

Issue 454

PS

September  
1990

TB 43-PS-454

# THE PREVENTIVE MAINTENANCE MONTHLY

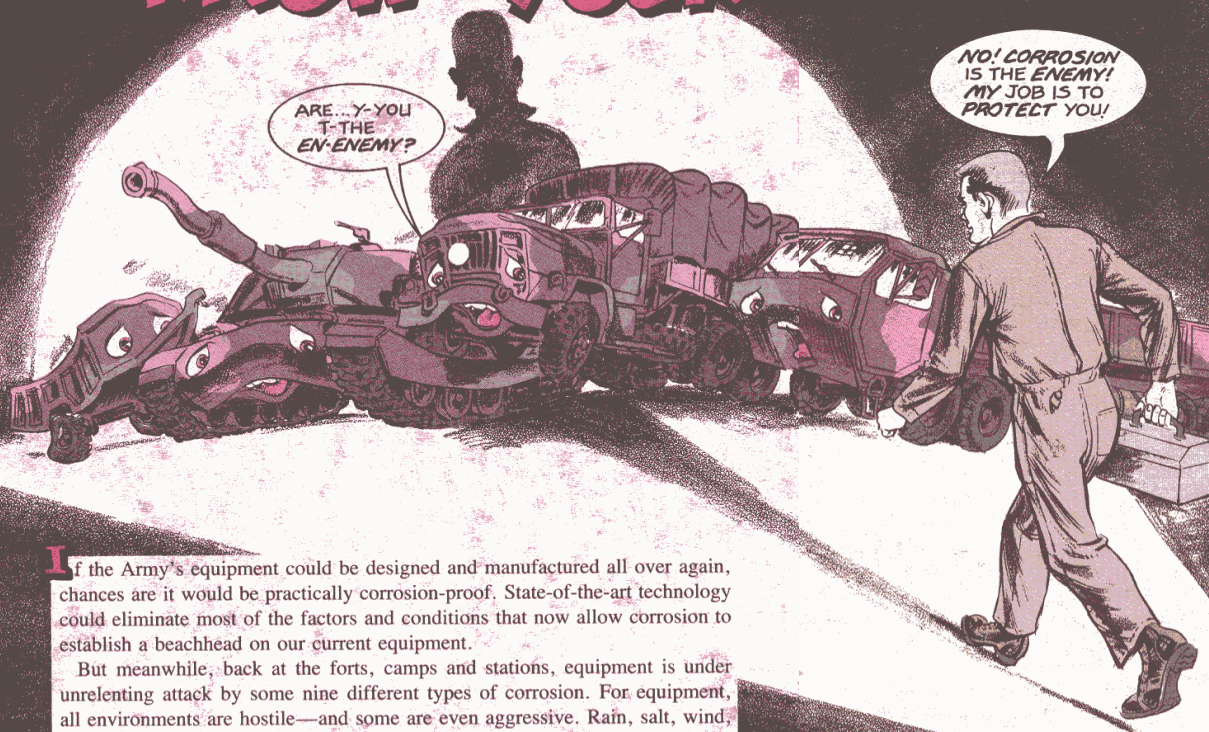
THIS CORROSION IS  
DESTROYING ME FROM  
WITHIN... CAN'T YOU  
DO SOMETHING?!

YES, I CAN! I JUST  
GOT THE WORD FROM  
CONNIE'S TV  
SHOW,  
"INSIDE  
PM!"





# KNOW YOUR ENEMY



If the Army's equipment could be designed and manufactured all over again, chances are it would be practically corrosion-proof. State-of-the-art technology could eliminate most of the factors and conditions that now allow corrosion to establish a beachhead on our current equipment.

But meanwhile, back at the forts, camps and stations, equipment is under unrelenting attack by some nine different types of corrosion. For equipment, all environments are hostile—and some are even aggressive. Rain, salt, wind, sand and such will always take their toll. The destruction is non-spectacular but enormous, and the cost is staggering.

To find, fix and fight the battle of corrosion, the Army has initiated its Corrosion Prevention and Control Program as outlined in AR 750-59. Among other things, it calls for each major command to establish an effective command level program and appoint a CPC manager.

The Center of Excellence for CPC at the US Army Materials Technology Laboratory has produced some excellent material on the subject, including THE CORROSION DIGEST. The material captures the essence of the enemy, defines it, and tells how to fight it regardless of what form it takes.

Contact them at:  
**US Army Materials Technology Laboratory**  
**ATTN: SLCMT-TMM**  
**Watertown, MA 02172-0001**  
 Or call:  
**DSN (AUTOVON) 955-5216**



THE  
**PREVENTIVE  
 MAINTENANCE**  
 MONTHLY

TS 43-PS-454, The Preventive Maintenance Monthly, is an official publication of the Department of the Army, providing information for all soldiers assigned to combat and combat support units and all soldiers with unit maintenance and supply duties. All information published has been reviewed and approved by the agency responsible for the equipment, publication or policy discussed. Application of the information is optional with the user.

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

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

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

By Order of the Secretary of the Army:

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 Chief of Staff

Official:

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

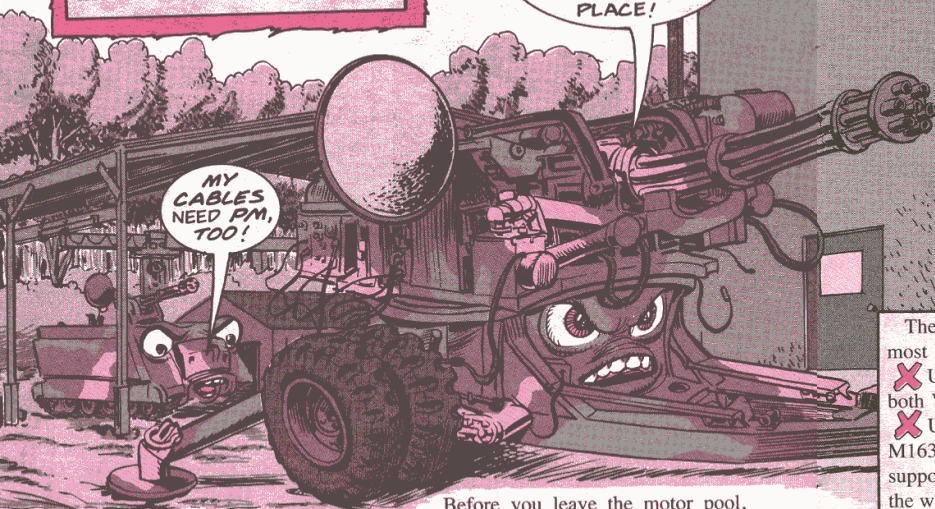
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# TIE 'EM BACK

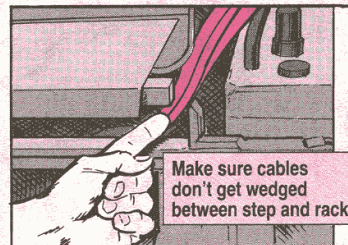
**C**ables are the only way the Vulcan sends power to its components. If a cable gets ripped or twisted, something like a radar receiver-transmitter has no juice. A Vulcan without radar is a useless Vulcan.



- ✗ Distribution box cables on both Vulcans. Tie them together.
- ✗ M163A1 radar cables that run under the gunner's step. Tie them back so they don't get wedged between the step and radar rack.

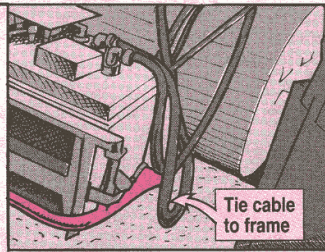
There are certain cables that are the most likely victims:

- ✗ Unit 2's (receiver-transmitter) on both Vulcans. Tie them together.
- ✗ Unit 5's (power supply) on the M163A1. Tie them to the power supply support frame. That keeps them out of the way of anyone working around the ammo drum.



Before you leave the motor pool, eyeball your Vulcan for loose, dangling cables that can snag something or someone. If you spot any, tie 'em back with strapping, NSN 5340-00-081-5169, and stud buttons, NSN 5325-00-027-0191.

Just tying the cables together will usually keep them out of the way. But if you do need to anchor a cable to something, be sure it's something that doesn't move and is out of the way.

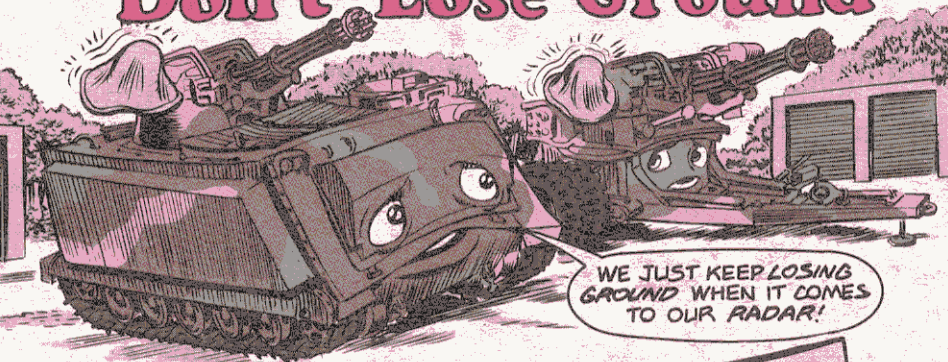


## Clean 'em, Too

Help the cables last longer by cleaning off dirt and grease that lead to dry rot. A damp cloth will take care of most dirt and grease. A mild laundry or dish detergent takes care of tougher problems.



# Don't Lose Ground



WE JUST KEEP LOSING GROUND WHEN IT COMES TO OUR RADAR!

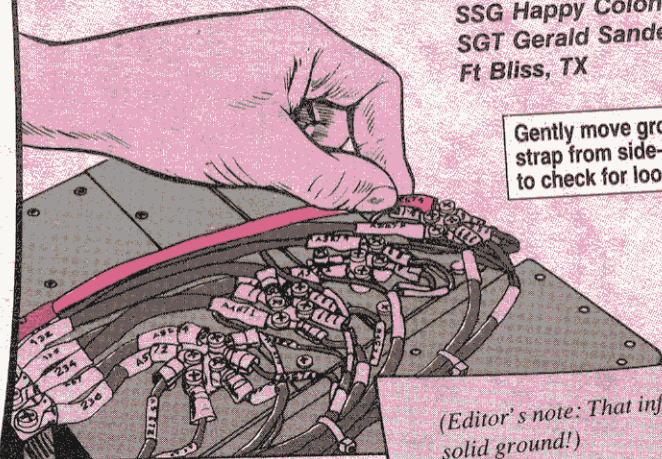
Dear Editor,

The screws that hold the Vulcan radar power supply's ground straps vibrate loose. Without a good connection, the power supply loses its ground. Then it quits working and you have no radar.

Mechanics can save troubleshooting time by first checking for loose grounds when the power supply goes out. Open the power supply. Grip the straps at the screws with your thumb and two fingers. Gently try to move the strap side-to-side. If it moves, grab a screwdriver and tighten the screw

SSG Constance Dickert  
SSG Happy Colon  
SGT Gerald Sanders  
Ft Bliss, TX

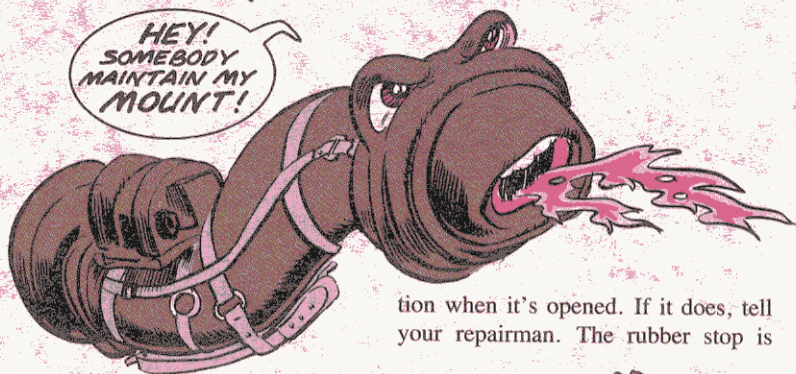
Gently move ground strap from side-to-side to check for looseness



(Editor's note: That info's on solid ground!)

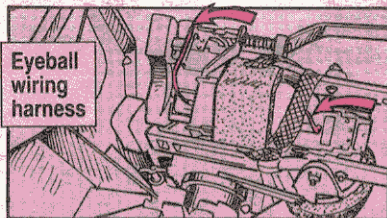


# Mount Up on Mount Woes



**A** bad M175 mount can leave you with a large amount of trouble when you get ready to make your Dragon roar. But a couple of checks and a little care keep your mount healthy.

During BEFORE PMCS, eyeball the mount's wiring harness for bare spots.

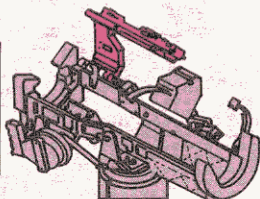


They cause shorts that can short out the firing mechanism. Report spots to your repairman. He can have a wire harness guard, NSN 5975-01-190-3948, installed that will help stop spots.

Also make sure the tracker mount won't swing past the straight-up posi-

tion when it's opened. If it does, tell your repairman. The rubber stop is

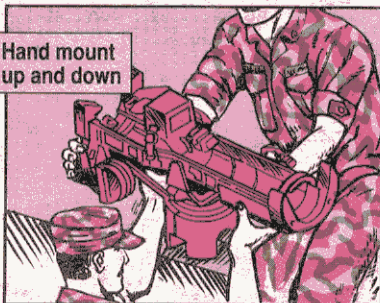
If cover swings past straight-up position, report it!



working its way off. If it comes completely off, the mount's brackets will be damaged when the mount's flung open.

Hand—do not toss—the mount on and off a vehicle. Even a good catch

Hand mount up and down



can knock off the mount's shock absorber. That spells NMC for the mount.



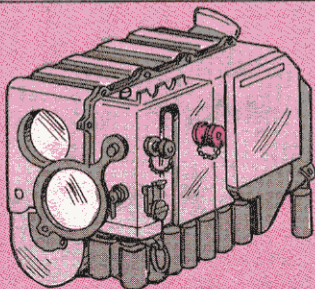
# G/VLLD Buster

The Ground/Vehicular Laser Locator Designator (G/VLLD) shoots powerful invisible rays that can blind you.

That's why there's an inhibit plug. It prevents the G/VLLD from being fired accidentally. But there are a few things you need to remember about the inhibit plug.

Leave the inhibit plug on . . . except when you're actually going to fire . . . to prevent blinding surprises. Always assume the G/VLLD is dangerous, even with the inhibit plug installed.

**Keep inhibit plug on all the time the G/VLLD's not being fired. Don't put it on or take it off unless G/VLLD is off.**



**DON'T  
PULL ME  
OFF!**

**YOU  
COULD GET  
HURT!**

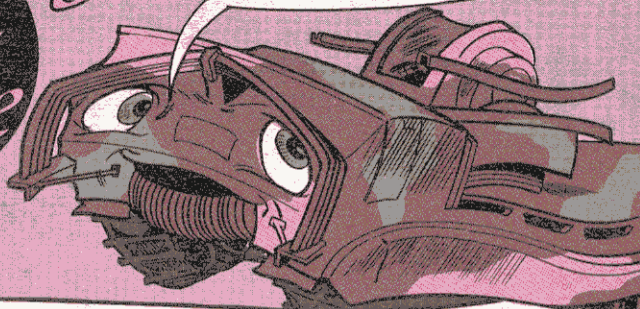
But always make sure the G/VLLD is off before you put on or take off the plug. If you forget, when you plug in the plug, there will be arcing. The 111 connector pins will be burnt. Burnt pins damage sensitive components like the wiring harness, power supply card, and even the whole G/VLLD.

Carefully install the plug, too. If you align the plug wrong or force it on, you've created a high voltage hazard. Line it up and plug it in. If it doesn't slide home easily, something's wrong.



# Covering Your Bustle

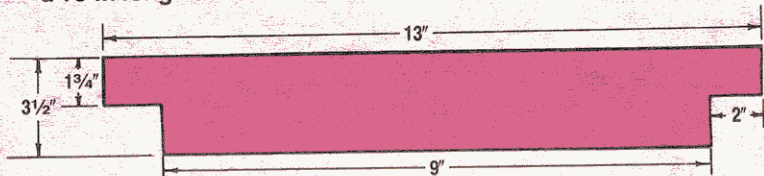
HERE'S A WAY TO INSURE  
YOU'RE NEVER HURT BY  
THE BUSTLE WHILE WORKING  
IN THE MOUNT!



Dear Editor,

Modifications to the Chaparral have added 300 pounds to the bustle. The bustle latches can't support the added weight safely. The latches bend and eventually give. The bustle can crash down on the repairman's legs.

We've made a safety brace that insures the bustle stays up. Cut a 13-in long 2x4 like this:



When you're working inside the mount, position the brace on the side next to a latch. If the latch gives, the brace holds up the bustle.

Position brace here



Sal Manfredi  
Ft Bliss, TX

(Editor's note: A rather bracing good idea that will prevent serious accidents . . . until you order and get the new support arm, NSN 1430-01-141-1189, and spring pin, NSN 5315-00-844-3940. They will support the heavier bustle just fine when the arms are fully extended and the locking knobs are tight.)



MLRS...

# Hydraulic Unit PMCS Vital



**9** It's a good bet, MLRS mechanics, that you're overlooking an extremely important service on the hydraulic servicing unit.

This piece of equipment lets you maintain the hydraulics on your vehicle and add clean fluid when necessary.

That is, the fluid will be clean if you change the servicing unit's three filters every quarter. You won't find that PMCS in the TMs for the carrier or the launcher. It's in TM 9-4935-646-14-1.

Eyeball Paragraph 2-11.1 for the instructions.

Here are the parts you'll need:

Item	NSN
Suction line filter element	4330-00-732-6535
Packing	5330-00-579-7918
Check valve packing (2)	5330-00-584-1840 & 5330-00-585-7723
In-line filter element	4330-01-232-9959
Packings (2)	5330-00-729-4992 & 5330-00-804-5695
Air filter element	1650-00-481-3119
Packing	5330-00-585-7723



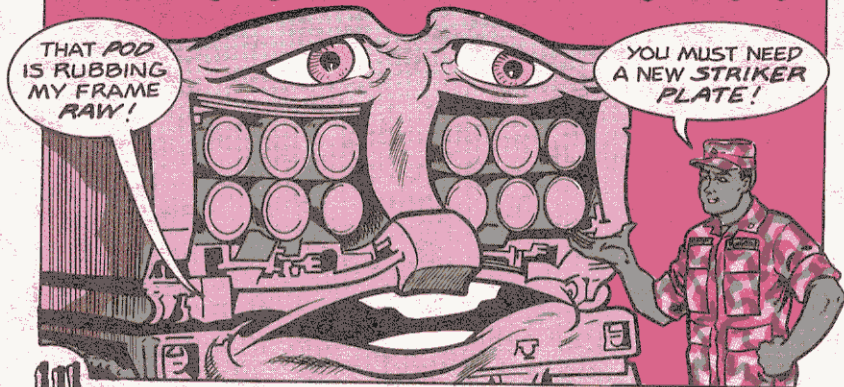
NEVER OVERLOOK THE OTHER CHECKS AND SERVICES IN THE UNIT'S TM. THEY MAY PREVENT PERSONAL INJURY!

## NATO Slave Cap for M1 Tanks

**G**et the dust cover for the NATO slave receptacle on M1-series tanks with NSN 5340-01-296-8605. Do not use NSN 5935-01-012-9820 unless you need the connector assembly also.



# Check Striker Plate Wear



**W**orn striker plates mean launcher frame damage, unless you act quickly.

Eyeball the plates in the launch pod/container (LP/C) during loading or unloading.

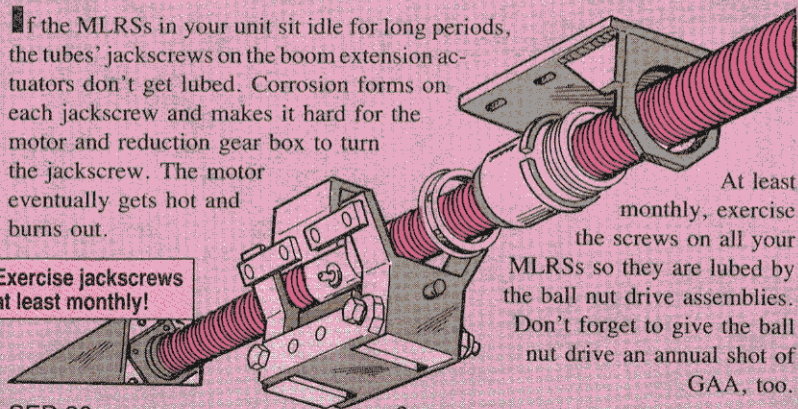
The LP/C striker plates are mounted on the launcher/loader module to prevent the pods from gouging the launcher frame. The plates wear down pretty quickly, and some get broken off in rough service. Once the plates are missing or badly worn, pod movement begins to wear on the frame.

If you notice worn or missing plates on your launcher, report it to your support unit. They'll fix it right up.

## Lube Tube

**I**f the MLRSs in your unit sit idle for long periods, the tubes' jackscrews on the boom extension actuators don't get lubed. Corrosion forms on each jackscrew and makes it hard for the motor and reduction gear box to turn the jackscrew. The motor eventually gets hot and burns out.

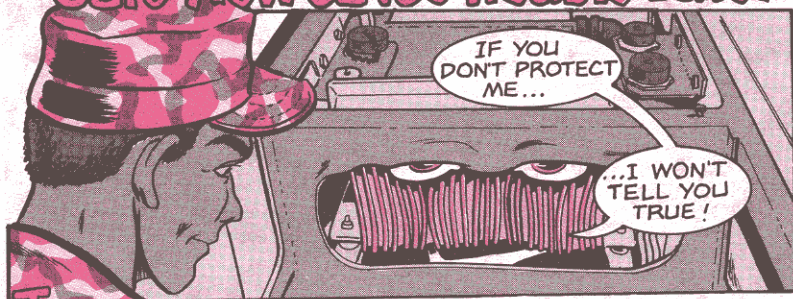
**Exercise jackscrews at least monthly!**



At least monthly, exercise the screws on all your MLRSs so they are lubed by the ball nut drive assemblies. Don't forget to give the ball nut drive an annual shot of GAA, too.

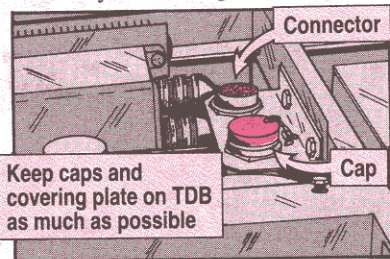


# Care Now Saves Trouble Later



**T**ake a little time now with the Bradley's turret diagnostic panel (J1-J4) and ammo sensor and save lots of trouble later for mechanics and crews.

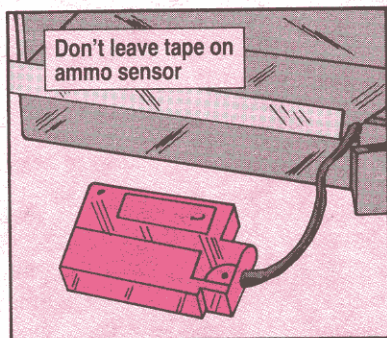
The four connectors on the panel patchboard are sensitive. If you leave the caps off, sand gets in the connectors. When mechanics do STE-MI/FVS tests, sand causes poor connections. Then you get bad readings. You think you've got electrical problems when you don't. It's hard to clean out the sand. Best advice: Put the caps back on when you're through running tests.



If the patchboard's covering plate is left off, someone can step on the patchboard, ruining a connector. Make sure the plate's in place before the Bradley leaves the motor pool.

## Sensor Sense

The ammo sensor is sensitive, too. If you tape over the sensor for Multiple Integrated Laser Engagement System (MILES) training, cover the sensor with paper before taping. That keeps adhesive off the sensor that will attract dirt. A dirty sensor won't sense well.



Remove the tape at the end of training. If the sensor's left covered, the Bradley will flunk the fire inhibit check during BEFORE PMCS.

Never use an empty ammo compartment for storage. Things bounce around in the compartment and... C-R-A-C-K... the sensor's ruined.

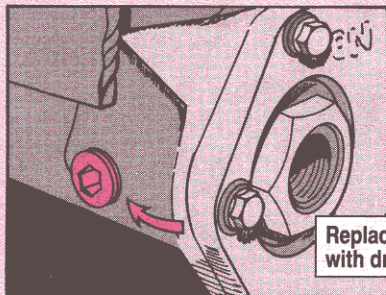
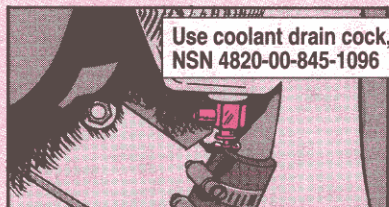


# Catching the Coolant



**S**aving and reusing coolant is good business, but it can be hard work unless you know the secret.

The secret? Replace the pipe plugs in the coolant lines with drain cocks, NSN 4820-00-845-1096.

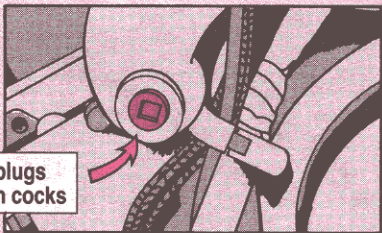


Connect a piece of  $\frac{3}{8}$ -in ID hose—about 5 or 6 feet of NSN 4720-00-177-0671 is plenty—to the drain cock. Then catch the coolant in a clean bucket.

Vehicles using the M548 chassis can route the hose out the engine or hull access panels.

Don't forget there's a drain cock in the engine oil cooler housing. Use the hose and bucket there, too. Keep the coolant clean until you're ready to reuse it.

O'course, make sure the coolant is worth saving. Check out TB 750-651 for the limits on freeze protection.





CUCVs (Except the M1009)...

# Wheel Bearing Wrench Fix

YOU LOOK  
DIFFERENT!  
YOU MUST  
BE NEW!

YES!  
MY PINS  
ARE NEW AND  
IMPROVED!

## Here's how to make it:

- ✚ Grind off the old pins.
- ✚ Use a center punch to start a guide hole in the pin.
- ✚ Drill out the pin with the No. 3 drill. Drill all the way thru the wrench.
- ✚ Thread both holes using the 1/4-28 tap.
- ✚ Grind the threads off about 3/4-in of the threaded end of both bolts.
- ✚ Cut off the heads of the bolts. Then cut a slot in the headed end of each bolt for a screwdriver slot.
- ✚ Screw in the bolts from the backside until about 3/16-inch sticks out the face of the wrench.

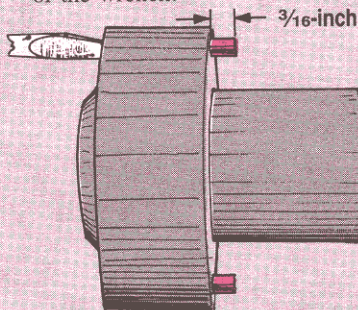


**T**he CUCVs front wheel bearing wrench, NSN 5120-01-180-0558, is a real dud. It won't hold up. Just a few turns when removing the wheel bearing nut, and the pins wear out.

You can buy a new one for \$44.00, or make the old one good as new by replacing the pins.

## Here's what you need:

- ✚ Two 1/4-28 capscrews, NSN 5305-00-068-0515.
- ✚ No. 3 drill bit, NSN 5133-00-189-9248, from the No. 1 Common shop set.



That's all it takes to make a sick wrench well.



CUCV...

# Voltmeter Needs Decal



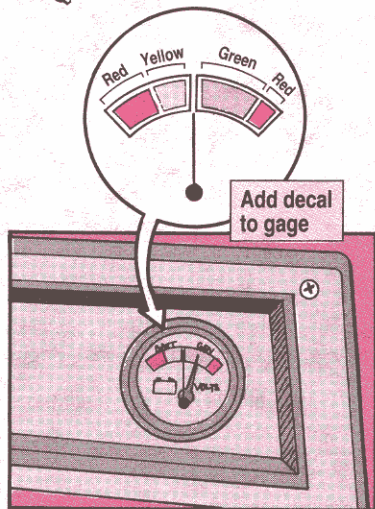
If the voltmeter on your CUCV always shows overcharging, it may be the wrong voltmeter on your truck.

Some early model CUCVs have a voltmeter designed for the M1010 ambulance's 200-amp electrical system. It works fine on the ambulance, but it gives a high reading on all other models.

Check your truck's identification number (VIN). If the last eight digits are lower than EF307276 on cargo models or EF106110 on M1009s, the truck came with the 200-amp voltmeter.

Correct it with an overlay decal that extends the green range of the voltmeter. Order the decal from:

**US Army Tank-Automotive Command**  
**ATTN: AMCPM-TV-LC**  
**Warren, MI 48397-5000**



Be sure to give them your name, full address and tell 'em how many you need when you order.

## CUCV U-joint NSN

Use NSN 2520-00-508-1566 for the U-joint kit for the rear propeller shaft on all CUCVs except the M1009. You get the wrong part if you order the NSN in the -20P TM.



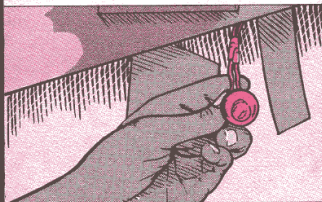
# MAKE NEW LIGHT FIT RIGHT



**W**hen you get in a new rear clearance marker light, NSN 6220-01-276-0635, for your CUCV ambulance, you'll get one that's too big to fit the holes. But with a few small changes, you can put it on.

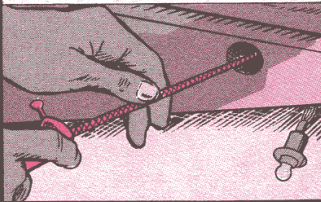
**1.** Take off the old light. Keep the screws.

**2.** Pull out (twist counterclockwise) the wiring harness bulb connector.

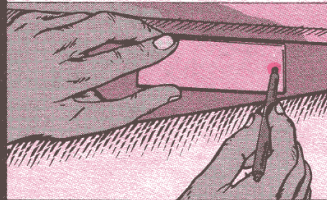


**3.** Toss the gasket and light.

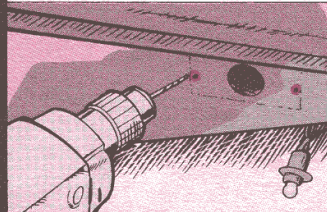
**4.** Enlarge the light center hole to 1 3/8 inches using a round file, NSN 5110-00-234-6551, from your General Mechanics tool set.



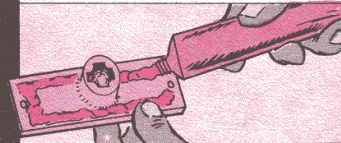
**5.** Use the new light as a template to mark the location of the holes for the mounting screws.



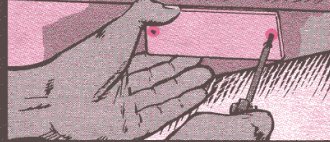
**6.** Drill 1/8-in holes using drill bit, NSN 5133-00-227-9650, from the No. 1 Common shop set.



**7.** Put a light coating of RTV sealant, NSN 8030-01-159-4844, on the back of the light cover.



**8.** Mount the light cover on the ambulance with the two self tapping screws. If the original screws are lost, use screws, NSN 5305-01-239-9265.



**9.** Connect the wiring harness and you're good to go.

## Sticky Rearview Mirror Fix

**S**ome vehicles, like the CUCV, come with rearview mirrors mounted on the windshields. The mirror falls off when heat, cold and vibration loosen the mirror's mount. There's no need to replace the mirror if it's not broken. Stick the mount back on with some tough adhesive. It comes in two sizes:

Size	NSN 8040-
1.75 oz	00-221-3813
1 qt	00-634-7121



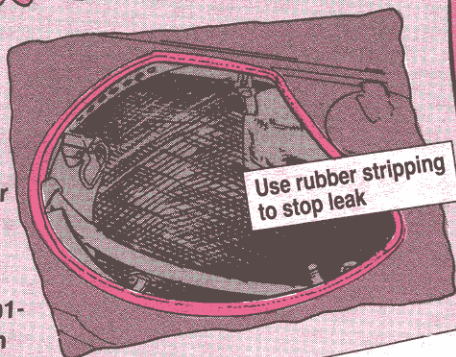


# Seal Keeps Out Water

Dear Editor,  
Water leaks into the cab from the turret area on our HMMWV armament carrier. To keep water out, we use the same rubber stripping that's used on the air cleaner assembly. It gives a better seal than what the TM calls for.

Just order by NSN 5330-01-190-2227 and put it on with RTV sealant.

SGT Wolf  
Ft Lewis, WA



(Editor's note: It's a tight seal to keep the water out!)

# Soft Top Door Fix

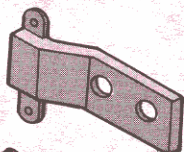
Dear Editor,

We've had trouble with the hinge screws on the doors of our soft top HMMWVs. The screws loosen and the door hits the frame. This tears the non-metallic door seal.

To keep screws tight, we added a lock washer, NSN 5310-00-527-3634, behind the hinge screws. This keeps the screws tight and stops torn seals.

Thought you might want to pass on the tip.

CW3 Juan Cruz-Roque  
PRARNG



Add lock washers,  
NSN 5310-00-527-3624

(Editor's note: You bet I do. All I would add is to replace the hex nut with self-locking nut, NSN 5310-00-241-6658.)



# Rear Door Grab Hold

If you use two hands and a little back muscle to pull down the M966, M1025, M1026, M1036, M1043-46 HMMWV's rear cargo door, you could bend or break the gas springs.

Save your back and the gas springs by getting your DS canvas shop to make a "grab-hold loop" that fits on the rear cargo door strap. All the info they need to make the grab loop is on Page 3-22, Para 3-70, of TB 43-0001-39-8 (Jan 90).

You mechanics have to remove the rear cargo door strap and send it to DS.



## HMMWV Light NSN

Use NSN 6220-01-308-5630 to get the high beam light diode. The NSN shown for Item 7 in Fig 32 of TM 9-2320-280-20P is wrong.



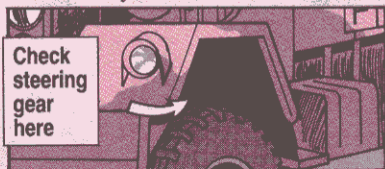
# Steer Clear of Loose Steering Screws

YOU'RE  
ALL OVER THE  
ROAD! DO YOU HAVE  
A SCREW LOOSE  
OR SOMETHING!?

NOT ME!  
IT'S MY  
STEERING  
GEAR!

**L**oose mounting hardware on your 5-tonner's steering gear puts it only a short turn away from steering failure. If your truck makes a wrong turn—or no turn at all—you could turn up in the hospital.

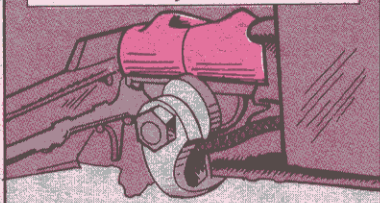
You need to check the steering gear screws on your M809- or converted



M39-series truck during semiannual service. Get a buddy to help. Pull the truck's parking brake ON and put the transmission in NEUTRAL. Have your buddy turn the steering wheel back and

forth while you eyeball the steering gear bracket.

If the bracket wiggles or wobbles, it's loose. Call your mechanic!

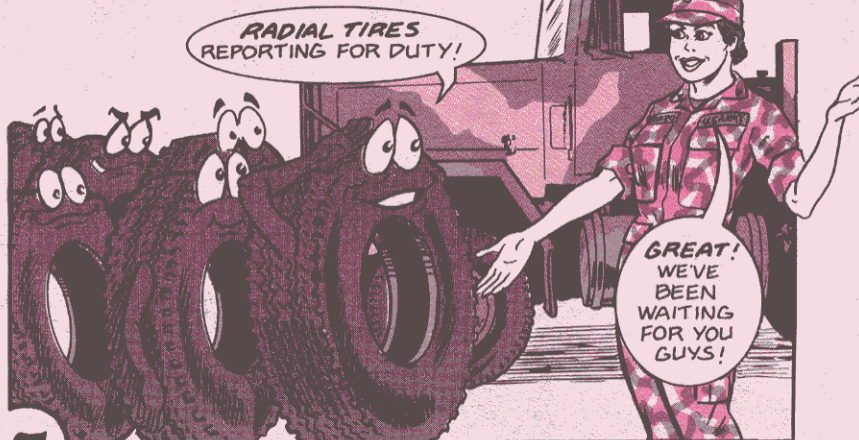


You can head off trouble on the unmodified M39s by eyeballing the steering gear bracket. Shiny spots around the nuts or the bracket show they're loose.

Get your mechanic to torque bracket nuts to 140-170 lb ft.



# Radial Tire Change Over



**T**he next time your M915 truck tractor needs tires, you can get your CO's OK to replace the bias ply tires with radials. A radial tire and tube costs about \$50 more, but radials last longer and help the truck get better mileage.

Get the new 10.00/9.75-20 radial tire and flap with NSN 2610-00-163-0420. The inner tube comes with NSN 2610-00-029-0562. Be sure to use Project Code BB4 on your supply requests.

Never replace just one tire on a truck with a radial. Bias ply and radials do not mix. Replace all the tires, including the spare, when you make the change.

If the bias ply tires and tubes you take off still have some miles left in 'em, save them for your other M915s or M872 semitrailers.

## Parking Brake Kit

**N**o need to order parking brake shoes separately for a 2½- or M39-/M809-series 5-ton truck. Now you can get a shoe kit with NSN 2530-01-281-5221.

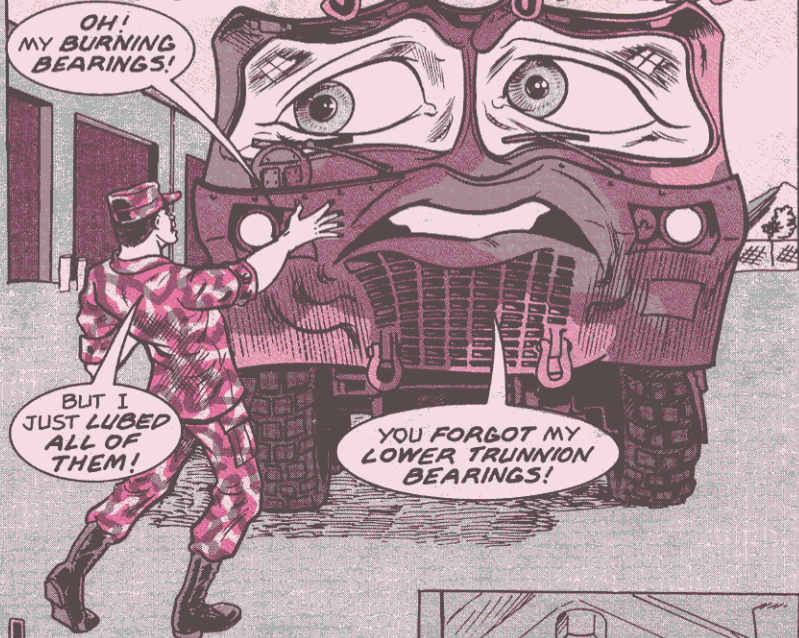
## 2½- and 5-Ton Truck Door Seal

**T**he NSN for the weather seal on the cab door of M44-, M39- and M809-series trucks has changed from NSN 9390-00-737-3291 to NSN 9390-01-285-9623.



HEMTT...

# Lube Bearings in Right Places

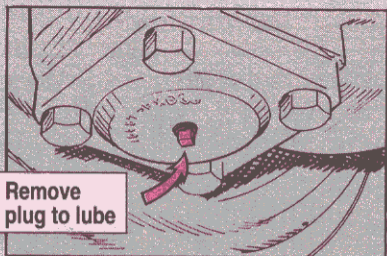


**L**O 9-2320-279-12 is short on info on lubing the upper trunnion bearings on the HEMTT's front axles. And it doesn't cover the lower bearings at all.

Both the upper and lower bearings need at least 8-10 shots of lube, quarterly, from your handy, dandy grease gun.

On the upper bearings, just pump in 8-10 squirts of lube into the fitting on top of the ball sockets.

To lube the lower bearings, remove the pipe plug on the bottom of each ball socket. Screw in lube fitting, NSN 4730-00-050-4208. (If you don't have a lube fitting, remove the upper ball

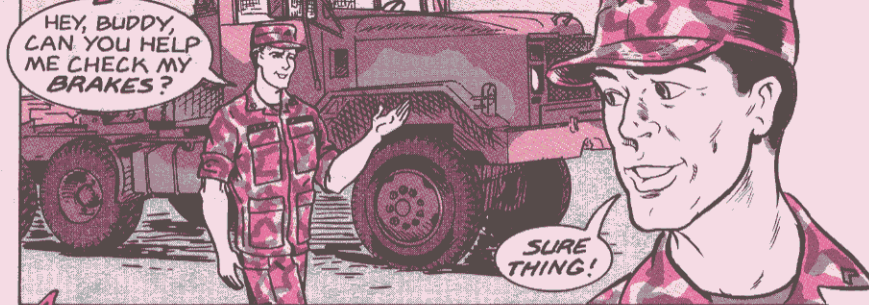


joint fittings and use them. Be sure to put 'em back when you're done.) Pump in 8-10 squirts of lube. When you've finished, replace the lube fitting with the pipe plug. The fitting could get broken off in rough country.

Save the fittings for the next time a HEMTT's lower trunnion bearings need lube.



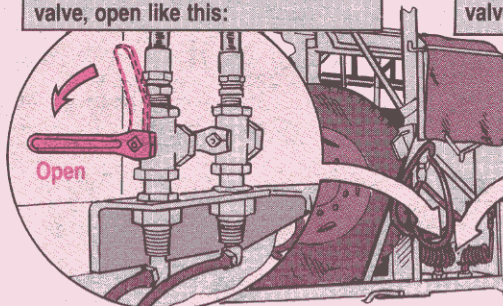
# Open Brake Valves



Air brake valves on these 5-ton truck tractors must be open for the semitrailer's brakes to work.

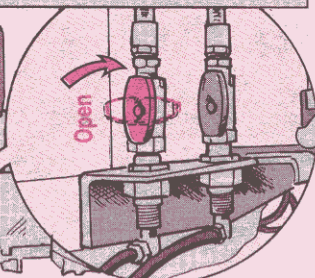
## LEVER-TYPE VALVE

If your tractor has the lever-type valve, open like this:



## HANDLE-TYPE VALVE

On handle-type valves, turn the valve handle up to open, like this:



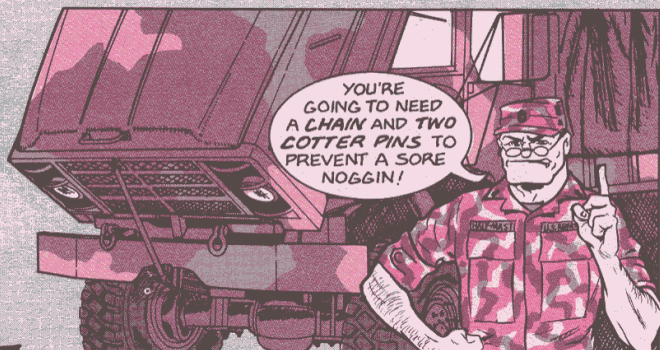
Make double-sure the air brakes on your semitrailer are hooked up right before you hit the road. Have a buddy watch as you start out of the motor pool. Drive about 5 MPH, then apply the brakes.

If the semitrailer tires do not slide, better check the valves again.








# Keep the T-Bar in Place



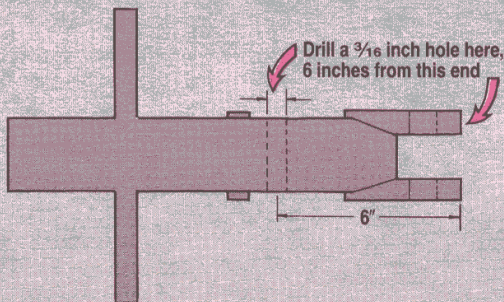
The chain on the T-bar hood support for these 5-tonners comes off and gets lost. The chain is not listed in Fig 201 of TM 9-2320-272-20P and procedures for fixing the T-bar are not in the -20 TM.

Here's what you need:

Item		NSN
Chain		4010-00-585-2108
Cotter pin		5315-00-013-7238
Cotter pin		5315-00-187-9370

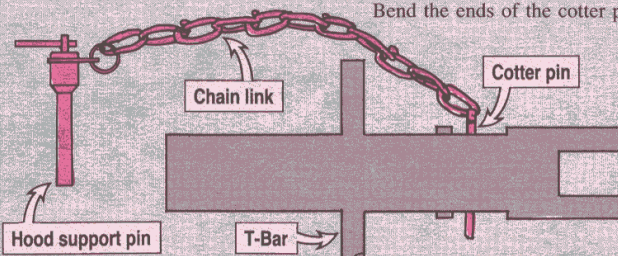
Here's how to keep the chain and hood support pin in place:

- 1 Remove the T-bar from the hood assembly. Toss the old cotter pin.



# T-Bar in Place

- 2 Remove the old chain from the hood support pin.
- 3 Install ten links of chain, NSN 4010-00-585-2108, to hood support pin.
- 4 Put cotter pin, NSN 5315-00-013-7238, thru the chain link and T-bar hole. Bend the ends of the cotter pin over.



- 5 Place the T-bar back on the M939's hood assembly with the existing pin and washer. Put in new cotter pin, NSN 5315-00-187-9370.

## Protect Wiring Harness

CHECK THE WIRING HARNESS UNDER THE FRONT FENDER TO MAKE SURE IT'S NOT RUBBING AGAINST THE AIR CLEANER PIPE.



Vibration and vehicle movement cause the wiring harness to rub against the air cleaner pipe on your 5-ton truck. This wears thru the protective wrap around the wiring harness. Enough rubbin' causes an electrical short.

Eyeball the wiring harness. See any rub marks?

If so, prevent an electrical short by wrapping the wiring harness with electrical tape. Then use a tie strap, NSN 5975-00-451-5001, to keep the wiring harness away from the air cleaner.



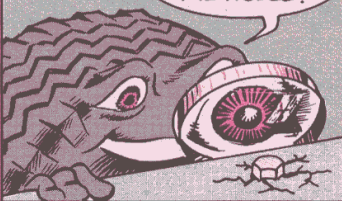
# SPARE TIRE CARRIER FIX

Vibration causes the support plate to crack around the bolts holding the mounting bracket on the spare tire carrier on M915-series tractor trucks. Cracks weaken the support. The spare tire carrier can break off.



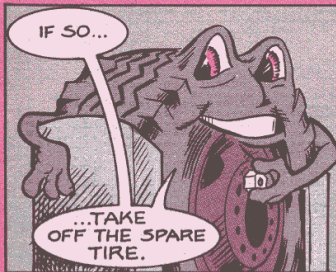
**DURING THE NEXT SCHEDULED SERVICE, EYEBALL THE MOUNTING PLATE.**

**SEE ANY CRACKS AROUND THE HOLES?**

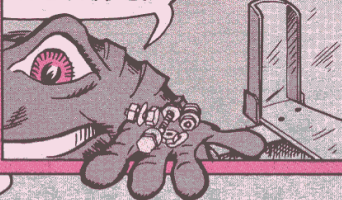


**IF SO...**

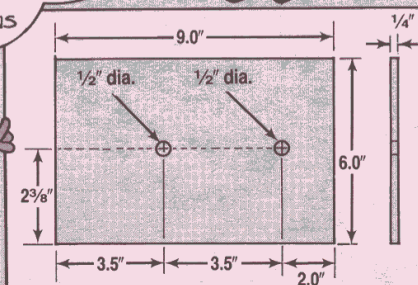
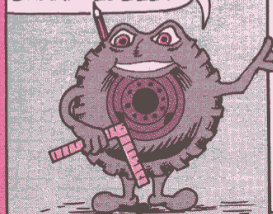
**...TAKE OFF THE SPARE TIRE.**



**REMOVE THE FOUR BOLTS, WASHERS, AND NUTS THAT HOLD THE SPARE TIRE CARRIER TO THE FRAME.**

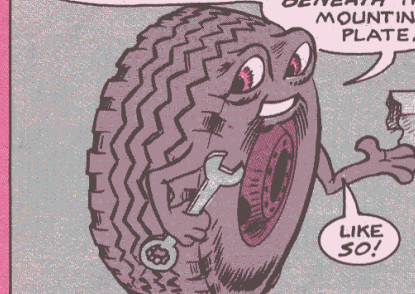


**MAKE FOUR PLATES FROM 1/4 INCH THICK STEEL PLATE. CUT 'EM TO THESE DIMENSIONS OR TO FIT. GRIND OFF ANY BURRS AND SHARP EDGES.**



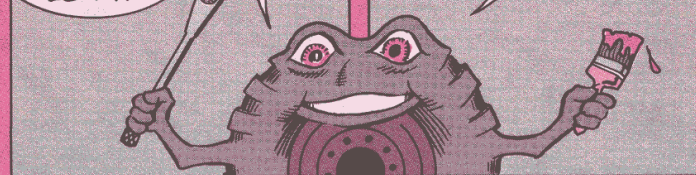
**PLACE THE FOUR PLATES ABOVE AND BENEATH THE MOUNTING PLATE.**

**LIKE SO!**



**PUT THE FOUR NUTS, BOLTS AND WASHERS BACK IN PLACE. TORQUE THE BOLTS DOWN TO 70-80 LB-FT.**

**PAINT THE MOUNTING PLATES TO PREVENT RUST.**



M796 Bolster Trailer...

## Landing Leg Bearing Needs Lube

The lube instructions in Chapter 4 of TM 9-2330-287-14&P do not mention the bearings inside the tube assembly of the retractable landing leg. The bearings, Item 26 in Fig 20, need lube, too.

But hold on before you grab your grease gun! There is no grease fitting for the bearings. You're going to need a wrench and a pair of pliers.

Unscrew the tube nut at the bottom of the support plate. Pull the tube out very carefully.

Pack the bearings in GAA and then put the tube assembly back together. Grease the bearing during each annual service.



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

**TM 5-1080-200-10-HR** May Camouflage screening system

**TM 5-2410-236-10** Nov 89 D5-series tractors

**TM 5-3815-226-13&P** Nov 89 Bucket, dragline, 3/4 cu yd medium purpose, intergy model DMD34

**TM 5-4120-395-14&P** Mar Air conditioner, 24,000 BTUH cooling, 23,600 BTUH heating, wall mounted, vertical, model AVP24HPA-08

**TM 5-4610-229-24P** Feb Water purification unit, reverse osmosis, 150,000 GPD, skid-mounted, model PD 81146

**TM 5-5430-226-12** Apr 20,000 gallon collapsible fabric tank

**TM 9-1090-208-23P** Jul M139 helicopter armament subsystem, M230 MM automatic gun; M140 inventory-deployment rocket management subsystem

**TM 9-1425-646-10-2** Apr MLRS launcher

**TM 9-1425-1525-24P** May HAWK air defense guided missile system

**TM 9-1430-602-24P-2** Feb Patriot missile system

**TM 9-2320-272-10-HR** Apr Hand receipt, basic issue items (BII), and additional authorization lists (AAL) for truck, 5-ton, M939/A

**TM 9-2350-252-24P-2** May M2/M3, M2A1/M3A1 Bradley turret

**TM 9-2350-255-24P-2** May M1/IPM1 tank turret

**TM 9-2350-264-24P-2** May M1A1 tank turret

**TM 9-2350-266-20** Apr M981 FISTV

**TM 9-2350-284-24P-2** May M2A2/M3A2 Bradley turret

**TM 9-2350-285-10** Apr SUSV carrier

**TM 9-2350-285-10-HR** Apr SUSV carrier

**TM 9-2590-509-10** Apr M1-series tank mine blade

**TM 9-2590-509-23&P** Jan M1-series tank mine blade

**TM 9-4120-385-24P** May Air conditioner, vertical compact, 9,000 BTU/HR 115 volt, 1-phase, 50/60 HZ

**TM 9-4933-259-14&P** Mar M26 muzzle boresight 105-MM w/case, M27 boresight 120-MM w/case,



M26A1 muzzle boresight 105-MM w/case, and M27A1 muzzle boresight 120-MM w/case

**TM 9-6115-648-14&P** Apr MEP-006A 60 KW 60 HZ generator set on M200A1 2-wheel, 4-tire, modified trailer

**TM 9-6115-651-14&P** May Power

unit PU-707A/M MEP-115A, 60 KW, 400 HZ generator set on M200A1, 2-wheel, 4-tire, modified trailer

**TM 9-6115-652-14&P** Mar Power unit, PU-760/M MEP-114A 30 KW 400 HZ generator set on M200A1 2-wheel, 4-tire, modified trailer

## Maintenance & Safety-Of-Use Messages

**AMCCOM SOU-MSG-21-90—** Advisory, Operational, 7-ton trestle, AMSMC-MA 141430Z Jun 90.

**AMCCOM SOU-MSG-23-90—** Advisory, Technical/Maintenance, Limited one-time inspection, M110A2 howitzer, AMSMC-MA 212030Z Jun 90.

**AMCCOM SOU-MSG-24-90—** Operational, CTG 9MM practice-tracer M939, AMSMC-DSM-MA 261700Z Jun 90.

**AVSCOM SOU-MSG-AH-1-90—** ASM-04—All AH-1 series aircraft, AMSAV-XSOF 281630Z Jun 90.

**CECOM SOU-MSG-90-05-02—** Mandatory, Operational, AN/GVS-5 laser infrared observation set, AMSEL-SF-SEC 301700Z May 90.

**CECOM SOU-MSG-90-06-01—** Advisory, Operational, BB-542/U nickel-cadmium batteries, AMSEL-SF-REE 140800Z Jun 90.

**CECOM SOU-MSG-90-06-02—** Advisory, Operational, BA-5588/U lithium-sulfur dioxide batteries, AMSEL-SF-REE 201810Z Jun 90.

**TACOM SOU-MSG-90-23—** Advisory, Technical/Maintenance,

HMMWV spindle locknut, AMSTA-M 181400Z Jun 90.

**TACOM SOU-MSG-90-24—** Operational, AVLB crossing restrictions, AMSTA-M 251500Z Jun 90.

**TROSCOM SOU-MSG-09-90—** Limited one-time inspection, Chain hoist, NSN 3950-00-889-8722,

AMSTR-MES 052100Z May 90.

**TROSCOM SOU-MSG-13-90—** Advisory, Operational, M2, M2A, and M2A with safety device burner units, AMSTR-MES 311345Z May 90.

**TROSCOM SOU-MSG-14-90—** Advisory, 3-KW DED generator, AMSTR-MES 061930Z Jun 90.

**TROSCOM SOU-MSG-15-90—** Advisory, LP-12 falling truck mounted well drilling system, AMSTR-MES 261525Z Jun 90.

**TROSCOM Maintenance Advisory MSG-90-19—** M2, M2A, and M2A burner units with safety device, AMSTR-MES 111345Z Jun 90.

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



# The Enemy Within

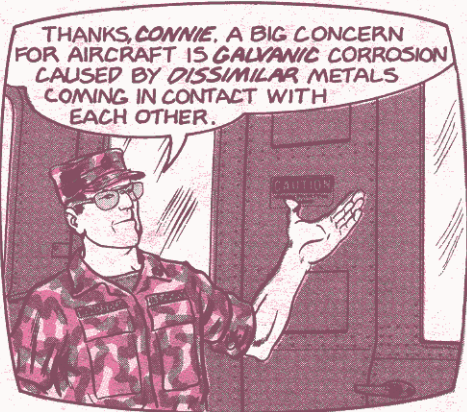
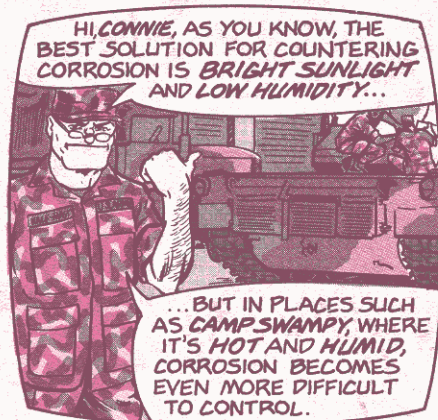
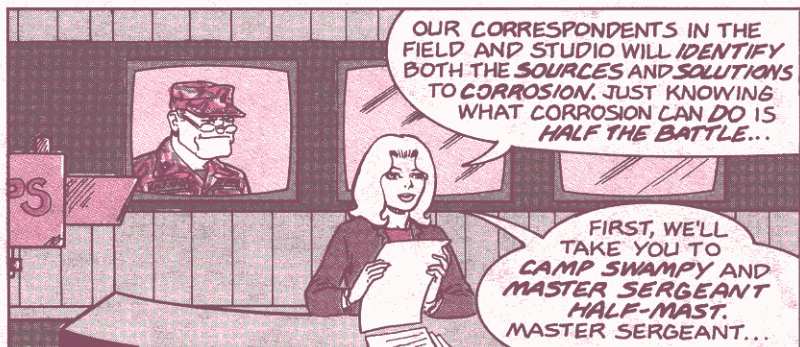
**HURRY,  
I DON'T  
WANT TO MISS  
ANYTHING!**

**TAKE IT  
EASY, IT'S  
JUST  
STARTING!**

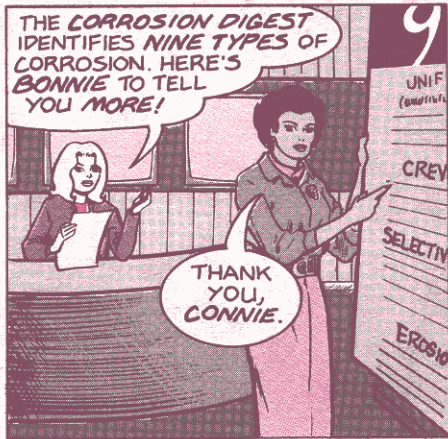
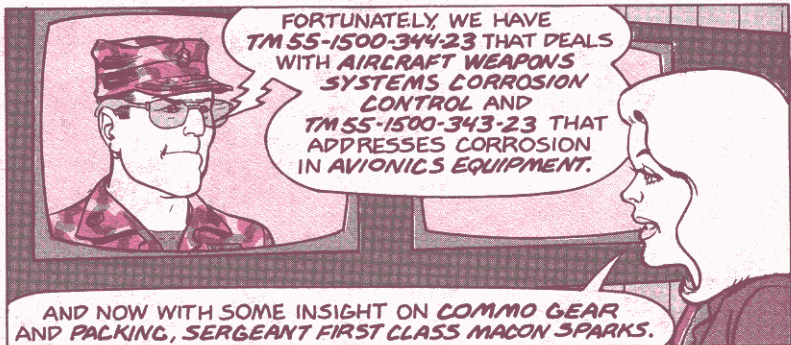
**HELLO,  
I'M CONNIE RODD,  
WELCOME TO  
THIS EDITION OF  
INSIDE PM.  
THIS  
EVENING'S TOPIC  
IS CORROSION:  
THE ENEMY  
WITHIN.**

**IT'S  
EVER  
PRESENT AND,  
FOR THE  
MOST PART,  
HIDDEN!**





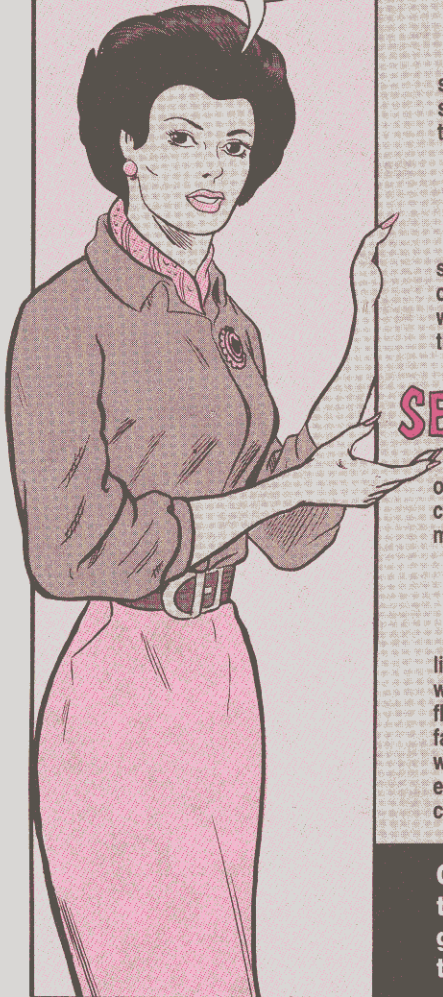






# 9 Types of CORROSION

TO  
FIGHT THE  
ENEMY, YOU'VE  
GOT TO KNOW  
THE  
ENEMY!



## UNIFORM (or general attack)

Affects a large area of exposed metal surface, like rust on steel or tarnish on silver. Gradually reduces the thickness of the metal until it fails.

## CREVICE

Occurs in crevices created by rubber seals, gaskets, bolt heads, lap joints, dirt or other surface deposits. Will develop anywhere moisture or other corrosive agent is trapped and unable to drain or evaporate.

## SELECTIVE LEACHING

One element, usually the anodic element of an alloy, corrodes away, leaving the cathodic element. Can create holes in metal.

## EROSION

Results when a moving fluid (gas or liquid) flows across a metal, particularly when solid particles are present in the fluid. Corrosion actually occurs on the surface of the metal, but the moving fluid washes away the corrosion produced and exposes a new metal surface, which also corrodes.

Corrosion products take on many different colors depending on the metal and type of corrosion. Everybody knows red rust, but corrosion can also be white, grey, blue, yellow, green, black, etc. Specific information can be obtained from the Corrosion Digest or the Corrosion Center.

## INTERGRANULAR

Metal deterioration caused by corrosion of the bonds between or across the grain boundaries of a metal. Metal appears to be peeling off in sheets, flaking, or being pushed apart by layers. A particular type of intergranular corrosion is exfoliation.

## PITTING

Can result from conditions similar to those for crevice corrosion. Pits can develop on various materials due to their composition. Rifle bores are big victims of pitting.

## STRESS

Term used to describe stress corrosion cracking and corrosion fatigue.

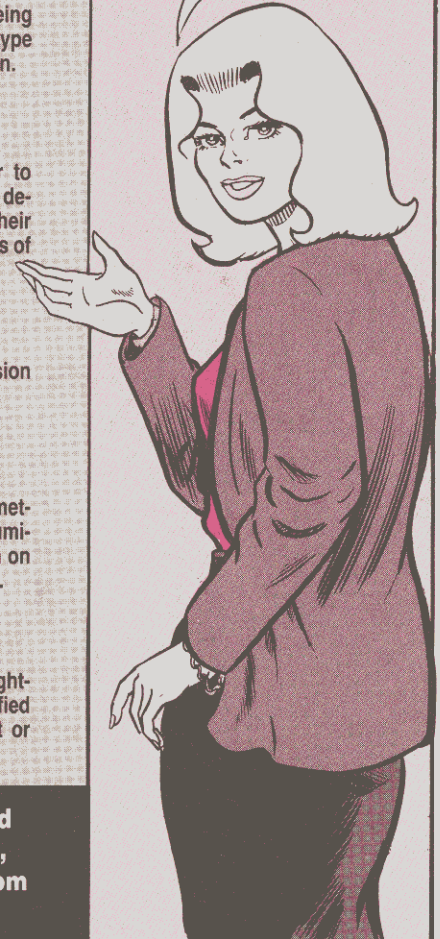
## GALVANIC

Occurs when two different kinds of metals are touching, like steel bolts on aluminum, for example. A common problem on aircraft because of their mix of metals.

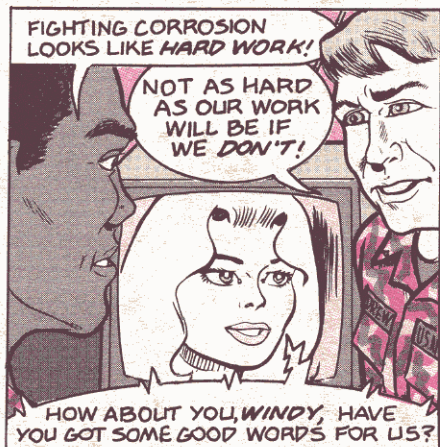
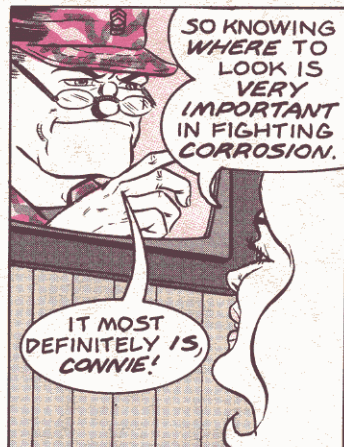
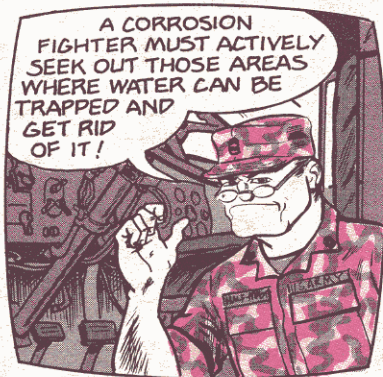
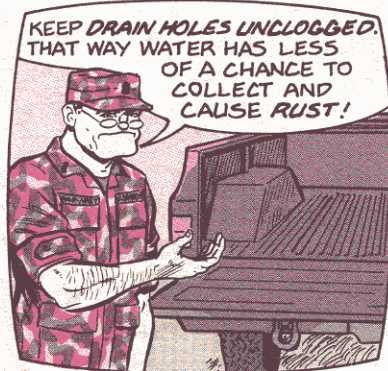
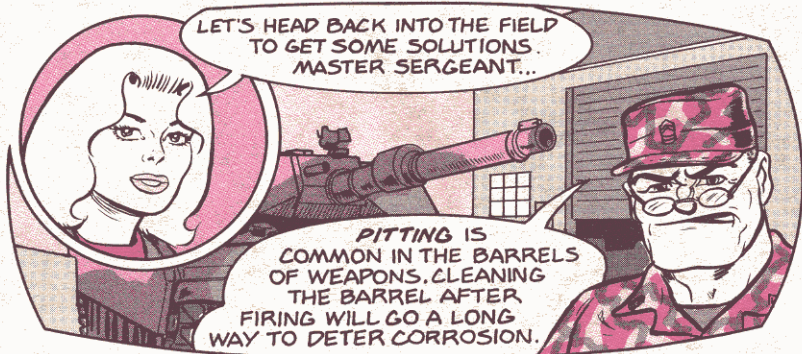
## FRETTING

Occurs between two pieces of weight-bearing metal in contact, usually identified by a black powder corrosion product or pits on the surface.

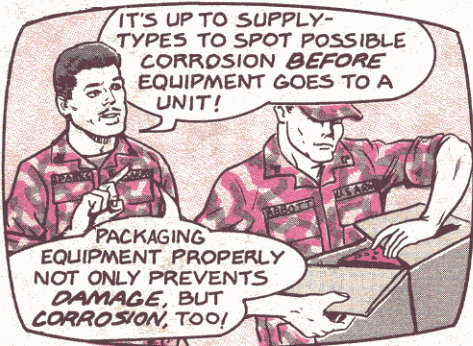
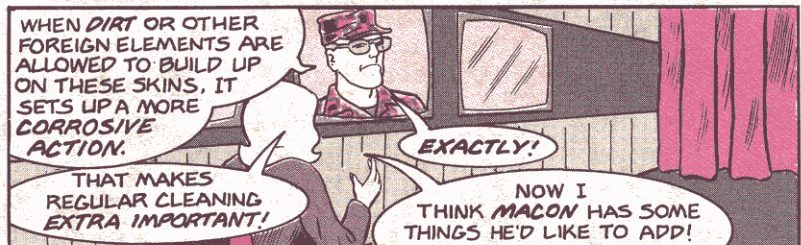
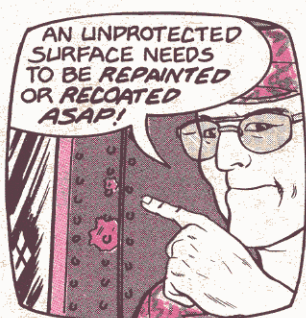
WITH THIS  
KNOWLEDGE,  
YOU CAN  
ANTICIPATE  
WHERE PROBLEMS  
WILL BE, AND  
CORRECT  
THEM.













WELL, **BONNIE**, CORROSION IS  
EVER PRESENT, BUT IT CAN  
BE CONTROLLED.

YES, **CONNIE**, KNOWING **WHAT** IT IS,  
ANTICIPATING **WHERE** THE PROBLEM  
WILL BE AND **HOW** TO CORRECT  
IT IS A GOOD START.

AND YOUR CORROSION CONTROL  
NCO CAN LET YOU KNOW **MORE** ABOUT  
YOUR **INDIVIDUAL RESPONSIBILITIES!**

THAT WRAPS UP ANOTHER  
EDITION OF "INSIDE PM."  
WORK  
**SMARTER**  
NOT  
**HARDER!**

THAT SHOW  
**REALLY** MADE ME  
THINK I CAN DO  
SOMETHING ABOUT  
**CORROSION!**

NOW?

**SURE!** I CAN UNCLOG DRAIN HOLES,  
LOOK FOR TRAPPED WATER, DO  
TOUCH-UP PAINTING, PLENTY  
OF THINGS!

OH!

**HEY!  
WAIT  
FOR  
ME!**



# Critical Coverup

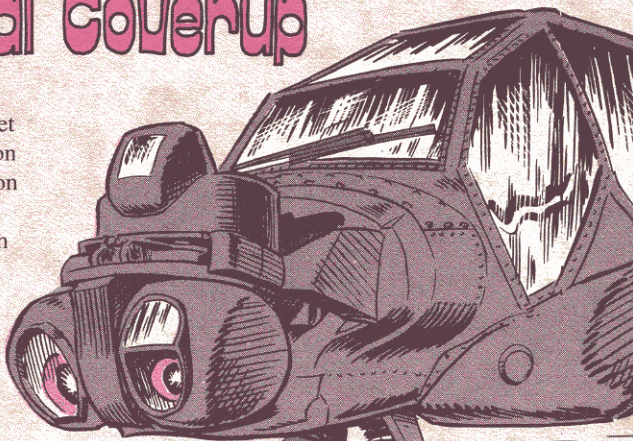
Your Apache's Target Acquisition Designation Sight/Pilot Night Vision Sensor (TADS/PNVS) includes some very high dollar Line Replaceable Units (LRU).

But when those high dollar LRUs go bad, some units ship them off for repair without their protective covers.

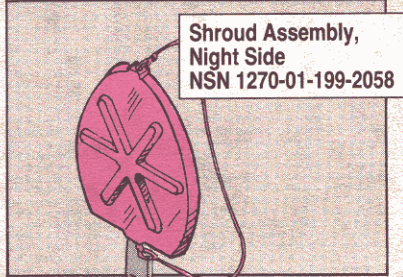
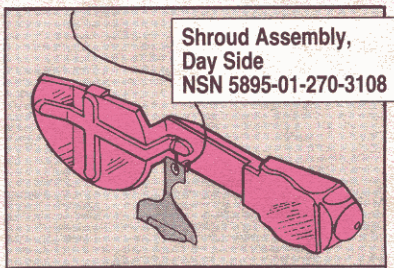
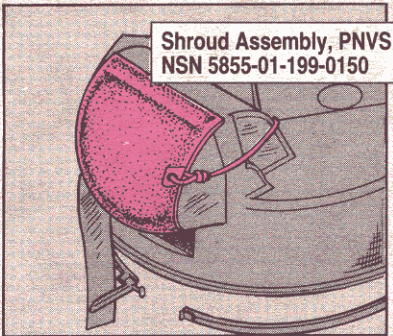
That leaves sensitive lenses exposed to further damage. It also leaves the repair facility in a bind because it can't return repaired LRUs without covers.

The bottom line is a supply hangup and reduced readiness.

So whenever you remove one of the following LRUs for storage or shipment, leave the cover on to protect the lens. Also wrap the entire unit in tissue and bubble wrap to protect it from damage.



**HEY! DON'T SHIP ME WITHOUT MY COVERS!**





# Strut Your Stuff

**I**t doesn't pay to ignore the crud and corrosion that builds up on your Black Hawk's main landing gear shock struts.

AHH...  
WHAT A *RELIEF!*  
THANKS FOR  
REMOVING CRUD  
FROM MY  
*STRUT!*

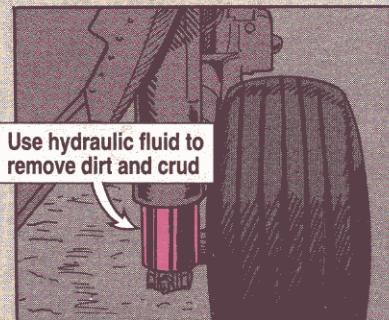
**I**f you don't keep the hydraulic cylinders clean, all that bad stuff gets into the seals. Before long, the seals start leaking. Then you can't service the struts like it says in Task 1-4.1.1 of TM 55-1520-237-23-1.

Minor maintenance has suddenly turned into major repair.

You can save aircraft downtime and repair dollars by cleaning the pistons often, daily if needed.

All you need is a clean cloth, a little hydraulic fluid and some elbow grease.

Use the same strategy on your bird's stabilator actuator rod. Keep it clean. Hydraulic fluid will take care of the crud, but you'll need crocus cloth to remove rust and corrosion. NSN 5350-00-221-0872 gets a package of 50 sheets.



Use hydraulic fluid to  
remove dirt and crud



Use crocus cloth  
to remove rust

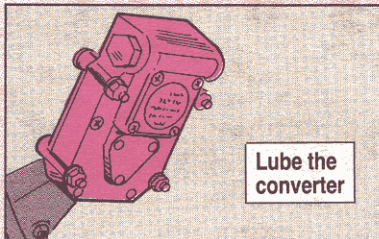
After you clean off all the rust and corrosion, wipe the surface with a dry cloth. Then spread on a thin layer of hydraulic fluid.



# Stop Wiper Motor Failure

**G**rease congeals in the converter for the Black Hawk's windshield wiper motor. This thick build up of grease causes the converter to drag. Then the wiper motor fails.

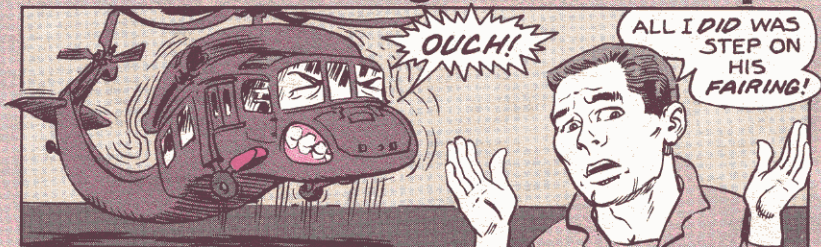
To keep your bird's wipers wiping, lube the converter every 500 flight hours—with the right grease.



Use only grease, MIL-G-81322, like it says in Task 12-3.1 of TM 55-1520-237-23-5. NSN 9150-00-944-8953 gets a 1-lb can.

**EH-60A Black Hawk...**

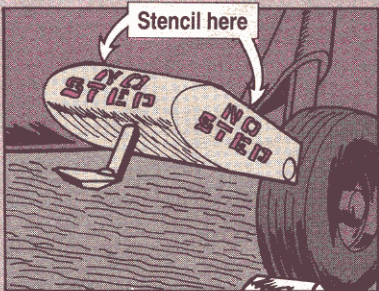
## Extended Fairings Are Not Steps



**T**he extended step fairing on EH-60A Black Hawks is thin and weak. It gets damaged when crewmen and mechanics step on it climbing up top.

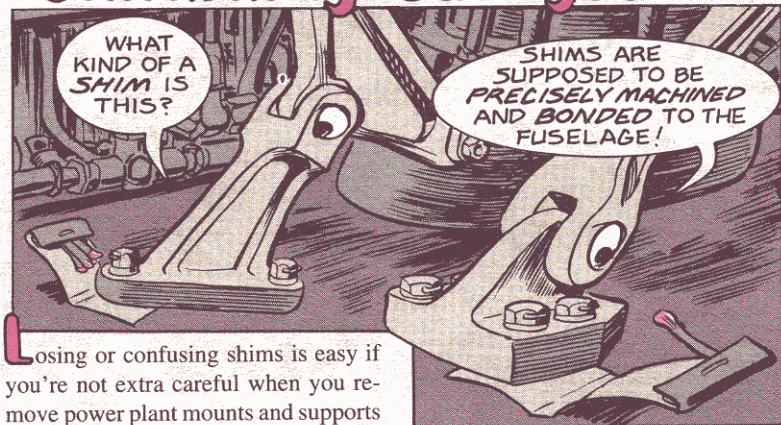
Prevent damage by stencilling "NO STEP" on the fairing. It's being added to Chap 1 of TM 55-1520-237-23-1 as a NO STEP area.

Use only the main drag beam supports as a first step up or last step down.





# Shimming Safeguards

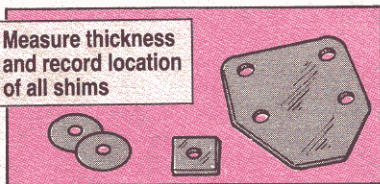


**L**osing or confusing shims is easy if you're not extra careful when you remove power plant mounts and supports for maintenance.

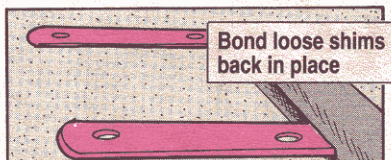
Shims are precisely machined and bonded to the fuselage to provide the exact amount of cushion under each mount fitting so that all components are perfectly aligned.

The best way to avoid improper shimming is to measure the thickness of all shims and record their locations on DA Form 2408-15.

**Measure thickness and record location of all shims**



If you find shims that have vibrated loose, bond them back in place as soon as you discover they're loose.



Apply adhesive, NSN 8040-00-016-8662, around the outer edges of the shims to secure them.

If you can't rebond them to the fuselage right away, tag or mark them for positive identification and put them in a safe place until you can rebond them.

## Heliport Deicer NSNs

**S**alt is a no-no for deicing heliport and airport runways because it's corrosive. Para 3-5f.(2) of FM 1-300 OKs the use of non-corrosive technical urea, a fertilizer compound. NSN 6810-01-198-9398 gets 50 pounds. In a pinch, use deicing fluid, NSN 6850-00-237-4304. It's not on the AMDF, so order it on a DD Form 1348-6 from RIC S9G.



CH-47D...

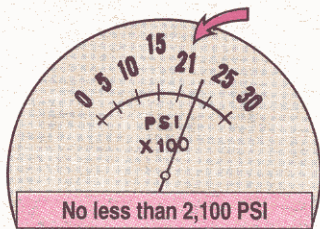
# A Pressure Situation

**W**hen you do an operational check on your big bird's center cargo hook, make sure the pressure gage reads at least 2,100 PSI, not 2,000 PSI like it says in Task 16-1.4 of TM 55-1520-240-T-3.

You can lose the external load if the actuator is not pressurized to at least 2,100 PSI.

If the gage reads less than 2,100 PSI, add pressure to the actuator like it says in Task 1-74 of TM 55-1520-240-23-1.

Make a note until TM 55-1520-240-T-3 is updated.



## Fuel Sampling Protection

**P**rotect your skin and clothing from fuel spills when you take preflight fuel samples by wearing fuel-resistant gloves, NSN 8415-00-641-4601. They're authorized by CTA 50-900, LIN J69434.

### Aviation Messages

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

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

**UH-60-90-ASM-01**, ASM, Revised Army Oil Analysis Program (AOAP) procedures, 071800Z May 90.

**AH-1-90-ASM-03**, ASM, Retirement life of the ejector racks cartridge, P/N CCU-44/B, 091800Z May 90.

**GEN-90-ASM-03**, ASM, Storage of all items of hardware at the user level, 152130Z May 90.

**UH-1-90-ASM-03**, ASM, T53-1-13B engine gears, 302000Z May 90.

**AH-64-90-02**, SOF, Maint Mandatory, AH-64A, one time and recurring inspection of main rotor hub retention nut, 142200Z May 90.

**OH-6-90-04**, SOF, Technical, Revision to OH-58-90-04, OH-6-90-03, SOF Msg, T63-A-700/720 turbine engine recall, 152300Z May 90.

**OH-58-90-06**, SOF, Technical, Revision to OH-58-90-04, OH-6-90-03, SOF Msg, T63-A-700/720 turbine engine recall, 152300Z

May 90.

**CH-47-90-10**, SOF, Maint Mandatory, One time and recurring inspection of right hand aft bellcrank support structure on 42 CH-47D aircraft, 211600Z May 90.

**OH-6-90-05**, SOF, Maint Mandatory, One time and recurring inspection of the main and tail rotor control tubes, 221700Z May 90.

**AH-64-90-03**, SOF, Technical, AH-64A, One time inspection of flight control servos, 221900Z May 90.

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



# Going Once, Going Twice

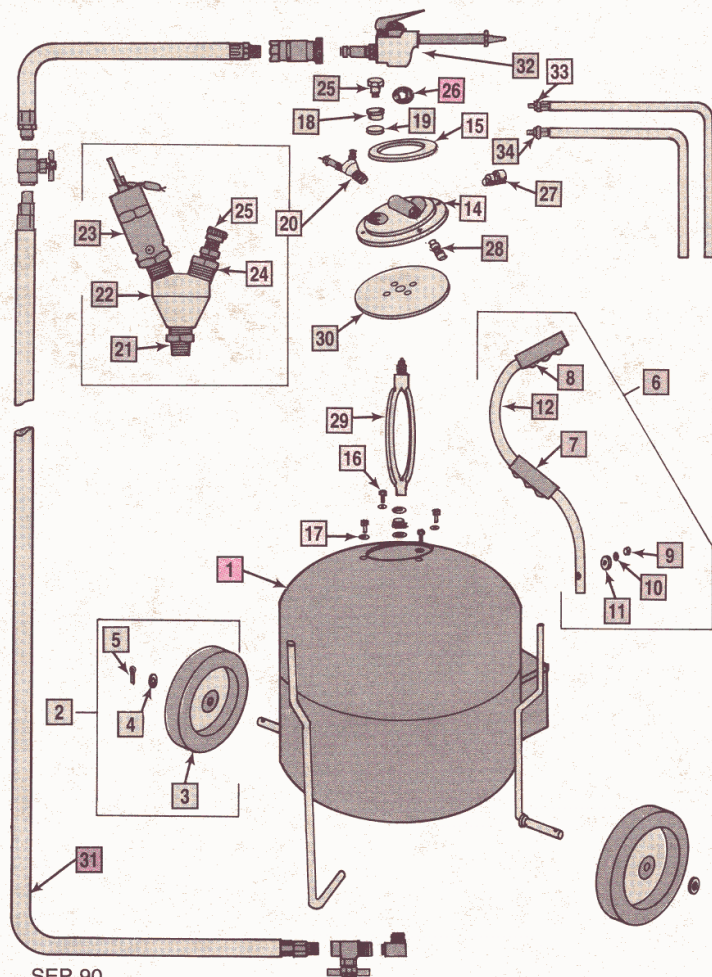
Don't trash your unit's hydraulic fluid dispenser, NSN 4910-00-245-1832, just because you can't find a replacement part.

Those little roundbellies cost Uncle—and your unit—about 800 bills each.

Here's a complete breakdown of all the parts. NSNs have not been assigned to any parts, so order what you need by CAGE 31989 and part number from RIC S9C.

	PN	Description	Qty
1	AF-5-1	Tank, complete	1
2	AF-5-2	Wheel assembly, composed of:	2
3	AF-5-2-11	Wheel	2
4	AF-5-2-12	Washer, wheel	2
5	AF-5-2-13	Cotter pin, wheel	2
6	AF-5-3	Handle assembly, composed of:	1
7	AF-5-3-14	Grip, lower	1
8	AF-5-3-15	Grip, upper	1
9	AF-5-3-16	Nut, handle hex	1
10	AF-5-3-17	Washer, lock	1
11	AF-5-3-18	Washer, contour	1
12	AF-5-3-19	Tube, handle	1
13	AF-5-5	Cover assembly, composed of:	1
14	AF-5-5-22	Casting, cover	1
15	AF-5-5-23	Gasket, cover	1
16	AF-5-5-24	Bolts, cover	4
17	AF-5-5-25	Washers, cover	4
18	AF-5-6	Cap assembly, composed of:	1
19	AF-5-6-26	Cap, with gasket	1

	PN	Description	Qty
20	A 904-1	Tank valve assembly, composed of:	1
21	AF-5-6-27	Reducer, brass	1
22	AF-5-6-28	Fitting, female	1
23	AF-5-6-29	Valve, relief	1
24	AF-5-6-30	Reducer, restricted orifice	1
25	AF-5-6-31	Air valve input	1
26	AF-5-7	Gauge, pressure, cover	1
27	AF-5-8	Valve, relief, cover	
28	AF-5-10	Valve, bleeder, cover	2
29	AF-5-11	Bladder, expulsion	1
30	AF-5-12	Shield, bladder	1
31	AF-5-13	Hose, outlet, compl	1
32	AF-5-14	Nozzle, trigger, comp	1
33	AF-5-15	Adapter, 8-32, brake	1
34	AF-5-16	Adapter, 10-32, brake	1
	AF-5-17	Hose, outlet, 10-ft extension	1
	AF-5-18	Label, warning	2
	AF-5-19	Label, instructions	1





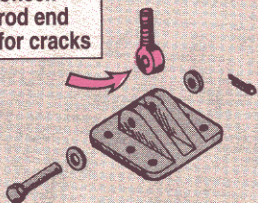
# Quick Reaction Antenna Erection

CHECK FOR DEFECTIVE  
ROD ENDS BEFORE YOU  
EXTEND YOUR ANTENNA!



Before you crank up the antenna, look at the rod ends for cracks or tapered shafts. If you spot any, get them replaced with straight-shaft rod ends.

Check  
rod end  
for cracks



Here are some other points to remember before you put up this antenna:

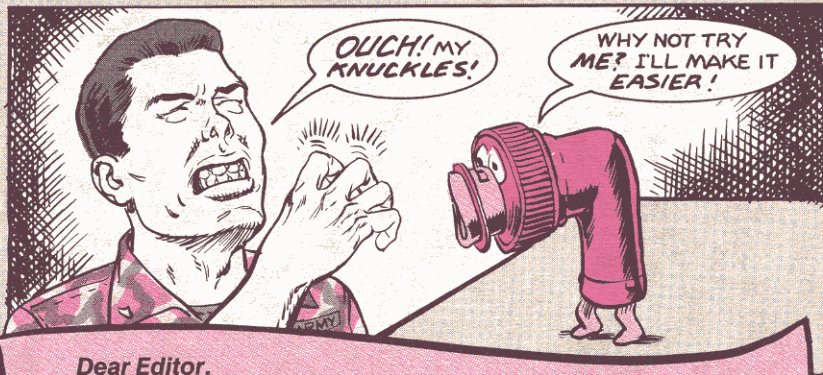
- Grease all pivot points, including the rod ends, and drive units once a month.
- Use only one crank to erect the antenna.
- Always wear a helmet.

**Y**ou may have bum rod ends, NSN 3120-01-111-1357, installed in your AN/TRC-170(V)3 quick reaction antenna. Defective rod ends break when you extend the antenna to its fullest height. If the rod ends break, the front reflector shifts down and to the side and could hit the operator.



SINGGARS...

# Easier Connector Installation



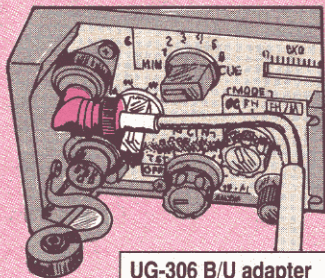
Dear Editor,

It's almost impossible to make an easy connection when you install the vehicular antenna connector on the SINGGARS radio. The face guard and channel select switch are so close to the antenna connector that you wind up with skinned knuckles.

Some operators try to install the antenna connector by using a pair of pliers. That breaks the connector or the cable.

I installed the UG-306B/U connector adapter, NSN 5935-01-032-5404, on the

radio. That raises the connector high enough to make the connection easier.



UG-306 B/U adapter makes connection easier

This adapter not only saves time, but a little skin on your fingers, too.

Harry Browning  
Ft Gordon, GA

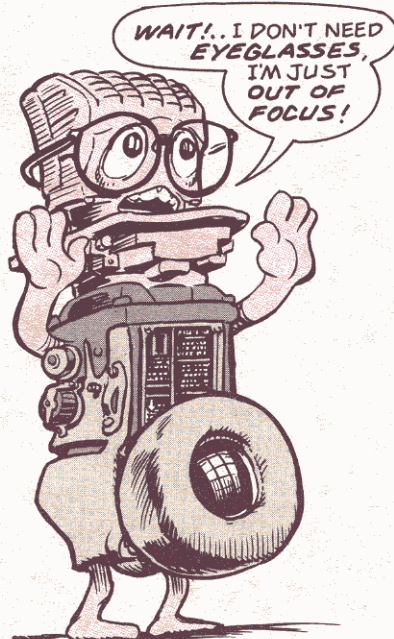
UG-306B/U  
connector adapter



(Editor's note—Sounds like you knuckled under to a super idea!)



# Focus on Changes



**B**efore you troubleshoot your AN/VVS-2 night vision viewer, make the focus test. It could be that your viewer is just out of focus and you won't need to spend time troubleshooting. But the focus test's not in TM 11-5855-249-10.

## Here's how you do it:

Adjust the AN/VVS-2 gain to the outside light level position. Then, make the focus test like so:

**STEP 1** —Set the resolution chart on a fence or wall in the motor pool or unit area where you can position the system 50 feet from the target. Be sure the target's not tilted.

While you're setting up the chart, make sure you have enough light for this test. A quick check is to stand at the front of the target and look down at your shoes. If you can see the outline of your shoes, you have enough light to do the test. If you can't see your shoes, get someone to shine a flashlight on the target while you do the focus test.

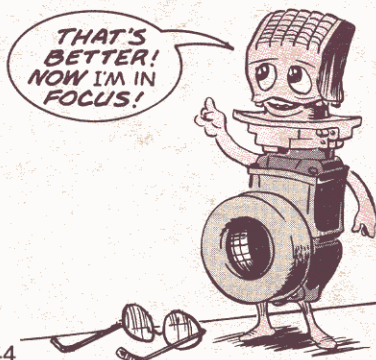
**STEP 2** —If the resolution pattern is clear and focused, the system's OK.

If the resolution chart is not clear, make sure the entrance window is clean and dry. If the image is still not clear, send the assembly to DS maintenance.

## ANOTHER CHANGE

TM 11-5855-249-20 leaves out an important part of the unit preventive maintenance checks and services. The AN/VVS-2 night vision viewer needs to be purged annually.

You also need to get the viewer purged when you notice moisture or condensation in the viewing lens or head assembly. Make a note until the TM is updated.





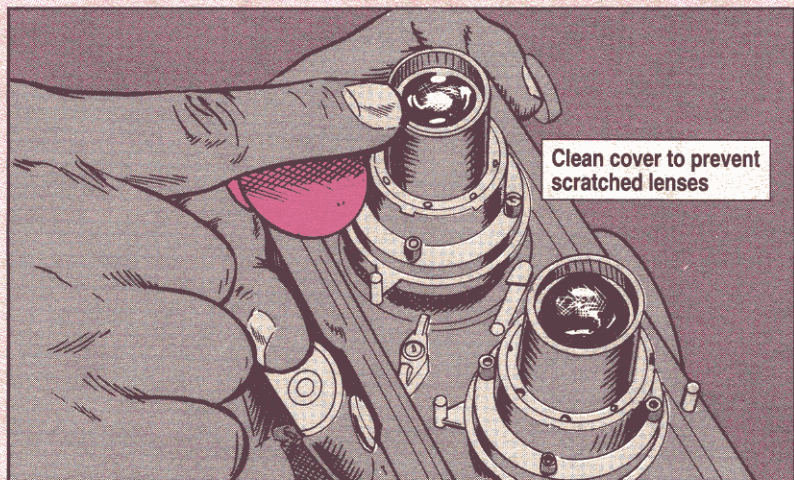
# Light Up Your Night

**Y**our “night eyes” lenses have to be free of dirt and moisture for you to see in the dark.

Most operators clean the eyepiece lens, but the objective lens needs cleaning, too.

It's also important to clean the daylight cover and the eyeguard cover so dirt and grit won't scratch the lens surface.

Check out your TM for complete cleaning instructions.



## Night Vision Goggle Cap

**Y**ou can order the battery cap for the AN/PVS-5 night vision goggles with NSN 5855-00-125-0398. The cap retainer gasket is NSN 5330-01-303-9745. Jot down these NSNs until TM 11-5855-238-24P is updated.

## AN/APR-39(V)1 Radar Washer

TM 11-5841-283-24P doesn't list the NSN for the plastic washer that goes between the side circuit card board, NSN 5841-01-040-3970, and the chassis of the AN/APR-39(V)1 radar signal indicator. Without the washer, the circuit card shorts out to the chassis during system operation. Get the washer with NSN 5310-01-043-1404.



# Backup Alarm

Replacing a bum backup alarm switch on a CAT 130G is a real bear.

TM 5-3805-261-14&P2 TELLS YOU TO REMOVE THE ENTIRE SHIFT TOWER HOUSING. BUT HERE'S AN EASIER WAY!

Cut a 7/8-in open end wrench to 4 3/4 inches long. File away any burrs.

Remove the cotter and clevis pins from the throttle linkage on the curb side of the operator's console. Move the linkage rod to the side.

Disconnect linkage, remove panel

# Switch Replacement

Remove the bolts and washers that hold the panels in place. Remove both panels.

Disconnect and tag the wires.

Use wrench to replace switch

Disconnect and tag wires

Use the shortened wrench to remove the nut that holds the backup alarm switch in place.

Replace the backup alarm switch assembly.

Put it all back together and it's ready to go.

THIS SHORTENED WRENCH MAKES IT A 20-MINUTE JOB!

# Pump Replacement

The ribbon bridge transporter TM shortchanges you on the parts needed to install a replacement hydraulic pump, NSN 4320-01-206-4184.

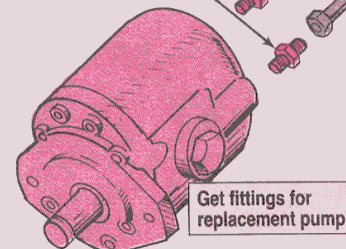
You need the two adapters shown—but not listed—in Fig 34 of TM 5-5420-209-20P.

Here they are:

Item	NSN 4730-01-	Used on
Adapter	018-1755	Suction/inlet port
Adapter	011-6190	Discharge/outlet port

Save the adapters from the old pump if it had 'em.

Adapters



Pump



# KEEP ON SCOOPIN'

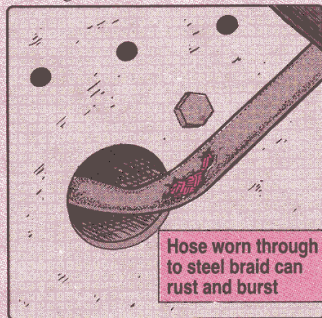
I'LL LOAD TONS OF DIRT FOR JUST A SHOVEL OF PM!



Here are some PM tips to help you keep your scoop loaders scoopin'.

## Keep Opposites Apart

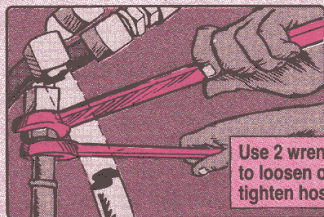
The lift cylinder hydraulic hoses on the MW24C scoop loader rub against the steel lines to the bucket clam cylinders. Then the hoses wear through. Hoses get weak and burst.



Hose worn through to steel braid can rust and burst

To prevent hose damage, reposition each hose so it's about an inch away from the steel line.

Use two wrenches to keep from twisting the hose. It takes a 1/4-in and a 1 1/16-in open end wrench to loosen the connection on the upper hose for each forward lift cylinder.



Use 2 wrenches to loosen or tighten hoses

Get a buddy to hold the hose about an inch from the steel line while you re-tighten the connections.

If a hose is worn through its outer cover, replace it.

Paint any bare spots on the steel lines.

# SCOOPIN'

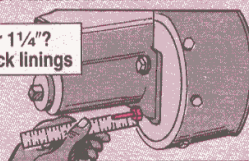
## MW24B Brake Adjustment

Measure here

You know you must adjust the brakes when the stroke indicator rod on the MW24B scoop loader sticks out more than 1/4 inches from the air chamber.



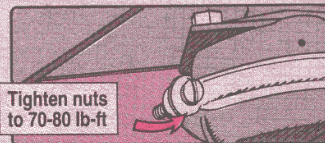
Over 1/4"?  
Check linings



But do you know what to do when you adjust the brakes and the rod still sticks out more than 1/4 inches? You need to send the loader to DS to get the brake shoes replaced because the linings are worn.

## MW24C Air Chamber Clamp

Vibration loosens the retaining bolts and nuts on the clamp holding the loader's brake actuator air chamber together. Air leaks out of the chamber—the brakes are gone. Tighten the nuts to 70-80 lb-ft.



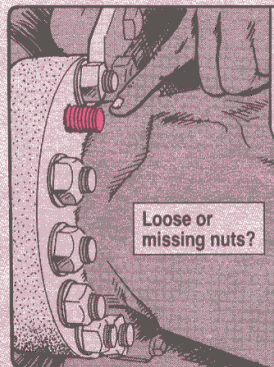
Tighten nuts to 70-80 lb-ft

## MW24/MW24B Brake Drum

Rough terrain and hard work loosens the nuts and bolts holding the backing plate to the axle.

If a nut falls off, the bolt drops down inside the brake drum. The bolt gets between the brake shoe and the drum. Then—no brakes.

When you're doing your scheduled maintenance, look for loose or missing nuts. A shiny spot or fresh rust around a nut is a clue that it's loose. While you're there, look for cracks in the weld between the axle and flange. Find a crack? Get support to weld the flange like Page 5-3/5 of TM 43-0143 says.



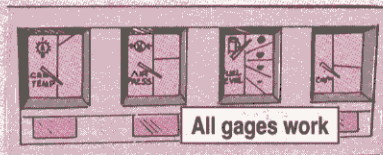
Loose or missing nuts?



## Gage Troubleshooting Tip

When the oil pressure, converter temperature or water temperature gages are not working, first check the resistor at the back of the gage with a multimeter.

You must get a reading of about 75 ohms. If not, replace the resistor.



If the resistor is OK, move to the transmitter, depending upon the bum gage.

Turn the master switch ON.

Take the wire out of the transmitter and touch the positive probe of the multimeter to the wire and the negative probe to a clean spot on the transmitter case—or any good ground. If you get 22-24 volts, but the gage still will not work, replace the transmitter. If you don't get voltage, you have a bum gage or broken wire.

To check the gage, remove the wire opposite the resistor at the gage. Touch the multimeter positive probe to that terminal on the gage and touch the negative probe to the ground. If you get 22-24 volts, the gage is OK and the wire is bad. No voltage? Replace the gage.

## MW24/MW24B Fuel Filter Kit

No need to order fuel filter parts separately. Get them all in a fuel filter kit with NSN 2910-00-401-4189. It

comes with one primary and one secondary spin-on filter element.

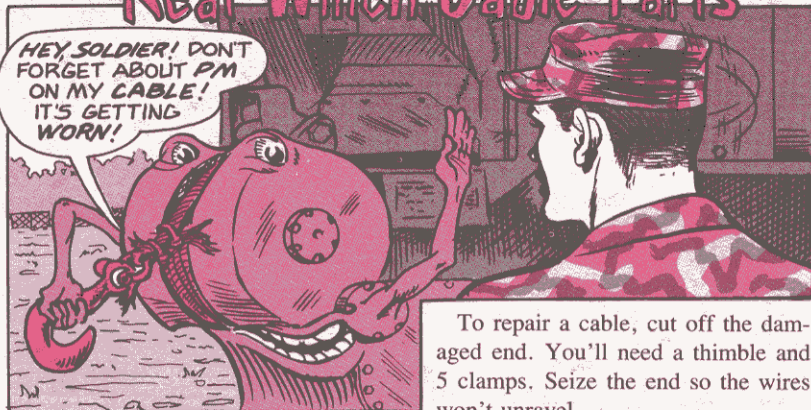
YES, CONNIE, MY MW24C IS WORKING FINE!

PM PAYS OFF!



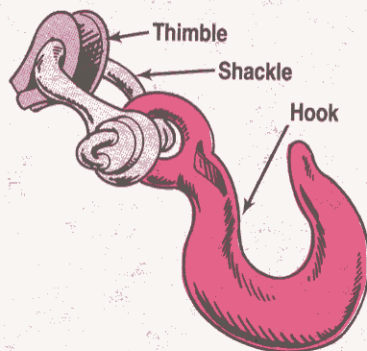


# Rear Winch Cable Parts



Here's what you need to make the 200-ft long winch cable assembly, NSN 4010-01-274-7309, used on D7-series tractors. Fixing it is cheaper than buying the complete assembly.

Item	NSN	Qty
Hook	4030-01-289-6202	1
Shackle	4030-01-287-2358	1
Thimble, wire rope	4030-00-266-0071	1



To repair a cable, cut off the damaged end. You'll need a thimble and 5 clamps. Seize the end so the wires won't unravel.

Item	NSN	Qty
Clamp, wire rope	4030-00-243-4448	5

Clamp, wire rope



Measure back 6 feet and bend the end back to there. Put a clamp around both wires, with the cast saddle on the live wire. Tighten the clamp.

Place clamps like so:



Continue adding clamps every 6 inches and tightening them. Be sure the saddles are on the live wire. Don't forget to put the thimble in place.

When all the clamps are on, go back and torque the nuts to 165 lb-ft.

Retighten the clamps after the first time you use the cable, and before each time you use it later.

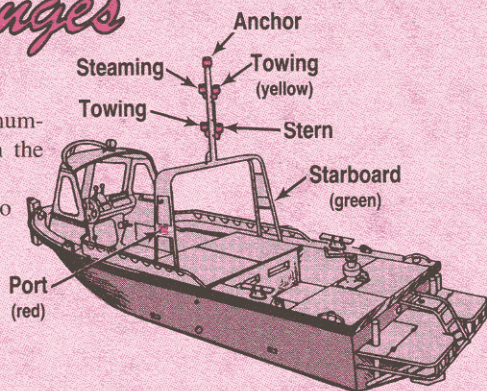


# Navigation Light and Lamp Changes

There are a few changes in the numbers for the navigation lights on the Mk-2 bridge erection boats.

And NSN's have been assigned to lamps that are used in the lights on both the Mk-1 and Mk-2 boats.

Make a note of these numbers until Fig 41 in TM 5-1940-277-20P catches up. All lights are clear except as noted.



Item	Old PN	Old Name	New CAGE, PN NSN (if available)		Light (Lamp Used)
19	47032052	Masthead light	97403	13226E0503*	Anchor 10 watt
26	47032023	Port	97403	13226E0502-4* 6220-01-164-3470	Port (red) 25 watt
33	47032025	Starboard	97403	13226E0502-5*	Starboard (green) 25 watt
40	47032028	Stern	97403	13226E0502-2* 6220-01-164-3469	Stern 10 watt
47	47032093	Towing	97403	13226E0502-3*	Towing (yellow) 25 watt
(Not shown)			97403	13226E0502-1*	Steaming 25 watt
(Not shown)			97403	13226E0502-6*	Towing 10 watt
21,28 35,42	47121022	Lamp, incandescent	46576	375-24v-25w 6240-12-157-4153	Lamp, 25 watt incandescent
10,18	2525U	Lamp, incandescent	46576	375-24v-10w 6240-12-157-4150	Lamp, 10 watt incandescent

\*No NSN or not on the AMDF. Order on DD 1348-6 using RIC A12.

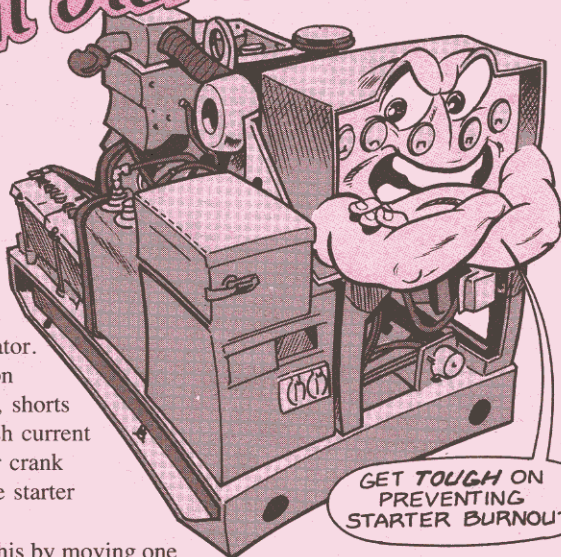
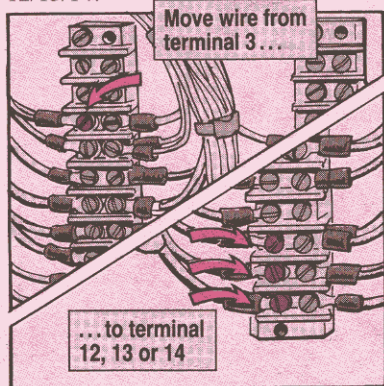


# Prevent Starter Burnout

**T**he failure of a little diode can cause starter burnout in a 5- or 10-KW DED generator.

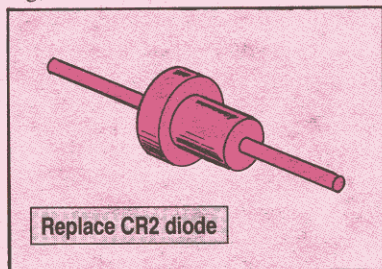
The diode, CR2 on the A-1 relay board, shorts out. Then, field flash current can reach the starter crank relay, energizing the starter and burning it out.

You can prevent this by moving one wire in the control box. Locate terminal block TB4. Remove wire P59E16 from terminal TB4-3. Remove it from the wiring harness and attach it to TB4-12/13/14.



After this change, when the generator is up to speed, there will not be a current path to relay K3 from the field flash circuit.

If the CR2 diode fails, replace it with a diode with a higher peak reverse rating, NSN 5961-00-469-2189. But with



the wiring change, even a shorted diode won't cause starter burnout!



# A Little Help from

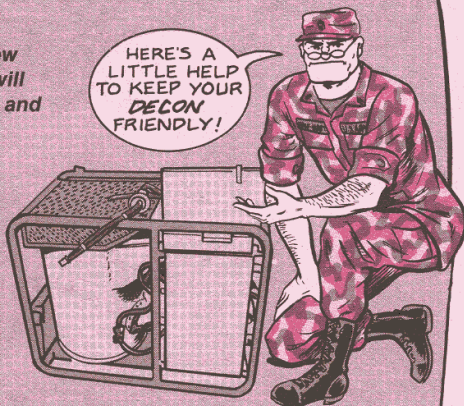
# a Friend

Dear Editor,

I've come up with a few tools and PM tips that will help Sanator operators and repairmen.

The spray nozzle clogs with sand and dirt and causes the Sanator to spurt and sputter. It's simple to unclog the nozzle with a piece of 4-in long, 1/16-in dia wire—welding rod will work—bent like this:

HERE'S A LITTLE HELP TO KEEP YOUR DECON FRIENDLY!

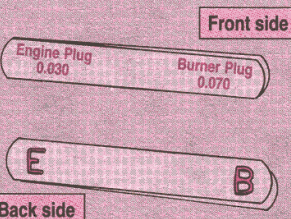


When the nozzle clogs, turn off the Sanator and poke the wire in the nozzle. Hit the nozzle against the palm of your hand to shake out what's inside. Keep the wire in your tool roll so you'll have it when you need it.

## Better Feeler Gage

The feeler gage that comes with the Sanator is difficult to use because so many of its leaves are required for measuring. Your post engineers can make a feeler

gage like this from stainless steel that takes the strain out of gaging:

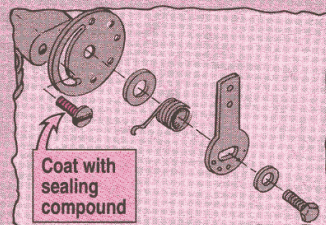


Have the engineers notch E (Engine) and B (Burner) on the gage for night measuring.

## Throttle Mount Screw

The screw that holds the throttle mount in place vibrates loose. Then the engine runs too slow or too fast for the Sanator to work right. Cure loose screws by coating the screw threads with sealing compound, NSN 8030-00-905-6818.

SSG Terry Staggs  
Ft Bliss, TX



(Editor's note: Thanks for the tips. Sanator crews could use more friends like you.)

M12A1 Decon...

## VENT DEADLY GAS

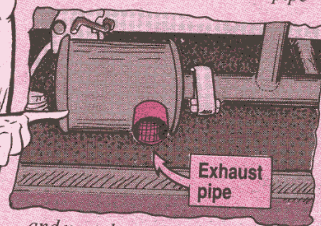
A BIT OF FLEX PIPE WILL CLEAR THE AIR.

DEAR HALF-MAST, WE'VE HAD PROBLEMS WITH EXHAUST FUMES WHILE OPERATING THE M12A1 DECON. IS THERE ANY WAY TO VENT THE EXHAUST SO THIS DOESN'T HAPPEN?

SGT. J.M.

Dear Sergeant J.M.,

Yes, with a flexible exhaust extension, NSN 2990-00-994-0827. Cut it to the length you need. Then slide the flex pipe over the M12A1's exhaust pipe



and vent the exhaust away from the crew.


Half-Mast



# Parts Breakdown

Dear Connie,  
We have a steel strapping  
kit, NSN 3540-00-565-6243.  
There's no publication  
that has the kit  
breakdown. Could you  
give us the NSNs for  
the items in this kit?  
Mr. E.T.

YES,  
HERE ARE  
THE PARTS IN  
THIS  
STRAPPING  
AND  
SEALING  
KIT:



Item	NSN
Hand Sealer	3540-00-234-6742
Hand Stretcher	3540-00-278-1250
Wood Box	3540-00-897-5516*
Seal, $\frac{3}{8}$ -in Wide, 1-in Long	8135-00-239-5285
Seal, $\frac{3}{4}$ -in Wide, $1\frac{3}{32}$ -in Long	8135-00-239-5288
Strapping, $\frac{3}{4}$ -in Wide	8135-00-283-0668

\*NSN has an AAC of L (local purchase)  
on the AMDF.



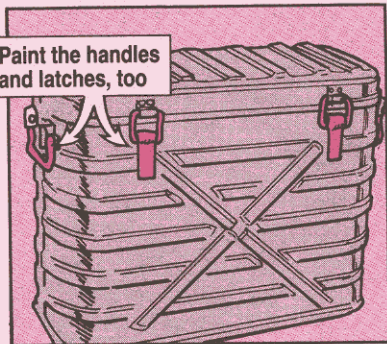
# Repainting Tips



When an insulated food container gets chipped and needs repainting, paint it with the same olive drab semi-gloss enamel that's already on it.

Get a quart of paint with NSN 8010-00-081-0809 or a gallon with NSN 8010-00-297-0586.

Paint the handles and latches, too

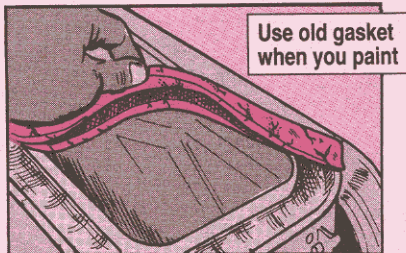


A quart of paint thinner comes with NSN 8010-00-087-1953, a gallon with NSN 8010-00-160-5794.



## Gasket to the Rescue

Hang on to the old cover gasket. It'll come in handy when you paint food containers. Use the old gasket instead of struggling with masking tape.



Before you paint, put the old gasket on the container and close the lid. Then paint the entire container. When the paint's dry, peel off the old gasket and replace it with a new one, NSN 5330-00-032-2722.

Keep the old gasket for the next time you repaint.



# Keep Your BDUs in Tip Top Shape



**Y**ou say your BDUs fade and wear out fast... and your CO's on your case to clean up your act... and it takes your "Saturday night money" to replace worn out BDUs?

Could be you need a little help with your laundry. Follow these tips to better looking and longer wearing uniforms.

## || Wash It Right ||

Your uniform and camouflage cap are machine washable. Make sure the machine's set on permanent press and use warm water and a mild detergent. Never add chlorine bleach to the wash water—or starch your BDUs.

Or you can hand wash the uniform by using warm water and a mild detergent. Be sure to rinse all the soap out. And don't wring or twist the uniform to get the water out—squeeze it out.

## || Dry It Right ||

Set the dryer on the permanent press cycle (130 degrees or less) to machine dry the cap, shirt and trousers. Take them out and hang them up as soon as the cycle stops. That way they won't wrinkle.

## || Press It Right ||

If you press your uniform, set the iron on a permanent-press or low setting.



# AMDF Solutions

**A**ny time you find something questionable on the AMDF, such as unit of issue, price, acquisition advice code (AAC) or item description, call the Management Information Research Assistance Center (MIRAC) hotline on DSN (AUTOVON) 977-7431 or Commercial (717) 770-7431. These folks will research your question and let you know the results.



HERE'S  
THE  
ADDRESS  
TO WRITE  
TO!

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

Or you can send your question electronically using this E-mail address:  
**mirac @ ncad-emh12.army.mil**

**MWO...**

## Fish (Fiche) No More

**D**A Pam 750-10, US Army Equipment Index of Modification Work Orders (MWO), is no more. If you need MWO information, see your local Logistics Assistance Office. No luck? Write:

**USAMC**

**Materiel Readiness Support Activity**

**ATTN: AMXMD-ER**

**Lexington, KY 40511-5101**

Just jot down the NSN and the serial number of the equipment you want MWO information on. You'll get a list that shows the MWOs required on each piece of equipment. The list also shows if the MWO has been applied to your equipment.

NSN/SN	MWO REQUIRED	MWO APPLIED	DATE COMP
2350010612445 D1120	092350020020001	092350020030002	89100
	092350020030002		
	092350025520003		
	092350025520004	092350025520005	89122
	092350025520005		
2350010612445 D1120	092350025520009		
	092350025550011		





### AR 700-138 Gets A Facelift

The latest version of AR 700-138 (Mar 90), Army Logistics Readiness and Sustainability, irons out a lot of wrinkles in the materiel condition status reporting system.

While you check out the revisions, there are a couple of major additions that you also need to eyeball. They are:

- Medical equipment has been added to the reportable items list in Table B-1.
- End item codes (EICs) and national stock numbers (NSNs) have been added to all reportable LINs and models in Table B-1.

If you don't have a copy of the latest AR 700-138, get your pubs clerk to order it on DA Form 4569. To make sure you get future changes, have the clerk add it to DA Form 12-09, Block 2299.

### Hydraulic AOAP Samples

The hydraulic systems of these four vehicles are now included in the Army Oil Analysis Program:

- M1A1 tank
  - M1IP tank
  - M88A1 recovery vehicle
  - M817 5-ton dump truck
- The word's in MRSA Message  
AMXMD-MO 181615Z Apr 90.

### M129A3 Van Stud Bolt NSN

Wheel stud bolts are like gloves. They're made for the left and right hands. But left-hand studs are all you get if you order NSN 5307-00-637-1084 listed for Item 18 in Fig 20 of TM 9-2330-374-14&P. The right-hand studs come with NSN 5307-00-637-0856.

### M110A2, M578 GPFU Snafu

Pay no attention to PMCS Item 62 in TM 9-2350-304-10 (Apr 90) because the M110A2 howitzer has never had a gas particulate filter unit installed. Also, pay no attention to PMCS Item 41 in TM 9-2350-238-10. The M578 is not NMC if GPFU parts are missing/damaged, filters are contaminated or the unit does not work.

### A TM on Wheels

If you don't have TM 1-1730-230-20P on aircraft ground-handling wheels, have your pubs clerk order it. It lists repair parts and special tools to keep your wheels rolling.

### GDU Box for Howitzers

You can get a gun direction unit (GDU) container to fit any towed howitzer. Use NSN 7025-01-277-7829 to get the container, which mounts on the howitzer trail.

### M911 Filter Foul-up

The C-HET uses only a canister-type filter as the external transmission oil filter. But some spin-on filters were put in filter assembly, NSN 2940-00-414-7975, by mistake. The spin-on filters were made under contract number DLA 70088DA0140248, by AC Delco. The filters are easy to spot. They have AC part number 25011035 printed on the red, white and blue striped label on the box. If you get one of the spin-on filters, turn in the assembly with a Report of Discrepancy (ROD), SF 364.

### Dolly Wheel Seal Deleted

Engineers say seal ring, NSN 5330-01-268-4738, on the wheel hub and drum assembly of the M1022 Dolly Set is not needed. Item 18 in Fig 12 of TM 9-2330-379-14&P will be deleted.

### M976 Wheel Hub Assembly

You can no longer get just the wheel hub for the bolster trailer. The hub comes as part of assembly, NSN 2530-00-752-1655, that has the bearing cup, cone and rollers. The cup, cone and rollers also come separately with the NSNs listed in Fig 14 of TM 9-2330-287-14&P.

### M24 Sniper Rifle Help

If your M24 sniper rifle's protective finish is chipped or scratched, touch it up with solid film lubricant, NSN 9150-01-260-2534. If the protective finish is peeling off, though, turn in your M24. It needs to go back to depot to be refinished.

### M353 Wheel Cylinder NSNs

The NSNs are no good for the wheel cylinders in TM 9-2330-247-14&P. Now you can get a wheel cylinder to replace the upper or lower cylinder on either side of the 3½-ton trailer with NSN 2530-00-741-2065.

### M796 Trailer Screw NSN

NSN 5305-00-978-9395 gets the screw for the locking ring that holds the locking collar on the M796 trailer's rear axle trunnion shaft. The NSN shown for Item 11 in Fig 4 of TM 9-2330-287-14&P is wrong.

### M934/A1 Van Short Lamp NSN

There are two different length fluorescent lamps used in the ceilings of 5-ton vans. But only the 28-in lamp is listed in Fig 258 of TM 9-2320-272-20P. The 18-in lamp comes with NSN 6240-00-152-2992.

Would You Stake Your Life *right now* on

the Condition of Your Equipment?

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

☆ U.S. GOVERNMENT PRINTING OFFICE: 1990 — 748-004/20010



# WHEN CHECKING YOUR TIRES' AIR PRESSURE...

HEY!  
THE SPARE'S  
FLAT, TOO! DIDN'T  
YOU GAGE IT?

NO,  
I THOUGHT  
YOU DID!

...DON'T FORGET  
YOUR SPARE!