
Issue 195
PS
1969 Series
THE PREVENTIVE MAINTENANCE MONTHLY
BOY, WE SURE GOT A WELL-DONE ON THAT INSPECTION!
YEAH!! NOW WE GOTTA CLEAN AND LUBE IT ALL OVER AGAIN!
Will Eisner

TRIANGLE SERVICE

Dear Editor:

Here's an idea to improve the Before-During-After operator PM on equipment. Other outfits could use the triangle idea on posters, wallet cards, decals, stenciled on equipment, in unit newspapers—almost anywhere—as reminders.

CW3 Jess R. Galloway
Korea

PS

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THE PREVENTIVE MAINTENANCE MONTHLY
Issue No. 195 1969 Series

IN THIS ISSUE

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PS wants your ideas and contributions, and is glad to answer your questions. Name and address are kept in confidence. Just write to:

Sgt. Half-Mast,
PS Magazine,
Fort Knox, Ky.
40121

BE YOUR OWN INSPECTOR ON YOUR

108-109 PART I

M108-M109 SELF-PROPELLED HOWITZERS...

HOWITZER

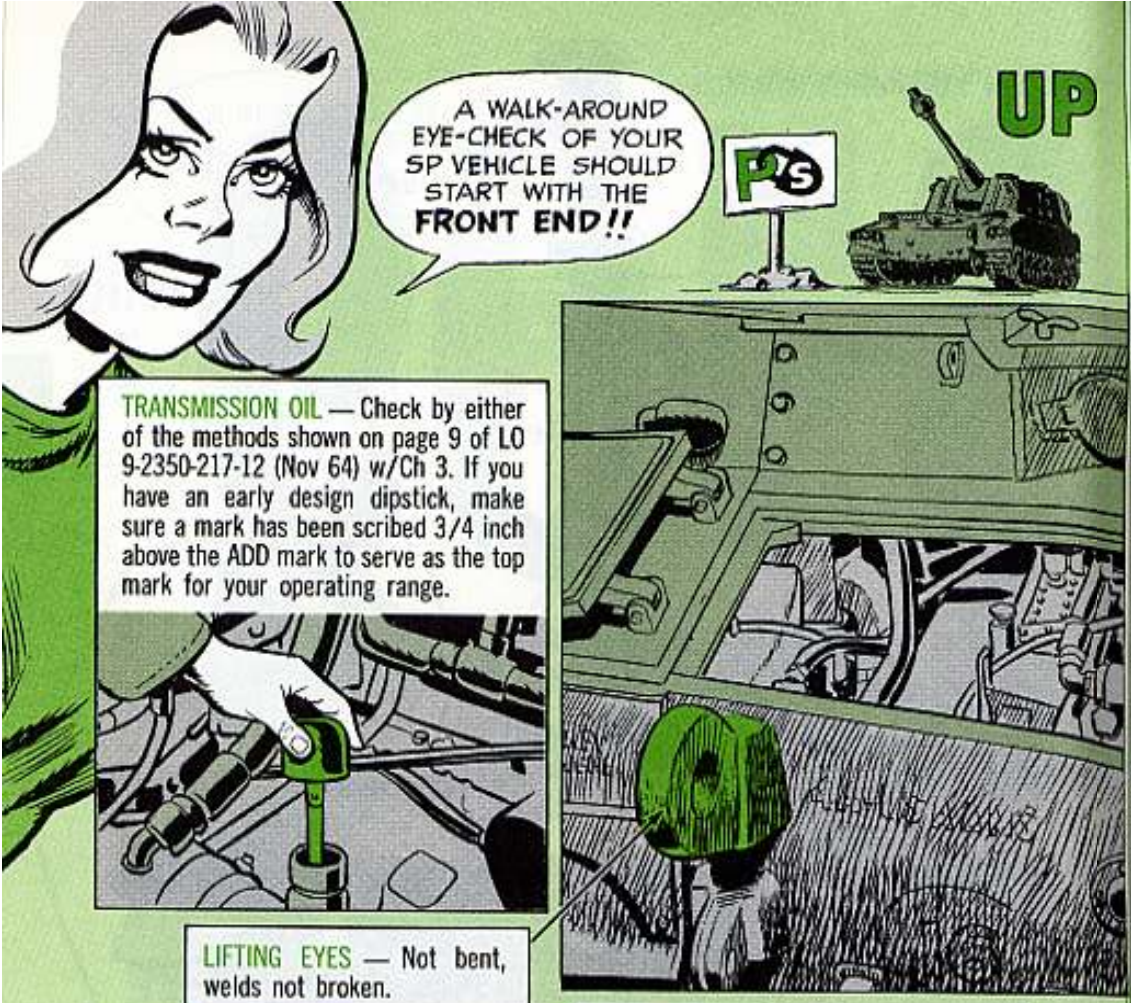
Use this inspection guide for M108 and M109 SP Howitzers to check over your vehicle before operations—and before the inspector does.

Find out the weak points and get 'em corrected. That way you'll be mission ready—and the inspector won't be able to gun you down even if he is a super-quick gig thrower with a fast-draw pencil.

To save you time we use this sign—PS—which means "Present, in good condition, and Securely mounted." Think of all these words whenever you see the PS sign.

Start from the front of the vehicle and work over the outside and then the inside.

PS MORE

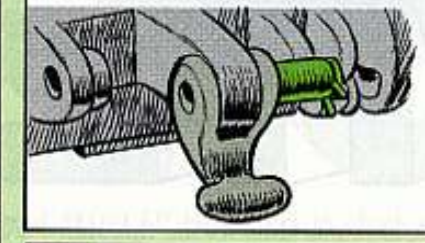


TRANSMISSION OIL — Check by either of the methods shown on page 9 of LO 9-2350-217-12 (Nov 64) w/Ch 3. If you have an early design dipstick, make sure a mark has been scribed 3/4 inch above the ADD mark to serve as the top mark for your operating range.

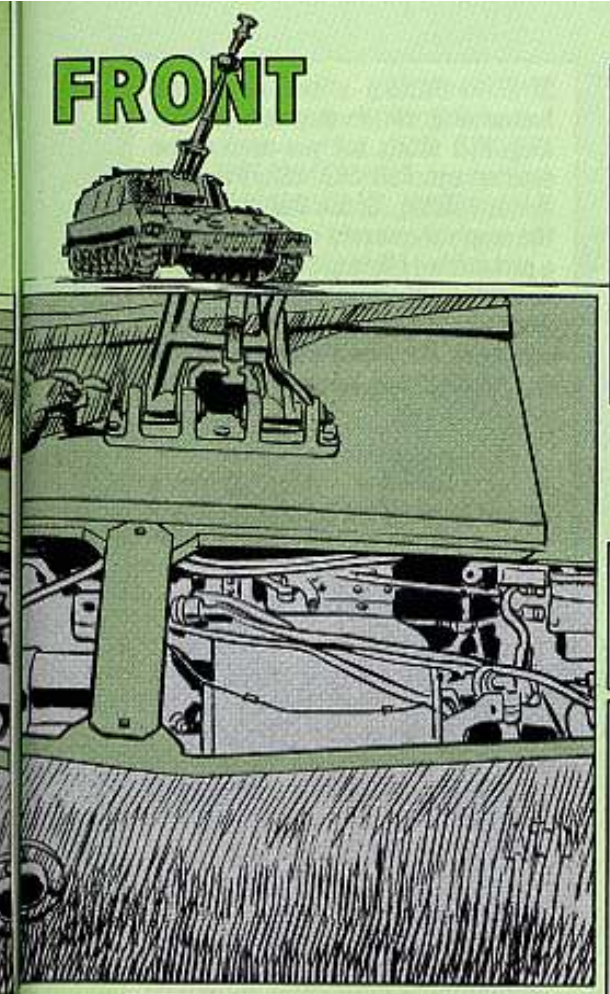
LIFTING EYES — Not bent, welds not broken.

OIL FILTERS—Service engine oil filters, universal joints, speedometer adapter housing, and final drive breathers through transmission access doors. See your LO and get your friendly mechanic to help you.

TOW HOOKS— PS, pin locks OK, headless pin lubed.

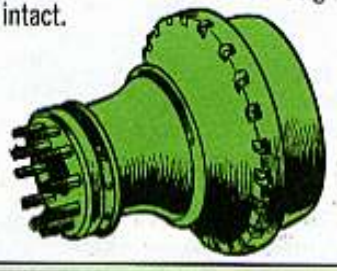


FRONT OF HULL — All required areas coated with flight-deck compound. FSN 5610-782-5556 gets you a gallon.



LIGHTS — All headlight lenses positioned so lens pattern is vertical, **not** horizontal. No lens cracked on service, IR or blackout. All bulbs work. (If possible check headlights and taillights at the same time. Looking directly into headlights, either service or IR, from close up is bad for your eyes. Test by hand feeling. If the lens gets hot the light is working.)

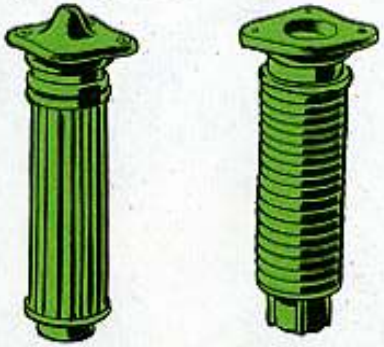
FINAL DRIVE — Check locking nuts for tightness and make sure the lacing wire is intact.



TRANSMISSION ACCESS DOORS — Nut, flatwasher and screw at each hinge PS. Doors not warped. Hold-down handles OK.

TRANSMISSION — Bolts all tight? If steering, shifting or brake linkage is not adjusted right, get your mechanic to work it over.

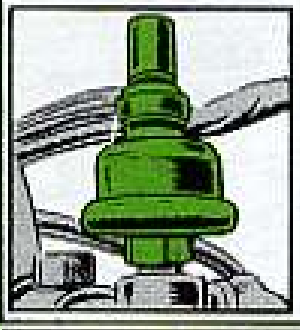
TRANSMISSION FILTER—You might get either of 2 types if you order a transmission filter for your vehicle. 1. A new, single element, screen filter, FSN 2520-740-3159, not yet listed in the parts manual. 2. The familiar screen disk type FSN 2520-730-6667 for the whole assembly, FSN 4330-770-7862 for the disks alone, and FSN 5310-737-4145 for the flat washers you also have to order. Clean either filter the way it says on page 11 of your LO.



PS MORE

SENDING SWITCH — The low-pressure fuel-sending switch may not last too long. If it shorts out you need a new sending unit FSN 5930-888-7656 (Part No. 10914602). Under this same FSN the supply people may send you instead a part marked MS 90530-2. Don't accept it. Instead of completing the circuit when the engine is running this part completes the circuit when the engine is turned off, so the reading it gives you is useless.

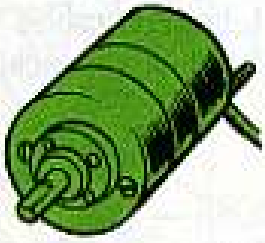
(NOTE: On late production vehicles — Serial No. 1123 and above — the switch is in a different location but it is the same switch.)



RIGHT UNIT — If you can't read the part number here's how you tell if you have the right sending unit on your vehicle . . . If you have the **wrong** one (MS 90530-2) when you turn your master switch ON your rectifier cooling fan will start turning. If you have the **right** part (10914602) when you turn the master switch ON the rectifier fan will not move until the engine has been started and the sending unit is receiving a pressure of between 9 and 13 PSI.

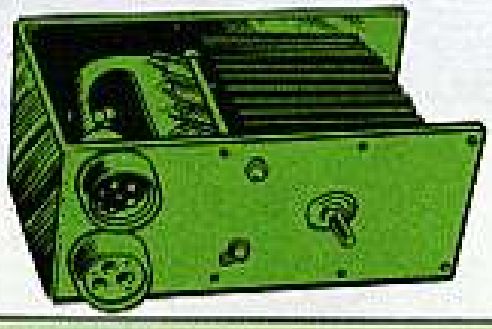
(NOTE: The fan-cooled rectifier FSN 5960-856-1316 is on all M108's and on M109's through vehicle serial number 1122.)

RECTIFIER — Late production (Serial No. 1123 and above) M109's have a solid state rectifier, FSN 6130-999-9825, not directly interchangeable with the FSN 5960-856-1316 rectifier still in stock. However, it's easy for your mechanic to install the new rectifier as a replacement part in earlier vehicles. See Figs 120.1 through 120.4 in Ch 3 to TM 9-2350-217-20.



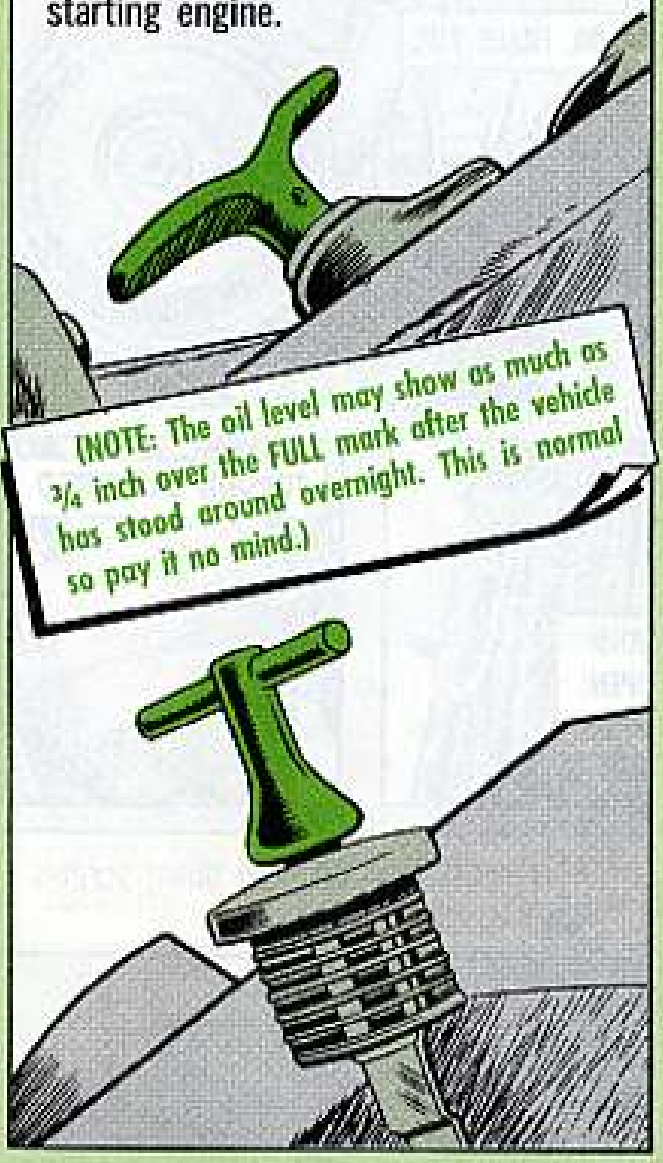
RECTIFIER KIT—If you need a rectifier blower motor it's now in supply as part of rectifier fan parts kit FSN 2590-900-8311 on page 75 of Ch 2 to TM 9-2350-217-25P/1 (Jan 65).

RECTIFIER CARE — If you find that your rectifier, FSN 5960-856-1316, is always burning out, have your voltage checked. It's probably too high. Test the way it says in para 24b on page 130 of your TM 9-2350-217-20 (Jan 65). It could be you're turning the master switch ON and OFF while the engine is running. This will cause a surge of voltage that can burn out the diodes in your regulator or rectifier.



RECTIFIER HARNESS — If this is not positioned right there'll be a pull on the connector wires that will cause early failure. Reposition harness to get rid of sharp bends. Wrap electric tape around exposed wires. If you have problems with loose connectors at the rectifier the screws can be cleaned and one drop of Sealing Compound, FSN 8030-082-2508, will hold 'em tight.

ENGINE OIL—Access door handle PS. Check oil level as called for by LO before starting engine.



PS MORE

ENGINE ROCKER COVER — You sometimes get oil leakage at the rocker cover gasket because of warping or loosening of the cover knobs. Straighten the cover if you need to, use a new gasket and lockwire the 2 handles together to keep them from working loose. (This also keeps anybody from overtightening the cover.)

AIR INLET GRILLE — If you need to add oil to the engine, open the air inlet grille and add it through the engine crankcase fill. Make sure the plug is screwed down tight after you finish. Grille hold-open support PS, complete with pin hook and chain. Check for torsion bar. If it's missing or broken the door will be very heavy. Torsion bar shield PS.

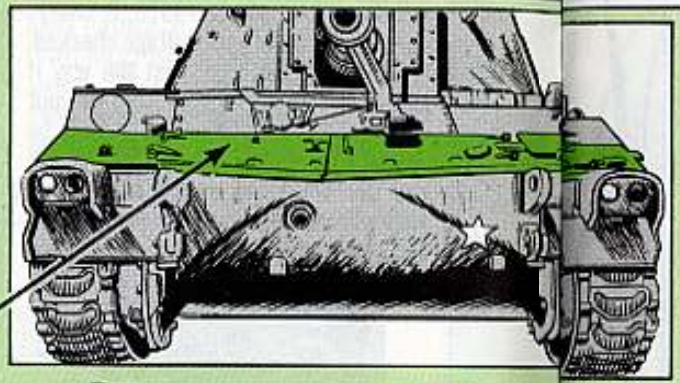
FRONT SLOPE — All hold down screws PS.

BATTERIES — Fully charged. Never let them get completely discharged — it ruins 'em. Recharge or replace if hydrometer reading is 1.175 or less. (Warm climate batteries identified by a one inch white dot painted on the top of the battery are fully charged at a reading of 1.225.) Check daily for shorts or dead battery. A shorted or dead battery will burn out your rectifier or regulator.

Battery supports and retainers either in good original condition or repainted with acid-resistant paint. Cap vents open, electrolyte to split ring, terminals lightly greased.

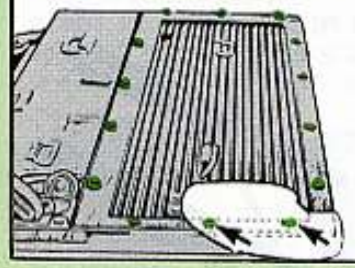
(Put the cables on terminals with screw and nut positioned so when an inspector pulls on it to check for tightness he will tighten instead of loosening it. Use only 2 fingers and light pressure. If you have to adjust battery cables wear no finger rings and disconnect **both** ground leads.)

BATTERY ACCESS DOORS — Lock securely, hinges don't bind, seals PS. Be sure the rubber seals fit properly in the corners.



EXHAUST GRILLE — Handles (2) and screws (14) PS.

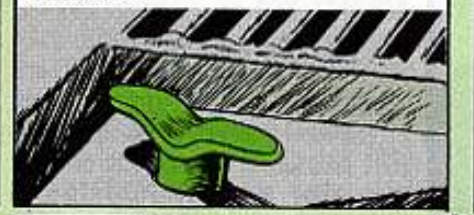
(NOTE: These grilles often get bent because all the screws are not removed before the grille is raised. Before raising the grille, get all 14 of the screws out including the 2 hidden by the exhaust deflector.)

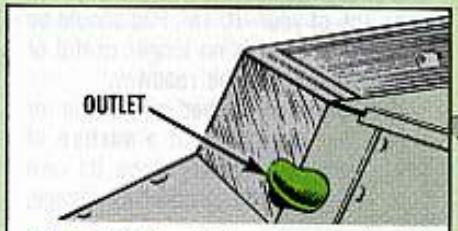


FUEL COVER — Locking pin and chain PS. Inflatable seal at 10 PSI (if vehicle is so equipped). If seal is deflated, call your mechanic. Filter screen clean and in good shape.

(NOTE: This seal was used on M108/M109's through serial No. 1122 only.)

DOOR HANDLES — If the grille, transmission, and battery door handles are not tight enough, vibration can stretch out the retaining pin holes and you could lose the handles. You can replace loose pins with screws and nuts. If necessary you can redrill holes in handles and studs.





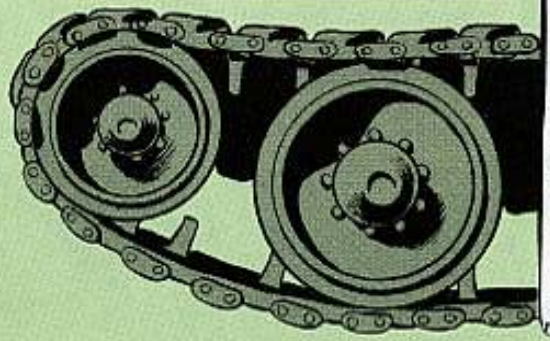
BILGE PUMP — If there's no water the pump should blow air which you can feel at the outlet. Running the pump over one minute unless the engine is running takes too much juice from the batteries.

TRACKS AND SUSPENSION

GREASE GUN — The 7,000-PSI grease gun issued with the M108/M109 did not have quite enough pep for good track adjustment. Turn it in and get the 10,000-PSI grease gun FSN 4930-766-3545 listed as Item 15 on page 272.1 of Ch 2 to your TM 9-2350-217-10.

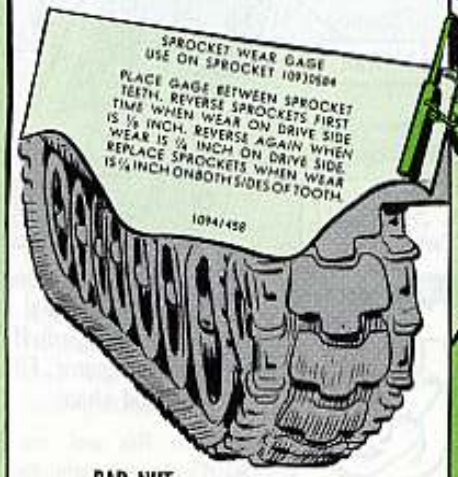
TRACK—Tension OK? (1/4-in clearance at 3rd roadwheel from front). Replace track pads that're missing or badly chunked. (Pad should not be replaced just because it's worn down level with the shoe.) Adjust the way it says on page 156 of your -10 TM. Pad should be replaced when it is no longer useful or when it marks up the roadway.

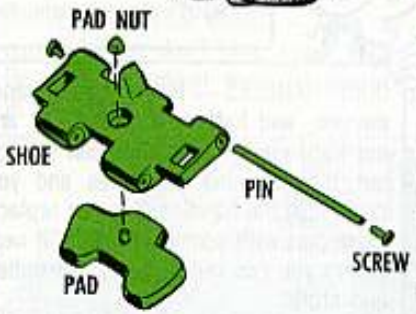
You can have either single pin or double pin track but not a mixture of both. Each system must have its own sprocket wheel and sprocket wear gage, like so . . .



SINGLE PIN TRACK —

Takes sprocket wheel FSN 2520-986-9891 (P/N 10930584) and wear gage FSN 5210-757-2745 (10941458).



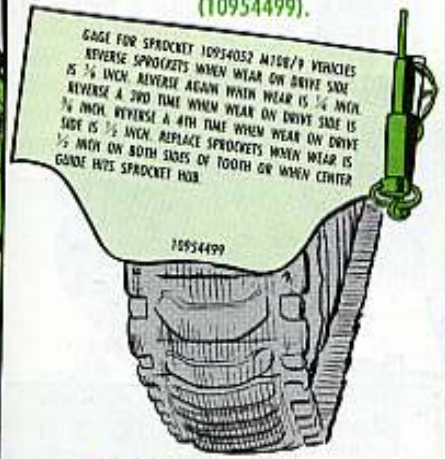


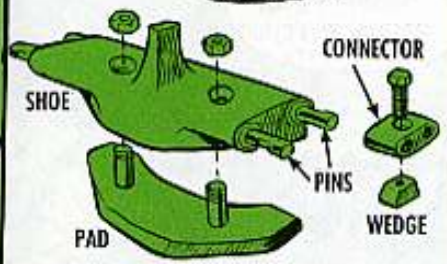
SINGLE-PIN TRACK SHOE ASSY

TORQUE (SINGLE PIN TRACK) — The 2 self-locking bolts FSN 5306-990-2631 (10930570) at each end of every track shoe pin, FSN 2530-816-6503 (10919100), take 160-190 lbs-ft. The self-locking nut, FSN 5310-333-7350 (7982725) that holds on the track shoe pad, FSN 2530-816-6507 (10913382), should be tightened to 185-215 lbs-ft.

DOUBLE PIN TRACK —

Takes sprocket wheel FSN 2520-789-2204 (P/N 10954052) and wear gage FSN 4910-908-7344 (10954499).

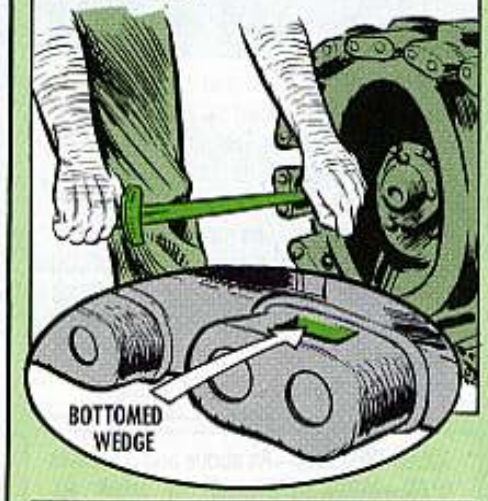




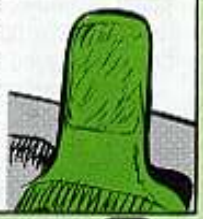
DOUBLE-PIN TRACK SHOE ASSY

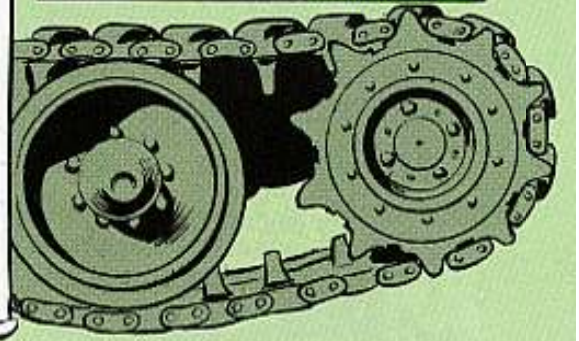
TORQUE (DOUBLE PIN TRACK) — The 2 self-locking pad nuts FSN 5310-052-0349 (8712289-3) that hold the track pad FSN 2530-799-0021 (10954048) take 30-35 lbs-ft. The bolt, FSN 5306-900-0400 (8743903-4), that goes through the end connector FSN 2530-799-0022 (10954049), and into the wedge, FSN 2530-799-0023 (10954041), takes 75-85 lbs-ft. Tighten when shoes are bent at 12° angle over the idler wheel. Do not tighten when track forms a straight line.

END CONNECTOR WEDGES — Tight, not bottomed. (A bottomed wedge is loose even though it's drawn down as far as it can go. A loose wedge will rattle when the end connector is shaken and there may be shiny metal or a flaking of rust where the wedge seats between the bevels of the track link pins. Mark loose wedges and tighten. If the wedge has bottomed and can't be tightened, put in a new one.)



CENTER GUIDES—Replace the track block if they're worn to within 1/8 inch thick at tip of guide. (See TM 9-2630-200-14, para 24 G(1).)





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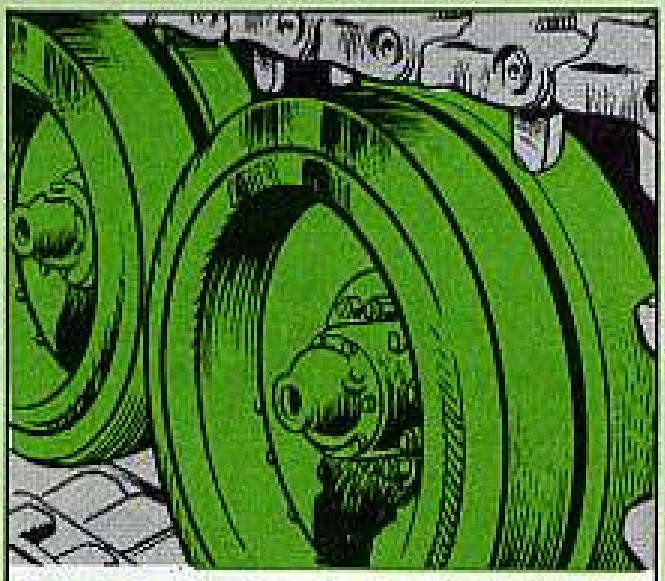
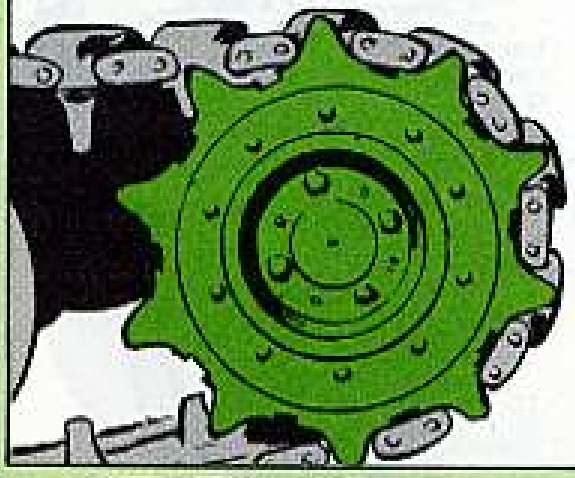
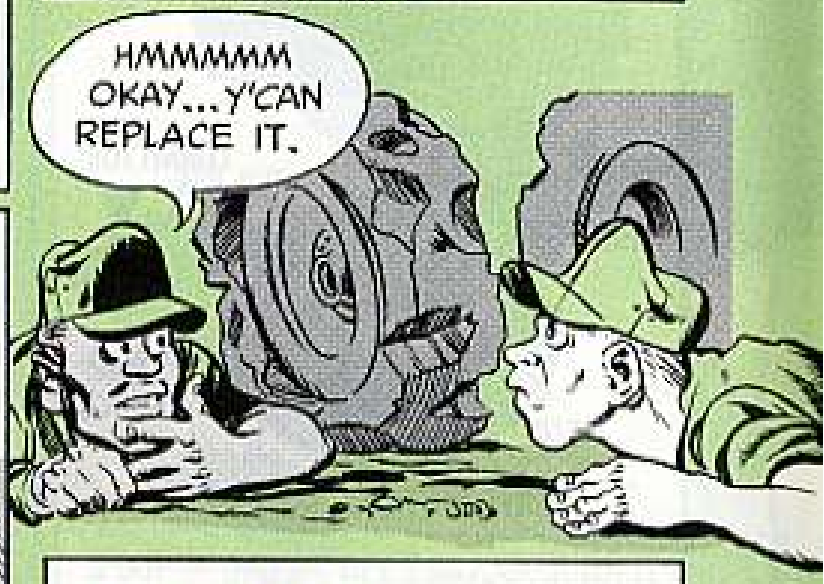


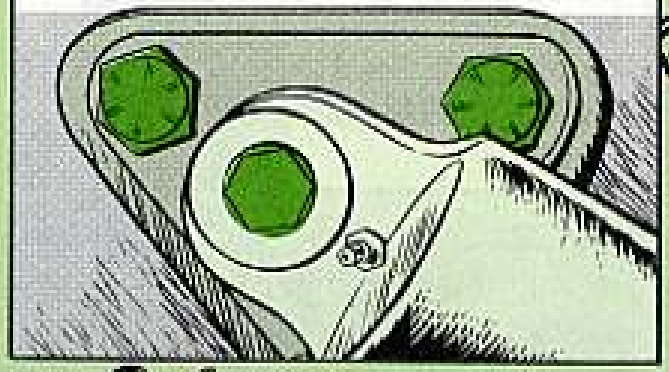
ROAD WHEELS—Replace if rubber is chunked or separated so badly that the wheel "thumps" in use or if the metal part of the wheel is bent, broken or cracked. All 10 self-locking nuts, FSN 5310-982-6809, (formerly 5310-266-4400), are torqued to 180 lbs-ft.* Oil to center level of sight gage. All 6 sight gage screws, FSN 5305-584-7944, torqued to 12 lbs-ft.* Sight glass not cracked or leaking around the edges

DRIVE SPROCKETS—No matter whether you have the sprocket for single pin or for double pin track, all sprocket mounting screws are the same, FSN 5305-719-5235, and their self-locking nuts FSN 5310-957-5071 should be tightened to 90 lbs-ft.* All hub bolts, FSN 5306-022-2122, take a torque of 450-475 lbs-ft.





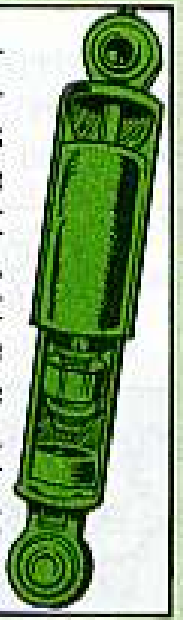
IDLER WHEELS—As above and 3 screws (P/N 96906-35304-186) of track adjuster mounting bracket torqued to 320 lbs-ft.* Screw holding track adjuster to bracket torqued to 90 lbs-ft.*



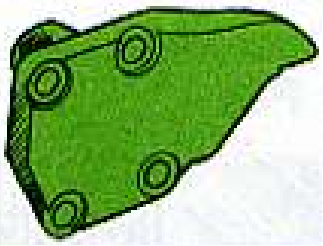
OIL FILLER PLUGS—The plugs (P/N 444613 and 444619) used on the vehicle suspension sometimes seize in the holes and you're likely to strip or round off the heads when you try to take them out. Two special 6-point sockets have been added to the basic issue items for plug removal. Replacement plugs will be made from high-strength steel. For now, though, be careful not to overtighten the plugs or use the wrong tools to work on them.

* ± 10 PER CENT TOLERANCE

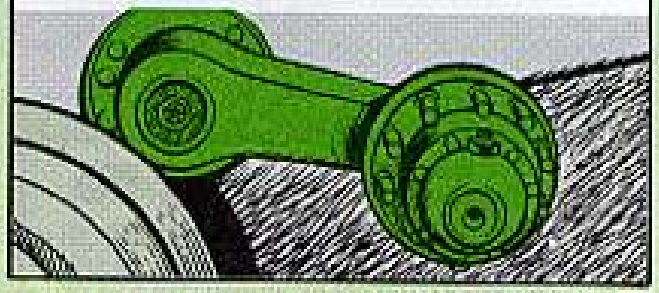
SHOCK ABSORBERS — Replace if damaged or leaking. After the vehicle has been run they should be warm to the touch but not hot like friction snubbers. If they're either very hot or completely cold they're probably not working. Have your mechanic check 'em. Nut, flat washer and cotter pin PS at both ends. Nut torque 150 lbs-ft.*



BUMP STOP BRACKETS — Tight. All 4 screws torqued to 320 lbs-ft.*

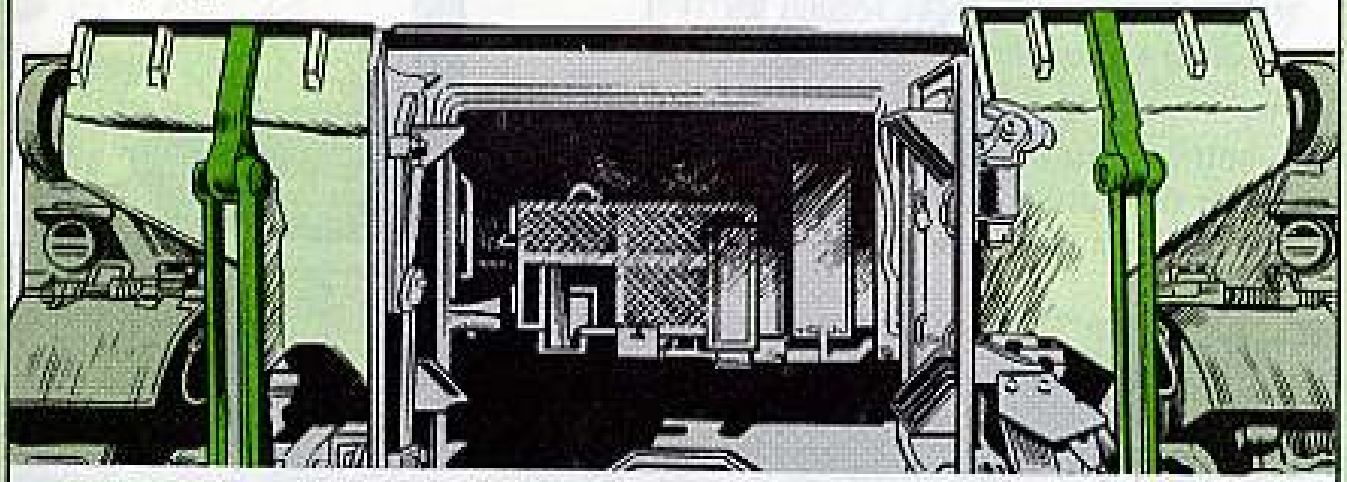


TORSION BARS — With a tanker's bar try to pry up each wheel. If you can do it the torsion bar is broken, and must be replaced. Get the right one from the 4 listed on page 119 of TM 9-2350-217-25P/1 (Jan 65). **Never unwrap protective tape at any time.**



IN THE REAR

SPADES — Remove burrs or sharp corners. If the helical extension spade spring FSN 2590-878-4173 gets broken or bent out of shape the spade can break at the hinges when you try to replace it. Check this spring often.



SPADE FSN's — FSN 2590-933-6259 (11605642-1) gets you the left-hand spade and FSN 2590-933-6260 (11605642-2) the right-hand spade. Pencil this info in your -25P/1.

SPADE CABLE — Early production vehicles had a spade cable, P/N 7748577, but MWO 9-2350-217-20/11 called for replacing this with an adjustable cable, P/N 10954637. To keep the cable length from changing, a jam nut, FSN 5310-655-9509 (MS 45691-22), should be installed.

PS MORE

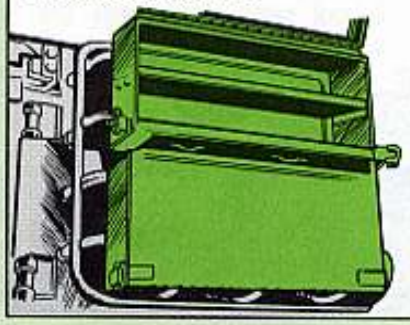
TOW PINTLE — Lubed, PS.

ACCESS COVERS & PLUGS — If situation permits, check bottom of hull. All covers and plugs PS.

TELEPHONE BINDER TERMINALS—Turn freely, hole not corroded shut. NEVER lube 'em.

TELEPHONE REEL — The reel bracket does not leave enough room for the reel to turn if the U17/GT plug is installed on the outside of the reel, so take this plug out before you put the reel into the bracket. Check condition of wire and tape up any bare spots.

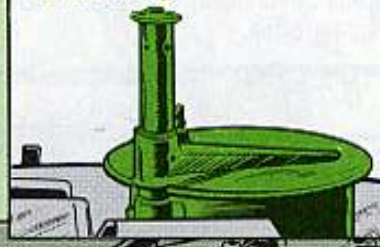
STOWAGE BOXES — The hinges on outside stowage boxes will rust and break unless they are lubed frequently. They are oil can points. Take care of them like it says in your LO.



BASIC ISSUE ITEMS — All items PS and located according to diagrams in TM 9-2350-217-10 on page 287 for M108 or page 290 for M109, for exterior storage. (See other TM diagrams for interior and hull storage.)

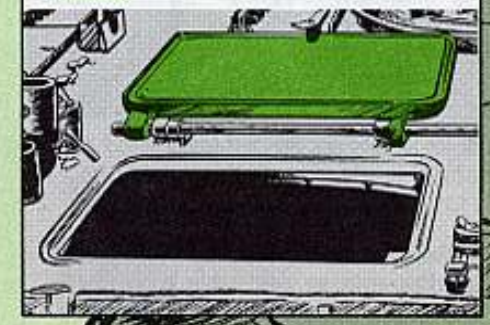
TELESCOPE BALLISTIC COVER — All hooks, pins and chains PS.

(NOTE: In high humidity areas you can expect water to condense in the sights. No good trying to cover the sights direct — like with a plastic bag. You are better off putting a waterproof tarp over the entire telescope ballistic cover.)



GUNNER'S HATCH DOOR—Locking latch and hold open latch PS. Torsion bar not broken, compensates for weight of door.

(NOTE: It is not a good idea to slam the door to OPEN position, because you might bend the catch and break the hold-open bracket.)

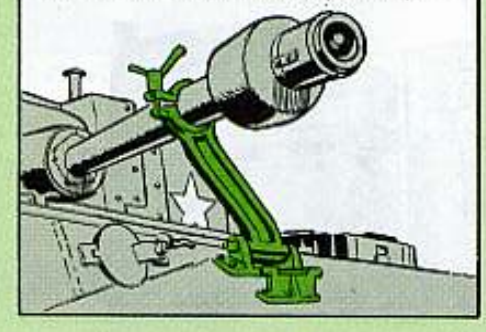


ON TOP

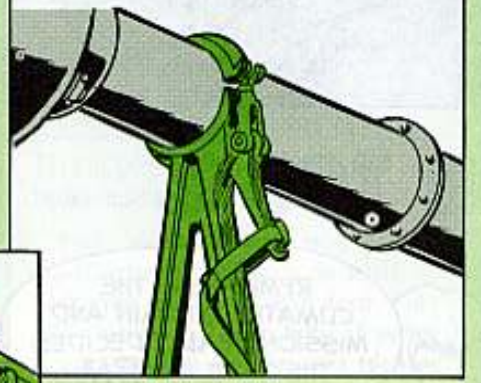
COMMANDER'S DOOR—Hold open latch lock and latch lock pin PS. Both outer and inner locking handle PS.

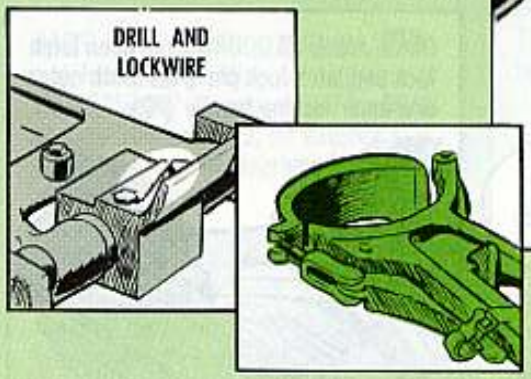
PS MORE

TRAVEL LOCK (M108)—Ears not broken on locking bar, all dowel pins and spring pins OK, lining in good shape, safety chain and snap PS (travel position) and hold down OK (stowed position).



TRAVEL LOCK (M109) — All parts PS including the hold-down strap. (If your M109 has Serial No. 99 or any serial number 94 or below, it'll have a latch-type hold down. If it has a number higher than 94 (except 99) it will have a stop-type hold down.) On late model (above 94) hold downs, the lug-mounting screws (P/N 35303-110) work loose because of vehicle vibration. Have these screw heads drilled and laced with lockwire.





TRAVEL LOCK (Both)—

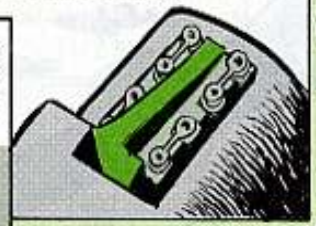
1. To prepare for fast action "hip shoots" some crews have been removing the top half of the travel lock. That lets them get out of travel lock just by elevating the gun tube from inside the turret. There are times when this can be very handy.

2. Handy it is but dandy it isn't. Firing at a low angle you run a big risk that the muzzle blast will beat up an unsecured travel lock. Always strap it down before firing — if you can.

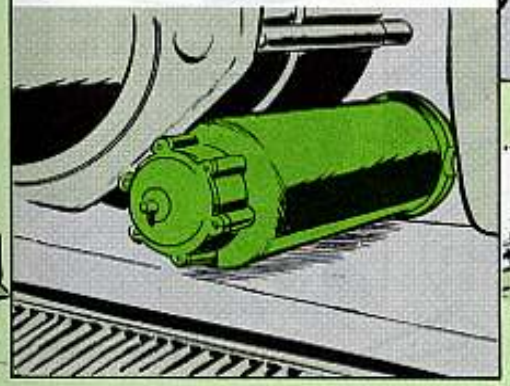
MUZZLE PLUG — Some M108 crews have been keeping their muzzle plugs from getting lost by securing them with a piece of wire.

MUZZLE BRAKE (M109) — Check for cracks around the baffles. If you have cracks longer than an inch, ask your support for a new muzzle brake. Keep your muzzle brake locking ring on tight and your muzzle brake lock secure. Check 'em when you can during pauses in firing.

TORQUE KEY (M109) — If your howitzer tube torque key (guide key) is worn out the tube will not be guided right in recoil and counter-recoil. So, to keep the key in good shape, lube it after 500 rounds and check often for wear. When the torque key has worn .021 of an inch it should be replaced. Previous experience indicates this amount of wear will occur in about 1500 rounds of firing.



RECUPERATOR (outside) M109 — Check the recuperator pins the way it says on page 18 of your LO and add hydraulic fluid if needed.

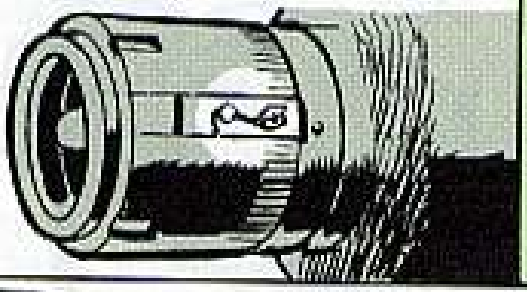


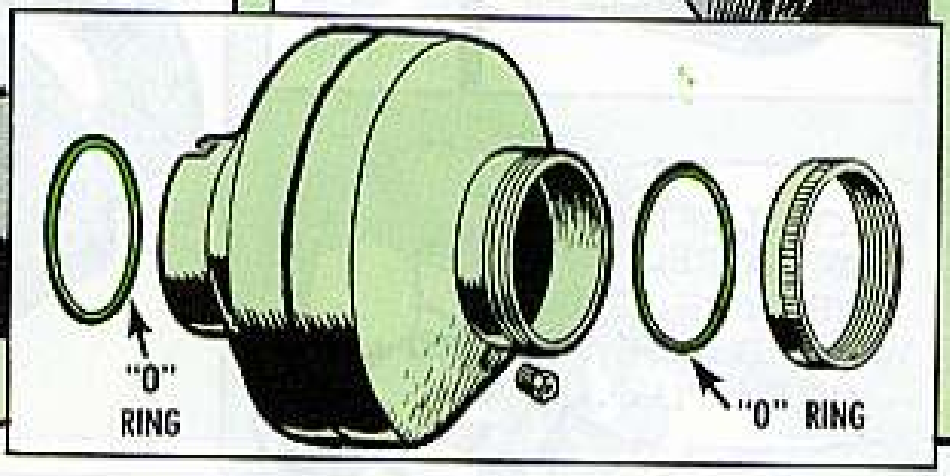
PS MORE

BORE EVACUATOR (M109) — The 2 O-rings tend to break when the evacuator is being installed . . . So give 'em a light coat of GAA, graphite grease or molybdenum disulfide (The moly comes in 1-qt cans under FSN 9150-390-5690).

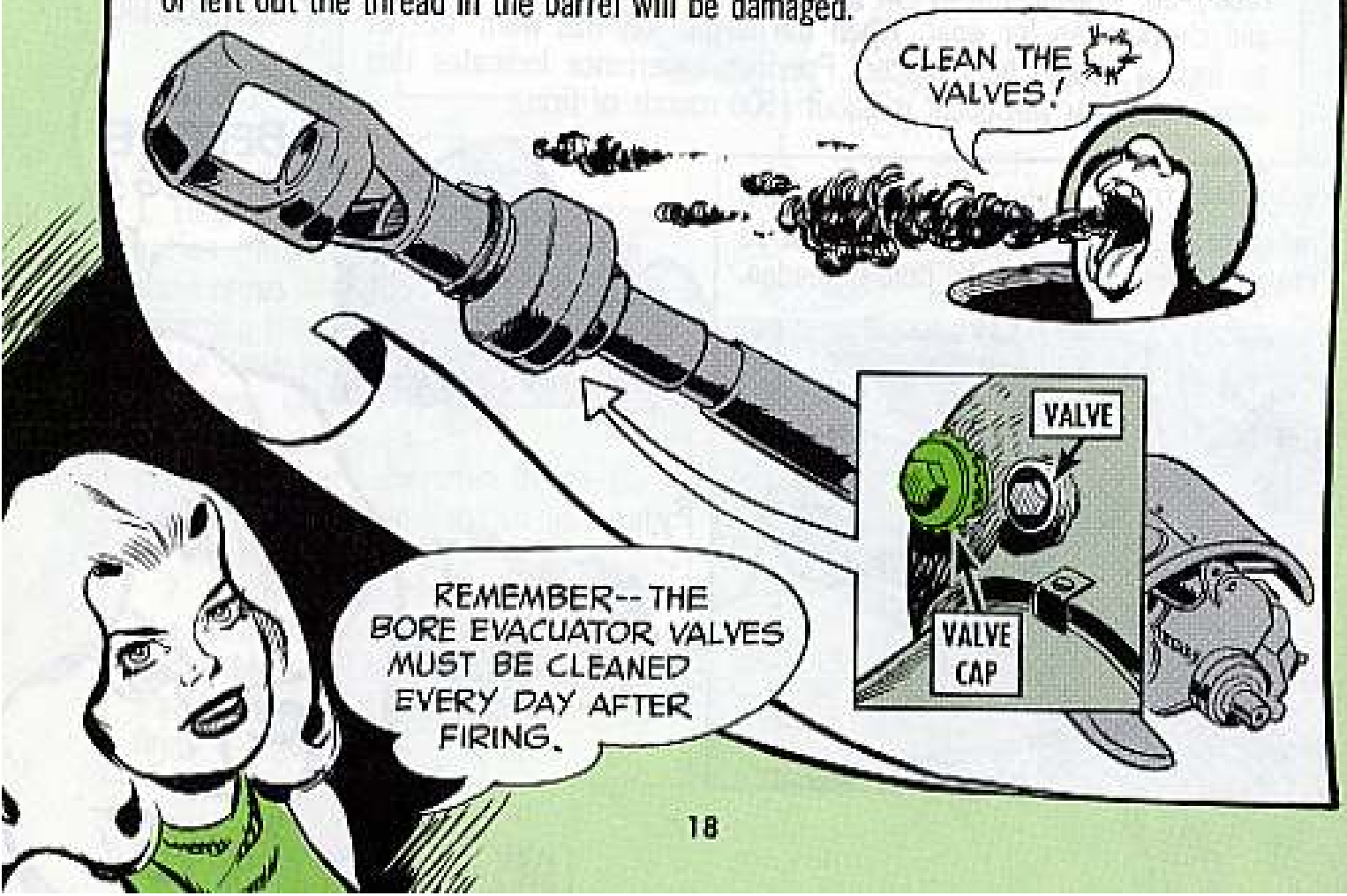
The dust cover and the recoil mechanism get damaged by the evacuator locking key and the check valve caps coming loose so check 'em during firing.

BORE EVACUATOR (M108) — The evacuator lock can come loose during firing. Check it often and, if you can get your CO to OK the deal, have it lockwired.



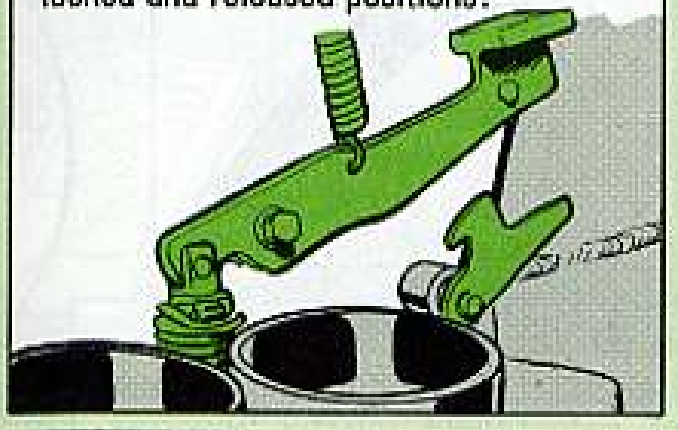


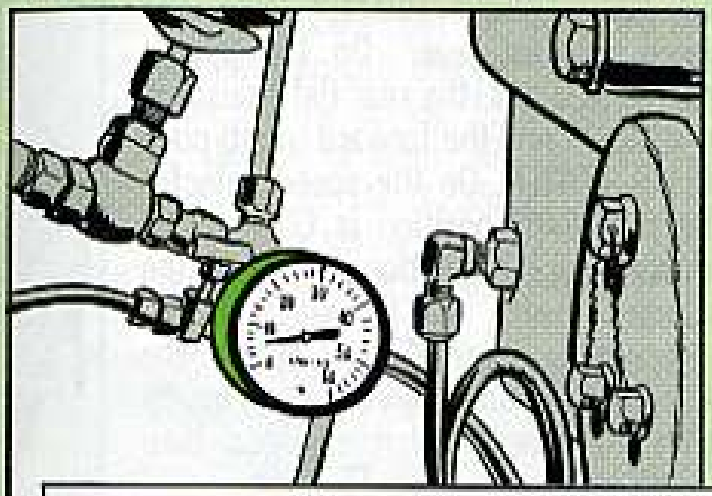
TWO-WAY VALVES — The bore evacuator valves have to be cleaned every day after firing in both the M108 and the M109. This is important because if the valves get dirty, smoke from firing will get into the fighting compartment. The M109 should not be fired unless all 6 valves are installed and torqued to 75 lbs-ft. If they are loose or left out the thread in the barrel will be damaged.



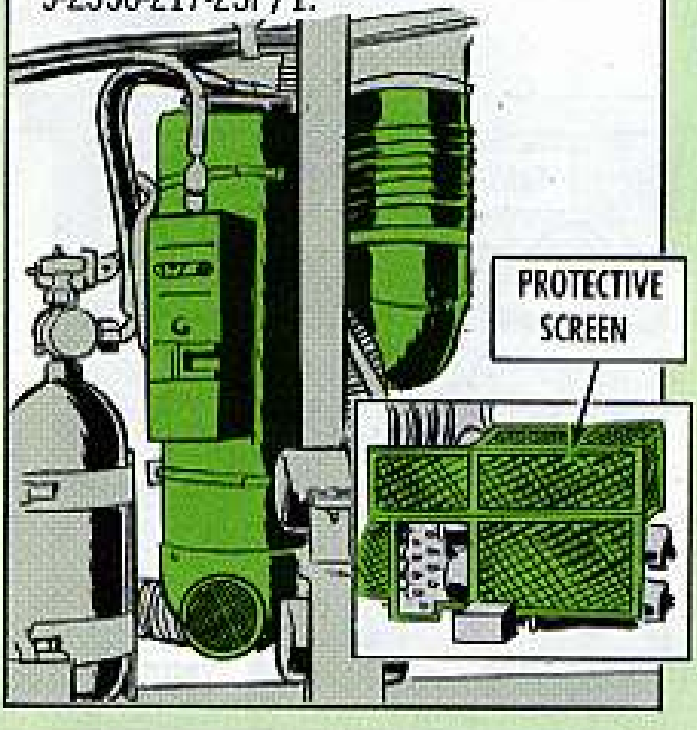
INSIDE THE VEHICLE

LOCK-STRUT PEDALS (M109) — Lock-strut pedals (spade locking lever) and latches (one each side) work in both locked and released positions?



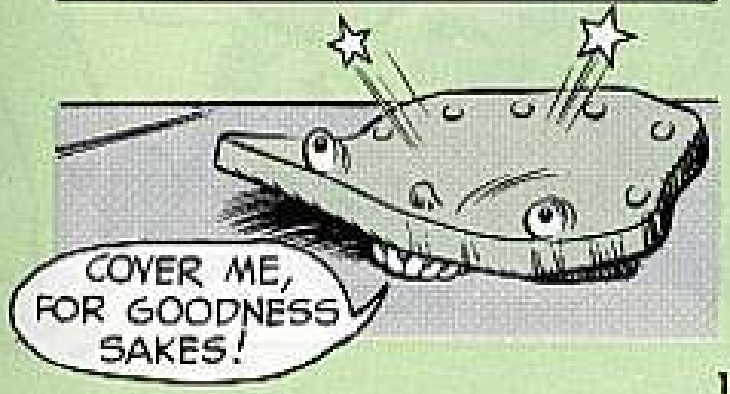


PERSONNEL HEATER — Check operation. If ventilating air stream smells of fuel, you have a fuel leak. Call your mechanic. Heater protective screen missing? Forget it. It was left off of M109's starting with vehicle 675. For identification, it's Item 5 on page 149 of TM 9-2350-217-25P/1.

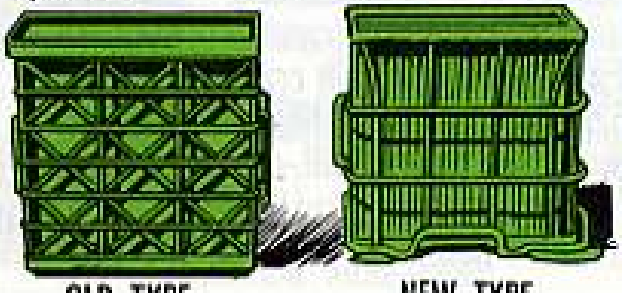


GUN SHIELD SEAL — If your M108/M109 is so equipped, pump seal to 5 PSI. If it leaks use soapy water solution to find the leak and repair it. (When the howitzer cannon and mount are scheduled for removal, the gun shield seal should be removed and not replaced.) Fig 346 in TM 9-2350-217-34/2 has the details.

COVER PLATES — The 2 rear torsion bar anchor cover plates can get beat up when you load ammo unless you cover 'em with wooden blocks or rubber pads.



AIR CLEANER FILTERS—Clean, serviceable, no holes or rips. Filter element is FSN 2940-537-1070 for old type and FSN 2940-999-8587 for new type that you clean without taking apart. With the new type you don't need your spacers.

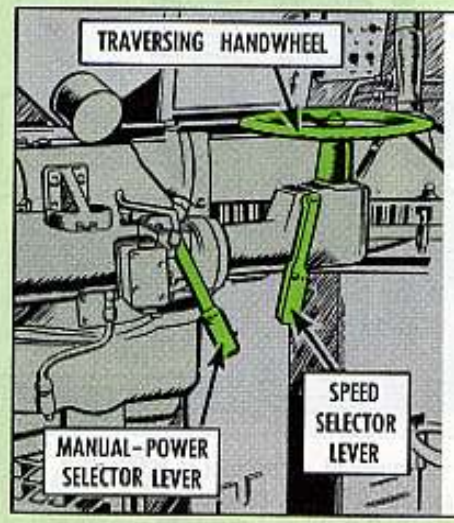


PS MORE

RACE RING SEAL — Inflate to 15-20 PSI.

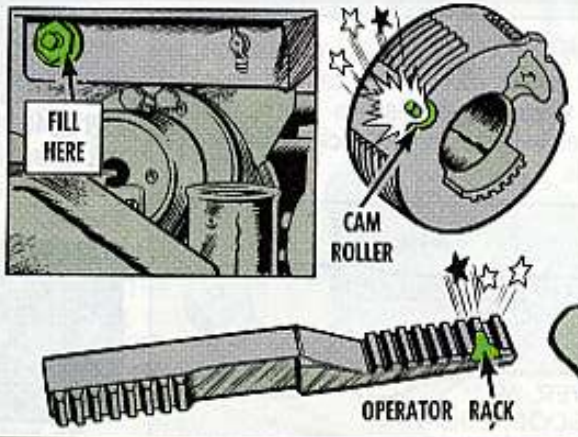
SLIP RING SEGMENTS — (Contact boards), clean, not pitted, no accumulated dirt or grease, should be completely dry.

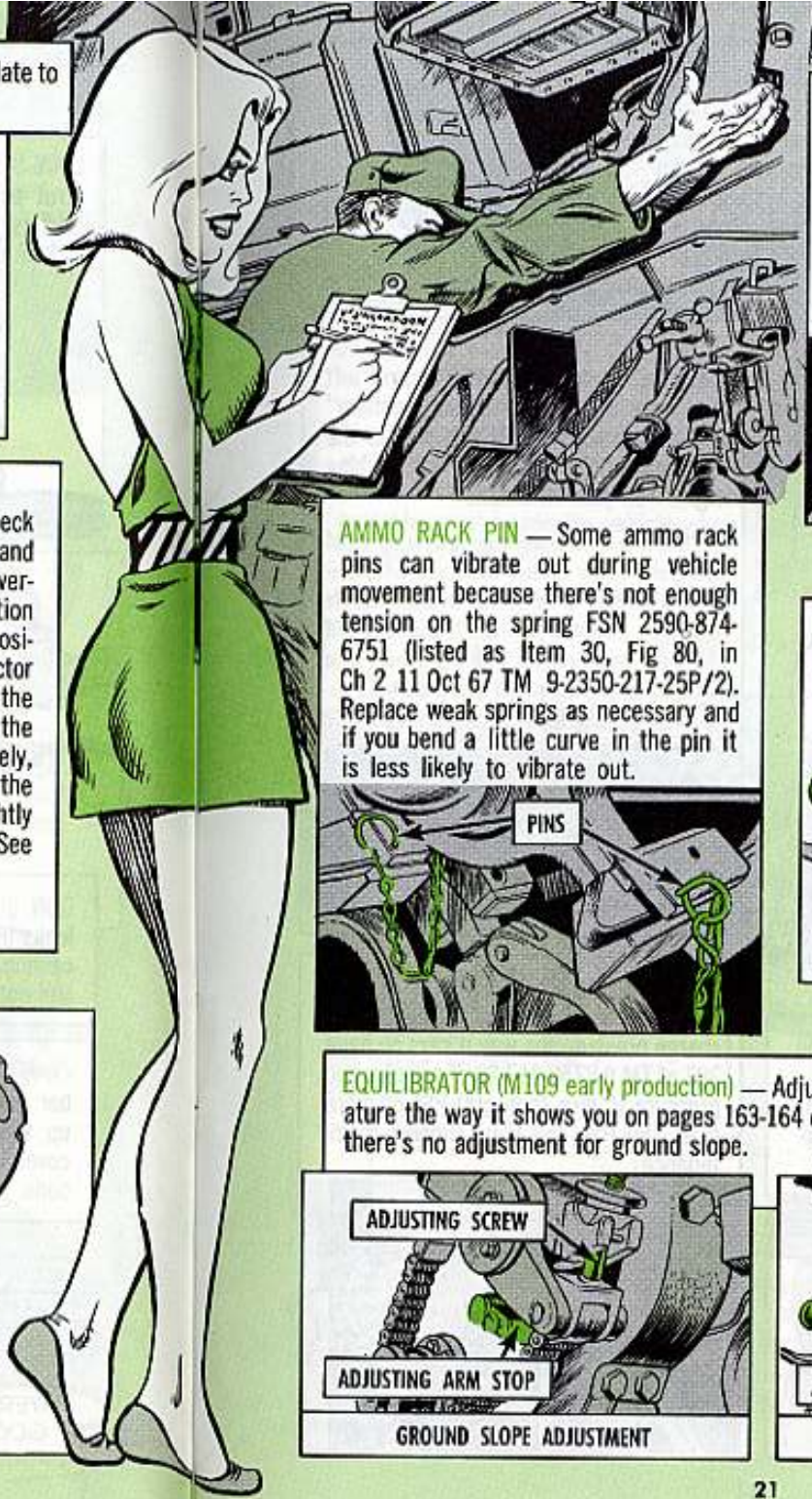
(NOTE: On 4th year M109's, Serial No. 1123 and above, there's only one segment, FSN 2590-929-8328.)



TRAVERSE SELECTOR LEVERS — Check out manual-power selector lever and speed selector lever. On the power-manual selector, the rear (left) position is MANUAL and the forward (right) position is POWER. On the speed selector the rear (left) position is LO and the forward (right) position is HI. If the selector levers won't engage freely, never force them. Slowly rotate the handwheel in either direction and lightly push the lever until it engages. (See Fig 55 in Ch 1 to your -10 TM).

REPLENISHER—Check daily and before firing. Keep slightly over-filled rather than slightly under-filled. If it is slight over-filled the worst that can happen is that you will lose some recoil oil. If it is underfilled, the counter-recoil can be too fast and you can crack a tooth on your breechblock operator rack. It will also ruin the cam roller and burr the cam path.

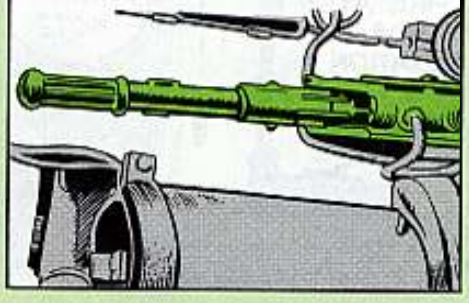




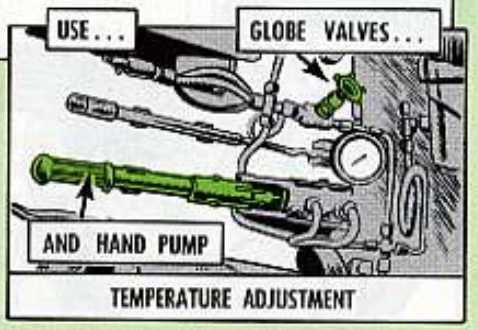
FIRE EXTINGUISHER SEAL — The fixed fire extinguisher is sealed only at the control head, not at either of the pull handles. (One handle is in the driver's compartment and one outside on the hull.) Don't let anybody gig you for lack of seals on the handles — you shouldn't have 'em.

AMMO RACK PIN — Some ammo rack pins can vibrate out during vehicle movement because there's not enough tension on the spring FSN 2590-874-6751 (listed as Item 30, Fig 80, in Ch 2 11 Oct 67 TM 9-2350-217-25P/2). Replace weak springs as necessary and if you bend a little curve in the pin it is less likely to vibrate out.

HAND PUMP — It can get damaged if it's not secured in its bracket except when in use.



EQUILIBRATOR (M109 early production) — Adjust for both ground slope and temperature the way it shows you on pages 163-164 of your -10 TM. On late model M109's there's no adjustment for ground slope.

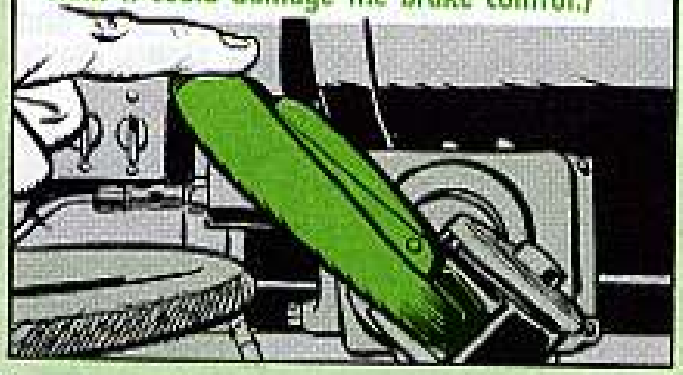


CYLINDERS SCORED — The walls of some equilibrator cylinders are becoming scored, which allows oil to by-pass the piston. To prevent this, use clean hydraulic oil in equilibrator system and in dusty climates. Keep a rag over the relief valve so dirt won't get in there.

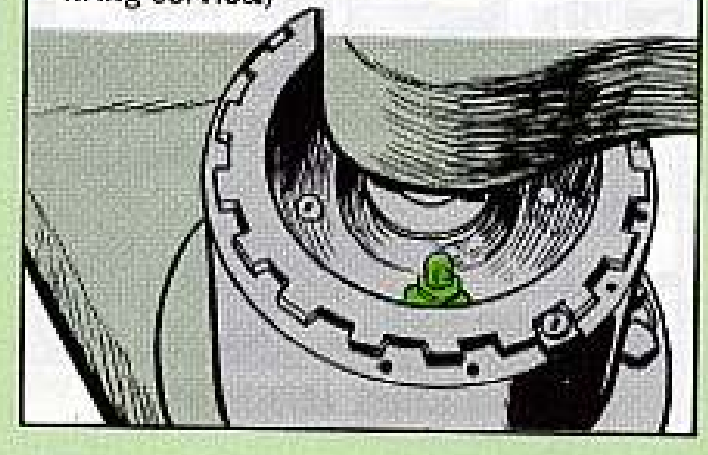
OUT OF BATTERY — If you fire the M109 at elevations over +65 degrees, the howitzer will hang out of battery 1-5/8 to 2-1/4-in. This is normal and nothing to worry about. The howitzer will return to battery as it is depressed to the loading position.

GUNNER'S HANDLE — With power switch ON, move gunner's control left and then right but without "palming" the magnetic brake. If this makes the cab rotate, the handle is not working right. Tell your mechanic.

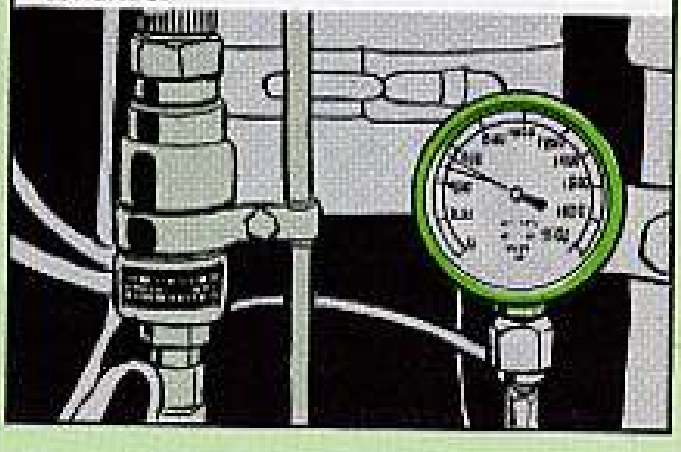
(NOTE: In normal operation never let go of this palm brake control until you have finished elevating or traversing and the handle is back in a neutral position. If you let go of the palm brake control with the handle at a slant it could damage the brake control.)



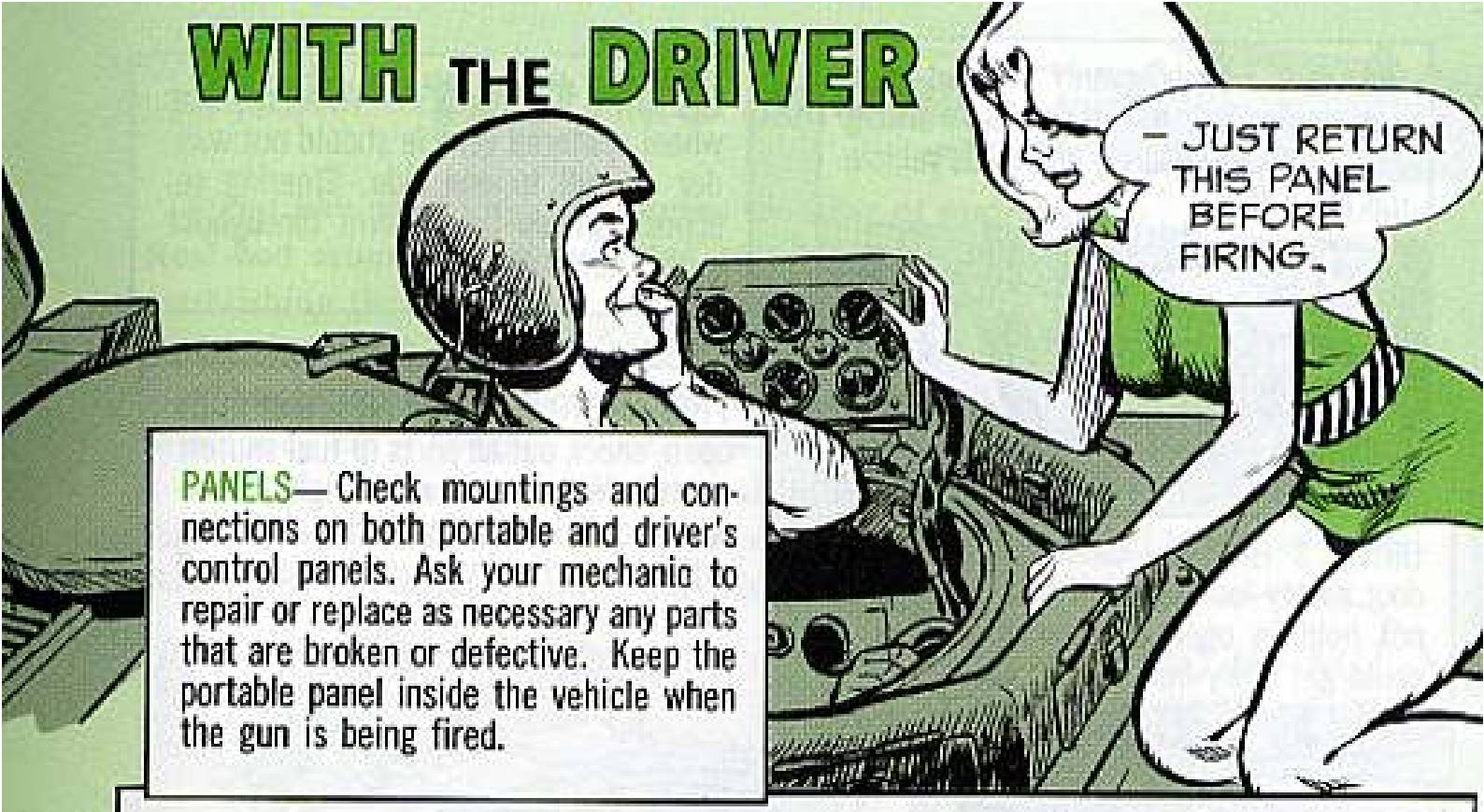
RECUPERATOR (M109) — Check pins on inside recuperator the way it says in your LO on page 18 and add hydraulic fluid as needed. (This is a daily before-firing service.)



NITROGEN PRESSURE (M109) — Check the main accumulator nitrogen pre-charge pressure the way it says on page 393 of TM 9-2350-217-20. If pre-charged pressure is less than 500 PSI or more than 550 PSI, tell your support maintenance.



WITH THE DRIVER



PANELS— Check mountings and connections on both portable and driver's control panels. Ask your mechanic to repair or replace as necessary any parts that are broken or defective. Keep the portable panel inside the vehicle when the gun is being fired.

NORMAL READINGS —

1. Water temperature — 170° (225° maximum).

2. Oil Pressure — 50-70 PSI at 2,100 RPM, 30-50 PSI at 1,000 RPM (70 PSI maximum). (WARNING: If you get a reading below 30 PSI at idle while hot, stop engine and recheck oil level.)

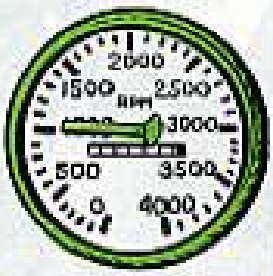
3. Transmission oil temperature — 220-275° (maximum 300).

4. Transmission oil pressure — 5-40 PSI (minimum 10 PSI at 1,000 RPM).

5. Battery-Generator — In green (charging) zone with engine at normal operating temperature. (WARNING: Stop engine and find out what is wrong if needle does not go into the green.)

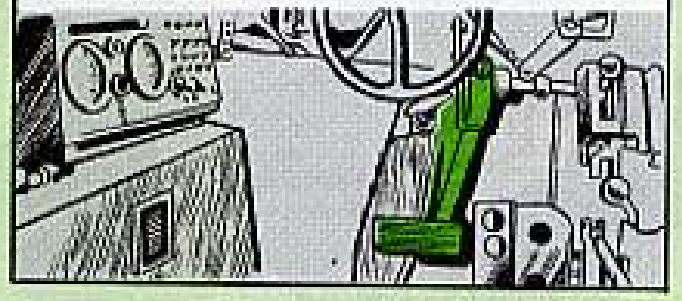
6. Tachometer & Speedometer — Operate without sudden fluctuations or noise.

COLD WEATHER IDLE — The diesel engine on your M108/M109 needs a high idle rate, 'specially in cold weather. For normal operation idle for 5 minutes at 1,000 RPM when starting. During cold weather when idling for periods over 10 minutes, set the idle at 1200-1600. When it's not cold, and you idle for periods over 10 minutes, adjust to 1,000-1,200 RPM.



MORE

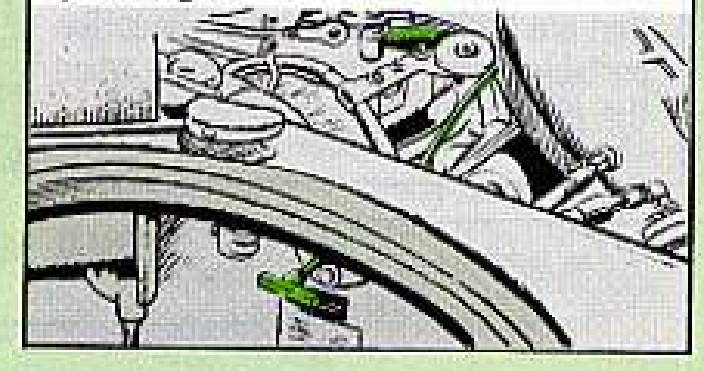
BRAKES — Apply evenly without pulling the vehicle to either side. Parking brake applies securely and holds vehicle on an incline.



STEERING CONTROLS — With steering wheel centered vehicle should not wander or pull to one side. Steering response should be uniform throughout entire range of wheel.

DRIVER'S HATCH — Catch on driver's door safety lock work? If this door will not hold in open position the driver could get badly hurt.

FUEL SHUTOFF — With air intake grille open, check out all parts of fuel shutoff control. Make sure it works right. Otherwise, you'll have to open the air intake grille every time you want to shut off your engine.



STARTING ENGINE — Before you start make sure all radios and night lighting systems are turned OFF. Some radio tubes and night lights have been blown off because they were left ON . . . So now you know.

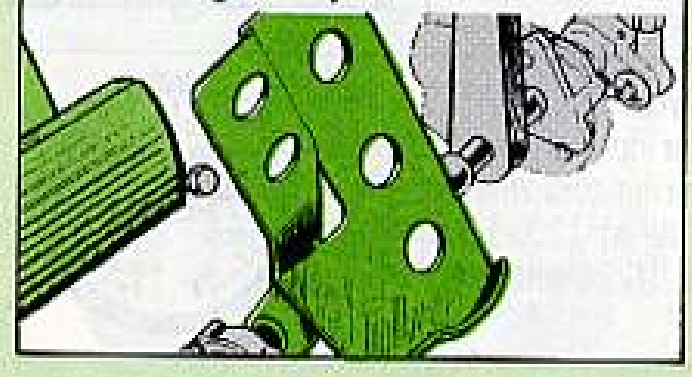
SMOKE SIGNALS — You can make like an Indian and get the news from smoke signals. If your engine does not smoke at all that's good.

Black or gray smoke — A lot of black or gray smoke can mean incompletely burned fuel, too much fuel or irregular fuel distribution.

Blue or black smoke — Fuel or lube oil not burned in cylinder.

White smoke — Wrong grade of fuel, low compression or misfiring cylinders.

ACCELERATOR PEDAL — If you're not getting enough power, no need to panic and pull the power pack. First check the accelerator pedal. If it is bent you won't be able to push it all the way down so you won't get full power.



See PS 196 for Part II of the M108-109 story. It will cover . . .

- SLINGS AND THINGS
- CANNON CARE
- FIRE CONTROL
- FOR YOUR MECHANIC

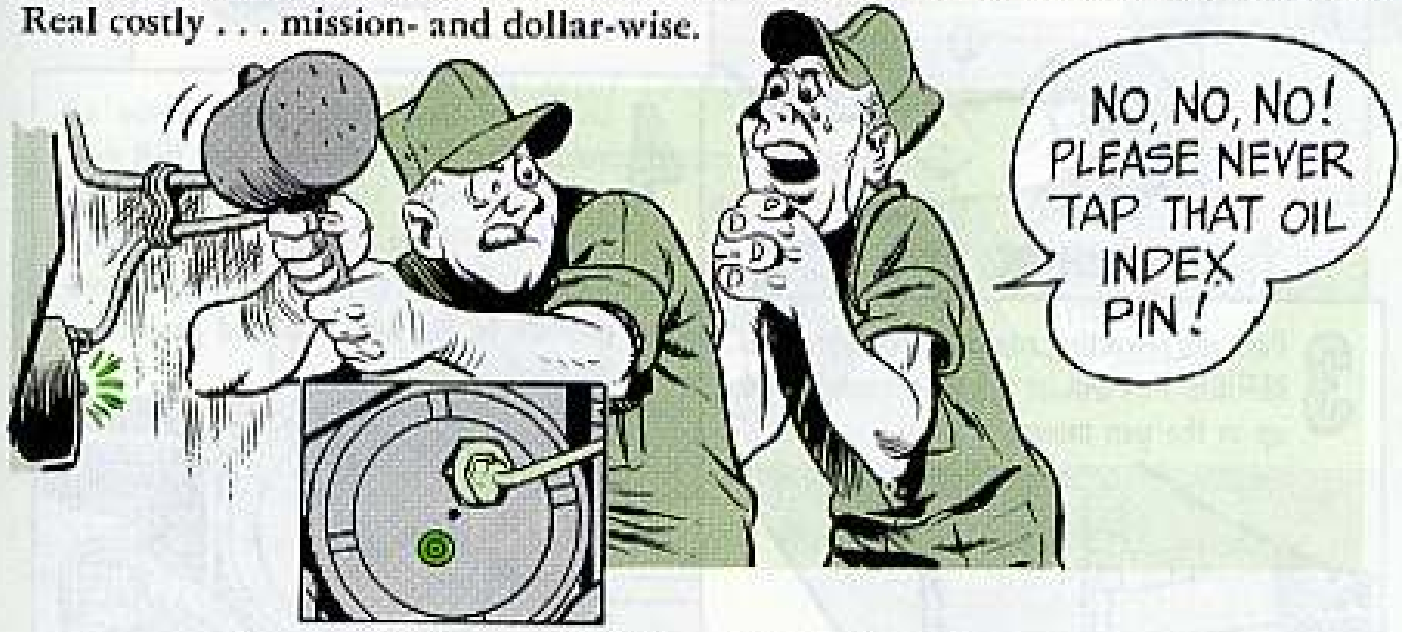
M107/M110 OIL RESERVE POOP...

TAP NO MORE

Seems like some guys are forever thinking of something to . . . er .. . drink. Real bad around a self-propelled M107 gun or M110 howitzer when you're establishing the oil reserve using the vehicle engine.

You know where it says in para 80b(3) of Ch 4 to TM 9-2300-216-10 that you should tap the recuperator oil index lightly to see that it's working OK? Well, they tap it alright . . . like it was a keg of beer!

Result: a banged-up pin or internal injuries like sheared-off rack gear teeth. Another M158 mount headed for depot, another M107 or M110 out of action. Real costly . . . mission- and dollar-wise.

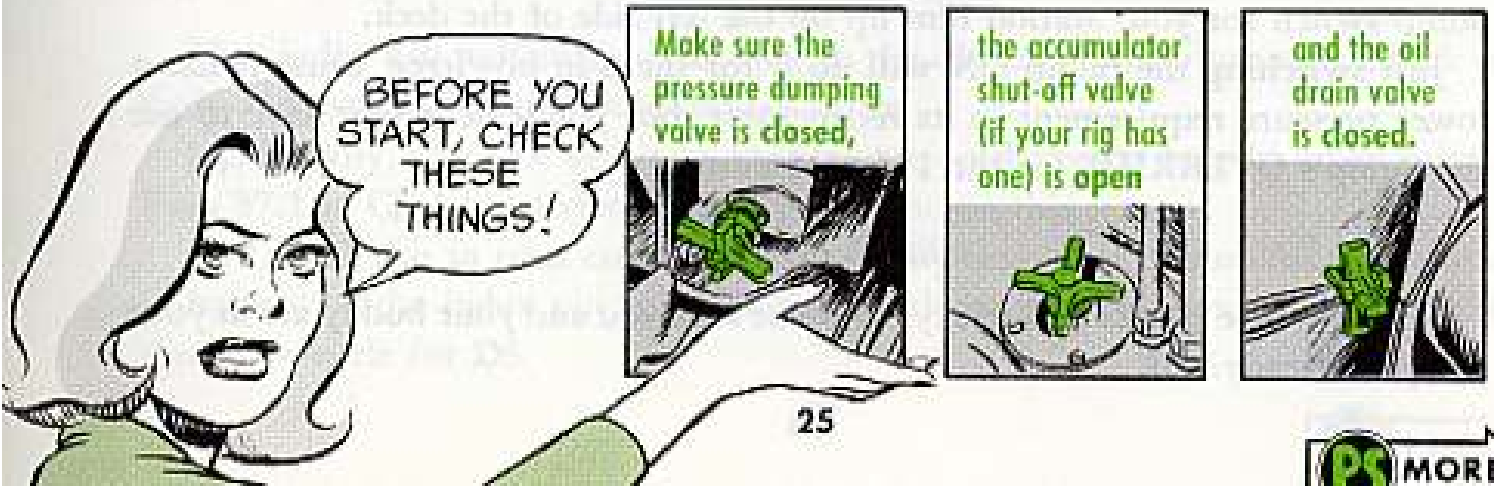


Cross out the words in para 80b(3) and wipe 'em from your mind. The word went out to all major commands in U. S. Army Weapons Command Msg 15349 (6 Jun 68).

If the oil index won't move out like it's supposed to, you leave it be . . . and tell your support guys to look into it.

THE TRICK TO IT

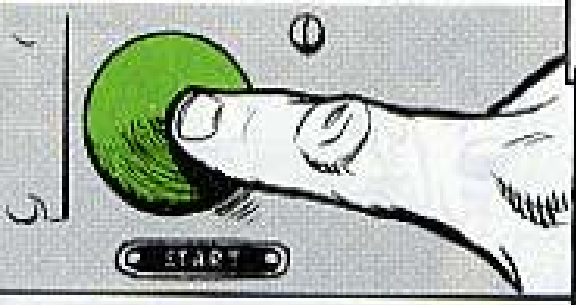
Also, it seems that some guys're running into snags with the rest of the oil reserve deal in para 80 of Ch 4, especially where is calls for using the electric-driven hydraulic pump. This can get pretty tricky, y'know.



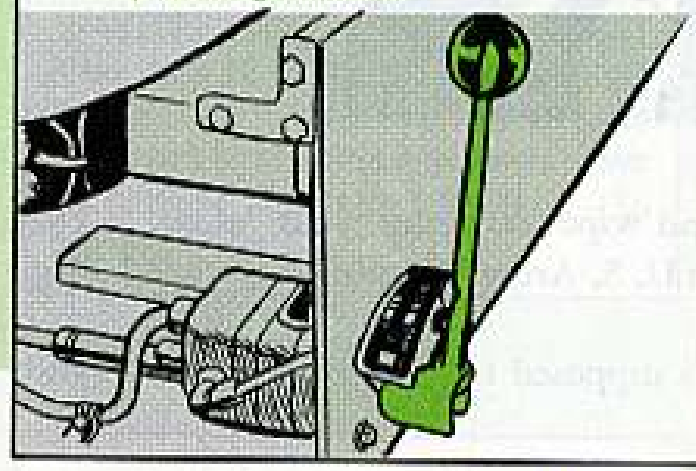
PS MORE

2 Put the power take-off (PTO) switch ON.

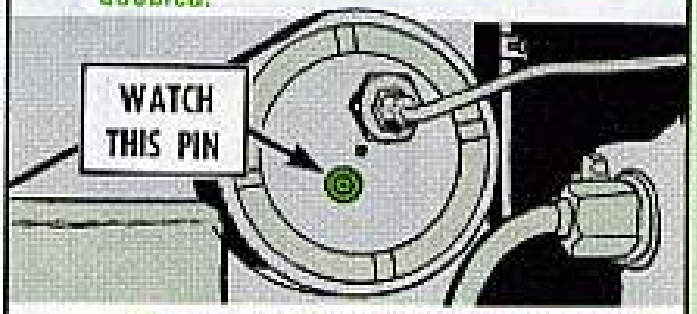
1 With the cannon in battery position, press the starter switch.



3 Push the retracting control valve handle to RETURN. This will let the oil pressure build up in the gun mount.



4 Lean over and take a peek at the oil index. The pin should pop out. If it does move out, fine. The oil reserve's established only if the amount of time needed for the index pin to move from the inward position to the fully extended position is doubled.



You can put the retracting valve-control handle in NORMAL & HOLD, turn off the PTO switch and shut the engine down. End of chore.

USING THE ELECTRIC PUMP

However, if the index pin won't move out, it means the nitrogen pressure in the recuperator is over 2400 PSI, and you've got to use the electric pump to get more oil pressure in there. First thing to do is to recruit a buddy to man the pump switch for you. Station him up on the left side of the deck.

Just switching the pump ON will do it for the 8-in howitzer 'cause it has a lower pressure requirement in its recuperator, but you'll definitely have to use the pump's OVERRIDE for the 175-MM gun.

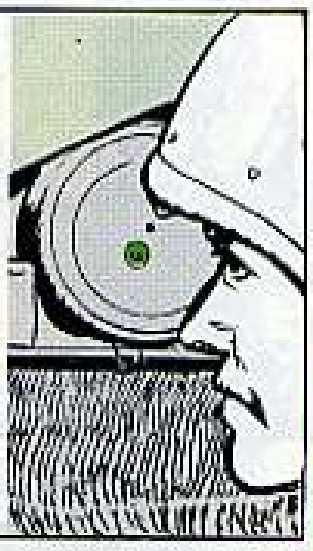
HEADS UP, MEN!

This is where it gets real tricky, so make sure you and your buddy are at your sharpest. Ready? OK.

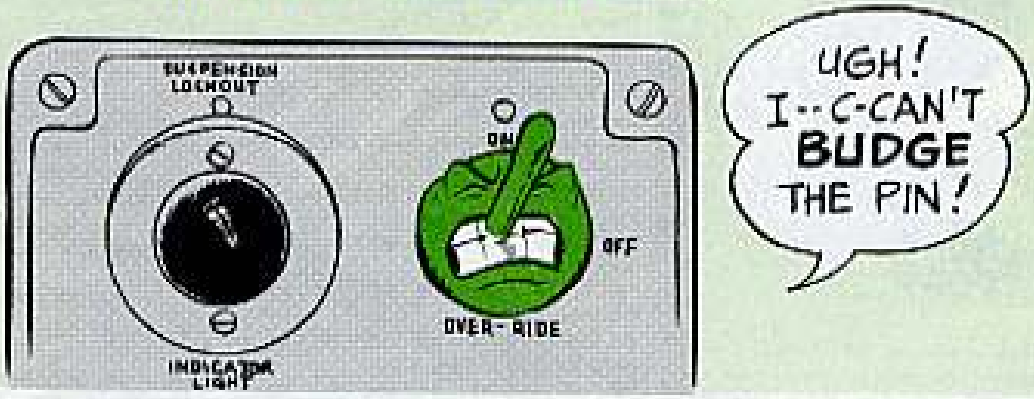
On the M107 Only (Using the ON switch):

1 Make sure the retracting valve-control handle is still on RETURN.

2 Lean over and eagle-eye the index pin. Tell your buddy to put the pump switch ON when you yell "Go" and to turn it OFF when you say "Stop." You start counting from the instant the pin starts to move and until the pin stops. Then keep counting twice that much more before you say "Stop." F'instance, if you count to 2, then add 4 more, making a total of 6. If you count to 3, add 6 more for a total of 9 before yelling "Stop." And so on.



ON THE M107 (USING THE OVERRIDE):



Natch, if the ON switch doesn't budge the pin on the M107, you use the OVERRIDE.

You go through exactly the same deal on counting between "Go" and "Stop." Only difference is your buddy puts his finger on—keeps it on—the OVER-RIDE instead of flipping the switch. This OVERRIDE's spring-loaded and requires steady pressing.

This should establish your oil reserve. Now your buddy can let the pump switch return to the OFF position, and you can put the retracting control-valve handle in NORMAL & HOLD, turn off the PTO switch and shut the engine down.

Remember this, though, if the index pin fails to come out at all, don't fuss around with it. Get your DS people on it quick.

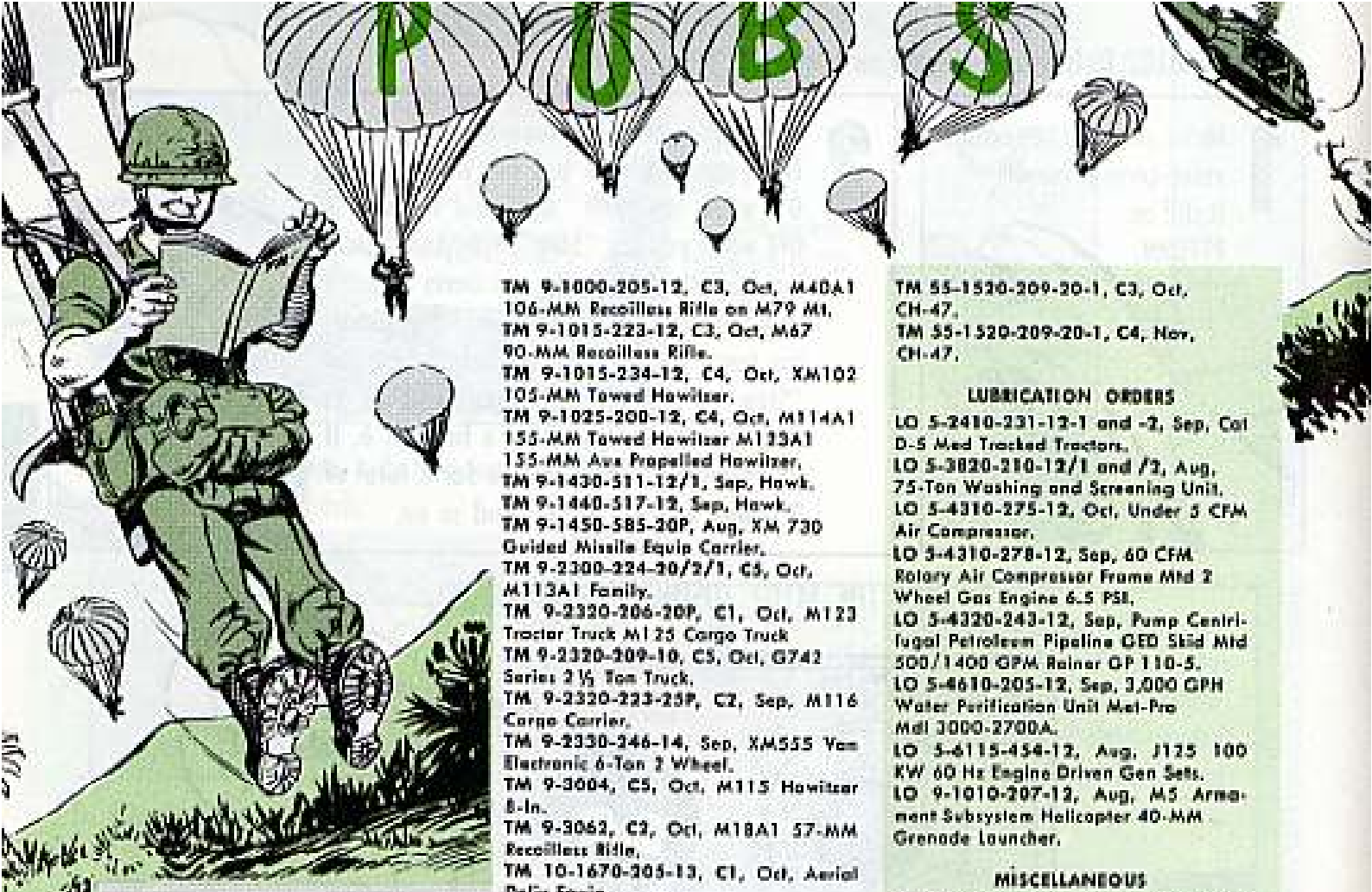
TIPS TO SECTION CHIEFS

That index pin will stay out as long as the oil reserve's up to snuff. Check it daily and especially before and during firing.

Incidentally, you'd be smart to keep an eye on the recoil lengths when firing. Para 37.1 in Ch 4 has a chart that'll guide you on this.

And notch this in your crew's headgear: Any time your cannon fails to return to battery or the index pin won't budge (without tapping, natch!) is the right time to whistle for DS.

END



This is a selected list of recent pubs of interest to organizational maintenance personnel. The list is compiled from recent AG Distribution Centers Bulletins. For complete details see DA Pam 310-4 (May 68), TM's, TB's, etc.; DA Pam 310-6 (Jul 68), SC's and SW's; DA Pam 310-7 (Apr 68), MWO's.

TECHNICAL MANUALS

TM 1-OV1-5, C3, Nov, OV-1.
TM 1-1OH-23C-24P, C2, Nov, OH-23.
TM 3-1040-241-12, Sep, 50 CFM Recip Compressor 3,000 PSI Mó-1R.
TM 3-1310-243-10, Sep, 40-MM Cartridge Tact CS XM651E1.
TM 3-1310-244-10, Sep, 40-MM Cartridge Riot Control CS XM674 and 40-MM Cartridge Red Smoke RS XM675.
TM 3-1325-233-12, Sep, E1 5882 Canister Cluster Tact CS 50-LB.
TM 3-1345-205-10, Sep, Anti-personnel Mine PWP POP-UP XM54.
TM 5-2410-200-20, C2, Oct, Med Tracked Tractors.
TM 5-2410-231-25, Sep, Cat D5 Med Tracked Tractor.
TM 5-3210-200-20P, Sep, Saw Mills.
TM 5-3431-205-15, Jul, Arc Welding Mach GED 300 Amp DC.
TM 5-3610-223-20P, Sep, Offset Platemaker and Copier.
TM 5-3610-231-13, Sep, Color Press Townsend Index Mdl T-51LW.
TM 5-4120-234-20P, Sep, 36,000 BTU Air Conditioner Rodmanson Mdl CE-36M.
TM 5-4120-288-25P, Sep, 60,000 BTU Air Conditioners.
TM 5-4310-275-15, Jul, Under 5 CFM Air Compressors.
TM 9-1000-205-12, C3, Oct, M40A1 106-MM Recoilless Rifle on M79 Mt.
TM 9-1015-223-12, C3, Oct, M67 90-MM Recoilless Rifle.
TM 9-1015-234-12, C4, Oct, XM102 105-MM Towed Howitzer.
TM 9-1025-200-12, C4, Oct, M114A1 155-MM Towed Howitzer M135A1 155-MM Aus Propelled Howitzer.
TM 9-1430-511-12/1, Sep, Hawk.
TM 9-1440-517-12, Sep, Hawk.
TM 9-1450-585-20P, Aug, XM 730 Guided Missile Equip Carrier.
TM 9-2300-224-20/2/1, C5, Oct, M113A1 Family.
TM 9-2320-206-20P, C1, Oct, M123 Tractor Truck M125 Cargo Truck
TM 9-2320-209-10, C5, Oct, G742 Series 2½ Ton Truck.
TM 9-2320-223-25P, C2, Sep, M116 Cargo Carrier.
TM 9-2330-246-14, Sep, XM555 Yam Electronic 6-Ton 2 Wheel.
TM 9-3004, C5, Oct, M115 Howitzer 8-In.
TM 9-3063, C2, Oct, M18A1 57-MM Recoilless Rifle.
TM 10-1670-205-13, C1, Oct, Aerial Deliv Equip.
TM 10-1670-219-23, C1, Oct, Aerial Deliv Equip Per Parachute.
TM 10-1670-224-23, C3, Oct, Aerial Deliv Equip Per Parachute.
TM 10-1670-225-23, C3, Oct, Aerial Deliv Equip Pers Parachute.
TM 11-5840-262-20P, Oct, OV-1A, OV-1B, OV-1C.
TM 11-6780-204-20, Sep, KS-6(1) Still Picture Camera Set, LM-17(1) Film Loader.
TM 55-1510-204-20P, C2, Oct, OV-1.
TM 55-1510-209-20P, C1, Oct, CH-47.
TM 55-1520-203-20, C9, Nov, CH-37.
TM 55-1520-209-20-1, C2, Sep, CH-47.
TM 55-1520-209-20-1, C3, Oct, CH-47.
TM 55-1520-209-20-1, C4, Nov, CH-47.

LUBRICATION ORDERS

LO 5-2410-231-12-1 and -2, Sep, Cat D-5 Med Tracked Tractors.
LO 5-3820-210-12/1 and /2, Aug, 75-Ton Washing and Screening Unit.
LO 5-4310-275-12, Oct, Under 5 CFM Air Compressor.
LO 5-4310-278-12, Sep, 60 CFM Rotary Air Compressor Frame Mtd 2 Wheel Gas Engine 6.5 PSI.
LO 5-4320-243-12, Sep, Pump Centrifugal Petroleum Pipeline GED Skid Mtd 500/1400 GPM Rainer GP 110-5.
LO 5-4610-205-12, Sep, 3,000 GPH Water Purification Unit Mat-Pro Mdl 3000-2700A.
LO 5-6115-454-12, Aug, J125 100 KW 60 Hz Engine Driven Gen Sets.
LO 9-1010-207-12, Aug, M5 Armament Subsystem Helicopter 40-MM Grenade Launcher.

MISCELLANEOUS

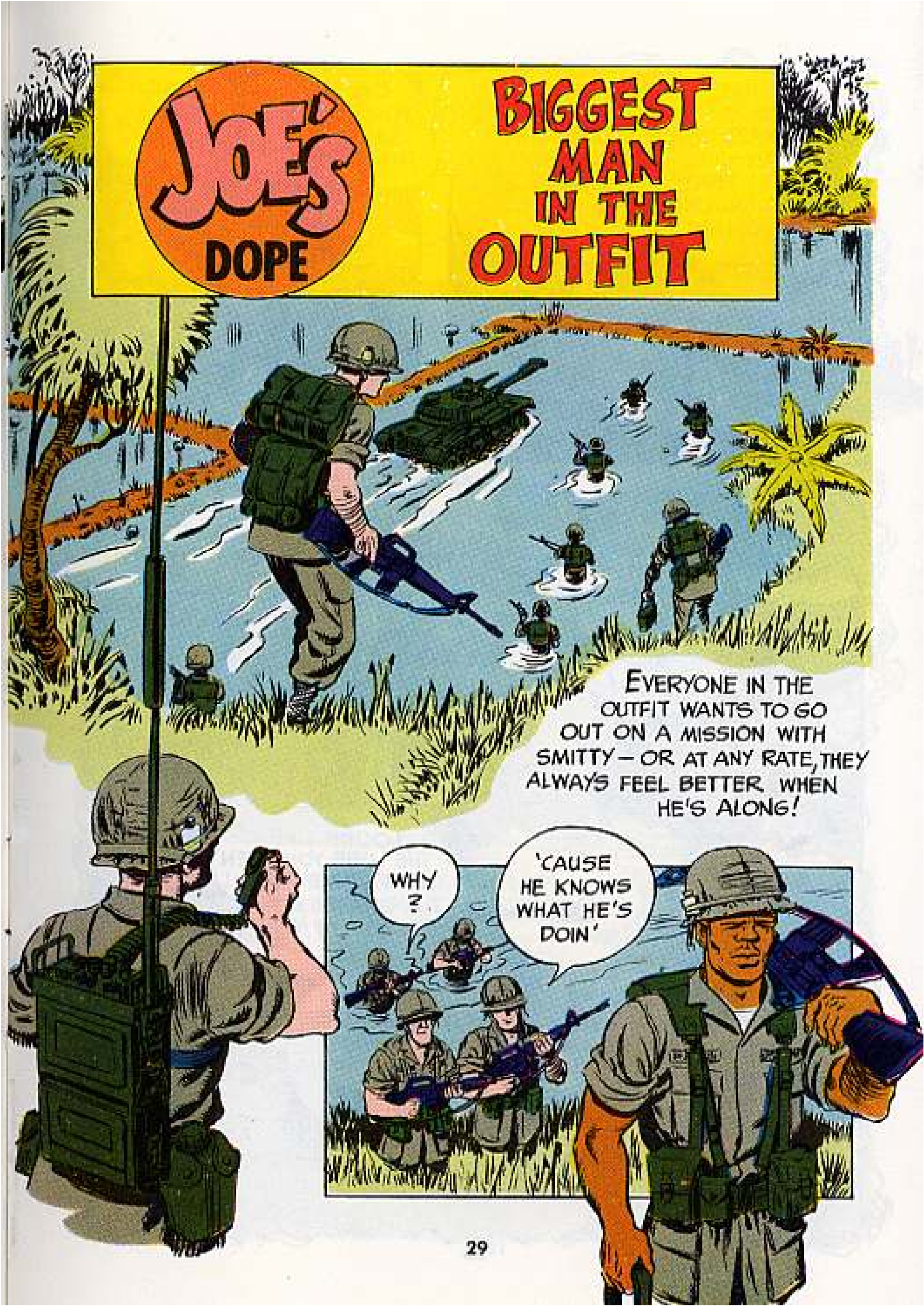
DA Cir 40-52, Oct, Prevention of Cold Injury.
FM 9-16, Sep, Explosive Ord Recon.
FM 10-67, Oct, Petroleum Supply in Theaters of Operations.
MWO 9-1000-252-30, Oct, M6, M16 and M21 Armament Subsystems.
SB 8-100, Oct, Med Dept, Expendable Supplies.
SC 6675-97-CL-E07, Sep, Drafting Set, Office.
TB 10-1670-213-20/1, C1, Oct, Aerial Deliv Equip Per Parachute.
TB 10-1670-240-20/1, C1, Oct, Aerial Deliv Equip.
TB 55-1500-206-20/10, C4, Nov, UH-1A-1B-1C-1D, AH-1G.

It's in a Sling

Have you included the latest stock number for the shoulder strap of the IM-174/PD and AN/PDR-39 radiacmeters?

The new FSN is 6665-646-9404. Use this in place of the deleted stock numbers, FSN 5340-823-5311 (webbing strap) for the IM-174 and FSN 6930-408-4313 (carrying strap) for the AN/PDR-39.

Don't sweat it if you see the old stock numbers still in the old pubs. They are being changed to pick up this info.

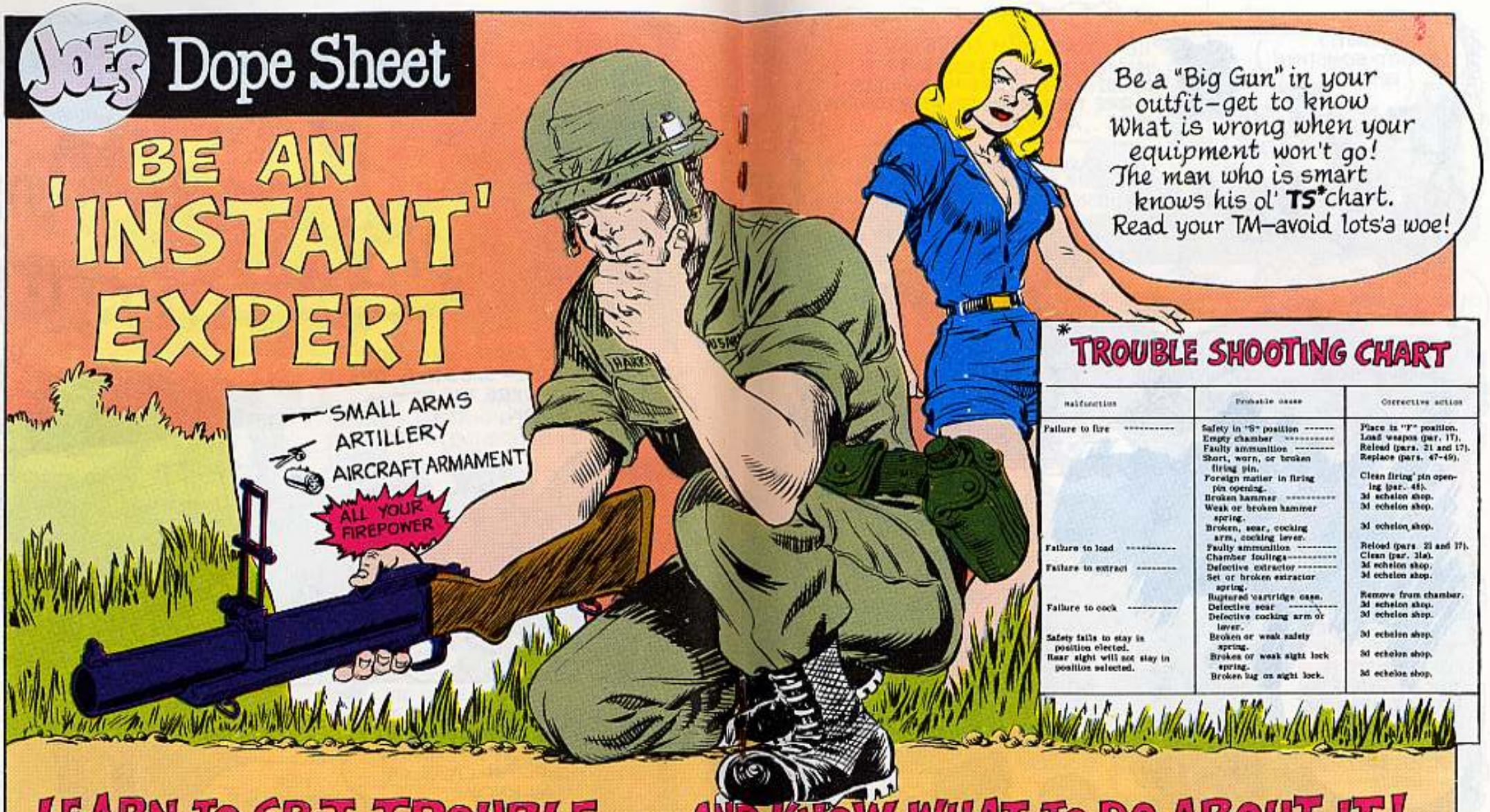

JOE'S DOPE
BIGGEST MAN IN THE OUTFIT
EVERYONE IN THE OUTFIT WANTS TO GO OUT ON A MISSION WITH SMITTY — OR AT ANY RATE, THEY ALWAYS FEEL BETTER WHEN HE'S ALONG!
WHY?
'CAUSE HE KNOWS WHAT HE'S DOIN'


AHA, THAT'S JUST 'CAUSE HE'S GOT EXPERIENCE AND ANYONE CAN GET THAT IF HE'S AROUND LONG ENOUGH.
MAN, THAT'S JUST THE POINT ... IN THIS BUSINESS THE TRICK IS TO BE AROUND ... DIG?
POINNGGG
OK, SO WHAT'S THE SECRET INGREDIENT?
LEARN, BABY, LEARN!
BANG BANG
SO, TELL IT LIKE IT WAS...
WELL, SMITTY SHOWED UP GREEN AS GRASS!
...AND RIGHT AWAY, LIKE HE MAKES MISTAKES, LIKE HE STICKS BY THE PM SCHEDULE HE LEARNED BACK AT SCHOOL...
SARGE, WE GOT CREAMED! MY PIECE JAMMED ON ME!
LOOKS LIKE THE LUBE YOU BEEN USIN' CAME OUTA A GRAVEL PIT, SMITTY!
BUT, I'VE BEEN LUBING IT JUST LIKE I DID IT BACK IN THE STATES!
NOT ENOUGH OUT HERE...THE HOT, BUGGY, DUSTY CONDITIONS REQUIRE MORE LUBE, MORE OFTEN!


RIGHT THERE SMITTY GOT THE MESSAGE!!
SO, NIGHTS...OR DURING HANG-UPS, SMITTY SPENT TIME WITH THE TM's OR FM's...
LIKE... HE'D READ AND STUDY THE TROUBLE-SHOOTING TABLES LIKE THEY WERE THE GOOD BOOK.
Table III. Troubleshooting
Malfunction
Probable cause
Failure to fire
Safety in "S" position
Empty chamber
Faulty ammunition
Short, worn, or broken firing pin.
Foreign matter in firing pin opening.
Broken hammer
Weak or broken hammer spring.
Broken, sear, cocking arm, cocking
Failure to load
Failure to extract
BEFORE LONG HE BEGAN TO DEVELOP A SORTA SIXTH SENSE ABOUT MALFUNCTIONS... LIKE, HE KNEW BY HEART WHAT-TO-DO-IN-CASE-OF LIKE, YOU KNOW...
HEY, LOOKS LIKE CONNIE'S BEEN THRU THIS WAY. DIG THE PS PIN-UP!

JOE'S Dope Sheet

BE AN 'INSTANT' EXPERT



*TROUBLE SHOOTING CHART

Malfunction	Probable cause	Corrective action
Failure to fire	Safety in "S" position	Place in "F" position.
	Empty chamber	Load weapon (par. 17).
	Faulty ammunition	Reload (pars. 21 and 17).
	Short, worn, or broken firing pin.	Replace (pars. 47-49).
	Foreign matter in firing pin opening.	Clean firing pin opening (par. 48).
	Broken hammer	3d echelon shop.
	Weak or broken hammer spring.	3d echelon shop.
	Broken, sear, cocking arm, cocking lever.	3d echelon shop.
Failure to load	Faulty ammunition	Reload (pars 21 and 17).
	Chamber foulings	Clean (par. 31a).
Failure to extract	Defective extractor	3d echelon shop.
	Set or broken extractor spring.	3d echelon shop.
	Ruptured cartridge case.	Remove from chamber.
Failure to cock	Defective sear	3d echelon shop.
	Defective cocking arm or lever.	3d echelon shop.
Safety fails to stay in position elected.	Broken or weak safety spring.	3d echelon shop.
Rear sight will not stay in position selected.	Broken or weak sight lock spring.	3d echelon shop.
	Broken lug on sight lock.	3d echelon shop.

LEARN TO SPOT TROUBLE ... AND KNOW WHAT TO DO ABOUT IT!

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.


THEN, SMITTY LEARNED SOMETHIN' ELSE!!
WOT?
HE LEARNED THAT MAINTENANCE IN THE FIELD IS AFFECTED BY CONDITIONS... LIKE UP IN THE HILLS WHERE THE AIR WAS DRY—TEMPERATURE COOL... AND VERY DUSTY.
HEY, SARGE, WHAT'S THE LUBE SCENE UP HERE!!
SOP HERE IS A LIGHT LUBE APPLIED THIN AND OFTEN... 'SPECIALLY OFTEN!
BUT, DOWN IN THE DELTA...
IN THIS SOGGY SITUATION WATER WILL GET INTO LUBE AND CONTAMINATE IT. SO, WE GOTTA BE BE EXTRA CAREFUL ABOUT LUBE STORAGE AND CLEAN LUBE USE!!
DIG, SARGE.
BEFORE LONG, HE WAS THE COOLEST CAT IN THE PACK...
HEY!! @*@#¤!! MY M16'S STOPPED EXTRACTING!
ODDS ARE THERE'S CARBON BUILT-UP IN THE EXTRACTOR RECESS OR LIPS... LESSEE IF THE EXTRACTOR'S BUSTED OR IF THE SPRING'S SHOT?


IT'S NONE OF THESE ... SMITTY!
YEAH ... MAN, YOU BEEN USIN' DIRTY AMMO ... GIT US A CLOTH AND WE'LL CLEAN OFF THE ROUNDS 'N' THE CLIP!!
GENIUS!
NAH ... JUST PLAIN COMMON SENSE AND KNOW-HOW!
DIG IN! WE FLUSHED CHARLIE IN THE PADDY YONDER!!

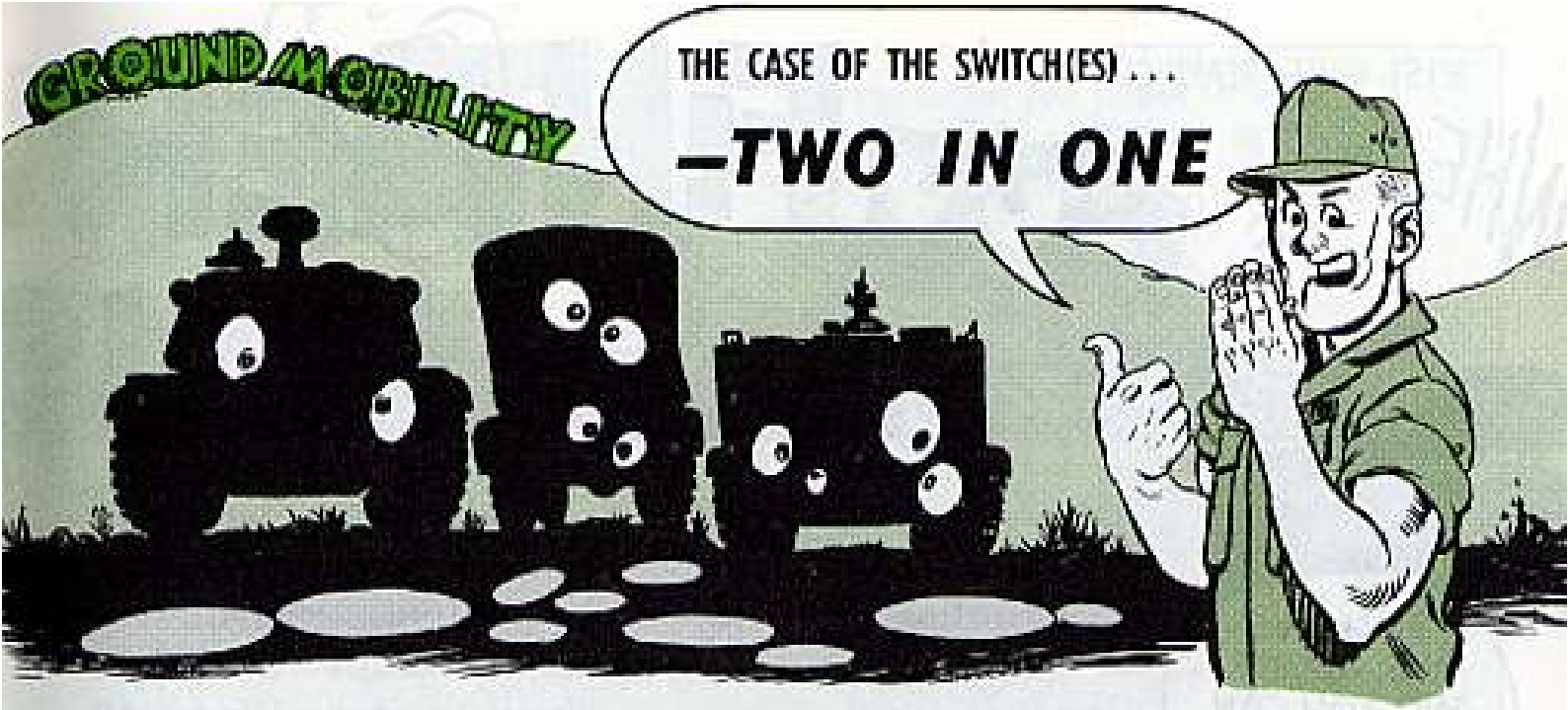

MAN, I GOT A RUNAWAY M60, SMITTY!
LEEME AT IT!


HMM


...EITHER THE SEAR'S BADLY BUSTED OR THE SEAR NOTCH ON THE OPERATING ROD IS BADLY WORN DOWN!
WOTCHA GONNA DO??


LEAVE IT... GRAB Y'SELF ANOTHER WEAPON!
LET'S FIX IT... WE GOT SOME TIME BEFORE THEY COME BACK.
NOPE... FIRST OF ALL WE DON'T HAVE THE TOOLS... SECOND, WE DON'T HAVE THE TRAINING FOR THIS FIX... LET THE ARMORER ... OR SUPPORT FIX IT...
THAT NIGHT
I DON'T KNOW WHY... BUT, EVER SINCE SMITTY HIT THIS OUTFIT... WE'VE BEEN HAVING A REGULAR EPIDEMIC OF TM READING AT SACK TIME.
I CAN GUESS!

THE CASE OF THE SWITCH(ES) . . . —TWO IN ONE



Don't sweat the likes of an ol' switcheroo when you request a vehicle light switch. You just install what you get and make sure you know how it works.

There're two versions of the light switch used in tactical and combat vehicles, and you may get either one under FSN 5930-307-8856.

Yes, they look the same, and both must be unlocked to go to STOP LIGHT.

But, you'll find this difference.

On one switch you've got to unlock before you go from STOP LIGHT to SERVICE DRIVE. You do this by lifting up the UNLOCK SWITCH.

On the other switch, you move from STOP LIGHT to SERVICE DRIVE by merely turning the MAIN SWITCH.

M151 WHEEL BEARINGS—

FINGER TIGHT IS RIGHT

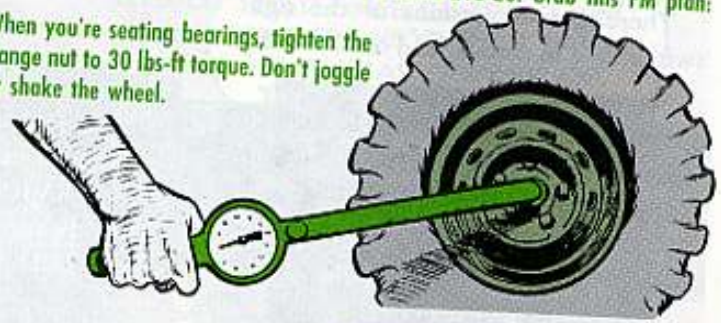
Your soft-purrin' M151 1/4-ton truck can suddenly turn into a howling monster if PM on wheel bearings and ball joints is neglected.

Matter of fact, you can develop a severe case of the jumpin' jitters yourself from the front-end noises. And the pity is.... no need for it all.

WHEEL BEARING ADJUSTMENT

At this point, you better haul out your TM 9-2320-218-20. Grab this PM plan:

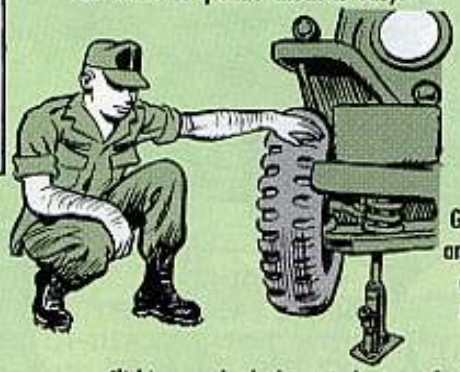
1. When you're seating bearings, tighten the flange nut to 30 lbs-ft torque. Don't joggle or shake the wheel.



2. Turn the wheel a few times to make sure the bearings are snug.

3. Then, you back off the flange nut until it's loose. Now, tighten with your fingers.

First, you can bet your jangled nerves the wheel bearings were adjusted too tight or too loose. A quickie check is easy.



Jack up the vehicle.

Grip your tire and "feel" for a sideway movement.

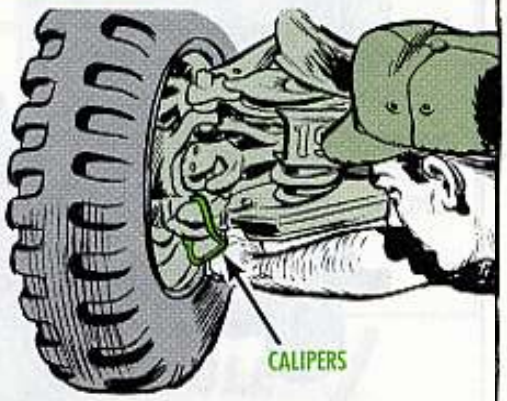
Clicking and clacking indicate a fault.

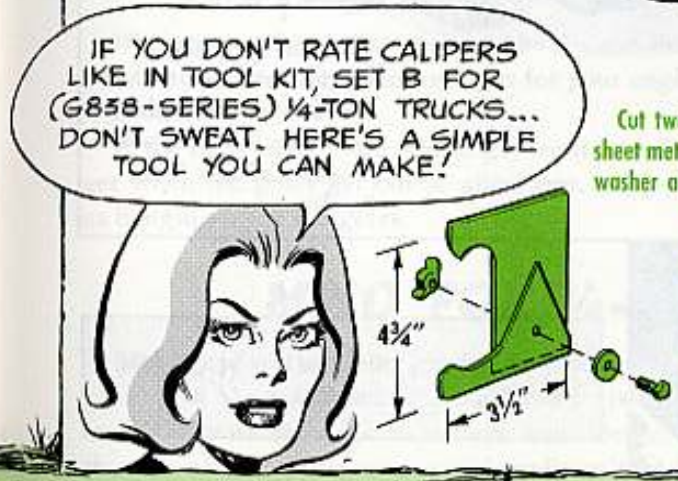
Wheel bearings out of adjustment or ball joints on the loose can let out some mighty bewailing cries. When they do, it's time you halt operations.

NOW, TO YOUR BALL JOINT

If you still get the trumped-up treatment, it's gotta be a loose ball joint.

Your -20 TM, para 141, tells you that if there's more than the allowable 1/8-in play in the lower ball joint, replace it. You'll have to measure with calipers twice to get the true picture. First with weight on the wheel and then with weight off the wheel. The difference should never be more than the allowable play.





Cut two caliper-like parts from a piece of sheet metal. Fasten 'em with ¼-in bolt, spring washer and wing nut. Snug down wing nut so you have moving "jaws." Points should be far enough from the "handle" to clear the ball joint assembly.

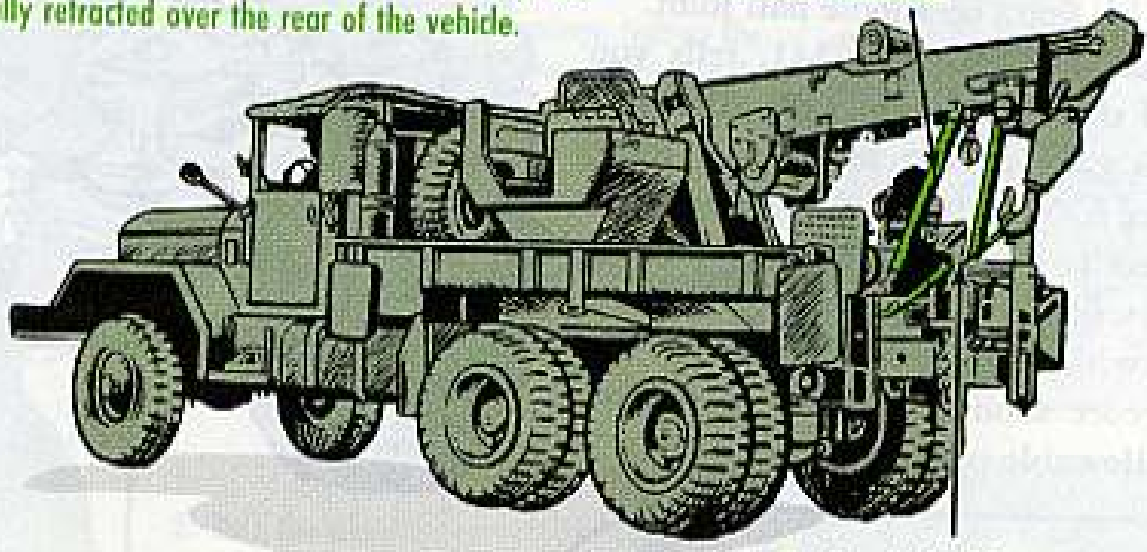
QUIT WRECKING YOUR WRECKER . . .

SNAP OUT OF IT

You're a loser if you and your 5-ton wrecker hit the road with a swingin' boom.

1. Center the shipper and boom horizontally and fully retracted over the rear of the vehicle.

2. Secure boom supports to floor brackets.



3. Attach the lifting sling to the cable hook and to the front outrigger frame tube eyes. Raise the cable hook to remove all slack from the sling.

4. Move the hydraulic pump control level to DISENGAGE, the clutch control level to ENGAGE, and the power divider lever to DISENGAGE.

1 Secured boom. 2 Stabilized drive train. 3 Controlled vehicle.

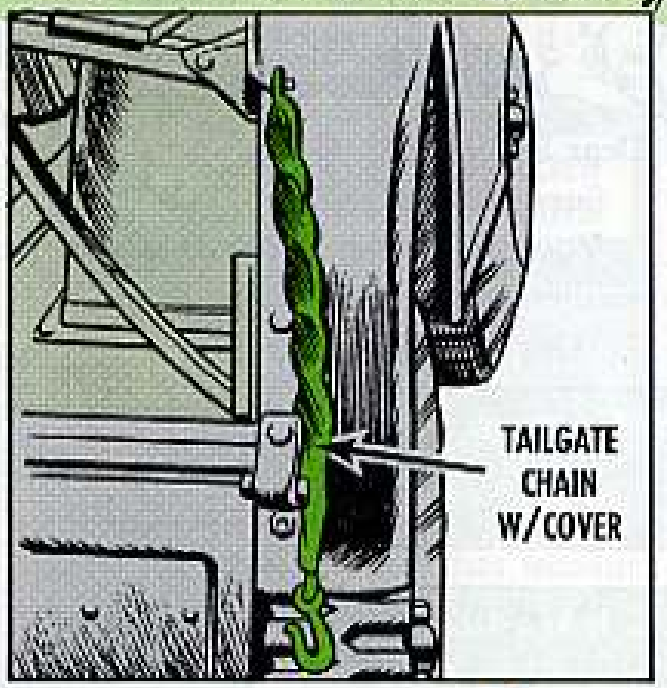
OK, you're in if chains and cans are clanging all around your vehicle when you're "just married", or if it's New Year's.

But, man, you're out when you don't have tailgate chain covers on your cargo trucks. Unnecessary noise can make you a real goner.

So, get into the right swing of things.

How?

You get Duck, cotton, FSN 8305-170-4956, and have your support make chain covers that'll muffle that rattle.



STOP STARTER TROUBLE

It's forgotten more than it should be . . . and that's too bad because checking the mounting bolts for your engine's starter is good PM.

If the bolts come loose, you'll get trouble—the kind you get when the gears get out of alinement. That is, jamming or hanging up of the gears.

MWO FOR ¼-TONNERS

Make sure your support gives you a break—a dependable parking brake, that is. They'll apply MWO 9-2320-218-30/6 (Jun 68) to your M151A1, M151A1C or M718 with the over-center-type hand brake lever. Then, when you tip up the driver's seat, you won't accidentally release the brake.

M149 WATER-TANK

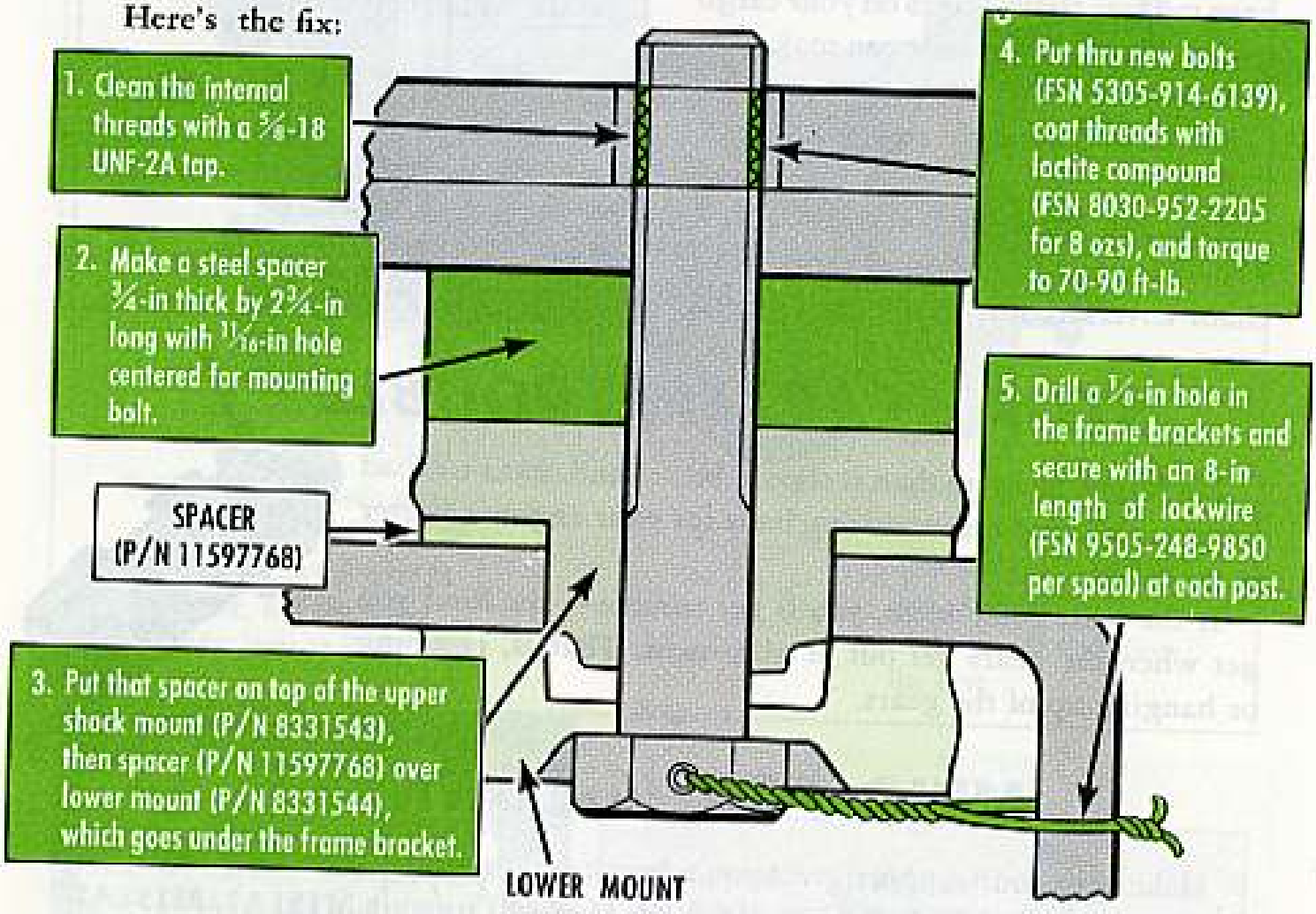
SECRET IS: LOCK-TIGHT GLUE

Dear Sergeant G. C. H.,

Sure do.

You use all the standard mount parts except the 4 mounting bolts and lock washers. Toss them out.

Here's the fix:



If you ever have to take the fix off, use fresh loctite on bolt threads. But even a Chu Lai trail in dry weather shouldn't budge 'em otherwise.

Half-Mast

Dear Half-Mast,

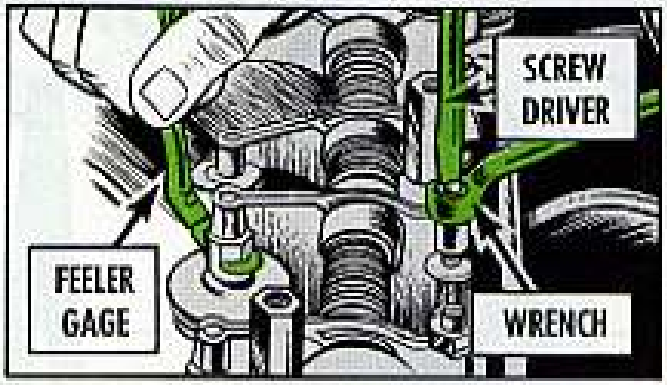
Can you tell me why Ch 1 (Aug 67) to SC 4910-95-CL-A72 took the Adjusting Tool, Valve Tappet, and the Caliper, Slide Diameter Cross Section, out of the Automotive Maintenance No. 2 Common Tool Set?

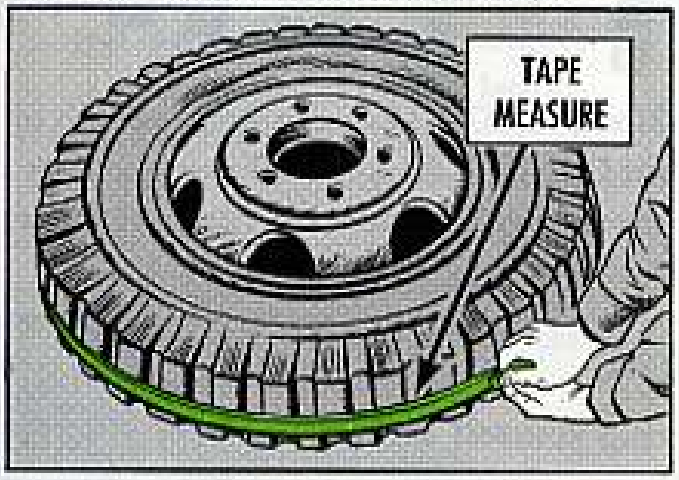
According to the TM's, we need those tools for adjusting valve clearance on certain engines and for matching tires.

SSG C. E. M.

Dear Sergeant C. E. M.,

When you've got a screwdriver and the right-size box end wrench already among your tools, you don't need that special tool for adjusting valve clearance. The screwdriver-wrench method is just as easy and saves you from having to keep track of a special tool.





And on that tire diameter measuring caliper, it's been decided that measuring the tire circumference is good enough for matching tires by size. You've got Tape, Measuring, FSN 5210-221-1875, in your No. 2 Common Tool Set. Para 27 (Matching Tires) in TM 9-1870-1 (Feb 55) tells you how.

Half-Mast

HOT POTATO RUMOR

Dear Half-Mast,

I got word of a change: No more national markings on tactical vehicles in an overseas area. Is this correct?

WO P. J. M.

Dear Mr. P. J. M.,

No . . . drop that idea like a hot potato, Sir. AR 746-5 clearly says the national symbol will be marked on all tactical and combat vehicles. Only for security, a commander of a major Army command may remove markings.

Half-Mast

SUPER SNOOPER MOHAWK

Your Mohawk (OV-1) does a first-rate job of seeking out Charlie. Like any sophisticated lady, tho, she needs regular attention from crewmen and mechanics to stay in the pink.

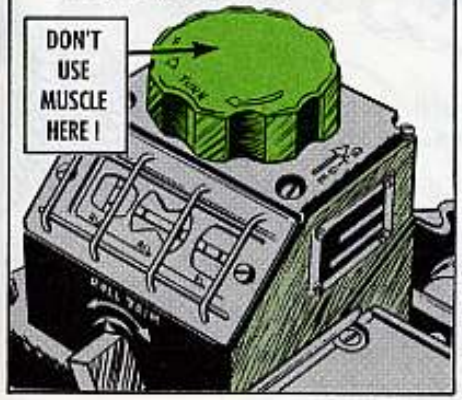
CREW TIPS

When you strap yourself in or unbuckle, never fling the safety belt into the C-3107/12(V) automatic pilot flight controller or you might break the window and sideline the bird. Those lighted window panels don't come cheap, either.

Replacement windows have a metal guard—no sweat.

To prevent actuator burn-out and shear pin breakage, disengage the autopilot before rolling the bird out of the nest.

How come? Well, if you taxi over a bump with those gyros spinning the shock can, be enough to knock out the autopilot, for real!!



It's not a good idea to fight the auto-pilot, either.

You can get the same type of damage in flight—shot actuators or shear pins—if you override the auto-pilot without first hitting the release switch on the stick.

PS MORE

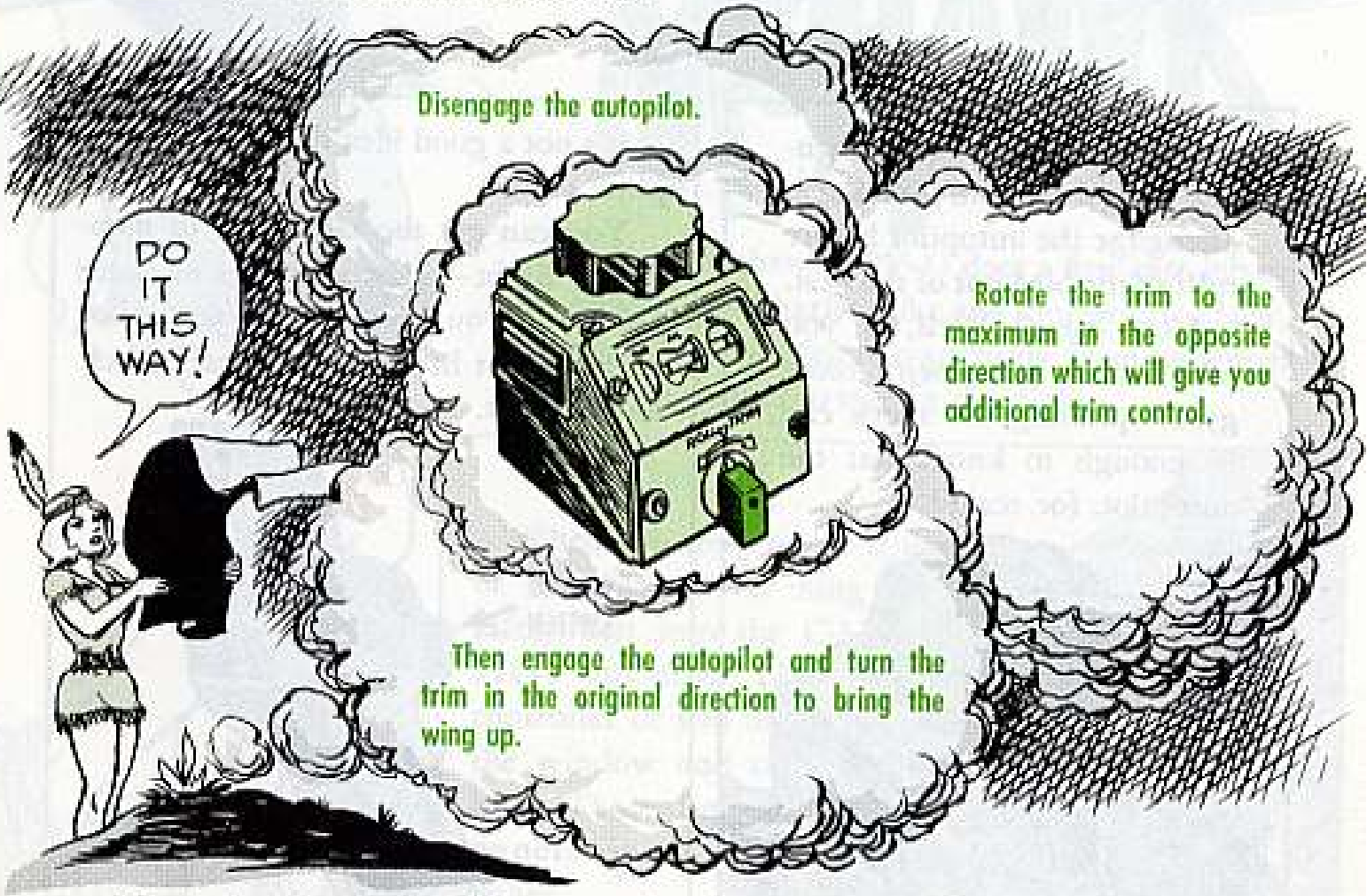
Sure, you turn the roll control knob in either direction to get a 45-degree bank. But if you don't get exactly the same bank in each direction never use muscle to force the knob past the mechanical stop.

Using force grinds one gear against another and before you know it the gears strip, the knob turns 360-degrees and you lose the detent to center the knob. Your autopilot is out-of-whack.

Fact is, it's just about impossible to equalize your turns. This is no real problem.

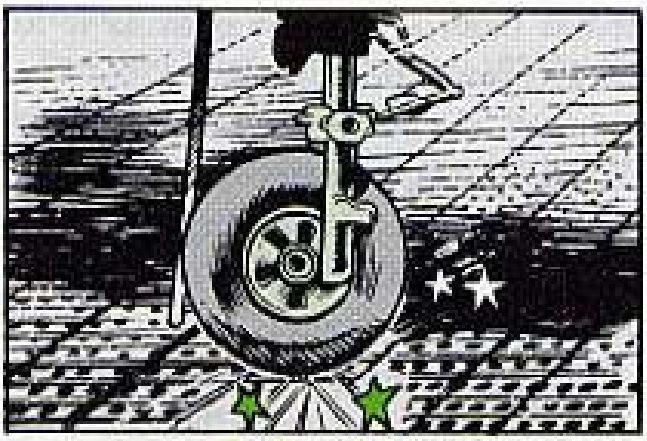
Now, suppose you engage the autopilot while you're in a turn. Then you level off and wind up with a wing low, despite the fact that you've got the roll trim control turned all the way to the maximum. Using muscle here won't help either . . . more busted equipment!!

Instead, leave the trim where it is.



The behavior of the flight controller in these instances is normal—no log book write-up needed . . . saves beaucoup trouble-shooting time and elbow grease by your friendly avionics repairmen.

Ever set your bird down on an unimproved strip? Sure you have! It's at times like this, without your tools and maintenance facilities, that a fly-away kit comes in mighty handy.



For one, those pierced steel plank corrugated landing mats play hob on tires. You're rolling along and—pow!

One tire change coming up.

You can pull off the runway and change that tire in a matter of minutes with a kit containing items like this: a spare main gear tire, nose gear tire, 10-ton jack, small bag of cotter keys, screwdriver, pliers, miscellaneous wrenches and hardware.

Don't overlook including a couple of cans of MIL-L-7808 and MIL-H-5606, either.

The baggage compartment in the Able Model makes a good storage place for the kit.

One point, tho. Remember that Chap 13 of TM 55-1510-204-10 says that this compartment is designed for a maximum weight of 40 pounds.

TIPS FOR MECHANICS

It's first-things-first when your bird comes in to roost after a mission. Use the bird covers. Nearby Chinooks and other choppers can stir up quite a dust storm so protect the engine from FOD by putting in the engine duct plugs. When you pull your after-mission check make sure you eye the bird for battle damage. When you locate a bullet hole never take it for granted that it went clear thru without damaging any vital parts. Remember that the bullet will be de-

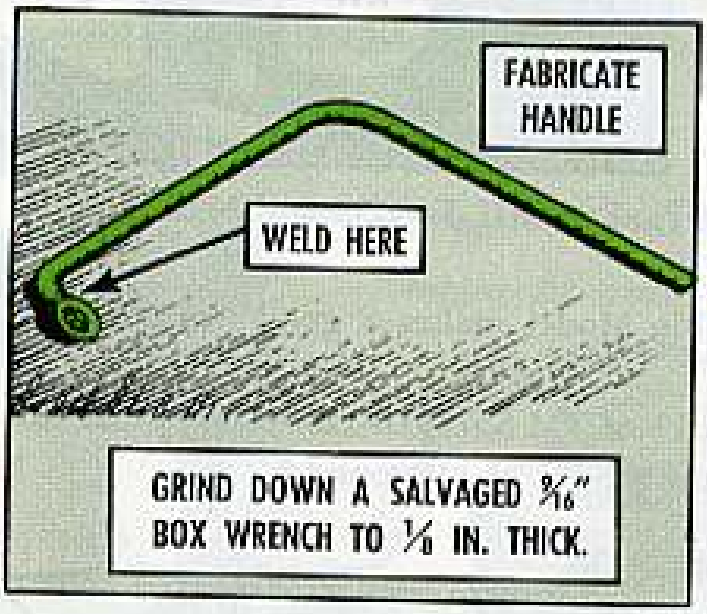
MORE

flected from a straight path as it hits the airframe and equipment . . .

Search the bullet path so you can get all the damaged parts repaired or replaced. It would be mighty embarrassing if a creased fuel, oil or hydraulic line let loose in flight!!

After you finish a repair job be sure you police up the area. Tools left behind will tear up an engine, for real.

Speaking of tools—you know those engine starter-generator and deicer generator self-locking nuts that are hard to get at with an ordinary wrench? You can't loosen the two hidden nuts on a generator change without using special wrench, P/N 134GT1065.



If there aren't enough wrenches to go around, make one up. Just latch on to a salvaged 9/16-inch box wrench and grind it down to a thickness of 1/8-inch. Weld on a handle shaped like the issued tool and you're in business.

Before your baby is released for flight give 'er the once-over for cleanliness. If you're stationed close to salt water remember that corrosion sets in mighty fast around rivets and seams, especially on ailerons and other control surfaces.

Never let oil and dirt collect because this is the breeding ground for corrosion. Try to wash your bird at least once a week.

When corrosion develops follow the poop in Sect II Chap 2 of TM 55-405-3 (12 Jul 66) for treatment.

Keeping your bird clean will also extend the life of bird parts.

Take the exposed landing gear pistons. Tar and dirt are thrown up by the wheels on some of those boonie strip take-offs.

Upon landing the struts compress and this stuff cuts into the hydraulic fluid seals . . . you get more leaks that way!!

Clean stubborn dirt off these pistons by wiping them with a rag moistened in hydraulic fluid, MIL-H-5606.

Now, stand back and eye your beauty.

Yessir-e-e-e, she's had her PM and is ready to do battle.

EYEBALL NEW TB

Reach for TB 55-1500-307-25 (7 Jul 68) when you birdmen check out the list of parts that require maintenance management and historical poop on TM 38-750 forms. It takes the place of TB AVN 23-65.

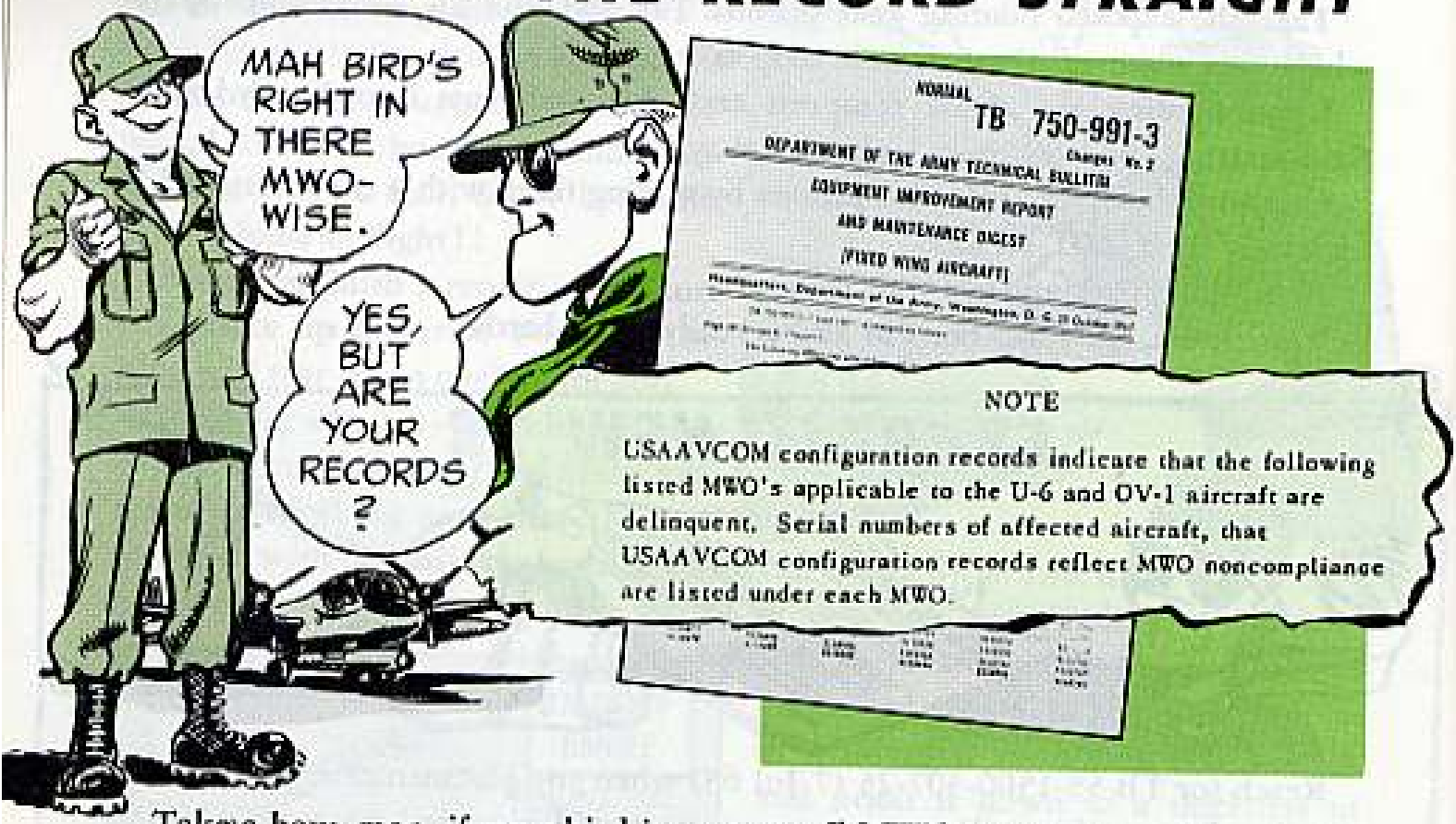
LESS

No need for you Bird Dog (0-1) types to do a doubletake when you spot a filter on the engine mags. It's there to cut down on radio interference from the ignition system. TM 55-1510-202-20 will have the maintenance poop on this optional set-up.

NO GUESSING, PLEASE!

There's no need for you birdmen to use guesswork when tightening hardware. Standard torque values are given in Table 5 of TM 55-405-2 (11 Jul 66) on aircraft hardware. Special torque values are given right in the text of each bird's maintenance pub.

LET'S KEEP THE RECORD STRAIGHT



Take a bow, man, if your bird is up-to-snuff MWO-wise.

To make sure your log book, DA Form 2408-5, agrees with the poop at the Aviation Systems Command, tho, better eye the EIR and Maintenance Digest regularly for any MWO that wasn't applied . . . or was it??

Like maybe you got it done OK, but the completion info was lost in the shuffle and never got back to the headshed.

So, if the serial number of your bird appears in the EIR Digest as being delinquent and the mod was done more than 4 months prior to the date of the Digest, here's what you should do:

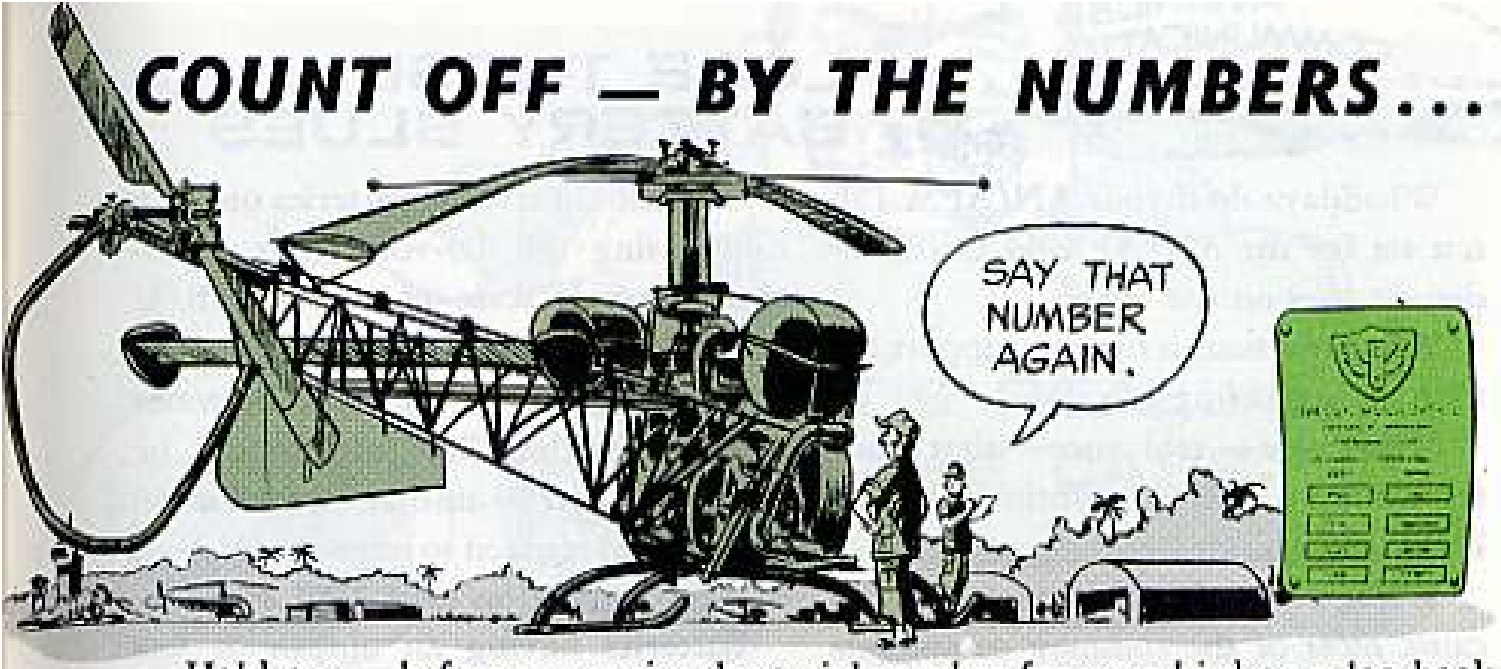
Dig up your file copy of the DA Form 2407 that shows the mod was done.

Duplicate this info on a new DA Form 2407, copy number 2, and send it to your Command's Data Processing Center.

If you can't locate the original maintenance request, take this route:

Fill out another DA Form 2407, using the mod completion info from the DA Form 2408-5. Use failure code 797 . . . No defect—MWO previously complied with. Send copy number 2 to Your Command's Data Processing Center (or to Lexington if there's no DPC).

COUNT OFF — BY THE NUMBERS...



Hold one — before you write the serial number for your bird on a log book form. Make sure you've got it right.

What happens when the bird tail number, which is only part of the serial number, gets on a TAERS form? Plenty!

The wrong number gets transferred from a log book form for machine processing. Then when the poop arrives at a data center the computer accepts the bogus number. With that number, the machine "creates" a non-existent aircraft.

To prevent the loss of good poop, make sure you use the serial number that appears on the bird data plate.

So, right now, while you've got a few minutes, check over all the forms in your bird's log book. Be sure serial numbers — not tail numbers — are in the serial number blocks. Prevent trouble when you fill out aircraft reporting forms in the future.

CARRY TIME FORWARD

Dear Windy,

Just to keep the records straight, is test flight time counted as part of a just-completed periodic inspection?

My buddy says it is, but I say the flight time is applied toward the next 100-hr PE. Who's right?

SP6 D. S.

Dear Specialist D. S.,

TB 55-1500-301-25 (23 Oct 67) para 4c(1) on maintenance inspections says that periodics are normally due every 100 flying hours after completion of the last PE.

TB AVN 23-16 (28 Feb 66) on test flights lists the conditions under which a test flight is required. Para 4a(1)(j) calls for a test flight after a periodic inspection has been completed.

Windy

2. LOSE THOSE BATTERY BLUES

Whaddaya do if your AN/APM-156 test set for the AN/APX-44 transponder set goes on the fritz?

Why, you turn it over to support for fixin'—but before you do . . .

Make sure—real sure—that your test set hasn't been downtimed by the battery blues.

Y'see, weak or dead battery cells can cause most of the common complaints such as erratic flags, inability to hold a charge, no IP and EMERG flags, and so on.

Trouble is, some of your battery kinks may not show up on the battery voltage meter.

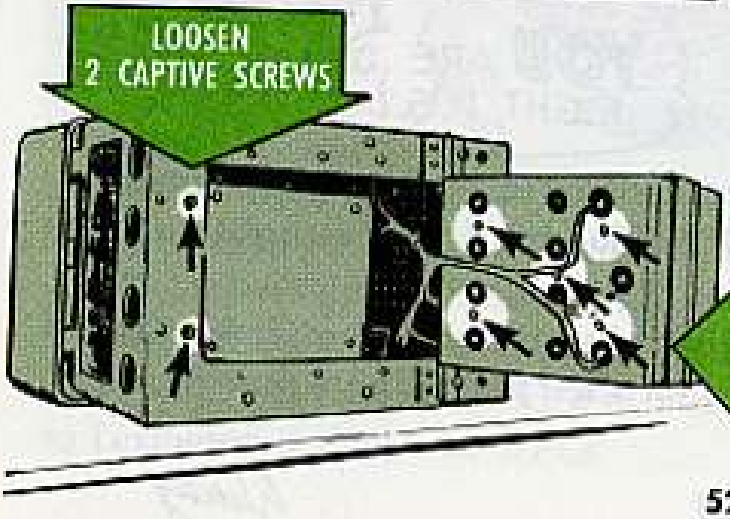
So-o-o-o- whaddaya do then . . . ?

You test . . . yeah, that's right . . . you test the batteries before the AN/APM-156 heads out for higher-level repairs.

Here's how:

Take off the 4 screws from the sides of the test set and remove the set from its cabinet.

Turn the test set on its side, then loosen the 2 captive screws just above the battery compartment. This lets you swing out the battery compartment for servicing.



You should test the batteries one at a time, using the 2.5-volt range 1000-ohms-per-volt scale of a TS-352B/U multimeter. A good battery will read above 1.1 volts at no load. Batteries having less than 1.1 volts should be recharged at 200 milliamperes for 16 hours, then retested to have a minimum of 1.25 volts at no load.

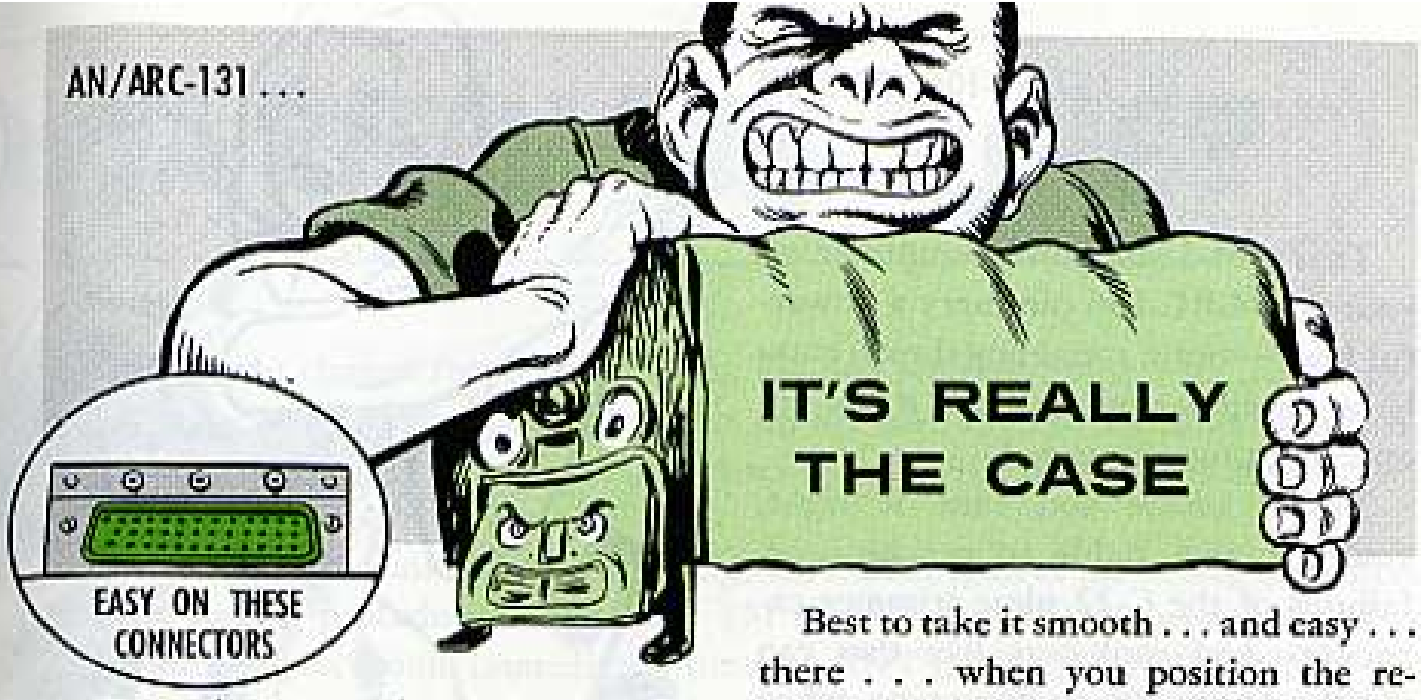
Batteries having an output of less than 1.25 volts after recharge should be discarded and replaced with fresh batteries.

In putting back your batteries, double-check their polarity as marked on the battery holder. If polarity is reversed, the batteries can be shorted out and knock out your tester.

To get new batteries, use FSN 6140-986-0341 as listed on Page 3 of TM 11-6625-509-20P (May 63).

By making this battery check, you can probably eliminate most of your transponder tester's downtime . . . and also prevent possible damage to your testing set while in transit for fixin'.

Remove the 5 phillips-head screws on the top of the battery compartment, lift off the top and remove the batteries.



IT'S REALLY THE CASE

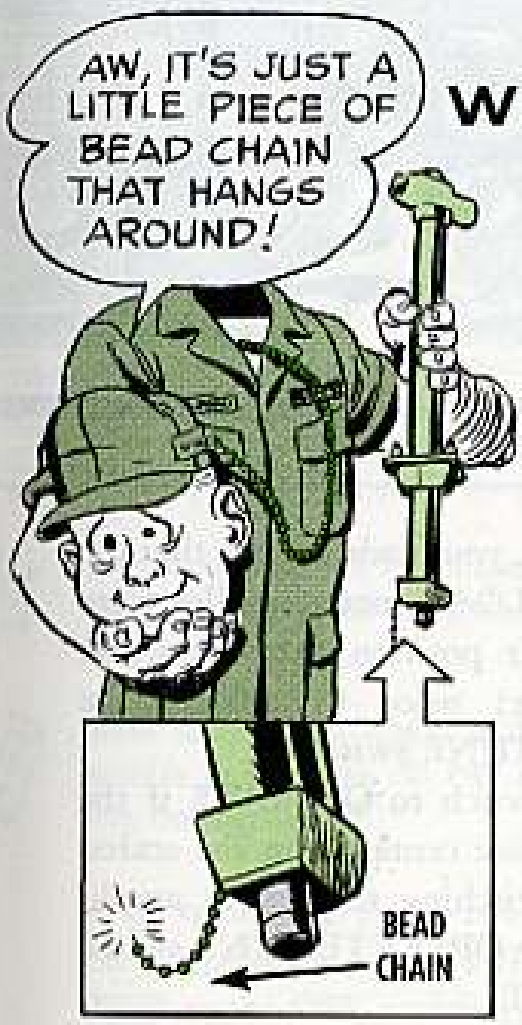
Better be on your best behavior when you put back your AN/ARC-131 radio set's RT-823 receiver-transmitter into its case.

Never use force as you replace the RT, especially since almost any kind of heavyhanding could plague you with bent alinement pins.

Best to take it smooth . . . and easy . . . there . . . when you position the receiver-transmitter in its case.

If you don't, you could harvest a crop of damaged connector pins, too—and louse up the incoming power to your set.

Since it's re-installing the RT that racks up troubles, be sure you take it from the case only when you have to.



WHY SNAP YOUR CAP?

Doesn't look like much to get excited about—but, listen, man . . .

Some people put in one heckuva lot of time and effort to get those chains fastened onto dust caps, connector shorting caps, mounting bolts, and quite a few other things on your electronic equipment.

They meant the chains for a pretty important purpose . . . to keep that cap or bolt or cover right with its equipment. 'Cause, y'see, when the cap's on, dust can't get in and ruin your equipment. That little cover's protective.

So-o-o-o, if your bead-chain catches on something and snaps . . . get it replaced. If your cap snaps from its chain . . . get it replaced.

And in taking off the cover, please stress that tender touch.

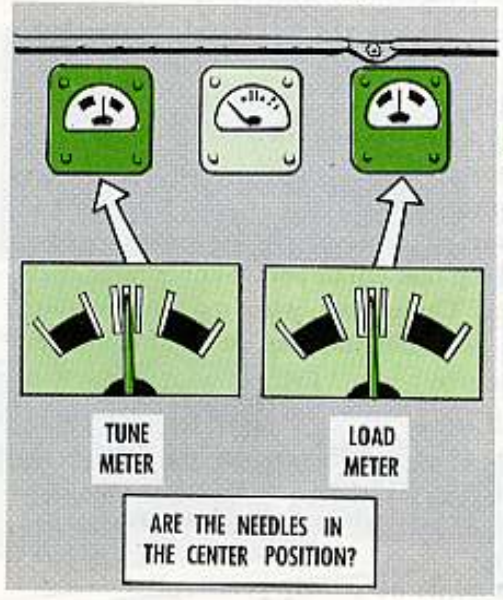
Why, you might never snap your cap!

That AM-3349 power amplifier on your AN/GRC-106 can carry a powerful load — but it could bog down, maybe at an embarrassing time, if it's not operated properly tuned.

Yessir, unless you tune it right, you're mighty liable to get hit with failures of the C-22 plate trimmer capacitor. And conk-outs like that can put the Angry-106 on downtime, when it really oughtn't to be.

But make no mistake . . . failure of the AM-3349 power amplifier is not restricted to just the Angry-106. If the AM-3349 is not treated right and tuned right, it can flunk out in such configurations as the AN/VSC-2, AN/GRC-142, and the AN/GRC-122.

So-o-o-o, it's a good idea to be especially careful when you synchronize the LOAD and TUNE dials.



Naturally, you made certain that the TUNE and LOAD meter needles were in the center position (green portion of the scale) prior to turning the OPERATE-TUNE switch.

Do not switch to OPERATE if the needles are not centered on the scales.

Before switching the power amplifier, turn the OPERATE-TUNE switch to OPERATE.

DO YA RECALL THIS TUNE?

When you change frequencies on the RT-662 receiver-transmitter, you've got to return the LOAD and TUNE meters on the AM-3349 to the center position.

If you relocate your radio set, re-check the LOAD and TUNE meters. Recenter the needles if necessary.

This'll ease your mind — and also lengthen the life span of the tuning capacitor.

The tuning procedure in para 24, TM 11-5820-520-12, has been changed to indicate that you should immediately tune the ANT LOAD and ANT TUNE controls after setting the HV RESET switch at TUNE and **before** taking readings with the TEST METER.

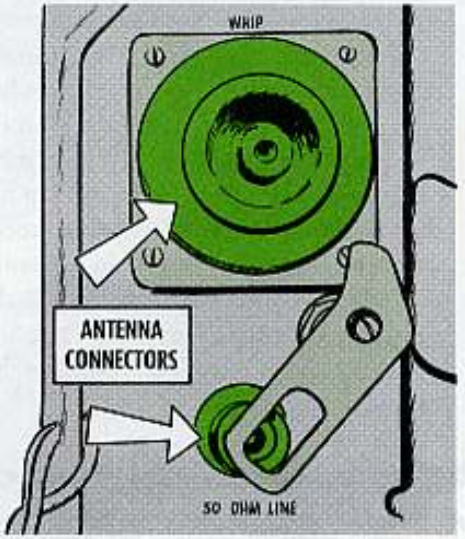
While you're eyeballing both associated meters, you should practice tuning the ANT TUNE and ANT LOAD at the same time — left hand on the ANT TUNE knob and right hand on the ANT LOAD knob.

This will increase your proficiency and shorten the tuning time.

CAUTION: Failure to unkey the radio set if the indication remains abnormal for more than 2 minutes may result in damage to the AM-3349/GRC-106.

To make sure you're tuning right, you can:

- Keep your antenna lead clean.
- Keep connectors free of dirt to insure a good electrical connection.
- Check RF cable for kinks or breaks.
- When you're using the 50-ohm GRA-50 doublet antenna, see that it's cut to the proper frequency.
- If the doublet doesn't tune properly — even when cut to the right length — try increasing the length by 1 or 2 feet.
- While we're on the subject of the AM-3349, it's possible to break the PRI PWR switch when you turn the amplifier off.

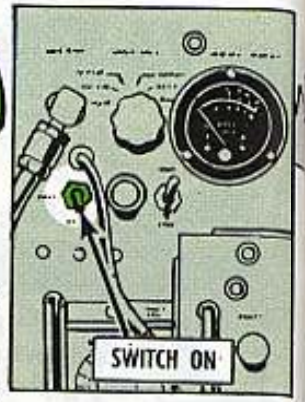


In operating your -106 (or other configurations), the rule is: Once you turn on the primary power switch, keep it on. Turning the RT-662 SERVICE SELECTOR to the OFF position removes power from the entire AN/GRC-106.

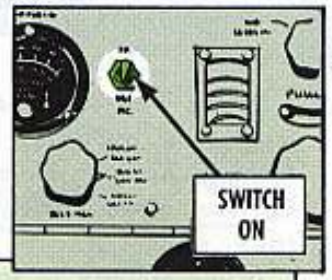
FREAK FREQS THERE SOMEWHERE

Chasin' rainbows is for the fairytale set as sending and receiving freqs is for radio-types.

But, those free, flying freqs can have you thinking your equipment is going to pot and needs a helping hand from the maintenance man. Take, f'rinstance, your AN/TRC-24 or AN/GRC-50 radio terminal set...



The R-417(*)/TRC receiver's AFC select switch has to stay in the on position until it has a good grip on the frequency beam. Then, flick it to the off position.



Same's so for the AFC switch on the T-302(*)/TRC transmitter . . . on the wandering frequency . . . So, when you latch onto the frequency you want, hold it by leaving the switch in the on position.

ACTION . . . ROLL 'EM!

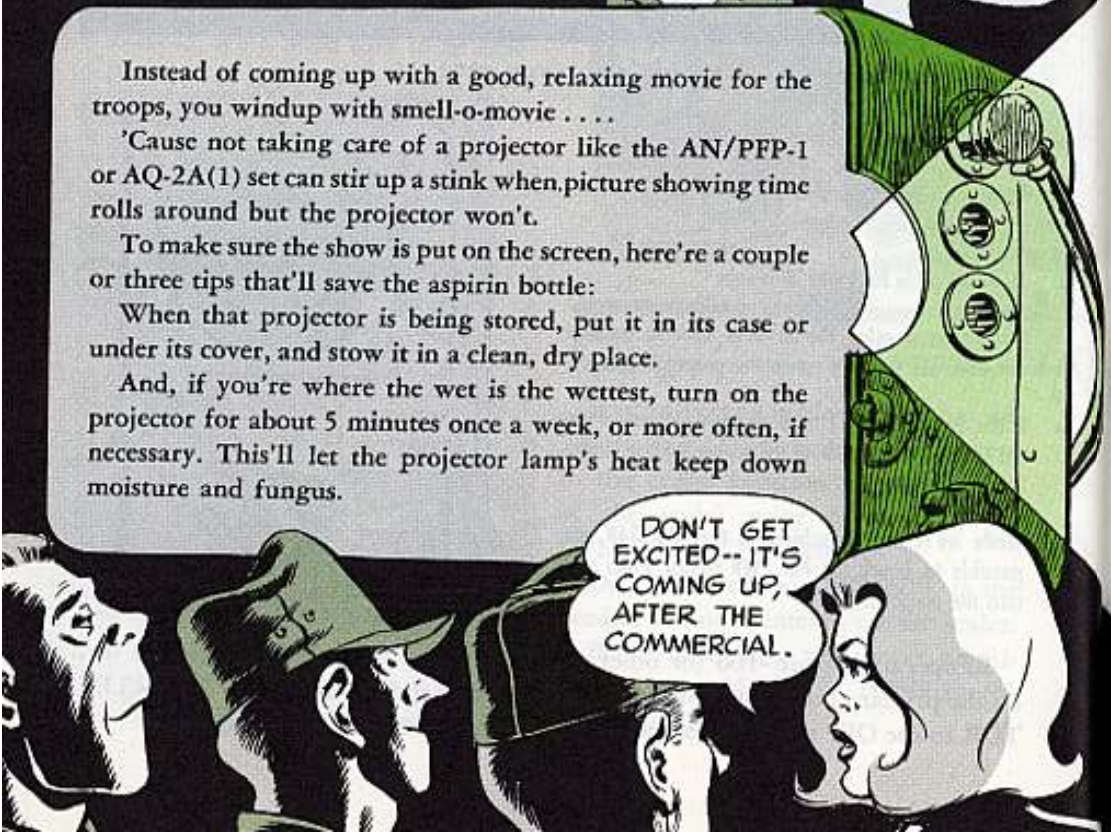
Instead of coming up with a good, relaxing movie for the troops, you windup with smell-o-movie . . . .

'Cause not taking care of a projector like the AN/PFP-1 or AQ-2A(1) set can stir up a stink when picture showing time rolls around but the projector won't.

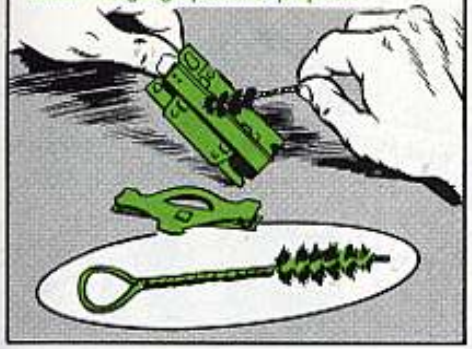
To make sure the show is put on the screen, here're a couple or three tips that'll save the aspirin bottle:

When that projector is being stored, put it in its case or under its cover, and stow it in a clean, dry place.

And, if you're where the wet is the wettest, turn on the projector for about 5 minutes once a week, or more often, if necessary. This'll let the projector lamp's heat keep down moisture and fungus.



After each showing remove the aperture plate and pressure plate and clean with the aperture brush, like it says in TM 11-6730-208-10 (Oct 60), to whisk away film particles which will gang up on the projector.

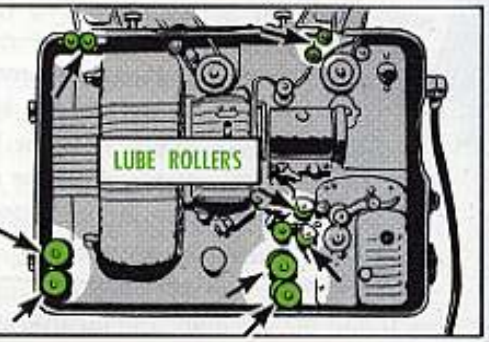


Another good before-storing practice is clean the lens and reflector with lens tissue (FSN 6640-393-2090). If the cleaning job calls for extra elbow grease, use a dab of liquid lens cleaner (FSN 7930-392-9751). Put it on the lens tissue and not on the lens or reflector.

O' course, you never want to use water to do the job of the lens cleaner.

When it comes to givin' spools, spindles and rollers a squirt of oil . . . don't.

Your best bet's to follow the guide in your TM for lubing. Then, only after 100 hours of operation or every 30 days. Be sure to wipe away any extra that'll catch dust.



GENERAL & SUPPORT

MHE EMERGENCY STOP

STOP! You do just that if you've tripped the emergency stop on your 6,000-lb Anthony Model MLT 6 or Chrysler Model MLT 6CH forklift truck.

Before you try to start 'er again, you'd better climb down and go back to the engine and reset the emergency stop reset lever. It should be at 6 o'clock or pointing down when the stop's reset.

If you keep trying to start with that emergency stop tripped, you could damage the starter. Or, enough air could be drawn through the air cut-off valve in the blower air horn so that it'll fire a cylinder causing the bendix starter drive gear to throw out.

And, unless you take your thumb off of the starter button and let everything come to rest, the bendix will try to re-engage. Result—damaged bendix, flywheel ring-gear or both. So, to head off busting up your equipment, check that lever before you touch the starter button.

TWINKLE, TWINKLE

Little stars and big stars. You can get in-between stars too for your equipment.

FSN	SIZE (inches)	Unit of Issue
7690-781-2496	6	Ea.
7690-781-2497	10	Ea.
7690-781-2498	12	Ea.
7690-781-2499	16	PG (1)
7690-781-2500	20	PG (1)
7690-781-2501	25	Ea.
7690-781-2502	32	Ea.
7690-781-2503	36	PG (1)

You'll find these FSN's listed in Fed Cat C-ML-A (Aug 68). TB 746-93-1, (Oct 64) para 11, f, gives you the authority to use 'em.

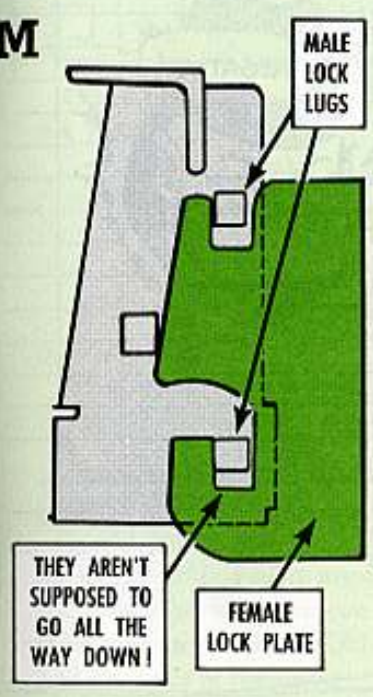
MATCH 'EM

You've made your bed but you'd better give it another look before you lie in it. The bed spring and the 2 bed ends of the double-deck steel bunk beds, FSN 7105-801-1692, must be made by the same manufacturer or they won't fit together good and safe.

There's a manufacturer's name, trade name, or trademark on the spring and the bed ends. Make sure they match up when you assemble the bed.

Watch this, tho! The male lock lugs aren't supposed to fit all the way to the bottom of the female lock plate slots, so don't try to force 'em.

You'll find the assembly and identification instructions for your bunk bed in TB 750-971-1 (Feb 68), EIR Digest.



A SPIDER WEB

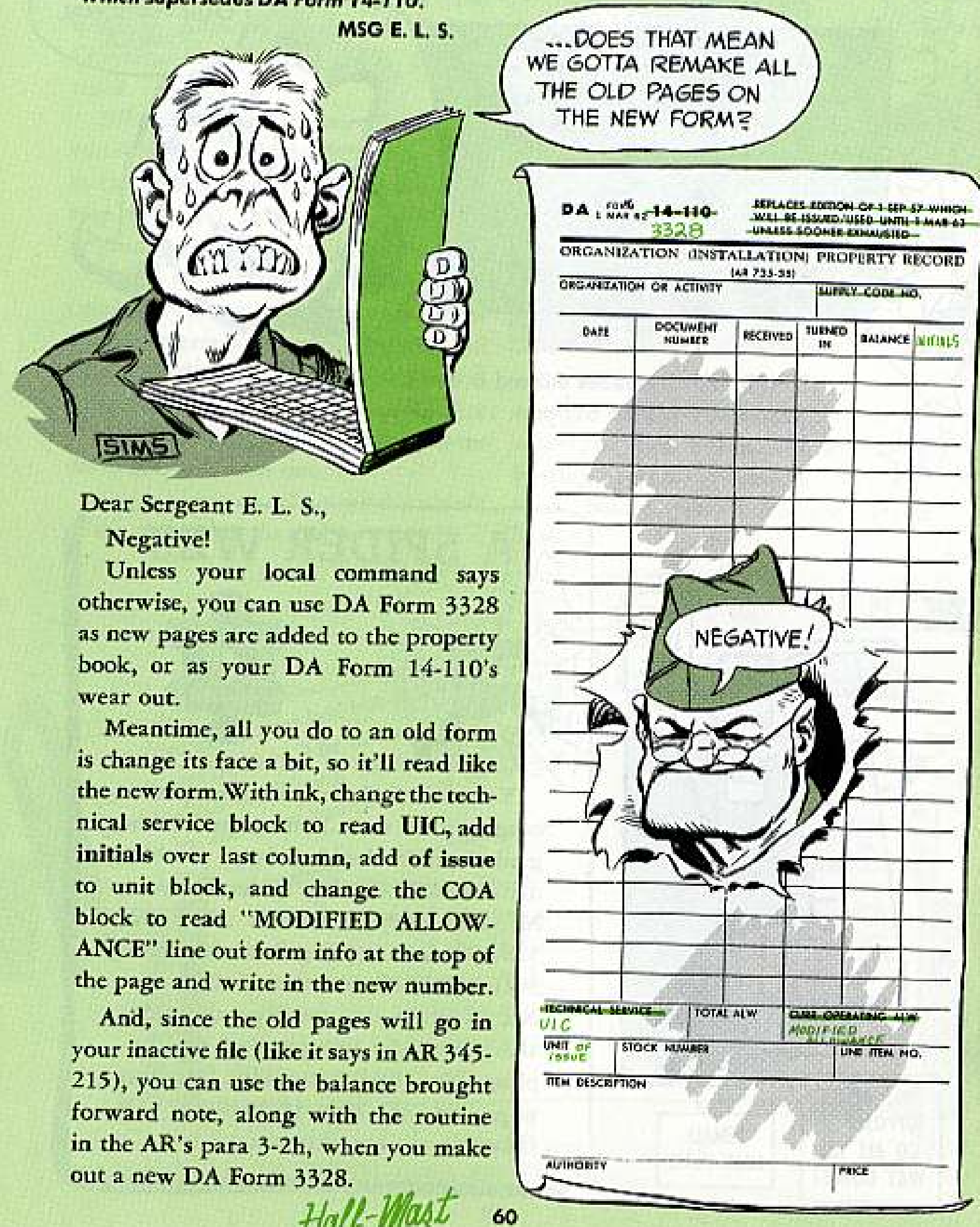
You can't find the spider, but you're caught in the web. You can get untangled if you're looking for a tumbler drive motor coupling spider for your M532 laundry unit, FSN 3510-782-5294. Order Coupling Assembly, FSN 3010-807-6623, Mfr Code 71041, Part No. FC-BB-15, and you'll get the spider along with the two parts of the coupling. You find this spider listed on page six of TM 10-3510-208-25P (Dec 66).

NEW PB PAGE

Dear Half-Mast,

Change 1 (May 68), AR 735-35 gives us a new property book page, DA Form 3328, which supersedes DA Form 14-110.

MSG E. L. S.



Dear Sergeant E. L. S.,

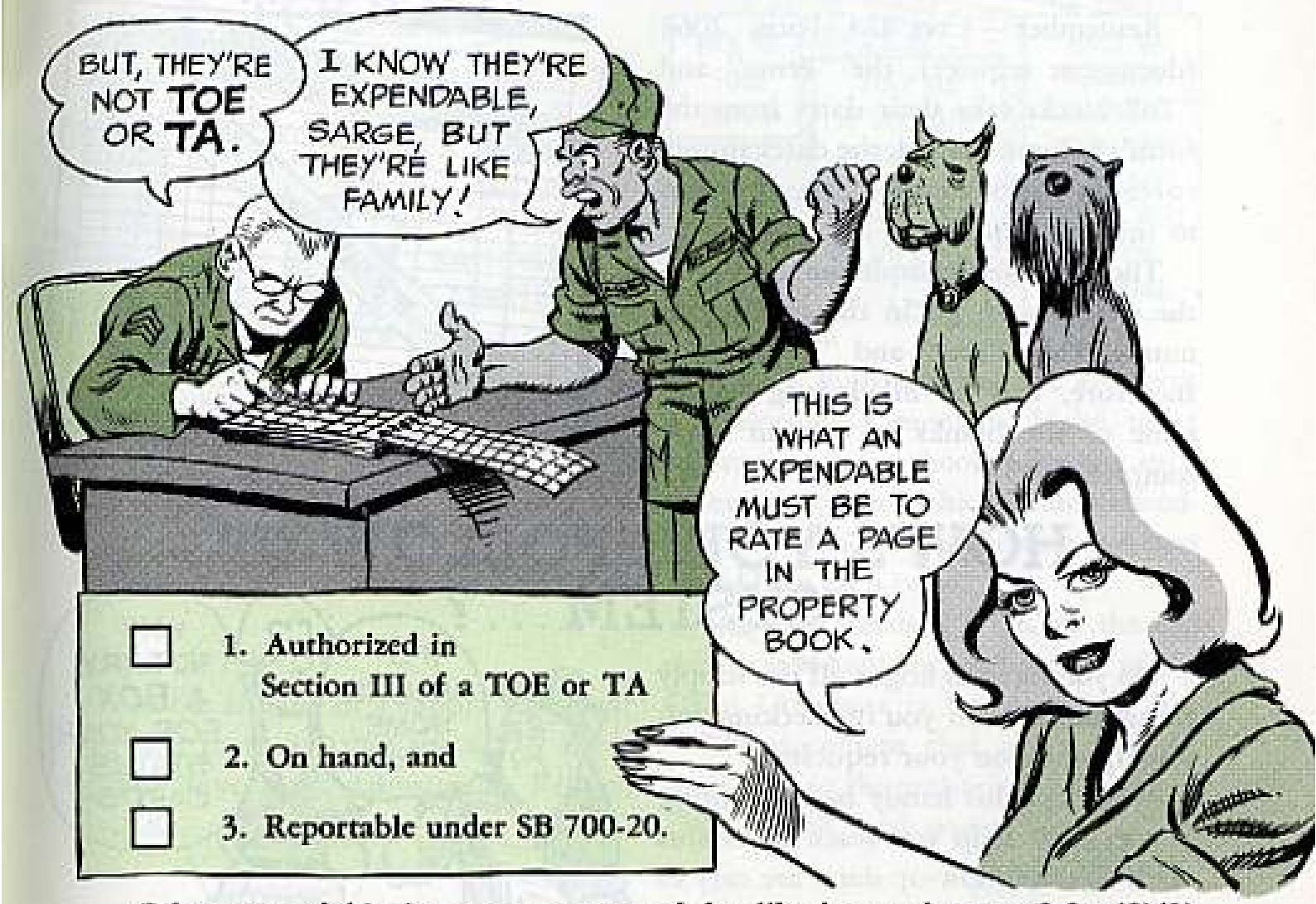
Negative!

Unless your local command says otherwise, you can use DA Form 3328 as new pages are added to the property book, or as your DA Form 14-110's wear out.

Meantime, all you do to an old form is change its face a bit, so it'll read like the new form. With ink, change the technical service block to read **UIC**, add **initials** over last column, add **of issue** to unit block, and change the COA block to read "MODIFIED ALLOWANCE" line out form info at the top of the page and write in the new number.

And, since the old pages will go in your inactive file (like it says in AR 345-215), you can use the balance brought forward note, along with the routine in the AR's para 3-2h, when you make out a new DA Form 3328.

BOOKING EXPENDABLES



Other expendable items are accounted for like it says in para 3-2g (2)(3), AR 735-35.

STAMP GIGGERS

PER INVENTORY

Dear Half-Mast,

What says I can't use a rubber stamp to make the "per inventory" and "per joint inventory" entries in the property book? Some inspectors gig stamp users.

SFC W. J. G.

Dear Sergeant W. J. G.,

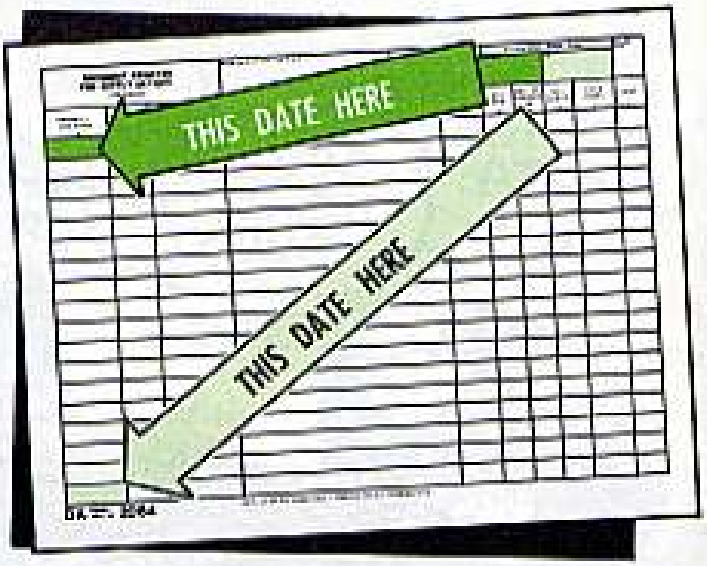
Nothing says you can't. AR 735-35 doesn't tie you down to a specific method. If stamps will save you work and time, all you need is the Old Man's OK and the price of the stamps.

Half-Mast

PAGE DATING

Remember — on DA Form 2064 (document register), the "From" and "To" blocks take their dates from the form's column a. And, the dates simply cover the period that the page was used to initiate requests.

The requests' completion dates, on the other hand, go in the form's column *i*. The "From" and "To" blocks, therefore, can be filled long before some of the blanks in column *i* are completed.



HOW'S YOUR FOLLOW-UP SYSTEM . . . ?

Do you have to finger all the supply status cards when you're checking follow-up dates on your requests?

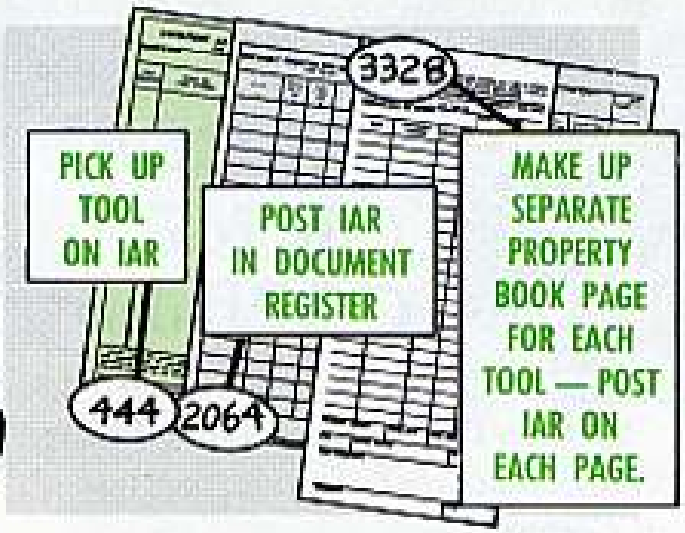
Well, eye this handy box and filing system. It'll help you stack the status cards so the follow-up dates are easy to spot.

You can make the box as long as you need to. But, it should be 10 inches wide and 2-1/4 inches high, and it should have a smooth inside bottom.

A board, to fit the inside length of the box, and 2-1/2 inches wide and 1/2 inch high, goes on each side on the inside bottom of the box.

Filing a request card on the left side makes its upper left end angle up. And, filing the latest status card on the request to the right side, makes its right upper end angle up, so its date column (blocks 62-64) is easy to check. And using a paper clip in the center of each request helps to keep the cards in their proper places.

STRAY SPECIAL TOOLS



Dear Half-Mast,

Some aircraft special tools in our shop have never been picked up in our property book. What paper work is needed to get them in the book?

CPT B. D.

Dear CPT B. D.,

In the absence of a supply document on the tools, you can use a DA Form 444, Inventory Adjustment Report, (IAR).

List the tools on the IAR and give it a document number. Make up a separate property book page for each different type tool which is non-expendable or expendable-reportable and post the IAR to each page.

The IAR needs the OK of the CO the book is kept for, and a copy of the OK'd IAR goes in the document file.

The document that gives you the tools goes in the authorization block of the property book pages.

Half-Mast

SUPPLY HELP

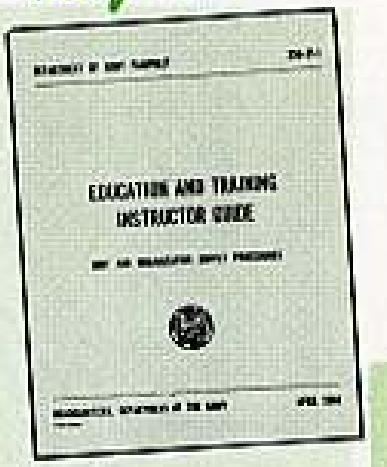
Planning a supply training session soon? Well, don't miss the latest Army Subject Schedule on the subject. It's ASubjSed 10-1 (Jun 68), Unit and Organizational Supply.

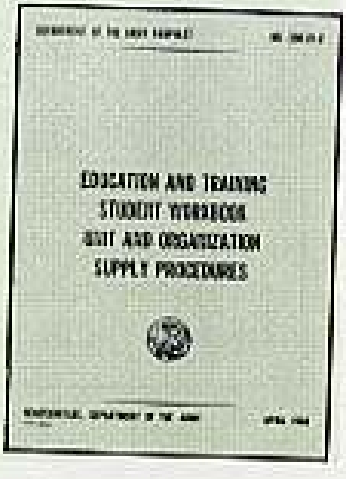
It lists the latest supply forms and identifies the pubs you'll need.

There's also DA Pam 350-21-1, Instructor's Guide, Unit and Organization Supply Procedures, and its companion handbook for the student, DA Pam 350-21-2.

With the Pams you can get a packet of transparencies (slides) titled T38-11-1. They'll help you illustrate supply SOP, channels, forms records and publications. See your audio-visual center for the transparencies.

And, be sure to check the pams and the slides with Ch 1 (May 68) to AR 735-35 to be sure you have the up-dated info on supply forms and SOP.





So your TO&E allows you a Bruning 300MS map reproduction set, but it's all Greek?

There are a couple ways out. In CONUS, just have your support unit phone the nearest Bruning office collect. They'll send a tech rep to show you the whole bundle.

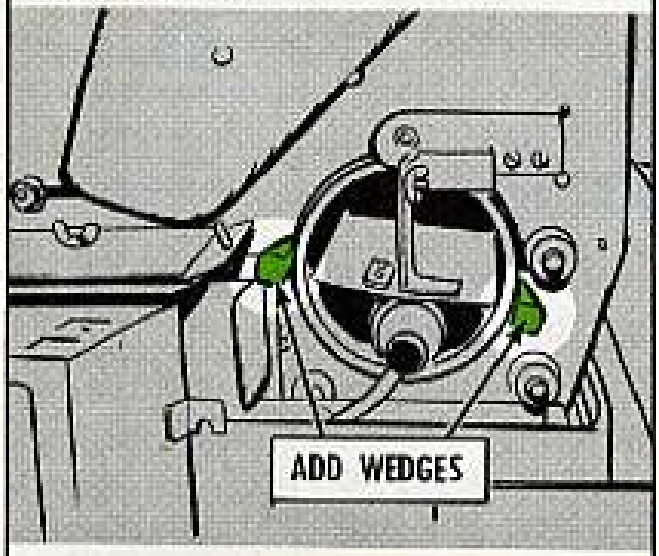
Across the pond, ask any MSO (Mobility Service Office) for Training Course No. NET-66-35, with pictures and everything.

And remember you can't use that machine without the expendable supply kit. You need LIN R-84552, Reproduction Expendable Supply Set, FSN 3610-889-3246 in SC 3610-93-CL-E18 (Jan 65.)

COMES MOVING DAY

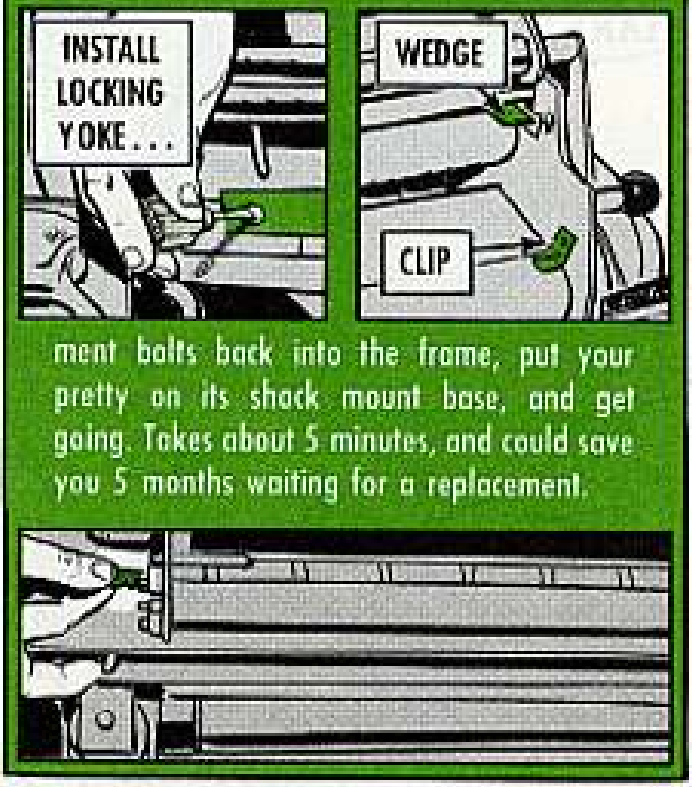
On moving day, map a break-free way. Remember shocks and knocks can break a box . . . and your Bruning set.

After you've drained and cleaned developer tray, jug, and rollers, with red shipping clips in to hold rollers steady, tend to a safety item . . .



That's the wedges — those little rubber midgets with a big job keeping your glass cylinder in one piece. Put 'em in just snug.

Then when you've put the red locks and brackets over the tray and yoke, you can lock the cabinet . . . run the leveling adjustment bolts back into the frame, put your pretty on its shock mount base, and get going. Takes about 5 minutes, and could save you 5 months waiting for a replacement.



Don't let volunteer help put bare hands or oily rags on those developer rollers. Otherwise there'll be big black spots in your next map.

Connie Rodd's BRIEFS

Unit Readiness

If you're a man who reports unit readiness on DA Form 2715, cast an eye on Ch 1 (10 Oct 68) to AR 220-1, Unit Readiness. It contains several Changes to the AR, supersedes DA Msg 852346 (21 Feb 68), with readiness condition (REDCON) points of special interest on communications and missile items and systems.

M16 PM Poop

Can't memorize your M16A1 tech manual, y'say? OK, get yourself a plastic, wallet-sized card containing basic dope on cleaning, lubing, ammo and combat tips straight from TM 9-1005-249-12. It's GTA 21-1-3 (Jul 68) and it supersedes your card dated August 1967. Use it — it can save your life! Order 'em from the Baltimore pubs center.

21 Questions

How does your outfit order, control and use its supplies? Good question. Your unit will be in better shape if you round up a copy of AR 700-87 (4 Sep 68), Supply Discipline. Be sure your supply business lines up with all the 21 questions on page 5.

Preserve Facts – Not Engine

Never pickle a pranged Huey T-53 engine if it failed or you believe it folded up. Then the experts can find out "wha hoppen?" Treat the C model engine, for example, according to the poop in TM 55-1520-220-20 (30 Jan 68) . . . para 16-50.

The Word On MWO

Every maintenance man and commanding officer will want to read all the new word on modification work orders in AR 750-35 (20 Nov 68).

For You Logisticians

Logistics types — such as S-4's, G-4's, commanders and support outfit people (military and civilian) — will want to read a new bi-monthly magazine, **Army Logistician.** To get it regularly on pinpoint distribution, make it a write-in on DA Form 12-4 and send the form to the Baltimore Publications Center right now. See DA Circular 310-72 (12 Nov 68) for details.

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

FLASH:

Your clutch pedal's no foot-rest. Keep your foot on the floor unless you're using the clutch to shift gears.

NO CLUTCH RIDING!