

Issue 627

PS

February
2005

THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-627

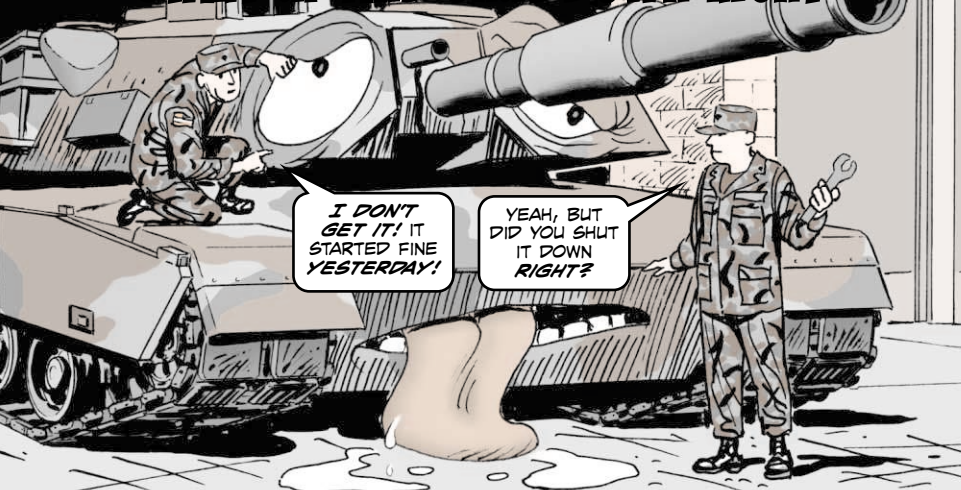
Approved for
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PROTECTING
THE MOVER,
SHOOTER
AND
COMMUNICATOR

(JOE
VEER)

SEE
PAGES
27-34 &
46-48

START-UP AND SHUT-DOWN RIGHT



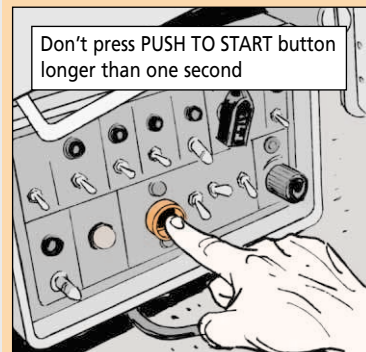
Starting up and shutting down your tank should be as easy as flipping a switch, right drivers?

Wrong!

If you want your tank to start tomorrow, follow these critical startup and shutdown tips today:

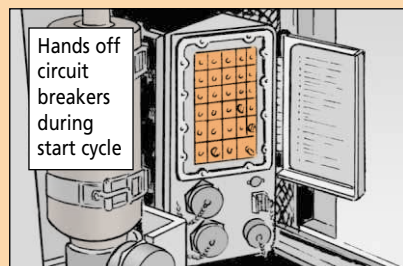
1. Never use the combat start info in TM 9-2350-200-BD-1, *Battlefield Damage Assessment and Repair*—unless you are in combat.

2. Never press the START button for more than one second at a time.



3. Never turn OFF any circuit breaker once the start cycle has begun.

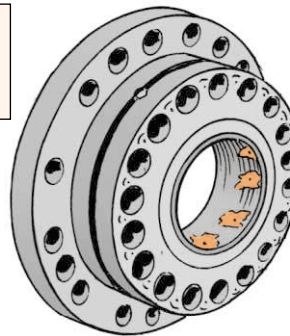
Violating steps 2 or 3 puts too much fuel into the engine. The extra fuel explodes, damaging the engine.



4. Always idle the engine at least **two minutes** to cool it off before shutdown. And never gun the engine during or after the cool-down period. Idling prevents heat soak, which cracks turbine rotors, clogs oil passages, and ruins the rear module.

Also, ignoring the cool-down period results in enough heat to boil the engine oil. That cokes bearings and clogs oil ports. Dry bearings will ruin the engine.

Ignoring cool-down ruins bearings



REFER TO YOUR -10 TM FOR THE COMPLETE PICTURE ON STARTUP AND SHUT-DOWN PROCEDURES.



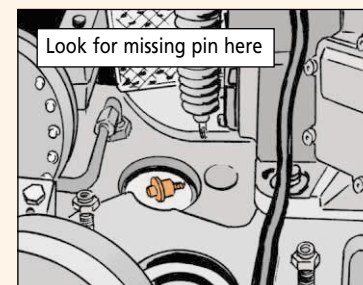
PIN PROBLEMS?

If your tank suddenly loses throttle control and the FUEL CONTROL FAULTY caution light comes on during operation, don't panic.

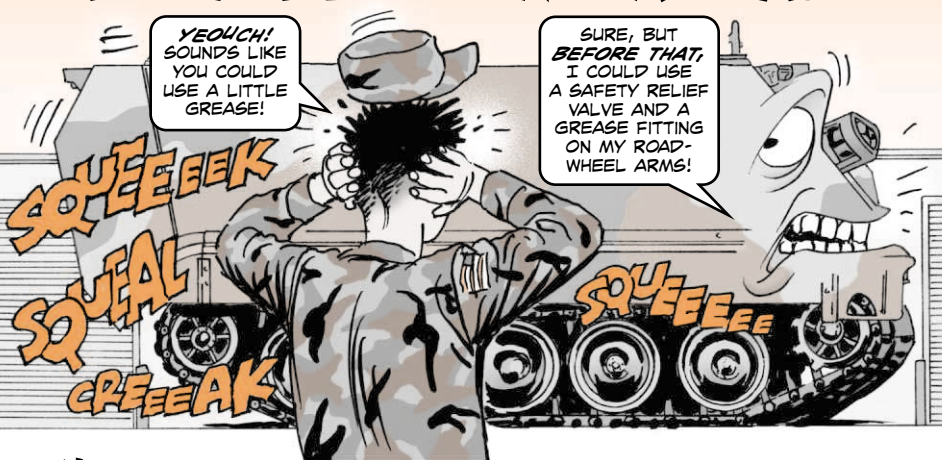
The problem could be something as simple as an electromechanical fuel system (EMFS) connector pin, NSN 5315-01-205-8647, that's vibrated loose and fallen out.

Before calling for a tow, try shining a flashlight into the engine compartment. Most of the time the pin ends up in the small cupped area under the EMFS. If you find the pin, slip it back into place and you're good to go.

Just make sure your mechanic replaces the pin when you get back to the motor pool. The next time it falls out, you might not find it.



STOP PLUGGING AHEAD

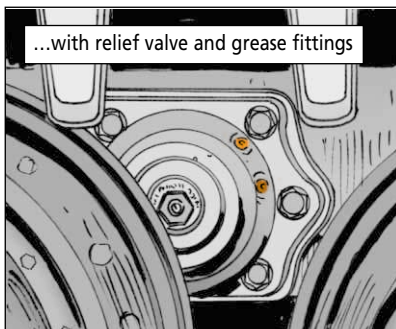
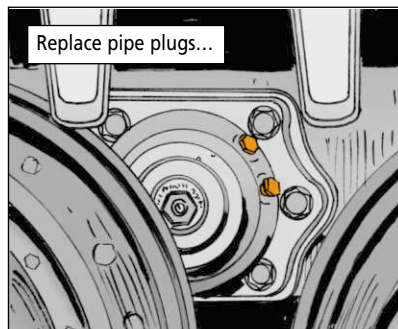


New roadwheel arms come with pipe plugs installed. Unless you mechanics replace the plugs with relief valves and grease fittings, you'll have to install **more** new roadwheel arms again real soon.

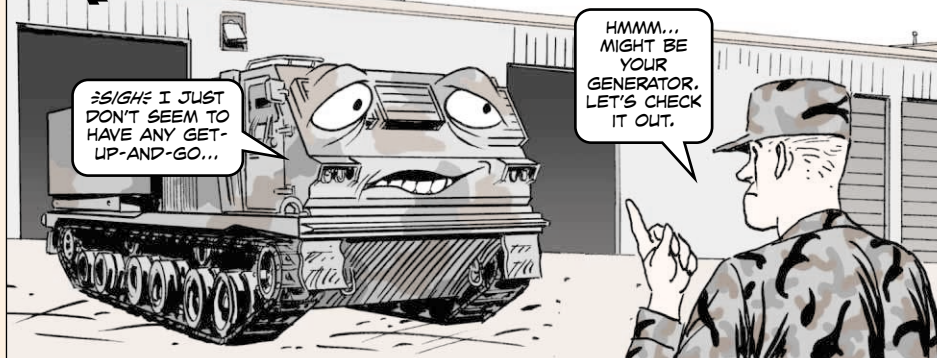
That's because crewmen can't lube the arms when there are no grease fittings. With no grease, the bearings burn out. It's that simple.

So pull the plugs and put in a safety relief valve, NSN 4820-01-070-7670, and grease fitting, NSN 4730-00-050-4208, whenever you put on a new roadwheel arm.

By the way, don't be fooled by the roadwheel arms on M113A3s. The threads are recessed in a larger hole, but they still take the same relief valve and grease fitting as other M113-series vehicles. The larger hole is there to protect the fittings from damage.



Quick Checks Generate Results



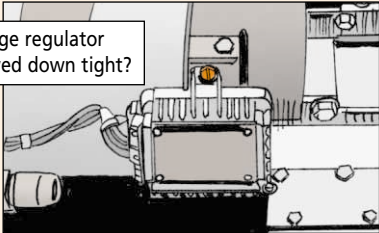
A few quick checks on your MLRS generator can generate powerful results during operations.

Check that the voltage regulator is tightly screwed on the generator. Only two screws hold the regulator in place. If they work loose, the regulator can come completely off or shake so much its electrical connection to the generator becomes shaky. Then you have electrical problems.

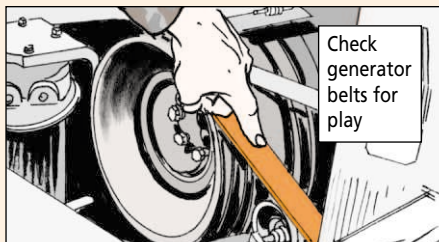
Push down on the rear secondary generator belt. If it gives more than 1/4 inch, it may be too loose and could start slipping. That could cause electrical problems. Tell your mechanic so he can tighten the belts.

Make sure the pigtail on the back of the generator is plugged in tightly. If it works loose, once again you have electrical problems.

Do all three checks at least weekly during PMCS.



Voltage regulator screwed down tight?



WRONG CANNON TUBE LIFE?

HEY! *WHAT'S*
GOING ON?

THE ONLINE 2408-4
DOESN'T HAVE THE
SAME INFO THAT I
JUST TYPED FROM
THE HARD COPY
FORM!

THERE'S
NOTHING
WRONG
WITH THE
SYSTEM.

YOUR DS
JUST
FORGOT
TO WRITE
DOWN THE
ADJUSTED
ROUND
COUNT...

...AFTER THE LAST
ENTRY FOR THE PULL-
OVER GAUGE READING.

IF *YOU'VE* RUN ACROSS
THIS PROBLEM, TAKE A
LOOK AT TABLE K-2 IN TM
9-1000-202-14 TO GET
THE RIGHT ROUND COUNT!

Crewmen, you want the M199 cannon tube on your M198 towed howitzer to last as long as possible. But in some cases, that's not happening.

The problem comes when DS performs a pullover gauge reading. They usually post "Borescope Serviceable IAW TM 9-1000-202-14" in the Remarks column of the DA Form 2408-4 along with the actual pullover reading. Unfortunately, they often neglect to update the Remaining Life (EFC RDS) column.

To do that, they're supposed to use Table K-2 in TM 9-1000-202-14, *Evaluation of Cannon Tubes*. Based on the wear reading, the table provides a new EFC count—usually a pretty big gain. That means the cannon tube's life is extended.

But if the corrected EFC count **isn't** added to the Remaining Life (EFC RDS) column, you'll probably just continue to use the old EFC count. That means the cannon tube's life goes down faster than it should.

Things get even more complicated when it's time to enter the data from the hard copy 2408-4 into the online electronic version of the form. When the actual wear reading from the Remarks column is entered, the system **automatically** enters the corrected EFC count in the Remaining Life (EFC RDS) column.

Now what you have listed in your hard copy 2408-4 and what shows up on the automated form don't match. Let the hair pulling commence!

Remaining Life (EFC RDS)	Remarks: Recoil Exercise (RE), Gauge or Velocity Reading, Safety Inspection (SI)
1439.80	BORESCOPE 19 MAR 03 SERVICEABLE IAW TM 9-1000-202-14 P.O. 6.11.30
1439.10	BORESCOPE SERVICEABLE IAW TM 9-1000-202-14 P.O. 6.11.30
1434.90	
1434.20	10 APR 04 REPORT NEW FORM INITIATED
No entry next to pullover gauge reading? Check out Table K-2	

AN UPCOMING CHANGE TO TM 9-1000-202-14 WILL INSTRUCT DS TO ENTER THE CORRECTED EFC COUNT FROM TABLE K-2 AFTER PERFORMING A PULLOVER GAUGE READING.

UNTIL THEN, YOU MAY NEED TO ENTER THE MISSING DATA YOURSELF TO PREVENT ANY PROBLEMS. HERE'S THE CHART FROM TABLE K-2...



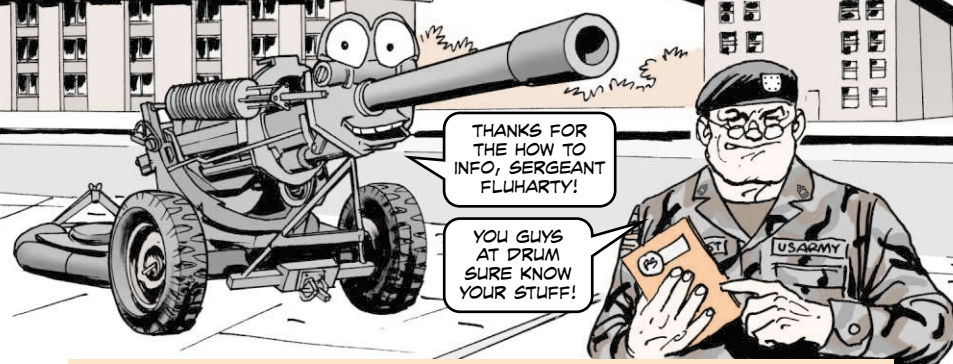
FOR MORE INFORMATION ABOUT THE ELECTRONIC DA FORM 2408-4, CHECK OUT PAGES 8-9 OF PS 620 (JUL 04). IT'S ONLINE AT:
<https://www.logsa.army.mil/pub/psissuesA/620/620-08-09.pdf>

BORE MEASUREMENT		EST. REMAINING LIFE*	
41.75 INCHES			
WEAR	ACTUAL DIA.	PERCENTAGE	EFC ROUNDS
(Gauge Reading)			
0	6.100	100	1750
.005	6.105	95	1663
.010	6.110	90	1575
.015	6.115	85	1488
.020	6.120	80	1400
.025	6.125	75	1313
.030	6.130	70	1225
.035	6.135	65	1138
.040	6.140	60	1050
.045	6.145	55	963
.050	6.150	50	875
.055	6.155	45	788
.060	6.160	40	700
.065	6.165	35	613
.070	6.170	30	525
.075	6.175	25	438
.080	6.180	20	350
.085	6.185	15	263
.090	6.190	10	175
.095	6.195	5	88
.100**	6.200	0	0

*Use lowest estimated remaining life obtained with wear at the 41.75 in location. Enter the "EFC Rounds" value on the cannon tube's 2408-4 card in the "Remaining Life (EFC RDS)" column.

**Condemnation Limit: Condemnation will be based on tube wear regardless of rounds fired.

HOWITZER 'HOW TO' PM



Dear Editor,

We have learned these lessons the hard way—through experience.

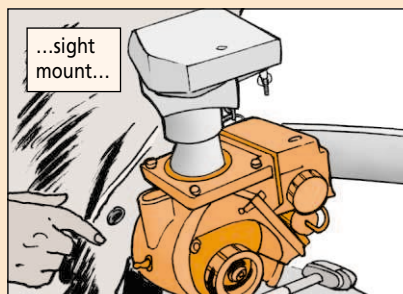
M119A2 crews will save themselves grief if they remember these points:

- The M119A2 has 36 grease fittings, but you'll miss some if you just go by the LO charts on Pages 0037 00-22 and 0037 00-28 in TM 9-1015-252-10. To hit all the lube points you must read the pages of notes that follow the charts, which many crews don't do.

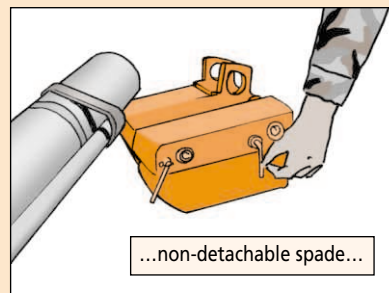
These are the fittings that are usually missed:



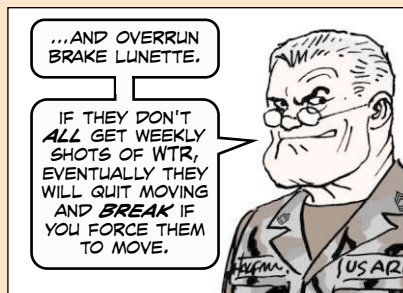
Don't forget to lube traversing hand wheel...



...sight mount...



...non-detachable spade...



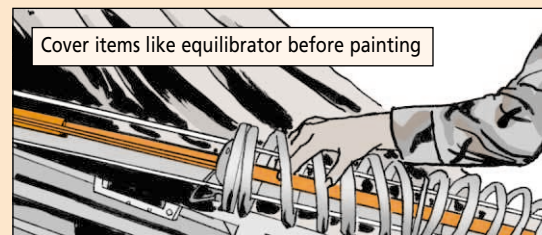
...AND OVERRUN BRAKE LUNETTE.

IF THEY DON'T ALL GET WEEKLY SHOTS OF WTR, EVENTUALLY THEY WILL QUIT MOVING AND **BREAK** IF YOU FORCE THEM TO MOVE.

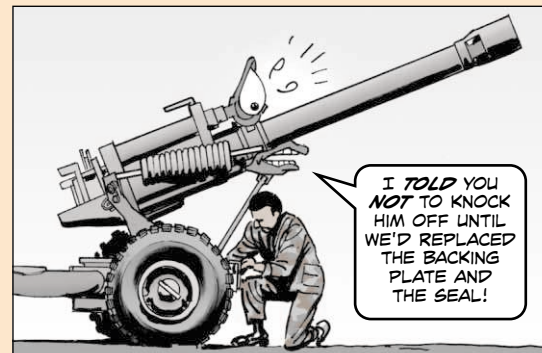
- Don't let the paint shop paint parts that need to move. If parts like the front stays, locking devices, equilibrator, and gear box are painted, they have trouble doing what they're supposed to. An equilibrator or gear box that can't function deadlines the howitzer. Before your howitzer goes to the paint shop, cover those parts that shouldn't be painted.

- When you change the knockoff hub on the right wheel, be sure to replace the backing plate, NSN 5365-01-343-1783, and seal, NSN 5330-01-465-4538. They don't come with the hub. Otherwise the bearings won't be tight and the wheel can come off. Plus the hub will wear out fast even if the wheel doesn't come off.
- The PMCS for the M119A2 doesn't pay much attention to the collimator, but if it doesn't work your accuracy suffers. When you do weekly PMCS, get the collimator out and make sure its knobs still work and the leveling bubble moves.

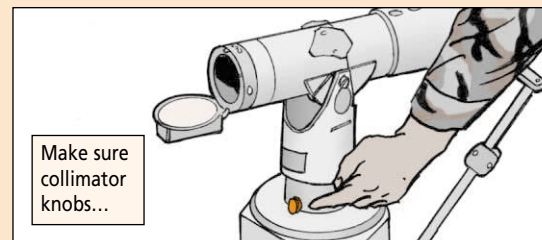
SGT Paul Fluaharty
A Btry, 3/6 FA
Ft Drum, NY



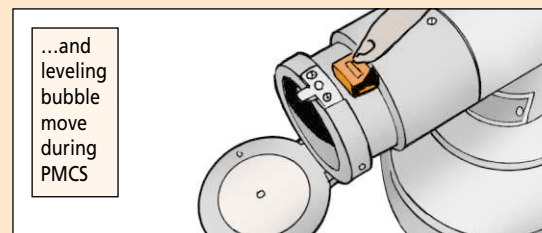
Cover items like equilibrator before painting



I TOLD YOU NOT TO KNOCK HIM OFF UNTIL WE'D REPLACED THE BACKING PLATE AND THE SEAL!



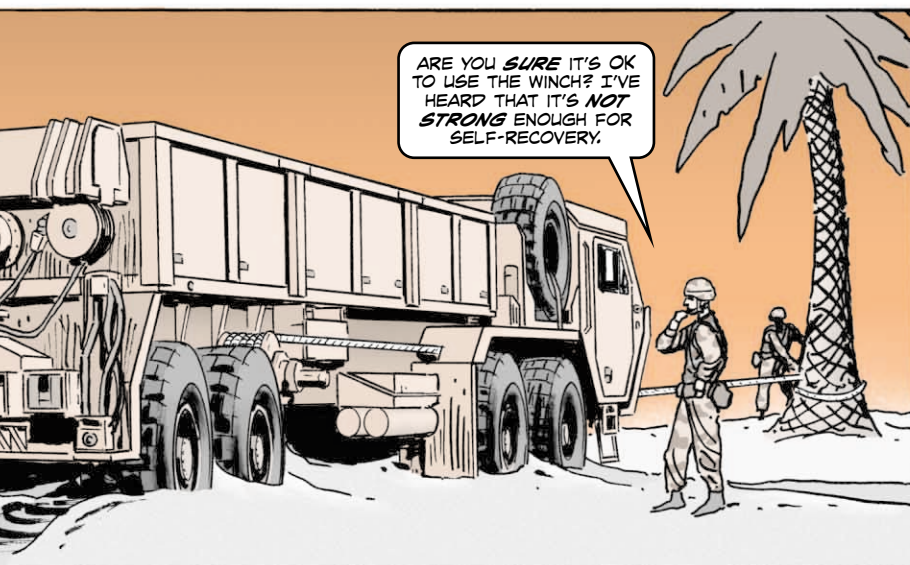
Make sure collimator knobs...



...and leveling bubble move during PMCS

(Editor's note: You do know the "how to" of howitzer PM. Thanks for sharing your experience.)

TO WINCH OR



Dear Half-Mast,

We've heard through the rumor mill that the self-recovery winch on our HEMTT shouldn't be used because it's not strong enough.

I've looked but haven't been able to find any safety messages or other write-ups to support this rumor. Can you set the story straight?

SSG M.J.S.

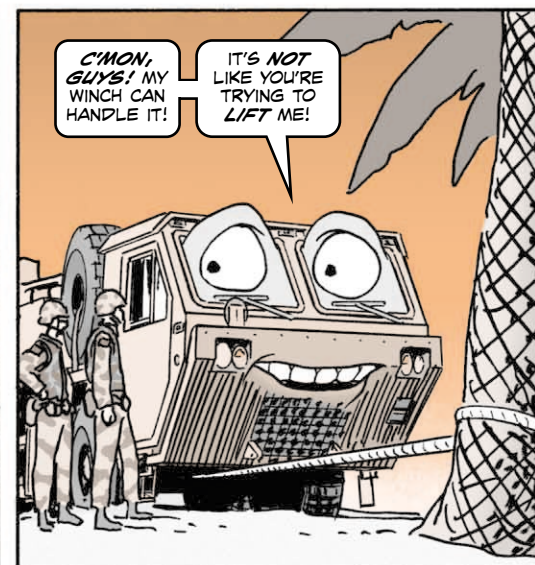
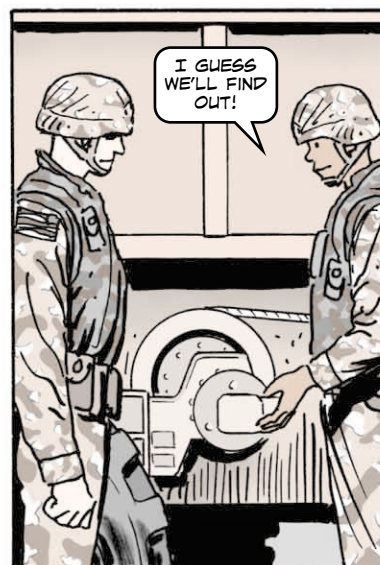
Dear Sergeant M.J.S.,

Sure can. This is a very persistent rumor that has been around for quite a few years. It probably started because the self-recovery winch is rated at only 20,000 pounds and HEMTTs weigh much more than that.

The rumor would be true if you were lifting the HEMTT. But you're not. You're just pulling a wheeled vehicle. For that purpose, the winch works just fine.

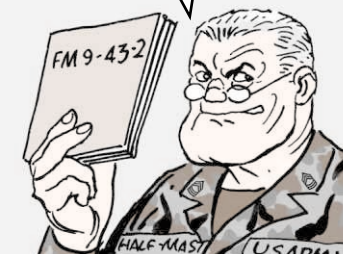
There are, however, a few things to keep in mind from the HEMTT TM when using the self-recovery winch:

NOT TO WINCH



- The caution on Page 2-402 in TM 9-2320-279-10-1 says the winch is not designed to pull free a mired vehicle by itself. Vehicle drive system power must always be used along with the winch or you risk damaging it.
- The caution on Page 2-400 says to never exceed the winch's pull capacity. That's the force needed to move the wheeled vehicle horizontally while it is in gear.
- A second caution on page 2-402 tells you to stop using the winch if the vehicle does not move.

YOU CAN FIND MORE INFORMATION ON WINCHING OPERATIONS IN FM 9-43-2, RECOVERY AND BATTLEFIELD DAMAGE ASSESSMENT AND REPAIR.



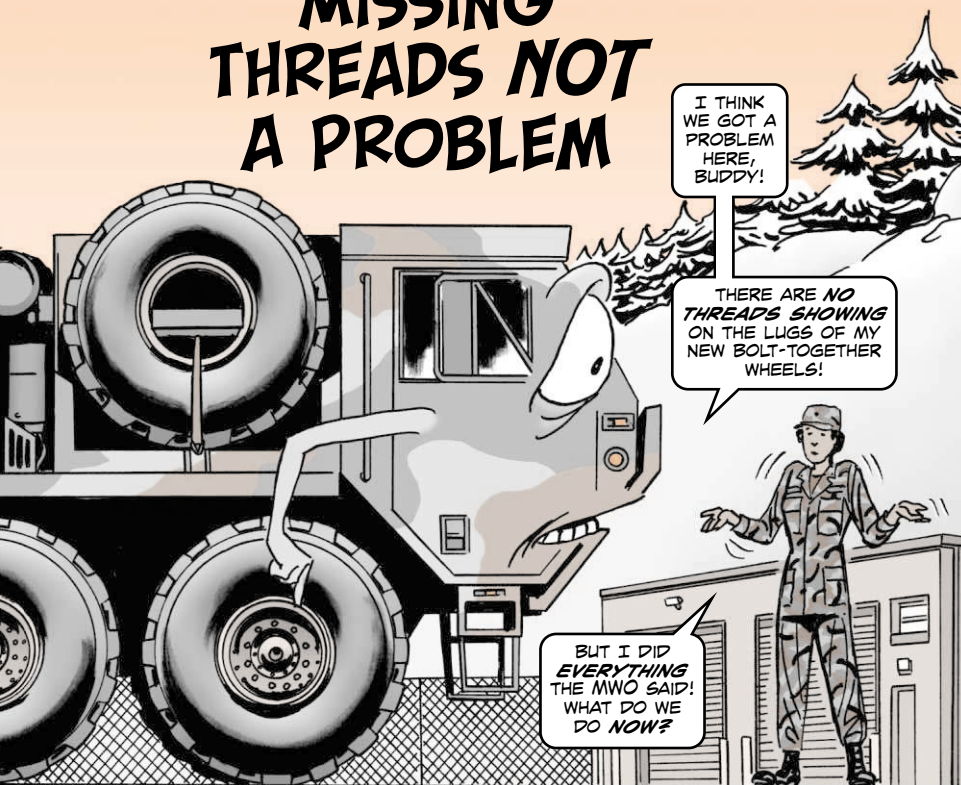
HEMTT Retaining Nut

Use NSN 5310-01-105-7227 when ordering the retaining nut for the HEMTT's parking brake valve. You'll see three different NSNs for this part number on FED LOG. But only this NSN gets the right nut. The nut is shown as Item 4, Fig 199 of TM 9-2320-279-24P-1 and P-2.

HEMTT Tie Rod Assembly

Use NSN 2530-01-469-6912 to get the tie rod assembly for the HEMTT's front axle. This NSN replaces the one shown as Item 17, Fig 219 of TM 9-2320-279-24P-1.

MISSING THREADS NOT A PROBLEM



Dear Half-Mast,

We have some concerns about MWO 9-2320-279-20-9, *Installation Instructions for Bolt Together Wheels for the M977-series HEMTTs*.

After installing the bolt-together wheels, we've found that there are **zero** stud threads showing past the lug nuts after correct torque is applied. Because of that, it's obvious that the studs and wheel nuts do not meet the criteria spelled out in TB 43-0218, *Inspection, Use and Tightening of Metal Fasteners Used on Tank-Automotive Equipment*.

Para 7b on Page 6 says, "In all installations, bolts, studs and screws must extend through the nut at least a length equivalent to two complete threads. This applies to both self-locking and plain nuts."

Is there a longer wheel stud that we should be using when applying this MWO? Or are the current studs OK, even with no threads showing?

MSG J.J.K.

Master Sergeant J.J.K.,

Good questions! In this particular case, however, TACOM says the criteria from TB 43-0218 **does not** apply.

The key to any lug nut/stud combination is not the visual check, but the requirements for clamping force and torque retention. It doesn't matter how many threads protrude outside the lug if the clamping force cannot be met or the lug will not hold the torque.

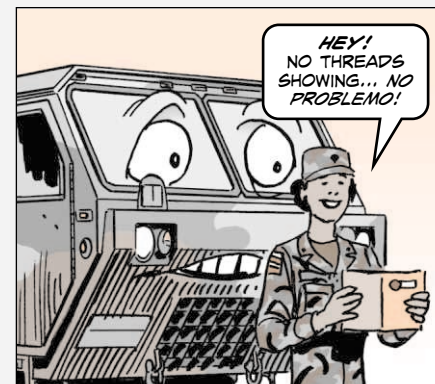
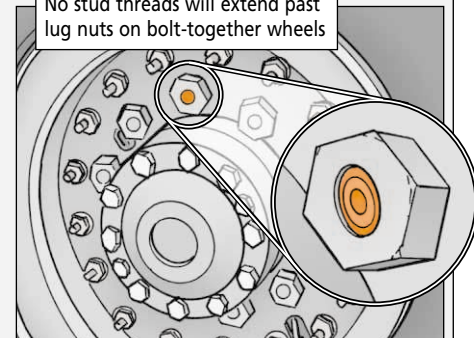
To ensure proper torque retention, the lug nut height must be at least 80% of the stud's diameter. The current HEMTT design exceeds this requirement, so there's no need for the studs to extend past the lug nuts.

Before the MWO was released, TACOM put HEMTTs through multiple tests, including several brake, shock and vibration tests and more than 25,000 test miles. There were no incidents of lug nuts loosening during these tests.

Today, more than 2,000 HEMTTs are currently operating with the bolt-together wheel configuration with no problems reported.

Half-Mast

No stud threads will extend past lug nuts on bolt-together wheels



FMTV Ring Mount Cover

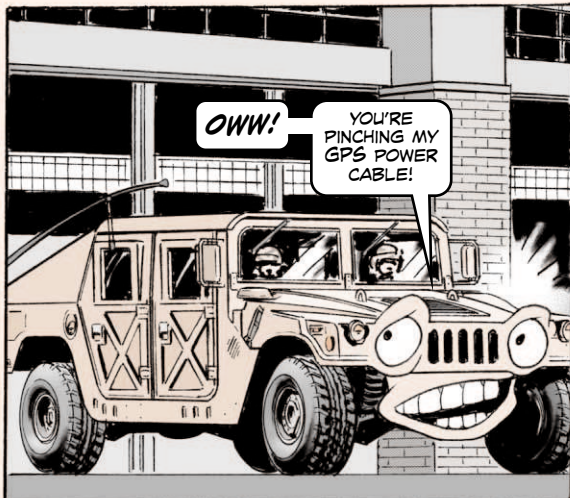
Use NSN 2540-00-909-3745 to get a canvas cover for the M66 ring mount on the MTV (5-ton models). NSN 1005-00-707-0725 gets the cover for the LMTV (2 1/2-ton). Use these covers to protect the ring mount from rain, dust, dirt and sand.

M915A3 Axle Breather

Use NSN 5340-01-355-3115 to get a curved axle breather for the M915A3 tractor truck. This new breather stops oil blow-by and replaces the NSN shown as Item 4, Figs 140 and 141 of TM 9-2320-302-24P.

HMMWV...

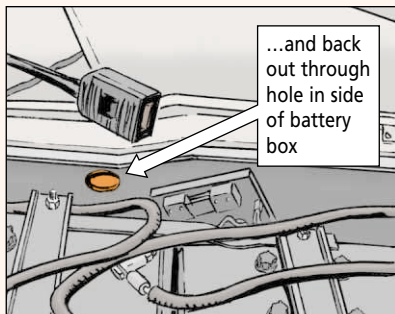
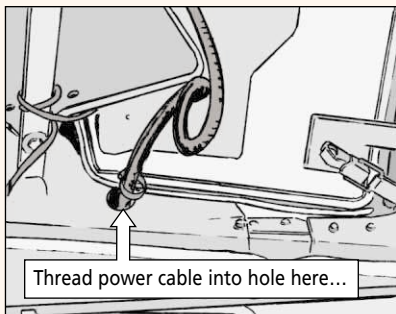
Take the 'Cut' Out of Shortcut



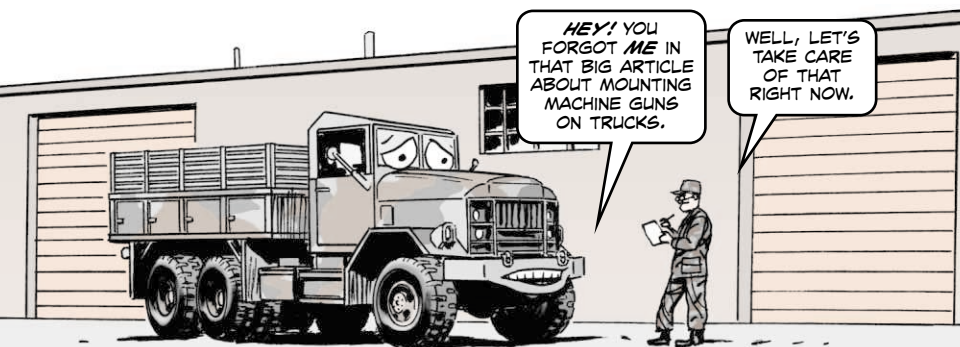
When hooking up a PLGR or GPS directly to the HMMWV's batteries, taking a shortcut will only create more work later.

Some operators run the power cable straight under the battery box lid. The lid pinches the cable until the insulation wears out and the cable shorts. Your "shortcut" has become a cut cable!

Your best bet is to run the power cable through the hole where the radio cables are threaded and then out through the hole in the side of the battery box. It may take a few minutes longer, but you'll save time and prevent damage in the long run.



WHAT ABOUT M35 TRUCKS?



Dear Half-Mast,

I thought your article in PS 621 (Aug 04) on how to mount machine guns did a great job listing the NSNs you need for all the hardware. But you forgot to mention the M35 2 1/2-ton truck and that's what my unit has. Can you help?

CW2 K.W.

Dear Chief K.W.,

Oops. To mount the M66 ring mount on the M35A2 and M35A3 trucks, you need mounting kit NSN 1005-01-226-4589. For the M35A2 you also need cab reinforcement kit NSN 2590-01-322-2694. The M35A3 doesn't need the reinforcement kit because its cab is strong enough to bear the weight of the M66.

For info on the mounting kit, see Fig 306 in TM 9-2320-361-34P. For info on the cab reinforcement kit, see Fig 318.

Half-Mast

Briefly Noted...

M35A3 Pulley Bearing

Use NSN 3110-01-504-2167 to get the tensioner pulley bearing on the 2 1/2-ton truck. This NSN replaces the parts info shown as Item 3, Fig 49 of TM 9-2320-386-24P. This NSN brings two bearings.

M915A2/916A1/A2/917A1 Tires

Fig 223 of TM 9-2320-363-24P lists wrong NSNs for tires on M915A2, M916A1/A2 and M917A1 trucks. Item 1 should be NSN 2610-01-045-3688. Order NSN 2610-01-436-3334 to get Item 2 and NSN 2610-01-436-3332 to get Item 3.

HET Tachometer Kit

Use NSN 2541-01-494-6557 to get a new tachometer for the heavy equipment transporter (HET). This tachometer replaces the old-style tachograph shown as Item 1, Fig 58 of TM 9-2320-360-24P (C2).

Not All Cleaning Tanks, Solvents Bad



THE HEADLINE "NO CLEANING TANKS" IN PS 617 (APR 04) HAS MISLED SOME SMALL ARMS FOLKS.

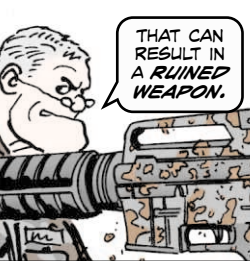
A BETTER HEADLINE WOULD HAVE BEEN "NO ULTRASONIC CLEANING TANKS."

AS THE ARTICLE POINTED OUT, **ULTRASONIC** CLEANING TANKS CAN DO **TOO GOOD A JOB**, DAMAGING A WEAPON'S ADHESIVES, SYNTHETIC FIBERS, PROTECTIVE FINISH, AND LOOSENING PRESSURE-FITTED COMPONENTS.

THAT RESULTS IN A **RUINED** WEAPON.

BUT A NORMAL CLEANING TANK CAN DO A GOOD JOB CLEANING A WEAPON. YOU JUST HAVE TO **REMEMBER** THAT AFTER A WEAPON GOES THROUGH A CLEANING TANK IT MUST BE DISASSEMBLED AND LUBED COMPLETELY.

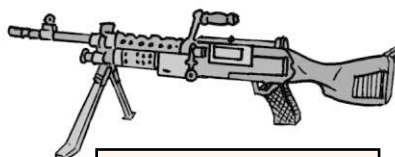
IF A WEAPON IS STORED WITH **NO LUBRICATION** AFTER GOING THROUGH A CLEANING TANK, IT WILL HAVE **NO PROTECTION** AGAINST CORROSION BECAUSE THE CLEANING TANK REMOVES ALL LUBE.



IT'S ALSO IMPORTANT TO REMEMBER **NOT** TO MIX UP PARTS IF SEVERAL WEAPONS ARE CLEANED AT THE SAME TIME.



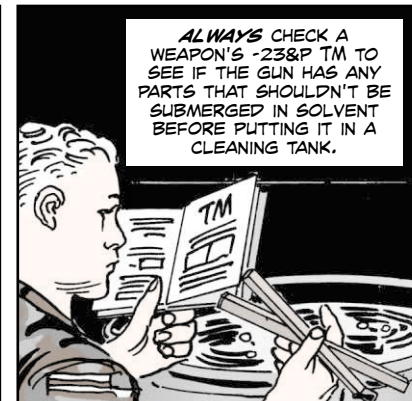
IF YOU GET THE **WRONG BARREL** ON A MACHINE GUN, IT RUINS THE HEADSPACE, WHICH IS DANGEROUS.



SOMETIMES IT'S **EASY** TO TELL RIGHT FROM WRONG... **SOMETIMES IT ISN'T!**



SO KEEP THOSE PARTS **OUT** OF CLEANING TANKS.



THE **ONLY** CLEANER TO USE IN A CLEANING TANK IS WHAT THE WEAPON'S TM RECOMMENDS, WHICH IN MOST CASES IS A DRY CLEANING SOLVENT LIKE PD-680.



MANY OF THE CLEANING SOLUTIONS THAT COME WITH THESE CLEANING SYSTEMS ARE WATER-BASED OR HAVE CHEMICALS IN THEM THAT CAN **HARM** WEAPONS.



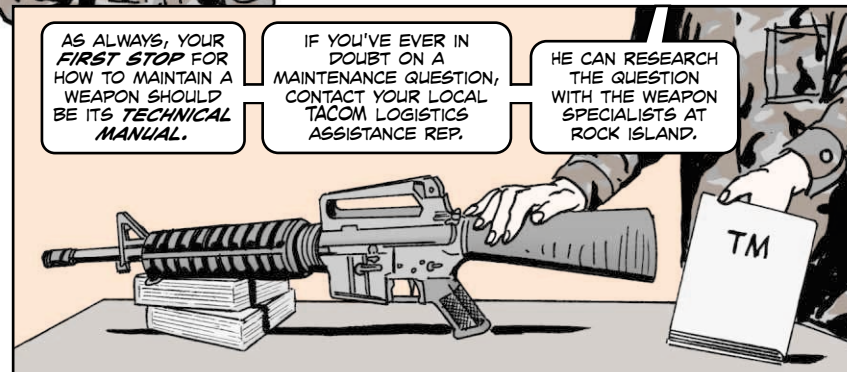
THEY SHOULD **NOT** BE USED.



AS ALWAYS, YOUR **FIRST STOP** FOR HOW TO MAINTAIN A WEAPON SHOULD BE ITS **TECHNICAL MANUAL**.

IF YOU'VE EVER IN DOUBT ON A MAINTENANCE QUESTION, CONTACT YOUR LOCAL TACOM LOGISTICS ASSISTANCE REP.

HE CAN RESEARCH THE QUESTION WITH THE WEAPON SPECIALISTS AT ROCK ISLAND.



ANSWERS FOR AVENGER PROBLEMS



Dear Editor,

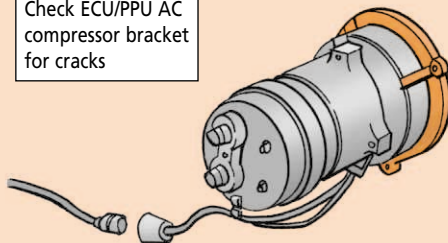
We gave our Avengers some rough workouts in Afghanistan and as a result found some parts of the Avenger that needed a little more attention than what the TM prescribes. For instance...

The mounting bracket for the ECU/PPU air conditioner compressor

If the bracket breaks, the compressor can fall and rip out the refrigerant lines. If you're doing some rough travelling, daily take off the access panel for the ECU/PPU and check the bracket for cracks, especially the upper right area. That's where cracks usually appear. Even if you're not doing rough driving, it's a good idea to check the bracket at least monthly.

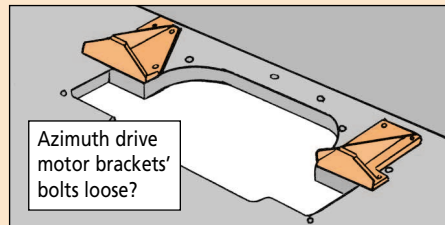
Your DOL or aviation shop can usually reinforce the bracket by welding it. That lets you keep your Avenger on the road until you can get a new bracket, which comes with PN 13502309.

Check ECU/PPU AC compressor bracket for cracks



Azimuth drive motor retaining brackets' bolts

Rough travel loosens them, too. If they become too loose, the bolts' inserts pull out and either the azimuth drive motor gear or the main gear for the pedestal can be damaged. Check the bolts for looseness daily if you're driving over lots of bumps. Tighten them if necessary.

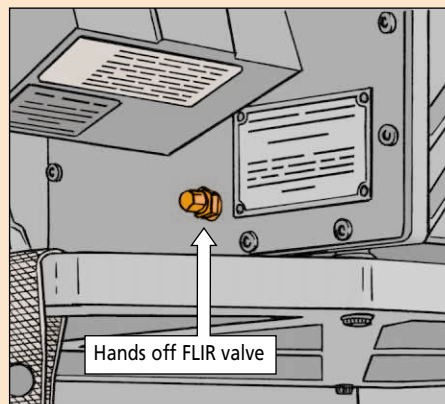


FLIR valve

Make sure Avenger crews know they are NOT supposed to push the valve on the FLIR. That doesn't release air, it releases nitrogen. The nitrogen is what keeps moisture out of the FLIR. Without enough nitrogen, the life of the FLIR is cut in half.

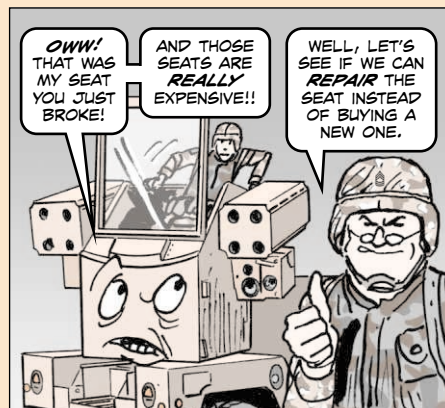
FLIR as a watchman

If you're using the FLIR for perimeter night watches in a hostile area, don't use the same system all night, night after night. That will soon put that FLIR out of business. Alternate different Avengers as much as possible. Remember, too, that the extreme daytime heat of the desert can cause the FLIR to overheat if you run it for long periods.



Seat

If someone's big foot breaks the seat, try using a fiberglass repair kit to fix the area where the seams split before you order a new seat. Most home repair stores have fiberglass repair kits, as do most DOL shops. You may be able to save yourself thousands of dollars, the cost of a new Avenger seat.

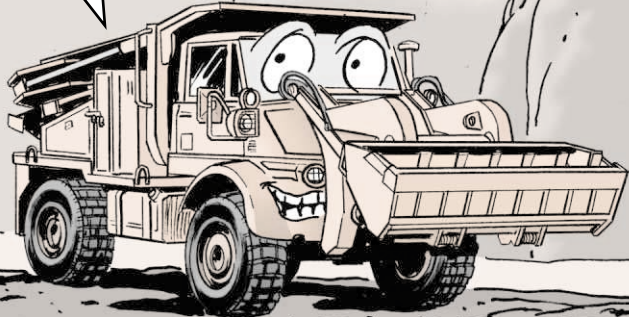


CW2 Scott Beran
CW2 Lamar Singletary
CW2 Robert Casebolt
SPC Edward Conklin
3/62 ADA
Ft Drum, NY

(Editor's note: Whoa! You guys did good. Thanks for the benefit of your experience in the war zone.)

TURN LINES AROUND

KEEP THESE TIPS IN MIND **BEFORE** YOU LOAD THE NEXT PILE OF SAND!



Operators, your small emplacement excavator just came back from the RECAP program looking show-room new and ready to go.

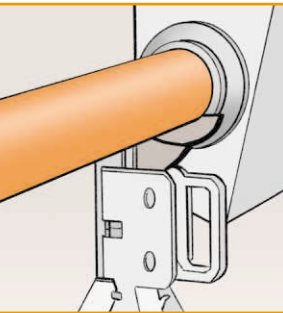
If your mission involves loading dump trucks, though, eyeball the steel lines on the boom lift cylinders before you lift one bucketful. Make sure the lines are facing up—on top of the cylinders.

Facing down, the lines take a real beating. Get the load close to the truck and the lines hit the side of the truck. Constant banging crushes the lines. Then they leak or burst during operation.

YOUR MECHANIC CAN FIX THAT BY TURNING THE CYLINDER OVER SO THE LINES ARE ON TOP. HERE'S HOW...

1. Park the excavator on a hard, level surface.

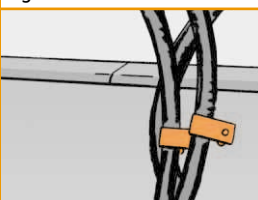
2. Raise the bucket about 30 inches and set a jackstand at the inside of each side of the lower boom crossmember.



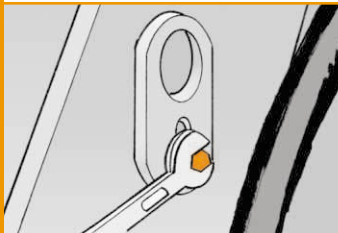
3. Now lower the lower boom crossmember on the jack stands.

4. As the bucket slowly uncurls, keep an eye on the jacks. You want the crossmember to rest safely on both stands.
5. Shut down the engine.
6. Relieve the pressure on the hoses using the control levers in the cab for the boom and bucket cylinders.

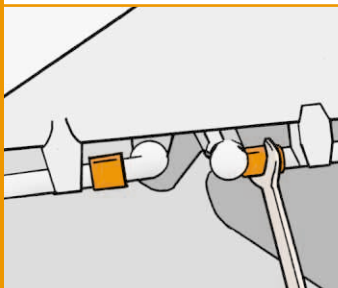
7. Remove the clamps holding the four hydraulic hoses between the left and right loader boom.



8. Remove the retaining bolt on the left boom lift cylinder (not the rod end) which holds the cylinder pivot pin.

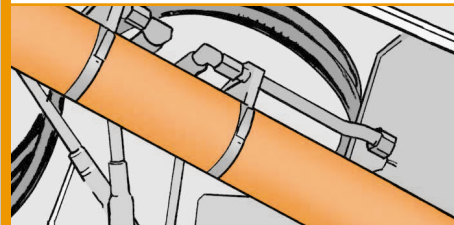


9. Loosen the A and B port swivel nuts at the 90° elbows (steel line end). Just loosen 'em, don't take 'em off.



10. Hold the cylinder while your buddy pulls out the cylinder pin.

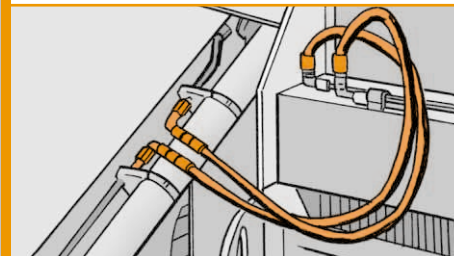
11. Rotate the cylinder 180°. This puts the steel lines on top of the cylinder.



12. Put the cylinder retaining pin back in, then the retaining bolt.

13. Tighten the two elbow fittings. Make sure the elbows are equally spaced between the lower part of the boom and the boom's lift cylinder.

14. Make sure the hoses are not kinked or interfering with the boom.



15. Tighten down the hose clamps.

ONCE YOU FINISH STEP 15, ONE SIDE WILL BE DONE. THEN DO THE SAME THING FOR THE OTHER SIDE.

NOW START THE ENGINE AND CHECK FOR HYDRAULIC LEAKS. OPERATE THE BOOM TO MAKE SURE YOU HAVE ENOUGH CLEARANCE WHEN YOU DUMP A LOAD INTO A TRUCK.



THERE, ISN'T THAT BETTER?

YOU KNOW IT! MY HOSES ARE OUT OF HARM'S WAY NOW!



SEE...

EASY ON THE FLUSH

LIKE I WAS SAYING, KEEP THE PSI BETWEEN 14.5 AND 29 DURING A BRAKE FLUSH.

TELL THAT TO OUR MECHANIC!

Mechanics, when you flush or bleed the brake fluid from the excavator, keep the air pressure between 14.5 and 29 psi. That's the word on Page 4-263 of TM 5-2420-224-20-2.

Air pressure above this will crack the brake fluid reservoirs. A cracked reservoir means brake fluid leaks out.

Enough fluid loss means you have to replace the reservoir(s), or worse yet, no brakes!

PEEK AT TIRE LEAK

LOOK FOR ROCKS WEDGED BETWEEN THE TIRE AND RIM.

Operating in rocky soil plays havoc with the excavator's tire pressure. Small rocks get stuck between the tire and wheel rim. This causes the tire to leak slowly.

Get down on your hands and knees and eyeball the wheel assembly for rocks wedged between the tire and rim. If you see small rocks stuck behind the rim, let your mechanic know.

That way, he can let some air out of the tire. He can remove the rocks carefully with a dull object like a stick or open-end wrench.

Check that the tire is re-inflated to 40 psi before heading out.

DEUCE...

ATTENTION TO SUSPENSION

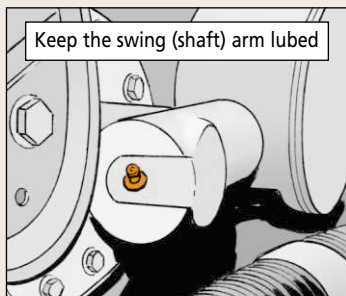


Operators, there's one grease fitting on the earthmover that's sorely neglected. It's the one that lubes the swing (shaft) arm for the vehicle's front recoil suspension.

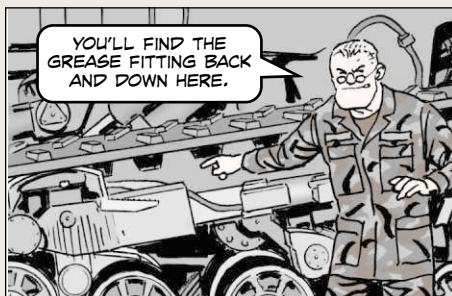
Without lube, the swing arm seizes up, causing the suspension to break apart. In Iraq, several earthmovers have met their demise that way. Their suspension fell apart and crumbled like a house of cards.

The grease fitting is a little tricky to find. It's located behind the bogie cylinder accumulator on the swing arm, facing toward the front of the vehicle. There's one on each side of the vehicle.

So, lube the swing arm weekly or every 50 hours of operation. You'll find this info on Page 104 in TM 5-2430-200-10.



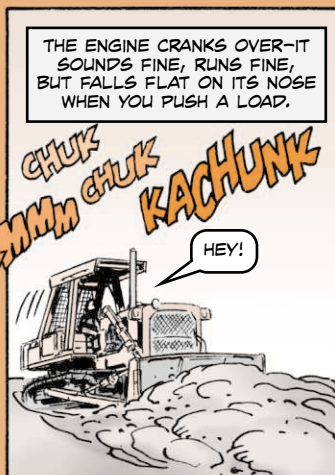
PS 627



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FEB 05

FUEL LINE CRACK

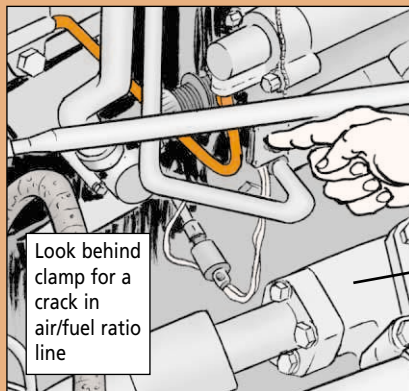


It could be a crack in the air/fuel ratio line that mounts into the air/fuel ratio valve that mounts into the fuel injector pump on the vehicle's curbside. Because of the age of the equipment and vehicle vibration, this line often cracks where it's mounted to the engine block by a small bracket.

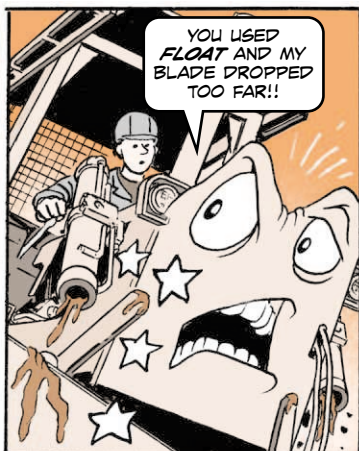
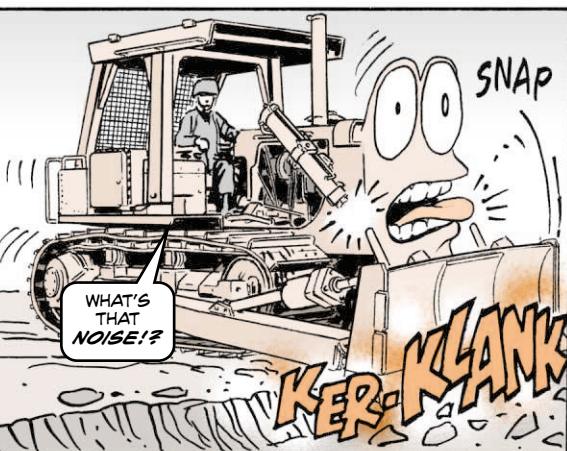
The crack is in that part of the line behind the bracket, so you won't see it. The only way you can find the crack is to have your mechanic remove the bracket so he can eyeball the line.

A crack in the line means the engine loses turbo boost pressure that's sent to the air/fuel ratio valve. When this happens, the fuel injector pump can't meter the increased fuel that's needed to push the load.

If your dozer runs fine but shows these symptoms when under a load, have your mechanic come in for a quick look-see. He can replace the line with NSN 4710-01-253-7056. Then your dozer should run like a scalded dog!



FLOAT BLADE REMINDER



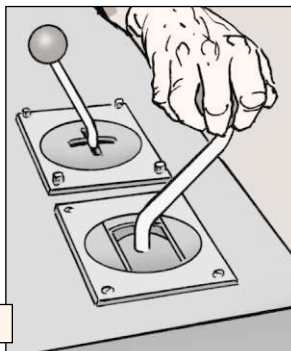
Operators, **do not** use the dozer's quick-drop feature when the blade is over a ditch or edge of a sand berm. That's not spelled out in the CAUTION you'll find on Page 2-31 of TM 5-2410-237-10.

In the desert, some have found out the hard way that the quick-drop lets the blade fall quickly when you put the blade control lever in the **F** (float) position.

Problem is, there's no built-in stop. The blade drops until it hits the ground, or the end of the cylinder rod hits the end of the cylinder and rips the nut off the rod. Then the blade's lift cylinder rods are yanked out of the cylinder. Your construction operations come to a screeching halt!

Never let the blade drop 18 inches or more below the bottom of the vehicle's tracks. Use the **F** (float) position with care, or shift to **L** to lower the blade under power.

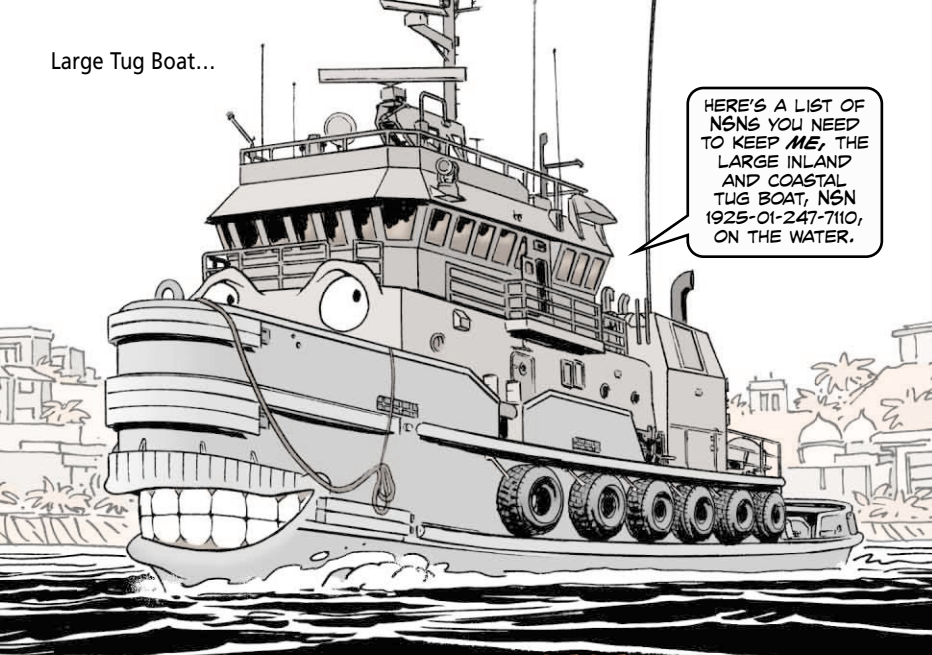
Use **F** with care



ON LEVEL GROUND, IT'S OK TO USE THE **F** POSITION TO DROP THE BLADE QUICKLY.



Large Tug Boat...



HERE'S A LIST OF NSNS YOU NEED TO KEEP *ME*, THE LARGE INLAND AND COASTAL TUG BOAT, NSN 1925-01-247-7110, ON THE WATER.

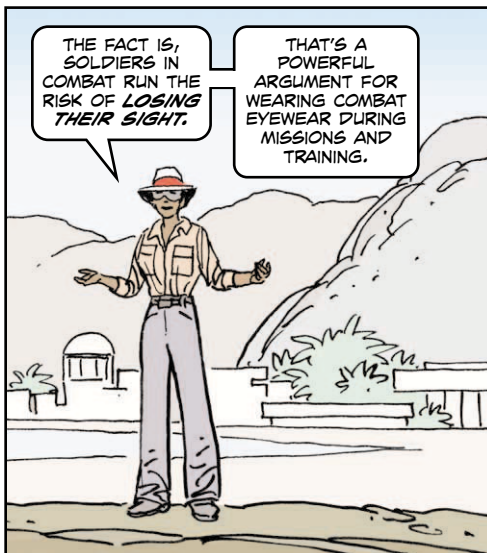
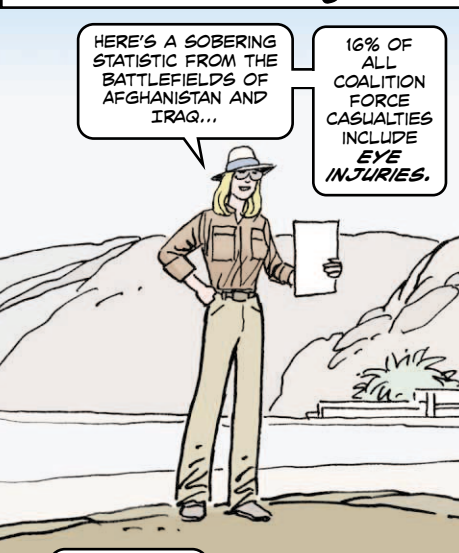
ADD TO BII LIST

ADD THESE NSNS TO THE BASIC ISSUE ITEMS (BII) IN TM 55-1925-207-10.



Item	NSN
Vari-nozzle	4210-00-465-1906
Stretcher	6530-01-380-7309
Shells, electrical	8415-00-264-3618
Jacket, welder's	8415-00-250-2531
Marker, smoke and illumination for rescue boat	1370-01-030-8330
Label, OBA canister	9905-01-462-6310
Label, EEBD, vertical	7690-01-462-6300
Label, EEBD, horizontal	7690-01-462-6288
Label, EXIT	9905-01-462-6269
Label, EXIT, left arrow	9905-01-462-6249
Label, EXIT, right arrow	9905-01-462-6247
Label, EXIT, double arrow	7690-01-462-6617
Tape, 1-in x 50 yards	9390-01-462-6814
Label, "Do not enter, gas free permit required, confined space"	7690-01-462-6057
Label, "Escape scuttle, do not block"	7690-01-462-6078
Label, "Damage Control Locker"	7690-01-462-6869

Your Sight, Your Choice



The answer depends on the soldier and the mission. Fortunately, the Army offers plenty of choices, everything from the trusty old sun, wind and dust goggles (SWDG) to high-fashion spectacles that look as stylish on Sunset Boulevard as on the streets of Baghdad. They all offer ballistic eye protection and some offer laser protection as well. Some combat eyewear fits right over prescription eyeglasses. Others are designed just for soldiers who don't need eyeglasses.



The Old Veterans

- Sun, Wind and Dust Goggles
- Ballistic/Laser Protective Spectacles
- Special Protective Eyewear Cylindrical System

The New Generation

- Wiley-X SG-1 Spectacles
- ESS Land Operations Goggles
- ESS Low Profile NVG Goggles
- Uvex XC Eyewear

PS MORE



The Old Veterans, the 50s to the 90s



Sun, Wind and Dust Goggles

Sun, wind and dust goggles (SWDG) date back to the 1950s. For years they've been the standard goggles providing ballistic and laser eye protection. SWDGs are worn both by soldiers who need prescription eyeglasses and those who don't. If you wear eyeglasses, the SWDGs fit over them. One size fits all.

The SWDG kit comes with two single piece ballistic lenses, one clear (Type 3) and one gray (Type 4 sunglass). The kit also includes a rubber goggle frame with retaining strap and a carrying case. The Type 3 and 4 lenses provide ballistic—but not laser—protection. If you need both ballistic and laser protection, get a Type 5 two-wave-length (2WL) or Type 6 three-wavelength (3WL) laser protective lens.



Sun, wind and dust goggles



Item	NSN 8465-01-
SWDG kit with Type 3 and 4 lenses. Includes case and frame with strap	328-8268
Type 5 green lens, 2WL laser protection (lens only)	439-3506
Type 6 brown lens, 3WL laser protection (lens only)	439-3511
Type 3 clear lens (lens only)	109-3997
Type 4 gray lens (lens only)	109-3996

Soldiers who wear prescription eyeglasses should consider using ballistic/laser protective spectacles (BLPS). BLPS has a prescription lens carrier (PLC) to hold your prescription lenses. The PLC fits behind the BLPS' protective lenses. Get the PLC and the prescription lenses through your post optometry clinic.

You can also wear the PLC with the M40A1 mask by using an adapter, NSN 4240-01-389-7152. The adapter's available through your optometry clinic, too. For operational readiness, it's best to keep two separate PLCs—one for the BLPS and one for the M40A1 mask.

BLPS ARE AVAILABLE IN **FOUR** KINDS OF LENSES...

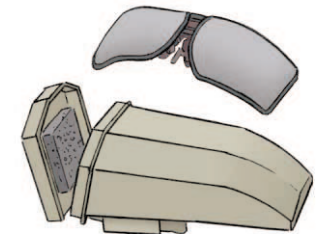


...clear, gray (sunglass), and 2WL and 3WL laser protection. Each comes in its own frame, with a retaining strap and a carrying case. The clear and gray lenses provide ballistic—but not laser—protection. If you need both ballistic and laser protection, get the 2WL or 3WL lenses. One size fits all.



Ballistic laser protective spectacles

Item	NSN
BLPS, clear	8465-01-416-4636
BLPS, gray	8465-01-417-4004
BLPS, 2WL laser protection	8465-01-416-3207
BLPS, 3WL laser protection	8465-01-416-3210
Carrying case	8465-01-417-9963
Retaining strap	8465-01-416-4637
Prescription lens carrier	6540-01-264-1348



Special Protective Eyewear Cylindrical System

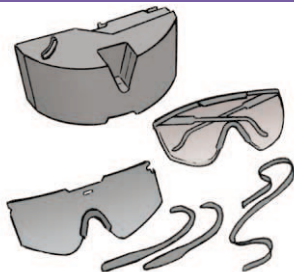
If you don't need to wear prescription eyeglasses, try the special protective eyewear cylindrical system (SPECS). SPECS come in two sizes: regular and large. Regular should fit most soldiers.

The SPECS kit for ballistic protection comes with a clear lens in a frame, a gray (sunglass) lens, a retaining strap and a carrying case.



Item	Size	NSN 8465-01-416-
SPECS kit. Includes clear and gray lenses, frame, strap and case	Regular	4626
SPECS kit. Includes clear and gray lenses, frame, strap and case	Large	4629
SPECS, 2WL laser protection. Includes lens and frame	Regular	4634
SPECS, 2WL laser protection. Includes lens and frame	Large	4632
SPECS, 3WL laser protection. Includes lens and frame	Regular	4635
SPECS, 3WL laser protection. Includes lens and frame	Large	8516
SPECS, clear. Includes lens and frame	Regular	4628
SPECS, clear. Includes lens and frame	Large	4631
SPECS, gray. Includes lens and frame	Regular	4630
SPECS, gray. Includes lens and frame	Large	4633
SPECS case	—	4627
Retaining strap	—	4637

SPECS



PS 627

IF YOU NEED **BOTH** BALLISTIC AND LASER PROTECTION, GET THE SPECS WITH EITHER A 2WL OR 3WL LASER PROTECTIVE LENS IN A FRAME.



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FEB 05

The New Generation

Until recently, your choice of combat eyewear was limited to the old veterans: SWDG, BLPS and SPECS. But now the Army offers you a new generation of combat eyewear with lots of style. You're now authorized to order and use the Wiley-X SG-1 spectacles with strap, the Eye Safety System (ESS) land operations goggles, the ESS low profile NVG goggles and the Uvex XC eyewear. There are a couple of things you need to know about them:

- These are commercial substitutes for the **non-laser** SWDG, BLPS and SPECS. They all provide ballistic protection, but none of them protects your eyes from lasers. So, if you have a mission or training that requires laser eye protection, you **must** wear the SWDG, BLPS or SPECS with laser lenses. So far the Army hasn't authorized any substitutes to the SWDG, BLPS or SPECS with laser lenses.
- The components of the SWDG, BLPS and SPECS are not interchangeable with components of the new generation of combat eyewear. For example, you can't put a SWDG lens in the commercial eyewear frame.

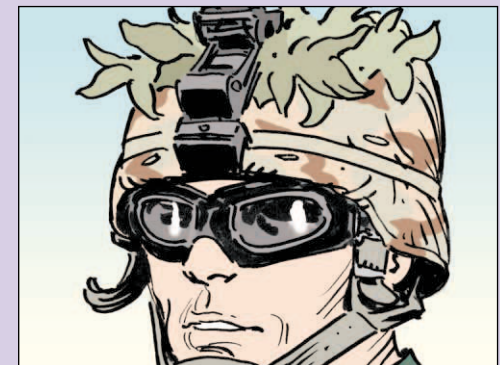
HERE'S A MORE DETAILED LOOK AT EACH OF THE **NEW** COMBAT EYEWEAR, ALONG WITH REPLACEMENT PARTS...



Wiley-X SG-1 Spectacles

These spectacles should be worn only by soldiers who don't need eyeglasses. It's not a good idea to fit the Wiley-X SG-1 spectacles with prescription lenses. For one thing, it's costly. For another, you run the risk that the prescription lenses won't protect you as well as the ballistic lenses that come with the spectacles.


The spectacle system comes with two pairs of ballistic lenses, one clear and one green smoke (sunglass). The eyewear has black frames. A foam seal around each eye prevents dust and wind from getting in. You can detach the temples and replace them with an elastic strap that comes with the system. The system also includes a carrying case. One size fits all.



PS 627

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PS MORE

Item	NSN 4240-01-504-	Wiley-X SG-1 spectacles
Wiley-X SG-1 spectacle system. Includes clear and green lenses, frame, strap, temples and case.	0994	
Clear lenses (lenses only)	5326	
Green smoke sunglass lenses (lenses only)	5312	
Temples	6474	
Elastic strap	5754	
Frame. Includes temples and strap.	6524	

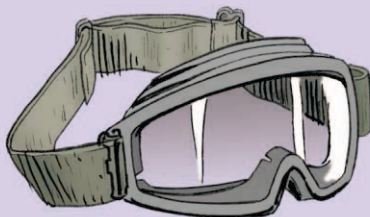
ESS Land Operations Goggles

These goggles can be worn both by soldiers who need prescription eyeglasses and those who don't. The ESS land operations goggles will fit over most eyeglasses.

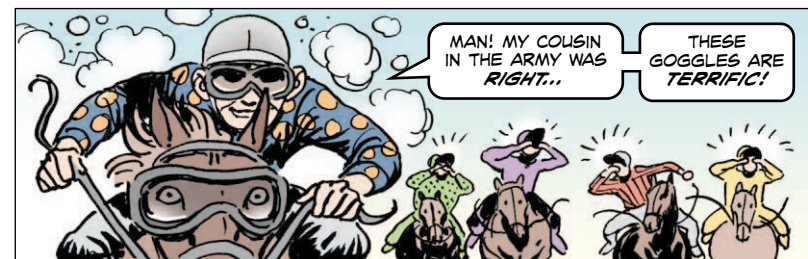
The goggles kit comes with two single piece ballistic lenses, one clear and one smoke gray (sunglass). The lenses are made with anti-scratch and anti-fog coatings. The kit also includes a rubber frame and a black elastic strap. Foam backing on the rubber frame helps the goggles to fit snugly against your face. Foam-covered vent holes allow ventilation while keeping dust out. The kit includes an anti-reflective sleeve that reduces glint when the goggles are not in use. One size fits all.



Item	NSN
Land operations goggles kit (with anti-reflective sleeve). Includes clear and gray lenses, frame and strap.	4240-01-504-0052
Smoke gray sunglass lenses (pack of 50)	4210-01-492-5725
Clear lenses (pack of 50)	4210-01-492-5722



ESS land operations goggles



ESS Low Profile NVG Goggles

These goggles are strictly for soldiers who do not need eyeglasses. Although ESS makes a prescription lens carrier for their low profile NVG goggles, you're not authorized to order it. The carrier has not been field tested for durability.

The goggles kit comes with two single piece ballistic lenses, one clear and one smoke gray (sunglass). The lenses are made with anti-scratch and anti-fog coatings. The kit also includes a rubber frame, a black elastic strap, a carrying case and an anti-reflective sleeve. You can order the kit in one of three frame colors: black, olive drab or desert tan.

Foam backing on the rubber frame helps the goggles to fit snugly against your face. Foam-covered vent holes in the goggles' frame allow ventilation while keeping dust out. An anti-reflective sleeve reduces glint when the goggles are not in use. One size fits all.



Item	NSN 4240-01-504
Low profile NVG goggles kit. Includes black frame, clear and gray lenses, strap, case and anti-reflective sleeve.	6222
Low profile NVG goggles kit. Includes olive drab frame, clear and gray lenses, strap, case and anti-reflective sleeve.	5706
Low profile NVG goggles kit. Includes desert tan frame, clear and gray lenses, strap, case and anti-reflective sleeve.	5727
Smoke gray sunglass lenses (pack of 50)	6143
Clear lenses (pack of 50)	5641



ESS low profile NVG goggles

Uvex XC Eyewear

This eyewear can be worn both by soldiers who need prescription eyeglasses and those who don't. If you wear prescription eyeglasses, you will need to get a PLC and prescription lenses from your post optometry clinic. The eyewear kit comes with two pairs of ballistic lenses, one clear and one gray (sunglass). The lenses are treated with anti-fog coating. The wrap-around lenses protect the eyes and allow greater peripheral vision. The kit also includes black frames and a carrying case. One size fits all.



Uvex XC eyewear

Item	NSN 4240-01-516-
Uvex XC kit. Includes clear and gray lenses, frame and case.	5361
Clear lenses (pack of 10)	3469
Gray lenses (pack of 10)	3473
Uvex XC spectacles. Includes clear lenses and frame.	3460
Uvex XC spectacles. Includes gray lenses and frame.	3452
Carrying case	3444
Prescription lens carrier	5342



At a Glance

HERE'S A NICE, QUICK SUMMARY OF THE LAST EIGHT PAGES!

Combat Eyewear	Application	Ballistic Protection	Laser Protection
SWDG	Wear with or without eyeglasses	Yes	Only with 2WL or 3WL lenses
BLPS	Wear with prescription lenses	Yes	Only with 2WL or 3WL lenses
SPECS	Wear only without eyeglasses	Yes	Only with 2WL or 3WL lenses
Wiley X SG-1	Wear only without eyeglasses	Yes	No
ESS Land OPS	Wear with or without eyeglasses	Yes	No
ESS Low Profile NVG	Wear only without eyeglasses	Yes	No
Uvex XC	Wear with or without prescription lenses	Yes	No



SNATCH OR GRAB

NOW THAT OUR FLIGHT IS OVER, **DON'T SNATCH** OUT THE HELMET HARNESS FROM THE ICS CORD.

NOT TO WORRY, THE QUICK DISCONNECT IS IN MY HAND.

Pilots and gunners, there's a right and wrong way to disconnect your Apache's Integrated Helmet and Display Sighting System (IHADSS) from the ICS wiring harness attached to the seat.

The right way is to hold the helmet harness connector with one hand and the ICS cord attached to the seat with the other hand and use the quick disconnect.

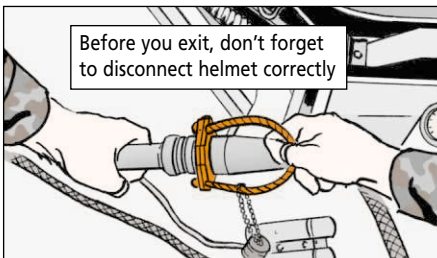
It's easy, but wrong just to take off the helmet and snatch out the helmet harness from the ICS cord. This can break the pins in the harness connector and the wires in the ICS cord.

If that happens, your bird is NMC because you won't be able to bore-sight the helmet to the aircraft/weapons and you won't be able to communicate.

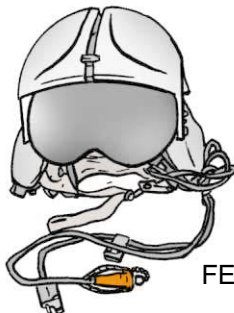
And it gets worse! The seat has to be removed from your Apache so your AVIM shop can repair the ICS cord and repin or replace the helmet harness connector.

Snatching doesn't work; it creates more work for repairers and the high replacement cost of a harness is hard on your unit's bottom line. A replacement for a broken harness, NSN 5995-01-186-8601, costs about \$7,000.

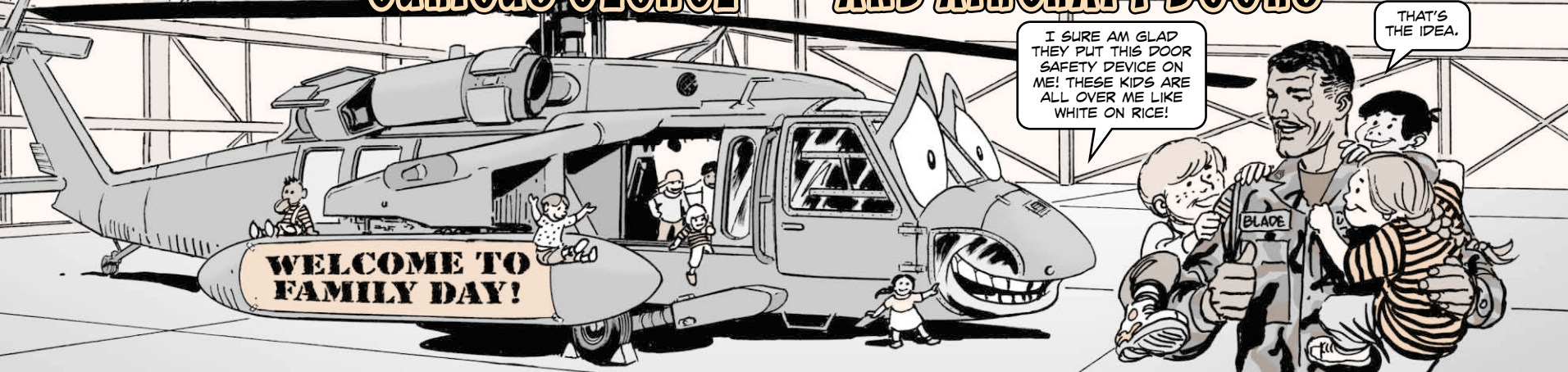
Before you exit, don't forget to disconnect helmet correctly



Damage to harness can result if you snatch out harness



CURIOUS GEORGE AND AIRCRAFT DOORS



Dear Sergeant Blade,

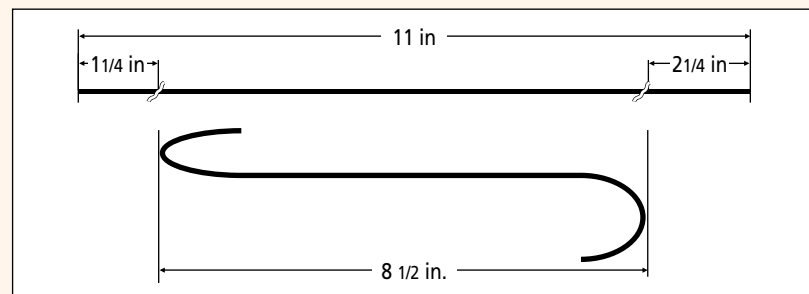
We often have static displays of Black Hawks in our facility for visitors to look at.

One problem though: the visitors are like Curious George. They touch, grab and pull! Many of them pull the cockpit door emergency jettison handles.

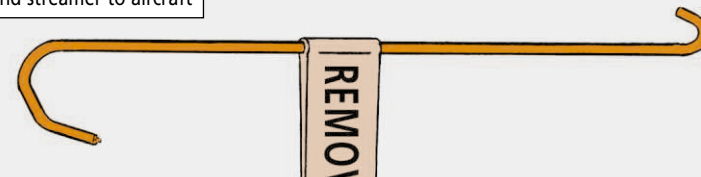
This damages the door and the airframe, can injure spectators and cause a lot of frustration for the crew, and unnecessary repair on the bird.

We've come up with a door safety device that will prevent the jettison door handle from being pulled. It's a hook-like device that goes around the handle and the other end into an opening in the door. Here's how to make the tool:

1. Start with an 11-in piece of 30-gage wire rod.
2. Make a 1 3/8-in diameter bend that's approximately 2 1/4 inches from one end. Cover with red heat shrink to make the small tool more visible.
3. Make a 3/4-in diameter bend (in opposite direction of first bend) approximately 1 1/4 inches from the other end.
4. Attach a "Remove Before Flight" streamer before you attach the tool.

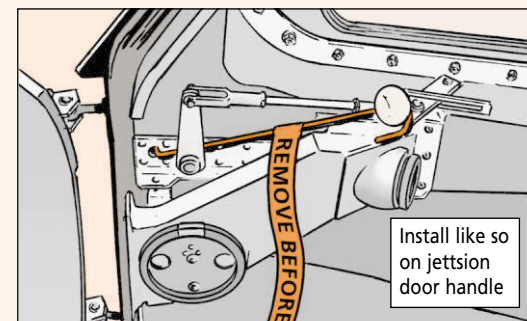


Attach completed tool and streamer to aircraft



To install the door safety device on the aircraft, all you have to do is insert the small curved end behind the door jettison lever and into the small hole just forward of the jettison lever. And place the large curved end around the door jettison handle.

Since all aircraft doors are not identical, small adjustments to the bend measurements might be needed.



Sergeant Webster,

Good job. Looks like you've got this problem all hooked up. Keep it up.

Rotor Blade

LATCH ON TO LATCH FIX



Mechanics, you've heard of the old saying, "Leave no stone unturned." The same is true when it comes to daily Chinook inspections.

At your next inspection, check out the aft pylon work platform latches and the holes the latches fit into for damage.

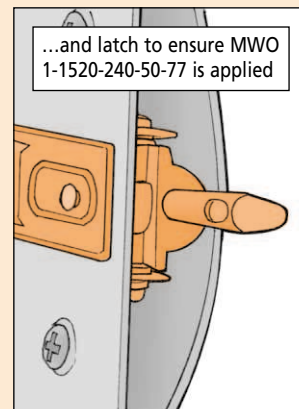
Because of aircraft vibration, the steel latches chafe and rub against the aluminum holes on the airframe and become elongated. Sometime cracks begin to form around the aft side hole more often than the forward side hole of the work platform. The latches get damaged in the process.

If you skip this inspection, you won't know there's a problem that needs fixing. If no repair is done, the hole gets longer, the latches get worse, and the seal around the aft pylon begins to wear out and may tear away from the airframe. The more damage the latches suffer and the more wallowed out the holes get, the better the chance the work platform door can fly open and fall off during flight.



Inspect your work platform door latches now. If you find any problems, let your AVIM shop know so they can have your depot or contractor field team repair the work platform door latches according to MWO 1-1520-240-50-77.

Check your bird and make sure MWO 1-1520-240-50-77 is applied.



Aviation Tools...

Don't Mark NATS

MARKING THESE TOOLS IS A GOOD WAY TO TRACK AND INVENTORY THEM!

HOLD UP BUDDY! DON'T MARK ANY TOOLS IN MY KIT!

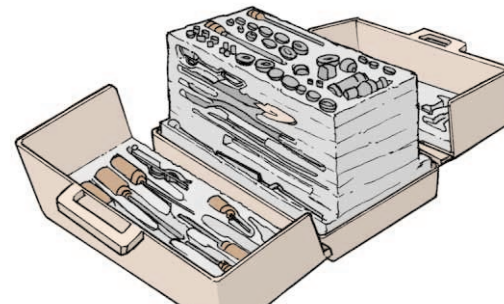


Some mechanics believe that DA PAM 738-751, TAMMS-A, authorizes marking of tools in the aviation tool system (NATS) kit for tracking.

But that belief is wrong. The PAM says **nothing** about tool marking! In fact, according to the PM, Sets, Kits, Outfits and Tools, there is no requirement or directive to mark or engrave NATS tools or any hand tools for identification or inventory purposes. So, do not mark tools!

The NATS tool kit has foam inserts with cutouts in the shape of the tools. This design is to make tool inventory and storage easier for the units.

So, there's no need to mark aviation tools.



Use shaped cutouts in foam inserts for tool inventory

ALL ABOUT THE BATTERIES

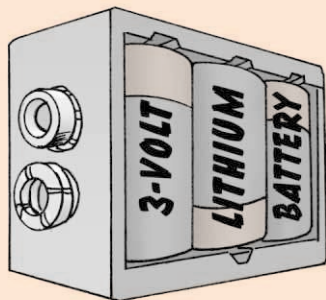
THE BATTERIES AND BATTERY COMPARTMENT ON THE AN/CYZ-10 DATA TRANSFER DEVICE (DTD) ARE YOUR MOST IMPORTANT PREVENTIVE MAINTENANCE CONCERNS.

GOOD PREVENTIVE MAINTENANCE ON THE DTD MEANS **THREE THINGS...** USING THE RIGHT BATTERIES, INSTALLING THEM RIGHT, AND KEEPING GOOD CONTACTS.

Using the Right Batteries

The DTD uses three 3-volt lithium batteries, BA-5123/U, NSN 6135-01-351-1131.

Use 3-volt lithium batteries

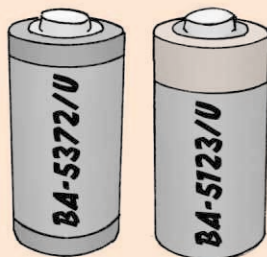


Before you insert the batteries, make sure they are fresh. Meter them. Good batteries will meter out between 9.25 and 9.50 volts.

Don't use batteries that fall below this range or your DTD might soon become erratic, intermittent or even lock up.

Don't substitute look-alike batteries like the BA-5372/U for the BA-5123/U.

No look-alikes!



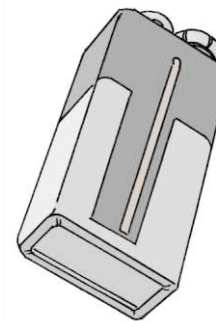
The last guys who did that are buying new DTDs to replace the ones that were destroyed by the high heat produced by the BA-5372/Us.

A future alternative to the BA-5123/U is the rechargeable 9-volt NiCad, NSN 5810-01-501-5401. Right now, only Navy folks can order it, but check FED LOG in the future, because the move is toward using rechargeable batteries whenever possible.

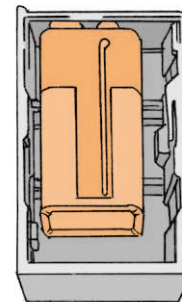
One final option is "for emergency use only" and that is a 9-volt battery. A 9-volt lithium, NSN 6135-01-369-9792, or alkaline, NSN 6135-00-900-2139, can be used, but neither one will last as long as the BA-5123/Us. However, the lithium will last longer than the alkaline.

Also, they will not sit as well in your battery compartment. You may need some "stuffing" to keep the batteries snug in the compartment.

Emergency? 9-volt Lithium can be used

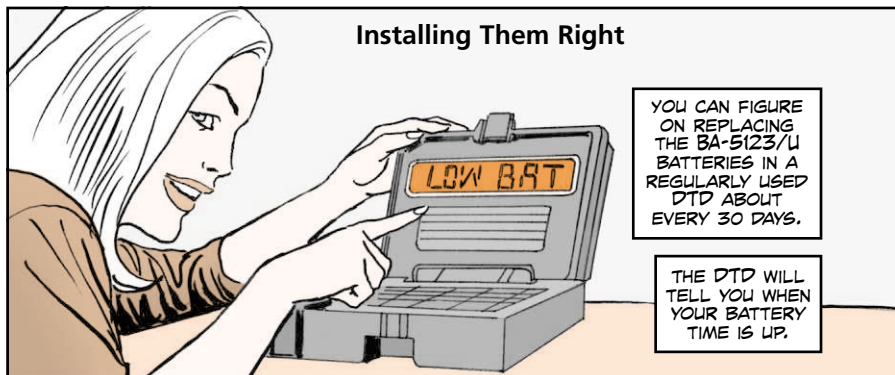


9-volt might not be tight



HERE'S AN ADDITIONAL TIP FOR SHOP USE... GO WITH THE BATTERY ELIMINATOR (AN ALTERNATIVE POWER SOURCE), NSN 5810-01-461-1149.

OVER THE LONG RUN THIS WILL SAVE BATTERY BUCKS AND IS GOOD FOR TESTING, TRAINING AND SOFTWARE LOADING.



First, you will get a low battery indicator message readout: LOW BAT. This message will be displayed continuously after a low battery is detected and will give you enough time, in most cases, to complete your current operation.

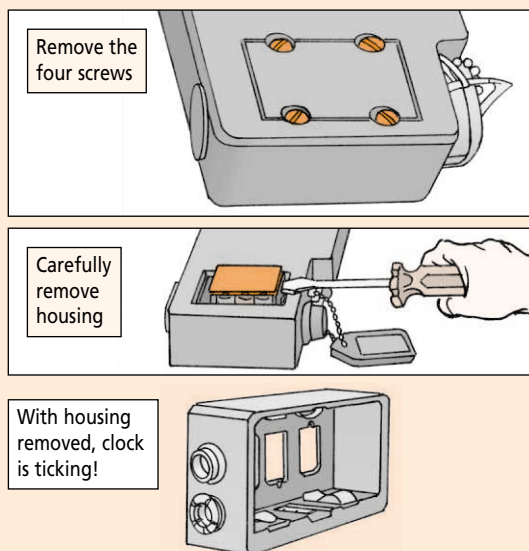
Don't depend entirely on the low battery indicator light, though. Batteries have been known to creep well below 9 volts without the light coming on. Do your best to keep track of how long a battery has been in the DTD.

When time has almost run out, the low voltage detector (LVD) will activate, sounding an alarm. You will have enough time to shut down the DTD in an orderly and secure manner, but not much more.

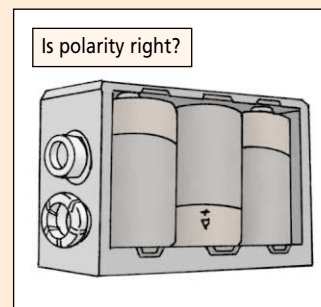
To replace batteries, first remove the battery cover, NSN 5810-01-347-9668, by loosening the four screws.

Carefully insert a flat-tip screwdriver under the extension lip and pry up the battery housing, NSN 5810-01-348-3147.

Once the battery housing is disconnected from the DTD, you've got 2 minutes to replace the batteries and reconnect the battery housing. After 2 minutes, data is lost and the DTD must be initialized again.



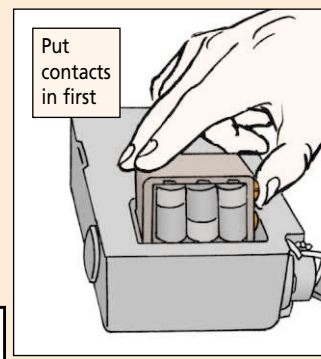
Don't try to save money on batteries; replace all three each time. Make sure the polarity is correct as you install each new battery. It's important to do it right the first time, because you might not have the time to do it a second time.



Put the housing back into the DTD with the positive contacts going in the slot first. The housing will not fit if you put the non-contact end in first.

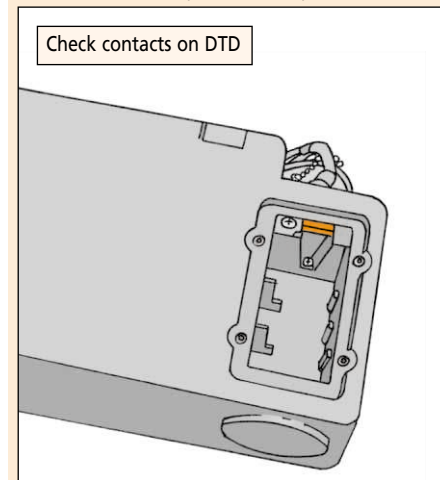
Tighten down the four battery cover screws, but don't overtighten them. You'll crack the cover if you do.

Turn on the DTD to make sure the batteries are working.



Keeping Good Contacts

As you install the battery housing, take a look at the positive and negative contacts on the DTD. Are they loose? Any burn marks?



Do the burn marks limit the electrical contact? Good electrical contact is a must.

Unit maintenance can replace both the negative contact, NSN 5810-01-350-8388, and the positive contact, NSN 5810-01-350-8387.

They will use a 1/16-in hex head screwdriver to remove the screws that hold the contacts. Then they will replace the contacts, making sure to get them in the right positions.

They will tighten the screws without over-tightening or they could crack the case.

One strong word of caution: 40,000 battery housings were replaced in 2003 because contacts were shorted! Never touch the contacts with your hand or any other material that may conduct. The fuse in the battery holder will blow. Since the fuse is not replaceable, a new battery housing will be needed.



IT'S A COLD, CRUEL WORLD FOR BATTERIES



IT'S A **CRUEL FACT** THAT WINTER WEATHER TURNS DRY CELL BATTERIES (CARBON, ZINC, OR ALKALINE) COLD.

AND COLD BATTERIES **MAY NOT** DELIVER THE **POWER** YOUR COMMO GEAR NEEDS.

THAT'S WHY **YOU** SHOULD KNOW ABOUT COLD-RESISTANT BATTERIES AND COLD WEATHER BATTERY CARE.

Cold-Resistant Batteries

Look at your equipment's TM and SB 11-6 for specific information on batteries for cold-weather operation. Both list primary battery-using equipment, battery type numbers, descriptions, storage temperatures and NSNs.

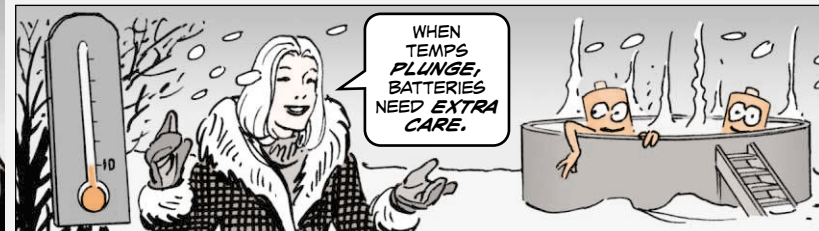
SB 11-6 can now be found on the internet. Access it at:

<https://www.logsa.army.mil/etms/online.htm>

Search for PIN number 079041. A user name and password are required to access SB 11-6. This web site also contains the latest on CECOM batteries and a link to battery safety messages.



Battery Care



Keep them stored until you're ready to move out. Then warm up only as many spares as you'll need. Lithium batteries won't need warming up unless they've been in temperatures below -20°F.

Protect dry cells by keeping them out of the cold and wind. Cover them with your clothing. Put them in a vehicle or commo shelter when possible. Sheltering batteries behind a wind break is better than leaving them out in the open. Putting them next to your body is best of all, but only if they are still in the original package. Otherwise, metal objects in your pockets could create short circuits.

Never stow batteries next to a heater or stove. That's too much warmth for most batteries and they could leak, vent or rupture.

Keep spare batteries handy so you can make a switch when the ones in your gear start to fade. When you remove batteries from your gear, put them in an inside, empty shirt pocket to warm up. After a while, they'll regain some of their punch.

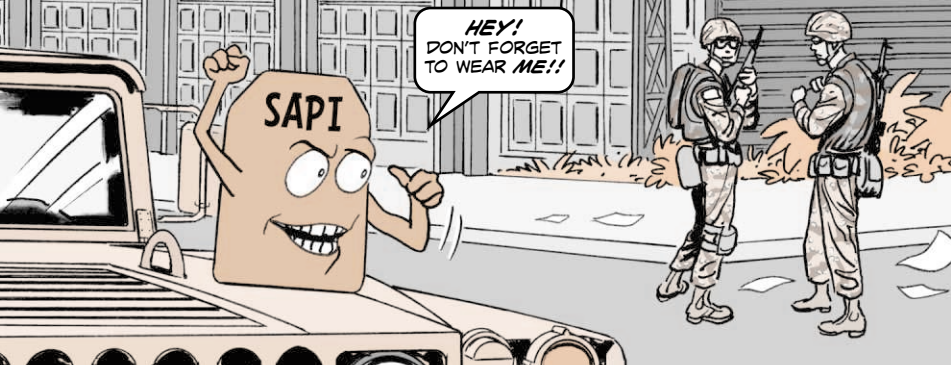
If you won't be using your gear right away, don't install the batteries. Keep them warm as long as you can.

If you warm batteries in a heated place, watch for sweating. Wipe off any moisture or it will freeze.

Finally, if your gear has plastic pins in the battery compartment, take care when installing the battery. Cold pins become brittle. They'll break if they're handled too roughly.



SOME INSIGHTS ON INSERTS



TWO SMALL ARMS PROTECTIVE INSERTS (SAPI) FIT INTO THE POCKETS OF YOUR INTERCEPTOR BODY ARMOR VEST...

ONE TO GUARD YOUR CHEST...

...THE OTHER TO GUARD YOUR BACK.

THE SAPI WILL SHIELD YOUR VITAL ORGANS FROM MULTIPLE HITS BY ROUNDS AS LARGE AS 7.62mm.

THE SAPI PROTECTS YOU, SO HOW ABOUT PROTECTING THE SAPI?

For starters, don't play rough with the inserts. That means no throwing them to the ground. And no dropping them on hard surfaces. Even though they're tough, the inserts are ceramic and they can crack if you manhandle them. And cracks weaken an insert's ballistic protection.

Don't drop inserts or vests

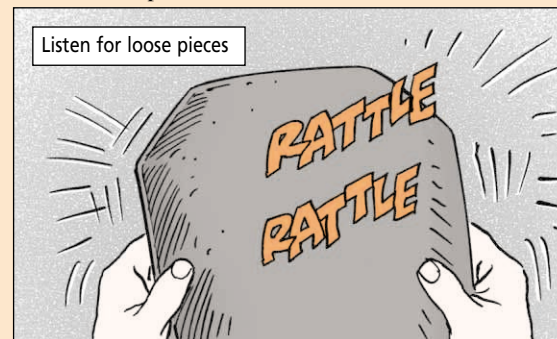
MAN! THIS THING IS HEAVY!

KLU MP

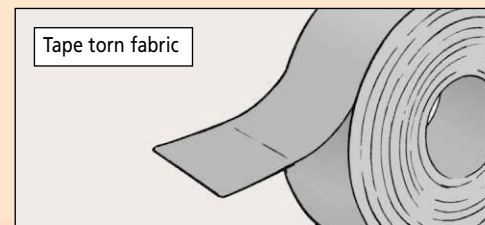
Inspect the insert for cracks before each mission and once a day during garrison or field use. It takes more than just looking it over, because cracks may be hidden underneath the fabric. Here's how to inspect:

- Handle the insert to see if it flexes.
- Listen for crunching sounds that indicate broken pieces.
- Shake the insert and listen for loose pieces rattling around.
- Look for rips, tears or holes in the fabric that expose the black ceramic tile.

Listen for loose pieces

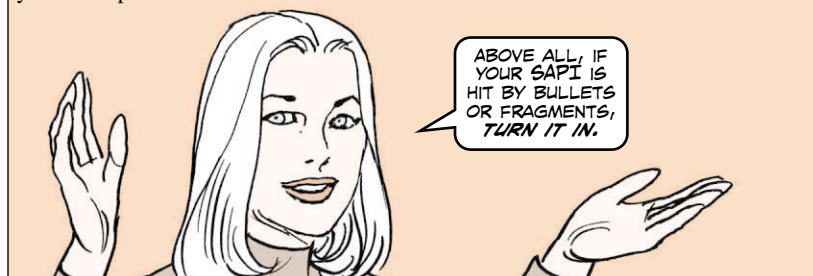


Tape torn fabric



If you find any of these problems, the insert is unserviceable. Turn it in to direct support and get a replacement. In a pinch, you can patch torn fabric with 100 mph tape, NSN 7510-00-266-5016, until you can replace the insert.

ABOVE ALL, IF YOUR SAPI IS HIT BY BULLETS OR FRAGMENTS, TURN IT IN.



NSNs and Sizes

As a rule, to fit properly, the SAPI should be the same size as the vest. For example, if you wear a medium vest, order the medium SAPI. The exception to the rule is if you wear an XX-, XXX- or XXXX-large vest. The SAPI doesn't come in those sizes, so order the X-large inserts. All size inserts are interchangeable between front and back pockets.

NSN 8470-01-497-	Size
8701	X-small
8709	small
8710	medium
8712	large
8714	X-large

WHAT KNEES NEED (AND ELBOWS, TOO)



Slivers of glass, shards of steel, bricks, rocks and rubble. That's the landscape of the urban battlefield. If you have to crawl through it, you'll soon tear up your knees and elbows. You need the protection of knee and elbow pads.

The pads are made of nylon cloth-covered foam protected by a high-density polyethylene shell. The inside is lined with a moisture wicking fabric for comfort. Webbing straps with hook-and-pile fasteners keep the pads securely in place. The pads come in woodland camouflage and also in a yellowish-brown color known as coyote.

Knee pads, woodland camouflage	
Size	NSN 8415-01-458-
small	8694
medium	8699
large	8703
Knee pads, coyote	
Size	NSN 8415-01-515-
small	0363
medium	0364
large	0367
Elbow pads, woodland camouflage	
Size	NSN 8415-01-458-
small	8759
medium	8761
large	8763
Elbow pads, coyote	
Size	NSN 8415-01-515-
small	0219
medium	0222
large	0224

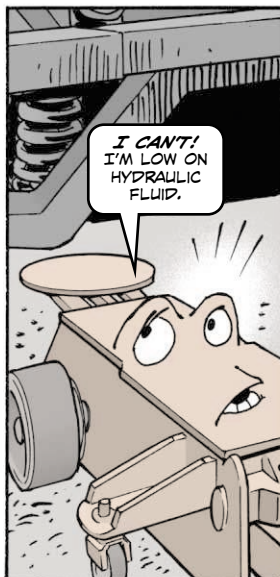
Knee pad, woodland



Elbow pad, coyote



Oil and Inspection **REQUIRED**



Dear Master Sergeant Half-Mast,

Our unit's motorpool has a 10-ton hydraulic jack that's used to lift HMMWVs, 2 1/2- and 5-ton trucks. What NSN do we use to order the jack's hydraulic fluid?

Also, what criteria do we use to inspect the jack for its lifting capabilities?

SFC M.S.F.

Dear SFC M.S.F.,

Use NSN 9150-00-935-9807 to get one quart of hydraulic fluid for your unit's 10-ton jack. NSN 9150-00-935-9808 gets a gallon and NSN 9150-00-935-9809 gets 5 gallons of hydraulic fluid.

When you use a 2-, 4- or 10-ton hydraulic jack to lift a piece of equipment, you don't want to worry about it being able to carry the weight. To be sure and safe, inspect the jack like it says in Para 4b(a) and Appendix E of TB 43-0142, Safety Inspection and Testing of Lifting Devices.

Half-Mast



The Army's "retiring" canvas (cotton duck) tents, tarps and vehicle covers. Since the Revolutionary War, soldiers have depended on canvas to shelter them and their gear. But now the Army's replacing it with 21st century vinyl-coated polyester.

What does that mean for those of you still holding canvas? For one thing, it means you won't find canvas replacement parts in the Army supply system: no canvas tent sections to replace damaged ones, no sheets of canvas for patching tears.

For another thing, it means direct support will no longer repair canvas. You are now responsible for maintaining it.

Canvas PM

Until you get polyester replacements, make your canvas tents, tarps and vehicle covers last by practicing good PM. That includes cleaning, drying, storing, sewing and patching.

You are responsible for canvas PM



Here are a few sources to keep you covered:

- **FM 10-16, General Fabric Repair**
<http://atiam.train.army.mil/portal/atia/adlsc/view/publc/296904-1/fm/10-16/toc.htm>
- **PS 555 (Feb 99), pages 52-54, general tent PM**
<https://www.logsa.army.mil/pub/psissues/PS-555.pdf>
- **PS 521 (Apr 96), pages 52-53, PM for cover on mobile kitchen trailer**
<https://www.logsa.army.mil/WEB-PAGE/1996/521/521-52-53.pdf>
- **PS 609 (Aug 03), page 53, tent repair tape and tentage repair kit**
<https://www.logsa.army.mil/pub/psissues/609/609-53.pdf>

You'll find these PS stories and more on the PS Magazine web site at
<https://www.logsa.army.mil/psmag/psonline.cfm>

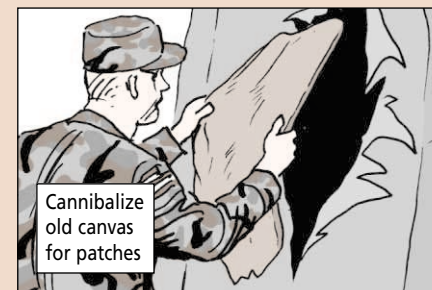
Disregard any information in these stories about waterproofing preservative, NSN 8030-00-281-2346. It's a terminal item, and the Army has no substitute for it.

The tentage repair kit, NSN 8430-00-262-5767, is essential for field repairs. Just remember, the canvas sheets that originally came with the kit are no longer available. The kit now comes with polyester sheets.



In the past, soldiers used chemical biocide to remove mildew from canvas. Not any more. The Army forbids its use because it's considered harmful to the environment.

One final suggestion about canvas PM: Don't discard entire tents, tarps and vehicle covers just because parts of them are worn and torn. Cannibalize them. Keep a supply of canvas scraps for patches.



Cannibalize old canvas for patches

Turn It In

When canvas becomes too worn out for your unit to repair, turn it in through normal supply channels. Learn more about turn-in policies by reading AR 710-2, *Inventory Management Supply Policy Below the Wholesale Level*, and AR 750-1, *Army Materiel Maintenance Policy*.

Unit maintenance can dispose of Class IX items, such as vehicle covers. Class II items, such as tents, are a different matter. Turn those in to the Supply Support Activity or the installation Directorate of Logistics.

CAM/ICAM...

DID HEAT AFFECT YOUR CAM?



If your chemical agent monitor (CAM) or improved chemical agent monitor (ICAM) has been in the extreme heat of Iraq or any desert, it may have problems. The CAM/ICAM is supposed to be able to take temperatures up to 158°F, but CAM/ICAMs stored in unventilated shelters in the desert for long periods may have experienced higher temps.



HERE'S HOW
TO CHECK
YOUR
CAM/ICAM
FOR
PROBLEMS...

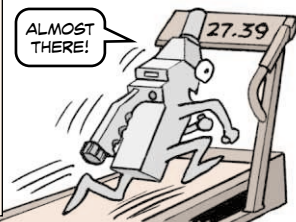
Do the self-test and confidence test. Run the CAM/ICAM for at least 30 minutes and until it passes the confidence test. Run it at least another 5 minutes after the confidence test bars clear.

If three dots are showing on the right side of the display after the WAIT light goes off, install a nozzle protective cap, NSN 6665-01-380-9974, and run the CAM/ICAM for 72 hours. Do the self-test and confidence test again. If the three dots disappear, your CAM/ICAM is back in business. If they're still there, your CAM/ICAM needs to go to direct support for repair.

Of course, you can prevent most CAM/ICAM problems by remembering to run it for 30 minutes every week. And don't store CAM/ICAMs in unventilated sheds in the desert.

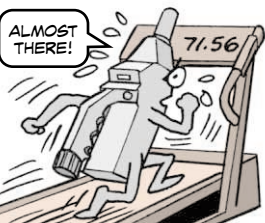
Run the
CAM/ICAM
for at least
30 minutes
and until
it passes
confidence
test

ALMOST
THERE!

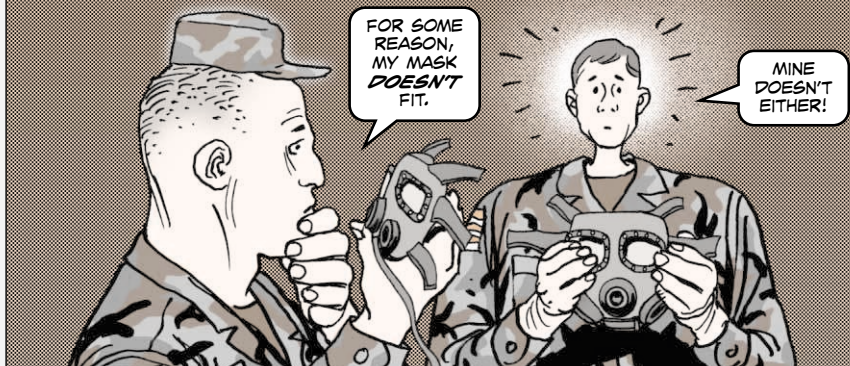


If 3 dots are
showing, put
on nozzle
protective
cap and run
CAM/ICAM
for 72 hours

ALMOST
THERE!



Fitting Solutions for the Hard-to-Fit



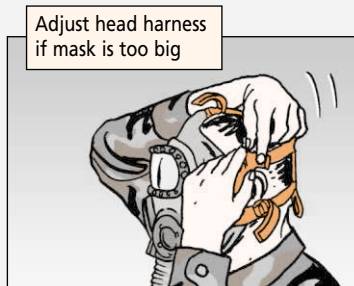
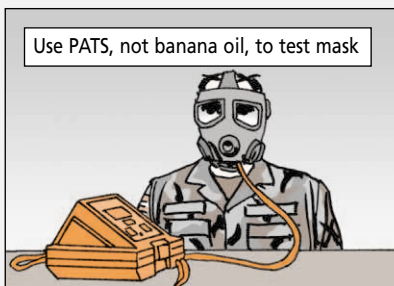
Some soldiers have heads that are bigger or smaller than average, which makes finding a mask that fits them difficult. These fitting solutions may solve your fitting problems, NBC NCOs:

Use the M41 protection assessment test system (PATS) instead of banana oil to test every mask. PATS is much more accurate than banana oil. A mask that flunks with banana oil may pass with a more accurate test. If a small mask is too big to create a good seal, readjust and tighten the head harness, then test with PATS again. Sometimes that's enough for the mask to pass.

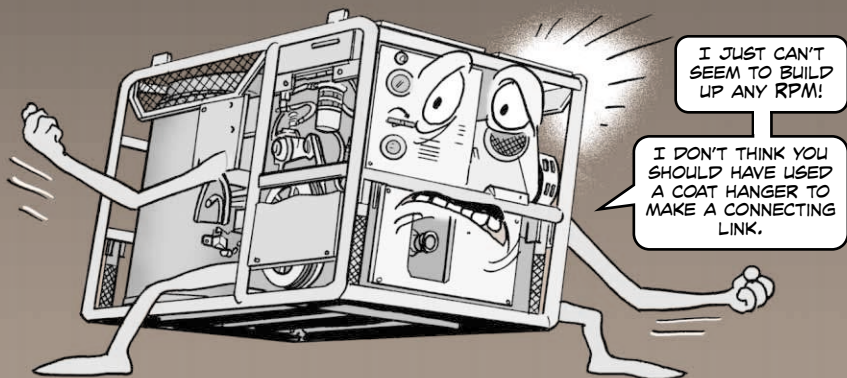
If the mask still doesn't pass, replace the head harness with a skull cap head harness, NSN 4240-01-390-3057, and re-check.

Still no luck? Then check out TB 3-4240-341-20-1, *Chemical-Biological Protective Mask for Hard-to-Fit Service Members*, for further help. If nothing works, tell your CO. He will decide if the soldier is deployable. Sometimes the M45 land warrior mask will fit when other masks don't.

Check out the TB if the M40 or M42 large mask is too small for a soldier, too.



CONNECT TO CORRECT CONNECTING LINK



Dear Editor,

In my role as a roving troubleshooter/inspector for the M17-series decon, I find that 25 percent of the M17 connecting links between the carburetor and the engine vane are either missing or have had a piece of coat hanger substituted.

The result is the engine governor vane gets bent in the engine housing and the M17 engine can't reach high enough rpm to decon properly. There is no replacement vane. The only fix is to buy a whole new engine block for more than \$3,000.

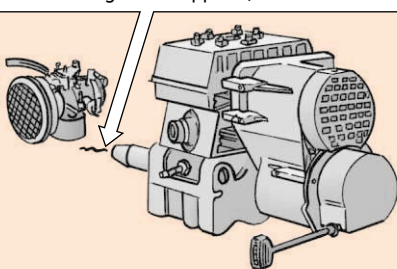
Before you order a new block, have your support remove the head nuts, washers, head gasket, and head to take out the vane. They can try to reshape the vane to its original shape and then reassemble the engine. The nuts must be torqued to 22-23 ft/lb.

Use the correct connecting link, NSN 3040-01-356-6947, and give the reshaped vane a try. If it works, you've saved \$3,000.

Never try to fabricate a connecting link. When a link is damaged or missing, order a new one. The link costs less than \$6. It's not worth risking a \$3,000 engine.

Jim Blackiston
RDECOM Decon/Smoke Team
APG, MD

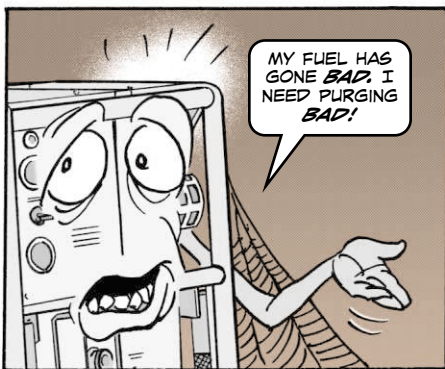
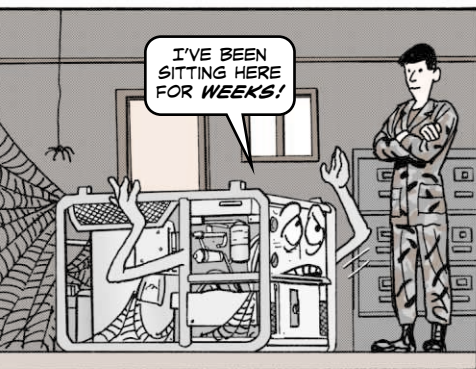
If connecting link disappears, order a new one.



Don't try to fabricate a link.
That damages engine vane.

(Editor's note: Excellent idea that should save decon units time. Thanks, Jim.)

STARTING AFTER SITTING



Dear Editor,

If you try to fire up your M17 decon after it's been sitting idle for weeks, you could end up sending crystallized gas chunks or gummed-up fuel into the fuel nozzles. Then you've got a plugged fuel system and a major cleaning chore ahead of you.

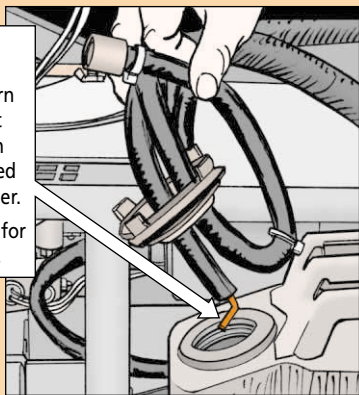
Avoid that chore by purging the old fuel. Get a 2-ft fuel hose that fits over the metal burner return line. Take off the return line hose and connect the 2-ft hose in its place. Put the other end of the hose in a container to catch the contaminated fuel. Stick the burner suction hose in a can of fresh fuel.

Start the engine and run it for one minute. That should get all the old gas out of the system. Dispose of the drained fuel properly.

Pull off the hose you used for purging and reconnect the hose for the burner return line. Make sure the other end of the return hose is in the fuel can with the suction hose like it normally would be.

Now start the engine and see if the burner fires up. If it doesn't, you need to clean the fuel nozzles and solenoid and try again.

Connect 2-ft hose to burner return line and put other end in contaminated fuel container. Run engine for one minute.



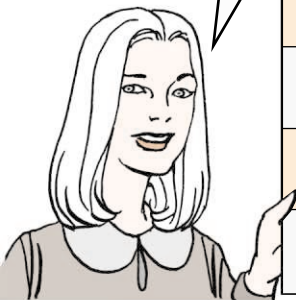
Jim Blackiston
RDECom Decon/Smoke Team
APG, MD

(Editor's note: Another good decon suggestion, Jim. Thanks again.)

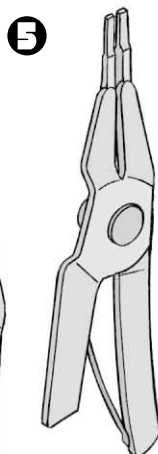
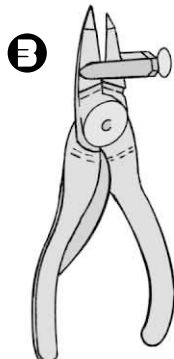
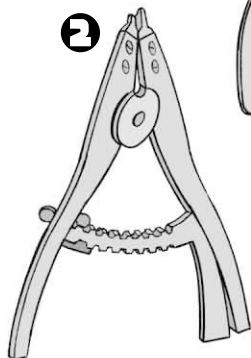
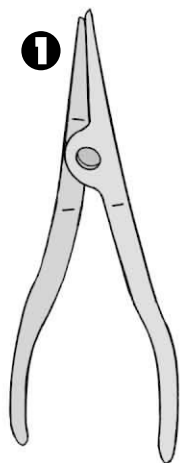
WHICH 'COMMON'

PLIERS ARE WHICH?

IF YOU NEED A CHECKLIST OF THE RETAINING RING PLIERS IN THE NO. 1 COMMON TOOL KIT...



#	NSN 5120-00-	Description	Type - Class - Size		
1	293-0044	external, straight tips, 3.15 to 3.5-in ring size, .115-in dia	2	3	4
2	595-9552	external, straight tips, 3.5 to 6.5-in ring size, .12-in dia tips	2	4	3
3	293-0045	internal, straight tips, 1.75 to 2-in ring size, .07-in dia	1	1	4
4	293-0048	internal, straight tips, 1.02 to 1.37-in ring size, .038-in dia	1	1	2
5	596-1106	internal, straight tips, .25 to .31-in ring size, .022-in dia	1	2	1



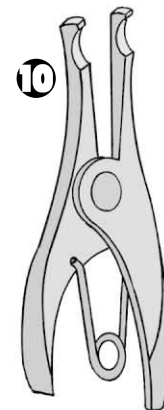
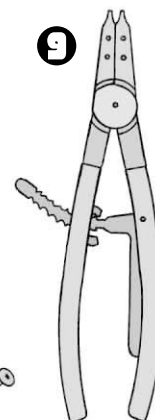
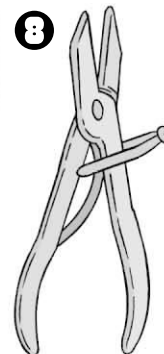
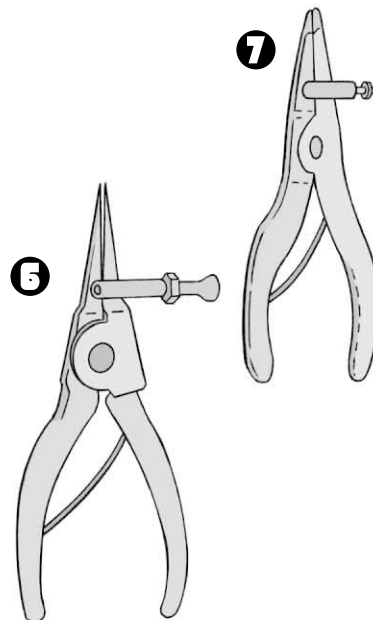
PS 627

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FEB 05

#	NSN 5120-00-	Description	Type - Class - Size		
6	293-0049	external, flat jaws, straight tips, 1.43 to 2-in ring size, .07-in dia	2	2	3
7	288-9717	external, straight tips, .0038 to 1-in ring size, .0038-in dia	2	2	1
8	293-0046	internal, straight tips, 3 to 3.5-in ring size, .09-in dia	1	1	5
9	293-0186	internal, straight tips, 3.15 to 6.5-in ring size, .12-in dia	1	3	3
10	595-9551	external, (automotive) brake key	3	2	1

...YOU CAME TO THE RIGHT PLACE.



PS 627

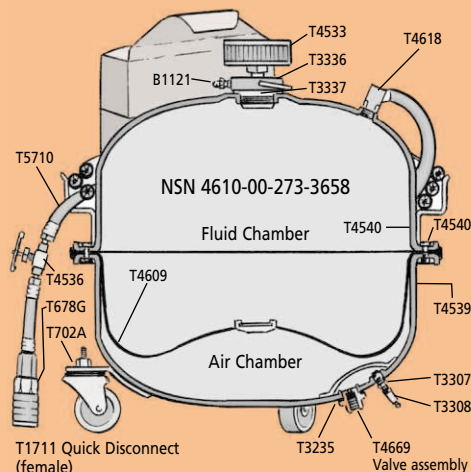
57

FEB 05

Parts for Filler Bleeder

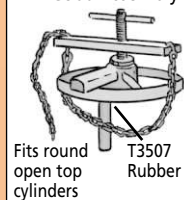
IF YOU NEED PARTS FOR THE FILLER BLEEDER, NSN 4910-00-273-3658, THAT'S PART OF THE NO. 1 COMMON TOOL SET YOU'RE *IN LUCK*.

ALTHOUGH THERE AREN'T NSNs FOR *ALL* FILLER BLEEDER REPLACEMENT PARTS, THERE ARE PART NUMBERS YOU CAN USE TO ORDER PARTS FROM THE MANUFACTURER. HERE ARE THE PART NUMBERS AND AVAILABLE NSNs...



T1711 Quick Disconnect (female)

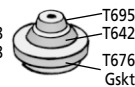
T3506 Assembly



Fits round open top cylinders

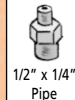
T1792

3/4" -18
1-1/4" -18
1-5/8" -18
threads



Various screw-type openings include M151 Jeep

T682



1/2" x 1/4"
Pipe

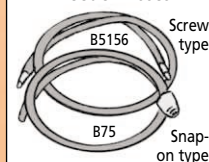
T4384

1/4" -18 Threads



R3311 Gskt
for vertical trucks

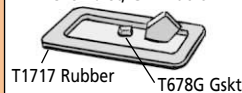
Bleeder Hoses



Screw type

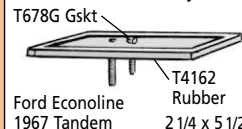
Snap-on type

T1697 Assembly Chevrolet, GM Trucks



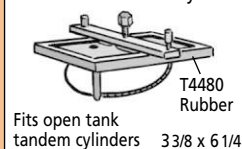
T1717 Rubber
T678G Gskt

T4165 Assembly



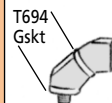
T678G Gskt
Ford Econoline
1967 Tandem
T4162 Rubber
2 1/4 x 5 1/2

T4165 Assembly



Fits open tank
tandem cylinders
T4480 Rubber
3 3/8 x 6 1/4

T678



T694 Gskt
Two 45°
Elbows to
make 90°
Connector

T1712



Quick-disconnect
(male)

Part No.	not Part No.
T642	Rubber gasket for T1792 1 1/2-in screw-type opening (NSN 5330-01-277-4250)
T676	Rubber gasket for T1792 1 5/8-in screw-type opening (NSN 5330-01-279-1180)
T678	45° elbow (2 for 90° angle) (NSN 4730-01-071-7768)
T678G	Fiber gasket for adapters T1697 and T4165 and T5710 hose ends (NSN 5330-01-277-4249)
T684	Combination adapter (1/2 x 1/4-in pipe)
T695	Rubber gasket for T1792 3/4-in screw-type opening
T696	Rubber gasket for T678 and T1712 quick disconnects
T702A	Caster
T1697	Adapter for GMC trucks
T1711	Quick disconnect coupler, female (NSN 4730-01-071-7766)
T1712	Quick disconnect coupler, male (NSN 4730-01-193-2613)
T1717	Rubber for T1697 adapter
T1792	3-thread adapter (NSN 4910-01-071-7769)
T3307	Air stem (NSN 4820-01-071-7850)
T3308	Air chuck (NSN 4730-01-071-7851)
R3311	Rubber gasket for T4348 adapter
T3331	screw and nut
T3335	O-ring for safety release valve
T3336	Tank filler plug
T3337	O-ring for filter plug
T3506	Adapter for universal for open round tanks and 1 1/4- and 1 5/8-in threaded inlets (NSN 4910-01-071-7776)
T3507	Rubber for T3506 adapter
T4162	Rubber for T4165 adapter
T4165	Adapter for Ford Econoline (1967)
T4348	Adapter for vertical truck 1961 and up (3/4-in 18 threads) (NSN 4730-01-371-9914)
T4400	Adapter for all open-tank tandem cylinders (NSN 4910-01-081-9898)
T4480	Rubber for T4400
T4536	Shut-off valve
T4533	Pressure gage (2-in dia) (NSN 4910-01-195-7431)
T4539	Tank shell -32 hole (bottom)
T4540	Tank shell -32 hole (top)
T4609	Diaphragm -32 hole
T4618	90° street elbow
T4669	Safety valve (NSN 4820-01-082-0012)
T5710	Hose assembly (84 inches long)
B75	Bleeder hose (snap-on type)
B1121	Bleeder screw
B5156	Bleeder hose (screw type)

To order by part number, contact Branick Industries, (800) 437-4394,
<http://branick.com>

For more information on the filler bleeder, see TM 9-4910-709-14&P, which you can see at
<https://www.logsa.army.mil/etms/data/A/047133.pdf>



Old M2 Barrel Supports Temporarily OK to Use

Because there is a shortage of barrel supports for the M2 machine gun, the old barrel support with rectangular cooling holes is **temporarily** OK to use. This means you can ignore the barrel support hole size rejection criteria on Page 0020 00-13/14 in TM 9-1005-213-23&P. But the barrel support must still pass the inspection criteria on Page 003500-3/002000-14. The old barrel supports, all of which have cooling holes larger than 1.1775 inch, should be tagged NOT FOR USE WITH M3 AMPLIFIER OR BFA. For more info, contact TACOM's Walter Hilliard at DSN 793-2108/(309) 782-2108 or email: HilliardW@ria.army.mil

M149A2 Trailer Elbow

Use NSN 4730-00-253-5765 to get a 90° elbow for the water trailer. This NSN replaces the parts info shown as Item 16, Fig 28 of TM 9-2330-267-14&P.

WATER TRAILER FAUCET

NSN 4510-01-433-0396 gets the single faucet for the M149A2 water trailer. The NSN shown as Item 1, Fig 28 of TM 9-2330-267-14&P gets the wrong faucet.

TACOM Tactical Trailer Survey

Gripping to your buddy about your trailer may get it off your chest, but doesn't get you an improved trailer. Instead, give the folks who design trailers your thoughts on improvements and challenges by filling out the U.S. Army TACOM Tactical Trailer Survey. This survey is available on-line at <https://saturm.tacom.army.mil/trailersurvey.php> Completing the survey should take only a few minutes to complete. If you have any questions with regard to this survey, please e-mail: AdvancedConcepts@tacom.army.mil

M149A2 Water Tank

The water tank on the M149A2 water trailer is no longer available separately. To get a tank, order NSN 2510-01-091-5167. The NSN includes Items 2 through 29 in Fig 27 of TM 9-2330-267-14&P.

RIFLE SLINGS AND TOP SLING ADAPTERS

TM 9-1005-319-10 gives the wrong NSN for M16 rifle slings. The right NSN is NSN 1005-01-216-4510. The M4 carbine sling is NSN 1005-01-368-9852. Top sling adapters for M16/M4s can be ordered using NSN 1005-00-406-1570. Appendix B of TM 9-1005-319-10 lists the adapter as an Additional Authorized List item.

FMTV PAINT PATTERNS

For the latest info on your FMTV's camouflage paint patterns, go to this website:

<http://peocscss.tacom.army.mil/pmMTV/index.html>

Once you're in the website, click on Logistics-Maintenance, and go to the first sub-bullet that says, Announcements. Scroll down on the right side of the screen to May 00 and click on FMTV Camouflage Paint Patterns. Select the vehicle you need info on.

A20 Heater Parts

The impeller and vent fan motor that make up the A20 personnel heater's vent fan motor assembly, NSN 6105-01-498-3867, can now be ordered separately. The NSN for the impeller is 4140-01-503-2369. But you can save a lot if all you need is the motor, NSN 6105-01-503-2368.

ROPE LOCK NSN

Order NSN 4030-01-477-0524 to get a rope lock that keeps a tent rope, loose gear, flight line or canvas cover snug. The rope lock doesn't need continual adjustments once it's secured or fastened. This NSN gets a package of 12 rope locks.

Windshield Wiper Actuator NSN

Use NSN 1680-01-483-2097 to order the windshield wiper actuator for your Chinook helicopter. The NSN shown for Item 7 in Fig 396 of TM 55-1520-240-23P-3 is wrong. Make a note until the TM is updated in the next change.

Finding NSNs for Unit Patches

Need to order colored or subdued unit uniform patches but don't have an NSN? Go to DLA's Clothing and Textiles website, Warfighters Clothing Support webpage at:

<http://ct.dscpl.dla.mil/Ascot/>

Search for SHOULDER SLEEVE INSIGNIA and scroll through the nearly 750 patches for the one belonging to your unit. Click on UNIVERSAL PRODUCT CODES to find the NSN.

Order M2 Recoil Buffer by Parts

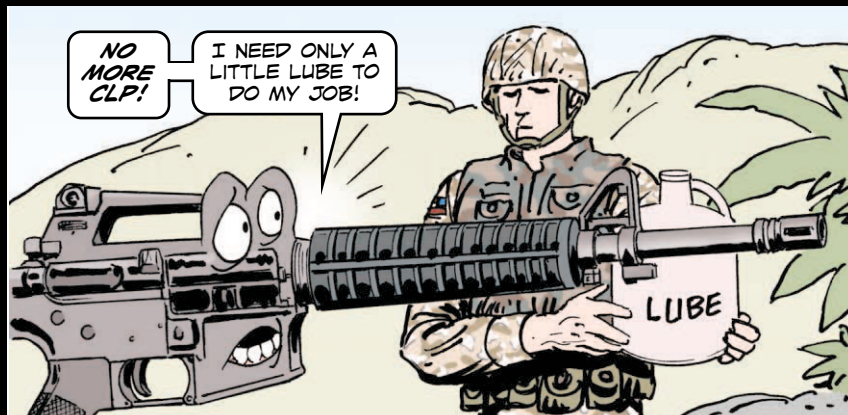
Armors, your support can no longer order the M2 machine gun's recoil buffer as an assembly. Its SMR code has been changed to AFFFF, which means it must be ordered with the parts listed in Fig 6 of TM 9-1005-213-23&P. Make these changes on Page 0049 00-3/4:

- The SMR code for Item 6, barrel buffer body assembly, is now PAFZZ and its NSN is 1005-00-726-6835.
- The SMR code for Item 4, machine buffer accelerator, changes to PAFZZ.
- The correct NSN for Item 1, barrel buffer assembly, is NSN 1005-00-141-1235.

DISTRIBUTION: To be distributed in accordance with the initial distribution number (IDN) 340312, requirements for TB 43-PS-Series.

Would You Stake Your Life ^{right now} on the Condition of Your Equipment?

Too much lube is as bad as too little

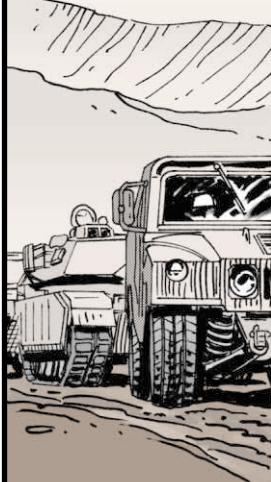


Lots of lube causes lots of carbon!



See -10 TM for lubing info

YOU BET YOUR LIFE!



Keeping up on your vehicle's preventive maintenance, day in and day out, is no easy task. So is PM really worth all the extra effort?

You bet your life!

Your vehicle is exposed to some of the worst conditions on the planet. Rocky terrain, talcum-powder dust and sand, clinging mud, freezing temperatures and desert heat take a terrific toll on your vehicle. Yet despite all of these conditions, your equipment is expected to be ready to go at all times.

Since it's impossible to design equipment that can take that abuse and still perform, you've got to apply the great equalizer—PM. Check for leaks, loose fittings and broken wires before each day's run. Fix what you can and report what you can't.

SO WHEN YOU'RE ASKED
IF YOUR EQUIPMENT IS
READY TO ROLL, YOU
CAN ANSWER...



YOU BET YOUR LIFE!

