

Issue 488

# THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-488

Has your  
buddy read  
this issue?  
Pass it along!

July  
1993

## REDSTONE ARSENAL

### WELCOME PS MAGAZINE

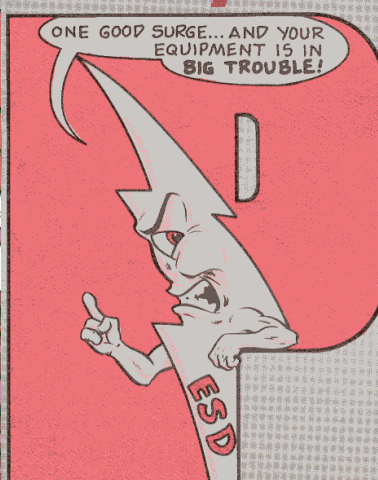
PS

THE  
PREVENTIVE  
MAINTENANCE  
MONTHLY

SEE  
PAGE 13



# The Elusive Enemy



That elusive enemy of electronic and electrical equipment—electromagnetic environment effect (E3)—continues to do its dirty work, causing failure and damage. Either one is bad news for your equipment.

Temporary E3 failures that interfere with transmission or reception are caused by electrical arcing—sparks, lightning, radar, communication and broadcast transmissions and power line surges caused by switching, motors or even solar flares and sunspots.

E3 damage is caused by electrostatic discharge (ESD) or improper grounding and such. Sudden surges of power zap your equipment.

Here are some ways to prevent this kind of E3 damage:

- Make sure your repairmen wear wrist straps when working on electronic circuit cards and components.
- Train your operators on proper grounding of their equipment.
- Teach soldiers how to handle and protect circuit cards being sent for repair.
- Practice "tight and bright" maintenance. That means making sure the hardware on things such as electrical panels is not loose.
- Report every E3 failure and all E3 damage. Check out DA Pams 738-750 and 738-751 on how to report E3 failure or damage on SF 368, Quality Deficiency Report (QDR). Then make sure your operators know when and how to fill out the QDR.

Tell the commo headshed about every E3 failure and all E3 damage—no matter if caused by natural or man-made sources. They want to know how well your equipment held up.



THE  
PREVENTIVE  
MAINTENANCE  
MONTHLY

TB 43-PS-488, 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.

ISSUE 488 JULY 1993

## LOGISTICS MANAGEMENT

AMDF	2-3	Defense Logistics	
Supply Requests	4	Agency ULLS	5, 6 7

## FIREPOWER

M16-Series Rifle	8-9	M2/M3-Series	
M9 Bayonet	10	Bradley	12, 13
AN/TSM-93 LCSS	11	M1-Series Tank	14-15
		Ordnance Hotline	15

## GROUND MOBILITY

Lead-Acid Batteries	16, 17	M599A2-Series Trucks	22
HMWV	18, 19, 20	Tire Inflation System	23
Wheeled Vehicle		HEMITT	24
Tow Bar	20	M915-Series Trucks	25
M39-, M809-Series Trucks	21	M870 Semitrailer	25
		Round Wrench	26
		Engine Exhaust	27-34

## AIR MOBILITY

FOD	35	AH-1S	38-39
AH-64A	36-37	SRU-21/P Survival Vest	40-41

## COMMUNICATIONS

SINCGARS	42-43, 44	MSE	46-47
KY-57 COMSEC Equipment	45	PP-1578A Charger	47

## TROOP SUPPORT

PS Relocation	13	NBC Marker Set	55
612B Scraper	48-49	Bolt Thread Repair	56-57
M9 ACE	50	Drycleaning Solvent	58
MK1 Bridge Boat	51	Tools	58
O-Rings	51	Oil Analysis Requests	59
Cranes, Winches	52-53	Maintenance Excellence Awards	60
M157 Smoke Generator	54		

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  
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By Order of the Secretary of the Army:

**GORDON R. SULLIVAN**  
General, United States Army Chief of Staff

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*Milton H. Hamilton*  
**MILTON H. HAMILTON**

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# Reading the Codes

It's no secret. You can learn a lot about an item from the Army Master Data File (AMDF). But, if you don't know how to read the codes used on the AMDF, you might as well be reading a pub from a distant planet.

Here's a list of some of those hard-to-crack codes used on the AMDF:

A C T	PRIME NSN MCN			①	②	UI	UNIT PRICE	S L C	C	③	④	⑤
	FSC	NUN	ADDL	SOS	A A C				I	A R C	C	MAT CAT
	2815-00-084-7495			S9C	F	EA	.58	O	U	X	Z	J2200

Column Title	Code Tells You
① SOS (Source of Supply)	Who really supplies you with the item—unless it's filled locally. The SOS is the same as the Routing Identifier Code (RIC) on your supply request.
② AAC (Acquisition Advice Code)	How and under what restrictions you request an item—regular requisition, fabricate, local purchase, etc.
③ ARC (Accounting Requirements Code)	The kind of paperwork accountability you need for an item. Nonexpendables (N) go on your property book and hand receipts. Durables (D) normally need hand receipts. Expendables (X) usually need no formal accountability. (See Para 2-5a of AR 710-2 for exceptions to these rules.)
④ RC (Recoverability Code)	What disposition action to take when an item is unserviceable. Z items are nonrepairable. When they become unserviceable, the maintenance level that replaces them disposes of them. O means it's a repairable item that unit level either repairs or disposes.
⑤ MATCAT (Materiel Category Structure Code)	The budget, inventory segment and category information. The first-place code tells you who's the Army's manager for the item.

I DON'T UNDERSTAND THIS AMDF. IT MUST BE WRITTEN IN KLINGON!

THE SOLUTION IS LOGICAL WHEN YOU KNOW THE CODES, CAPTAIN.

⑥	⑦	⑧	⑨	⑩	EIC LIN	P	M	P	A	R	N
SC	UM	MEASMT	NOMENCLATURE	PHRASE STATEMENT/RELATED NSN/MCN	C	OOU	JTC				
9K	G 3	EA	1	FERRULE ASSEMBLY Q-FAB/ASMBL- 5340-00-352-9292				Z			

Column Title	Code Tells You
⑥ SCMC (Supply Category of Materiel Code)	The supply class (number) and subclass (letter).
⑦ UM (Unit of Measure) and ⑧ MEASMT QTY (Measurement Quantity)	How much and what measure— length, volume, weight or count—you'll get when the unit of issue (UI) is not clear. PK tells you the item comes in a packet. How many are in the packet? Look at these columns to see how many are in the packet. When these columns are blank, the UI is all you need.
⑨ Nomenclature	The name of the item, related NSNs and Line Number (LIN) from SB 700-20, if one's been assigned.
⑩ Phrase Code	If there's been a change in the NSN's status and any information on substitute, deleted or consolidated items.

For more information on AMDF codes, check out CDA Pam 18-1, Code Reference Guide for the ARMS Monthly AMDF, and I&S History File.

If you don't have one, write to:

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

Or call:  
DSN 977-6741  
COMM (717) 770-6741

Supply  
Requests ... **2B OR NOT 2B ?**



Using advice code 2B on your supply request tells the supplier not to substitute another item for the preferred NSN. If the preferred NSN is not in stock, the item has to be ordered. That means it will be a long time before the item is sent to you.

Of course, there are times when you need to use advice code 2B. With pliers, for example, you determine that TL-13 with skinners, NSN 5120-00-247-2063, is the only item that will do the job. The TL-13 without skinners, NSN 5120-00-239-8254, is a substitute for the pliers with skinners. Use 2B on your request to make sure the supply folks know not to substitute the pliers without skinners.

JULY 93



DLA  
Price  
Cuts...

# S-T-R-E-T-C-H

## Supply Dollars

LOGISTICS MANAGEMENT

MAKE YOUR SUPPLY BUDGET DOLLARS GO FURTHER BY TAKING ADVANTAGE OF THE DEFENSE LOGISTICS AGENCY PRICE REDUCTION PROGRAM.

THIS PROGRAM GIVES A 50 TO 80 PERCENT DISCOUNT ON SELECTED ITEMS.

EACH DEFENSE SUPPLY CENTER OFFERS A LISTING OR FLOPPY DISK THAT DOES THESE THINGS...

- \$ Identifies the discount items.
- \$ Cross-references the items to weapons application, next higher assembly or end item application.
- \$ Gives ordering information.

To get the listing, write or call:

SOS (Source of Supply)

Address

Phone Numbers (DSN/Commercial)

S9C

Defense Construction Supply Center  
ATTN: OPD  
Columbus, OH 43216-5000

850-2407  
(614) 692-2407

S9E

Defense Electronics Supply Center  
ATTN: OPR-2  
Dayton, OH 45444-5160

986-6872  
(513) 296-6872

S9G

Defense General Supply Center  
ATTN: OPDL  
Richmond, VA 23297-5000

695-3901  
(804) 279-3901

S9I


Defense Industrial Supply Center  
ATTN: OPR  
Philadelphia, PA 19111-5096

442-3837  
(215) 697-3837




Supply ...

# Help in a Hurry



HELLO, S9I,  
I NEED TO TRACK  
DOWN A PRIORITY 03  
REQUISITION,  
PLEASE.

**N**ow that almost all your Class 9 repair parts are managed by the Defense Logistics Agency (DLA), you need to contact them when you want to track down your priority 01-08 requisitions.



EACH DLA SUPPLY CENTER  
HAS AN EMERGENCY SUPPLY OPERATION  
CENTER (ESOC). YOU CAN CALL THEM  
AT THESE PHONE NUMBERS...

ESOC	DSN	Commercial
General Supply Center (S9G)	695-4865	(804) 279-4865
Electronics Supply Center (S9E)	986-6161	(513) 296-6161
Industrial Supply Center (S9I)	442-4042	(215) 697-4042
Construction Supply Center (S9C)	850-2271/3191	(614) 692-2271/3191
Fuel Supply Center (S9F)	284-8105	(703) 274-8105
Personnel Support Center Medical Materiel (S9M)	444-2111	(215) 737-2111
Personnel Support Center Clothing and Textiles (S9T)	444-3042/3043	(215) 737-3042/3043







# CRACK MARKING

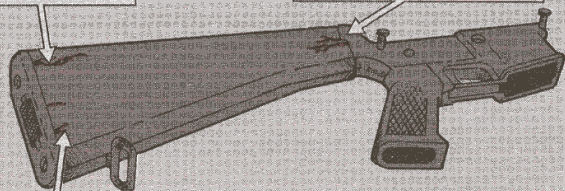


Here's the rule on buttstock cracks:

Hairline cracks (no chipped-away material allowed) at the butt plate end of the buttstock are OK under these conditions:

One hairline crack, no longer than one inch per buttstock side.

Any cracks in the front end of the buttstock mean it's time to replace the buttstock.

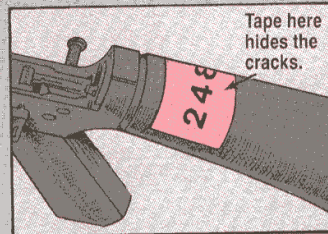


Two additional hairline cracks up to 1/4 inch long per side of the buttstock.

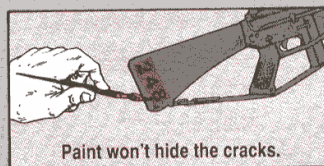
Up to three cracks per side of the buttstock—if they start from the butt plate end—are OK.

You can mark M16s about any way you want, as long as it doesn't scar the rifle, like cutting or stamping does.

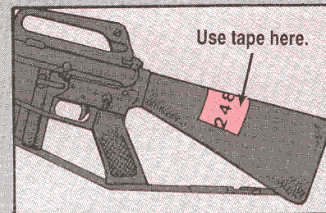
Problem is, many armorers use tape for ID numbers and put it either at the front or rear of the buttstock—right where you have to worry most about cracks. The tape hides cracks and bad buttstocks go to the field.



The best way to prevent that is to paint ID numbers on the buttstock.

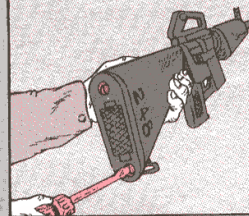


If you must use tape, put it on the middle of the buttstock where it won't cover critical areas.

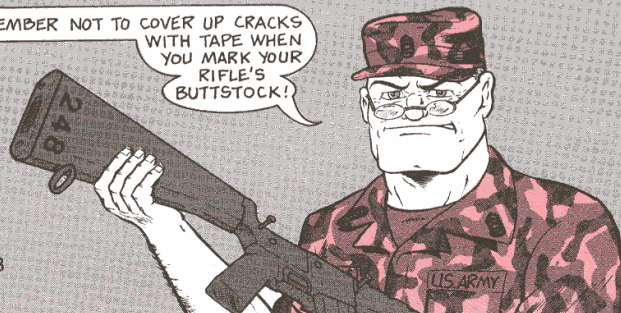


Remember when you do replace the buttstock to take it easy with the butt plate screws. Just one turn too many cracks the butt plate or distorts the liner.

Turn the screws until you feel resistance. Make one more quarter turn. Stop.



REMEMBER NOT TO COVER UP CRACKS WITH TAPE WHEN YOU MARK YOUR RIFLE'S BUTTSTOCK!

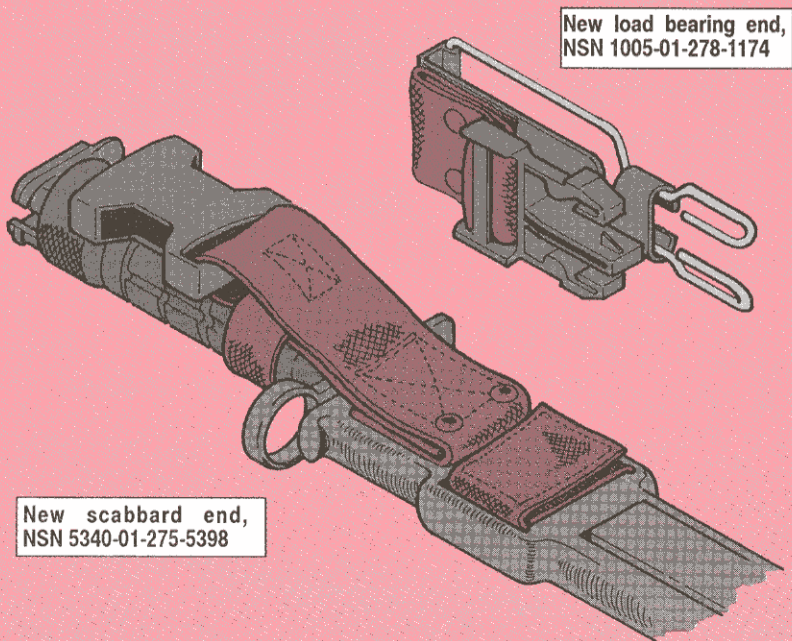




M9 Bayonet...

## Better Belt Attachment

If you're tired of rivets popping out of the M9 bayonet's belt attachment and letting the bayonet drop off, order a new, sturdier attaching assembly. You need to order two pieces, though—a load bearing end that attaches to the belt and a scabbard end.



New load bearing end,  
NSN 1005-01-278-1174

New scabbard end,  
NSN 5340-01-275-5398

When the parts come in, take off the old scabbard end and put on the new one. Then toss both parts. Never mix the old with the new. The new belt attachment with the old scabbard end lets the bayonet dangle. You'll lose it for sure.



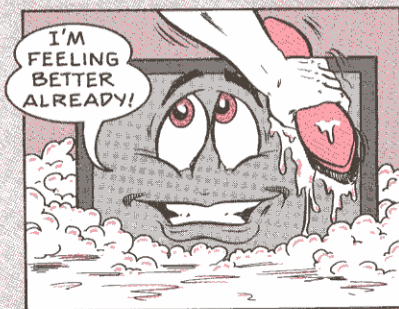
# The Forgotten Filter...



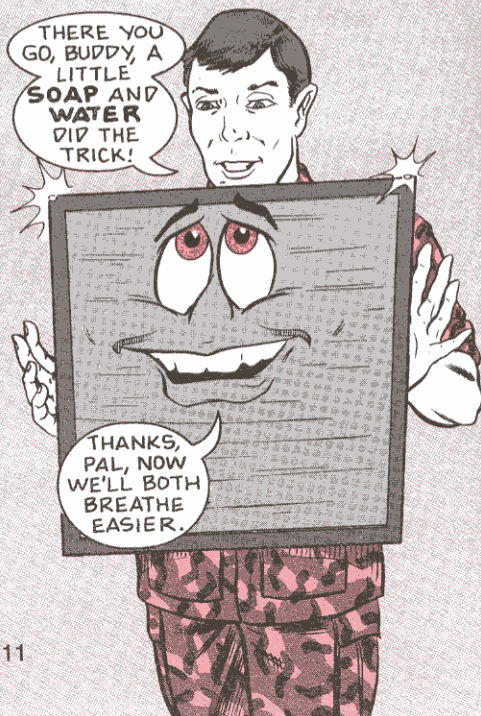
FIREPOWER

The Land Combat Support System (LCSS) needs lots of cool, clean air or its electronic equipment and computers shut down from overheating. The air conditioners can conk out, too, from the strain of trying to cool an LCSS with dirty filters.

Most LCSS crews do a good job of cleaning or replacing filters — except for the forgotten filter. It's the one inside the wall at the rear by the air conditioner. If it gets clogged, the air conditioners go down.

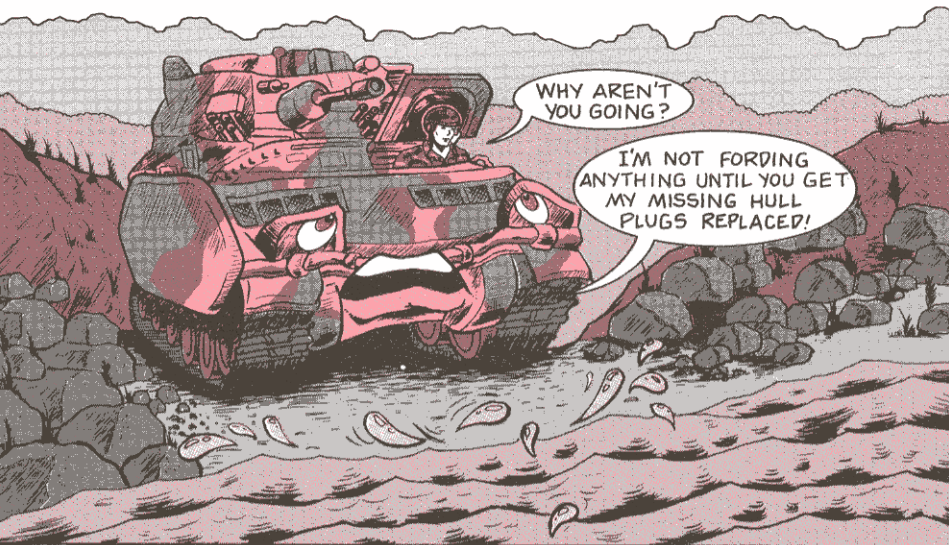


It needs to be cleaned monthly with the other filters. Wash it out with soap and water and then shake it dry. Repeat the process until all the brown gunk is gone.





# PULLING THE PLUG



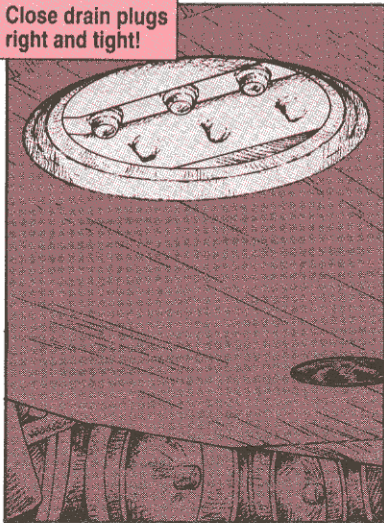
**C**rewmen, you've got to make sure the hull drain plugs on your Bradley are closed right and tight before operation.

If they're closed wrong, the plugs can work loose. They hang below the hull and are knocked off by rocks and brush. That means you have to replace them before you try to ford or swim.

The secret is to close the plugs right. First, take a look at the two mending plates inside the hull. If they are sheared off or cracked, get your mechanic to replace them.

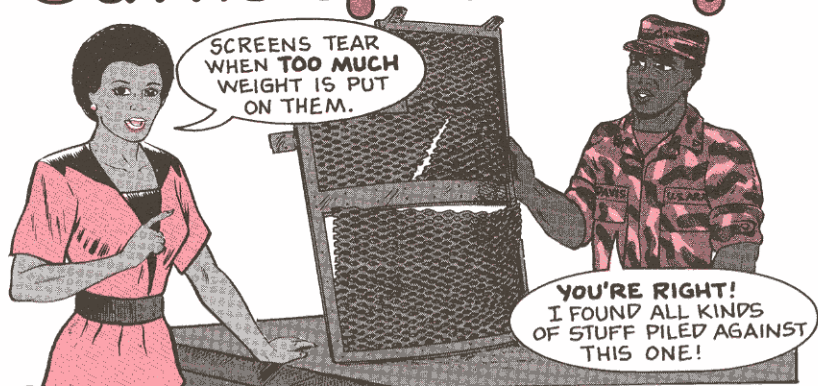
Wipe each plug free of any mud or sand that might prevent it from seating properly. Make sure the bar is placed firmly between the hull's two mending plates, then tighten the plug in place.

**Close drain plugs right and tight!**





# Battle of the Bulge

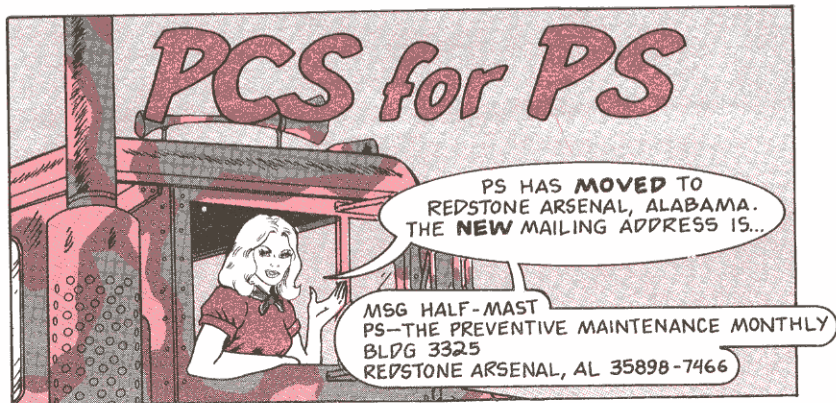


Crewmen, you may not realize it but the turret screens inside your M2/M3-series Bradley have a weight problem.

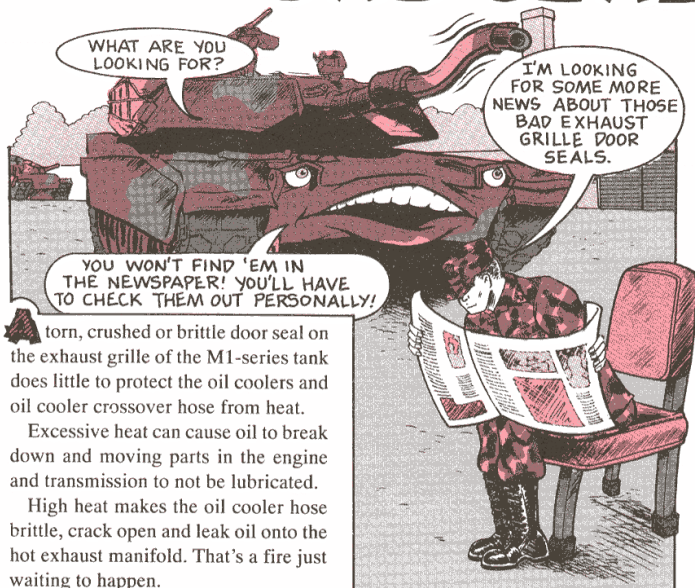
The extra weight comes from stuff that shouldn't be stored there in the first place. Items like TMs, tools, containers, jackets and work gloves get piled up against the screens.

As the weight builds, the metal screens bulge outward. When the turret is traversed, the screens snag on projections in the turret wall and tear. Then they catch on electrical cables and connections, ripping them loose. Your vehicle is down until the damage can be repaired.

Do yourself and your vehicle a favor: Keep unnecessary items out of the turret.



# BAD SEAL IS BAD NEWS



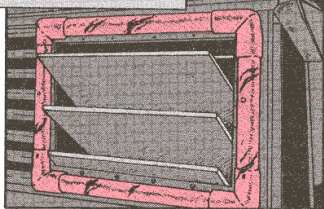
A torn, crushed or brittle door seal on the exhaust grille of the M1-series tank does little to protect the oil coolers and oil cooler crossover hose from heat.

Excessive heat can cause oil to break down and moving parts in the engine and transmission to not be lubricated.

High heat makes the oil cooler hose brittle, crack open and leak oil onto the hot exhaust manifold. That's a fire just waiting to happen.

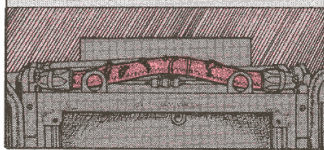
If you spot a bad seal, replace it using NSN 5330-01-099-6331. Replace old seal screws with stainless steel ones, NSN 5306-01-309-7031.

Look for torn, crushed or brittle seals.



Coat the new screws with antiseize compound, NSN 8030-00-597-5367, so they'll come out much easier next time. Then torque 'em to 120-130 lb-in.

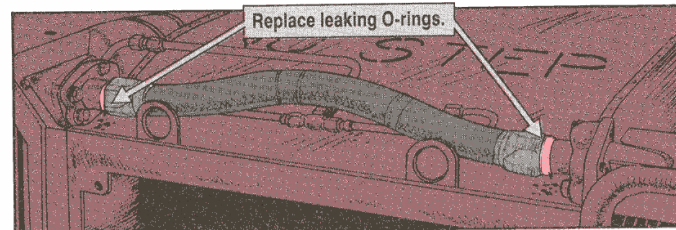
Scan the oil cooler crossover hose for cracks and wear.



If the hose is damaged, replace it with NSN 4720-01-067-9039.

Mount the hose so it doesn't touch the exhaust duct or the top deck. If the hose touches, loosen the mounting bolts and reposition it. Torque the bolts to 46-58 lb-ft.

Start the engine and check the hose clamp O-rings. If they leak, replace 'em with NSN 5330-00-165-1944.



Hold it! Never touch a hot engine. You'll be badly burned if you try it.

## Ordnance Soldier Hotline

If you Ordnance enlisted soldiers have questions about your career field, look no further. The Ordnance Corps has two special hotlines for soldiers with questions about their MOS, career progression, or just the corps in general.

IT'S A 24-HOUR 5-A-DAY RECORDED SYSTEM, SO CALL ANYTIME.

Electronics & munitions  
DSN 746-6627 or  
Commercial (205) 876-6627

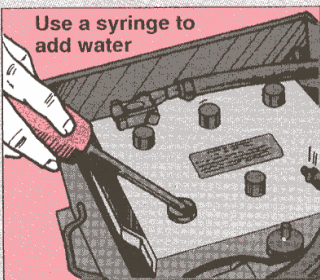
Mechanical maintenance  
DSN 298-5542 or  
Commercial (410) 278-5542



# Water Is Life



battery filler. Both are in the No. 1 and 2 Common shop sets.



## Say When

Cover the battery plates to within about 3/8-in. of the top of the fill holes. Fill any higher and the electrolyte will boil out through the vent caps when the battery charges.

Never use a water hose to add water. It's easy to overfill a battery with a water hose. That flushes out the electrolyte. A battery cannot be fully charged if electrolyte is weak.

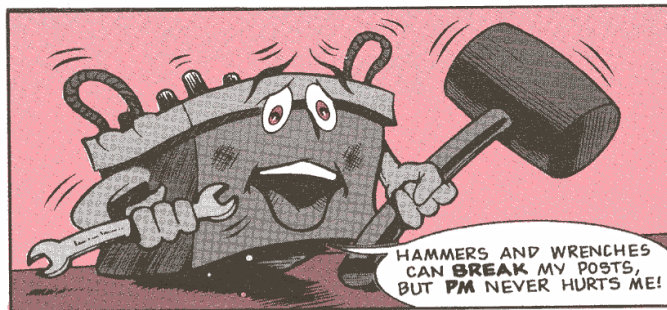
**J**ust as you need water to survive, so batteries need water to keep producing power. The big difference is, lead-acid batteries need distilled water. Distilled water has no minerals in it that will ruin a battery.

You can get a gallon of distilled water with NSN 6810-00-682-6867, or a 5-gallon jug with NSN 6810-00-356-4936.

But tap water will do if you're stuck without distilled water. So will rain-water or melted snow. Just strain it through a few layers of clean cloth. Catch and store water in a clean jug or a covered glass container.

There're several ways to add water to a battery, but two ways work best. One is to use a syringe; the other is to use a

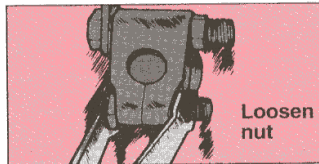
# Spread Clamps, Save Posts



**Dear Editor,**  
"Tapping" a battery clamp onto a battery post with a hammer or wrench is bad news for the battery. It breaks the battery case or the post.

Here's a trick I've learned that makes installation easy, and saves batteries.

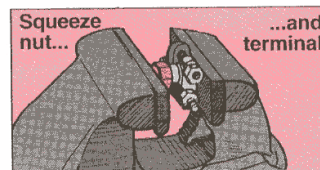
1. Loosen the battery clamp tightening nut.



2. Insert a 1/2-in tube coupling nut into the terminal. Slip the tapered end in first. Nut, NSN 4730-00-054-2572, from the No. 1 Common shop set does the job.



3. Put the terminal and nut into a vise and squeeze the two together.



4. Remove the nut and install the terminal.

CW2 Jeffrey G. Wernz  
APO AE 09081

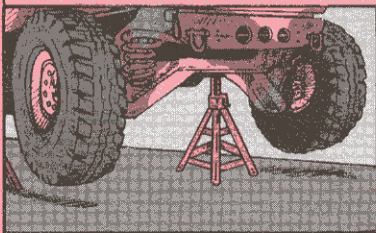
FROM THE DESK OF THE Editor  
Thanks for spreading the word, Sir.



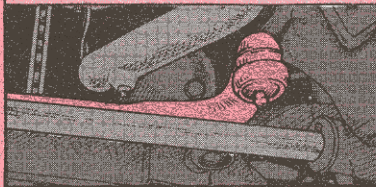
# Idler Arm Specs Check



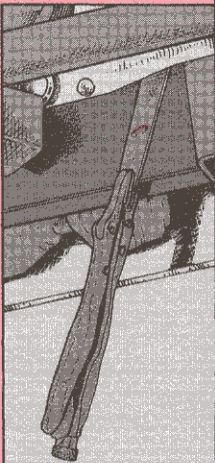
- 1 Park on flat ground, and set the parking brake. Block the rear wheels. Raise the front wheels off the ground, and put floor jacks under the frame rails. Turn the front wheels straight ahead.



- 2 Check the idler arm for damage. If there are breaks or cracks, replace the idler arm. Check mount bolts for looseness.



- 3 Get a flat piece of scrap steel and clamp it to the front cross member with a C-clamp or lockable pliers. Pull down on the center link to seat the ball and socket of the idler arm. Using the flat surface of the center link as a guide, mark a reference line on the scrap steel.



- 4 Put the spring scale, NSN 6670-00-254-4634, from your No. 1 Common shop set, on the center link and pull upward until you get a 25-lb reading. Hold that reading until you mark a second line on the steel.



- 5 Remove the scrap steel from the cross member. Measure the distance between the two marks. If the distance exceeds one-quarter inch, replace the idler arm.

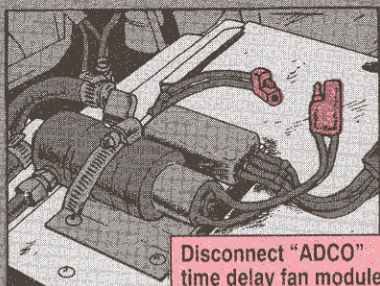




# Fan Module Disconnect

Some bum fan time delay switches on HMMWVs need to be replaced. These switches don't let the radiator fan kick in at 190° F like they're supposed to. The engine can't keep cool without circulating air.

Eyeball the module switch on your HMMWV's engine. If the vehicle's serial number is 100000 through 112867 or 68555 through 72541, and you see ADCO stamped on top, replace the switch. Get a better one with NSN 5945-01-193-7175.



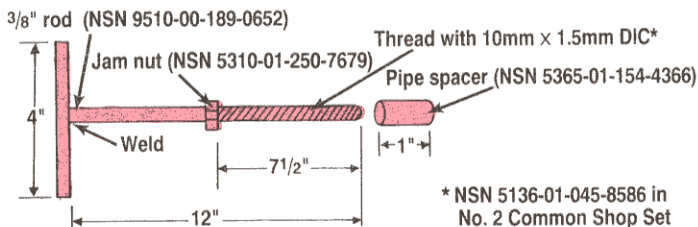
Disconnect "ADCO" time delay fan module until you replace it.

Until you get a new one, disconnect the ADCO module from the control valve connector. That way, the fan will continue to run, no matter what the temperature is. The HMMWV's engine will stay cool, even in desert heat.

## Make Starter Starter Bolt

Dear Editor,


In our shop, we frequently pull and replace HMMWV starters. One of our mechanics, PFC Bruce Cole, came up with a homemade tool that makes the job a lot easier.



Run the tool through the pipe spacer and the starter bolt hole and into the engine bell housing. Raise the starter by turning the jam nut. Raise it until you can seat the other mounting bolt.

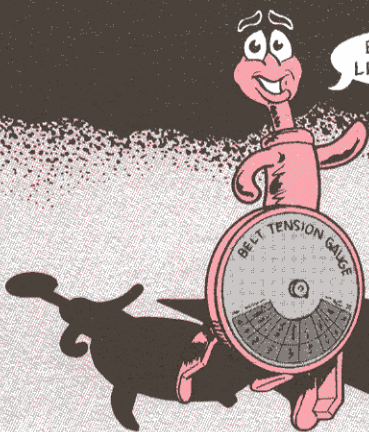
That will hold the starter in place while you remove the starter tool and install the second bolt.

CW2 Richard S. Haase  
Ft Drum, NY

FROM THE DESK OF THE Editor   
It looks like your mechanic started something. Good work, Private Cole.



# Tension Gauge Warranted



NEVER TOSS A BAD "BURROUGHS" BELT TENSION GAUGE. WE'RE GUARANTEED FOR LIFE, SO THE COMPANY WILL REPAIR OR REPLACE US.

Your only cost is the postage to Burroughs. Send the gauge to:

Burroughs Division  
Sealed Power Corp  
ATTN: Repair Department  
2429 N Burdick St  
Kalamazoo, MI 49007-2700

That word is on Page 3-35 of TACOM EIR Digest, TB 43-0001-39-2 (Sep 92).

Wheeled Vehicles...

## Tow Bar Too Long?

**M**WO 9-4910-593-20-1 to the wheeled vehicle tow bar, NSN 4910-00-433-7094, leaves it too long for short jobs.

A sleeve welded on the fixed side's male leg may keep the leg from sliding in far enough to be pinned in its last hole.



IF YOU HAVE THIS PROBLEM, USE A HACKSAW TO CUT NO MORE THAN AN INCH OFF THE TOW BAR'S FIXED FEMALE LEG - UNTIL THE PIN LOCKS THE MALE LEG IN THE LAST HOLE.



# Lock in on Brake Problems

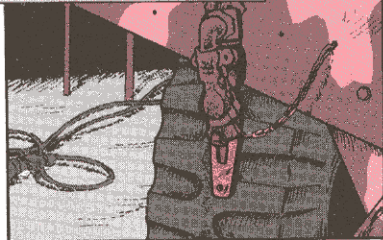


SERGEANT, HAVE YOU EVER FINISHED A BRAKE REPAIR JOB ON ONE OF THESE 5-TONNERS ONLY TO HAVE THE BRAKES LOCK UP? EVEN BLEEDING DIDN'T HELP.

SURE HAVE! AND I THINK I KNOW THE ANSWER TO YOUR PROBLEM!

Could be nothing more than a plugged vent valve on the service brake dummy coupling near the front bumper. Or maybe a dummy coupling without a breather vent.

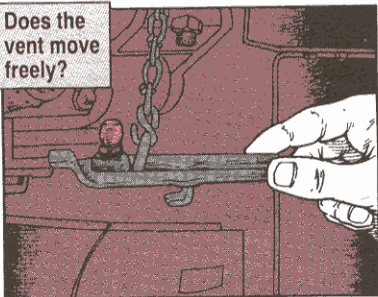
Check the dummy coupling on the front curb side.



Without a breather, back pressure builds up in the air-hydraulic cylinder when you step on the brake treadle. The cylinder won't release air, so brakes lock.

First, check out the vent. Blow into it. You should feel air coming through. If it's plugged, take it off and clean it with drycleaning solvent. Let it dry completely before putting it back.

Does the vent move freely?



If the dummy coupling does not have a vent, someone switched couplings. Put on a new dummy coupling, NSN 2530-00-740-9445. It should solve the problem.



# Get Right Wheel Parts

WHAT'S WITH THE RULER? DON'T YOU MEASURE UP?

YEP, WE ALL DO, AND THAT MEANS WE WON'T HAVE TO BE REPLACED.

Newer M939A2s  
use  $\frac{3}{4}$ -in studs.

**T**here are two different wheel assemblies for M939A2-series trucks, even though Fig 157 of TM 9-2320-272-20P shows only one.

M939A2 models serial-numbered 501 and above use wheel, NSN 2530-01-303-0801. It uses  $\frac{3}{4}$ -in nuts and studs (Items 6 and 14) and a different O-ring. The wheel works on older M939A2s and A1s, but you have to replace all parts.

Parts for the new wheel are:

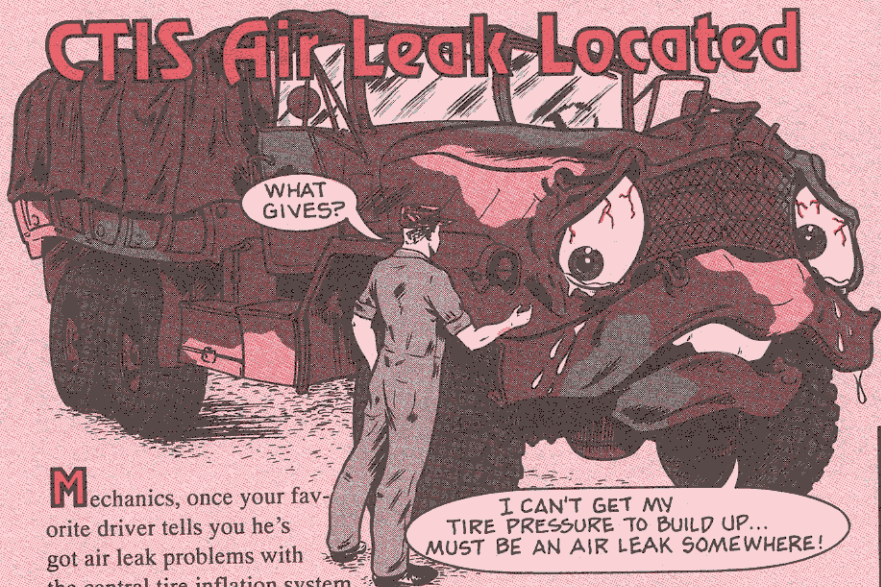
Item	NSN
O-ring	5330-01-314-7598
Stud	5306-01-314-6742
Nut	5310-01-102-2711

The wheel assembly shown in the TM fits early -A2s and all M939A1s. It uses  $\frac{5}{8}$ -in studs and nuts.

Not sure which you have? Measure the face of the stud. A  $\frac{3}{4}$ -in stud will measure  $\frac{3}{4}$  inch across.



# CTIS Air Leak Located



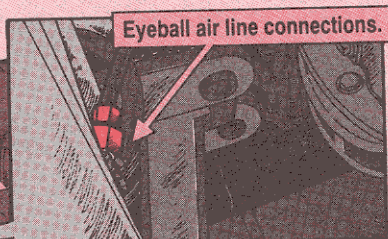
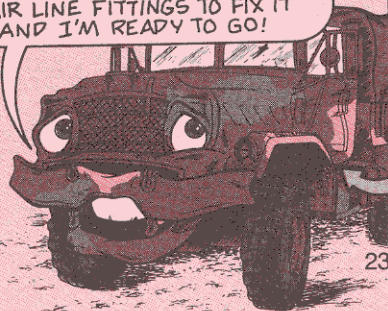
**M**echanics, once your favorite driver tells you he's got air leak problems with the central tire inflation system (CTIS) on his 5-tonner, here's a tip that can save you some troubleshooting time:

Some of the air line connectors were over-tightened at the factory. These over-tightened connectors crack and leak air, preventing the CTIS system from working right.

To check for bad connectors, eyeball the air line connectors that mount into the T-connector located on the driver's side frame rail next to the firewall. Look for cracks and feel for loose fittings.

Use an air compressor or other source of compressed air to pressurize the system. Daub a little soapy water around the connector. Look for bubbles and listen for leaking air. If you find a crack, a loose fitting, or hear or see a leak, you've probably found the problem.

REPLACE THE T-CONNECTOR'S AIR LINE FITTINGS TO FIX IT AND I'M READY TO GO!



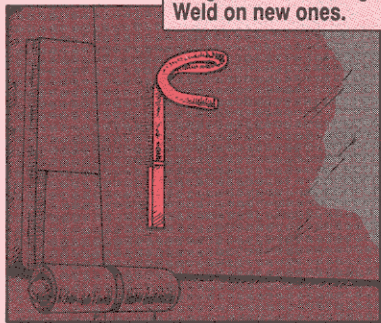


# Cargo Hook News



① Order the hooks you need with NSN 5340-00-456-1011.

**Cargo hooks missing?  
Weld on new ones.**



Remember, too, that those hooks won't stand the strain of a mechanical rope tightener. They'll snap off.

Need to brush up on your welding before you install them? Get a copy of TM 9-237 (soon to be TC 9-237), Welding Theory and Application, and TC 9-510, Metal Body Repair and Related Operations.

## S-Hook Safety

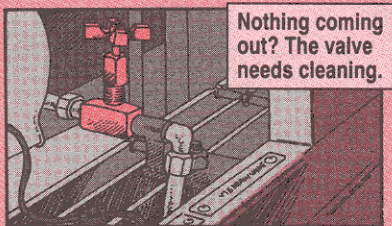
Close the S-hooks on the front end panels of M977 and M985 cargo trucks. That keeps 'em from snagging someone climbing into or out of the box.

## Open the V15 Valve

**W**hen you open the filter-separator drain valve (V15) on your M978 HEMTTs for PMCS, fuel and contaminants should come out.

If they don't, it means water and other contaminants are backing up in the filter canisters, and could end up in the vehicles you're fueling.

As soon as your tanker is empty, or when it's convenient to unload the fuel, have your mechanic disassemble and clean the valve. Removal instructions are on Page 23-2 of TM 9-2320-279-20-3.

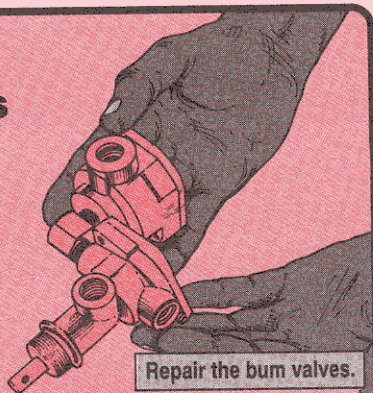




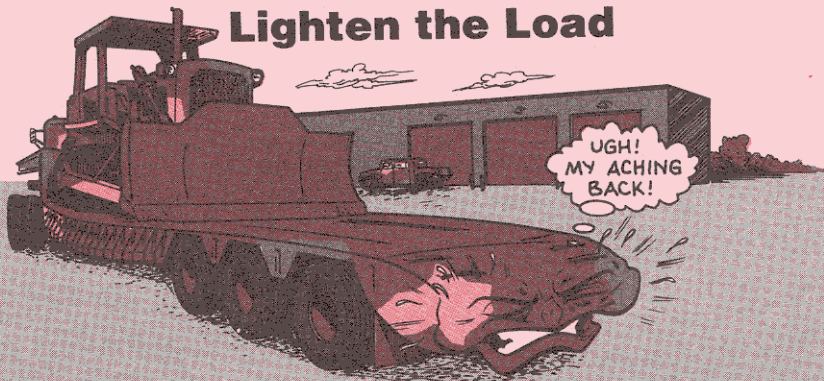
## Kit Fixes Valves

**Y**ou can now repair the brass parking brake valve and the trailer supply valve instead of replacing them with plastic valves. Order repair kit, NSN 2530-01-126-1505. It brings a diaphragm and four O-rings.

If you get a plastic replacement valve that doesn't work or fit properly, fire off an SF 368, Quality Deficiency Report, to Tank-Automotive Command, AMSTA-QWH, Warren, MI 48397-5000. Chapter 11 of DA Pam 738-750 in the Maintenance Management Update has details on filling out the form.



## Lighten the Load



**T**he D8K is much too heavy for the M870 — so heavy it cracks frames, breaks welds and causes other maintenance problems. To load a dozer, lighten it like so:

- X Clean caked dirt off the vehicle before loading.
- X Remove the blade and rollover protective structure (ROPS) from the tractor and haul it separately.
- X If your tractor has a ripper, remove it, too, and haul it separately.

One driving tip that can save trailer damage — drive slowly during cross-country travel.



# Round Wrench Works Wonders



**Y**ou can get a wrench that acts like a third hand to help you tighten or loosen frozen or stubborn nuts or bolts in hard-to-get-to areas.

To use it, choose the right size wrench opening for the nut or bolt. Place that wrench opening over the nut or bolt. The spring clip will automatically lock the wrench in place.

Hold the round wrench and tighten or loosen the bolt until the round wrench wedges itself and stops turning. Now both your hands are free to hold and turn

the socket wrench to tighten or loosen the bolt.

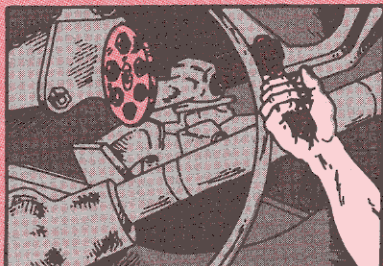
Two wrenches are available:

- One for SAE nuts or bolts, NSN 5120-01-342-8956, includes sizes 1/2 through 13/16 inches.
- One for metric nuts or bolts, NSN 5120-01-342-8957, includes sizes 13 through 18 mm.

Your authority to order is Appendix A of CTA 50-970.



Turn round wrench until it stops turning. . .



. . . then tighten or loosen bolt



# Smoking Out an Exhausting Lesson



C'MON, YOU  
DARN TRUCK!  
WE'VE GOT TO KEEP  
UP WITH THE REST  
OF THE CONVOY!



WHAT THE...?  
WHAT NOW?

WHAT ELSE  
COULD GO  
WRONG?

R-R-R-R-R-R-R



UH-OH!  
SORRY  
I  
ASKED.



OK, BUB, OUT OF THAT TRUCK RIGHT NOW! I REPRESENT THE HIGH SHERIFF ON THESE ROADS...

... AND I'M NOT HAPPY WITH THE **BLACK CLOUD** YOU'RE SENDING UP.

WE'VE GOT LAWS AGAINST POLLUTING AROUND HERE...

...AND YOU'RE VIOLATING EVERY ONE OF 'EM! SHUT DOWN THAT TRUCK, TOO! I CAN'T BREATHE!

SORRY, DEPUTY, IF I TURN IT OFF IT MAY NOT START AGAIN.

THAT'S IT! YOU'RE COMING WITH **ME!**

MOMENTS LATER...

BESIDES, ALL THE POLLUTING ANDY, HE'S WASTIN' FUEL AND WEARIN' OUT THE ENGINE.

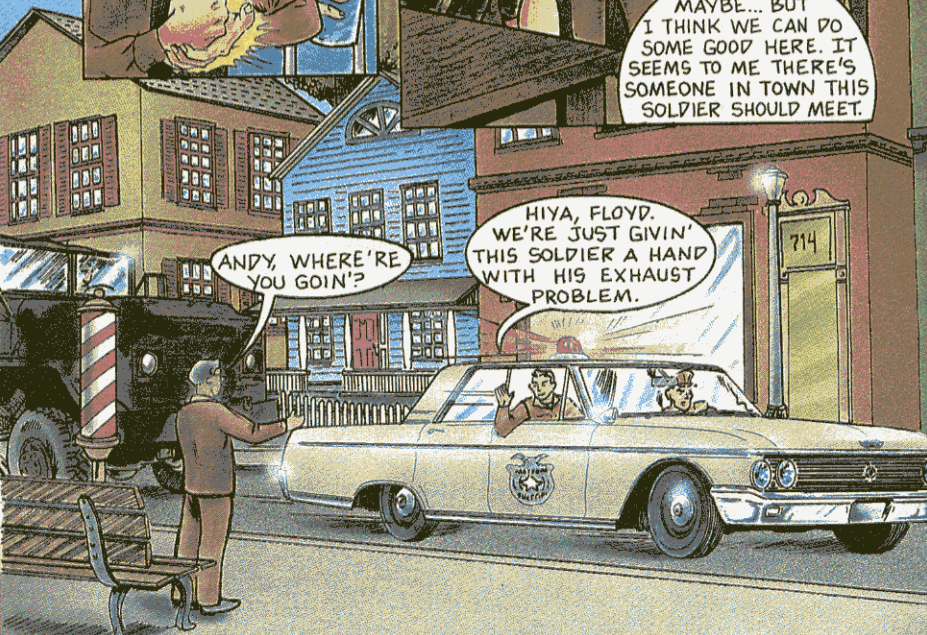
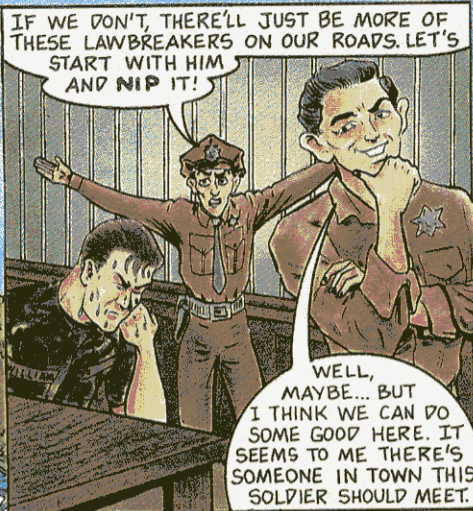
PICKLE, ANDY?

WELL, AS MUCH AS I'D LIKE TO, I CAN'T LET THIS PASS.

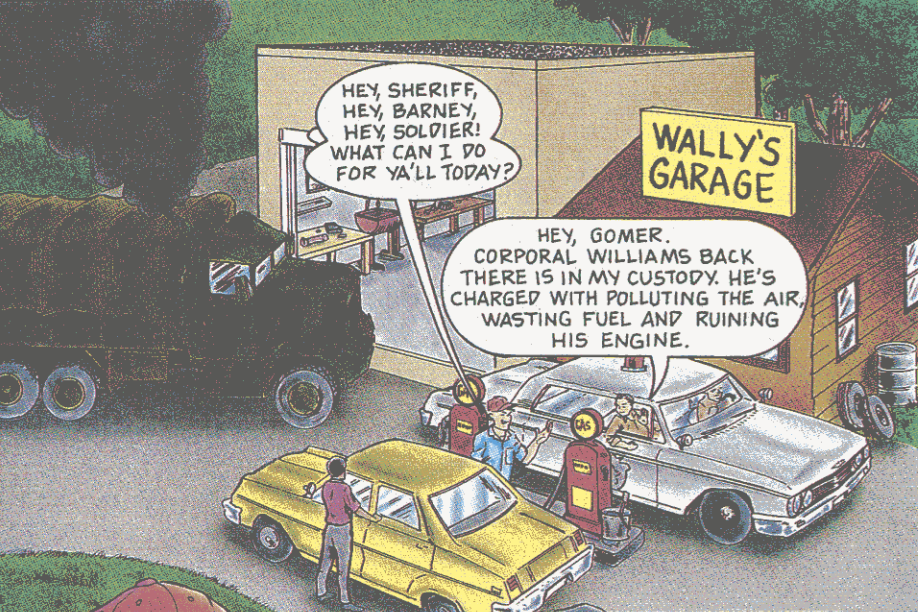
I'M GOING TO HAVE TO RUN YOU IN.

BARNEY, COULD YOU GET OTIS A LITTLE WATER?





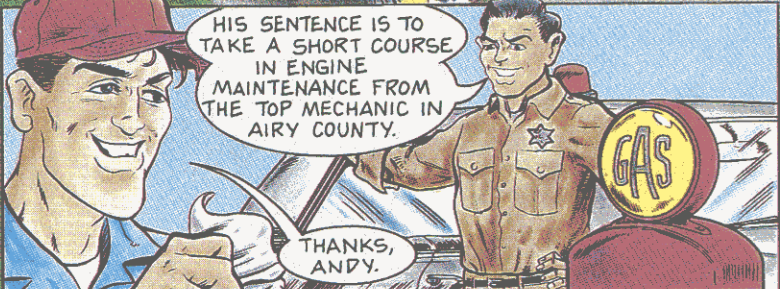




HEY, SHERIFF,  
HEY, BARNEY,  
HEY, SOLDIER!  
WHAT CAN I DO  
FOR YA'LL TODAY?

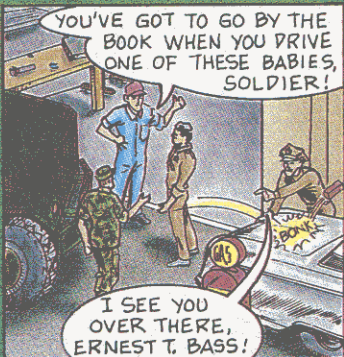
WALLY'S  
GARAGE

HEY, GOMER.  
CORPORAL WILLIAMS BACK  
THERE IS IN MY CUSTODY. HE'S  
CHARGED WITH POLLUTING THE AIR,  
WASTING FUEL AND RUINING  
HIS ENGINE.



HIS SENTENCE IS TO  
TAKE A SHORT COURSE  
IN ENGINE  
MAINTENANCE FROM  
THE TOP MECHANIC IN  
AIRY COUNTY.

THANKS,  
ANDY.

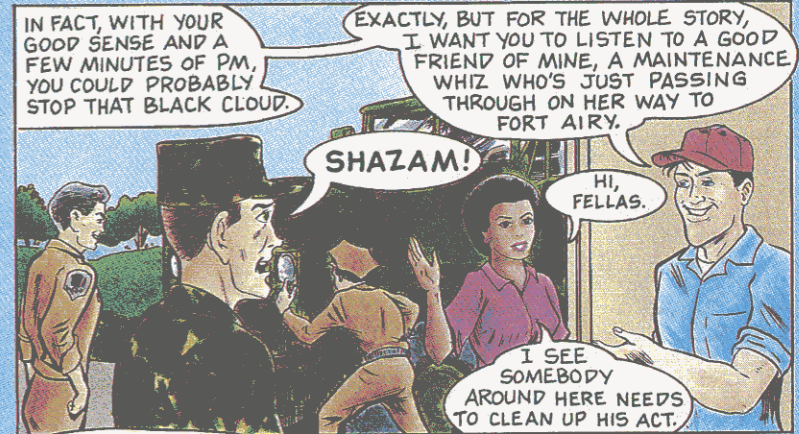


YOU'VE GOT TO GO BY THE  
BOOK WHEN YOU DRIVE  
ONE OF THESE BABIES,  
SOLDIER!

I SEE YOU  
OVER THERE,  
ERNEST T. BASS!



THE BOOK TELLS YOU WHAT  
TO CHECK, WHEN TO  
CHECK IT, AND TELLS  
YOU WHERE TO LOOK  
IF SOMETHING UNUSUAL  
IS GOING ON LIKE  
THAT NASTY CLOUD  
OF BLACK SMOKE!



IN FACT, WITH YOUR  
GOOD SENSE AND A  
FEW MINUTES OF PM,  
YOU COULD PROBABLY  
STOP THAT BLACK CLOUD.

EXACTLY, BUT FOR THE WHOLE STORY,  
I WANT YOU TO LISTEN TO A GOOD  
FRIEND OF MINE, A MAINTENANCE  
WHIZ WHO'S JUST PASSING  
THROUGH ON HER WAY TO  
FORT AIRY.

SHAZAM!

HI,  
FELLAS.

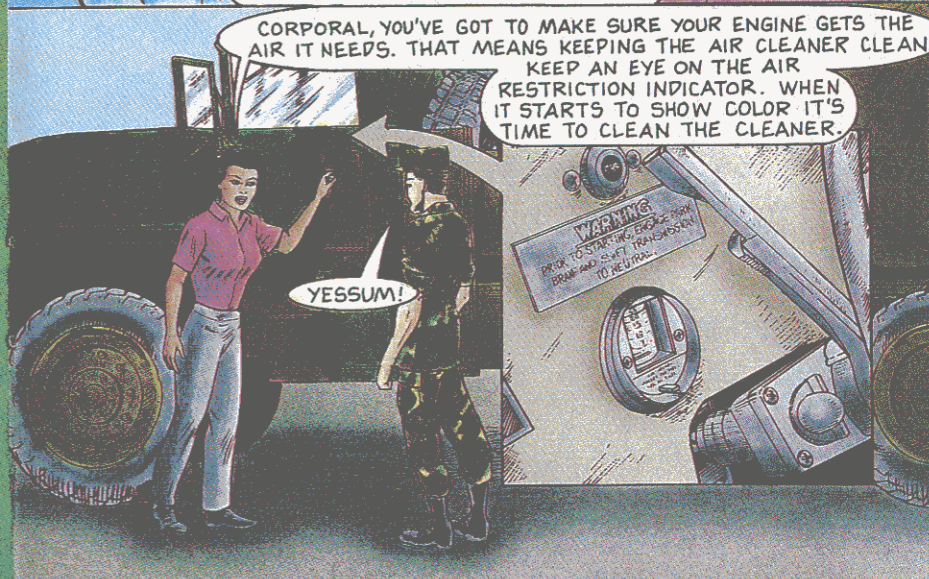
I SEE  
SOMEBODY  
AROUND HERE NEEDS  
TO CLEAN UP HIS ACT.

WOULD YOU DO THE  
HONORS, MISS BONNIE?



SURE, GOMER.  
JUST A DIRTY AIR CLEANER  
CAN CAUSE THE BLACK SMOKE.  
YOU SEE, YOUR ENGINE CAN'T  
GET ENOUGH AIR... BUT IT KEEPS  
RIGHT ON GULPING FUEL.

FUEL CAN'T BURN COMPLETELY  
WITHOUT AIR. SO WHAT YOU SEE AS  
BLACK SMOKE IS REALLY UNBURNED FUEL.



CORPORAL, YOU'VE GOT TO MAKE SURE YOUR ENGINE GETS THE  
AIR IT NEEDS. THAT MEANS KEEPING THE AIR CLEANER CLEAN.  
KEEP AN EYE ON THE AIR  
RESTRICTION INDICATOR. WHEN  
IT STARTS TO SHOW COLOR IT'S  
TIME TO CLEAN THE CLEANER.

YESSUM!

WARNING  
PRIOR TO STARTING ENGINE FROM  
BRAKE AND CLUTCH TRANSMISSION  
TO NEUTRAL.





WHEN YOU  
CLEAN THE  
EQUIPMENT, USE  
LOW PRESSURE  
AIR...

...AND  
NEVER, EVER RUN  
YOUR ENGINE WHILE  
THE ELEMENT IS OUT  
OF THE CLEANER  
HOUSING.

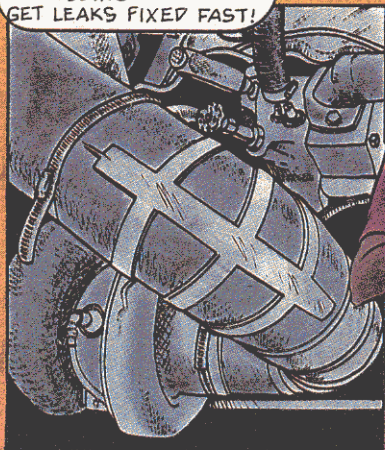


DIRT IS LIKE A  
SANDBLASTER IN YOUR  
ENGINE. WORN PARTS MAKE  
FOR BLACK SMOKE, TOO!

DIRT CAN ALSO GET IN THROUGH  
LEAKS IN THE AIR INTAKE  
SYSTEM. LOOK FOR...

- \* GOUGES OR HOLES  
IN THE ELEMENT.
- \* MISSING, TORN OR  
TWISTED GASKETS.
- \* LOOSE OR DAMAGED  
TUBING.

GET LEAKS FIXED FAST!



ANOTHER SMOKE-MAKER IS  
DIRTY FUEL. ONE SPECK OF  
DIRT CAN FOUL UP A FUEL  
INJECTOR NOZZLE. DIRT  
MAKES THE NOZZLE DRIP  
FUEL INSTEAD OF  
SPRAYING IT.

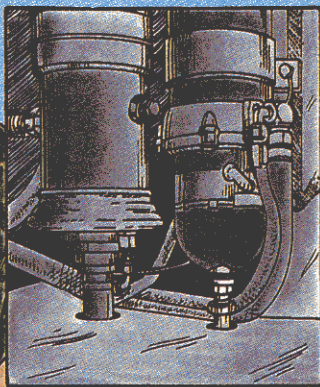


THE  
FUEL WON'T  
BURN RIGHT...AND  
IT COMES OUT OF YOUR  
EXHAUST AS... THAT'S  
RIGHT, **BLACK  
SMOKE!**



YOU CAN HEAD OFF DIRTY FUEL BY DRAINING FUEL FILTERS BEFORE EVERY OPERATION. CHANGE FUEL FILTER ELEMENTS BY THE BOOK OR CLEAN THEM IF YOU'VE GOT METAL ELEMENTS.

HEY THERE, ERNEST T!



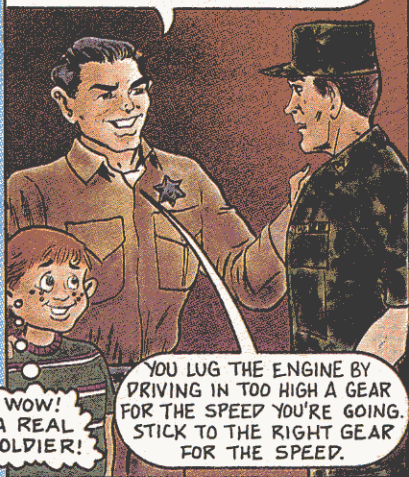
UH... OH.

KEEP DIRT FROM GETTING IN THE FUEL TANK WHEN YOU'RE REFUELING. YOU MAY HAVE TO DRAIN SOME FUEL OUT OF THE TANK TO GET RID OF THE JUNK ALREADY IN THERE. IF THERE'S NO ON-OFF DRAIN ON YOUR TANK, YOU MAY HAVE TO DRAIN ALL THE FUEL. THIS IS ESPECIALLY IMPORTANT IF YOUR VEHICLE HAS BEEN IN DUSTY AREAS.

FINALLY, CORPORAL, IF YOU CAN'T FIX THE PROBLEM, GET YOUR MECHANICS ON IT. THE VEHICLE MAY HAVE TO GO TO P.S. MECHANICS THERE CAN EXPLORE OTHER CAUSES FOR YOUR BLACK EXHAUST.

IT COULD BE A WORN INJECTION PUMP, BAD TIMING OR A BUM FUEL INJECTOR!

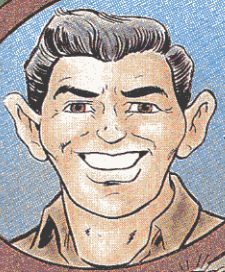
CORPORAL WILLIAMS, IT APPEARS TO ME YOU'VE GOTTEN SOME VALUABLE LESSONS HERE TODAY! HERE'S ONE MORE FOR GOOD MEASURE. SOME OF YOUR BLACK SMOKE PROBLEMS ARE CAUSED BY... YOU!



WOW! A REAL SOLDIER!

YOU LUG THE ENGINE BY DRIVING IN TOO HIGH A GEAR FOR THE SPEED YOU'RE GOING. STICK TO THE RIGHT GEAR FOR THE SPEED.





BUT ANYWAY, MY DEPUTY AND I  
THINK YOU'VE LEARNED A VALUABLE  
LESSON. WE'RE JUST GOING TO FORGET  
THIS LITTLE INCIDENT, AND HELP YOU  
CATCH UP WITH YOUR CONVOY.




RRRRRRRRRR



WHAT...  
WHERE...  
MAN, WHAT  
A DREAM!

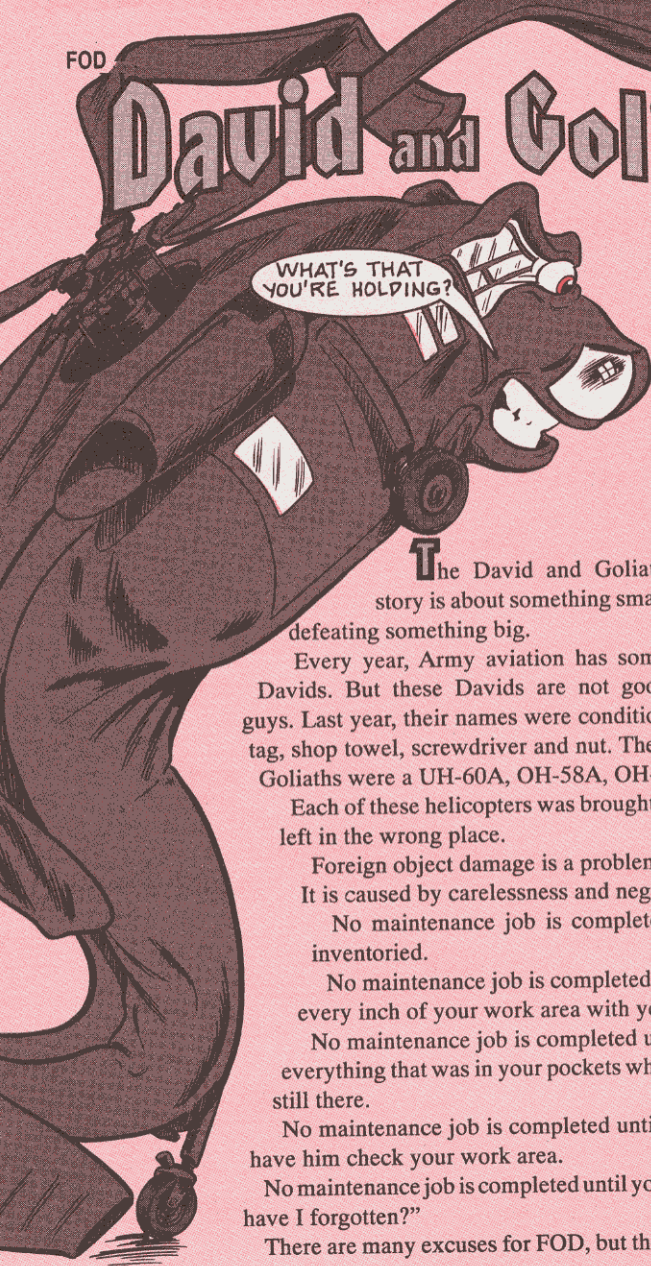
THAT ROUGH RUNNING-TRUCK  
MUST HAVE AWAKENED ME!



WHICH REMINDS  
ME... I'VE GOT  
A CONVOY TO  
GET READY  
FOR!!



# David and Goliath



WHAT'S THAT  
YOU'RE HOLDING?



I GUESS  
YOU'VE NEVER  
HEARD ABOUT  
**DAVID AND  
GOLIATH.**

**T**he David and Goliath story is about something small defeating something big.

Every year, Army aviation has some Davids. But these Davids are not good guys. Last year, their names were condition tag, shop towel, screwdriver and nut. Their Goliaths were a UH-60A, OH-58A, OH-58C and a UH-1V.

Each of these helicopters was brought down by small objects left in the wrong place.

Foreign object damage is a problem that never goes away. It is caused by carelessness and neglect.

No maintenance job is completed until your tools are inventoried.

No maintenance job is completed until you have covered every inch of your work area with your eyes.

No maintenance job is completed until you make sure that everything that was in your pockets when you started the job is still there.

No maintenance job is completed until you grab a buddy and have him check your work area.

No maintenance job is completed until you say to yourself, "What have I forgotten?"

There are many excuses for FOD, but there are no good reasons.



# Could it Be the Thermocouple?

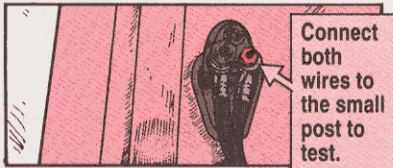


If your auxiliary power unit (APU) fails to crank, check the exhaust gas temperature (EGT) thermocouple. You won't find a test for it in your TMs, so many APUs are labeled bad simply because of a failed thermocouple.

Here's how to test it:

First, make sure the battery is disconnected and all electrical power is removed.

Then disconnect the wire on the large post of the thermocouple and



reconnect it on the small post. Now both wires are on one post. That bypasses the thermocouple.

Reconnect the battery and/or electrical power. If your APU cranks, you've found your problem.

Immediately shut down the APU, disconnect your power source, and solve the problem by replacing the thermocouple like it says on Pages 15-74 through 15-76 of TM 55-1520-238-23.

After testing, make sure you reconnect the wires to the right posts.

Remember, the APU is easy to start, so always disconnect the power source before doing any maintenance.

## A Light Touch

Lift the turtle-back fuselage fairing with the mounted navigational light too high and you'll rip out the light's wires.

The light, Item 2 of Fig 420 in TM 55-1520-238-23P, is connected by two short wires. If you open the turtle-back wide like you do most fairings, you'll pull the wires out.

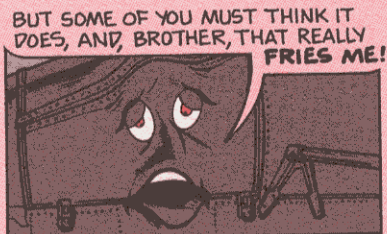
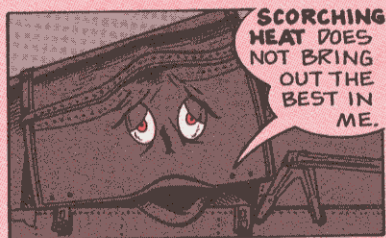
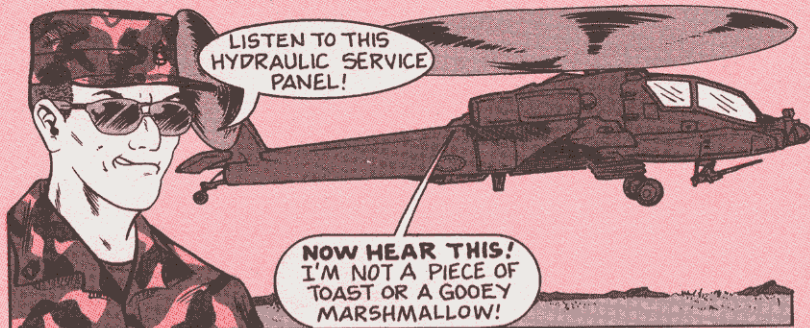
So, lift the panel about four inches, reach in and disconnect the wires. This light touch will keep you out of the dark.

Lifting the fairing too high will pull out the light's wires.

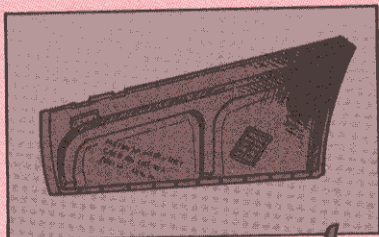




# THAT REALLY BURNS ME UP!

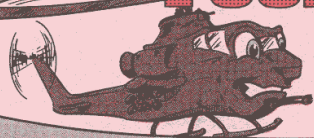


IF YOU LEAVE ME OPEN AND CRANK UP THAT APU, THE EXHAUST IS GOING TO BURN ME! IT'S NOT ENOUGH JUST TO SHUT ME. IF YOU DON'T LATCH ME DOWN TIGHT, I'LL BLOW OPEN AND THAT SCORCHING EXHAUST WILL GET ME ANYHOW!





# Tool to Install Fairing Grommets



WHAT'S WRONG,  
BUDDY?

Dear Editor,

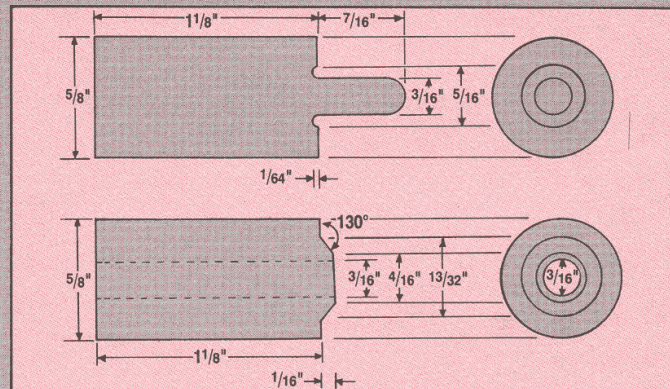
Installing the grommets and washers on the upper pylon fairings is a tough job to do right. Often the grommet is peened over the washer, which swells the inside diameter of the grommet and makes it unusable.

Sometimes improperly installed grommets fall onto the engine inlet screen, becoming an FOD hazard.

So, I made a special tool that solves the problem of installing grommets, NSN 5325-00-176-0693, and flat washers, NSN 5310-01-071-2082.

I used bolt, NSN 5306-00-877-6434, as raw stock for the tool, but three inches of 5/8-in steel round stock will do.

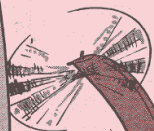
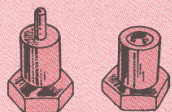
HERE'S HOW YOU MAKE IT ON A METAL LATHE:



Here's what the tool  
is made from ...



Here's what the tool  
looks like:

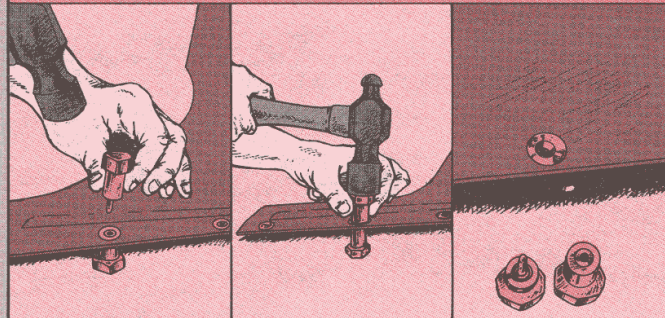


KNOCK  
PING GRIND

ERP! I THINK  
I JUST SUCKED  
A GROMMET INTO  
MY INTAKE!

HERE'S HOW YOU USE IT:

Just put the grommet and washer in place and insert one end of the tool into the other end through the fairing. Now use an arbor press or tap until the grommet is properly peened over the washer for a good fit.



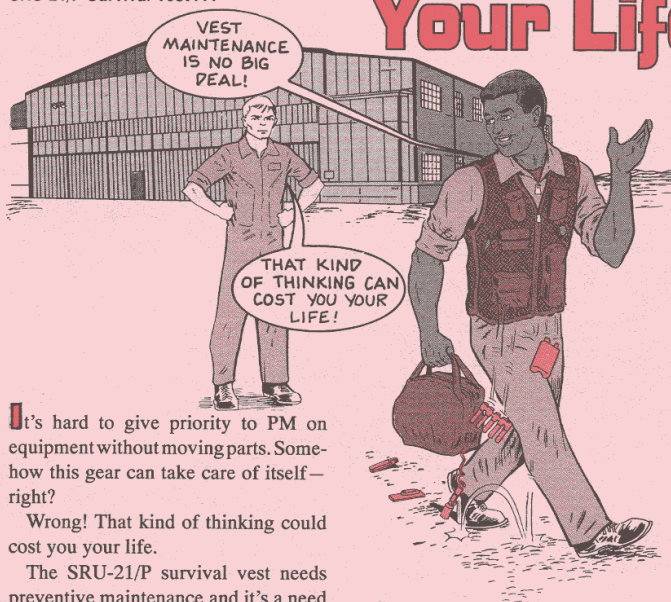
SFC Andy L. Bolinger  
OHARNG

FROM THE DESK OF THE Editor

Thanks for sharing another great  
idea, Andy.



# Your Life Depends on PM



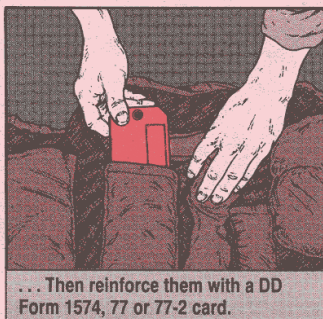
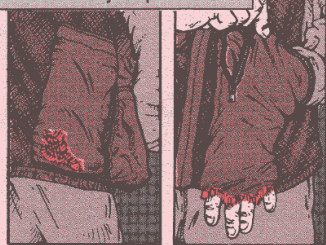
It's hard to give priority to PM on equipment without moving parts. Somehow this gear can take care of itself—right?

Wrong! That kind of thinking could cost you your life.

The SRU-21/P survival vest needs preventive maintenance and it's a need that's not being met. You, the user, need to do PM.

Start by inspecting the vest pockets. They wear out—especially the foliage penetration signal kit and radio pockets.

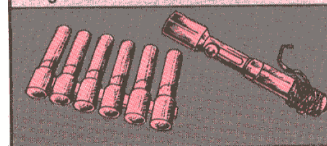
Got holes in your pockets? ...



The card, not the pocket, takes the wear and tear.

Some vests are being issued with the flare pocket removed. If you get a vest like this, put the flares in the left inside pocket with the card and packing sheet.

Never put the signal kit inside the same pocket with the water storage bag.



Rubbing will soon wear a hole in the water bag. It'll leak.

If your vest still has the original pocket, don't remove it. Just reinforce it and use it for the signal kit.

You and your ALSF tech need to work together to keep your vest clean. Take out the components and wash the



vest using a non-detergent soap and warm water.

Bleach will destroy the fabric! Wash by hand or on the gentle cycle of the washing machine. Rinse with

clean water and hang to dry out of direct sunlight.

Once your vest looks good, check the components.

Pull out the pocket knife and check the action and the blade condition. Lube or sharpen if it's needed.

- ✓ Make sure the water bag is not torn or ripped.
- ✓ Make sure the compass and signaling mirror are not broken.
- ✓ Make sure the survival kit is intact and the inspection date is current.

YOUR VEST COULD BE THE DECIDING FACTOR BETWEEN LIFE AND DEATH. PM MAKES SURE THAT FACTOR FALLS IN YOUR FAVOR.





# Pulling the Load Together

THERE'S NO SINGLE PUBLICATION THAT GIVES YOU INFORMATION ON HOW OTHER EQUIPMENT WORKS WITH THE SINGLE CHANNEL GROUND TO AIR RADIO SYSTEM—SINGGARS!

Equipment	Publication
Wire Line Adapter Interconnect Cable CX-13310/VRC	TB 11-5820-890-10-3
Variable Format Message Entry Device AN/GSC-21	TB 11-5820-890-10-4
Tactical Fire Direction System AN/GSG-10	TB 11-5820-890-10-5
Lightweight Digital Fax AN/UXC-7	TB 11-5820-890-10-6
Secure Net Radio Interface Unit TSEC/KY-90	TB 11 5820-890-10-7
Battery Computer System AN/GYK-29	TB 11-5820-890-10-8
Digital Message Device AN/PSG-2A	TB 11-5820-890-10-9
Digital Message Device AN/PSG-5 (DMD) Fire Support Team	TB 11-5820-890-10-10
Maneuver Control System MCS	TB 11-5820-890-10-11
Lightweight TACFIRE AN/PYC-1 (BCT) and AN/PSC-2 (DCT)	TB 11-5820-890-10-12

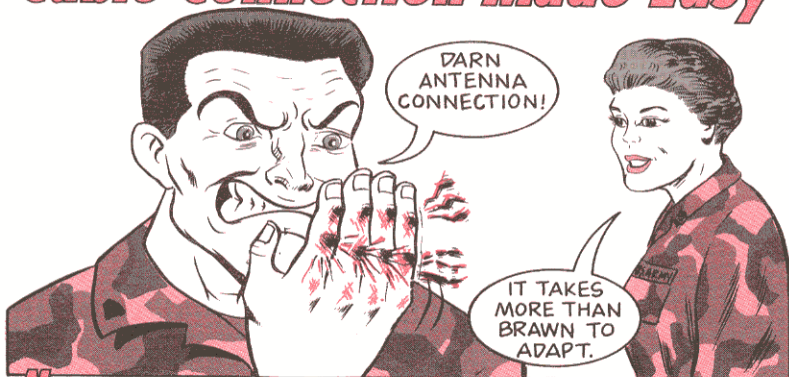
HERE'S A LIST MATCHING EQUIPMENT TO THE TM OR TB THAT HAS THE OPERATION PROCEDURES.

Equipment	Publication
Mortar Ballistic Computer M23	TB 11-5820-890-10-13
Loudspeaker LS-671	TB 11-5820-890-10-14
FIREFINDER AN/TPQ-36	TB 11-5820-890-10-15
Battery Computer System (BCS) to Gun Display Unit (GDU)	TB 11-5820-890-10-16
Radio Set, AN/PSC-3	TB 11-5820-890-10-17
Remote Control Device C-2329/GRA-39	TM 11-5820-890-10-1 and TM 11-5820-890-10-3
Teletype AN/UGC-74	TM 11-5820-890-10-1 and TM 11-5820-890-10-3
Intercommunication Set AN/VIC-1(V)	TM 11-5820-890-10-1 and TM 11-5820-890-10-3
Wire Line Adapter HYX-57/TSEC	TM 11-5820-890-10-1 and TM 11-5820-890-10-3



SINGGARS...

## Cable Connection Made Easy

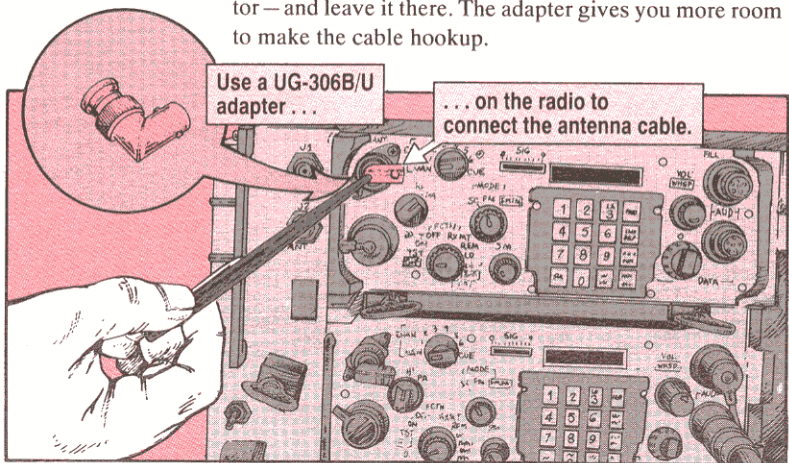


**N**o matter how you try, it's tough to connect the vehicle's antenna cable directly to the SINGGARS radio.

The RT's antenna connector is wedged between the face guard and the RF switch. That leaves little room for hooking up the cable. Chances are, you'll end up with skinned knuckles for your trouble.

Some operators try to install the cable with a pair of pliers. That's a good way to bend or break connectors.

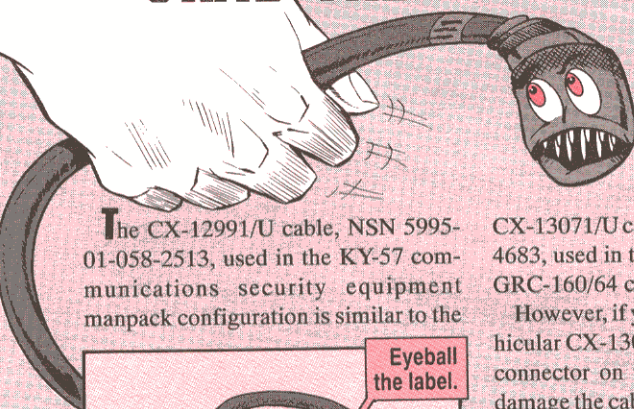
Save wear and tear on your equipment, as well as your knuckles. Install the UG-306B/U connector adapter, NSN 5935-01-032-5404, on the RT's antenna connector — and leave it there. The adapter gives you more room to make the cable hookup.





KY-57 COMSEC Equipment...

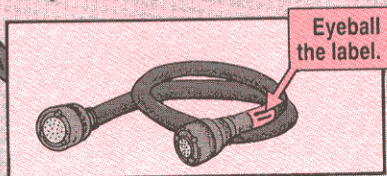
# GRAB THE RIGHT CABLE



The CX-12991/U cable, NSN 5995-01-058-2513, used in the KY-57 communications security equipment manpack configuration is similar to the

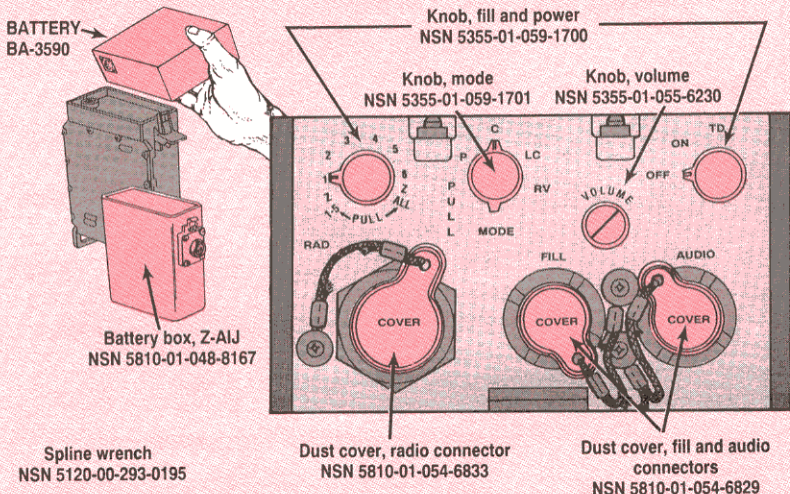
CX-13071/U cable, NSN 5995-01-044-4683, used in the vehicular mount AN/GRC-160/64 configuration.

However, if you try to hook up the vehicular CX-13071/U cable to the power connector on the manpack RT, you'll damage the cable and the RT connector. To prevent this damage, check the label on the cable before each mission to make sure you've got the right one.



## Piece Parts Guide

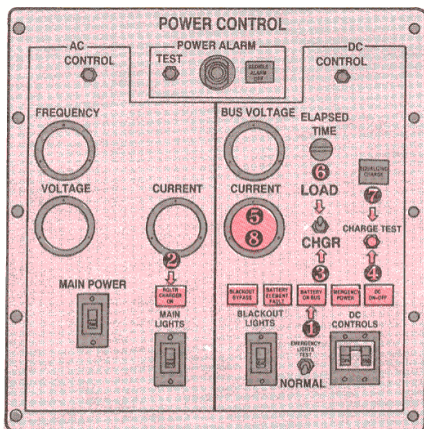
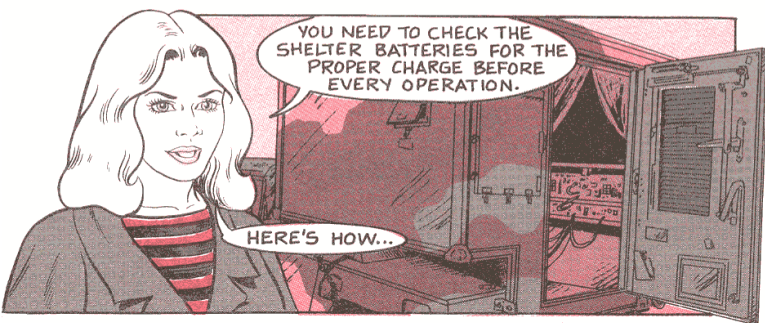
Here are some of those hard-to-find replacement part NSNs for your KY-57 communications security equipment:





# SWITCH BATTERY

If the AN/TTC-47 node center switch (NCS) or AN/TTC-46 large extension node (LEN) in your mobile subscriber equipment (MSE) crashes when you switch from AC to DC power, the crash more than likely was caused by weak batteries.

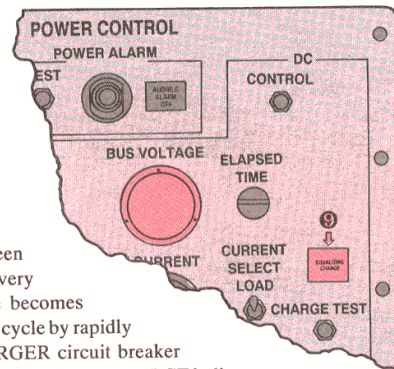


- 1 Check that the BATTERY ON BUS indicator is on.
- 2 Check that the RGLTR CHARGER ON indicator is on.
- 3 Set the CURRENT SELECT switch to CHGR.
- 4 Press and hold the CHARGE TEST pushbutton.
- 5 Record the reading displayed on the DC CURRENT meter. This is the charger current.
- 6 Put the CURRENT SELECT switch to LOAD.
- 7 Press and hold the CHARGE TEST pushbutton.
- 8 Record the reading displayed on the DC CURRENT meter. This is the load current.

Subtract the load current from the charger current. The batteries don't need to be charged if the difference is five amps or less. If the difference is greater than five amps, the batteries require charging.

# MAINTENANCE

- 9 To charge the batteries, press the EQUALIZING CHARGE pushbutton on the POWER CONTROL panel. The EQUALIZING CHARGE indicator goes on and the BUS VOLTAGE meter increases from 26.5 to approximately 28 Vdc. The regulator charger then starts a 5-hour charge cycle.



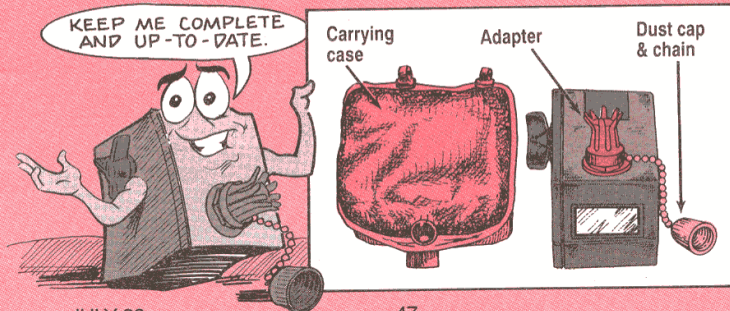
Monitor the difference between charger current and load current every half hour. When the difference becomes five amps or less, stop the charge cycle by rapidly switching the BATTERY CHARGER circuit breaker from ON to OFF, then to ON. The EQUALIZE CHARGE indicator will then go off. If the charge cycle isn't stopped when the current difference becomes five amps or less, the batteries will be damaged by overcharging.

PP-1578A...

## Charger Parts

Get the NATO adapter for your PP-1578A radiac detector charger with NSN 6665-01-077-2986. Order the dust cap and chain with NSN 5999-01-362-0069.

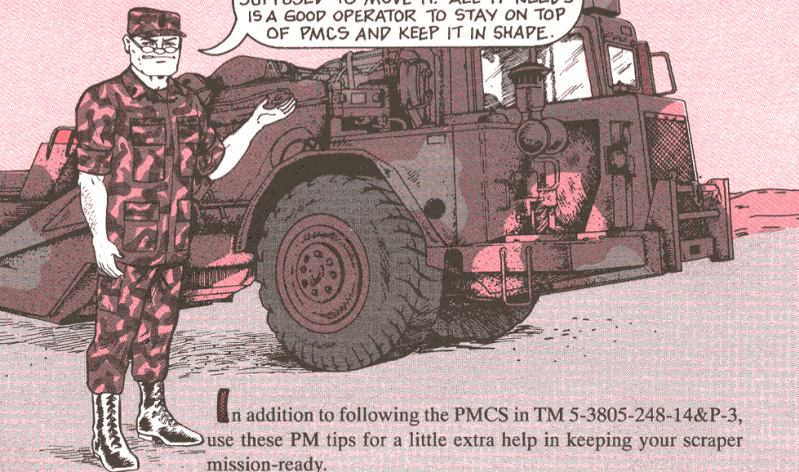
The carrying case is ordered from RIC B16 on a DD Form 1348-6 using CAGE 80063 and part number SM-C-146753.





# PM Tips for Good Running

THAT OLD 621B SCRAPER HAS BEEN MOVING DIRT LIKE IT'S SUPPOSED TO MOVE IT. ALL IT NEEDS IS A GOOD OPERATOR TO STAY ON TOP OF PMCS AND KEEP IT IN SHAPE.

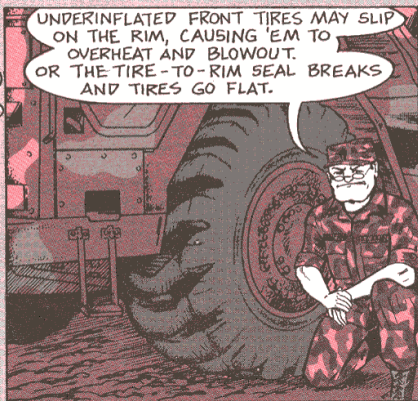


In addition to following the PMCS in TM 5-3805-248-14&P-3, use these PM tips for a little extra help in keeping your scraper mission-ready.

GAUGE TIRE PRESSURE BEFORE OPERATION. FRONT TIRES GET 60 PSI AND REAR TIRES GET 40 PSI.



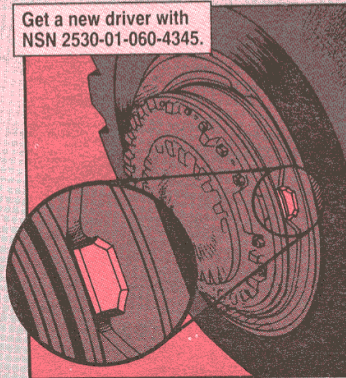
UNDERINFLATED FRONT TIRES MAY SLIP ON THE RIM, CAUSING 'EM TO OVERHEAT AND BLOWOUT. OR THE TIRE-TO-RIM SEAL BREAKS AND TIRES GO FLAT.



# Good Running

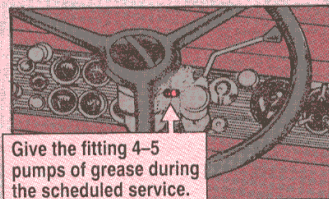
When you have a flat front tire, you may lose the driver (that little piece of metal that ties the final drive and the side ring together). Without it, there's no way to deliver power to the tire.

Get a new driver with  
NSN 2530-01-060-4345.



☑ Grease the scraper's steering column every 2,000 hours or annually. That fitting is often overlooked.

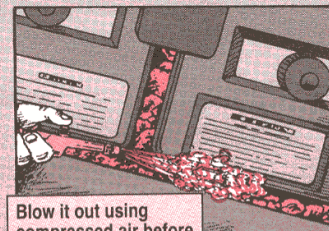
Four or five squirts from the grease gun will keep the shaft in the steering column from sticking.



Give the fitting 4-5 pumps of grease during the scheduled service.

☑ Check the batteries during the weekly PMCS and look for dirt.

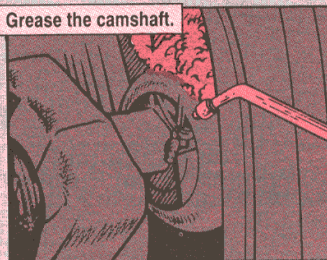
Dirt and sand will settle around the batteries in the battery box. When the dirt gets wet and packed in, the batteries are a bear to get out.



Blow it out using compressed air before it gets packed in.

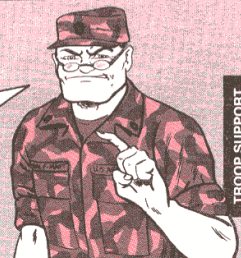
☑ Grease the brake camshafts during the 500-hour/3-month service.

Grease the camshaft.



If you neglect 'em, the shafts will bind—usually with the brakes on. Then the brakes drag, the linings glaze, and you may have a tire fire!

THESE TIPS WILL KEEP YOU FROM GETTING INTO A TOUGH SCRAPE!

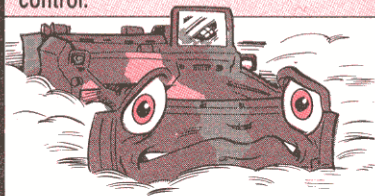




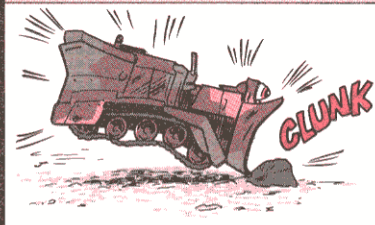
## Follow These Steps while Driving

**D**rivers, you can avoid making costly mistakes while driving the M9 ACE. Here's how:

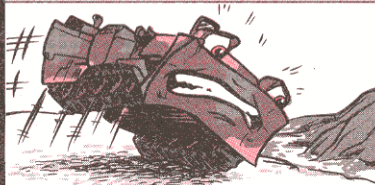
- ✓ Keep to a reasonable speed on the highway. Check out the road conditions. If it's wet, foggy, or slick, 30 MPH will be too fast. Slow down to whatever speed allows you to maintain complete control.



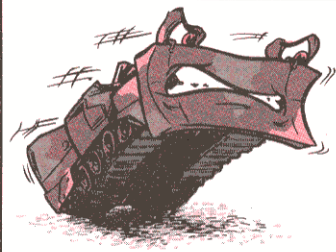
- ✓ Off-road conditions require skill in driving, too. If the blade digs into a ridge or other obstruction, your ACE is going to stop real fast.



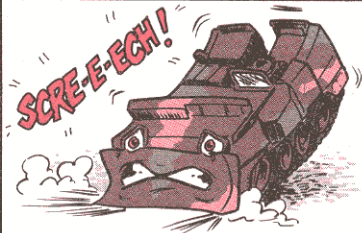
- ✓ Sharp turns need to be made at slow speed to prevent overturning.



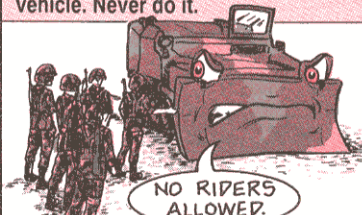
- ✓ Avoid jackrabbit starts.



- ✓ Give yourself plenty of distance to stop. Don't make panic stops.



- ✓ Use the bowl for dirt, sand or cargo—but never for troops. Same goes for hauling people in the rear of the vehicle. Never do it.



To re-a-l-l-y know your stuff, get familiar with the driving instructions in the -10 TM. And read FM 21-306, Manual for Tracked Combat Vehicle Drivers, too.

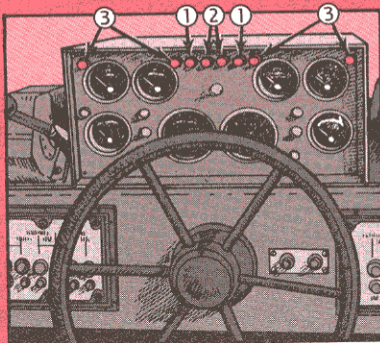


# Light Up Your Instrument Panel

TO GET SIGNAL LAMPS WITH THE RIGHT BEZEL FOR THE BRIDGE BOAT'S INSTRUMENT PANEL, ORDER THEM FROM RIC A12 ON A DD FORM 1348-6 USING CAGE U0928 AND THESE PNs...

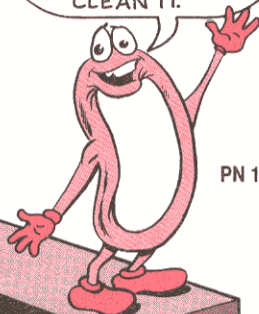


Item	PN	Color Lamp
1	DX0973/RD/LES	Red
2	DX0973/GN/LES	Green
3	DX0973/AM/LES	Amber

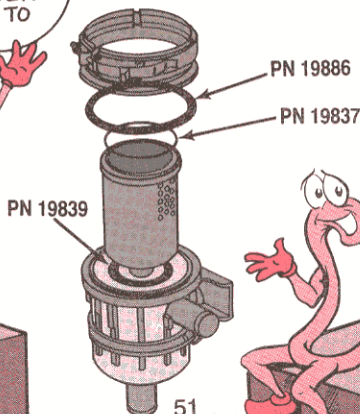


## Order O-Rings by PN

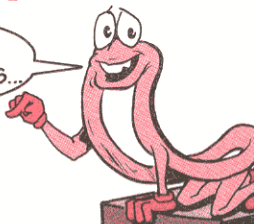
IT'S EASY TO DAMAGE OR LOSE THE THREE O-RINGS WHEN YOU REMOVE THE MK1'S RAW WATER INLET STRAINER TO CLEAN IT.



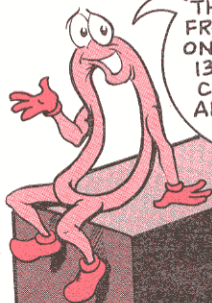
Raw water inlet strainer



USE THESE PNs TO GET REPLACEMENTS...

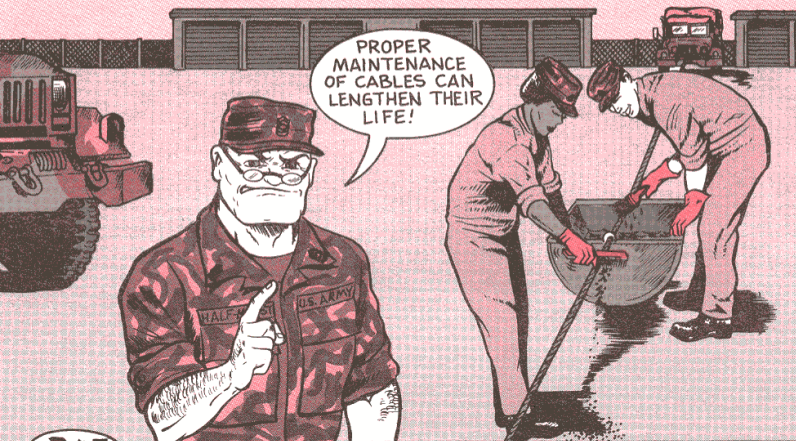


ORDER THE O-RINGS FROM RIC A12 ON A DD FORM 1348-6 USING CAGE U2340 AND THE PART NUMBER.





# CLEAN, LUBE



**W**ire rope just hates four-letter words. Words like dust, dirt, grit, rain, snow and rust, for instance. These are the things that shorten rope life.

Cleaning and lubing takes care of those cable-killers.

Before you do your PM thing, be sure you have on a pair of leather gloves. They'll protect your hands from broken wires.

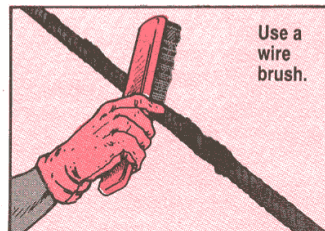


Wear leather gloves ...

... and look for kinks, broken wires and other damage.

Clean and oil winch cables after every operation. Crane cables usually stay cleaner during operation, so clean them only when they need it.

Unreel the wire rope and stretch it out straight. Use a wire brush, like the one from your No. 1 Common shop set, to get off old lube and dirt. Clean the whole cable. Grit and corrosion get buried among strands.



Use a wire brush.

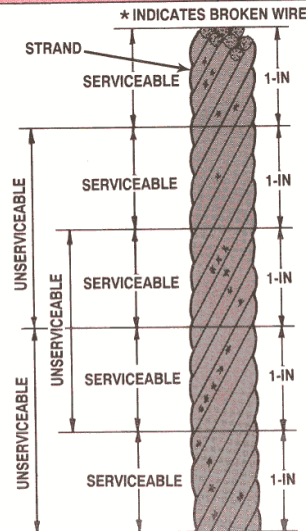
# WIRE ROPE

While cleaning, look for broken wires, kinks and other damage.

Replace the cable if you find kinks. Broken wires can KO the cable, too. TM 5-725, Rigging, and TB 43-0142, Safety Inspection and Testing of Lifting Devices, as well as vehicle TMs, have details.

For instance, some TMs call wire rope NMC if there are more than three broken wires per inch on one strand, or more than six on all strands in one inch. Also, the max number of broken wires can't occur in any two consecutive inches.

**If there are six broken wires in one inch, the next inch can have none.**



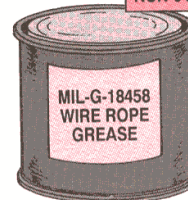
Lube wire rope according to the LO for your gear.

If the LO doesn't cover it, here's what to do:

1. Coat the cable with clean OE-HDO 30 engine oil if the cable gets a lot of use.
2. Forget used oil. It has acid that weakens wires fast.
3. In dry, dusty areas, rope doesn't need oil. In fact, oil just collects more dust and dirt.

If wire rope is not used much, or if conditions are damp or salty, give it extra protection. Use MIL-G-18458 wire rope grease.

**Get a 35-lb can with  
NSN 9150-00-530-6814.**



Covering a winch is OK for travel. That keeps the cable from picking up a lot of road dirt. Don't leave the winch covered when your vehicle's parked. That traps moisture that rusts wire rope.



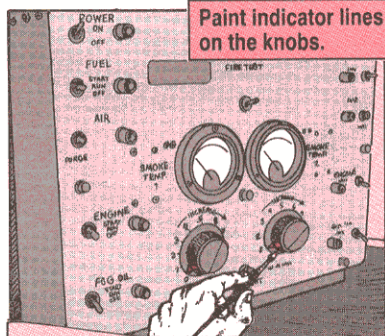
## Ring of Truth

Dear Editor,

The ring for the fog oil flow knobs on the M157 control panel often breaks loose or off. That causes setting problems because the setting indicator is on the ring, not the knob. No ring means you guess at the setting.

We rang out ring problems by painting an indicator on the knob itself. Then the ring doesn't matter. You can keep operating until you get the knob replaced.

CW2 Timothy Weaver  
Ft Bragg, NC



FROM THE DESK OF THE Editor  
Your suggestion has the ring of truth.  
Good going.

## Capping Air Problems

Dear Editor,

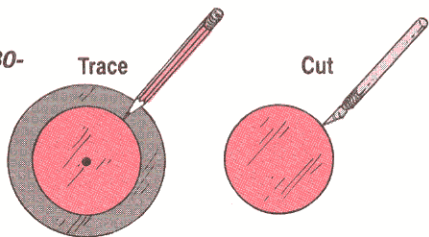
The disk that fits in the cap for the M157 air compressor's air filter doesn't survive many trips to the field. It falls out when the cap's removed and is lost. There is no NSN for the disk. Without the disk, unfiltered air goes straight into the compressor pump.

A replacement disk, though, is as close as your nearest flashlight. The flashlight filters make perfect quick-fix replacements after a slight modification. NSN 6230-00-128-2464 gets a black filter.

Using an M157 disk as a model, trace the disk on the filter. Cut out the new disk with a knife. Your M157 is back in business.

When you get back from the field, tell your repairman so he can order a new filter, NSN 4330-01-106-4291.

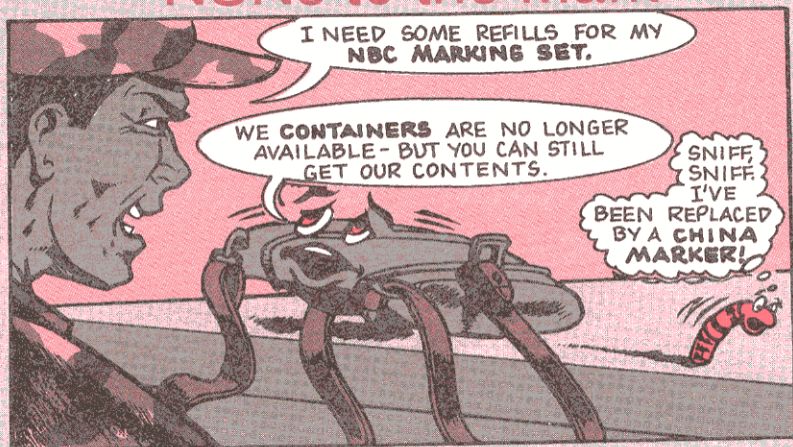
SGT Christopher Britt  
Ft Bragg, NC



FROM THE DESK OF THE Editor  
You've lighted the way to the solution.  
Thanks.

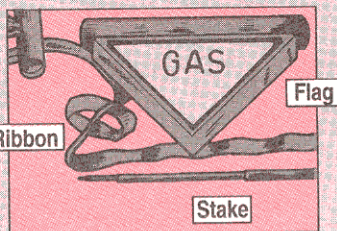


# NSNs to the Mark



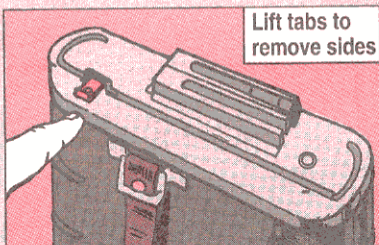
If you run out of ribbon or flags for your NBC marking set, you don't need to order a new set, NSN 9905-12-124-5955. Instead, order replacements:

PART	NSN
China marker	7510-00-240-1526
Ribbons, yellow (13)	8315-12-132-2577
Stakes (48)	9905-12-133-0113
Flags (20 per NSN)	
Bio	9905-12-132-2578
Atom	9905-12-132-2579
Gas	9905-12-132-2580



NSNs are shown on a decal under the ribbon compartment of your set. For access to the decal NSNs (and for permanent reference), lift the tabs on the sides of your set. Remove the sides and lift out the ribbon roller. The decal's on the chassis. . . below the roller.

The marking set container is no longer available, even though it's listed on the decal. The crayons have been replaced by the china marker.



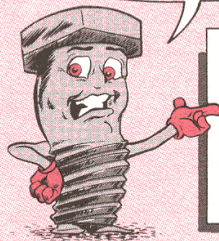


# Thread Repair Set Info

**T**here are thread repair sets available to fix bolts with damaged threads. Get the standard sets with NSN 5136-01-321-6790 and NSN 5136-01-355-3036, the combination set with NSN 5136-01-321-6789 and the metric sets with NSN 5136-01-355-3034 and NSN 5136-01-355-3035.

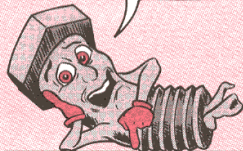
HERE ARE THE DIFFERENT SIZE SPLIT DIES FOR THE THREAD REPAIR SETS.

THREAD REPAIR SET, NSN 5136-01-321-6789, CONTAINS SEVEN SIZES...



7/16-20NF  
1/2-20NF  
10MM1.25  
12MM1.25  
12MM1.50  
12MM1.75  
14MM1.50

THREAD REPAIR SET, NSN 5136-01-355-3036 CONTAINS FOURTEEN SIZES...



1/4-20NC	9/16-12NC	7/16-20NF
5/16-18NC	5/8-11NC	1/2-20NF
3/8-16NC	1/4-28NF	9/16-18NF
7/16-14NC	5/16-24NF	5/8-18NF
1/2-13NC	3/8-24NF	

THREAD REPAIR SET, NSN 5136-01-321-6790, CONTAINS TWENTY SIZES...

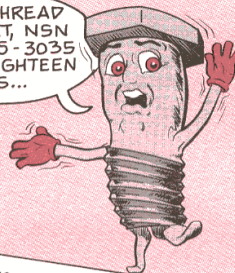
1/4-20NC	3/4-10NC	1/2-20NF
5/16-18NC	7/8-9NC	9/16-18NF
3/8-16NC	1"-8NC	5/8-18NF
7/16-14NC	1/4-28NF	3/4-16NF
1/2-13NC	5/16-24NF	7/8-14NF
9/16-12NC	3/8-24NF	1"-12NF
5/8-11NC	7/16-20NF	



METRIC THREAD REPAIR SET, NSN 5136-01-355-3034 CONTAINS EIGHT SIZES...

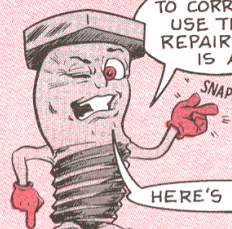
5MM0.80	12MM1.50
6MM1.00	16MM1.50
8MM1.00	20MM2.50
10MM1.25	24MM2.00

METRIC THREAD REPAIR SET, NSN 5136-01-355-3035 CONTAINS EIGHTEEN SIZES...



5MM0.80	10MM1.00	12MM1.75
6MM1.00	10MM1.25	14MM1.25
8MM1.00	10MM1.50	14MM1.50
8MM1.25	11MM1.50	16MM2.00
9MM1.00	12MM1.25	20MM2.50
9MM1.25	12MM1.50	24MM3.00

TO CORRECTLY USE THESE REPAIR SETS IS A...

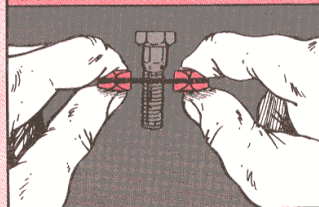


HERE'S HOW...

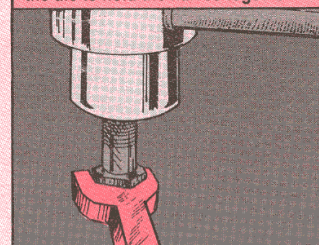
**1** Pull the die apart and slip it over a damaged stud or bolt. Do not stretch the spring too far.



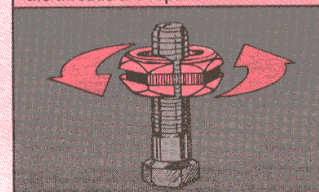
**2** Be sure the die is placed behind the damaged threads, then release the spring tension. Twist the die around the bolt by hand a few times to ensure both halves are aligned on the same threads.



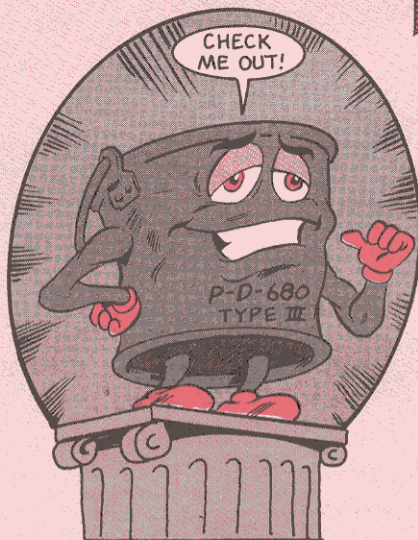
**3** Slip a standard socket wrench over the die to hold the halves together.



**4** Turn the die counterclockwise until the threads are repaired.







## P-D-680 Just Got Better

If you still must use drycleaning solvent in your maintenance operations, an improved P-D-680, Type III, is now available.

The improved solvent is not as flammable as the older types, which makes it safer to use.

It will, however, take longer to evaporate, so your parts will stay damp longer. Get a 5-gal can of solvent with NSN 6850-01-331-3349 or a 55-gal drum with NSN 6850-01-331-3350.

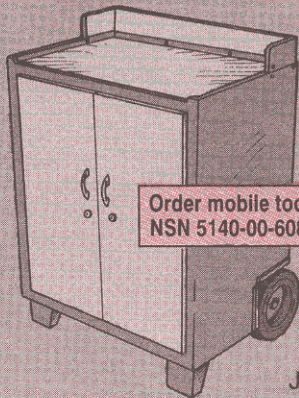
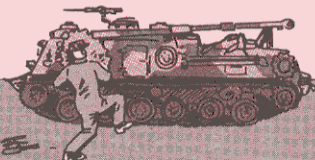
## Get Mobile!



**T**ired of lugging around those heavy tool boxes, mechanics? Frustrated because you've misplaced or lost so many tools?

Mobile tool cabinet, NSN 5140-00-608-4757, is the solution. The two wheels on the back of the cabinet make it easy to tilt back and push to your next job. The cabinet has a lock to keep your tools safe.

Appendix A of CTA 50-970 is your authorization for ordering the cabinet.



Order mobile tool cabinet,  
NSN 5140-00-608-4757.



# The Wreck of the Old 2026

An incorrectly filled out DD Form 2026, Oil Analysis Request, is like a truck without brakes. You can get the form started and you can send it down the road with your sample. But eventually it's going to CRASH! And that means more work for you cleaning up the wreckage.

What causes most DD Form 2026 wrecks?

Using the wrong numbers!

You **must** enter the right and complete end-item serial number in the "End Item Ser. No./EIC" block.

You **must** enter the right and complete serial number of the sampled component in the "Equipment Ser No" block.

You **must** enter the right bumper number in the "REMARKS" block.

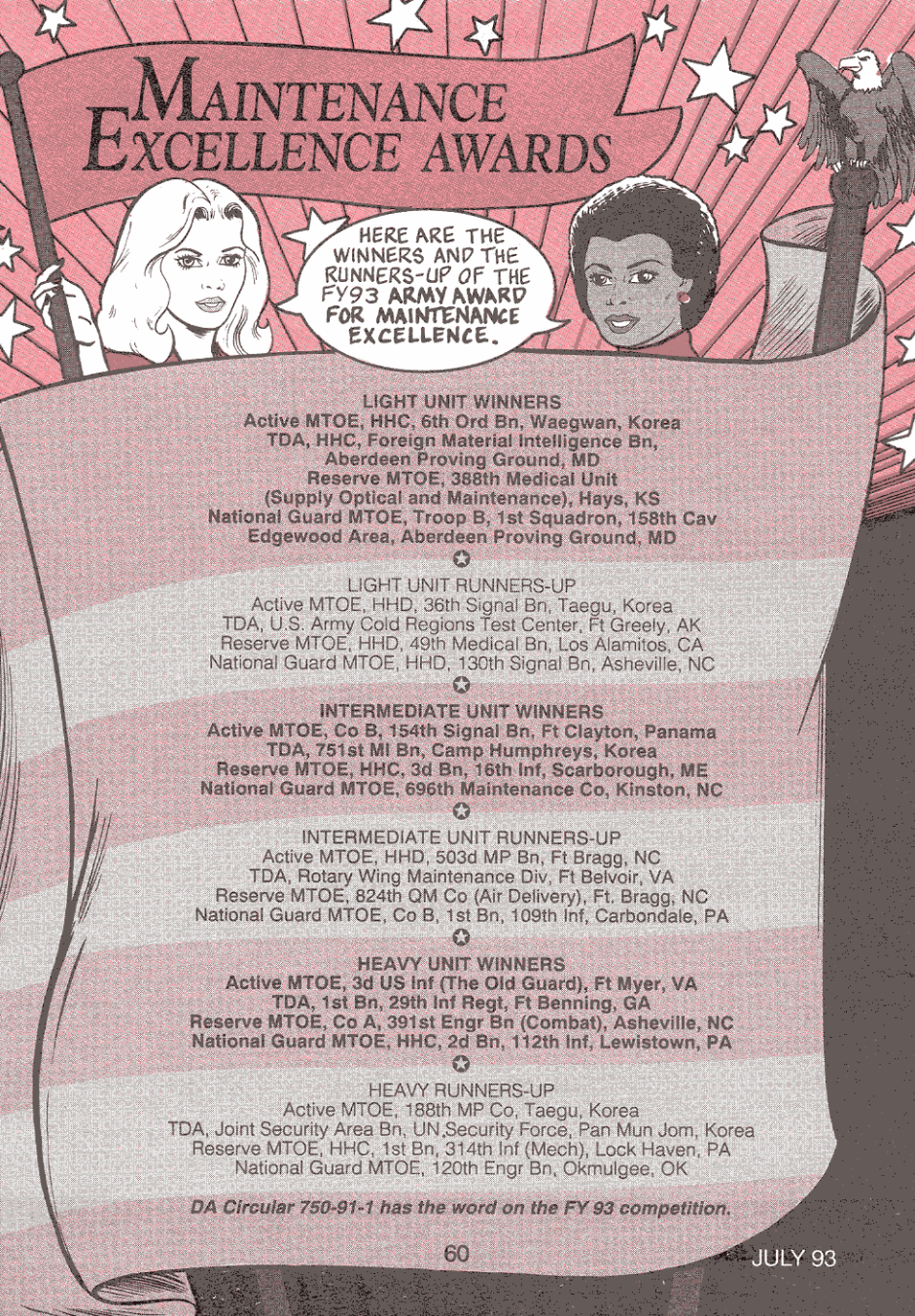
OIL ANALYSIS REQUEST				KEYPUNCH CODE
TO	OIL ANALYSIS LAB			1-3
F R O M	MAJOR COMMAND			4
	OPERATING ACTIVITY (Include ZIP Code /APO) DODAAD			5-10
EQUIPMENT MODEL/APL				11-14
EQUIPMENT SER. NO.				15-20
END ITEM MODEL/HULL NO.				
END ITEM SER. NO./EIC				
DATE SAMPLE TAKEN (Day, Mo., Yr)		LOCAL TIME SAMPLE TAKEN		21-24
HOURS/MILES SINCE				25-29
HOURS/MILES SINCE OIL CHANGE				30-33
REASON FOR SAMPLE <input type="checkbox"/> ROUTINE		LAB <input type="checkbox"/> REQUEST	TEST <input type="checkbox"/> CELL	OTHER <input type="checkbox"/> (Specify)
OIL ADDED SINCE LAST SAMPLE (Pts, Qts, Gals)				35-36
ACTION TAKEN				
DISCREPANT ITEM				
HOW MALFUNCTIONED				
HOW FOUND				
HOW TAKEN <input type="checkbox"/> DRAIN <input type="checkbox"/> TUBE		SAMPLE TEMPERATURE <input type="checkbox"/> HOT <input type="checkbox"/> COLD		37-38
TYPE OIL				
<b>REMARKS</b> PUT THE ODOMETER READING IN THE REMARKS BLOCK! IF THERE IS NO ODOMETER, RECORD THE END ITEM HOURMETER READING. IF THE EQUIPMENT HAS BOTH, RECORD THE ODOMETER ONLY.				
SAMPLE RESPONSE TO				
FE 41-43	AG 44-46			
PB 62-64	SI 65-68			
LAB RECOMMENDATION				
SAMPLE NO.	SIGNATURE	FILE MAINT	DATA SEQ	
		79	80	
FORM DD 1 NOV 77 2026 PREVIOUS EDITION WILL BE USED				

Some of you are causing wrecks because you're using the wrong numbers like the manufacturer's part number, the engine stamping number and the warranty code instead of the serial numbers. The right numbers are the brakes that stop your form and park it next to the right sampled equipment and component. With those right numbers, you'll know about the dirt, water, fuel and metal particles that contaminate your oil.

With the wrong numbers ... **CRASH, BAM, BOOM!**



# MAINTENANCE EXCELLENCE AWARDS



HERE ARE THE  
WINNERS AND THE  
RUNNERS-UP OF THE  
FY93 ARMY AWARD  
FOR MAINTENANCE  
EXCELLENCE.

## LIGHT UNIT WINNERS

Active MTOE, HHC, 6th Ord Bn, Waegwan, Korea  
TDA, HHC, Foreign Material Intelligence Bn,  
Aberdeen Proving Ground, MD  
Reserve MTOE, 388th Medical Unit  
(Supply Optical and Maintenance), Hays, KS  
National Guard MTOE, Troop B, 1st Squadron, 158th Cav  
Edgewood Area, Aberdeen Proving Ground, MD

## LIGHT UNIT RUNNERS-UP

Active MTOE, HHD, 36th Signal Bn, Taegu, Korea  
TDA, U.S. Army Cold Regions Test Center, Ft Greely, AK  
Reserve MTOE, HHD, 49th Medical Bn, Los Alamitos, CA  
National Guard MTOE, HHD, 130th Signal Bn, Asheville, NC

## INTERMEDIATE UNIT WINNERS

Active MTOE, Co B, 154th Signal Bn, Ft Clayton, Panama  
TDA, 751st MI Bn, Camp Humphreys, Korea  
Reserve MTOE, HHC, 3d Bn, 16th Inf, Scarborough, ME  
National Guard MTOE, 696th Maintenance Co, Kinston, NC

## INTERMEDIATE UNIT RUNNERS-UP

Active MTOE, HHD, 503d MP Bn, Ft Bragg, NC  
TDA, Rotary Wing Maintenance Div, Ft Belvoir, VA  
Reserve MTOE, 824th QM Co (Air Delivery), Ft. Bragg, NC  
National Guard MTOE, Co B, 1st Bn, 109th Inf, Carbondale, PA

## HEAVY UNIT WINNERS

Active MTOE, 3d US Inf (The Old Guard), Ft Myer, VA  
TDA, 1st Bn, 29th Inf Regt, Ft Benning, GA  
Reserve MTOE, Co A, 391st Engr Bn (Combat), Asheville, NC  
National Guard MTOE, HHC, 2d Bn, 112th Inf, Lewistown, PA

## HEAVY RUNNERS-UP

Active MTOE, 188th MP Co, Taegu, Korea  
TDA, Joint Security Area Bn, UN Security Force, Pan Mun Jom, Korea  
Reserve MTOE, HHC, 1st Bn, 314th Inf (Mech), Lock Haven, PA  
National Guard MTOE, 120th Engr Bn, Okmulgee, OK

*DA Circular 750-91-1 has the word on the FY 93 competition.*



Connie's  
★ POST ★  
★ S ★  
★ CRIPTS ★

BEAT THE HEAT AND HIGH HUMIDITY  
WITH REGULAR DOSES OF P.M.

### Big Rig Tires, Tubes

You can now take advantage of a one-TACOM time buy of a tube and radial tire combination set for your M916- and M920-series tractors. Until the sets are gone, you can order them with NSN 2610-01-368-4780 and save a requisition. That NSN is not on the AMDF. Note that on your supply request, and send it to SOS AKZ. If you don't need the set, you can still order the parts separately. The tire is NSN 2610-01-332-1564 and the tube NSN 2610-01-331-3520. These NSNs will be added to TM 9-2320-273-24P.

### Trailer Accessory Kit

The tarps and bows that make up accessory kit, NSN 2540-00-133-3492, for your M101 and M116 3/4-ton trailers must be ordered separately. A set of five bows is NSN 2540-00-278-6560. Tarps are NSN 2540-00-513-9794 (green) and NSN 2540-01-325-7719 (tan).

### Humvee Sealant Change

The sealing compound you need to put on a new door seal on the HMMWV's cargo shell is NSN 8030-01-347-0964. That NSN brings a 5-gal pail. Jot down the number until the TM's changed.

### Telephone Replaced

Even though the AMDF shows the TA-954 telephone, NSN 5805-01-149-0608, as a reparable item, it's not. It's been replaced by the new TA-1042 telephone set, NSN 5805-01-318-8421. That means your old TA-954 can be disposed of at unit level. If you have any unserviceable TA-954 telephones, get rid of them.

### Don't Ship Laptop

The ULLS End User's Manual tells you to use the "SHIP" command when you quit for the day. However, this does not go for the Zenith SS-286 laptop computers. The hard drive locks up with repeated use of the "SHIP" command. The read-write heads of this laptop are automatically parked when you power down the system.

Distribution: To be distributed in accordance with DA Form 12-34-E, Block 0312, for TB-43-Series

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

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Do you know how to take apart a  
jet engine with a pocket knife?



Do you know how **NOT** to?

**STOP  
FOD!**