

Issue 441

PS

August
1989

TB 43-PS-441

THE PREVENTIVE MAINTENANCE MONTHLY

COMBAT
READINESS
TAKES A TEAM
EFFORT!

Approved For Public Release; Distribution is Unlimited

For Combat Readiness ...
See "personal involvement"—page 27

Keep' Em Cool Under Fire



With no coolant circulating through the engine, combustion chamber temperatures get so high that gaskets, O-rings and seals begin to melt. Piston rings and valves warp and burn.

Most times the damage is done during a test of a replacement engine before installation, or after work has been done on an engine which required radiator removal.

And what happens is, an engine has to be repaired or rebuilt. All because you took a shortcut during testing.

You didn't take the time to hook up the cooling system. You thought a few seconds of running without coolant wouldn't hurt.

You know where the solution lies. If you're a mechanic, don't take the shortcut. Do your work by the book. If you need help with a groundhop kit, call or visit your local TACOM Logistics Assistance Representative.

If you're a leader, let everybody know what happens when testing is done wrong. That's your job, too. Then make sure the testing is done right.

Everybody's got a stake in engine maintenance. You don't move without it.



THE
PREVENTIVE
MAINTENANCE
MONTHLY

TB 43-PS-441, The Preventive Maintenance Monthly, is an official publication of the Department of the Army, providing information for all soldiers assigned to combat and combat support units and all soldiers with unit maintenance and supply duties. All information published has been reviewed and approved by the agency responsible for the equipment, publication or policy discussed. Application of the information is optional with the user.

ISSUE 441 AUGUST 1989

FIREPOWER

M2/M3 Bradleys	2, 3	M88A1 RV	10-11
MLRS	3	M163A1, M167A1	
M113A2-Series FOV	4	Vulcan	12-13
M113-Series, M901 ITV	5	M60 MG	14-15
XTG-411-2A Allison Transmission	6	M21 Sniper Rifle	16-17
BATTLEKING Plans	7	TOW, TOW 2	
M110A2 SP Howitzer	8, 9	Missile	18-19

GROUND MOBILITY

HMMVV	20, 21	HEMTT	24
CUCV	22	M977 Cargo Trucks	24
Air Brakes	22	Metric Bolts	25
2½-ton Trucks	23		

AIR MOBILITY

Rocket Launchers	35	Aviation Messages	41
UH-60A	36-37, 38, 39	High Performance	
T-53 Engines	40	Tools	42-43
CH-47C	41		

COMMUNICATIONS

TA-312	44-45	Lithium-Sulfur Dioxide	
CY-7875 Battery Box	46	Batteries	48-49
Electrical Connectors	47	Shelters	49

TROOP SUPPORT

New Pubs	26	M8A1-Series Alarm	53
Personal		AN/PDR-27 Radiac	
Involvement	27-34	Set	54
MW24C Scoop		Tent Pin Tip	55
Loader	50-51	Mess Can Painting	56-57
Warehouse Tractor	51	Driver Testing	58
Cat Tractors, Graders	52	PS Binders	59
5-KW DED Gen	52	SOU's	60

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

MSG Half-Mast
The Preventive Maintenance Monthly
Lexington, KY 40511-5101

By Order of the Secretary of the Army:

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

Official:

WILLIAM J. MEEHAN II
Brigadier General, United States Army
The Adjutant General

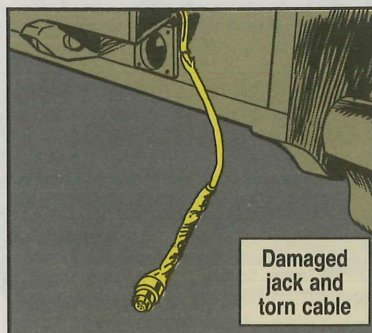
PS, The Preventive Maintenance Monthly (ISSN 0475-2953) is published monthly by the Department of the Army, Washington, D.C. Second Class Postage is paid at the Lexington, KY post office and at additional mailing offices.

Postmaster: Send address changes to Cdr. US Army Pubs Ctr, 2800 Eastern Blvd, Baltimore, MD 21220-2896.

Keep Trailer Cable Safe



Older M2/M3 Bradleys have no protection for the exposed part of the trailer electrical cable, 1W24. The cable hangs down and gets snagged on underbrush or pinched in the ramp.

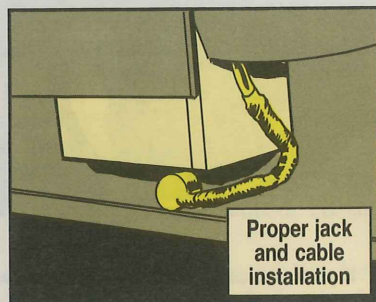


Prevent much of the damage by tucking as much of the 1W24 cable as possible under the ramp armor.

Using the basic instructions on Pages 7-502 through 7-507 of TM 9-2350-252-20-1-4, install the trailer receptacle end and the jack end. Before you remove the wood blocks and secure the armor, tuck as much extra cable as you can under the armor.

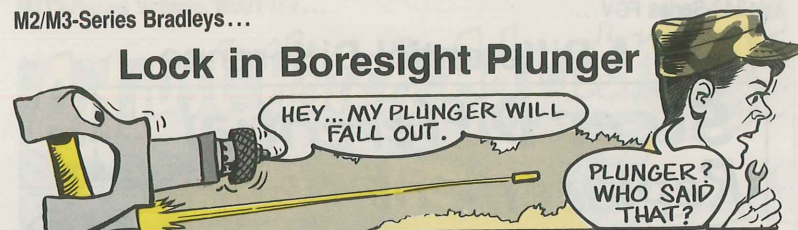
Make sure the clamps are in place and holding tight. Replace if needed.

Allow only enough cable so there is no binding when the ramp is raised or lowered. That way, there'll be very little cable dangling at hull level.

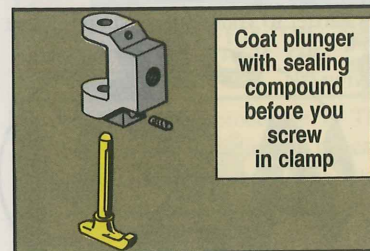


Make sure the cable connector is screwed tight onto the jack at all times. That way you won't get as much jack damage either.

Lock in Boresight Plunger



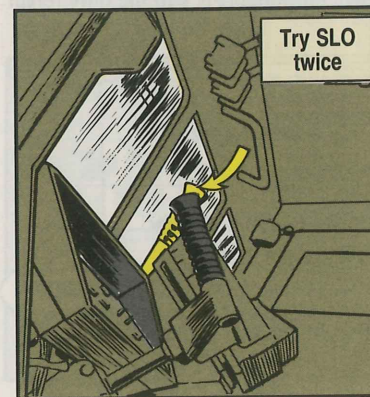
When you Bradley turret mechanics repair the M240C gun mount, lock in the detent plunger in the boresight control with sealing compound.



MLRS...

SLO Exercise Works Wonders

Just a little exercise of the MLRS suspension lockout (SLO) can save a lot of hydraulic system parts.



Otherwise, the plunger works out during firing and the M240C is loose in the mount. If the plunger disappears, you'll have trouble finding a replacement.

Do it like it says in Step 13 on Page 28-5 of TM 9-2350-252-20-2-3. Coat the plunger threads first with sealing compound primer, NSN 8030-00-900-2373. Then coat them with sealing compound, NSN 8030-00-081-2339, before you screw the plunger in the clamp.

The monthly PMCS found on Page 2-92 of TM 9-1450-646-10 says your SLO must hold at least 20 minutes.

But don't try it once and quit. If you can't get the SLO to hold for 20 minutes, disengage the system and re-engage it. It will work most of the time.

Try it twice. It just might work.



A Differential Difference

Steer Differential Replacement **PAFHH**

THERE'S BEEN A CHANGE IN THE SMR CODE.

CHANGE?

Ever wondered why you haul a 113-series carrier to your support shop to have the steer differential removed or replaced?

Especially since the hardest job in removing it is disconnecting two drive shafts and a U-joint?

Wonder no more, unit mechanics. The job's now yours, lock, stock and barrel. The Source, Maintainability and Recoverability (SMR) code for the steer differential has been changed from PAFHH to PAOHH.

SFC Tracy J. Reeve of the 29th Area Support Group in Germany wondered about it in writing to the SMART program. He got \$500 for his efforts.

Until the applicable -20 TM's pick up the procedures, get your friendly DS folks to lend you the troubleshooting and replacement procedures from applicable -34 TM's. Remember, though, that your General Support is still the only repair source.

Steer Differential Replacement **PAOHH**

HEY, THAT LOOKS GREAT!

I KNOW.

Adjust Hatch Adjustment

GASP!

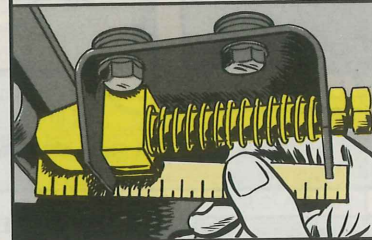
WELL, I ADJUSTED THE CARGO HATCH COVER THE WAY IT SAID IN THE TM.

If you follow the procedure in TM 9-2350-261-20-2 for adjusting the cargo hatch cover, you won't get a good seal. Following the instructions lets in fumes from TOW firing.

Do it like this instead:

If the hatch cover is too tight to latch right, add washers equally to both brackets until the latches engage easily

Set the bracket so the latch goes in the striker $\frac{3}{8}$ to $\frac{5}{8}$ inch



IF YOU'VE ADJUSTED THE COVER CORRECTLY, IT WILL FIT TIGHT AND EVEN ON ALL FOUR SIDES.

If the cover is not tight enough for a good seal, remove washers equally from both brackets until the latches engage easily

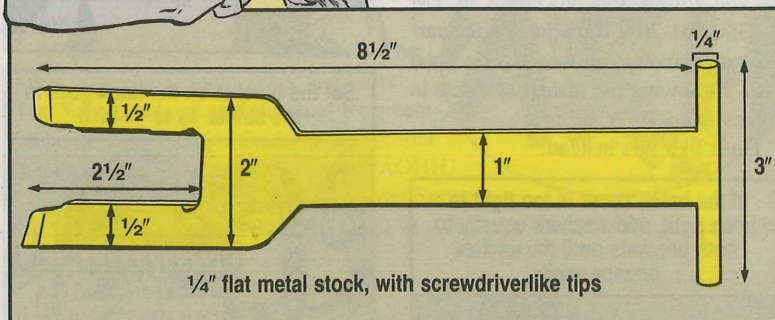
Homemade Brake Adjusting Tool



Adjusting the brakes on the transmissions of M109-series and M110A2 howitzers, M992 ammo carriers and M578 recovery vehicles with a screwdriver is a knuckle-buster.

Robert D. Wilkinson of Ft Knox, KY, submitted plans for a tool through the TIPS program that makes the job easy and safe—no more busted knuckles.

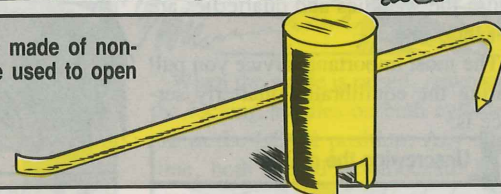
Make the tool out of 1/4-inch flat metal stock. File the tips in the shape of a flat-tip screwdriver blade 1/2-inch wide.



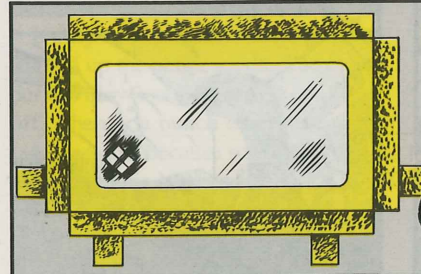
Yours If You ASK



Or plans for a wrench made of non-sparking aluminum to be used to open powder canisters?



Or plans to make and install plastic windows in the cab of the Lance missile launcher, which would reduce the cost of replacing glass window assemblies?



MAKES SCENTS TO ME!



President
TEXCOM Field Arty Bd
ATTN: ATCT-FAO
(BATTLEKING)
Ft Sill, OK 73503-6100

Plans and information for these improvements are available from BATTLEKING at Ft Sill. Call AUTOVON 639-3717/4075 or write to →

EQUILBRATORS DEMAND SERVICE

HEY, SARGE, SOMETHING STINKS!

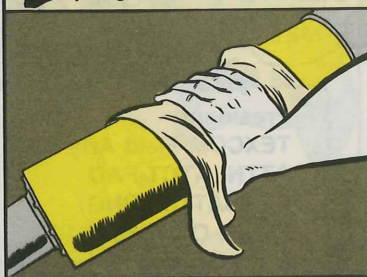
Some mechanics are shortchanging the quarterly lubrication service for the M110's equilibrators because a similar set of checks and services are pulled every week.

Don't fall for the trap, though, because the weeklies and quarterlies are not the same.

The most important service you pull during the equilibrator quarterly service is:



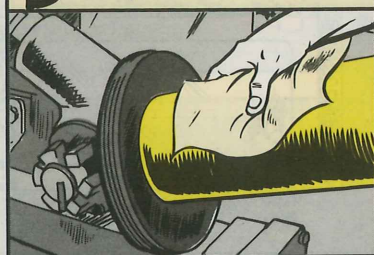
1 Unscrewing the cover



2 Clean dirt and gunk off cylinder plunger

WHAT STINKS IS YOUR PMCS!

3 And applying a thin coat of PL to all parts



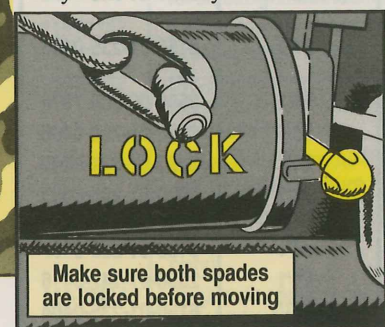
Forgetting to do this leads to seal damage and cylinder leaks on the equilibrators—something your favorite crews don't need when they're putting steel on target.

Follow your LO 9-2350-304-12 to the letter. Eyeball Note 43 on Card 26 of the LO.

LOCK SPADE BEFORE GOING

ARE WE READY TO MOVE THOSE HOWITZERS?

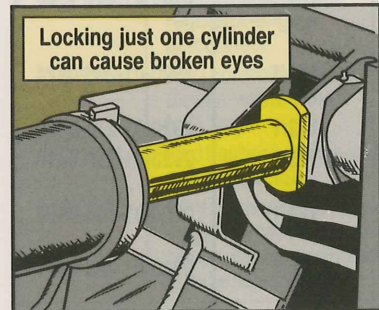
Make sure both spade cylinders are locked on your M110A2 howitzer before you move it anywhere.



Make sure both spades are locked before moving

If only one cylinder is locked, it tries to hold up the entire spade. The cylinder can blow a seal or the eye can break off. There's a bunch of busted spade cylinders just because someone locked only one cylinder before moving out.

Locking just one cylinder can cause broken eyes

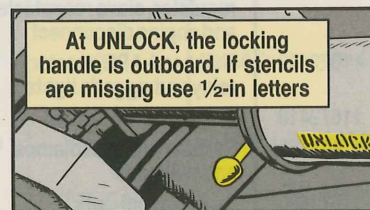


NOT UNTIL BOTH SPADE CYLINDERS ARE LOCKED!

When the spade is raised, make sure the locking handles on both cylinders are in the LOCK position. Any other time, both should be unlocked. Most howitzer spade cylinders are stenciled to show LOCK and UNLOCK. If yours is not, get your mechanics to stencil them on with 1/2-in letters.

At UNLOCK, the handle is as far out-board as it'll go. LOCK is 90 degrees from UNLOCK with the handle upright against its inboard stop.

At UNLOCK, the locking handle is outboard. If stencils are missing use 1/2-in letters



Never lock the spade down. It's not necessary and will break the locks when the spade is raised.

Wiring Harnesses

Happy days are here at last, mechs! Now you can get ready-made branched wiring harnesses for your M88's. Gone forever are the days when you had to make 'em yourself.

TM's 9-2350-256-24P1 and -24P2 will pick up the NSN's eventually, but you can use 'em right away.

Here are the part numbers crossed to nomenclature, TM figure/item number and NSN:

Part No.	Assembly Nomenclature	-20P Fig/Item	NSN
11671471	Main engine (single regulator system only)	(Not in TM)	2920-01-245-7652
11671796	Main lighting, blackout selector switch	51/1	6150-01-235-0405
10866909	Main lighting, master relay	52/1	2590-00-705-7876
11671226	Starter switch	53/1	6150-01-235-0406
11672051	Gage panel	58/1	2920-01-271-0399
10945007	Bilge pump, generator cutout switch lead	63/1	2920-01-235-0365
10945008	Bilge pump main power	64/1	6150-01-235-0407
11672409	APU control box	69/1	2590-01-147-3416
11672366	Oil temp transmitter housing	104.3/1	6150-01-235-0404
11672273	Turn signal flasher	105/1	6150-01-235-0412
11671813	Bulkhead-master relay, L/R taillight	117/1	2920-01-235-0470
11671790	Bulkhead-main engine, starter relay	118/1	2920-01-235-0469
11672413	Batts-master relay, voltage regulator, slave receptacle and engine disconnect	120/1	6150-01-235-0423
11672412	Bulkhead-APU, master relay and rigger's lights	121/1	2920-01-235-0424
11672410	Gage panel-bulkhead	122/1	2920-01-255-3360
11671568	Switch panel-headlamps and bulkhead	123/1	2920-01-235-0413
11671420	Switch panel-park position switch-bulkhead	124/1	2920-01-235-0468
11671798	Switch panel, radio and bilge pump-bulkhead	126/4	2920-01-235-0471

Get NSN's

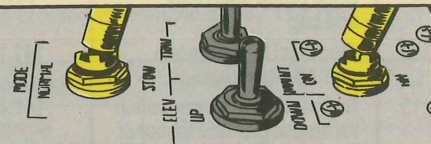
Part No.	Assembly Nomenclature	-20P Fig/Item	NSN
11671353	Heater control box-heater	127/1	2920-01-235-0415
11671795	Switch panel-gage panel and misc. switches	132/1	2920-01-245-7653
10866950	Headlight and dimmer switch	136/1	2590-00-707-8794
10894548	Bilge pump lead relay and cap	141/1	2920-01-235-0416
11672299	Electrical kit for smoke grenade launcher	141.1/1	2920-01-241-9632
11672315	Box assembly, power switch for smoke grenade launcher	141.4/1	6150-01-235-0408
11672387	Switchplate-driver's vehicle exhaust smoke bracket	141.5/1	6150-01-235-0409
11672382	Driver's vehicle exhaust smoke bracket-bulkhead connection	141.6/1	2920-01-235-0472
11671808	Voltage regulator, APU and main engine armature (single regulator only)	(Not in TM)	2920-01-245-7655
11671473	APU (single regulator only)	(Not in TM)	2920-01-245-7654
11672414	Engine disconnect cable assembly-starter module low voltage protective system	108/1	6150-01-235-0411
11672416	Instrument control	107/1	2920-01-235-0467
11672411	Bulkhead-main engine bracket and rear fuel transmitter	119/1	2920-01-255-3361
11672415	Main engine voltage regulator-engine disconnect	131/1	6150-01-235-0414
11672466	APU control box-foot dimmer switch and bulkhead	125/1	6150-01-238-5714
11672371	Red flasher breaker-switch cable assembly	104.1/1	6150-01-241-9445
11671793	APU generator and main engine generator armature relays-voltage regulator (single regulator only)	(Not in TM)	2920-01-247-7034

SAVE YOURSELF

Sometimes Vulcan problems are easily solved—if you know what to look for. The troubleshooting steps in your -10 manual will usually solve the problem. But if the book runs out before the problem's solved, follow these checks before you call your mechanic. You may save yourself a call.

Radar won't track with cannon.

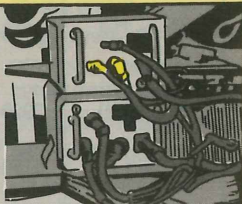
MODE switch not set to NORMAL.
MAINTENANCE switch not set to ON



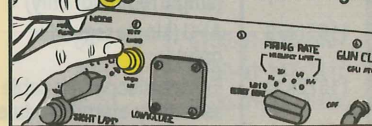
GOOD WHEN LIT light won't light.

MUZZLE VELOCITY switch not set to 4.0, AIR DENSITY switch to 0.95, and cannon to 0 degrees elevation

W12 cable connections are loose



Light's dust cap is screwed too tight. That grounds out the light



Blowers don't come on in radar receiver-transmitter or radar power supply or power distribution box.

Radar receiver-transmitter cover is not fully screwed down

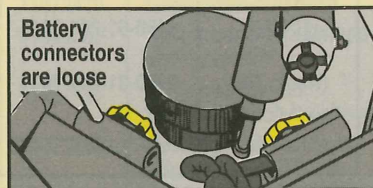


Circuit breakers on the units are tripped



Vulcan has no power.

Battery connectors are loose



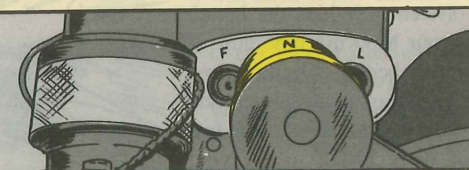
W1 and W5 cable connectors are loose



A CALL

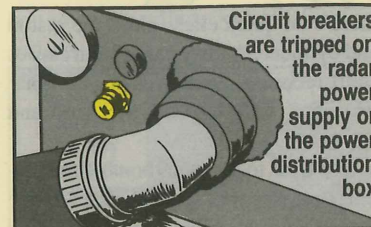
Drum drive has no power.

Shift pin's in NEUTRAL instead of LOAD

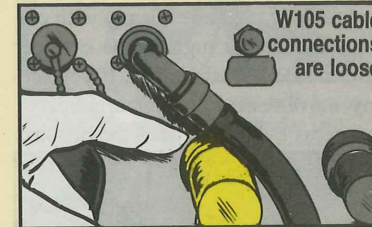


MIDRANGE CALIBRATION test light won't come on.

Circuit breakers are tripped on the radar power supply or the power distribution box



W105 cable connections are loose



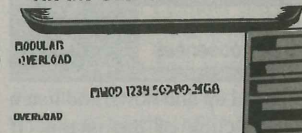
READY WHEN LIT light won't come on in required time.

READY WHEN LIT light's dust cover is too tight

Radar receiver-transmitter cover is not fully screwed down



Either overload light or the receiver-transmitter light is lit. Hit the overload reset button

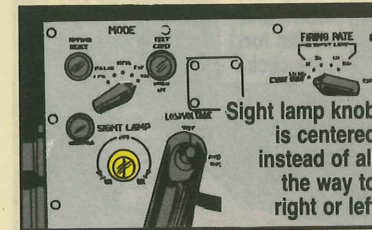


Sight reticle light fails to come on.

Sight lamp bulb is burned out



Sight lamp knob is centered instead of all the way to right or left



If these checks don't cure problems, then it's time to call your mechanic.

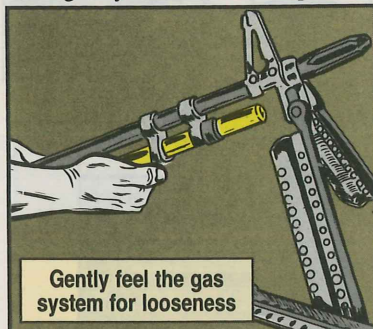
DAILY
PMCS IS A
MUST!

GASSED UP

AND READY TO GO

The gas system provides the breath of life for your M60 machine gun. If the gas system becomes gummy and grimy, the gun coughs and sputters and chokes...and quits. But just a few minutes of daily PMCS keeps your M60 gassed up and ready to go.

Feel the gas cylinder for looseness by grabbing the barrel firmly with one hand and gently tugging the cylinder side to side with the other. If you feel any movement, tell your armorer. A loose gas cylinder cracks the piston.



Gently feel the gas system for looseness

Tilt the barrel up and down and listen for the quick click of the piston. If

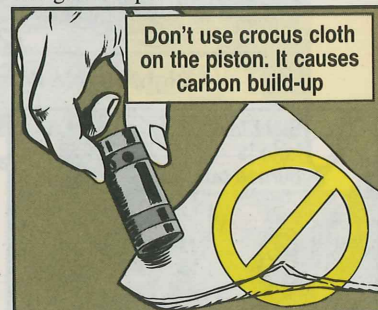


Tilt up and down and listen for the click

there's no quick click, clean the piston and cylinder. A dirty gas system causes short recoil. This can result in a runaway gun, failure to extract, feed and fire.

Use CLP to clean carbon off the piston. Remember to shake the CLP bottle first to mix the C and L and P. If you have trouble getting all the carbon off, use RBC, NSN 6850-00-224-6656. Your armorer should have some. It'll make the job easier.

Never use crocus cloth on the piston or cylinder. Crocus cloth roughens the piston surface and causes worse carbon buildup. It enlarges the cylinder and lets gas escape.



Don't use crocus cloth on the piston. It causes carbon build-up

Ream the gas port with your combination tool. Push it in until you reach

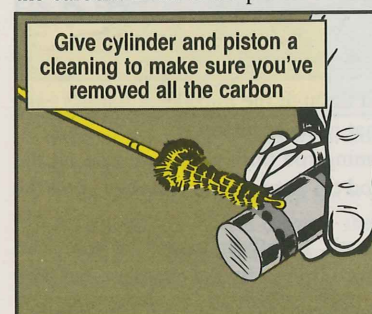
bottom or the cylinder will still be plugged up.



Ream gas port all the way through

Ream all the holes in the piston and cylinder.

Run your bore brush through the cylinder and over the cylinder and piston holes to make sure you've gotten all the carbon. Even if the piston's clean,



Give cylinder and piston a cleaning to make sure you've removed all the carbon

it will stick if any carbon's left in the cylinder.

Use a piece of lacing wire to clear out the extension vent hole.

Wipe the piston dry before you put it back in the cylinder. Make sure the piston holes line up with the cylinder



Put end with holes in cylinder last

holes—the shiny piston end goes in last. Otherwise, your M60 fires once and quits.

When you put the cylinder back together, make sure the key washer's long prong points toward the opposite end of the cylinder. If the washer's backwards, you'll have a tough time taking off the cylinder nut again.

When you screw on the cylinder nut, listen for the key washer's clicking. No clicking means the washer's weak and will let the nut back out. Get a new key washer.



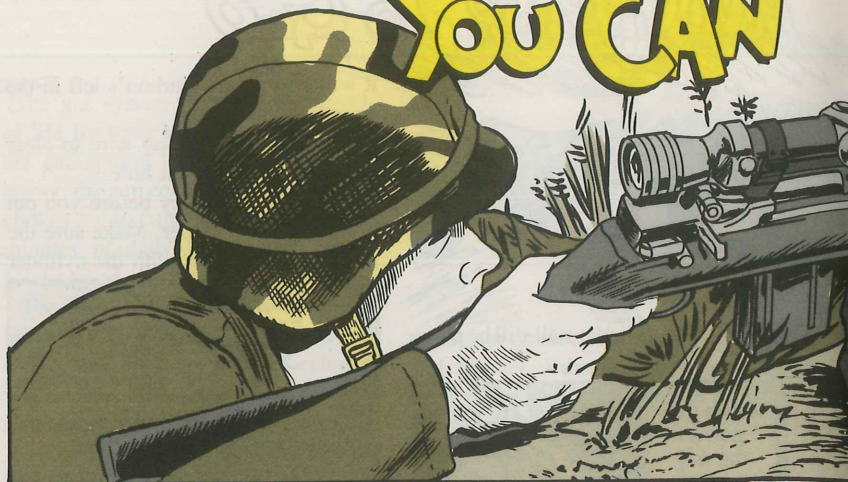
Key washer should click as you screw in nut

Have your armorer safety wire the cylinder plug and key washer to keep the cylinder tight.

Now your M60 can breathe fine.

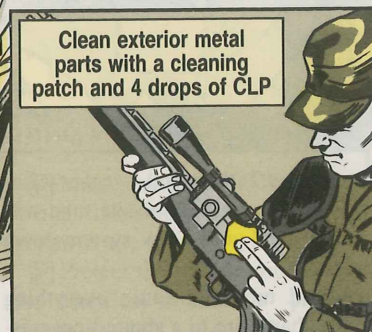
YOU CAN

HELP TOO



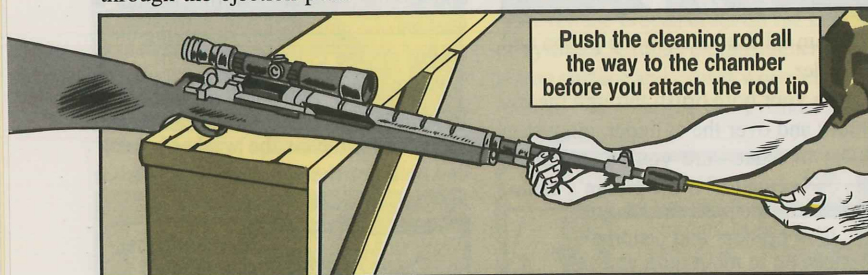
Lubricate the metal parts very lightly. Too much lube can ruin the glass bedding between the metal and wooden parts. Put four drops of CLP, LSA, or LAW on a cleaning patch and rub it over the exterior.

Clean exterior metal parts with a cleaning patch and 4 drops of CLP



Because the M21 must shoot accurately over very long distances, it has close tolerances and critical alignment. Most maintenance has to be done by specially trained repairmen. But there are some very important things you can do to help your M21 see and shoot straight.

Clean it. After every firing, run a chamber brush dipped in CLP or RBC through the ejection port.



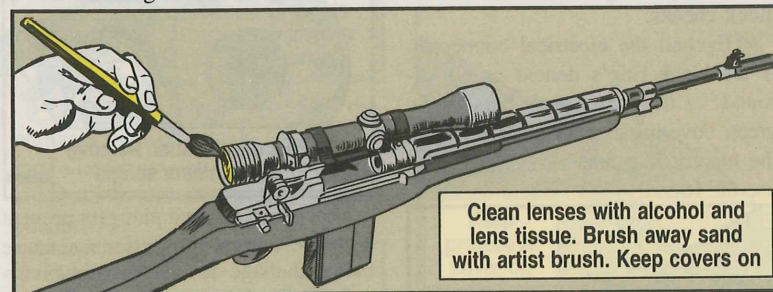
Push the cleaning rod all the way to the chamber before you attach the rod tip

One problem with pushing a cleaning rod through the muzzle is that it's easy to nick or burr the crown of the barrel. That ruins accuracy.

To prevent that, carefully insert the cleaning rod through the muzzle all the way to the chamber. Attach the cleaning rod tip through the chamber. Pull the cleaning rod straight back and out.

Dry the bore and chamber with a clean patch. Lightly lubricate the bore with a patch dipped in CLP, LSA, or LAW. Before firing, dry the chamber and bore again.

Clean the scope lenses only with an artist's brush, NSN 8020-00-597-4767, lens tissue, and alcohol. Anything abrasive—like cloth or polishing liquids—scratches the glass.



Clean lenses with alcohol and lens tissue. Brush away sand with artist brush. Keep covers on

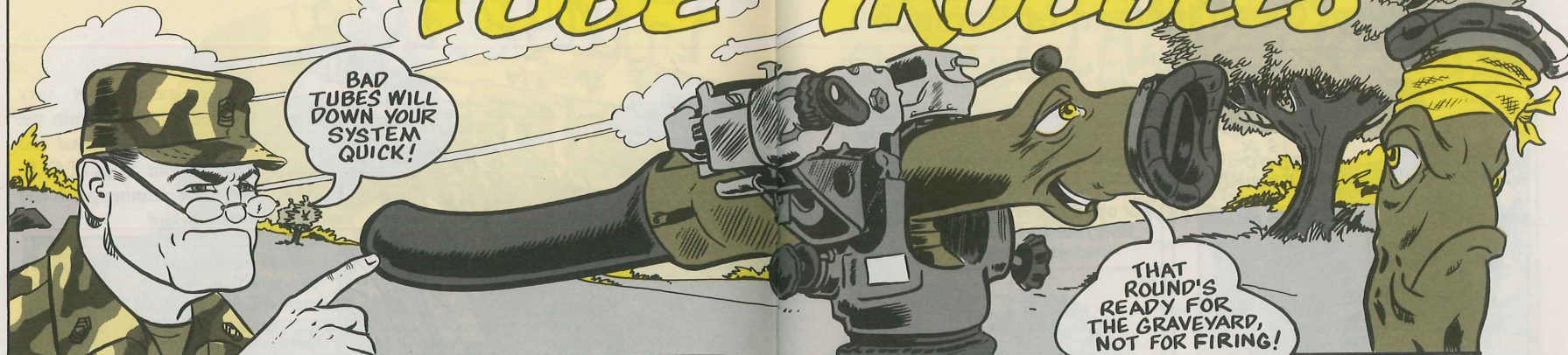
Protect the scope lenses from dirt and sand by keeping their covers on when you're not shooting.

Take the scope adjustment knob covers off only to zero the weapon. Moisture and dirt can get in and damage the adjustment knobs.

Use the artist's brush to clean away sand and dirt from the scope and lenses.

If you run into other problems, don't try to solve them yourself. You've done all you should. Your armorer can send your M21 to the folks who know what to do.

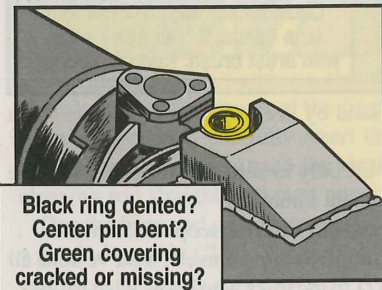
TUBE TROUBLES



Loading a TOW round—real or training—that has a bad missile tube will quickly send your TOW system down the tubes.

A bad tube can cause everything from a hang fire to a shorted-out missile guidance set or command guidance electronics flex harness. But you can weed out bad tubes with just a few quick checks.

☑ **Eyeball the electrical connector.** If the black ring's dented or out-of-round, or the center pin's bent or the green covering's cracked or missing, the electrical connector's bad. Don't use the round.



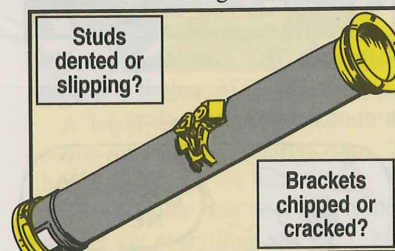
On training rounds, peel off every bit of aluminum label on the connector. Even a little piece of the label can burr and peel. Push down on the rubber detent spring and sheared plunger have been removed. If the cover doesn't spring back, they've been removed.



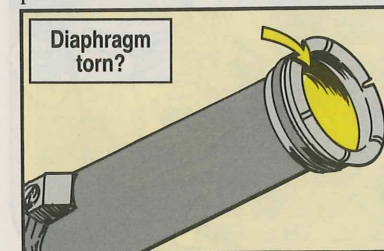
Labels and sheared plungers prevent a good electrical connection and cause major damage to TOW components and even the vehicle the TOW's mounted on.

☑ **Eyeball the mounting brackets in the middle of the tube for chipping and the alignment studs at the front for dents or slippage.** If you find any problems, turn in the tube. The tube has to

fit in the launcher tight or the missile and launcher electrical connections can't mate for firing.

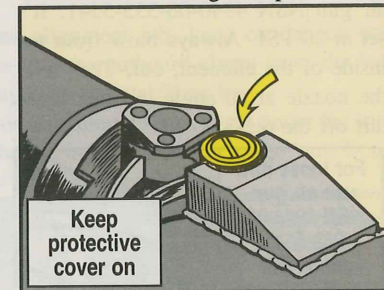


☑ **Inspect the front and rear diaphragms on live rounds for tears.** A torn diaphragm lets moisture in that damages the missile's electronic components.



☑ **Make sure the humidity indicator is blue.** If it's pink, moisture's already gotten in the tube.

☑ **Protect the missile rounds.** Keep the electrical connectors' protective covers, NSN 1440-00-444-0563, screwed on. Never roughly handle live or training rounds. Keep them strapped in their racks during transport.



**NO
ROUGH
HANDLING!**



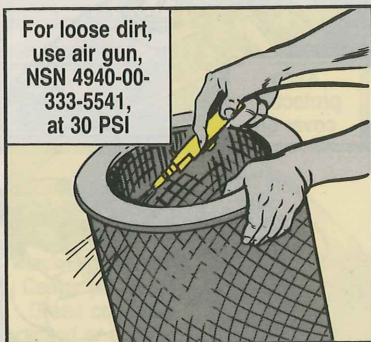
Air Filters: Clean Instead of Replace



You don't need to replace the air filter element every time the air restriction indicator shows red. Most times you can save the cost of a new element by cleaning the old one with compressed air or warm, soapy water.

When you use compressed air, use air gun NSN 4940-00-333-5541. It's set at 30 PSI. Always blow from the inside of the element, out. Then hold the nozzle at an angle to blow loose dirt off the outside.

For loose dirt, use air gun, NSN 4940-00-333-5541, at 30 PSI

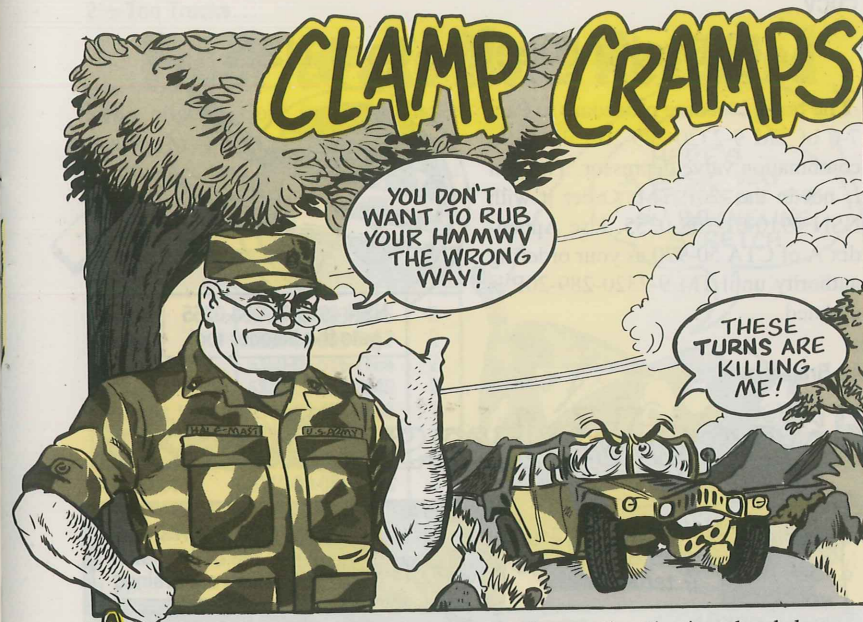


For oily dirt, wash the element in detergent, NSN 7930-00-282-9699, and warm water. Rinse away the soap with warm water and let it dry before you put it back in the truck.

For oily dirt, use detergent NSN 7930-00-282-9699, and warm water



Replace the filter element, NSN 2940-01-188-3776, only if it's ripped, torn or it won't come clean.

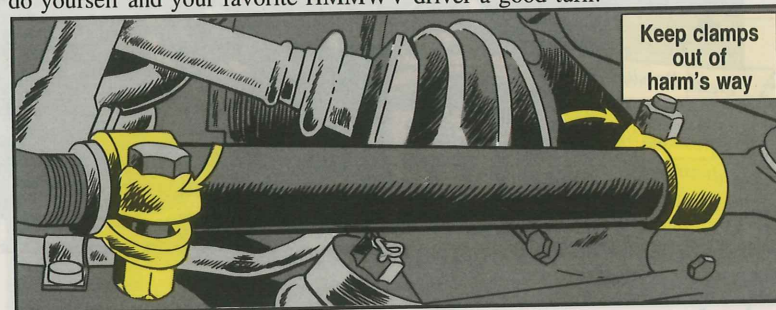


A toe-in adjustment job's not completed until you adjust the tie rod end clamp.

A lot of mechanics quit before they take this last step. Then the outboard clamp rubs the wheel during turns. The inboard clamp bumps into the stabilizer bar. Both bumps are bad.

So next time you've got a front end alignment job, keep on the job until you've got everything just right. Make sure the outboard clamp faces the half-shaft and the inboard clamp faces away from the stabilizer bar.

Next time you have a HMMWV in for semiannual service, get under the truck and look at the tie rod end clamps. If they're in harm's way, change 'em. You'll do yourself and your favorite HMMWV driver a good turn.



Brake Bleeder Tool NSN

The brake bleeding procedure in Para 7-6 of TM 9-2320-289-20 calls for a combination valve depressor. The tool is not in the -20P TM. Order it with NSN 4910-01-268-0255. Use Appendix A of CTA 50-970 as your ordering authority until TM 9-2320-289-20P is updated.

Air Brakes...

Keep Valves Closed

Dear Half-Mast,
Do you close air valves after
you bleed air tanks or leave
them open?
PFC J. P. K.

Dear Private J. P. K.,
Always close the valves tight
after the tanks are completely
drained. This keeps a buddy from
driving off with them open. Also,
in winter the valves can freeze if
you leave them open and you can't
close them.
Half-Mast

22

AUG 89

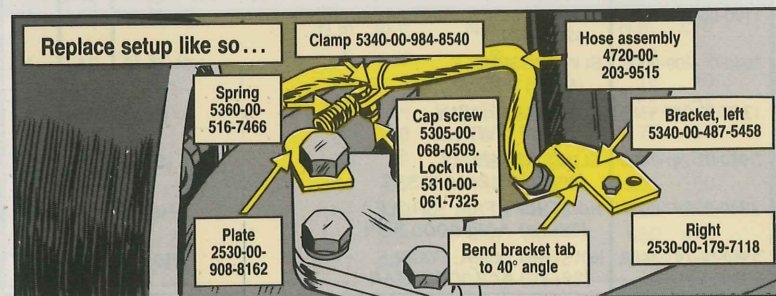
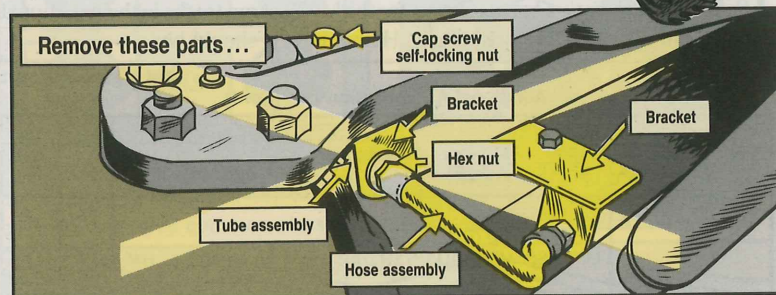


Front Brake Hose Revisited

The original front hydraulic brake hose on M44-series trucks is too short. It stretches and breaks. Before that happens, replace it with a longer hose set up. You'll need:

Item	NSN	Qty
Hose	4720-00-203-9515	2
Plate	2530-00-908-8162	2
Spring	5360-00-516-7466	2
Clamp	5340-00-984-8540	2
Bracket, Left	5340-00-487-5458	1
Bracket, Right	5340-00-179-7118	1
Cap screw	5305-00-068-0509	2
Lock nut	5310-00-061-7325	2

The procedure is in Para 4-10a of TM 43-0143, but basically here's how it goes:



AUG 89

23

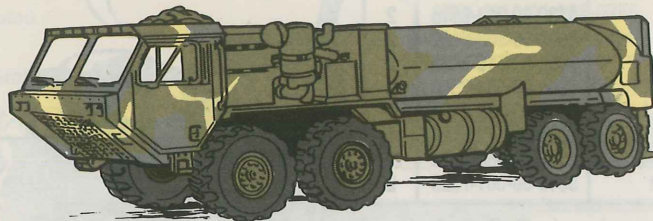
HEMTT...

Drain the Tank

When you change fuels in a HEMTT tanker, about 50 to 60 gallons of fuel are left in the bottom of the tank.

Get it out by installing a drain valve in the primary fuel pump and an adapter fitting to the top of the filter-separator cover.

All of the instructions are in Para 3-3 of TB 43-0001-39-3-1 (Jul 86). If you don't have that TB, see your TACOM Logistic Assistance Representative or write MSG Half-Mast for a copy.



Ordering Slings and Beams?

The slings and hoisting beams shown for the M977 cargo trucks in the Additional Authorization List (AAL) are wrong. Here's how it should be:

TM 9-2320-279-10-1

Additional Authorization List (Cont)

(1) National Stock Number	(2) Description FSCM & Part Number Usable On Code	(3) U/M	(4) Qty Auth
6545-00-922-1200	KIT: FIRST AID (19207) 11677011 LIFT ASSEMBLY ADAPTER (RH) H40	EA	1
1190-00-541-9837	(81348) KK-C-450 SLING ASSEMBLY 120976-00 H01, 1/4, 40	EA	1
3940-01-209-6008	SLING ASSEMBLY (45152) 1385750 H01, 1/4, 40	EA	1
1398-01-083-9313	SLING ASSEMBLY (91796) SW71M H06	EA	1
3940-01-241-7400	SLING ASSEMBLY (28620) AC200000352 H06	EA	1
3940-01-247-3681	HOISTING BEAM SINGLE (28620) AC200000354 H06	EA	1
3940-01-247-3682	HOISTING BEAM, DOUBLE (28620) AC200000364 H06	EA	1

Bolts...

CLASSING METRIC BOLTS

WHEN TORQUE FOR
METRIC BOLTS YOU NEED,
THE
HEAD AND
THE CHART HAVE
THE SCOOP--
JUST
READ!

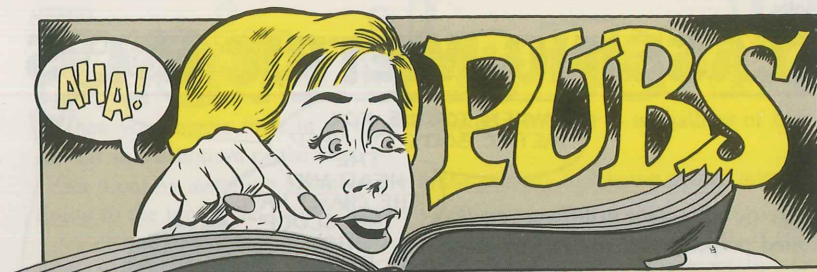
Metric bolts come in different grades called property classes. The property class number is stamped on the head. The higher the number, the stronger the bolt, and the more torque it takes to hold it tight.

Here are three classes the Army uses:

Property Class		
	5.8	
	8.8	
	10.9	

Use the torque called for in the TM, but if nothing is specified, use this chart for the three common classes:

Diameter, pitch (mm)	5.8(5S)		8.8(8G)		10.9(10K)	
	N.m	lb-ft	N.m	lb-ft	N.m	lb-ft
5x0.8	5	3	6	4	8	6
6x1	8	6	10	7	14	10
8x1.25	19	14	25	20	35	25
10x1.5	37	28	55	40	75	55
12x1.75	65	48	90	65	125	90
14x2	104	77	145	105	205	150
16x2	162	120	220	160	300	225
20x2.5	317	233	450	325	650	475
24x3	547	403	800	600	1025	750

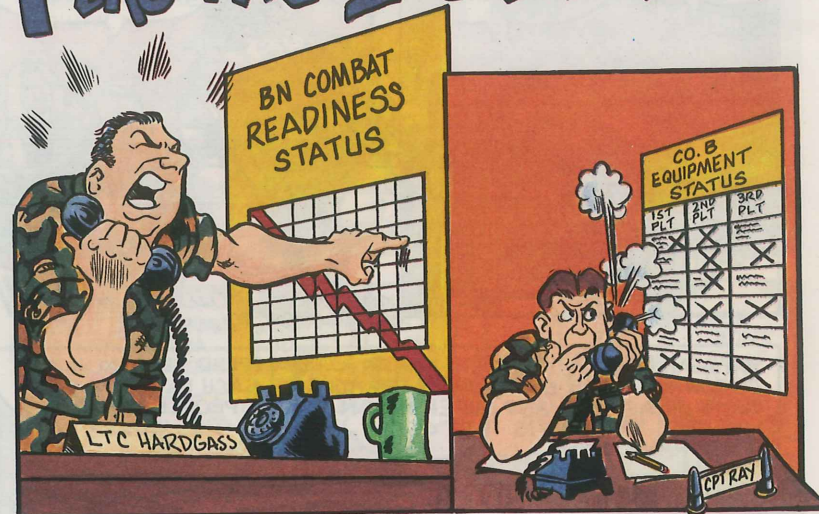


This is a selected list of recent pubs of interest to organizational maintenance personnel. This list was made from a computer print-out provided by the Adjutant General.

TM 3-4240-308-20&P Sep 88 TAC-FIRE M277
 TM 5-2410-237-10 Jan D7G tractor
 TM 5-3810-300-20P Jan Crane, truck mounted hydraulic 25 ton Grove model TM S-300-5
 TM 5-6150-227-13&P Apr Power distribution center
 TM 5-6665-296-20P Jan Mine detecting set, AN/PSS-12
 TM 9-1010-230-10 Jan MK19 machine gun
 TM 9-1010-230-23&P Jan MK19 machine gun
 TM 9-1015-232-23&P Apr 107MM mortar turntable and mount, 81MM mortar turntable and mount, and 81MM mortar bipod assembly
 TM 9-1095-206-23&P Nov 88 Dispenser, general purpose aircraft: M130
 TM 9-1265-211-10 Feb M16 rifle and M249 SAW multiple integrated laser engagement system (MILES) simulator system
 TM 9-1270-220-23&P May Helicopter sight head-up display subsystem: M76
 TM 9-1270-233-23&P Dec 88 Flyer's helmet unit, integrated
 TM 9-1410-600-24P Feb MIM-104 and MIM-104A and MIM 104B (Patriot guided missile)
 TM 9-1425-450-24P Feb TOW 2 missile
 TM 9-1425-646-BD Dec 88 M270 MLRS rocket launcher
 TM 9-1425-647-24P Feb Multiple launch rocket system (MLRS)
 TM 9-1430-600-10-1 Apr AN/MSQ-104 engagement control station guided missile (Patriot missile)

TM 9-1430-601-10-1 May AN/MPQ-53 radar set (Patriot missile)
 TM 9-1430-602-10-1 Apr AN/MSQ-116 (Patriot missile)
 TM 9-1430-2533-24P-1 Dec 88 AN/MPQ-61 radar set (HAWK missile)
 TM 9-1430-2533-24P-2 Dec 88 AN/MPQ-61 radar set (HAWK missile)
 TM 9-1430-2535-10 Nov 88 Platoon command post and battery command post (HAWK missile)
 TM 9-2320-355-24&P Jan HIAB models cranes (MHC) for M985E1 HEMTT
 TM 9-2320-361-10 Dec 88 M44A2 series trucks (multifuel)
 TM 9-2330-379-14&P Dec 88 Manual, M1022 transportable shelter
 TM 9-2350-257-24P-2 Dec 88 M60A1 tank turret
 TM 9-2350-284-10-2 Nov 88 M2A2/M3A2 Bradley turret
 TM 9-4935-600-24P-5 Feb AN/TSM-163 (Patriot missile)
 TM 9-4935-2541-24P Nov 88 HAWK missile
 TM 9-4935-2544-24P Dec 88 HAWK missile
 TM 9-5855-247-24P-2 Feb Infrared AN/UAS-11 night vision sight
 TM 9-6920-762-12&P May M32A1 pneumatic mortar trainer
 TM 11-2300-475-13&P-5 Jul 88 MK-2544/GRC-193A installation kit for CUCV (M1009)
 TM 11-5805-367-20P-2 Apr TD-204/U multiplexer
 TM 11-5820-401-20P Aug AN/VRC-12 series radio sets
 TM 11-5820-864-24P Apr AN/TRC-174 radio terminal set
 TM 11-5820-865-24P Apr AN/TRC-173 radio terminal set
 TM 11-5820-926-24P Apr AN/TRC-138A radio terminal set
 TM 11-5820-931-24P Apr AN/TRC-175 radio terminal set
 TM 11-5820-960-20P Jan MK-2172/VRC installation kit
 TM 11-5821-259-24P-2 Apr AN/ARC-114A radio set

PERSONAL INVOLVEMENT





WHAT HAVE YOU DONE ABOUT IT?

I POST BULLETINS, I THREATEN, I CAJOLE, BEG, PROMISE...



...VIEW WITH ALARM, POINT WITH PRIDE AND.....

HAVE YOU TRIED PERSONAL SUPERVISION?



... NO WONDER!! YOU'VE BEEN USING OUT-OF-DATE PARTS MANUALS.... BEEN SENDING INCOMPLETE SUPPLY FORMS... HERE, LET ME SHOW YOU.



...HEY?!... WHAT'RE THESE DOIN' HERE??



...WE JUST NEVER GOT AROUND TO SENDIN' EM BACK TO SUPPORT.

YOU GOT ENOUGH COMPONENTS HERE TO GET ALL YOUR WHEELS ROLLIN' AGAIN... A GOLDMINE OF REPAIRABLE STUFF!



TH' FASTER Y' GET THEM OUT... TH' QUICKER REPAIRED ITEMS RETURN TO YOU!

GEE, I DIDN'T SEE IT THAT WAY!



YOU MEAN ME GO DOWN TO THAT DUSTY, GREASY LINE AND?...THAT'S A MECHANIC'S JOB!

MAINTENANCE IS A COMMAND JOB, TOO! AND SUPERVISION IS PART OF IT!



SPEND SEVERAL HOURS EACH DAY WITH THE PEOPLE WHO DO THE WORK!



LATER

WE'RE STYMIED...NO REPAIR PARTS...NOTHIN'S COME DOWN FROM SUPPLY IN WEEKS... SO, WE GOTTA WAIT!

HMM... LEMME SEE YOUR SUPPLY REQUESTS.



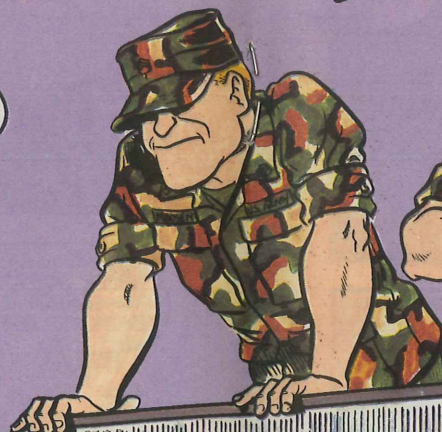
HOLD ONE... THE WAY YOU'RE PACKING - HALF OF EM WILL ARRIVE SO BANGED UP YOU'LL BLEED SUPPLY OF THEIR INVENTORY OF REPLACEMENT PARTS AND DRY UP THE PIPE LINE... PACK EM SO THEY'LL GET THERE IN GOOD SHAPE!

Maintenance Needs Everyone's

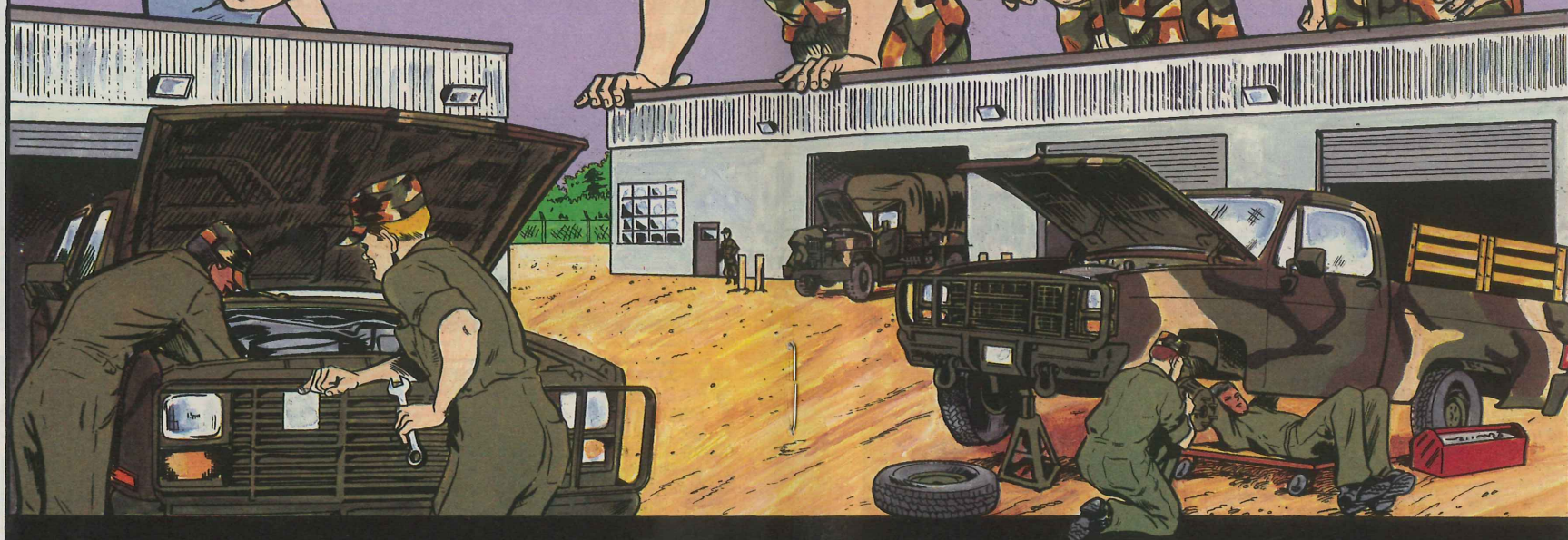


FROM
THE BOTTOM
TO THE TOP, IT
TAKES A TOTAL
EFFORT.

Involvement



THAT'S
RIGHT,
CONNIE!



WE HAVE THE WORLD'S BEST EQUIPMENT... *Take care of it*

IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BULLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.

ONE MONTH LATER

HOW'S IT GOING, CAPTAIN?

I GOT A GUNG-HO MAINTENANCE TEAM THANKS TO YOUR TALK WITH MY NON-COMS, BUT... OUR COMBAT READINESS STATUS COULD BE BETTER.



CPT. RAY

WHEN'S THE LAST TIME YOU SPENT SOME TIME INVOLVED IN UNIT MAINTENANCE WITH YOUR NON-COMS!

WUH?



WE'RE A FIGHTING OUTFIT!! I'M INVOLVED IN TACTICAL OPERATIONS!

WITHOUT MAINTENANCE YOU'LL BE TRYING TO FILL MISSIONS WITH YOUR BARE HANDS!! YOU MUST GET INTO IT PERSONALLY!



BUT, CAPTAIN. WE JUST DON'T HAVE ENOUGH MEN TO CUT IT... I NEED MORE 63C'S!

WE SHOULD HAVE ENOUGH!... HOW ABOUT SMITH, BROWN, GOLDSTEIN AND SNODGRASS!



SMITH'S PAINTING ROCKS!

BROWN'S MAKING SIGNS!!

GOLDSTEIN AND SNODGRASS ARE BUILDING AN AUTOMATIC COFFEE MACHINE IN THE MESSHALL!

OH!



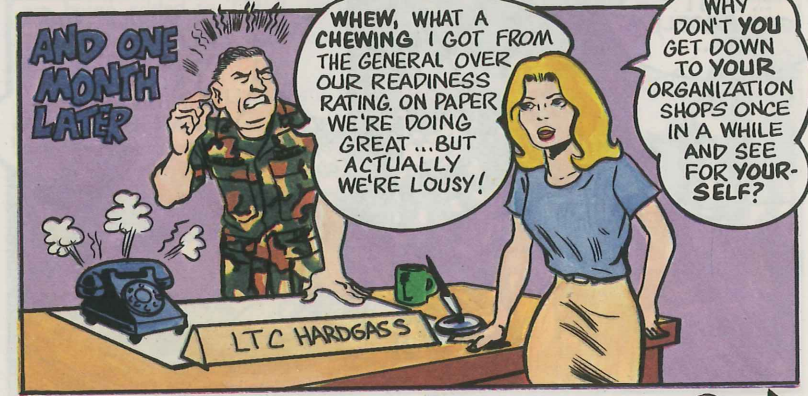
...ASSIGN THEM BACK TO THEIR REGULAR DUTIES RIGHT NOW! WHAT THEY'RE DOING CAN WAIT!



...WITH FOUR GOOD MECHANICS BACK ON THE JOB WE'LL LICK THAT BACKLOG IN NO TIME!



FROM NOW ON I'LL BE DOWN HERE EVERY DAY TO SPEND TIME WITH YOU ON MAINTENANCE SO WE CAN CORRECT PROBLEMS THAT COME UP RIGHT ON THE SPOT!



AND ONE MONTH LATER

WHEW, WHAT A CHEWING I GOT FROM THE GENERAL OVER OUR READINESS RATING. ON PAPER WE'RE DOING GREAT ...BUT ACTUALLY WE'RE LOUSY!

WHY DON'T YOU GET DOWN TO YOUR ORGANIZATION SHOPS ONCE IN A WHILE AND SEE FOR YOURSELF?



ANTI-ICE DEVICE ADVICE

Next time your Apache or Cobra goes to the firing range, give those rocket launchers a little protection.

Install the environmental protection device (EPD) on the M261 lightweight launchers if they're to be ripple fired or if icing conditions are possible.



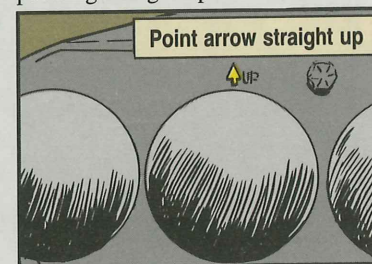
If the launcher is ripple fired without an EPD, heat and flame from the rockets will warp the launcher's bulkhead.

If ice gets inside the launcher, it could cause a hang fire. Then the launcher has to be jettisoned.

Get EPD's for your launcher with NSN 1055-01-241-1049.

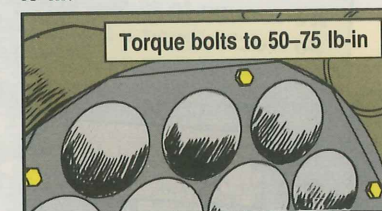
Instructions for installing the EPD are being added to TM 9-1055-460-13&P. But until they show up in the TM, here's how:

- Position the EPD with the arrow pointing straight up.

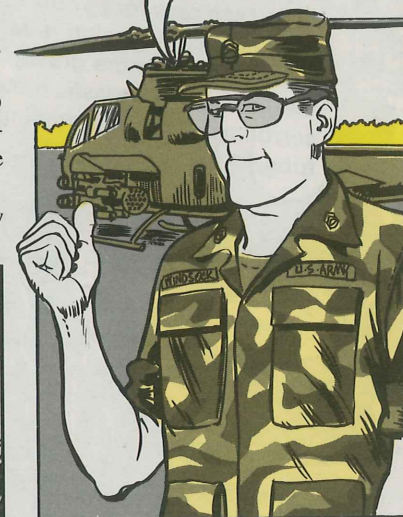


- Place it on the launcher with the bolts aligned with the launcher's captive nuts.

- Torque the EPD bolts to 50-75 lb-in.



NEVER STAND IN FRONT OF OR BEHIND A LOADED LAUNCHER WHEN YOU'RE INSTALLING THE EPD. YOU'D BE IN A WORLD OF HURT IF SOMETHING ACCIDENTALLY TRIGGERED THE LAUNCHER!



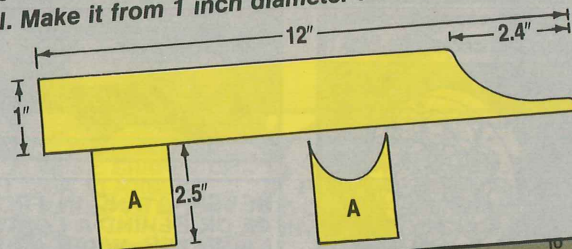
TOOLS TO HELP

Dear Editor,

To sample the fuel in a Black Hawk, you have to slip one flexible hose inside another flexible hose that's inside the gravity fuel port.

It's enough to ruin your whole day.

So we designed a plastic extension tube to help sample fuel. Make it from 1 inch diameter PVC to these dimensions:



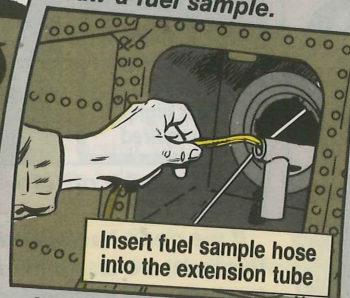
Use a half moon file to groove the handle. Clean off all burrs using PVC primer. Attach the grooved handle to the long pipe using PVC cement. Let it cure for 24 hours.

To use the extension tube, insert it through the gravity fuel port until the plastic tube surrounds the fuel sampling tube.

Insert extension tube through the fuel port

SAMPLE FUEL

Then insert the sample hose inside the extension tube and draw a fuel sample.

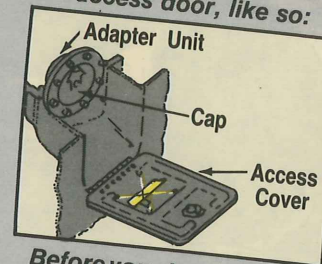


Insert fuel sample hose into the extension tube

We store the extension tube inside the refuel access cover door, using $\frac{3}{16}$ inch diameter elastic cord, NSN 8305-00-267-3116, or $\frac{3}{4}$ inch spring clips, NSN 5340-00-060-9344, to hold it in place.

(Editor's note: Taking fuel samples on any aircraft can be a real pain. Thanks for prescribing your pain reliever.)

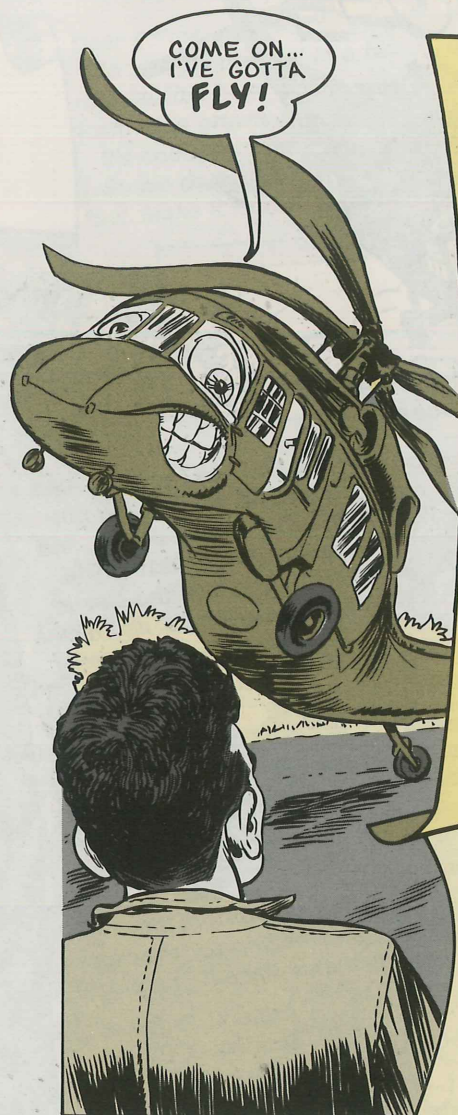
Use screws, NSN 5305-00-180-0011, self-locking nuts, NSN 5310-00-785-1755, and washers, NSN 5310-00-167-0818, to secure the elastic cord in the form of an X inside the access door, like so:



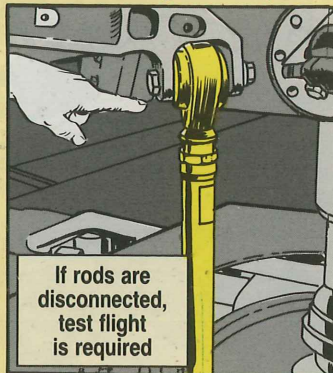
Before you store the extension tube, wipe off the excess fuel and place it in a plastic bag.

Arthur E. Essenpreis
Scott AFB, IL

TEST FLIGHT NEEDED?



Dear Windy,
When we disconnect the pitch control rods on our Black Hawks, there is some question about whether a limited test flight is required



per Para 3-2.b of TM 1-1500-328-25.

If we don't have to adjust the rods, we shouldn't have to perform a limited test flight. Right?

SSG J.R.T.

Dear Sergeant J.R.T.,
Wrong! You have to perform a limited test flight any time adjustable flight control surfaces, primary flight control actuators, electronic sensors, flight control linkage or cables are replaced, disconnected or adjusted.

Windy

PUMPS and PRYBARS

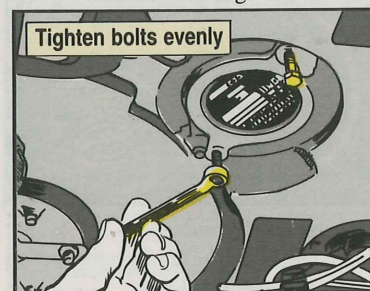


Some mechanics reach for a prybar or heavy screwdriver to remove their bird's main module oil pump.

That's why as many as 80 percent of the pumps are returned to depot with broken flanges. Prybars almost always do more damage than good.

So forget the prybar and latch onto a pair of jacking bolts with at least a 2-in thread. NSN 5306-00-982-3372 will do just fine.

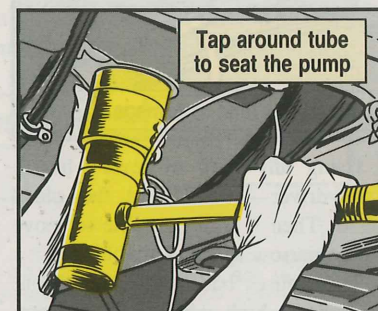
Screw the bolts into the threaded holes of the pump base. Be sure to tighten the bolts evenly when drawing the pump away from the sump or you could crack the housing.



The same principle applies when you install a main module oil pump. USE ONLY THE TOOLS CALLED FOR IN YOUR TM.

If you don't have the special tool called for in Step 2 of Task 23, TM 55-1520-237-23-7, make one from 1-in phenolic sheet, NSN 9330-00-585-8678. Fig F-50 of the TM shows how.

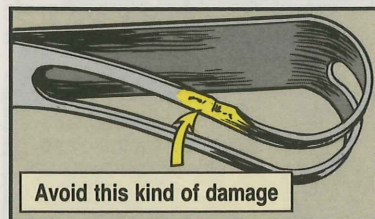
Push the oil pump into the main gear box sump. Seat the pump by tapping around the tube with a rawhide mallet from your No. 2 tool set.



Install washers and nuts on the pump and torque the nuts to 95-105 lb-in.



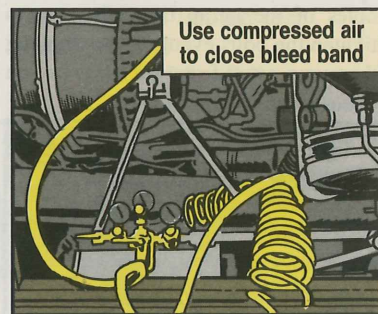
Never use a lever to close the bleed bands of your Huey's or Cobra's engine when you're washing the compressor.



Using any kind of lever—like a screwdriver—could bend the bleed band. Then it won't be able to move in the narrow space available.

That causes bad things to happen, including a high exhaust gas temperature (EGT) during a turbine engine analysis check (TEAC).

Always use compressed air to close the bleed band, like it says in Para 2-2 of TM 55-2840-229-23-1. But make sure you don't exceed 60 PSI when closing the bleed band or you could damage the actuator diaphragm.



If metered compressed air is not available, clean the compressor section with the bleed band open.

NVG Shields for Switches

Dear Windy,
I've tried without success to order NVG shields for my Chinook's transmission temperature/pressure switch and fuel quantity switch. Can you help?

L.J.E.

YOU CAN'T ORDER IT! BUT YOU CAN MAKE IT!

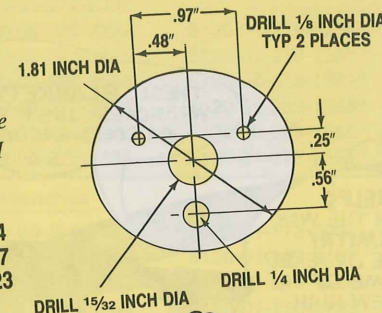
Dear Mr. L.J.E.,

You bet. You have to make the shields from .016-in aluminum alloy, 2024-T4. But the instructions for making the shields have not made it into Appendix D of TM 55-1520-227-23-5 yet.

Here's how:

Prime with NSN 8010-01-120-5004
Paint with NSN 8010-00-166-3147
Finish with NSN 8030-00-811-3723

Windy



CH-47C Sampling Interval

The oil sampling interval for the CH-47C's forward and aft transmission should be every 12½ flight hours, not 25 hours like it says in Appendix A of TB 43-0106. The 12½-hr oil samples are a special inspection that must be listed on Equipment Inspection List, DA Form 2408-18.

Aviation Messages

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

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

AH-64-89-05, SOF, Maint Mandat-

tory, Inspection of wire bundle chafing forward avionics bay, 032300Z Apr 89.

AH-1-89-06, SOF, Maint Mandat-
ory, Addendum to revision/change of selected component lives,

172100Z Apr 89.

UH-1-89-04, SOF, Emergency, Im-

mediate grounding of UH-1H/V and EH-1H/X series aircraft, 220003Z Apr 89.

UH-1-89-05, SOF, Technical, In-

spection, 252258Z Apr 89.

AH-64-89-06, SOF, Maint Mandat-
ory, Hanger assembly, forward bearing, 262130Z Apr 89.

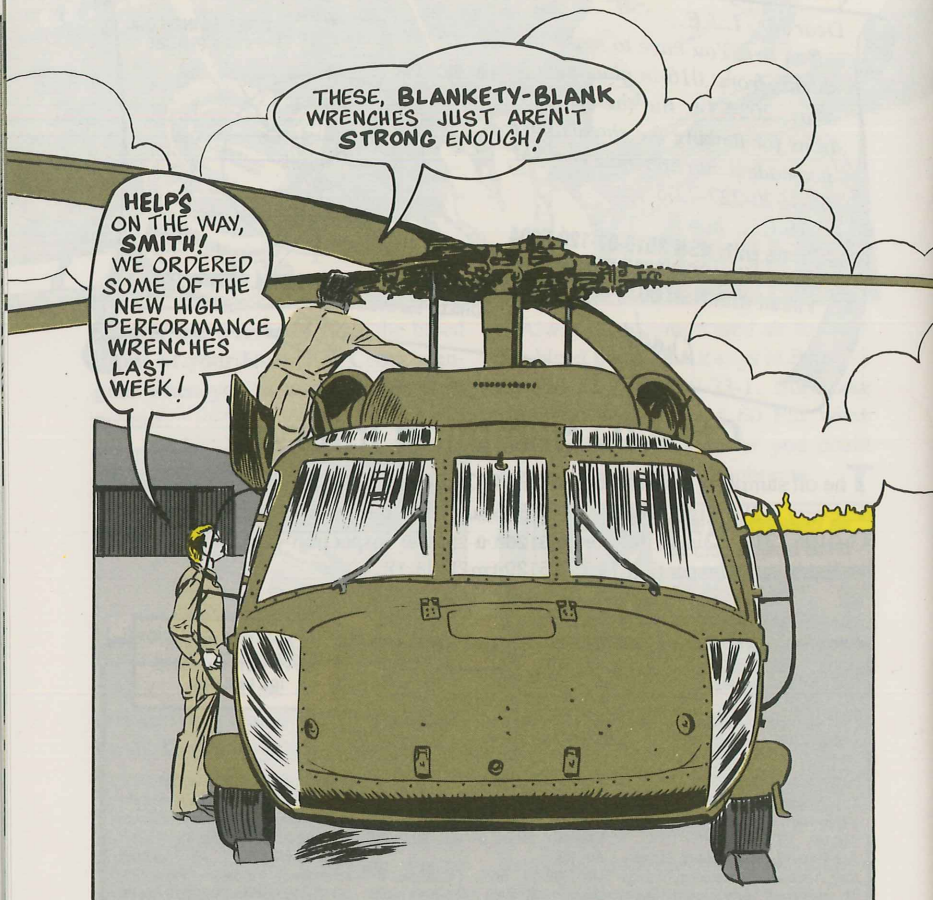
GEN-89-MIM-05, All aircraft, emergency locator transmitter (ELT) information, 202215Z Apr 89.

NEW HIGH

Put an end to those wrenching headaches all you aviation mechanics have had to cope with for so long.

You can now replace most wrenches in your common aviation tool sets with high strength, thin wall socket and box end wrenches.

These high performance wrenches don't touch the points of 12-point fasteners. So they won't strip the fasteners under high torques. They're made of special alloy steel to provide the highest torque capacity obtainable.



PERFORMANCE TOOLS

Here's a list of the new wrenches by size and NSN, along with the NSN's of the wrenches they replace in your current tool sets.

SIZE (inches)	CURRENT NSN	NEW NSN
15 Degree Angular Off Set Box End Wrenches		
7/32 X 1/4	5120-00-435-7358	5120-00-018-1576*
1/4 X 5/16	5120-00-888-8007 and 5120-00-277-8303	5120-00-555-0998
5/16 X 3/8	5120-00-935-7362	5120-01-278-8254*
3/8 X 7/16	5120-00-224-3146	5120-01-278-1523*
7/16 X 1/2	5120-00-596-8556	5120-00-018-1583*
1/2 X 9/16	5120-00-277-3364	5120-00-889-1858*
9/16 X 5/8	5120-00-224-3148	5120-00-889-1859*
1 1/16 X 3/4	5120-00-277-1438	5120-01-277-2566*
Combination Box-Open End Wrenches		
9/32	5120-00-288-9671	5120-01-173-7057
5/16	5120-00-288-9503	5120-01-082-6437
11/32	5120-00-278-0342	5120-01-278-1524
3/8	5120-00-228-9504	5120-01-263-9793
7/16	5120-00-228-9505	5120-00-935-7370
1/2	5120-00-228-9506	5120-00-935-7371
9/16	5120-00-228-9507	5120-00-935-7372
5/8	5120-00-228-9508	5120-00-935-7373
1 1/16	5120-00-228-9509	5120-00-935-7374
3/4	5120-00-228-9510	5120-00-935-7375
13/16	5120-00-228-9511	5120-01-264-6122*
7/8	5120-00-228-9512	5120-00-935-7377
15/16	5120-00-228-9513	5120-01-264-6123*
1	5120-00-228-9514	5120-01-264-2392*
Socket Wrenches		
1/4 Drive x 7/32, Deep	5120-00-948-3214	5120-00-935-7493
1 1/2 Drive x 1 1/16, Deep	5120-00-243-7341	5120-01-280-3051*
Torque Adapters		
3/8 Drive 7/16	5120-00-927-9499	5120-01-278-8253*
3/8 Drive 1/2	5120-00-867-5517	5120-01-278-7266*
3/8 Drive 9/16	5120-00-867-5518	5120-01-112-4498*

***Not on AMDF yet.**

Be sure to order these new wrenches from GSA so you won't get tools of a lesser quality.

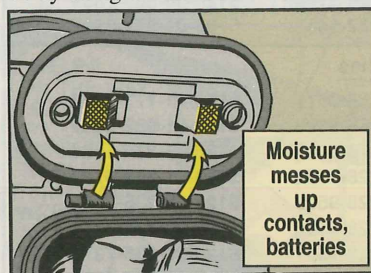
PM Makes for

Toll-Free Service

MACON,
THEY SEEM TO
BE HAVING A PROBLEM
WITH ALL THEIR
SETS!

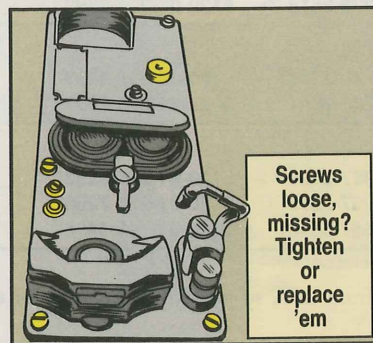
Wet and dry and cold and hot are big killers of your telephone set. But the biggest of these is wet.

Moisture creeps inside your set's battery box, corroding batteries and contacts. You can block the damage by drying out the box with a clean cloth or by using an air hose.



Moisture
messes
up
contacts,
batteries

Another way wetness gets into your telephone is through a case screw hole if the screw is loose or missing. If the screw, NSN 5305-00-054-6670, is missing, replace it, pronto. When you



Screws
loose,
missing?
Tighten
or
replace
em



SOUNDS
LIKE THEY
NEED SOME
PM
QUICK!

use a new screw, get new packing, NSN 5330-00-448-1018, to go with it. The packing will guard against water leaks.



Canvas case helps
to shed water

Leave the CY-1277 canvas case on your telephone set to help shed water. If the case gets soaked, take it off the set to dry. Use a cloth to dry the telephone. Be sure to put the case back on the set after it's dry.

About BA-3030's

Even though the BA-3030 battery's made to stand up to all kinds of weather, always carry extra ones during cold temperatures.

Eye the batteries for corrosion or leaking. If you see either, replace them.

Always take out the batteries when your telephone is idle awhile. Forgotten batteries will eat up your telephone.

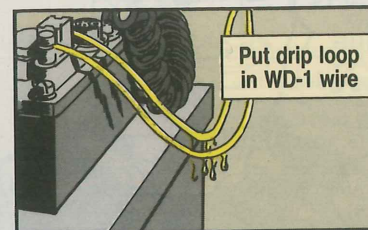
The H-60 handset's no handle, so never pick up your set with it. You'll tear out the cord if you drop the case.

Crank Tip

When you use the G-42 hand ringing generator crank, never make a quick stop while cranking. A sudden stop or reverse rotation will damage the generator.

After you're through with the ringing generator, tuck in the crank handle. This'll keep the handle protected from getting bumped or broken.

If you use WD-1 field wire on the telephone's binding posts, make a drip loop in the wire so water will run away from and not into your set.



Put drip loop
in WD-1 wire

Rubber boots, NSN 5999-00-869-6263, on the binding posts give added protection against dampness.

Let your unit repairman know any time your telephone's been exposed to lots of water so an extra effort will be made to examine for tightness of the case gasket.

If there's moisture inside your set, he'll wipe it out or air dry the telephone.



Block icy moisture
with de-icing shield

When freezing weather sets in, put the de-icing shield on the outside of the mouthpiece. This will keep icy breath from getting into your handset. Never put the screen on the inside of the handset's mouthpiece cover. It just won't do the job.

LATER...

THIS IS
MUCH BETTER,
MACON!

THAT'S
GREAT,
BONNIE. ALL
IT TAKES
IS A
LITTLE
PM!



Beat the Battery BLAST



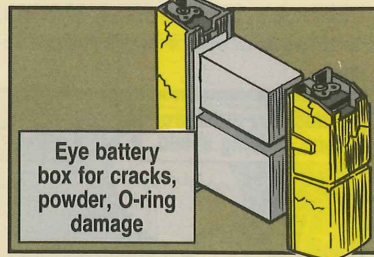
A leaky battery box leads to water buildup, which will set your AN/PRC-104() or AN/GRC-213 radio set up for an explosion.

Water will seep into the box, causing hydrogen and oxygen gas to form. This gas can explode, bulging the box and maybe hurting people.

You can keep the water out of the battery box by pulling PM.

Eye the box for cracks, mineral deposits or a chipped or missing O-ring. You may need to replace the box if there's moisture in it.

To make the O-ring seat snugger, dab a little silicone grease, NSN 6850-00-880-7616, on it.



Use Battery Twins

Always take out the two BA-5590/U batteries when your radio is idle for 30 days or longer.

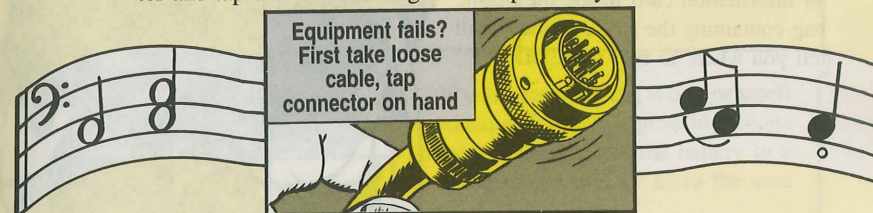
Be sure to keep matched batteries together. You might mark 'em with a felt-tip pen or pieces of tape.

When you replace the batteries with new ones, match up the contract number and manufacturer's date code. The batteries must be paired to get the same energy capacity and to prevent gassing.



But all it takes is a little Yankee ingenuity to get you back on line.

Next time a component fails, disconnect the electrical connector and tap it a few times against the palm of your hand. Most



times that's all it takes to knock out bits of dirt and corrosion. Then when you put the connector back on it makes good contact.

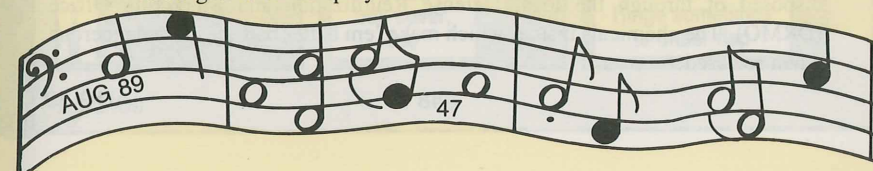
If that doesn't work, scrub the pins and threads with a non-abrasive pad, NSN 7920-00-151-6120.



Then use a toothbrush or other soft-bristled brush to put on a dab of solvent, NSN 6850-00-105-3084, to the cleaned surfaces.

Remove excess solvent with a clean cloth, and apply a light film of corrosion preventive compound, NSN 8030-00-546-8637. Tilt the connector down to drain excess compound, then wipe dry with a clean cloth.

After you reconnect the plug, coat the outside with non-conductive corrosion preventive compound. NSN 8030-01-041-1596 gets a 16-oz spray can.



KNOW BEFORE

Before you toss lithium-sulfur dioxide (Li-SO₂) batteries, make sure they're fully discharged. Except for BA-5567/U, NSN 6135-01-090-5365, these batteries come with a built-in complete discharge device (CDD).

A label over the manual switch or an information card inside the plastic bag containing the Li-SO₂ battery will tell you where to find the CDD.



Damaged or unserviceable batteries that do not have a built in CDD must be disposed of through the local Defense Reutilization and Marketing Office (DRMO). The chemicals inside, which make 'em better batteries, are dangerous when released.

YOU THROW



Protect yourself any time you handle a cracked or leaking lithium battery. Wear gloves, roll down your sleeves and wear goggles or a face shield to protect your eyes.

If you hear a hissing sound or smell a rotten-egg smell, it probably means battery venting. Take the battery to a well-ventilated area or leave the area until the smell is gone.

Shelters...

Lengthen Hinge Life

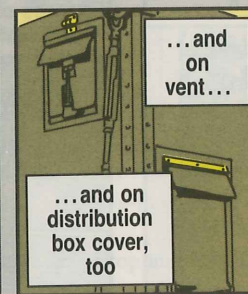
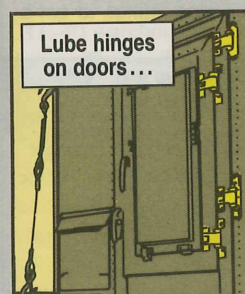
Without lube, hinges bind... and then break.

Then your shelter and the equipment inside is open to moisture or dust and dirt damage.

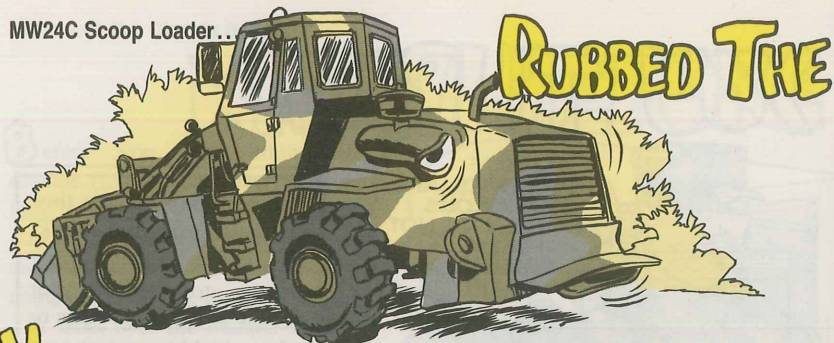
You can lengthen the life of a hinge by lubing it yearly or more often if necessary. Change 2 of TB 43-0124 adds this in Para 38d(1).

Use a solid film lubricant to protect the hinge. NSN 9150-01-260-2534 is for a 16-oz aerosol can and NSN 9150-00-954-7422 is for a 1-qt can.

Make sure the hinge is clean before putting the lube on it.



Hinge sometimes is under flap



Vibration causes the air compressor oil supply hose on your scoop loader to rub against the fuel sediment bowl. This wears a hole in the hose.

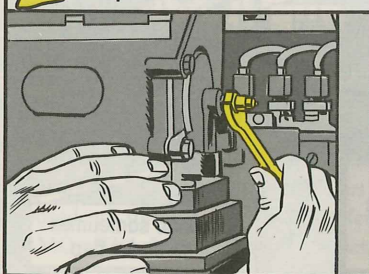
You can put a stop to this by re-routing the hose. You'll need:

Item	NSN 4730-	
Elbow, 1/8-in pipe to 5/16-in tube	00-288-9440	
AND EITHER		
Elbow, street, 1/8-in	00-053-0266	
OR		
Nipple, close 1/8-in	00-230-1996	
Elbow, 1/8-in pipe	01-171-1934	

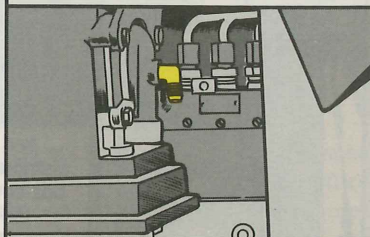
HERE'S HOW:

1 Take off the hose and save it

2 Remove the tube fitting on the compressor and toss it

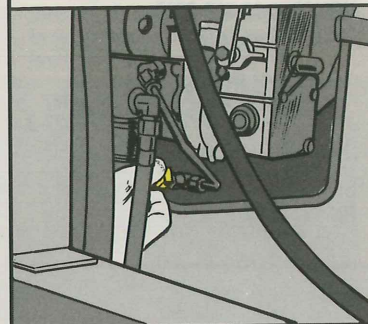


3 Screw in the pipe to tube elbow in the compressor. Make sure the opening points down. Use Teflon tape, NSN 8030-00-889-3534, on the threads of all pipe fittings to get a good seal



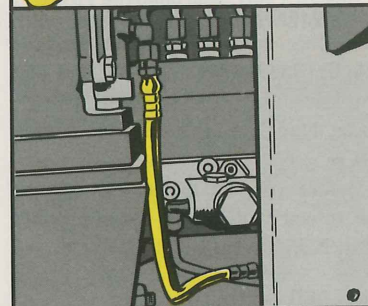
WRONG WAY

4 Screw the 1/8-in street elbow in to the existing fitting on the engine block. OR screw the close nipple and the pipe elbow into the fitting on the engine block



5 Be sure the elbow is horizontal and the open end points toward the compressor

6 Replace the oil line you removed earlier



Warehouse Tractor Radiator Cap

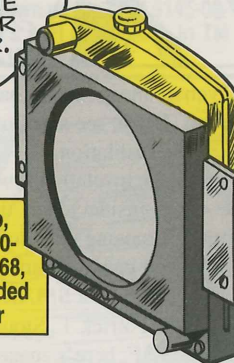


When it comes to the radiator cap, TM 10-3930-633-20P for the Clark CTE-40 warehouse tractor is only half right. That's because replacement radiators use a different cap than the original radiators.

Before ordering a cap, look at the radiator on your tractor. The original radiator has a rounded top and is 22 1/16-in wide. It uses cap, NSN 2930-00-772-5768.

Replacement radiators have a flat top and are 20 3/16-in wide. These use cap, NSN 2930-00-358-5960.

Use cap, NSN 2930-00-772-5768, with rounded radiator

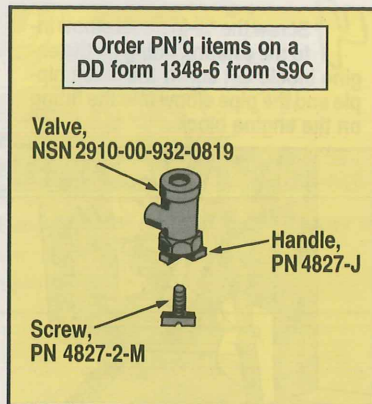


Get a Handle on Fuel Shutoff

Losing the handle is no reason to replace the fuel shutoff valve on a Cat D7E, D7F, D8K or 830MB tractor or 120 grader.

The valve, NSN 2910-00-932-0819, is listed in manuals, but the handle and screw are not. Get the handle with CAGE 75833 PN 4827-J, and the screw is CAGE 75833, PN 4827-2-M. Order them on a DD Form 1348-6 from S9C.

Before you put the screw in, coat the thread with thread-locking adhesive, NSN 8030-00-148-9833.



5-KW DED Generator...

Keep Cable in Its Place

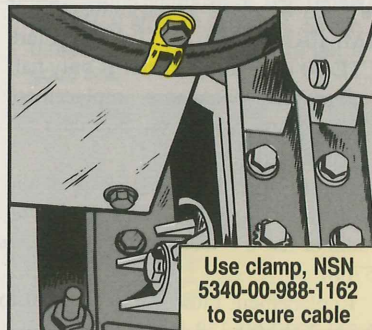


Eyeball the positive battery cable near the lower corner of the engine fan shroud. If you see signs of rubbing or wear, report it. That rubbing cuts through the cable insulation.

When the insulation is worn through, the wires inside touch the metal fan shroud—causing a short circuit. It could even cause a battery explosion.

As a result of a SMART suggestion from SPC Patrick T. Stout, 61st Maint Co, APO SF, here's an easy fix to keep your generator's cable in place.

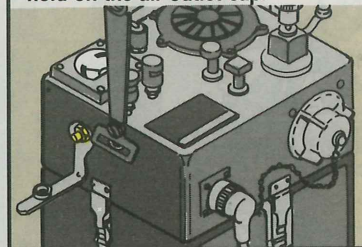
Tie the battery cable to the fan shroud with clamp, NSN 5340-00-988-1162.



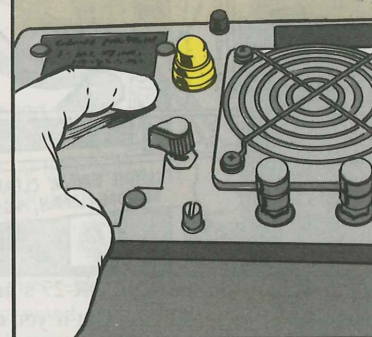
SHORT... But Sweet

Save time and your M8A1's trouble with these three quick ones, NBC NCO's.

1 Tighten the plastic air outlet nut hand tight...and stop. Forcing the nut tighter strips the threads or cracks the nut. It's hard to get a replacement. A bad nut can't hold on the air outlet cap.



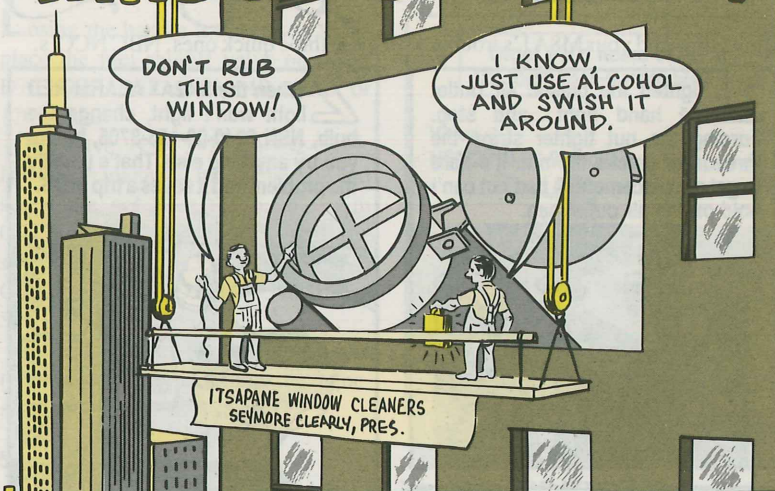
2 When the M42A1 ALARM-RED light won't light, change the bulb, NSN 6240-00-155-8706, before you try anything else. That's usually the problem and it saves a trip to DS.



3 Never depend on your commo people for telephone cable. Order your own cable, NSN 6145-00-226-8812. It's part of the AAL in TM 3-6665-312-12&P.



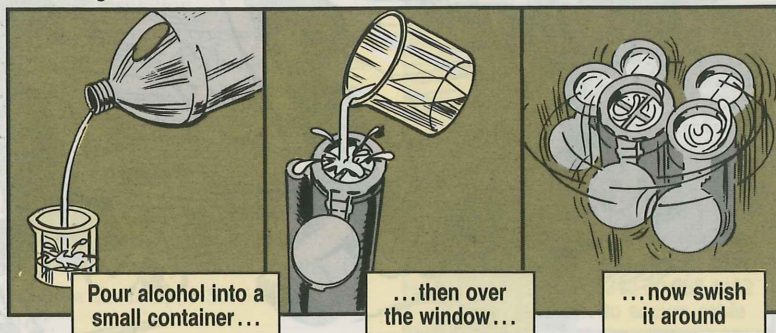
WINDOW CLEANING



If the window on the AN/PDR-27's probe gets caked with dirt, the radiac set loses a lot of its sensitivity. But if you clean the probe wrong, you can puncture the probe's window. Then the probe's ruined.

None of the TM's tell you how to clean the window. Here's how:

1. Pour just enough denatured alcohol, NSN 6810-00-241-4709, in the probe well to cover the window.
2. Swish the alcohol around and pour the alcohol off.
3. Never clean the window with a rag or brush. You'll damage it.
4. Protect the window by keeping the cover shield in place any time you're not using the AN/PDR-27.

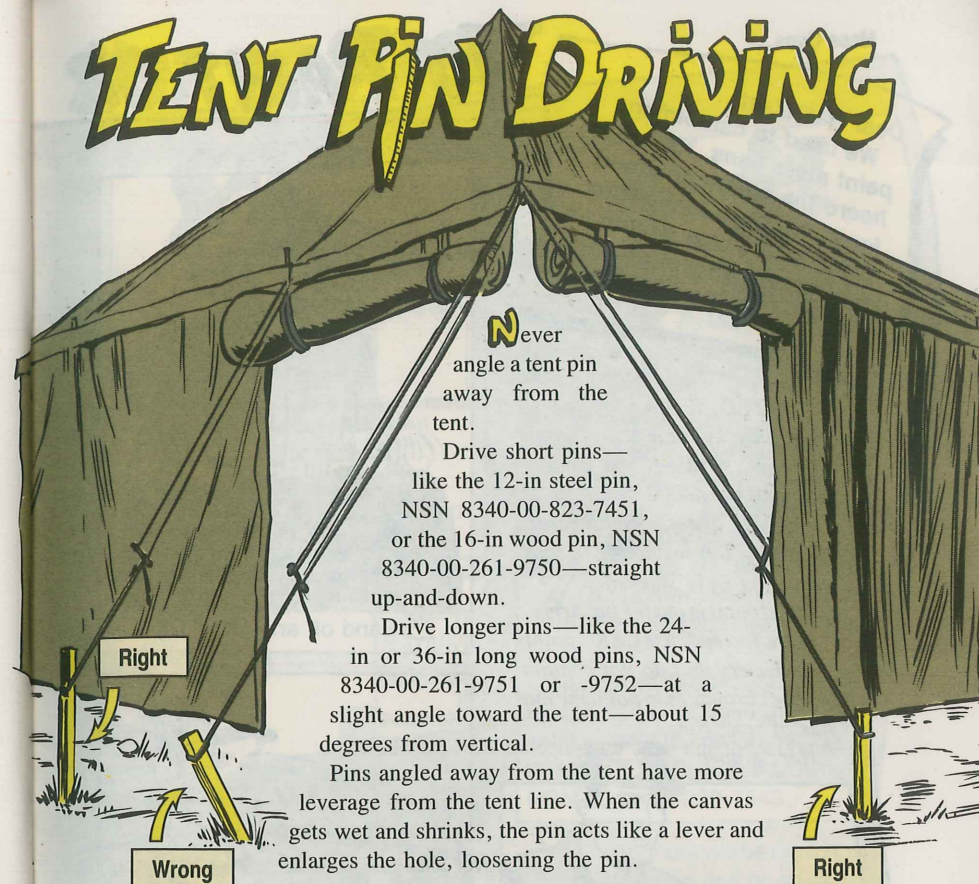


Pour alcohol into a small container...

...then over the window...

...now swish it around

TENT PIN DRIVING



Right

Wrong

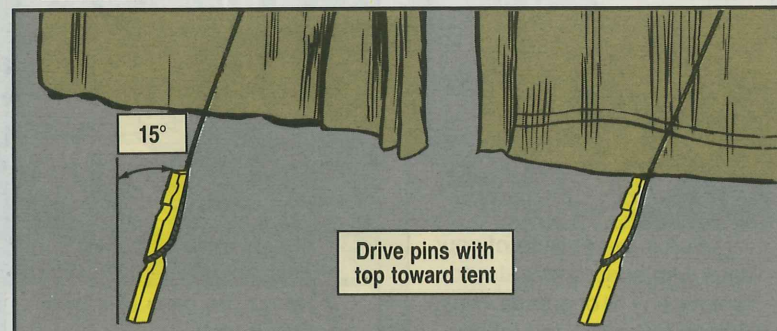
Right

Never angle a tent pin away from the tent.

Drive short pins—like the 12-in steel pin, NSN 8340-00-823-7451, or the 16-in wood pin, NSN 8340-00-261-9750—straight up-and-down.

Drive longer pins—like the 24-in or 36-in long wood pins, NSN 8340-00-261-9751 or -9752—at a slight angle toward the tent—about 15 degrees from vertical.

Pins angled away from the tent have more leverage from the tent line. When the canvas gets wet and shrinks, the pin acts like a lever and enlarges the hole, loosening the pin.



15°

Drive pins with top toward tent

Dear Half-Mast,
We used to camouflage paint mess cans. Then we heard the paint contained lead, and were told not to paint. Now I hear we are to paint them. What's the latest?
CW2 D. K. C.

Dear Mr. D. K. C.,

The old alkyd paints did contain some lead, so using them to paint cans could be dangerous. Paint on the outside of cans would scrape off and be left inside other cans when they were stacked.

Alkyd paint is out for the Army, though. Instead, use CARC paints and primers that do not contain lead or chromates to paint the outside of your cans.

Here's how:



1 Scrub the outside of your cans with soap and water to remove any oil or grease. Rinse with fresh water, and let dry.

56

TO PAINT OR



2 Sand off any rust.



3 Move the cans to a well-ventilated area.

AUG 89

NOT TO PAINT



4 Use an approved paint vapor respirator to avoid problems with paint fumes.

Wipe down the can with thinner, NSN 8010-00-181-8079.



5 Immediately coat the can with coating compound, NSN 8030-00-850-7076. Use a sponge to apply it to get the thin, even coating you need.

6 After the coating is dry—at least 30 minutes but no more than 24 hours—apply primer, NSN 8010-01-193-0516. Mix the two parts of the primer in a 4-to-1 ratio and let stand 30 minutes before using.

AUG 89



7 The primer will dry in 30 to 90 minutes and you can add the topcoat.

There's no three-color pattern for the cans, so paint them a solid color. Use green, NSN 8010-01-229-7546, or brown, NSN 8010-01-229-7543.

8 The topcoat will be dry to the touch in 30 minutes or so. It'll take 6 to 8 hours to be cured enough to withstand impact, but give the coating about a week to completely cure before you stack the cans.

You can temporarily camouflage cans in the field using mud or by dropping canvas over them. Make sure the canvas does not touch the immersion heater.

Half-Mast

57

MDB I and II Driver's Testing

Dear Connie,
If a soldier has a valid state driver's license, which motor vehicle driver selection battery (MDB) test is the soldier required to take?

SSG J.W.



Dear Sergeant J.W.,

Here's the way driver's testing works out:

Enlisted personnel entering the Army with no civilian driver's license take MDB I at the military entrance and processing station. Personnel who do not have a score of at least 85 from MDB I take MDB II.

A person who has a valid state driver's license need not be given MDB II to be in line with AR 600-55.

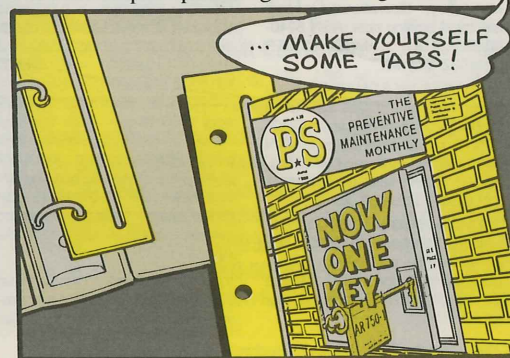
Connie

Let Your Fingers do the Walking

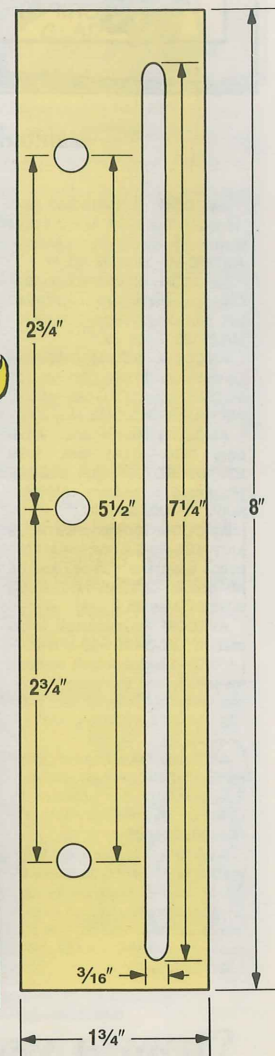
Putting PS Magazines in binders will help you put your finger on back issues when you need them. The binders will keep 'em in tip-top shape, too. NSN 7510-00-187-6486 gets you a three-ring looseleaf binder that holds about eight copies of PS Magazine.



Punching holes in PS Magazine is not a good idea—the holes may take out info you need. Quick and easy tabs can be made from file dividers, NSN 7530-00-988-6515. For each tab, cut a 1 3/4 x 8-in strip from the divider and punch three holes and a 7/4-in slit in the strip. Slip the magazine through the slot.



To label the binder, use typing correction fluid ("whiteout"). It dries fast and is permanent.





Maintenance & Safety-Of-Use Messages

AMCCOM SOU-MSG-03-89—Advisory, Technical, M252 81MM mortar system maintenance, AMSMC-MA 030800Z Apr 89.

AMCCOM SOU-MSG-04-89—One-time inspection on M109A2 self propelled howitzer, AMSMC-MA 251930Z Apr 89.

AMCCOM SOU-MSG-05-89—Operational, 81MM Smoke WP M375A3, inspect CTG before firing, AMSMC-DSM032045Z May 89.

AMCCOM Maintenance Advisory MSG—M1A1 tank, NSN 2350-01-087-1095, gun tube replacement procedures, AMSMC-MAW 101200Z May 89.

AMCCOM Maintenance Advisory MSG-89-5—Cracked M12A1 decon apparatus pumps received at depots, AMSMC-MAR-FC(A) 301600Z May 89.

AVSCOM Maintenance Information MSG-UH-1-89-MIM-03—UH-1/EH-1 series aircraft, verifying the failure code and using the correct retirement life on tail rotor grips, NSN 1615-01-210-6454, AMSAV-SOF 032130Z May 89.

AVSCOM Maintenance Information MSG-CH-47-89-MIM-09—Fuel cell inspection schedule for CH-47D aircraft, AMSAV-SOF 081900Z May 89.

AVSCOM Maintenance Information MSG-UH-60-88-MIM-04—All H-60 series helicopters, reminder of stabilator inspection requirements and advanced notification of manual changes, AMSAV-SOF 102115Z May 89.

AVSCOM Maintenance Information MSG-UH-60-89-MIM-05—TM changes concerning engine support tube, AMSAV-SOF 232200Z May 89.

CECOM SOU-MSG-89-04-03—Operational, Deadlines BA-5588/U lithium-sulfur dioxide batteries made by TNR Technical Inc., under contract No. DAAB07-83-D-H328, AMSLF-SF-REE 141800Z Apr 89.

CECOM SOU MSG-89-04-04—Emergency, Maintenance, One-time inspection of high voltage testing equipment, AMSEL-SF-SEC 141800Z Apr 89.

CECOM SOU MSG—Corrections to CECOM SOU MSG 89-04-02 on multi-fuel heater used in the AN/GRC-122/142 radio teletype-writers, AMSEL-SF-SEC 261700Z Apr 89.

CECOM SOU MSG-89-05-22—Mandatory, Operational, Inspect electrical binding post, NSN 5940-00-269-2219, AMSEL-SF-SEP 221800Z May 89.

USACEA-VH SOU MSG—Adds information to CECOM SOU MSG 89-04-05 concerning the AN/TRQ-32(V)1 radio receiving set, NSN 5895-01-167-7655, and AN/TRQ-32(V)2, NSN 5895-01-167-7656, SELCE-PA 211600Z Apr 89.

TACOM SOU-MSG-89-32—Operational, Updates M113 FOV ban on swimming and fording procedures to include the M730A2/M48A3 vehicles, AMSTA-M 261400Z Apr 89.

TACOM SOU-MSG-89-35—Advisory, Technical/Maintenance, Gives procedures to restart HEMTT engine which has lost its prime, AMSTA-M 051730Z May 89.

TACOM SOU-MSG-89-34—Advisory, Technical/Maintenance, Fatal accident involving the M916 truck tractor/M172A1 semi-trailer combination, AMSTA-M 121300Z May 89.

TACOM SOU-MSG-89-33—Advisory, Operational, Follow-up to TACOM SOU MSG 88-58 on M911 truck tractor, C-HET, NSN 2320-01-025-3733, AMSTA-M 160830Z May 89.

TROSCOM SOU-MSG-13-89—Advisory, Technical, M12A1 storage and packaging restrictions on wrist watch, NSN's 6645-00-066-4279 and 6645-00-952-3767, AMSTR-MES 051300Z May 89.

TROSCOM SOU-MSG-14-89—One-time inspection of M2 and M2A burner units, NSN's 7310-00-842-9247, 7310-01-017-1285 and 7310-01-113-9172, AMSTR-MES 191500Z May 89.

TROSCOM Maintenance Advisory MSG 89-20—Additional procedure on the replacement of rubber seal, NSN 1670-01-118-1877 used in the automatic opening device, NSN 1670-01-213-8145, part of the Interim RAM air parachute system, AMSTR-MES 171420Z Apr 89.

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

SMART Ideas

Got a "SMART" way to improve the Army's maintenance system or to help soldiers do their jobs more efficiently and effectively?

Just write down your idea on a DA Form 5533 or any piece of paper. Give the current procedure and your suggestion of how to improve it. Be sure to include your name, address and telephone number.

Mail your suggestion to:
SMART

US Army Logistics Center
ATTN: ATCL-CFI-S
Ft Lee, VA 23801-6000

If your idea is approved, it could put money in your pocket.

M44-Series Truck U-bolt Correction

The info on Page 61 of PS 436 is only half right. The two rear leaf spring assemblies listed as Item 1 of Fig 147 in TM 9-2320-209-20P use different U-bolts. If your truck has the 12-leaf spring, NSN 2510-00-736-8629, use U-bolt, NSN 5306-01-234-9388. The 10-leaf spring, NSN 2510-00-200-1053, takes U-bolt, NSN 5306-01-231-7374.

Missile Hotline

If you have questions on any missile Class V items—such as malfunction reporting, suspensions, restrictions, or demilitarization—call MICOM's 24-hour hotline for help. Call commercial (205) 876-0341, AUTOVON 746-0341.

Or write:

US Army Missile Command
ATTN: AMSMI-LC-AM
Redstone Arsenal, AL 35898-5679

Maintenance Award Error

The 363d MP Co is the Reserve MTOE winner in the Heavy Unit category of the FY88 Army Maintenance Excellence Awards. They are, of course, located in Grafton, West Virginia—not Virginia, as listed in PS 439.

No More Frozen Bearings

Good news, Black Hawk mechanics! You don't have to freeze upper and lower pitch control rod bearings before you install them. Just press 'em on with an arbor press. The requirement to freeze the bearings in dry ice is being deleted from Task 48 of TM 55-1520-237-23-7. The word's in AVSCOM Msg UH-60-MIM-89-03.

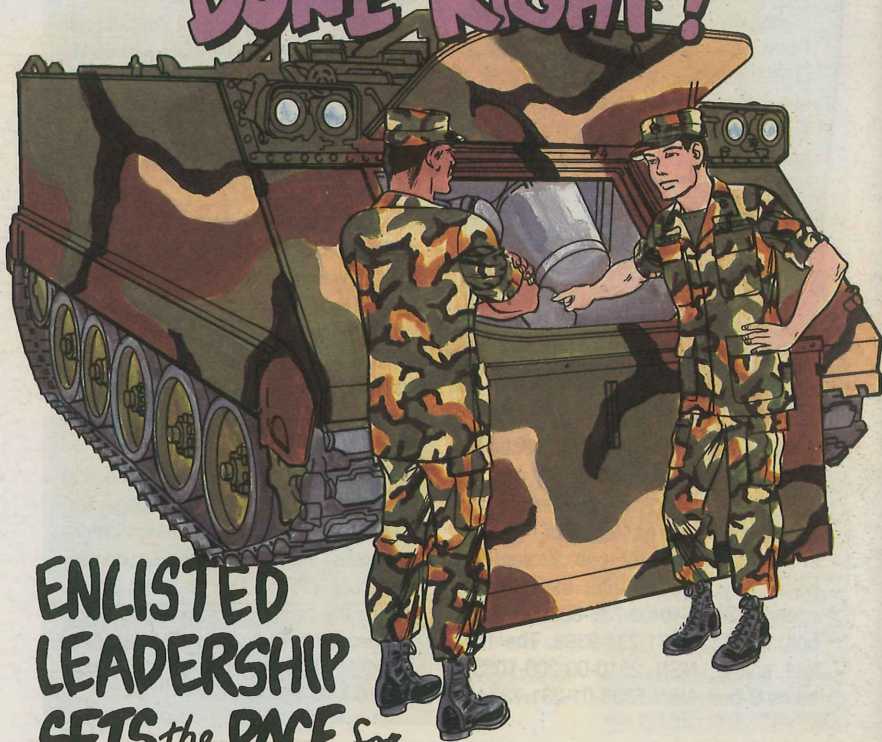
Distribution: To be distributed in accordance with DA Form 12-34-C-R, for TB-43-series.
☆ U.S. GOVERNMENT PRINTING OFFICE: 1989—648-004/00008

Would You Stake Your Life *right now*

the Condition of Your Equipment?



YOU'RE in CHARGE
to see that it's
DONE RIGHT!



**ENLISTED
LEADERSHIP
SETS *the* PACE for
PREVENTIVE MAINTENANCE**

PIN: 064836-000