



# PS

## THE PREVENTIVE MAINTENANCE MONTHLY

DECEMBER THRU JULY 1953 ★★★★★ NUMBER 7

THE DOGS ARE 1 IN 1000  
THAT MOST AIRCRAFT ARE  
CRUISED BY FAULTY ARMING. PAGE 208

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SMALL ARMS CAN FREEZE, TOO.  
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## THE MORNING ALL THE BIRD: MORE DRIFTY . . .



Where were all the people?  
Out doing things, of course.  
Maybe watching the service,  
Maybe fishing.

Or writing love letters,  
Maybe a lot of them were even sitting  
out adjusting their equipment,  
(Between hills.)



But a lot of the people, like yourself,  
are sitting around reading *PI* Magazine.  
There's no maybe about that!  
They're reading *PI* in the clubhouse  
or walking in the shops,  
on rock towers and forested trails,  
and under the shadow of a wing  
as well as by the light of a desk lamp.



It's because they all woke up this morning  
and found out that *PI* is now informing all of the people  
some of the time.  
Instead of some of the people  
all of the time.



*PI* is now full of facts for facts,  
Clubs for gannets, rifles for ruffians,  
streams for streams, and even optics for optics.



All in addition to the solid mass  
of information being brought your way three last six months.  
What manner of words are these, you ask. Can this be  
our humble *PI* blowing its own big fat horn.  
Of course *PI* is blowing its big fat horn.



But all the blowings about you.  
Yes, my friend, now *PI*  
All these great and wonderful things *PI* is full of,  
are the letters you've written,  
the problems you've handed *PI* itself, and the solid  
facts from the hundreds of you that have stopped by  
an Abundant to spill stories all over the place.  
Keep 'em coming.  
Until all the people are well informed all of the time.

Dear Editor,

To those in charge of motor vehicles, July PE contained many hints of value. Joe Depp's "How to Start a Drafted Engine" was especially valuable, and me being the guy in charge of four jeeps and a M-16 truck, I have my drivers follow it step by step.

Your "Great Editorial" proved all too lightly the "affectionless army soldiers and peevish sergeants." It's sad but true that one out of ten (10) units over here cover up their poor PE practices by stealing, then allowing or condoning vehicles from other units. The closer a unit is to being combat, the less it bothers with self-discipline, and considers the little practice manual.

The net result of this procedure comes out backward and upside down. The effect will leave a vehicle, the inefficient driver penalty, and the wrong one get promoted. An identifiable whole vehicle is lost because its distance is limited and its major assemblies worked for spare. Carrying it further, the chain of events that should bring a vehicle to the vehicle shop has been tested. As lowest combat loss cannot be replaced, the combat unit is penalized, and the whole Motor/Mech. in Wonderland deal starts all over.

There's for a maintenance, and therefore better, army world, with penalties for the individual.

**M Sgt E. Gordon  
Charwon, Korea**

DECEMBER 1951

AND JULY 1952

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**PE MAGAZINE** is published monthly for worldwide distribution as part of the **PREVENTIVE MAINTENANCE PROGRAM**. The Editor welcomes your ideas and questions. Write to: PE Magazine, Aberdeen Proving Ground, Maryland.

## WAS ENGINE COOLING FAN BEARING OK

Dear Editor,

For some time the number one problem in our M44's was the upper-bearing in the engine cooling fan clutch. They're the sealed type, factory packed with graphite grease (that's to last the life of the bearing 118112-131200). The trouble was, they didn't live long because the grease kept coming out. We thought you'd like to know how we saved these fan-clutch balls.

Whenever any of our tanks had about one-hundred miles, we'd pull out the fan clutch and examine the upper-bearing. Then we pried off the top seal from the bearing, taking care not to trigger the balls or race in any way, into this open bearing (after cleaning it properly) we packed water-pump grease, then re-installed it in the clutch. On top and dead-center of the derby-shaped shell cover we inserted a grease fitting (42-P-488-200 L). Before securing the cover in its place we packed it full of the same grease.

The reason for the grease fitting: about once a week we'd squirt a few shots of water-pump grease into the cover and to date, none of our bearings have gone bad.

**Major Edgar Harvington  
Army**

(Ed Major-Delaware armor have been modifying



# Maintenance Stories

These detail anecdotes. Make sure your gun's been worked on before you try this fix.

## GIT INS OF THE PROJECTILE

Dear Editor,

Along in November the field artillery 105 Howitzer outfit being for the 17th Infantry was making a push up toward the Yala river. We didn't have the opportunity to fix and completely before we had to change position. We had the weapon brought into the stop. When the gun was fired, the projectile started through the tube but got only half-way and stopped dead in its track. The gun didn't explode, but the forward part of the tube blew off, split the breech end, jammed the breech block so it couldn't be opened or the strip case removed. Luckily the projectile didn't explode.

Another time it was extreme weather in Korea. We'd been firing a 30 minute mission on the 105 Howitzer. The breech block had

been repaired and replaced in the gun. The gun was hot. We attempted to remove the cold projectile but couldn't do it. We left it there until six hours later when we had another mission. We fired it—the gun went in pieces. The moral seems to be:

Get permission from the captain of the gun crew and get rid of the projectile. If you can't get it out the back end of the gun, fire it out the front end—in the direction of the enemy.

Wing Greaves II, Supt  
AMF Sea Frontier, Cal.

## HE'S MAD IN YOUR HEARTS

Dear Editor,

What used to be the desert, mud is in Korea. It's all over the place—you can't get away from it. We were having trouble with the air brakes on the 105-Howitzer. First they wouldn't take hold—then when they did take hold they'd grab and have a tendency to swing from one side to the other. They weren't releasing properly. We





found that the trouble was caused by the air filter being clogged with mud. They had to be cleaned often—and replaced every six months.

The hard brakes, too, had a tendency to stick—and for the same reason—mud. If we moved the gun over a quarter of a mile, there would be great globes of it clinging to the wheels. The only thing we could do was to keep cleaning them—clean them every time we made a move. And then we had broken!

**SH. Gashay**  
Korea

#### LOFT BEDS FOR TRAIL SPADERS

Dear Editor,

Korean ground is rocky and at times deeply leassy. Trail spades on ordinary power their bedding soft—like ground logs they want to burrow in.

So what happens when you're set up for firing on this bank of hard-battered materiel? We soon found out. The trail spade will buckle and bend during firing. And the shock of recoil like high-angle-axes will soon do other damage, too.

Best way to keep the spade in working order, we discovered, is to blast-out for large trail-spade tips and smash them into the ground. Give 'em soft bedding, we say—and you'll get better performance.

**Arigo E. R. Biddle**  
Korea

## what'll you have?

Nobody's ignoring the fact that *PE* Magazine was out of circulation for a few months.

Listed below is a batch of tips on articles to be covered in the monthly issues of *PE* which you'll be getting again. They're based on letters from readers—during the time *PE* sat around on its back cover waiting for a printing contract—new engineering changes,

maintenance difficulties, Mail-Matt's two-bits and everything else that puts stress in your job.

If your immediate needs require more-complete data on any subject mentioned here, fill out the coupon on page 389 and do your scribbling in Kitter, *PE* Magazine, Aberdeen Proving Ground, Maryland, and you'll get the whole story by return mail.

### MAIL ORDERS TAKEN HERE

**0026** To clear flooded cylinders, bridge coil-to-plug and break points.

**0030** Soldered brake-lines will get you home, but need replacing on arrival.

**0031** Protect stored chrome with AHS-673 chrome in use with SS-6-3898 (3-182).

**0032** Differential oil will behave better in your 2 1/2-ton GMC's if 1" below fill hole.

**0037** Whatever your experience with the numbers game, you'll get the right part if you use its right name.

**0038** Cargo beds will last longer if you dump down easy, or roll 'em up a ramp.

**0039** Thrust links stay in their constant-shaft sockets when adjusted with throttle to 3000, and carburator throttle wide open.

**0033** M34 2 1/2-tonners before Manufacturer's Serial Number 90475 can be pushed backward only by removing a propeller shaft—after 90475, only when transmission's in reverse.

**0039** Oil discolored grey by acidified condensate is still a good lubricant.

**0035** Lift 12-volt batteries by the case, not the terminals, to avoid cell damage.

**0037** The in-line resistor in the 24-volt circuit permits use of available 12-volt coils.

**0040** The 1/4" hole in the M38 jeep wheel is to tell it from civilian jeep wheel—you worried?

**0041** Have M38 jeep starter contact-plungers adjusted with 1-9/16" clearance between adjusting sleeve and flange. This needs a special tool.

**0845** Leaky Cuno-filters won't—give extra-turn, clean at 2000 or 2500 rpm, make sure cap face is smooth, change gasket or turn it over.

**0846** Moving the M18 jeep's fuel line away from the clutch-pedal device will save wear and rattle.

**0848** Both 12-volt and 24-volt battery terminals can be insulated with wrap inner-tube.

**0851** Tilt pins are important to be correct, and just waiting a week won't keep it ticking.

**0853** Incorrectly reversing the polarity of electrical systems will ruin the batteries if not detected in time.

**0854** More frequent cleaning of fuel-tank strainers prevents foiled pumps and carburetors; drilling holes in strainers won't.

**0878** M17 % lines must be stopped completely before making transfer-case high or low shift.

**0880** A couple of 90° sheet-alloys will keep brake lines from rubbing through against shock absorbers on 17-passenger, 4x2, Southern Coaches.

**0883** Graphite or oil inside the notch tube helps keep M18 jeep throttle wires from snapping.

**0883** When commutator bars shake or break loose in a generator—replace the generator.

**0187** Mixing equal amounts of 20-weight and 30-weight oil together will not give you 25-weight.

**0193** Ammeters that read

high, then fall back, are no good reason to tear into voltage regulators—there is no good reason for breaking the coils on these regulators.

**0193** Even the attempt to put M14 steering-knuckle bushings and thrust-bushings together upside down will tear the lower stop.

**0194** Replacing burned-up carbon-relations in spark-plugs with pieces of brass welding-rod, looses up radio suppression and looses up radio operation.

**0195** STWC ONE AIR W-17 says the constant-flow assemblies on vol. 50 machine gun mounts may need trimming to keep ammo from jamming in the tray.

**0198** You can't "hot-wire" a 110-Horsepower-like removing safety labels to speed up operations—you're asking for more than you can control.

**0199** Knowing how to use the truck's weight to help break loose lines that have rusted to steel, will save lots of sledge-hammering.

**0199** Starting aircraft without auxiliary power-units can be done with a 24-volt jeep or truck, a long cable, appropriate cable plugs, and care to get the polarity right.

**0199** Dodge, M17's, produced prior to June 1951, need a "hot-wire" in lower end of pioneer-tail bracket to allow tailgate to hang down instead of out.

**0199** Crankcase capacity is 15 qts. for Weikaste Motor Model No. 2482KM—but with empty 83-



## KNOW YOUR 24-Volt Slave-Receptacle and Cable



Does the slave-receptacle in your machine vehicle work?

The old saying, "the left eye is the cow's head in position," has been given meaning a long time ago because of the slave-receptacle being hooked up wrong.

Left or Right? It all depends on how you look at it. From the cow's head-on view, it's his right eye that's pointing the horn where you're pointing. It is no good, but when you're looking at the head-on view when it's assumed head-on to your vehicle.

Check it. Get a test-light or voltmeter. Put one wire in the right-eye and the other wire on a suitable ground on

the vehicle. If the right eye's hot, then the slave-receptacle is OK. But if it isn't, something's wrong. Either the vehicle's polarity is back wards or the slave-receptacle's hooked wrong.

Check it out on the slave-receptacle. If you're hooked, mark your vehicle with the engine, then look at the receptacle. It's changing the polarity. If you're not, it's not you for hooking the slave-receptacle. What you've got to do is remove the four wires from the slave-receptacle, get at the wires and put the hot wire in the cow's right eye (on your left).

Another thing that has cropped up to plague the generating system of your vehicle is a fuzzy slave-cable. Some

cables get twisted when assembled and have an ambiguity between the end terminals. When using dual positives or negative hook-ups, the polarity in the vehicle that's being reformed is changed. It also means a heavy set of the three receptacles and just spells trouble to ground.

Before using your three cable, think it for positive-to-positive and negative-to-negative installation... make sure both end terminals have the hot wire (+) on your right when you're looking at them with the connector on top (Fig. 1). To me... plug one end of the cable into a hot three-receptacle. Then on the cable's other end, put one wire of a run light or voltmeter on the supposed hot pole and ground the other's other wire on the vehicle or just screw

the cable on the ground and trace the wires. If they're crossed, unscrew the two-side and run screws on the terminal and slide back the metal cover. Then remove the contact screws, pull out the contacts and replace them so the hot wire will be on your right when the connector sits on top of the cover (Fig. 1).

Each cable connector terminal should have their indicating arrow on the opposite side of the contact pins. If they're not, the cable may not be built using right three receptacles. The best remedy for this is to tie off all three positive legs.

It isn't advisable to use a three cable between vehicles with different voltage systems. Plugging into a 12-volt or 6-volt system from 24-volt is liable to blow a fuse or through the load.

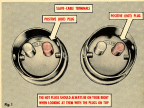


Fig. 1



### *Burned out sealed beams*

There've been rumors of trouble with burned out sealed beam units on the new type vehicles... and all sorts of theories for covering the trouble. There are those who recommend turning **OFF** all light switches before starting the vehicle. The other school of thought goes along with the idea of turning on all the light switches.

All we can say at this point is that the 14-volt electrical system has just come into use. The 24-volt lamp filament is not as strong as the 6-volt—it is thinner and longer. There have indicated that vibration is the basic cause of headlight failure. The parking-beam filament taps and touches the filament pins for the driving-beam. The extra high current going through the pas-

sing-beam in this manner causes the filament to fail as though due to high voltage. Upon further examination of the unit, there's no high voltage to be found. **Welding** does it.

For the time being, our advice is when the unit burns out, replace it.

### *Cherry OE-clipsticks*

It's possible that a lot of oil is being wasted in your Chevrolet 1958 and 1951 sedans and 14-ton and 14-ton pick-up trucks. You might have the same condition on the 1949 sedans and 14-ton's, too. Some of the OE clipsticks (not all of them) have a slipping washer. This is because the hole in the washer is large enough to let it slide over the angled-shoulder on which it should rest, and down the side (Fig.



(1). The other type of dipstick on these vehicles doesn't have the angled-shoulder, or a large enough hole in the washer to let it slide.

When you measure oil with the dipstick that's dragging in the washer, you'll get an incorrect reading. You leave the dipstick as far as the washer lets it go, which isn't far enough since the washer is wedged too low on the stick. You think you haven't enough oil when you may even have too much.

You can put a halt to this fooling around by tack welding the washer to the stop (Fig. 1). Use a small, low-temperature rod, and weld only on the top side of the washer. Be sure the washer's stuck up against the stop when you do it.



### *Starting-gear mounting-bolts*

If you're driving around a 174-ton Ken or Brushholder, a real mean thing to do would be to check the torque on

the steering-gear mounting-bolts. It seems they get out of production maybe right, maybe wrong. And it's mighty hard (even *Manly*—impossible) to tell by a visual inspection whether or not they're torqued right.

The correct torque on these bolts (Fig. 2) is 60-65 foot-pounds. How about doing the job before trouble starts?



### *Disabling pressurized cooling systems*

If you don't want a bonded block, gasketed, you'd better remove those caps!

No, Cruise hasn't gone high over on you . . . just pointing out the risk of pulling a drain job on pressurized cooling systems with the caps on. Vacuum will prevent smooth drainage (the whole you punch only one hole in a hose and you won't be aware of the water that leaked to the block until the flow real flows when you

leaving transportation boxes up with a heated blank.

To play it safe—when you pull out the drain plug, take off the radiator cap.

### *Gas in the oil*

You've heard the story about gas in the air cleaner, and how to get rid of it (PS, November, p. 255) and the story about gas in the crankcase when the wrong cap's put on the gas tank (PS, November, p. 255) but here's one you maybe haven't heard. It's a related problem about how gasoline gets in the crankcase.

Sometimes the pressure-relief valve on the fuel tank sticks (Fig. 3 and 4). When that happens and the engine's been idle in the hot sun for a while, pressure builds up in the tank with

enough force to push the gas through the pump, past the carburetor, and down the intake manifold where it finally soaks by the piston rings in the oil in the crankcase. Under high pressure it could even ooze through the primer pump. To avoid all this it would be smart to leave the cap of the tank in the pressure-release position while you're not using the vehicle during hot weather.

### *Trailer tail-lights*

With an ordinary GI flashlight (TL 122) tacked on to the back end of the M100 cracker with a couple of U-bolts (or some wire and a spot weld), and a rubber band to anchor and collapse over the lens, you're ready to roll in eight minutes (not of being scared in the dark). A couple spare batteries (E6-50) for your car, and you're in good shape until your jumper cables or modifications like catch up to you. Do I hear a better offer?

Fig. 3



Fig. 4



# tank talks

A LITTLE GOSSIP ABOUT THE  
M48, M48A1, AND M47



First, most important and most basic, is the way to drive these tanks. More specifically, the way to back them up, just because you can shove 'em in reverse while the tank's still in a forward motion, doesn't mean you're a wing-ding of a driver.

Sure, you've seen it done. Saw you can name names—big names. Sure, the tank can do it. You can jump off the roof of Radio City—but unless you're a kind of a bird, landing is a different matter. One you *can* do it.

Engaging reverse while in forward motion is something your tank *can* do—but that's a tank—not a bird either.

In brief, what happens is that the transmission reverse-band quickly grabs onto a revolving drum to stop the drum's motion. This is exactly what the reverse-band is supposed to do, to control the transmission. But if the tank is moving forward

when you shift to reverse, then the reverse-band has to stop the tank! The whole damn tank. How many tons is that, multiplied by how much motion?

What it takes to stop the forward motion of the tank, engineering-wise, is something like eleven times the area of that reverse-band you're having to do the job. Eleven times. That's a lot. Eleven times your present low-capacity could get you a heated gut. And for sure you'll get a heated transmission when that reverse-band bumps up. It doesn't take much home-play to shred it, either.

**STOP** your tank before shoving her into reverse.

## CLAVE PARI

How's the muffler shield on your M47? It does a fine job of hiding the schwaunglows, top and side—but maybe it also does a fine job

of collecting airborne debris such as leaves, bits of paper, and so on. This is a real tidy habit, and not harmful as long as the tank's parked. When you're on the go, wind again is when the trouble starts.

The red-hot exhaust ignites the collected trash, the wind blows it out the rear end, and you have a blazing trail behind you.

There's a screen on the end of the muffler shield to eliminate this fire hazard on newer production. This will keep out the junk when the wind blows. You can rig a similar fix for your tank—whether you have a short-sided shield (Fig. 1) or the newer shield (Fig. 2). And until you can get around to assembling the apparatus, a before-operation or at-half-clearing of the muffler-shield area will stop the fire.

#### FINAL-DRIVE GEAR-RATIO

The gear-ratio in the gear boxes for your final-drive should be marked, the same, paired—this you know. If they weren't matched,

you could get nowhere going around in circles.

Something you maybe don't know, however, is that when the CD450-4 transmissions are concerned, your final drives could be mismatched in gear-ratio. Along about mid-way in production, the gear-ratio was upped to 4:11 to 1. This marking (447 to 1) appears on the final-drive housing. Prior to this change, the final-drive housings were not marked. And that's how you can tell the one from the other. And that's how you can be sure of getting a mated pair in your tank.

#### FIRES AND SPARK-PLUGS

Detonation is a fire-back word that can mean more dollars than that in damage to pistons, rings, etc. And many things can cause excessive detonation, among them are: the wrong fuel, and the wrong spark-plugs.

There are no "lois" about it, soldier—there's one right fuel, and



Fig. 1



Fig. 2

one right kind of spark plug.

The right fuel is 80-octane gasoline. That is not 85, not 76, not 73, but ATEC-88—slightly worse. The right kind of spark plugs are tagged with Federal Stock No. G244-752-1155 for engines with serial numbers up to and including Engine Serial No. 1203—after Engine Serial No. 1103, you'll use spark plugs under Federal Stock No. G244-7525593. Whether or not you worry about how hard they are to get doesn't make another kind OK for the M44, the M44A1, or the M47.

You can use the right fuel and the right plugs and in a huge number—of you can use the wrong kind and go delirious all over the place. This latter choice will eventually find you without a tank to fill your own. And you may find a replacement harder to get than the right fuel and the right plugs.

#### **OIL-COOLER CLUTCH FAILURE**

The main reason for the clutch in the oil-cooler fan going dead electrically has been attributed to dirt and oil in the fan-brush housing. The prime offender is the fan-shaft and gets polished to a glass that's been acting as an insulator. Since the magnetic clutch gets its electricity through this shaft it must be clean at all times to be a good conductor.

The quickest and best way to remove the hardened glass from the shaft is to unthread the square-headed plug from the brush-holder

housing and give the shaft and brushes a good dose of carbon-10. Do this periodically and you'll get rid of ninety percent of the fan's electrical failures.

#### **ENGINE-OIL-FILTER**

After an M44 main engine has been overhauled or repaired from a major breakdown, it's good practice to pull out its oil-filter and give it a good cleaning ... after the engine has been installed in the tank and run for approximately five hours. The usual procedure has been to clean the oil-filter during the overhaul then forget it till the next oil change. This method has proven to be enough on the repaired engine and on the backs of the overhaul crew.

When an engine has an internal breakdown, tiny metal particles often go flying about and are carried into the oil-cooler. They stay in the cooler-core because very seldom do the coolers get flushed out while the engine's being worked on. When the engine's connected to the alternator all the bits of ground metal and gunk that's in the cooler-core get washed into the filter and eventually clog it. This causes the filter bypass valve to open, allowing the oil to carry the metal particles and muck back into the overhauled engine.

Cleaning the filter after five hours of engine time is a night's work; thus overhauling the engine a second time.



#### LVT TRAININGS

Dear Half-Mast,

On our LVT (V) (Landing Vehicle, Tracked, MK IV) our biggest headache is the pressure and vacuum cap screws (NORM-COLNOR). After operating for a short time, these screws tend to work loose, and as there are 250 screws per vehicle, you can see it takes time, sweat and a lot of cursing to tighten them.

Also, if they're left long enough without being tightened, the pressure itself will come loose on one end and then you're a good distance to replace along with a pressure. We've left the head section right on the bottom, as a loose head causes a lot of vibration and the crew knows that must hurt.

It's pretty embarrassing to have to stop in the middle of an operation to tighten pressure. Now you got a case for the particular headache?

Sgt. R. M. M.

Dear Sgt. R. M. M.,

Deepest sympathies are extended. It's a real aggravation to keep up with those — cause 'em — 2500 fasteners on the LVT track . . . but, if you'd tighten and then make work all the cap screws on the pressure side to the shore and long ball-ends (Fig. 1), your problem should be a problem no longer.

What's missing? "The crew's worse than the disease!" Well, it is a dirty job, but once it's finished you get no worries for a long, long time.

Except if things to remember though — the cap screws have to be tightened before each working, but here right is right! Here's where you work mostly by feel (if you over-tighten you'll strip the threads and if you under-tighten you're right back where you started). To go easy on the pressure, and when you think the cap screw has had enough, give it another slight twist until you feel resistance —

and that's it. Before you begin neck-welding, be sure your EPT's had enough hours-of dry-laid-operation to stretch the expansion as much as they're going to. If they **will** stretch in operation, and when welding, could you much less (plate would be bent all around them) or they'll weld up and stretch more later.

From where I sit it's easy to tell you not to operate your LVT 18's on hard surfaces . . . but since we got to be realistic, your real best bet is to measure the expansion before you get a screw loose yourself.

*Half-Mast*



#### SPARE-TIRE PLATE

Dear Half-Mast,

We had an argument about the old Jeep 4x4 spare tire plate, that is, which side goes out? Some of us say that the capped edge goes out, and

some say if you do, others say they don't know.

We would like to know if it makes any difference, or if there is any certain way you would suggest.

SFC T. A. B.

Dear SFC T. A. B.,

Yep, there is a difference. If you take a close upshot of this plate, you'll see a beveled edge on the mounting steel bolts. This bevel is set to take the beveled edge of the mounting steel nut just like in mounting the wheel on the vehicle. That way the lip of the cap faces in and helps keep the wheel centered on the tire rails. Otherwise, the tire may get shaky.

*Half-Mast*

#### WHEEL-BEARING OIL

Dear Half-Mast,

In the June PE Magazine there was an article on the possibility of wheel bearings on the M4V Light Beaver. We don't have M4V in this center just but if this rule policy applies to the M4V only not to any other vehicle?

Sgt C. A. B.

Dear Sgt C. A. B.,

The M4V Light Beaver used to be the only exception to the general lubrication policy so far as the amount of lube is concerned, this exception having been made at the request of the engineers. Seems there's a difference of opinion on this lube question. Some people believe that a large amount of grease will interfere the heat dissipating ability of the hub. Others believe the extra amount isn't needed because enough lubricant is received from what is packed right in

the hearing and that any excess is a waste.

As of now, both the new 2½ amp (Rex and Insulator) and the Luxon (International) are operating under this "extra" gross policy. On all other vehicles the amount of television remains the same as formerly but the interval has been changed from 4:00 to 4:15 AM unless on January, 1961.

*Half-Mast*

#### DIFFERENT SHOCK ABSORBERS

Dear Half-Mast,

Is there any way possible of installing different shocks on Civics to fit as they will take more abuse?

Sgt R. A. C.

Dear Sgt R. A. C.,

They're working on an improved shock absorber for this vehicle but it might take some time 'til we see it. Meanwhile, hold on to your work.

How about checking the shocks you have on to see if they're worn and need replacing? Also, try setting your speed according to the nature of the terrain you're on—if you can. Basically though, the M18, like most military vehicles, is a machine of constant for ruggedness and more will be very relaxing.

Other shocks could be put on with a few links but it would most sure wear and tear on you or your bugs than what if you were built for. It isn't considered the best thing to do.



*Half-Mast*

#### BATTERY TROUBLES

Dear Half-Mast,

I was lucky enough to get hold of your first and second copies of *PI Magazine* (midnight republishers). Must say you are in these pictures, Mac... I only hope the Marine Corps will see the light and get on your mailing list. In issue No. 1 you covered one electrical problem I've had, but you didn't mention a couple other battery items I've had trouble with.

After checking everything else on a couple batteries that kept losing charge overnight, I finally found a ground cable loose at the frame which helped some. Later got to fiddling around the battery top with my water leak and found I could get a reading in the cooling compartment around the cells. After cleaning out this one and replacing it with new, the battery held a good charge. Was I right?

Marine Sgt R. A. C.

Dear Marine Sgt R. A. C.,

You got something there large, anything that breaks the electrical connection in the charging circuit, regardless of location, will foul the works. And of course correct leaks, regardless of location, will drain the charge. Both of the items you mentioned are often overlooked. Swales and sponge sealing compound is a common conductor that many don't know about. When it leaks suspension, best replace it then change you get. And in a case like this, I'll pay you to check for additional places, too.

*Half-Mast*



# M135

## trouble stoppers

### TRANSMISSION ADJUSTMENT

Until such time as the front bend in the automatic transmission gets itself accustomed to the drive, it's going to need check-up—often. This is so important to the life of the transmission that "check" intervals have been specified. 1. Prior to setup stage (owner specifically, immediately upon receiving vehicles from the manufacturer). 2. After 500 miles of operation, check and, if necessary, adjust the bend. 3. After 1000 miles of operation, do the same thing. 4. After 2000 miles of operation, repeat the procedure. What procedure? You do like it says in TM 9-6194, page 265, paragraph 175, and Fig. 304.

And at any time that shifts don't occur like it says in Table VIII, p. 259 (same TM): the front bend adjustment should be checked. The rear bend adjustment, by the way, is something you don't have to touch—it's automatic.

### ENGINE-OIL DIP-STICK

If you're getting hot flashes, removing the engine-oil dip-stick for a quick test and tilting the battery in the process, a little re-positioning of the guide tube will prevent steering on the battery

terminal. You'll notice the guide tube is designed with a slight bend to eliminate interference in the clear quarters. Loosen the retaining nut at the base of the guide tube and turn the tube so that when the dip-stick's removed, there's more space between stick and battery. Tighten the nut.

This will make for better relations, but you still can't play like you're mowing a flag when you pull out the stick—a steady hand will make the difference.

### BRAKE BACKING-PLATE SCREWS

Check your TM 9-6106 on installing the brake backing-plate to the steering-knuckle (page 182). It says to install the 12 retaining screws and lock washers, and tighten the screws.

These screws *must* be right, or rub your fingers around a pencil and add a note in your manual for future reference. GM's says to torque the screws, please. The correct torque reading is 27-38 foot pounds. And in this instance, that's low tight is right.

### RADIATOR BRACE-ROD

That rod attached to the upper left corner of your radiator is known as the radiator-steady-brace. Normally it is fastened in its spring loaded clip. If it isn't, put it there. This rod should be fastened to the cylinder-head *only* when the engine is being removed or replaced. Otherwise, the rod's bracket will be torn loose from the radiator upper-tank when the vehicle flexes in motion.

# JOE DOPE

HOW TO PERFORM AN  
AFTER-OPERATIONS  
SERVICE ON YOUR VEHICLE



1

**INSIDE  
YOUR  
VEHICLE**

I SAID ACCIDENTS  
DON'T HAPPEN!  
I'M A GOOD DRIVER!  
I'M A GOOD DRIVER!



ON  
CORRAL  
SERIES

**CHECK PERISCOPE AND PROTECTOSCOPE**



SAFE



NOW BEFORE  
YOU GET TO  
NOW'S THE  
REPLY!

LOOKS GOOD  
TO ME.

# 2

## OUTSIDE YOUR VEHICLE

SO...FROM HERE ON IN, ANY POINT WE CHECK IT IN A LARGE, TIGHTENED UP BY THE MARCH.

SURELY, AFTER THAT YOU'VE BEEN "SMALL" SOURCE TESTED?

YIP, YIP!



### EVERYTHING AT CORRECT SPOT



### IT'S A SHIRT



# 3

## ACCESSORIES

SHIRTS, TIES, AND ALL THE OTHERS & MORE UNDER THE HOOD

# 4

## OUTSIDE CHECK

THINGS TO DO

- INSPECT AND CLEAN TWO
- TIGHTEN YOUR BELT AND WAIST ADJUSTING
- CHECK AND OIL YOUR BATTERY, TIGHTEN UP BOLT
- INSPECT SHOES
- INSPECT TIGHTEN AND OIL BOLT
- INSPECT TIGHTEN BATTERY TIGHT
- INSPECT BUSH AND OIL AND CHANGE IN
- CHECK CENTER-BEARING AND TIGHTEN

AND NOW THERE'S NOTHING LEFT TO DO BUT CHECK ANY OR LINK TO THIS SOURCE.



5

CLEAN  
UP

LUBRICATE EVERYTHING  
THAT NEEDS LUBRICATION,  
CLEAN DIRT OFF  
ENGINE AND CLEAN  
THINGS ON FRONT  
END OF THE MOTOR?



**JOE'S**

# Dope Sheet



**WE HAVE THE WORLD'S BEST EC**

Oh, hear ye our sad tale of woe,  
Our plane was just wrecked by a tow.  
In flight she is agile  
On land she is fragile  
And we'll soon tell Joe Dope  
where to go!



**EQUIPMENT** *Take care of it*

# M38 CHANGES

The latest in vehicles are going through lots of changes before they get their final stamp of approval. When a good idea comes along, models coming off the assembly line get the benefit. Here's some on the M38 which ought to raise some questions.



## LEAKY BY-PASS HOSE

A leaky by-pass hose can let water out of your cooling system and onto the motor. And that's no place to by-pass your water. This problem may be caused by a loose nipple in the water pump hole at the lead to the by-pass. To solve this, remove the by-pass hose, tighten the nipple and finally replace the hose. Use a water-proof cement as well as the clamp to seal the hole in place.

## STEERING-SHOCK CAP-SCREW

Some turning radius stop screws ridge the ridge on the cap screw of the steering knuckle, hard and often, bending the ridge. This stops the front wheels from stopping where they're supposed to stop. That can cause the front tires to rub on the tie-down brackets. One fellow suggests filing off the ridge to get a solid surface and then sealing the cap screw with a washer for the original thickness.

## NEW BOLTS AND CABLE

Therwell-br hardened steel bolts for attaching the brake backing plates to the axle led to bolt.Ord. No. 181278, 1/2-24x1 1/2 has had, to replace bolt GM-305017 a few months ago. These bolts take the strain of brake application.

And the hand-brake cable and its sheath have been made 1/4 inches longer to allow for clearance over the brake master-cylinder shield and exhaust pipe.

## TRANSMISSION GREASE IN SPEEDOMETER

We can't say who put the grease in Mrs. Murphy's chowder, but we have an idea how grease got in Sgt. Murphy's speedometer. In the M38 the vent for the transmission is combined with that from the transfer and is located on top of the transfer case. There are times that the breather gets plugged with



strained up all. When this happens, the pressure built up in the transmission and transfer has no outlet so it forces grease up the speedometer shaft, and there you are. Try a larger vent tube and see if it doesn't relieve the situation.

Overfilling the transmission and transfer with grease can also cause up a speedometer though it's less likely to happen. Anyway, give any excess tube a chance to spill out before plugging the filler hole.

### NEW IGNITION PLATE

To make sure you're sure, the ignition switch has ON and OFF positions printed on its plate, Part No. 884639, since last July. At the same time a tag was added to hang on or near the steering wheel as a warning to drivers about the right position of the ignition switch for ON and OFF to avoid runaway batteries. The tag also tells how to operate the cruise light-switch, the fueling knob and the primer.

### CRATE BROWN WIRE

If the brake line and horn wire get snagging too close together your trailer can go on the blink. The brake line chafes the wire which may end up in horn trouble. Bending the line slightly toward the engine, allowing about an inch clearance from the horn wire, is one possible solution. But beware about putting a kink in the brake line. Another idea is to let your wire drag a little.

### WATER IN MAP COMPARTMENT

Water in the map compartment might not cut you short or wet your clipboard but it can make your odds and wads messy. And water doesn't have to seep in hard to get through the right-side hole of the battery-compartment lid-latchener when the shock holding the lid down is loose. When you're in that condition, stamp a washer out of a blow-out insulator, using the hollow punch set (2nd edition tools). This ring should have a 5/16 inch hole and be used with the original washer to seal the throat of the latchener.

At the same time look at the firewall joint in front of the compartment. This joint should be joined tight—weld it if it isn't. The map compartment in the new outfit is water resistant and, while not waterproof, should keep things dry even while fording for a few minutes.



# Oil-Pressure Sending-Unit Merry-Go-Round

Are you having a heck of a time getting a new high-pressure oil-sending unit to work in your car? If you are . . . here's some good news that may keep you from getting into a barrel with your supply-room gang.

First, in the 1941, 1941 1/2, 1942, 1943 and their related vehicles, new types of electric oil-pressure-gauge systems have been installed.

Some make use of a Seaway-Water oil-pressure-gauge system while others

have the AC IAC Spark Plug Div. GMCI system . . . parts from these two systems are not interchangeable. The merry-go-round usually starts when one of the sending units goes kaput and is replaced with a unit that belongs to the other system. You'll probably wonder how you ever got your hands on the wrong sending unit when you got the right stock number out of the house. Well, and it didn't say anything about sending units for other systems. Well . . .



according to TB QRD 96 (11 May 1944), when ordering an oil-pressure sending-unit, it is important that in addition to the stock number, the unit be identified by the manufacturer's name and number, and the Oldsmobile part number.

Try and get these numbers from the old part, not from the SFL. If they're not legible then follow the instructions in the chart above.

Sending-unit and panel gages in group A set of the Seaway-Warner electric system, there aren't many units around that have it. One way to tell if a sending-unit is for the PE system, is to see it with an ohmmeter; it will show about 121 ohms resistance when no pressure is being applied.

The sending-unit and gage in group B set of the AC electric system... the one used in most current tanks. When these sendings are used with an ohmmeter, they'll register "0" resistance.

When substituting a replacement for a sending-unit, besides giving the stock number (Q106-714648), manufacturer's name and number, and the Oldsmobile number, require the listing also put to comply with paragraph 3 of TB QRD 96 (11 May 1944) if they intend to send you a substitute. This TB says, if the particular unit required isn't available, another interchangeable unit or complete assembly (gauge and panel unit) be furnished in accordance with the chart on the TB.

## OUT ON A LIMB

### GLAZ' CO.

Keep Our Collective eyes, like the Silver Glaz in the September issue, [p. 181] are a light pink. And like the pink Silver Glaz, the pink ones indicate PE was slightly damp.

It seems that Silver Glaz is still in the picture, and that only a small portion of it is either voided for resistance reasons. Most of it is clear crystal, but it may be any of several colors and still be a useful drying agent.

### DAVEY LIGHT-SWITCH

If the tank were known, the position of the safety light-switch (PS, diagram) for the new vehicles is not real exact. You'll find the main info and diagrams in the vehicle TM's also. The reason there is no true movement of the main vehicle from OFF position to NO Entry. The only true movement is one click to the left for NO Machine. Unlock the main switch, please, for all other positions.

# ARMAMENT & AMMUNITION

**KEEP THAT GUN BOOK—  
JUST FOR THE RECORD**



Ammunition that goes wild of the mark can be more than an inconvenience. It has been known to make soldiers very unpopular with their buddies, especially when it falls short and lands among them.

"Wild" shots can usually be traced to gunwork, carelessness, or faulty records. Shooting round after round of ammunition without keeping scores will land you behind the eight ball.

It works like this: Your gun has fired away most of its expected life and needs a check for erosion and bore damage—how're you to know? You haven't kept your gun book.

Do you keep on shooting. Your shots go on a spree, ranging here, there, and everywhere they're not supposed to go. Maybe the whole thing will add up to just a waste of ammunition—which is serious enough in itself. On the other hand, by the time you get wise to what's going on, your erratic shooting may have caused a few losses for the wrong side.

Then comes embarrassment number two.

You need your gun to be over-

hauled, minus gun book. This makes the service crew very unhappy and they will hate you violently. They need the dope in your book as much as your doctor needs to know where pain is before he guesses what's wrong. They have to know what's wrong. They have to know what repairs have been made, the number and type of rounds fired each day, malfunctions, dates of inspection and other data, completed MFO's and accounts of essential life and model changes.

What's the result when you've laced up the entries in your gun book, or when your gun book is lost? Confusion—lost time and valuable data—and general bad feeling all around.

Another thing. Suppose you have made your entries. Your firing physics may be perfectly clear to you—but how about the guys back in the shop who never learned shooting? Can they read it? Even after they scrape off the grime?

**KEEP YOUR GUN BOOK—  
AND KEEP IT CLEAR.**

She may look clean, but...



when it's colder

## SMALL ARMS CAN FREEZE

With the thermometer registering way below zero, this maintenance business can be a mighty stiff proposition. And rifles have been known to leave you cold when you're stuck in need of fire. Remember that gun writer's words are underpinning with everything from kerosene hair tonic and coal oil to anti-manufactured products.

Well, you can toss away those kerosene-made items, soldier. Recent tests on cold weather performance of small arms point to frozen lubricants as the cause of your jamming problems. When caught in this jam, rifles have been kicked, tossed, banged and hand-operated... everything's been tried but hand-sling bullets. But no go. When it comes to continued cold weather usage, bottles you've used. And the only real cure is what you learned in weeks days—KEEP IT CLEAN AND UNCLOGGED—like it says in FM 78-12.

There are two main points to this cold weather operation problem. The first is Cosmoline or Compound, Rust Preventive (Spec. 2-

121). This stuff is like slow molasses inside your gun, and **IT GOT TO GO... ALL OF IT.** Only small consolation is that while you're freezing you can't rust. So when time comes packed in Cosmoline a **COMPLETE DISASSEMBLY JOB** is SOP, urgent, and downright necessary. Same on-the-spot job may have already disassembled and cleaned your rifle, but make sure. You can sometimes spot the Cosmoline when field stripping, or it may come oozing out when you hit a warm spot. If you've never got an inkling you're still carrying the stuff, find the man in your outfit who knows his rifle best, and get the **JOB DONE.** The best method for getting rid of this ring in your rifle is:

1. Remove Cosmoline by any reasonable method such as soap and water. (Wood parts are not boiled.)
2. Disassemble and wash each component in solvent.
3. Clean bore with solvent.
4. Wipe each part with a dry cloth.

The second point to consider is cold-weather shooting in your lubrication. Oil reacts to cold about like Comstock does, and an overdose in your rifle can really gum up the works. Don't CLEANED of Comstock-based oil, but JUST A LITTLE. A new type pack, the Velsol Comstock Lubricant method (Jan-D-111), now being tested for small arms, brings your rifle to you already oiled, with special preservative lubricating oil (Jan-L-644 or MIL-644A). In milder climates these rifles are ready to go after a dry-cloth wipe-off. But when the temperature's way down low these VCI-packed rifles have to be THOROUGHLY CLEANED, and then MIL-OILED... lightly with Jan-L-644 or MIL-644A.

Here's how to lightly oil your de-Comstocked and de-oiled arms:

1. Always rub a thin film of oil on your hands to start with... like with above lather. Hand perspiration and finger prints have destructive acid on bare metal. This acid will continue to cause damage to your rifle even after the metal is covered by oil or rust preventive.

2. If using a cleaning patch, wet it with oil and wring thoroughly.

3. Coat surfaces of all parts with a thin film of Jan-L-644 or MIL-644A, either with the cleaning-patch or by running lightly-oiled hands over parts.

Another thing that could happen before freezing is this matter of a heavy rifle. A cold rifle brought

into a warm bedroom will sweat. If left there it may rust. A cleaning rifle carried out into the cold again will freeze. Any way you look at it, that moisture gathering on your rifle's bore can cause plenty trouble. And a CLEANING-LIGHT-OILING job is in order.

To take another look at Old Bear, she may look clean, but... is she ready for action below her forty-eight's parafin?

## 85-RUM MOSTAR BASE-PLATE

From Korea (the rock-garden of the world) come tales of a new battle. This one's between the new circular, two-piece 85mm mortar base-plate and that cold, cold ground. The real story is that you get hard metal (your mortar) pounding against hard metal (your base) pounding against solid granite. Something has got to give... and lately it's been the rotary base-plate that's been cracking, right up its middle.

Behavior? One unit tried going back to the old rectangular base plate. But they still handle like steel. Some blame excessive charges during cold weather. Others say DOG TUM IN. And if you can't dig, cushion 'em with sawdugs, wood, logs, brush, anything. Better to take a few extra seconds before firing than to get cracked wide open in the middle.

## WHICH 4.2 MORTAR AMMO

If the shell fits, you wear it . . . but just because the ammunition fits, you fire it? Not on those 4.2-inch mortars ya' shoot. You don't shoot till you're sure.

There are two kinds of 4.2's . . . the M2 and the M28. Even there'll be only the M20, but for now you got troubles. Both of 'em will do a good day's work in the same type rifles—M2A1, M2A1, M2A8 and M20 shells. Even the M208 and M209 lugs. Crossing the cartridge-container plus the cartridge

container extension) will fit, aim, and fire in both the M2 and M28.

**BT**—and this is for the guys who get a big bang out of a large charge—the eyes on that M2 are bigger than its stomach, and it'll stretch from an increased charge that's gone gray in the M20. And maybe, no prob' for you. The **M20** when it's firing M208 and M209 lugs will take up to 41 increments, and be a real hot shot.

But no matter what cartridge you're firing in your **M2**, you **NEVER, NO NEVER, NOT EVER** use over 2½ increments. Ya' do and you'll be building a bridge that'll fail on your **M2** for sure.

## M19 60-mm Mortar... Your Pin Up?

### Signs of The Times Say You'll Have a Choice

If that M19 60-mm mortar you've been firing by trigger suddenly ain't bakin' and sends up a shell like it was set for drop fire—same face by hitting the dirt, but quick, whenever firing your **M19**.

Keep your trigger happy and working the way you want it to, by giving it lots of spring tension. What happens is that primer sets, carbon residue, unburned powder residue, and just plain dirt get into the firing mechanism on the job and prevent the pin from being drawn back into the firing. And just like that, you've

got a dead pin.

Also, you could develop a spring spring, which will hold the pin so tight as if you'd set the selector for drop fire. Tender on the firing spring can be tested when cleaning. You may need a new one.

The only way to keep this party under control is to **KEEP IT CLEAN** . . . at least once a day, and after every heavy roundly possible. If not possible . . . **BT** **CLEAN** with safety precautions. It's not necessary to be caught overseas with your firing pin up.

# FIRE CONTROL



## LEATHER KIPING

It's a rough ride! Side but it's hardenig' to be used for. That's the way with leather carrying-cases you get to tote your instruments. Most of the stuff inside is made of fine leather, and cleaning it means removing all hardened grease with a shiver of wood and then washing it with a sponge soaked with a heavy lather of saddle soap and clean warm water. After the wash, rinse with clean water and rub with a dry cloth until the leather is dry.

Some leathers may want to scrape the grease off with a piece of glass or a knife but, no matter how careful, there's bound to be little cuts that may end up in big sores after a little handling. And should those horrors use a solution with a strong alcohol instead of saddle soap, or let the case dry in

the hot sun, they'll weaken the leather's natural toughness and make it brittle for sure. Saddle soap (#1-S-1776 QM issue) is a soft paste soap 'specially made for cleaning and preserving leather, and can be sponged on with a coarse-pore, cellulosic sponge, #1-S-4107.

You'll find that washing leather a few times takes away most of its lubricating oil. In order to keep it from becoming harsh and brittle, rub a soft cloth moistened, but not saturated, with mastic-foot oil (#4-D-307 QM issue) over the surface. Only a very light coat of oil now, and that after the leather is dry from the washing. Then end up by wiping off any excess oil and rub it to a polish. No spit!

If your carrying-case was treated to a special coat of moisture-and moldproofing (which you won't know just by looking at it), have it retreated for that added protection...the washing you just gave it neutralizes the fungicide.



To get the items described, quote TA18-008 as your authority. And for those-dogs-on-takin' care of leather cases, you might like to look at TM 9-830 and TM 9-575.

## BATTLE SHORTS

Battle Shorts or the MCM (TM 9-670A) are swell gadgets but what's to control the guys who controls 'em?

These low delay-timers rigged to give the gas-tube modules and the tracking and acquisition magnetrons a chance to warm up before the high voltages go blasting through the systems—are mighty handy regulators. Using the Battle Shorts to take the equipment from "standby" to "operate" in short order, without thinking twice about the probable damage to these switches, may find you caught with your equipment down. Yet, there are lighting times when it pays to take a chance—that's why the controls were put there to begin with. But it's only when things get real hot that you'd want to remove the delay timers and risk a short cut.

Besides bypassing the timers, these switches also work you by other practices—which may serve a useful purpose. In battle emergencies for instance, by de-energizing the electrical stream for quick action you can skirt any heated-up time delays, interlocks, or safety dead-switches holding up the work. But remember that in-

terlocks are safety plugs made to protect trainers against high voltages—pulling that switch closed wide-open changes. Warming up over the fryer won't help, so go safely when moving the red button.

## Mounting An Instrument

Wedge-hammering assemblies would be nice in any shop. And that goes for stacking an instrument on its mount as well as anything else.

Sometimes the connecting parts of this machine are roughened and marked with striae and burrs. These bluish-essentially come from the instrument or mount being banged or bang about and can send some jolt off the beam when he goes to use them. Especially if it's the kind that fits on a spindle and rotates.



# ARMY AIRCRAFT

## Maintenance and Supply Switches to Ordnance



As many of you know, the care and feeding of Army aircraft is now the responsibility of the Ordnance Corps. The changeover from Air Force to Army is a gradual thing, that's been taking place ever since the National Security Act of 1947 established the Air Force as a separate service. Before that time, the Army Air Force was in charge of all aircraft including the few planes then used by the Field Forces. Using units of the Army did organizational maintenance only.

Taking over a complete new service, particularly a specialized and technical activity like aircraft maintenance, takes lots of time and lots of planning. The planning has been going on since 1947, and is still going on. In 1949 an Army Aircraft Section of the Ordnance Field Service Division was created. In January of '50 the field maintenance responsibility for aircraft and the related supplies began to be assumed officially by The Chief of Ordnance.

As the situation stands today, The Air Materiel Command, U. S. Air Force, is doing the development,

testing, and procurement. Also supply and overhaul from the depot level to wing. Army has the field maintenance and supply, and the organizational maintenance and supply. (Roughly equal to 1st, 2nd, 3rd and 4th echelon responsibility.) Plans are going forward to switch depot supply and overhaul to Ordnance in the not too distant future.

Now, is there a thirty-year man in the house? To you, friend, for what it may be worth, there is a general shortage of Army Aircraft Mechanics, M006 M008, and an acute shortage of Army Helicopter Mechanics, M008 M009. Moreover, the aircraft program is just beginning, present plans call for lots more of 'em all through the service '50?

Your old friend PG Magazine is now included in this program too. We're starting with this issue, you can have an Air Department, run by a guy called Sgt Winky, who will do on the wing what Hall-Mat does with his feet on the ground. You can look for letters, tips, field facts, and suggestions from him, and ourselves, let's welcome to hear your problems. Be with us, will you?

## Lost On The Ground

A duck on the ground is about as lively and clumsy a thing as we have ever seen—reminds us of an airplane taxiing on rough ground. Aircraft in flight, even the little biplane types you see around you, are very pretty things. And they can take an awful beating—in flight. But an aircraft on the ground (and it will have a strong, graceful beauty in a way that old help who must be plumped).

But lots of people don't know this. They see the kind of landing around these ships take in the air and in rough field landings, sometimes after hours of being shut full of holes, and they begin to think of aircraft being as rugged and durable as the Jeeps and six-by-sixes.

This kind of thinking, unfortunately, costs a lot of lost time with these aircraft.

Someone slides a Jeep up just a couple of inches too close, and the tail assembly of a ship is tossed up farther over. Or they walk under the wing with their weapons slung on their shoulders, and hear crisp ripping noises (fatigue tearing on the wing, hair being torn out by the crew chief).

Or they step where it says "No Step" and all of a sudden they are ankle deep in airplane.

The ships just are not built to take abuse. To be light enough to fly, they gotta be made of light fabric or aluminum, not steel plate and canvas like a truck. So play like handling a crate of eggs whenever you are around an aircraft. Only treat the eggs singly.

Every so often you will be unlucky enough to catch a ground loss around an aircraft park. In such case, any pilot or crew chief will be only too happy to tell you a few ground secrets about airplanes before he leaves for his work.

The fair trade in the deal is that you don't explore it yourself later in the night. It is no end of fun to sit in a cockpit and play like Black Rogers, but the chances are you'll not get all the glances and dooflicks back like they were before, which makes your fun not so fancy when some guy has to take-off-but first—in some emergency. Not to mention your old face if you pull a lever to "Landing Gear Up" and Betty kneels down like a tired elephant right under you. In some you'll fall right through if you sit down without a parachute on.

If you should be as unlucky as to hit or damage a plane, **tell the crew chief.** Flight crews stake their lives on their equipment.

# New News On Aircraft

The following items are straight from the presses, on the L-10's, and the L-17's — some do's and don'ts you won't skip if you're going to help them stay in the air by plowing them on the ground.

## BRAKE-LINE PROTECTOR

It seems that the little 1/2-inch section of protector hose that runs under the spring clip on the L-10A brake lines (AFM 01-125LAA-1, page 73, Fig. 4-81, reference 10) has been slipping out of place (Fig. 1). Subsequent vibration of the brake line means P-tying-up. No clip, the aircraft after No. 31-4140 will have this hose made one inch long, and cemented to the line. You, too, can have this same protection by slipping an inch of hose, cementing it in place on the line, and lacing with twine and staples (Fig. 2).



## GENERATOR, REGULATOR & LANDING-LIGHTS REPLACEMENT

On the L-10A's TO 01-125LAA-6 will be revised to increase the replacement period on generators from 500 to 800 hours. On reverse current relays from 500 to 1800 hours, and to eliminate the fixed replacement period on landing lights altogether. On the addition of Air Mat Command, you are authorized to use the longer periods of time pending publication of the revised TO.

## TIRE LIFE

Seems to be lots of tire wear on L-10A's. If you're bothered, turn to TO 01-125LAA-3 for the way to check your wheel alignment. And, of course, turning your wheels around at inspections (major inspections) will speed the wear.

However, you are **not** authorized to use 5-ply coatings to combat excessive wear—since they have no

appreciably longer life, and they do increase the loading capacity shock.

It is further suggested that if your heavy porters in unloading, be those that you check carefully for looseness, wear, and distortion at the wheel and axle assemblies. And be sure to install the axle nut as per instructions in TO-NM 11-12 SLA-A-2, Sec. IV, Par. 4-306a.

#### WATCH THE WATER!

The L-17 users are reporting troubles with water in the fuel systems. Condensation from empty or partly empty tanks being part of the cause.

To prevent this, do your tanks after each flight and be extra careful to have the ship string level when draining the tank sump.

What puts the wrapper on this at this time of year is a little thing called freezing. A quantity of water you'd never notice in warm-weather operations can freeze up in the low spots of the system and stop your fuel flow. Hard starting in cold weather can be one symptom of this, excessive fuel pressure can be another. (This happens the Adol pump and the fuel-pressure relief valve.)

And remember, if you take hot air out of a warm hangar into cold air with water in the system, the ship can come home in a basket.

#### LUBRICATION

Newest tests on the L-17's point to AN-G-5A grease as the latest decision for all main and auxiliary landing-gear wheels. And this latest information is all yours.

### WISE GROUND PILOTS:

#### 1. RESPECT SPINNING PROPELLERS

Get out to main field



#### 2. RESPECT THE LAST SWEEP OF A HELICOPTER ROTOR

It kills the helicopter!



#### 3. KNOW THAT A HELICOPTER'S SWING IS IN THE TAIL

Like with a duck, fly to tail.



#### 4. DON'T LINE UP IN THE PLANE OF A PROP

It smashes you to bits, instantly!



#### 5. KNOW WHEN THE FIELD IS "BLIND"

If you can't see the main in the cockpit, he can't see you!



## 'WINDY' WINDSOCK'S

### AIR MAIL DEPT.



#### CRUISING SENSE

Dear Windy,

We have an L-13 which is periodically rigging-heavy. We have attempted the wing root extension to give maximum lift, and also tried the permanent alternate trim tab up as far as possible but she still flies wing heavy. Naturally we have checked our alternate drag and cable adjustments, also our weight and balance. Can you help us?

L.L.O.R.

Dear L.L.O.R.,

Has it occurred to you that maybe your L-13 is following light as well as light wing heavy? I mean the left wing could be out of adjustment and giving excessive lift. If it's not, I am afraid you'll have to go back to AN 81-121-LAA1, pages 1 and following, and check the whole machine out again to see if anything's gone awry. If any of the rigging dimensions are out beyond the limits of adjustment, you may have to send her to depot for correction.

Windy

#### MAINT' TAKE-OFF

Dear Windy,

What do you know about the availability of dual or compensator landing gears for the L-13? We had some of these ships on maintenance in the last fall, and had an awful time landing them, getting up flying speed on take off runs.

CWO E.D.B.

Dear CWO E.D.B.,

There are no dual or compensator landing gears available for the L-13's, but AAF Manual No. 1 has been coming down and found them to work well in sand and mud. Until they get into ground supply, all I can suggest for soft sand is to be sure of the air out of the tires, and keep the tail low on take-off runs. Might also consider being easy on the run up and the RPM in general to avoid exciting the prop, landing edge and windshield with blown sand.

Windy

#### MAINTENANCE KIT

Dear Windy,

I have a suggestion which I believe would be of great value in speeding up maintenance procedure, and saving the wilderness of parts supply for Army Air Corps.

As you no doubt know, the periodic inspection of all our aircraft call for the arbitrary replacement of some parts, starters, landing-gear bolts, generators, and control-surface pins for example. They also require routine greasing, etc. Is reasonable units torn down for inspection. In addition, some small

parts may or may not be needed, but their cost is so slight compared to the possible loss of aircraft time that they might as well be provided.

My suggestion is that such parts be assembled into kits, and issued as inspection kits, all in one package titled, say, "Kit, 200-000 for inspection, LIP", or "Kit, 1000 for inspection, LC/MC", which will just provide all the necessary parts for a complete inspection without delay, and second, provide an easy and fast method of drawing such parts. In view of the possible field conditions which may crop up, where a mechanic may be called on to perform an inspection on a type of aircraft near to him and for which he has no Tech Order available, I suggest that an excerpt of the pertinent Tech Orders covering the inspection specified by the kit be included in the kit.

Wjg L.A.C.

Dear Wjg L.A.C.,

As of now, all I have on this is the fact that your suggestion was sent to the men concerned with it, and they thought well enough of it to mean an investigation of the possibilities. When I hear more about their decision, I'll let you know.

Windy

#### NEVER BLAME LAM

Dear Windy,

I have a suggestion to make. On the EC 120C's, the tail wheel also uses a ballnut at the bottom of a collar containing needle bearings. It is possible to clean this assembly without dis-

assembling the wheel, but in order to re-lubricate it, the entire wheel must be taken to bits. I suggest that the removal of a tail fitting in this collar would be most helpful.

Wjg M.T.E.

Dear Wjg M.T.E.

I can't go along with you on that grease fitting. I thought it was good myself, at first glance, but deeper digging turns up a couple different angles. In the first place, since you only get into this assembly (Fig. 1) at the five-hundred-hour inspection, they want you to take it apart and examine the race and needles for wear and galling. In the second place, grease lubrication isn't good for needle bearings. In every place, that comes in again whenever you have an idea.

Windy



Fig. 1—Collar bearings can be checked for wear and galling, so disassemble don't to clean and lub. 'em. It's rather than say.

# SUPPLY & DIRECTIVES

## HOW TO BE A GOOD PARTS MAN

The new mechanic in the Army motor pool soon learns the Army has its very own system for managing spare parts...and what helps to learn the system, is the ability to find the right directives. Here's a small guide-line that will help brighten your day in the big city.

Check first at the T.O.M. for your unit and you'll find the quantity of each major item. Doptom says you can have—also use the SNL. This will give you your stock level.

Then with any luck at all, you'll find a current Ord 1 Index, which you can check to see if the SNL is still in use. SR 9-1 might help too, as it lists publications for each major item and combinations of items.

A separate SNL is issued for nearly every major item of equipment, parts are listed by groups like "Engines", "Chassis", etc. and the number of them allowed for use is shown. Some items you use more often should be stocked by your unit...items not used so much can be ordered as needed from the stocks of Ordnance Field Maintenance. August 1953 FM explains how to use a Supply Catalog.

Then there's the locator and inventory control card (DA AGO Form 971). It should be properly filed in and kept that way. It'll show you which items you can use in place of those you don't have, manufacturer's numbers, new Ordnance numbers as they're changed—but most important, it'll be a history of your needs and often the basis for increasing your orders, when necessary, for better operation.

Here's a few tips for future reference: EXPENDABLE & MISCELLANEOUS ITEMS ALLOWANCES are listed in SNLs of the "H" and "K" series. SUPPLY AND TECHNICAL BULLETINS are listed in SR 310-28-4. PUBLICATIONS ON MAJOR ITEMS AND COMBINATIONS are in SR Ord 1-1. LUBRICANTS are listed in QM Supply Catalog 3-14 "Oils, Greases and All Lubricants." DA LUBRICATION ORDERS are listed in SR 310-20-4. BLANK FORMS are listed in SR 310-26-4. DA AGO Form #13 is used to order all publications (continuation sheet is DA AGO Form #37-1)...you'll need some registration blanks and locator cards too. Other information can be found in TFO-185, AR 750-3 and in the TM's issued for each item of equipment.

Take a specific example: The new truck, 3 1/2-ton, 6x6, M34, Res. Ord 1 lists Ord 7 SNL 8-742 as pertaining to this vehicle. If your company T.O.M.'s for the 6x6 shows you 38 Res Trucks, the allowance



for your unit is listed in the 14-40 columns. In addition, each supply shop should have the parts authorized in the first column. A locator card (DA AGO Form 9-71) should be made for each listing, showing all the information given you in the SWL. When you get the parts, give them a space of their own in the storage cabinet and be sure to fill in the locator card, showing location, number received, etc. Keep these cards current all the time and the story is there for the looking.

If your head is swimming at this point, just see your Adjutant and get the right publications to start with. It's the answer to being a good parts man.

#### **DIRECTIVE YOU'VE BEEN ASKING FOR**

If you've been clamoring for directives on the 1/2-ton, 4x4 truck, M3A, here's news for you: ORD 9 SNL, G-748, MWD ORD G-548-W1, and Change 1 to TM 9-1804A have been distributed.

On your 1 1/2-ton two-wheel cargo (M304) and water tank (M305) trailers, ORD 1 1/2 SNL, G-754 (not), as well as TM 9-1718.

There's an MWD on your 2 1/2-ton, 4x4 cargo truck, M34, MWD ORD G081-W1, and two new pages for the Technical Bulletin 9-402-3 and TB 9-818-3 on this vehicle.

And have you seen these directives on the new M35A, 2 1/2-ton, 4x4 truck? TM 9-370A is the op-

erating manual, TM 9-1818A is hot off the press and gives the low-down on the Hydra-Matic transmission on this vehicle. The talk's still out on the revision of ORD 7 and ORD 8 SNL, G-749 and ORD 9 will be along very soon.

You've also been asking about directives on the M31, 3-ton, 4x4 truck, so here they are: TM 9-637 and ORD 7 SNL, G-744, TM 9-1837A on the engine and clutch will probably be in distribution by the time this reaches you.



#### **WHERE, WHY AND HOW**

DD FORM 708-208-3 (18 December 51) has come along to replace the old one of the same number. It deals with sources of supply of Ordnance general supplies and the system for their distribution to installations and activities of the Departments of the Army, Navy, Air Force, Civilian Components and other Government and International agencies. It gives you all the info on how and where to send your requisitions, and names the other directives to be used in the case of each type of installation or agency. It's a must for a supply man.

ers and lines in Southern Coches, total capacity is 30 gal.

**0149** Loose flap valves, and airways not streamlined with flaps, can cause wing turbulence in L-19 aircraft.

**0150** Because the cap screws holding front brake-assembly and spindle to steering knuckle on M16's can work loose, they need frequent checks and tightening.

**0151** Those fast-wearing steering-knuckle (M16 ribs, steering-pinion assemblies) shouldn't be tossed away. Send the knuckle knuts to Springfield Armory for reworking.

**0152** If M16 brake pedal's strike oil-pressure sending-unit, a steering nipple to control sending-unit to block will allow full application of brakes.

**0153** A lousy job of screwing the spring-mechanism housing on 120-Hawthorns can leave loose headspins, which leads to shock fring mechanisms.

**0154** Stick close to your M16's gunner while she's operating—if she starts spin' down, you'll be able to catch her off before the current slow-down bumps up the tank-flores.

**0155** Unseen pressure when you're tightening front and rear differential-covers on M16's can give them a pronounced buckle.

**0156** Some trailer tailgates aren't built to be lifted from vehicles with high-lift-truck forcs—see

much pressure for them.

**0157** A pair of brackets mounted on top of body-tilt lock-rod on M16's will make storage space for pedal-levers.

**0158** Silicone oil-seals are destroyed by oil-and-grease-dissolving cleaners and abrasives, and should be cleaned with clean cloth and a dab of clean GAE #10.

**0159** The odds are 1 in 1000 that mortar malfunctions are caused by faulty ammun. box—if you're blasting the ammun. you're probably missing what's really wrong.

**0160** A home-made guide will help brake-spring pliers work on new 9/16-in. loaded linkags.

**0161** The latest rumor (from two posts over) says steering-knuckle-bush Nibs (Q242-2419-843) are available thru channels.

**0162** Unless they're oil saturated, your L-19 oil-filters are practically useless.

**0163** M16-series 5-ton-weight flat-air-brake cutoff-pressure topped from 190-185 psi to 115-120 psi.

**0164** L-19 and L-17 carburetors look alike but are not interchangeable.

**0165** You can keep exhaust kames out of the M16 cargo area with a 17" tailgate extension.

**0166** The M100-trailer cable-pocket-cover will unlash the M16 left reflector if the cover's not locked open when you hitch the trailer.

**0167** To light the M104 tail-

er's right-hand black-out marker, note M13 2 1/4-tons need a wiring modification.

**Q114** Aviatik and Delta Heavy 24-volt generators and regulators switch with each other, any which way, is ac/dc.

**Q118** On L-17Es, cracks in tank welds on landing-gear string-assembly indicate failure of brass joints.

**Q121** Some M41, 5-tonners got out with three cap-screws in face of clutch-pressure-plate housing—they're used in assembly only and need to be removed.

**Q120** Ground break-ies will fail instead of help run or rebuild aircraft engines.

**Q120** Keeping small batteries in warm pockets saves them for those night-lighting devices—especially at -30° F.

**Q121** Keep your compass out of the watch repair section by locking the needle when you're not using the compass.

**Q122** Flywheel housing drain-plugs can be stored close to the housing by welding a half-pipe

under to the frame.

**Q126** Checking transmission and differential oil levels in M4, M4A1, M4A1C, M4C High-Speed Tractors is less confusing with the right procedure.

**Q127** Brake-adjustment on 4-tonners calls for exact adjustment since undrained bearings allow only 0.038" to 0.050" heel and toe clearance.

**Q128** If you're setting up an 80 directed battery, you should know about a "spiking" for steering the steering-arms.

**Q128** M5 tractor armature X and Y brushes can be checked and set exactly 90° to each other without a multi-voltage lead set.

**Q140** Wadding the right kind of rig will ease your struggle and prevent rear-wheel oil-and-damage during wheel disassembly.

**Q142** It makes a difference in the life of the M4B-Hawkeye how you go about routing its torrid tube.

**Q145** TOVE units can regulate hose for vehicle washing by authority GND J 30M, 317 (March '77).

## Please Don't

—only if you need it

You can have the full story on any thing you've seen listed, the answer is for your convenience. Clip it, fill in the blanks, and mail it to Editor, PE Magazine, Aberdeen Proving Ground, Maryland.

DEAR EDITOR,

I need info on the following subjects by the numbers—and I need it fast.

NUMBER \_\_\_\_\_

\_\_\_\_\_

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

\_\_\_\_\_

# CONTRIBUTIONS



## **C.V. JOINT GAMBO-BOOT**

Dear Editor,

There have been numerous complaints about the C.V. joints geared best on the MH being purchased. It may be that in most cases cheap imitations are purchasing the boots when the vehicle is driven forward in heavy break and then reversed out. In that case it would be very simple to fabricate a guard in the case of the axle, similar to the one in front. This would not interfere with the operation of the vehicle.

On the other hand, these purchasers may be caused by the adjustable screw which holds in place the two security rings on the geared boot. By raising the front end of the truck on a jack, and turning the front wheels either to right or left, it can be seen how this boot is wedged in turning. If the inside ring adjustment is located in the bottom of

the C.V. joint, the screw will penetrate the boots. (Some of the security rings have been faced with the inside adjustment in the lower position.)

The number one for this situation would be to pivot the adjusting screw in upper position.

The number two would be to remove one-half inch from *each* end of screw. It will still be plenty long.

L. E. Price, OCT  
Camp Edwards, Mass.

## **FORD DISTRIBUTOR-SPRING**

Dear Editor,

We have quite a few 14-ton and 17-ton Fords. I learned early that anytime you raise the cover off the distributor shaft, watch for a small spring that fits on top of the shaft and sometimes comes out with the cover. Sometimes it falls out when you lay the cover down

to turn it upside-down to get back on. Anyway, when the time is just back without this spring, the first turn of the screw leaves the plates wide open. I found this when I first started before the news got to me. I've painted the wood thing in the same guys in my shop so it mightn't happen around here again.

**Cpl Wallace F. Baumgart**  
Fort Knox, Kentucky

**Old Note**—I've seen't just flipping your lip—that spring is worth watching. And for everybody who wants 100% distributor performance, FF says to use the center pins coated right when it's just back on the shaft and that the cap on the distributor housing is correctly set.

### PLANT ON INSTRUCTION-PLATES

Dear Editor,

As an amateur shop foreman, I am encountering lots of vehicles on which the opening-instruction plates are covered with paint.

This is bad. It conceals necessary information, and may result in severe damage to the vehicle by a perfectly careful driver not familiar with the particular machine. I wish the paint shops would be more careful about this.

**Cpl A. M. Baker**  
EFB's Civil Mark Co

**Old Note**—A few minutes time, and a little masking tape is all it takes to protect plates from paint. In the absence of masking tape, a little grease rubbed over these plates before paint-

ing will prevent coating of plates, grease and all after the paint dries.)

### JACK-STANDS ETC

Dear Editor,

In my current organization much of our repair services are performed in the field. Hoisting up and supporting vehicles on soft ground with the usual trailer has been a problem because these specially legs sink out of sight into the soil. To prevent this I had flat pieces of 1/2" boiler plate cut to size and welded between the legs of all our jack-stands (Fig. 1).

This increases their flotation on sand and dirt and doesn't impede their effectiveness when used in shops or on-civil floors.

**Capt E. J. Bate**  
2nd Armored Cavalry



### REMOVE DRAIN PLUGS

Dear Editor,

In a recent check-up, it was found that some M1A's still had their drain plugs installed. Result: a slipping clutch. Drain plugs, if left in, cause a vacuum—which is not miles off from the transmission, causing the clutch to slip.

The cover plate was removed, the clutch facing was sprayed with carbon-monoxide and allowed to dry. This cleaned the facing. After thirty minutes, the clutch wasn't slipping any more.

Like *PI Magazine* said back in July, it's a good idea to remove the plugs, tug them, and place them in the compartment in the cab of each M1A. Some thing to talk for the M1A.

Lowell B. Piles, GCI  
Camp Edwards, Mass.

### THROTTLE CABLE FIX

Dear Editor,

I'd like to suggest a fix for the throttle-control wire when the collar has been lost. Most men bend the wire, but this usually results in breakage, thereby putting the control out of order.

If you get a hole  $\frac{1}{8}$ " by  $\frac{1}{8}$ " (and not to fit), use chain saw under the hole big enough to slip the wire through, you can then tighten the nut and lock the wire in place. (Fig. 1)

Cpl Lewis A. Joseph  
48th Cav LAM/Co

(*Tip Note—Nearly done in a min, with a nut on the line while waiting to clear the threads, it's an inch job . . . and it'll take care of lost chain-saw collars too.*)



### PARTS FOR BLADINGS

Dear Editor,

In my work we needed some parts, but had. We sent two men out to our supply unit but the answer they got was, "Sorry, we just don't have any of those." One man came back empty handed. We had to have those parts so we sent two guys we knew wouldn't give up so easily and they took the requisitions to higher and higher echelons of supply until they found one that gave them what we needed. We learned that you can't stop at the first 'no' if you want to keep moving. You don't have to quarrel either. Somewhere back through supply echelons you'll get what you need. There's a sign nailed on the wall of our shop now that reads, *Seek And Ye Shall Find*—and the motto works.

Cpl Mitchell G. Winslow  
APO, Maryland



## Connie Rodd's

### BRIEFS

#### *Air-cleaners and brushes*

The engine air-cleaner and weather wick-and-wet filter interval on all modern vehicles has been changed from 1000 miles to 250 miles. This change does not affect the specified intervals for cleaning under-vehicle conditioners. Naturally, if you're operating in a dust bowl or getting mired with fat sand, those air-cleaners and brushes need a daily cleaning—sometimes more often. This new change in cleaning interval, every 250 miles, is for the record.

#### *Service-date plates*

A real good dash peering around the new 24-valve vehicles (1.9L400, 2.4L400, 2-1/2-ton, and 5-ton trucks) would soon learn that information on the service-date plates doesn't agree with what's in the official label-orders for these vehicles. The difference: some service-date plates specify 60 PS in the temperature range 40 to 10 F. This is wrong. The vehicle label-orders say the correct

gear oil for the temperature range 40 to 10 F, is 60 PS.

Even the label-orders, when it's cold enough to stop the thermostat from doing normal duty, 60 PS "thawed". And when all is said enough to let gears cleaned paths through it—those gears aren't getting the lube they need.

Sometimes in the frozen you'll get a TB on how to dilute and change the incorrect markings. In the meantime, the vehicle OEMs have the right info.

#### *"Pop, the job's only half-done!"*

Just like the little man in the hooding suit says, the job is only half done if you clean a spark plug on the electric cleaner and fail to blow the electric component out of it before using it. We wouldn't thought it would happen, but we hear from the field that some people are getting careless about this, with some unfortunate results. After all, an engine will appreciate a temperature of information in the conductor chamber, now will it?

# STOP THAT MAN!

When you see this man on the gravel  
bring him down with a low tackle.  
But don't hurt him. Please!

It's only Sgt. Hoff-Most  
hunting for information.  
He wants to learn  
your problems  
so he can get  
you the answers.  
You may see him  
almost any time . . .  
any place there's  
a maintenance job.

He may even be disguised  
as a civilian  
wearing a PS armband.  
But Hoff-Most is no legend who  
can be everywhere at once.  
So if you've got a problem or a  
new fix . . . scribble it on  
a match-cover and get it to him  
by mail. Address:

MSGt Hoff-Most McClenick,  
PS Magazine  
Abandon Firing Ground, Md.

