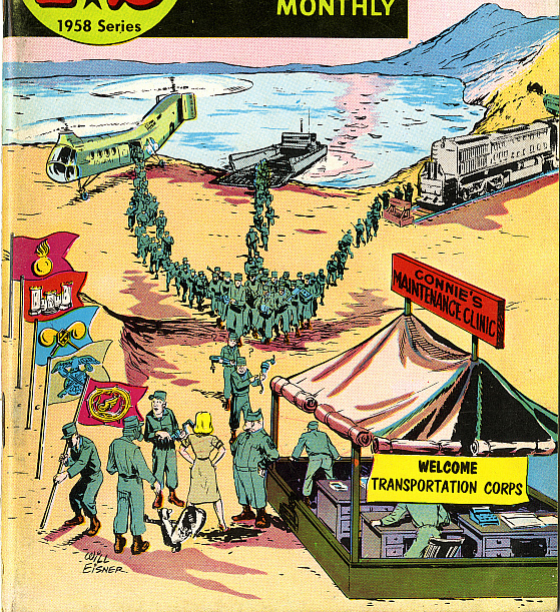
Issue 64

P.S.

1958 Series

THE PREVENTIVE MAINTENANCE MONTHLY



TRANSPORTATION CORPS JOINS PS

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF TRANSPORTATION
WASHINGTON 25, D. C.

3 December 1957

The Editor
PS Magazine
Raritan Arsenal
Metuchen, New Jersey

Dear Sir:

Preventive Maintenance is of extreme importance to us, whether as individual soldiers or officers or as commanders of military units. The effectiveness of Preventive Maintenance determines how each item of equipment operates, and, in combination, how men and equipment perform in combat.

We of the Army Transportation Corps are highly pleased at this opportunity to participate in PS Magazine. We join with other Technical Services in striving to make all Army equipment ready to operate - any time or place.

Since PS Magazine is written for and by the individual in the Armed Forces, I want to encourage every soldier - be he private, non-commissioned officer or officer - to contribute his ideas and problems on maintenance of Transportation Corps equipment to the Editor of PS Magazine.

We heartily subscribe to your motto: "We have the World's Best Equipment . . . Take Care of It". Now, let's get on with that mighty important job.

Sincerely yours,

PAUL F. YOUNT
Major General, USA
Chief of Transportation

SEE FIRST ARMY AIRCRAFT ARTICLES, STARTING ON PAGE 2.

P.S THE PREVENTIVE MAINTENANCE MONTHLY

Issue No. 64 1958 Series

Published by the Department of the Army for the information of organizational maintenance and supply personnel. Distribution is made through normal publication channels. Within limits of availability, older issues may be obtained direct from Preventive Maintenance Agency, Raritan Arsenal, Metuchen, New Jersey.

IN THIS ISSUE

EQUIPMENT

DEPARTMENTS

PS wants your ideas and contributions, and is glad to answer your questions. Just write to: Sgt Half-Mast, PS, Raritan Arsenal, Metuchen, New Jersey. Names and addresses are kept in confidence.

The printing of this publication has been approved by the Director of the Bureau of the Budget (27 April 56). DISTRIBUTION: Active Army: DCSPER; ACSI; DCSOPS; DCSLOG; ACSRC; CANG; CoA; CUSARROTC; CofF; CINFO; TIG; TJAG; CLL; CMH; CNGB; OCSpWar; Technical Stf, DA; Chaplain Bd; CAMG Bd; TAG Bd, USA; USA Intel Bd; Technical Stf Bd; USCONARC; OS Maj Comb; MDW; Armies; Corps; Div; Brig; Regt/Gp; Bn; Co/Btry; Pl & Comps; Svc Colleges; Br Svc Sch; Joint Sch; Specialist Sch; PMST Sr Div Units; PMST Jr Div Units; PMST Mil Sch Div Units; Gen Depots; Sup Sec, Gen Depots; Depots; Ord Tk Autmv Comd; AH; USATC; Fld Comd, AFSWP; Ports of Emb (OS); Trans Terminal Comd; Army Terminals; OS Sup agcy; PG; Arsenals; CmlCM atCom; DQ; Engr Maint Cen; Recoiling Mach Shp; Div Engr Dist; NG: State AG Special List. USAR: Mil Dist Special List. For explanation of abbreviations used, see AR 320-50.

CHOPPER CONKIN'?

Seems like some of the H-34A's with R 1820-84 engines have been cuttin' out briefly, particularly those with Bendix Stromberg 391513-2 Model PD 12R1 carburetors on 'em. This is disconcertin', to say the least, and serious.

Apparently there are two causes—one has been corrected in manufacture. The other trouble was a sticking poppet valve, that might have had something to do with this.

So please to go check TB-AVN 25-1. This TB is on engine-driven and auxiliary fuel-pumps, all aircraft.

But it applies here, because it tells you what precautions to take in handling fuel, to prevent contamination. And contaminated fuel has not only caused the fuel-pump failures, it can also cause the poppet valve to stick.

So, you see, reading a fuel-pump TB to correct carburetor troubles does make sense.

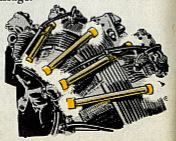
RETORQUING TABOO

They by-gawsh did it! They cut down on a maintenance requirement.

On Pratt and Whitney pushrod-housing packing-gland-nuts, it was. It was decided that periodic retorquing of these glands was not necessary, and tended to tear up the seals, with possible plugging of the oil passage.

So from here out, you don't touch 'em unless they leak. If and when a leak does develop, you replace the seal, and torque the gland nuts to these tensions . . .

PACKING GLAND NUTS



R-985-AN1 AND AN3: 125 TO 150 INCH-POUNDS.
R-1340-57 AND R-1340-59: 125 TO 150 INCH-POUNDS.
R-2800-54: CYLINDER END: 300 TO 325 INCH-POUNDS;
CRANKCASE END: 125 TO 150 INCH-POUNDS.

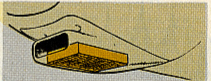
HERE'S THE RUB

The heater fuel lines (S14-50-5101-5) on your H19 copters sometimes get chafed by the clamp assembly (45A04). The clamp rotates around due to vibration until the release lever is touching the fuel line.

Check yours, please, and if you find a worn spot on the line, replace it.

Then turn the clamp clockwise a ways and snap it tight so's there'll be no more interference. Nobody wants a fuel leak into the cabin, that's for sure.

CLEAN YOUR CLEANERS



You all know that dusty operation is hard on aircraft, the more dust, the shorter engine life, and the greater oil consumption. This has been particularly troublesome on the R-985-AN engines in your L20's.

Watch for TO 1L-20A-535 which'll relocate the air filter and air intake higher up on the cowl to miss some of the dust swept up by the prop-wash.

Until your ship is modified, be extra careful about inspecting and cleaning your air filters. If you find that the fine fibers are pulling through the retaining screen of the filter element, get a new one.

AND THAT'S NOT ALL—

This dope on Army aircraft is just the first you'll be seeing in PS about Transportation Corps equipment. Rail, marine, land transport—all will be covered in the PS issues to come.

ON TOP OF OL' SMOKY

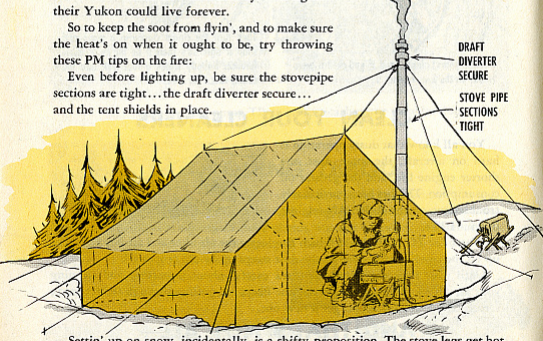
They laughed at old Stovepipe Sam when he laid lovin', sooty hands on his favorite wintertime playmate. The Yukon Stove, M1950, that is.

He cleaned, adjusted, inspected and tightened.

But when the icicles came and the thermometer dropped faster'n a five-spot in a side bet, there never was a colder crew than the boys who figured their Yukon could live forever.

So to keep the soot from flyin', and to make sure the heat's on when it ought to be, try throwing these PM tips on the fire:

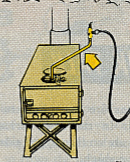
Even before lighting up, be sure the stovepipe sections are tight... the draft diverter secure... and the tent shields in place.

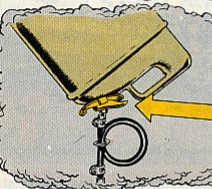


Settin' up on snow, incidentally, is a shifty proposition. The stove legs get hot pretty soon, and melt the ice or snow they're restin' on. That's when old Yukon goes into a dive.

Prop the heater on blocks or rocks to keep on an even keel.

If liquid fuel is being used (gasoline, kerosene, jet fuel, etc.) be sure the offset fuel tube keeps the hose away from the sides of the stove. 'Course, you're courtin' a beard full of flame if you forget to wipe up any gas, etc. that may spill inside the burner assembly and stove body.

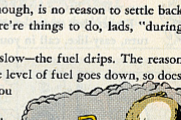




As for the cloth or paper used to sop up the fuel, it's no beauty rag. Get rid of it pronto, pardner. One more PS about fuel—keep an eye on the gravity feed adapter to be sure it's put on right and not leaking fuel down the hose.

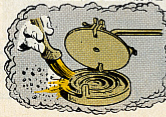
Just because that hot box is cookin' along, though, is no reason to settle back and get heated up over next week's pass. There're things to do, lads, "during operations."

After checkin' for leaks, watch how fast—or slow—the fuel drips. The reason is simple: According to an old Greek law, as the level of fuel goes down, so does the rate of flow. Anyway, when that happens you have to jack up the drip rate.



One more thing while operating, and that's the routine when the burner poops out. Make tracks to the valve and shut it. Careful about relighting it, now. Wait till it's cool enough to put your bare paw on.

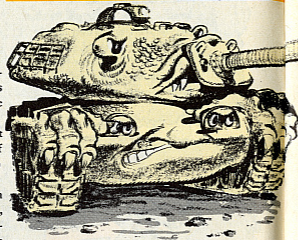
Comes time to shut down and you shut the drip valve. Shut it, that is, and not **tighten** till it squeaks. Why ruin it?



See that black, sooty stuff on the burner assembly? That's right, it's carbon. And it should come off before the stove is used again. Start shoveling ashes and clean the grate if coal or wood has been providing the heat.

Run Down This List of Do's To Stop Fire Control Blues

TANK TALK



Your fire control instruments in the M48-series tanks are on the rugged side right enough.

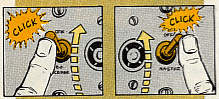
So is the tank itself, but you wouldn't run it off a cliff and expect it to come up shootin'.

And, when you're rough on fire control equipment, you find you're aiming thisaway at the target when you oughta be aiming thataway.

Doesn't take much to keep the equipment in shape. It just means remembering some Do's—like so.

Keep your brogans and paws off fire control knobs, handles and shafts when you wanna lift or lower yourself around the turret.

Forget that strong-man stuff when it comes to turning knobs. If they don't turn, easy-like, call in your support unit.



Make sure the power is shut down before handling those high voltage power cables that go to the infra-red periscope.

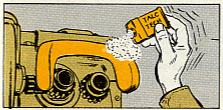
Turn the power off before replacing range finder lamps so's you don't burn out resistors.

ON YOUR FIGHTIN' 48

Remember that fire control equipment isn't ultra-ultra waterproof, which means you don't wanna clean the inside of the turret with a steam or water hose.

Watch where you aim the water hose when cleaning the outside of the tank ...you've got fire control equipment you can get to from the outside with a stream of water.

Have the smallest electrical or mechanical foul up repaired right quick 'cause minor troubles can grow into big ones mighty fast.



Follow instructions for operating the equipment—down to the letter.

Keep oil, grease and solvents off headrests, eyeshields and other stuff made of rubber. Sprinkle a little technical talc on rubber once and again to give it a new lease on life.

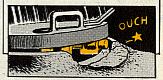
SLAM, WHAM, DAM(AGE)

You're on the ball when you clean the loader's hatch-bolt on the M48 series tanks.

Yes sir, keeping the bolt clean is a good idea. But you wanna make sure the bolt is in the open position when you're done.

When the bolt is in the closed position while the hatch is open it sticks out beyond the hatch rim...

...and when the cover comes down—wham—the bolt takes a beating. Might even snap in half.



So play it shrewd...make sure the bolt is out of the way whenever you close the cover.

TANK TALK

HUB CAP HASSLE

Hold on there, friend! Don't toss that gasket in the basket—the one that goes with the single-plug-type road-wheel hub caps on your M41A1 tanks, M8E2 tractors, M52 105-mm self-propelled howitzers, M44 155-mm self-propelled howitzers, and your M42 and M42A1 40-mm motor carriages.

The gasket may not be the reason these vehicles have been bleeding oil around those hub caps and around the cap bolt-holes.

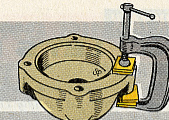
One keen-eyed mechanic ordered new gaskets till he was blue in the face. Found out later it wasn't the gaskets that were causing the leak after all. Looking a little further, you may also find that the hub cap itself is porous and the oil is leaking through the metal, and sometimes through to the bolt holes and out past the bolt heads.

So, here's what you can do to fix up those holey hubs. All you need is some Thinner, paint, volatile mineral spirits, (FSN 8010-242-2089 gets 1 gallon from the Engineers); a C Clamp; some gasket forming compound (Permatex No. 2) FSN 5330-252-3391; and a few 1-in square patches cut from an old inner tube.

First, take off the hub cap and wash it clean in the thinner. When the cap dries, lay it flange-up on a bench—hold your finger tight under a bolt hole and fill the hole with thinner. (Careful you don't get any thinner inside the cap.)

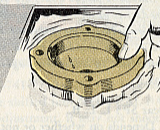
Now, put your thumb on top of the bolt hole and squeeze a few times. If there're any tunnels or passages inside of the cap the thinner will find its way through and squirt or dribble out. Do this for each hole and note any leaks. Dry the cap off again.

Now, fill up the bolt holes that leaked with the compound. Scrape off any that runs out the top or bottom.



Next, take those rubber patches and hold 'em tight over each end of the bolt hole with the C clamp. When you tighten that clamp up, the compound will ooze through the passages in the porous metal and appear inside the hub cap.

Swab the compound out of the bolt hole by dragging a piece of cloth through it. Smear the compound that oozed into the cap around the area where it came out. Don't use a solvent to clean off extra compound —scrape it off instead.



If there're holes from the inside to the outside of the cap that by-pass the bolt holes, you can find 'em by putting the filler plug back in the hub cap and easing the cap into thinner up to the edge of the flange.

Mark the area where the thinner starts to drip into the cap—that's where your leak is. Take a small ball peen hammer and tap away at the area where the leak showed. When the leakage stops, you've peened the hole closed.

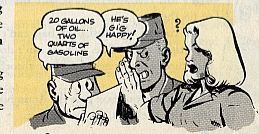
GIG NOT—WASTE NOT

Just a reminder to all inspectors, and particularly to spot-check teams:

Detergent oils often look dirty after they've been in an engine as little as five hours. But this doesn't mean they should be changed; there's lots of useful life left.

So if you find an engine with dirty-looking oil, don't gig it until you have checked back to see when the oil was put in. Remember that the LO's say oil will be used for 6,000 miles in a wheeled vehicle, 1,000 miles in a tracked vehicle. The only reason for changing it more often is operation in extreme dusty conditions (or contamination by gasoline, coolant, or such).

On one post, eager-beaver gigging actually caused the amount of engine oil consumed to be greater than the amount of gasoline used.



TANK TALK

GREETINGS, GATE-

LET'S DESICCATE

Dear Half-Mast,

We are stationed in a spot where the climate is wet, to put it mildly. Lots of rain and high humidity.

The medium tanks in our outfit have external phone boxes mounted on the rear of the hull. Some of these boxes contain desiccant (demoisturing) bags—MIL-D-3464.

Since the phone boxes are not air-tight, the desiccant seems to draw moisture from the outside to the inside of the box. So we've been wondering if it wouldn't be better just to leave the bags out of the box.

SP3 L. L. B.

Dear SP3 L. L. B.,

Depends on whether or not your phone boxes have had vent (drain) holes drilled in 'em yet.

When it was found that keeping those boxes water-proof was practically impossible, directives were whipped up to provide the drain holes to keep water from collecting and staying there. (See MWO Ord G1-W53 and MWO Ord G254-W13.) But since these MWO's are not classified "urgent" it may be some time before they're applied to all the tanks.

Meantime those desiccant bags can help keep your phone equipment dry—if they're handled right. In such a humid climate they'll get saturated fast—and ought to be re-activated often, at least once a week.

Which is simple enough...if y'can arrange for use of an oven—like in the mess hall or company kitchen. Put the bags in the oven and bake 'em for a couple of hours (or according to the time and temperature stamped on the bag if it's still readable). Make sure the heat's not above 350° (or less—if it says so on the bag).

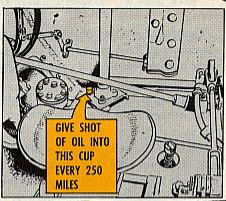
Of course, the desiccant bag can't do much good unless that phone box is kept tight as possible. But—it can't do any **harm**, as far as drawing in excess moisture is concerned. It'll just absorb all it can hold...and hold it. And that's that.

But once your box gets the drain holes, there's no longer any point in messing with the bags. Leave 'em out.

Half-Mast

LIFE-SAVING PIN

Down in the driver's compartment of your M41 and M41A1 tanks and your M42 motor carriages, right at the base of your T-bar steering control, you've got an oil cup that you'd better not overlook. You can easily miss it, even though it's spelled out in big bold letters in your vehicles' LO's because it's partially hidden by shafts and stuff.



Now, if you haven't spotted 'er and haven't been giving 'er that shot of oil every 250 miles, you could very easily have a live rattlesnake in the palm of your hands next time out.

The spring-loaded locking pin (FSN 5315-741-9739-G251) is supposed to lock that T-bar up good'n tight when you've shifted into NEUTRAL PARK. But if it hasn't been lubed up or is out of adjustment, it may not shoot into the locking hole in the bottom of the T-bar. So, now, when you step on the gas and move that T-bar the least bit, she makes like NEUTRAL STEER and that tank can go into one of the dizziest spins you ever did see—and woe be unto him what gets into its path.

By out of adjustment I mean that the pin linkage may be so tight that it won't reach far enough to go into the T-bar hole to lock it up. On the other hand it may be so loose that it can't disengage itself from the T-bar.

Just to be sure that none of your buddies get hurt, better give this baby a real close check to see how it's workin' on your vehicle. And, for goshsakes, don't use the T-bar for leverage when raising out of the seat. If the pin is engaged, it can be broken off easy.

TANK TALK

FUEL PUMP FOUL-UPS

Fuel pump diaphragm bugs in an AOS 895 and AV 1790 tank engine are sometimes as hard to find as a cat at a kennel club picnic, unless you know what to look for. Reason... they sometimes act the same as carburetor or ignition troubles.

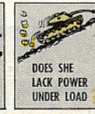
Diaphragm failures are more likely to happen if the vehicle has just come from storage. Stuff in gasoline can settle during storage and can gunk up the pump.

The first clue, and the easiest to spot, is an oil level rise. When your crankcase oil comes up so's you can notice it, or smells like it's been mixed with gasoline, your pump diaphragm assembly's probably busted and gas has seeped into the crankcase. If so, don't wait for a crankcase explosion to clear your doubts—drain your crankcase and get a new fuel pump.

A bum pump can cause hydrostatic lock, too. If the fuel tank is too full, warm and expanding gasoline can leak through the pump vent line and into the intake manifold and from there it can fill the cylinders. Crank 'er without a pre-start check and... POW! Right in the con rod.

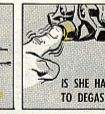
Try making like Sherlock Holmes and check these clues:

DOES YOUR VEHICLE MISFIRE AT HIGH SPEEDS?



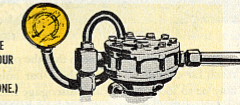
DOES SHE LACK POWER UNDER LOAD?

DOES SHE RUN ROUGH?



IS SHE HARD TO DEGAS?

RUN A LEAK DOWN TEST... HOOK UP VACUUM-PRESSURE GAGE (FSN 4910-387-9582) TO OUTPUT SIDE (LINE TO CARBURETOR) OF ONE OF YOUR FUEL PUMPS. (CHECK OTHER PUMP AFTER GETTING A READING ON THIS ONE.)

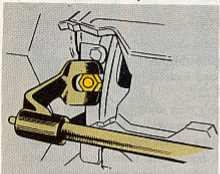


You should get an output pressure of 3½ PSI minimum to 6 PSI maximum. That reading should hold from 20 to 30 seconds after cranking. If it doesn't, try a new pump.

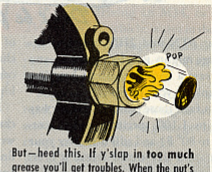
NUT-WORKS

A word to you light-tank men herding all those buggies with Bulldog-type suspension. Your track tension adjustment is a simple matter when everything works right. Right? This can help you keep it that way.

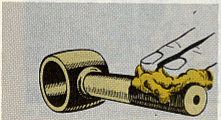
As you may've found already, that tension adjusting nut and eyebolt have a way of rusting and freezing up if they don't get a little attention now and then. Here's the attention they need:



Every time your track is broken—or at each "C" service, loosen the adjusting nut stop and back off the nut. Then pack the threads with GAA—like your LO says.



But—heed this. If y'slap in **too much** grease you'll get troubles. When the nut's screwed back on the eyebolt, the excess grease'll push against the expansion plug at the end of the nut and pop it out of place.



Good way to play it safe is to put your grease on the eyebolt threads—not in the nut. Then when it's screwed back on the nut'll push any excess grease out of the way—away from the plug.

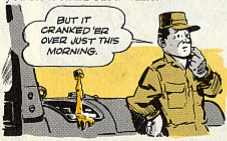
'Course, if y'find the threads already rusty, you'll want to clean 'em first. Then go on with your packing.

Don't be fooled

Your 6TN and 2HN military batteries are mighty peculiar animals—you never saw a battery that can beat 'em for cranking your engine.

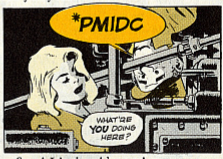
It's a fact, those batteries can be way down to 1.100 specific gravity (corrected to 80° F) and still turn over your engine on a day that'd freeze a brass monkey.

Which is mighty fine when you're tryin' to start a vehicle. But there's a joker in the deck. A battery that's as low as 1.100 gravity will freeze at 19° F. So in this case you don't get any warning, your battery will turn over your engine just fine, and still freeze up as soon as you let it stand out a while.



Which means you can't afford to get careless about your hydrometer checks, particularly in cold weather. Smart drivers check their batteries every day of a cold snap, and yank 'em out for charging the minute the temperature corrected hydrometer reading falls below 1.225.

Don't wait until your battery won't crank your engine before you start worrying about recharging, you may find a frozen and busted battery case. Let your hydrometer—not your starter—tell you your batteries condition.



Sure! It's the old story!

You can barely keep up with daily checks, weekly checks, monthly checks, road checks and bad checks.

So who's gonna worry about hundreds of nuts, bolts and studs.

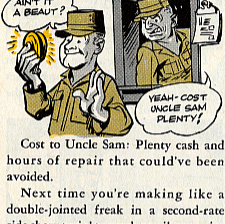
Once they're on there, they're ON.

Tain't necessarily so, though.

*Preventive Maintenance in Dark Corners

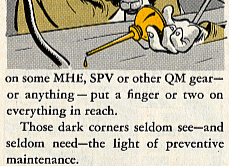
Take a U.S. Thermo King K-10 unit mounted on a 7½-ton refrigerator van. One hit the deadline a while back 'cause a retainer nut got loose—and stayed loose.

As a result, a drive pulley got chewed up. It kept rubbing against the woodruff key.



Cost to Uncle Sam: Plenty cash and hours of repair that could've been avoided.

Next time you're making like a double-jointed freak in a second-rate side show tryin' to reach an oil-can point



on some MHE, SPV or other QM gear—or anything—put a finger or two on everything in reach.

Those dark corners seldom see—and seldom need—the light of preventive maintenance.

Yet an extra half-turn on a nut that's worked a little loose can mean the big difference between headaches and smooth sailin' later on.

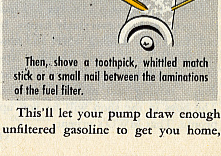
Glop in your gas?

Naturally you've always drained your gas tanks to clear the sediment and water at your D-service—"If evidence of contamination exists"—like it says in the TM. But as you know, a fouled-up gas truck or gas pump can give you beaucoup water in your gas tank almost any time.

If you're driving an M34, or other 2½-ton G-742 vehicle, water in the tank will swell up the paper laminations of your fuel filter and choke off all flow, both gas and water.

Suppose this happens to you on the road, and there's no towing or wrecker service around. You've gotta get back to camp, so here's what to do:

Drain all the water and glop out of your tank.



Then, shove a toothpick, whittled match stick or a small nail between the laminations of the fuel filter.

This'll let your pump draw enough unfiltered gasoline to get you home,

where, o'course, you take out the stick and dry out the filter for re-use.

One thing for sure—never do this if you spot silt or other junk floating around in the gasoline. If you do, you'll damage the fuel pump, lines and carburetor. Guess you'll just have to hitchhike.

'Course service 'em like TB ORD 487 says and you'll help yourself avoid getting in a spot like this.

Staff of life

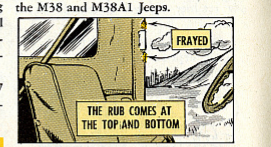
Few sights are sadder than a baker whose dough sagged all the way to the ground.

Happens, though, when the lunettes on those M-1945 bakery trailers figure they're overdone. The lunettes crack up like a stale bun . . . usually when the trailer is bouncin' along the trail . . . and the whole works take a nosedive.

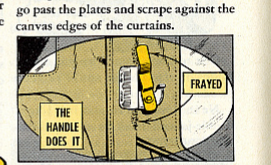
MWO 10-1699A-3 (18 Apr 57) has the recipe to keep everybody happy. It calls for a new landing wheel and lunette that're heavier and stronger. Applies to both the bakery oven and the dough mixing and make-up trailers. The boys in the shop will fix you up pronto. That MWO's urgent.

Cut the rub

Long handles and short rub plates are tearing heck out of the side curtains on the M38 and M38A1 Jeeps.

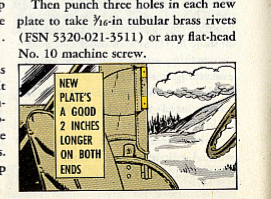


The rub plates are a mite too short at the top and bottom, so the door handles go past the plates and scrape against the canvas edges of the curtains.

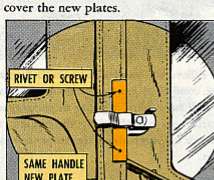


Smooth out this rough situation by making new plates from a piece of thin (about 21 gage) scrap steel. Just cut out chunks measuring ½x3x7 inches—and shape 'em like the old plates.

Then punch three holes in each new plate to take 5/16-in tubular brass rivets (FSN 5320-021-3511) or any flat-head No. 10 machine screw.



The new rub plates will cover the wear spots left by the door handles on the canvas—and a dab of OD paint will cover the new plates.



Dust cap

Gritty—that's the way it is when dust gets into the distributors of your Model 3100 Chevvy pickups and Model 424 2½-ton GMC stake-and-platform trucks. And it's been happening, especially in those blow-dust areas.

So, it's been figured that it's time to catch this stuff before it moves in on your distributor and starts grinding. Which all means your Ordnance support unit can get you some dust caps from the local dealer.

These caps go under GMC part number 2363333.

The Skinner

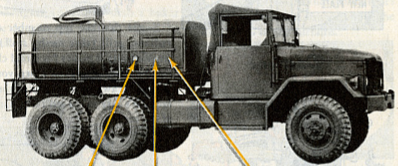
Way it is now, when you unlatch the hood on those 2½-ton Model 424 stake and platform jobs, you can scratch the devil out of your hand—may even draw blood.

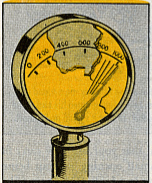
Seems that the top member of the radiator grill (that meshy stuff) is so situated that it makes for a real close fit for the hand to get in. When you take your hand away after releasing the hood latch, it's easy to cut it on the sharp side of the mesh.

Just so there won't be any more blood dripping 'round, take a fine-grained file and round off the member, so that it's good and smooth.

If you find that your big paw can't fit into this small opening without being scraped, get in a UER (DA Form 468) and maybe you'll be allowed to cut out the top member, so you can get at the release.

'Here are some pointers aimed to help relieve the painful suspense before an inspection of your decon. If any of these conditions exist on your M3A3, you won't have to worry about suspense. You'll know you're going to get gigged. 'Course, if you're a real shrewd operator, you can shape up the equipment before the inspector sees it. Then you can relax, forget about the suspense—and the gigs. Counter-intelligence, they call it.



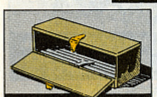


PRESSURE GAGE—broken dial cover, **failure to register, abnormal movement of needle, wrong pressure**

VALVE CHAMBER (valve covers and cylinder heads)—**leakage** (not a seep)

ECCENTRIC CASE (at cover end and at plunger end)—**oil leakage** (not a seep)
HOOD COVERS—dents, distortion

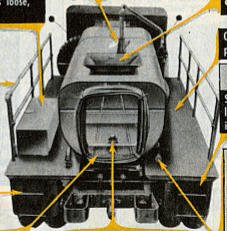
And don't forget—there are major deficiencies and minor deficiencies. The major ones here—those that make it unsafe and downright dangerous to operate —are shown in YELLOW TYPE.



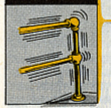
STORAGE CHEST—chest and contents wet, hinges loose, rusty

RISER PIPE ASSEMBLY—**won't lock**, stiff operation after cam clamp is released

TANK INTERIOR — corrosion, foreign matter
BLEACH INTAKE STRAINER—**clogged, holes enlarged**



HANDRAILS — loose, spray holes clogged

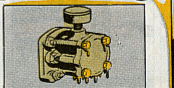


LADDERS—bent or broken

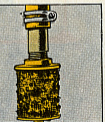
OPERATING PLATFORM—slippery, dirty

SPLASH GUARDS — missing, loose, worn, fasteners missing

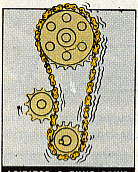
SPRAY HOSE—**holes**, cracks, cuts, tears in rubber, fittings damaged or worn



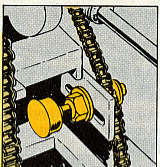
REAR AGITATOR BEARING—**leaks** (not a seep), **grease cup less than three-quarters full**



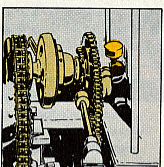
WATER INTAKE STRAINER—damaged fittings, **clogged strainer, holes that pass foreign matter**
WATER INTAKE HOSE—**holes**, cracks, cuts, tears in the rubber



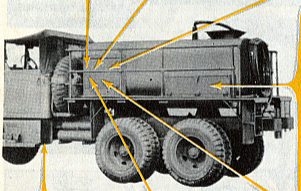
AGITATOR & PUMP DRIVE CHAINS—too much slack and wear (both chains should have ½" slack at the middle

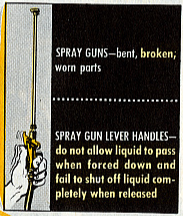


GREASE CUP (on agitator chain idler)—less than three-quarters full



FRONT AGITATOR DRIVE—leaks, (not a seep), grease cup less than three-quarters full

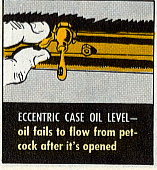




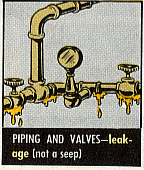
SPRAY GUNS—bent, broken, worn parts

SPRAY GUN LEVER HANDLES—do not allow liquid to pass when forced down and fail to shut off liquid completely when released

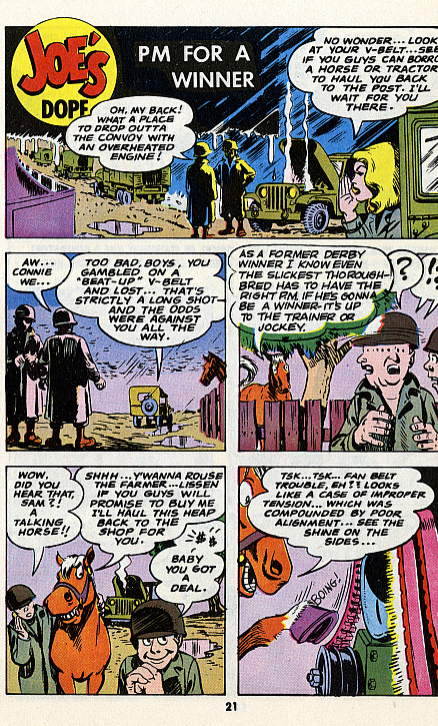
POWER TAKE-OFF UNIT—lube leaking (not a seep)

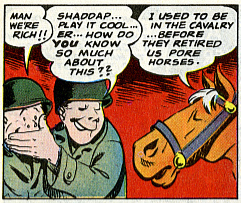


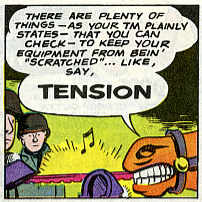
ECCENTRIC CASE OIL LEVEL—oil fails to flow from petcock after it's opened



PIPING AND VALVES—leakage (not a seep)


JOE'S DOPE
PM FOR A WINNER
OH, MY BACK! WHAT A PLACE TO DROP OUT?A THE CONVOY WITH AN OVERHEATED ENGINE!
NO WONDER... LOOK AT YOUR V-BELT..SEE IF YOU GUYS CAN BORROW A HORSE OR TRACTOR TO HAUL YOU BACK TO THE POST. I'LL WAIT FOR YOU THERE.
AW... CONNIE WE...
TOO BAD, BOYS, YOU GAMBLED ON A "BEAT-UP" V-BELT AND LOST... THAT'S STRICTLY A LONG SHOT AND THE ODDS WERE AGAINST YOU ALL THE WAY.
AS A FORMER DERBY WINNER I KNOW EVEN THE SLICKEST THOROUGH-BRED HAS TO HAVE THE RIGHT PM, IF HE'S GONNA BE A WINNER-IT'S UP TO THE TRAINER OR JOCKEY.
?
!?
WOW, DID YOU HEAR THAT, SAM?! A TALKING HORSE!!
SHHH...Y'WANNA ROUSE THE FARMER...LISSEN IF YOU GUYS WILL PROMISE TO BUY ME I'LL HAUL THIS HEAP BACK TO THE SHOP FOR YOU.
BABY YOU GOT A DEAL.
TSK...TSK... FAN BELT TROUBLE, EH?! LOOKS LIKE A CASE OF IMPROPER TENSION...WHICH WAS COMPOUNDED BY POOR ALIGNMENT... SEE THE SHINE ON THE SIDES...
BONG!

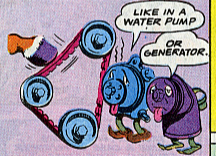




WHETHER YOUR EQUIPMENT IS MOBILE (LIKE A TRUCK) OR STATIONARY (LIKE A GENERATOR) KEEPING THE V-BELT AT THE RIGHT TENSION IS A KEY TO GOOD BOOK FOR THE LONG HAUL... FOR EXAMPLE:

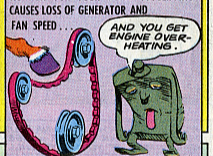
TOO TIGHT

...BELT WEARS ITSELF OUT FAST—PUTS TOO MUCH PRESSURE ON THE BEARINGS—PUTS 'EM OUT OF THE RACE TOO SOON...



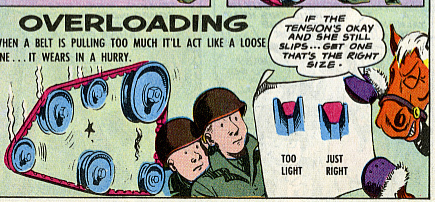
TOO LOOSE

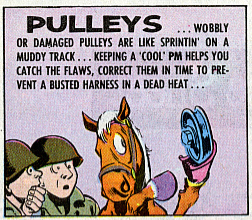
...THIS TYPE BELT IS FRISKY AS A YEARLING... SLAPS, SLIPS AND FRAYS. YOU GET NO RUN FOR YOUR MONEY ... SLIPPING CAUSES LOSS OF GENERATOR AND FAN SPEED...

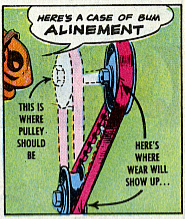


OVERLOADING

WHEN A BELT IS PULLING TOO MUCH IT'LL ACT LIKE A LOOSE ONE... IT WEARS IN A HURRY.

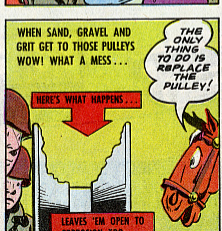


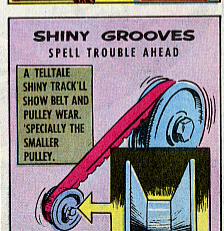

PULLEYS ...WOBBLY OR DAMAGED PULLEYS ARE LIKE SPRINTIN' ON A MUDDY TRACK... KEEPING A 'COOL' PM HELPS YOU CATCH THE FLAWS, CORRECT THEM IN TIME TO PREVENT A BUSTED HARNESS IN A DEAD HEAT...

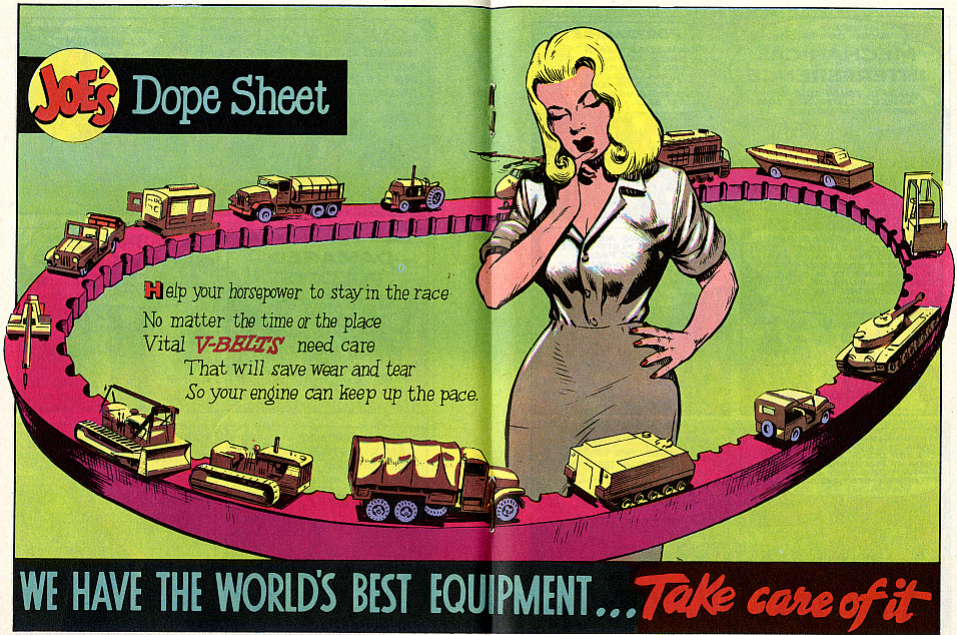

HERE'S A CASE OF BUM ALINEMENT
THIS IS WHERE PULLEY SHOULD BE
HERE'S WHERE WEAR WILL SHOW UP...

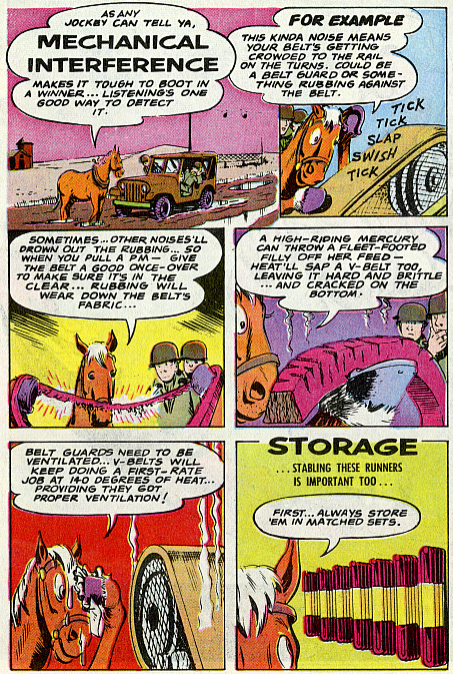

SOMETIMES YOU GET A CASE OF DAMAGED PULLEYS.
LOOKS LIKE THIS...AND THE ONLY THING TO DO IS GET ANOTHER.


NOW FOR PULLEY GROOVE WEAR
WORN OR DISHED OUT GROOVES CUT DOWN THE BELT ACTION!
WORN
DISHED OUT

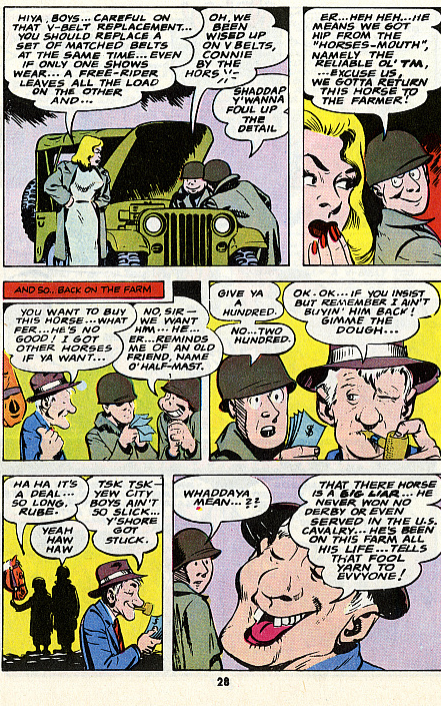

WHEN SAND, GRAVEL AND GRIT GET TO THOSE PULLEYS WOW! WHAT A MESS...
THE ONLY THING TO DO IS REPLACE THE PULLEY!
HERE'S WHAT HAPPENS...
LEAVES 'EM OPEN TO CORROSION, TOO.


SHINY GROOVES
SPELL TROUBLE AHEAD
A TELLTALE SHINY TRACK'LL SHOW BELT AND PULLEY WEAR. 'SPECIALLY THE SMALLER PULLEY.


JOE'S Dope Sheet
Help your horsepower to stay in the race
No matter the time or the place
Vital V-BELTS need care
That will save wear and tear
So your engine can keep up the pace.
WE HAVE THE WORLD'S BEST EQUIPMENT... Take care of it


AS ANY JOCKEY CAN TELL YA,
MECHANICAL INTERFERENCE
MAKES IT TOUGH TO BOOT IN A WINNER... LISTENING'S ONE GOOD WAY TO DETECT IT.
FOR EXAMPLE
THIS KINDA NOISE MEANS YOUR BELT'S GETTING CROWDED TO THE RAIL ON THE TURNS. COULD BE A BELT GUARD OR SOMETHING RUBBING AGAINST THE BELT.
TICK TICK SLAP SWISH TICK
SOMETIMES... OTHER NOISES'LL DROWN OUT THE RUBBING... SO WHEN YOU PULL A PIT— GIVE THE BELT A GOOD ONCE-OVER TO MAKE SURE IT'S IN THE CLEAR... RUBBING WILL WEAR DOWN THE BELT'S FABRIC...
A HIGH-RIDING MERCURY CAN THROW A FLEET-FOOTED FILLY OFF HER FEED — HEAT'LL SAP A V-BELT TOO, LEAVING IT HARD AND BRITTLE ... AND CRACKED ON THE BOTTOM.
BELT GUARDS NEED TO BE VENTILATED... V-BELTS WILL KEEP DOING A FIRST-RATE JOB AT 140 DEGREES OF HEAT... PROVIDING THEY GOT PROPER VENTILATION!
STORAGE
...STABLING THESE RUNNERS IS IMPORTANT TOO...
FIRST... ALWAYS STORE 'EM IN MATCHED SETS.


V- BELTS KEEP BEST STORED IN A COOL - DRY PLACE!
NO! NO!
Not in places like this...
Damp... or hot... the v-belts crack and shrink
THE SMALLER SIZED V-BELTS COME IN SLEEVES, SO WHEN YOU HANG 'EM ON A PARTS BOARD... OR WALL, MAKE SURE THEY ARE OUTTA THE SUN-LIGHT... THE CARTONS YOU CAN STACK.
CLEANING
REMEMBER THIS: GREASE AND RUBBER DON'T MIX... CLEAN V-BELTS LIVE LONGER!
OIL OR LUBE WEAKENS 'EM AND CAUSES 'EM TO SLIP.
SO DO THIS...
DRY
CLEAN WITH DRY CLEANING SOLVENT
DRY
APPEARANCE
SADDLING UP NEEDS CARE... A V-BELT TWISTED IN THE GROOVE IS OFTEN CAUSED BY PRYING... PUT 'EM ON LIKE THE TM SAYS!
WHEN PULLING PM LOOK AT THE UNDERSIDE... WATCH FOR CRACKS, GLAZING, SPLITS — AND MOVE IT SO YOU SEE THE ENTIRE LENGTH.


HIYA, BOYS... CAREFUL ON THAT V-BELT REPLACEMENT... YOU SHOULD REPLACE A SET OF MATCHED BELTS AT THE SAME TIME... EVEN IF ONLY ONE SHOWS WEAR... A FREE-RIDER LEAVES ALL THE LOAD ON THE OTHER AND...
OH, WE BEEN WISED UP ON V BELTS, CONNIE BY THE HORS \-- /
SHADDAP Y'WANNA FOUL UP THE DETAIL
ER... HEH HEH... IIE MEANS WE GOT HIR FROM THE "HORSES-MOUTH", NAMELY THE RELIABLE OL' TAM, ---EXCUSE US, WE GOTTA RETURN THIS HORSE TO THE FARMER!
AND SO... BACK ON THE FARM
YOU WANT TO BUY THIS HORSE... WHAT FER... HE'S NO GOOD! I GOT OTHER HORSES IF YA WANT...
NO, SIR — WE WANT HIM... HE'S ER... REMINDS ME OF AN OLD FRIEND, NAME O' HALF-MAST.
GIVE YA A HUNDRED.
NO... TWO HUNDRED.
OK-OK... IF YOU INSIST BUT REMEMBER I AIN'T BUYIN' HIM BACK! GIMME THE DOUGH...
HA HA, IT'S A DEAL... SO LONG, RUBE.
TSK TSK... YEW CITY BOYS AIN'T SO SLICK... Y'SHORE GOT STUCK.
YEAH HAW HAW
WHADDAYA MEAN... ?!
THAT THERE HORSE IS A BIG LIAR... HE NEVER WON NO DERBY OR EVEN SERVED IN THE U.S. CAVALRY... HE'S BEEN ON THIS FARM ALL HIS LIFE... TELLS THAT FOOL YARN TO EVVYONE!

IT MAKES V-BELT CARE ALMOST NICE

Here's a real handy chart that makes it a cinch to spot the wear and tear on the V-belts in your rig. Whether it's a drive belt on a stationary compressor or a fan belt on a 2½-ton truck, a few minutes spent checking it now and then will be your guarantee that it'll do the job.

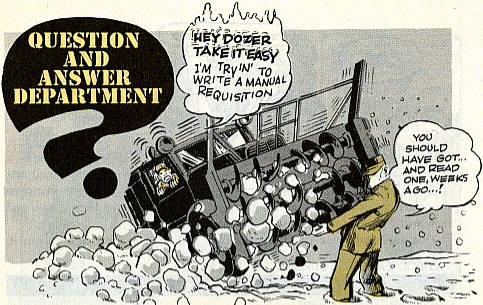
This guide will clue you to any trouble and tell you what to do about it.

CHECK 'EM OUT YOURSELF...BY EYE 'N EAR

V-BELT PERFORMANCE CHART

LOOK FOR—	IT'S CAUSED BY—	FIX IT BY—
V-Belt Slipping	Not Enough Tension Overloaded Drive Pulleys Worn Oily, Greasy Belt	Increasing Tension Using Right Belt Having Pulleys Replaced Wiping It Clean
Cracked Belt	Belt Slipping Too Much Heat	Increasing Tension Proper Ventilation, Checking Belt Guards
Belt Turning In Groove	Broken Cords In Belt Overloaded Drive	Using New Belt Using Right Belt
Rapid Belt Wear	Belt Put On Incorrectly Tension Too Tight Mismatch Belts (In Set) Overloaded Drive	Using New Belt Right Adjusting Tension Replacing With Matched Set Using Right Belt
Shiny Pulley-Groove Bottom	Belt Bottoms In Groove, Worn Pulley	Installing New Belt, or Having Pulley Replaced
Worn Pulley	Worn Pulley Sidewalls	Having Pulley Replaced
Pulley Wobble	Bent Shaft, Worn Bushing, Improper Installation	Having Defects Corrected, Pulley Re-Installed
Damaged Pulley	Chipped, Bent Pulley	Having Pulley Replaced
Ticking Noise	Belt Rubbing Guard	Checking Belt-Guard Clearance
V-Belt Squeal	Overloaded Belt Not Enough Tension	Using Right Belt Increasing Tension

QUESTION AND ANSWER DEPARTMENT



A NO-GO SNOGO

Dear Sgt Dozer,

Our truck-mounted rotary Snogo snow-plow runs fine except for one thing—it won't throw snow out of the chute. The chute gets packed solid in no time and we have to pull the snow out with a shovel.

The plow's complete nomenclature is Snogo plow, Snow, Rotary, GED, Serial Number 640. It's mounted on a Ford 4x4 truck and it's powered by a 6-cylinder International engine with V-belt drive.

Got any ideas on how we can get it working right before the snow comes again?

Mr. W. C.

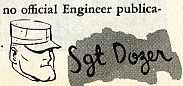
Dear Mr. W. C.

That plow will throw snow—wet or dry—about 150 feet when she's working right. But to get that kind of action you've got to have the plow's engine running at 1800 RPM.

To find out how to tune her up to get 1800 RPM, you'll need the manufacturer's manuals. They're the only ones available on the Snogo. Requisition 'em through regular repair parts supply channels the same way you would **non-stocked type repair parts.**

Say on the requisition that you want an operator's manual, a maintenance instruction manual, and a parts book. Include the make, model and serial number of your Snogo.

This procedure goes for any equipment that has no official Engineer publications. Better get hold of those manufacturer's pubs right away.They'll help you keep the snow on the go.



WHAT'S IT?

Dear Half-Mast,

What's the deal on the accelerator stop screw on the G744 5-ton truck, which is talked about only on page 233 of TM9-8028? Does that screw have to be a certain length? Does it need any kind of adjustment? The TM doesn't say.

Cpl P. L. H.

Dear Cpl P.L.H.,

That pedal stop screw (FSN 5305-018-1645) doesn't need any adjustment. The threads on the screw are for installation purposes only. Any throttle adjustment that's needed is made with the throttle linkage. So, don't mess with it, and it won't mess with you.

PIN POINTS

Dear Connie,

We were chinnin' a while back on the best way to drive a tent pin. Some jokers say the pin should be pounded into the ground so the top of it points away from the canvas. I go along with the guys who say it should either be vertical or with the top angled toward the tent.

What's the right answer?

SFC C. L. B.

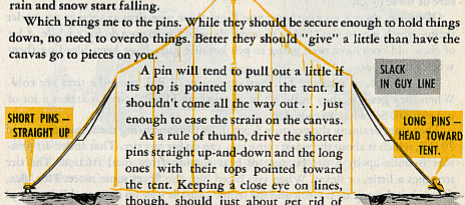
Dear Sgt C. L. B.,

The big thing to watch in tent pitching is slack in the guy line. It's got to be tight enough to do a holding job . . . but slack enough to handle shrinkage when rain and snow start falling.

Which brings me to the pins. While they should be secure enough to hold things down, no need to overdo things. Better they should "give" a little than have the canvas go to pieces on you.

A pin will tend to pull out a little if its top is pointed toward the tent. It shouldn't come all the way out . . . just enough to ease the strain on the canvas.

As a rule of thumb, drive the shorter pins straight up-and-down and the long ones with their tops pointed toward the tent. Keeping a close eye on lines, though, should just about get rid of the danger of too-tight guy lines.

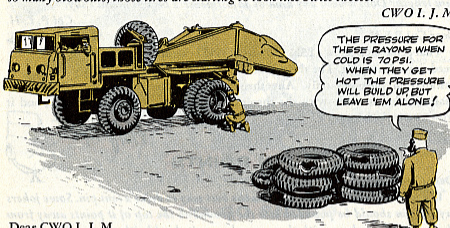


CLASSY NYLONS

Dear Half-Mast,

Can you tell me why we're having so much trouble with the 16,00x25 tires (FSN 2610-051-9626) on our M249 and M250 transporters? We've been having so many blowouts, those tires are starting to look like Swiss cheese.

CWO I. J. M.



Dear CWO I. J. M.,

You're not the only one, Sir. There's been loads of trouble with those tires since they hit the field. That's why Ordnance has come out with a new, better tire for those transporters, under MWO ORD G258-W32 (27 May 57).

Your new tires are 24-ply rated nylons instead of the 20-ply rated rayons you now have on your trucks. They go under FSN 2610-699-8584, and were put into being by TB 9-8006-1 (26 Dec 56), which also gives a lot of good poop on the care of these nylons.

Of course, there's no guarantee you'll get these new tires as soon as you order them—which means you'll have to make those old-style ones do for a while. A lot of these old ones have been going to pot because guys have been bleeding them when they're hot.

You see, the air pressure for those rayons is 70 PSI when the tires are cold. When they get hot, they build up to as much as 110 PSI, which makes a lot of guys sweat. So, what do they do?

They start draining the pressure from those tires and bring them back to around 70 PSI, which is about the worst thing you can do for any tire. That added air pressure is built up by a tire because of heat coming from road friction. The tire stretches a little, or flexes. When you bleed her, she flexes some more. Flex, flex, flex—until the carcass is weak and the temperature is way up there and B-l-o-o-e-y!

So, the best thing to do is check those tires right—when they're cold. Then, leave 'em be.

FORM PROTECTOR

Dear Connie,

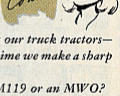
You gals tell us that a form stays in better shape if it is well wrapped up. So we've worked out a sort of canvas corset for the forms in our vehicle glove compartments. This envelope was run up by our upholstery shop, and equipped with a snap fastener.

We carry the TM, LO, DD 110, accident report forms and so on in it at all times. This keeps the forms and manual clean and unwrinkled, and the envelope is easy to remove when washing or fording the vehicle. Also, on cross country, it makes a safe place for strip maps and special orders, etc.

CWO D. R.

Dear CWO D. R.,

It's OK, and how about the plastic bags that are being widely used to wrap commercial items? They're tough, you can see through them, and they're easy to latch on to.



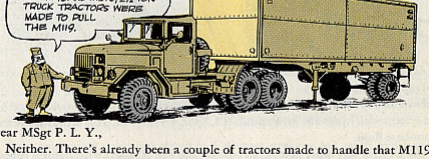
M52 – NAW!

Dear Half-Mast,

Just got two 6-ton, 2-wheel, M119 Semitrailers, Sarge. But our truck tractors—the M52 5-tons—just can't seem to handle them. Seems every time we make a sharp turn, the trailer's foot pad hits the truck's rear outer tire.

What's coming, Sarge—a different tractor to handle the M119 or an MWO?

MSgt P. L. Y.



Dear MSgt P. L. Y.,

Neither. There's already been a couple of tractors made to handle that M119—and neither of 'em is the M52 5-ton.

The tractors I'm talking about are the M48 and M275 2½-ton truck tractor (G742 series). They're the only ones that should be used to tow the M119. The M52 is built to take the M127 12-ton trailer, only.

NIX ON OHC

Dear Half-Mast,

We've just been issued some M52 self-propelled howitzers. There was some kind of fluid in the brake system when we got 'em, and the brakes worked all right. But the minute we added OHC to make up losses, they gummed up on us.

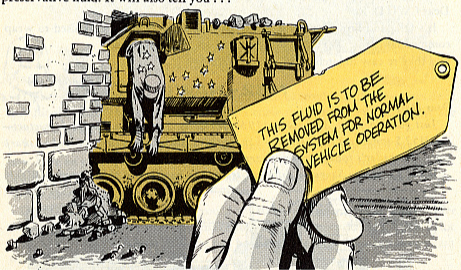
What's in 'em, and what caused the gum-up?

Capt B. V. M.

Dear Capt B.V.M.,

Your boys goofed twice. First when they ran those vehicles without de-processing the brakes, and next when they added OHC to a brake system.

When your vehicles are issued look for a little tag (DA Form 9-3) wired to the steering yoke or stored in the map compartment. This tag will tell you if your brake system was preserved according to the old SB 9-4, para 5 with Mil-P-12098, preservative fluid. It will also tell you . . .



All this means is that a mixture of castor oil and alcohol has been put into the system to preserve it.

Now if you find one of these tags, pump out all you can of this fluid and fill the system with hydraulic brake fluid, HB, Spec. VV-F-451a. This is the non-petroleum-base fluid.

Use OHC or any other petroleum base oil and you'll louse up the natural rubber seals and cups in the system.

That must have been what happened to your vehicles. They'll have to be cleaned out completely and new cups installed. Then you fill 'em with fluid, HB (or HBA, depending on temperature range) only.

Half-Mast

MISSILE BLASTS

New Nike Pit Safety Lowering Valve . . .

FLAPPER FLAP

Dear Sgt Dozer,

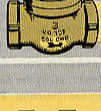
Those new safety lowering valves for the Nike pit are giving us installation problems. They seem to be as simple as one-two-three to install, but some of the boys got them in backwards. We've also found that in some pits the new valve cuts down pressure so much that the S-4 lowering valve doesn't operate at the right lowering speed.

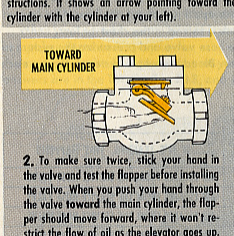
Sgt R. J. A.

Dear Sgt R. J. A.,

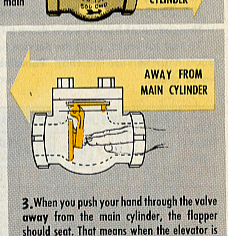
There's one big thing to remember when you install that new safety lowering valve: **Make sure the free flow of oil is toward the main cylinder.** There are two ways of checking on that:

1. Point the arrow on the valve toward the main cylinder. If the valve's installed right, the main cylinder will be on your right as you look at the arrow. (Don't get confused by drawing NE-40355, which has installation instructions. It shows an arrow pointing toward the main cylinder with the cylinder at your left).





2. To make sure twice, stick your hand in the valve and test the flapper before installing the valve. When you push your hand through the valve **toward** the main cylinder, the flapper should move forward, where it won't restrict the flow of oil as the elevator goes up. That gives you free flow **toward** the main cylinder.



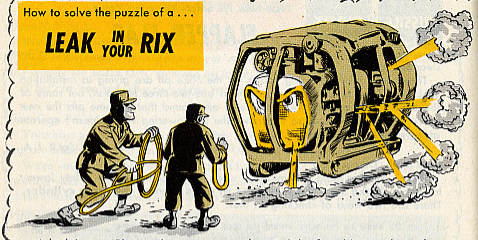
3. When you push your hand through the valve **away** from the main cylinder, the flapper should seat. That means when the elevator is going down, oil will have to flow through the three holes in the flapper.

If the new safety valve cuts down on S-4 valve pressure too much and makes lowering too slow, take the top plate off the safety lowering valve and pull out the flapper. There's no sweat there, because there's only one way to take the flapper out and put it back in. But don't take the flapper out unless it's really necessary—with it taken out, you're right back where you were in the beginning—no safety valve. But hang onto that flapper—you'll be hearing about a modification to fix that slow lowering.

Sgt Dozer

How to solve the puzzle of a . . .

LEAK IN YOUR RIX



A leak in your Rix capping compressor that can't be found is a real puzzle to figure out. It's also as dangerous as trying to figure out how to keep a tiger in a canary cage.

If 3500 PSI of air breaks loose, it'll take apart just about anything in its way.

The puzzle of how to trace down a leak is solved in the chart below.

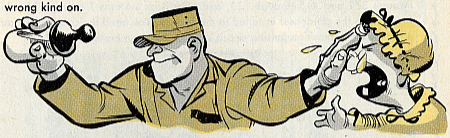
To test for leaks, open the service line hose valve and pressurize the system to 3500 PSI. Then use the chart. Remember: Bleed the whole system between each valve check.

TO CHECK VALVE NO.	PLACE VALVES IN THESE POSITIONS									IF IT'S LEAKING, THIS HAPPENS
	1	2	3	4	5	6	7	8	9	HOSE BLEED	
1	C	C	O	C	C	O	C	C	O	C	AIR ESCAPES FROM THE SERVICE HOSE VALVE
2	C	C	C	O	O	C	C	C	O	C	AIR ESCAPES FROM THE SERVICE HOSE VALVE
3	O	C	C	C	C	O	C	C	O	C	AIR ESCAPES FROM THE SERVICE HOSE VALVE
4	C	O	C	C	O	C	C	C	O	C	AIR ESCAPES FROM THE SERVICE HOSE VALVE
5	O	C	C	C	C	C	C	O	O	C	AIR ESCAPES FROM REACTIVATION OUTLET
6	C	O	C	C	C	C	O	C	O	C	AIR ESCAPES FROM REACTIVATION OUTLET
7	O	C	C	C	C	O	C	C	O	C	AIR ESCAPES FROM REACTIVATION SAFETY VALVE
8	C	O	C	C	O	C	C	C	O	C	AIR ESCAPES FROM REACTIVATION SAFETY VALVE
9	O	C	O	C	C	O	C	O	C	C	AIR ESCAPES FROM THE SERVICE HOSE VALVE

LEGEND: OPEN O CLOSED C

When it comes to repairing your Rix compressor, be careful. TM 5-5398-1 (May 56) authorizes the user to make some repairs. But even if you're authorized, be sure you have the right parts, the right tools, and the know-how.

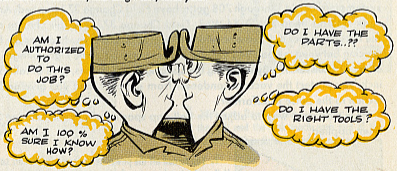
F'rinstance, field maintenance boys overhauling Rixes in the shop have found ordinary waterpipe nipples on the compressor instead of the heavy pipe nipples that're supposed to be used. Some guys figured nipples are nipples and put the wrong kind on.



Another thing: When you take off high pressure compression fittings, tubes, or nuts, **don't put 'em back on the compressor.** Use new stuff.

When you're working with 3500 PSI, you've gotta be as careful as the big winner in a poker game on his way home.

Any time you're fixing anything on your Rix, ask yourself these questions. The answers are in the TM, the Eng 7&8, and you.



'Course, these rules apply to all repair jobs on all equipment. But they're more important than ever on something that can get dangerous as a 3500-PSI air compressor.

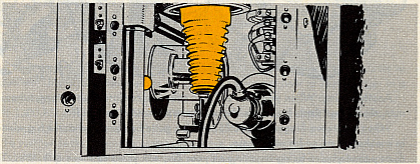
If you get a "no" answer to any of the questions, call in field maintenance to do the job for you. Better safe than sorry . . . better to fill out a work order than an accident report.

On your M33 and Nike-Ajax radar units . . .

THERE'LL BE SOME CHANGES MADE

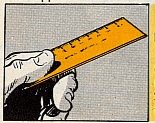
You radar men know that for smoother operation on your M33 radar system, Field Change 262 puts a GA-51991 vacuum condenser between the acquisition magnetron cathode and ground. On Nike-Ajax systems, MWO Y4-W1, Field Change 262 (N), does the job

Your Ordnance support is applying this change to all M33 systems numbered 1 through 372 and 415 through 513, and Nike-Ajax systems 1 through 24, which didn't have the condenser installed at the factory. You need the condenser 'cause it makes the acquisition pulsing circuit in the magnetron more uniform.



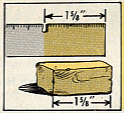
Maybe your M33 system gets Field Change 262, maybe not . . . but all M33 radar systems numbered 1 through 708 gotta have Field Change 373 applied. And Nike-Ajax systems need MWO Y4-W67, Field Change 373 (N). This change replaces the arc suppressor ball in the acquisition hot box and tells you to adjust the ball gap spacing between the ball and the disk at the lower end of the high voltage insulator of the T1 transformer. By adjusting the spacing to 1 5/8 inches, give or take 1/32 of an inch, you protect the vacuum condenser from arc-over, and you give added protection to the pulse transformer.

Here's an easy way to adjust the ball gap spacing after Field Change 373 has been applied.



1. You turned off the power before replacing the arc suppressor ball so that's taken care of.

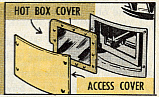
2. You'll need something to measure the ball gap spacing. Field Change 373 recommends that you use Rule, S, spring tempered, No. 4 grad. 1/8, 1/16, 1/32, 1/64 in., 6 in. Lg., Ord Stock No. 41-R-2990. But, it's kinda tough to get an accurate measurement between the ball and the disk 'cause things are cramped around the

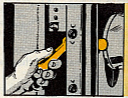


ball and the disk. So . . . the best bet is to use a rule that's been cut at the 1 5/8-in mark. Or get yourself a block of wood and cut off a piece that's exactly 1 5/8-inches long. The field change says you can make your own tool if it'll do the job.

3. When you're all set to start, make sure all your magnetron equipment is turned off.

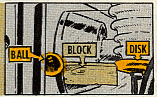
4. Remove the access cover and the hot box cover of the magnetron.





5. Loosen, but don't remove, the lock nut. You'll find it at the left, on the outside of the magnetron wall, smack dab behind the ball.

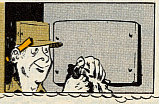
6. To space the easy way, insert the 1 5/8-in block of wood or shortened rule between the ball and the disk at the bottom end of the high voltage insulator.



7. With your fingers screw the ball in or out so that the ball and the disk touch each end of the block of wood. Then tighten the lock nut.

8. Remove the wood, replace the hot box cover and the access cover, and you're in business.

After you apply the field change, you'll find that your condenser will give you lots longer service, with lots less trouble.



Got a Rollin?

GET IT IN QUICK

You in a Corporal outfit?

Got a Rollin Model 80 generator?

Then, quick-like, take a look at that generator to see if it needs modifying. Here's why—

There are some stray generators around that're hurting for the modifications. And the only one who can modify 'em is the guy who built the generator—the manufacturer.

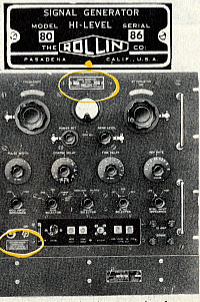
Most outfits have a replacement on hand so it's not like being without a generator when the other is sent back for modifying. And, if you don't have a replacement around, keep this address in mind:

Commanding General
Redstone Arsenal
Huntsville, Alabama
ATTN: ORDDW-RMP

Redstone'll generate heat getting the replacement off to you.

Your Ordnance officer takes care of things if you're stateside—the area commander if you're overseas.

It's easy enough to tell which generators need modifying. They do if they have any of these serial numbers:



You can spot a modified generator real quick by looking at the front panel. You'll see a sign that reads: "Unit must remain inoperative for 10 minutes after a shutdown". That's a dead giveaway.

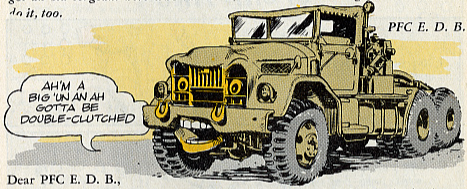
DOUBLE CLUTCH DOUBLE TALK

Dear Half-Mast,

We've just received our new M123 10-ton tractors. TM 9-8002 says in paragraph 46 f that "double-clutching is necessary to bring the speed of transmission parts into synchronization so the shift can be made without clash..."

It goes on to explain how to do this, but I'm having a little trouble understanding just how you work it. Can you explain double-clutching to me? We've got an old sergeant here who can do it, but he can't seem to get it across so I can do it, too.

PFC E. D. B.



Dear PFC E. D. B.,

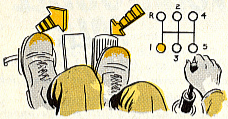
By golly, you're right. Double-clutching is getting to be a lost art in the Army. On accounta the only places you use it nowadays are on the 5-ton truck transfer cases and the transmissions of the 10-tons and some few extra heavy special vehicles. As you've found out, it's easy to do, but very hard to explain. But I'll be happy to try.

To start with, you know that your transmission is a means of changing the ratio between your engine speed and your road speed. As you go from first gear up to high, you're getting a higher road speed in each gear for the same engine speed. Also, as you shift down the gears from high to low, you are getting a higher engine speed for the same road speed.

You get these different speeds by shifting different sets of gears into mesh inside the transmission. If we can set the speeds of these gears so that the same number of teeth per second are going past a given point, they'll slip into mesh nice and quietly. But if we have a whole lot of teeth on one gear trying to race past while just a few on the other gear go by, the teeth will clash when we shift. This makes lots of noise, keeps the gears from meshing, and can tear up the transmission if you pull too hard on the gearshift.

Double-clutching is a way to adjust these speeds so the gears mesh quietly and efficiently.

HERE'S HOW IT'S DONE



Taking it from the start, you shift into low and engage your clutch, easing down on your gas pedal to start your truck rolling. You pick up speed in low until you are ready to shift to second.

Now watch this closely.

UPSHIFTING

1. Depress clutch—Let up gas—Shift to neutral.

2. Clutch pedal up—Foot off gas—Gears in neutral. Engine drag slows gears in transmission.

3. Depress clutch—Foot off gas—Shift to second.

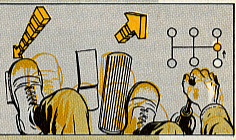
4. Clutch pedal up—Feed 'er gas and accelerate as you pick up the load.

The same procedure is used on each upshift on up to high or overdrive as the case may be. Each time you let up on the throttle between shifts to allow the engine to slow down the gears to proper meshing speeds. Make your shifts with a smooth easy pull, not a sudden jerk.

DOWNSHIFTING

So now you are rolling in high, with a loaded truck, and you approach an upgrade. As your speed falls off you prepare to shift down to the next lower gear.

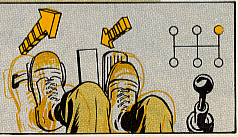
1. Depress clutch—Foot off gas—Shift to neutral. (Fifth to neutral).



2. Clutch pedal up—Step on gas—Gears in neutral. Engine speeds up transmissions input gears so they'll mesh in the next lower gear.

3. Depress clutch—Ease gas—Shift down. (Neutral to fourth).

4. Clutch pedal up—Feed 'er gas and continue up hill. (Gears in fourth).



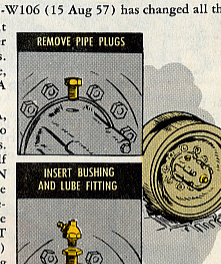
If the hill is steep and your load is heavy, you make additional downshifts in the same way, accelerating the gears between each shift for quiet shifting, until you find a gear in which you are no longer losing speed. In other words, a gear low enough to take you over the top.

That's how it's done, no double talk about it. One other place you will find this technique very helpful is when rolling with a load and approaching a **downgrade**. In this case, you slow your truck down yourself by closing the throttle, before you start down the grade, then you downshift same as before. If a grade is a steep one and your vehicle is loaded, **STOP**, shift into low gear and if necessary shift your transfer to low range before going down.

You may have to downshift two or more gears to find the gear in which you can go down the grade without racing your engine or heating your brakes. You want the gear in which you can control your speed with short applications of the brakes, releasing them to allow 'em to cool between times, and still not overspeed your engine. Generally this will be about the same gear you'd use to come up that hill with the same load.

Up to now, tankers, you've been putting OE in the suspensions of your M48-series tanks, the M103 tank, the M67 flame thrower tank and the M51 tank recovery vehicle. Well, MWO Ord G1-W106 (15 Aug 57) has changed all that.

This MWO tells you how to put grease fittings in the compensating idler wheels and hubs of these vehicles. When you get these fittings in there, you'll stop using OE and switch to GAA Amendment 3.



To get to where you can use GAA, which'll stop oil leaks, you have to remove the pipe plugs in those wheels. Then, like the MWO says, get yourself either a ¼x⅛-in pipe bushing (FSN 4730-141-9098) or a ⅜x⅛-in pipe bushing (FSN 4730-193-0867), depending on what size that plug hole happens to be. Now, get a ⅛-in NPT male lube fitting (FSN 4730-278-5660) — and screw the bushing and fitting together.

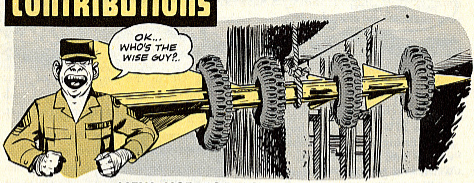
Screw the threaded end of the fitting into the pipe plug hole—and start lubing away with GAA Amendment 3. (Keep GAA Amendment 1 and 2 out). Stop when she won't take any more.

Now, here's some added dope. If you find those seals inside the wheels and hubs are not holding up because they've been blown out by grease pressure, you can get yourself a ⅛-27NPT, 1 to 5-PSI lube fitting (FSN 4730-330-0111). This fitting has a pressure relief valve right in it, so you won't have to worry about ruptured seals. Just screw it right into the bushing.

One more bit of info—you may find that as you roll over rough ground those grease fittings break off. If so, just unscrew the grease fitting after lubing and put the pipe plug back in.

This way you need only one grease fitting and one bushing, which you can keep in a safe spot in your vehicle. Then, when you're ready to lube, go right down the line, unscrew the pipe plug, put the bushing and grease fitting in, grease, unscrew the bushing and grease fitting, and screw the pipe plug back in. May be a little more work, but it's sure safer.

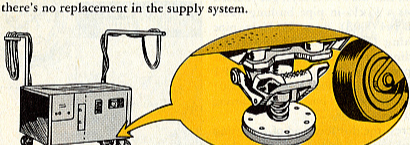
CONTRIBUTIONS



NEW USE FOR TIRED TIRES

Dear Editor,

Our Nike-Ajax outfit has run into the problem of fast wear on the foot-brake liner used on the brakes of most fuel service elevators, hoist assemblies and hydraulic test stands. The liner is made out of belting material that wears out fast... and there's no replacement in the supply system.



So, we set up our own supply line . . . and it's nothing more than old tires. We cut three pieces of rubber, about 4 inches in diameter, from the tire and had our support unit rivet each one on the brakes.

WO Dee W. Crow
A Btry, 36th Missile Bn

SIMPLE FIX FOR WARNING KITS

Dear Editor,

AR 385-55 (24 Feb 55), para 42 says military passenger vehicles with rated capacities of over nine persons and cargo-carrying vehicles with rated capacities over 1 ton are to be equipped with highway warning kits when operating over public highways in the United States.

Para 43 says: "Kit, highway warning, reflector type, Stock No. 8K388 . . . is approved as an item of issue on the basis provided in TA 20."

This kit is in short supply. It costs $5.20. So, our motor pool made up one by using three reflectors (FSN 9905-205-2795), costing 25 cents each and a little welding rod, costing 12 cents. The reflector stands can be fabricated in a few minutes. Nine flags, 12 inches square, can be cut from a yard of red cloth, costing 40 cents.

Here are two types of reflector stands. The one on the right is the easiest to make, but the other has the advantage of being easier to stow, because it can fold up. Also, the folding one lets the reflector swing, making it much more stable when subjected to strong blasts of wind created by passing vehicles.

Also, these reflectors are expendable—no paperwork if one gets run over.

MSgt Salomon C. Jaurique
Fort Huachuca, Arizona

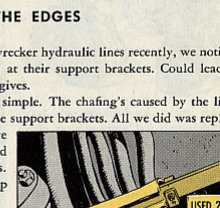
(Ed Note—Looks like this'll solve the problem of due-outs when these kits aren't available. If you can't get the kit, your homemade folding type is the best to use.)

HEDGIN' THE EDGES

Dear Editor,

After a look-see at our M62 5-ton wrecker hydraulic lines recently, we noticed that some of these lines were chafing at their support brackets. Could lead to trouble if one of those lines suddenly gives.

What we thought up to fix this is simple. The chafing's caused by the lines rubbing against the sharp edges of the support brackets. All we did was replace all lines that were shot—and then we took some used 2-in radiator hose and put it around the support brackets. This'll help stop the bracket's sharp edges from doing their dirty work.



MOP Shop
Raritan Arsenal

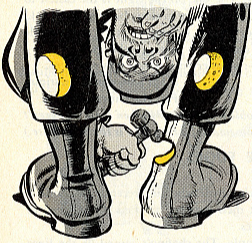
(Ed Note—Good thought. But, there's another way to check that line cutting without using radiator hoses as a crutch. Make sure all burrs and sharp edges are filed away. Then, when you go to tighten the hose-end couplings, make sure the hydraulic lines are so arranged on their supports so there can be no twisting when you tighten the couplings.)

FREEZING FLANGES

Dear Editor,

Like us, there may be some other second echelon shops who've had troubles removing that rear axle shaft on the G742-series 2½-ton trucks.

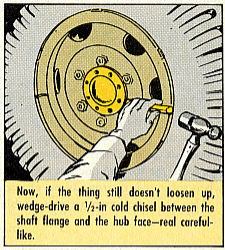
We had one man injured when that shaft froze to the hub. He tried to bang the thing out with a hammer. A steel chip came flying off the hub flange on which he was banging and went right into his leg.



This got us to thinking—and now, after that careful thought process, we've had no trouble at all.

The first thing to do, of course, is like para 272 of TM 9-8022 (Dec 54) says: Remove the eight screws and lock-

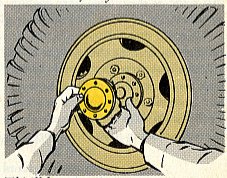
washers attaching the drive flange to the hub. Then, try and withdraw the shaft from the hub by pulling on the shaft flange. But, if the axle shaft flange freezes to the hub flange, tap the outer edges of the axle shaft flange lightly with a ball peen hammer to crack and free any corrosion there.



Now, if the thing still doesn't loosen up, wedge-drive a ½-in cold chisel between the shaft flange and the hub face—real careful-like.

This'll sure'n heck break any corrosion freeze there and free the shaft flange from the hub flange.

(Ed Note—To keep those flanges from corroding and freezing, coat them with a little GAA before you bolt them down—



This'll keep 'em from rusting and sticking. Another thing—give those bolts a little GAA also, so you won't have any trouble in that area either. Next time you go to take that shaft out—whew—s-m-o-o-t-h!)

Connie Rodd's BRIEFS

Up periscope

M47 tankers can now arrange to have Ordnance put on a box for stowing the M19 periscope and replace the periscope mount on the driver's hatch cover with a periscope quick-release assembly. Urgent MWO ORD G262-W27 (8 July 1957) gives all the details.

It's got to fit

Here's a tip on installing the exhaust muffler and top deck grille of the M48 and M48A1 tanks. Make sure the elbows line up with the holes in the muffler—else the heavy grille will rest smack dab on the lightweight elbows. The elbows will bend inward, and let flaming exhaust gases escape through the opening. This brings business for the fire department!

Radome paint

No doubt about it . . . none at all. There's only one paint to use for your acquisition antenna radomes. It's Enamel, synthetic, semi-gloss, OD, (No. 2430, FS TT-C-595), FS TT-E-529 (Nonmetallic), FSN 8010-297-0586, Eng Stock No. 52-3476.017.100. You gotta use **only** this OD, 'cause it's non-metallic. Any other OD is no-go 'cause it causes radar reflection.

Homeless hole

That MWO Ord G1-W101 (19 Apr 57), which tells you to drill ½-in diameter holes through the lower and upper channels of your M-series vehicles for drainage, doesn't go for the G749-series 2½-ton trucks. These trucks don't have channels, so you just can't drill any holes there.

Check that brush

Might be a good idea if you M48 tankmen keep a sharp eye peeled for carbon dust on the brush holder of your auxiliary engine generator when it's out of your tank . . . you'll be able to see it through the inspection hole. Too much of this dust will stop the brushes from making proper contact with the armature. And, poof—Li'l Joe won't put out.

Brake it in

Have you seen TB Ord 667 (24 Jan 57) and its Change 1 (2 May 57) yet? It'll give you the low-down on installing, operating, maintaining and testing the electric brake kit that's supposed to go on all your M-series tactical wheeled vehicles from the 2½-ton level on up—**if** your truck is going to be used as a prime mover for a load equipped with electric brakes.


ALL THE FACTS, MAN...
ALL THE FACTS!
GIVE ALL THE INFORMATION YOU CAN —
PUT ALL IDENTITY CLUES ON A DA FORM 468 (UER)
• What Went Wrong, Why, How...
• Contract Number
• Serial Number
• Manufacturer
• Model
• Depot Supply Item
DA FORM 468