



**THE  
PREVENTIVE  
MAINTENANCE  
MONTHLY**

TB 43-PS-569, 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**  
**The Preventive Maintenance Monthly**  
**LOGSA, Bldg. 5307**  
**Redstone Arsenal, AL 35898-7466**

Or E-mail to:  
**psmag@logsa.army.mil**

Internet Address:  
**http://www.logsa.army.mil/psmag/pshome.html**

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# Why PM? You Play Rough!

**Y**ou say your Army gear is not as good as similar stuff you have at home? It just doesn't hold up as well?

That's because your stuff doesn't have to put up with the rough or harsh conditions your Army stuff does:

- Bouncing and twisting over rough terrain.
- Choking dust and sticky mud.
- Searing heat and bitter cold.
- Hub-deep water and repeated hosing at the wash rack.
- Neglect by some operators and repairmen.

Army engineers are doing their best, but they can't come up with equipment that will take this abuse and still do a top job without extra attention.

Even with better lubes, stronger metals and rugged electronics, parts will loosen, bend, break, leak, rot, dry out and wear faster than seems reasonable to you.

That's where PM comes in. It's that extra lubing, cleaning and tightening when conditions or operations demand it.

This extra attention lets you find and correct minor faults before they become major faults.

Face it. Your Army gear gets harder use than your personal gear. That's not going to change. What you can change, is the extra care it gets—PM.

Here's another way to think about it: Would you stake your life—right now—on the condition of your equipment?



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# Hydraulic Mist is OK



**C**ontrary to what we printed on Page 3 of PS 539 (Oct 97), the presence of a smoky mist coming from the air/hydraulic power unit when you raise or lower the cab on your FMTV does **not** mean the gasket has failed.

A mist of hydraulic oil may come out of the power unit pump's pneumatic muffler at any time. You see the mist just like you see your breath on a cold day. There's nothing wrong.

The gasket between the oil reservoir and the power unit is not under pressure. It just keeps moisture and dirt from getting into the reservoir.

If the gasket goes bad, and dirt and moisture get into the reservoir, they could cause pump seizure or clog the restrictors behind the CAB TILT and SPARE TIRE valves. So check the restrictors and gasket if the cab or the spare tire bracket won't go up or down.



# Remove Fuse Links

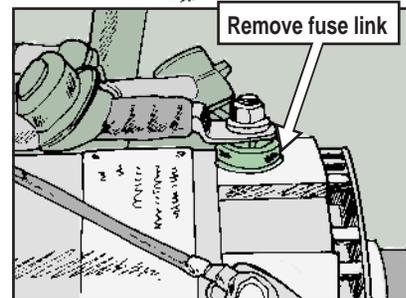
**T**hey look like washers, but they're really fuses—and if they short out, you'll probably never know it until your FMTV's batteries run down.

They are the fuse links under the 12- and 24-volt DC cable connectors on the FMTV's alternator. Normally, when a fuse link burns or shorts out, you won't have an electrical connection any more, so you know something is wrong.

Not so with these fuse links. Depending on how they fail, you'll have a constant drain on the batteries, or the batteries won't charge. In either case, it's bye-bye batteries.

So remove those fuse links before they cause problems. Here's how:

1. Turn the vehicle's master switch off.
2. Raise the cab.
3. Disconnect the negative battery cables.
4. Remove the hardware on the 12-volt DC power cable, discarding the self-locking nut.
5. Remove the fuse link and discard it.
6. Reinstall the hardware, using a new self-locking nut, NSN 5310-01-423-0880.
7. Remove the hardware on the 24-volt DC power cable, discarding the old self-locking nut.
8. Remove the fuse link and replace it with washer, NSN 5310-01-042-8391, so the hardware won't bottom out on the stud. Discard the fuse link.
9. Reinstall the hardware, using a new self-locking nut like the one in Step 6.



# Too Much Is Too

No way oil is supposed to be in your M939-series truck's air filter, but there it is. So where did it come from?

Oil-fouled air filters often start with an overfilled fuel tank. But how does that happen?

The fuel tank, transmission gear case and transfer gear case all vent into the air cleaner duct. Fuel from an over-

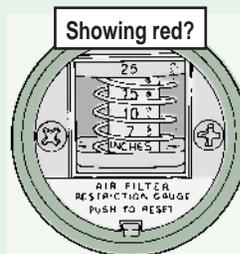
filled tank can run through the vents...and end up in the gear cases. Then, oil from the overfilled gear cases is forced out through the vent lines...and ends up in the air filter.

It's also possible that a leaking interlock air cylinder can pressurize the transfer and push oil into the air filter.



# Bad for Filter

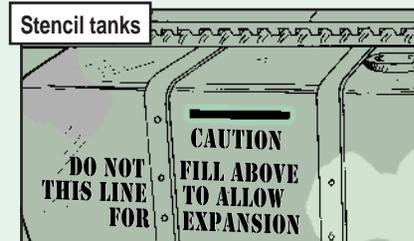
Regardless, if the air restriction indicator in the cab shows red, check the air cleaner. If it's oil-clogged, check the levels in the transmission and transfer gear cases. If they're overfilled, have your mechanic drain the excess.



Consider, too, that the oil in these components may contain fuel. If so, change the oil.

If either gear case is low, support can check the transfer interlock air cylinder for leaks.

A good reminder not to overfill the fuel tank is to paint a line two inches from the top of the tank. Then, stencil "CAUTION: Do not fill above this line to allow for expansion" in 1-in black



letters as shown in Fig 17 of TB 43-0209, *Color, Marking and Camouflage Painting of Military Vehicles, Construction Equipment and Materials Handling Equipment* (Oct 90 with Change 1, May 91).

HMMWV...

## Less Heat, Less Damage

Tired of having to pry swollen dashboard light lenses off your HMMWV to replace a burned-out bulb?

Replace the bulb that produced so much heat that it caused the lens to swell with a cooler-operating LED kit, NSN 5980-01-438-8939. The kit contains the LED and a clear lens.

If you need just the LED, order NSN 5980-01-438-7452. Get the lens only with NSN 6220-01-429-4596.

Standard bulbs swell lenses, so use LEDs



# Leave Valve Screws in Place

**M**ake a slight change to the V10 bottom loading valve removal procedures on the HEMTT tanker and save yourself time and money.

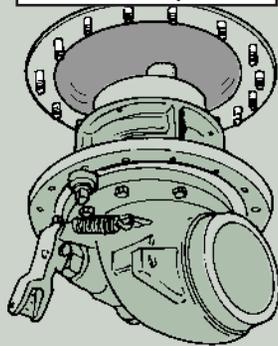
Start by eyeballing Step 5 of the removal procedure in Para 25-24 of TM 9 2320-279-20-3. There's no need to remove 16 screws from inside the fuel tank as directed.

The valve will come off the tank easily enough with the screws left in place, and you can avoid damage to the screws and seal ring.

Don't lose any screws, though. They aren't available separately, so if they are damaged or lost, you'll be buying a new seal ring for DS to install.

A note will be added when the TM is updated telling mechanics to replace the seal ring only when the screws are broken, stripped, or missing.

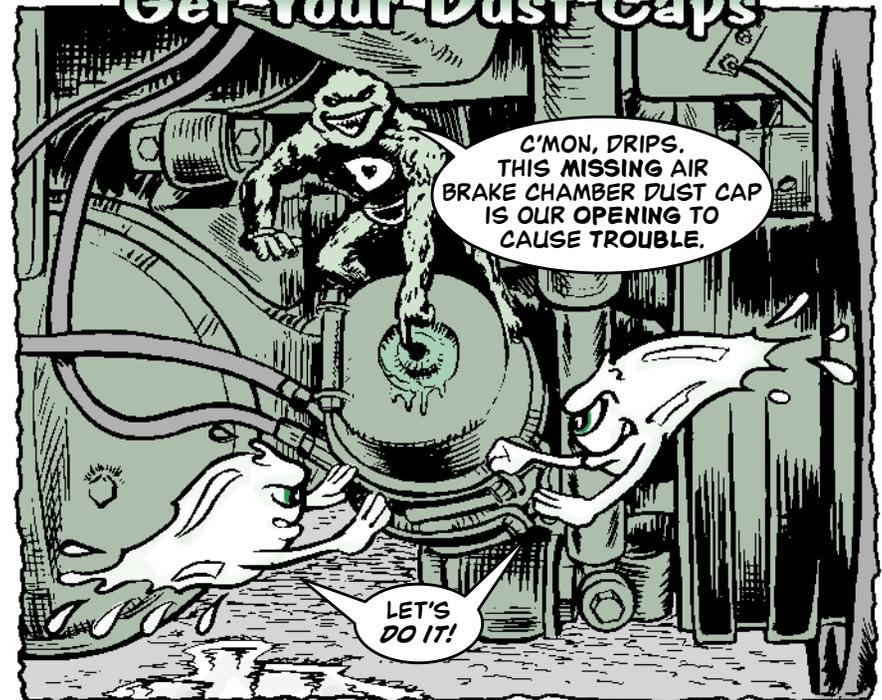
Leave V10 bottom loading valve screws in place



THE NEXT STEP IS TO REPLACE THE BOTTOM LOADING VALVE.

OK, BUT LEAVE THE BOTTOM LOADING VALVE SCREWS IN PLACE.

# Get Your Dust Caps



C'MON, DRIPS. THIS MISSING AIR BRAKE CHAMBER DUST CAP IS OUR OPENING TO CAUSE TROUBLE.

LET'S DO IT!

A missing air brake chamber dust cap is an open invitation for water and dust to get into the chambers and mess up your air brakes.

Stop the invasion by making sure all brake chambers on your air brake-equipped trucks and trailers have dust caps.

Eyeball this list for dust cap NSNs:

| Trailers             |                      |
|----------------------|----------------------|
| M870A1               | NSN 5340-00-518-5678 |
| M871-series          | NSN 2530-01-084-6975 |
| M872/A1/A2           | NSN 3040-01-065-2021 |
| M872A3               | NSN 2530-01-084-6975 |
| M967/M969/M970       | NSN 3040-01-065-2021 |
| M967A1/M969A1/M970A1 | NSN 2530-01-084-6975 |
| M1000                | NSN 5340-01-367-6668 |
| M1076                | NSN 2530-01-314-9318 |

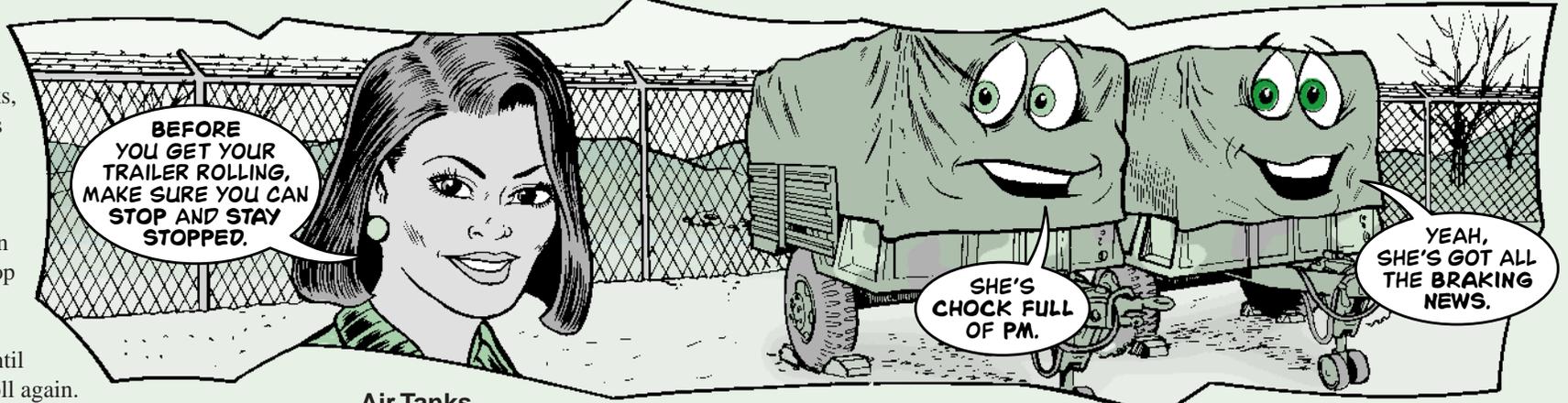
| Trucks         |                      |
|----------------|----------------------|
| FMTV           | NSN 2530-01-084-6975 |
| M939-series    | NSN 2530-01-084-6975 |
| HEMTT          | NSN 5340-01-163-2073 |
| M915-series—   |                      |
| front axle,    | NSN 5340-00-181-1546 |
| tandem axle    | NSN 5340-01-060-1624 |
| M915A1-series— |                      |
| front axle     | NSN 5340-01-155-1840 |
| tandem axle    | NSN 5340-01-060-1624 |
| M1070          | NSN 5340-01-367-6668 |
| M1074/1075     | NSN 5365-01-385-0000 |

Notice caps missing in the field? Use tape to cover the holes.

# PM Puts the Brakes On

**D**rivers, what do master cylinders, air tanks, emergency brakes and chock blocks have in common?

If each is used properly and taken care of, they'll stop your trailer or semitrailer...and keep it stopped until you're ready to roll again.



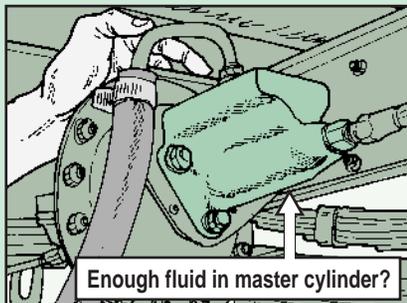
## Master Cylinders

Many small trailers have hydraulic brakes. That means they've got a master cylinder that needs regular service.

Some are easy to find, like the one on M149A2 water trailers. It's right behind the lunette.

Others are not so easy. On other 1 1/2-ton trailers, the cylinder is under the chassis, next to the curbside wheel.

Your operator's manual will pinpoint the location. Then you need to make sure there's enough fluid in the master cylinder to make the brakes work.

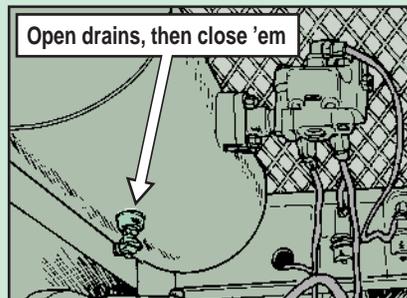


## Air Tanks

Other trailers, especially semitrailers, use air brakes. That means there are air tanks to be drained each day after operation. Draining gets rid of water that would freeze brake lines in cold weather or corrode them in any weather.

After you drain the air tanks, close the drain cocks. Leaving them open lets condensation back inside the tanks when temperatures go from hot to cool.

An open drain cock also lets anything small enough to crawl inside (like bugs) or to blow inside (like dirt).



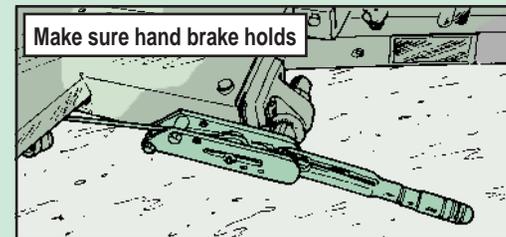
## Before You Go

When you're ready to go, a quick check to make sure your brakes are hooked up right is to roll and stop the vehicle. If it stops, then rolls again once the brakes are released, the brakes are right.

If the trailer rolls, stops, and won't roll again when the brakes are released, the brakes are locked up, which means only one thing—the air lines are connected backward. So, change 'em.

## Emergency!

It does no good to set your emergency brake if it doesn't work, so be sure it does.



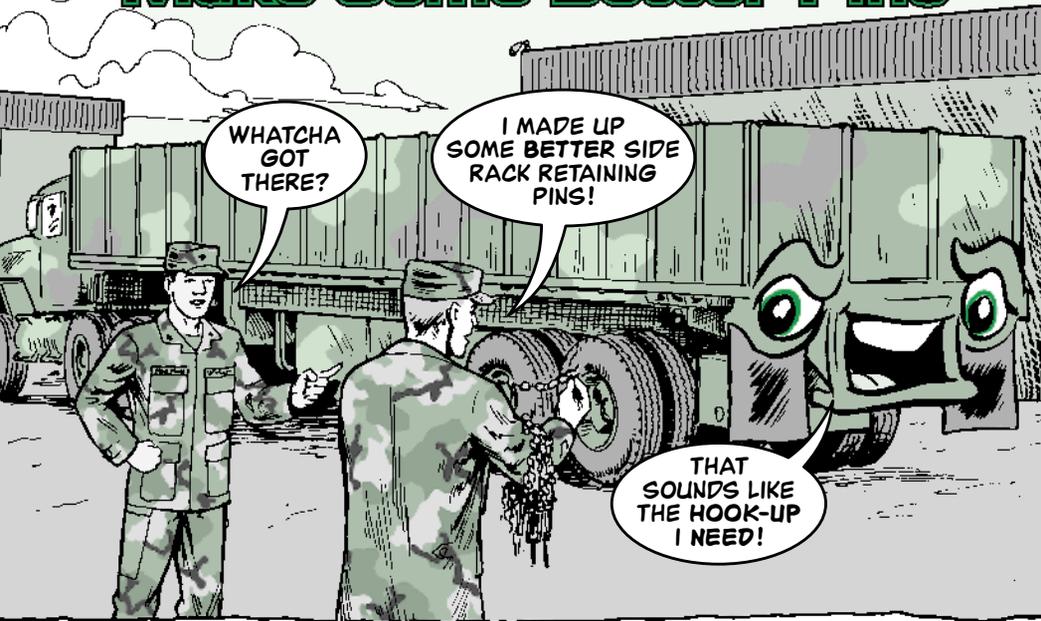
While your trailer is still hooked up, set the brake and try to pull the trailer forward with the truck. If the brakes are working, the tires won't roll.

On the other hand, forget using trailer emergency brakes during cold weather. The cable and handle can freeze and break when you try to use them. Then you can't release the brakes. During cold weather, always use two chock blocks instead of emergency brakes.

If your trailer's not hooked to a truck, and it's on level ground, use chocks in front of one wheel and behind the wheel on the other side.

Put both chocks on the downhill side when parked on a slope. Before moving out, stow the blocks in a safe place, like in their brackets, in a tool box or in some other handy place.

# Make Some Better Pins



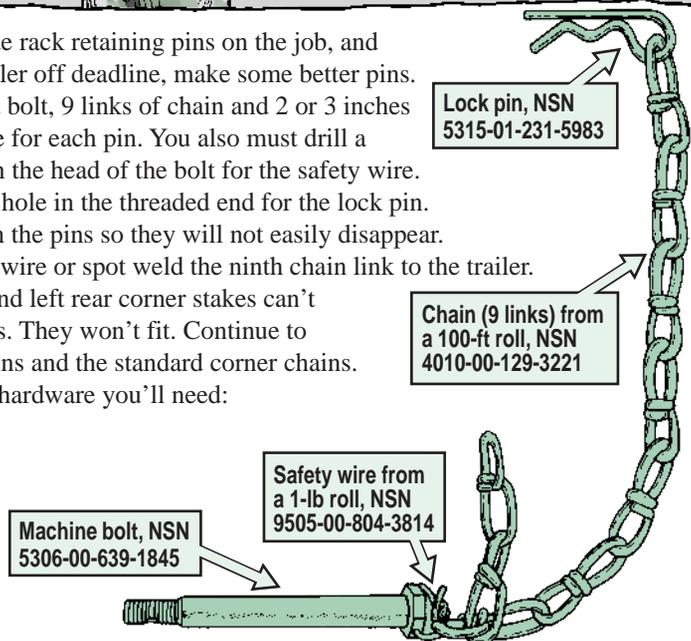
**T**o keep side rack retaining pins on the job, and your semitrailer off deadline, make some better pins.

You need a bolt, 9 links of chain and 2 or 3 inches of safety wire for each pin. You also must drill a 3/64-in hole in the head of the bolt for the safety wire. Drill another hole in the threaded end for the lock pin.

Then attach the pins so they will not easily disappear. Either safety wire or spot weld the ninth chain link to the trailer.

The right and left rear corner stakes can't use these pins. They won't fit. Continue to use the old pins and the standard corner chains.

Here's the hardware you'll need:



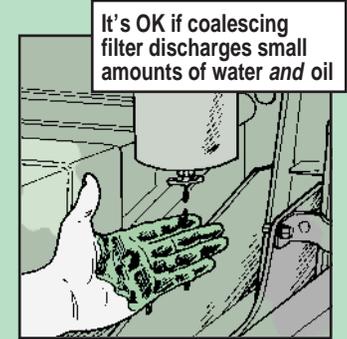
# A Little Oil's OK

**W**hen you operators drain the coalescing filter as part of the weekly PMCS for the compressed air system on the HET and PLS tractor trucks, you'll see a combination of **oil** and water run out.

No problem. The filter is there to remove oil and water before the air goes to the dryers and reservoirs.

Operator PMCS for the PLS already says that a small amount of oil coming from the drain is normal, but a steady stream is not. Report that to your mechanics.

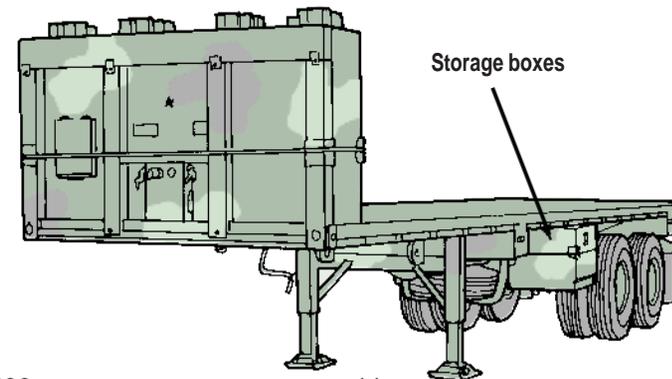
This same PMCS holds for the M1070, although it's not currently in the TM. It'll be added at the next change or revision.



# Storage Box Replacement

**N**eed to replace one or more of the storage boxes on your M871-series semitrailers? You've got two choices:

- Contact Dynaweld Inc, 406 N Highland Rd, Aurora, IL 60506, phone (708) 896-0009. Dynaweld may have storage boxes on-hand.
- Fabricate the boxes using 12-gauge sheet steel, NSN 9515-00-237-1890. That'll get you a 4x8-ft sheet, from which you can make boxes using the dimensions from the old ones. The hardware to attach the boxes is shown in Fig 33, TM 9-2330-386-14&P.



# Keep Safety on Your Side

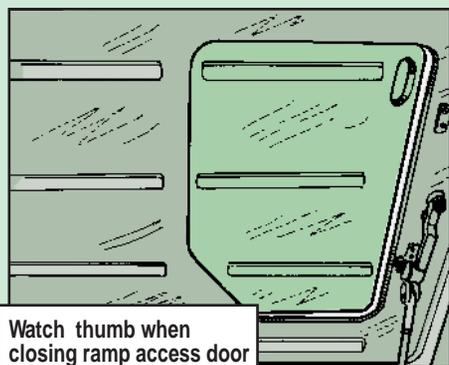
“Better safe than sorry” is a good idea when dealing with vehicles from the M113-series family.

While you’re heeding the WARNINGS already listed in your -10 and -20 TMs, here are two more you need to add.

## Ramp Access Door

Most soldiers use their left hand to close the ramp access door when inside the vehicle. Unfortunately, that exposes their left thumb to danger.

If the thumb is extended, it may stick out far enough to get caught between the door and the door frame.



So, add the following WARNING to Page 2-142 of TM 9-2350-261-10 and Page 2-159 of TM 9-2350-277-10:

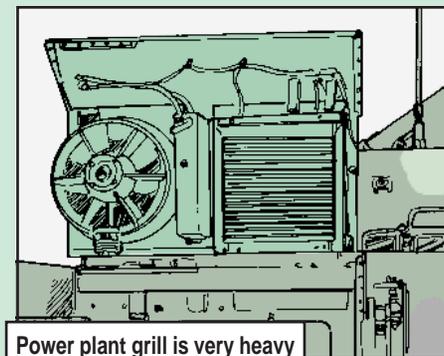
### WARNING

Use of the left hand to grasp and close the ramp access door will expose thumb to being extended beyond the door’s edge leading to possible amputation when the door is pulled closed. When using left hand, use only the center of the handhold and be aware of the thumb’s position.



## Power Plant Grill

You must use extra care when you remove or replace the power plant grill. It’s very heavy, so use the proper lifting equipment at all times.



Add the following WARNING to Page 5-1 of TM 9-2350-261-20-1 and Page 7-51 of TM 9-2350-277-20-3:

### WARNING

When removing and installing the Power Plant Grill, you must be aware that the grill assembly will swing when the screws are removed. To avoid injury, do not stand in front of or behind the grill assembly.

Use chain and lifting device capable of lifting and holding 2,000 pounds (908 kg) securely. Inspect each and be sure your chain and lifting device are in good working order and are not damaged in any way. Do not use damaged lifting devices. They can fail with load. Soldiers can be killed or injured. Remember the grill and access cover are very heavy. Use extreme caution when lifting, blocking and lowering the assembly. Allowing the assembly to fall could cause death or injury.

Make a note of these new warnings until they’re added to the TMs.

## New Deal for No Seal

WHAT A LOUSY DEAL! I'M TELLIN' YA THAT A LEAK IN MY ENGINE ACCESS PANEL SEAL IS OK! HONEST!

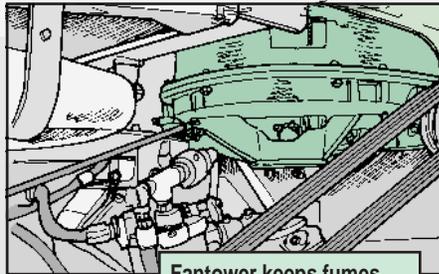
NMC



Operators, the -10 TMs are wrong when they say your M113-series vehicle is NMC if the engine compartment access panels won't seal.

TACOM says your vehicle is good to go even with a leaky seal. The engine fantower keeps any dangerous exhaust from entering the troop compartment.

Make a note until the TMs can be updated.



Fantower keeps fumes out of troop compartment

## Armored Vehicle-Launched Bridge ...

### Do You Smell Gas?

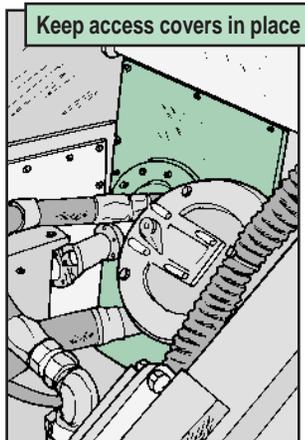
Loose or missing access covers between the crew and engine compartments of the armored vehicle-launched bridge are downright dangerous.

Loose or missing covers can:

- ▶ Let exhaust gases seep into the crew compartment. Carbon monoxide in the gases can kill you!
- ▶ Let an engine fire spread into the crew compartment before you have a chance to get out.

Check the access covers right now. If they're loose or missing, get your mechanic to tighten or replace 'em right away.

Mechanics, replace any damaged or missing gaskets, too.



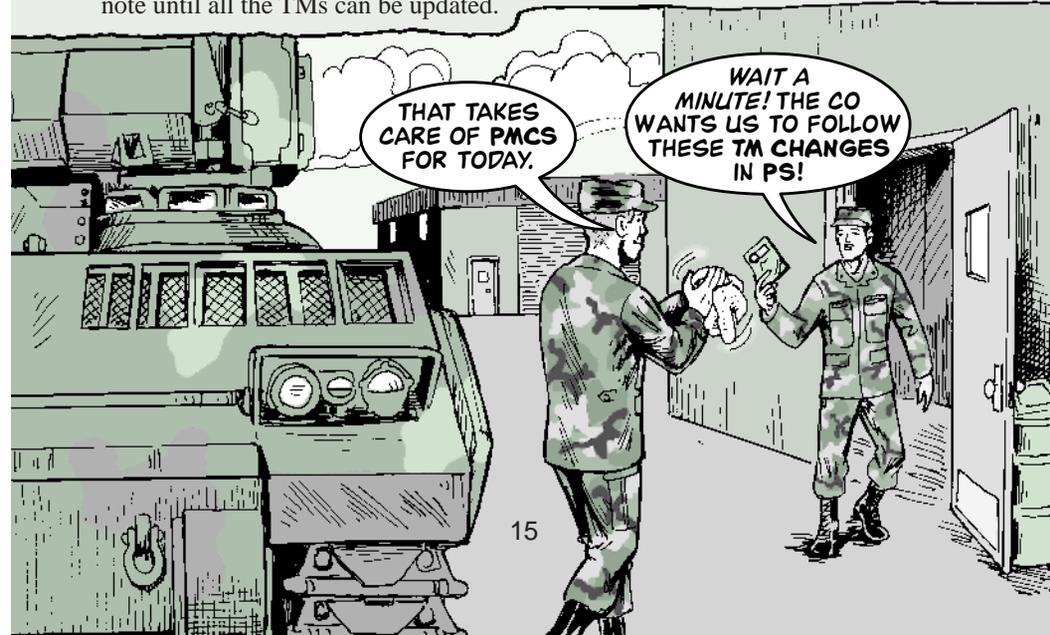
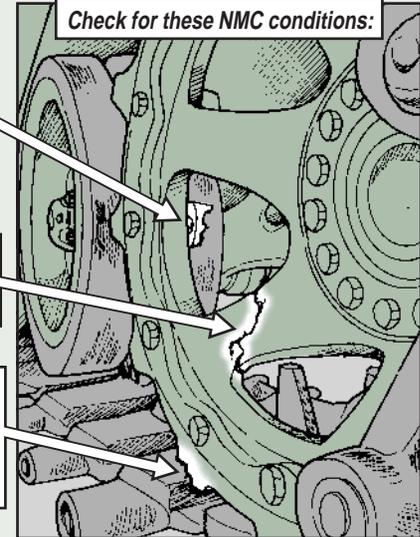
## New Sprocket Checks

Crewmen and mechanics, before you inspect Bradley sprockets, eyeball these upcoming changes to your TMs.

Bradleys are now NMC if even one drive sprocket tooth or carrier track support is broken. That's down from the three broken teeth or supports currently listed in your TMs.

You'll also need to watch for cracks that go all the way through the sprocket carrier and complete breaks of the sprocket carrier. Surface cracks are OK, but should be reported and watched. A break makes the Bradley NMC.

These new checks will be added to the -10-1 TMs as part of Item 24 in the after-operation PMCS tables. Mechanics will find the new checks added to the sprocket drive maintenance section of their -20-1-2 TMs. Make a note until all the TMs can be updated.



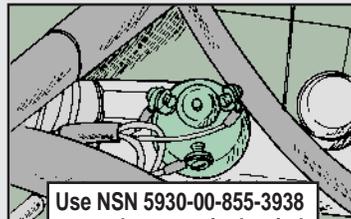
# Make a Switch Swap

Need a new engine oil pressure switch for your Bradley? OK, but don't order the one called out in your parts TMs.

NSN 5930-01-341-8008 is supposed to bring a three-terminal switch, PN 76579. But because the wrong part number (PN) was entered in the supply system, you'll get a two-terminal switch, PN 76576, instead.

Until things are straightened out, get the three-terminal switch with NSN 5930-00-855-3938.

You'll find the switch listed as Item 246 in Fig 83 of TM 9-2350-252-24P-1. It's also found as Item 264 in Fig 99 and Item 263 in Fig 100 of TM 9-2350-284-24P-1. Make a note until the new NSN is added to the TMs.



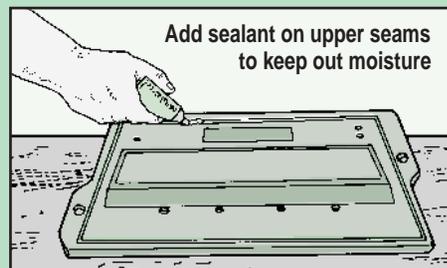
# Scoping Out a Solution

Mechanics, installing a new commander's periscope, NSN 1240-01-319-5340, on an M1A2 tank takes a bit of care and effort. In other words, you don't want to do it again anytime soon.

Keeping moisture out of the periscope is the key to making it last. The periscope seams are already coated with a thin bead of sealant, but it won't keep water out for long.

Before installing the new periscope, run a 1/8-in bead of sealant, NSN 8040-01-331-7469, on all upper seams. That creates an air-tight seal that keeps the periscope on the job for a long time.

You'll find the new procedure on Page 9-39 of TM 9-2350-288-20-2-4.



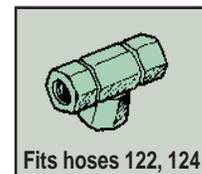
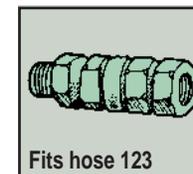
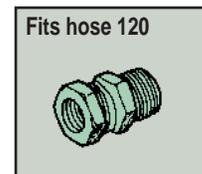
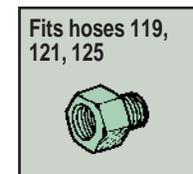
# Your Hose and Coupling Connection



Fig 47 of TM 9-2350-256-24P-2 does a good job of listing the hydraulic hoses and couplings for your recovery vehicle. But it doesn't tell you where the hoses go or which coupling each hose takes.

Items 119-125 in the diagram on Page 12-21 of TM 9-2350-256-20 show the location of each hose. Use this chart to identify each hose and the coupling it needs:

| Hose # | Hose NSN 4720- | Coupling NSN 4730-00- |
|--------|----------------|-----------------------|
| 119    | 00-706-9126    | 200-0515              |
| 120    | 01-018-4899    | 496-2700              |
| 121    | 00-706-9091    | 200-0515              |
| 122    | 00-706-9141    | 541-9081              |
| 123    | 00-706-9138    | 090-9252              |
| 124    | 00-706-9114    | 541-9081              |
| 125    | 00-706-9107    | 200-0515              |



Keep this information handy until the TM can be updated.

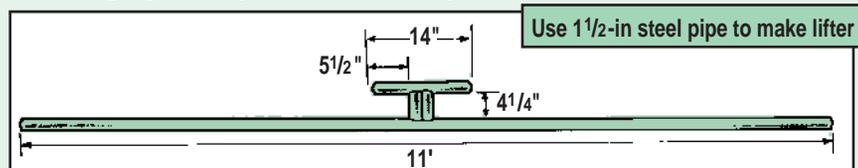
# Easier Tow Bar Hookups



**M**echanics, hooking up the tow bar when recovering a disabled combat vehicle is one of the most difficult—and dangerous—jobs you have to do.

Not only is that tow bar back-breakingly heavy, but who wants to stand between several tons of metal that might move suddenly?

The solution is a homemade tow bar lifter. It makes your job a lot easier and safer. You won't have to stand between vehicles to hook up the tow bar. And, with two people lifting, the load is a lot lighter.



The 11-ft long lifter is made of 1 1/2-in diameter steel pipe that is 1/8 inch thick. It has a 14-in long tee made from the same pipe that fits in the V-shaped end of the tow bar.

After attaching the tow bar to the disabled vehicle, two people use the lifter to hold the tow bar up. The recovery vehicle driver makes the hookup with the help of the ground guides.

The lifter is designed to work with all Army tow bars and recovery vehicles, including the 5-ton wrecker.

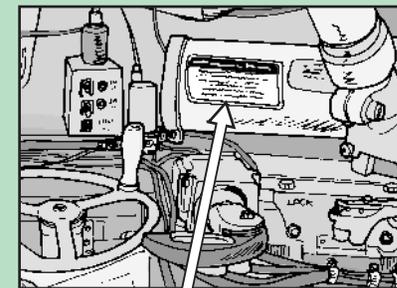
# DON'T FORGET NEW DECAL

**C**rewmen, depending on memory to do your howitzer's primary prefire checks and services can be a problem, especially since there have been a few changes lately.

The index guide pins on the recuperator must now extend 1/4 to 3/4 inch in order for your vehicle to be FMC. Also, the tube borescope maintenance interval has been increased from 90 to 180 days.

To help jog your memory, a new decal is available that lists all of the primary prefire checks and services.

Place the new decal, NSN 9905-01-037-0245, on the accumulator next to the "CAUTION CLOSE BUSTLE DOORS BEFORE TRAVERSING CAB" decal.



## PRIMARY PREFIRE CHECKS AND SERVICES

1. TRAVEL LOCK : UNLOCKED AND STOWED.
2. RECOIL SYSTEM : BUFFER AND RECOIL SYSTEM BLED, REPLENISH GAGE PRESSURE WITHIN OPERATING RANGE, RECUPERATOR INDEX PINS PROTRUDE 1/4 INCH TO 3/4 INCH.
3. TUBE : UNOBSTRUCTED, BORESCOPED WITHIN LAST 180 DAYS-IAW TM9-1000-202.
4. BREECBLOCK : SMOOTH OPERATION, COMPLETE CLOSING.
5. FIRING MECHANISM : PROPER FUNCTIONING, FIRING PIN SERVICEABLE.

# Keep the Ram in Your Rammer

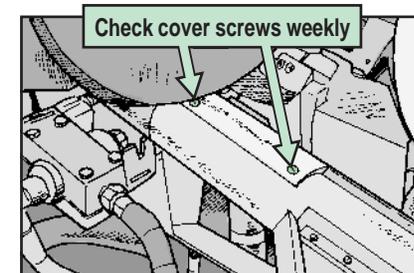
**C**rewmen, the formula is simple: Exert enough pressure for long enough and anything will come loose.

That goes for the small screws that hold the track cover in place on your M109A2-A5 howitzer's rammer assembly.

The constant movement and vibration from ramming ammo eventually loosens the screws. If some of the screws are missing or not tight enough, the cover doesn't make contact with the blocking valve.

When that happens, the blocking valve doesn't open all the way and there's not enough hydraulic fluid available for the rammer to properly seat the projectile.

Check the screws at least weekly to make sure they're not loose or missing. Replace missing screws with NSN 5305-00-954-3487.



# REEL IN BETTER

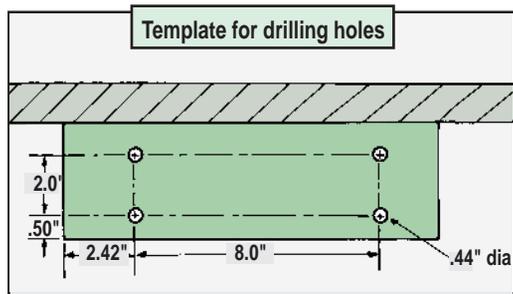
**H**ere's some good news for mechanics who are tired of repairing broken or bent telephone cable reel brackets welded to the backs of M992-series ammo carriers. A new, screw-on bracket is now available that's easier to remove and repair.

*First, you'll need to get rid of the old bracket:*

1. Remove the reel and set it aside.
2. Use a sledgehammer to break the two bracket arms loose from where they are welded to the hull. Grind the surface smooth with the drill grinder attachment, NSN 3460-00-529-2105, from the No. 1 Common shop set.
3. Touch up the metal with CARC paint.

*Now install the new bracket:*

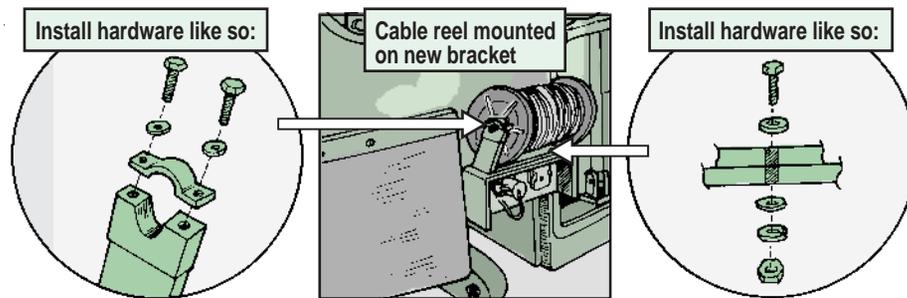
1. Mark four hole locations on top of the NATO slave receptacle guard like so:



# BRACKET

Lay the new bracket, NSN 2590-00-933-9011, on top of the guard to make sure the holes will line up.

2. Drill four  $\frac{7}{16}$ -in diameter holes using drill bit, NSN 5133-00-227-9670, from the No. 1 Common shop set.
3. Install the new bracket using four screws, NSN 5305-00-068-0511; eight flat washers, NSN 5310-00-080-6004; four lock washers, NSN 5310-00-637-9541; and four nuts, NSN 5310-00-732-0558.



4. Secure the reel on the new bracket with two retaining clamps, NSN 5340-00-933-7464; four screws, NSN 5305-00-068-7837; and four lock washers, NSN 5310-00-582-5965.
5. Slide the hand crank back through the reel and secure it with a new cotter pin, NSN 5315-00-068-5629.

## Universal Joint Changes

**M**echanics, before you check, repair or tighten the universal joint assembly on an M992A2 ammo carrier, note these changes to TM 9-2350-293-20-1:

- Item 13 on Page 2-27 of the PMCS tables says to torque the mounting bolts to 90 lb-ft, but that's too tight. The correct torque is 37-42 lb-ft.
- Para 9-3, Universal Joint Repair, provides **no** torque specifications for the mounting bolts. Again, the correct torque is 37-42 lb-ft.
- Para 3-2, Powerpack Replacement, refers you to TM 9-2350-293-10 for disconnecting the universal joints. That's wrong. It should refer you to Para 9-3 of TM 9-2350-293-20-1.

Make a note of these changes until the TM can be updated.

# Air Filter

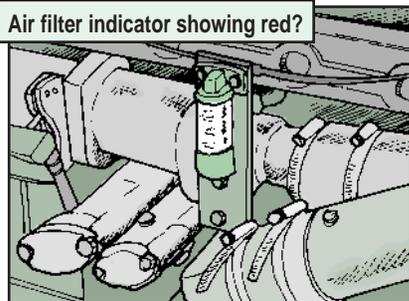
# Brushhoff

**O**perators, your dozer needs clean air to do its job. Its filters can provide that air, with a helping hand—and eye—from you.

## Check the Indicator

Keep an eye on the dozer's air cleaner indicator. It's right next to the canister. If the indicator moves from yellow to red, open the canister and pull out the primary air filter.

Air filter indicator showing red?



Use low-pressure air from a nearby tactical vehicle to blow air—30 psi or less—from inside to outside to loosen dirt and sand from the dozer's air filter element. Never bang the filter on a rock or hard surface like the dozer's track. Replace the primary air filter element once a year, or after six cleanings.

When the dozer's secondary filter becomes clogged, have your unit mechanic replace it. How do you tell if it's clogged? Simple.

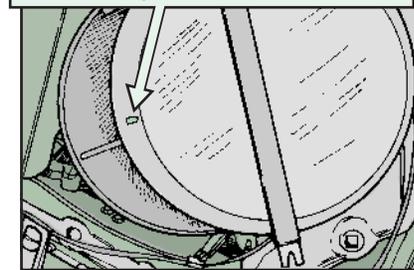
After installing a clean or new primary filter element, if the indicator moves into the red zone when you try to start, the secondary filter's clogged. Black exhaust smoke is another indication of a clogged filter.

## Tight Seal Deal

With the filter elements installed, be careful how the canister lid goes back in place. That lid needs a tight seal to keep out dirt and sand, two culprits that can ruin your dozer's turbocharger and engine.

The lid has a recessed lip with a raised mark on its outer cover. Make sure this area points toward the front of the vehicle. That way the primary filter element fits tight against the lid with a good seal.

Raised mark points towards vehicle front



## Use Caution with Blade Float

**O**perators, make sure you heed the CAUTION on Page 2-31 of TM 5-2410-237-10. Never use the D7G dozer blade's quick drop option when it's over a ditch or big hole.

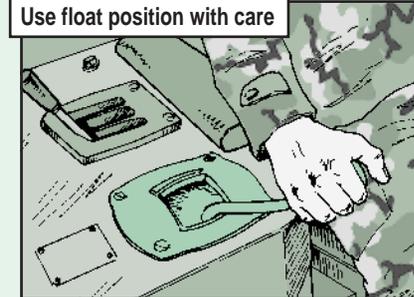
The blade falls quickly when you put the blade control lever all the way forward, in the float position. Problem is, there's no built-in stop.

The blade drops until it hits the ground, or until 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 cylinders. That brings your dozer operations to a screeching halt.

So never let the blade drop 18 inches or more below the bottom of your dozer's tracks. Use the float position with care, or lower the blade under power.

On level ground, it's okay to drop the blade quickly.

Use float position with care



# KEEPING THE ACE IN A-1 SHAPE

The ACE is a hard-working earthmover, and will move mountains for you if you pile on the PM.

Follow the word in TM 5-2350-262-10 and use these pointers that others have learned the hard way to keep your ACE on the job.

## Keep a Keen Edge

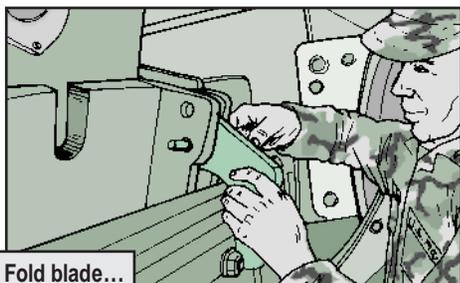
The dozer blade's cutting edge protects the moldboard. If the edge wears down too far, the moldboard is damaged and has to be replaced or sent to DS for repair.

Make sure the moldboard is still protected. Get down on your knees and clear away the dirt to eyeball the blade's cutting edge. To get an even better look, fold the blade like you do for cross-country travel.

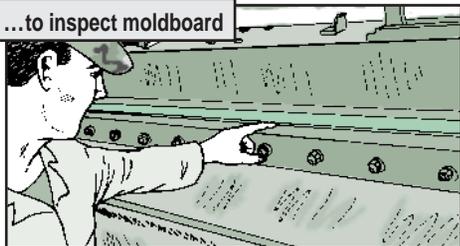
If the cutting edge is worn to 1/4 inch—report it. Your mechanic can reverse the edge or replace it if it can't be reversed.

## Fold the Blade

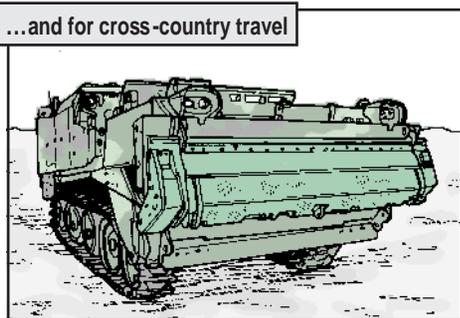
As always, follow the word in the TM and fold the blade when traveling cross-country, no matter what the soil conditions are—even if it's sand or loosely packed dirt. That way, the blade can't dig into a ridge or other obstruction—damaging the blade, moldboard, ejector and hydraulic system.



Fold blade...



...to inspect moldboard



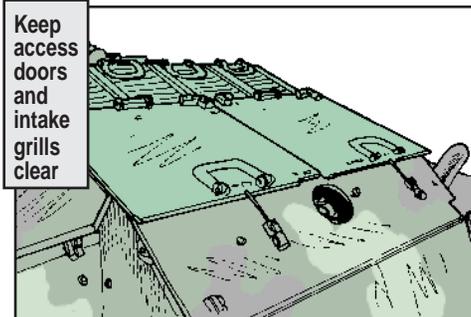
...and for cross-country travel

## Fire Prevention Tip

When you're ready to go to the field, don't stack duffel bags or camouflage netting on top of the engine's access doors. Those items can shift during travel and end up on top of the exhaust stack. The stack gets hot enough to start a fire.

Keep things off the air intake grills, too. Anything stacked there restricts airflow to the engine and radiator—overheating the engine and transmission.

Keep access doors and intake grills clear



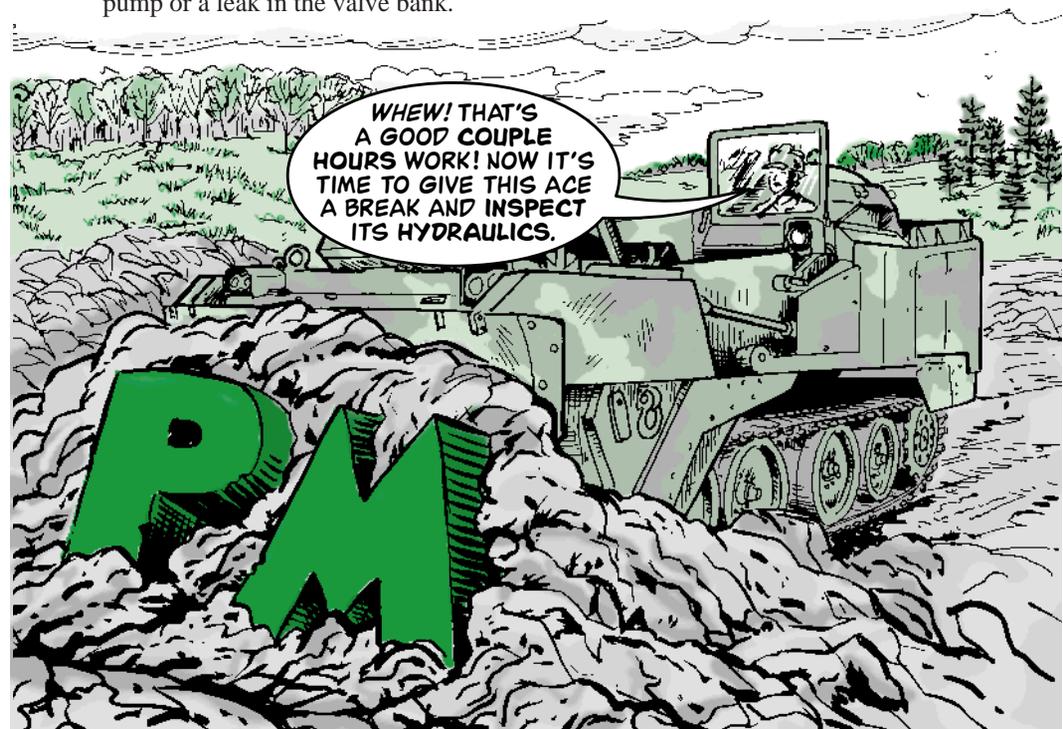
## Time for a Break

It's no secret that the ACE is hard on its hydraulic system, especially when you're digging in the hard stuff.

Taking a break every 2 or 3 hours for vehicle downtime is an unwritten rule for many ACE operators. That short time off lets them look for any potential hydraulic problems.

While training other operators, leave the vehicle's ejector out about 2 feet when digging or extracting dirt. With your CO's OK, do the same thing during normal operations.

With the ejector forward, there's enough room to see a busted compensation pump or a leak in the valve bank.



WHEW! THAT'S A GOOD COUPLE HOURS WORK! NOW IT'S TIME TO GIVE THIS ACE A BREAK AND INSPECT ITS HYDRAULICS.

# Watch Your Step

**T**he starter master relay on your ACE does its job best when left alone.

Problem is, some well-meaning mechanic pulls the vehicle's floorboards for cleaning and uses the relay's protective box as a step. All that weight breaks the box's mounting bracket—shorting the starter master relay. The end result is your ACE won't start.

So, keep your boot off the relay's protective box when cleaning or doing maintenance.



## Track Pads Needed??

Dear Half-Mast,

*Some of the track pads on our M9 ACE are missing or in bad condition. Do we have to replace them?*

SFC G.P.A.

Dear Sergeant G.P.A.,

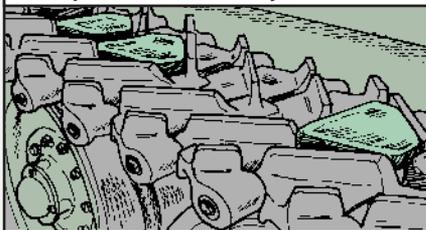
*That depends. If you can get from the motor pool to the job site without damaging roads, you don't need pads. That's the word from Tank-automotive and Armaments Command (TACOM).*

*In most soil conditions, the ACE will dig better without pads. However, in muddy clay, the soil will clump up without pads and the ACE will lose traction and digging ability.*

*Need that in writing? See the March '92 issue of ACE News 'n' Views on the Internet:*

<http://www.tacom.army.mil/m9ace>

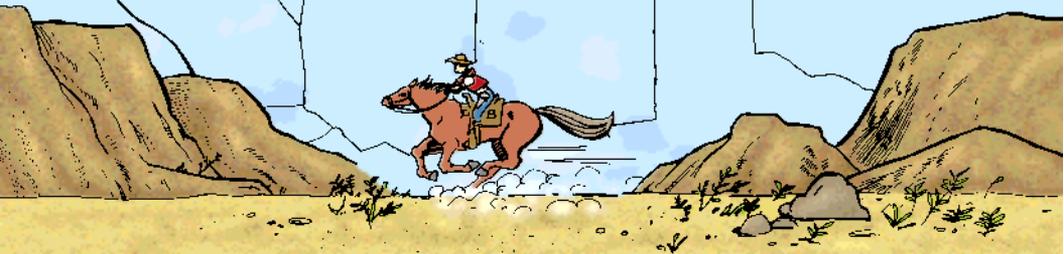
Track pads aren't necessary in dirt or sand



*Half-Mast*

# THE TRUE STORY OF THE PONY EXPRESS

From April 1860 to November 1861, a drama played out on this continent's Western stage that still stirs the soul and fires the imagination. That drama was The Pony Express. From St. Joseph, Missouri to Sacramento, California, a journey of 1,840 miles, young men with true grit carried the "mochila" (mail pouch) and rode hell-bent-for-leather.



Young men with names like Tough Littleton, Bronco Miller, Mochila Joe Paxton and Cyclone Thompson got the mail through. History tells us there were only two failed rides. The first happened during the Paiute Indian War when 7 relay stations were razed and 16 people were killed by the warring Paiutes. The second, well, that's our story today.

*The story of the failed ride of...*

...Lazybones Jones!



**SCHLUNK**

RATTLE RATTLE

Never heard of old Lazybones, huh? Not many folks have. He simply rode off into oblivion one day. But we do know some of the things that led up to that fateful ride, thanks to the journal of one of his expressing-riding compatriots, Buffalo Bob Half-Mast.

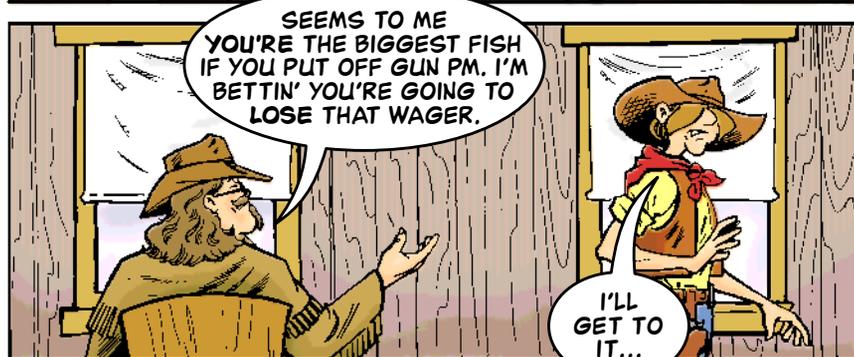
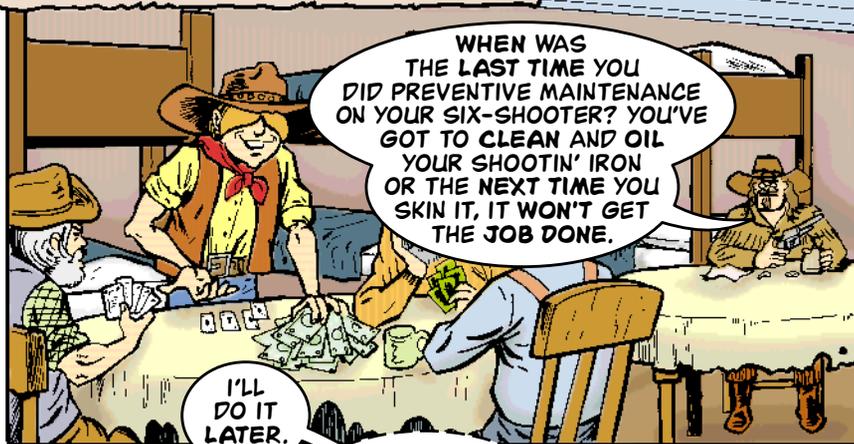


HEY, JONES, YOU'D BETTER CHECK YOUR HORSE'S SHOES. YOU DON'T WANT HIM TO COME UP LAME ON THE TRAIL.

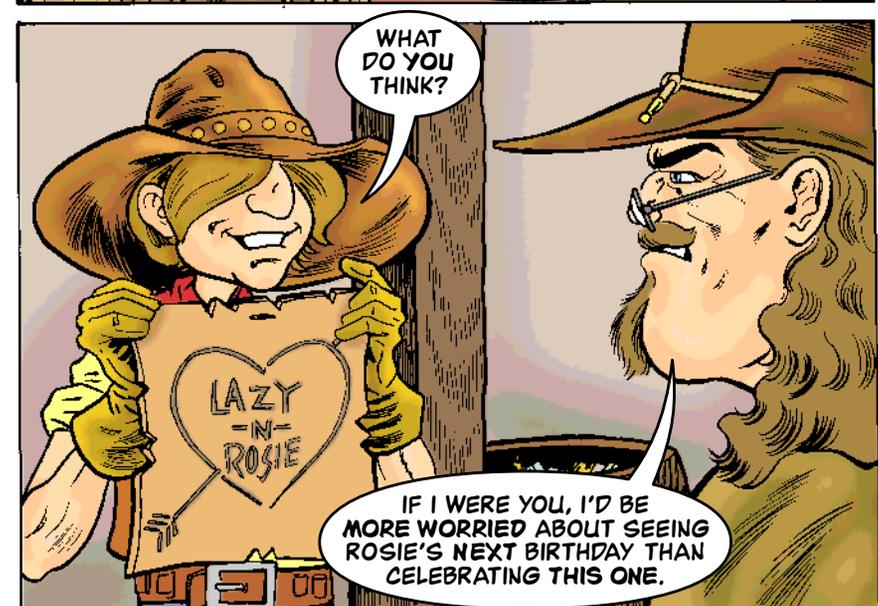
I'LL DO IT LATER. I WAS UP LATE LAST NIGHT AT ROSIE'S. YOU KNOW HOW THE FOLKS LIKE A MAN WHO RIDES TALL IN THE SADDLE.

IF YOU DON'T PULL SOME PREVENTIVE MAINTENANCE ON THOSE SHOES, YOU'RE GOING TO FIND OUT HOW THEY LIKE A MAN WHO WALKS LOW IN HIS BOOTS.

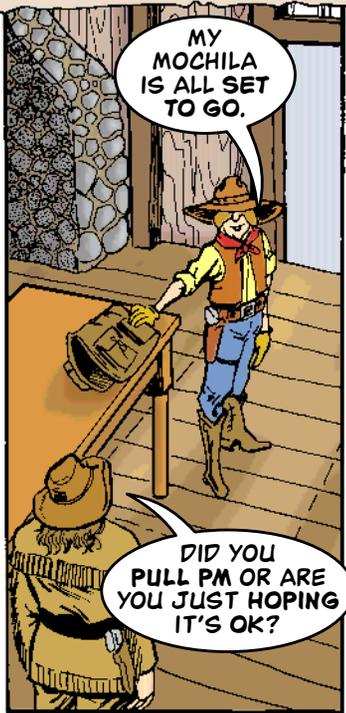
But later, Lazybones was busy with something else...



But he didn't get to it, nor to saddle maintenance...



After the party, one of the most important things for a successful ride needed attention...



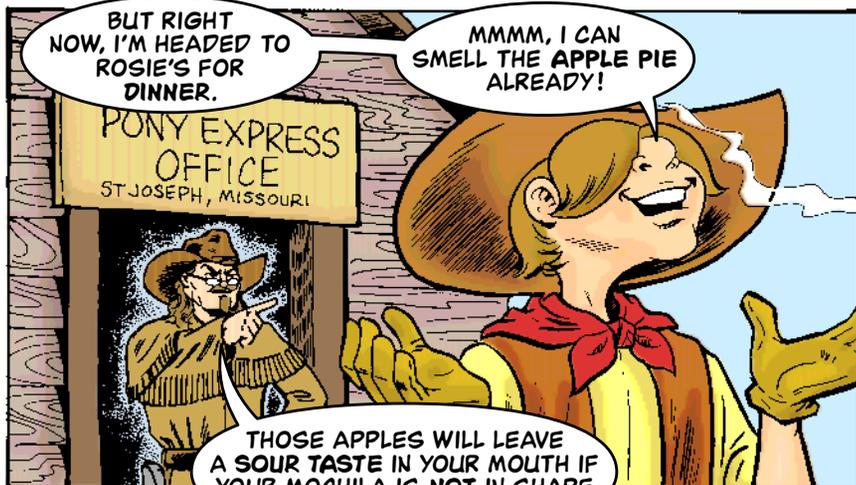
MY MOCHILA IS ALL SET TO GO.

DID YOU PULL PM OR ARE YOU JUST HOPING IT'S OK?



THIS STITCH JOB WON'T HOLD UP PAST THE FIRST HARD MILE.

I'LL WORK ON IT MORE LATER.

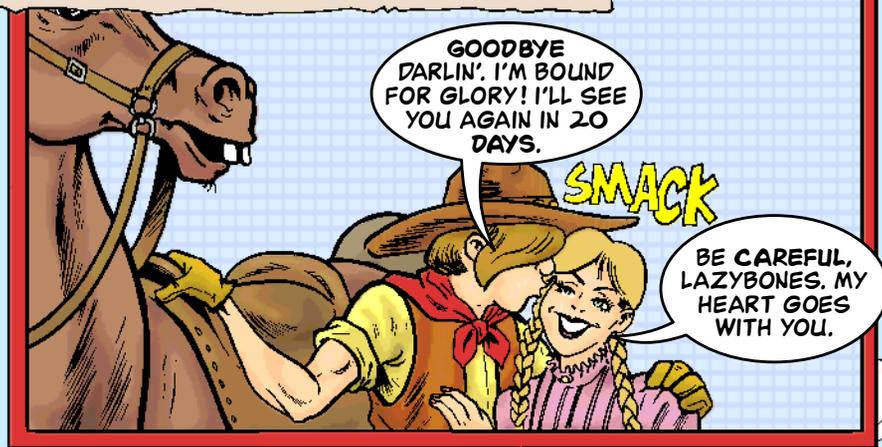


BUT RIGHT NOW, I'M HEADED TO ROSIE'S FOR DINNER.

MMMM, I CAN SMELL THE APPLE PIE ALREADY!

THOSE APPLES WILL LEAVE A SOUR TASTE IN YOUR MOUTH IF YOUR MOCHILA IS NOT IN SHAPE TO CARRY THE MAIL.

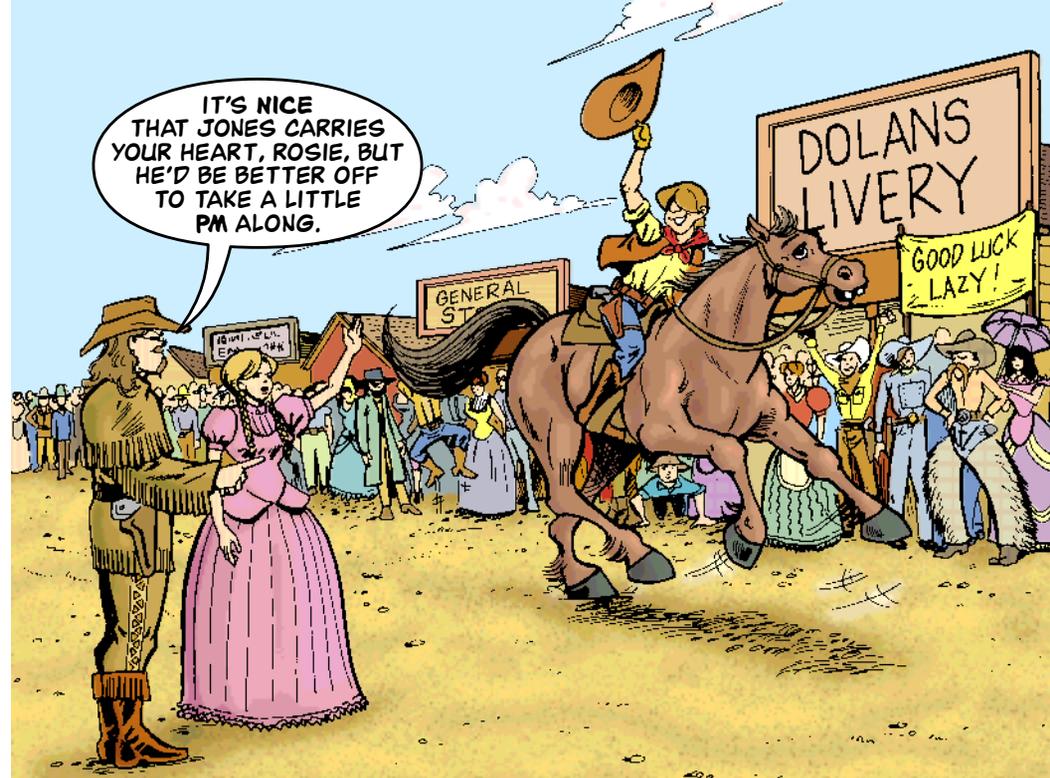
Jones' turn to ride came up...



GOODBYE DARLIN'. I'M BOUND FOR GLORY! I'LL SEE YOU AGAIN IN 20 DAYS.

SMACK

BE CAREFUL, LAZYBONES. MY HEART GOES WITH YOU.



IT'S NICE THAT JONES CARRIES YOUR HEART, ROSIE, BUT HE'D BE BETTER OFF TO TAKE A LITTLE PM ALONG.

But, unfortunately, Lazybones Jones never returned from that ride...

EXTRA!  
EXTRA! READ ALL  
ABOUT IT!

PONY  
EXPRESS RIDER  
LOST!

THE MAIL  
DOES NOT GO  
THROUGH!

LACK OF PM  
SUSPECTED!

BOO HOO  
HOO! MY POOR  
LAZYPONES!

ST JOSEPH REGISTER  
**EXPRESS RIDER  
LOST**  
THE MAIL DOES NOT GO  
THROUGH. LACK OF PM SUSPECTED

LAZYPONES JONES  
WASN'T A BAD FELLOW. HE  
HAD ALL THE GOOD INTENTIONS  
IN THE WORLD TO DO PM. IT WAS JUST  
THAT HE ALWAYS INTENDED TO DO IT  
LATER. AND LATER FINALLY CAUGHT  
UP WITH HIM. UNFORTUNATELY,  
LAZYPONES' DESCENDANTS  
ARE PLENTIFUL.  
THERE MAY BE ONE IN  
YOUR UNIT. BUT BEFORE YOU  
POINT A FINGER, CHECK THE  
MIRROR. COULD BE HE'S  
HIDING THERE.

# BLADE ADJUSTMENT

The preferred AMCOM method for raising and lowering Chinook rotor blades uses a hangar crane. It's an awkward job and requires up to three persons.

But some units simplify the job and reduce the manpower required by making and using a rotor blade stand. It lifts, lowers and holds the blade in place while the pitch change links are adjusted.

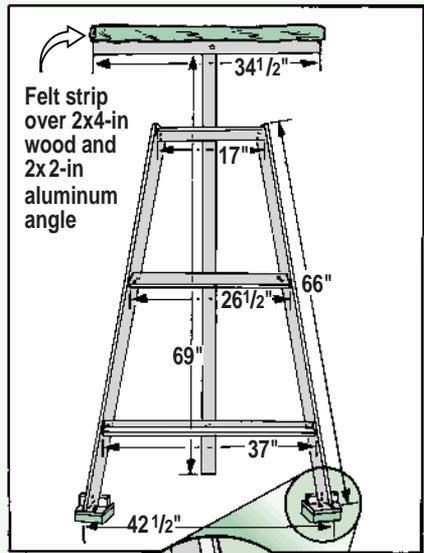
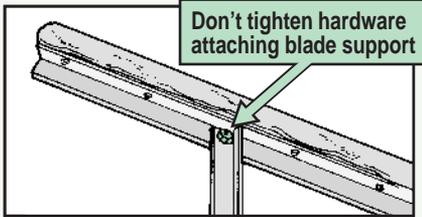
If your commander OKs using the stand, here's what you need to make it.

- Angle aluminum, 2x2-in, NSN 9540-00-231-9911
- Assorted nuts and bolts
- Lumber, 2x4-in, NSN 5510-00-267-2283
- Felt strip, NSN 8305-00-812-2360

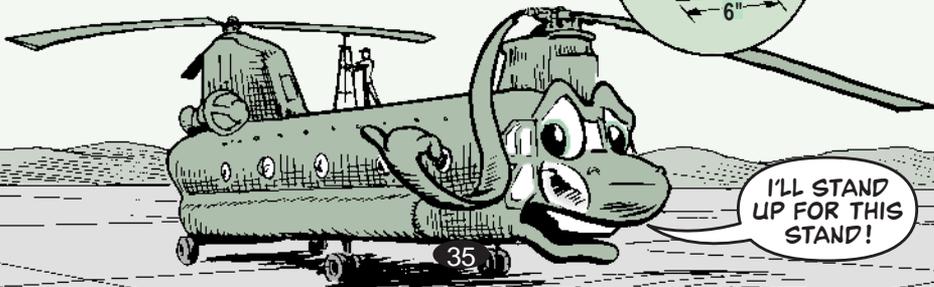
Here's how to put the stand together:

When you use the stand, make sure you put the legs of the blade stand ONLY on the reinforced seams of the fuselage so they don't dent or tear the bird's skin.

Never tighten the hardware attaching the blade support to the vertical beam. The blade support must be able to tilt to fit the angle of the rotor blade.



Once in place, move the stand toward the tip of the blade to raise the blade and toward the rotor head to lower it.



# Fuel Sample Buddy Takes the Plunge

Dear Editor,

The plastic tube that goes to the bottom of the Black Hawk's fuel tank sump—the tube you must insert your fuel sample hose into—does not line up with the fuel port.

Too often, the sample taker has to dip his hand into the fuel, grab the tube and hold it in line with the fuel port. Once lined up, the fuel sample test hose fits into the tube and the sample is taken.

Getting your hands wet with fuel can be dangerous. Just read the material safety data sheet (MSDS) for JP-8. It can irritate or infect the skin and its fumes can cause headache and dizziness.

Warm soap and water will ease skin infection and irritation and breathing fresh air will eliminate the headache and/or dizziness.

But, I've made a tool that eliminates the need for the soldier to get his hands wet at all. I call it the "fuel sample buddy" because it takes the plunge and grabs the tube for you.

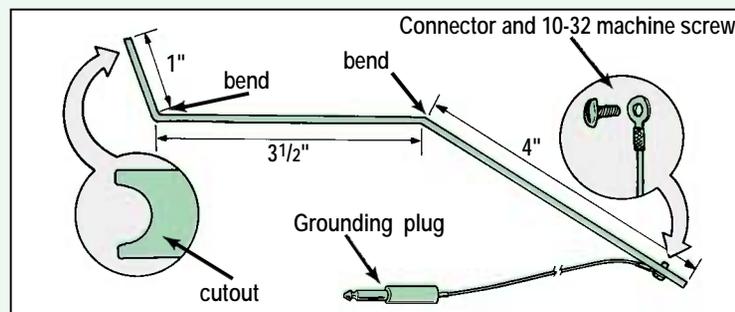
Your sheet metal folks can make this tool for you. They'll need these parts:

| NSN              | Description                          | Qty                                    |
|------------------|--------------------------------------|----------------------------------------|
| 9535-00-232-0405 | .090-in aluminum, 4x12-ft sheet      | 8x1 <sup>1</sup> / <sub>8</sub> inches |
| 4010-00-286-2681 | Wire rope, .093-in dia, 1000-ft roll | 36 inches                              |
| 5305-01-025-5769 | Machine screw, 10-32                 | 1                                      |
| 5310-01-111-9441 | Hexagon nut, 10-32                   | 1                                      |
| 5935-00-574-5714 | Plug, tip, ground connector          | 1                                      |
| 5930-00-143-4794 | Connector, 10-32                     | 1                                      |

Here's how to make the "buddy":

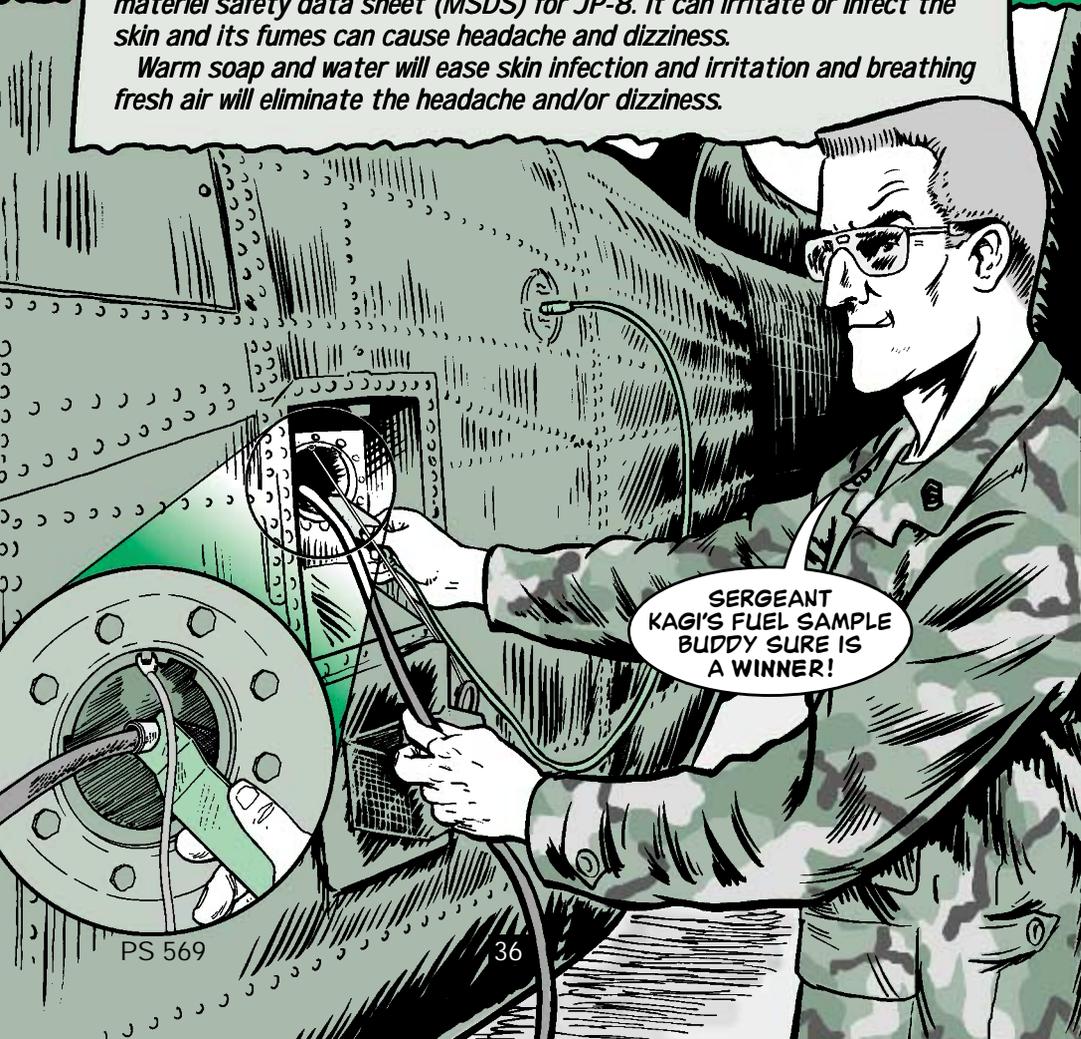
1. Cut an 8<sup>1</sup>/<sub>2</sub> x 1<sup>1</sup>/<sub>8</sub>-in piece of aluminum.
2. Take a nickel and trace half of it at one end of the aluminum. Cut it out.
3. Make two bends in the metal tool as shown in the drawing.
4. Crimp the 10-32 connector to one end of the cable and attach it to the straight end of the tool with the 10-32 machine screw and nut.
5. Attach the grounding plug to the other end of the wire rope.

**CAUTION:** make sure the helicopter is adequately grounded before attaching the ground plug to the helicopter.



Now you're in business. With your "sample buddy" holding the fuel tank tube in place, you insert the sample hose into the fuel tank tube and siphon the fuel into your sample jar. The "sample buddy" takes the plunge—eliminating messes and potential health problems—and its cable grounds the tool and keeps it from falling into the tank.

Ssg Paul Kagi  
AASF Richmond  
Richmond, VA



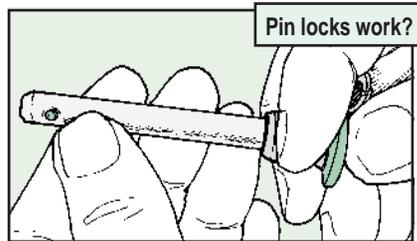
# ECS & ICC &

**C**hecking the little things on the ECS (engagement control station) and ICC (information control center), and CRG (communications relay group) can give you a bit of R & R when it comes to Patriot firing problems.

**Check the exhaust fans on the rear of the shelters.** If the fans get out of alignment due to dirt buildup, they will burn out their motors. You're supposed to check them semiannually during PMCS. But if you're operating in the desert where the fans really have to

work, check them more often to head off problems. And any time the fans become loud, clean them. That's usually a sign they need it.

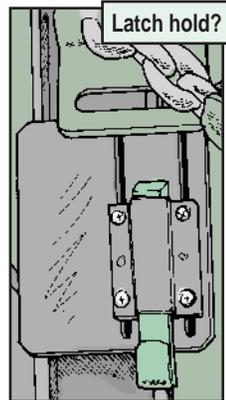
**Check the pin locks on the ECS, CRG and ICC data link antenna platforms.** If the locking pins work



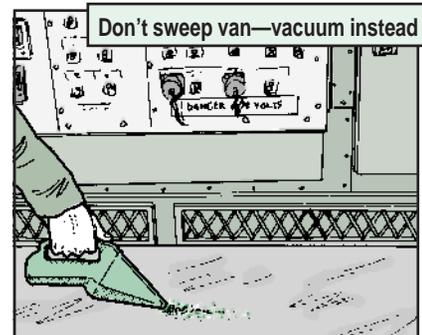
# CRG R&R

loose and fall out, the platform collapses, damaging equipment and anyone standing on or under the platform. Just make sure the pin locks go in and out when you push and release the release button. And be sure the pins are fully seated in their holes.

**Test the latch for the ECS, CRG and ICC modular collective protective entrance rack.** Over time, the latch gets beat up or misadjusted and won't hold. Then the wind can blow the rack shut, which crushes the A112 air inlet door and can cause the system interlock to shut off the ECS, CRG or ICC. Just pull gently on the rack to make sure the latch holds.

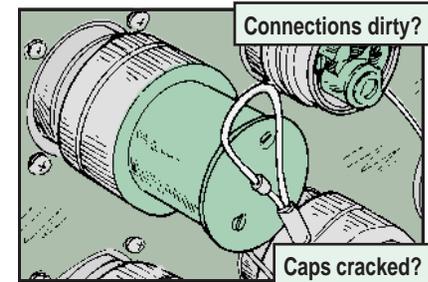


**Vacuum—don't sweep—the ECS and ICC vans.** Keep the vans clean.



That prevents dirt from clogging the air filters and causing the computers to overheat. But sweeping out the vans can stir up dirt and make the problem worse. So use the vacuum that comes with the Patriot maintenance center to suck up the dirt. Vacuum daily in the field and check the filters at least monthly like it says in the systems' -10 TMs.

**Keep all fiber optic connections clean and in good shape.** If the eight connections on the ECS or CRG and the two on the launching station are dirty or cracked, the ECS or CRG launching station can't communicate and you can't fire. If the connections are dirty, clean them with isopropyl alcohol, a swab, and a soft toothbrush. If the protective caps are cracked, tell your repairmen and get them replaced with NSN 5340-01-362-6138.



THESE TIPS SEND FIRING PROBLEMS ON A PERMANENT VACATION!



# Battery

# Boosters

Dear Editor,

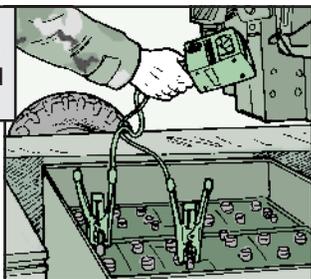
Batteries are critical to the MLRS. If just one launcher/loader module (LLM) battery is weak, it can cause faults that prevent you from firing. Roughly 90 percent of the MLRS problems we run into are battery-related. Here are a couple ways we've found to boost battery performance:

\* Get a battery load tester. Using a load tester, you can check the entire battery at once without having to check individual cells and you get a truer picture of the condition of the battery. The load tester checks the load, state of charge, cranking ability, and charging system output.

It makes troubleshooting much easier. It also makes it easier to spot bad batteries BEFORE you go to the field.

Any auto parts store will have a tester that will do the trick. Or request NSN 6130-01-463-8499. That brings five load testers.

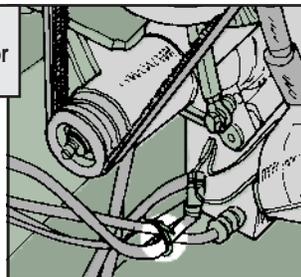
Check batteries with load tester



\* Tie back the cables for the generator. If cables lie on the engine compartment floor, they will soon be covered by water and oil. They destroy cable insulation. Bare wires can short out the whole charging system. So use garbage bag ties to tie the cables to the

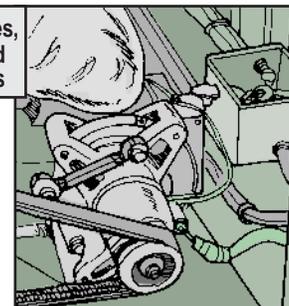
cables that run to the fuse box on the right side of the engine compartment.

Tie back generator cables



A good troubleshooting tip is to make the batteries your first check when you get self-test faults. If they're OK, make the generator your second check. Make sure the generator cables are securely plugged in, the cable connections

Check wires, cables, and connectors

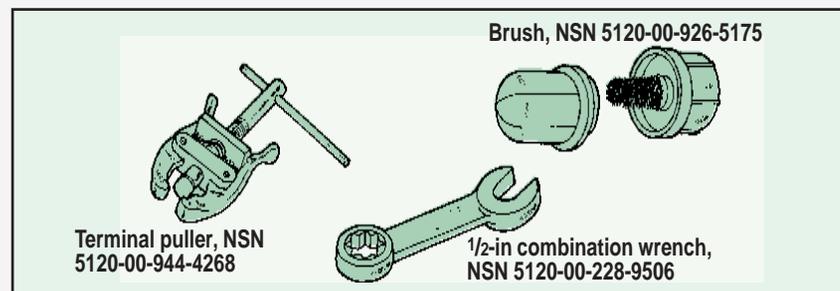


aren't corroded, the generator wires aren't frayed or broken, and there are no signs of arcing at the generator terminals.

CW2 Joseph Carter  
SSG Michael St. Cyr  
Gary Wade  
3/27th FA (MLRS)  
Ft Bragg, NC

FROM THE DESK OF THE Editor 

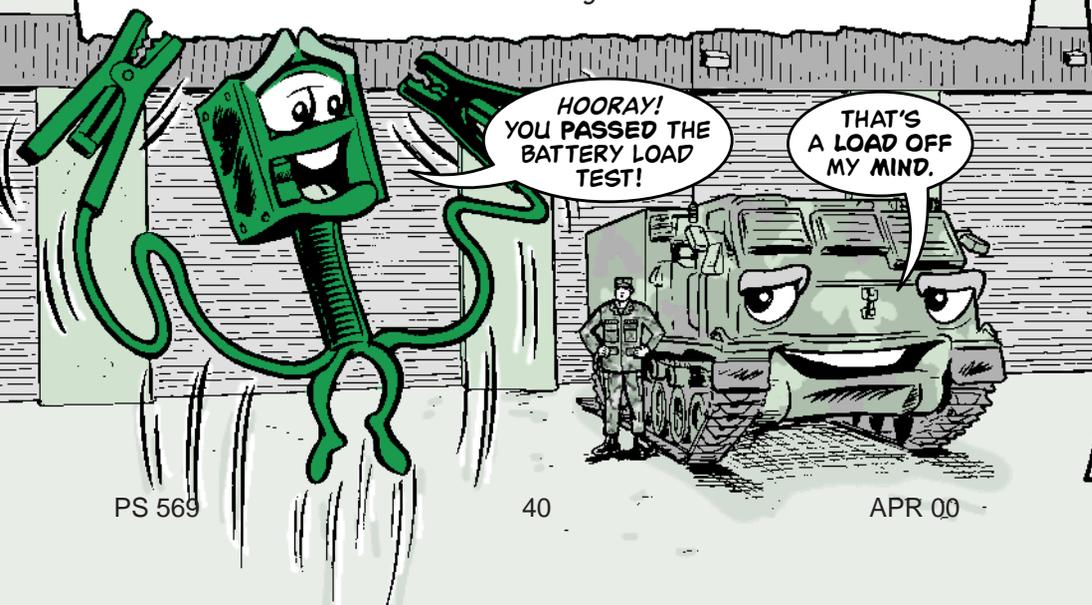
We're really charged up about your battery suggestions. Another good idea is to order inexpensive battery tools for your MLRS repairmen, since the MLRS tool kit doesn't have any. These tools will take care of most battery fixes:



Terminal puller, NSN 5120-00-944-4268

Brush, NSN 5120-00-926-5175

1/2-in combination wrench, NSN 5120-00-228-9506



HOORAY!  
YOU PASSED THE  
BATTERY LOAD  
TEST!

THAT'S  
A LOAD OFF  
MY MIND.

# CHECK FOR SOFT BREECH LOCKS

A number of breech locks have turned up that are too soft to use with the M2 machine gun. Soft breech locks cause bad headspacing, which leads to ruptured rounds, damaged M2s, and injury to gunners.

So, armorers, before your M2s go to the field again, check their breech locks. **Any** breech locks that are cracked, chipped, burred, or heavily worn should be replaced.

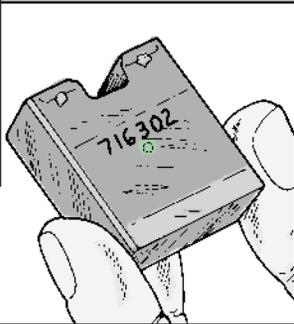
Breech locks stamped with part number 7161302 and those with no stamped part number should be tested by your support for hardness before they are used.

To be usable, a breech lock should test in the C50 to C60 range. To get the hardness tester, contact your local TACOM-Rock Island (TACOM-RI) logistics assistance representative (LAR) for help or contact the manufacturer directly. Call Pacific Transducer Corp at (310) 478-1134 and ask for hardness tester model 316 (scale C20-C65). It costs \$525.

If the breech lock passes the hardness test, mark it on the right and left sides with dots of yellow paint so that you know it's good.

Breech locks that don't pass should be turned in with an SF 368 quality

Put yellow dots on breech locks that pass hardness test



deficiency report (QDR) to TACOM-RI, ATTN: AMSTA-AR-QAW, Rock Island, IL 61299. Fax it to DSN 793-6653, (309) 782-6653. E-mail it to:

[QAWQDRS@ria.army.mil](mailto:QAWQDRS@ria.army.mil)

Order replacement breech locks with NSN 1005-00-716-1302.

See TACOM-RI Safety-of-Use-Message (SOUM) 99-03 for more info. Your TACOM-RI LAR has a copy.

## M4 Meets the M203

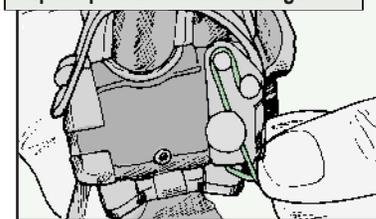
Everything isn't "just the same" when you mount the M203 grenade launcher on the M4/M4A1 carbine instead of the M16A2 rifle, armorers.

For one thing, an accidental nudge to the M203's quick-release button can let the M203 come loose. A retaining spring, NSN 5340-01-452-9637, keeps that from happening. Fit the spring on the bracket behind the button to prevent the button from being depressed.

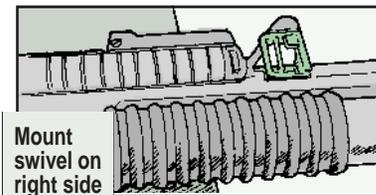
When the M203 is mounted on the M4/M4A1, the sling swivel can't be mounted on the left side of the barrel because it interferes with the M203 barrel release latch. Solution: Mount the sling swivel on the right side. See Para 2-16 in TM 9-1005-319-23&P for the procedure.

When the M203 is mounted on the M16 rifle, the handguard holds the pin for the barrel stop in place. But the M4/M4A1 handguard doesn't reach that far, so the pin can work out. No problem. Stake the hole edge once on both sides of the receiver with a center punch.

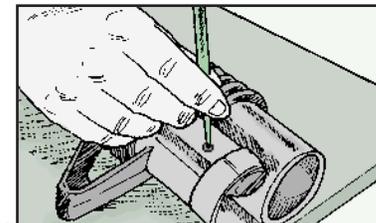
Clip keeps barrel from coming loose



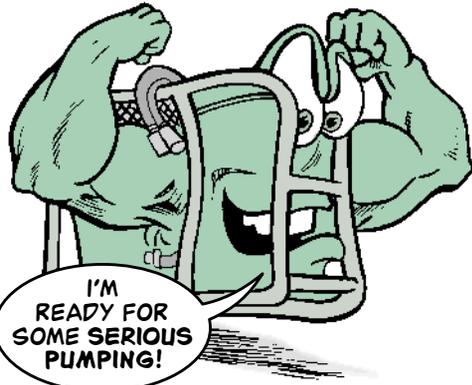
Mount sling swivel on right side



Stake pin hole edge once only on both sides of receiver



# Pumped to PUMP!



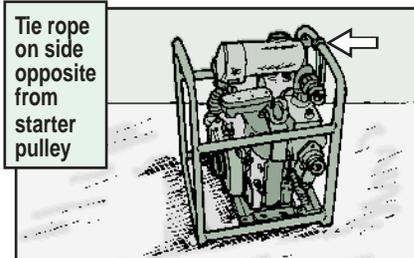
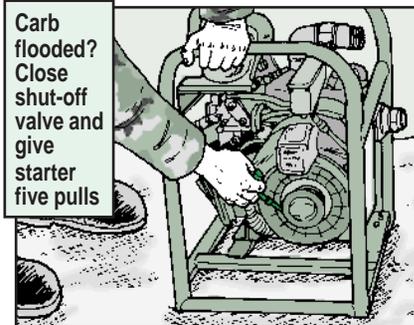
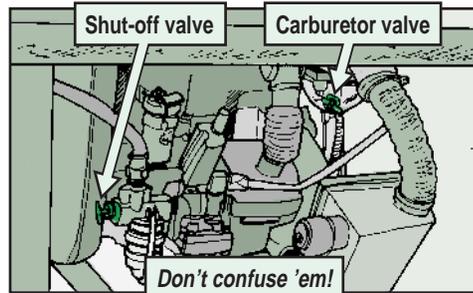
our M17 or M12 decon won't be deconning if you've been careless with the 65-gpm pump. Here's how to keep the pump pumping:

If the pump is going to be off for more than 10 minutes, shut off the shut-off valve. Otherwise, the carburetor will flood and the pump will be hard to start.

Don't confuse the shut-off valve with the carburetor valve. If you accidentally turn the carburetor valve, you'll mess up the carburetor setting. Then you'll really have starting problems. The shut-off valve sits on top of the fuel filter.

If the carburetor ever gets flooded, close the shut-off valve and give the starter five pulls. That should drain the carburetor enough for it to start. So turn on the shut-off valve and try to start the pump again. No luck? Do the procedure one more time. Still no luck? Tell your repairman.

Tie the starter rope to the handle on the opposite side of the starter pulley. That keeps it from being caught in the spinning pulley.



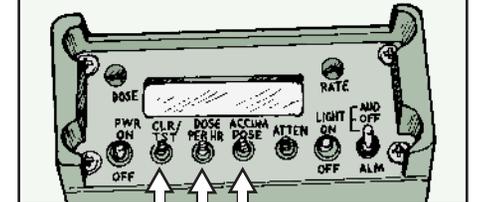
# Check for MWO

MWO 11-6665-251-40-1 added an electronic chip to the AN/VDR-2 radiac set that made it easier to set the attenuation factors and store accumulated dose readings.



1. Make sure batteries are installed.
2. With power off, simultaneously hold down the CLR/TST, DOSE PER HR, and ACCUM DOSE buttons.
3. Turn on the power with the buttons still held down. All LEDs should illuminate.
4. Release the three buttons and press CLR/TST. You should see 01.
5. Press CLR/TST again. You should see 31.
6. Press CLR/TST again. You should see 94.

Hold down first three buttons and turn on power



A date other than 01 31 94 indicates the MWO hasn't been done. Your TMDE will have to perform the MWO and calibrate the radiac set.



# OLD & NEW



**A** new CAM (chemical agent monitor) is being fielded. It's called ICAM (improved chemical agent monitor) and it's a bit different from its ancestor. But, there are a few things you need to remember about both CAMs. The ICAM, NSN 6665-01-357-8502, is more reliable and needs less maintenance.

## CAM and ICAM

**Run it**—If you run both CAMs for 30 minutes **every** week, you'll prevent 95 percent of all CAM problems. But don't use expensive lithium batteries to operate it in the NBC room or during training. Instead, order the BAT (battery

## New Drink Tube

**T**here are two M40/M42 mask drink tubes in the field, NBC NCOs, and you need to know which one you've got.

The new drink tube looks like a stretched Z—it has two bends. The old tube has only one bend.

The new drink tube, NSN 4240-01-441-0557, can be used only with the new drink tube coupling, NSN 4240-01-462-0045. If the new tube disappears or if the coupling is damaged, you can replace them with the procedures that begin on Page 2-54 of TM 3-4240-346-20&P. The new drink tube and coupling NSNs will be added to the TM in the next change.

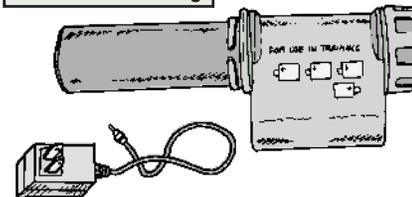
If the old drink tube coupling is damaged, you must turn in the facepiece for depot repair.

Do not try to use the old drink tube with the new coupling or visa versa. That puts the drink tube in the wrong position for drinking. The old coupling has a squared base and points upward toward the front voicemitter and nose-cup ridge. The new coupling is straight and points out of the facepiece.



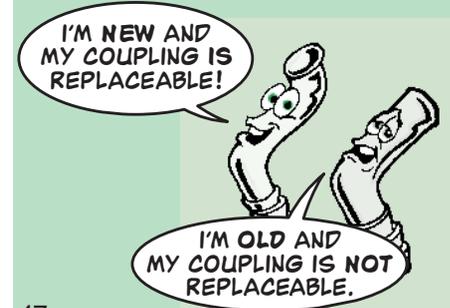
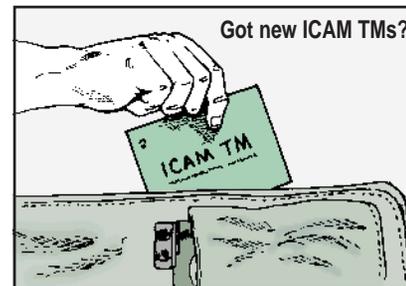
assembly, training), NSN 6910-01-333-3631, and power the CAM with cheap D-cells or AC power. Get one BAT for each CAM.

Use BAT for training



## ICAM Only

**TMs**—The ICAM has its own TMs: TM 3-6665-343-10 and -23&P. If they don't come with your ICAMs, have your pubs clerk order them.



# Don't Print



Nothing grounds the high-flying Standard Army Retail Supply System (SARSS) faster than poorly printed bar codes. But that's what many of you get from your 4400 bar code printer because you're not doing printer PM.

To keep the printer clean you need to use the maintenance kit provided with the printer station.

The kit has a foam print head protector (used for shipping and storing the printer in its transit case), a screwdriver, brush, and alcohol wipes.

Two new thermal printer cleaning accessories are available through local supply channels: Clean Penn, NSN 7930-01-467-4055, and thermal cleaning card, NSN 7930-01-467-4061.

## Clean the Print Head Area

The number one problem area with the printer is the print head. Label debris and glue collect on the print head and paper guides and sensors and jam your label making.

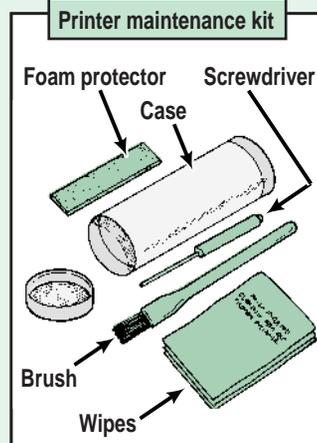
To clean it, switch off the printer and let it cool at least 15 minutes. A hot printer can burn you and ignite the cleaning alcohol.

When the printer's cool, remove the ribbon access door and press the manual release to open the printer cover.

Remove the labels and print ribbon.

Now clean the print head area with an alcohol pad, swab, or clean lint-free cloth and isopropyl alcohol. Make sure you get all the adhesive off.

Once the print head is clean, use the brush to clean off the platen roller. Then use the alcohol wipe over the roller, rotating it so you can clean the whole thing.



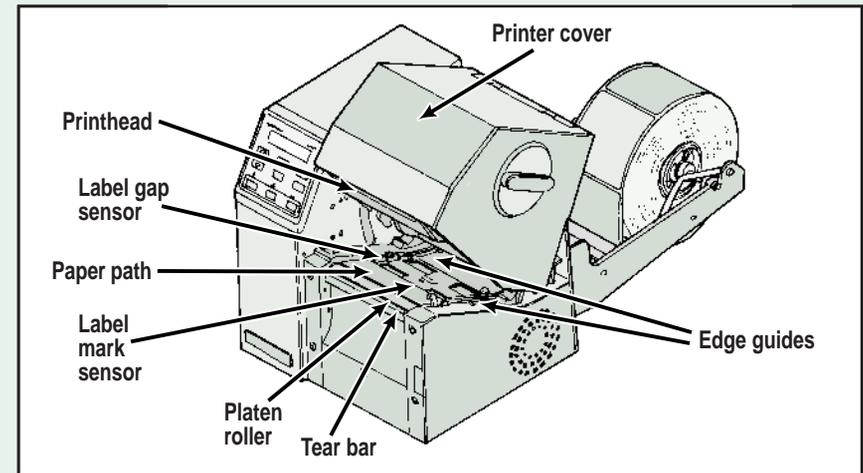
# without PM

Be sure not to scrape the rubber platen roller. Scraping will gouge the roller and void the warranty.

Now wipe off the tear bar, label gap and mark sensors. Clean both sensors with the brush and isopropyl alcohol. Be careful not to cut yourself while cleaning the tear bar.

Use the brush again to clean the flat surfaces of the paper path and the edge guides until they're free of all traces of dust, paper and adhesive. Wipe the whole area down with the alcohol pad.

Do this cleaning process after every three rolls of labels. Do it more often if you have label printing problems.



## Clean the Case

A second problem area is the cooling vents on the printer case. The printer needs clean and unobstructed vents to keep from overheating.

While the printer is still cool, use the brush and an alcohol wipes to remove dust and debris from the cooling vents.

Next, use a lint-free cloth to remove any excess alcohol. Then wipe down the entire cover with the lint-free cloth.

If the printer requires any warranty or maintenance support, call the Intermec hotline. In the US dial (800) 892-7007.

In Germany, call them at 0130-82-21-55. In Korea call them at 007-981-6800-3076. In Italy, call them at 1678-71846. In Japan, call them at 0044-22-12-2451.

Or e-mail them at:

[support@intermec.com](mailto:support@intermec.com)

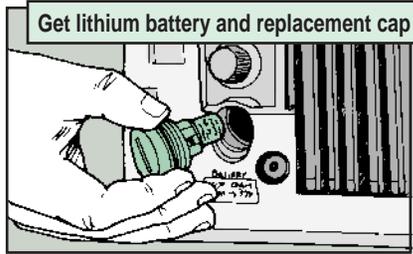
# Beating the Battery Blues

The RT-1539 receiver-transmitter gives mobile subscriber equipment (MSE) secure VHF FM communications. But the security is only as good as the fill battery that holds programmable data—and that's where three problems are:

## Problem One

When your RT was fielded, it used a BA-1318/U battery, NSN 6135-00-295-2619, that was held in place with a cap, NSN 6140-01-315-4810.

But that mercury battery has been replaced with a lithium one, NSN 6135-01-214-6441. The BA-5372/U lithium battery lasts longer, it's safer to use and it's less harmful to the environment.



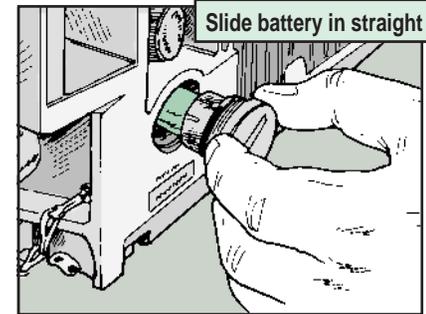
The old battery cap does not work with the new battery. The new battery is longer than the old one and the old cap is not deep enough to hold it.

Order a new cap that will work with NSN 6140-01-381-6352.

## Problem Two

When you replace a battery and its cap, make sure you insert the new battery straight into the compartment. A

battery inserted at even a slight angle leads to worn battery compartment threads, poor battery contact and a poor cover seal that lets water into the compartment.



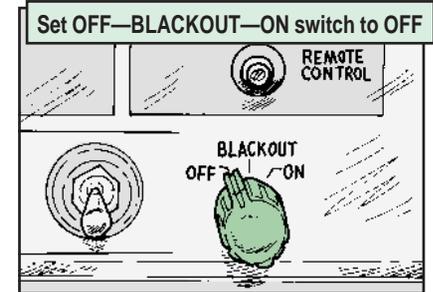
Use a screwdriver to snug up the battery cover. For a tight fit, make sure the O-ring enters evenly into the battery compartment. Once the battery is installed correctly, the O-ring should not be visible.



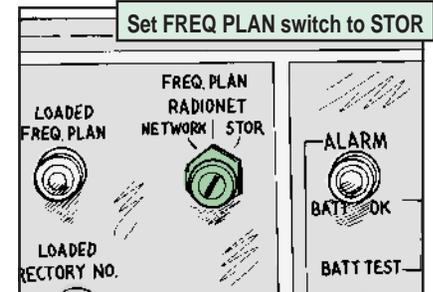
## Problem Three

The new battery can be drained, just like the old one, if you don't shut down your RT right.

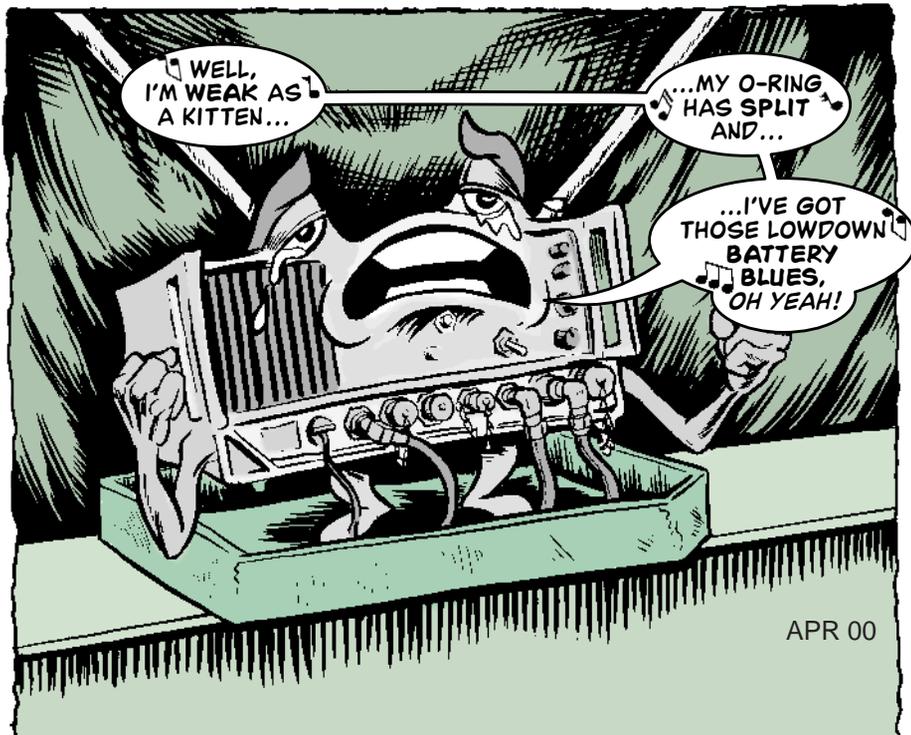
With the OFF—BLACKOUT—ON switch set to OFF, the main power to the RT is shut down. If the **FREQ** switch is left in the **NETWORK** or **RADIO NET** setting, the RT then draws power from the battery. The battery runs down and stored data is lost.



Here's how to stop that power drain. When you're ready to shut down the RT, set the **OFF—BLACKOUT—ON** switch to **OFF**. Then set the **FREQ PLAN** switch to **STOR** with a small-blade screwdriver. That allows the battery to hold the programmable data in memory.



The next time you power up your RT, you can reestablish the previous frequency plan by switching the **STOR** switch back to **RADIONET** or **NETWORK**. Or you can load a new frequency plan.



# Stay in the Dark

**Y**ou can search TM 11-5805-778-24P-1/2 until the cows come home, but you won't find any blackout curtains for your AN/TTC-39D telephone central.

Order the right-side curtain with NSN 7230-00-792-6339 and the left-side curtain with NSN 7230-00-792-6341.

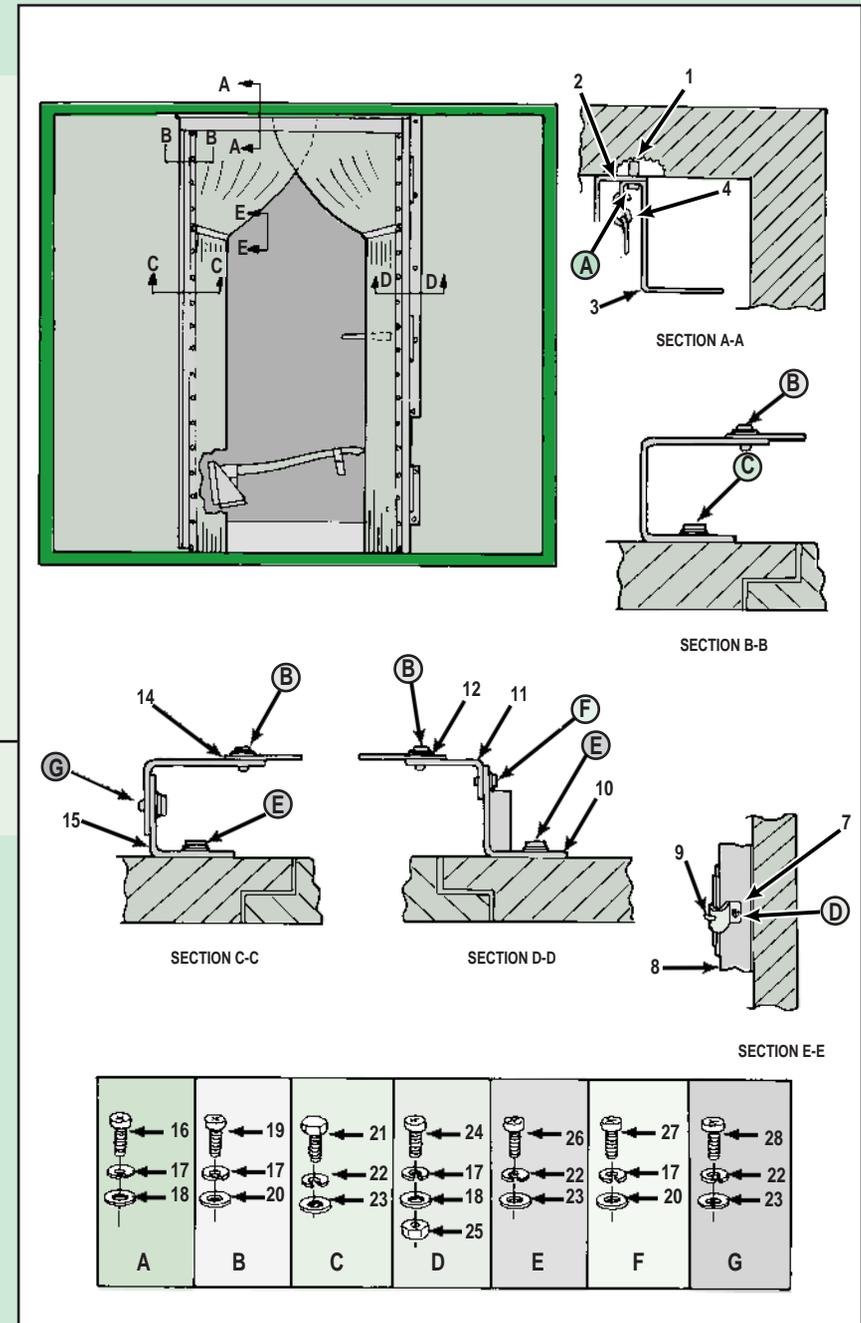
Here's the hardware you need to get the curtains up:



Some of the parts you need have no NSNs. So order them by part number on DD Form 1348-6 from RIC B16:

| Part            | Item | Part Number      |
|-----------------|------|------------------|
| Blind rivet nut | 1    | 5310-00-068-0221 |
| Chain hook      | 4    | 4030-01-022-5465 |
| Strap assembly  | 7    | 5342-01-022-5190 |
| Drapery hook    | 9    | 7230-01-028-0884 |
| Screw           | 16   | 5305-00-059-3661 |
| Lock washer     | 17   | 5310-00-933-8120 |
| Flat washer     | 18   | 5310-00-619-1145 |
| Screw           | 19   | 5305-00-054-6671 |
| Flat washer     | 20   | 5310-00-880-5978 |
| Bolt            | 21   | 5306-00-543-4405 |
| Lock washer     | 22   | 5310-00-974-6623 |
| Flat washer     | 23   | 5310-01-389-6965 |
| Screw           | 24   | 5305-00-059-3660 |
| Nut             | 25   | 5310-00-934-9765 |
| Screw           | 26   | 5305-00-051-0840 |
| Screw           | 27   | 5305-00-054-6670 |
| Screw           | 28   | 5305-00-051-0836 |

| Part                 | Item | Part Number   |
|----------------------|------|---------------|
| Shim                 | 2    | SM-B-835739-2 |
| Double-angle bracket | 3    | SM-D-811974   |
| Mounting bracket     | 6    | SM-C-821878   |
| Mounting bracket     | 8    | SM-D-812879   |
| Structural section   | 10   | SM-D-811973   |
| Mounting bracket     | 11   | SM-D-811972   |
| Metal strip          | 12   | SM-B-744780   |
| Metal strip          | 14   | SM-B-835740   |
| Angle bracket        | 15   | SM-D-812880   |



# TOGETHER FOREVER

Equipment that uses more than one lithium-sulfur dioxide (LiSO<sub>2</sub>) battery, like the AN/PRC-104 radio, and the AN/PSN-10 GPS receiver, needs to have those batteries replaced in matched sets.

To be considered a matched set, LiSO<sub>2</sub> batteries must be made by the same manufacturer and must have the same contract number and date code.

If you follow the first in, first out rule when drawing batteries from your supply, you should be getting matched sets.



Replacing both batteries of a set and using matched sets ensures the same approximate state of charge for both batteries. That minimizes problems during use.

Replacing one battery at a time or using non-matched sets means one battery will be discharged before the other. This could cause voltage reversal and a ruptured battery. It could damage your equipment and even injure you.

Also, never mix LiSO<sub>2</sub> batteries or other non-rechargeable batteries with their rechargeable equivalents.

# An Able Cable

The J-6362/U 24-volt vehicular cable, NSN 5940-01-427-9395, lets you operate the PP-8444 battery charger from a vehicle's NATO slave receptacle.

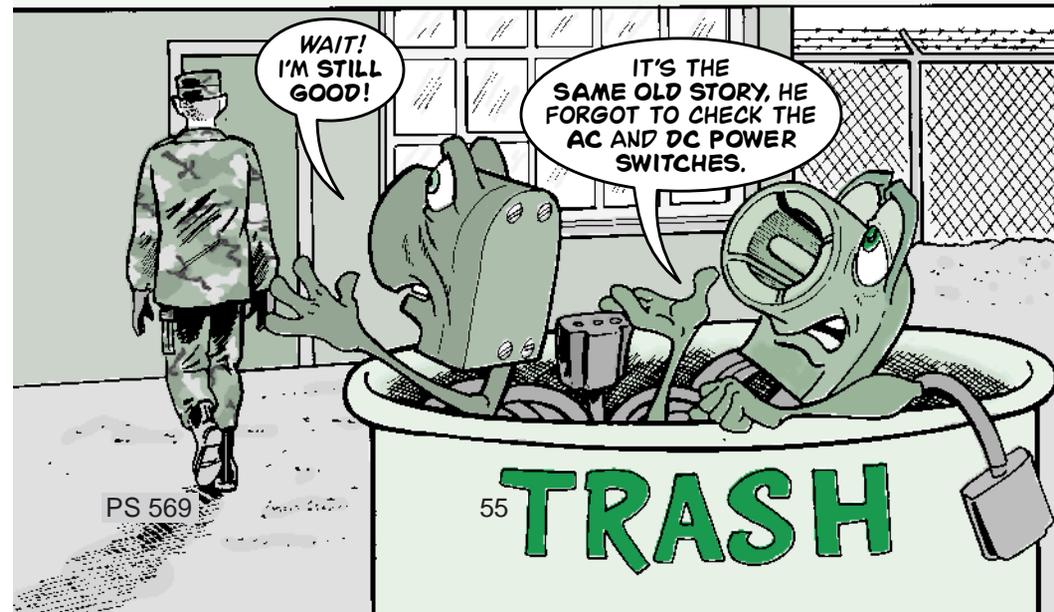
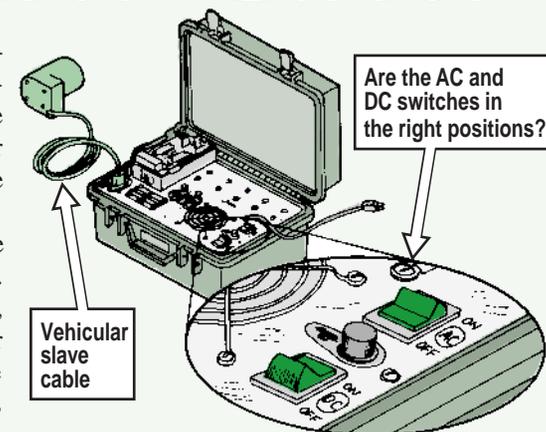
But sometimes you plug the cable up and get nothing. Before you trash the cable, check the AC and DC power switches on the charger. Make sure the AC power switch is OFF and the DC switch ON.

If the DC is on and you're still not getting power, turn the switch on and off several times to help clean the contacts.

Still nothing? If you have compressed air, like the canned air used for cleaning keyboards, use it to clean the contacts.

Still nothing? Make sure both ends of the cable are clean by removing them, cleaning away any debris and wiping off the contacts. Then reseal them.

If you're still not getting 24 volts of power to your charger, troubleshoot the charger to find out if the cable or the charger is the problem. Troubleshooting procedures are in Para 4-2 of TM 11-6130-489-13&P.



# Changes to Shelf and Service Life

The shelf and service lives of collapsible fabric fuel and water tanks have been changed.

Fuel tanks from 3,000 to 210,000 gallons now have a dry, indoor shelf life of 12 years. That's up from 10 years. Fuel tanks not stored dry and indoors have a 5-year shelf life from date of receipt, or 12 years from the manufacturing date, whichever comes first.

Water tanks from 160 to 50,000 gallons no longer have any shelf or service life restrictions. They're used until they are no longer repairable.

Once fuel is put in a tank for the first time, the tank is good for 3 years, max. Service life may be less than 3 years depending on where and how many times the tank is used.

A visual inspection is the **only** way to be sure that a fuel or water tank is ready for deployment. Here are the criteria as given in an interim maintenance advisory message (MAM) dated 6 Mar 98 for the shelf and service life of the tanks:

**Dispose** of a tank if:

- \* It has holes, tears or cuts through the coated fabric greater than 6 inches long.
- \* It has seams that show signs of coming apart.
- \* It has severe discoloration (dark rust-colored stains along seams of fuel tanks or an entire panel is darker than a panel right next to it).

- \* It has cracks in the exterior coating.
- \* It has fungus growth.

**Repair** a tank if:

- \* It has holes, tears or cuts through the coated fabric that are less than 6 inches long. Make temporary repairs using the tank's mechanical repair kit. Permanent repairs can be made with an adhesive repair kit, NSN 5430-01-359-1078 (for both fuel and water tanks) or NSN 5430-01-352-6073 (for fuel tanks only).

- \* It has abrasions that have exposed the nylon fabric underneath the outer coating. Re-coat with the adhesive repair kits listed above.

- \* It has blisters, areas where the coating appears to have lifted away from the fabric or where fluid has leaked between tank layers.

Fix this damage by puncturing and cutting away the lifted coating. Temporarily repair the defect with the mechanical repair kit. Make permanent repairs with the adhesive kits listed above.

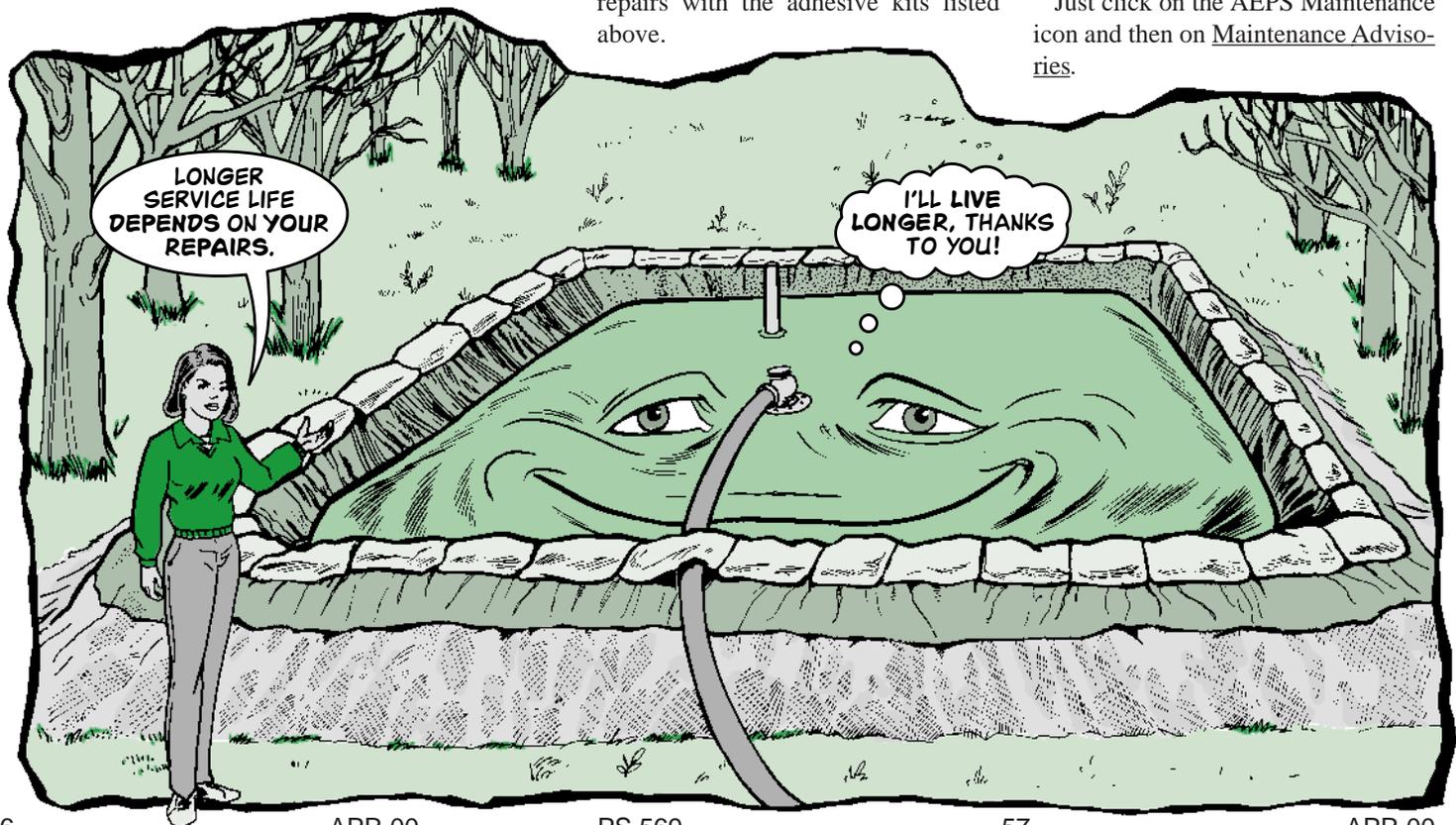
Once a tank's service or shelf life is used up, serviceable components should be removed for reuse before salvage of the tank.

These include berm liners, filter/discharge hose assemblies, drain hoses and control valves, gate valves and some other vent and hose assemblies.

The complete scoop is in TACOM MAM 99-007 (Jun 99) and the interim MAM. Both MAMs are available at:

<http://aeeps.ria.army.mil/>

Just click on the AEPS Maintenance icon and then on Maintenance Advisories.



# APPLYING THE GRACE PERIOD

Dear Half-Mast,

I need a translation of Para 3-3 in DA Pam 738-750 on how to apply the 10 percent window for scheduled services.

Currently, I allow a 10 percent variance before and after the scheduled service date. That is, I can do an annual service 36 days before to 36 days after the scheduled date.

At a briefing I was told that I had to divide the days equally and allow only 18 days on either side of the scheduled date for a total of 36 days for an annual service. What's the story?

CW2 G. E.



Dear Mr. G. E.,

The experts at DA say that you are right to apply the 10 percent variance before and after the scheduled service date.

Here is how it works. Let's say the annual service date for a 5-ton truck is 15 May 00. However, the vehicle is dispatched on 12 May and won't be back until 25 May. What do you do?

Here's how to figure the 10 percent variance:

Number of days (annual = 360) x 10 percent = 36 days.

Then, by applying the results on both sides of the date, you are allowed to pull the service 36 days before or 36 days after the scheduled service date. This means you can do the service as early as 10 Apr or as late as 20 Jun.

This formula also works for hours or miles. Just plug them into the formula in place of days.

Take note that some services may be too critical to allow the 10 percent variance. The maintenance procedure in the tech manual will tell you when the variance is not allowed.

*Half-Mast*

# TAILORED FOR YOU

**N**eed a listing of all the equipment publications required by your unit? The USAMC Logistics Support Activity (LOGSA) can give it to you from their Equipment Oriented Publication Data Base (EOPDB).

There are several ways to get a list tailored for your unit:

- ☒ If your unit uses the Standard Property Book System-Redesign (SPBS-R), send LOGSA an e-mail or mail a disk containing your unit's hand receipt.
- ☒ Not on SPBS-R? Send a recap of your unit's equipment with the Unit

Identification Code (UIC) to LOGSA either in hard copy or on e-mail.

☒ Call, write or e-mail LOGSA for an equipment disk which will help you submit your equipment data to LOGSA.

Write:

**USAMC LOGSA**  
 Bldg 5307  
 ATTN: AMXLS-AP  
 Redstone Arsenal, AL 35898-7466  
 E-mail: eopdb@logsa.army.mil  
 Call: DSN 897-6115/(256) 313-6115

Remember, though, this brings only a list of the pubs you need. You will still have to order them.



Publications ...

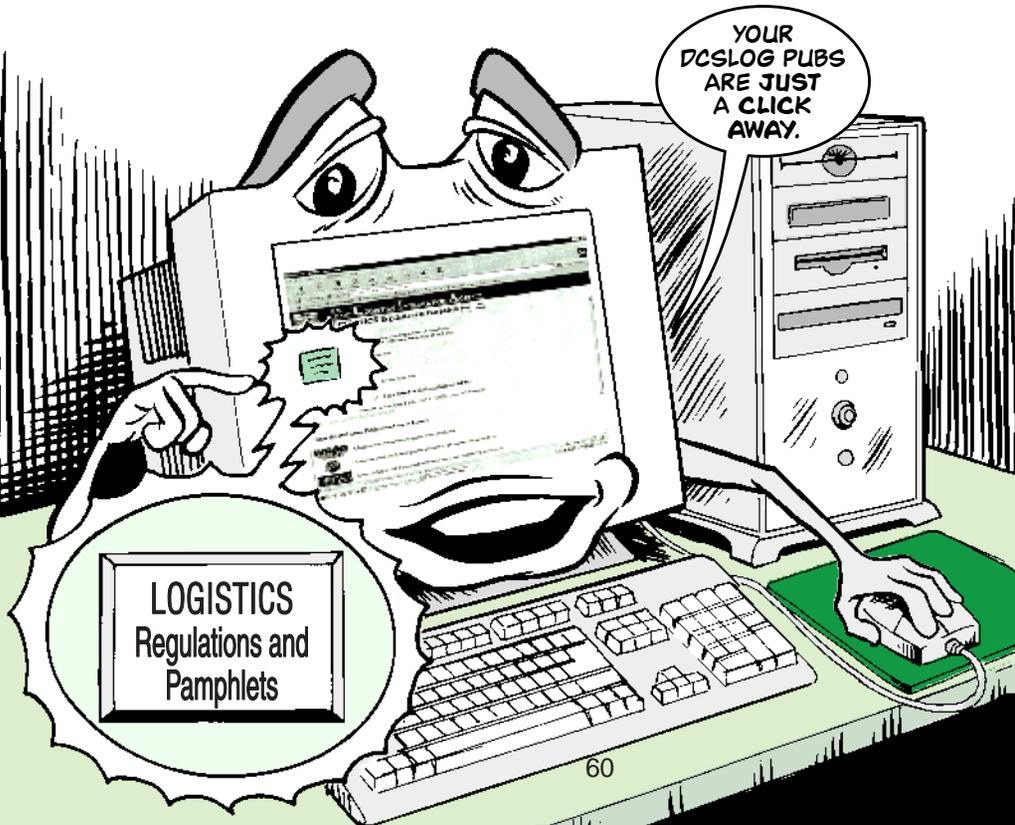
# Read DCSLOG Pubs *On-line!*

DA Deputy Chief of Staff for Logistics (DCSLOG) pubs are at your fingertips. Just go to the Logistics Integration Agency home page:

<http://www.lia.army.mil>

Once there, click on the LOGISTICS Regulations and Pamphlets button (located on the left side of the screen) and you will be linked up to the DCSLOG publications management system (DPMS). DPMS gives you access to:

- some 140 DCSLOG publications, such as AR 735-5, *Policies and Procedures for Property Accountability*, and AR 710-2, *Inventory Management Supply Policy Below the Wholesale Level*;
- current and newly revised policy and procedures;
- the opportunity to e-mail your recommended changes to the people responsible for the pubs.



### MKT Canopy Problem?

If the grommets on your MKT's new canopy, NSN 7360-01-043-8477, don't line up with the MKT's poles, don't panic. Instead, contact the folks at the U.S. Army Soldier and Biological Chemical Command (SBCCOM). They'll provide a field fix for the problem. Call DSN 256-4335/5234 or (508) 233-4335/5234. Send e-mail to: [acellucc@natick-amed02.army.mil](mailto:acellucc@natick-amed02.army.mil) or [haubut@natick-amed02.army.mil](mailto:haubut@natick-amed02.army.mil)

### SEE Sandbagger

An automated sandbag-filling attachment is being added to the small emplacement excavator's additional authorization list. The \$10,000 attachment fills up to 500 bags an hour. Order it on a DD Form 1348-6 with CAGE code 3Y949 and PN 6613024 from RIC S9C. You'll get installation instructions, an operator's manual and a video.

### Improved MICLIC Hand Pump

Do not order the MICLIC hand pump, NSN 4320-01-072-4918, listed on Page F-29 in TM 9-1375-215-13&P. NSN 4320-01-226-1226 brings a better pump that has a plug for draining oil, a dipstick for checking oil, and a protective plug cap to keep water out of the pump.

### Power Distribution Box

The PP-8440/ASM power distribution box, NSN 6110-01-423-8822, can reduce the number of generators needed to power your AN/ASM-146, AN/ASM-189 or AN/ASM-190 vans and shelters and help eliminate damage caused by wetstacking. The distribution box works with a 60-KW generator and can provide safe distribution for 200-, 100- and 80-amp power. For more info on the PP-8440/ASM and how it can help your unit, contact CECOM, DSN 992-5549, or e-mail: [shedlock@mail1.monmouth.army.mil](mailto:shedlock@mail1.monmouth.army.mil)

### M1A1 Traverse Mechanism

Need OEA for your M1A1 tank's traverse mechanism? Use NSN 9150-01-330-0692 to get a quart. NSN 9150-00-402-4478 is no longer available.

### BB-390A/U Battery Caps

Protect your BB-390A/U battery terminals from dirt or damage with protective dust caps. NSN 5340-00-213-8881 brings 100 caps for \$1.38. More info on rechargeable batteries and accessories is available at: <http://www.monmouth.army.mil/cecom/lrc/lrhcq/power/rechargebat.html>

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?

# If You See This Man...

...in your area, don't let him get away! He's really there to see you, anyway. He's MSG Half-Mast, hunting for information.

He wants to find out about your maintenance and supply problems so he can get you the answers.

You may see him at any time and any place. He may even be disguised as a civilian wearing a PS cap or jacket.

But even Half-Mast can't be everywhere at once. So if you've got a problem or a new fix, call it in, send an e-mail, write a letter, or send smoke signals!

Here's how:

**E-mail:**

[psmag@logsa.army.mil](mailto:psmag@logsa.army.mil)

**Fax:**

(256) 955-0961/DSN 645-0961

**Phone:**

(256) 955-9878/DSN 645-9878

**Letter:**

MSG Half-Mast  
PS, The Preventive Maintenance Monthly  
LOGSA, Bldg 5307 ATTN: AMXLS-LP  
Redstone Arsenal, AL 35898-7466

**Smoke Signals:**



Issue 569

# PS

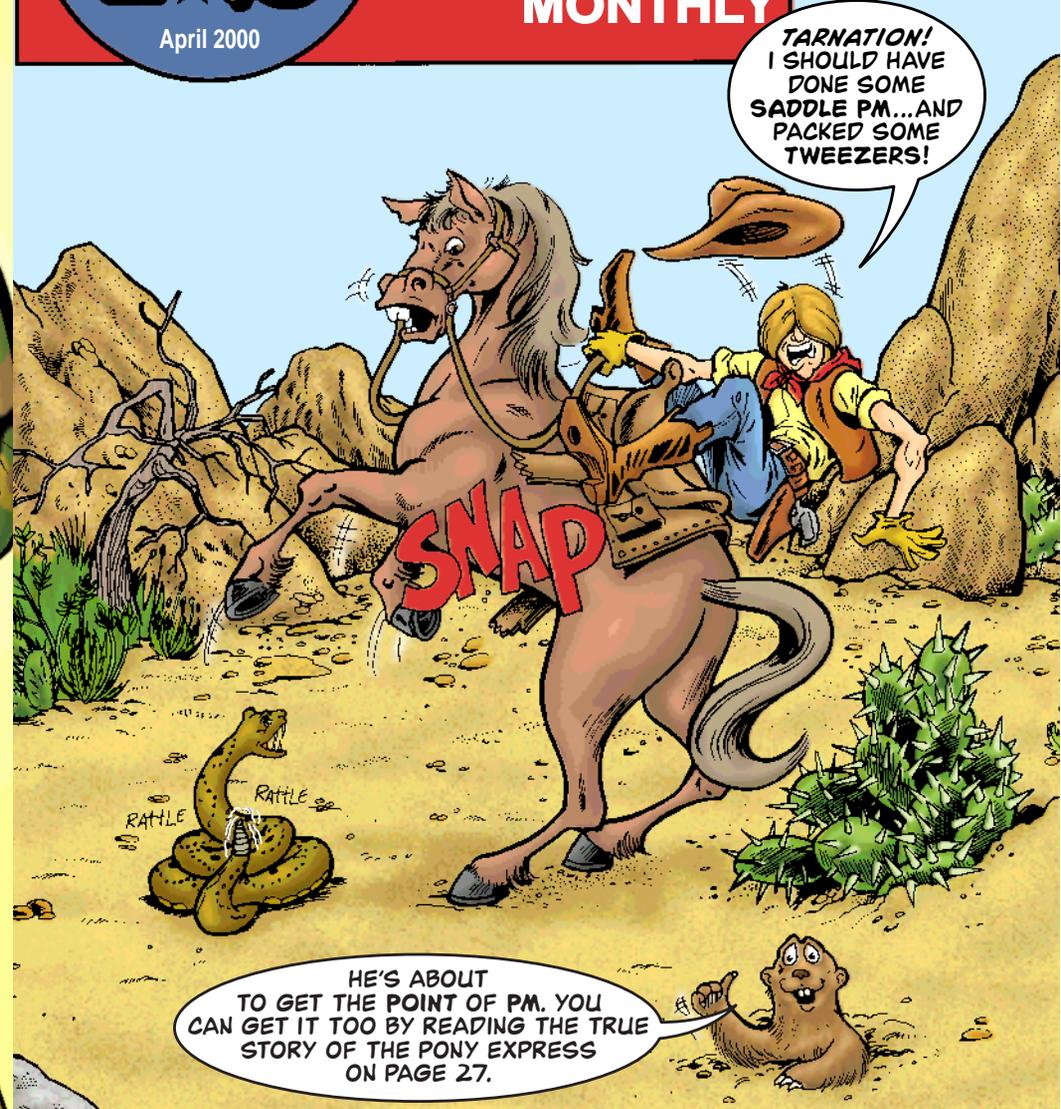
April 2000

## THE PREVENTIVE MAINTENANCE MONTHLY

TB 43-PS-569

Approved for  
Public Release;  
Distribution Is  
Unlimited

**TARNATION!  
I SHOULD HAVE  
DONE SOME  
SADDLE PM...AND  
PACKED SOME  
TWEEZERS!**



**HE'S ABOUT  
TO GET THE POINT OF PM. YOU  
CAN GET IT TOO BY READING THE TRUE  
STORY OF THE PONY EXPRESS  
ON PAGE 27.**