

Issue 401

PS

April 1986

# THE PREVENTIVE MAINTENANCE MONTHLY

ACCIDENT PRONE, HUH?

NOPE, JUST CARELESS  
AND POORLY SUPERVISED!



The Deadly Triangle  
(See page 29)





# THE PREVENTIVE MAINTENANCE MONTHLY

Published by the Department of the Army for the information of all soldiers assigned to combat and combat support units, and all soldiers with organizational maintenance and supply duties. Within limits of availability, older issues may be obtained direct from Editor, PS Magazine, c/o US Army Materiel Readiness Support Activity, Lexington, KY 40511-5101.

ISSUE 401

APRIL 1986

## FIREPOWER

TOW 2	2,3	M1 Tanks	12,13
M901-Series		Sprocket Hub	
ITV	4,5	Tip	14
Stinger	6-7	M60A3 LRF	15
Small Arms		M578 RV	15
Tips	8-9	MLRS	16,17
M60 MG	9	DH-132 Helmet	18
Powerpack		M113-Series	19
Info	10-11,12	CVC Helmet	19

## GROUND MOBILITY

Engine Cooling Systems	20-21	1/4-ton Trucks	26
Engine Lube	22-23	CUCV	26
Radiator Hose		2 1/2-ton Trucks	27
Clamp	23	TACOM EIR	27
Dump Trucks	24	Digest	27
M939-Series Trucks	25,26	The Deadly Triangle	29-36
Microfiche Reader	25		

## AIR MOBILITY

CH-47C&D	37	AH-1S	40-41
UH-60A	38,39	UH-1	40-41
Aviation Messages	39		

## COMMUNICATIONS

Wet Weather Operations	42-45	Polaroid Mod 250	50
Antenna PM	46-50	Radio Secured?	51

## TROOP SUPPORT

New Pubs	28	Pop Rivets	61
Generators	52,53,54	M8 Alarm	62
Cot PM	55	M11 Decon	63
Parts Pubs	56-57		
Welding Torches	58-60		

PS wants your ideas and contributions, and is glad to answer your questions. Name and address are kept in confidence. Just write to:

MSG Half-Mast  
PS Magazine  
Lexington, KY  
40511-5101

Use of funds for printing of this publication was approved by the Secretary of the Army on 1 February 1985 in accordance with the provisions of AR 310-1.

**DISTRIBUTION:** In accordance with requirements submitted on DA Form 12-5R. **Private subscription:** Order from US Govt Printing Office, Supt. of Documents, Washington, DC 20402. PS Magazine ISSN 0475-2953 is published monthly by the Department of the Army, Washington, D.C. Second Class Postage is paid at the Lexington, KY post office and at additional mailing offices.

**Postmaster:** Send address changes to Cdr. US Army Pubs Ctr. 2800 Eastern Blvd. Baltimore, MD 21220-2896.

# Maintenance Excellence Awards

### LIGHT UNIT WINNERS

- \*Active MTOE HHC, 197th Ord Bn (USAREUR)
- \*Active TDA Miesau Army Depot (USAREUR)
- Reserve MTOE 277th QM Co (FORSCOM)
- National Guard OMS 3, 211th Engr Co (ARNG)

### LIGHT UNIT RUNNERS-UP

- Active MTOE 714th Med Det (FORSCOM)
- Active TDA 502nd MI Bn (INSCOM)
- Reserve MTOE 644th Trans Co (FORSCOM)
- National Guard OMS 10, Co A, 140th Sig Co (ARNG)

### INTERMEDIATE UNIT WINNERS

- \*Active MTOE 533rd Trans Co (FORSCOM)
- \*Active TDA 56th Sig Co (USAISC)
- Reserve MTOE 962nd Ord Co (FORSCOM)
- National Guard OMS 9, 1st BN, 229th FA (ARNG)

### INTERMEDIATE UNIT RUNNERS-UP

- Active MTOE Co A, 44th Engr Bn (EUSA)
- Active TDA Motor Trans Div, 29th Area Spt Gp (USAREUR)
- Reserve MTOE 452nd Ord Co (FORSCOM)
- National Guard OMS 3, 2nd Bn, 135th Inf (ARNG)

### HEAVY UNIT WINNERS

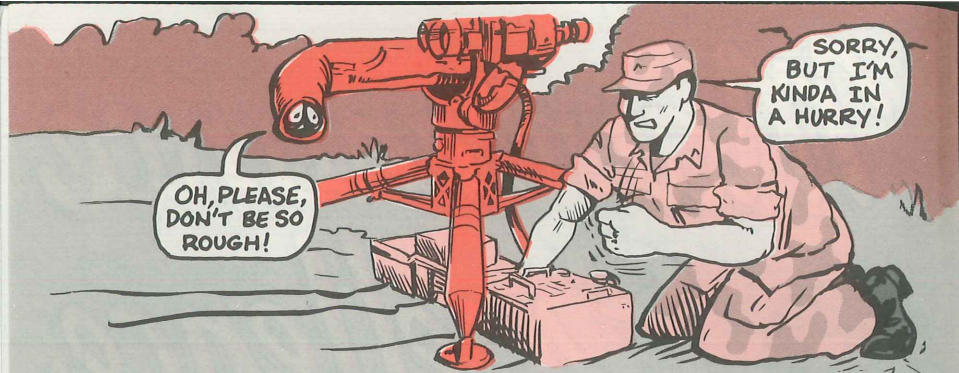
- \*Active MTOE Co B, 44th Sig Bn (USAISC)
- \*Active TDA US Army Field Station Augsburg (INSCOM)
- Reserve MTOE 969th Maint Co (FORSCOM)
- National Guard OMS 5, 53rd Inf Bde (ARNG)

### HEAVY UNIT RUNNERS-UP

- Active MTOE 1st Bn, 6th Inf (USAREUR)
- Active TDA HQ, VII Corps
- Reserve MTOE HHC, 321st Engr Bn (FORSCOM)
- National Guard OMS 3, 547th Trans Co (ARNG)

\*Nominee for DOD Award.





## TOW 2 Connection Is Slow & Easy

Haste will waste the 2W1 cable connector of your TOW 2 missile system.

Timed crew drill or whatever, take your time when you match the connector to the J1 jack on the digital missile guidance set (DMGS). If you're not careful, you'll bend or batter the connector pins.

Many connectors were damaged that way on basic TOW. The story's repeating itself on TOW 2.

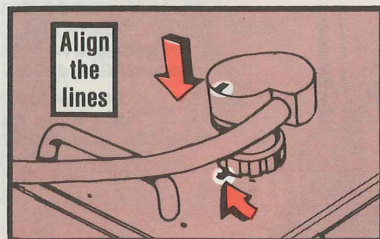
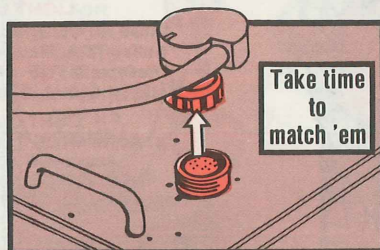
Do this:

- Carefully line up the white line on the head of the connector with the white line in the DMGS.

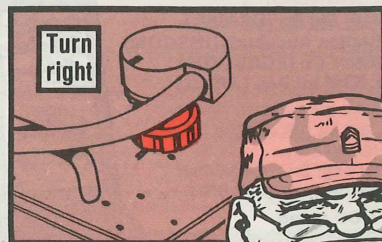
- That should align the keys and keyways on the jack and connector. If you get resistance when you push the connector in, don't force it. Jiggle the connector slightly to the right or left until the keys slide into place.

- When the connector slides home, turn the locking nut until the nut is tight.

- To prevent damage when you



remove the connector, loosen the locking nut and pull the connector straight out.



TAKE YOUR TIME!

APR 86

For TOW Missile . . .

## You Need TOW 2 Pubs!

TOW does not equal TOW 2 when it comes to technical manuals.

If your unit is receiving TOW 2 missiles, you'll need TOW 2 operator and organizational manuals. The basic TOW manual will not do the job

To get on distribution for TM's and changes, have your pubs clerk fill in blocks 441 and 481 of DA Form 12-32-R and send it in.

To get the current manuals and their changes, send in DA Form 4569. Be sure to tell them you want **all** changes to the TM's.

At the very least, your unit needs these manuals:

- **System:** TM 9-1425-450-12 Changes 1 and 2; TM 9-1425-450-24P with Changes 1 and 2

- **Trainer:** TM 9-6920-450-12 with Changes 1 and 2; TM 90-6920-450-24P.

- **Infrared Night Vision Sight:** TM 9-5855-450-24; TM 9-5855-450-24P.

Refer to TM 9-1425-450-L for other pubs you might need.

APR 86

3



## Cable Keepers

OOPS!

OUCH! GET OFF MY BACK!

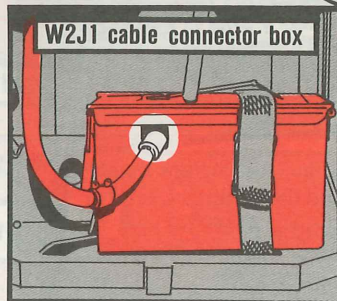
Dear Editor,

We've come up with a way to protect the W2J1 cable connector on the M901-series Improved Tow Vehicles (ITV).

When you remove the M901's Missile Guidance Set (MGS) for storage, the connector is left lying on the floor, defenseless against combat boots.

The protective caps that come with the cable are often lost and there's no NSN for replacements.

A more permanent solution is to get a 5.56 MM ammo box or any similar box from the can point. Cut a hole in the side of the box big enough to slip the connector through.



When you remove the MGS, strap down the box in its place with web straps. Slide the connector through the box's hole, close the lid, and the W2J1 connector is out of harm's way.

SSG Anthony Holloway  
Ft Riley, KS

A LITTLE ALUMINUM CAN SOLVE YOUR PROBLEM!

GREAT! JUST IN TIME.

## Waterproofing Your ITV

Dear Editor,

We have found a way to keep water out of the M901's azimuth drive assembly.

Put a piece of manila folder or thin cardboard on top of the drive assembly and trace a pattern. Get a 1/8-in thick piece of aluminum from support. Using the pattern, cut the aluminum to fit the top of the drive assembly.

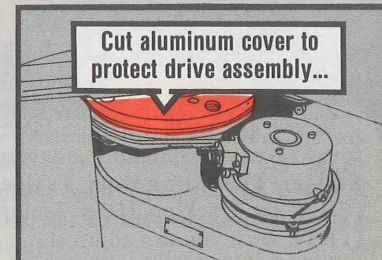
Apply a 5/16-in bead of silicone sealant, NSN 8040-00-851-0211, to the bottom of the aluminum. Fit the aluminum onto the top of the drive assembly. Apply a 5/16-in bead of sealant along the straight edge of the aluminum.

Allow to dry overnight.

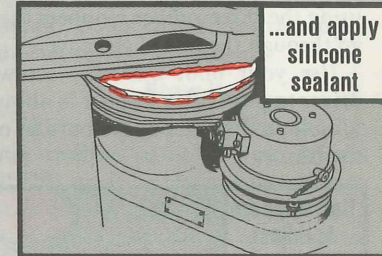
Cover with a coat of green paint. NSN 8010-00-598-5648 gets a quart. Let dry.

The azimuth drive assembly is now waterproof.

Cut aluminum cover to protect drive assembly...



...and apply silicone sealant



John Tyer, Elbert Sanders  
Ft Benning, GA

(Editor's Note: Sounds like a winner. Some newer and rebuilt units have been improved to seal out moisture. If the azimuth drive assembly ID plate shows 12327903, you won't need this fix.)

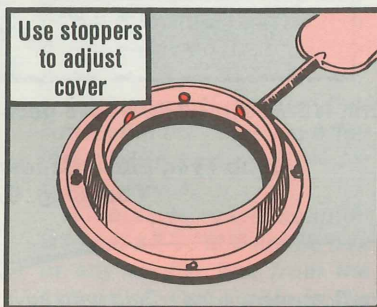


# Stinger

Before you replace a loose-fitting forward cover assembly on your Stinger Field Handling Trainer (FHT) or Tracking Head Trainer (THT), see if you can adjust it.

You can save a lot of dollars by using the three rubber stoppers that go through the rim of the cover.

Use your boot assembly screwdriver to push each stopper in about 1/16 inch. Push from the outside of the rim.

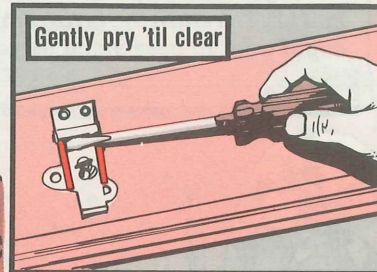


Try the cover for fit. You may have to move the stoppers in or out slightly.

# Cover Up

If the ends of the slots are pinched or forced closed, that's almost certainly the trouble.

PM PAYS  
OFF AGAIN!



Slide a flat-tipped screwdriver into the clear end of the slot and gently pry it open. Clear the full length of the slot so that the latch can slide freely.

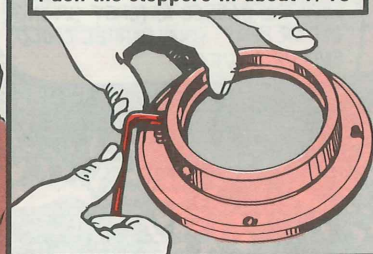
It beats forcing latches until they break . . . or covers that flop open during storage or transit.

## Stow It

When you're through with the digital readout cable of your Model PS201 pressure tester, coil and stow it in its case. That way people won't step on it, trip on it, or otherwise damage it.

The cable's used in proof testing your GPU.

Push the stoppers in about 1/16"

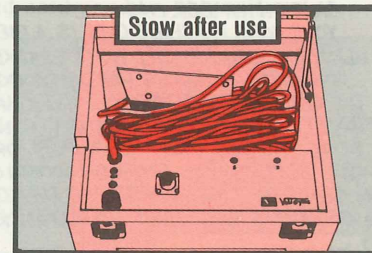


If the cover stays snug on the tube, you're in business. If it won't stay on, replace it.

## Latch onto It

When storage container latches need muscle to seat them, or when they won't engage all the way, eyeball the slots through which the latch slips. You can see them when you drop the latch down.

Stow after use





# Small Arms Tips

Dear Bonnie and Connie,

Thanks for the spread in PS 394 on the small arms repairman tool kit. To return the favor, I'm sending three gun cautions you might want to pass along as you visit the troops.

SFC H. F.

THANKS FOR THE TIPS, SARGE.

CAUTION NUMBER ONE...

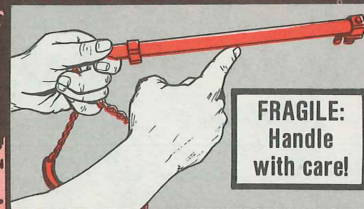
...NEVER FORCE THE M3 SUBMACHINE GUN BARREL RATCHET SPRING TO FIT. IF IT WON'T EASILY LATCH ONTO THE BARREL, IT MEANS LOOSE SPRING RIVETS OR A WEAK RATCHET SPRING OR MAYBE THE BARREL'S SCREWED ON SCREWY. BUT SOMETHING'S WRONG THAT NEEDS CHECKING OUT BY YOUR ARMORER! IF YOU FIRE YOUR M3 WITH THE BARREL RATCHET SPRING OFF OR BENT, YOUR BARREL COULD END UP A UFO!

CAUTION NUMBER TWO...

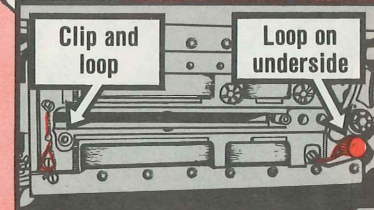
...YOUR M85 MACHINE GUN IS A PIECE OF HEAVY DUTY EQUIPMENT BUILT TO TAKE KNOCKS. IT HAS AN ACHILLES' HEEL, THOUGH, IN THE CHARGER ASSEMBLY. THE CHARGER'S A FRAGILE PIECE OF METAL THAT CAN EASILY BE BENT. IF YOU DROP YOUR M85 OR STACK THINGS ON IT, YOU'LL SOON BE LOOKING FOR A NEW CHARGER. MAKE SURE THE CHARGER'S OUT OF HARM'S WAY WHEN YOU CLEAN YOUR GUN, TOO!

CAUTION NUMBER THREE...

...STOP SNAGGING YOURSELF ON YOUR M2 MACHINE GUN BY KEEPING THE WIRE ON THE RETRACTING SLIDE ASSEMBLY SCREWS CLIPPED TO WITHIN 1/4 INCH OF THE NUTS. BEND THE CLIPPED END IN TOWARD THE SCREW AND LOOP THE WIRE ON THE UNDERSIDE OF THE NUTS AT THE CHARGING HANDLE. THAT WILL UNTANGLE YOUR SNAGGING PROBLEMS!



FRAGILE:  
Handle  
with care!

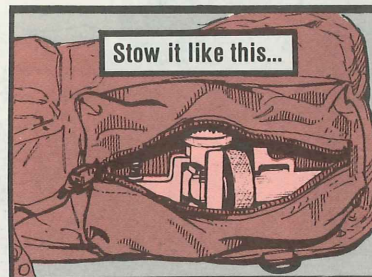


## Stow Your M60 T&E

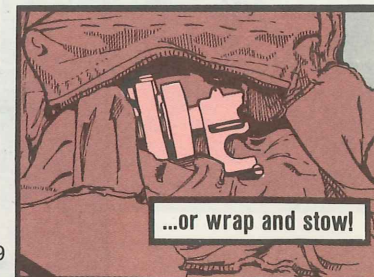
Rust, snags, bangs and rough handling can send your M60 machine gun's traversing and elevating mechanism (T&E) to the shop for repairs.

That stuff can also knock the T&E out of calibration, which sets you up for inaccuracy.

To beat the problem, keep the T&E stored in the M60's spare barrel case. Wrap it in a clean rag before you stow it. That cushions the shock of handling it and keeps it protected until you have to use it.



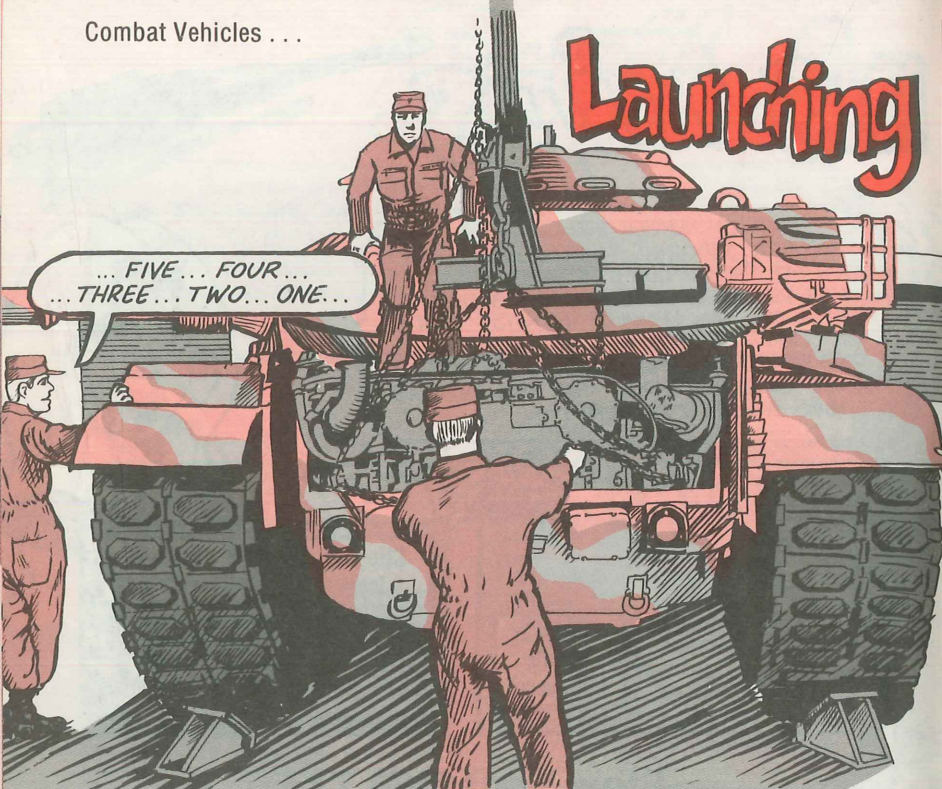
Stow it like this...



...or wrap and stow!



# Launching a Powerpack



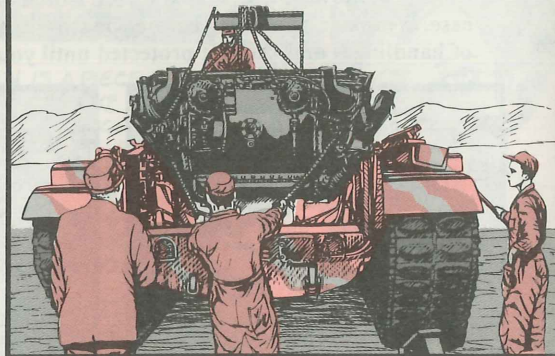
## Here are a few tips:

Pulling the powerpack from a combat vehicle isn't quite as delicate as launching a space craft, but a lot of the same principles apply.

The job may be old hat to you, but don't get careless. Smashed fingers and hands, broken connections, and bent parts result when you don't follow your - 20 TM's guidelines.

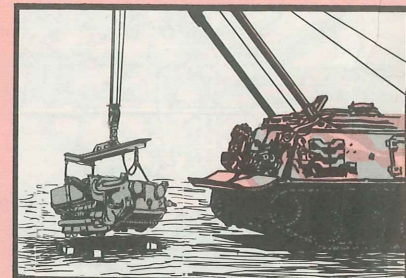
## The Right People

Make sure there're at least four of you tackling the job. Any fewer can lead to injuries and damage — any more can cause confusion.



## The Right Stuff

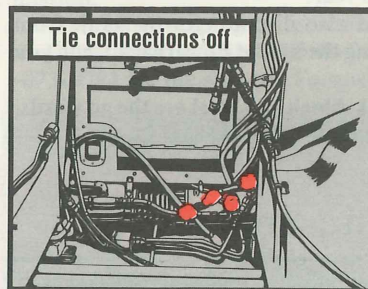
Make sure the lifting equipment you use is designed to do the job. No improvising or substituting. Position your vehicle and the lifting equipment on level ground, or at least level to each other. Make sure hoist connections are secure. Move tank turrets out of the way before you open deck grille doors.



## The Right Connections

Be sure you unhook all assemblies, linkages, hoses, cables and tubes. Tie up connections that stay with the pack, and secure those that stay in the hull. Tape or plug lines that need protection.

## Tie connections off



## The Right Way

See that everyone's arms and legs are out of the way before you S—L—O—W—L—Y pull the pack straight out of the hull. As you lift the pack, keep it away from fuel tanks and other hull parts that can't take abuse.

## The Right Housekeeping

Keep the pack off the ground. Use a pack stand or block it up squarely so it won't tip over. Cover the pack with a tarp at night to keep dirt out. Clean grime, grease and oil off the hull floor and pack before the pack goes back into the vehicle.

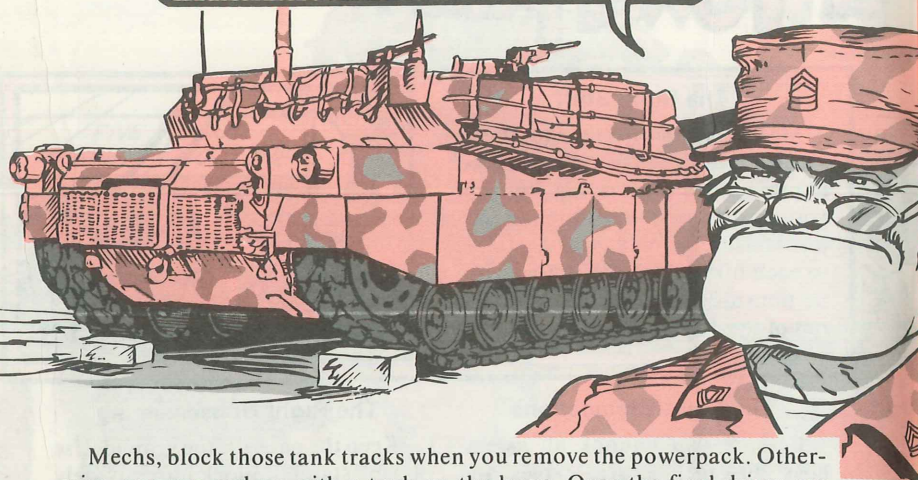
Be even more careful putting the pack back in the hull. Watch out for the secured lines, fuel tanks and your buddies' arms and legs.

## Clean hull of dirt, grease and oil





# Block That Tank!



Mechs, block those tank tracks when you remove the powerpack. Otherwise, you can end up with a tank on the loose. Once the final drives are disconnected, the tank is free to go where it wants if both tracks aren't blocked.

Drive the tank onto a hard, level surface and coast to a stop without using the brakes. Chock both tracks front and rear.

Doing the job on hard, level ground also discourages the tank from rolling and lessens the chance of damaging the hull or powerpack when you lift it out of the vehicle.

So when you remove a tank powerpack, **block and level** are the go words.

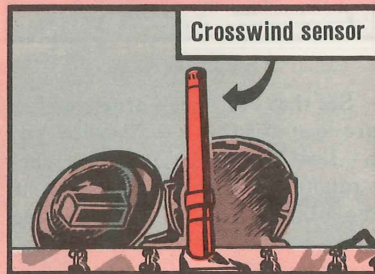
## M1 Tank Mechs...

### Hands Off Wind Sensor!

There's nothing you mechs can do to repair crosswind sensors that don't measure up to snuff.

If the crews can't get the sensor to work the way it's supposed to by cleaning it by the book, you don't do anything but pass the sensor along to your support for repair.

There's no repair info in your TM's.



## M1 Tanks... ☆ ☆ ☆



### Self-Help for TC's

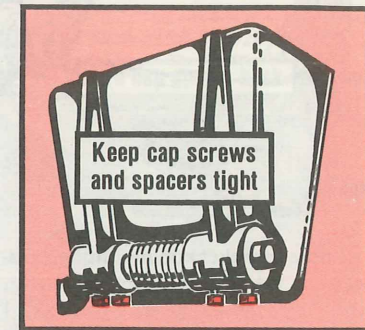
If your seat's intermediate platform has loose or missing cap screws, you could be riding for a fall.

The four screws holding the platform on the seat post support have a way of vibrating loose. The platform can give way while you're standing on it.

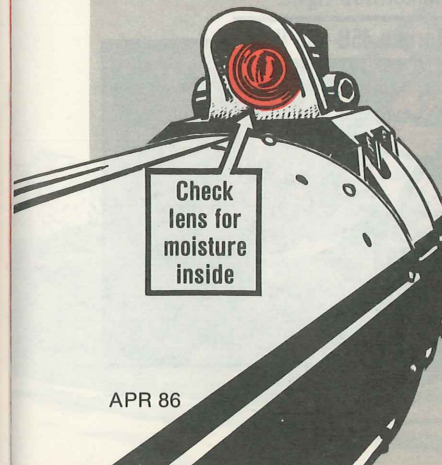
If the platform gives way while you're standing on it, you'll fall.

Take a second to look at the platform screws before you set out on a mission.

Report any missing or loose screws. (Mechs, don't substitute screws and spacers. Use NSN 5305-00-942-2196 for the screws and NSN 5365-01-073-9793 for the spacers. Torque the screws to 30-35 lb-ft.)



### Report Water-Logged Sensor



Crews, when you scope out the muzzle reference sensor before operations, look for wetness in the lenses.

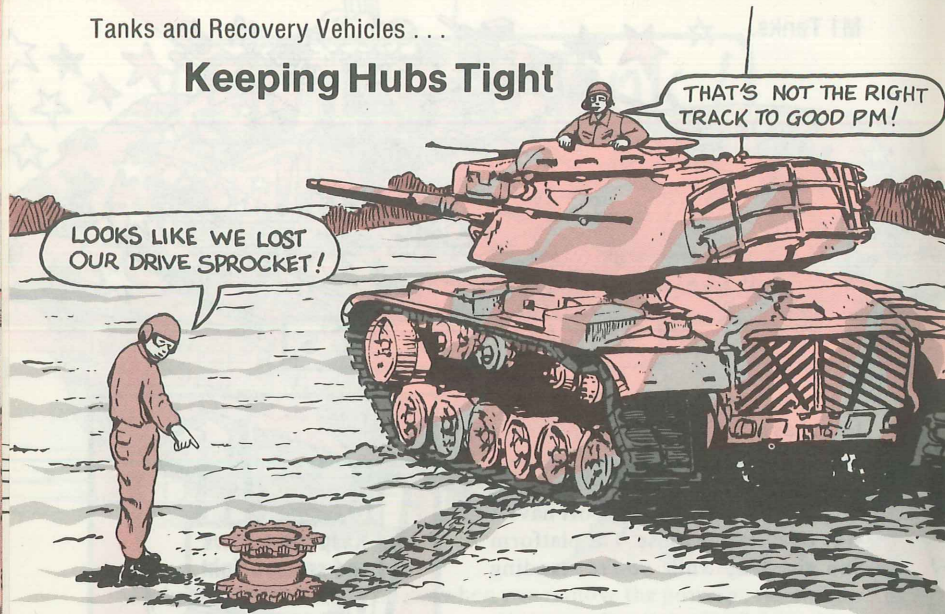
Moisture in the sensor will eventually affect its ability to detect tube sag, and you may not be able to hit your target.

If the lenses have moisture in them, report it to your mechs, just as you do cracks and gouges.

Your mechs will remove the sensor and turn it in to support for repair.



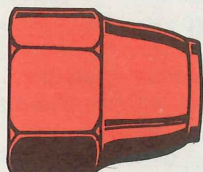
## Keeping Hubs Tight



Loose sprocket hub mounting hardware on the final drive can put your M48A5, M60-series tank or M88A1 recovery vehicle out of control.

Look for shiny spots or rust around the nuts. If you find any, report it.

Your mech can keep hubs tight by replacing the old nuts and bushings with new one-piece dowels. Most new and rebuilt vehicles come with the one-piece dowels. But you won't find them listed in any of your -20P TM's. Use NSN 3020-01-123-6782 to get them.



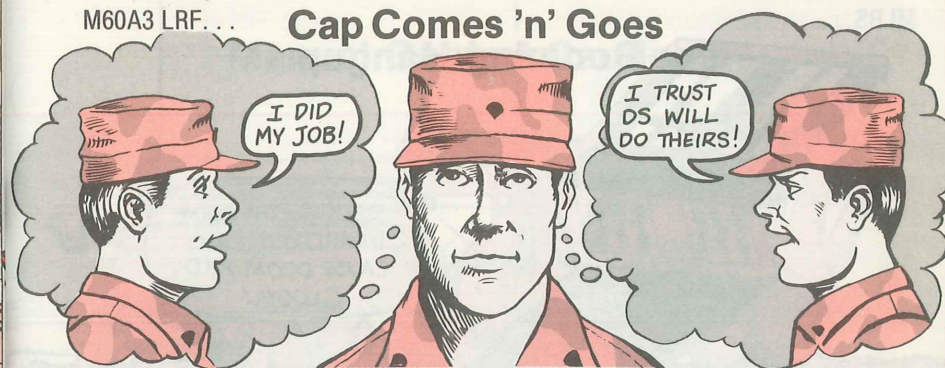
Dowel nut

Never mix the nut/bushing arrangement with one-piece dowels on the same hub. The nuts will loosen. It's OK to have all nuts and bushings on one side and all one-piece dowels on the other side of the same vehicle, tho.

Wet torque the one-piece dowel to 450-460 lb-ft. That will keep the sprocket hub tight.



## Cap Comes 'n' Goes



Mechs, you did your job, right?

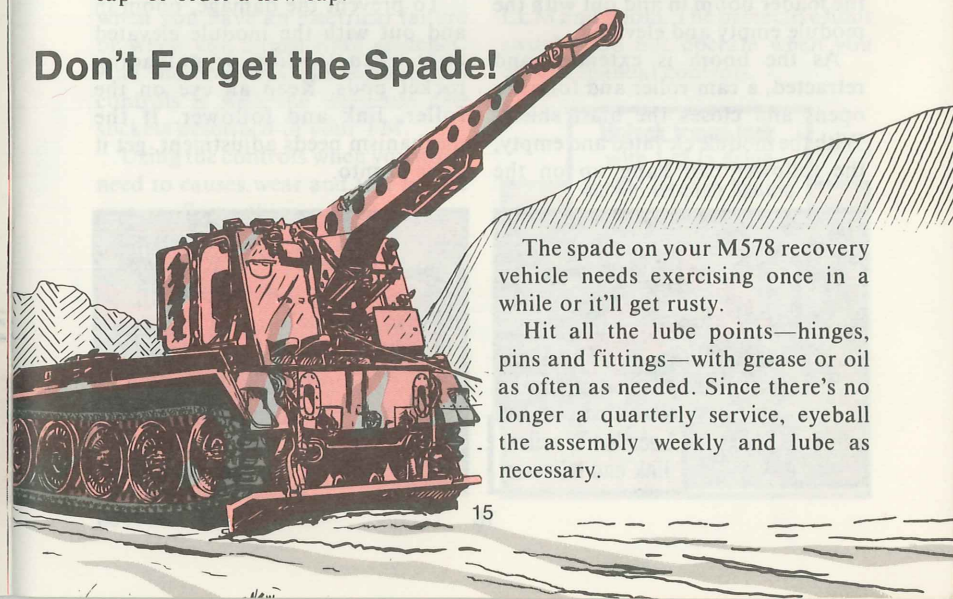
You followed the word in Para 15-102b of TM 9-2350-253-20-2 and replaced the ballistic drive bearing cap before you shipped your laser rangefinder's RT to DS maintenance. Good show!

Now make sure DS does their job. Don't accept your repaired RT from them unless they've also replaced the cap.

Without the cap, you can't mount the RT in your tank. You'll have to go back to DS and hope they've got a cap or order a new cap.



## Don't Forget the Spade!

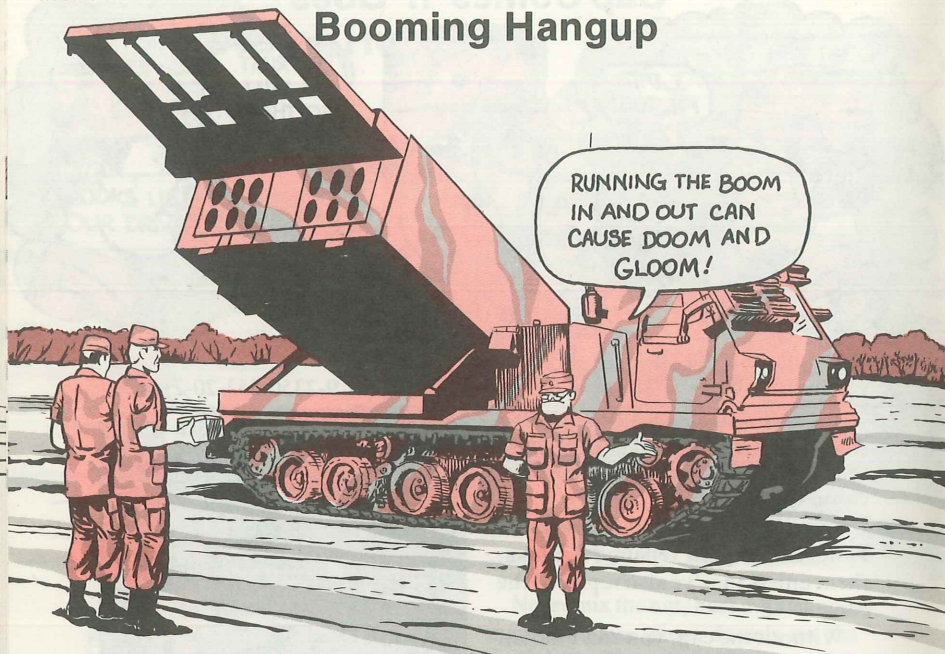


The spade on your M578 recovery vehicle needs exercising once in a while or it'll get rusty.

Hit all the lube points—hinges, pins and fittings—with grease or oil as often as needed. Since there's no longer a quarterly service, eyeball the assembly weekly and lube as necessary.



## Booming Hangup

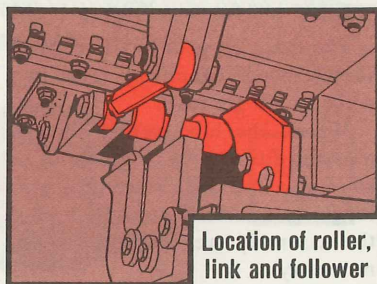


You can break off more than you can fix, crews and mechs, running the loader boom in and out with the module empty and elevated.

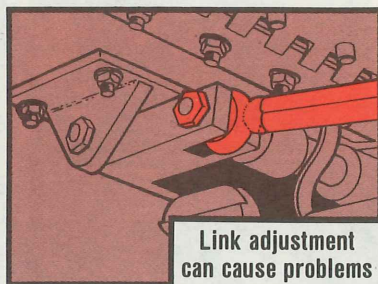
As the boom is extended and retracted, a cam roller and follower opens and closes the blast shield. With the module elevated and empty, the follower can hang up on the

roller, either breaking it off or jamming it to the roof of the module.

To prevent the damage, boom in and out with the module elevated only when loading or unloading rocket pods. Keep an eye on the roller, link and follower. If the mechanism needs adjustment, get it done pronto.

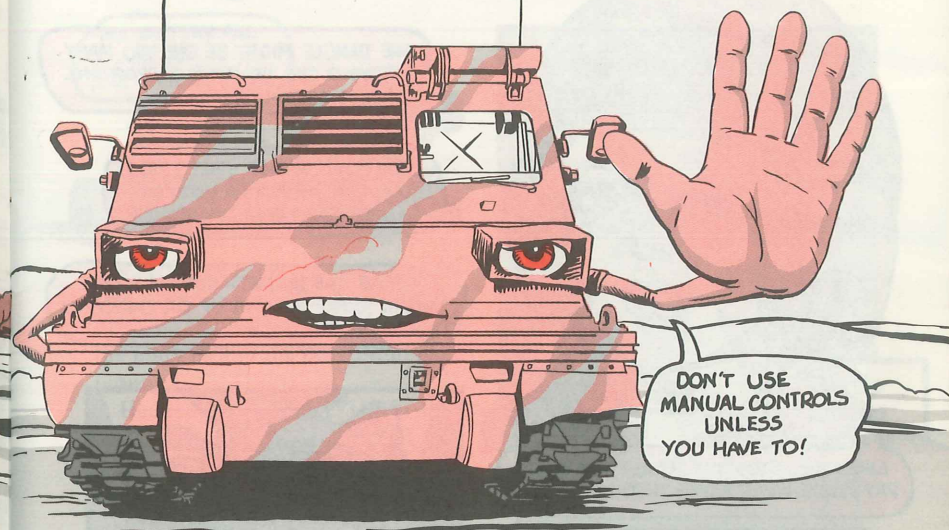


Location of roller, link and follower



Link adjustment can cause problems

## Manual Control Cautions



The only time you use the manual drive controls for your Launcher Loader Module (LLM) MLRS is when you have an electrical failure or when you adjust limit switches. And the only way you operate the controls is with the wrenches and sockets described in your TM.

Using the controls when you don't need to causes wear and tear on the system. Same thing goes if you use the wrong tools.

When you've got to use manual controls, follow the directions in Para 2-43 of TM 9-1425-646-10. Unlock the travel lock and operate other drive controls with the wrenches in the MLRS tool bag. Never use power tools. You risk bending the actuator arm or damaging the flexible driveshaft, either of which makes

your MLRS NMC.

Remember, during manual operation, be extra careful lowering the LLM and boom. The protective limit switches do not operate when you use the manual controls.

Unlock travel lock with 1/2-in drive socket wrench handle

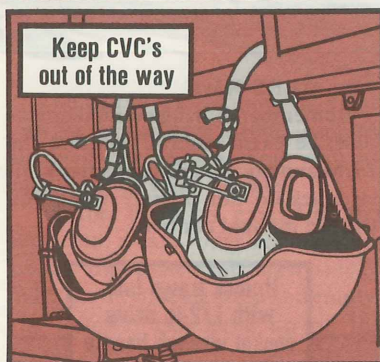




## Mike's Not a Toughie



LIKEWISE, STOW THE HELMET IN A SAFE, DRY PLACE WHEN YOU'RE THROUGH WITH IT.



Keep CVC's out of the way

A hanging helmet can break its mike boom. It can also be in the way of the crew and their equipment.

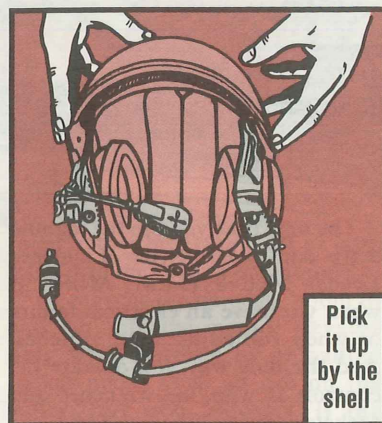
Stow the whole helmet. Disconnect the CVC cable from the intercom control box.

Some troops disconnect the cable at the breakaway connector. Bad idea! That leaves the dangling cord easy prey for the slip ring gears. It

ONE DANGLE MIGHT BE ONE TOO MANY FOR YOUR CVC HELMET'S MICROPHONE BOOM ASSEMBLY.

THE BOOM WASN'T BUILT TOUGH ENOUGH TO SERVE AS A HOOK OR HANDLE FOR THE HEAVY HELMET.

GRAB THE HELMET—NOT THE BOOM—WHEN YOU'RE PICKING UP OR CARRYING THE CVC.



Pick it up by the shell

also puts it in the way of hardware mounted on the turret walls. Remember, that hardware moves when the turret does.

On the outside of your track, your CVC helmet has more enemies.

If you leave it sitting on its top, it turns into a commo-killing rain bucket.

If you leave the helmet outside with the cord running inside, a falling hatch cover will eat your cable for lunch.

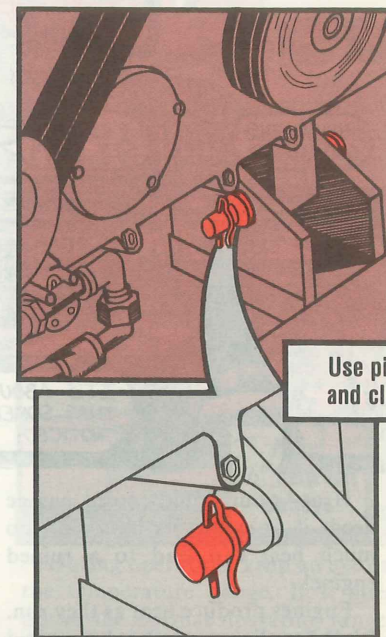
## Mounting Pin Saves Time



Cut powerpack removal and installation time in half, carrier mechs, by using the pin and clip, instead of the body bolt in the horizontal pack mount.

Headed pin, NSN 5315-01-064-3847, and clip, NSN 5315-00-598-5808, work on both the A1 and A2 series vehicles and replace the old body bolt with its bushings, washers and nut.

In addition to having fewer parts, you don't have to torque the pin. Torquing the old body bolt was a real pain.



Use pin and clip

## CVC Cable Mixup

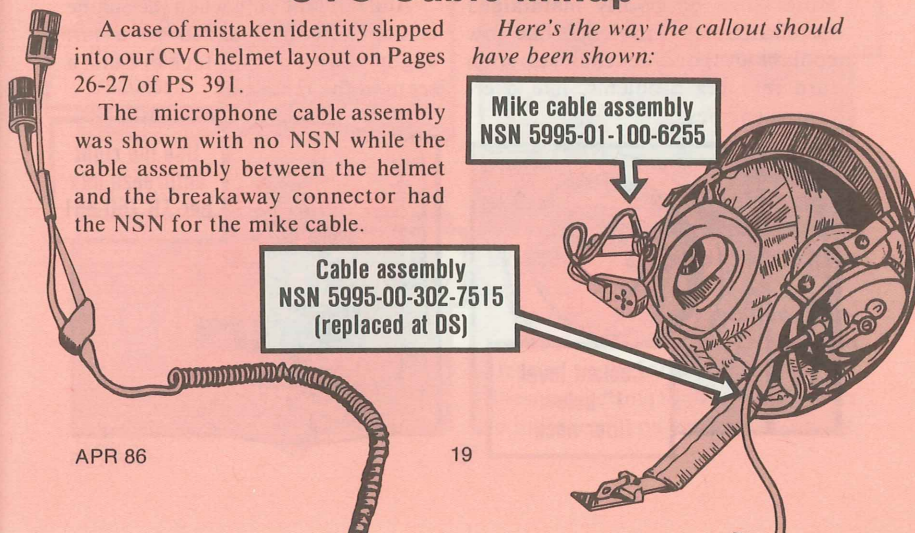
A case of mistaken identity slipped into our CVC helmet layout on Pages 26-27 of PS 391.

The microphone cable assembly was shown with no NSN while the cable assembly between the helmet and the breakaway connector had the NSN for the mike cable.

Here's the way the callout should have been shown:

Mike cable assembly  
NSN 5995-01-100-6255

Cable assembly  
NSN 5995-00-302-7515  
(replaced at DS)





# Some Like It Hot, But...



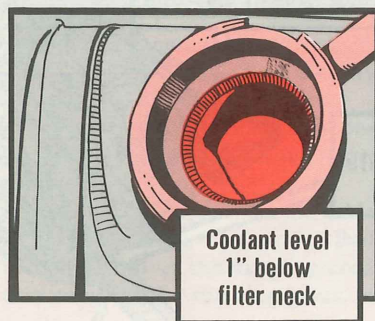
Heat—your liquid-cooled engine needs it to run at its best. But too much heat can lead to a ruined engine!

Engines produce heat as they run. It's the cooling system's job to get rid of extra heat.

High summer temperatures put more stress on poorly maintained systems. Small problems, like low coolant level or cracked hoses, soon turn into big problems, like overheated engines.

To keep your cooling system on the job, start by checking the coolant level. If it's low, add enough coolant to bring the level back to the mark—or about one inch below the filler neck. Never overfill, tho. When the engine heats up, the extra will overflow as the heated water expands.

Add coolant only when the engine is cool. Coolant added to a hot engine can crack the block or burst a seam in the radiator.



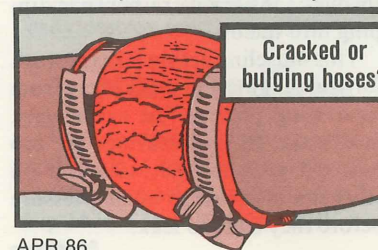
Use a mix of antifreeze and water, even during the summer. The mix raises the boiling point of the coolant, so it won't boil away like plain water does. It also provides corrosion protection your engine needs year-round. You'll find the guide for mixing antifreeze solutions in TB 750-651.

Look for wetness around the engine, radiator and hoses. A rust streak may be a clue to a leak that only shows up when the cooling system is hot and under pressure.

Clean the radiator of leaves, trash and bugs. If air can't get through a clogged radiator, it can't carry away heat.

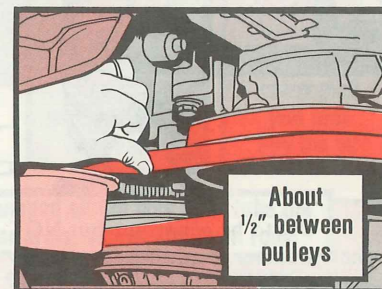


Eyeball and feel radiator hoses. Get mushy, cracked or leaky hoses

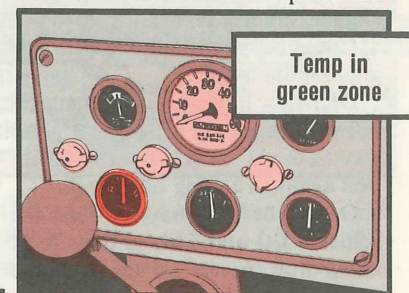


replaced right away—head off failure when you're miles from nowhere.

Check fan belts, too. Have your mechanic replace any that are cracked or damaged, and tighten any loose belts.



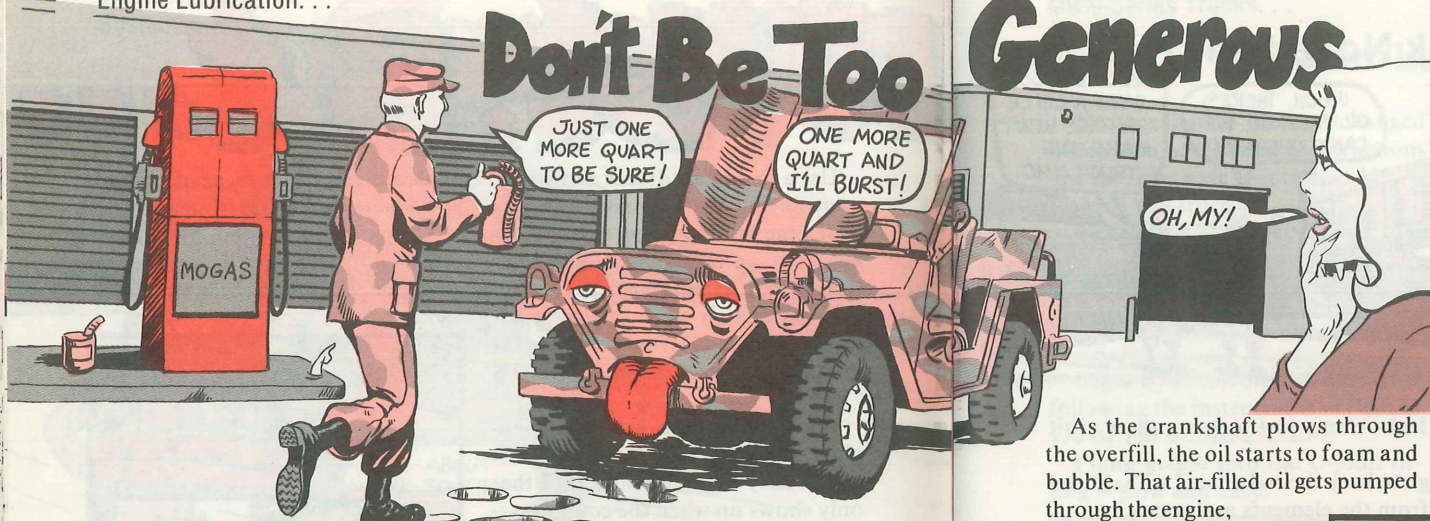
During operation, keep an eye on the temperature gauge. If it goes above the normal operating range, shut down and check for problems.



Don't wait for a plume of steam from under the hood!

You may need to clean the radiator at stops, too. Even though you cleaned it before you started, it doesn't take long for brush and leaves to build up if you run cross-country.





It's OK to be generous, but NOT when it comes to adding extra oil to your engine's crankcase. That overfill increases engine friction and heat, robs engine power, and builds pressure that causes leaks.

Why do operators overfill their engines' crankcases?

Could be they think, "If FULL is good, more is better."

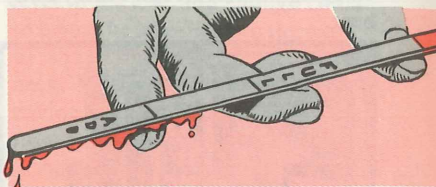
Or, if they have an engine that uses oil, they think overfilling is a good way to carry extra oil. . . as protection against running out of oil.

Or maybe they haven't read the vehicle's LO and TM, so they don't know how much oil their engine needs.

But whatever the reason, they're ruining their engines.

The engine's design engineers decide how much oil it takes to lubricate and cool the engine's parts. This is up to the ADD mark on the dipstick on most engines.

They also decide how much extra oil the engine can handle. That's usually up to the FULL mark.



Below ADD is not enough. Above FULL is too much. That ADD-to-FULL range is all the extra oil your engine needs.

When you add oil over the FULL level, the crankshaft has to muscle through the overfill, rather than dipping into the oil.

This muscling action is extra work for your engine and takes away from its driving power. The extra work makes the oil and bearings get too hot. Oil pressure increases and oil seals can take just so much pressure before they start to leak.

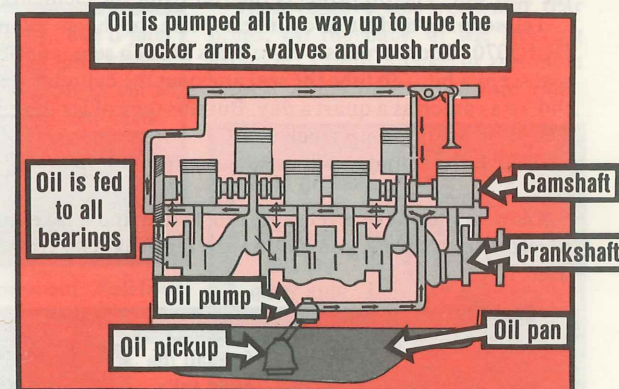
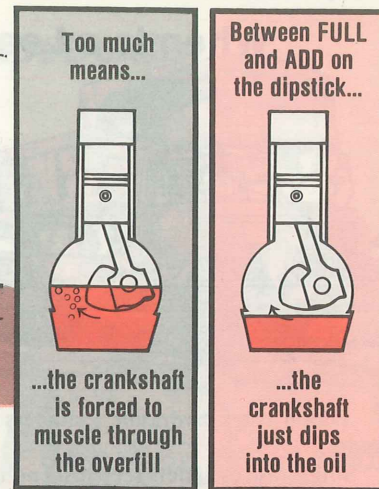
# Don't Be Too Generous

As the crankshaft plows through the overfill, the oil starts to foam and bubble. That air-filled oil gets pumped through the engine, but it doesn't lube parts like straight oil. Foamy oil can't carry away engine heat as well either, so bearings get hotter.

As the oil moves through the engine, it thins even more and starts a chain reaction that leads to damaged engine parts.

You've got to go by your LO for the engine—and only that engine—in your equipment. You've got to read the dipstick just like the LO tells you.

Remember, every engine has different lubing needs. Don't let your generosity destroy your engine.



## New Radiator Hose Clamp NSN

When ordering clamps to hook up the overflow hose between the radiator and coolant reserve tank on your M880, use NSN 4730-00-871-6729. It's cheaper and works just as well as NSN 4730-00-908-3195, shown as Item 10, Fig 14 in TM 9-2320-266-20P.



## When Is a Leak Not a Leak?



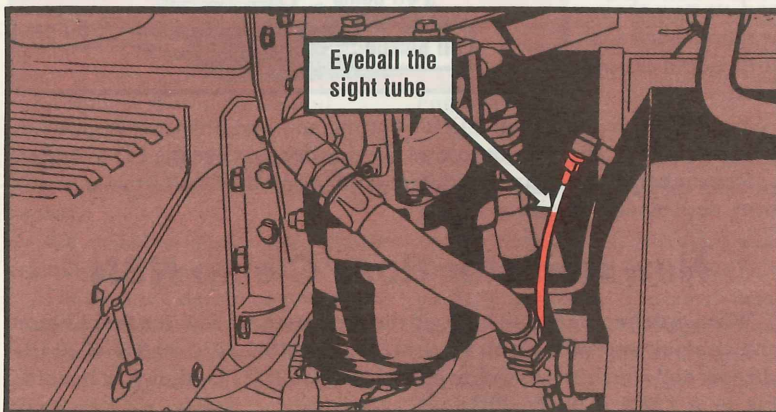
Dump truck hydraulic cylinders leak—some just a dab, others a bit more.

Single ram cylinders seep just enough to keep the rod coated with oil and the seal wet. The oil protects the rod from the elements and corrosion.

Telescoping hydraulic cylinders—like the hoist cylinders on M917 and IH F5070 dump trucks—have seals at each segment of the cylinder. Each seal seeps a bit... to lube the seal and coat the cylinder. The seepage adds up, tho, to as much as a quart a day. But this type of leakage does not make your F5070 or M917 dump truck NMC.

If the hoist cylinder will raise the empty dump body, your truck's OK to go.

Keep an eye on the level gage, tho. If you find it takes more'n a quart a day to refill the reservoir, you may have a real leak. Get your mech to look things over.



## U-Joint Lube Details

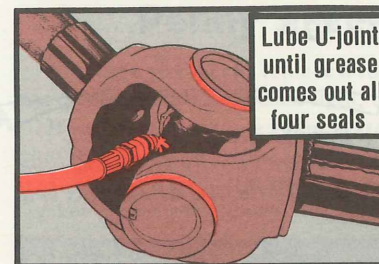
You mechanics get shortchanged when it comes to lubing instructions for the front axle U-joints on M939-series 5-ton trucks.

Note 7 of LO 9-2320-272-12 tells you to lube them, but doesn't tell you how.

HERE'S HOW TO LUBE THEM:

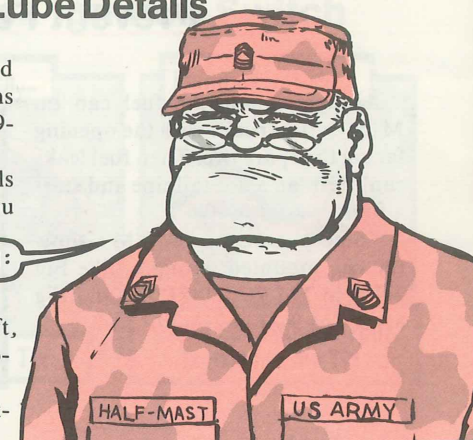
Begin by removing the axle shaft, following the instructions in Para 6-13a of TM 9-2320-272-20-1.

Pump grease into the U-joint fitting — slow and easy.

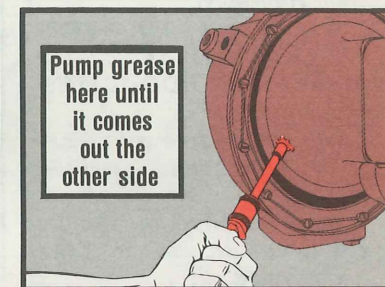


Be sure grease oozes out of all four seals.

Put the axle back in and reassemble the steering knuckle like it says in Para 6-13e.



Then remove the front and rear plugs, on the back of the steering knuckle. Pump grease in one hole until it comes out the opposite one.



## Seeing's Believing

You say you put a new bulb in your microfiche reader but it still won't light up?

Before you send the reader in for repair, make sure you've replaced the bulb's access cover.

Most readers have an interlock switch that keeps the bulb from lighting until the cover is in place. That keeps dust and dirt out of the set. It also prevents a hot bulb from starting a fire.

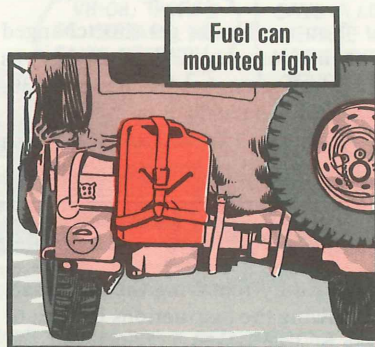
You close the switch by putting the cover back where it belongs.



## Prevent Fuel Fires

Always mount the fuel can on M151-series trucks with the opening facing the spare tire. Then fuel leaks can't drip on a hot tailpipe and start a fire.

Some pictures in the TM's show the can mounted wrong... like Fig 2-400 in TM 9-2320-218-20 and Fig 81 in TM 9-2320-218-20P.



## DEXRON II's OK

**Dear Half-Mast,**  
According to LO 9-2320-272-12, our M939-series 5-ton trucks use OE/HDO-10 in the transmission.

Our truck came with DEXRON II transmission fluid instead.

Do we need to change the oil? What do we use if we need to add oil?

SGT G.F.G.

**Dear Sergeant G.F.G.,**  
There's no need to change the oil until the AOAP lab tells you to.

If you need to add oil, use OE/HDO-10. It'll mix with DEXRON II just fine.

When you change the oil, use OE/HDO-10.

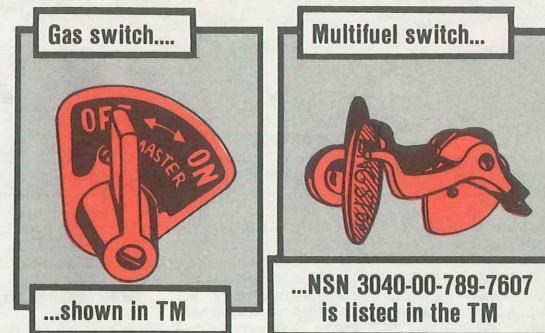
*Half-Mast*

## CUCV Fuel Filter

Hold one before replacing a leaky fuel filter assembly on your CUCV. Could be the vacuum switch or the O-ring behind it is leaking. If so, NSN 5930-01-208-6292 gets you the vacuum switch and NSN 5330-01-213-9966 the O-ring.

## 2 1/2-Ton Truck Ignition Switch

Item 8 in Fig 62 of TM 9-2320-209-20P shows the gasoline engine ignition switch. But NSN 3040-00-789-7607 in the TM is for the multifuel engine switch with a locking lever.

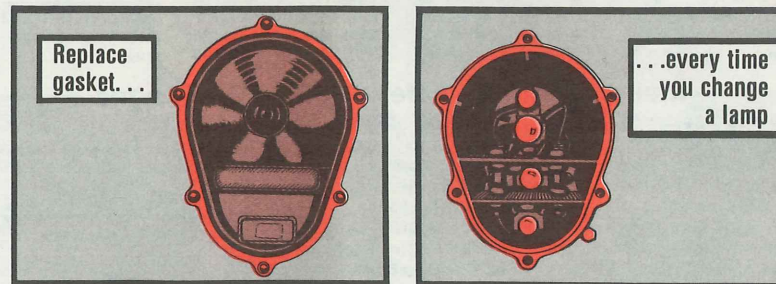


Composite Lights...

## Penny Saved... Dollar Burned!

Any time you mechs replace a turn signal, stop, tail, parking or blackout marker lamp in a composite light, use a new gasket.

If you use the old one again, water will get into the assembly, causing rust that'll fuse the lamp base to the socket. You'll end up doing the job all over again... and again. It's smarter and cheaper in the long run to use a new gasket each time you open the light.

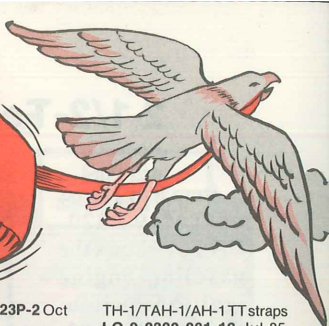


## TACOM Combines EIR Digests

Thanks to a recent SMART suggestion, TACOM's EIR Digest is now one single publication, rather than four separate pubs. The Jan 86 issue — TB 43-0001-39-1 — includes all TACOM equipment — tank, automotive, construction, commercial, and material handling. The combined digest will come out quarterly and remain valid for one year.



# PUBS



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

TM 5-3805-253-12-1 Dec 85 F1500M grader  
 TM 5-2420-222-10 Dec 85 JD-410 loader backhoe  
 TM 5-3805-253-12-1 Dec 85 Huber F1500M grader  
 TM 9-1015-200-20&P Oct 85 M29A1 81-MM mortar  
 TM 9-1015-200-30&P Oct 85 M29A1 81-MM mortar  
 TM 9-1430-1533-24P Dec 85 HAWK  
 TM 9-2350-264-10-1 thru -3 Dec 85 M1A1 tank  
 TM 9-2350-264-20-1-2, -2 and -4 Dec 85 M1A1 tank  
 TM 9-2350-264-20-1-3-4, and -6 Dec 85 M1A1 tank  
 TM 9-2350-264-20-2-2 Nov 85 M1A1 tank  
 TM 9-2350-267-10 Sep 85 M992 ammo carrier  
 TM 9-2350-267-10-HR Sep 85 M992 ammo carrier  
 TM 9-6920-450-24P Nov 85

TOW 2 training set M70A2  
 TM 11-2330-632-10-HR Feb 84 AN/GSM-271 maintenance shop  
 TM 11-5805-698-24P Aug 85 TD-1237 multiplexer  
 TM 11-5805-699-24P Aug 85 MD-1023 modem  
 TM 11-5820-919-12 Jan 86 AN/PRC-104A radio set  
 TM 11-5826-227-23P Sep 85 AN/ARN-89B direction finder set  
 TM 11-5840-281-12-1 Jan 86 AN/TPN-18A radar set  
 TM 11-6130-453-24P Jan PP-7545A power supply  
 TM 11-6625-3053-14 Dec 85 AN/USM-213B signal generator  
 TM 11-7010-205-23P Nov 85 AN/MYQ-4A DAS-3  
 TM 11-7440-241-10-1, -2 and -5 Jan 0A-8390 artillery fire direction center  
 TM 11-7440-283-12-1-2 Jan AN/GYK-29(V) LANCE fire direction system  
 TM 55-1510-220-10 Dec 85 RC-12G  
 TM 55-1510-220-CL Dec 85 RC-12G

TM 55-1520-238-23P-2 Oct 85 AH-64A  
 TM 55-1520-238-T-1 Dec 85 AH-64A, Vol. 1  
 TM 55-1520-238-T-2 Dec 85 AH-64A, Vol. 2  
 TM 55-1520-238-T-3 Dec 85 AH-64A, Vol. 3  
 TM 55-1520-242-MTF Dec 85 UH-1, EH-1  
 TM 55-1520-238-PM Dec 85 AH 64A  
 TB 55-1520-209-20-38 Oct 85 CH-47A  
 TB 55-1520-240-20-8 Nov 85 CH-47D  
 TB 55-1520-240-20-10 Dec 85 CH-47D  
 TB 55-1520-241-20-33 Oct 85 Spiral bevel gear in forward and aft transmissions on CH-47A/B/C  
 TB 55-1520-241-20-34 Oct 85 CH-47A/B/C  
 TB 55-1520-241-20-35 Dec 85 CH-47B/C/D  
 TB 55-1520-241-20-36 Dec 85 CH-47B/C/D, YCH-47D  
 TB 55-1520-242-20-16 Oct 85 UH-1D/H/V and EH-1  
 TB 55-1520-243-20-8 Oct 85 UH-1C/M/H/V, EH-1 and

TH-1/TAH-1/AH-1TT straps  
 LO 9-2320-281-12 Jul 85 Topographic support system  
 LO 9-2350-267-12 Sep 85 M992 ammo carrier  
 SC 4931-95-CL-A22 Jan 85 Tank turret and artillery mechanic's tool kit supplemental  
 SC 4940-95-CL-B09 Oct 85 Tool set, Bn Maint Team: Arm, Mech Inf and Fld Arty  
 SC 4940-95-CL-B09-HR Oct 85 Tool set, Bn Maint Team: Arm, Mech Inf and Fld Arty  
 SC 5975-91-CL-C02-HR Aug 85 MK-2056 telephone cable splicing kit  
 FM 55-511 Dec 85 Floating cranes  
 CIR 310-85-4 Nov 85 STAR-PUBS (exp Nov 86)  
 PAM 310-32 Nov 85 Graphic training aids index  
 AR 700-138 Dec 85 Logistics readiness and sustainability  
 AR 700-139 Mar Warranty program

## Maintenance & Safety-of-Use Messages

**AMCCOM 86-1**—Canister insert filter, NSN 4240-01-177-2675, with M24/M25 series chemical mask, AMSMC-MAR-C 271530Z Jan 86.

**AMCCOM 86-3**—M17 series protective mask sanitizing update, AMSMC-MAR-C 311830Z Jan 86.

**AMCCOM 86-4**—M256/M256A1 chemical agent detector kits, AMSMC-MAR-C 312215Z Jan 86.

**TROSCOM SOU-MES-12-85**—Sherwood, Dacor and Parkway MK4 life preservers, AMSTR-MES 271202Z Jan 86.

**TROSCOM SOU-MES-13-85**—Seat assembly, non-magnetic EOD scuba reserve mechanism, PN B-0528-17, AMSTR-MES-271201Z Jan 86.

**TACOM SOU**—Reach-All Model 9050-2 mounted on NSN 4940-00-490-0857, AMSTA-MVA 211200Z Jan 86.

**TACOM SOU**—M1/M1A1 Abrams tanks, J33 electrical connector, AMSTA-MCD 221600Z Jan 86.

**TACOM SOU**—Pneumatic tire and rim assemblies, AMSTA-MTA 271300Z Jan 86.

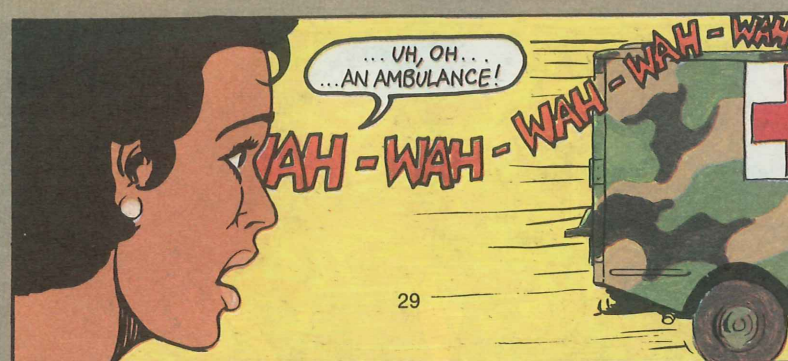
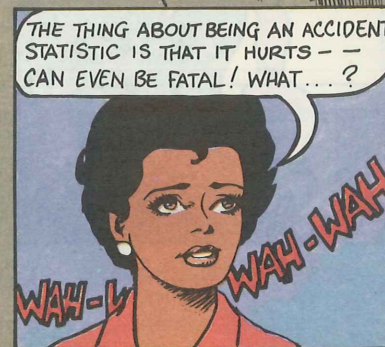
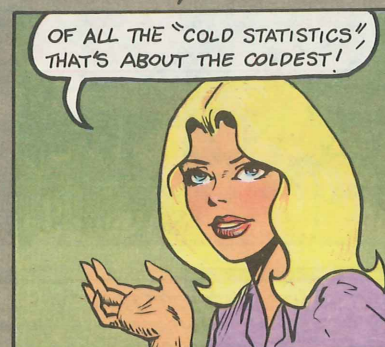
Your Direct Support or Logistic Assistance Office (LAO) can provide you with more information.

### SMART Messages

**SMART Msg #67**—Expedient portable shower, DALO-PLR 162045Z Jan 86.

**SMART Msg #68**—Substitution of common hardware for quick-disconnect couplings in UH-1H helicopter transmissions, DALO-PLR 291017Z Jan 86.

# The Deadly Triangle







GOOD GRIEF -- THIS'S THE MOTOR POOL WE WERE HEADED FOR!

IT LOOKS LIKE AN ACCIDENT!



WHAT HAPPENED?

SMITTY WAS AIRING UP A TIRE WITHOUT A SAFETY CAGE... THE SPLIT RING BLEW OFF! I THINK HE'S HURT BAD!



WHEN YOU DO SOMETHING YOU **KNOW** IS DANGEROUS, YOU'LL LOSE... TODAY... TOMORROW... SOMEDAY... FOR SURE!

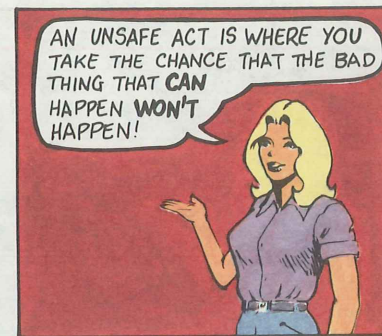


I GUESS SMITTY JUST RAN OUT OF LUCK!

ACCIDENTS DON'T JUST HAPPEN-- THEY RESULT FROM UNSAFE ACTS, UNSAFE PRACTICES OR UNSAFE CONDITIONS-- THE DEADLY TRIANGLE!



I DON'T GET IT-- HOW'S ONE DIFFERENT FROM THE OTHER TWO?



AN UNSAFE ACT IS WHERE YOU TAKE THE CHANCE THAT THE BAD THING THAT **CAN** HAPPEN **WON'T** HAPPEN!



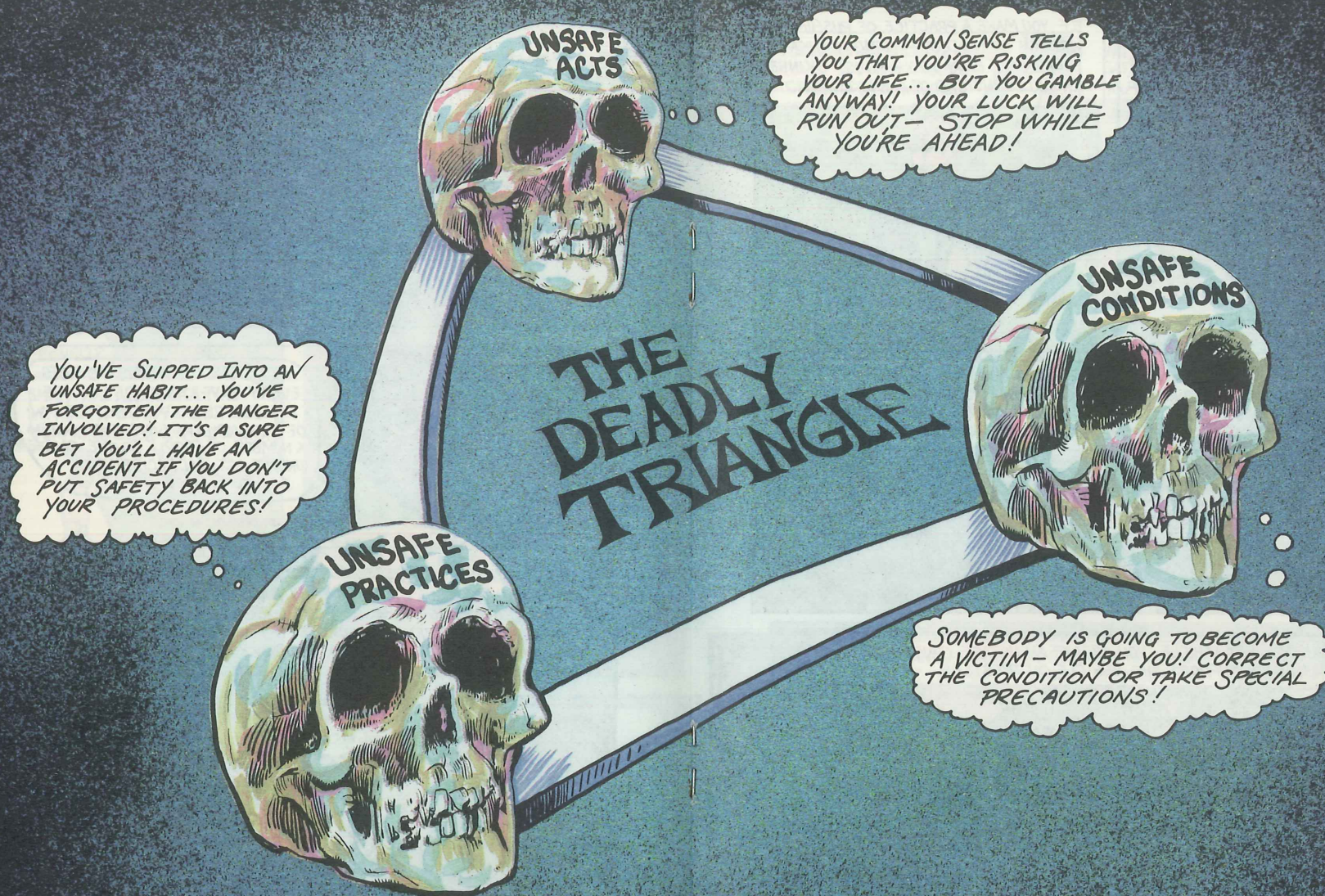
WE ALL ENGAGE IN UNSAFE ACTS EVERY DAY-- AND MOST OF THE TIME, WE'RE LUCKY! BUT THE LAW OF PROBABILITY SAYS THAT WHEN X NUMBER OF PEOPLE DO THE SAME UNSAFE ACT, AN ACCIDENT IS BOUND TO HAPPEN!

YOU MIGHT GET BY ONE TIME BY BACKING A BIG VEHICLE IN A TIGHT MOTOR POOL WITHOUT A GROUND GUIDE. BUT IF A NUMBER OF PEOPLE ACROSS THE ARMY TRY THIS ON A GIVEN DAY, CHANCES OF AN ACCIDENT ARE OVERWHELMING!



H-E-E-L-P!





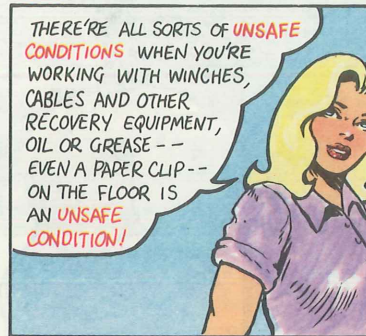
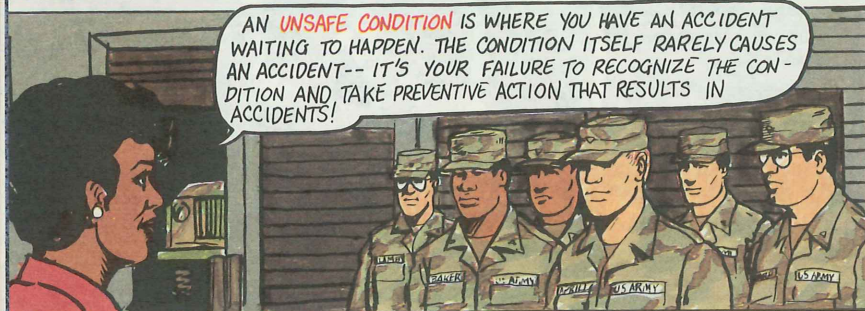
**WE HAVE THE WORLD'S BEST EQUIPMENT ...** *Take care of it*

IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BULLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.

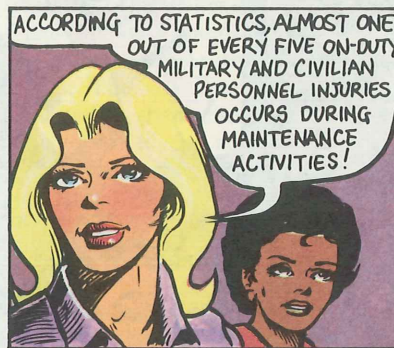




IF YOU MAKE A PRACTICE OF PUSHING A WRENCH INSTEAD OF PULLING, YOU MAY LEARN THE EASY WAY -- JUST SKINNED KNUCKLES INSTEAD OF A BROKEN HAND!



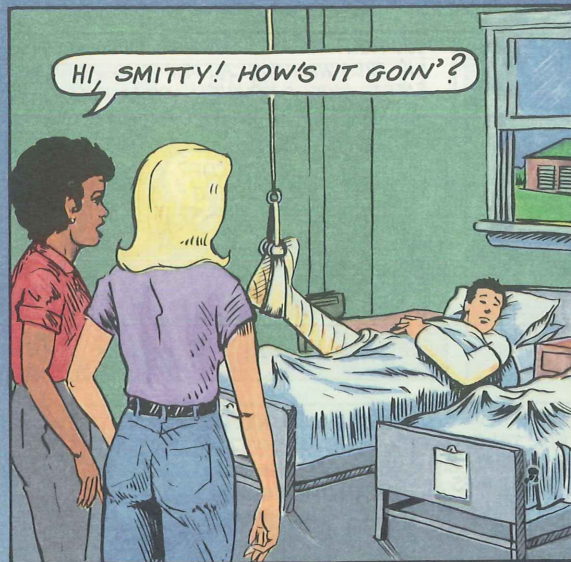
YOU FIGHT **UNSAFE CONDITIONS** BY CORRECTING THEM WHEN YOU CAN AND BY BEING SAFETY CONSCIOUS WHEN YOU CAN'T! YOU KEEP SLIPPERY STUFF OFF THE FLOOR!



THESE ACCIDENTS NOT ONLY COST THE ARMY MORE THAN 6 MILLION DOLLARS FOR FY85, THEY LAID A LOT OF HURT ON A LOT OF WARM BODIES!







HI, SMITTY! HOW'S IT GOIN'?



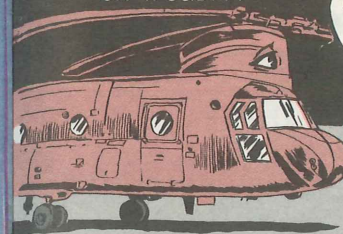
IS THERE ANYTHING WE CAN DO?



YES! PLEASE PASS THE WORD ONE MORE TIME: WHEN YOU GAMBLE WITH SAFETY, YOU'RE BETTING YOUR OWN LIFE ON A STACKED DECK!

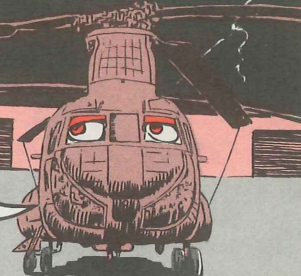
**COUNTERMEASURE**, ARMY GROUND ACCIDENT REPORT, IS PUBLISHED MONTHLY BY THE U.S. ARMY SAFETY CENTER. TO SEE A COPY, ASK YOUR SUPERVISOR.

CH-47C&D.



MY ROTOR HUBS REALLY TAKE A BEATING FROM THOSE LIGHTNING PROTECTION JUMPER WIRES!

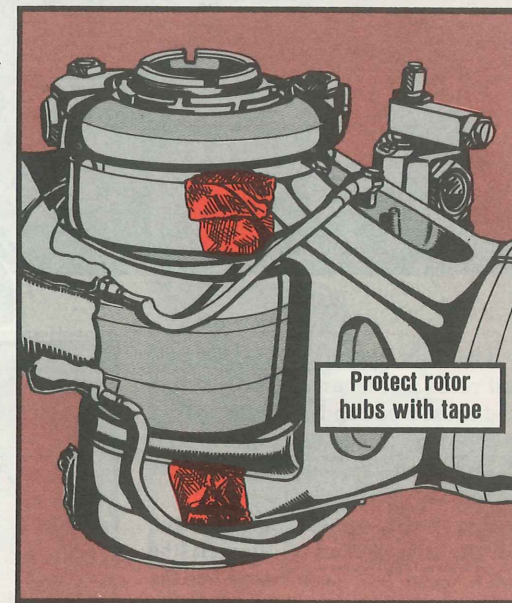
MY MECH USES PRESSURE SENSITIVE TAPE FOR PROTECTION!



## Prevent Damage to Rotor Hubs

The lightning protection jumper wires on fiberglass rotor blades of C and D model Chinooks can damage the rotor heads. The wires are mounted on the leading edge of the blades and constantly strike the shotpeen finish of the blade lugs and outboard housing areas.

The headshed says you can protect those areas of the rotor hub between the jumper wire connections with pressure sensitive tape, NSN 7510-00-074-5124. Check the tape after each flight and replace it if it has become loose or worn through.



Protect rotor hubs with tape

## CH-47D Droop Stop Fix

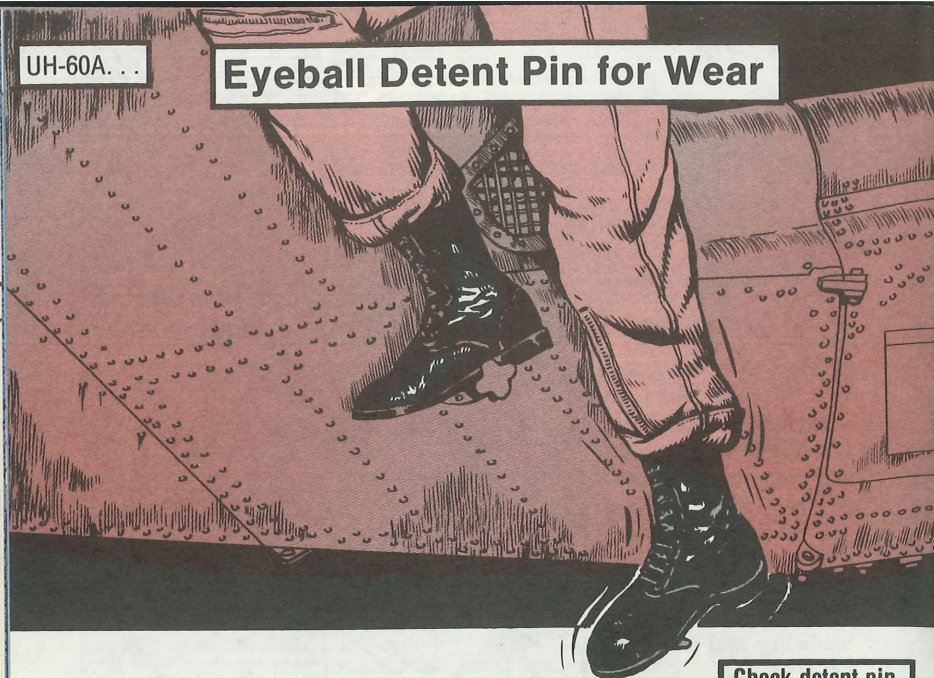
Para 5-52 of TM 55-1520-240-23-4 leaves you hanging when you're checking the clearance between the balancing arm pivot lugs and the bottom of the hub.

What do you do if the clearance is less than 0.030 inch? You can find the answer in the B or C series maintenance manuals. Para 5-63 of TM 55-1520-227-23-1 has the details. If you don't have one of these TM's, see your local AVSCOM Logistic Assistance Representative.

If the clearance is more than 0.050 inch, replace the droop stops.



## Eyeball Detent Pin for Wear



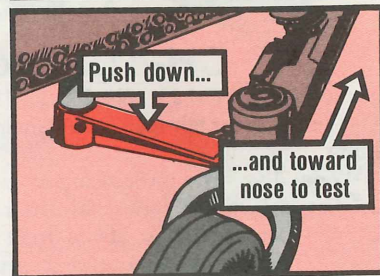
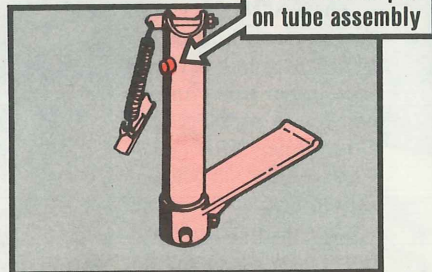
The lower step on the Black Hawk's tail rotor pylon can suddenly rotate and cause a bad spill if the detent pin in the step's tube is badly worn. And if somebody's groin catches the second step during a fall—ouch!

So eyeball and test the detent pin on the tube assembly often. If the pin's worn and won't stay in the pylon fitting when you push on the step, report it.

Test the pin like so:

- Pull the step out and lock it in position.
- With both hands, push down and toward the nose of the aircraft. If it holds, it's OK.

But if the step gives, get the tube assembly replaced. Better to be safe than sorry.



## Prevent Tailwheel Lockup

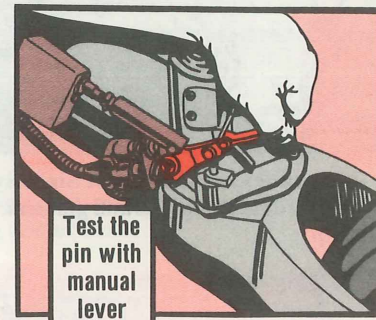


Ever had problems with your Black Hawk's tailwheel lockpin? Like it won't lock or unlock when you move the control lever?

Could be you've got a rust problem—especially if you haven't greased the pin lately.

Check it for rust by moving the pin up and down with the manual lever. It should move freely. If it doesn't, soak it with penetrating oil.

Prevent rust buildup on the lockpin by coating it with aircraft grease. And inspect it often—at least every 14 days like it says in TM 55-1520-237-PMS-1.



## AVIATION MESSAGES

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

CH-47-85-21, SOF, Technical, One-time inspection of CH-47D flight control mounting pallets, 121400Z Dec 85.

OH-58-85-05, SOF, T-63 engine compressor lining, 261930Z Dec 85.

OH-6-85-03, SOF, T-63 engine compressor lining, 261930Z Dec 85.

UH-60-85-27, SOF, Maintenance Mandatory, UH-60A/EH-60A, Revision to reporting downtime on DA Form 1352, 181900Z Dec 85.

UH-1-85-13, SOF, Revision to one-time inspection of AH-1/TH-1/TAH-1 and UH-1M main rotor hub, 121400Z Dec 85.

AH-1-85-08, SOF, Technical, Revision to one-time inspection of AH-1, TH-1, TAH-1, and UH-1M main rotor hub, 121400Z Dec 85.

AH-1-85-10, SOF, Technical, Correction to revision to one-time inspection of the AH-1/TH-1/TAH-1 and UH-1M main rotor hub, 181500Z Dec 85.

SOU-UH-60A-85-02, SOU, Technical, EH-60A/UH-60A, One-time inspection and operational changes, main rotor

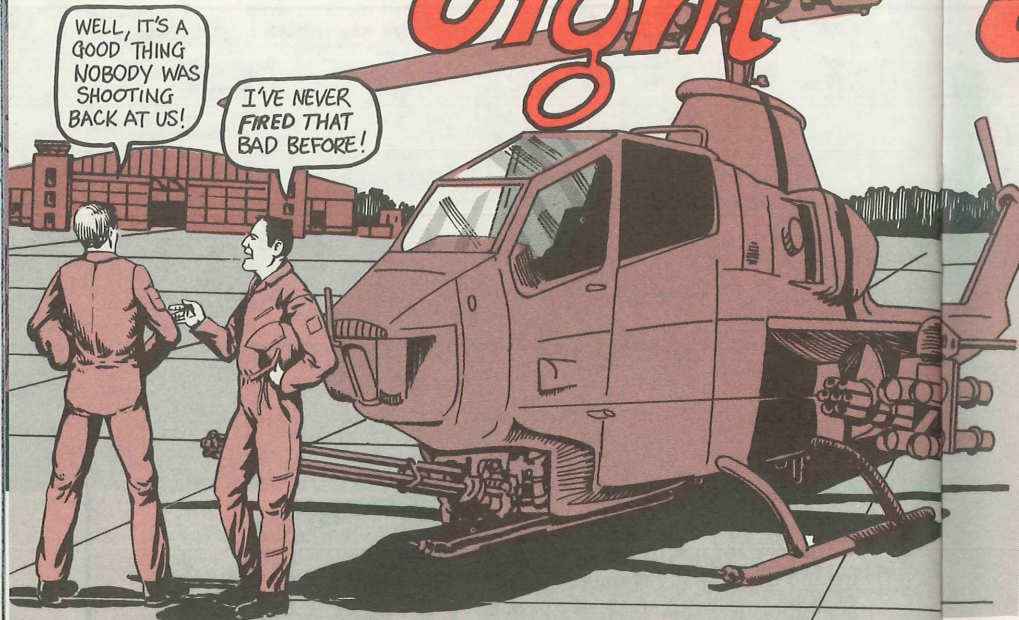
blade clamp assembly, NSN 4920-01-112-4939, P/N 70700-20324-041, 191430Z Dec 85.

MIM-GEN-85-ME-08, MIM, General, Turbine engine washing, 111800Z Dec 85.

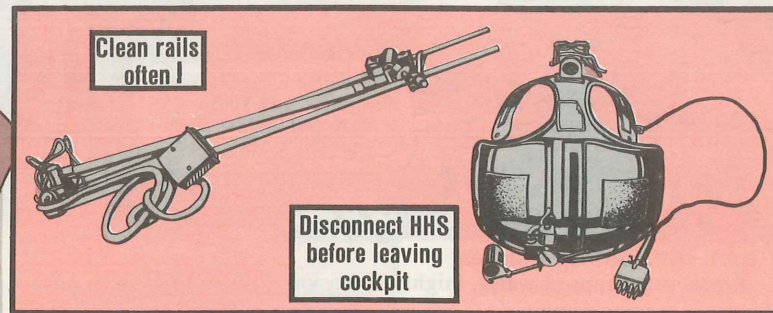
CAT 1 EIR Phone  
AUTOVON 693-2066  
(24 hours)



# Sight Savers



Give your Cobra's Helmet Sight System (HSS) the care and attention it needs, bird mechs, pilots and gunners, or you might as well be shooting from the hip.



Here're some critical DO's and DON'T's:

**DON'T** lube the linkage rails. Keep them free of all foreign material, such as oil, grease, paint, insecticide, window cleaners and tape residue.

**DON'T** use the linkage rails for the handhold when you leave the cockpit. That will bend the rails and they'll have to be replaced at \$2,600 a whack.

**DON'T** throw anything into the cockpit before climbing in. Your HSS won't take a licking and keep on ticking.

**DO** clean the linkage rails often. Use a lint-free cloth soaked with de-natured alcohol.

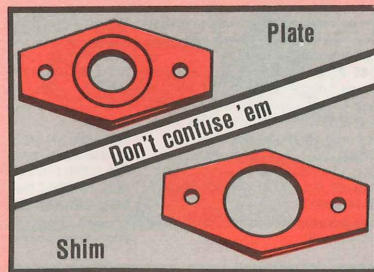
**DO** remove small nicks and light damage by rubbing the rails with crocus cloth. Wipe the rails clean after using crocus cloth.

UH-1 . . .

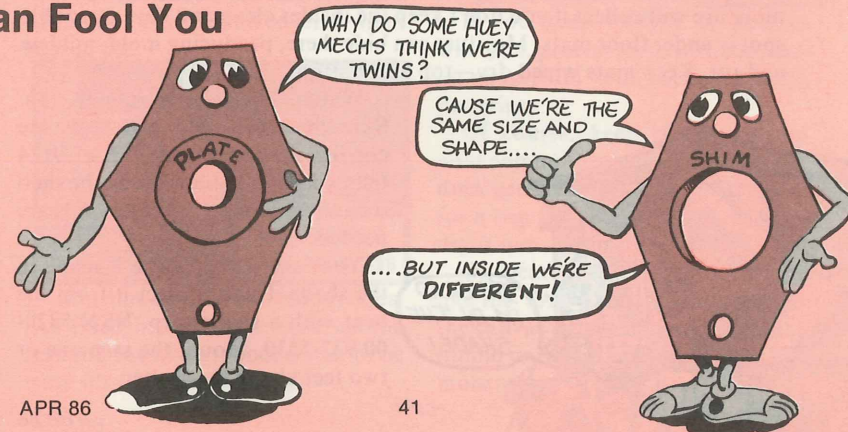
## Look-Alike

The retainer plate and the shim in the Huey's tail rotor hub are the same shape, same size, and roughly the same thickness. It's easy to confuse one with the other when you're installing the blade and hub assembly.

When you put the tail rotor hub together, the plate with the smaller center hole goes on the slider under the bearings.



## Can Fool You





# Keeping

# Commo High & Dry



BY USING COMMON SENSE AND THESE PM TIPS, YOU CAN DRY UP YOUR WET WEATHER PROBLEMS!

From little drops of water, mighty corrosion grows and grows—until it knocks out your commo.

Moisture, whether it comes from rain or humidity, leads to commo-killing corrosion. There are some weapons at your disposal, though, for stopping moisture buildup before corrosion stops you.

## Shelters

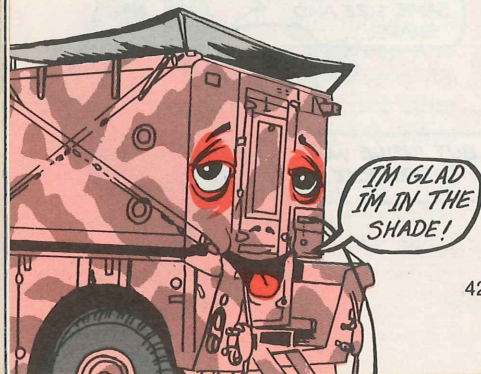
Fresh air is the thing for your sheltered gear in humid weather. With the shelter door closed and the louver covers open, crank up the ventilating fan and send a breeze across your gear. That breeze will keep the gear dry.

When its door is closed, your shelter is practically airtight. This means moisture will collect if you don't keep the insides clean and dry. A trouble spot is under floor mats. Moisture can hide there, producing mold, mildew and rot. Keep mats wiped dry—top and bottom.



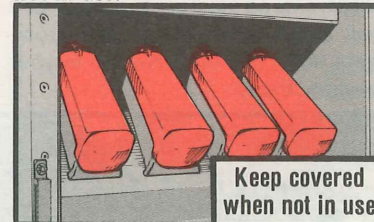
Watch the shelter's outside, too. Skin punctures and bad seals are corrosion's best friends. TB 43-0124 tells who should fix what on the shelter and what materials and tools are needed.

Your shelter will have it made in the shade if you protect it from the heat with a shade tarp, NSN 5820-00-937-5530. Mount the tarp one or two feet above the shelter.



Hot, humid weather KO's air filters, too. Scope out the filter in your AN/GRC-103 radio set daily. Make sure it's clean and dry.

Connectors like those on your Pair-26 cables can become corroded if you don't keep them covered when not in use.



Moisture can also corrode grounds. At fixed installations, pull up the ground rod at least once a year to be sure it's still in good shape.

## Remember the Little Stuff

Squad radios and backpack radios need waterproofing, too.

Follow your pubs on protecting equipment. Rain or humidity means you've got to take the extra precaution of wrapping handsets, headsets, speakers and radios in plastic.

One reminder: If you wrap AN/PRC-25 or -77 radios, leave a hole in the bottom of the bag for gas to escape.



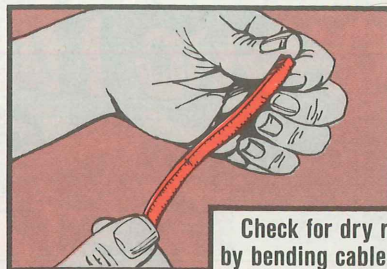
If you keep CEOI's or keylists with you, protect them with the plastic wrap from your backpack radio batteries.

Of course, keep the outside of your commo gear wiped dry. If water does get inside equipment, it's time for a trip to support where they can dry it out.

On gear covered with canvas—like the TA-312 telephone—remove the canvas from time to time during humid or rainy spells and inspect for moisture.



Dry rot will crack the insulation on cords and cables. Inspect cables for dry rot by bending them over your finger. If you spot cracks, dab silicone grease, NSN 6850-00-880-7616, on the spot. Remember, a dab'll do you—too much grease and you'll have a mess.



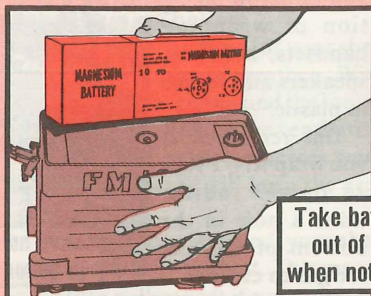
Check for dry rot by bending cable and looking for cracks

### Dry-Cell Batteries

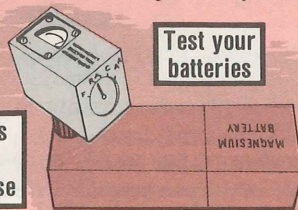
Batteries are prone to all kinds of problems in hot, wet areas. Corrosion can quickly take your batteries out of action. And if the batteries are

keeping them in a refrigerator as much as possible. If it isn't possible, try the coolest place around.

You can find out how much juice your batteries have left by testing them with the AN/PSM-13 battery tester. That can prevent your being



Take batteries out of gear when not in use



Test your batteries

in your commo gear, the gear's ruined, too. Keep batteries out of the gear when it's not in use.

Batteries also don't last long in the heat. You can give them extra life by

stuck power-less in the field. The PSM-13 won't test all dry cells, but it will handle most of the more common ones, like the BA-4386 in your backpack set.

NO SUCH THING AS A "DRY" CELL IN THIS CLIMATE!



APR 86

APR 86

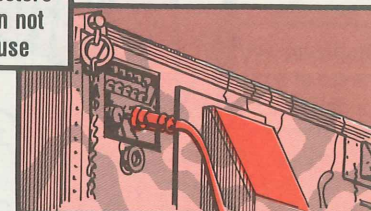
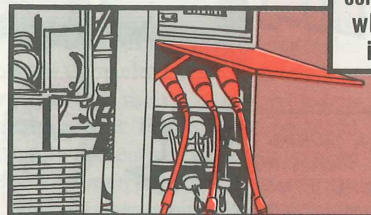
### Connector Cover Ups

The best way to protect connectors against moisture is to use their covers. But even then connectors can corrode, so you need to eye them often.

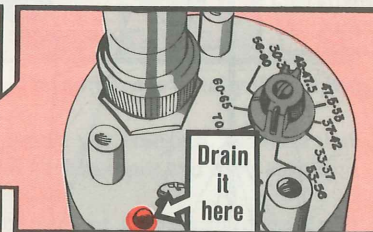
TAKE CARE OF ME!



Cover connectors when not in use



If you spot corrosion, clean it off with a plain rubber eraser if the pins are sturdy enough. Sealed connectors, like the MT-1029, can corrode too. Keep the dust cover on when not in use. Draining your MS-6707 is a must in rainy, humid weather. Drain it when the TM says—more often if needed.



Moisture is a tricky enemy and you may never stop it completely. But using common sense and these PM tips can help dry up your problem.

WITH PM, YOU CAN SLOW A FLOOD OF DAMAGE TO A TRICKLE!

MOISTURE LEADS TO COMMO-KILLING CORROSION.



PS END



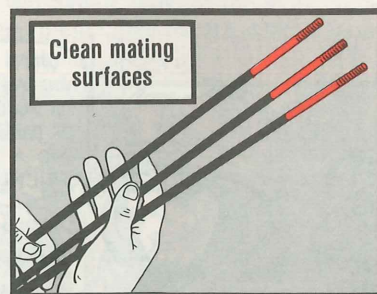
# Antenna Rx's

IF A SIGNAL ISN'T  
RADIATING,  
THERE IS NO  
COMMUNICATION!

Do your radio signals find a super-highway or a roadblock when they reach your antenna?

It's your job to knock down the barriers that keep radio signals from getting through. Here's how:

**Rub out crud** that coats copper contacts between antenna sections. A rubber pencil eraser will rub out this corrosion. Use no abrasives. They'll scrape off the copper and weaken contact.



Clean mating  
surfaces

46

APR 86

# a Tail Order

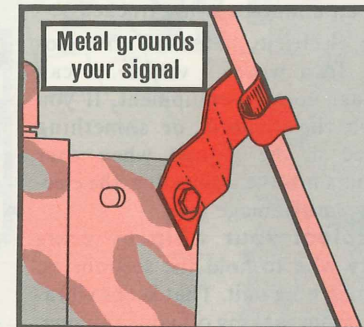
**Cap connectors** and receptacles to keep them clean and dry when you aren't using them. If you've lost a cap, improvise. For example, an M203 grenade protective cap will cover the MX-6707 matching unit's top contact.

A piece of tape will do in an emergency. Be sure to wipe off any glue on the contact before attaching the antenna.

**Dry up water** that pools inside ceramic insulator bowls. Eyeball the bowl often for cracks that let moisture in. Get cracked insulators replaced.

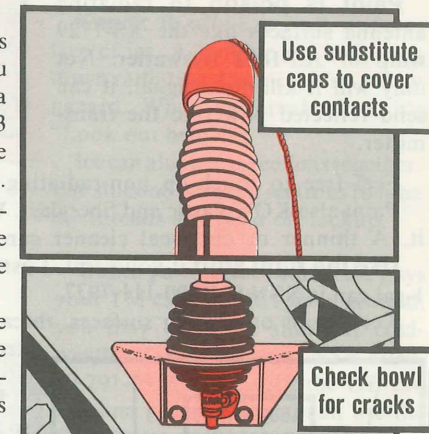
**Reflected power kills** transmitters. The antenna is usually the culprit. To stop this killer:

- Make sure an antenna is connected before you transmit. Without that escape valve, transmitted RF power comes back as input and KO's amplifier circuits.
- Never ground your antenna's radiating element. Clipping it to metal will ground it. So will letting it touch a hatch cover, a camouflage screen or another antenna.



Metal grounds  
your signal

APR 86



Use substitute  
caps to cover  
contacts

Check bowl  
for cracks

• Replace broken antennas. Using a too-short antenna mismatches it to the transmitter, creating reflected power.

**Stop the strong arm** when tightening whip sections. Snug them up by hand and then back them off a quarter turn or so. That keeps them from "freezing" together. A light coat of silicone, NSN 6850-00-880-7616, on the threads does, too. Unscrew sections once in a while to keep them from sticking together.

47



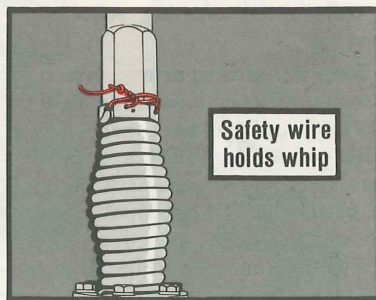
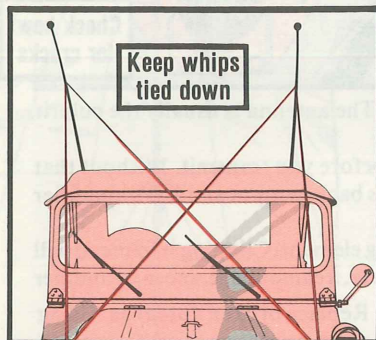
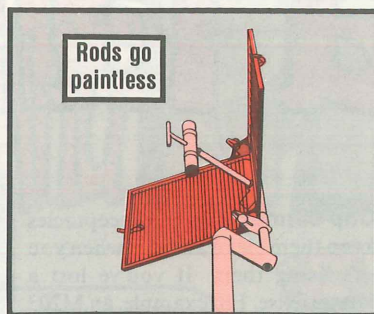
**Keep your mitts off the antenna.** You might grab it when a buddy decides to transmit. Big radio sets—like an AN/GRC-106—can leave ugly burns. The RF jolt can kill, too.

**Paint is poison** to radiating antenna surfaces like the AS-1729 whip or AS-1852 flyswatter. Not only will it kill your signal, it can send reflected power to the transmitter.

Feel free to touch-up non-radiating metal surfaces like masts, tho. Paint also KO's plastic and fiberglass. Wipe it off ASAP. If it dries, leave it. A thinner or chemical cleaner can do as much damage as paint.

**Use the right stuff** if you paint. Lusterless forest green is the ticket. A 1-gal can is NSN 8010-00-111-7937.

Keep paint off mating surfaces, threads and rubber gaskets. Mask all decals and labels before you paint.



**Forget camouflage** when it comes to those tall, skinny masts and whips. Their surface is too small for a pattern to do any good. For more on painting and camouflage, see TB 43-0118.

**Protect yourself** by clipping your AS-1729 whip under the tiedown clip before traveling. High-flying antennas can strike power lines.

In an ammo-carrying tracked vehicle, electricity can set off an explosion. In a wheeled vehicle, it can damage commo equipment. If you touch the ground, or something rooted in the ground when your antenna hits the power line, the electricity can damage you.

**Protect your whip** by using safety wire to hold the sections on the matching unit. That keeps vibrations from shaking off your antenna.

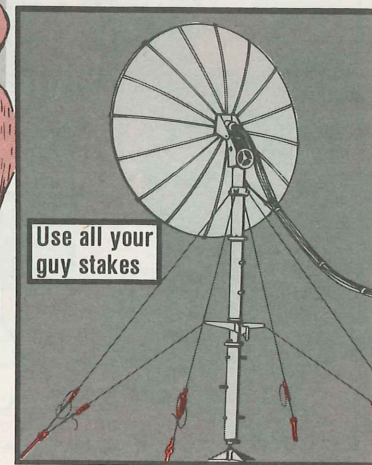
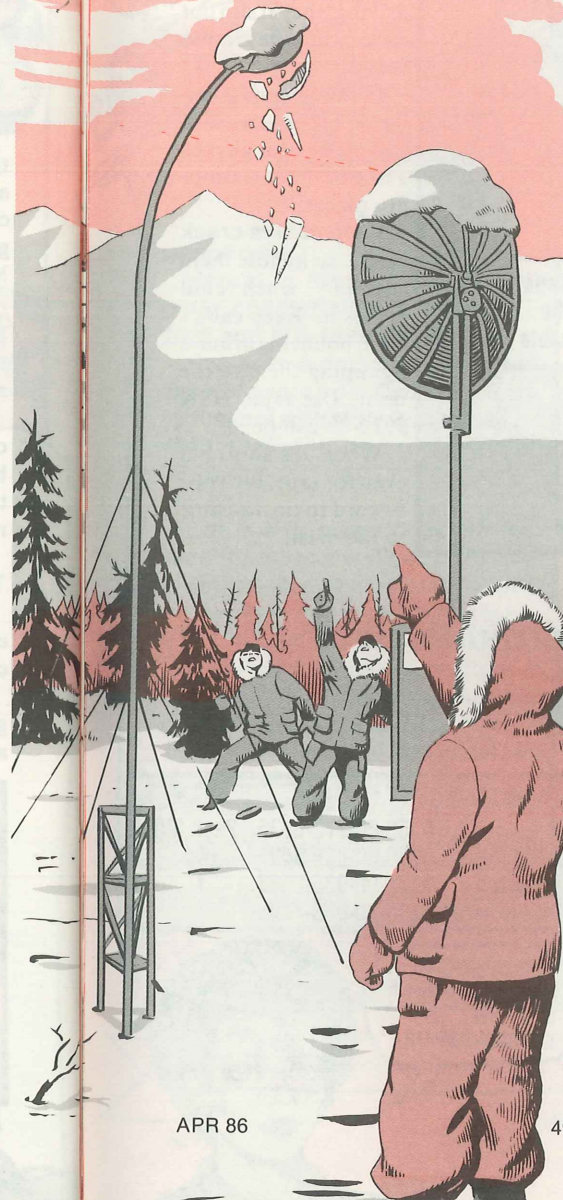
## WINTER WATCH

Antennas need extra care when Jack Frost comes nipping around.

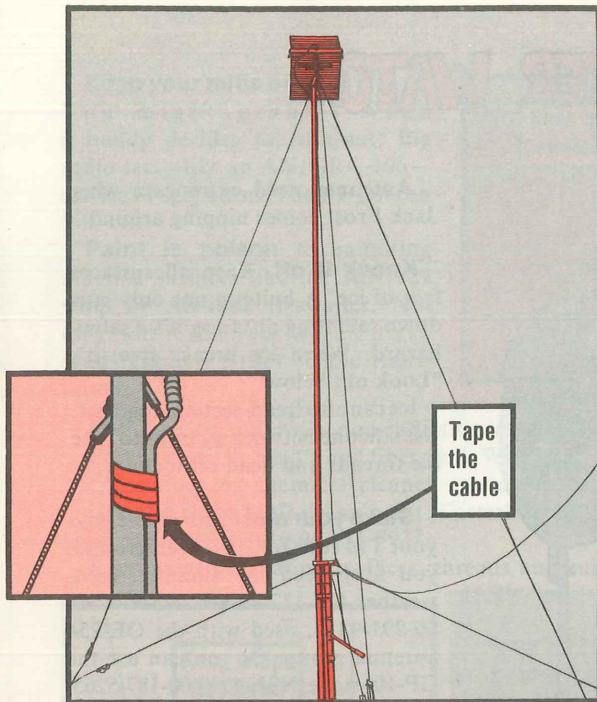
**Knock it off.** Keep all surfaces free of ice. A buildup not only cuts down radiating distance, it's a safety hazard. When ice breaks free, it's "Look out below!"

Ice can also freeze sections together. Use silicone between sections to lube the threads and head off lockup.

**Stake your mast** with all the guys your TM calls for. In frozen ground, you may need the slimmer, cold-weather GP-112 stakes, NSN 4030-00-291-9354, used with the OE-254 antenna group. Or you can use the GP-101 stake, NSN 4030-00-187-5265, from the RC-292 antenna equipment.







Watch cold-weather stakes, tho. Since they are slimmer for easier driving, they'll slip out easier when the ground thaws.

If the ground's too hard for even slim stakes, tie your guys to a tree or other stationary object.

**Cold cables crack** easily, so handle them carefully when cold settles in. Keep cables from bouncing around by taping them to the mast. Use tape, NSN 5970-00-240-0620.

When it's too cold even for tape, use rope or cord to tie the cable to the mast.

Flash! ...

## Here're Polaroid Parts

The parts you need to keep your KS-101A or KE-40B (Polaroid Model 250) camera set in the picture are:

Item	NSN	QTY
Film	6750-00-775-8835	Pack (20)
Lamps, M3	6750-00-889-3431	144
Batteries, flash	6135-00-935-2587	1
Batteries, camera	6135-00-985-7845	1

FOR OPERATION  
AND MAINTENANCE  
INFO, SEE TM  
11-6720-239-12!



## Radio Locked In?



Dear Editor,

Here's an easy way to secure radio components in their MT-1029 and MT-1898 mounts.

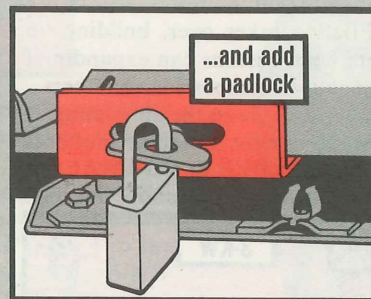
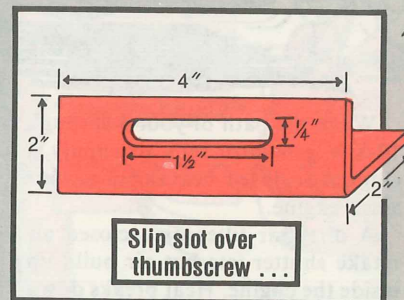
You need a padlock and a foot or so of angle iron. Order the iron by the foot with NSN 9520-00-277-4913 (2x2x1/4 inches) or NSN 9520-00-277-4911 (2x2x1/8 inches).

Cut a 4-in piece of angle for each thumbscrew. Then cut a slot in the center of one side of the angle. Make the slot 1 1/2-in long and 1/4-in wide—just big enough to slip the thumbscrew through.

Smooth off rough edges and paint the angle iron.

Drill a hole in the thumbscrew for the padlock's shackle.

To install the device, hold it so the L-shape is toward the component. Slip the slot over the thumbscrew. Put the padlock shackle through the hole and your radio is secure.

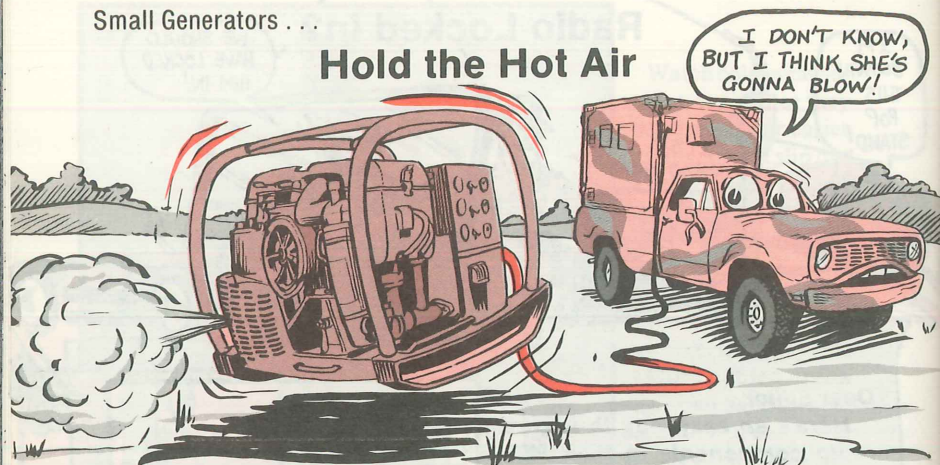


SSG Chuck Ervin  
Upland, CA

(Editor's Note: — Looks like you've locked onto a good deal. Thanks for letting us in on it.)



## Hold the Hot Air



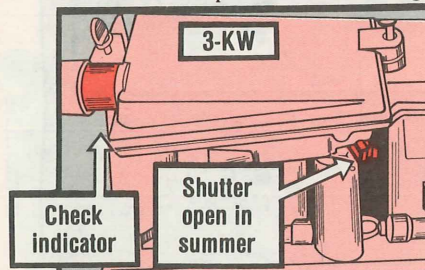
When the path of your 3-through 10-KW generator set's air supply is clogged or closed, heat can seize your small engine.

A dirty air filter or a closed air intake shutter lets hot air build up inside the engine. Heat breaks down lubricating oil.

Friction takes over, building up more heat. Pistons can expand and stop cold in combustion chambers.

Operators, keep the air coming.

Make sure the air intake shutter is in the **SUMMER** or **NORMAL** position when temps are above freezing.

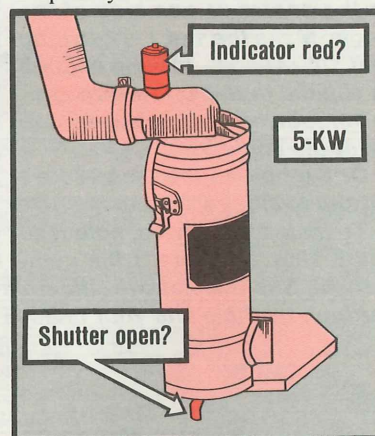


In **WINTER**, keep the shutter closed. This sends preheated air from the manifold into the combustion

chamber. It holds the cold air outside. That's perfect for cold weather operation.

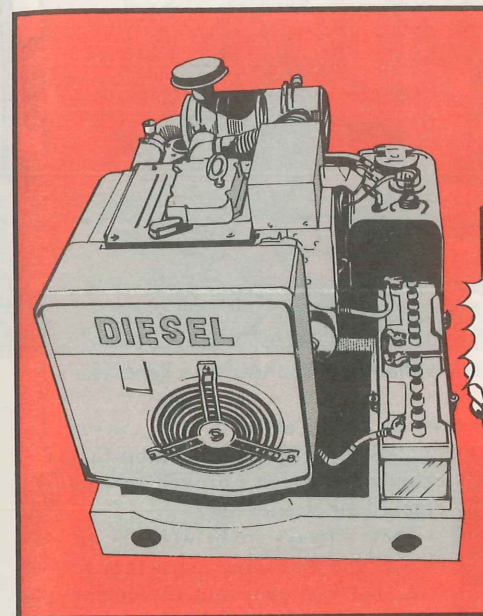
When outside temps are high, the engine doesn't want, or need, hot manifold air. It needs the cooler outside air.

Another engine-saving step is to keep an eye on the air cleaner restric-



tion indicator. It will show red when the filter is clogged or dirty. If you see red, call your mechanic.

## Train Your Operators



THIS TB IS THE PICK OF THE LITTER!

TB 600-1  
DEPARTMENT OF THE ARMY  
PROCEDURES FOR SELECTION, TRAINING, TESTING AND QUALIFYING OPERATORS OF EQUIPMENT/SYSTEMS EXCLUDING SELECTED WATERCRAFT AND AIRCRAFT. MANAGED SUPPORTED BY US ARMY TROOP SUPPORT AND AVIATION MATERIEL READINESS COMMAND

If you're tired of seeing good generators ruined by untrained—and unlicensed—operators, it's time to take another look at TB 600-1.

Among other things, it tells how to pick, train, test and qualify soldiers for generator set operation.

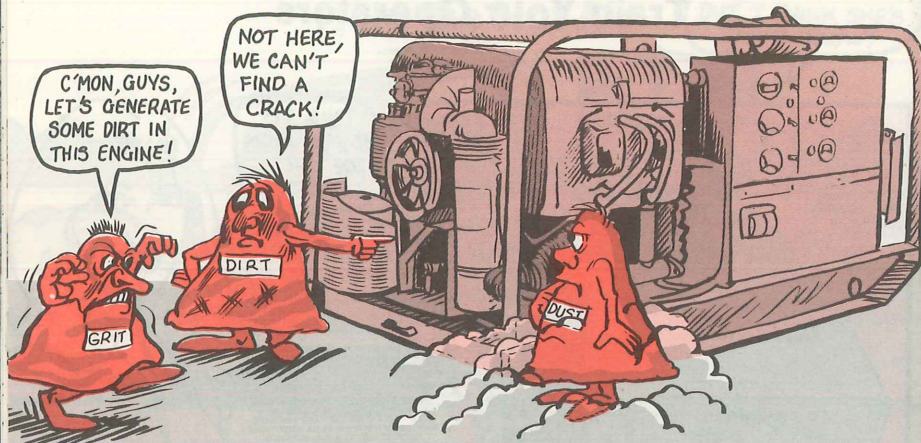
Appendix H has been added by Change 3 to the TB. It lays out a complete training program for 5-KW generator set operators. It can easily be tailored to any size generator.

## 10-KW Fastener, Spring NSN's

The turnlock fastener stud and retaining spring in TM 5-6115-275-24P's Fig 13 now have NSN's. Get the stud (Item 10) with NSN 5325-00-290-2906 and the spring (Item 11) with NSN 5360-00-621-9175.



## Keep Engines Airtight



Dust, dirt and grit inside combustion chambers can tear up a generator's hard-working engine.

Sad to say, often your air cleaner can't do a thing about it.

That's because these dirty little engine killers get into the combustion chambers through a broken, torn or cracked air cleaner duct.



These airways are between the air cleaner and the engine. When they go bad, dirt is drawn into the engine directly from the outside air.

Save your engine. When adapters or ducts go bad, get your mechanic to replace them.



REMEMBER... DUST, DIRT AND GRIT ARE ENGINE KILLERS...

... SO KEEP YOUR ENGINE AIRTIGHT!



## Use PN to Get Stud

Need a load terminal stud shown as Item 14 in Fig 29 of TM 5-6125-202-20P for the 60-KW generator? Order it by part number on DD 1348-6, using FSCM 74159, PN SC55. The RIC is S96.

## Cot Care Counts



Dear Half-Mast,

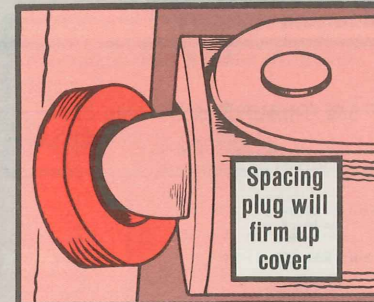
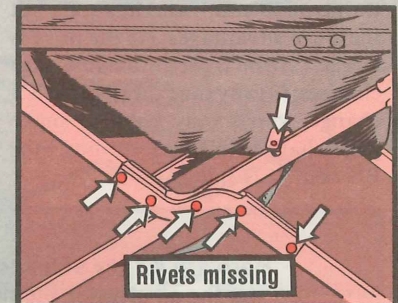
Your article on cots on Pages 62-63 of PS 396 lists all the pieces except the rivets used to hold the cot together. Can you give me a stock number for the rivets?

CW2 R.A.B.

Dear Mr. R.A.B.,

There's no NSN for the rivet, Sir. You replace a broken or missing rivet with a screw, NSN 5305-00-050-9236; nut, NSN 5310-00-934-9760, and washer, NSN 5310-00-933-8120.

If the rivet holding the folding strap is damaged, replace it with screw, NSN 5305-00-432-4251, and washer, NSN 5310-00-809-3078.



While you're at it, keep an eye on the spacing plug, NSN 7105-00-935-0434. A new cot may not need the plugs because the cover may be tight enough. Later on a sagging cover can be firmed up with the help of spacers.

Store the unused spacers in an end stick until you need 'em.

*Half-Mast*



# First the Letters, Then the Numbers



Now that you've gotten over the shock of finding no NSN's listed with the items in your new-style P manual, take another look.

The NSN's are there, but they're listed separately—and cross-referenced from part numbers.

This arrangement may not exactly thrill you to your twinkling toes, but there are advantages: (1) the print is larger; (2) you'll get automated page changes; (3) any time there's an NSN change, you'll only have to make page changes in two locations, (the PN and NSN Index).

Alpha-numeric is the name of the game. To find a part number in the part number cross-reference, remember:

- All the part numbers that start with letters are listed in alphabetical order at the beginning of the cross-reference.
- These are followed by part numbers that begin with numbers listed in numerical order, one character at a time, like so:

10689329-2  
108-0902-001  
1093  
11-018-100  
110024

Here are 4 easy steps for finding an NSN, say, for the air cleaner element for the HMMWV:

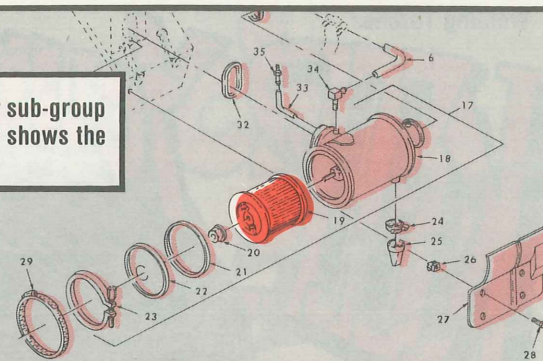
(1) Look in the Table of Contents and find the group or sub-group for the part you need.

TM 9-2320-280-20P

## TABLE OF CONTENTS (Continued)

	Page	Illustration Figure
Transmission oil cooler and engine oil cooler lines . . . . .	4-1	4
Pressure regulator valve and mounting hardware . . . . .	5-1	5
Oil filter . . . . .	6-1	6
Oil filter . . . . .	7-1	7
0302 Fuel pump and mounting hardware . . . . .	7-1	7
0302 Fuel injection pump and fuel filter lines . . . . .	8-1	8
0302 Fuel injection supply and return lines . . . . .	9-1	9
<b>0304 Air cleaner, air horn, and related parts . . . . .</b>	<b>10-1</b>	<b>10</b>
0306 Fuel tank supply and return lines . . . . .	11-1	11
0306 Fuel tank assembly and mounting straps . . . . .	12-1	12
0306 Fuel filler pipe assembly and vent lines . . . . .	13-1	13
0306 Fuel tank vent line, filter, and mounting hardware . . . . .	14-1	14
0309 Fuel filter assembly/water separator and mounting hardware . . . . .	15-1	15

(2) Turn to the group or sub-group and find the figure that shows the part you want.



(3) Locate the item in the figure. Look on the next page to find the item's part number in Column 4 of the repair parts listing.

Get down the part number and FSCM.

## Section II.

TM 9-2320-280-20P

(1) ITEM NO.	(2) SMR CODE	(3) FSCM	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
18	XAOZZ	78940	L-111DK30	AIR CLEANER ASSEMBLY, 5/16-18 X 3.75	1
19	PAOZZ	78940	W-250053	ELEMENT AIR CLEANER ASSEMBLY, 5/16-18	1
20	PAOZZ	78940	L-952A59	NUT AND WASHER AIR CLEANER ASSEMBLY, 5/16-18	1
21	PAOZZ	78940	0-615B60	GASKET AIR CLEANER ASSEMBLY	1
22	PAOZZ	78940	L-563C158	COVER, AIR CLEANER AIR CLEANER ASSEMBLY	1
23	PAOZZ	78940	L-223C24	CLAMP, RIM CLENCHING AIR CLEANER ASSEMBLY	1
24	PAOZZ	76599	52H55	CLAMP, HOSE AIR CLEANER ASSEMBLY UNLOADER	1
25	PAOZZ	78940	52H55	BOOT, DUST AIR CLEANER ASSEMBLY UNLOADER	1

18	XAOZZ	78940	L-111DK30	AIR CLEANER ASSEMBLY, 5/16-18 X 3.75	1
19	PAOZZ	78940	W-250053	ELEMENT AIR CLEANER ASSEMBLY, 5/16-18	1
20	PAOZZ	78940	L-952A59	NUT AND WASHER AIR CLEANER ASSEMBLY, 5/16-18	1
21	PAOZZ	78940	0-615B60	GASKET AIR CLEANER ASSEMBLY	1
22	PAOZZ	78940	L-563C158	COVER, AIR CLEANER AIR CLEANER ASSEMBLY	1
23	PAOZZ	78940	L-223C24	CLAMP, RIM CLENCHING AIR CLEANER ASSEMBLY	1
24	PAOZZ	76599	52H55	CLAMP, HOSE AIR CLEANER ASSEMBLY UNLOADER	1
25	PAOZZ	78940	52H55	BOOT, DUST AIR CLEANER ASSEMBLY UNLOADER	1

## Section IV.

TM 9-2320-280-20P

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

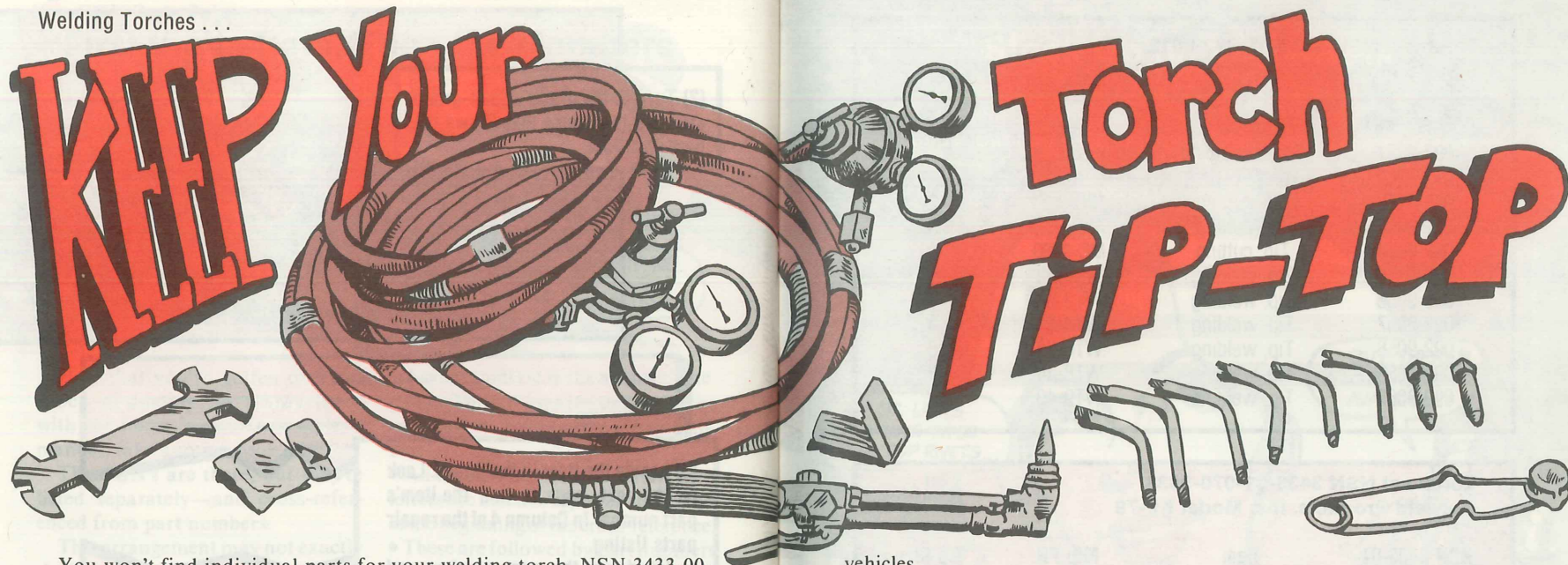
FSCM	PART NUMBER	STOCK NUMBER	FIG.	ITEM
09527	VG0089	6625-01-180-6542	132	20
78940	W-250053	2940-01-188-3776	185	13
19728	WSU-400-6UT	5975-01-196-4855	14	5
79470	H21-204	4730-00-B97-5497	66	10
27647	W6000HUV	2599-01-179-7602	185	20
90763	XE78323	5325-00-823-5999	32	7
04963	Y-9485		152	8
			159	27
			BULK	28

(4) Turn to the PN Index in Section IV.

Find your PN in Column 2 and use the NSN in Column 3.

09527	VG0089	6625-01-180-6542	132	20
78940	W-250053	2940-01-188-3776	185	13
19728	WSU-400-6UT	5975-01-196-4855	14	5
79470	H21-204	4730-00-B97-5497	66	10
27647	W6000HUV	2599-01-179-7602	185	20
90763	XE78323	5325-00-823-5999	32	7
04963	Y-9485		152	8
			159	27
			BULK	28





You won't find individual parts for your welding torch, NSN 3433-00-294-6743, listed in an SC or TM, but you can get them.

The torch set is part of torch outfit, NSN 3433-00-357-8116, covered by SC 3433-90-CL-N03. The outfit's part of the No. 1 and No. 2 Common shop sets. It is also carried on 5-ton wreckers, M88A1 and M578 recovery

vehicles.

NSN 3433-00-294-6743 covers torches from several manufacturers. But each manufacturer's torch also has a separate NSN to identify it. Here's a rundown of parts for several torches. Use the NSN for your torch to find the parts list that applies.

**Torch set NSN 3433-01-075-2134  
Smith Welding & Equip Model BIG98-510**

NSN 3433	Item	Mfg PN	Tip Size
00-018-8151	Torch, welding	MW5	
01-074-8112	Torch, cutting	MC509	
00-688-9784	Tip, cutting	MC12-1	1
00-484-2772	Tip, cutting	MC12-2	2
00-484-2771	Tip, cutting	MC12-4	4
00-017-2190	Tip, welding	MW203	3
00-017-2191	Tip, welding	MW204	4
00-017-2192	Tip, welding	MW205	5
01-085-9343	Tip, welding	MW209	9
01-074-8242	Tip, welding	MW211	11
01-074-8243	Tip, welding	MW212	12

**Torch set NSN 3433-01-075-2135  
Dockson Corp Model 5**

NSN 3433-	Item	Mfg PN	Tip Size
01-074-8113	Torch, welding	Model 5	
01-074-8238	Torch, cutting	Model C-5	
01-074-8239	Tip, cutting	C-1	1
01-074-8240	Tip, cutting	C-2	2
00-378-4344	Tip, cutting	C-4	4
01-075-2145	Tip, welding	E-3	3
01-075-2146	Tip, welding	E-4	4
01-075-2147	Tip, welding	E-5	5
01-075-2148	Tip, welding	E-9	9
01-075-2149	Tip, welding	E-11	11
01-075-2150	Tip, welding	E-12	12



**Torch set NSN 3433-01-093-8012**  
**S.S. Co Model BSM**

NSN 3433-01-	Item	Mfg PN	Tip Size
092-9051	Torch, welding	BS	
092-9050	Torch, cutting	BMC	
092-9052	Tip, cutting	10C-2-54	2
090-9053	Tip, cutting	MC-3-50	3
092-9054	Tip, cutting	MC-1-60	1
092-9055	Tip, welding	WT1-68	1
092-9056	Tip, welding	WT2-62	2
092-9057	Tip, welding	WT4-54	4
092-9058	Tip, welding	WT6-50	6
092-9059	Tip, welding	WT8-44	8
092-9060	Tip, welding	WT9-40	9

**Torch set NSN 3433-01-070-9838**  
**Uniweld Products, Inc. Model KL-79**

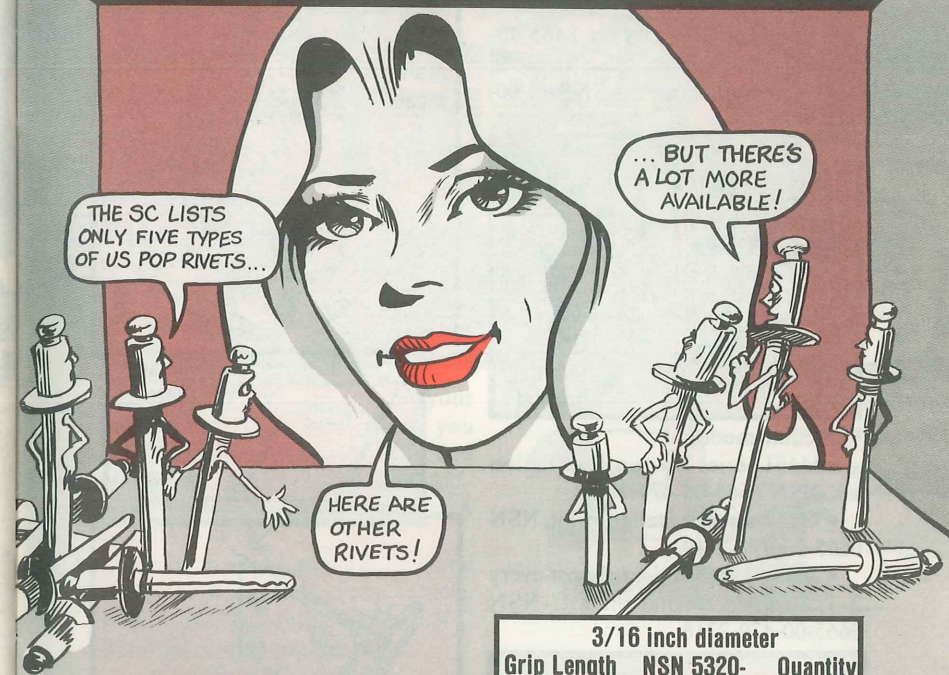
NSN 3433-01-	Item	Mfg PN	Tip Size
070-9833	Handle, welding torch	WH-79	
070-9834	Cutting attachment	CA-79	
070-9867	Tip, cutting	6290A-0	0
070-9868	Tip, cutting	6290A-2	2
070-9869	Tip, cutting	6290A-4	4
070-9870	Tip, welding	79-6	6
070-9871	Tip, welding	79-4	4
070-9872	Tip, welding	79-7	7
070-9873	Tip, welding	79-9	9
070-9874	Tip, welding	79-10	10
070-9875	Tip, welding	79-1	1

**KEEP YOUR TORCHES  
 CUTTING WITH THESE NSN'S**

## Stock Up on Pop Rivets

The hand blind riveter—"pop" riveter—in the No.1 Common shop set is handy. But there are only 5 different sizes of rivets listed in SC 4910-95-CL-A74.

Here are some other sizes of plain head, self-plugging blind rivets:



1/8 inch diameter		
Grip Length	NSN 5320-	Quantity
1/16-1/8	00-510-7823	100
1/8-3/16	00-904-4136	1
3/16-1/4	01-015-6896	1
1/4-5/16	00-052-1972	1
5/16-3/8	00-903-8778	1
3/8-1/2	00-824-4760	1

3/16 inch diameter		
Grip Length	NSN 5320-	Quantity
1/16-1/8	00-408-6073	100
1/8-1/4	00-493-4101	100
1/4-3/8	00-409-6841	100
3/8-1/2	00-408-9928	100
1/2-9/16	00-753-3809	100

Check supply catalog FSC 5320-Identification List for other sizes and head types. Your support unit has a copy.



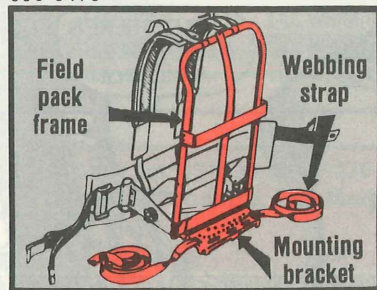
## M8 Alarm Hardware NSN Rundown

Been scratching your head and wearing out eyeballs on various TM's while looking for M8 chemical agent alarm hardware?

Here it is:

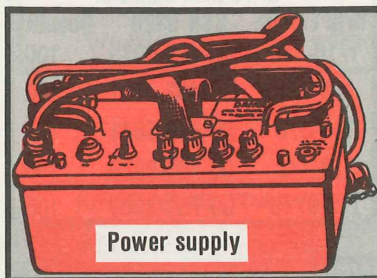
Manpack mode:

- Field pack frame, NSN 8465-01-073-8326
- Webbing strap, NSN 8465-00-001-6477
- Cargo support shelf, NSN 8465-00-001-6476



Vehicular mode:

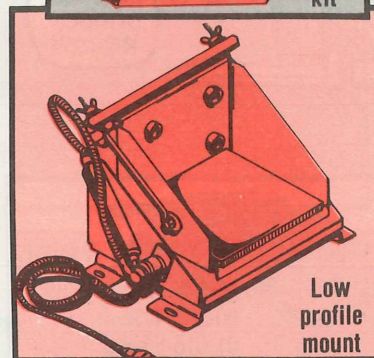
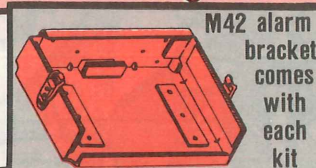
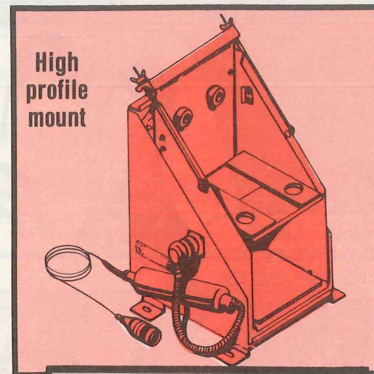
- M151-series 1/4-ton, installation kit, NSN 6665-00-479-2716
- M113-series, installation kit, NSN 6665-00-479-2719
- M44A1/A2-series (almost every 2 1/2-ton), installation kit, NSN 6665-00-479-2718



Fixed emplacement:

- M10 power supply, NSN 6665-00-859-2225

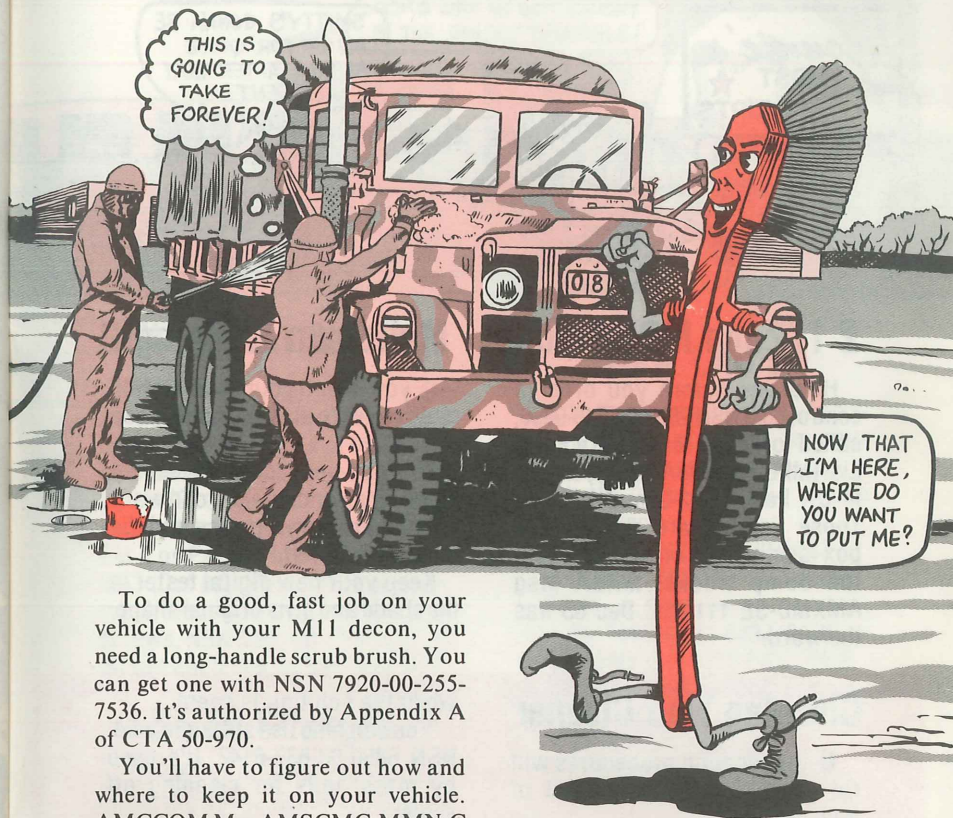
- M228 high profile mounting kit for wheeled vehicles, NSN 6665-00-859-2212.



- M182 low profile mounting kit for tracked vehicles, NSN 6665-00-110-9492

(No other vehicles have installation kits yet.)

## M11 Decon Brush



To do a good, fast job on your vehicle with your M11 decon, you need a long-handle scrub brush. You can get one with NSN 7920-00-255-7536. It's authorized by Appendix A of CTA 50-970.

You'll have to figure out how and where to keep it on your vehicle. AMCCOM Msg AMSCMC-MMN-C 041315Z Sep 85 has the word.

## Ballistic Goggle Lenses

Get replacement lenses for your sun, wind and dust goggles, NSN 8465-01-004-2893, with these NSN's:

Neutral Gray 8465-01-109-3996  
Clear 8465-01-109-3997

Use the clear lenses for protection from blowing dust and sand, the neutral gray for when you need to cut out glare from the sun.





SMITTY'S GONNA BE LAID UP FOR QUITE AWHILE AFTER THAT ACCIDENT!



## 2 1/2-ton MPL Error

Hold one before you order a control box, NSN 2520-00-740-9090, called for in the Mandatory Parts List (MPL) for M35A2 cargo trucks in DA Pam 710-2-3 and 710-2-4. Those listings are wrong. The box is only used on M34A2 2 1/2-ton dump trucks. MRSA Msg AMXMD-SE 111030Z Dec 85 has the word.

## Meltdown Warning!

If you want your AN/PSM-45 multimeter to stay in shape, keep it cool.

The sun—especially when it's aided by a windshield—can warp the plastic carrying case and the multimeter itself.

Keep your new digital tester in the shade and in its original shape.

## Getting Your Bearings

To install those new grease actuated track adjusting links mentioned on Page 4 of PS 392 on M60-series tanks, bridge launchers and M728 CEV, you've got to have some parts that are not in your -20P TM's or Para 3-3c of TB 43-0001-39-3 (Oct 84). You'll need a bearing, NSN 3120-01-153-0290, and 2 screws, NSN 5305-00-724-7222, to mount each link to the road arm.

## New LAO's

Add these new Logistic Assistance Office numbers to your list in PS 398:

6th US Army, Presidio of San Francisco

AUTOVON 586-3629/3633

COMM (415) 561-3629/3633

FT Drum, New York

AUTOVON 341-6437/6438

COMM (315) 785-6437/6438

LAO-Caribbean, Ft Buchanan, Puerto Rico

AUTOVON 740-7227

COMM (809) 793-3699

## SF 46 Changes

AR 600-55 is being changed to make the SF 46, Standard Operator's Permit, good for four years from date of issue instead of three. USASC Msg PESC-PR 171430Z Jan 86, gives the go-ahead on the four year change until the updated AR is published. Change 2 to FM 55-30, Army Motor Transport Units and Operations, has already picked up the change in the time limit.

SF 46's already issued won't be extended. The permits are good only until the date in the Date Expires block—then you renew them.

## Retread Restrictions

Running retreaded tires is OK on most vehicles. There are exceptions tho', and it's important to be aware of them.

You can't use retreads on Goers, M747 semitrailers or the front wheels of busses.

AR 750-36, Rebuild and Retread of Pneumatic Tires, lists these restrictions. Check for any other local command restrictions that may also apply.

## Cleaning Your Cleaner

New descaling procedures will rid your steam cleaner coil of built-up lime.

AMCCOM Msg DRSMC-MAT 262000Z Jul 84 told you not to use formaldehyde and hydrochloric acid to descale steam cleaners.

AMCCOM Msg AMSMC-MAT 091950Z Jan 86 is out with the new word to use inhibited sulfamic acid.

Besides making the cleaning operation safer, descaling compound inhibited sulfamic acid, NSN 6850-01-174-9548, contains an indicator that will change colors

when the solution is spent.

You can also use sulfamic acid, NSN 6850-00-637-6142. It's used by mess halls for cleaning off scale.

See your AMCCOM Logistic Assistance Representative (LAR) for a copy of the new info.


Or, get a copy by writing to:

**Commander**  
**US Army Armament Munitions and Chemical Command**  
**ATTN: AMSMC-MAT-T**  
**Rock Island, IL 61299-6000**

Or call:

**AUTOVON 793-2509/2476/2735**  
**COMM (309) 782-2509/2476/2735**





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