201700Z Nov 89.

TROSCOM SOU-MSG-02-90—Advisory, 60-KW DED generator sets, AMSTR-MES 011530Z Feb 90.

TROSCOM SOU-MSG-04-90—Advisory, Centrifugal pump, GED, frame mounted, AMSTR-MES 201516Z Feb 90.

TROSCOM Maintenance Advisory MSG-89-54—Modification procedure for 15- and 30-KW acoustic suppression kits (ASK), AMSTR-MES 121630Z Jan 90.

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

Homely Humvee Humbly Begs Respect

Your homely Humvee may look like a frog on a skateboard, but even ugly frogs need big doses of tender loving care and some respect.

WHAT A BEAUTIFUL DAY!
IT'S SO NICE TO GET
A...

HELP...
HELP ME,
PLEASE!

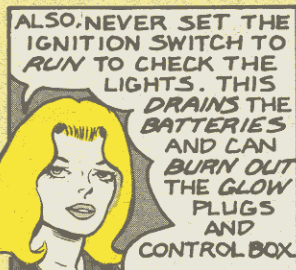
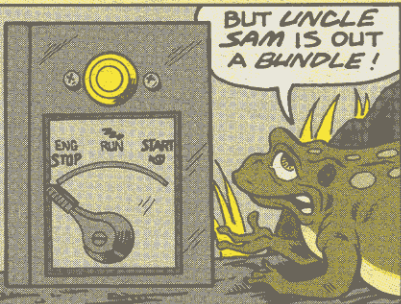
HI,
LITTLE FROG!
DON'T TELL ME
YOU WERE
ONCE A
PRINCE?

NO, BUT I WASN'T ALWAYS A FROG
EITHER! ONCE I WAS A LEAN, MEAN,
TROOP CARRYIN' HUMVEE!
BUT NO RESPECT AND
NEGLECTANCE TURNED
ME INTO A
REAL FROG!



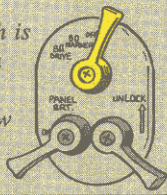
WAIT, like the light says, before you turn the rotary switch from RUN to START.

If you switch to START before the light goes out, you'll burn out the glow plugs and the protective control box. Your mechanic can replace the burned out control box with NSN 6110-01-292-6552.



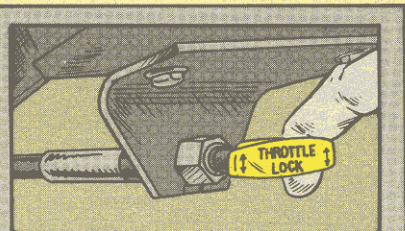
Instead, turn the light selector to SER DRIVE. When you've made sure the lights work, turn the switch to OFF.

Make sure the ignition switch is turned OFF before you leave a parked vehicle. This stops all power drain and keeps the glow plugs from cycling until they burn out.



SOMEONE COULD REALLY GET HURT THAT WAY!

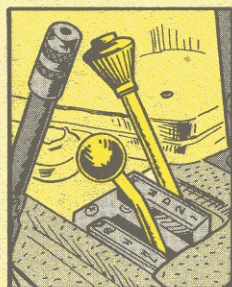
THEY SURE COULD!



So, use the throttle control only like TM 9-2320-280-10 says—to boost RPM's to power electronic equipment, to operate the winch, to ford and to start the truck in cold weather.

...AND WITH ALL THE ON-THE-MOVE SHIFTING, MY DRIVE TRAIN GEARS LOST MORE TEETH THAN A DENTIST SEES IN A WEEK!

THERE'S ONLY ONE WAY TO SHIFT THE TRANSFER—AT A DEAD STOP!



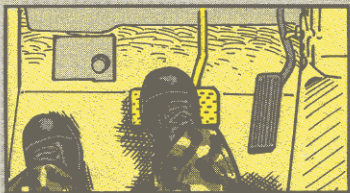
The right way to shift is come to a complete stop, put the transmission in NEUTRAL and then shift the transfer.

THERE, THERE—IS THERE MORE?

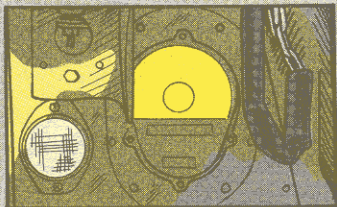
DID I TELL YOU ABOUT THE TRICKY BRAKE LIGHT SWITCH?

Drivers, there's only one way to make sure the brake lights will light up when you're on the road.

Get a buddy to watch while you drive the truck forward in the motor pool. Push down on the brake pedal about $\frac{1}{4}$ inch—that's the free travel.



The brake lights should come on. If not, call your mechanic to adjust the brake light switch by the instructions in Para 4-46 of Change 1 in TM 9-2320-280-20.

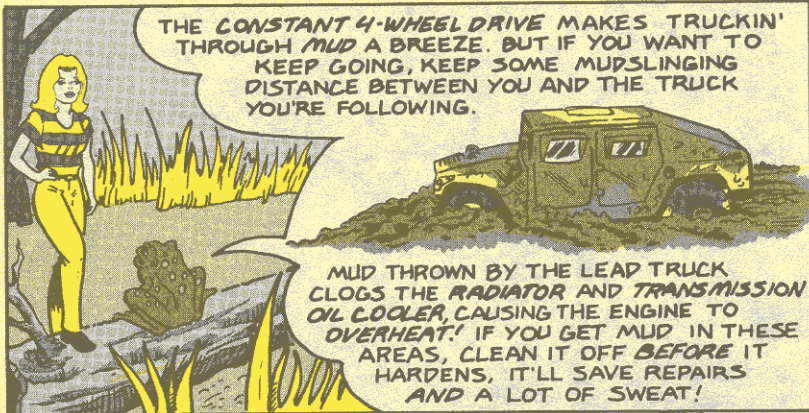


Hazardous Hazard Lights

The brake lights do not work when the hazard lights are flashing. So, drivers, put some extra distance between your truck and the flashing HMMWV in front of you. It will stop without warning.

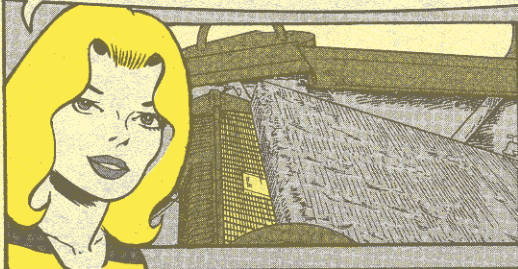


THE **CONSTANT 4-WHEEL DRIVE** MAKES TRUCKIN' THROUGH MUD A BREEZE. BUT IF YOU WANT TO KEEP GOING, KEEP SOME MUDSLINGING DISTANCE BETWEEN YOU AND THE TRUCK YOU'RE FOLLOWING.



MUD THROWN BY THE LEAD TRUCK CLOGS THE RADIATOR AND TRANSMISSION OIL COOLER, CAUSING THE ENGINE TO OVERHEAT! IF YOU GET MUD IN THESE AREAS, CLEAN IT OFF BEFORE IT HARDENS, IT'LL SAVE REPAIRS AND A LOT OF SWEAT!

YOUR TRUCK TAKES QUITE A LICKING WHEN YOU DRIVE CROSS-COUNTRY. VIBRATION AND JOLTS CAN BREAK THE TOP SUPPORT MOUNTS ON THE RADIATOR.



Then the radiator bounces against the cooling fan. Both the radiator and the fan blades get damaged. Head for the nearest mechanic any time you spot loose, cracked or broken mounts.

Head Off Fan Failure

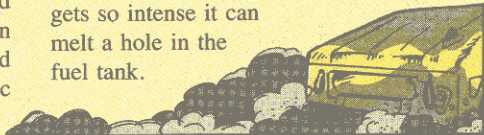
Loose bolts let the fan blades fly off and hit the radiator and hood. Eyeball the fan during your **after** operation checks.

Look for cracked or chipped blades and shiny spots around the bolts. Take hold of the fan and try to move it. It should not wiggle. Call your mechanic at the first sign of trouble.

No Fiction—It's Friction

Your truck has enough horses under the hood to override a partially set parking brake.

Friction from the brake pad and rotor rubbing together burn them up. Heat gets so intense it can melt a hole in the fuel tank.



NOBODY NEEDS THAT! HERE'S HOW TO KEEP THE PARKING BRAKE COOL!



- Idle the engine while you shift the transmission into drive.
- Fully release the parking and service brakes.
- Push down easy on the accelerator pedal when you take off. As the truck moves, feel for drag or hesitation. If the truck hesitates, have your mechanic take a look at the parking brake.

OOOH! THAT USED TO BURN ME UP!



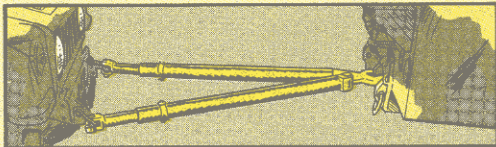
THEY SHOULD KNOW—ANYTIME THEY FEEL DRAG OR VIBRATION WHILE DRIVING—STOP!! AND MAKE SURE THE PARKING BRAKE IS FULLY RELEASED.



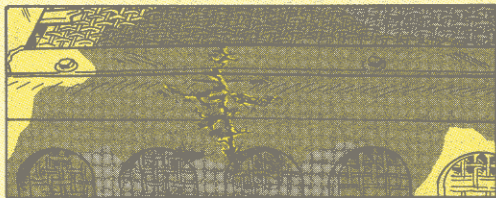
AND IF THAT'S NOT THE PROBLEM, GET HOLD OF A MECHANIC!

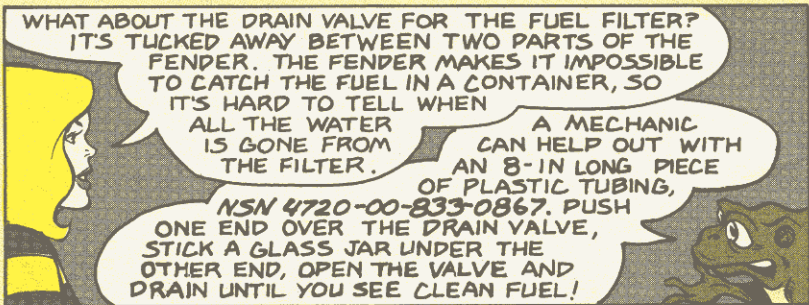
No Chain Towing

Always use a tow bar to tow a HMMWV. Using a chain lets the truck bang into the towing vehicle.



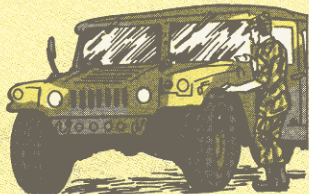
That smashes the fiber glass hood and can rupture the transmission oil cooler.





Lift Hood Right

Save your back. Instead of lifting the hood by the instructions in TM 9-2320-280-10, do it the easy way. Here's how:



- Set the parking brake and release the hood latches. Put both hands under the hood on the driver's side.
- Bend your legs slightly and keep your back straight.
- Lift with your legs. Push the hood away as you lift. This keeps the passenger side of the hood from hanging on the truck's body.
- Move your hands toward the front of the hood as it raises. Hook the prop rod firmly in its support bracket.

DON'T FORGET TO REMIND THEM **NOT** TO STICK ANY PART OF THEIR BODY UNDER THE HOOD UNTIL THEY **KNOW** IT WILL **STAY UP!**

GOOD POINT! NOW LET'S TALK ABOUT TIRES!
A **FLAT TIRE** ON A **34-TON TRAILER** IS NO PICNIC, BECAUSE THE TRAILER **DOESN'T** HAVE A **SPARE TIRE!**

WHAT'S **WORSE** IS THE **SPARE TIRE** AND **TOOLS** FROM THE **HUMVEE** **DON'T FIT** THE **TRAILER!**

THEY CAN GET THE PARTS WITH THEIR **COMMANDER'S** **OK!**

These parts are listed in TM 9-2330-202-14&P.

M101A2 or M116A2

Item	NSN
Wheel	2530-01-155-3905
Tire	2610-01-148-1635
Valve	2640-00-555-2829
Pneumatic tire	2610-00-540-4719
Hand jack	5120-00-233-6829
Jack handle	5120-00-357-6106
Lug wrench (Double head socket)	5120-00-293-2452
Bar (Lug wrench handle)	5120-00-243-2419

There is no specific authorized location, mounting bracket or other hardware to stow the spare. Stow it where it works best on the truck or in the trailer.



HERE ARE THE MILITARY LOAD CLASSIFICATIONS FOR THE *HMMWV!*

Model	Empty	Cross-country	Highway
M966, M996, M998, M1025, M1026	3	4	4
M1036, M1045, M1046, M1035	2	3	3
M1037, M1038, M1042, M1043	2	4	4

The vehicle class sign kit, NSN 9905-00-565-6267, is authorized by Appendix A of CTA 50-970.

Mount the sign flush on the hood above the right headlight. Put it 1/2 inch to the right of the radiator grill and about 3 inches up from the front of the hood.

Use the sign as a template and drill two 11/32-in holes in the hood that line up at 9 o'clock and 3 o'clock. Mount the sign with the hardware in the kit.

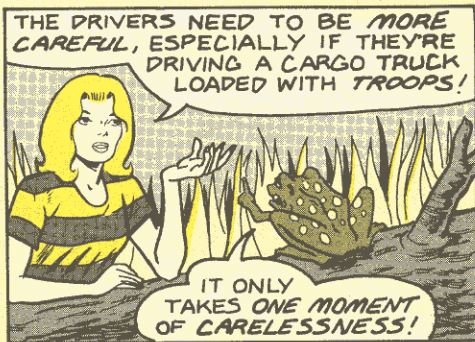
Hand tighten the nuts. Too much torque will damage the hood.

ARGH! MY WINDOWS WERE SCRATCHED SO BADLY THEY LOOKED LIKE STRANDS OF SHREDDED WHEAT!! IT'S A CRIME WHAT DIRT AND GRIME DOES TO BALLISTIC GLASS!

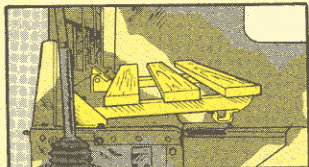
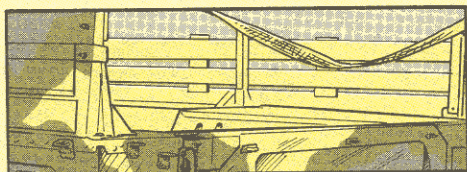
ALL THEY HAD TO DO WAS WASH THE WINDOWS GENTLY WITH DETERGENT NSN 7930-00-282-9699 AND A CLEAN, SOFT CLOTH. RINSE WITH CLEAN WATER AND APPLY CREAM HAND CLEANER NSN 8529-00-082-2146 WITH A CLEAN, SOFT CLOTH OR SPONGE!



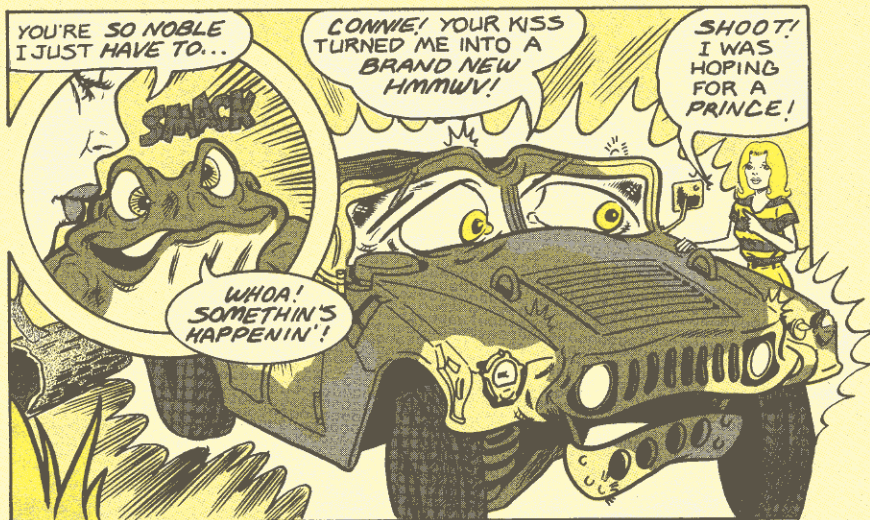
THEN WIPE THE CLEANER OFF BEFORE IT DRIES WITH A DRY CLOTH!



The cargo carriers have troop seats but no seat belts. One moment of carelessness can be fatal.

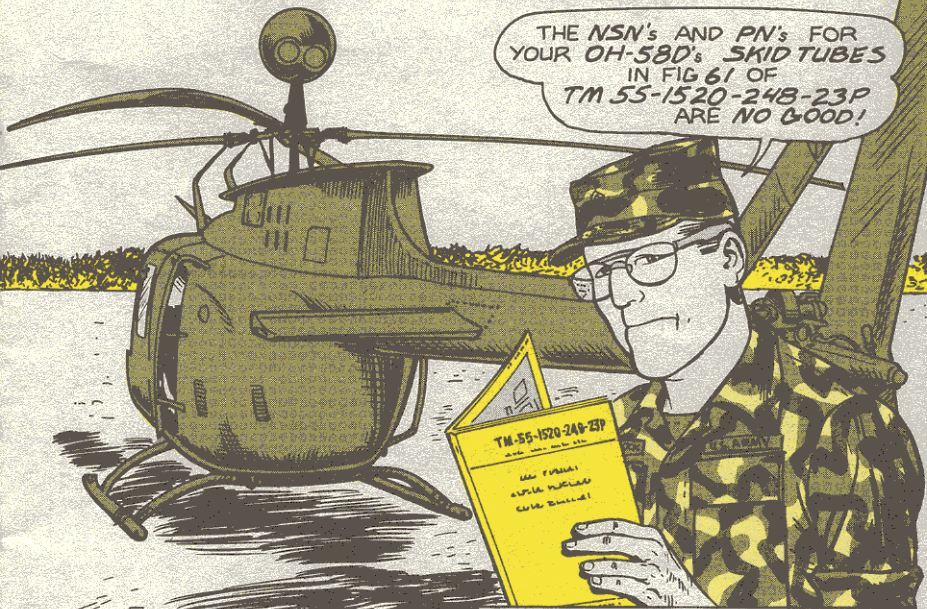


Speed kills. Match your speed to driving conditions. Stay alert. Avoid stumps and big rocks everytime you can. If you can't avoid 'em, treat 'em with respect, because if you hit 'em wrong, you can dump the load of troops you're hauling.



SKIDS AND STUFF

THE NSN's AND PN's FOR
YOUR OH-58D's SKID TUBES
IN FIG 61 OF
TM 55-1520-248-23P
ARE NO GOOD!



Use NSN 1620-01-297-1038 to get the left skid tube and NSN 1620-01-299-1731 to get the right skid tube.

Transmission

Also, the preformed packing that fits between your bird's transmission oil pressure switch and the "T" fitting is missing from Fig 82 in the -23P. You can get it with NSN 5330-00-020-0203.

Scavenge Oil Filter

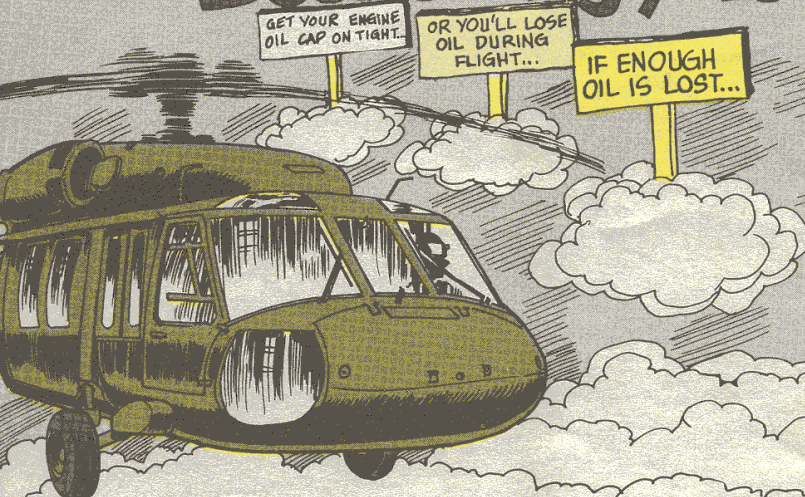
And here are the parts for your bird's engine scavenge oil filter, NSN 2915-01-256-6348:

Item	NSN or Part Number
Filter bowl	CAGE 90005,* PN 1742241-01
Filter head	2945-01-182-9872
Filter element	2915-01-294-4283
Preformed packing	5330-01-195-8890

Make a note until your TM's updated.

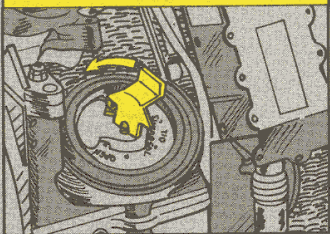
*Order on a DD Form 1348-6 from RIC B17.

Locked Tight Is



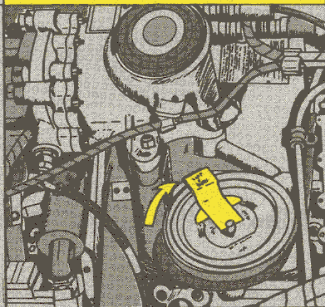
Here are five simple steps to make sure the engine oil cap is locked tight:

1. With the locking lever up, turn it COUNTERCLOCKWISE to open. Remove the cap.



2. Seat the cap firmly in the oil tank opening.

3. Turn the lever CLOCKWISE until it points toward the engine accessory gearbox. Do not press the lever.



All Right



4. Grasp the locking lever firmly and pull upward. If the cap is properly positioned, it won't budge.

5. Press down firmly on the lever until the lever lugs are flush with the filler cap.



Skin Savers

Moving around on top of your Black Hawk is like walking through a mine field. If you're not careful where you step, you could rip your bird's thin skin—or your own.

Step, grab and walk only where it's safe to step, grab and walk. Keep off NO STEP areas.

Here's another reminder that could save your bird's skin. When you open the oil cooler access doors and plan to leave them open for awhile, close the latches.

If you leave the latches open and let the doors fall free, the latches will puncture the engine cowling.

Or someone might step on an open door with the latches sticking out. Ouch! The latches get mashed right into the cowling.



SLOPPY SAMPLING SOLUTION



Some Chinook crew chiefs are still taking fuel samples the hard way—with a screwdriver in one hand and a sample jar in the other. They can't help but spill fuel—on themselves and the helipad.

But SSG Dale W. Parker came up with a device to make fuel sampling quick and easy without spilling any fuel. It lets you open the drain, direct the fuel into your sample jar and close the drain using one hand.

Besides a sample jar, the only materials you need are:

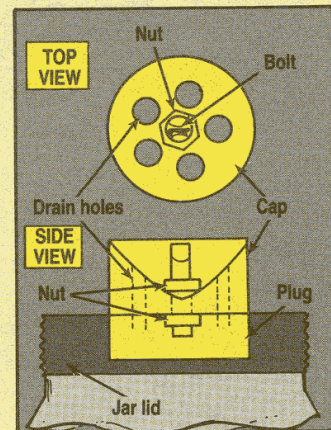
Item	NSN
1 Plug	4730-00-540-2232
1 Cap	4730-00-554-8917
1 Bolt	5306-00-687-7570
2 Nuts	5310-00-877-5796

Here's how to make the device:

1. File or grind a screwdriver tip on the end of the bolt to fit your bird's fuel drain.
2. Drill a 1/4-in hole in the center of the cap, the plug and the sample jar lid.
3. Thread a nut on the bolt and run it down all the way.
4. Put the bolt through the hole in the plug, then through the jar lid—from the bottom—and then through the cap. Put the other nut on the bolt and run it down tight.

5. Drill 5 drain holes through the cap, lid and plug around the bolt.

Put the device on a sampling jar and you're done.



Aviation Messages

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

CH-47-90-01, SOF, Technical, CH-47D, Ungrounding requirements of "fan eaters" and changes to CH-47-89-11, 121400Z Jan 90.
AH-1-90-01, SOF, Operational, M-18 smoke canister, 121900Z Jan 90.

CH-47-90-02, SOF, Technical, OH-47D, Eddy current inspect engine cross shafts, 232130Z Jan 90.

UH-1-90-01, SOF, Maint Mandatory, Inspect tail rotor retention nuts, 242000Z Jan 90.

CH-47-90-03, SOF, Technical, CH-47D, Extension of combiner cooling fan drive shaft grease to 100 flight hours, 291600Z Jan 90.
OV-1-90-01, SOF, Operational, OV-1D and RV-1D, Restricted flight of certain serial numbered

aircraft, 291700Z Jan 90.

AH-1-90-02, SOF, Maint Mandatory, Inspect clearance between swashplate assembly, inner ring arms and link to scissors and sleeve, 312030Z Jan 90.

AH-1-90-MIN-01, Retention fitting marking/serialization, 111800Z Jan 90.

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

GRAND STANDS

Dear Windy
We use desks and
mattresses to balance
main rotor heads and
blades. This is
precarious at best.
Do you know a
better way? SFC H.A.

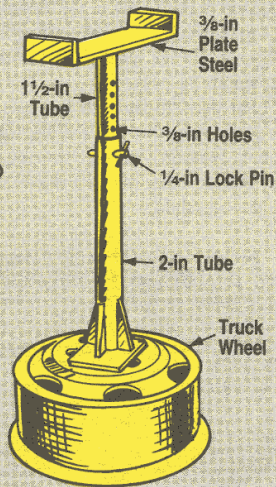
THERE'S GO' TO
BE A BETTER
WAY!

YOU BET!
SSG J.R. ARNOLD
SHARED THESE
PLANS WITH
US IN
1985!



Blade Stand

Get a 2½-ton or 5-ton truck wheel from the can point. Get your sheet metal shop to weld a 24-in piece of 2-in tube steel post to the center. Get a 12-in piece of 1½-in tubular steel to go inside the first tube. Weld a piece of ¾-in plate steel to one end of the post. The piece should measure 4x14 inches for an OH-58, 4x21 inches for a UH-1 and 4x41 inches for an AH-1.



Weld a 1x4 inch strip of the ¾-in plate steel to each end of the steel plate.

Wrap the steel plate with cushioning material to protect the blades. Foam rubber packing material works well.

Insert the smaller post into the larger one and drill a series of ¾-in holes an inch apart to let you adjust the blade height.

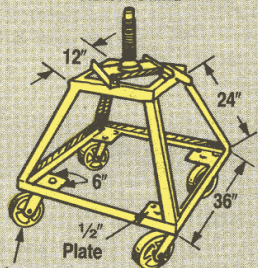
Use a ¼-in lock pin, NSN 5340-00-482-1457, to hold the post at the proper height. The pin's not on the AMDF, so order it on DD Form 1348-6 from RIC S9I. You can use a ¼-in nut and a 2½-in long bolt until you get the pin.

The uprights are adjustable, so you can get the 3-in elevation on the end of the blades, and you don't have to balance or adjust them when you reinstall them on your bird.

Rotor Head/Transmission Stands

Here's how to make a rotor head stand for your OH-58, UH-1 or AH-1 from 2-in angle iron, NSN 9520-00-277-4913:

Rotor Stand

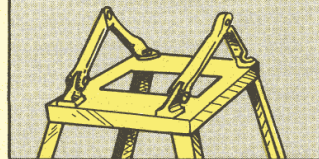


Casters
NSN 5340-00-838-7059

Just mount your bird's head stand to the top portion of the base to bring the head up to the mechanic's work height.

Or use the base as a transmission stand by bolting your bird's transmission mounts to the top part of the base, like so:

Transmission Stand



Use the Right Battery

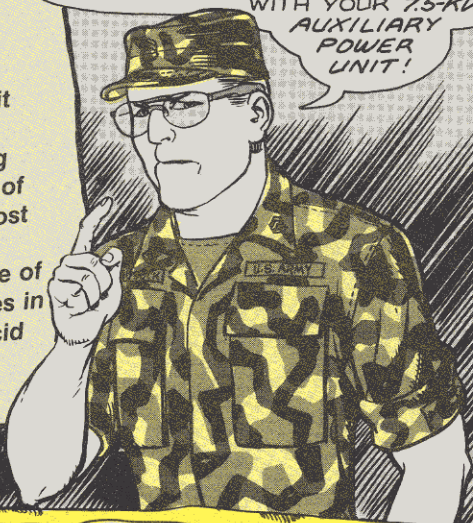
Dear Windy,

There seems to be a problem in the field with 7.5-KW auxiliary power unit batteries. I've seen nickel-cadmium batteries costing \$605 being used in place of lead-acid batteries that cost only \$124.

What authorizes the use of expensive ni-cad batteries in place of cheaper lead-acid batteries?

R.A.K.

USE ONLY LEAD-ACID BATTERIES WITH YOUR 7.5-KW AUXILIARY POWER UNIT!

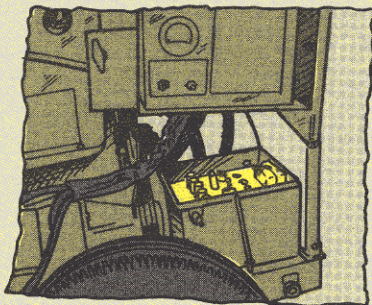


Dear R.A.K.,

Ni-cad batteries are not authorized for your 7.5-KW APU's. TM's 5-6115-440-20 and 5-6115-440-24P authorize only lead-acid battery, NSN 6140-00-406-2633, for 7.5-KW APU's.

Nickel-cadmium batteries require a constant potential charging system and the 7.5-KW APU's don't have that kind of charging system. So nickel-cadmium batteries used on 7.5-KW APU's never reach their fully charged potential. Which means they put out considerably less amperage than a fully charged lead-acid battery.

Windy



PITOT NO-NO

A pitot or static port that gets covered or clogged up can put your bird down.

So mark all ports like it says in Chap 9 of TM 55-1500-345-23, Painting and Marking of Army Aircraft. That way, mechanics won't paint over the port holes.

Mark static ports like so:

DO NOT PLUG OR DEFORM HOLES



STATIC PORT

Clean and test the pitot/static lines like it says in Para 3-301 of TM 55-1500-204-25/1. Use pressure sensitive tape, NSN 7510-00-266-6712, to seal the pitot tube drain holes air tight for testing.

When you wash your bird, keep water out of the lines by covering the vent holes. Cut out a circle of barrier material, NSN 8135-01-261-2051, or



other suitable material, to the same size as the vent holes and tape it over each opening with preservation tape, NSN 7510-00-040-5895.

When you remove the tape and barrier material after washing, make sure the vents are not all gummed up. Remove the sticky stuff with aliphatic naphtha, NSN 6810-00-238-8119, like it says in Para 3-5.2.2 of TM 55-1500-344-23.

RED DASH FOR DRAIN & FLUSH



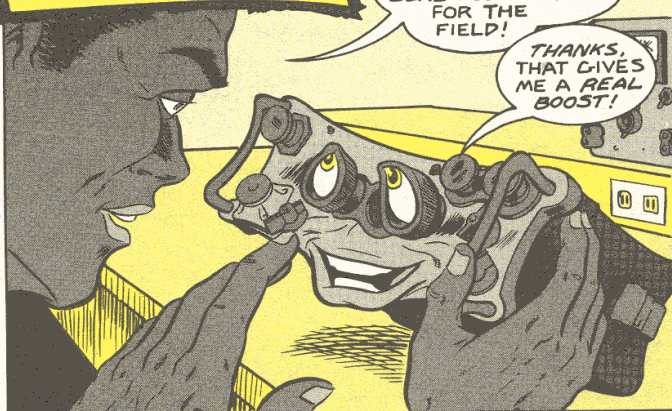
IF YOUR LOCAL OIL ANALYSIS LAB REQUESTS A DRAIN AND FLUSH OF AN AIRCRAFT COMPONENT-- BUT DOES NOT RECOMMEND IMMEDIATE GROUNDING-- THE CORRECT ENTRY ON YOUR DA FORM 2408-13 SHOULD BE A RED DASH (-), NOT A RED DIAGONAL (/), LIKE WE SAID IN PS 447.

Little PM Big

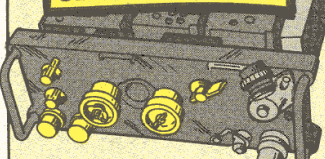
Make PM your first priority when you're getting that radio set ready for a field training exercise...

I'LL TAKE A LITTLE EXTRA TIME AND MAKE SURE YOU'RE READY FOR THE FIELD!

THANKS. THAT GIVES ME A REAL BOOST!

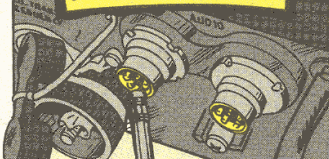


Switches and Knobs



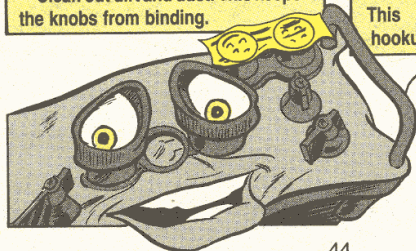
Clean out dirt and dust. This keeps the knobs from binding.

Audio Pin Contacts



Clean dull pins with pencil eraser. This makes for better commo hookup.

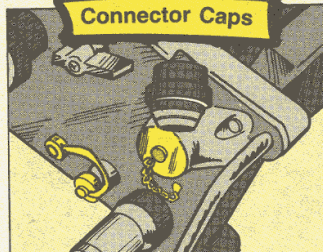
PROTECT THE CONTACTS WITH A DUMBBELL COVER, NSN 5340-00-973-1732, OR TAPE!



Boost to Perks

While you're eyeing covers, be sure all other connector caps are in place. If a cover is missing, moisture and dirt get inside the connector. This will short out your radio.

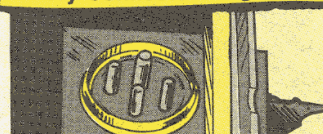
Connector Caps



Are they in place?

When it comes to the power shorting cap, NSN 5935-00-973-1859, your radio will not operate on battery power if the cap's missing. So, make sure the cap is on hand and on the connector when you're using your radio as a backpack portable.

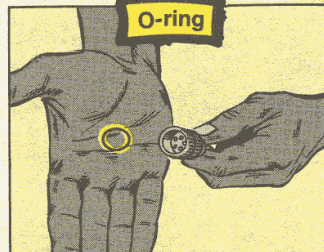
Battery Connector Plug Gasket



Cracked or missing? Replace it with NSN 5330-00-049-0038.*

Any other gaskets, such as around the inside of the CY-2562 battery case, you find cracked or too compressed to keep out moisture need to be replaced by your support folks.

O-ring



A missing O-ring, NSN 5330-00-905-6032, in the H-189 or -250 handset's connector will cause your radio to short out. Replace it!

Battery Care

Whether you use a BA-5598 lithium battery, NSN 6135-01-034-2239, or a BA-4386 magnesium battery, NSN 6135-00-926-8322, put it into the battery case carefully, like this:

1. Turn off the radio power switch.
2. Stand your radio on the front panel guards.
3. Put the battery straight into the battery receptacle.

Never use a lithium battery in an AN/PRC-25's RT-505 receiver-transmitter. This type battery will damage the radio's tube. Only use the magnesium battery.

When your RT is a part of a vehicle-mounted radio set up, take out the battery. It can overheat and explode.

Antenna Tip

Make sure the antenna is screwed tight into the antenna base. If the antenna works loose, use a rubber band to snug it down.

Keep it Cool with Hot PM!

NO NEED FOR A MAJOR OPERATION!
JUST KEEP THESE DOORS SHUT!

THANK YOU!!

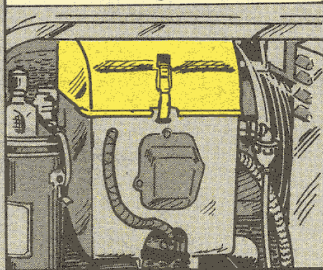
THAT'S A
RELIEF!



Hot weather will knock your generator set's engine cold. Heat causes oil to thin out, which reduces its ability to lube parts. The engine knocks, uses extra oil, and wears parts rapidly.

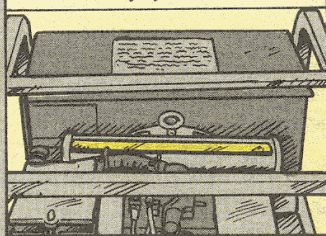
Beat the heat buildup by giving your generator plenty of air. Here are some ways to cool your generator.

Close shrouds and doors to keep cool air circulating around engine.



When the shutter assembly jams, airflow is restricted.

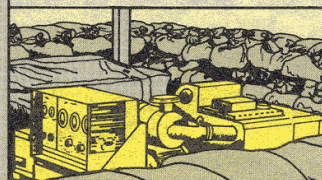
Keep the shutter or control lever clean for easy open/close.



Give your generator lots of breathing room. If it's put inside a permanent-type shelter, set the generator long ways of the structure. Face the engine toward the door or an outside opening. Limit one operating generator to each shelter.

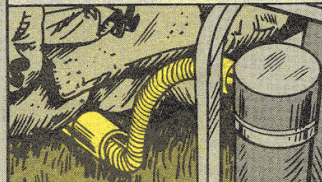
Same goes if you put your generator in a sandbag, log or earthen revetment.

**Give power unit space for air!
Center on floor area with at least four feet between generator and walls.**



Be sure to ventilate the exhaust outside of the shelter area. Hot fumes can be deadly to you and your generator's engine.

Extend exhaust to outside with flexible tubing.



Here are some common sizes:

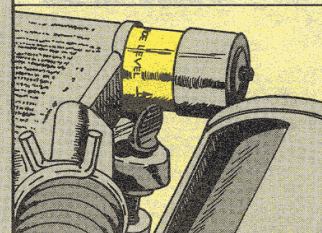
NSN 4720-00-	Diameter (Inside)
174-4668	1-in
278-8030	1½-in
278-8027	1¾-in
278-8031	2-in
174-6818	2½-in
174-4664	3-in
174-4671	4-in

Keep your generator dry. Put it in an area with good drainage.

Eye TM 5-6115-series equipment TM's and FM 20-31, Electric Power Generation in the Field, for more info about setting up your generator.

While you're into this generator cooling kick, eye the airflow indicator. If it's red, the air filter is dirty. Clean the filter or replace it. A clogged filter stops cooling air flow.

Airflow indicator red? Clean and replace filter.



New Parts Make Smoking Easier

THERE ARE A FEW **NEW PARTS AVAILABLE** THAT MAKE IT EASIER TO OPERATE AND MAINTAIN THE **M157 SMOKE GENERATOR SET!**

NSN 2920-01-263-9720 brings a new, improved spark igniter.

NSN 6685-00-265-0905 gets a pressure gage for the fog oil tank that helps you better adjust the fog oil flow.

NSN 6685-01-024-7174 brings a fuel and air pressure gage for the air compressor.

Wiring Schematic

Also available is the "System Explanation by Wire Schematic," a pamphlet that explains the wiring diagrams in TM 3-1040-279-12&P. If you don't have a copy, write MSG Half-Mast.



Dear Half-Mast
I'd like to get a copy

Check Lens Mount Assembly

Objective lens mount assembly, part number SM-C-657375-1, manufactured under contract number DAAB07-87-C-F016, does not have a retaining ring.

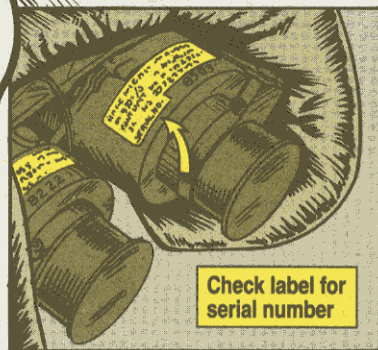
I
CAN'T SEEM
TO FOCUS THESE
THINGS. MUST BE A
MISSING
RETAINING
RING!

Without this ring, the lens assembly goes too far forward and comes off the threaded part of the collar. Then the lens cannot be returned to infinity focus. These lenses must be removed from service.

Take a look at the lens assemblies in these items:

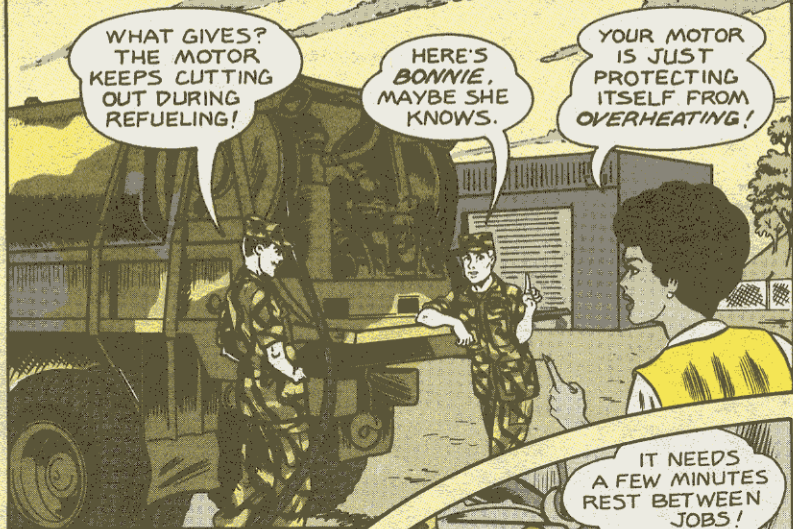
Item	NSN
AN/PVS-5 and 5A	5855-00-150-1820
AN/PVS-5B	5855-01-228-0938
AN/PVS-5C	5855-01-228-0936
Mount Assembly	6650-00-125-0640

Look for the serial number on the lens label. If the serial number is 0001 through 4356, send them to your DS shop.



CECOM SOU Msg AMSEL-SF-SEC 061700Z Jun 89 has the info on sending these lenses to Sacramento Army Depot for repairs.

Hot Under the Collar



WHAT GIVES?
THE MOTOR
KEEPS CUTTING
OUT DURING
REFUELING!

HERE'S
BONNIE.
MAYBE SHE
KNOWS.

YOUR MOTOR
IS JUST
PROTECTING
ITSELF FROM
OVERHEATING!

If your electric motor driven tank and pump unit cuts out when it's not supposed to, it could be simply protecting itself against overheating.

The operating cycle for the electric motor is 30 minutes, max. It's not spelled out in TM 5-4930-230-13, so some operators run the motors continuously instead of shutting down between jobs.

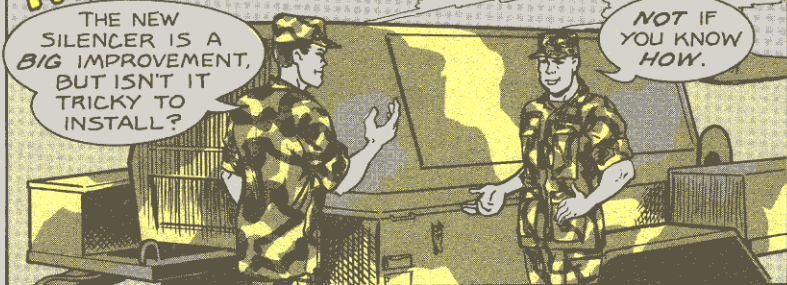


IT NEEDS
A FEW MINUTES
REST BETWEEN
JOBS!

There's a thermostatic switch inside the motor housing that automatically shuts off the motor whenever the temperature inside the housing gets too high. Then it takes 10-15 minutes to cool off and reset.

So next time you dispense fuel, use the remote control switch on your ON-OFF switch cable to turn off the motor when the job's done. Even a 2- to 3-minute break between fuel dispensing jobs will keep the motor operating when you need it.

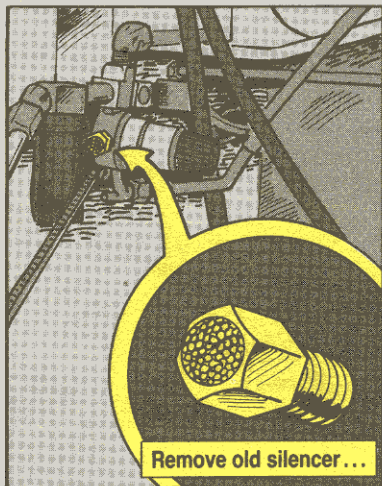
New Silencer Makes Sick Well



The air silencer mounted in the pressure regulator valve on the 250 CFM Ingersoll-Rand air compressor clogs easily. When it does, the compressor can't build air pressure.

A new air silencer, NSN 4940-01-192-8269, does a better job. But it's a little tricky to install. **Here's how:**

✓ Remove the old air silencer with a $\frac{3}{8}$ -in tube wrench.



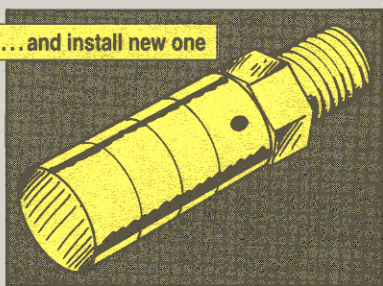
✓ Loosen the tube fitting nut on the moisture filter using an $\frac{1}{16}$ -in tube wrench.

✓ Turn the moisture filter by hand to about 3:00 o'clock. Then you have enough room to put in the new air silencer.

✓ Put about 3 wraps of Teflon tape, NSN 8030-00-889-3534, on the threaded end of the silencer.

✓ Screw in the new silencer. Tighten it with a $\frac{3}{4}$ -in open end wrench. Don't over-tighten or you'll crack the aluminum.

... and install new one



✓ Turn the moisture filter assembly back to 6:00 o'clock. Retighten the tube fitting.

ROWPU's...

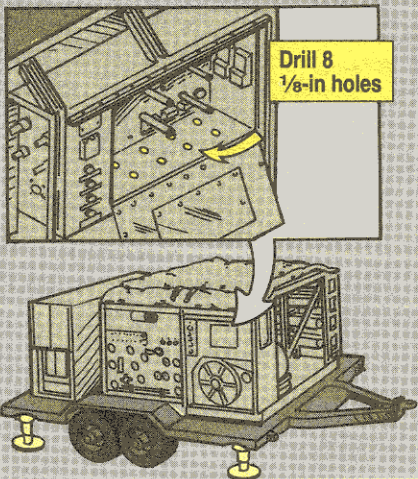
Drill to Get Water Out

Water from a wash hose or rain gets in the junction box on the 600-GPH reverse osmosis water purification unit. Switches, relays and the wiring are damaged by corrosion.

It's tough to keep the water out. The seal around the door leaks if the door is warped. But don't make it worse by aiming a high pressure hose at the box!

Since you can't stop the water, give it someplace to go. Remove the box and drill eight 1/8-in holes in the bottom.

While you have the box off, clean, inspect and repair it like it says in Para 2-57 of TM 5-4610-215-24.



M870A1 Semitrailer...

Clip Your Kingpin

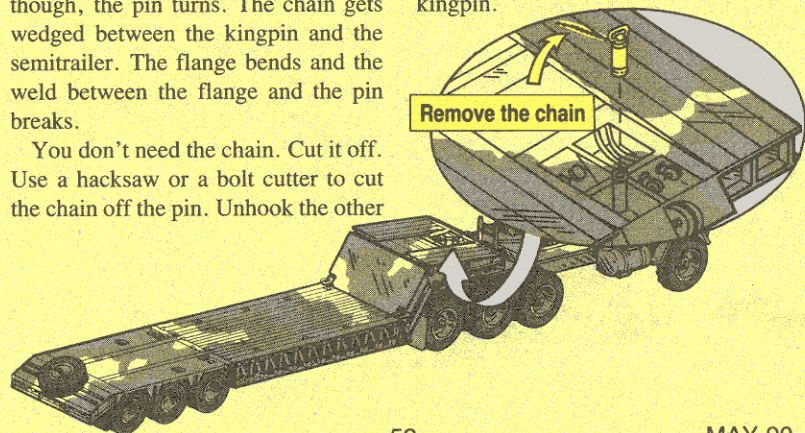
M870A1 lowbed trailers from Shoals American Industries come with a chain attached to the kingpin.

During coupling and uncoupling, though, the pin turns. The chain gets wedged between the kingpin and the semitrailer. The flange bends and the weld between the flange and the pin breaks.

You don't need the chain. Cut it off. Use a hacksaw or a bolt cutter to cut the chain off the pin. Unhook the other

end of the chain from the trailer and discard the chain.

If you replace the kingpin, remove the chain before you install the new kingpin.



Bumper Markings Explained

DEAR HALF-MAST

WE'RE NOT SURE HOW WE ARE TO ADD UNIT MARKINGS TO THE BUMPERS ON VEHICLES PAINTED WITH CARC. SOME UNITS PAINT A SAND OR GREEN PATCH ON THE BUMPER, THEN ADD THE LETTERS IN BLACK. THAT BREAKS UP THE CAMOUFLAGE PATTERN, THOUGH. OTHER UNITS USE BLACK LETTERS OVER THE EXISTING COLOR, BLACK LETTERS ON A BLACK BACKGROUND ARE UNREADABLE. HOW SHOULD WE DO IT?

CW4 J.C.

Dear Mr. J. C.,

The word is in Para 4-9, Fig 4-2 of TM 43-0139. Use CARC to add any markings needed.

Use black over brown or green, green over black, and brown over white or sand.

Here's an example:

Half-Mast



9-1/33 E



M270A1 Relay Valve

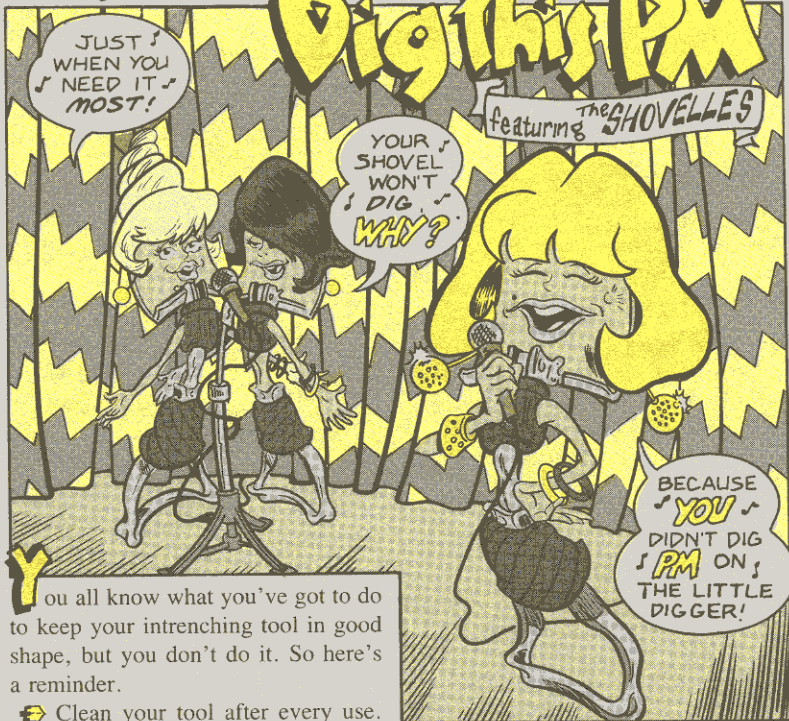
The NSN is wrong in TM 9-2330-371-14&P for the emergency relay valve used on the 12-ton lowbed semi-trailer. Order the valve, Item 6 in Fig 14, with NSN 2530-00-021-2366.

No Pressure Wash

Keep high pressure water and washing solvent away from the outrigger relay boxes on the M860A1 semi-trailer. Water shorts out internal electrical components.

Dig this PM

featuring THE SHOVELLES



You all know what you've got to do to keep your intrrenching tool in good shape, but you don't do it. So here's a reminder.

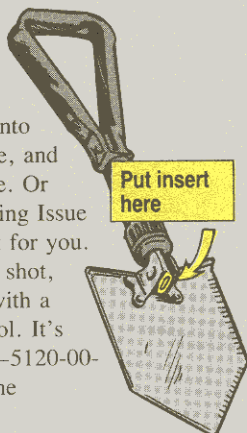
- ➡ Clean your tool after every use. If you don't, dirt and rust will stop the handle from folding and make the blade look awful.
- ➡ Oil the threads on the locking nut when you return from the field. Use the same oil you use on your weapon.
- ➡ Keep the nut tight on the bolt that holds the blade. Check it after each use. (If you have an older model shovel with a rivoted on blade, and the blade's loose, turn it in for a new one.)

Take a close look at the tube at the blade hinge point. If the hole is worn, get your supply clerk to order an insert, NSN 5120-01-279-6396. The NSN is not on the AMDF, so order on a DD

Form 1348-6 from GSA. Each one costs 58¢.

Use two pairs of pliers to remove the blade. Push the insert into the handle's tube, and replace the blade. Or have your Clothing Issue Facility install it for you.

If your tool is shot, get it replaced with a newer, better tool. It's the same NSN—5120-00-878-5932—as the older tool.



Carbide Drill NSN's

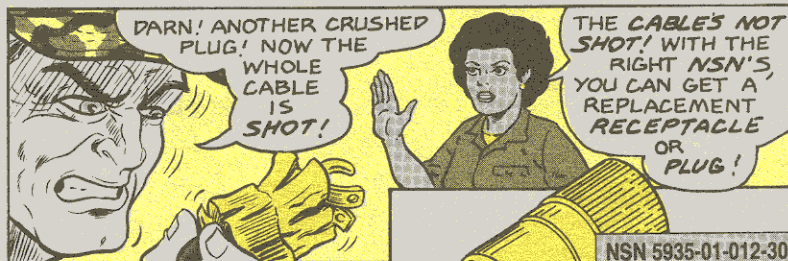
DEAR HALF-MAST
I NEED NSN'S FOR
CARBIDE DRILLS FOR
DRILLING INTO CONCRETE.
NONE OF THE COMMON
TOOL SETS HAVE A SET
LISTED.
CW2 J.W.C.

Dear Mr. J. W. C.,
There is no carbide drill bit
set, but you can order the drills
individually.

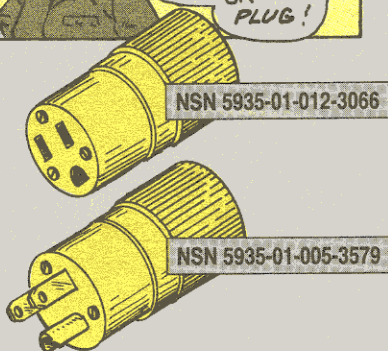
Half-Mast

Size (in)	NSN 5133-00-Solid carbide	NSN 5133-00-222-Carbide-tipped
3/32	010-4005	none
1/8	841-8702	none
5/32	850-3292	none
3/16	900-2063	9471
7/32	841-8759	none
1/4	841-8757	9469
5/16	none	9470
3/8	841-8746	9467
13/32	841-8744	none
7/16	841-8742	9468
1/2	841-8708	9466

Plug, Receptacle NSN's



When the plug or receptacle on a commercial extension power cord is damaged, there's no need to scrap the cable. Get a heavy duty, 15-amp, male three-prong plug with NSN 5935-01-005-3579. A heavy duty, 15-amp female three-prong receptacle is NSN 5935-01-012-3066. Both plugs are 125 volts and 50/60 hz.



GET 'EM

There's no kit available that gets you the waterproof electrical connectors—sometimes called Packard connectors—used on tactical vehicles.










And they don't come in the electrical connector tool kit, NSN 5180-00-876-9336, in the No. 1 Common shop set.

In short, you have to order them individually.

Before you go through the list, here are a few hints to make connections easier.

➤ Pick out the right parts to go with the gage wire to be used (12, 14, or 16 AWG wire).

➤ Working with 12 AWG wire? Use washer, NSN 5310-00-298-8903, instead of plastic sleeve, NSN 5970-00-833-8562.

NSN	Description	Quantity
5935-00-900-6281	Adapter, connector "Y" 	1
5975-00-660-5962	Cable nipple Male shell for 16 AWG wire 	100
5975-00-833-8561	Connector Male shell for 14 AWG wire 	1
5935-00-399-6673	Connector Ribbed male shell for 14 AWG wire 	1
2590-00-695-9076	Shell, headlight circuit Male shell for 12 AWG wire 	1
5935-00-691-5591	Shell, electrical connector Female shell for 16 AWG wire 	1
5935-00-572-9180	Connector Female shell for 14 AWG wire 	1
5935-00-695-9077	Shell, electrical connector Female shell for 12 AWG wire 	1
5999-00-926-3144	Electrical contact for 16 AWG wire 	1

BIT BY BIT












➤ The two types of male shells (ribbed and plain) are to be used to identify the plus (+) and minus (-) hookups on polarized units.

➤ Don't mash down on the rubber shells to get a good connection. You'll mangle the female connector and make it tough to get a connection.

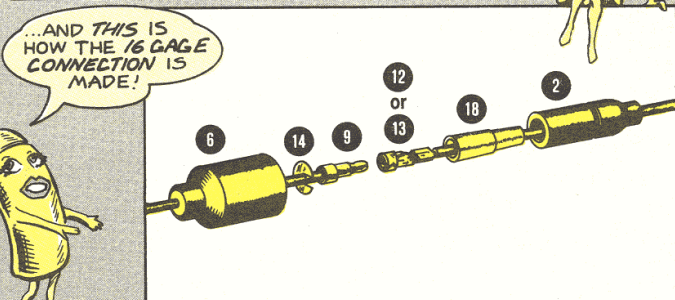
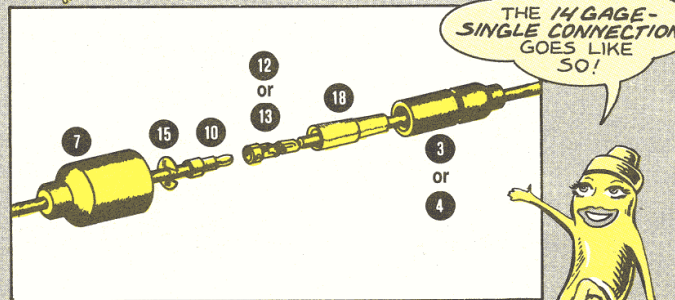
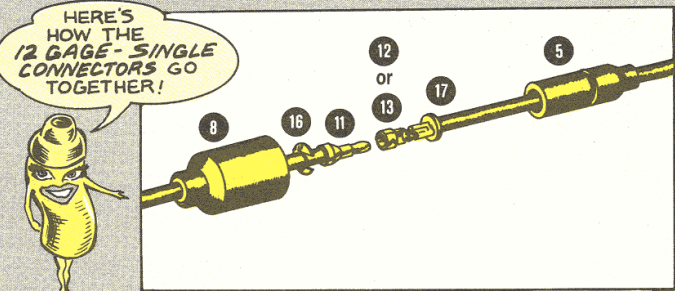
➤ There are two types of female connectors—crimp-on and solder. The connector with a solid sleeve gets crimped on the wire. With the other, the larger tabs are bent around the insulated part of the wire and the smaller tabs are bent around the bare wire. Then you melt on a dab of solder.

You can use either type with 14 or 16 AWG wire. For 12 AWG, the crimped version is better. If you use the solder kind, the larger tabs can't be used to

NSN	Description	Quantity
5999-00-057-2929	Electrical contact for 14 AWG wire 	1
5999-00-925-6495	Electrical contact for 12 AWG wire 	1
5940-00-846-5012	Ferrule, electrical connector Female solder terminal for 12, 14, 16 AWG 	pack of 5
5940-00-399-6676	Terminal assembly Female crimp terminal for 12, 14, 16 AWG wire 	1
5310-00-656-0067	Slotted washer for 16 AWG wire 	100
5310-00-833-8567	Slotted washer for 14 AWG wire 	100
5310-00-595-7044	Slotted washer for 12 AWG wire 	100
5310-00-298-8903	Flat washer Terminal retainer for 12 AWG only 	100
5970-00-833-8562	Insulator Plastic insert for 14, 16 AWG wire 	100

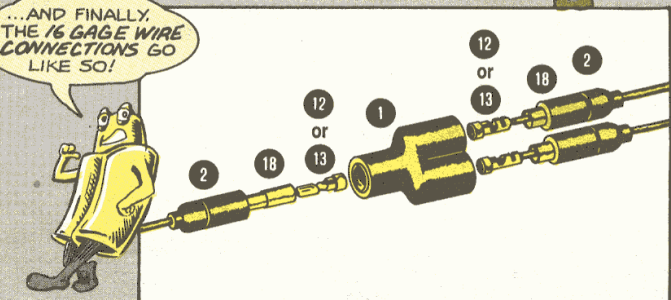
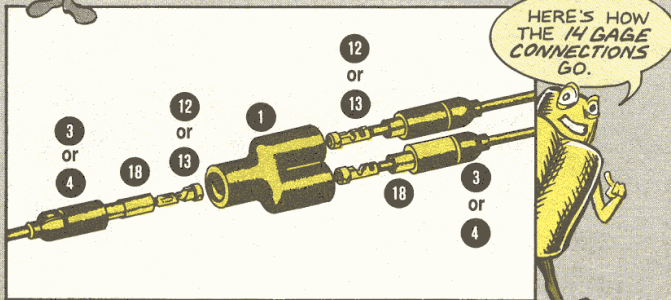
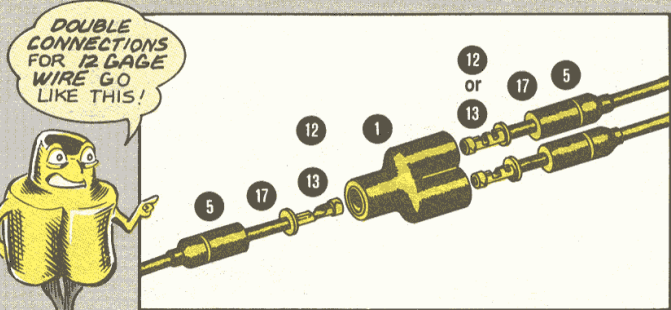
latch on to the insulation because the small washer must be used. The washer goes between the insulation and the terminal. So peel off the insulation, slip on the washer, and add the terminal. Bend over the tabs and solder on the terminal.

Use a dab of silicone compound, NSN 6850-00-880-7616, to make hookups easier. Put the compound on the male shell before you mate it to the female



shell. It'll also help when you disconnect the connection.

If you can't pull on the wires and separate the connection, don't bend connections up and down. Instead, insert something down between the shells—careful like—and pry gently until the connectors can be pulled apart.



How to Get on Distribution

Getting the Army Master Data File (AMDF) need not be a tough task. It doesn't come through normal publication pinpoint distribution.

Instead, you need to contact the Catalog Data Activity (CDA). They will mail the AMDF to your unit's address every month.

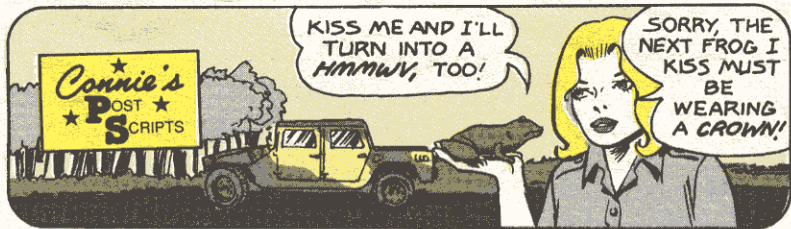


JUST SEND A
REQUEST THROUGH
YOUR COMMAND
CHANNELS TO-

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

They need this information:

- Number of AMDF sets you want
- Number of microfiche machines your unit has
- Current address
- Whether you can access the AMDF by remote terminal
- Point of Contact (POC)
- AUTOVON or Commercial telephone number.



M915/M915A1 Lug Nut Socket

You need a special deep well socket to torque the inner lug nuts on M915/M915A1-series trucks. The square drive socket comes with NSN 5120-00-430-1687.

Collimator Needs O-rings

Install new O-rings on the M1-series tank's gun tube collimator screws every time you change the desiccant. Get the rings with NSN 5330-00-724-7902. Dab a little GAA on the rings before putting them on the screws. Be sure to wipe off each screw end before installing.

Apache Fire Extinguisher

Fire extinguisher cartridge, NSN 1377-01-185-2622, has replaced cartridge, NSN 1377-01-285-3016, for the AH-64A Apache. See AVSCOM Msg AH-64-89-MIM-14 for details on how to install it.

M870A1 NSN Snafu

TM 5-2330-378-14&P shows the wrong NSN for the wheel hub cap used on the M870A1 semitrailer. NSN 4730-01-264-9488 gets a pipe plug, so forget it. Order the hub cap on a DD Form 1348-6 using CAGE 06721 and PN 411726. The RIC is S9C.

Crane Radiator Hose Wrong

Forget the info about the radiator hose for the M320RT 20-ton crane shown as Item 2 in Fig 191 on Page 398 of TM 5-3810-295-20P. It's wrong. The right hose is 2³/₄ by 6-in. You order it on DD Form 1348-6 with CAGE 27315, PN 44Z1497-D5 using RIC S9C.

Make a note until your TM is updated.

M1 Tank Anti-Seize Compound Change

Use NSN 8030-00-251-3980 to get a better anti-seize compound for the M1-series tank engine combustor dome bolts. This compound is also more readily available through normal supply channels than is the compound cited on Page 3 of PS 446 (Jan 90).

M548 Carrier Kit Changes

TM 9-2350-247-10 is wrong when it lists the M66 ring mount kit and material handling hoist kit as components of the end item (COEI). Both are special purpose kits and should be listed in Appendix C as additional authorization list (AAL) items. They do not go with the M548 cargo carrier when transferred or turned in. TACOM Msg AMSTA-M 081600Z Nov 89 has the word.

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

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

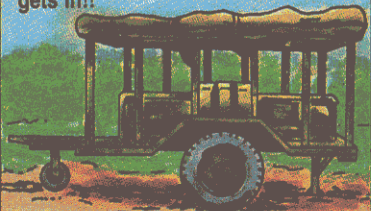
GENERATORS NEED ROOM TO BREATHE

GIVE ME AIR!

Keep sandbags well away from unit—
leave vents for air circulation!!



Keep canvas high enough so air
gets in!!



PIN: 064836-000