

Issue 425

PS

April 1988

THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-425



UH-OH, CONNIE,
LOOKS LIKE
TROUBLE!

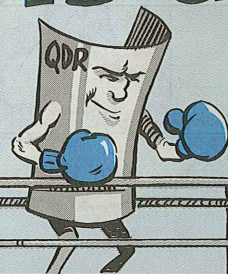
LET'S
CHECK IT
OUT!

Approved For
Public Release;
Distribution Is
Unlimited

Maintenance IS Mission ...
See Page 27

QDR is a Knockout

NEVER LET THE LACK OF SPECIFIC INFORMATION KEEP YOU FROM SUBMITTING AN SF 368. THE QUALITY DEFICIENCY REPORT STILL PACKS A PUNCH... EVEN IF YOU DON'T HAVE THE INFO TO FILL IN EVERY BLOCK IN SECTION I! THE ESSENTIAL INFO THE HEADSHED NEEDS COMES FROM BLOCKS 1a, 1b, 2a, 3, 4, 5, 6, 10, 11, 15c, 15d, 16a, 16b, 21, AND 22!



QUALITY DEFICIENCY REPORT (Category II)

SECTION I

1a. From (Originating point)
(Include COMM Phone number for the benefit of contractor, etc.)

1b. Typed Name, Duty Phone and Signature

2a. To (Screening point)

2b. Typed Name, Duty Phone and Signature

3. Report Control No.

4. Date Deficiency Discovered

5. National Stock No. (NSN)

6. Nomenclature

7. Manufacturer/Mfg. Code/Shipper

8. Mfg. Part No.

9. Serial/Lot/Batch No.

10. Contract/PO/Document No.

11. Item
☐ New ☐ Repaired/Overhauled

12. Date Manufactured/Repaired/Overhauled

13. Operating Time at Failure

14. Government Furnished Material
☐ Yes ☐ No

15. Quantity

16. Deficient Item Works On/With
a. End Item (Aircraft, tank, ship, howitzer, etc.)
b. Next Higher Assembly

17. Dollar Value

21. Action/Disposition
☐ Holding Ex ☐ Holding In

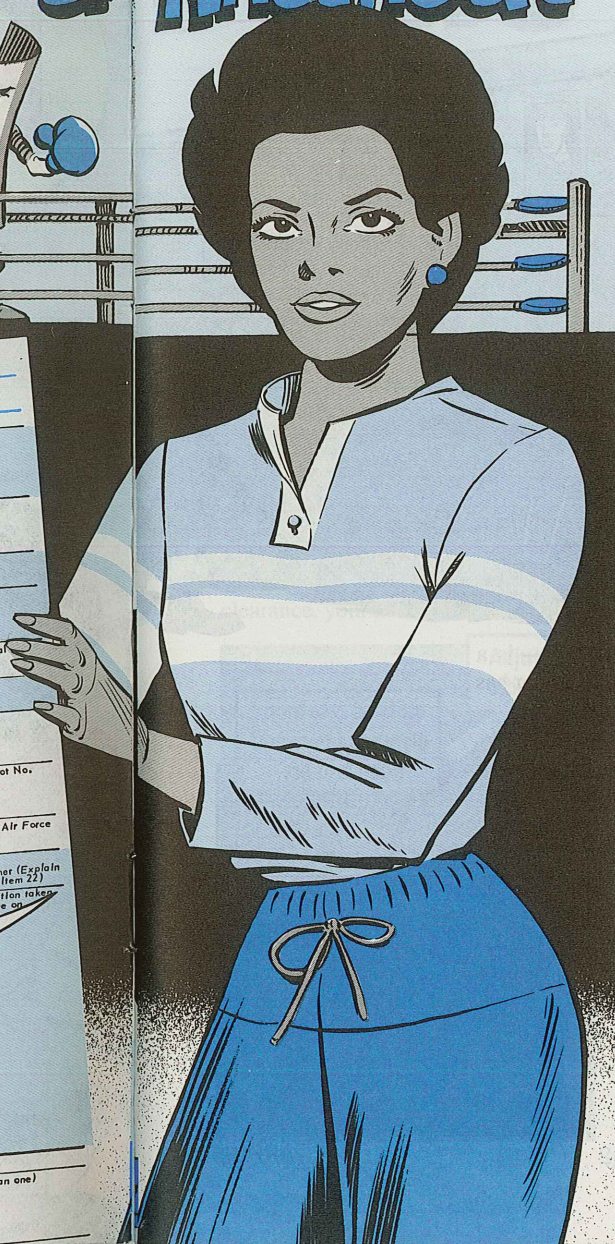
22. Details (Describe in detail)

23a. To (Action Point)

24a. To (Support Point) (Use Items 25 and 26 if more than one)

OF COURSE THE OTHER BLOCKS SHOULD BE FILLED IN IF YOU HAVE THE INFO! JUST DON'T LET THE ABSENCE OF INFO KEEP YOU FROM SUBMITTING THE FORM! CHAPTER 12 AND APPENDICES F AND G OF DA PAM 738-750 HAVE THE DETAILS ON THE SF 368. PARAS 2-14 AND 2-15 OF DA PAM 738-751 HAVE THE SCOOP FOR YOU AIRCRAFT TYPES!

Knockout



PS

THE
PREVENTIVE
MAINTENANCE
MONTHLY

TB 43-PS-425, 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

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

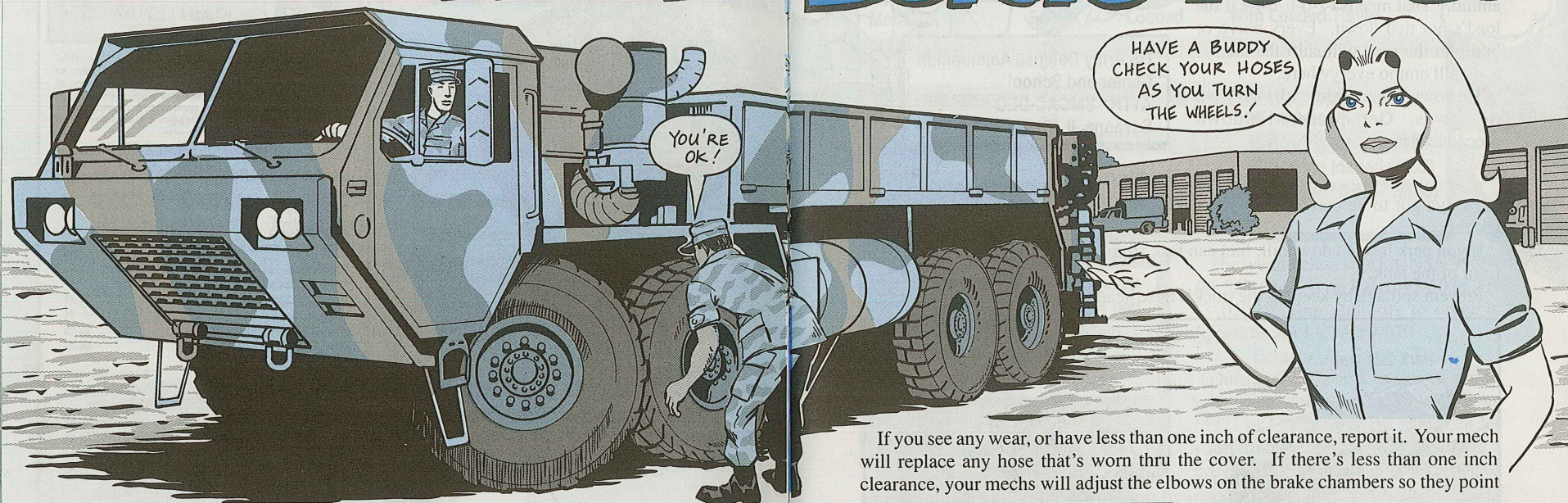
R.L. DILWORTH
Brigadier General, United States Army
The Adjutant General

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HEMTT...

Know Before You Go

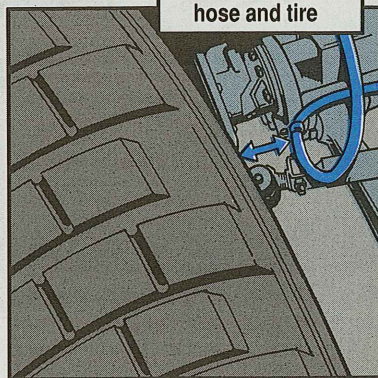


The Army's new workhorse—the HEMTT—is a brute with plenty of muscle. But this heavy hauler has some quirks that you need to watch out for.

Once the big wheels get rollin', it takes a lot of braking power to stop 'em. Brakes on HEMTT's take a special look-see to keep all their stopping power ready to serve you.

Air hoses to the front wheel brake chambers rub against the tires when you turn. This rubbing will wear and tear the hoses, leaving you stomping a dead brake pedal.

Before you head out each day, get your buddy to watch those hoses while you turn the wheels full right, and then full left. There must be at least an inch clearance between the hose and tire.

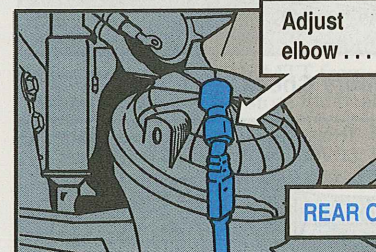


**At least one inch
clearance between
hose and tire**

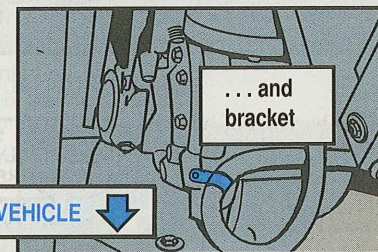
2

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If you see any wear, or have less than one inch of clearance, report it. Your mech will replace any hose that's worn thru the cover. If there's less than one inch clearance, your mechs will adjust the elbows on the brake chambers so they point



**Adjust
elbow...**



**... and
bracket**

REAR OF VEHICLE ↓



**Loosen hoses and twist
for more clearance**

directly toward the rear of the vehicle. The hose brackets need to point to the rear too. Excess hose is pulled back thru the clamps.

If that doesn't give enough clearance, loosen the hoses at the brake chambers and relay valve. Twist the hoses until there is enough space.

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3

Tie Down Ammo

Cargo truck sidewalls and endgate are not strong enough to hold a load of ammo. That means t-r-o-u-b-l-e if the load's not tied down. Every curve or bump in the road will shift the load—and spill ammo everywhere.

Tie down ammo right with web strap tie-downs. Get proper tie-down procedures from:

USE PROPER
WEB STRAP
TIE-DOWNS!

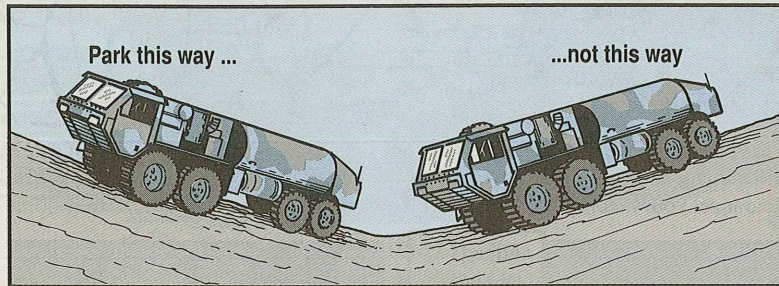
US Army Defense Ammunition
Center and School
ATTN: SMCAC-DEO
Savanna, IL 61074

No-Spill Parking

You've got to be careful how you park a fully loaded fuel tanker on uneven ground.

If you park headed downhill, fuel can leak from the vent valve that's located in front of the tank.

Prevent spillage by keeping the truck's nose headed uphill when the tank's full.

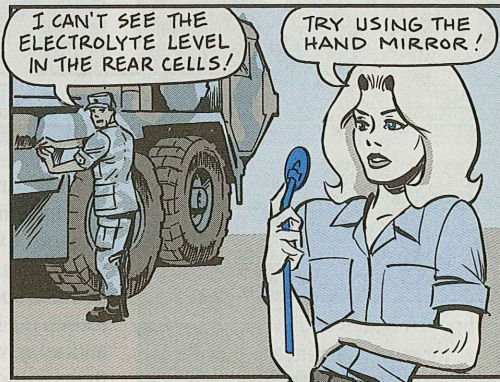


Use Mirror for Battery Check

The back set of batteries is a bear to check each month. You can't see down into the filler holes.

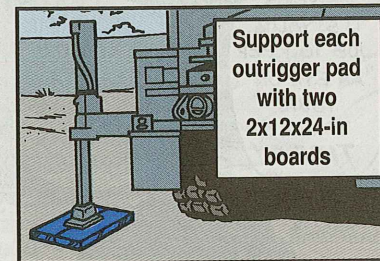
Use hand mirror, NSN 5120-00-892-5709. It's the extra set of eyes you need to look for cracks, leaks and low electrolyte levels in those hard-to-get-to places.

Appendix A of CTA 50-970 is your authorization to order the mirror.



BIG LOADS AND LIGHT BRIDGES DON'T MIX. HERE'S
A WEIGHT CLASS GUIDE FOR THE HEMTT...

Model	Empty	Loaded	With Loaded Trailer
M977	16	28	
M978	15	25	
M983 (w/o crane)	14		32 (w/Patriot)
M983 (w/crane)	16		36 (w/Pershing)
M984	18		45 (towing loaded M985)
M984E1	19		48 (towing loaded M985)
M985	17	28	39 (towing HEMAT M989)
M985E1	18	25	



The weight class sign kit, NSN 9905-00-565-6267, is on Pages 43-50 of TB 43-0209. Your authority to order is Appendix A of CTA 50-970.

Board-Up Cargo Tilt

Outrigger pads sink in soft or sandy soil when you load or unload your M977 or M985 HEMTT. This can let your truck roll over when you lift a heavy load, like an MLRS rocket pod or

a pallet of ammo. Stop this problem by placing a couple of 2x12x24-in boards under each outrigger pad. Or use semitrailer ground jack boards, NSN 2510-00-741-7585. Center the boards before lowering the outriggers. They spread the weight and keep your HEMTT from coming up T-I-L-T!

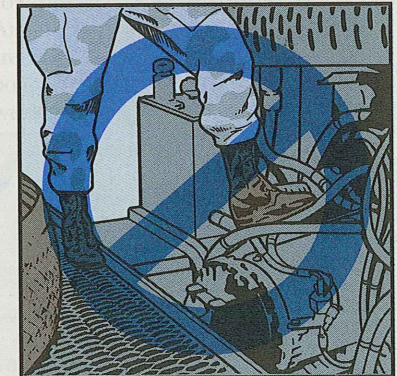
When the job's done, store the boards in the cargo bed.

Big Foot Destruction

One of the big hazards to the M983's transmission is a Size 13 boot.

There's enough room on the back deck for a Bigfoot to cross without hurting a thing. But if you plant your big Number 13 on the transmission oil lines, you'll break the PTO sending unit or bust the transmission oil temperature sending unit.

Feet are made for walking, and that's what you'll be doing if you don't watch where you step on the M983.



Right Pressure Saves Tires

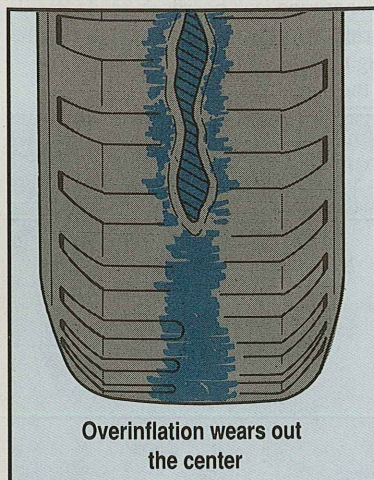
THIS
TIRE
HAS
HAD
IT!

DRIVERS,
IT'S YOUR
JOB TO KEEP
AN EYE ON
YOUR
TRUCK'S
TIRES!

WRONG AIR
PRESSURE
MEANS BIG
PROBLEMS
DOWN THE
ROAD!

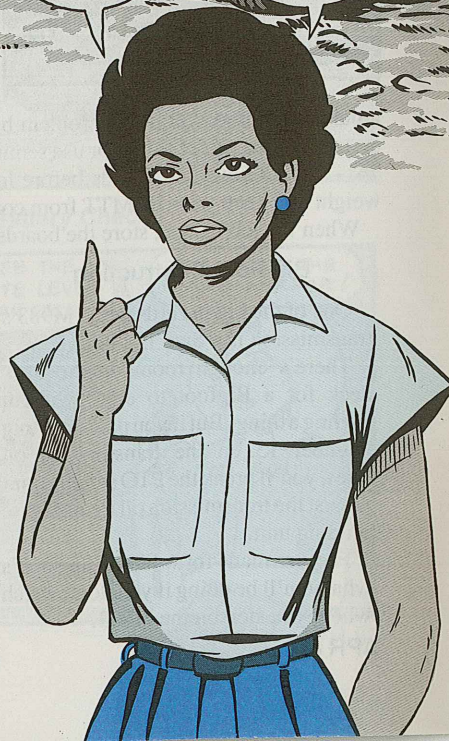
Overinflation keeps a tire from flexing enough to take hard jolts. The cord body weakens with every bump until one day you hit a pot hole...Boom! You've got a blow out.

Overinflation makes center tread wear fast. The extra stress and strain of too much air also causes bruises, breaks and sometimes tread separation.



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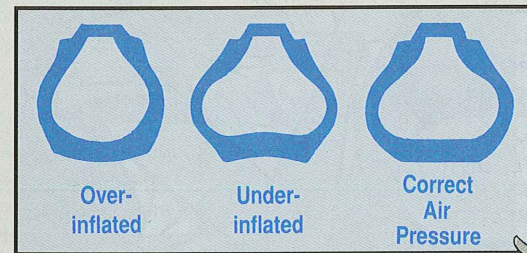
Underinflation is bad news, too. An underinflated tire runs hot, and excessive heat weakens the cords.

With underinflation, you get uneven tread wear, rapid wear on the outside edges of the tread, sidewall cracks and ply separation.

Play it safe...check tires when they're cool...as part of your Before Operation checks. If a tire looks low, gage it. If it's low, pump it up right away. Even driving a short distance generates a lot of heat. And this'll throw off final readings.

For dual tires, use a hammer or lug wrench to thump the tires. A dull "thud" means the pressure is low—check it! A "pong" is good—a sign the pressure's OK.

Use a gage to check the tire pressure weekly in all tires, including the spare.



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7

Underinflation makes the tire run hot and eats up outside tread

RIGHT
PRESSURE
KEEPS
RUBBER
ON THE
ROAD!



Get a GO on Test

STEP 1 TEST 74 PAGE 2-169
OF TM 9-2320-272-20-1 IS **WRONG!**

WRONG

1. INSTALL CURRENT PROBE:

- Install the current probe around the output wire on the alternator/generator.
- Point the arrow on the probe away from the alternator/generator.

RIGHT

CONDITION CURRENT PROBE:

Clamp current probe, TK item 11, around the positive battery cable connected to the starter. Point the arrow on the probe toward the starter. Make sure current probe is closed. Try to crank engine for several cycles with fuel shut off. Unclamp current probe from battery cable.

INSTEAD, USE
TEST 74
PAGE F-46 OF
TM 9-4910-
571-12 & P!

THAT'S
RIGHT!

SO MAKE
A NOTE UNTIL
THE TRUCK'S TM
IS CORRECTED

Here are Your MLC's

THE BRIDGE TROLL
CAN'T GET ME NOW THAT
I HAVE MY NEW MLC!

HERE ARE THE **MILITARY
LOAD CLASSIFICATIONS** FOR
THE HMMWV's...

... FOLLOW
THEM AND
I CAN'T
GET YOU!

Model	Empty	Loaded	
		Cross-country	Highway
M966, M996, M997, M998, M1025, M1026, M1036, M1044, M1045, M1046	3	4	4
M1035	2	3	3
M1037, M1038, M1042, M1043	2	4	4

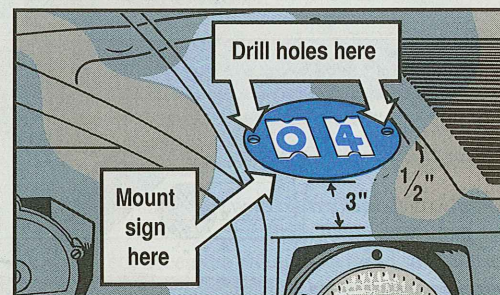
The vehicle class sign kit, NSN 9905-00-565-6267, is authorized by Appendix A of CTA 50-970.

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

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

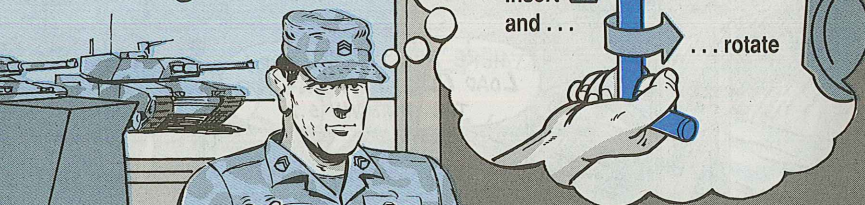
Use two 3/4-in long bolts, NSN 5306-00-225-9087, two washers, NSN 5310-00-167-0721, and two nuts, NSN 5310-00-880-7746. The bolts, washers and nuts are part of the sign kit's hardware.

Tighten the nuts only enough to hold the sign. Over tightening can damage the hood.



M1A1 Tanks...

The Tool's the Thing



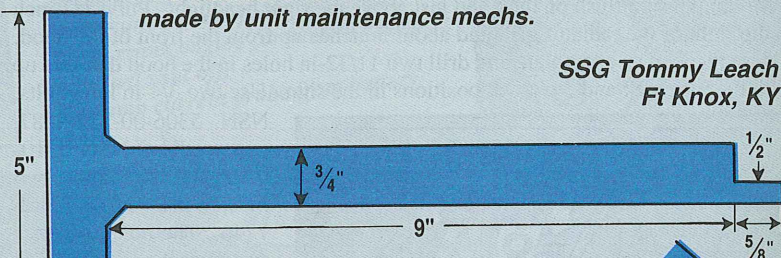
Dear Editor,

Removing and installing the plunger on the M1A1 tank breechblock can be a pain if you use a screwdriver like the TM tells you.

Here's a tool I made from 3/4-in steel that makes the job easy and safe. The handle is 5 inches long and the shaft is 9 inches from tip to handle. There's a 1/2-in section removed at the tip 5/8-in down.

Using this tool, you can avoid jamming the screwdriver between the plunger and the plunger hole. You can also remove and install the plunger without crawling under the breechblock. The materials for the tool cost about \$7 and it can be made by unit maintenance mechs.

SSG Tommy Leach
Ft Knox, KY



(Editor's note: Great way to make a job easier and safer.)

Big Changes in TM's

Get ready, mechs, for real big changes in the TM's you use every day—like different numbering systems and fewer pages and volumes to use.

You'll benefit right off from having fewer TM's to haul around with you to the field. There won't be so much repetition either—some volumes have 55 percent fewer pages!

Until you get all the volumes of a series (all five of the -20-1-series, for example), don't get rid of any of the old volumes. Once you have all of them, chuck the old ones pronto.

Here's a quick rundown for M1A1 -20 manuals:

Old Manuals

TM 9-2350-264-MAC
-264-20-1-1
-264-20-1-2-1
-264-20-1-2-2
-264-20-1-2-3
-264-20-1-2-4
-264-20-1-3-1
-264-20-1-3-2
-264-20-1-3-3
-264-20-1-3-4
-264-20-1-3-5
-264-20-1-3-6
-264-20-2-1
-264-20-2-2-1
-264-20-2-2-2
-264-20-2-2-3
-264-20-2-3-1
-264-20-2-3-2
-264-20-2-3-3

I CAN'T WAIT TO GET RID OF THESE OLD PUBS!

New Manuals

TM 9-2350-264-20-1-1
-264-20-1-2
-264-20-1-3
-264-20-1-4
-264-20-1-5
-264-24-1 *
-264-20-2-1
-264-20-2-2
-264-20-2-3
-264-20-2-4

SURE GLAD THEY CUT OUR TM LOAD IN HALF!

*The -24-1 is a single volume of all the schematics found scattered in many volumes before; a -24-2 will follow.

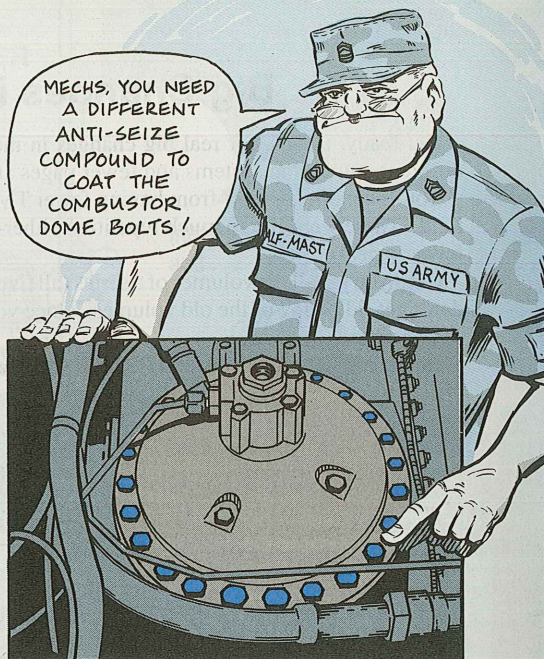
The -20P and -34P will also be combined into a single-volume -24P.

The TM lineup for the -255-20 series will be similar to the -264-20 TM's when it is printed. Keep the changes in mind so you use the most current info for maintenance and repairs.

Seize a New Anti-seize Compound

Anti-seize compound, NSN 8030-00-597-5367, found in the -20-series TM's for the M1/IPM1 and the M1A1 as an expendable item, should not be used because of its lead-base content.

Instead, use anti-seize compound, NSN 8030-00-664-6146. Apply the compound to the bolts before putting them in. The new compound won't cause the bolts to "weld" to the combustor dome housing, like the old stuff did.



Towing Tips and Your Safety

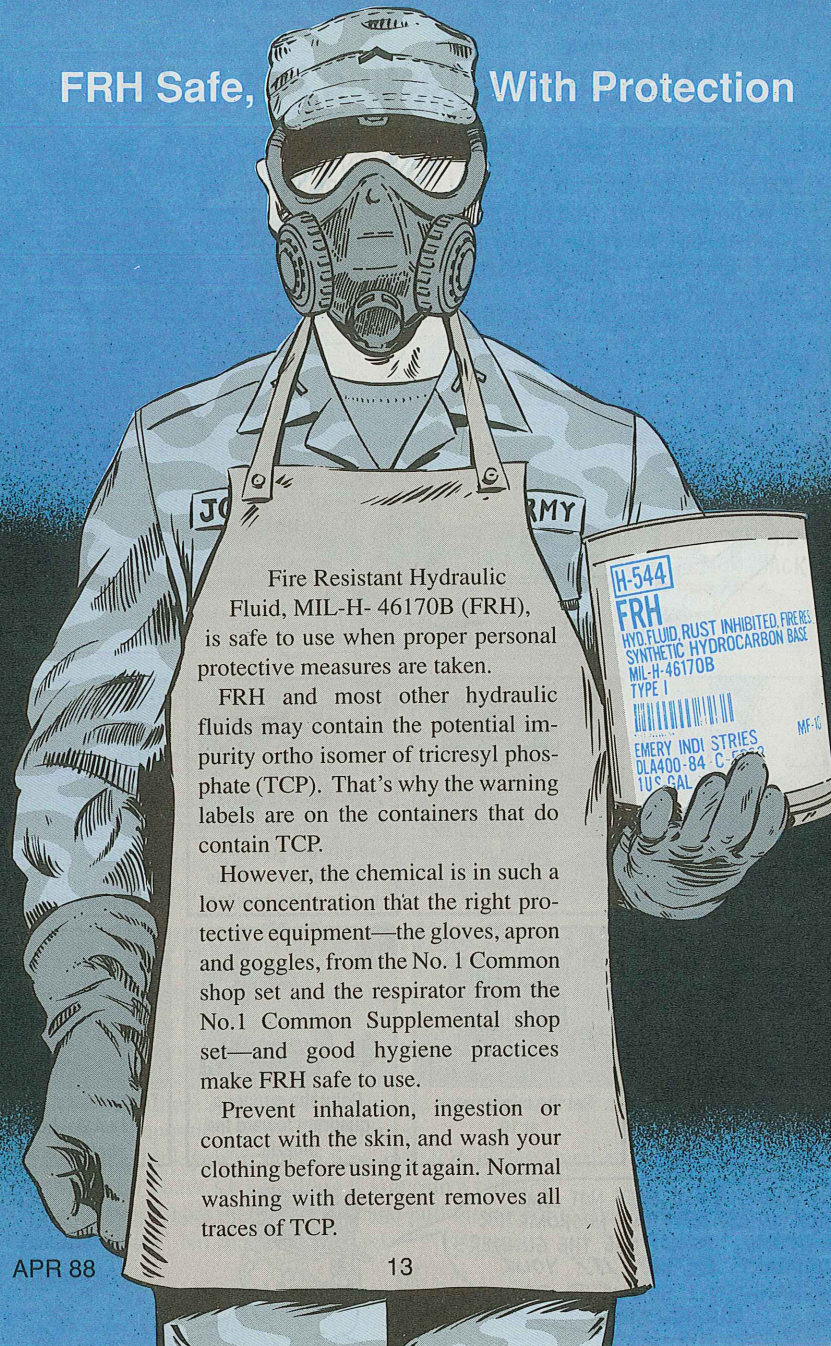


Towing heavy combat vehicles takes professional effort every time to prevent injury and equipment damage. Here are some TM warnings that bear repeating over and over:

- ➔ Use a second, hold-back vehicle when descending a grade of 20 degrees or more, even if you're towing with a tow bar. A second vehicle is also required when the road surface or conditions make it necessary.
- ➔ Never exceed 8 MPH when towing a vehicle that has its tracks removed or final drives disconnected.
- ➔ Use tow bars when attempting a tow start. Tow cables are for use only when you're faced with a real emergency. And never attempt a start by towing backwards.



FRH Safe, With Protection



Fire Resistant Hydraulic Fluid, MIL-H-46170B (FRH), is safe to use when proper personal protective measures are taken.

FRH and most other hydraulic fluids may contain the potential impurity ortho isomer of tricresyl phosphate (TCP). That's why the warning labels are on the containers that do contain TCP.

However, the chemical is in such a low concentration that the right protective equipment—the gloves, apron and goggles, from the No. 1 Common shop set and the respirator from the No.1 Common Supplemental shop set—and good hygiene practices make FRH safe to use.

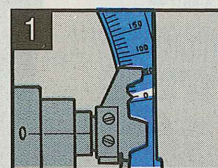
Prevent inhalation, ingestion or contact with the skin, and wash your clothing before using it again. Normal washing with detergent removes all traces of TCP.

Instrument Testing Not in TM

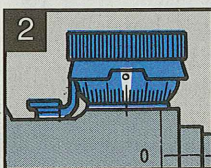
The micrometer test for the M1A1/ M1A2 gunner's quadrant was left out of TM 9-1015-203-12 (Feb 87).

Without the test, you won't know whether you have a functional quadrant when you do the end-for-end test before firing. Bad readings lead to disasters, so make a note of this procedure until your TM catches up:

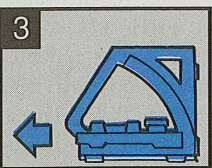
I TOLD YOU THERE WASN'T A MICROMETER TEST IN THE TM!



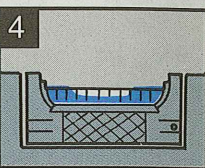
Set the index at plus 10.



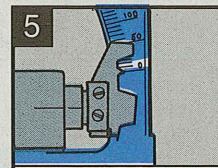
Zero the micrometer.



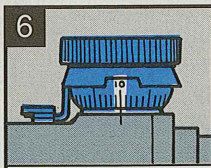
Point the gunner's quadrant toward the muzzle of the howitzer.



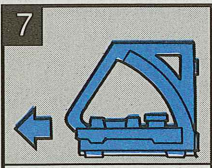
Depress/elevate the cannon tube to center the level vial bubble.



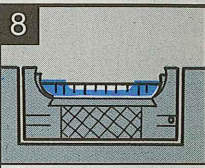
Set the index at zero.



Set the micrometer at 10.



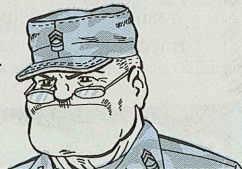
Point the gunner's quadrant toward the muzzle.



The gunner's quadrant level vial bubble should center.

IF THE BUBBLE DOES NOT COME BACK TO CENTER, THE MICROMETER IS WRONG. DO NOT USE THE GUNNER'S QUADRANT. REPORT IT! YOUR MECHANIC WILL SHIP IT TO DS FOR REPAIR!

14



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Quadrant Setting Error Message

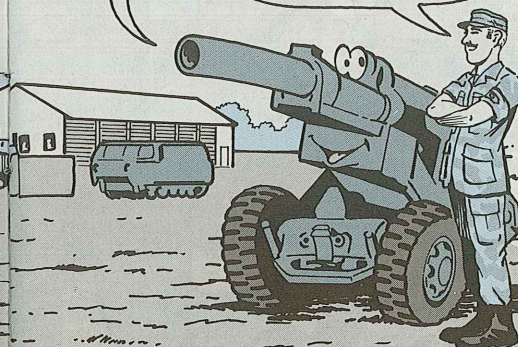
YOU SAY I'M LAYING WHERE?

NOT WHERE! IT'S A CHANGE FROM 300 MILS ON YOUR ELEVATION COUNTER!

That 300-mil setting for the M14A1 quadrant elevation counter when laying the M102 howitzer is not the only setting you can use.

Even though Step 3 on Page 2-35 of TM 9-1015-234-10 (Aug 85) says 300 mils and nothing else, your local unit SOP can prescribe a different setting.

The TM error will be corrected to say that the assistant gunner sets 300 mils or another elevation dictated by unit SOP on the M14A1 quadrant elevation counter.



THE OLD ONE GOT PUNCTURED BY THE ARMOR JACK, JACK!

SO, TELL ME WHY I NEEDED A NEW RADIATOR?

M109-Series SP Howitzers, M992 Ammo Carrier. . .

Always Take Grille Support Off

Taking a shortcut with the intake grille support assembly, or armor jack, is a surefire ticket to a busted radiator, mechs.

The support must be removed as shown in the TM's before pulling the power-pack and installed after the pack is in place.

Otherwise, there's so little clearance between the radiator and the support that it's almost impossible to prevent damage.

You may think you're saving time and work by leaving the support in place, but you won't have saved a thing if you ruin a radiator.

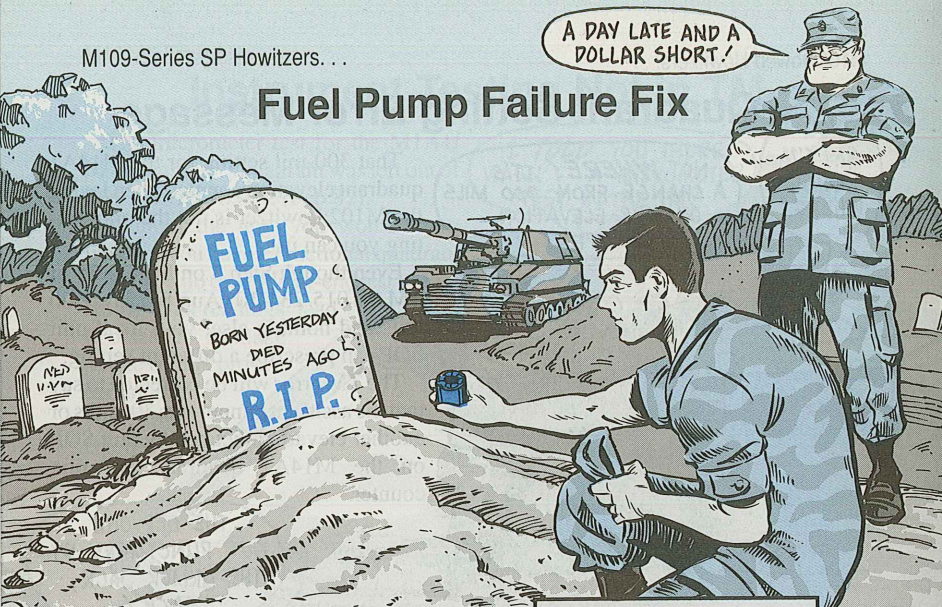
Remember—take the support off and pull the pack out. Put the pack in and install the jack. No shortcuts allowed.

APR 88

15

Fuel Pump Failure Fix

A DAY LATE AND A DOLLAR SHORT!



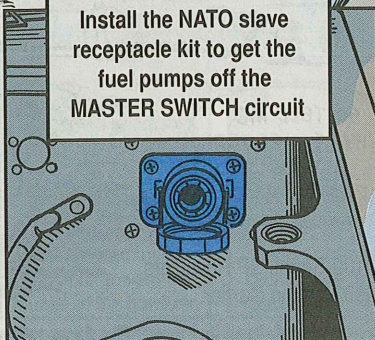
Fuel pumps run when the master switch is ON. But sometimes you want the master switch on, but you don't want the pumps to run.

Here's a simple way to shut the pump off and save them from early deaths.

Get and install the NATO slave receptacle parts kit, NSN 2590-01-201-7858. The fuel pumps will no longer be on the same circuit as the master switch. The pumps won't run as much, so they will last longer.

Complete installation and wiring instructions come with the kit, and plenty of the kits are on hand. Your CO can authorize you to get the kits and install them. Then you'll start saving fuel pumps.

Install the NATO slave receptacle kit to get the fuel pumps off the MASTER SWITCH circuit

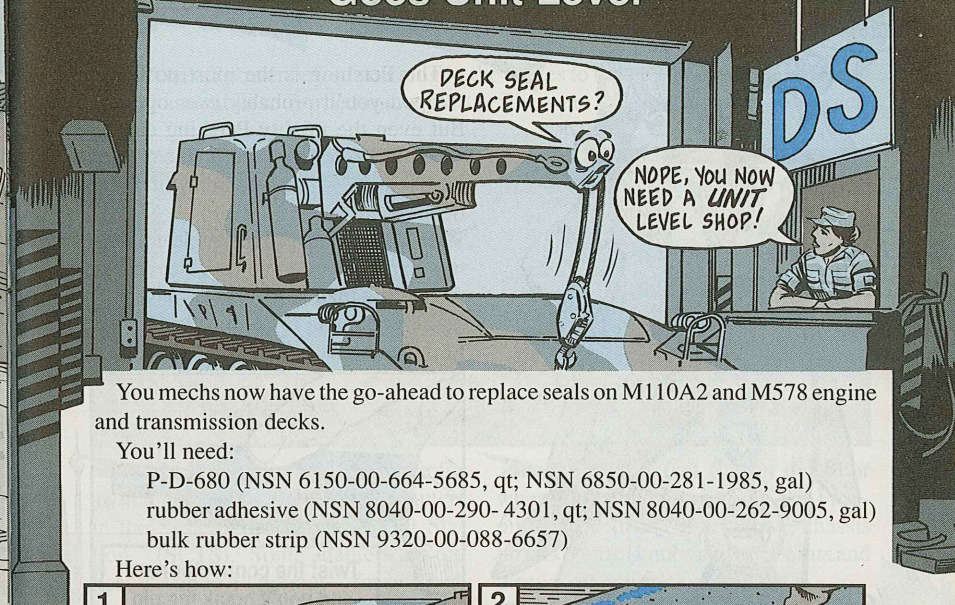


Oil Filter Housing NSN's

TM 9-2350-261-20P omits the stock numbers for the engine oil filter head and housing for M113-series vehicles. Use NSN 2940-00-338-5933 for the head and NSN 2940-00-019-4775 for the housing.

Replace these items only when they are damaged or missing. If you just need a filter element, order NSN 2940-00-580-6283.

Deck Seal Replacement Goes Unit Level

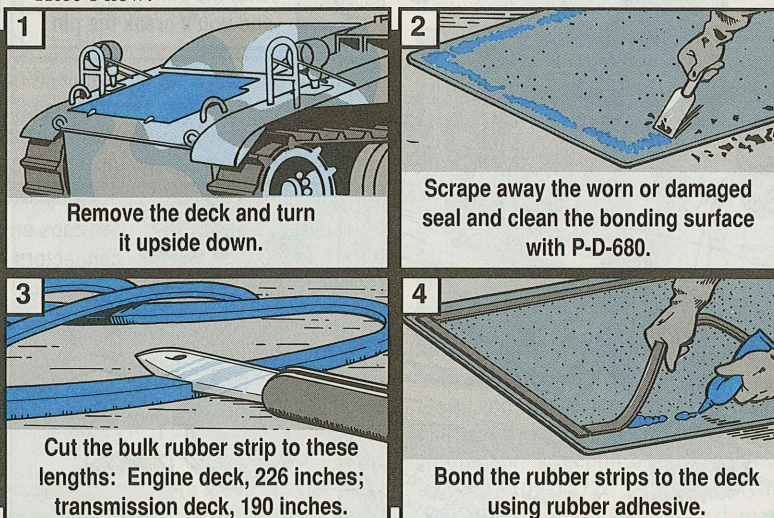


You mechs now have the go-ahead to replace seals on M110A2 and M578 engine and transmission decks.

You'll need:

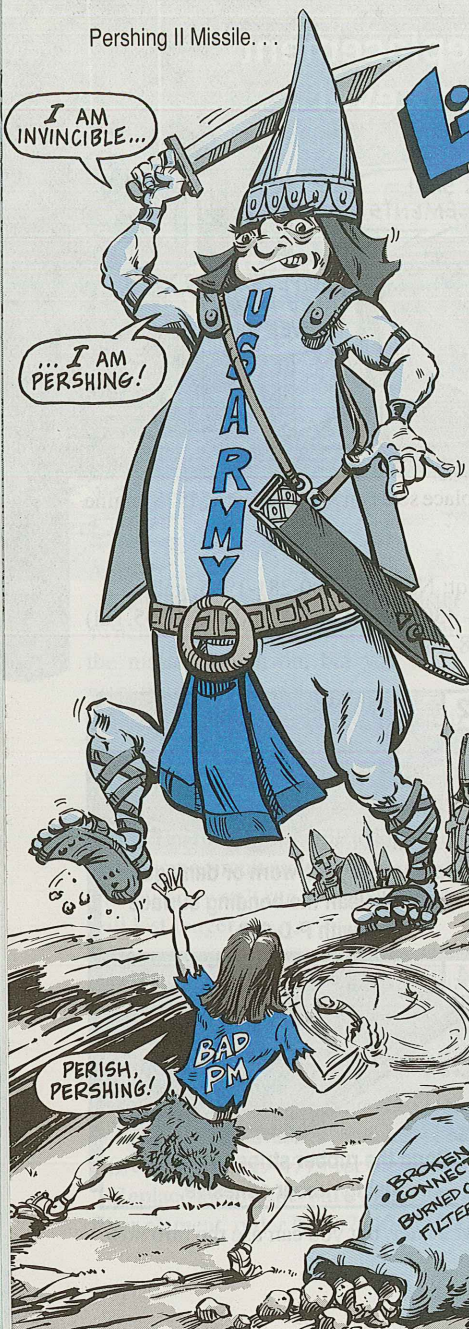
P-D-680 (NSN 6150-00-664-5685, qt; NSN 6850-00-281-1985, gal)
rubber adhesive (NSN 8040-00-290-4301, qt; NSN 8040-00-262-9005, gal)
bulk rubber strip (NSN 9320-00-088-6657)

Here's how:



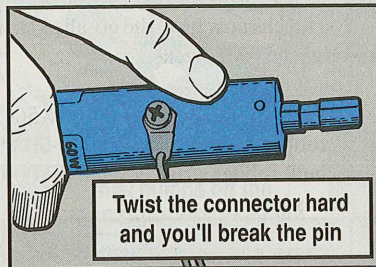
These procedures will be added to the TM's later, but you can use the info now.

Little Things Mean A LOT!

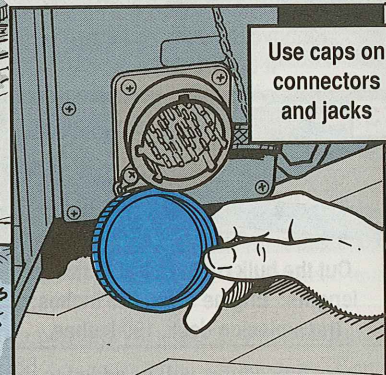


The Pershing is the most powerful weapon you'll probably ever operate. But even the mighty Pershing can be brought down if you don't take care of little things. Trip up trouble with these tips:

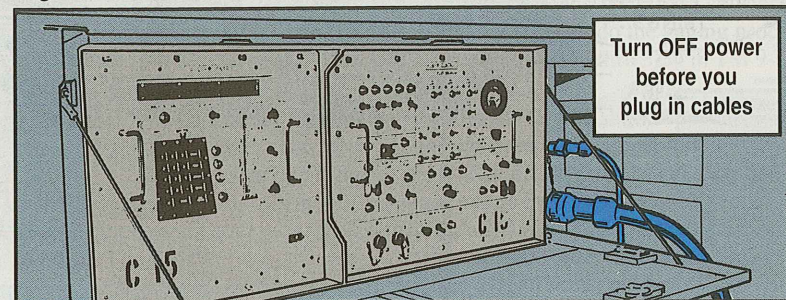
✦ Never twist ground cable connectors hard to lock them on. Never turn them more than 180°. Cables have a fiberglass pin that breaks easily. Gently turn the connectors until they lock.



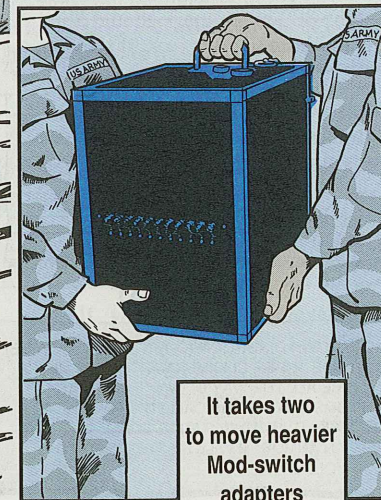
✦ Use dust caps on the connectors and jacks when cables are unplugged. Otherwise, dirt and moisture can cause shorts and bad connections.



✦ Turn off power before you plug in the cables to the power control and launch control assemblies. Burned-out capacitor filters are the price you pay for forgetting.



✦ Always use the two-man rule for switching heavier mod-switch adapters in the Systems Components Test Station (SCTS). Some adapters are too heavy—up to 67 pounds—for one person to lift.



✦ Keep your feet flat on the floor when you're operating the SCTS. Propping your foot on the floor-level chassis breaks control knobs and test points and throws off calibration.



✦ Keep the inside of the SCTS clean. Drink and smoke outside, too. Sweep it out gently so dust's not knocked on equipment. Sweeping compound, NSN 7930-00-269-1272, prevents flying dust. Dust, liquids, and smoke damage sensitive computer equipment.

Zeroing In On Zeroing

MY RIFLE AND MY
TM ARE TELLING
ME DIFFERENT
THINGS!

If you follow the 25-meter zeroing procedures in TM 9-1005-319-10 and Change 4 (Jan 86) to TM 05538C-23&P/2, you'll end up confused.

Army and Marine M16A2's have slightly different elevation requirements. Marines zero their rifles like the TM's say. Their rifle's elevation knob should bottom out three clicks below the 300-meter mark, just like it says in Para 4 on Page 53 in the -10 TM and Para 2 on Page 2-5 in the -23&P/2.

But it's a different story for Army M16A2's. Their elevation knobs should bottom out at the 300-meter mark.

HERE'S
HOW YOU
NEED TO
CHANGE
YOUR TM'S

... out and will not pivot freely. Position elevation knob back slightly to its last whole click so the rear sight base is under tension of the bearing ball and helical spring (items 11 and 12 page 3-40). **Now, rotate the elevation knob clockwise three clicks.** The 300 meter mark should align with the mark on the receiver. If the 300...

... moved). Knob should be positioned on its last whole click. **Now, rotate lower portion of elevation knob clockwise three clicks.** Tighten index screw. Do not attempt to remove the index screw. This is an intermediate function.

4 ROTATE ELEVATION KNOB IN THE DOWN DIRECTION (COUNTER-CLOCKWISE). THE ELEVATION KNOB SHOULD STOP THREE CLICKS ~~PAST~~ THE 300-METER MARK. THE REAR SIGHT SHOULD BE ALL THE WAY DOWN ON THE LAST WHOLE "CLICK" BEFORE IT BOTTOMS OUT. THIS IS CALLED MECHANICAL ZERO ELEVATION FOR THE REAR SIGHT. IF YOUR RANGE SCALE WILL NOT LINE UP IN THE ABOVE MANNER, AN ARMORER WILL BE REQUIRED TO ADJUST THE RANGE SCALE FOR YOU.

ITS AT

Armorsers Check Firing Pin

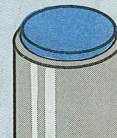
Gaging the M249's firing pin is now your job, armorers.

That means every time you change a firing pin you do the gaging procedure on Pages 3-53 thru 3-54 in TM 9-1005-201-23&P.

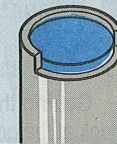
There's one slight change. The gage does not have a flat end as Step 3 shows. It has a stepped—or notched—end.

If the firing pin's good, it will push the gage's movable rod into the stepped area. If it doesn't push the rod that far or pushes it past the

Wrong



Right



... In Para 2 on Page 2-5 in the -23&P/2, change the fifth sentence to: "(Marines only: Now, rotate the elevation knob clockwise three clicks.)"...

... And change this sentence to: "(Marines only: Now, rotate lower portion of elevation knob clockwise three clicks.)"

In Para 4 on Page 53 in the -10 (the zeroing procedure's for the Army, too), the second sentence should say: "The elevation knob should stop its clicks at the 300-meter mark."

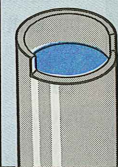
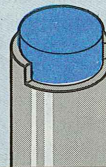
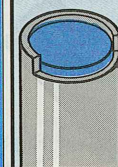
If your M16A2's elevation knob doesn't bottom out at the 300-meter mark, your armorer can adjust the range scale's index screw.

If that doesn't fix the scale, armorers, turn in the rifle to DS. Never remove the index screw.

Good

No Good

No Good



stepped area, replace the firing pin.

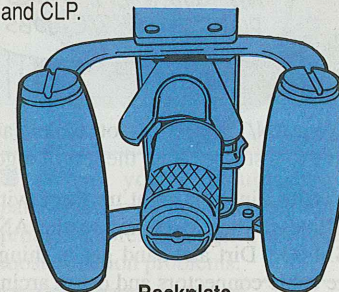
NSN 5220-01-141-4732 brings the gage. You're authorized 2 gages for every 15 machine guns. DS should continue to test the firing pins until you receive the gages.

Make a note until TM 9-1005-201-23&P is changed.

It Doesn't Have to Be Hard

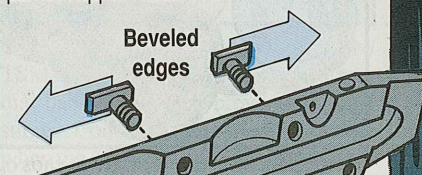
ARE YOUR **BEVELED EDGES** POINTING IN THE SAME DIRECTIONS?

Never clean the backplate by dunking it in solvent. Solvent ruins the fiber discs in the backplate, which makes for hard recoil. Clean the backplate with a cloth and CLP.



Backplate

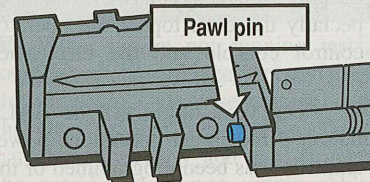
Armors, when you put the two shoulder bolts through the receiver side plate, make sure their beveled edges point in opposite directions. The beveled



edge of the bolt nearest the barrel points toward the barrel and the rear bolt's beveled edge to the rear of the machine gun.

If you point them in, the slide plate works loose during firing. That breaks the bolt stud and lets the charging handle fall out of place.

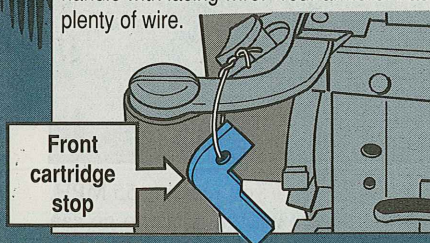
When you remove the front cartridge stop to train with the Multiple Integrated Laser Engagement System, pull the belt-holding pawl pins out just far enough to



Pawl pin

release the cartridge stop. Then slide the pins right back. If you pull the pins all the way out, the pawl and spring fly out.

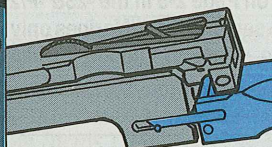
Prevent the front cartridge stop from disappearing by tying it to a backplate handle with lacing wire. Your armorer has plenty of wire.



Front cartridge stop

After cleaning, reassembly is easier if you put the bolt, buffer, and barrel extension back together outside your gun instead of inside.

Slide all three into the receiver in one



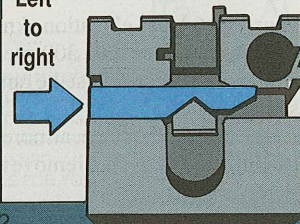
Put 'em together like this

piece with the cocking lever forward. Then put in the driving spring rod assembly and backplate.

That prevents the burrs and scrapes that come from putting things together inside the receiver.

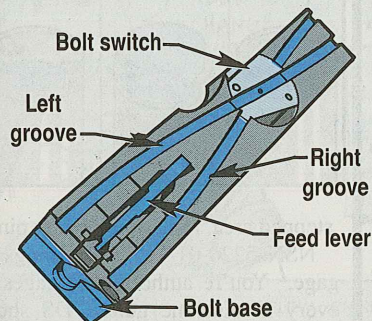
It's one way only—left—to slide the sear slide in the bolt. If you push it in from the right, your M2 can't fire.

Left to right



HERE'RE SOME TIPS THAT'LL HELP YOU KEEP YOUR M2 READY ON THE FIRING LINE...

Getting the feed right is a cinch if you look at the grooves beginning at the bolt's base. For left-hand feed, set the bolt switch so the left groove is unblocked.



For right-hand feed, it's the right groove that's unblocked. If you forget the grooves, you damage the feed lever tip and the bolt.

Be Cool and Clean

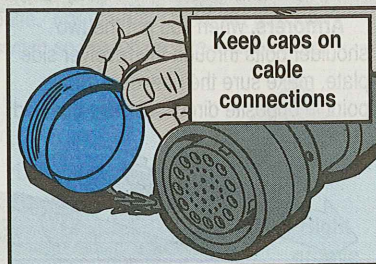
HOW AM I TO DO
MY JOB IF OPERATORS
DON'T DO *THEIR* JOBS?

Your AN/TSM-93 has lots of delicate components that need lots of delicate care if it's to test true. Pass the test of a good operator with these tips.

■ Cleanliness is right up there with godliness when it comes to the AN/TSM-93. Dirt and sand get in things like cable connectors and cause arcing and shorts. Dust off counters and sweep

■ Help the AN/TSM-93 stay cool by keeping its screens and filters clean, especially those on top of the operator control console and the electronics rack.

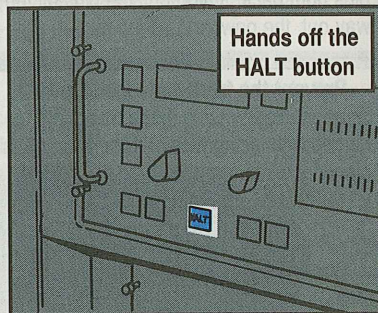
■ Keep your finger off the HALT button if the signal generator's power amplifier has been programmed or the 1A4 variable transformer is being used. Hitting HALT is like throwing your car



out the van. Shut the door. Keep caps on cable connectors not in use.

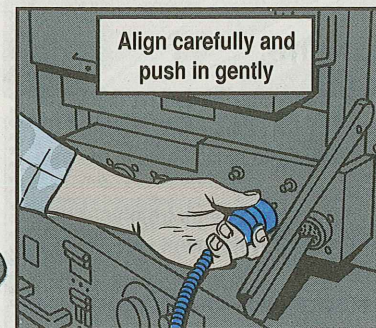
Quench your thirst outside the AN/TSM-93 van. An overturned glass can mean major electrical damage.

■ Don't fiddle with the van's thermostat. Raising and lowering the temperature leads to condensation, which keeps the AN/TSM-93 from performing like it should.

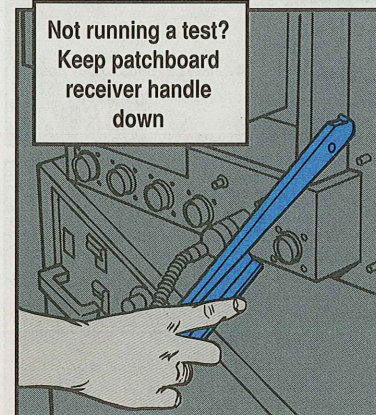


in reverse when you're going 55 MPH. Power surges with no place to go can cause circuit card damage, too.

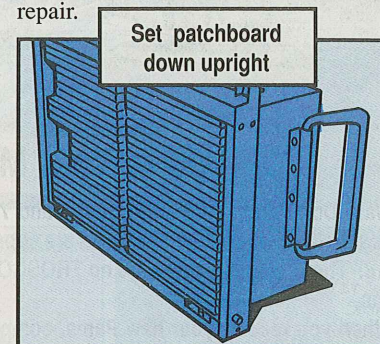
■ Be gentle mating cable connectors to jacks. It doesn't take much muscle to bend connector pins. Line up pins and keyways, then push in the connector. If you feel resistance, try jiggling the connector side-to-side slightly. If you still feel resistance, check the connector for bent pins.



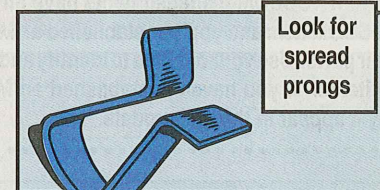
■ When you're not running tests, keep the patchboard receiver handle all the way down. Otherwise, voltage from the power supplies keeps running to the patchboard receiver and can damage the patchboard, power supply cable pins, or the filter adapter.



■ Upright's the only position to set down a patchboard. If you lay it down flat, something as small as a pen can bend pins. Replacing pins is a major repair.



■ When you're troubleshooting patchboard pins, look for broken pin prongs or spread prongs. Those are the most common problems.



■ Before you shut down the AN/TSM-93, turn the variable transformer dial back to 0. That prevents voltage surges from damaging the transformer when the AN/TSM-93's turned back on.





Save Your MPL Pams

Wait! Don't pitch DA Pams 710-2-3 and 710-2-4, Mandatory Parts List (MPL) for Category I and II units. These Pams are superseded by DA Pams 710-2-117 and 710-2-118. The problem is there are no TROSCOM managed end items listed in the new Pams.

When you receive your new Pams, compare your on-hand items from your unit hand receipt or property book with the Mission Profile Development List (MPDL), Appendix J of DA Pam 710-2-1 in Supply UPDATE 11.

If your end items appear in the MPDL, check them on the new DA Pam for your unit category. If there's no MPL for the end item on the Pam, look at the item's NSN on the AMDF. TROSCOM-managed items have an A12 Source of Supply (SOS). If it's a TROSCOM item and you've established an MPL for that piece of equipment, keep the repair parts. Use your old Pam to identify and justify keeping the repair parts for these end items. If you haven't established an MPL for the TROSCOM items, hold off. They'll appear in the next update.

Maintenance & Safety-Of-Use Messages

AMCCOM SOU-MSG Operational, Warns of a safety hazard when the turret relay box circuit breaker switch is OFF and the turret drive is in the powered mode on the Bradley Fighting Vehicle System, AMSMC-MA, 291945Z Jan 88.

AMCCOM SOU-MSG—Advisory, Operational, Warns of M1, M1A1 and IPM1 Tank loaders toe guard safety hazard, AMSMC-MA, 291945Z Dec 87.

CECOM SOU-MSG—Mandatory, Operational, Confirms testing interval for AN/PVS-5 series goggles for aviation and ground use, AMSEL-SF-SEC, 151830Z Jan 88.

CECOM SOU-MSG—Advisory, Operational, Deadlines lithium-sulfur dioxide BA-5590/U batteries made by Duracell, contract No.

DAAB07-85-C-H335, lot No. 0987, AMSEL-SF-REE, 252230Z Jan 88.

MICOM SOU-MSG—Advisory, Operational, Provides info for inspecting antenna positioner welded joints on OE-349/MRC Antenna Mast Group, AMSMI-LC-AM, 061900Z Jan 88.

MICOM SOU-MSG—Advisory, Increases distance between personnel and ignition point on MXU-4A/A Engine Starter Cartridge, M156, and all Army owned stocks used with Ballistic Aerial Target System (BATS), AMSMI-LC-AM, 261630Z Jan 88.

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

AUDIO-VISUAL STUFF

Available at battalion or post Learning Center

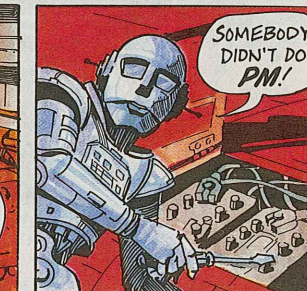
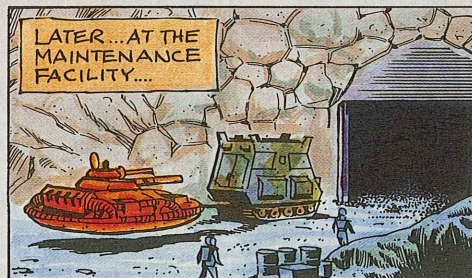
TVT 9-84 Boreighting the integrated sight unit to the 25mm gun and night sight to day sight
TVT 9-93 M939 brake system: construction and operation
TVT 9-128 HMMWV: Troubleshooting the fuel system
TVT 9-130 Bradley fighting vehicle: basic operation of the weapon systems controls
TVT 11-179 AN/TYC-39 modem alignment
TVT 11-180 Repair AN/TYC-39 central processor group (CPG), part II
TVT 11-184 Installation of the generator set 5KW AC

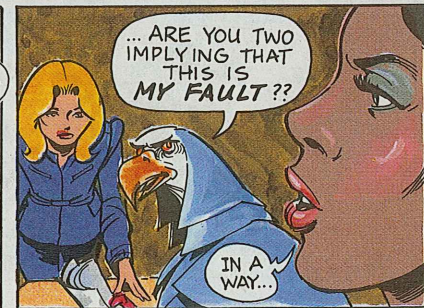
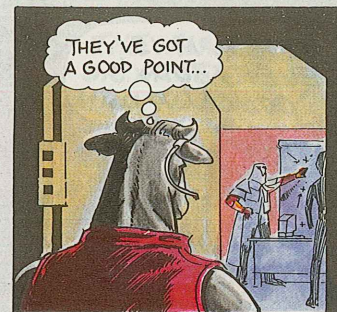
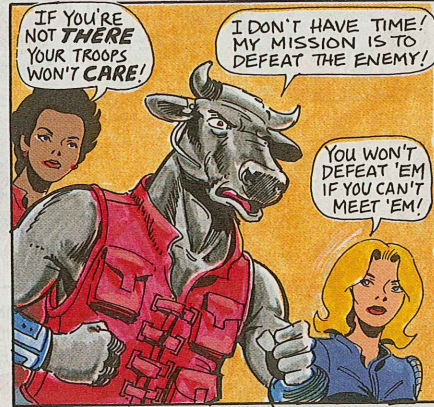
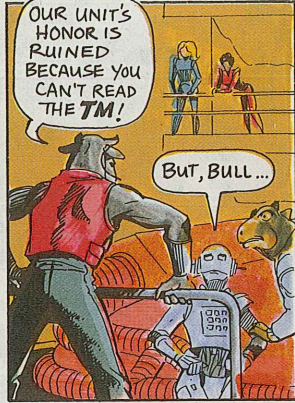
Mission Possible

A COMPANY OF HOVER-TANKS DEPARTS ON ROUTINE MANEUVERS



WHAT'S WRONG?





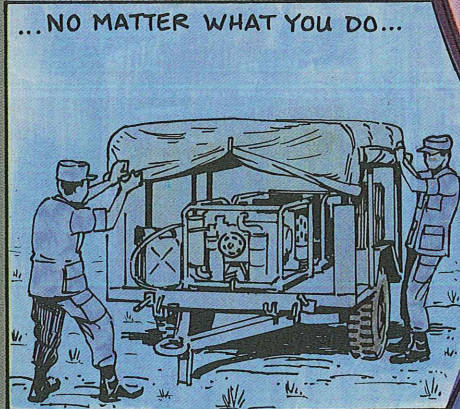
NO MATTER WHO YOU ARE...



...NO MATTER WHERE YOU GO...



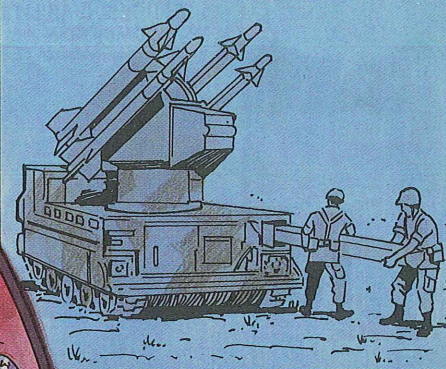
...NO MATTER WHAT YOU DO...



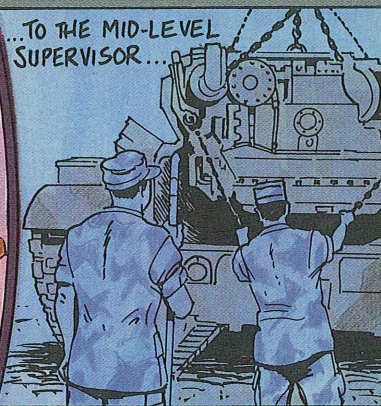
GOOD PM IS
EVERYBODY'S
CONCERN!

THE FLIP-SIDE
OF MISSION IS
MAINTENANCE!

...FROM THE FRONT-LINE OPERATOR...



...TO THE MID-LEVEL
SUPERVISOR...



...TO THE COMMAND AUTHORITY!



... EVEN AT THE
COMMAND
LEVEL...

... MAINTENANCE
IGNORED TODAY
CAUSES LIABILITIES
TOMORROW!

... EVERY
HOUR OF
STRATEGY
IS
WASTED...

OK, TROOPS,
LET'S
MOVE IT!

I HOPE
NO ONE
FINDS
OUT
ABOUT
THIS!

THIS ISN'T
RIGHT,
BUT IT'LL
HAVE
TO DO!

ATTENTION
ALL UNITS!

FIELD EXERCISES
IN 15 MINUTES!

OH NO-
NOT
AGAIN!

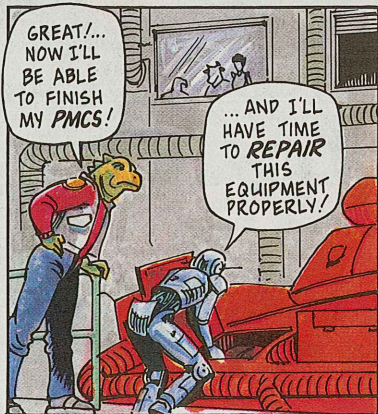
PMCS IS
POSTPONED
AGAIN!

THIS CAN'T BE
VERY IMPORTANT
IF BULL DOESN'T
THINK IT IS!

I THOUGHT
YOU KNEW
THE
PROCEDURE!

WHA'?
I'VE
BEEN
FOLLOWING
YOU!

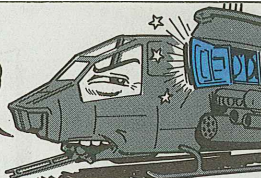
GOOD THING
THERE'S NOT
A WAR ON!



AH-1F...

AIR
MOBILITY

OUCH!



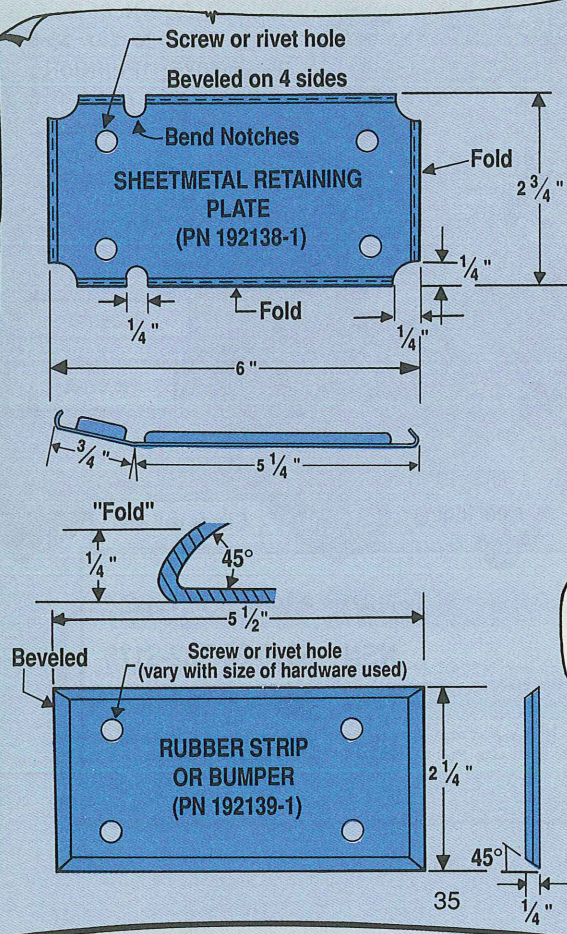
Save the Canopies

When your Modernized Cobra's transmission cowling door is open for maintenance, it can rub against the pilot's canopy and leave it looking like Scarface.

But SP4 Darwin E. Elliott at Hunter Army Airfield came up with a SMART idea to prevent those ugly scars and costly repairs. Just add a bumper plate to the door where it rubs against the canopy.

To make the plate, get access cover, NSN 5340-01-159-8291, and rubber strip, PN 192139-1, CAGE 70210.

Make the bumper plate like so:



NOTE: Holes to be countersunk so hardware does not touch mating surface but secures rubber strip

Attach the bumper plate to the cowling with rivets or screws.

Put a bead of sealant, NSN 8030-00-723-2746, under it before putting it on. Be sure the holes in the bumper for the hardware are countersunk so that the hardware won't touch the windshield and scratch it.

THE CANOPY YOU SAVE MIGHT BE YOUR OWN!



EASIER TRUNNION REMOVAL

HERE'S A
HANDY HOME-MADE
TOOL TO USE WITH THE
WORK AID SHOWN IN FIG 5-38
OF TM 55-1520-210-23-1
TO REMOVE TRUNNION
ASSEMBLIES FROM THE
SWASHPLATE!

Eye bolt

Washer

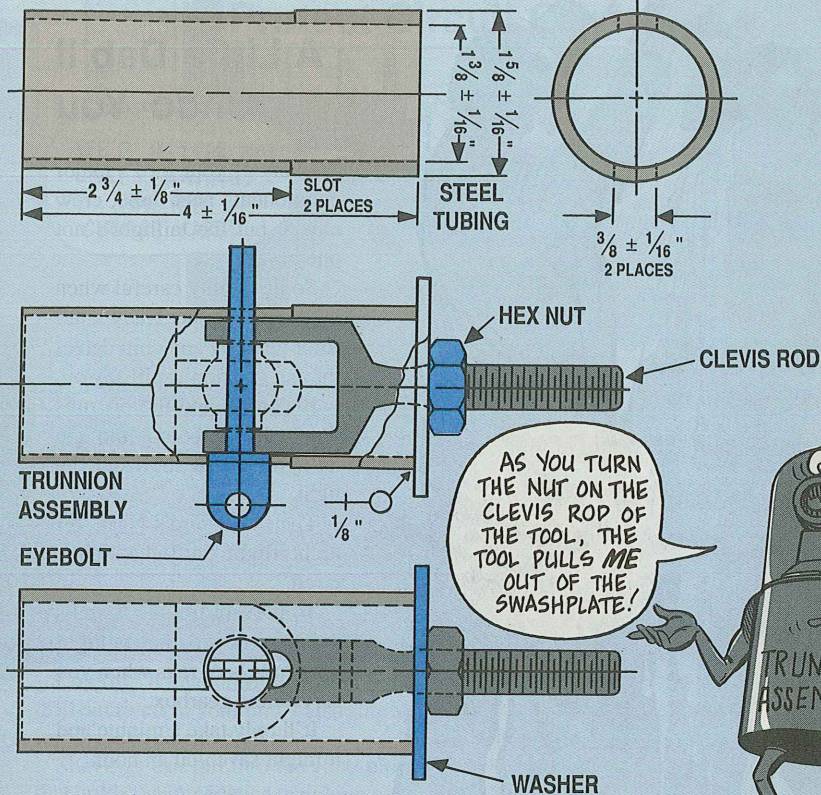
Hex nut

1 3/8-in ID
steel tubing

Clevis rod end

GET YOUR
MACHINE SHOP
TO MAKE IT
FROM THESE
MATERIALS...

Eye bolt	NSN 5306-00-271-4742
Hex nut	NSN 5310-00-582-8173
Clevis rod end	NSN 5340-00-989-2983
Washer	NSN 5310-00-167-0771
1 3/8-in ID steel tubing	



AVIATION MESSAGES

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

AH-64-87-25, SOF, Technical, Inspection for defective T700-GE-700/701 engine power turbine modules, 030100Z Dec 87.

UH-60-87-12, SOF, Technical, Inspection for defective T700-GE-700/701 engine power turbine modules, 030100Z Dec 87.

CH-47-87-14, SOF, Technical, CH-47D Inspection of flight control and utility hydraulic pump housing, retaining screws, 031830Z Dec 87.

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

AH-1-87-10, SOF, Maintenance mandatory, Tail rotor yoke, 161900Z Dec 87.

AH-64-87-26, SOF, Maintenance mandatory, Multiple safety inspections, 172100Z Dec 87.

UH-1...

A Little Dab'll Undo You

Many of your bird's major components need lube, crew chiefs, but the taillight's not one of 'em!

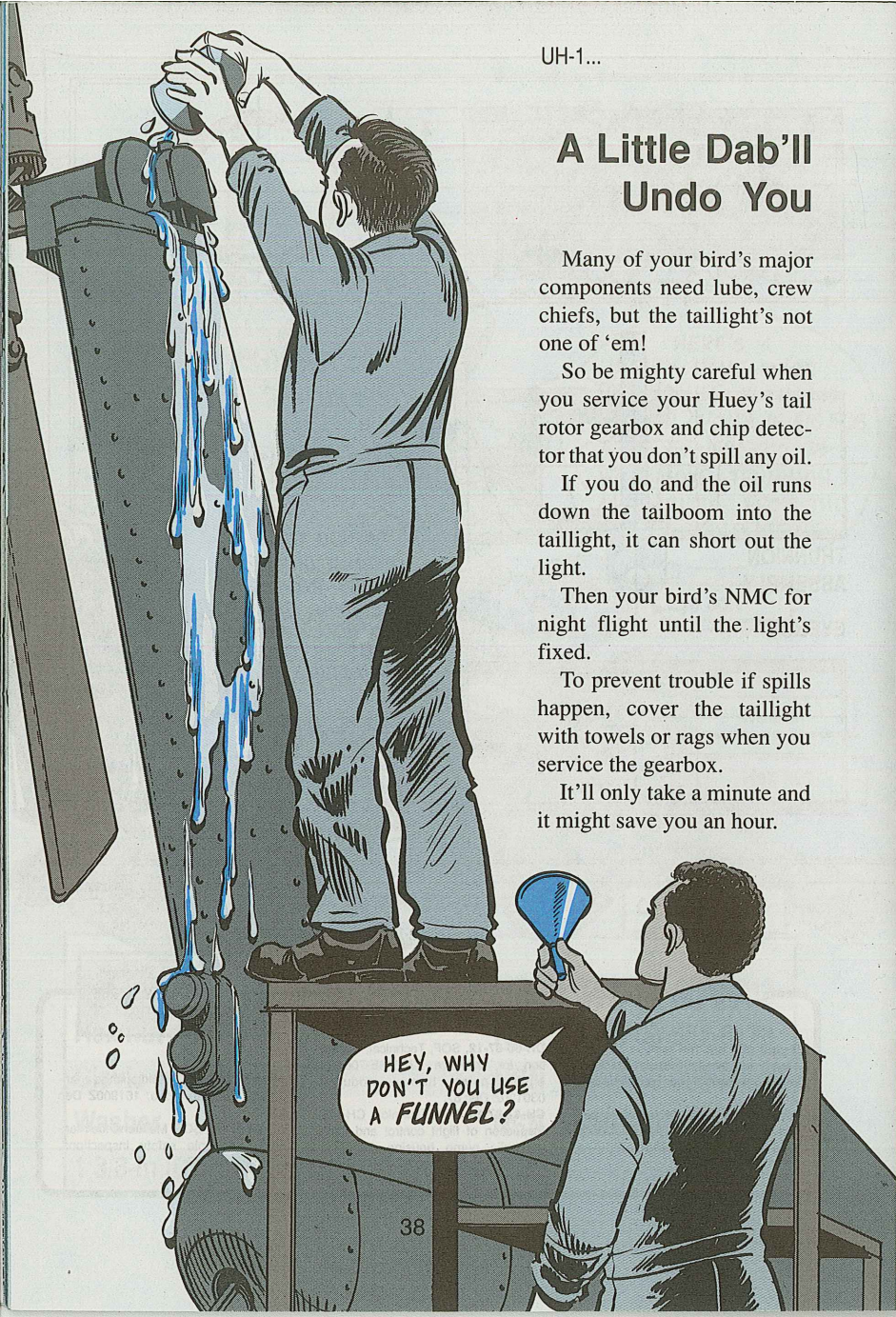
So be mighty careful when you service your Huey's tail rotor gearbox and chip detector that you don't spill any oil.

If you do and the oil runs down the tailboom into the taillight, it can short out the light.

Then your bird's NMC for night flight until the light's fixed.

To prevent trouble if spills happen, cover the taillight with towels or rags when you service the gearbox.

It'll only take a minute and it might save you an hour.

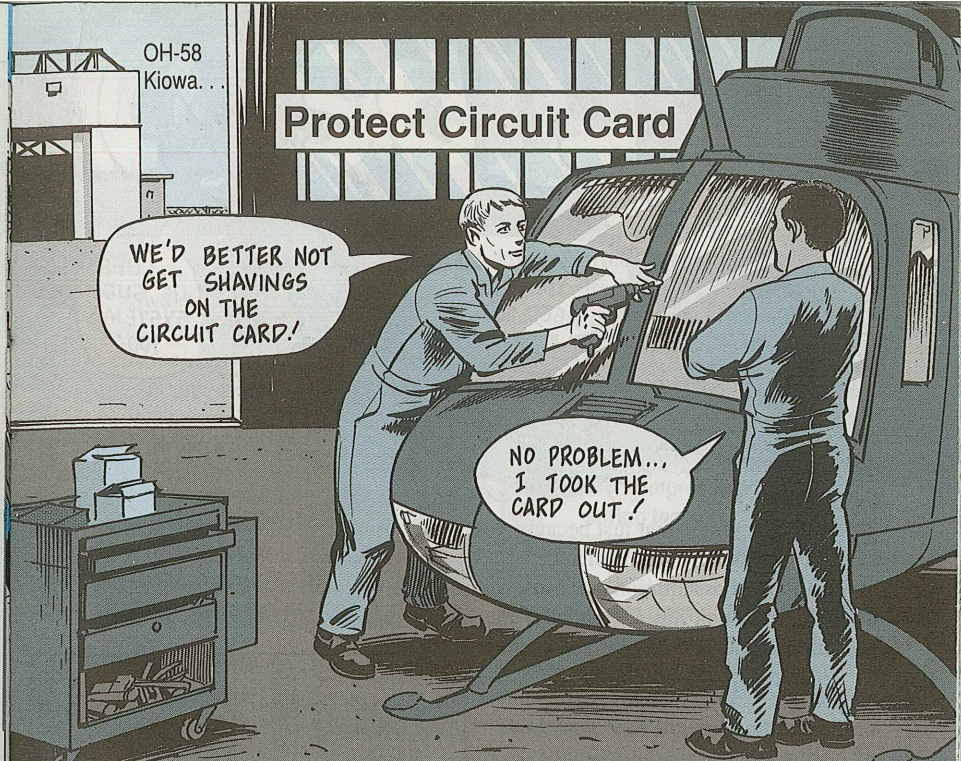


HEY, WHY
DON'T YOU USE
A FUNNEL?

38

OH-58
Kiowa...

Protect Circuit Card

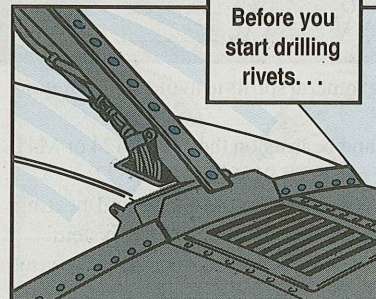


WE'D BETTER NOT
GET SHAVINGS
ON THE
CIRCUIT CARD!

NO PROBLEM...
I TOOK THE
CARD OUT!

Careful, Kiowa mechs, when you drill out rivets in your bird's airframe to replace a windshield.

Shavings can fall into the J600 plug that holds the impedance matching network and circuit card at the rear of the instrument panel.

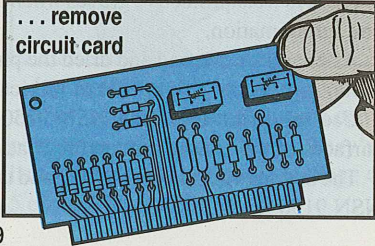


Before you
start drilling
rivets...

If the shavings get into the circuit card's contacts, they short out your commo gear.

That adds up to a lot of grief in repair time and cost.

So next time, before you drill out rivets on a windshield, remove the circuit card from the plug and put a strip of duct tape over the plug. This will protect the circuit card.

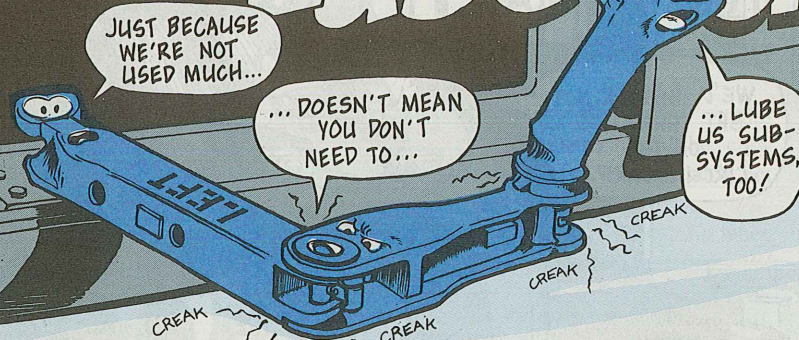


... remove
circuit card

APR 88

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Lube or Lose



You can't assume that just because your bird's armament subsystem is seldom used, it seldom needs maintenance.

That kind of assumption can cause you a world of hurt. If your Huey, Black Hawk or Chinook has a mount for the M60D machine gun, it needs periodic cleaning, lubrication and inspection.

Cleaning and Lubrication

If the gun is mounted in your bird, clean and lube the mount monthly.

If you're operating under unusual conditions—extreme temperatures, dust or sand, humid or salty atmosphere, rain or snow—clean and lube the mount at least twice a month.

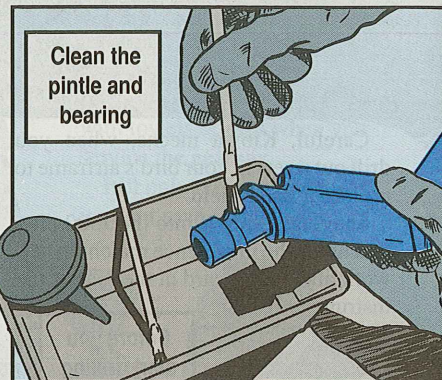
Before you apply lube, clean the pintle and bearing with mineral spirits, NSN 6850-00-264-9039, like it says in Para 3-2 of TM 9-1005-262-13.

Always wear protective gloves when using mineral spirits to avoid skin irritation and inflammation.

After you've cleaned and dried the pintle and bearing on the M23, M24 or M41 mounts, give 'em a light coat of lubricating oil, NSN 9150-00-889-3522.

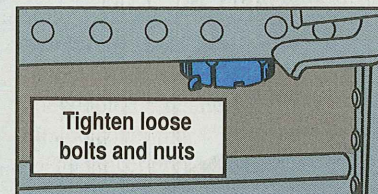
Use solid film lubricant, NSN 9150-00-168-2000, on the pintle and bearing surfaces of the release arm on the Black Hawk's M144 armament subsystem.

The bearings in the Huey's M23 and the Chinook's M24 also get a shot of grease, NSN 9150-00-985-7244.

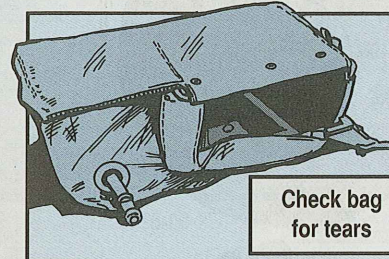


Inspections

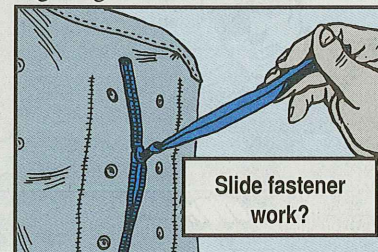
Always eyeball your bird's armament subsystem before operation. Look for loose bolts on the pintle mount and mount assemblies. Tighten any loose bolts.



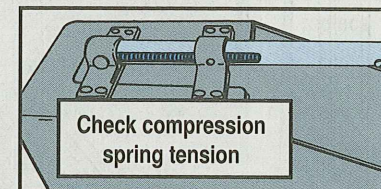
Check the ejection control bag for tears or torn seams. Make sure the slide



fastener works and give the latch a slight tug to make sure it holds.

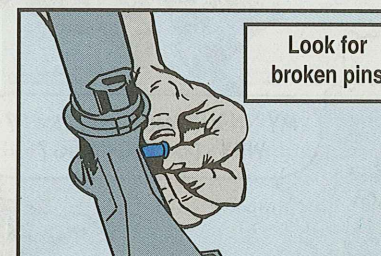


Eyeball the ammo can assembly for a broken compression spring, damaged or bent holding plunger, or deep dent in the can which could stop the flow of ammo. Replace the bag or can if you find any defects. If you find loose rivets, replace them.



On the Huey's M23 pintle mount, also make sure the pintle post assembly is locked into the base tube assembly. Tighten the slotted nut if it's loose.

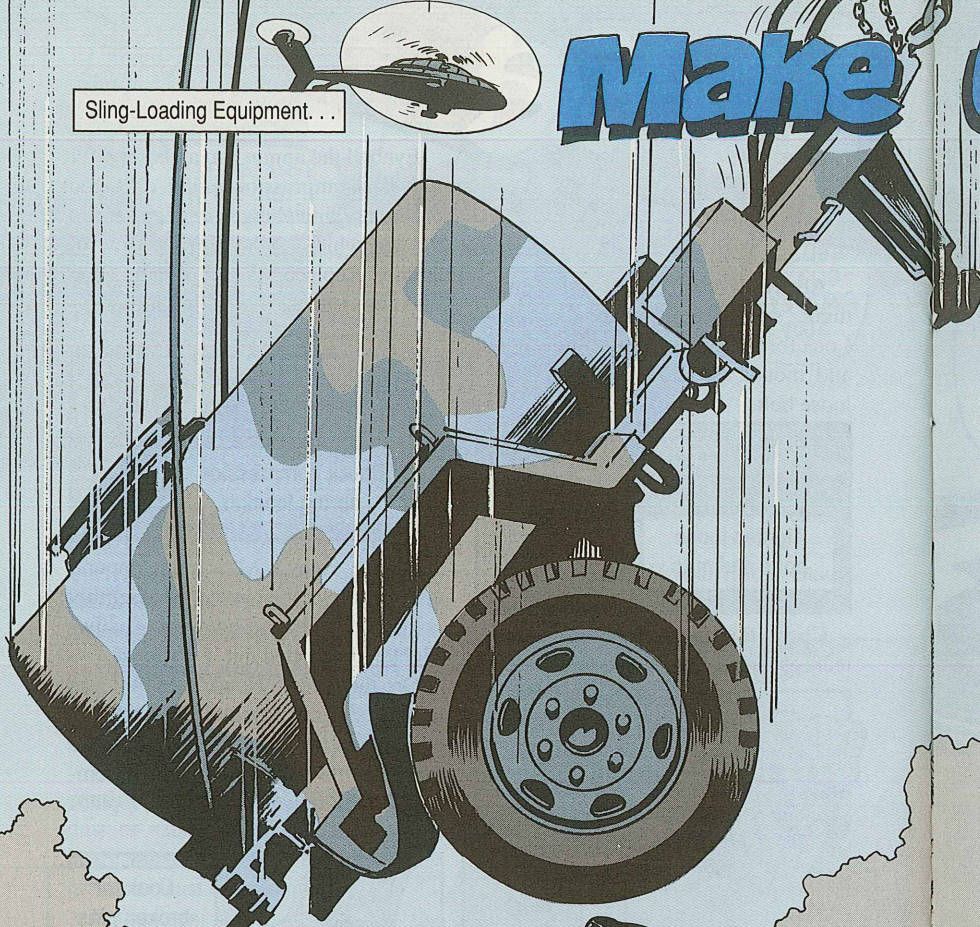
On the Black Hawk's M144 gun mount assembly, eyeball the cotter pin and headed straight pin that secures the mount pintle to the release arm assembly. If they're worn or broken, replace them.



In addition to before-operation checks, you have to inspect some components every 25 flying hours. They're listed in the table beginning on Page 4-5 of the TM.

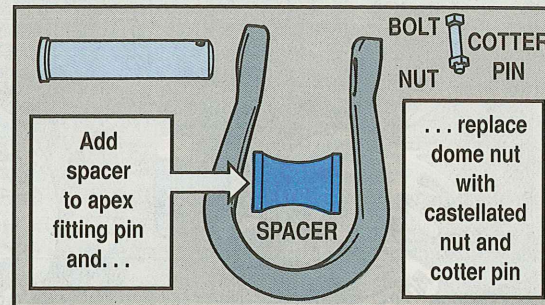
Sling-Loading Equipment...

Make Unsafe Gear Safe



The pin on the apex fitting of your 10,000-lb sling set, NSN 1670-01-027- 2902, can work its way under the keeper on the Black Hawk cargo hook. Then it can slip off the hook. Talk about a hard landing! KA-WHAM!!

To prevent unexpected equipment drops, modify your sling before you use it again. Add an aluminum spacer to the apex fitting pin and replace the safety bolt and dome-shaped nut with a new bolt, castellated nut and cotter pin.



The spacer prevents the apex fitting from raising the cargo hook keeper. It also centers the fitting on the hook to reduce shock loads from a rotating sling load.

Here's what you need:

Spacer

NSN 1670-01-235-0908

Bolt

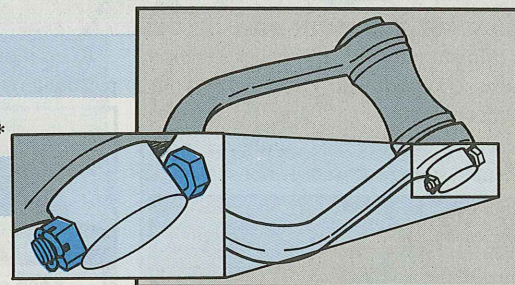
NSN 5306-00-944-1536*

Nut

NSN 5310-00-207-9274

Cotter pin

NSN 5315-00-234-1864



If you have to sling equipment before you get the spacer parts to modify the apex fitting, either replace the fitting with one from a 25,000-lb set or make a temporary substitute for the spacer.

The substitute spacer should be a 3 7/16-in piece of steel or aluminum tubing that has a 1 3/16 inch inside diameter and an outside diameter of 1 1/2 to 1 7/8 inches. Your 10,000-lb sling sets don't have to be modified for use with Hueys or Chinooks.

To modify your 25,000-lb sling sets, add spacer, NSN 1670-01-235-0907 and bolt, NSN 5306-00-944-2659*, along with the same nut and cotter pin used to modify the 10,000-lb set.

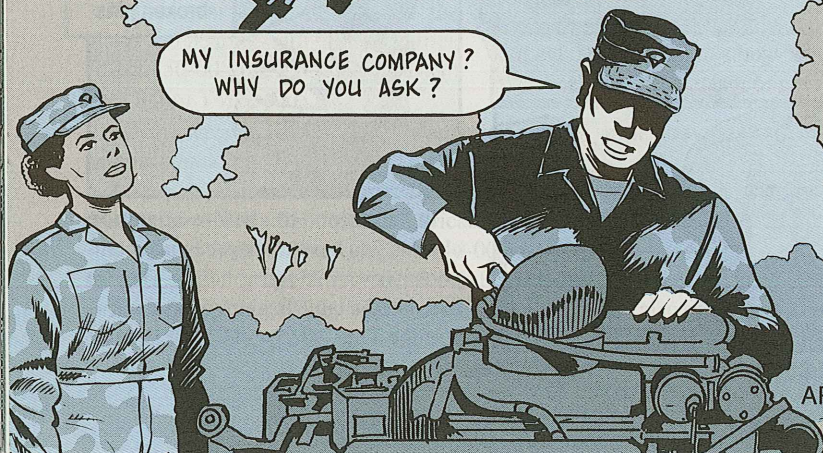
* Not on the AMDF. Order on DD Form 1348-6 from S91.

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APR 88

MY INSURANCE COMPANY?
WHY DO YOU ASK?



Moisture KO's Avionics

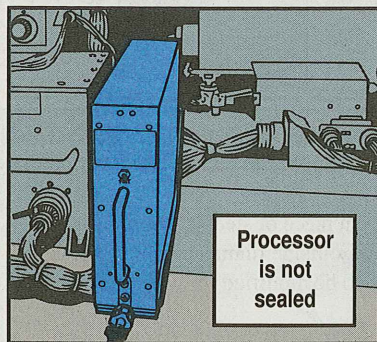
LET'S PUNCH HIS **LIGHTS** OUT RIGHT NOW!

OH NO!

NO HURRY! WE CAN GET IN THRU THAT BAD SEAL ANYTIME!

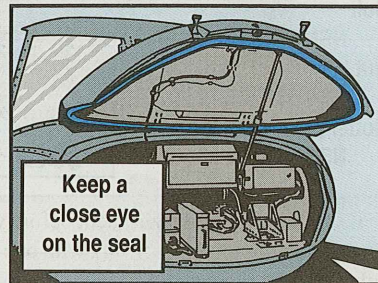
Moisture inside your Black Hawk's nose compartment can knock your lights out.

That's because the command instrument system processor is not sealed.



When the inside of the processor gets wet, some of your critical instruments can go haywire in a hurry.

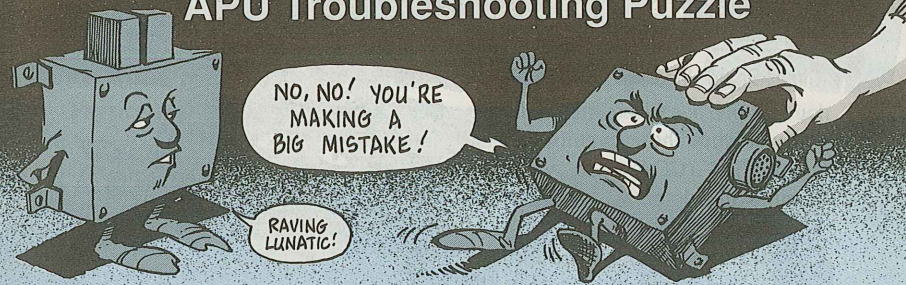
Keep moisture out of the nose compartment by keeping a close eye on the



compartment door seal. Check it out at least every 10 hours or 14 days, whichever comes first, like it says in Sequence 1.5 of TM 55-1520-237-PMS-1.

Look for cracks, cuts, brittleness and deformities in the rubber seal. If it's damaged or hard and brittle, replace it with NSN 5330-01-114-2342.

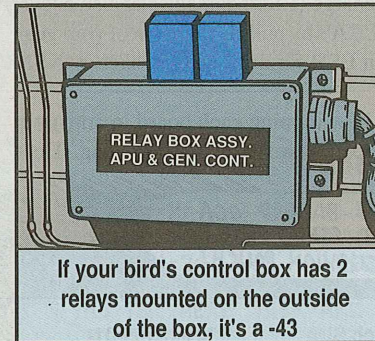
APU Troubleshooting Puzzle



A lot of APU and generator control boxes, PN 114E2077-41, being returned to depot for repair are not bad.

That's right. The depot tests the relay control boxes before they repair them and find there's nothing wrong with the boxes.

It might be because the -41 control box does not have the time-delay relays and load resistors that are built into the 114E2077-43 control box that's installed in some C-model Chinooks.



If your bird's control box has 2 relays mounted on the outside of the box, it's a -43



If your bird's control box has no external relays, it's a -41

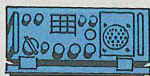
The time-delay relays and load resistors are built into the generator control panel. Sending -41 boxes back to depot without thorough troubleshooting is a big waste in time, effort and money.

When your big bird's APU fails to start or aborts after starting, go by the book in performing operational checks and troubleshooting.

Operational checks are listed in Para's 15-4 through 15-8 of TM 55-1520-227-23-4. Para 15-9 tells you where to enter troubleshooting Table 15-1 based on the results of your operational checks.

If the operational checks and troubleshooting fail to isolate the cause of the no-start or start-abort, check out the troubleshooting procedures for the APU in Section 4 of TM 55-2835-203-24.

If the relay control box is at fault, replace it and turn it in to AVIM for repair.



COMMO

Circuit Board Handling...

Even when those circuit card assemblies (CCA's) in your commo and electronics gear are bad, they're still good.

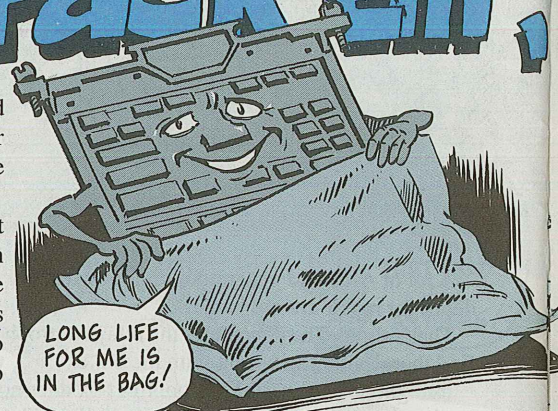
That's right! A burned-out resistor, capacitor or broken pin can be fixed. That's unless the board is battered, broken or gets built-up static electricity due to careless handling on its way to repair.

CCA's thrown helter-skelter into a carton will get ruined by sharp soldering pins scratching printed circuits. Electrostatic discharge (ESD) damage can also occur.

Stop additional damage to ESD-sensitive CCA's by pulling them out of your gear only after you've grounded yourself up to an ESD field service kit, such as NSN 5920-01-253-5368.

Package your CCA's for return shipment by wrapping each board in antistatic wrap or cushioning material. Place the wrapped board in an antistatic bag. Heat seal the bag.

Pack 'Em, Don't Knock 'Em



THEN PUT THE BAGGED CCA IN AN ELECTRO-STATIC FREE FLEXIBLE CUSHION POUCH!

Pouch Size (in inches)	NSN 8105-01-
12 by 12	197-2965
11 by 15	215-4752
10 by 10	197-2966
10 by 12	197-7846
8 by 8	215-0462

Physical and mechanical protection is the next step. Unit pack each bag or pouch in an antistatic "Fast Pack" container. (You'll find some listed on Page 49 of PS 405.)

IF YOU NEED MORE INFO ON HANDLING ESD SENSITIVE ITEMS, WRITE TO...

USAMC Packaging, Storage & Containerization Center
ATTN: SDSTO-TP-P
Tobyhanna, PA 18466-5097

AUTOVON 795-7685
Comm 717-894-7685

... OR CALL...

RL-207...

V-Belt NSN's

NSN'S FOR THE V-BELTS ON YOUR RL-207 AND -A REELING MACHINES ARE NOT LISTED IN THE TM. HERE THEY ARE!

PLAIN MODEL	PN/NSN
Upper belt	3030-00-892-4576
Lower belt	3030-00-892-4577
A-MODEL	
Upper belt	PN 6BB0, CAGE 24161*
Lower belt	3030-01-158-7527

*Order on a DD Form 1348-6, using RIC S9C.

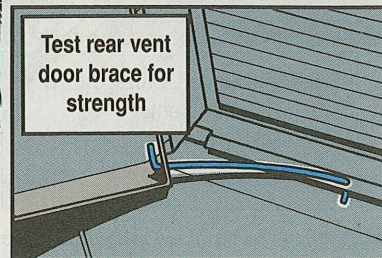
Generators...

Pulling the

USE THESE TIPS TO PULL THE PLUG ON GENERATOR PROBLEMS THAT CAN LEAVE YOU POWER-LESS IN THE FIELD!

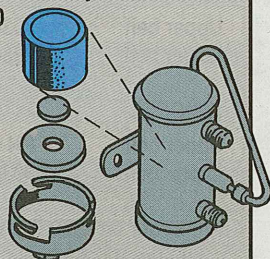
A rear vent door brace that can't hold lets the air intake suck the door shut—then the engine overheats. Make sure the brace will hold by gently pulling the door back and forth with the brace locked in place. Your mech can straighten out bad braces.

Test rear vent door brace for strength

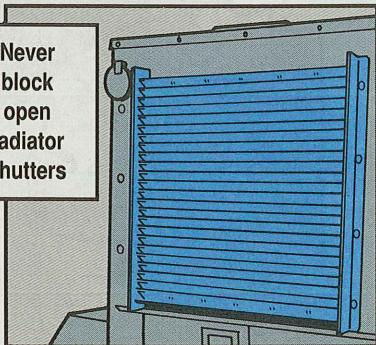


Clean the screen on the fuel transfer pump at least monthly or every 100 hours of operation, especially in sandy areas. If the screen gets clogged, your generator has trouble getting fuel. Clean screens with solvent and low-pressure air like your TM says.

Clean screen monthly or every 100 hours of operation



Never block open radiator shutters



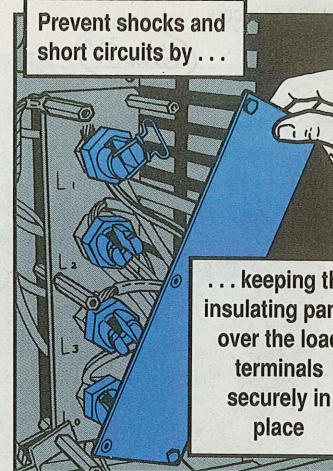
15-KW and Larger

Never block open the radiator shutters to help the generator stay cool. That keeps the generator engine from reaching operating temperature. The engine also can't reach operating temperature if you don't shut all the side doors or shrouds. If the engine runs cold, its oil turns to sludge, the engine slobbers, and fuel gets in the oil.

Plug on Problems

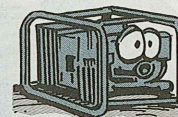


Prevent shocks and short circuits by ...



... keeping the insulating panel over the load terminals securely in place

Make sure the insulating panel over the load terminals is tight before starting the generator. If the panel vibrates off, the terminals can touch the door and cause major electrical damage and shock anyone that touches the door.



LITTLE JENNIES NEED CARE TOO!

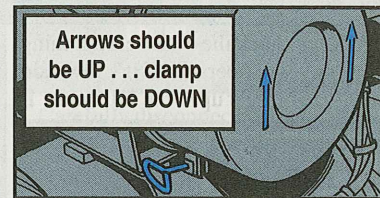
5- and 10-KW Diesels

Always put the air filter cap back on with the arrows pointing up. If the cap's on wrong, dirt gets sucked into the engine and shortens bearing and ring life.

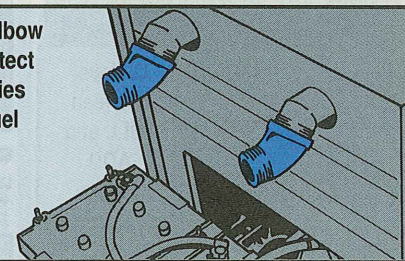
Position the cap clamp so it's at the bottom of the cap. That helps the cap seal out rain and dirt better.

Heat from the exhaust dries out batteries quick. Deflect that exhaust with a 45-degree elbow, NSN 4730-00-137-9218. You need an extra elbow for the 10-KW to also protect the fuel tank from exhaust.

Arrows should be UP ... clamp should be DOWN



Add elbow to protect batteries and fuel tank



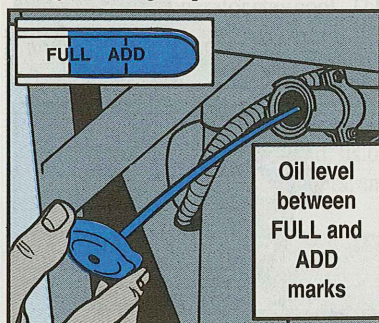
No Idle Advice

Your TM's don't spell it out, but you never idle any generator at the start of operations for warm-up or the end for cool-down. That can wreck the exciter, burn out the voltage regulator, or blow the rotor rectifier diodes.

THE BEST WAY TO WARM UP AND COOL DOWN YOUR GENERATOR IS TO RUN IT AT RATED SPEED WITH NO LOAD FOR 3 TO 5 MINUTES!



Always check the oil level first thing every day you operate. If it's low, add enough to bring it up to the full mark. If



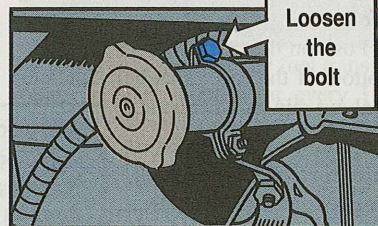
it's over the full mark, drain a little out. The correct level is between the add and full mark.

Look for leaks, too. Even a slight oil leak can turn into a big leak surprisingly fast during operation.

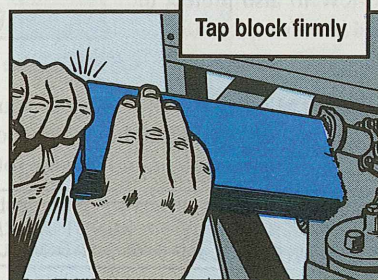
If you see oil on the pump unit's base plate, it's probably coming from the oil filler tube. Engine vibration shakes it loose.

Here's a quick fix for your mechanic:

- Loosen the bolt on the tube's bracket.

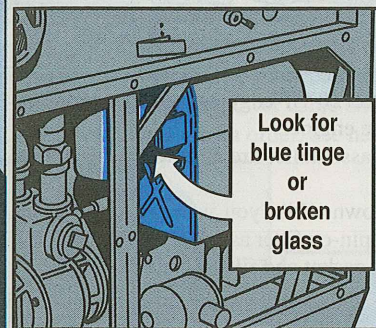


- Set a 2 x 4 wood block on top of the tube. Tap the end of the block firmly. Tighten the bolt.



Look Before You Go

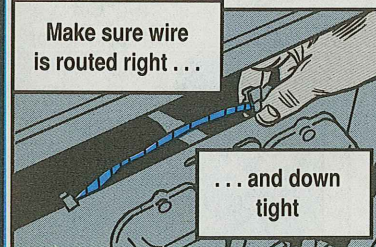
Before you go to the field, eyeball the regulator rectifier fuse for a blue tinge or broken wire or glass. If you see any



of that, the fuse is bad. A bad fuse means the battery won't recharge and your M12 won't go. Report bad fuses.

Make sure the wiring harness is routed right around the engine and fastened down tight. If the harness is loose,

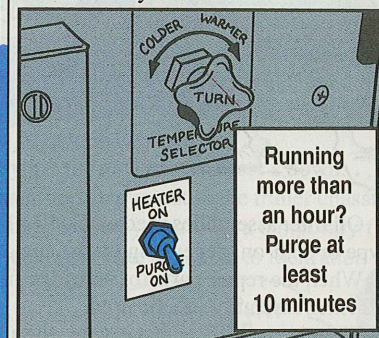
Make sure wire is routed right...



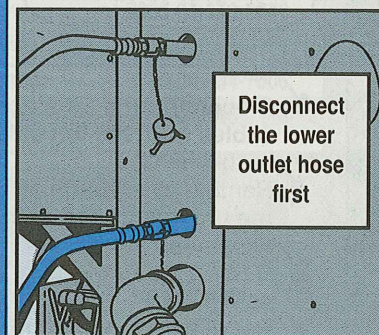
you can damage it when you lock the shrouds down. Or the engine manifold can burn it.

Before You Put it Away

If you've been running the M12 longer than 1 hour, purge the heater longer than the 5 minutes TM 3-4230-209-10 says—at least another 5 minutes. This prevents carbon build-up in the refractory chamber.

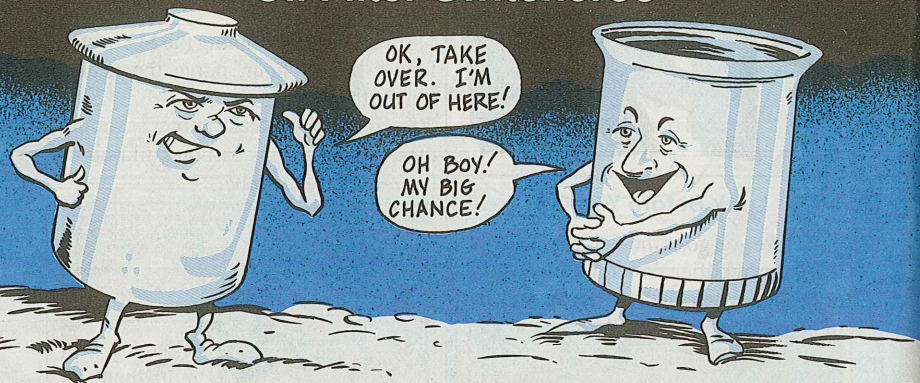


Carefully disconnect the outlet hoses from the pump unit. Hot water can spray out and scald you. Disconnect the lower hose first.



In freezing weather, drain the main tank, prime detergent tank and pump. Drain it on level ground. If the M12's on a slant, you won't get out all the water. Even a cup of water will freeze and crack the pump tank.

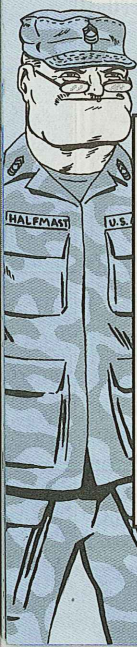
Oil Filter Switcheroo



Oil filter assemblies used on 6-, 10-, 14- and 20-HP engines are either cartridge-type or spin-on, depending on the age of the engine.

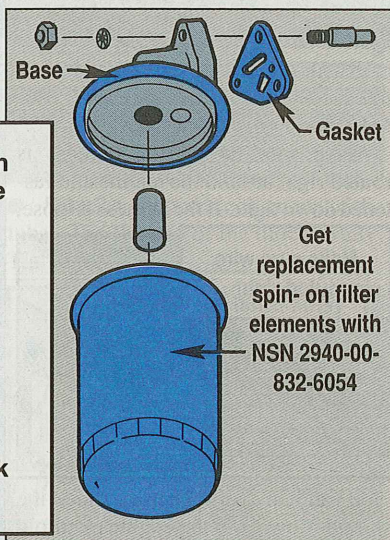
When the repair parts for cartridge filter assemblies are gone, only the spin-on oil filter assembly will be used.

There's no need to have your engine down while you wait on parts for the cartridge-type filter, tho. You can install a spin-on filter assembly, NSN 2805-01-189-9698 now. That NSN gets you a base, gasket and filter element.

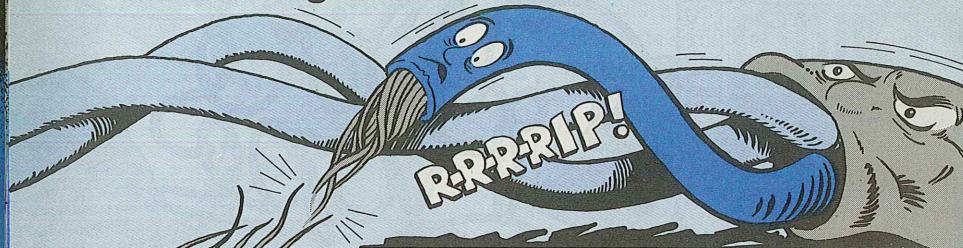


SWITCH FROM THE CARTRIDGE TO THE SPIN-ON FILTER ASSEMBLY LIKE SO:

- ☒ Disconnect the 2 ignition cables from the left side of the co:1.
- ☒ Remove the 3 bolts on the bracket for the filter assembly.
- ☒ Bolt on the new filter assembly.
- ☒ Reconnect the ignition cable and the switch is complete.
- ☒ Start the engine and look for leaks.



Lighten the Load

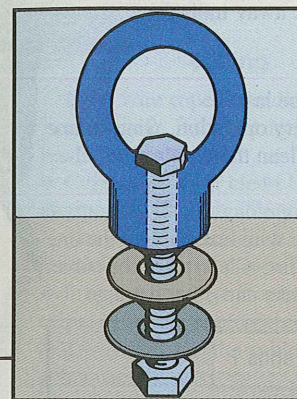


Those heavy power cables used on your 5- and 10-KW power units put a big strain on the load terminal connectors. Nothing supports the cables except the connectors where the cables attach to the power switch box.

Heavy cables pull the connectors out by the roots. Then your set's down.

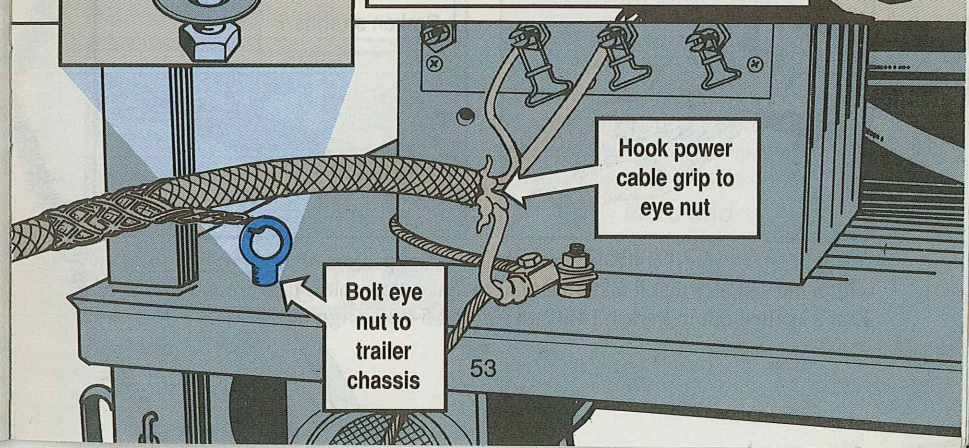
Take the strain off the connectors by installing an eye-nut to the trailer chassis.

Put the grip on the power cable and hook it to the eye-nut. As a temporary fix while your items are on order, use heavy tape to secure the cable to the trailer.



HERE'S WHAT YOU NEED...

ITEM	NSN
Eye nut	5310-01-169-2849
Cap screw	5305-00-071-2070
Flat washer	5310-01-164-5600
Lock washer	5310-00-834-7606
Power cable grip	5120-00-946-5148





Cranes, Winches ...

I'LL CLEAN OFF THE DIRT...

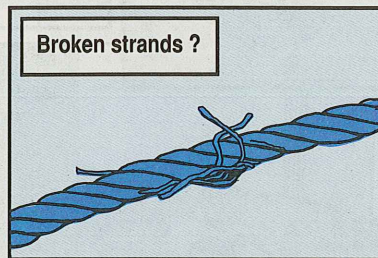
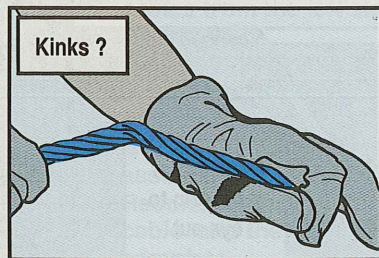
...AND I'LL LUBE WITH SOME FRESH OIL!

Some outfits use this homemade rig — a half-drum with a hook on each end. The tank is slid along the cable while cleaning.

Wire rope used on cranes and winches has a hard life. It's exposed to the weather, and often doesn't get any PM. Then when you need it, it lets you down. Dirt and grit work their way into the cable and wear away individual strands. Moisture gets rust started, weakening the cable.

Cleaning

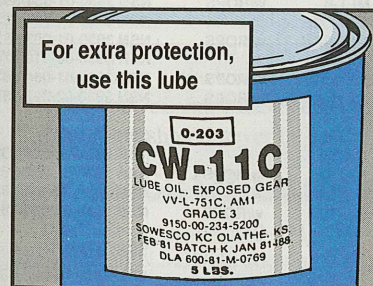
A good cleaning goes a long way in making wire rope last. As a general rule, clean and oil winch cable after every operation. Since crane cables are usually not dragged thru mud or dirt, you clean them only when they need it. Always wear leather gloves when you handle wire rope. Unreel the wire rope and stretch it out straight. Use a wire brush—like the one in the No. 1 Common shop set—to get off old lube and dirt. Clean all of the cable. While you're cleaning it, look for broken strands, kinks and other damage.



Replace the cable if you find any kinks, or if four percent of the strands are broken within the distance that it takes a strand to make a complete turn around the cable. That's spelled out in Para 1-14b(2)(b) of TM 5-725, Rigging.

Lubing

Lube wire rope according to the LO for your gear. If the LO doesn't cover it, here's what you do:
 ♦ Coat cable with clean OE-HDO 30 engine oil if the cable's used a lot. Never pour on used oil. It contains acid that will weaken the rope fast.
 ♦ In dry, dusty areas, rope doesn't need oiling. Fact is, oil collects dust and grit that will chew up the cable.



♦ If wire rope is not used much, or if conditions are real damp or salty, give rope extra protection. Use CW-II — Lubricating Oil, Exposed Gear, Fed Specification VV-L-751.

It's stickier than engine oil, so it'll pick up dirt when the rope drags on the ground. It's best for cranes, because crane cables are rarely on the ground or get handled much.

CW-II comes in three classes. Pick the one that's right for your area:

(These NSN's get 35-lb cans)

CW-IIA (for -30 to +30 F)	NSN 9150-00-261-7891
CW-IIB (for +30 to +80 F)	NSN 9150-00-246-3276
CW-IIC (for +80 to +130 F)	NSN 9150-00-264-2918

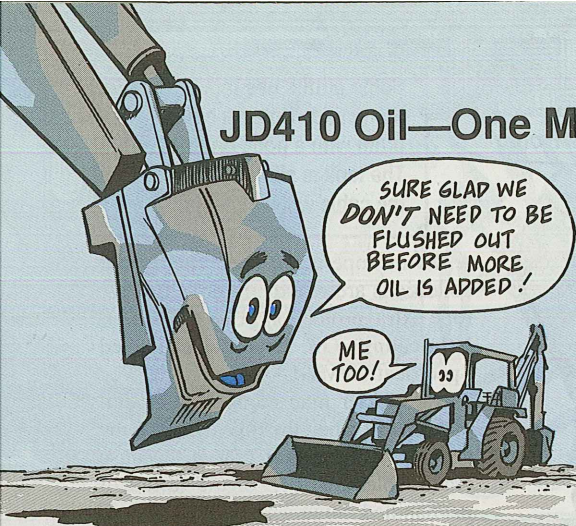
CW-II pours better when it's heated. It soaks into the wire rope better when it's hot, too.

Careful With Covers

Covering your winch is OK for travel. That keeps the cable from picking up a lot of road dirt. But don't leave the winch covered when your vehicle's parked. The cover traps moisture under it that'll rust the rope.

More Info

For more information on wire rope care, see Para 1-12 of TM 5-725, Rigging.



JD410 Oil—One More Time

Turns out you can use Grade 10, OE/HDO engine oil (MIL-L-2104D) in your JD410 loader backhoe's transmission.

Once again, the headshed says you don't have to use special 10W oil.

There's no need to flush out the old oil before adding the OE/HDO 10W to your JD 410. TACOM Msg AMSTA-MVB, 311400Z Jul 87 has the word.

RTFL's, Hawk Loaders...

Ordering Generator, Regulator

There's a trick to getting the 25-amp generator and regulator used on 6,000-lb and 10,000-lb rough terrain forklifts and Hawk missile loaders.

Your request must include a cover letter giving the vehicle's LIN, SSN, NSN, model number and serial number.

Supply will send the requisition to:

Commander
US Army Tank-Automotive Command
ATTN: AMSTA-FTLD
Warren, MI 48397-5000

HERE'RE
 THE NSN's...

LIN: X48914		SSN: M489
6,000 lb	MLT-6	NSN 3930-00-903-0900
6,000 lb	MLT-6	NSN 3930-01-054-3831
6,000 lb	MLT-6CH	NSN 3930-00-937-0220
6,000 lb	MLT-6CH	NSN 3930-01-053-4823
6,000 lb	ARTFT-6	NSN 3930-00-419-5744
6,000 lb	ARTFT-6	NSN 3930-01-054-3830
6,000 lb	MLT6-2	NSN 3930-00-327-1575
LIN: X49051		SSN: M488
10,000 lb	RTL10	NSN 3930-00-903-0899
10,000 lb	RLT10	NSN 3930-01-052-8997
10,000 lb	RLT10-1	NSN 3930-00-465-5869
10,000 lb	RLT10-1	NSN 3930-01-053-4824
LIN: L76762		SSN: M501
Loader, Missile	XM501E3	NSN 1450-00-066-8873

APR 88

Tools...

Don't Mix Sockets



A socket is a socket is a... whoops, hold it! Not all sockets are the same!

Impact sockets are hardened to take the extra force that impact wrenches dish out.

Regular hand sockets are not as tough. If you use them on impact wrenches, the sockets deform or break.

It's easy to keep the sockets straight. Hand sockets have thin walls. They're used with speeders, ratchets or torque wrenches, so they won't have to stand up to much force. There's a notch or groove inside the square drive end that matches up with the retention ball on the handle. And they usually have a shiny, bright finish.

Impact sockets have thicker walls to stand up to repeated impact loads. There's a hole thru the drive end to allow the socket to lock to the impact wrench with a pin. And they have a black or industrial finish.

When you're using a socket and socket wrench handle, be sure that's all you use. A cheater bar should never be used.

621B Scraper Battery NSN

Use NSN 6130-01-250-2113 (PN 9G4231) to order a battery. This NSN and PN replace PN 9G2648 shown on Page 76 of TM 5-3805-248-14&P-4. If you need a filler cap, order NSN 5340-01-160-0319.

APR 88

57

Sub Search Is No Secret

MICRO FICHE?

BASS FAMILY, ACTUALLY!

There's no secret to searching for a substitute item on the Army Master Data File (AMDF). Interchangeable and Substitute (I&S) group info is now found in the Phrase Statement/Related NSN/MCN column on the AMDF.

So when you get a status card that gives a code saying there'll be a long wait, don't go looking for the old I&S microfiches. They've been deleted. Instead, look on your AMDF.

Phrase Code

The phrase code located in the Phrase Statement/Related NSN/MCN column is a one-position code which shows changes and connections between the item in the Prime NSN/MCN column and information in the Related NSN/MCN column.



Phrase Code

J

The stock number in the prime NSN/MCN column and the stock number in the related NSN/MCN column are completely interchangeable.

3 Reverse of Phrase S

When you see this phrase code, the stock number in the prime NSN/MCN column is the actual item of production. Additional interchangeable production items are shown in the related NSN/MCN column with a phrase code "J."

ROW J COLUMN 02		ARMS MONTHLY AMDF										EFFECTIVE DATE		EIC LIN		M/P I/A/R	
PRIME NSN/MCN		A	A	A	A	A	A	A	A	A	A	P NOMENCLATURE		C PHRASE STATEMENT/RELATED NSN/MCN		M/P I/A/R	
FSC	NIIN	ADDL	SOS	C	UI	UNIT PRICE	C	C	C	C	C	OUU JTC		OUU JTC		M/P I/A/R	
4520-00-223-3121		A12	J	EA		2,510.00	0	U	N	H	001W6	2	2	A	1	7	A
HEATER 01400-40-1A VXC K24931 H																	
3-REVERSE OF PHRS S 4520-00-203-0224																	
J-INTERCH. WITH 4520-01-071-2191																	
J-INTERCH. WITH 4520-01-136-2139																	
J-INTERCH. WITH 4520-01-165-9477																	

Phrase Code

7 Reverse of Phrase F

Phrase Statement

The stock number in the prime NSN/MCN column is the preferred replacement item and can be substituted for the stock number in the related NSN/MCN column. This is a one way substitution. The stock number in the related NSN column cannot be substituted for the preferred NSN in the prime NSN/MCN column.

ARMS MONTHLY AMDF										EFFECTIVE DATE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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If you find I&S phrase codes G, 5 or 7 NSN's listed in Phrase Statement/Related NSN/MCN column, you'll need to check out two other columns—the Order-of-Use (OOU) column and the Jump-to-Code (JTC) column.

Order-of-Use Code

The first two positions of the OOU Code are the Subgroup (SG) code. Items with the same SG letter, such as AA, are interchangeable.

If the SG letters are different, the two items are substitutes. Use the item with the lower value subgroup code first. Example: Subgroup AB has a higher value than subgroup AA, so you would use the NSN with subgroup AA before the NSN with subgroup AB.

ROW C COLUMN 13										C										ARMS MONTHLY AMDF										EFFECTIVE DATE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
PRIME NSN/MCN										A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

The third position of the OOU code is the sequence code. It shows the Order-of-Use within the subgroup. The least preferred item in the subgroup will have an "A" assigned.

REMEMBER, WHEN YOU FILL OUT
AOAP DD Form 2026...

OIL ANALYSIS REQUEST				KEYPUNCH CODE
F R O M	TO	OIL ANALYSIS LAB	FT. HOOD	1-3
		MAJOR COMMAND	FORS COM	4
		OPERATING ACTIVITY (Include ZIP Code/APO) DODAAD HQ CO 166 ARMOR 2 AD (WAD 570) FT. HOOD, TX 76544 685-3988		5-10
	EQUIPMENT MODEL/APL	ENGINE	AVDS 1790-2D	11-14
	EQUIPMENT SER. NO.		A0606	15-20
	END ITEM MODEL/MULL NO.		TANK M60A1	
	END ITEM SER. NO./EIC		6486	
	DATE SAMPLE TAKEN (Day, Mo., Yr)	LOCAL TIME SAMPLE TAKEN		21-24
	HOURS/MILES SINCE OVERHAUL		346	25-29
	HOURS/MILES SINCE OIL CHANGE		67	30-33
	REASON FOR SAMPLE LAB <input checked="" type="checkbox"/> ROUTINE <input type="checkbox"/> REQUEST <input type="checkbox"/> TEST <input type="checkbox"/> CELL <input type="checkbox"/> OTHER (Specify)			34
	OIL ADDED SINCE LAST SAMPLE (Pts, Qts, Gals)		1 GAL	35-38
	ACTION TAKEN			
	DISCREPANT ITEM			
	HOW MALFUNCTIONED			
	HOW FOUND	<input type="checkbox"/> LAB REQUEST <input type="checkbox"/> AIR OR GROUND CREW		
	HOW TAKEN <input type="checkbox"/> DRAIN <input type="checkbox"/> TUBE	SAMPLE TEMPERATURE <input type="checkbox"/> HOT <input type="checkbox"/> COLD	TYPE OIL OE 30	37-38
	REMARKS			
	FOR LAB USE ONLY			
	SAMPLE RESPONSE TIME			39-40
	FE 41-43	AG 44-46	AL 47-49	CR 50-52
	CU 53-55	MG 56-58	NI 59-61	
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