



High Quality THE
PREVENTIVE
MAINTENANCE
MONTHLY

Issue 25 1955 Boston



TURN OFF
THAT *GO-ROVING!*

Ignition...

1972

**DAILY
PROPOSITION**



FROM THE SHARPEST POINT TO

24-VOLT WATERPROOF ELECTRICAL

HOW YOUR ENGINE GETS ITS FIRE
WHEN IT NEEDS IT—WHERE IT NEEDS IT

In other articles in this FE

Magazine series on the electrical systems of your military vehicle, you got a look at your battery, and how your generator and regulator keep it charged. Now's the time for you to get a close look at how your ignition system makes the current from your battery and drives the right spark, at the right time, into the right cylinder to get the most out of your charge of fuel/air/mix.



That current from the battery comes to the dashboard ignition switch through the generator, or its warning light. When the switch is on, it sends to the ignition coil.

SYSTEMS

PART III

DISTRIBUTOR & CO.



THERE'S NOTHING COLDER THAN THE OLD CAR, WHEN THE ENGINE GOT THE SPARK, THE ONLY THING THAT'S GOT THINGS JUMPING IS A JOE OF HOT JUICE IN THE RIGHT PLACE—AND AT THE RIGHT TIME THAT'S THE JOE OF YOUR VEHICLE'S IGNITION SYSTEM.

The ignition coil is a sort of precision transformer coil. If you want to be drilled that steps up to 12, or 24-volt current from the battery to a voltage high enough to jump the gap of your spark plug—anywhere between 4000 and 18,000 volts.

IGNITION COIL



Like you are on the generator, when it comes to electricity there're three things that go together like Huey, Dewey & Louie—when you get two of 'em together you're stuck with the third. With electricity, it's a wire, a current, and a magnetic field.



Move a wire through a magnetic field or a magnetic field through a wire and you'll get a current in the wire.



Push a current through a wire and you'll get a magnetic field set up around it.

That's the basic idea, and we use it both ways in the ignition coil. Your ignition coil is really three coils wrapped around the same core. If it's opened up a little bit just so's you can see how she works, you'll see on that core with one coil of wire around it—and then another coil completely circling the first one and the core.

That outside coil has a few hundred turns and is called the "primary" because that's where the current hits first.

The inside coil has thousands of turns and is called the "secondary." That's where you get your other current hit, the primary and then leaves it.

How do you get that? Well, you never get something for nothing, so here in the upper cell you have to spend a little "energy" (total heat) in order to get

more voltage (pressure), but if a spring-loaded wheel (the primary bulb) up a gradual gang of "electrons" and they fling a weight on the spring board,

booming on or two other electrons high enough to jump the spark plug gap. You sacrifice the gang in order to become a few up real high.

IT WORKS LIKE THIS...

... Now you are
back at a
negative
pole...
So when the
primary current
is cut off,
the electrons
from the
cathode
start down
the secondary
coil.



A second coil has
the primary coil...

... Now
oppose
the magnetic
field from
the main
coil.
Current starts in
secondary
coil to make
a more
voltage.



all the spark it happens when you put the current in the primary coil. It happens when you cut off the current going through the primary which in turn collapses the field. So what we need now is some way to break down the primary current at just the right fraction of a second when you need to fire the plug.

The current flows through the primary, across the points, to ground. The points open and close, turning on and off the current that goes into the primary. While they're doing this, there's a change of the points being kept open and the would weaken your secondary current—the one that goes to the engine, why? Because the magnetic field wouldn't collapse until after the points got far enough apart for the sparking to stop.



CONDENSER

How to stop the sparking points? That's the question, and the sparking happens because the same magnetic field collapsing around the secondary coil creates induced a current in its own primary coil. It's this self-induced current from the primary that's sparking the points.

Now solve the problem right quick with a handy little gadget called a condenser for short—but it's used to play a dirty trick on the self-induced current. It's hooked up across the points so that in the current it looks like a shorted device, only it never can be a shorted device. But by the time the current finds that out, stops, and backs out, the points are already open, the spark plug has already fired—and it's too late for sparks.

The glenoid floor "flaps" the current at the exact instant when y' need to fix a particular plug in the bracket points which are opened when the high point of the cone fits the plug and follows on movable contact point.

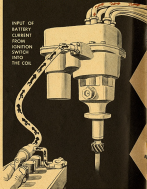


Illustration
of the contact point



SO NOW YOU SEE...

INPUT OF
BATTERY
CURRENT
FROM
IGNITION
SWITCH
INTO
THE COIL



THAT THE DISTRIBUTOR HAS TWO JOBS TO DO—



First, it has to direct current to the coil, or end coil, or end-off, so that the coil will give off perfectly timed flashes of high-voltage juice—the juicier the juicer.

Second, the distributor has to take these flashes of high-voltage current and direct them into the right cylinder.



To do this, the distributor is part of a two-part team. You know the type in the top-left: like a traffic cop that directs the flashes into the one cylinder that's to be fired.

The other half of the team is your breaker points. They direct perfectly timed flashes of current into the cylinder coil in turn, direct perfectly timed high-voltage flashes back to your traffic-cop team, and to direct them into the right cylinder.



TIMING

PROPER TIMING . . .



These show that the time you want to fire your charge is just before the piston gets to the top of the compression stroke, but how long before isn't exactly the top of the stroke depends on several different things, though, and that's where the dual gaps come in.

MAIN THINGS TO BE CONSIDERED IN DECIDING HOW MUCH



**ENGINE
SPEED**

As a rule, when your engine goes faster you want more spark advance—more speed, more advance.

This is needed because when your compressed gas has to travel to the cylinder, it takes a little time for the flame to spread across the face of the piston. You need to have your fire burning just as the piston is starting to go down.



**ENGINE
LOAD**

Just how far your compressed gas has to travel to the cylinder depends on how much it has been compressed—or expanded—by the cylinder on its way up. When you first load it, you would think this would be the same all the time, but it isn't.

That's what makes the difference. As your engine pulls harder, you open your throttle wider. When you open your throttle wider, you increase the pressure of the hot air that you're putting into the cylinder. This happens because the open throttle lets the intake manifold vacuum approach the pressure of the cylinder air. And when you increase the pressure of your charge, you want to hold off firing (until just before piston is pretty close to the top of its compression stroke. This helps prevent that "ping" which comes from detonation—when the whole charge blows off once instead of burning evenly.)

GETS THE BEST POWER OUTPUT FROM THE ENGINE

TOP OF COMPRESSION
RING
ALL THIS TIME
SPARK IS ABOUT 40°
BE THE WAY UP



JUST LIKE YOU
WANT YOUR
JOES (MUSCLES) TO
START CONTRACTING

SPARK ADVANCE OR RETARD AND

ENGINE
SPEED

AND

ENGINE
LOAD

SPARK ADVANCE



TOP OF COMPRESSION RING



TOP OF COMPRESSION RING



TOP OF COMPRESSION RING

SPARK RETARD



TOP OF COMPRESSION RING



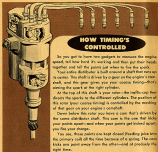
TOP OF COMPRESSION RING



TOP OF COMPRESSION RING

(THOSE INSTANCES ARE EXAGGERATED, OF COURSE.)

SO YOU SEE THE MORE THE SPEED THE MORE YOU WANT TO ADVANCE THE SPARK
THE MORE THE THROTTLE, THE MORE YOU WANT TO RETARD THE SPARK.



HOW TIMING'S CONTROLLED

If you get to have five gadgets to measure the engine speed, tell how hard it's working and then put their heads together and tell the points just when to fire the spark.

Your entire distributor is built around a shaft that runs up its center. This shaft is driven by a gear on the engine's crankshaft, and this gear gives you your *crank timing*—that's timing the spark to the right cylinder.

At the top of this shaft is your rotor—the little cap that drops the sparks to the different cylinders. The position of this rotor *breaks* crank timing is controlled by the working of that gear on your engine's crankshaft.

Down below the rotor you have a cam that's driven by the same distributor shaft. This cam is the cam that *locks* your points apart and when your points get locked apart, you fire your charge.

You see, those points are kept closed (holding juice into the primary coil) all the time because of a spring. The cam lifts one point away from the other—and at precisely the right time.

THERE ARE TWO WAYS TO CONTROL TIMING ...



Since the crank timing is determined by the gear on the engine crankshaft, there are only two ways you can change the *timing* of fire. Change the position of the cam as it rides on the distributor shaft, or change the position of the points around the distributor shaft so that the cam hits the points sooner or later.

Actually your distributor does both. Up in the distributor body is a set of flyweights, held in by springs. These springs control the setting of the cam on the distributor shaft. As the engine speeds up, these weights swing outward (centrifugal

Space) and sends the cam forward around the distributor shaft until the spark advances. This advance varies from none at idle speeds all the way to full advance at the engine's top speeds.

ACTUALLY
HERE'S
HOW



At the same time, there is a spring and a diaphragm mounted on the side of the distributor housing. This diaphragm is connected to the intake manifold. The spring opposes the plate that the points are on, around the distributor block, so that the cam kicks the points open sooner—or later—depending on the intake vacuum. At normal road load you have a high vacuum, so the spark is advanced. When you jam your big foot down on the throttle, opening it full, you have practically no vacuum so the diaphragm turns the points loose and the spring moves 'em back so that they retard the spark. (In your Mustang vehicle, you'll find only the conventional flyweight spark advance—no vacuum advance.)



COMBINATIONS

So you can see these two gadgets behave them out over the whole range of engine speeds and loads. When you're taking off, with slow engine speed and open throttle low vacuum, they work together to retard your spark way back. When you're running at a pretty good clip but with a half-drawn throttle, they work together to give you full advance. But when your engine is running hot and you suddenly open the throttle full, like at the head of a hill, then the "conventional advance" and the "vacuum advance" work off the difference to give you just the degree of spark advance you need.

In that last case, the flyweights stay advanced, because the engine is going fast, but due to the drop in engine vacuum the diaphragm retards.



Now that you've built up your spark and have its timing taken care of, you have to worry about getting it over to the cylinder. Most of the wiring you have seen so far is wiring just carries battery voltage and as it likely had steel, No. 14 or 16 wire, and connected by terminals or screw-type binding posts.

Your high-voltage secondary wiring has to carry high-tension spark currents, though, so it has lighter wire, heavier insulation, and is equipped with built-in spacers on the ignition coil and distributor cap. These wires run from the center terminal of the coil to the center of the distributor cap—and from the side terminals of the distributor cap to the spark plugs.

AND LAST BUT NOT LEAST SPARK PLUGS

Spark plugs are much varied and discussed, but seldom understood and appreciated. Actually, the little sparks have an awful job to do, and do it very well. They have to carry currents of thousands of volts—without heating or charring. They must seal in explosion pressures up to about 400-PSI at the same time, they must operate off dry air temperatures as high as 1500° F and live up to 40 times a second.

Spark plugs specify the inside of a center wire, called an electrode, which guides the current into the cylinder; an insulator, generally porcelain, which

CYLINDERS



You then see these two paths of current working to explode the gas in the cylinder.

Your battery (primary) current (battery to key for switch—key to primary coil—primary coil to points—then from points to ground).

Your high-voltage (secondary) voltage (magneto moves from the secondary coil to carbon brush in center of rotor—carbon brush to rotor tip— rotor tip to side terminal—side terminal to the correct cylinder).

Now that you've got a hot enough current to fire the charge, and sent it to the right cylinder at the right time, you've got to get it inside that cylinder. You use the spark plug to do this.



It provides current from opening coil it explodes the gas & gap, a side electrode which parallels the gap and carries the spark current to the ground (engine block) and the steel shell or body which holds the whole thing together and is threaded to screw into the cylinder.

When the spark jumps that gap on your spark plug head that gap has to be just right your compressed gas head fires and another piston is blown/ downward on its way to delivering power to your shop/baggy.

This is how your ignition works. Other articles in this series will tell you how to keep it working.



Lube Use

When it comes to the lube level in your front, rear, track's steering gear case, you've got a choice to make!

The way it's about time, the gear case is brim full of oil—which is more than these parts can take. Sooner or later they leak.

But just because there's a slow leak at that high point doesn't mean it can't be fixed. With a lube leak up there, you still have enough left for the gears to whir without grinding. Stay off deadline with this type of leak. Lube lower down on the various axles.



Recent experience shows there has been too much lube put in the case. In stead of 6 pints, put only 3-4 pints in the gear case. This should check in at 1 inch below the filler plug. So from now on, make that your goal. This change will appear in later TM's and LO's.

And speaking of lube around the steering gear—watch for one at the point between the steering-gear housing and the housing cover. It could be you aren't putting enough muscle into tightening the steering-gear case's mounting bolts. Besides causing a leak, with loose bolts the movement of the case can crack the steering housing. Torque these bolts 28 to 33 ft-lbs to meet class of trouble.

Looking Out

The ends and ends of chains are most abused when mounted in tension. Rubber vulgare chain covers, like you find on the M17, M4 carriers, will crack. When yours do, wrap repair is a good replacement. Stick those repair units by hand or machine, and the sound will be buried deep.



No loose links, please

You fight with belts—M1, M1A1 and M1A2—before you find out you're

The connecting links that tie your feet to the road supporting a car to the compressor adjusting arms need checking. You gotta keep 'em tight, or the assemblies wear out fast.

You'll be using this in the TM's



Woolly exercise

Be sure you shift your feet back into **LOW RANGE** at least once a week. You don't have to go far—a couple of feet will do.

The high and low range gears of the transfer are mounted on the input shaft on two ball bearings for each gear. Whichever gear you are using is locked to the shaft by the sliding synchronizer assembly, so that gear and the shaft turn as one unit.

While this is happening the ball bearings for that one gear do not turn, and if you operate day after day in that range, they will hammer the balls into the races (bearing, they call it) and bore it like a hammer, what you finally do get is the other range.

If making a shift once a week, you have the bearings in the balls do it in one place, and you also have your oil up into the bearings and there are no sludge that way to there.

Of course, this works both ways. If you have a lot of **LOW RANGE** driving in the shift in **HIGH RANGE** at least once a week for the same reason.

This sweep, which applies only to vehicles being used, is gonna be included in a change to TM 9-819, which'll supersede TM 9-819-20 (2) Para 15).

Big feet

Every time some people open their mouths they put their feet in it. But what's worse, every time some people open their tank engine-compartment, they put both their big feet in it. Which does the throttle rods and the air induction system no good. Man or woman (also puns they stamp on).

This wouldn't be you, of course, but just in case someone who thinks with his feet should get into your pet buggy, why not wear "NO STEP" on the front air duct?



When start something?

This one spot (Fig. 1) was uncovered under a 2-1/2-ton truck's master cylinder. The cover was visibly condensed and water trickled in. Some—no more—only steps. Shows the cover's gotta be right or all the'll start a trouble.



Hot lead

Some of the boys report that their AC Model A spark plug wires, Delco Radio No. 48-C 1013, is heating up when they use it on the checked spark plugs of the Wharton buggies.

Some the EI babies guess that carbon the hot caused to the plug can't take it straight way out to get over the coil plug.



It's a good idea to use the correct wires on the AC Model A. The Delco 48-C 1013 is the best choice.

Typewriter road wrong

In case you missed it, case 5 of LO 2-8724 for the M13 track, got its differential and transfer gear caught in the transmission's teeth. So stick to TM 3-8724, page 76, for the gear case such as transfer case and differential. Like it was, bring in like up to plug level when the oil's hot, and LL tank below that level when it's cold.

If these cases are filled to plug level when cold, the oil will expand when it gets hot and you'll get gipped for an overfilled gear case.

You'll see this dope. You long to LO 2-8724 (for the Hydra-Matic).

Perc's Law —



Busted tramp seats

Buskers claim no truck tramp seats can resist from shock or rattle flags. If not, or more, legs fail to come down when you put the seat down, the weight of the seat will surely bust the slats.

Stop...don't bust

The guys who share their trucks have serious beliefs they stop are just asking for hazardous circumstances. On any truck, being hit by a hole-in-the-side is serious.



Inside! A host of additional official publications on your choice. Equipment, News and all interesting to a lot of you.

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1. STARTER DOESN'T CRANK ENGINE

HEADLIGHTS BURN BRIGHT AND DO DUTY WHEN STARTER'S FEET REST POOR GROUND OR BATTERY CONNECTIONS



STARTER AND BATTERY CABLES TIGHT AND CLEAN... AND STILL NO GO?



BUT FROM CAR, LEAVE CAR BODY TO MAKE YOUR MOVE!



IF STARTER DOESN'T CRANK, YOU'VE GOT TO TRY SOMETHING ELSE TO GET THE ENGINE

2. STARTER CRANKS BUT ENGINE WON'T START

WHEEL DRIVES CRANKING DOWN ON THE HOOD SPRING PLUG CABLE TIGHT FROM BLOCK...



FULL LEVEL CRANK? THEN CHECK IGNITION

IF YOU GET NO SPARK, GO FOR HOOD SPRING PLUG A REAL QUICK CHECK WITH A REAL CONDENSER & WOUND TORQUE AND SHOOTING, SPOON, POINT TO... OR A SET AND SPRING HOOD TO HOOD TAIL THE HOOD AN EMERGENCY IF HOOD SPRING PLUG IS NOT AS TIGHT AS IT SHOULD BE... SET SPRING OF SET A REAL EMERGENCY REMOVE CONDENSER CAP AND SPRING MAKE SURE SPRING CLEAN AND SET. THEN CHECK DISTRIBUTOR SET TO

CHECK DISTRIBUTOR: TIGHTEN STARTER (POSITION OFF) TO FIRE BLOCK (CAR TOUCHDOWN) KEYS ON HIGH POINT OF CAM



CHECK POINT SPRING WITH MATCH BOOK COVER



POINT TO TO GIVE ONE OTHER POINT, THE HOOD SPRING & HOOD SPRING TO GIVE

FUEL'S OKAY
AND SO IS THE

**GO GET
HELP!**

CAREFUL!

DON'T USE A TORCH TO CHECK FUEL SYSTEM
BEFORE YOU GET HELP



**3. STARTER OKAY...FUEL IN
TANK...IGNITION OKAY**

CHECK FUEL SYSTEM

WITH HYDRAULICS
TURN ON IGNITION
(CHECK FUEL IN TANK)

OTHER VEHICLES
IGNITION OFF

THEN CRANK ENGINE

DOES
FUEL REACH
CARBURETOR



THEN REMOVE AIR
CLEANER INPUT
AND LOOK DOWN
CARBURETOR
OR THROTTLE
TO SEE THAT
CHECK'S
OPEN

COVER CARBURETOR
WITH HAND WHILE
THROTTLE CLOSED (AND
SEE IGNITION'S OFF)

THIS NOT CLOSED
IF YOU SEE FUEL
IN MANIFOLD AND
ON YOUR HAND

SO... WITH
THROTTLE
WIDE OPEN
TO CLEAR ANY
FLOODING,
CRANK AND
TRY TO START
ENGINE



(CHECK FROM TANK TO CARBURETOR USE IT SAFE IN YOUR HANDY TR)


JOE'S

Dope Sheet



WE HAVE THE WORLD'S BEST EQUIPMENT

COPYRIGHT 1950



Our doc has been stalled, in distress.
The poor jerk is yelling, "SOS"
She'll start up and go—
If you're in the igloo—
Be prepared, don't get caught
in a mess.

EQUIPMENT... Take care of it

IF IT'S STILL
NO GO, GET
THE BMIT
MECHANIC.



WASH IT YOURS (SHOULD HAVE GONNA
BUT MIGHTY CRANK THE ENGINE... IT'S
AN AIRBURN (SHOULD... JUMP... FURNACE)
HOWE THE TIME FOR YOU (SHOULD... TO
FIND A MECHANIC AND LEARN?



THEN CHECK THRU FUEL AND IGNITION SYSTEM!

FUEL SYSTEM

HYDRAULICS

1 DOES CURRENT
REACH FUEL PUMP?



IS FUEL LINE... OF THE CAR

2 REMOVE FUEL
LINE AT TANK...
CHECK FUEL
PUMP OUTPUT
PRESSURE

3 REPLACE LINE



MINIMUM IS:

3-PSI

MEANS THE 3-PSI PRESSURE IS AT THE
WITH THE ENGINE RUNNING THE
MOTOR... AFTER ENGINE STARTS CHECK
THE FUEL PRESSURE IT IS.

IF THE
PRESSURE
IS LOW

THE FUEL LINE



ALL OTHER REPAIRS:

1 BLOW INTO GAS
TANK... CLEAN?

2 REMOVE FUEL
LINE AT FUEL
PUMP INLET AND
BLOW...



WHAT IS?

IF YOU LIFT FUEL LINE
INLET IN TANK AND
BLOW INTO THE PUMP
CHECK THE FUEL LINE
CHECK THE FUEL LINE
CHECK THE FUEL LINE

IF THE
PRESSURE
IS LOW

3 REMOVE LINE ON OUTLET SIDE OF FUEL PUMP.



4 REMOVE FUEL LINE AT
CABLE-TION PART...
AND NOW, FUELLED
UP... CLEAN AND RE-
PLACE OR PUT IN NEW
ONE.

WE DEMAND THE BEST. CLEANER, MORE FROM THE CARBURETOR AND CHECK WITH OUR HAND LIME BEFORE...

HEH...



IF YOUR VEHICLE IS EQUIPPED WITH A MECHANICAL ACCELERATION PUMP, OPEN THE THROTTLE AND OBSERVE THE Jet OF FUEL INTO VELOCITY... NO FUEL... REPLACE CARBURETOR.



NO SPARK
BATTERY



NO SPARK
WIRE

NO SPARK
TEST COIL



IGNITION SYSTEM

ONE BAD HIGH TENSION COIL CAN GIVE A HARD TIME. CHECK FOR SPARK AT TWO OR MORE COILS.

1 NO CURRENT AT PRIMARY CONTACTOR OR DISTRIBUTOR... REPLACE DISTRIBUTOR PRIMARY LEADS OR SWITCH OR BOTH.

2 NO CURRENT AT +TERMINAL?... CHECK PRIMARY LEAD

IF CURRENT, GO TO STEP THREE

4 IGNITION POINTS CLEAN, UNBURNED AND ADJUSTED

3 NO CURRENT AT -TERMINAL?... REPLACE COIL

5 CONDENSER OILY?... FOR BEST HOLD CHECK USE NEW CONDENSER.







ON YOUR MARK

Dear Half-Wast,

What's what an ignition timing the Model Jeep? Is Auto like some have no timing marks, and where have you had they've had to cut. A few of their older slaves, the '80's, aren't much better off.

CHUCK W. J. M.

Dear Miss W. J. M.,

May a man timing his Jeep may think he's being rewarded—but it's all to how you look at it. Here's the very answer—rightly.

To begin with, except for the very few that get away, all 41's have a timing hole in the crankshaft pulley (Fig 1). These few happened at the change of production, when some left over from the early 380's came into the later 41's and late 41's. The earlier



41's of course, are fitted as the flywheel (Fig 2) and no mark in the crankshaft is needed.



Without a timing hole, all you can do is either exchange the pulley for one with a hole, or put one in. Put it in when the pulley's key-way is the crankshaft at 90-degree in the crank's center-line on the distributor side—when No. 1 piston's at top dead center.

It's the mark on the distributor cover that's got most men stumped. At first, these covers had a hole (Fig 3).



But it's really wide and sometimes gets overwhelmed. The best way for you to see it is from the side—it's really weird looking as it hauls you.

About a few thousand of these, that wide embankment was changed for a simpler one. This means of two marks, one for Top-Center, and the other for 7" before TC (Fig. 4). But the trouble with that one is you got to get down on your hands and knees and look up from



between the axle and the radiator, to see it. Which means to take your eyes to close the vehicle—use above, and the other on his hands and knees. Not very handy.

And finally, those coming out now have a double-paned arrow on their gear cover, one for TC and the other indicating 7" before TC (Fig. 5). This moral pointer can't be missed. It sticks out over the crankshaft pulley's hole,



and with it, only one man's needed at time as engine.

The moral pointer should solve the timing problem. (RWC) (Gd 12-5714 put one on all A's that have come out without it.

Half-Mast

ROD BROW

Dear Half-Mast,

How is it that the work order was allowed to repair a defective bolt on a machine, and yet parts are ordered to the Gd 7 (N)?

Cpl E. J.

Dear Cpl E. J.,

That was an awkward situation, but it's long gone now. Order 1, FM 21-7 (17 Oct 51) authorized the discontinuity of the bolt under the supervision of an officer, sergeant, or aviator. Now, since the Gd 7 (N) gives him the tools and the parts, the trouble is all out to make repairs on the bolt.

Half-Mast

PINKAL WYNN

Dear Half-Mast,

Has anyone mentioned the spring-loaded bolt on the R12 machine's front wheel clutch/brake? The door doesn't have a positive stop, goes over too far and lets the steel ball jump out. Can you suggest a fix?

FRANK M. J. G.

Dear Miss R. I. H.,

It's been mentioned all right in various other letters and the P.N.A. But before the lever can go overboard, its shifter-rod's or keys must've been twisted out of shape. These are what the driver-handle has on, and they limit its movement.

Always raise the drum *manually* until the check-jaw lines up with the drum-jaw, before you get the wheel going. If you don't, the wheel'll meet with a bang, which leads a sudden end to the shaft and key—what's what causes all the trouble. Ease up.

The lower lever for that track has a stronger spring behind the ball, and the lower location on the plate isn't carefully positioned. Replacing your spring with a heavier one, or stacking light gaps metal spacers behind the one you have, should keep it in place.

Half-Mast

GET CONSIDERATE

Dear Half-Mast,

Could you tell me how to answer Carl's light extension. Carl took No. 17-C (1981) on the Main Plug. I have, Spade, 23-track DC, 400-cwt AC, My track No. 21, 200-HP, that same with car 2-172-cwt, No. 23-trap cars—MWH and M.J.H.

L. F. G. H.

Dear L. F. G. H.,

This extension will show you've got in one that was used on the old cars,

and it can't handle a full electrical load due to the large voltage drop in the road (which has only a No. 11 A. W. G. tin-cable).

If you're going to use it for the lighting load of the cars, it will take care of it. Just cut the inside end off of the road, disassemble the plug and solder the cut end of the road to the two poles of your plug, and you've got it.

Now, if you've got a heavier electrical load than just lights, you'd better reposition those cables. There's a 7-4 one P.N. 60/50-594-1 984 (Oad drawing 4-7941305) and a 21-4 one P.N. 61/50-595-1095 (Oad drawing 4-7941304). The above one goes from the generator to the long cable, and the long cable plugs into the track (unless your generator is close enough for the 7-4 cable to reach the track).

These cables are not OEM but set with the shop guy.

Half-Mast

TICKETS FOR TICKETS

Dear Half-Mast,

What's the advantage of using these "PM Service One" windshield wipers—(Oad Form 177) seems to me they only duplicate PM raised and tilt and add confusion. Specially when the ones that get put on the vehicles don't jibe with those in the yard file, or it apt to happen pretty often. Also, I wonder how many drivers ever really put the wipers a correct thought.

3rd F. G. H.

Dear Sgt V. B. B.

Who's blamed a gun as to how many drivers actually load these vehicles when they're used. All I can say is ... if they don't, they ought.

The main idea is to let the driver help anticipate the most anticipated PM service. It's particularly important when the vehicle's likely to be driven more than 1000 miles in 60 days or 6000 miles in 6 months. (How they're also considered useful during spot checks.)



DD FORM 317

The driver should remember not only to check the vehicle now and then during operation, but to use it up until it's put on either C or D inspection. Make sure to get the right date and mileage figures to start with. Then, if it should have that to jobs with card file into, he'll know who's good.

Nothing in the books says these vehicles have to be planned on the windshield of your outfit. But if properly used, they can help a lot to insure against preventive maintenance over-sights.

Half-Meat



OIL ADDITIVES

Dear Half-Meat,

What about these products for adding to your oil? Are they any good? And if they are, why doesn't the Army use them? It's worth one day of your and expense on our vehicles if these products do what the advertisements claim they will.

Sgt T. K. B.

Dear Sgt T. K. B.

Oil additives are one of the most tested and discussed subjects in the Army today. Some are some good.

The military procurement people are constantly testing such products, and both the oil companies and the vehicle manufacturers are always looking for ways to make their products better. So you can be sure that they're not over-looking any here.

But you won't be likely to see any additives for the Army. Those which actually prove helpful will be included in the specifications and put into the oil by the manufacturers. In fact, you are already getting a good many additives, mainly of the detergent type, in your motor oil. And you'll get any new ones in the same way.

So don't worry about them, and don't buy any at your own expense to pour into your GI buggy. What you do wish your own car is your business. If you like the pretty girl in the ads, go ahead with your beauty. But remember, the get-down's come with the beer.

Half-Meat

HEP TO THE CATS

The RCATS, that is, the Radio-Controlled Aerial Targets have come a long way. Today's advanced beauties do well over 200 MPH, can stay in fly, and have all sorts of parachute and flotation gear in tow. And bigger and still better ones are coming.

But, as the targets get better and better, the men taking care of them have to get sharper and sharper, too. So PI has been working up the latest gags for you.



Self-Loos

There's been a case resulting from using elastic stop nuts on the connecting rod bolts in the O-100-C engines. Reaching a stretch under 1800-18100 (TC-A16) was and the 1800-14110 (2nd-Act) special lock-plans. But, if the right parts are unavailable and you **gotta** use the self-locking nuts, be sure you turn the engine over carefully and see that the bigger nuts are clearing the crankpins all the way around. These big self-locking nuts won't do the job and by moral starting into the bearings. That's what all the boozers' about.



Tool Sets

If you're still trying to put your hand over maintenance tools, take a quick look at your Old 5 SML P-1, list 12, Corbin 1981 and see if you have every-

thing listed in the Tool Set, organizational maintenance, radio-controlled target, 141-1-0048-0231. That's got it all, from screw to nut. Also see TP042 0404.

Your best buy gets and your best (SML) will have them! Corbin's standard hardware and lots of the negative ADI hand-and-walk. Economy, y'know.



Advance Hardware

Classification



RCATS are now F group material. So your new SML's are Y10 to Y16 inclusive. For targets, handsets and more, Y7 and Y15 will be along later.

Oil Tubes



Less oil clearance takes being re-placed are well good. You needn't be hasty in replacing these tubes. Don't cut any tube before it's replaced. And if you have a tube out of a critical circuit which will not perform within the operating limits, cut it. If it cuts "good," mark it and mark it for use in a non-critical circuit.

Water in Fuel



Some RCAT's've been lost fairly from water in the gas. Be sure your system is clean, particularly if your RCAT has been recovered from salt water. (See *Rocket Annual* TEL 204, dated 23 February 1974 for steps on purging salt water from engines.)

Less oil clearance takes being re-placed are well good. You needn't be hasty in replacing these tubes. Don't cut any tube before it's replaced. And if you have a tube out of a critical circuit which will not perform within the operating limits, cut it. If it cuts "good," mark it and mark it for use in a non-critical circuit.

Insurer Settings

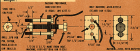


Here's a handy list of insurer wrench values for your RCAT:

- Connecting nut nut—1.00 to 1.10 in/lb.
- Plug lock retaining screw—1.60 to 1.80 in/lb.
- Upper retaining bolt—1.50 to 1.70 in/lb.
- Cartridge nut—1.0 to 1.10 in/lb.
- Fuel pump bolt—1.0 to 1.10 in/lb.
- Center case bearing pump nut—1.0 to 1.10 in/lb.
- Lock plug—1.0 to 1.10 in/lb.
- Cylinder nut—1.0 to 1.10 in/lb.
- Propeller thrust nut—1.0 to 1.10 in/lb.
- Receptor mounting nut—1.0 to 1.10 in/lb.
- Receiver nut—1.0 to 1.10 in/lb.

Ring Drive Puller

You can get a ring-drive-assembly puller under Civil Stock No. 41-P-2041-761. But if you'd rather make your own, here's the drawing. It's simple.



ARMAMENT



TEETH TOO TIGHT

No double-headed keys—just better care of your M1 rifle's rear-sight teeth.

Yeah—yep, the elevating knob's teeth will wear mighty fast if you screw down the windage knob too tight.

To head that off, here's what to do: Turn the rear-sight windage-knob screw on the pinion until the windage-knob can't be turned—without forcing it. Then back the screw up 1/2 turn (1 click). If the windage and elevation knob are still too tight, you may need to take another half turn.

The elevation and windage clicks should be sharp and distinct, and the settings shouldn't change during firing.



It's true: on all military guns, not just Army and Marines, by the time what it is and what it's for is known, you can see your foot on the ground on page 24.

IT'S IN THE BOOK

Man, don't get the wild idea that because your mechanic's piece has just come back from rebuild that it's all ready to fire. Cause the chances are it's not.



The only way you'll know for sure is by checking the gun book. You won't find any red flags flying or warning tags sticking around on the gun to tip you off. The Old M16 does away with them. Your gun book and only your gun book can give you the straight dope.

Some adjustments on your piece have to be done when the weapon is first fired after rebuild, so someone from Ordnance should be on hand to do it. The gun book should be checked for any adjustment dope that may be already in it. Otherwise, you'll add any new dope.

To keep your fancy trigger finger off that piece until you check and double-check the gun book.

MEZ MEZ

When you tear down your M1 rifle for cleaning, you'd better make sure you put the main parts back on that you took off. Some other guy's parts may look like yours, but sometimes they're not exactly the same.



Your stock, bolt, operating rod, gas cylinder, and trigger group have been hardened or gaged to fit your parts. That's why they've got to stay together.

Although the parts of the weapon are considered interchangeable, they're not to be changed or switched unless it's done by your Ordnance center—they're trained to make your parts behave like it should. So best keep those parts together when swapping, else you won't run into trouble here.

SMOKE UP

By the Numbers

Getting the right machine gun mount for your M1-series vehicle is pretty much of a trap compared to what it used to be with the old ones. You have fewer choices and less chance of error.

Here's a run-down of mounts for some of the new trucks as you'll see in Qdr 7 and 8-DM, 8-55, Sections 15, 18 and 20. That's where you'll find all the dope on the mounts, including which one goes on what vehicle.

	TYPE	NUMBER
1/1/50	8-55 8-55A	8-55A1
2/1/50	8-55	8-55A1
3/1/50	8-55, 8-55A, 8-55A1, 8-55A2, 8-55A3, 8-55A4, 8-55A5, 8-55A6, 8-55A7, 8-55A8, 8-55A9, 8-55A10	8-55A1
4/1/50	8-55, 8-55A, 8-55A1, 8-55A2, 8-55A3, 8-55A4, 8-55A5, 8-55A6, 8-55A7, 8-55A8, 8-55A9, 8-55A10	8-55A1
1/50	8-55, 8-55A, 8-55A1, 8-55A2, 8-55A3, 8-55A4, 8-55A5, 8-55A6, 8-55A7, 8-55A8, 8-55A9, 8-55A10	8-55A1

Your T/DM will tell you how many and what kind of mounts your unit's authorized. The DM's will show you on how to mount 'em with the trucks. On the trucks you'll only have one mount for every five vehicles assigned to your unit.

And how do you get 'em on your truck? Well, you or your mechanic can do that.

HOTTER AND TIGHTER

If the flash hider on your M103A1 machine gun is suffering from the shakes and the drapes, here's a sure-fire cure. A new retaining clip (Fig 1) is now available and it'll be the joy of your life. The hider is gone the righter it gets. So, wash it, wash ya' get one (Ord Stock No. 3000 841 8712). M103A1 Ord 400 8711 is your authority—and it's marked urgent.



HYDRA CABLE

Come, shed a warm, oily coat for Old Joe, the tankless and mud-free M17 machine rifleman in the boy scout's Army.

Joe spins on his foot and a half-palming, his gun hits position and another foot waiting for a chance to work on it. And just when he was ready to violate the target . . . **blam!** He ripped the firing cable with his elbow and shot off prematurely. The target, of course, hit in a puff and a huff. And a couple Joe's buddies won't have to share for a year.

It doesn't have to happen to you. You can get that firing cable covered and secured so that there's not the slightest danger of accidental discharge. God-never can slip a sleeve over the cable and lock it to the gun so it won't hang loose and bang on whatever's around.



A lot've things will do the job, including Foster tubing, Ord Stock No. G526-8291A24; Casting, specifications, Ord Stock No. G514-7704(1); Casting, specifications, Ord Stock No. G508-788023, or Best's, flexible, any, Ord Stock No. 8240-08608-04 if there's still any around. Takes a piece 34-1/2 inches long.

The new 2042 machine has this situation all taken care of.

HERE'S A FEW POINTS



There're plenty-all kinds—spring pins, straight pins, and bent pins, but none can be as much of a troublemaker as the driver pin in the breath mechanism of your 30mm AAA gun. You'd better check the elements of your driver pin with the breath operating disk. If the pin doesn't look that sharp, you can expect trouble. When you load that pin out of filler—don't live-and an ICE in Delaware.

KNOW YOUR GUY PRODS

Before you ask for a new tube for your air-ock job, make sure it's wanted in it.

If you've got a 30mm gas M1A3, M1A1 or a 120mm gas M1A1, you're just waiting your time to ask for a new tube for one of those babies. TB Ord 128 C85-C86 M1 says they're not re-usable.

If you've got a 30mm gas M1, M1A1, M2 or a 120mm M1 in need of reusing, better turn it in (the whole thing) and you'll get another prize.

On the 75-mm gas TR88 and TR87, 90-mm gas M1A3 and M1A1, 120-mm gas M1A2 and M1A1, you'll find it's a horse of a different color. The tubes can be replaced if they still come under the limits outlined in your TB Ord 528.

You'll have to check your model numbers on the 30mm gas M1A3, M1A2 and 120-mm M1A1. Guess they all look alike.

BEWARE

C-8 SAFETY SYSTEM

Pairing the machine on your 1000 Rev-control system and using C-8 before you go to do the job calls for caution.

This note contains a statement which could be harmful if you get in an unsafe position.

If it accidentally gets on your skin, wash the spot for a period of 15 minutes. **Do it immediately—now!** And if you get some on your clothes, have them washed before you put them on again.

When working with C-8, wear clothes. Be sure you're not getting your clothes wet. Some people are sensitive to vapors from water and maybe you're one of those folks—why take a chance?

WHAT??? ANSWER

It's the operating range setting of the machine eye that's located inside the machine assembly, in one end of the reference to your field-of-vision and system. If the machine eye does nothing, on one side only, then the easy answer there's the right amount of reference and system, but it's not there on both sides. The thing, get out your tool of use—the gun and blowtorch—the like reference machine can make an eye side of the machine eye. If you're too much of a the operation, it'll show in the machine eye. But with enough eye and, when in extremely full condition, a slightly visible side of machine eye. Use blowtorch operation—your tool is on one side only by having working part of it, but make sure you're not in a half of the eye just.

Check the manufacturer's working eye in or eye operation in the 10 for your weight to your operation.

REPLASHER INSTRUCTIONS

Long Machine In
Both Side

Small-Ce
Both Side

FIG. 10-100

Machine In One
Side Only

Machine In
Both Side

NOTE—Don't use, it's made. Before the start of

NOTE—Repeat for the most of, but not 10 to be—
long on one side for both sides because the user
may think that isn't working.

NOTE (Cont.)

OPERATING RANGE—The right amount of all is in
the system.

NOTE—Don't use eye in this condition. It's a machine
to pass between the full and operating range zone.

Some Ask-Ask Talk
on the M42 and M1941—

TWIN-40 TUNE-UP

Course, about the worst thing you can have between you and attaining success is a confusion of facts. But if you're fresh out of these when the buzzer sounds, try your best on your M42 and M1941 self-propelled twin all-gun gun. They're great little pieces for accomplishing whole-happy four-fours.

Basically, you want to know all the angles, or have a few tips that'll help you boost your firing average when the foot's up and the ship are down.

First, though, you just won't know any angles at all, if your twin all's aren't synchronized with the elevation all-guns. Anybody'll tell you the elevation has to be just right if you expect to have any fun with your gun. And there's nothing like synchronization for getting into the swing of things. You have to know right the gun and synchronize the mounting right just like it tells you in the 14.





SYNCHRONIZE 'EM THIS WAY:

- 1** TURN ON SWITCHES TO MAKE SURE ALL SET OF GAMES HAVE 1-1/2" IN OIL.



REPLACE EXHAUST FILTERS CHECK BY PRESSING AND STRIKE THE TEST



MAKE SURE EXHAUST FILTERS ARE PROPERLY OILED AND

- 4** SET SWITCHES TO OFF POSITION. MAKE SURE ALL GAMES HAVE BEEN CHECKED. MAKE THE TEST STRIKES.



- 5** MAKE SURE ALL GAMES HAVE BEEN CHECKED. MAKE SURE ALL GAMES HAVE BEEN CHECKED. MAKE SURE ALL GAMES HAVE BEEN CHECKED.



- 6** STRIKE THE TEST STRIKES. MAKE SURE ALL GAMES HAVE BEEN CHECKED. MAKE SURE ALL GAMES HAVE BEEN CHECKED.

- 7** CHECK EXHAUST FILTERS. MAKE SURE ALL GAMES HAVE BEEN CHECKED. MAKE SURE ALL GAMES HAVE BEEN CHECKED.



- 8** MAKE SURE ALL GAMES HAVE BEEN CHECKED. MAKE SURE ALL GAMES HAVE BEEN CHECKED. MAKE SURE ALL GAMES HAVE BEEN CHECKED.



Bring the throttle lever back across the 100 to 150 lb. to bring you a full liter of fuel. If you will, if you've been exploring to all the different look-alike bearings. These are little bearings can hold to you and your bearings parts that your bike only can give for a guarantee of easy starting and riding. They're a difference that will show through later.

NEW PIN

Keeping around for a long pin, following straight out to you, you'll see the difference. It will show the same as you'll see on the side of the 100 to 150 lb. will be held without the sliding in place that will be. 100 to 150 lb. The other end of the chain is attached to the pavement side of the plate. The new pin shows a new design that will be shown and it will be held in place, righting to you.

If your bike isn't quite there yet, get one of the new pins and there will be held in the plate, and you can check the chain that stays on.

100 to 150 lb.
100 to 150 lb.



NEW PIN
100 to 150 lb.
100 to 150 lb.



OIL GEARS: E-A-S-Y DOES IT



"When I looked for a way to get the oil out of the gear and the bearings, I thought of the way I do things. I thought it was the best. You can't get away from the fact that there's no such thing as a free lunch."

1 PUT AN FIVE GALLON BUCKET AND BRUSH THE MACHINERY WITH WASH OIL IN BRUSH POSITION.



2 REMOVE BUSHING AND JUMP TO LINE 2000. REVERSE THE HAND OPERATOR BY MOVING CURVE RIGHT WITH THE HANDLE.



3 GET THE TOOL-OIL TO A GOOD LINE THEN TAKE OFF THE BRUSHING.



4 MAKE SURE CONTINUED BY OPERATING POSITION AND LOGS.



5 TURN ON BUSHING WITH CENTER AND BRUSH. RUN BUSHING SYSTEM.



6 HOLD ON-BUSH OPERATOR TO THE BAR.



7 HOLD TOOL-OIL WITH A TIGHT—



"I know that, when operating correctly, you're getting the maximum out of the gears of the."

"Now here are the things you have to do: make sure the oil gets into the gear mesh in the center, and make it so the teeth don't touch the oil gear before they have completely stopped. It's not the gear right out of the."



STEERING-CLUTCH LEVER LIFTING

Dear Sgt. Dwyer,

Our D6 came along to some real steering-clutch trouble. Some one had wrongly changed an the right-hand side of the steering-clutch-lever housing cover being overlooked.

There's one fitting on each side of the steering-clutch-lever housing cover, and they're identical to the steering fittings on the left side of the steering-clutch-lever housing (Fig. 1).

Thought I'd better also put on the same fittings cover that is used.



They're located under the hydraulic-control-valve bracket assembly, and they aren't shown in LO 5-1068-B of the D6, which goes with our D6.

We didn't realize we had ourselves into the left steering-clutch-lever housing until they'd already and related to cover in several positions. After a good hole job, the lever started operating smoothly again. Now we're giving the fittings on the right side the same hole size the LO prescribes for the fittings on the left side of the clutch housing.

W. C.

Dear W. C.,

Thanks a million. We're making a handy note about those fittings and telling it to the attention of everybody who uses LO 5-1068-B in the D6... which, incidentally, covers D6's with serial numbers ranging from 301 to 202315. Also by with TUC113, there's a new fitting on the left side only.

Sgt. Dwyer

PCU'S DRIVING-CONE SHARDS

Dear Eye Doctor,

The tip on changing the PCU driving-cone linings (PT 27, page 201) is OK for older cone linings, but a metal lining has replaced the fiber linings. This new lining is also available for the master cones. Paul's comment doesn't affect 'em. *Old Tooth and File*

Dear Old Tooth and File,

The "Tooth and File" article deals entirely with woven linings. The rasp treatment doesn't apply to the bi-modal linings on later model PCUs starting in 1982.



This cleaning tip may be old stuff to some old timers, but please pass it along anyway for the benefit of the not-so-old youth-todays who may be working with not-so-new equipment.

TM 5-1383 "Trouble-Shooting Guide," page 248, gives the rasping facts for woven linings.

Sgt. Deger

MAKE YOUR GO TO ITS OWN GO

You're likely to slip a vital hole point if you're not taking your DE (Serial No. 24029 and on) by GO 5-2640-B (4 Dec. 58, which superseded GO 5-2640-1 4 Mar. 52). Some DE's covered by these serial numbers have a hole fitting in the governor housing to take care of the governor control-shaft bearings. The fitting is clearly marked on the GO card in your DE's manufacturer's manual, but on the DE it may be hiding under a guard coat of paint—so take a close look at the upper left-hand corner of the governor housing. If your DE's got it, take it sparingly. Some older models don't have this extra point— that's how you can tell if on your new DE if you use an old GO. Your publications section has the new GO—put in a fast requisition for it if you have to.

TROUBLESOME CAVITY



There's one cavity that's got to be filled on this No. 12 Car owner grade. If you don't keep that hole atop the blade-like stalk-support-bracket (arrow No. 1) filled up, you're headed for trouble, especially during cold weather.

The hole, used to connect *actuators*, was originally plugged at the factory. But someone saw the plug is long gone by this time. That leaves a hole where rain or snow water can pour inside the bracket. Then the trouble starts. The water freezes, expands, and cracks the ribs of the bracket (like a screw No. 1).

Here's how you can solve the problem:



1. It may seem like this is the hard part. One of us tried using a 1/8" x 1/8" cap screw and it was not correct.



2. Use sand to make it seal. An 1/8" hole drilled in the bottom of the bracket (arrow no. 2) will let wet sand get into cavity to seal it.



All of the late model No. 12 grades had the above hole drilled in the bottom of the bracket before leaving the factory.



THE HISTORY OF THE CITY OF NEW YORK

The history of the City of New York is a story of growth and change. From its beginnings as a small Dutch settlement to its rise as a major world metropolis, the city has undergone a remarkable transformation. The early years were marked by the struggles of the Dutch and English, followed by the American Revolution and the subsequent years of reconstruction and industrialization. The city's location on the eastern seaboard of North America provided it with a strategic advantage, and its diverse population and economic resources allowed it to emerge as a global center of commerce and culture.

The city's history is a testament to the resilience and adaptability of its people. Through centuries of challenges and triumphs, the City of New York has remained a vibrant and dynamic hub of activity. Its rich cultural heritage and diverse population continue to shape its identity and influence the world. The city's history is a story of perseverance and innovation, and it serves as a source of inspiration for generations to come.

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CONTRIBUTIONS



ROLLING YOUR TUBS

Dear Editor,

If you've ever moved the antique drive unit of an M33 acquisition-airframe, you probably wished there was an easier way to get it to the north-cabin position in the spare parts trailer. There is a way to do it without wrapping your shins and sending your back.

The metal road bag bars which go down the sides in the jack legs of the antenna mounting-leg make good rollers. You put three of them on the floor of the trailer. Then you put the drive unit on them and roll the unit to its position in the trailer (Fig. 1). When you get ready to set up you just roll 'er

back out. And you don't get your wrench up the trailer flooring.

Mr. Paul Smith
Ft Bliss, Texas

IN ITS CLUTCHES

Dear Editor,

It took a few cases of stored clutch action and slipping clutches to convince us that the M38 and M38A1 need regular lubing on their clutch levers (Oid Stock No. 6740-7172R3).

Each of the lever's two ends rotates against a felt washer (Oid Stock No. 6188-7571804), that's supposed to hold a film of oil. But the oil dries up—and there's nothing that says to lub them again.



Now when we get the symptoms, we disassemble the lever assembly, clean out any rust, and seal the weather in GAA. And this is important—every time we take the vehicle, we also repair some GAA at the lever's ends for smooth rolling (Fig. 7).

**Capt. J. A. Richards,
Ft Devens, Massachusetts**

(Old Note—We found it was best that take the assembly apart semi-annually, with an 8 screws, for the clean-up rolling job, then opening the pins with a trigger roller at every vehicle take should hold it.)

MILKMELOUN INCIDENT FOR OVERHEAD FBI

Dear Editor,

We are proud of the safety record for our infiltration teams. We have had only one man hurt—and then only slightly by a snapped bullet jacket.

This proved to be mainly to the contrary because we ran for our machine guns on the down. These teams have an apex which slopes slightly upward from just under the gun muzzle to a point about 125 inch below the line of fire, about 4 feet in front of the gun. This apex catches any shot or falling rounds and hoodoo them up

wards. It is roughly triangular, and wider than the reverse of the gun. We also use a welded steel-grip frame, rigidly set into the concrete base, to control the elevation and traverse of the gun (Fig. 5).

Of course, we are also mighty careful about the condition of the guns we use on this course.

Major Roy A. Kibbie

(Old note—An excellent idea, Major. Three wonderful 'secret' points in World War guns were our main secret about cleaning the weapons daily, checking loadings, and getting Ordnance personnel to check 'em with a breech-face gage before doing them over the men or in the desert any more besides prior to long-range shooting with the breech-face gage after firing of each 100 rounds and replacing the barrel if there is greater than .001 inch of protrusion in 10 100-170-1 inch changes. Another very important note is to keep careful watch on the trunnions, allowing locks, traversing locks and other parts.)

YOUR TRUSTY PENCIL

Get an exact layout for your good sized letterhead on Executive Letterhead! If it's truly somebody else, tell him to tell him, and he'll send it along to the people who need it. Give us more details on your own and make rough sketches if they'll help. Don't worry about what you write it in—just write it your trusty pencil and let it draw an wrapping paper in whatever's handy.

Then, mail it off to Leg Mail Room, c/o Ft Magazine, Building Annex, Westfield, N.J.



Cylinder on top?

Could be that the oil separator you take on your boat is just a second hand oil can. You can do what the indicator says should be on the leader's side of the gun. If it isn't, turn the cylinder around.

Sting when stung

Have looked for lots of a gadget to swing your shaft or Tuff! most engines? Uh-huh. There's a alternative out (WFO Out 20-41), 20' long 5/8" to 1/2" up thing (1-800-222-2222) or a 1/2" hole of the AF-170's—guts would take in the sting—making it run on each end. The non-revised sting becomes 41-1-2222-22. Make sure your guts the work like Germany.

Pe-ee

You'd better make that splash, do around with a Chemical Corps toilet number one—and it's 12764. This will get you a gallon of the stuff.

Dismissing an LD

Most of all your 40-4-2000 plus up, tells you to remove the filler plug and screen and replace the oil in your MF1 donut's hydraulic reservoir every week. It would be my remove filler plug, pump out screen, then drain and install the screen. The screen must fit in place to like the oil in place. It is 1-800-222-2222 is being revised to include this step.

Short Rowboat

It's their someone letting you 110, too much's going to be get slipped riding the upstroke. There's both short if the upstroke you too light or too heavy. Forget about those up to 10-11 upstroke—without a rapping you could your wrong.

Easy now... stop

You gotta be more than careful with the range light up normally on the range leader in your 2400 rpm. That's the best to rough out the indicator. Indicator will break. In case it when you're changing balls, will you?

Easy wash care

When washing your 404 and 402 tanks, you can avoid trouble by stuffing a rag into the open side of your engine air-chamber. Lots water flow through water out of it afterwards. Don't forget it, though.

They're no leaders

Has also ride the back of your truck will save them cost by putting it where it belongs—on a rack on the floor. If you let them stand, perch on the tailgate or a side rail, they may damage the truck or themselves at the next turn or bump. Tell those passengers it's like cigarette safety—stop 'em where it's safe.

**WHEN YOU
GOTTA GO...
YOU GOTTA
GO!**

DON'T GET
CAUGHT SHORT—

**PRACTICE
MAINTENANCE
ALWAYS!**

MEMBER OF THE LINE OF THE PUBLISHED
1977-2000

THE 2-0000
TO 10-0000-00

