



**THE
PREVENTIVE
MAINTENANCE
MONTHLY**

ISSUE 631 JUNE 2005

TB 43-PS-631, The Preventive Maintenance Monthly, is an official publication of the Department of the Army, providing information for all soldiers assigned to combat and combat support units and all soldiers with unit maintenance and supply duties. All information published has been reviewed and approved by the agency responsible for the equipment, publication or policy discussed. Application of the information is optional with the user. Masculine pronouns may refer to both genders.



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

Just write to:

MSG Half-Mast
PS, the Preventive Maintenance Monthly
USAMC LOGSA (AMXLS-AM)
5307 Sparkman Circle
Redstone Arsenal, AL 35898-5000

Or e-mail to:

psmag@logsa.redstone.army.mil or
half.mast@us.army.mil

Internet address:

https://www.logsa.army.mil/psmag/pshome.html

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PS

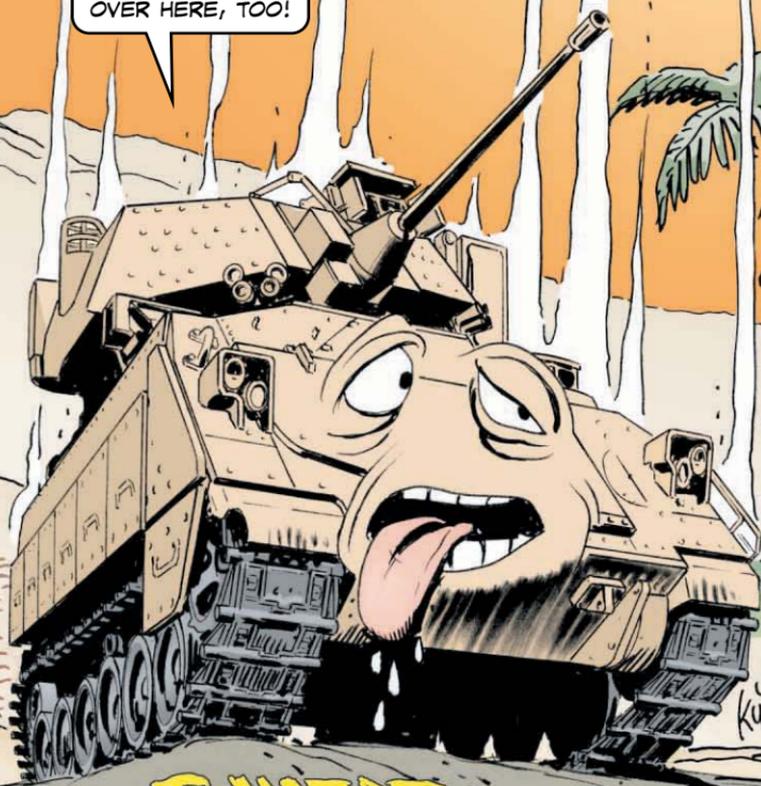
June
2005

THE
PREVENTIVE
MAINTENANCE
MONTHLY

TB 43-PS-631

Approved for
Public Release;
Distribution is
Unlimited

HEY, GUYS, I
NEED SOME HOT
WEATHER PM
OVER HERE, TOO!



HOT WEATHER ISSUE



Try to remember that when you're getting ready for the next hot turn-around. Yes, there's plenty of danger outside the wire, but what about the risk you're taking if you don't do PM?

That HMMWV or Bradley you're driving or commanding or riding in is only as good as its maintenance—and someone has to do that PM. If it's your neck on the line on patrol or in a convoy, it ought to be you.

DID YOU CHECK OIL LEVELS IN THE ENGINE AND TRANSMISSION BEFORE YOU TORE OUT THE GATE?	DO YOU WANT TO GET MILES FROM NOWHERE AND HAVE YOUR VEHICLE BECOME A SITTING TARGET BECAUSE THERE WAS NO OIL IN IT?	WHAT OTHER LITTLE THINGS DO YOU LET SLIDE BECAUSE IT'S LATE OR YOU'RE IN A HURRY?	ARE YOU GOING TO BET YOUR LIFE ON THE CHANCE THAT SOMEONE ELSE HAS MADE THOSE LAST-MINUTE CHECKS?
YOU BET!	HECK NO!	NOT A ONE!	NO WAY!



It's tough enough out there without making more problems for yourself. Since you gear up with the most protection you can get before you go on duty, doesn't it compute that your vehicle needs the most protection you can give it?

Your vehicle does its job protecting you from external threats, but the only protection your vehicle has from internal threats is YOU!

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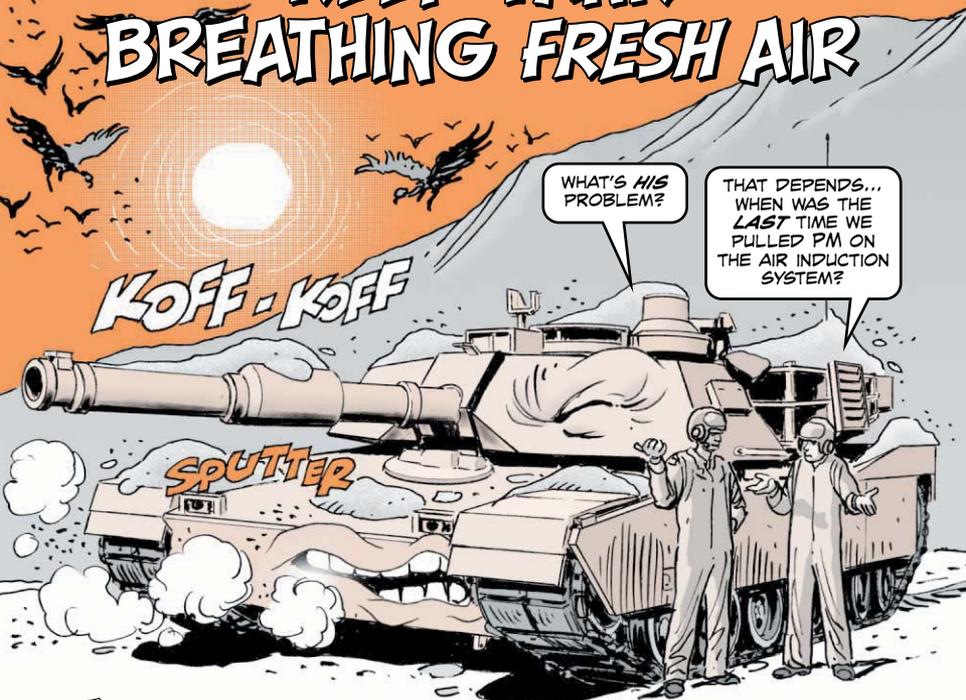
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 Internet address:
https://www.logsa.army.mil/psmag/pshome.html

By order of the Secretary of the Army:
PETER J. SCHOOMAKER
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SANDRA R. RILEY
 Administrative Assistant to the Secretary of the Army
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KEEP TANK BREATHING FRESH AIR



The air induction system on your tank is like a giant vacuum cleaner—it sucks up anything that gets close.

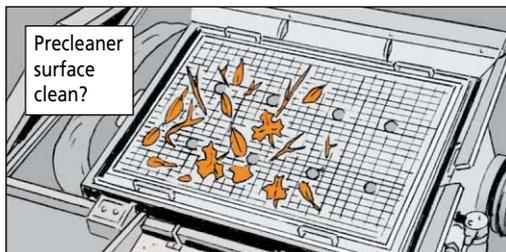
That's the reason for your tank's seals and filters. They screen out sand and dirt so that only clean air can get through. They also keep out larger debris that can dent, crack or break compressor blades.

If you want them to continue to stop potential damage, pay special attention to these important PM points:

Precleaner

Trees and bushes make a good hiding place for your tank, but they also result in clogged air precleaners.

Leaves that fall on or near the air inlets get sucked onto the precleaner. Enough leaves will cut off airflow and lower power output.

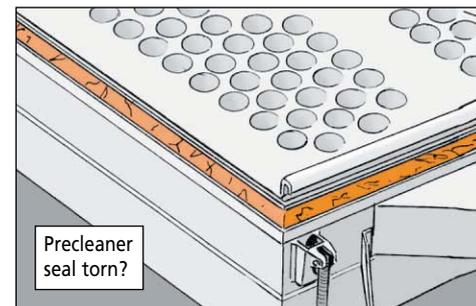
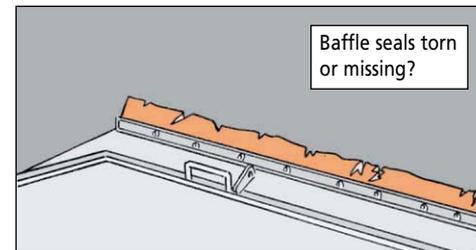


If the AIR CLEANER CLOGGED FILTER light comes on, make the precleaner one of your first checks.

While you're there, take a close look at the baffle seals. Cracked, torn or missing seals allow dirt and oil from the engine to clog the air cleaner assembly element strainers.

NSN 5330-01-225-6106 gets a new short seal. The longer seal is NSN 5330-01-320-3696.

Next, eyeball the bottom pre-cleaner seal. If the seal is missing, loose or torn, replace it. There are two different seals available: NSN 5330-01-166-5798 and NSN 5330-01-329-6614. The seal you use depends on the type of pre-cleaner in your tank. Check your -24P-1 TM to match the correct seal with your pre-cleaner.



A NEW SEAL IS USELESS, THOUGH, UNLESS YOU PUT IT ON RIGHT. HERE'S HOW...



1. Clean off the old seal and adhesive completely. To do it right you'll need a lot of elbow grease—combined with a rag, dry cleaning solvent and a wire brush.
2. Spread adhesive, NSN 8040-00-664-4318, in the seal groove. Use enough to hold the seal, but not so much that it squeezes out around the seal. The right amount of adhesive keeps the seal from sticking to the airbox frame and ripping loose every time you remove the pre-cleaner.
3. Apply a very light coat of adhesive to the bottom of the new seal and press it into the groove with your finger. Take extra care not to twist the seal as you put the rounded side in the mounting groove. A twisted seal is not airtight.
4. Let the adhesive dry completely before you put the pre-cleaner back in place. Put a dab of adhesive on a piece of paper. When it's dry, the seal should be, too.

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Skirt Seals

If you're having problems with clogged air cleaner intake filter elements (V-packs), missing fender skirt seals could be the cause. Those rubber strips are there to seal the area between the skirts and hull.

Missing seals let dirt and dust get sucked inside the fender skirts. The engine pulls the dirt into the intake system where it clogs up the V-packs.

All the seals are important, but pay special attention to the seals at skirts 4, 5 and 6 on the left side of the vehicle. These seals are closest to the air intake grills and can let in the most dirt.

NSNs for the seals are listed in Figs 261-264 and 266 of TM 9-2350-255-24P-1 (Oct 92) for the M1, Figs 263-266 and 268 of TM 9-2350-264-24P-1 (Sep 01) for the M1A1, Figs 242-245 and 247 of TM 9-2350-288-24P-1 (Jul 01) for the M1A2 and Figs 241-244 and 246 of TM 9-2350-388-24P-1 for the M1A2 SEP (Feb 01).



V-Packs

The three V-packs on all tanks not equipped with the pulse jet system (PJS) should be removed, cleaned and inspected after every operation. V-packs on PJS-equipped tanks are self-cleaning.

The preferred cleaning method is the V-pack cleaning wand. You'll find info on the wand in the "unusual conditions" section of your -10-2 TM's operating instructions.



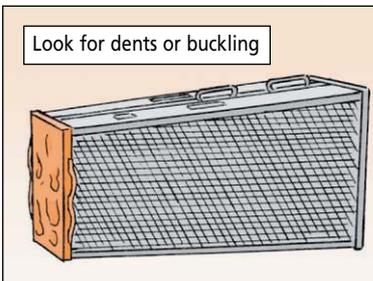
If the cleaning wand isn't available, shake the V-packs, making sure not to hit them against anything harder than your hand. Brush dirt and dust from the elements with your hand. Then, have the elements properly cleaned by your unit maintenance folks as soon as possible.



WHILE THE V-PACKS ARE OUT, INSPECT THE PLENUM BOX AND ELEMENTS FOR POTENTIAL PROBLEMS...

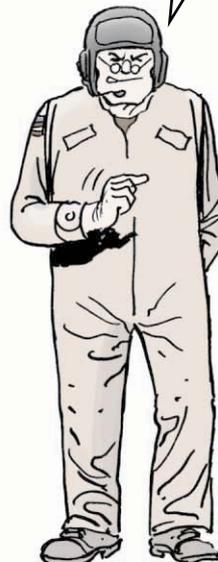


- Eyeball the bead on the front face of each V-pack element for dents or sharp edges that could cut the plenum box seal. Then check for buckling on the rear face of the element. Either problem means you need a new V-pack.
- Look for broken welds and cracks in the plenum air box. Dust trails along the welds and seams of the box are a good sign of a leak, so tell your mechanic.
- Look for torn, cracked or missing plenum box seals. A missing seal makes your tank NMC.



Those three seals also deteriorate over time, so check each one by measuring the depth of the depression made by the V-pack bead in the seal. If the depression measures more than 3/16 inch, get the plenum box seal replaced.

HERE'S ANOTHER WAY TO CHECK THE SEALS...



1. Apply chalk to the raised portion of the V-pack bead.
2. Install the V-pack and secure the holding clamp.
3. Remove the V-pack and eyeball the plenum box seal. There should be a complete chalk line around the seal from contact with the V-pack bead.



If the chalk line is broken, the V-pack may not be sealing correctly. So, get your mechanic to install a new seal, NSN 5330-01-098-6807. Remember to wipe the chalk off the V-pack bead and seal after testing.

This method works especially well if you are putting new V-packs in without replacing the plenum box seals. But, it's a good idea to put in new seals along with the new V-packs whenever possible.

HEAT IS HARD ON TRACK



It's a fact of life: The hotter it gets, the harder it is on your Bradley and MLRS T157I track.

When operating on improved road surfaces at increased convoy speeds (faster than 25 mph) and when temperatures are at or above 100°F, track bushings tend to soften. That allows the bushing pin to move around and extend out of the bushing bore. Protruding pins make your vehicle NMC.

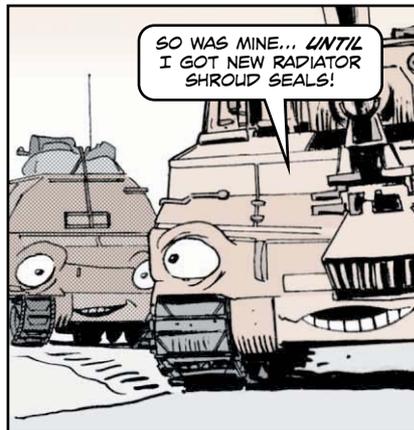


A new section entitled "Operating Vehicle in Extreme Heat" will soon be added to the operator's TMs. Until the TMs are updated, Maintenance Advisory Message 05-003 provides the following guidance when operating on paved roads at convoy speeds faster than 25 mph or when temperatures have reached or exceeded 100°F:

Crewmen should check for track pin movement and inspect track tension hourly, or as soon as the tactical situation permits.

If you find protruding pins, you can—as a BDAR fix only—hammer the pins back into place and continue operating until the vehicle reaches a safe location for repair. However, you must mark the bad bushing so that it is easily identified when repairs are possible. The best way to do this is by scribing a mark on the metal surface of the affected shoe with a screwdriver.

KEEP THE COOL AIR FLOWING

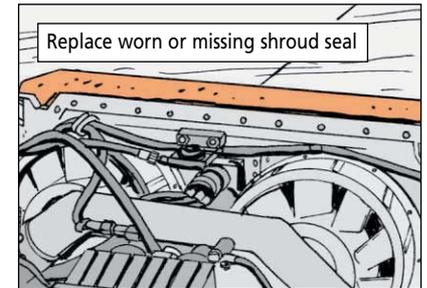


Mechanics, if you've been getting complaints of a hot-running engine in an M109-series howitzer or M992-series ammo carrier, make the radiator shroud seals one of your first checks.

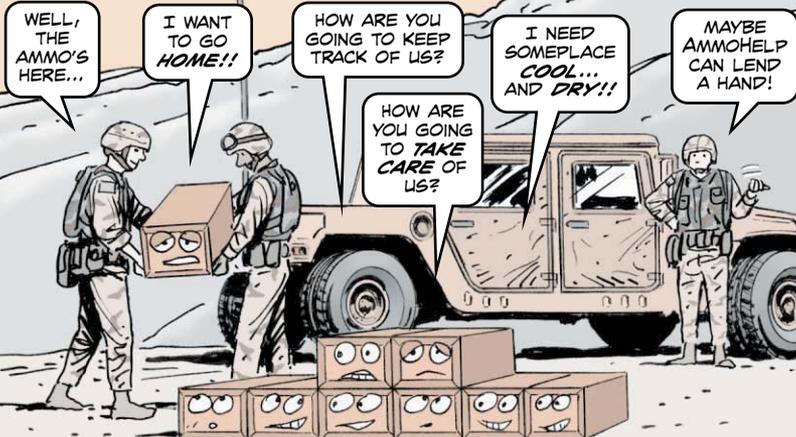
Those seals form an air barrier between the radiator and fan tower. That barrier increases air flow across the radiator to keep the engine cool. If seals are missing, torn, squashed or mangled, air escapes around the sides of the radiator. Engine temperature goes up.

Have your mechanic check out the shroud seals next time the pack's out. If the seals are missing or damaged, he'll order new ones.

NSN 5330-00-102-9927 gets a seal for the right or left side. NSN 5330-01-314-1439 gets a top or bottom seal for the M109A6 and the M992A2. A top or bottom seal for the M109A2-A5 comes with NSN 5330-00-899-5220.



AmmoHelp Has the Answers



Need help with a question when dealing with ammunition-related problems? Not sure where to turn?

Sources of valuable advice include a Quality Assurance Specialist (Ammunition Surveillance), ammunition supply point personnel, range safety, a military ammunition specialist (MOS 55B), an ammunition LAR, and various publications including ARs, TMs and FMs.

Still no luck? Try the Defense Ammunition Center's (DAC) AmmoHelp website. This 24-hour help system provides a one-stop clearing house for soldiers and civilians seeking answers to ammunition-related questions that can't be readily found elsewhere.

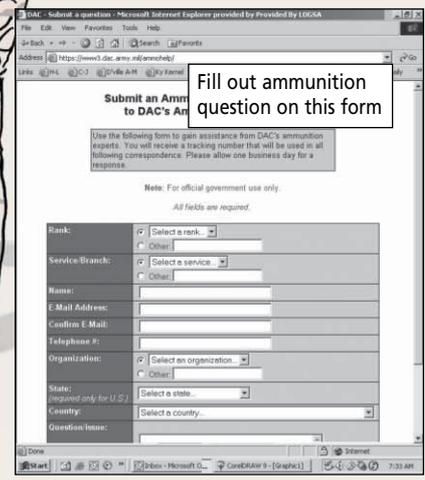
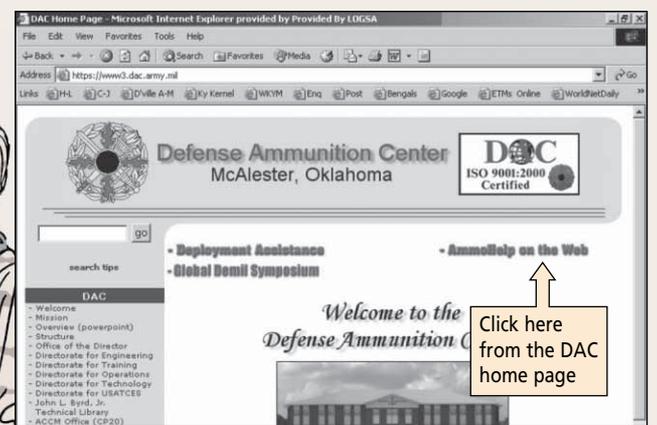
AMMOHELP CAN HELP WITH AMMUNITION TOPICS SUCH AS...

- Administration
- Ammunition logistics (supply, transportation, and storage)
- Ammunition surveillance
- Ammunition training and training courses
- Engineering (drawings, testing, and equipment)
- Explosives safety
- Cataloging
- Material management
- Physical security
- Demolition/demil technology

THERE ARE **THREE** WAYS TO ASK/SUBMIT A QUESTION...

1 THE **PREFERRED** METHOD IS VIA THE INTERNET AT DAC'S HOME PAGE: <https://www3.dac.army.mil>

ONCE THERE, SELECT THE AMMOHELP ON THE WEB HOT BUTTON AND FILL OUT THE FORM.



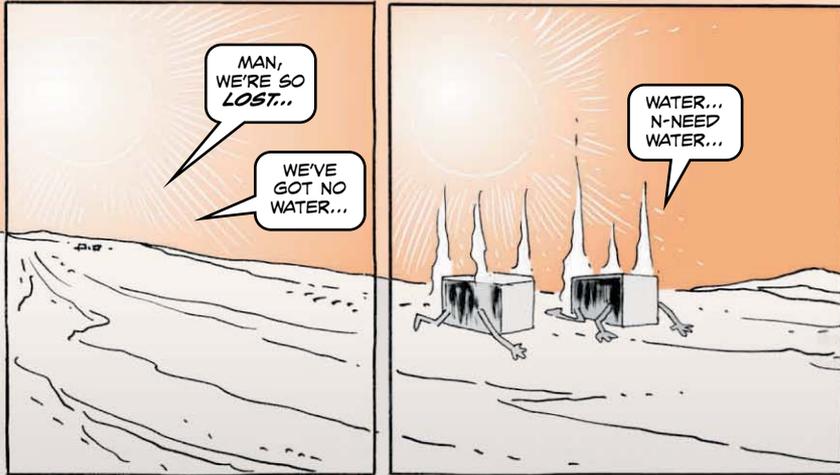
2 YOU CAN FORWARD AN EMAIL QUESTION BY SENDING IT TO: **AmmoHelp@dac.army.mil**

3 YOU CAN ALSO ASK YOUR QUESTION BY CALLING TOLL-FREE (877) 668-2840.

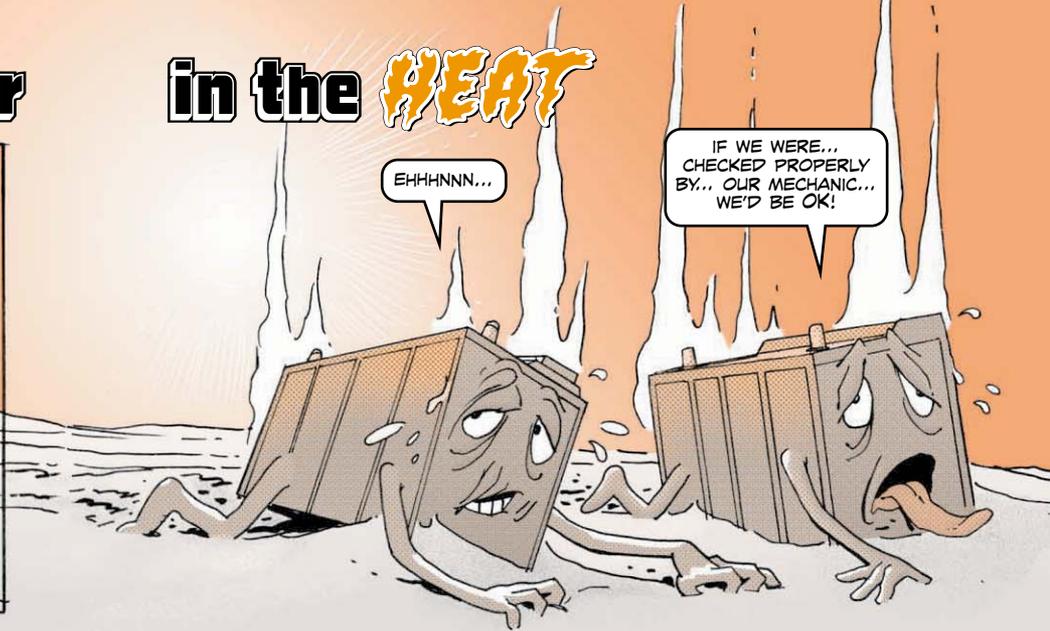
AmmoHelp is intended for official government use only. Normally only questions received from a government domain (.mil or .gov) are answered, so make sure you provide a government email address for responses. Most answers are provided within two working days.

All questions and responses are collected in a local database. The information is periodically reviewed to identify specific problem areas as they surface in the field.

Providing Power



in the HEAT

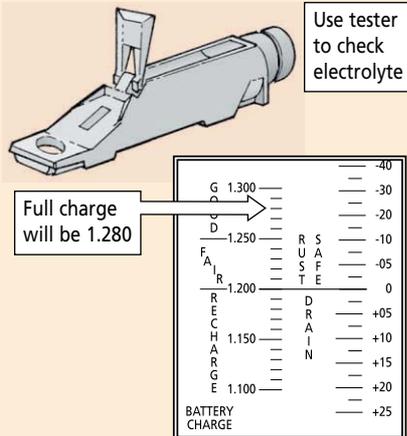


Working in the heat means drinking lots of water so your body stays hydrated. So you drink lots of water. Working in the heat also affects the water in lead-acid batteries. So you have to keep them hydrated, too.

Where Does It Go?

Normal charging causes some water in the electrolyte to evaporate. But overcharging drives off much more water. Add in the evaporation caused by high temperatures and your batteries can go dry quickly.

Just adding water won't always be enough to save your batteries. First off, the batteries need to be checked by your mechanic using the optical battery/antifreeze tester, NSN 6630-00-105-1418. A fully-charged battery should give specific gravity readings of 1.280.



Then operators should eyeball the electrolyte levels at least once a day if the temperature stays above 90°F for a week. The level should be at least ½ inch above the top of the battery plates. If the filler hole has a lip or an indicator at the bottom, it should be filled to that.



Adding Just Enough

More is not better, though. If batteries are filled to the rim, the electrolyte will boil out through the vent caps when the battery charges. Use the battery filler syringe, NSN 6140-00-808-7325, to remove any excess.

Make sure, too, that the vent caps are open so that gases can escape. If the vents are clogged, the battery can explode.

If you find a battery that needs water, let your mechanic know ASAP. The best water is distilled water. NSN 6810-00-682-6867 gets a gallon and NSN 6810-00-356-4936 gets a 5-gal jug.

ELECTROLYTE LEVEL LOW

ELECTROLYTE LEVEL OK



THIS BIRD'S EYE VIEW SHOWS EYE-SHAPE

Another good choice is battery water. It has no more than 100 parts per million of impurities, and costs a little less than distilled water. Get a gallon with NSN 6810-00-286-3783 and a 5-gal jug with NSN 6810-00-297-9540.

Ground water has minerals in it that can kill batteries, so don't use it. If there's no other choice, plain drinking water (not mineral water) can be used.

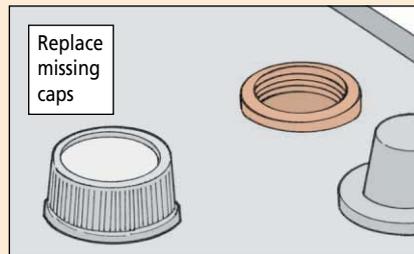
Use a battery syringe or a battery gravity filler, NSN 6140-00-635-3824, for precise filling and help in avoiding overfilling. Both are in the No. 1 Common shop set.



Tight and Right?

Make sure the caps are in place on the fill holes. If you need caps, ask your mechanic for some from an unserviceable battery.

Mixing batteries of different types is OK, as long as you don't mix maintenance-free batteries with the older style. It's best to keep 6TLs, 6TLFs and 6TMFs together.



No Water!



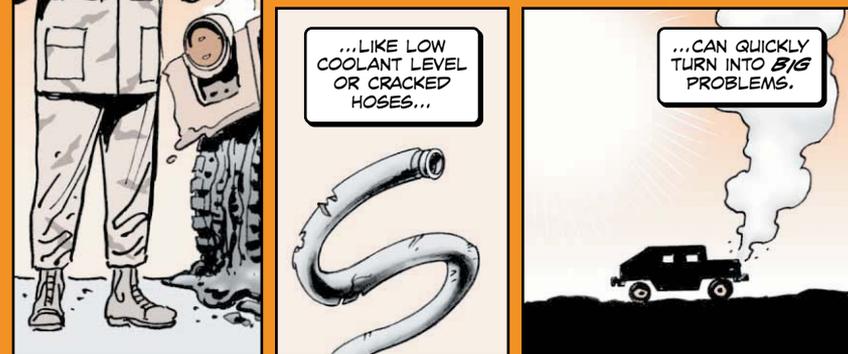
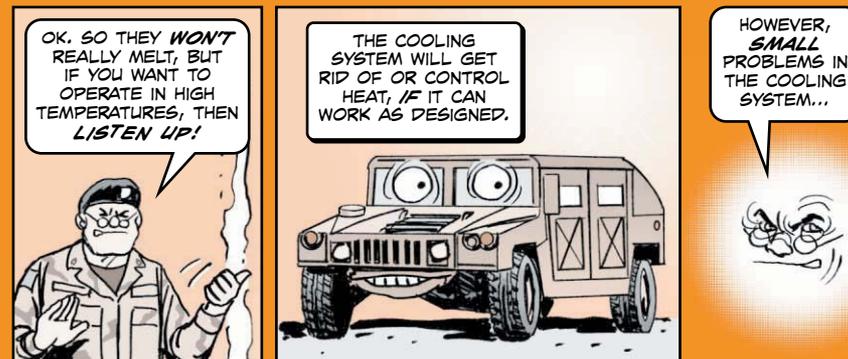
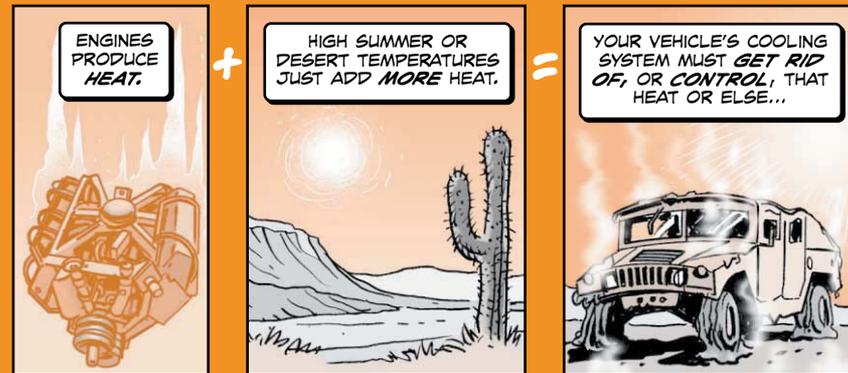
DO NOT ATTEMPT TO ADD ANY FLUID TO HAWKER (AGM), OPTIMA OR GEL-TYPE BATTERIES.

THIS WILL CAUSE PERMANENT IRREPARABLE DAMAGE TO THE BATTERIES AND POSSIBLY YOUR EQUIPMENT, TOO.



PS
END

CONTROL THE HEAT





HERE'S HOW TO FIX THOSE PROBLEMS...

... WHILE THEY'RE STILL **SMALL!**

CHECK THE COOLANT LEVEL OFTEN. BEFORE YOU ROLL, WHEN THE ENGINE IS STILL COOL, MAKE SURE THE COOLANT IS UP TO THE MARK.

Check coolant level in radiator...



...or surge tank



IF IT'S LOW, ADD COOLANT TO BRING THE LEVEL UP. NEVER OVER-FILL, THOUGH. WHEN THE ENGINE HEATS UP, THE EXTRA COOLANT WILL OVERFLOW.

ADD COOLANT **ONLY** WHEN THE ENGINE IS COOL. ADDING COOLANT TO A HOT ENGINE CAN CRACK THE ENGINE BLOCK OR BURST A SEAM IN THE RADIATOR.



DUDE! WAIT FOR ME TO COOL DOWN!

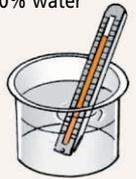
A 60-40 MIX IS BEST, BUT MAINTAIN **AT LEAST** A 50-50 MIX OF ANTIFREEZE AND WATER TO RAISE THE BOILING POINT OF THE COOLANT SO IT WON'T BOIL AWAY LIKE PLAIN WATER.

Plain water



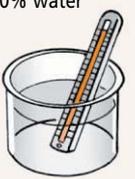
BOILING POINT 212°

50% antifreeze
50% water



BOILING POINT 226°

60% antifreeze
40% water



BOILING POINT 230°

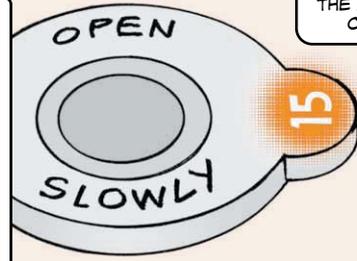
CHECK THE PROTECTION LEVEL WITH TESTER, NSN 6630-00-105-1418.

USE DISTILLED WATER, NSN 6810-00-356-4936, IN RADIATORS IF IT'S AVAILABLE. IF NOT, USE POTABLE WATER. GROUND WATER CONTAINS CHEMICALS THAT WILL **CLOG** UP THE RADIATOR.

REMEMBER! USE ONLY **CLEAN** WATER FROM A **RELIABLE** SOURCE!

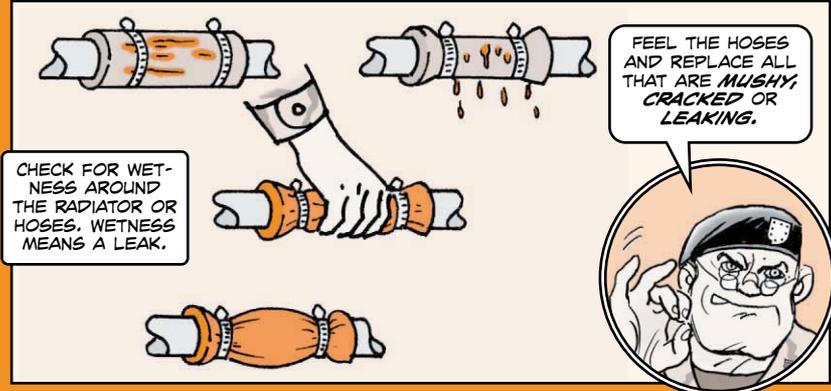


WHILE YOU'RE ADDING COOLANT, TAKE A CLOSE LOOK AT THE RADIATOR CAP. MAKE SURE IT IS IN TOP NOTCH CONDITION AND IS THE **RIGHT** CAP FOR YOUR ENGINE.



MAKE SURE YOU'RE USING THE **RIGHT** CAP!

CHECK THE PRESSURE RATING ON THE CAP WITH THAT LISTED IN YOUR TM.

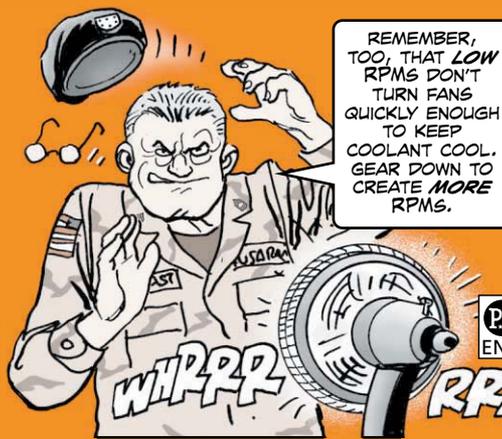


FEEL THE HOSES AND REPLACE ALL THAT ARE **MUSHY, CRACKED** OR **LEAKING**.

CHECK FOR WETNESS AROUND THE RADIATOR OR HOSES. WETNESS MEANS A LEAK.



DURING OPERATION, KEEP AN EYE ON THE TEMPERATURE GAUGE. IF IT GOES ABOVE THE NORMAL OPERATING RANGE NOTED IN YOUR TM, SHUT DOWN AND FIND OUT WHY.



REMEMBER, TOO, THAT **LOW** RPMs DON'T TURN FANS QUICKLY ENOUGH TO KEEP COOLANT COOL. GEAR DOWN TO CREATE **MORE** RPMs.

PS END

Steady at 40

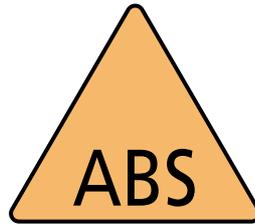


Drivers, the highway speed limit is still 40 mph unless your M939-series 5-ton truck has the MWO 9-2320-272-55-1 applied.

TACOM Safety-of-Use Message (SOU) 00-018 (Jul 00), *Resumption of Safe Operating Speeds for M939 Family of Vehicles Following Retrofit of Anti-lock Braking System (ABS)*, authorizes you to resume normal operating speeds only after MWO 9-2320-272-55-1 is applied.

Application of ABS to your trucks rescinds the requirement for MWO 9-2320-272-20-7 and removes the brake proportioning valve installed during that modification. Never add MWO -20-7 to a truck that has been modified by MWO -55-1. It's not needed then.

Look for decal on windshield...



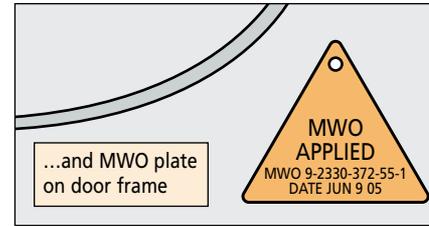
MPH Speed Limit



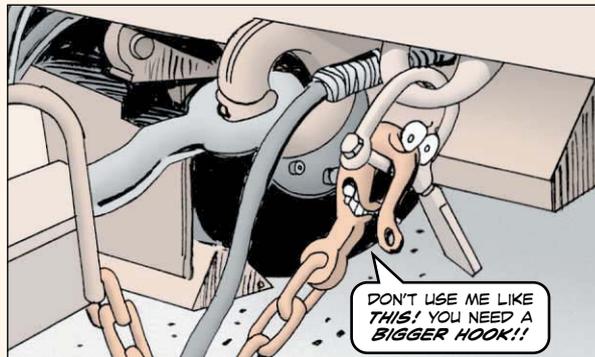
Trucks with the ABS MWO have a yellow triangular decal with black lettering "ABS" in the lower left corner of the windshield. Of course, there'll be a regular MWO tag on the cab reinforcement just inside the driver's door, too.

MWO 9-2320-272-20-7, which still has not been applied to some vehicles in the fleet, installed a brake proportioning valve kit to prevent front-wheel lockup during heavy braking when driving on slick surfaces with little or no load on-board.

TACOM SOUM 98-07 (Apr 98), *Safe Operating Speeds for M939 Series Trucks*, dropped speeds to 40 mph and outlined safe driver practices. It is still in effect until MWO -55-1 is installed.



DON'T HAVE A SHACKLE FIT

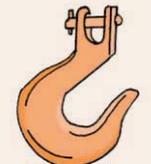


When your tactical vehicles get heavier towing shackles to comply with air transport regulations, your trailer safety chains will need larger hooks to fit over them.

Heavier towing shackles...



...need new chain hooks



Forget the easy way out, like putting smaller shackles on the trucks so your old chain hooks will fit. That defeats the purpose of the safety chains.

Replace the old chain hooks with a larger one, NSN 4030-01-438-1803. That hook works on the larger shackles and is easy to install.

Cut the trailer chain's last link or remove its removable link. Discard the old hook and install the new one with its pin and cotter pin.

YOUR LATEST TM CHANGES RIGHT HERE

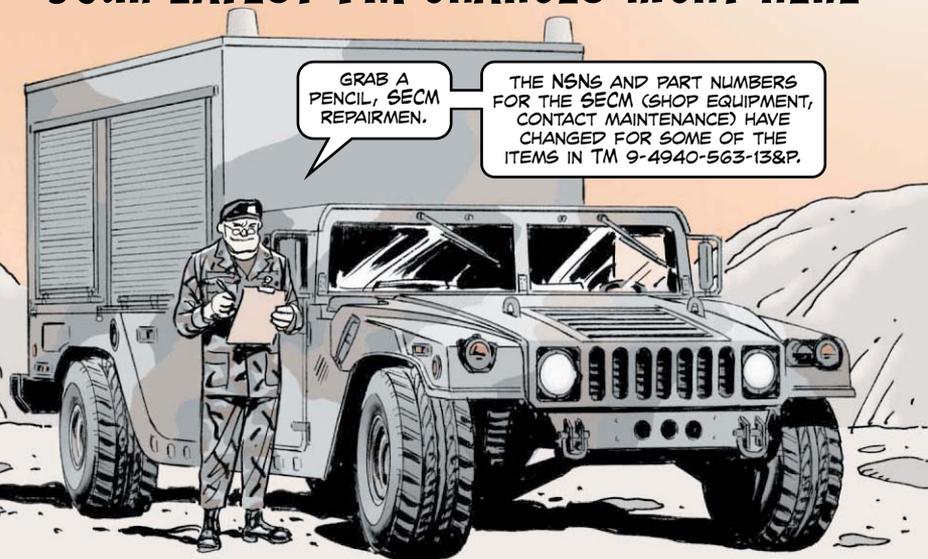


Fig B-8

Item 13: cabinet, storage, back, modified;
NSN 5140-01-386-1408; PN TRX4113

Fig B-12

Item 11: pulley, crankshaft;
NSN 3020-01-188-3884; PN 612-6

Fig B-15

Item 10: hose end, male;
NSN 4730-01-446-9975; PN 11B256021
Item 11: ferrule, hose;
NSN 4730-01-435-9946; PN 11B256020

Fig B-16

Item 60: cover, junction box
(previously called "load center");
NSN 5975-01-507-1855; PN 11B254103
Item 169: DC/AC power inverter (UOC AQ6)
(previously called "AC/DC power inverter");
NSN 6130-01-492-3067; PN DUI-24/6000HEPHQ

Fig B-17

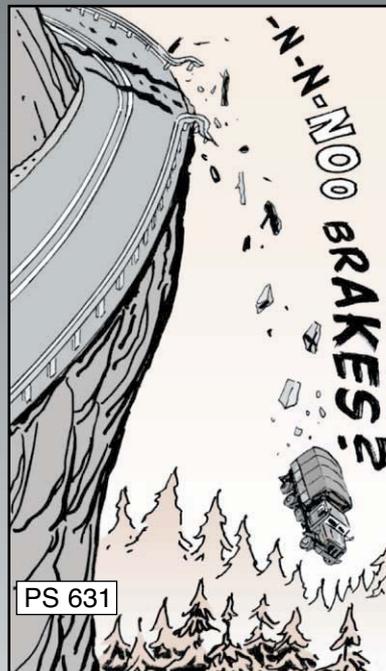
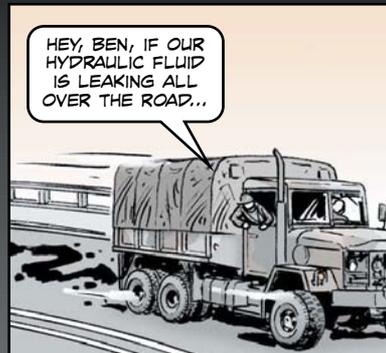
Item 5: screw, tapping;
NSN 5305-01-432-9158; PN 15-065410-100

Fig B-18

Item 16: relay, electromagnetic;
NSN 5945-01-438-7443; PN EA325NHHD
Item 24: conduit, outlet;
NSN 5975-01-432-4124; PN 11B254101
Item 25: cover, electrical, GFI;
NSN 5925-01-231-5423; PN GF5352-IC
Item 26: cover, outlet;
NSN 5975-01-452-7053; PN WP26



DITCH OLD SWITCH



Some deuce-and-a-halves are still using the old hydraulic fluid-operated brake light switch.

That's not good.

The switch can blow an electrical connector pin, dumping all your hydraulic fluid. That means no brakes!

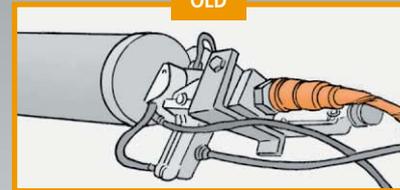
Replace the old switch with an air-operated switch, NSN 5930-00-789-6192. TM 9-2320-361-20 shows the new system. To install the switch, you need a conversion kit, NSN 2530-01-105-5025.

The kit brings the switch, installation instructions, mounting hardware and a ½-in elbow. Some trucks need a ¾-in elbow, NSN 4730-00-289-0155, so measure the tubing to find out which elbow you need.

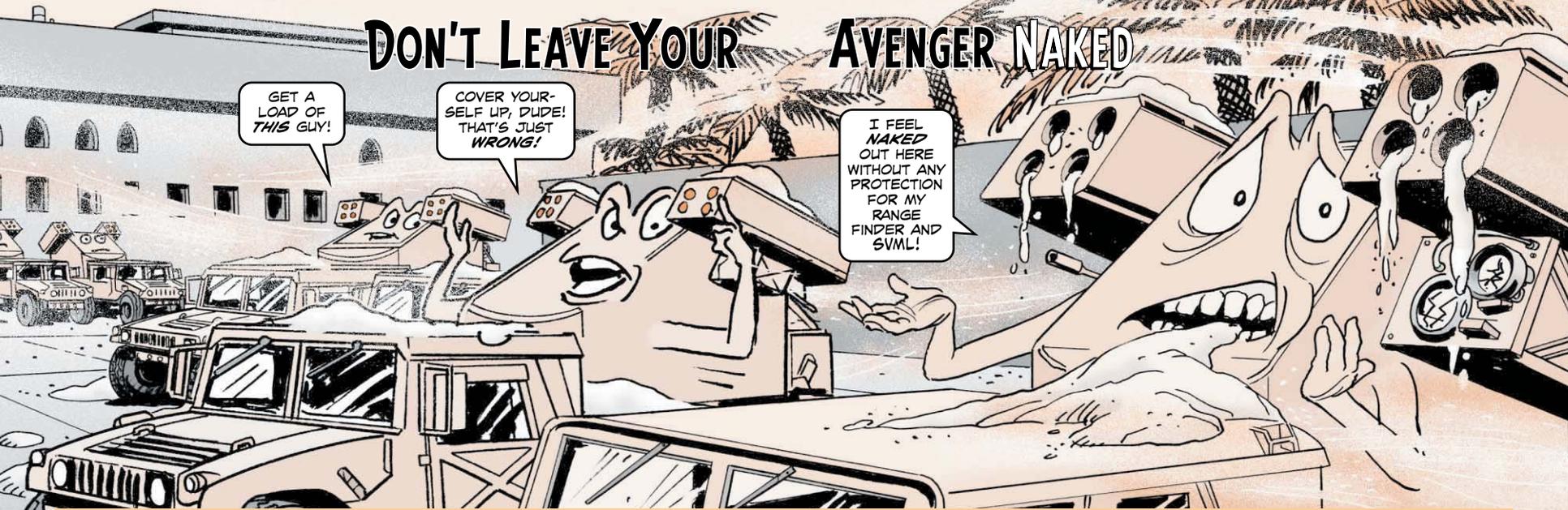
NEW



OLD



DON'T LEAVE YOUR AVENGER NAKED

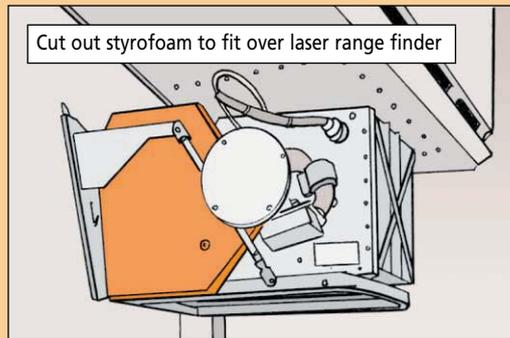


If you walk through almost any Avenger motor pool, you'll see missile systems with no protection for the range finder and no caps for the standard vehicle mounted launcher (SVML). That leaves an Avenger naked to the elements.

Blowing sand can pit and eventually ruin the range finder's expensive lenses. On the road, tree limbs and thrown gravel can crack the lenses.

Without caps in the ends of the SVML, dirt gets inside the launcher and messes up cryogenics and electronics and you have firing problems. That's why you need to protect your Avengers with covers and caps.

There are no ready-made covers for the range finder. Styrofoam makes a good cover. Take a 1-in thick piece of styrofoam and trim it to 12 x 18 inches. Punch a hole in it for the boresight guide pin cover. Stick the cover in front of the range finder lenses so that the range finder support bracket holds it in place.



I FEEL NAKED OUT HERE WITHOUT ANY PROTECTION FOR MY RANGE FINDER AND SVML!

COVER YOURSELF UP, DUDE! THAT'S JUST WRONG!

GET A LOAD OF THIS GUY!

IF YOU WANT SOMETHING MORE DURABLE THAN STYROFOAM, USE THE COVER FROM A DRAGON NIGHT SIGHT'S SACK LINER.

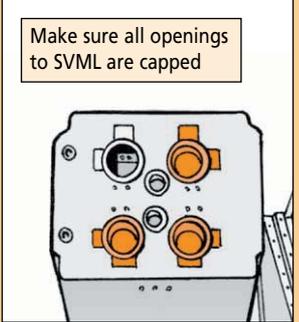
THAT COMES WITH NSN 1430-01-193-6651 AND COSTS AROUND \$7.50.



Fortunately, there are plenty of caps for the SVML. Order the rear launcher caps with NSN 5340-00-855-7993 and the front caps with NSN 5340-00-157-5624. Caps for the pressure gauge holes come with NSN 5340-01-348-6514. You can also get a FLIR lens cap with NSN 5855-01-441-3189.

Caps for the cryogenic and electrical ports inside the SVML are also available. Order cryogenic caps with NSN 5340-01-466-1897 and electronic caps with NSN 5340-01-466-1898.

All of these caps are fairly cheap. Order extras. They disappear and you'll need more.





Don't Trail on Trailer PM

When the fifth wheel on the Patriot missile system's tractor and the M860 trailer kingpin get in bad shape, you can't hook them up to hit the road. If they get in too bad a shape, you think the truck and trailer are locked together, but they're not. One Patriot unit watched their launcher take a spill when the truck drove off but the launcher didn't follow. And even worse, a weak kingpin can also break off during travel.

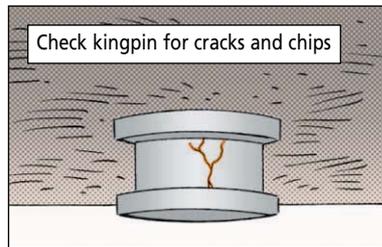
A little PM, though, will keep your Patriot trucking.

If you're operating in the desert, sand is more of a problem than rust. Grease the fifth wheel and kingpin lightly only. When the truck and trailer aren't hooked up, cover the fifth wheel and kingpin with plastic bags to prevent the grease from collecting sand. When it's time to travel, wipe off any sand from them before you hook up. Sand will cause the kingpin and fifth wheel to wear fast.

In rainy areas like Germany and Korea, corrosion is the problem. Grease the kingpin and fifth wheel monthly. Any time you can't see grease on either, grease them.

It's a good idea to check the condition of the kingpin before you hit the road. Here's how:

- Completely wipe off all grease from the kingpin and then clean it with dry cleaning solvent. That way you can easily spot problems.
- Look for cracks, gouges, and chips. Any cracks in the kingpin make it NMC, as do any nicks, chips or gouges deeper than 1/8 inch.



Make Your Stand... For Your TU



The TOW 2 missile system's traversing unit (TU) cable is too long to fit inside the TU. So the cable sticks out where it can be stepped on or crimped. If the cable is damaged, you're out thousands of dollars. Plus if you're forced to lay the TU on its side for storage you need twice as much storage space.

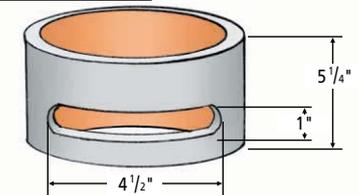
SPC Stacy Stanfa and SPC Donald McIntosh of the NYARNG at Ft Drum gave an easy solution for storing the TU back in PS 517 (Dec 95). Some units missed it so here it is again:

Make a TU stand with schedule 40 8-in diameter PVC pipe. If your DOL doesn't have any pipe, your local plumbing supply store will.

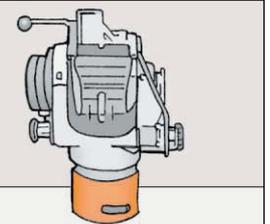
Cut off a 5 1/4-in piece of the pipe. For handholds, cut a 4 1/2-in x 1-in slot on each side of the pipe.

Then set the TU upright in the stand. The TU should fit snugly in the stand up to the TU outer lip. The cables are coiled safely inside the pipe. Use the handhold slots to pick up the TU.

Cut pipe like this



Set TU like this with cables coiled inside pipe



HOW DO WE STOP JAMMED MAGAZINES?

WE'VE GOT TO DO SOMETHING ABOUT YOUR JAMMING.

CAN'T HAVE THAT IN COMBAT.

YOU'RE PAYING ENOUGH ATTENTION TO ME...

...BUT YOU'RE FORGETTING MY MAGAZINES!

Dear MSG Half-Mast,

Is there any guidance for preventing magazines for the M16-series rifle and M4/M4A1 carbine from jamming? We've heard it's better to load no more than 28 rounds in a magazine to prevent jamming. Is that true?

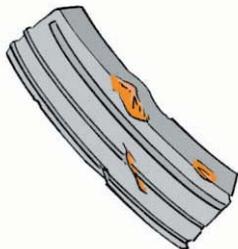
SGT M.B.

Dear Sergeant M.B.,

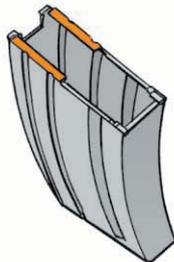
If a magazine is in good shape, it should hold 30 rounds with no problem. But there are many magazines in the field that may not be reliable any longer. Here's how you can tell:

Check each of your seven magazines for dents and corrosion. If a magazine has more than minor dents and corrosion, get a new magazine. Eyeball the magazine's feed lips. If they're bent, get a new magazine. If the magazine's spring and follower have come apart, don't try to reattach them. Get a new magazine.

Check each magazine for dents and corrosion



Feed lips bent?



Never stretch the spring to try to make it work better. That ruins the spring.



Never use a speed loader or jam the feed lips against a table edge or anything else hard while loading a magazine. That can bend the feed lips and ruin the magazine. Bent feed lips can cause double feeds.

Never use a table edge to force rounds in magazine



Load a magazine like it shows on Page 0008 00-23 in TM 9-1005-319-10:

Use the 10-round stripper clip and magazine filler to load 30 rounds in the magazine. With the magazine filler in place, push with your thumb on the rear of the top cartridge until all 10 rounds are below the feed lips. Remove the empty stripper clip while holding the magazine filler in place. Repeat until three 10-round clips are loaded.

Use stripper clip and magazine filler to load magazines



PS MORE

When possible, don't leave magazines fully loaded all the time. Over time that pressure may cause the magazine's spring to lose its spring and then you may have feeding problems.

Of course, a dirty magazine will be more likely to jam, especially if sand is coating moving parts. When you clean your rifle, also clean magazines. Take each magazine apart and run a clean cloth through each tube until all dirt is gone. Wipe off dirt from the follower and spring. If you're not in the desert, lightly lube the spring to prevent corrosion.



But in the desert don't lube any part of the magazine. Lube will just attract sand, which leads to jamming.

In the desert especially, do everything you can to keep sand and dirt out of magazines. Keep magazines in their sealed bags. NSN 1005-00-193-8306 brings 500 plastic magazine bags.



M9 Pistol

Most of this also applies to the M9 pistol magazines. Load M9 magazines by hand. Don't stretch their springs. Don't leave M9 magazines loaded all the time. Keep them clean. Don't lube them in the desert. Disassemble and clean them after every mission. Keep magazines in their sealed plastic bags or the ammo pouch, NSN 8465-01-207-5573, as much as possible. See Page 3-26 in TM 9-1005-317-10 for care of the magazine.



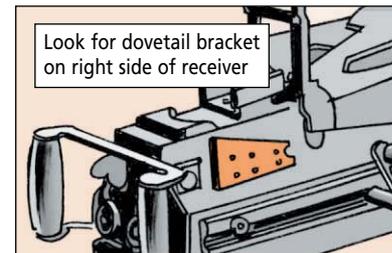
MK19 Machine Gun...



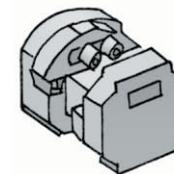
Check for MWO NOW

All MK19 machine guns should have had MWO 9-1010-230-50-1 applied to them by now. The MWO changed the MK19's cocking lever from a one-piece to two-piece design that will improve the gun's safety and reliability and eliminate out-of-battery firing.

But some MK19s were missed—and that's why TACOM needs your help, armorers. Check your MK19s now to see if they've gotten the MWO. If they've been modified, they have a dovetail bracket mounted on the right side of the receiver and an "-M" stamped on the left side immediately following the weapon's part number.



Also check the arms room for a feed slide adjustment tool that arrived in a square white box with a label that reads "NSN 1005-01-467-9435," the tool's NSN. The tool should have come with the MWO. You'll need the tool after the weapon has been modified. Instructions for using the tool come with it. Also see WP 0073 00-1 in TM 9-1010-230-23&P.



Check arms room for feed slide adjustment tool

If your MK19s haven't been modified or you're missing the tool, TACOM wants to know about it. Contact Jeannette Morphew at DSN 793-0609/(309) 782-0609 or email:

morphewj@ria.army.mil

or Kathi Johnson at DSN 793-0684/(309) 782-0684 or email:

johnsonk4@ria.army.mil

or Pat Hall at DSN 793-1903/(309) 782-1903 or email:

hallp@ria.army.mil

Magnetic Strainer PM

HERE'S A PM TIP THAT SAVES WEAR AND TEAR ON THE DOZER'S TRANSMISSION.



YOU'RE CHANGING THE TRANSMISSION FLUID IN A D7G DOZER AND NOTICE THE FLUID IS **CONTAMINATED** WITH METAL SHAVINGS.

HEY!



I **ALWAYS** CHANGE THE TRANSMISSION'S PRIMARY FILTER.

SO, WHAT GIVES?

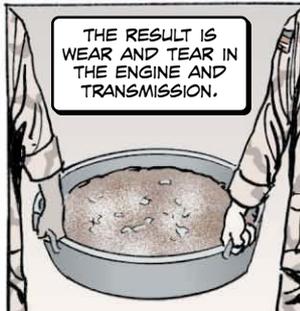


WHAT GIVES IS A **CLOGGED SCREEN** IN THE TRANSMISSION SYSTEM'S MAGNETIC STRAINER.

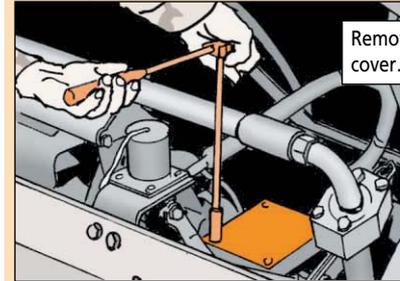
A **CLOGGED SCREEN** RESTRICTS OIL FLOW IN YOUR D7G'S TRANSMISSION.



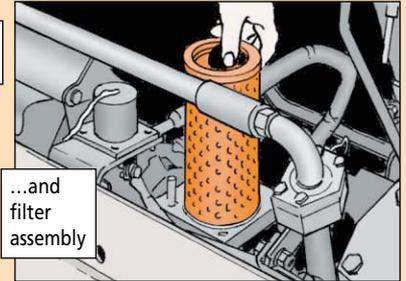
THE RESULT IS **WEAR AND TEAR** IN THE ENGINE AND TRANSMISSION.



1. Remove the cover and spring, then remove the filter assembly.



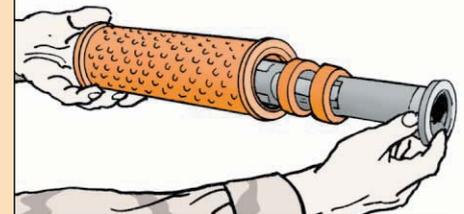
Remove cover...



...and filter assembly

2. If you're in the motor pool, steam clean the screen and magnets, and then dry 'em with pressurized air. In the field, wash the screen in MIL-PRF-680 Type III dry cleaning solvent. Clean the magnets with a stiff bristle brush. Don't use a wire brush! That type of brush can scratch or demagnetize them. And don't drop or tap the magnets. That can demagnetize or break them.

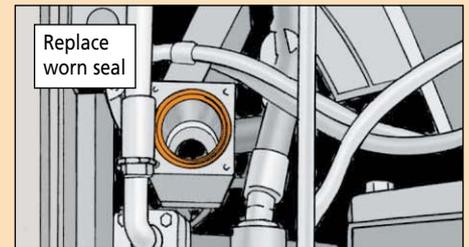
Wash screen in PRF-680 dry cleaning solvent



Use stiff bristle brush to remove shavings

3. Check the cover seal for cracks, tears or mashed edges. If you find any, replace the seal, NSN 5330-00-863-5549.

Replace worn seal



4. Install the magnets, screen, spring and cover, in that order. Torque the cover nuts to 31-34 lb-ft dry (no oil) or 23-25 lb-ft (threads lubed with oil).

5. With the engine running and the transmission in neutral, pull the dipstick to measure the oil level. Add oil to bring it to the FULL mark on the dipstick.

WHAT TANK IS THAT?

ONE MORE THING BEFORE I'M READY FOR THE DAY'S RUN... OPEN THE AIR TANK FOR THE AIR BRAKE SYSTEM.

SOLDIER! THAT PETCOCK IS NOT WHAT YOU THINK IT IS!

THEN WHAT'S IT FOR?

IT'S FOR THE ALCOHOL RESERVOIR.

The alcohol reservoir on the crane's air brake system is getting a bad rap.

Some well-meaning operators walk around the vehicle before the day's run. While in a hurry doing the checks and services, they open the petcock for the alcohol reservoir, because they think it's an air tank for the air brake system. So, the alcohol is drained out of the reservoir. But the reservoir is supposed to be filled year-round.

WITHOUT ALCOHOL, THE AIR BRAKE SYSTEM CAN'T DO ITS JOB VERY WELL. HERE'S WHY...

- Alcohol keeps moisture from freezing up inside the vehicle's air brake system.
- Water expands when it turns to ice. That kind of pressure will burst most anything. You can lose your brakes and control of the vehicle.

THE SOLUTION IS REAL SIMPLE. DON'T DRAIN THE ALCOHOL EVAPORATOR-IT'S NOT AN AIR TANK FOR THE CRANE'S AIR BRAKE SYSTEM!



AIR FILTER REMINDER

KEEP THIS PM POINTER IN MIND AS THE DESERT WIND BLOWS!

Operators, fine desert sand is everywhere. It will end up in the crane's air filter no matter what.

Just remember that you don't have to replace the primary filter element every time the restriction indicator shows red. Save the cost of a new element by cleaning the old one with compressed air or warm, soapy water.

When you use air, blow out from the inside of the element, since the sand is "in" and "on" the outside of the filter.

Then hold the nozzle at an angle to blow loose sand from the outside. That keeps you from damaging the paper element.

To get rid of oily sand, you'll need to wash the filter element with detergent, NSN 7930-00-282-9699, and warm water.

Rinse away the soap with warm water and let the element dry before you put it back in the crane.

Replace the filter element, NSN 2940-01-438-5680, after six cleanings or if it's ripped, torn or won't come clean.

If the indicator still shows red after cleaning the filter element, tell your mechanic.

For loose dirt, use compressed air



For oily dirt, use detergent and warm water



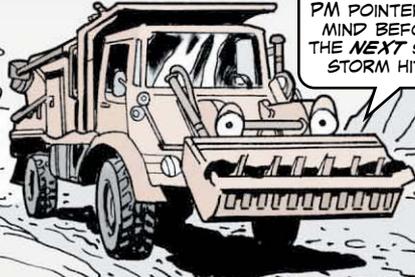
Indicator shows RED after cleaning the filter element? Tell your mechanic



Small Emplacement Excavator...



KEEP THESE PM POINTERS IN MIND BEFORE THE NEXT SAND STORM HITS!



High winds, lots of dust, deserts of sand, hot days and cool nights. You might want to keep these conditions in mind before the next sand storm hits.

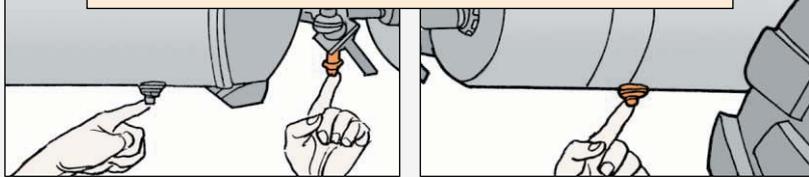
Tank Drain Again

It's no secret that temperature changes, like cool nights and real hot days, increase condensation in the excavator's air brake system.

Condensation leads to corrosion and brake failure.

Drain water out of the air tanks before the day's run by pressing the drain valves on the front air tank, then on the centerline and rear reservoir tanks.

Press drain valves on front of air tank, centerline, and rear reservoir tank



Expansion Tank

The coolant level in the excavator's expansion tank is often overlooked—and in some cases just completely forgotten.

That's because the tank is under the doghouse inside the vehicle's cab.

When coolant gets low, the engine overheats. It could seize up and leave you stranded. That's the last thing you need in the desert!

Your PMCS in TM 5-2420-224-10 tells you to keep the expansion tank half full. There's no marking on the tank that shows where the level should be.

Do your excavator's cooling system a real favor. Mark the tank with a permanent marker. Label the tank at one-half and three-quarters full.

This means no more guesswork. Just add coolant when the tank's below half full.



Air Filters

Clean air filters are crucial for the excavator's smooth operation—especially in the desert.

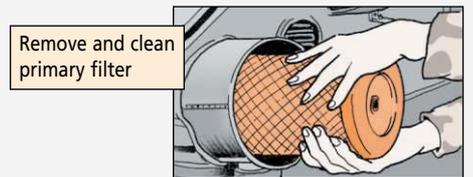
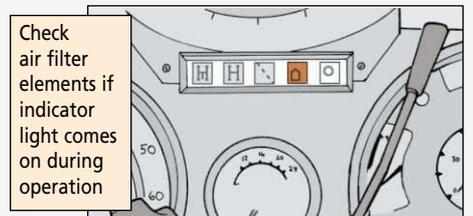
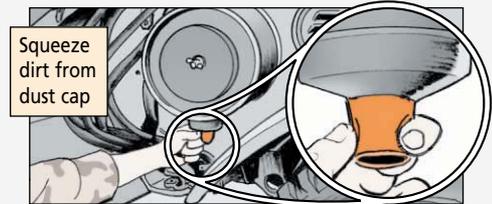
Start by squeezing the dust cap on the bottom of the air canister. Do this before the day's run. This gets rid of **only** the sand and dust at the bottom of the canister, but not from the primary or secondary air filters. Sand that's left in the canister will end up in the filters—causing them to clog up.

Keep an eye on the air cleaner indicator lamp on the dash. When it lights up, call in your mechanic for service.

Mechanics, give the filter the brush off when the operator notices a loss of engine power and black smoke from the exhaust. Pop the canister lid and remove the outer (primary) filter. Do not remove or clean the inner (safety or secondary) filter.

Tap the primary filter with the heel of your hand to loosen sand, then shake and tap some more. This quick PM tip works well at the work site until the primary filter can be cleaned or replaced. Whatever you do, do not operate the excavator without both filters in place.

And make sure you don't bang the filter on a rock or hard surface. That only dents the filter so it won't fit back properly.



Steering Wheel Deal



Operator, your mechanic buddy comes over to ask you a question while you're sitting in the cab of your compactor with the engine running. When you lean over to listen, your right arm or leg moves the steering wheel.

Guess what? Your buddy just became a mechanic sandwich!!!

The compactor has an articulated steering system. With the touch of your hand you can turn the front and rear wheel assemblies side to side in a second. That means your buddy can get crushed or knocked off his feet by the tamping tips on the wheel assemblies.

And play it safe when you leave or enter the cab, too. Move the steering column by tilting it forward. Now it's out of the way.

Then make sure you use the handholds along the cab's structure. Do not use the steering wheel to hoist yourself into the driver's seat.



TEMPORARY AIRCRAFT STORAGE

Mechanics, there are preventive measures to consider when you temporarily store your bird. For example, you'll need to cover open areas to block out sand, rain and such.

And you'll protect canopies and windshields from blowing sand, too. But duct tape is **not** the solution.

Improper materials such as the ever-popular cotton-backed adhesive tape, commonly known as "duct tape" or "hundred mile-an-hour tape," can wreak havoc on an aircraft's painted surfaces and canopies.

Duct tape leaves a sticky residue that has to be removed with harsh chemicals, which often damages the paint on your bird.

The correct tape for short and long-term storage (up to two years) is pressure sensitive tape. You'll find it listed in Appendix A, Item 92 of TM 1-1500-344-23. It works for many outdoor applications and can be used on metals or painted surfaces with clean removal up to two years after its use.

You can order the width you need from the list below. The tape comes in 36-yd long rolls.

Tape, pressure sensitive	
NSN 7510-00-	Roll width
852-8179	1-in
852-8180	2-in
885-3510	2.5-in
926-8939	3-in
916-9659	4-in
926-8941	6-in

But don't use it on acrylic or polycarbonate canopies and wind screens. First, cover canopies and windscreens with barrier material and use the pressure sensitive tape to hold it in place.

Barrier material is Item 88 in Appendix A of TM 1-1500-344-23. It comes in 200-yd rolls.

Nomenclature	NSN	Width
Barrier material, flexible, greaseproof, water resistant, heat sealable, MIL-PRF 131 class 1	8135-00-282-0565	36-in roll

PACK FOR YOUR

MAINTENANCE NEEDS



Mechanics, before you pack up and head to the sand box on a long deployment, make sure you have everything you need for aircraft maintenance.

Even the smallest item like a missing screw can cause a hiccup in your PMCS or maintenance if you don't have necessary items on hand. Make a plan to check your TMs for required items.

Find out what you're missing and what's needed in common stock before deploying. If you're missing anything, now is the time to requisition bulk and common materials and Class II and III expendables. Stock up on all the consumables you need.

Whatever mission design series your company's aircraft is assigned, take with you only what you need for that specific mission. Always include extra hardware and tools—they'll come in handy.

Take whatever bulk materials and Class II and III expendables you need to ensure your aircraft stays mission ready.



Black Hawk mechanics, check Appendix D, *Expendable and Durable Items List* found in TM 1-1520-237-23-9.

AH-64 mechanics, review Maintenance Information Message (MIM) AH-64-03-003, 8 Jan 03. This will provide a good "lessons learned" starting point on how to prepare for extended deployments. Use the experience of those who've gone before to prepare for current and future deployments.

Chinook mechanics, check Chapter 1- 18, *Expendable Materials* list found in TM 55-1520-240-23-1.

Kiowa Warrior mechanics, eyeball Appendix D, *Expendable and Durable Items* list found in your IETM EM 0246.

Keep Oil Drains! Free of Sand



THIS DRAIN TUBE SEEMS TO BE PLUGGED!

THERE'S PROBABLY HARDENED SAND STUCK IN THE TUBE.

YOU KNOW WHAT THAT MEANS, DON'T YOU?

Mechanics, the Kiowa engine deck's upper and lower oil drain tubes may be out of sight, but don't ignore cleaning the tubes at regular intervals—and more often in the desert.

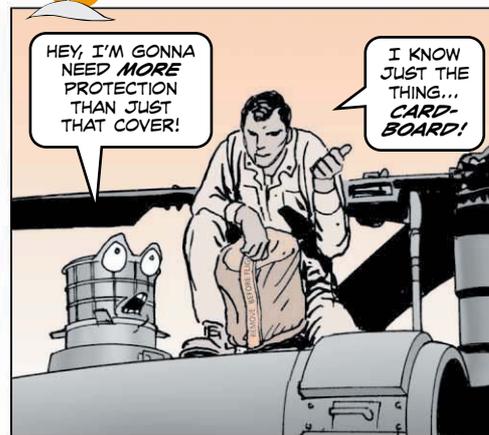
The tubes allow excess oil and condensation to drain off from the transmission and engine.

Oil and sand inside the tubes can dry out and harden from the heat. When that happens, fluid and condensation runoff will back up and overflow the scupper. The liquid leaks into the avionics bay on the AN/ARC-201 radio set's breather holes and shorts it out. Then your communications are shut down.

Use an air blow gun, NSN 4940-00-333-5541, to clear obstructions from the drain tubes or use safety wire and snake the tubes to clear up clogs from oil, sand and dirt.

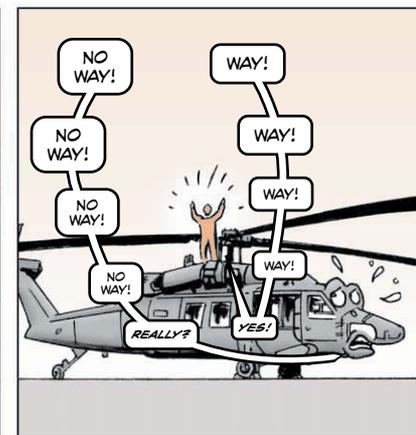
If the tubes are blocked by hardened sand you'll need to remove them from the bird to break up the sand to get it out. If necessary, put in new tubes if the old ones are NMC after the sand is removed.

OF COURSE, ALWAYS CLEAN THE TUBES LIKE IT SAYS IN PARA 4-4-15 OF TM 1-1520-248-23-2.



HEY, I'M GONNA NEED MORE PROTECTION THAN JUST THAT COVER!

I KNOW JUST THE THING... **CARD-BOARD!**



NO WAY!

WAY!

NO WAY!

WAY!

NO WAY!

WAY!

NO WAY!

WAY!

REALLY?

YES!

Countermeasure Set Protection

Black Hawk, AH-64 and Kiowa Warrior crew chiefs, don't assume all is well with your countermeasure set even though you keep it covered on the desert flight line.

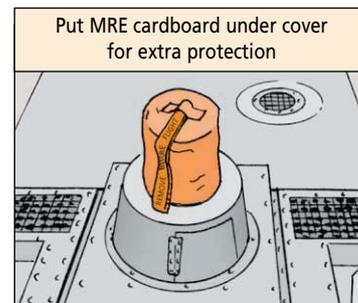
The cover, NSN 5865-01-109-1800, isn't enough protection by itself. A handy desert preventive maintenance measure is right at your finger tips.

Take an MRE cardboard box insert and wrap it around the countermeasure set. Tape the ends of the cardboard together with duct tape, NSN 5640-00-103-2254, and put the cover over the cardboard.

That protects the set from rocks and sand blown up when helicopters hover near or fly over parked aircraft. The cardboard insert will save your unit \$36 a pop for each mirror pane that is saved.

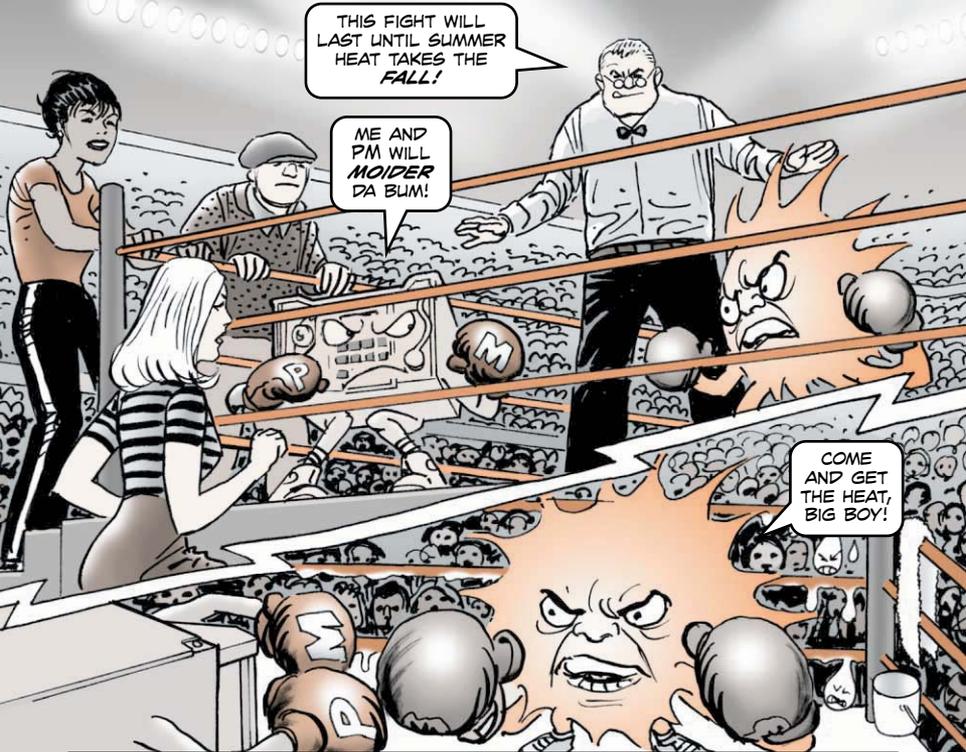
Without the MRE cardboard box insert, desert sand and small rocks caught in the rotor wash can still break panes on the countermeasure set with the cover on.

Make sure your countermeasure set stays operational. Clean the mirrors in the desert before takeoff and after each landing like it says in Chap 4 of TM 11-5685-200-12. That way, with the cardboard box and the cleaning, you'll be mission capable.



Put MRE cardboard under cover for extra protection

FIGHTING THE HEAT



THIS FIGHT WILL LAST UNTIL SUMMER HEAT TAKES THE FALL!

ME AND PM WILL MOIDER DA BUM!

COME AND GET THE HEAT, BIG BOY!

IN THE SUMMERTIME HEAT-NTC, IRAQ OR ELSEWHERE-MAINTENANCE OF RADIO SETS AND OTHER ELECTRONIC EQUIPMENT IS **TOUGH.**

IT'S **EASY** FOR HEAT TO **DAMAGE** EQUIPMENT.



HERE ARE A FEW HIGH-TEMPERATURE MAINTENANCE TIPS.

Good Moisture

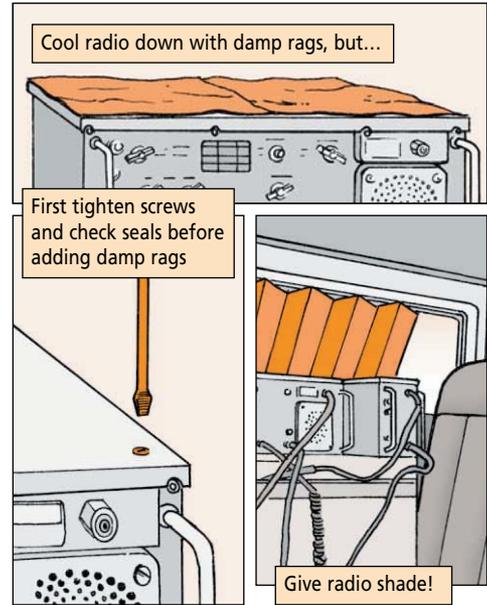
Put damp rags on the tops of radios to keep them cool. Make sure the rags are damp, not soaking wet. Soggy rags lead to water inside the radio. Some of you have tried letting ice melt on top of a set. Don't! That much water will get inside and do damage. However, ice laid against a set can do some cooling without getting water into the equipment. Try large plastic bags to hold the ice.

Before you put on the damp rag or use ice on the sides, make sure all screws are screwed down tight and all seals are in good condition.

Of course, whenever possible, shade your radio. Use cardboard or your vehicle's canvas top. Anything will help that keeps the glaring sun off the radio, but doesn't hold in the heat.

Lessons learned have shown that shade is a valuable tool and that almost anything can be used to give your radio some shady relief.

A fan will run itself to death trying to cool your radio. Give the radio the moisture-and-shade treatment to help the fan.



Cool radio down with damp rags, but...

First tighten screws and check seals before adding damp rags

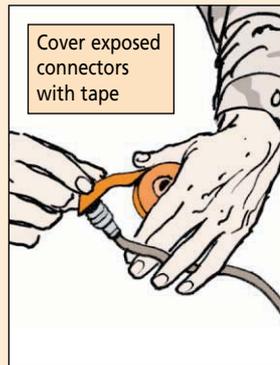
Give radio shade!

Bad Moisture

Overnight, condensation forms on metal surfaces that are cooler than the air temperature.

This condensation can affect electrical plugs, jacks and connectors. If condensation is affecting your commo connectors, tape over all connectors that may be exposed to moisture overnight. This prevents that moisture from contaminating the contacts.

Plugs should be dried before inserting them into equipment jacks.



Cover exposed connectors with tape

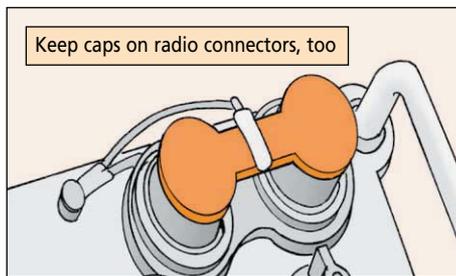
EXCESSIVE MOISTURE OR DEW SHOULD BE REMOVED FROM ANTENNA CONNECTORS TO PREVENT ARCING.



Static electricity is common in areas of extreme, dry heat. It's caused by wind-blown debris and extremely low humidity. Poor grounding conditions aggravate the problem. Make sure your equipment is properly grounded.

Be sure to use tip caps on all antennas to cut down on wind-caused static discharges.

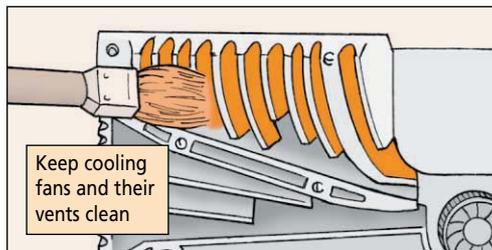
No Moisture



A Little More Cleaning

Keep all cooling fans clean and their vents clear of all clogging sand and dirt. Dirt magnifies the bad results of high temperatures.

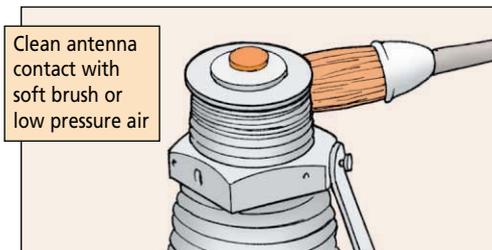
Use a brush or compressed air—whatever your equipment TM says—to clean the fan and the areas around it.



A Few More Things

If you have any broken or missing knobs, switches or connectors, get them replaced before you hit the heat.

Check the whip antenna's mast base to be sure the contact is clean. If it's dirty, use low-pressure air or a soft brush to clean it.



Room to Breathe

Give your commo equipment room to breathe. If you pile gear on or around it, heat quickly builds up. Keep field gear, maps, manuals and other items away from the RT blower fan. Blocking the airflow will cause the heat to build up inside your set.



Batteries...

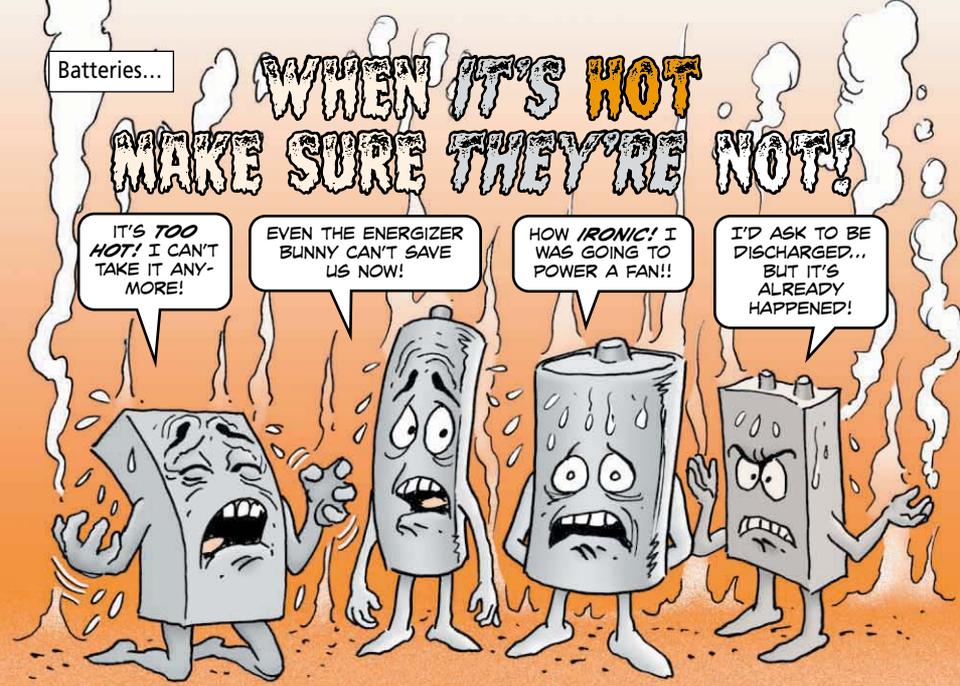
WHEN IT'S HOT MAKE SURE THEY'RE NOT!

IT'S TOO HOT! I CAN'T TAKE IT ANY-MORE!

EVEN THE ENERGIZER BUNNY CAN'T SAVE US NOW!

HOW IRONIC! I WAS GOING TO POWER A FAN!!

I'D ASK TO BE DISCHARGED... BUT IT'S ALREADY HAPPENED!



In hot weather, proper storage and handling procedures for commo batteries are a must. Here are some storage and handling tips every commo equipment user and repairman, whether at a large storage facility or just in a unit, should know.

Make Sure You're Safe

Get your post fire department to help you pick a battery storage location and to inspect it periodically.

For large bulk storage of batteries, a sprinkler system is recommended. Small extinguishers will do the job for small fires of combustibles such as packaging. Lithium battery fires should only be handled by trained firefighters.

Do not smoke, eat or drink in battery storage areas. An open flame could lead to an explosion and eating around toxins is never a good idea.

Personal protective equipment such as gloves, face shields and aprons must be available and must be worn whenever handling leaking or vented batteries.



When It's Too Darn Hot

Temperatures in battery storage and maintenance facilities must not exceed 130°F. Among the problems high heat causes is the loss of available capacity and, in the case of rechargeables, the loss of their capacity for recharging.

If the temperature in your storage area consistently hits the 110° mark, it's time to think about cooling off the area or finding another storage spot.

Remember, temperatures inside a MILVAN or similar container in SWA will exceed this. Read SB 11-6 for ideas on how to keep them as cool as possible. Try to find somewhere else to store your batteries if you cannot find an alternative storage area.



Don't Mix 'em

Battery chemistries don't mix well with each other. Some combinations can cause explosions and others harmful gases. So segregate batteries in storage. Keep lead acid batteries away from nickel cadmium or nickel metal hydride.

The same tools and materials must not be used between battery chemistries. So color code the tools. Pick a color for each type of battery a tool could be used on and mark the storage area, as well as the tool, with that color.

Do not mix new and used batteries. Each type needs its own storage area. Do not let used batteries pile up. Dispose of them quickly.



It's in the Package

KEEP BATTERIES IN THEIR ORIGINAL PACKAGING UNTIL THEY ARE USED.

OUR ORIGINAL PACKAGING HELPS YOU IDENTIFY US...

...AND DOES OFFER SOME PROTECTION FROM CRUSHING, PUNCTURING AND SHORTING.

What Have You Got and What Shape are They In?

Periodically inspect stored batteries for defects such as bulges, cracks or leaks and monitor their expiration dates.

Keep only authorized batteries on hand and keep only the number that you need. It's a good idea to display in your storage area a list of available batteries and the equipment they're used in.



Know Your Metal



Use Your Eyes, Nose and Ears

Check the packaging and the batteries for leaks, stains, bulges, cracks or other signs of damage.

Know the odors, such as the smell of rotten eggs, and sounds, such as hissing and popping, associated with abnormal battery behavior. Let your nose and ears tell you when you might have a problem with a stored battery.



Also, immediately disconnect any battery that is hot to the touch.

Train, Train, Train

Last, but certainly not least, all personnel should be properly trained in maintenance procedures, first aid, personal protection equipment and the hazards of battery maintenance operations.

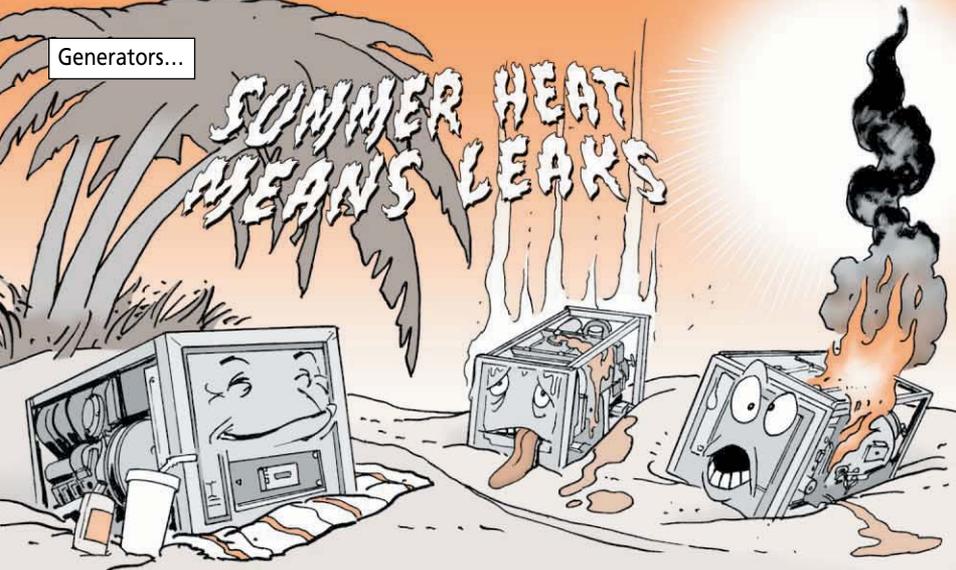
Check out the following that are available on the LOGSA website:

<https://www.logsa.army.mil/>

The US Army Supply Bulletin, SB 11-6, *Communications Electronic Batteries, Supply and Management Data* and the US Army Technical Bulletin, TB 43-0134, *Battery Disposition and Disposal*.

Generators...

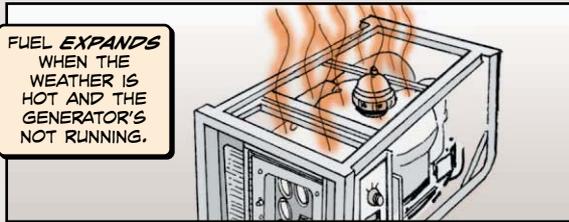
SUMMER HEAT MEANS LEAKS



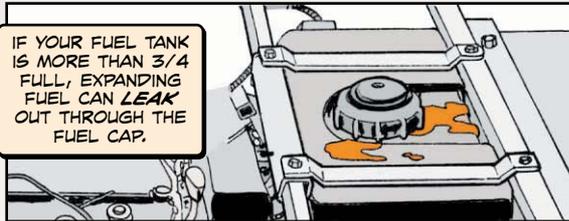
HOT WEATHER IS A **PRIME TIME** FOR LEAKING FUEL FROM YOUR GENERATOR.



FUEL EXPANDS WHEN THE WEATHER IS HOT AND THE GENERATOR'S NOT RUNNING.



IF YOUR FUEL TANK IS MORE THAN 3/4 FULL, EXPANDING FUEL CAN LEAK OUT THROUGH THE FUEL CAP.



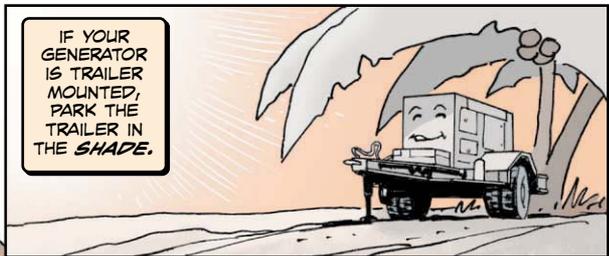
THEN YOU HAVE AN ENVIRONMENTAL AND FIRE HAZARD.



ONE WAY TO STOP FUEL FROM EXPANDING IS TO KEEP YOUR GENERATOR **COOL**.



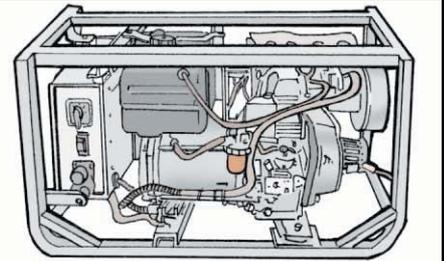
IF YOUR GENERATOR IS TRAILER MOUNTED, PARK THE TRAILER IN THE **SHADE**.



USE THE CANVAS COVER TO KEEP DIRECT SUNLIGHT OFF OF THE GENERATOR, BUT ROLL UP THE SIDES OF THE COVER TO GIVE IT AIR.

THE **BEST** WAY TO PREVENT FUEL LEAKS FROM THE FUEL TANK CAP IS TO KEEP THE TANK LESS THAN 3/4 FULL OF FUEL.

YOUR TANK MAY HAVE A LINE ON IT TO INDICATE WHERE YOU STOP WHEN FILLING OR YOU MAY NEED TO KEEP AN EYE ON THE FUEL GAUGE WHEN YOU'RE FUELING UP.



ON SOME GENERATORS YOU CAN DOUBLE CHECK THE AMOUNT IN THE TANK BY TAKING OFF THE CAP AND LOOKING INSIDE.



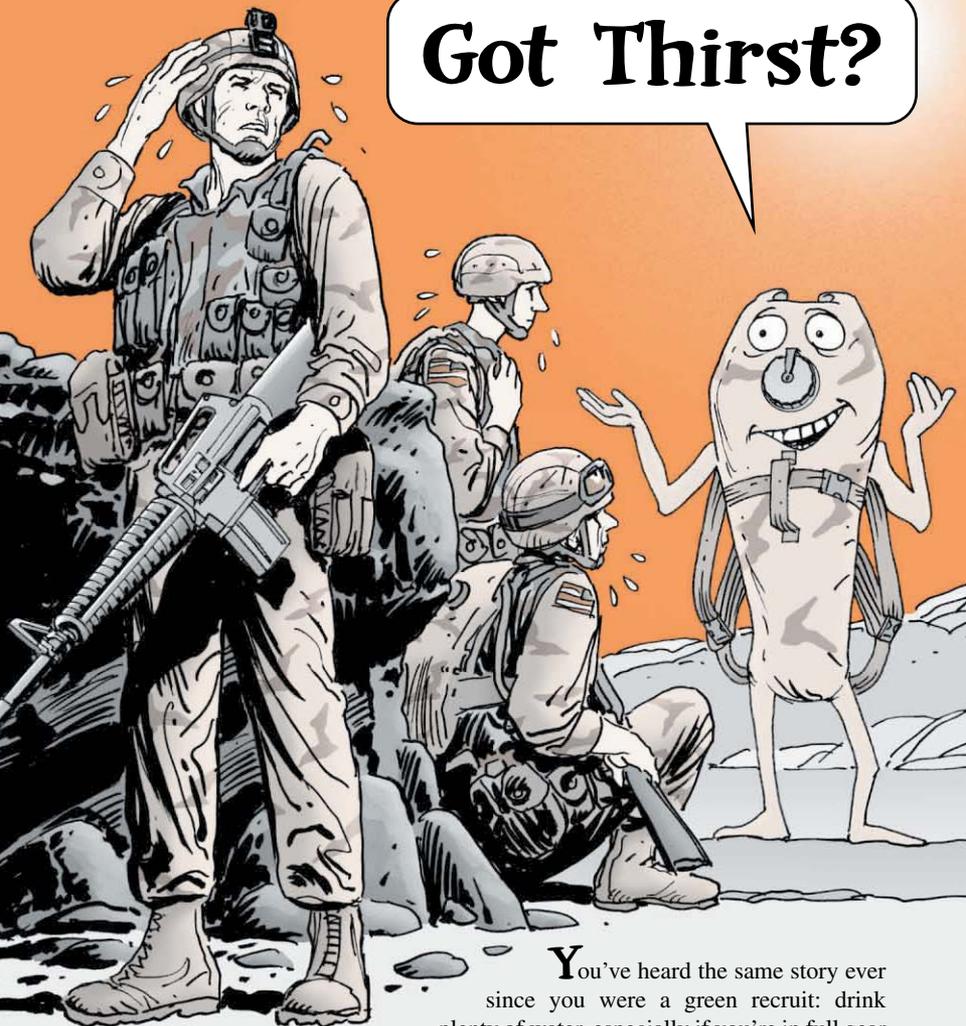
IF THE FUEL REACHES **HALFWAY** TO THE TOP OF A VISIBLE STRAINER, THEN THE TANK'S FULL **ENOUGH**.

THE TEMPTATION IS STRONG TO FILL A TANK TO THE TOP, JUST LIKE YOU DO WITH YOUR CAR, BUT IT'S BEST NOT TO.

FUEL LEAKED ON THE GROUND OR ON YOUR GENERATOR DOES NO GOOD FOR NO ONE.



Got Thirst?

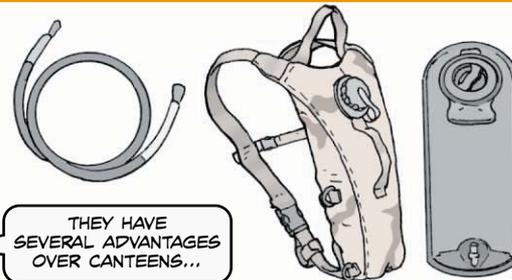


That's why you see more soldiers wearing hydration systems every day. They make it easy to replace your precious bodily fluids lost through sweating.

You've heard the same story ever since you were a green recruit: drink plenty of water, especially if you're in full gear and soldiering in the heat. Just a couple of hours out in the sun without enough water will begin to sap your energy and endurance. Soon after that, you'll feel the advanced stages of heat stress: headaches, nausea and serious fatigue.

[Click here for a copy of this article to save or email](#)

THE TYPICAL SYSTEM HAS A BLADDER FOR HOLDING WATER, A CARRIER WITH STRAPS FOR CARRYING IT, AND A DRINKING TUBE.



THEY HAVE SEVERAL ADVANTAGES OVER CANTEENS...

- They carry more clean, cool water
- You can drink on the move while keeping your hands and eyes focused on the mission
- Drinking from the tube is more convenient than reaching for a canteen, so you'll drink more water more often



HERE ARE A FEW THINGS YOU SHOULD KNOW ABOUT HYDRATION SYSTEMS...



Filling—If your hydration system has an external cap, you can fill it without removing the bladder. Just open the cap and fill the system with water. Add ice cubes if you like. If your system doesn't have an external cap, you'll have to remove the bladder from the carrier.

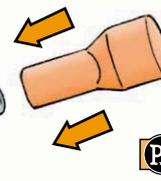


Assembling—Insert a bladder into the carrier. Route the drinking tube out the carrier opening. To install a new bite valve, pinch the tube and pull off the old valve. Wet the tube and slide on a new valve. Make sure you don't force the tube past the valve stops.

To install the bite valve cover, pinch the tube and pull off the valve. Attach the cover's lanyard to the tube. Wet the tube and slide the bite valve back on.

Wet tube and slide on a new bite valve

Do NOT insert tube past valve tops

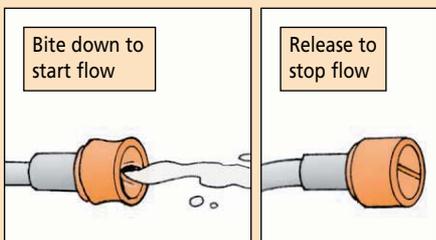


PS MORE

Fitting—These systems are made to be worn close to your body. When you carry weight close to your center of gravity, the load feels much lighter. So tighten the shoulder straps until the carrier is snug. If your carrier comes with a sternum strap and a waist belt, attach them. Drape the drinking tube over your shoulder with the bite valve close to your mouth. Adjust the tube length by sliding extra tubing into the carrier.



Drinking—Pinch and roll the bite valve between your fingers to open the drinking slit. Don't use a knife to open it. You could damage the valve. Bite down on the valve to start the water flowing. Draw in slightly, just like you were using a straw. Ease up on the valve to stop the water flow.



In very cold weather, route the drinking tube close to your body or inside your sleeve to prevent the water from freezing. After you drink, blow air into the tube to force the water back to the bladder. That way water can't freeze in the tube.



Inspecting and Repairing—Inspect the bladder often for leaks. If the bladder leaks, replace it.

Before each mission, inspect the carrier, buckles and straps. Look for wear spots—any place where metal or plastic rubs against the fabric. Repair small rips, tears and loose seams.

For tears less than an inch long, fix them with cloth tape, NSN 8315-00-958-0744.

If the fabric is ripped up to three inches, sew it with the needle and thread from the tentage repair kit, NSN 8340-00-262-5767.

For longer tears, you may need to replace the carrier.



ONE LAST NOTE. TAKE CARE WHEN PACKING PENS, PENCILS, NAIL FILES, KNIVES OR OTHER SHARP OBJECTS IN THE HYDRATION SYSTEM.



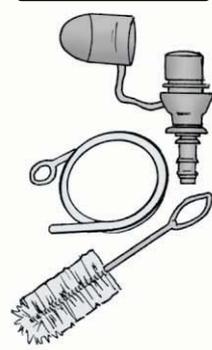
THEY CAN PUNCTURE THE BLADDER.

ONE OF THE LEADING MAKERS OF HYDRATION SYSTEMS IS CAMELBAK PRODUCTS. THEIR WEBSITE IS AT:
<http://www.camelbak.com/mil/military.cfm>



YOU CAN REACH CAMELBAK BY EMAIL AT:
military.sales@camelbak.com
OR YOU CAN PHONE THEM AT
(800) 767-8725 OR (707) 792-9700.

THERE YOU'LL FIND A VARIETY OF SYSTEMS, REPLACEMENT PARTS AND ACCESSORIES, INCLUDING BITE VALVES AND COVERS, CLEANING SUPPLIES, BLADDERS AND DRINKING TUBES.



Soldier Support...

WE'RE BEING
INVADED!
WE NEED MORE
PROTECTION!!

THEY CAME FROM BENEATH THE SAND!

Insurgents aren't the only enemies you face in Southwest Asia. You'll also be battling ticks, mites, chiggers, mosquitoes and other biting insects. One of the worst threats comes from sand flies. Bites from these little buggers spread a disease called leishmaniasis. There are two forms of the disease:



ONE FORM CAUSES SORES ON THE SKIN, ALSO KNOWN AS "BAGHDAD BOIL." LEFT UNTREATED, THE SORES CAN ENLARGE, CRUST OVER AND BECOME SLOW-GROWING ULCERS. THEY CAN TAKE MONTHS TO HEAL AND CAN LEAVE SCARS.



A bite from an infected sand fly causes "Baghdad Boil"

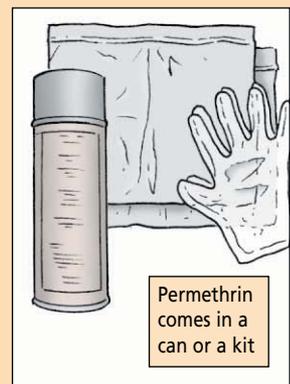
THE OTHER FORM IS INTERNAL, CAUSING FEVER, WEAKNESS, LOSS OF BODY WEIGHT, AN ENLARGED SPLEEN AND A LOWERED BLOOD COUNT. LEFT UNTREATED, IT'S USUALLY FATAL.

It can take several months from the time you get a bite from an infected sand fly until you show signs of the disease. If you suspect you have either form of leishmaniasis, seek medical attention immediately.

OF COURSE, THE BEST DEFENSE IS TO AVOID SAND FLIES IN THE FIRST PLACE. HERE'S HOW...



- Treat your BDUs with an insect repellent known as permethrin. It's available in a 6-oz aerosol can, NSN 6840-01-278-1336, or in an individual dynamic absorption (IDA) kit, NSN 6840-01-345-0237. One can treats one uniform and the treatment lasts through five to six washes. One kit treats one uniform and the treatment lasts through about 50 washes. That's considered the combat life of the uniform.



Permethrin comes in a can or a kit

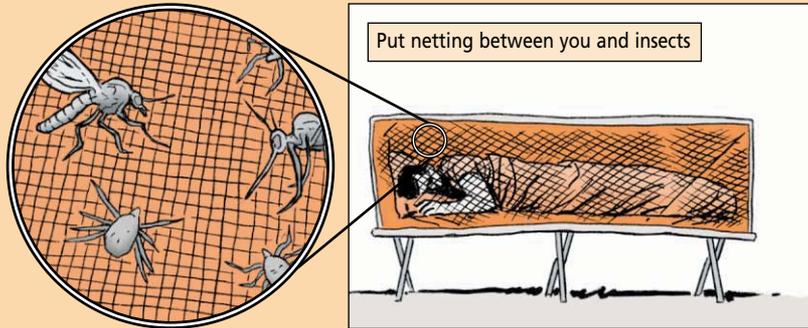
- Treat your exposed skin with an insect repellent containing DEET. NSN 6840-01-284-3982 brings a lotion you can apply to uncovered areas such as hands, face and neck. It wards off insects for up to 12 hours.



DEET wards off insects for up to 12 hours

PS MORE

- Protect yourself while sleeping. Get insect netting, NSN 7210-00-266-9736, that you can hang over an insect bar frame, NSN 7210-00-267-5641. Drape the netting over you so that there are no openings. Tuck the edges of the net under your cot, mattress pad or sleeping bag.



HOWEVER, SAND FLIES ARE *TINY* AND THEY CAN CRAWL THROUGH THE MESH OF THE NETTING.



A self-supporting pop-up bed netting is now available. NSN 3740-01-516-4415 brings an olive drab net. NSN 3740-01-518-7310 brings a coyote brown net. The new net has smaller mesh than the old one. It's also factory-treated with permethrin, and it doesn't need a separate frame.

- Cover as much of your skin with clothing as possible. Wear the BDU rolled top with the sleeves rolled down. Close all openings in your clothing. Tuck your undershirt inside your pants, and your pants inside your boots.



- Never wear after shave, cologne, perfume or scented deodorants or soaps while you're in the field. They attract insects.

- Each day, wash and inspect your body for insects and their bites. Use the buddy system to check your clothing for crawling pests such as ticks. Wash your uniform regularly to remove insects and their eggs.



- Never dry-clean a permethrin-treated uniform. Dry-cleaning solvents will completely remove the permethrin. It's okay, though, to commercially launder and press a treated uniform.



- If you're using both sun screen and DEET, apply the sun screen first. Wait 30 minutes so it can bind to the skin. Then apply the DEET.

- If you're using both DEET and camouflage face paint, always apply the DEET first. Then apply the paint. Camouflage face paint that has DEET in it is now available. Get it with NSN 6840-01-493-7334.



- Never wear unauthorized products—such as animal flea and tick collars—for personal protection. They'll protect Rover but not you, and they may even be hazardous to your health.



For more information, go to the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) website at:

<http://chppm-www.apgea.army.mil/>

Once there, click on [Leishmaniasis](#).

The USACHPPM website also has information about insect repellents. From the home page, click on DOD Insect Repellent System.





YOUR MASK NEEDS *EXTRA* ATTENTION IN THE DESERT.

TELL 'EM, HALF-MAST! THEN WE CAN *BOTH* BREATHE EASIER!



BETTER BREATHING
IN THE
DESERT

Many soldiers have already found out how difficult the sand and heat of the deserts of Southwest Asia make it for most Army equipment to do their jobs. The desert is no picnic for your M40- or M42-series mask either. Sand can plug airways and heat and the desert sun can shorten the life of some mask parts. This advice, though, can provide your mask an oasis in the desert:

Keep it clean. The fine sand of Southwest Asia will penetrate every part of your mask, which could lead to poor breathing or seeing. The only ways to fight sand are to keep your mask in its carrier as much as possible and to clean the mask often.

Areas you want to pay special attention to when cleaning are around the outlet valve disc, the inside of lenses, the canister's air intake, and in the mask's inner lining. You can shake out much of the sand and use a dry, clean cloth to wipe out the rest.



Wipe mask often in desert

Of course, if your mask is really caked with sand the best option is to wash it. Remove the hood, outserts, outlet valve cover, second skin, outlet valve disk and canister. Dip a clean cheesecloth in clean water and wring it almost dry. Then use the cloth to clean out all dirt inside and outside the facepiece. Wipe the mask dry with a dry cloth. Make sure the mask is completely dry before you put it back in the carrier.



I THINK I NEED A GOOD WASH!

If the mask is really filthy, mix liquid soap, NSN 8520-00-228-0598, in the water. After cleaning with the soap-water mixture, wipe out the mask with a clean cloth that's been dipped in water. Then wipe out the moisture with a dry cloth.

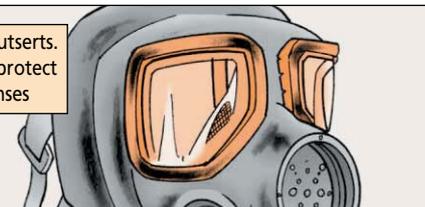
Second skin and facepiece. Check both the skin and facepiece for cracking or sticky or soft areas. Pay special attention to the parts of the skin where it is stretched, such as around the canister, the voicemitter, and eyelenses.

Check second skin and facepiece for cracks and sticky spots

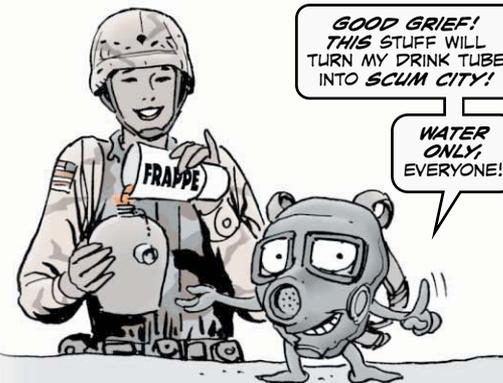


Outserts. Use them. They protect the eyelenses from blowing sand that will scratch up the lenses and make it difficult for you to see. Scratched outserts can be replaced quickly. Scratched eyelenses mean you need a new facepiece.

Use outserts. They protect eyelenses



Water only. If you drink anything other than water through the drink tube coupling, the coupling will gunk up. That doesn't make for a pleasant drinking experience. And keep the drink tube coupling stored in the outlet valve cover at all times to help it stay clean.



GOOD GRIEF! THIS STUFF WILL TURN MY DRINK TUBE INTO SCUM CITY!

WATER ONLY! EVERYONE!

More than 1,000 Ways to Help Your Unit



Dear Online Warrior,
 In these trying times soldiers are looking for ways to help their units. The Army Knowledge Online (AKO) Tool Developer Users Group (TDUG) Community of Practice (COP) provides more than 1,000 excellent computer files (and counting) to help soldiers help their units. Here's a breakdown of the three TDUG subordinate sections:

PowerPoint Central

There are 677 PowerPoint classes, briefings and templates on virtually everything of interest to the average unit. Examples are common and collective training tasks of all types.
 Need to prepare a unit or staff briefing of some type? Chances are you will find one you can use as a template here. You will also find primers for creating PowerPoint presentations, classes and briefings.

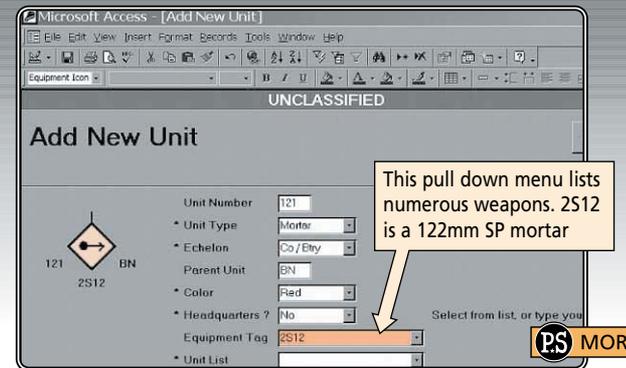
SOP Central

If you need a sample SOP, the 207 MS Word-formatted SOPs cover almost everything. There are also excellent tactical SOP samples. Just download a sample SOP and edit it to fill your unit's requirement. A comprehensive guide to writing SOPs is also available.

Tool Central

There are 452 military software tools for use in a MS Windows environment. More than 270 Excel worksheets alone make this the largest single collection of military worksheets on the web! Tools Central also includes 25 Access database tools. You can also find here more than 40 professionally done military software application tools, including a military logistics freeware software collection only available at Tool Central.

Tool Central has many tools similar to Enemy Icon Builder, a MS Access file that allows users to set up icons for exercises or operations. This view shows the Add New Unit page. As information is entered in the fields the icon at the left is built with associated information.



Accessing the AKO TDUG

After logging on to AKO click on files between [email](#) and [forums](#). Then expand the left hand column until it looks like the one below.

Want to submit a file or tool of your own for distribution at TDUG? Check out instructions in the TDUG User Guide found under [HELP FILE TOOLS](#) in Tool Central.

Bob Dalton
MSG, U.S. Army Retired
Tool Developer Users Group Host (Volunteer)

THANKS, BOB.
AKO TDUG OFFERS
SOLDIERS A GROWING
SOURCE OF HELPFUL,
TIME-SAVING TOOLS.

THIS FIGURE
SHOWS YOU *HOW*
TO FIND THESE
HELPS ON AKO.

LET'S HOPE
THAT SOLDIERS
KEEP SENDING IN
THEIR SAMPLES!



Name	Description	Size	Date/Time (GMT)	My Status
PowerPoint Central	PowerPoint Central	677 file(s)	01/14/05 15:16	Subscribed
SOP Central	SOP Central	207 file(s)	01/20/05 16:15	Subscribed
Tool Central	Tool Central	456 file(s)	01/21/05 03:00	Subscribed

Connie's Post Scripts

M2A2/M3A2 Ramp Armor

The information for Items 86 and 87 in Fig 67 (sheet 3 of 12) of TM 9-2350-284-24P-1 is reversed. Item 86, the personnel door inner plate, should be NSN 5340-01-206-3887 (PN 12334344). Item 87, the ramp door inner plate, should be NSN 9515-01-206-3888 (PN 12334342). Make a note until the TM can be updated.

No Blank Firing with M249 Short Barrel

Never fire blanks with your M249 machine gun if it's equipped with a short barrel. The increased bolt unlocking velocity can damage the receiver's inner rail. Fire blanks with the normal M249 barrel and the M249 blank firing attachment, NSN 1005-21-912-8997. The Army is developing a BFA for the short barrel. PS will let you know when it's available.

M88A2 Track Tension

Once is not enough when it comes to adjusting track tension on the M88A2 recovery vehicle. In fact, the third time is the charm. Until WP 0104 00 in TM 9-2350-292-10 (Jan 02) can be updated, add the following after Step 8: "8a. Repeat Steps 1 through 7 two additional times, for a total of three times, for each side of vehicle alternately." TACOM MAM 05-014 is your authority for the change.

M16A4 RIFLE, M4/M4A1 CARBINE BUIS LOCKING BARS REPLACED FREE

Because of manufacturing problems, locking bars for the backup iron sight (BUIS) for the M16A4 rifle and M4/M4A1 carbine are breaking.

You can now get an improved locking bar and recoil screw as a free replacement.

Soldiers deployed in Iraq can get the locking bar and screw at the Small Arms Support Center at Camp Anaconda. Call 987-0567, ext 6203, to verify they have locking bars on hand.

Soldiers outside Iraq should contact TACOM for the locking bar at DSN 793-2909/(309) 782-2909 or email:

TACOM-RI-TPF@ria.army.mil

Put "BUIS locking bar" in the subject line.

If you want express shipping, you will need to provide TACOM your DODAAC, non-APO address, POC and phone number. Otherwise, the locking bar will be shipped by regular mail.

TURN IN BROKEN AN/APM-305AS

If you have an AN/APM-305A transponder set test set, NSN 6625-01-052-3881, that has stopped working, turn it in NOW. Tobyhanna Army Depot will fix it for free as part of the RESET program. Presently, they have no AN/APM-305As on hand, so if you have excess sets, turn them in, too. Questions? Contact CECOM's Charles Lamb at DSN 992-9899/(732) 532-9899 or email:

charles.lamb@mail1.monmouth.army.mil

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

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