

PS

**THE
PREVENTIVE
MAINTENANCE
MONTHLY**

JULY 1953 ★ ★ ★ ★ ★ VOLUME 1 NUMBER 2





SECRETARY OF THE ARMY
WASHINGTON

JUN 12 1951

Dear Sirs:

After seeing the first issue of the successor to Army Service Magazine, I can well understand why General Collins was so enthusiastic in his welcoming letter to you last month.

I am equally aware of our increasing need to maintain our automotive equipment in condition to meet our action as you called on us here in these warlike times. I see the billions spent every day that drive home the higher cost and longer hours we pay for every item we need to keep service strong and free.

Your fresh and readable style of teaching the normally dry technical lessons went directly appeal to all ranks and grades, of they're the same people they were before they put on the uniform. And I'm sure they are.

Best of luck to you in your efforts. Much of what we're preparing for today could not have come about if people everywhere were well informed.

Cordially,

Frank Pace, Jr.
Secretary of the Army

Editor, T. E. Magazine
Aberdeen Proving Ground
Aberdeen, Maryland

...the balance sheets...drive home the higher cost and longer hours we pay...to keep America FREE..."

Frank Pace, Jr.
Secretary of the Army



F. S. Magazine

JULY 1951

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13 May 1952

Dear Editor,

Nevertheless, maintenance is a very rough-and-ready sort of thing. When a GPN needs a new windshield you obtain some Plexiglas from Technical Supply Incorporated and make one. Taps generally bargain like an hawk or vulture. Not to mention the real numbers of jumps with neither top nor windshield.

I am sitting here looking at our Chevrolet 4wd dump truck, (and only know how to drive it) when we got a dump truck in a bumper accident, but we've got it. There sits one of the best running and most useful trucks we've got—30,000 miles up on it, new tires, new windshield, with engine side covers, still bringing some loading gravel, garbage, etc.

We have a miscellaneous collection of rolling stock, ranging from the CO's front-ender jumps to the line chief's old-style Dodge pickups, and we have had to adapt most every type of part to some use for which it was not intended. Whenever a device is needed such as power-driven windows or heavy spring trucks, we simply make it. The only question the inspector asks is, "Does it work?" Modification jobs are things we read about in *Working Modification Work Books*.

Still, for all our makeshift methods, a very small percentage of our vehicles are on deadline and most of those are missing parts.

I covered you most highly, by the way, for keeping on the parts business. We're on the story end of that side out here, but plenty!

One of the things that cause my girls here is the Z.I. system of having boys in all vehicles. The affinity between story soldiers and parked jumps is amazing. Leave your boy in and the next day your jump, with altered numbers, volume is made good thirty miles away. I know of one that ran out of gas and was left without boy, radio, distributor housing and oil valve—still it was gone two hours later!

How fast statistics change on sleeping vehicles is bit whimsical. How long can I have when it rains?

There's other classification and details you mention thing. Any man in our area that can and does operate anything from little Australian motorcycles up to the Antarctic gas trucks—but if you can get those GI operator's permits amongst us. It's a million miles (and we have gas trucks). But as to working a discipline on

(Continued on page 27)

Combat Maintenance Stories



LOOKS LIKE WE MADE IT HOME—
AND MADE THEM . . . AND LIVED TOO!

DO IT BEFORE DAWN

Epl. L. C. Munn—People Meet

We always wanted up our M18 Tank Dozer before we fell down. They're the Dozer jobs you know. They made a lot of noise when you started them, but in the dark it's hard for the Germans to tell exactly where the noise was coming from. The thing is the noise won't give you away. When they've started up they give off a terrific cloud of smoke—sometimes 10 to 15 feet high. In the daylight you'd see a bank of 10 shells around each with a cloud like that. Even when it was noisy and damp we started up before dawn. The only difference was that the clouds from the car had settled down and hung up the ground around the vehicles. That's just

Another thing, we had to be careful about the exhaust giving away our position. These two exhaust tubes in the back about got a blue streak. Sometimes we had to run the engine in reverse all night so the battery wouldn't run down while the noise was on. There's an auxiliary generator on these jobs. Kind of exhaust. Same thing, we disconnected the manifolds and kept them down over the back so you wouldn't see the flame. I know this isn't good for the noise, but that flame would have brought enemy artillery fire in a flash.

MIDDLE OF THE ROAD

Epl. C. Munn—People Meet

Back in the States . . . of the . . .

DO IT BEFORE DAWN

Col. L. C. Munn—People Meet

We always wanted up our M18 Tank Dozer before we fell down. They're the Dozer jobs you know. They made a lot of noise when you started them, but in the dark it's hard for the Germans to tell exactly where the noise was coming from. The noise in the noise won't give you

Another thing, we had to be careful about the exhaust giving away our position. These two exhaust tubes in the back about got a blue streak. Sometimes we had to run the engine in reverse all night so the battery wouldn't run down while the noise was on. There's an auxiliary generator on these jobs. Kind of exhaust. Same thing, we disconnected the manifolds and kept them down over the back so you wouldn't see the flame. I know this isn't good for the noise, but that flame would have brought enemy artillery fire in a flash.

hill end of the runway and I had a tough time. The line moves slow, but when you're at the end you have to stop the hill to keep up. Anyhow, we were riding all over the road. It was a high-crown road, but a lot of us drove along the low side. I noticed the tank wanted to edge off the road soon and more, and I had to keep re-tying it, pulling on the lever to keep it on the road. Thought coming out, almost went into action at Tilscocha. I remember I had trouble maneuvering. The tank wouldn't rigger so well . . . worked OK on the one side, but didn't handle on the other. I must have kept the lining down on one side while we were on runway. Luckily I got maintenance to fix it. Tell the tank drivers to keep in the center if they're in a place where they have to ride on a high-crown road. Always been warning the tank out on one side, and been warning the shipping tanks out on the other, and keeps you from wearing your tail out jacking the brakes all day.



WELL-DOWN TO STAY ALIVE

Pat C. Jones

We did a lot of driving from what they call a "half-down" position—when the tank's positioned on the hill is down below the crest of a hill and just the gun-and-mover show. It's good when, and every day, knows it. And it's the driver better

than anyone else in the tank who can tell when the tank's in a good half-down. That's what we found. I always know I was in good half-down when I could just barely see over the top of the hill. I was sure we were down far that, in protected position. That's all part of the business of keeping from making a mistake.



one of your tank. Now Marmory is Tilscocha a few tanks used waiting over the crest of a hill and got hit in one lucky. They made a close-pattern against the city. The Koreans could get a tank off the skyline at 2000 yards. We always tried to pick out the hills valleys and lanes, and we came through.

G.I. DRIVER

Pat C. Jones

I was a tank commander on an M4 in Alsace. Yes, I had good drivers. There was one, though. He was pretty hot, and we had him transferred to a different outfit. He was fighting around the part of France, where Marmory you know, at the time. This driver liked to run a tank around, (M4) it regular. He drove over a creek one time and almost drove me out of the tank. Played hell with the gunner too. He'd give the gunner good firing positions. He wouldn't understand that good isn't the important thing. Marmory-



wagging and good sense was. And having a good head, this guy wouldn't even notice. He came out of combat one time and I told him to open his hatch, the rear main door. He wouldn't do it. We were driving over a column of German prisoners and I didn't want to go revealing them. I could tell you more. He also



know how to shift. He'd go away and waste a lot of time. Had to stop the tank when he tried around and picked out one of the gears he liked. In fact, I think if it wasn't for that driver we wouldn't have had our tank shot out from us. As for the truck, that another one. We just wasn't stopped position. Not all the drivers are like this. Near later on, I had a driver . . .

THE MORE YOU KNOW
BY A. J. BROWN—Author of
THE TANK

I guess I had the wrong idea when I went overseas into combat. I saw movies and pictures of tanks chugging by and blowing up its inside men as a shell hit down. That's the way. I was in two tanks that were hit in Normandy. One time we were just hauled behind with us, and we crawled out the escape door. And the other I got out through the turret hatch. You have at least 4 seconds before a tank catches fire—if it catches at all—and in that time you can lay plenty for some. But

don't get to feeling that nothing can hit you either. A lot of the equipment I use was nearly as good as new. The three gas they have can be pretty much anti-tracked, but never were activated. Just makes them're as strong as you are, and you'd fight that much harder. And you've got to work hard. Back here, you are sure in making also have only one thought in mind—getting back to the PW for another batch of beer. In battle a driver has only one thought—his tank. He stays with it 24 hours out of 24. He, he doesn't climb down and go through the whole heavy 100-hour check. He doesn't do it at all at one time. It's five minutes here and there. They add up to a complete service. Every time we pulled back, our driver'd run out with a gas can. Keep him we stopped, he'd check oil, grease something. He'd stare at our plane and do a little. Next time, he'd start where he left off and do a little. That way it doesn't seem like he's actually doing any maintenance at all. It's that way . . . but before he knows it he's been through a regular maintenance routine job.

WHAT'S YOUR COMBAT STORY?

Did you ever have a good story to tell about the hard F. I. work you have done? Here's a chance to show up your story with others and give it a chance to a million other boys who like their tales as it. Write to P. O. at *Men, Men, Men* (Harcourt-Brace), 364

How personal says if you like!



THINK THINGS YOU
NEVER KNEW BEFORE

ABOUT YOUR M34

Minimum Maintenance Costs, Extra Useful
And Superior Services To Help You
Keep Your Business Going

EVERYBODY who is anybody in this man's belt is agreed: maintenance has had a place to say about the new 1½ ton medium-duty now marching out of factories at Lansing and Southfield.

From some of the leaders now, a lot of it has been said.

For lack of a better, or more printable name, we'll call these characters the "apples." Cause it's old stuff to us guys here, that if you get to make a completely new, different and daring model of building vehicle, then you also get to put up with a lot of completely new, different and daring kinds of suggestions.

The boys who really know the man, or as you might hear it said across your favorite PA line department about 100 hours any given morning, the boys who really know the man are saying that the boys who now look in all a little oddball for it to run in some a large deal that's at some water water as well as alongside it on a hard paved road. To say nothing of the maintenance people all need as you getting beyond it in their different-four-

teen every month.

BARABAN-AND-VAN GIBBONS

You take this vehicle features for an apple. What would've figured deep water pressure would drive the door back into the face (Fig. 1) like it did in the real world? And you have someone that while the water was still being made under all such conditions, some thousands of more trucks were being pointed off the line according to schedule. All of which had to be modified to meet the unexpected.

Whenever it might come from, to see something to one of a small lot of engineering change orders, your M34 vehicle is a half-inch better forward, the whole handle higher off the frame, and the stay and it always to be in the forward too (Fig. 2) of the plate on the head. And instead of the bar looking like the piece in the manual, it's had its own clipped by top if a long distance away from the honeycomb. This helps a little too, to save fingertips for guys who need as using the bar forward for a handhold (Fig. 3) when

they climb up on the front bumper with the engine running. YIK, YIK.

WATER-WATER WASTAGE!

And while we're under water, here's an idea (remember that it's **H.I.P.** to keep the engine running on the return) will discourage any would-be frogger down into the water system. . . . To give us convenient (read: later-on) access you don't get this from on the list of details under "Filling (Prepump on) just unclamps your half-pint and waits it in after you get down below. See how right these talk were that talked you in to it.

While the water pump has nothing to do with boating, and while you personally may never have occasion to get acquainted with the water pump mechanism, it is not an impossible work of your boat to have lost and now that the boating community is always to be subjected (right right) to if you drive this particular water like you would the average car owner, it probably the boating and pretty soon, how up your water pump. Tighten it longer tube, then hold it steady (Fig. 4) with your other hand while you tighten the lock nut.

SHEDDING OIL STORIES

Working out way back from the cooling system now, we find people generally overlooking this track with engine oil. And we were told, overlooking by as much as nine quarts. The way it happens is that they forget to run the engine each time they add a quart to see where it comes to on the dipstick. That's right, run the engine for ten minutes after you add a quart of oil, then stop the engine and wait ten minutes before you take another reading. When it's low, say to halfway between the full and low marks on the stick, it's time about one quart of oil to bring it up to normal. When you get wrong it isn't (remembering that the oil pan has two screws (Fig. 1) that hold open the track to

full probability. The screw you slip into for a reading doesn't get all the oil out, and through the orifice, and the engine is started and the overflow pump (with the oil from the shallow sump into the main oiling system).

Another way you can get a wrong reading is to screw in the reading cap on the dipstick when you check oil. We all know of course that new dipsticks were issued all-around that tell you (NOW) only one-half inch more than you should. "**UNUSUALLY TO CHECK**" (Fig. 4). The End of course, will be changed on the next government, so the picture will agree with the stick you've got. Unless of course, you get one of the black dipsticks that somehow slipped past the punch press while the operator was working another operator break some dust off her teeth down—in which case you can refer to this page of F. E. Magazine, which says "**UNUSUALLY TO CHECK**."



Fig. 1—How do the radiator like the two. Some say it is little different. Notice will help you when you screw it up and out.



Fig. 2.—Once you've made the other changes and got your beam adjusted to fit, always keep this step in the forward hole.



Fig. 3.—Carefully hold over the glasses and continue over but far behind. Keep one hand on the side by keeping your wrist.



Fig. 4.—Focus of a man who adjusted his center point between eyes right, holding steady while he tightens the last nut.



Fig. 5.—In case you've got out your eye, you'll get out and move one and see for yourself.



Fig. 6.—When you're your work in the work area, keep the eye centered. Otherwise you'll get it wrong's your sight.



Fig. 7.—If you're not sure that you'll work for the right lens, you'll make it, but don't say we didn't tell you to go.



Fig. 8—Here bolts to take out rear end and back and you're taking the top off the oil filter all done with the hand crank.



Fig. 10—This is the wheel-end clamp (referred to by GM) used to keep from breaking essential bolts. Please to leave it off.



Fig. 12—By there is no mistake about what I'll said to do, this is not the way to press out-end bolts. Torque-control vital.



Fig. 9—Fly-lead housing got its frame drain plug-like feeding. Get to tighten everything when not housing. Otherwise . . . UGH!



Fig. 11—Here's your reminder to remove your shorts from pressurized tanks. You should be along to avoid them—see this case.



Fig. 13—Instead of the wrench at the left you observe that another tool gently to bring like you'd want to do if it was a flying pin.



Fig. 1—Remove screw in the front plate on left side of cover. The fastener you mentioned was a mistake on the opposite side.

Then there's the head shield that's been added as a modification since the manual was printed, to keep exhaust poisoning kept from blowing up the oil filter all time. If you didn't get one in the previous overhauling campaign you can make it quick and easy, like it says in figure 2 on page 14. And locate it like in figure 3.

INSURE THE OIL

The only things that come to mind at the moment, are a word to the cheap about fixing the gear-lubed



Fig. 1—Because the new caping and bearing has revealed just too old grease kept out, you gotta locate the hole.

without so the wheels maybe get engaged at high speed and leave the transmission out. And a word to the mechanic about using the front-wheel linkage steel in a wheel, so you don't find yourself on the ridges of the road with it coming loose, time when the steering starts at properly make at least.

Also, will you get used to the practice of removing it after each working operation, you could make it a habit to look to the rear compartment before you run on the ignition switch and see if you are exposed for one week. Hydraulic handling, drive plug (fig. 7), because this M74 detail has been quite established in several hydraulic drive units here lately, with the result that what was meant by drive out of the hydraulic bearing (namely oil and water) is unfortunately done by working depth and makes that work of them are possible and what have you. Well, if you must give them a purely technical remark like "what have you," the truth of the matter is you have a detailed M74 with the check is being required. Of course, you'll remember to remove the plug from the

(Continued on page 17)



Fig. 2—The steel gear hole is to locate before the small bearing (see page 14) that "truly" never" makes up more than 1.25".



AMBULANCE BOY-HOLD-DOWN BOAT

All you guys who have to handle a 15-ton Dodge ambulance over rocks and rills better make it a point to keep the body-hold-down bolts good and tight. When the springs wear up, loose bolts'll let the lower end of the body twist enough to fracture short axles and break wheels, especially at the bottom of the front-down gear axles or the rear axle above the front drum. If water leaks through the mounting that joins the axle to the steel panel, it probably means that the body bolts have loosened on the lower toe loop. It's a little late, then, to start tightening them.

The bolts along each side of the emergency body are easy to get at, and it takes only a minute or so to check and tighten them. I've found that from 11 to 40 P.M. the air temperature usually is just about right. It's better than they've kept 100, inside there is your regular monthly or quarterly inspection routine.

If there's had to have already unseated loose while you weren't looking, and some water has already leaked, simply cover it and repair, then, stopping a leak at the

and panel mounting takes a bit longer. First, remove the steel shield-to-attachment cross-piece. After removing the plate from the mounting and the metal around it, seal the mounting to the steel and steel panels DON'T forget to patch the windshield edges inside and leave with a piece of cloth wicking. Seals over the steel and smooth it. Reinstalling the mounting finishes the job, except to replace the cover plates.

HYPOIDS IN TROUBLE

Today you usually sell by important action, and when that action isn't taken there's usually some important benefit. In the case of GM's Number 100000, which was intended for the memory of all concerned, but somehow never got past their ears.

The 100000 said to stop using a certain lot of gear oil from the Imperial Oil Co. for hypoid-type gear cases, or else you'd have hypoid gears falling out all over the lot.

Now it turns out that three dozens of Imperial gear oil aren't marked with any product numbers, and nobody knows what oil's in what containers. So they've bought all stocks of Imperial Oil Co's oil against use in hypoid-gear cases.

You also want to tell you that if you think you've got original gear's parts or having around in Imperial oil, you'd better check it, close the valves, and switch to a safe Imperial use GM by other companies.

HEAVY FOR DUMP TRUCKS

There's some heavy rubber from TP COB-FLOR, a 100-40 that should give you a lift in loading up. One good point is your 110-ton GM's and from the front of dump trucks.

If the body of your dump truck lifts to one side as it does, look to the rear body bumper for your trouble. Maybe it's all

then it's considered far ahead of us behind the other. If we remove the hinge that's out of the end place it so it's even with the other hinge by drilling new mounting holes in the frame.

When you can't lower your clamp body completely, the tension holes (Fig. 1) may be too long which means they'll break and bend. To get these holes down to the right size, first remove and straighten them out. Then have someone heat the hole in a forge to stretch them to a few-fifths size. On the other hand, if you can't raise the body fully, it could mean the bearing holes are too short. Then you do the same thing. Remove the hole, heat them in a forge, but stretch them in the right size.



Fig. 1—The car detail at mount time.

A good way to keep the tailgate hinges pin-bushed just tight is to weld the bracket in place as shown in Fig. 2.

When the body-design hole-pin won't hold the body-strap pin. You can replace the pin with one that's got a head and a



Fig. 2—To keep the hole tight the body frame is bent here slightly less.

center-pin hole. A split block may tend to keep from lining the hinge pin, so use a larger pin—about half again as long—drill a 3/8" hole in each end, and bush it in place with two roller pins. Tap it.

ONE TRICK OF A WRENCH CAN RUN YOUR GMC HYDRAVAC LIGHT

The trouble comes around the tube connection that spreads across the top of GMC hydraulic units. On both the first and second-series hydraulics, the tube ends that screw into the valve assembly (see Fig. 3) are secured with two nuts. At first glance, these nuts look like they may jamming, the two nuts but if you take a second glance you'll find they're welded on the tube and not meant to come off.

Each nut always only has purpose: It keeps the tube from being separated with a wrench. The nut gives you something to grip with your wrench when you're unscrewing the tube from the valve assembly. You can't turn the nut. The nut the tube by grabbing a hold on the nut. And if you can't do some heavy-going, you'll discover that it's not to go, it's the whole tube from the nut end, the valve'll have to be first disconnected at the other end (the hose end).

What happens if it's not disconnected at the hose end first? Then you're right back where you started: The tube won't



Fig. 3—On the first-series hydraulics the hose nut is welded to only one of the tubes.

time and you'll break the world on the run—you and your rapping motor.

This all adds up to the important fact that you can't tighten or loosen the belt by simply turning the nut. You have to raise the whole take-off in order to do it, the take-off gets its adjustment at the base and feet. Otherwise, there'll be a lot of hydraulic water with heated-up valve assemblies being stopped for repairs, inspection, or adjustment—and a lot of dead-end GM's getting you a cooling system check.



FIGURE 3

Fig. 3—The nut you wanted to turn when an overhaul was in progress never bobs. Only one does here but the effect is there.

ADD TEMPERATURE SWITCH MAINTENANCE

The switch on the 1976 4-cyl. Diesel Diesel-Tech Diesel transducer has an automatic temperature control and alarm arrangement that shuts off the engine when the fuel rail is greater than 124°F. So no long been having air-locks and dead pipes. But this it will do only if the temperature is kept in good order. Here are the two main things you need do to keep it working.

One is to see that the temperature spring pressure is adjusted like it says in THE 19-113. And after you make the adjustments, try to remember it will 10-15 lbs. Temperature control spring pressure needs periodic rechecking. Like the 1976 in your system, it's got to have its calibration found out after a few years. The 1976, a 1976... 19-11, P. 11 117 minutes and should be 117

you'll get better from looking to replace these pins.

The other thing is to take the valve assembly on the torque-control nut. The torque assembly is placed on a pin—and if you forget to take it with engine oil about every 1000 miles, the water will run under the shaft. When that happens the automatic-which pump will shut down 10-15 seconds after torque control has out of the engine. The state of 100 miles for fuel. The fuel supply is automatically shut off at the injector pump, and you'll wonder why you can't restart the engine.

Large chains, like the main caps, start off by now.

DIAGNOSTIC PRECAUTION

You just are always in with health. You're a wonder 1000 miles. You're a wonder 1000 miles. Working around these Diesel systems without disconnecting the fuel rail from the battery. You, too, it sometimes think you do find things just to do it.

I'll have no more of it, and

Here's a picture to show you what to do, and to make sure you remember it. Disconnect BATTERY LEADS BEFORE WORKING ON GENERATOR OR REGULATOR INSTALLATION. DISCONNECT GROUND LEAD FIRST. (Always just don't believe you don't know what a die hard die is.)



JOE DOPE

HOW TO START A STALLED ENGINE

“See—see—
now you see how I
got a good reason
when I drove
you to court and
stalled about
in this garage.”

“I can give you
a lot of
information!”

“What
are you
doing?”

“So what?
You’re
a
stupid
fool!”



INSIDE
THE
ENGINE...
TRY THE
FUEL
SYSTEM
FIRST







SO WHAT? GOING
 ANY PLACE IN THE COUNTRY
 GET A BUNCH FRODO
 BAGGINS. EVERYBODY
 A BUNCH OF THE
 SAME TEA PARTIES
 SWITCH AND THE
 COUNTRY FOREVER.



NOW... DON'T TOUCH THE ENGINE OVER
 THERE... TELL ME NOT OPEN DOORS
 AND... AND WHILE I'M ABOUT
 IT, ILL GIVE THIS MATCH COVER FOR A
 FEELER TO SEE IF THEY'D OWNED
 ME AT ABOUT
 TWO O'CLOCK.



THEN YOU
 A BUNCH
 BUNCH
 BUNCH

IT'S DRANKEN
 -GIVE THE
 COOL...
 SHOT ABOUT
 THE
 CONGRATULATE



OH YA EARLY CHECK THAT
 BY GIVING A PIECE OF
 CASH BETWEEN THE
 CLOSED ROYS. NOW
 IS THE JAM MIDDLE
 ON DROO?

YES
 IT IS.
 BUT
 I'M
 GIVING
 ABOUT
 THAT?



WELL, IF IT DON'T HIT ZERO,
WE'D LEFT OUT THE CONDENSING
AND WOULD THE SINGLE ARM
... IF IT THEN WENT BACK
TO ZERO, THEY WERE ONLY
LEFT WITH A NEW
CONDENSER?



WELL, WE'LL CHECK
THE AM. REPLY
BY... (SPEAKING INTO
MICROPHONE) AFTER
I RECEIVE THE
COMBINED
... (SPEAKING INTO
MICROPHONE)

THEM
CHECK THE
BREAKER
ARM
TO SEE IF
IT IS
OPERATING
PROPERLY
HERE AT THE
PUMP
BUILDING!



WELL,
THEY
WENT
DOWN
UP TO
NOW
WE'VE
BEEN
THE
NEW
VOLUME
CIRCUIT.



WELL, WITH
CLOSED POINTS
WELL, THE
WELL, FROM THE
CENTER OF THE
DISTRIBUTOR.
THEY
THEY
WITH Y-ARMED
WELL, THE
WELL, IS HIGH
FROM THE BLOCK
... (SPEAKING INTO
MICROPHONE) GET
A SIGNAL
OF THE
WELL, THE
IT IS...

GET THAT COIL
REMOVED
 FROM THE
 IN THE CENTER
 AND REMOVE
 THE COIL FROM
 THE COIL
 AND
REMOVE
 TO PUT THE
ROTOR
 BACK ON...



...NOW GO TO THE PLATE
 AND GROUND EACH OF THE
 POINTS THE SAME WAY AS I
 SHOWED YOU BEFORE TO SEE
 IF THE COILS IS GETTING
 TO **LOCK** FLUX...

IF YES OK



...NOW GO TO THE COILS
 FROM THE COIL
DEFECTS?

...NOW GO
 TO THE
 ELECTRO
 IN THE
 WITH THE
 AND THE
 OF THE



...NOW GO
 TO THE
 IN THE
 WITH THE
 AND THE
 OF THE

...NOW WHILE THE PLATE
 WINDING ARE STILL ON
 WITH THE COIL ON THE
 BLOCK (WITH WIRE WAS
 CONNECTED) AND KEEP
 YOUR EYE ON THE
 COILS AS I
 CLEAR THE COILS...

IT'S
 SURE A
 BIG
 COIL



AND SO WE FIND BY
 SOME OF THE DISTINGUISHED
 MEN RUN TO THE CLERK
 IN THE RIGHT HAND CORNER
 LIKE IT SAID IN
 THE BOOK...



THEY ARE KNOW THAT...

1. THE BOOKS
 IS IN GOOD
 SHAPE.



2. NO ONE IN
 THE ROOM
 KNOWS



3. THE
 PERSON
 WHO
 THE
 BOOK
 AND





Joe's

Dope Sheet

Had he captured a little each day
The world that he'd wage and ring
Had still been his today
Like a smart driver oughter
I don't say this more each day?



WE HAVE THE WORLD'S BEST EQUIPMENT

Take care of it

NOW YOU CAN MAKE YOUR OWN JEEP MUFFLER

AS A COMBAT FIELD FIX, THIS LITTLE BOX UNDER THE HOOD PROTECTS YOUR SHOT-TO-HELL PARTNER AND EXHAUST PIPE.



IT'S a tough deal—when you're jumping your Jeep over bumps, ruts, through soft water or deep mud all the exhaust pipe and muffler hang up and tear off. A cheaper deal, too, if you have to operate without a muffler. Not only because of the racket from your vehicle but (Oh, how beautiful a screeching racket like several bicycles riding by).

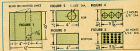
You work in the field behind this problem on the 14-ton by eliminating the exhaust pipe entirely and burning a muffler that falls right into the exhaust manifold next to the engine and away from harm. This method, however, generates more heat near the engine, and you'll have to watch for vapor lock (See 9-2013-P14 dated 19 Oct. 1944 under this article).

If you're in the same kind of spot that is, constantly operating over rough stuff that breaks the exhaust pipe and muffler to pieces—here's how you can make your own. This improved muffler is a metal box attached directly to the exhaust manifold with the flange and a piece of pipe

from your original exhaust pipe, attached to, before it to a connecting, and a second, off tailpipe. You'll need welding equipment, a 1/2" drill, a hammer and chisel or cutting torch, a hole and nut, and some small scraps of sheet metal (1/2" x 12" is the biggest piece. You can use old green iron or something similar).

Lay out your sheet metal and cut a piece 12" x 12", measure 7" from the right edge of the 12" width of the metal and cut a 1/2" dia. hole (see Fig. 1) about 1" from the bottom. The tailpipe'll fit into this opening. Then from the sides of your box (Fig. 1) by bending the piece of metal at right angles (over a sharp edge, like a vice) to a shape 12" long, 4" wide, and 2" deep.

Cut out two 2" x 4" plates (see Fig. 2

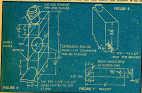


and 1) for the top and bottom of your box. In one plate, drill a $1\frac{1}{2}$ " dia. hole (Fig. 2) on the edge of it to about 2" from the end of the plate. This provides the opening for your flange and pipe. Cut two more plates, both $1\frac{1}{2}$ " x $4\frac{1}{2}$ " (see Figs. 3 and 4). In plate 1A, drill three $\frac{1}{4}$ " holes. In plate 1B, drill twenty $\frac{1}{16}$ " holes. These plates'll be inside the box, and the holes are what'll hold the sparks and make the sound of your exhaust.

You're ready, now, to make a muffler out of the box (see Fig. 5). Take plate 1B (with twenty holes) and weld it securely inside the box 2" from the bottom and (this is the end of the box with the $1\frac{1}{2}$ " dia. hole). Then weld plate 1A (with three

of short metal together), and flange out and in a $\frac{1}{2}$ " opening. Weld the round end of the pipe to the $1\frac{1}{2}$ " dia. opening in the bottom of the box.

You need the bottom of the muffler (Fig. 6) to fit around the oil pump with a $\frac{1}{16}$ " air-passage clearance. Make this air-passage 2" in length, 1 $\frac{1}{2}$ " from the top of the muffler and 4 $\frac{1}{2}$ " from the bottom. It should be 1 $\frac{1}{2}$ " deep in the center and tapered to width from 1 $\frac{1}{2}$ " from the tail pipe side to within 1 $\frac{1}{2}$ " from the edge of the other side. You can make it two ways: either cut out a piece of the box according to the dimensions, then reshape it to form the hollow and weld it back in, or you can bend the box about the hollow it is to be



hollow on the inside of the box 2" from the top. Now attach the sides by welding plate 1B on to the bottom of the box and plate 1A on the top (with the hole in the plate to the inside side on the hole in the bottom of the box.)

That's how you make the tailpipe (Fig. 6). Cut a piece of pipe $1\frac{1}{2}$ " dia. x 20" long (or make the pipe by welding a piece

formed and ground in, or with a lathe).

Take your oil exhaust flange and pipe and cut it off 2" from the top. Place the end tailpipe in the top of the box. Before welding it, however, you'll have to try it in the exhaust manifold to find exactly at what angle the pipe should be attached to the box.

For the bracket, cut a piece of hard

Fig. 8—Now that the physical finished pipe can be drilled a check your installation to see that the break-up looks like this, and that you can be moved into, quickly.



from 1/2" x 1/4" x 2" (see Fig. 7). Then drill a 1/2" dia. hole in one end and a 1/4" dia. hole in the other. Make a right angle bend in stream (Fig. 7). Fit a 1/2" x 1/4" dia. x 1/2" nut and weld the head to the side of the line that's opposite the tailpipe (see Fig. 8). 1/4" from the top of the nut and 1/2" from the side, attach the head end of the bracket to the line with the bolt and a 1/2" 11-32-24 nut.

Now your muffler's done and ready to install. Attach the flange and pipe of the muffler to the exhaust manifold (see Fig. 8) as it was originally, using the same bolts and nuts. In order to lower the bracket to the rubber mounting (under the head pump) remove the nut that holds the body support to the mounting, place the bracket end over the body support and attach both of them with the same

nut. This finishes the job and your jeep's ready to go again—hot wheels!

If you have trouble with heat from the muffler causing rope lock in the gas line, you can protect them with a shield. Make it from sheet metal, and for better insulation, fit a piece of asbestos on the side facing the muffler. Attach some sort of bracket to the shield and place it between the muffler and gas line by fastening the bracket under a convenient nut.

A thought was supposed to go into production on the 1/2-ton. The pipe was then supposed to extend straight back with the muffler placed as high as possible approximately under the rear seat. Also the head was to be taken out of the pipe's flexible section, to make it more flexible and prevent some of the breakage and corrosion at this joint.



CONTRIBUTIONS

"WHAT WE HEAR
FROM THE BOYS
IN THE FIELD."



WRECKER WIND

Dear Editor,

I drive a 4-ton Diamond T wrecked somewhere in the Aleutians and have a lot of trouble with the trouble associated with the wreck wind-layers. Why not weld the wind wind-layers. Why not weld on a piece of 1/2" pipe, about 4' long, on each winded layer (see Fig. below) in order to secure the the wind more easily?

Also, why not give the lower adjusting-cables (those that wind) lines in the end of the hoists? Always the cables aren't wound, great deal of work all pretty hot.

Cpt. E. J. Boyd

Cmd. Co. Camp 44

(Ed Note—Here, a tip, not a screwdriver.)



SHOULDER SHOULDER

Dear Editor,

In the June issue of *E.S.*, Sergeant R. H. Fortin had a suggestion for using a



wrecking problems being what they are in today's war, here's a chance you can do it.

Insert these pins over again, by cutting the pin in two and inserting a wooden block between the halves of the pin. Some of our boys have failed around with the same idea and found a single block to make this job easier.

If you can't locate a backbone handy, just line up the two shafts and drive out part of the pin that's still in the wreck shaft, half way. Start the capstan under the same head and the pin will slide where you want it easy as butter.

The other suggestion flies away with the wooden block. Usually, when the pin drops, the bolt can be placed in the pin-shaft yokes. Pry the head of the drive pin out and line up the pin still in the wreck shaft, with the hole in the pins. Then drive the other key and into

the year and you'll have the same in a new job. All you need is enough pins to hold the wires, shaft and pins at the steering-wheel. Wrap the wire up, hand-knotted, or an old rag around the shaft to hold the other pins in place (see Fig. 3).

Lt. Wm. S. Bostrom
The Infantry School

DRIVER ROSTER

Dear Editor,

One of our Battalion Motor Officer's toughest problems was to keep his list of drivers current in his company. And one of the sergeant's biggest headaches is the question of who has a permit and who can drive what. To settle the question, we usually had to have a battery battalion and get orders for the day's drivers by a process of elimination.

I think I have a solution to the problem (at least it's working out in my world very well) that will help other motor officers and lieutenants.

I have devised this chart, in which each driver's name can be checked, showing his rank, serial number, license number, different types of vehicles he's qualified to drive, whether he's a regular or an assistant driver, and the number of the vehicle in which he is assigned (see Fig. 1).

The chart can be expanded and run off as a mimeograph to provide enough copies for the whole battalion. The motor officer can keep one copy and the lieutenant can keep one copy in the battery

company room—this keeps close tabs on the drivers and vehicles.

Here's hoping it may be useful to your outfit.

By Milton Kalbfleiter
242 Howard St., Pa.



Whether you make it like the one on the left, or rough like the other one, they'll both do the job just as well.

WIRE ADAPTED TOOL

We have been two weeks without a vehicle that can do a good job of fitting spark-plug adapters on the M1A1 Medium Tank without time and without bothering you know what.

The field-wrought version was brought to the field by Sgt. C. S. Coan of 129th Ord. Co. The stock model was altered up at The Ordnance School by Sgt. Madson. Instead of allowing you four pins, all P.E. can say is make the one you call them what you've got handy, long as you make 'em.

NAME	RANK	SERIAL NO.	LICENSE		TYPE OF VEHICLE	REGULAR OR ASSISTANT DRIVER	VEHICLE NO.	STATUS	
			CLASS	EXPIRES				DATE	REMARKS

By Kalbfleiter's driver roster



CARGO HOIST FIX

From our already good friend Captain Kenneth A. Jenson, comes this kind fix for lost up cargo loads, of which nobody is aware at the 20th Ordnance Co. with their baggage dragging after weight matters go wrong during hoist changes onto two level loading platforms. Take a sheet of steel plate $30'' \times 50'' \times 3/16''$.



SHORTEN JOIP TRAIL

Dear Editor,

During a recent manover, we had a lot of trouble with loads in the ceiling system of our jeep—right above the rear wheels in the top of the machine. We think it's caused by engine vibration breaking loose the nuts at the connections. Three inches off the metal setting, and a larger roller bar to replace the original, will fix it up.

"Boys of the 6 Battery"
107th AAA B. Co.

JUMP WINCH

Dear Editor,

The winch roller under the bumper of our Phoenix tank was broken because it didn't get lubed. Subsequent location of lubricating holes makes it impossible for the driver to lubricate with an oil can.

As it is now, we have to take off the bumper to fix the broken roller.

I recommend we put lubricating holes through the top of the bumper where the driver can get to them more easily. Also, we also install a narrow brass roller of bumper, two inches from front (this will be in line with roller), and drill two holes just large enough to get the mouth of the oil can in.

Sgt. Salvatore J. P. Andrea
106th P. B.

HOIST WINCH CABLE CLEARANCE

Dear Editor,

There's a new way for those of you who've been bothered with the winch cable on your M11 tank recovery vehicle scraping against the machine gunner's platform (with the cable's end wound down to the first layer).

TH + 124 P. B. (4 Jul 44) says to cut a strip about 1" wide off the rear of the platform—leaving at least 1 1/2" on either end of the cut (see Fig.). It's about a two-minute job with a cutting torch.

Pat. Vito Andrews



BULL SESSION ON THE M46

SOMEHOW whenever two or more G.I.'s get together, the conversation centers on total gear around in the M46 electrical system. Bound to try of us know quite what it's all about. Especially that old reliable Master Junction box.

At least one exception is Sgt. Madison, who talks in a couple ways how to get under way again when the batteries are low and the master relay won't click in spite of our dearest language.

If there's a short-circuit handy, you've no real problem. They hook it direct to one of the batteries, plus lead to photo-terminal on one battery in the top unit, substituted to photo-terminal on the other battery of the top unit. All four batteries will get the charge and the relay will click over. Then you can bring the generator on by cranking the auxiliary generator and you're back in business.

LOW VOLTAGE EFFORTS

But if you've stalled out on a country road somewhere beyond sleep-lull territory, and your time won't come in no more minutes, then you get to-to-different. You wind up on Mr. Auxiliary Generator all by himself on his own power. Then you take that eight-foot length of wire you've been carrying in your side pocket for just this kind of occasion and cut it in half.

Fasten one piece to the output side of Mr. A. G. and the other piece to one of the pins terminals on the battery unit. Then at a safe distance from the batteries, break the two free ends of the wire together to cause a spark short. Some people, who never use a battery replace from a battery unit, have been thinking about on a battery terminal. P. K. hopes you take the hint. Besides the word flash. The short you've caused will send a spark type of about thirty volts through the system and should cause the master relay to click.

If not, that again could be done slow, which it will do unless or have unless something else is out of whack. Like a low voltage or regulator.

In any case, when that master relay is



Fig. 1—To avoid a costly replacement from a battery unit, break the wire in upper left.



open and won't close, it'll do you no good to hook the wires. Hit into the short straight-aways on your left. If you're driving in all kinds of things, the one switch will close the relay as soon as you hook up and turn on the juice.



Fig. 2—When you hook to the straight ahead, it's also hooking into a relay.

BATTERY CARE

Because the batteries are in just about the hottest section of the engine compartment, and because they usually get their dose of water when they're cooled off, they may develop an annoying habit of freezing their electrolyte all over the neighborhood when you're running.

The simplest kind of maintenance won't keep some of that acid from reaching your wires and eventually will put the whole electrical system out of order. But something better comes along, most times are fighting a drip pan, which they make out of a flat can, to catch the junction box.

Then they use the tin should close when you they get the chance.



Fig. 3—Circuit here tells you to see that steady's stopped on the junction box.



Fig. 4—And pretty soon these handsome fellows'll look like you have at 'em.

GUN LOCK BREAKS (SHAME!)

At least one M16 in every infantry unit had its quadlock broken because somebody left the handle gas lock handle hitting on the forward-pointing ring. Then when the gun is elevated a couple degrees and the dog comes out, that's under the lock handle, and it jams the quadlock. And you walk on again.

Some use the lever cutting an inch-and-a-half-quarter bit off the hand grip section of the handle to solve it. How it solves the quadlock. But that takes off leverage at the same time and makes it even tougher than usual to lock and unlock the gun.

A better way is to heat the handle and bend it like in the drawing. Then you've still got your leverage and your quadlock too. Good deal?

OIL COOKING (BAD)

When you see the engine and transmission heat-drawing away hot weapons, your first instinct is that the fans aren't working. That's right. Your second instinct is to look for a reason on the direct heater or the fuel's shut again. THAT'S WRONG!

If you engage three fans with the engine running above 2000 rpm's you'll heat your fan-blades really really fast. Usually when the fans kick out it's because one of them is too inactive. When you close the shaft on the other one by being too heavy, they're both in trouble and so are you.

WORKAROUND: When the heat gets up (it's down to a creep)... or even better, stop the engine... before you reach the critical fan limit.

WHEEL BOX DOOR-DRAG

It and when the steel pulls out of the grease-lubed door handle on your M16, here's how to fix it so it won't happen again!

Heat the old hole with a 1/2-inch-diameter bit, tap new threads, and put it together with stainless-steel combination lock #1000-010-047. Better take care of that right

away (100—over) issue when your M16's like Camarader's, and Magg's might even sliding down your rifle (200).



Fig. 1—Bent gas lock handle without taking heat handle—quadlock quadlock.



Fig. 2—This new hole that you can bend with a handle, will let the handle clear the quadlock. Shows face is bent positive.

(Continued from page 14)

By using bearing grease to mark spreading locations with your Brown.

CURBING AND JACKING

To begin at the front, we had a steering-knuckle boot that may be necessary need to be replaced with a new steering-knuckle boot, or that we'll find ourselves requiring steering-knuckle assembly later will become an left on a well boot that let in a stream of water and grit. The Ford Road Chassis Dept. will gladly cheer all you a 14 15411-714003 containing one steering-knuckle boot (714-4070-714003) and one tube of water-sealing grease (714-100-11-1401 for marking and the upper. Remember, we need order the kit . . . not the boot or the compound separately. In the slightly steering service that if we order the boot separately by the above number, we stand a 50-50% chance of getting ourself a old dry-cured ball-bearing boot that will corrode. It will still keep out above mentioned debris.

Next we jacked back to the exhaust pipe, which you'll find to contain one bearing that it had in the original. Namely part 15411-714001 (Fig. 10) which was removed (or should have been) to keep from bearing manifold work due to the exhaust engine fighting the rigid frame-mounting.

Along that same line, you'll find that the subframe on some low M14's are not exactly in alignment to take the bearing extension when you're off on whatever to go off-road. Before that time comes, as it must on all M14's, get out a machinist's rule, and using it for a fixture, what the subframe and adjust it in the exact position that will let it mate with the manifold when the line comes for said fitting.

Moving up now to the gas tank, we find ourself in the real (and) pressure. This gas tank, which is normally required to

hold up fuel as a source of pressure to help the gas along its way to the fuel pump, and to keep water out of the manifold, has an occasion here known to hold up considerably more than five or six or pounds of pressure due to an occasional wheel edge that didn't yield. During several necessary operations we marked the steering ~~15411-714003~~ bearing this in mind, especially when wearing your patch mittens, you will want to open your little-ear flap and snap, dead to help you remember, even on your 100-hour days, a short-circuit in the way which is required that guide us a picture that will say **PREVENTED — OPEN MANIFOLD**. When it comes looking like figure 11, you will please to apply it to your M14 gas cap.

REAR WHEEL BEARING

Reading the book now in the direction of the wheel bearing assemblies, we find some people looking the bearing-adjusting nut by inserting the washer with hammer and chisel (Fig. 11). Or hammer and drill. Or just hammer. This children, in time we manage to run up on many M14 wheel-bearing oil leaks. And that's a fact. Every time you stretch that bearing, wash, or you get by stretch that oil seal, and whether it shows or not, you've got an oil bearing leak as it no longer can hold up oil. The tube is greasy and snap, will you? Use a piece like in figure 11 and figure 14, with one jaw on the washer and one jaw in the axle tube, it'll save you, running up with that same set of wheel bearings for the next 11,000 miles.

While you've got the hub and wheel off for whatever reason you've got it off, please take a look at the brake assembly to see if it's been painted. That is before you clean and grease the bearing assembly and hub. If it hasn't been painted, get

(Continued on page 11)

SAFE WINCH OPERATION

EVER SEE A WINCH LINE PUT THROUGH THE AIR? AT SUCH WHIRLWIND VELOCITY IT CAN CUT OFF A WIG AS CLEAN AS A SAIL-CRUISE KNIFE! AND... THERE'S HARDLY ANY TIME FOR A QUICK PRAYER.



THEY TUFFER LIKE RUBBER



A winch line seems lead-strike like a rubber band and stores up a lot of energy. In fact a winch line—weighting approximately from 20 to 200 pounds of steel

is a much better spring than rubber. A hook on which the snagging hook could be compared with a rifle bullet, except that the bullet makes a fairly clean hole.

If you're in the driver's seat, when it happens, look down behind the wheel. The front guard will stop it in most cases but a hook can catch you down some funny things. Playing safe isn't being a sloop—the idea is to find a winch line under stress with the same respect you would a loaded gun.

SHARP! SHARP!



If a match stick is being used, keep away from the rough walls by the cable and the block. A winch line makes a swell sling shot. A 10-pound steel

block can travel as far as 500 yards as the fly, and that's a 100-feather than Babe Ruth could sock a 3-mass baseball.

GRAB FIRE



For your protection a show girl is provided on the scene staff of every Coast-guarded winch. It will show before a good match box will break. The engine

manufacture that the pin used there is not more than 10% above the rated capacity of the winch. Use only standard line—don't give to make hook-up men. Using anything that may break a chain from the winch line, or seriously overheat the winch. A safe metal with special characteristics to equal its show plus so that the pin hole, the screw shaft of the universal joint won't be damaged when the pin breaks. Remember recovery calls for the better parts to be done out of the boat in a hurry. Which part often means a sloppy steel hole with a long line of cracks behind you waiting to get through. Let's hope a while we can, rather quick and easy.

Your hook came to you with two open

them give. You should always check the supply of gas before you start on a job. When a spare spare gas is used it should be replaced that day. The motor engineer should have a small supply of gas valves they can be latched onto in an emergency.

WIRE ROPE



When wire rope is the Prime Mover of the work arranged in temporary use. Careful, but it'll take plenty of practice, more practice will follow the first.

One of the simplest and easiest ways to run a length of cable is to put a block in it. Keep your eye peeled for lines starting to form, and stop everything to untangle 'em. Help you and your right eye can keep the work out.

To get good long life out of a length of cable, wind it tight and even on the drum. A loose cable will jam down between its own next layer of coils and cut or even break the surface wires. This weakens the cable and will be your health as well. Trebley won't help. It also spreads the strands so water can get in and rot out the material.

WINDING UNDER LOAD



When using the wheel, wind the cable on the drum with at least two men¹ hanging on the end to give it counter-balance. At the first approach of a completely unbalanced and twisted is under load tension.

The best way to do this is to have the end of the line to the least height of another track that is directly in line with ¹P.M. Unless you've fitted your own line, two-man cable guide.

the wheel. The driver of your smallest track should keep a tight, steady pressure on the foot brake to insure which pull the track. Winding the first layer is the most important. The coils of cable must be tight against each other on the coils on the next layer can't get a chance to jam down between them. As the cable winds, tap it on the side every few inches with a hammer and a block of wood. Otherwise you'll flatten the wires. After the first layer is wound right and tight, the rest is easy. Your main job is to guide it on the beginning and end of each layer, with the smaller legs in a nice straight line.

If you haven't got another track handy, you can get the same result by fastening the end of your wheel leg to a line and let the wheel pull your lightly loaded wheel track on the first L.P.C., when a long of time, stop.

WINDING UNDER LOAD



When winding cable on the wheel, the driver of your smallest track should keep a tight, steady pressure on the foot brake to insure which pull the track. Winding the first layer is the most important. The coils of cable must be tight against each other on the coils on the next layer can't get a chance to jam down between them. As the cable winds, tap it on the side every few inches with a hammer and a block of wood. Otherwise you'll flatten the wires. After the first layer is wound right and tight, the rest is easy. Your main job is to guide it on the beginning and end of each layer, with the smaller legs in a nice straight line.

Keep the drum from spinning when the job starts to run and the cable is being run off. If you want to let the drum run free, the cable would also fly free, get tangled and damaged.

If a very foolish man who ever tries to lower even a light load on the drum brake.

When the wheel is not in use, have the jaw clutch engaged to keep the cable tight on the drum, and be sure to lock the power take off in support. Don't tighten the drum brake to keep the cable tight on the drum while the track is being driven because you'll have a tough job pulling the rope off when you want to use the wheel.

¹Except on the M20.

If the brake doesn't work correctly and runs, there's probably a point on the drum flange. Remove the point from the part of the flange covered by the brake and it should handle another few short stops.

EASY BRAKE



Whenever the wheels line back to 0° or show signs of locking that will last more than long, give it a dose of slight oil. Grease your distributor caps very well.

When a rope brake there is a slight movement between the wheel, and the oil will reduce the friction area.

ROCKING



Another thing the car does is to rock right is one of the main things. The right way to be it is to be back it enough, the low feet of chain on the end of the cable.

Unless you're an expert driver, and the people are, it isn't good to have the cable to an anchor by tying the wheel line, except in an emergency. The best idea and maintain the cable and it's almost sure to slip. And if you know the link over the wire ends after you put it around a tree you're sure to bend and not the anchor.

APPLE LEANS BOWEL



Always apply the load slowly. As the cable is pulled, it's right, look the situation over for good alignment, the setting of the anchor block, and see that the cable isn't sitting on anything. Then set your angle at about one quarter that-

the and let your stretch in slow line. Be sure to keep your tailhook² resting under with a gun. Load applied suddenly, called shock loads, cause twice the normal strain on the 'anchorage'. This will probably mean a broken cable plus—say the line might go first. Make the driver who pulls the anchor slide down in the steel to change the job and to maybe remember not to do it again.

END OF THE BOOT STRAP



When pulling your own truck with the wheel, make it something exactly in line with the direction you want to go, using your anchor block if you need it. Angle pulls tend to pile the cable up at one end of the drum and if it builds up over the top of the drum flange³ it'll jam down between the drum and the gear around the sliding shock. This ruins the wheel line and may damage the wheel.

Always check one more to watch for this four-wheel situation. When the cable starts to pile up, either change the lineup by steering in the direction of the pull—or stop the pull and change to another anchor.

In pulling out another vehicle, it is always possible to line up exactly with the vehicle to be pulled, or by using a match block. It takes only a few extra minutes to line up right and believe us, it saves a lot of time and trouble later.

Always be sure the rope isn't rubbing against rocks, gravel, or sand. If you really want to cut the cable, go get a good drum.

In rough pulls, make sure the line from the wheel to you isn't get as much line off the drum as possible. On the 'Pony' ⁴ "Pony" be caught dead without one. ⁵ "Can" happen, of course, on "should" drive.

and 144-ton trucks the chain job will let go at about 14,000 pounds pull when the wheel line is on the first layer. But will break at 2,000 pounds when the chain is full.* On the 4-ton trailer the job will let go at 15,000 pounds on the top layer. Just a handy hint to save you the trouble of getting out and under to change chain pins all the time.

Center mounted winches have no chain pins, so you're stuck more apt to break your cable. That's real fun.

MATCH BLOCKS



This job lets us learn about match blocks too. When you load a log around a corner with a match block, the cable on the block runs the same way that the

cable on the winch. If you bring the cable back to where you started from, a 20,000 pound strain on it puts a 10,000 pound strain on the block. If the cable makes a right angle around the block, a 14,000 pound strain on the line puts over 14,000 pounds on the block. Make a knotway in which you can strap in hold the block

* Different pounds on the M24, but same ratio.

(Continued from page 77)

yourself is quite a bit of pressure and let yourself go. Coat the shoes, loading pins, springs, levers and other load-bearing parts you find rubbing the inside of that bearing. And don't worry about the log just getting where you think it doesn't belong on a log skid system. It is about half by force, because when it isn't protecting something from rust, it is remarkably and pitifully weak. All of things the loader brings without them is the danger of drives.

Now there goes East and we come to Alaska, synthetic, higher melting heat 200.

should be twice as strong as the cable, otherwise, you'll have some blocks flying through the air looking for O.L.'s. When the match block changes the direction of the cable 90 degrees or more, wrap your cable chain twice around the corner and place the hook of the block through both loops of the chain.

LOAD TIPS

After all this spiel, here are a few tips that will make things easier for the boys in the engine vehicles... especially the Medical Corps.

Bring your manual on track mounted winches.

Bring your Form wheel lines.

Keep out of the angle made by the wheel line and the match block.

Be sure there are never any kinks in the line.

Line the track up properly before starting to pull.

Check the setting of the match block.

Watch the wheel line, block and anchor for signs of overload.

Keep the cable properly and evenly wound on the drum.

Apply the load slowly and evenly.

Watch the wheel line for broken wires, local wear, or broken strands.

what it shows on the new spring and assembly. We got two things on my mind in connection with this letter that'll only make a minute. Before you start going in the living under search, find the gentleman in doing in figure 12, because the supervisor has the gentleman did in figure 12, because the bearing has no other solid part and the old ball has to come out and the way like it did in that same figure, to win 15.

And when you have finished to adjust the spring and bearing, which is located offstage in the above mentioned figure 12.

(Continued on page 77)

TAKE 'FIVE'

AND FIT YOUR MISS

TO THE GUYS WHO HAVE BEEN
PUTTING OFF THOSE . . . THINGS
THAT'S- YA-KNOW-BO-SOME-ORT
. . . WE SAY,

"SERVE HIM OR GET OFF THE SOUL."



You know as well as the next guy that you're gonna be getting that new jump, AKA, all over the sportsbook for a long time.

May one of the five things below can be taken care of as easy as one of those a-hundred-dollar bills, and will save you a buck in the long run when you're paying this way across the road.

☐ FLEXIBLE OR, ERG

Practically this all lies from the floor, but the legs about two inches in front of the exhaust manifold do you know that when you're juggling things around underneath, the flexibility of the a-horse's legs and you should not be worried with the mechanical stuff?



What you best up from the weather for a while, it is not the same as the other in the other, to the next level. This makes the of the best enough as it can't do itself here.

☐ ON THE SERVICE

In the same connection, they've been telling us about some how who were around with them that they told them

get to know 'em up again. This is the kind of thing people forget would be found doing. It brought wires in the forest according to all that . . . better you're likely because you know how!

In its many of the best ways, you should be good enough, but in some cases between those that are for the best of.



4 CIRCUIT BREAKER ADVISED

Often that get kind of making that better circuit-breaker fixed on every circuit to their trouble. They simply connect it all the right amount and connect it to the lowest like in the picture. In this particular case from the picture of the last.



5 How to work with

Now, while you get on your working stand, you'll want to keep the best to the best of the floor up the distribution for a longer time that won't be through on the distribution system.

When times when a thing like that will make a whole about it makes that deep bend around the stand, because the more there is hidden by the angle of bend.

5 MAKE YOUR OWN

And finally, for this matter, let us see with a good circuit-breaker with what's left of the lamp holder handle the best for the best.

Good friend of mine named George used to be around right working about from work like this. He was too busy to find he'd been something simple that would get stopped in a unexpected time when he wasn't looking.



Dear Half-Mast,

For a long time I've been wondering why there can't be a way arranged to transmit the jump from propeller-shaft and just without the annoying the wrong gear. It would save much time.

Sgt. G. B.

Dear Sergeant,

There is a way. Block up the front end of the jump so you can turn the propeller shaft. Then it around out the W-shaft into the right side of the vehicle. (You can take the shaft off when they're landing that way.) Then take the universal joint up to the spring to clear the other end.

You can do it that way, large, but I doubt it is will save any time. Telling the whole Group goes off is just a matter of removing the bolts, and that's no major operation.

HALF-MAST

Dear Half-Mast,

We had an argument in our maintenance section the other day about whether or not the fan on a GMC (71-104) was balanced. Some claimed it wasn't because of the spacing of the five fan blades. Others said it had to be, and was. Can you settle it for us?

Pls. L. V. M.

Dear Pls.

Here's your chance to get scientific—this little experiment will prove that the

fan was balanced. Break out 1000 of several lbs. thin gold foil leaves for experiment and let her run. The engine will set the "blinky" in the V-belt strip.

When the fan is designed, it's balanced both statically and dynamically. Then all the ribs and tips are made up, using the original fan as a template, and all measurements are held to a close tolerance.

The fan blades on the GMC's are evenly spaced to eliminate noise. When that or more blades are evenly spaced, the flow of air across the fan is in motion makes just like a drum.

HALF-MAST



We have Signal Corps special equipment, say? W-4's and eight W-5's and they're automatic Chevrolet (71-104-4's), and water wheels? As you probably know, they're placed just back of the tank and set just over the power-plant assembly. You can do most anything with them, from changing to a third to making a house. But here's my problem. I can't find a safety about this. After that checking the wheel assembly for gold pin with

on hand, I read the Maintenance Manual and the DR-100 and I don't see right back where I started the above job. But in the spare parts list that comes with the Cap-Block, I don't have the P-Block Drive shaft drive pins. Now rather it happened early in my R-4's career in such broken which makes. Well, after a quiet day looking in the back office with the run drives, after looking out to a "cast" pins with their rivets, I went up with a few more drive holes and run broken which makes but still no idea as to what to do in the future to prevent this trouble. Can you kindly enlighten me on this subject so that I can go to bed at night with out having nightmares.

Lt J.P.S.

Dear Half-Wast,

If you've been having broken wheel-able trouble, maybe you can tell us a way to modify this wheel drive shaft to take a drive pin. But the idea of this wheel was for the drive shaft to act as a drive pin. There's supposed to be a wood bolt in the drive chain. If it isn't letting go when over-haul, maybe you'd better check the shaft, and maybe rig up your own wood bolt. About finding them spare this year in the spare-parts list—on Chevy 14-tons get the same kit. It's never been making up a special one for trucks with their wheel assemblies.

HALF-WAST

Dear Half-Wast,

We've been having trouble with the gas vents on our DR-100 DRC's, model CCDF-10. The front corners of the tanks get blocked in by some wind, trip or bump in the neighborhood and they leak all over the place.

I fixed up a bracket (see Fig.) which, when bolted on, prevents this trouble. The bracket will also serve as a working board support. How's about it?

Eph. A. L.

Dear Sergeant,

Eight days ago, Al King as you've done it, why not use the roller plate and run it from the running board to the bottom of the tank, tip the sides up slightly and have that pressure for the tank bottom? A 1/2" gap of 1/4" metal will do it. To leave the running board, attach the bracket to the vehicle frame. The front end of the body is spring mounted and flexible, and vibration might damage the tank.

HALF-WAST



Dear Half-Wast,

We've been having trouble with our DR-100 DRC trucks. The trouble is in the hydraulic piston and valve assembly. The rubber seal is all up.

We've taken every precaution to see that the mechanism don't wash any parts of the inside system in solvent or mineral oil, yet the seal swell and cause plenty of trouble. The driver claims the rubber don't come dead, and they're right, because most of the time these seals in the early valve assemblies don't last. The fuel gases from the cylinder into the valve assembly, then into the hydraulic shaft, and from there into the various lines, the intake manifold and the combustion chamber. The fuel not burned by the engine goes out the exhaust tail-pipe.

We have experienced most of this trouble with 100 DRC trucks. Please get me on my logs because we have enough leaks created in the Pacific area without

the hydraulic fluid seeping up.

Fig. 2, L. R.

Dear Engineer,

It's hard enough to figure out your trouble, since you've been so thoroughly into making the brake parts with solvent or mineral oil. The wrong type of brake fluid (containing mineral oil) would cause swelling, not that all the cups in the system would swell. And if only the rubber cup in the hydraulic piston and valve assembly is giving you trouble, the brake fluid can't be the cause.

What you've got is improper installation. The cup for the end of the piston in the hydraulic cylinder might be installed with the flat face against the end of the piston. If it isn't installed that way, when the brakes are applied and the pressure of the fluid swells the cup, it swells in the wrong place and distorts or cracks the cup. Also, with the cup installed face-against, the lip is forced into the hydraulic piston and away from the direction of the flow of fluid — which means not enough resistance from the cup, so the fluid squirts right by and enters the hydraulic shaft. That's probably what's happening when the drums squeak almost breaks "drinking" the fluid.

Be very careful the installation of these cups. The flat face goes against the end of the hydraulic piston (see Fig. 2). And I'm praying the rest of your trouble.

HALP-MAN!



Dear Halp-Man,

Recently received your M11 (1-ton flat International Group) at this camp and just had your two left halves of his three 100-mile breakage in my own section and indicate most operations. It's also that a rope edge on angle-iron-plate about an eighth of an inch from the top face. We replaced the jaw with new bolts but haven't shown them yet enough yet to see how they're working out.

What, if anything, do you know about it?
Mr. V. M. P.

Dear Mr. P.,

I checked the best engineering sources on this question before I dare answer . . . because Mr. P. . . and this'll insure you right out of your sleep track . . . That M11 bolt you normally do be adjusted as tight as you can make them. Allow no-doubtful (except hole condition) between pulleys.

They come long enough at the factory, and suggest you tighten them at Camp McCoy with your temperature handle behind the generator for leverage.

Ever hear with a thing? Neither did I. That's why I thought I'd send of my M11's right to you too, so they can't get around loosening proper selected bolts.

Come soon again Mr. P., glad to hear from you.
HALP-MAN!

FIG. 2 (P. 16) IS FIGURING MORE ABOUT THIS.

THE CHAPLAIN'S ADVICE

The Chaplain has all maintenance problems sent to Halp-Man—all them big and little operations you get stuck on your ship's deck. If there is an answer, Halp-Man knows where to find it. Try him . . . write: Dear Halp-Man, P.O. Box 9, 1001 Ocean Fronting Street, Ft.

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the uniform, my God! The only decoration any of these instructors and drivers wear is a campaign ribbon with stars. That's what counts, isn't it? (Or maybe in both countries?)

I don't doubt that the best mechanics schools are doing a great job, and having not some excellent mechanics well qualified in "Keep 'em Rolling," but I wonder how big a percentage of their time is spent on field experiments and jobs—experiments which are so necessary in the field.

Major reported to his boss, "The battle is the P-51," suggests eliminating all barracks and permanent installations from the training program. I can think of nothing that would be finer for the independence man than to be obliged to do their work under field conditions from scratch. We are unusually fortunate just here, we have a hang near the grass pit, a shop track for our tools, and a tent for the car and battery work. The "shop" is an oval of gravel (best when it rains) behind the shop track. The air compressor (pneumatic parts on wheels) is taken away on the line. The office is a grass shack, and the service station is a pile of drums and a hand pump.

What I'm not complaining about this—see the line, thank you. But I'm suggesting it as appropriate training conditions for our replacements. (And you can read on them any time you like.)

P. L. HARRY E. MERRILL

(Continued from page 47)

Behind the cover, you should not back off the adjusting nut like you would one of the wheel-bearing adjusting nuts because this wheel bearing is meant to be pre-loaded. That means adjusted up so snug so there is no clearance to let the bearings rattle loose and behind themselves in death.

The plain-to-go reason is that this bearing internally does not run on a wheel bearing. It sits still, so rattle back and forth from the spring action. Every time, it is subject to all the shocks of combat and other, or domestic variety of work-over, and will if left alone to do so, however small that is almost any time. More work for you changing bearings, and more money out of the Army's war-torn-tire-bank.

TRAMPOLINE LIFE

Read to succeed. Record of what is done

shop, we had to open our big mouth about rattling—underneath the track. So with a short break for our luggage, you will please to crawl behind us and loose the right way here we make a slight adjustment to the trailer—well, nothing. That is if the particular truck we're about to crawl under has the double-spring-type mounting—done.

First, however, we jack up either front wheel and put the trailer shaft down into wheel. Then (now you have to look back and forth from figure 20) we shorten the SHOCK-TI until lower 20(24)-TI is in maximum forward position. Then we lengthen the link (just a few inches you) until the lower handle starts to rattle. And by having started, it means we must have LPH in LPH of an inch.

The trouble with this that has been that some people's idea of "loose" means to rattle," has sometimes been as much as a

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JEEP SLING

OFTENTIMES, when you encounter a trapped jeep and have to lift it on to off a mucky track with your wits, you beat the victim by wrapping a chain around it. Then you'll know it's going, but often the jeep is in even worse shape when you're through because the chain damages the body. To save a lot of unnecessary repair work, the Willy Old Model Co. got busy and devised a simple sling that holds the jeep firmly but never leaves a mark.

The sling is made of a reinforced 2" I-beam, a chain with a hook at one end, two chains with hooks on the other end, and two heavy metal rings near the center of the beam. You reinforced the I-beam on both sides, preferably with U-shaped iron if you've got it, otherwise use plate. It's better not to exceed these reinforcements along the beam's full length or it'll increase the sling's weight considerably. Instead, you can place one at each end and overlap them in the center for added strength under the ring holes.

In case you can't find an I-beam, two pieces of frame steel will hold in welded together will do just as well and you won't have to bother to reinforce it. You'll find the exact dimensions for building the sling in Fig. 1.

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half loads which is the main reason why some of your M4's haven't been going automatically into and out of four-wheel drive. Notice that when the adjustment isn't low enough, like it told about above, the corresponding chain forward-drive gear isn't engaged by the shifting fork.

Be sure you adjusted like 41.

1. Put the transmission shift-lever into reverse.

To get this sling in work, first bend the top end straightend of the I-beam and use that the one end to bend with the back edge of the body. Then place the I-beam longitudinally over the jeep with the right-chain end to the rear (Fig. 2). Hook the single chain to the plate, or if that isn't size, under the rear edge of the beam. Then hook the other two chains under the two frame rails supporting the front bumpers. After you place the wicker-fork through the metal rings, you can gently lift the jeep to where you want it with easy a slip.



2. Push the rear of the truck and turn the propeller shaft one revolution counterclockwise.
3. If all's well, FORWARD is in maximum gear position.

Remember though, on the high-speed M4's, the SOP on shifting is to always shift to first gear after you've been in reverse.

And so to lead Oleg said,
But before.

MAINTAIN THE WORD



A LOT OF LEFT HANDS DON'T KNOW WHAT THE RIGHT HANDS ARE DOING... WHICH JUST AIN'T SMART.

A crowd of dead men from the war of '63 (AAA) couldn't talk, not about what the owner of the shop, a Fla., building a bag, the extension also tipped up on the end of an air duct, was blowing away at the radiator.

"What's trouble" up there?" we asked.

The bagger explained, "Oh, that's a little thing we have to do to keep from blowing up some of our friend's tank engines. We have to a couple before we found out a heavy thing about the radiator cover.

"The cover looks like a solid cover, but if you take up the strip of metal that runs all along the top of the radiator, you can see where it's split longways down the middle. There's only about a 1/2" space between the front half of the pipe and the back half, but back of each, the end of both end pieces down is there. That the heat can't get the air through the cover and the engine heat up. We have 'em cut with that long thin wrench on the end of an air duct every 100 hours."

"Looks like a damn good idea. Did you write in a letter AAA" or AA?"

"Well, I've been kinda busy, but ..."

In another shop a man said, "We had trouble with the ball head service trailer. Got towing a load of lumber across a rough road, and even at low speed the trailer went to skiddy and threw lumber everywhere. We fixed it by putting our screws on the wheel yoke on the front axle system and to keep it from skidding in the dangerous zone."

"Sounds good," we said, "Report it in a letter AAA?"

"Well, we've been a little worried lately, and ..."

We think to be done from there was small distance to get how the man show words and that out of a truck radiator cover, so how do you usually a trailer to keep it from swaying forward. The shop is that there are two good ideas—both gathering together in the name of somebody's chief.

Because there have happened you will think gathered around... because somebody was too busy or busy to read in an "Unsatisfactory Equipment Report" and there is less in P.L. Magazine—there good and good ideas on the gear page, "write their happen on the street air."

You got an idea? Let's take a look at it. If it's good we'll make you some a frequent word, if it's bad, we'll tell you what you can do with it. And don't forget it a name.

UNSATISFACTORY EQUIPMENT REPORT

75%

... all the fuel and lubrication
needs are covered in one Group for
the damage done to high-speed equip-
ment through lack of fuel and lubrication
maintenance is responsible for the 75% cost.



"... AND IT BURNS ME UP!"

M/Sgt. D.S.W. TEXAS