

ARMY MOTORS

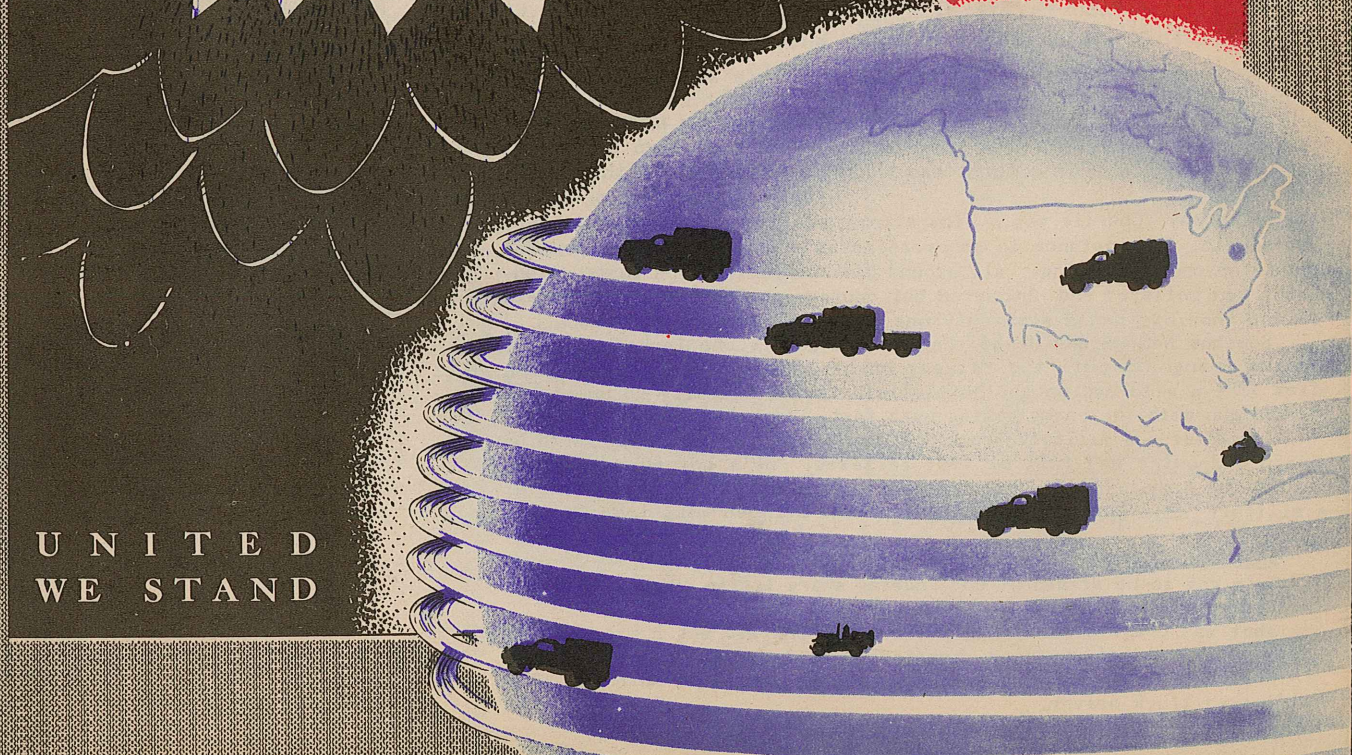
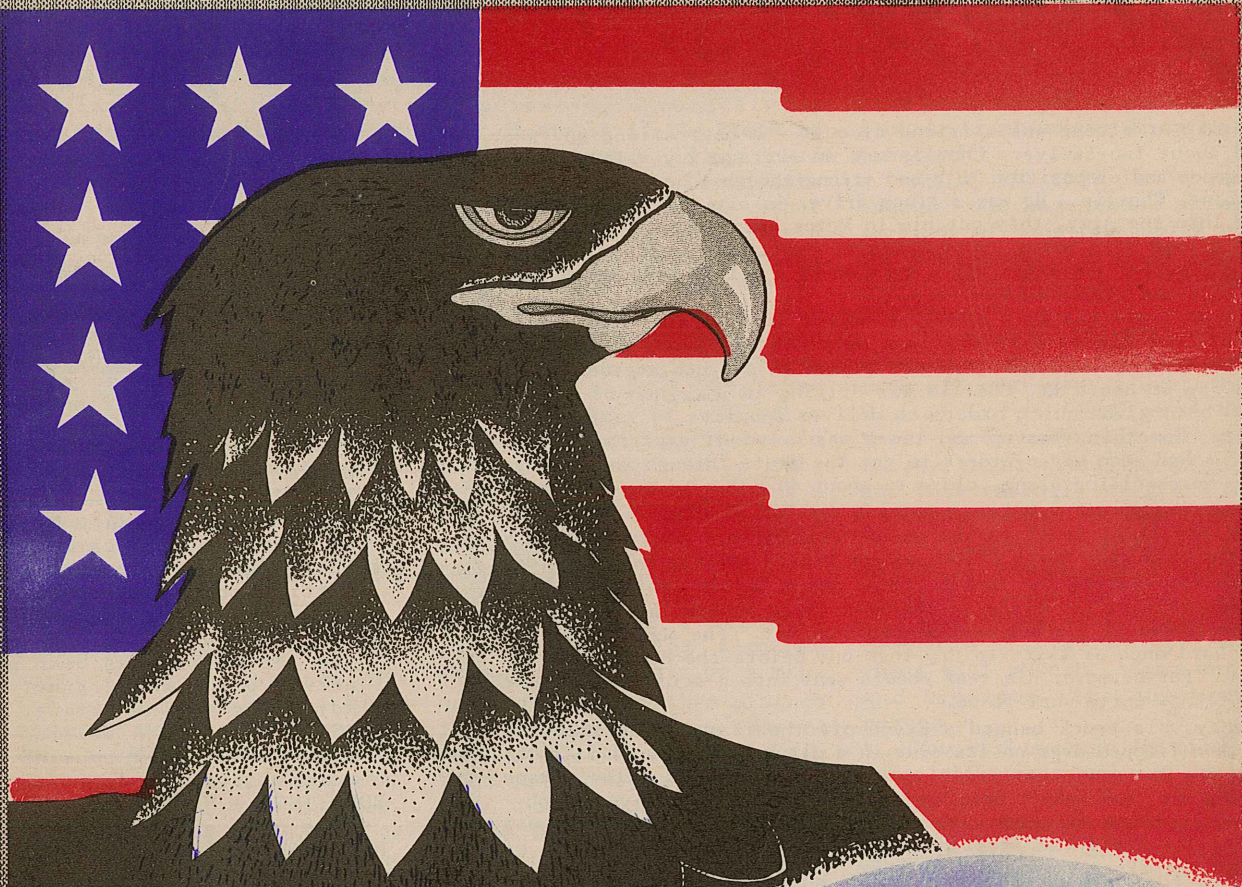
VOLUME-3



JUNE 1942



NUMBER-3



UNITED
WE STAND

Steering Wheel

ARMY MOTORS

for JUNE 1942

Charlie Armstrong was a friend of ours - a big, strong guy who weighed about two-twelve. Charlie was an average guy with average intelligence and disposition. Big and strong though - he wasn't afraid of anything, Charlie. He was a truck driver in civilian life so when he came into the Army, they put him in Motor Transport.

Not afraid of a thing, that Charlie, heart of a bull. He got killed the other day - outside of a little town where some of our boys are stationed overseas.

He didn't get hit by a shell, a bullet didn't catch him - as a matter of fact his station was in a quiet little place where they hardly knew there was a war. He got killed in a truck accident.

The way we heard it, Charlie was driving in a column of trucks that had been given quick orders to deliver supplies to another encampment. Something was up and there was a lot of excitement; the lieutenant had been given orders to get the stuff through in a hurry.

They were rolling along, close to about 40 miles an hour, through hilly, curving country; a heavy morning dew had slicked-up the road. Suddenly the first truck in the column braked hard to avoid a deep pit in the road, the three trucks behind braked quickly in neat order - but Charlie driving the fourth truck, got a little confused. They say he was driving too close to the next truck anyway, and everybody heard the squeal of his wet brakes when they bit. (He should have put them on hard once or twice to dry them out before the convoy started rolling). Furthermore, his rear wheels went into a skid and it seems he didn't know quite what to do.

Anyway, his truck banged a piece off the rear of the truck in front, then flopped over on its side in a ditch and parts of it split wide open. One part that split open was the gas tank. The straps supporting the tank hadn't been kept tight - that's the driver's job - and the jolting up and down weakened the seams. Charlie didn't know enough to flick off the ignition switch as the truck started to go over, and the first thing anybody knew, the whole cab was a ball of fire.

They say Charlie's foot was pinned down there in the cab and although he couldn't get out, he did manage to reach the fire extinguisher. From the looks of things afterwards though, he hadn't anymore than started to play the thing, down there in the cab, than it petered out. Couldn't have been more than a half a glassfull in the extinguisher.

As we say, Charlie was a big, strong guy, not afraid of anything. Not afraid, for instance to go overseas as a military truck operator without proper seasoning. All around him instructors and instruction-books had volleyed and thundered but courageous Charlie, never afraid of *not-knowing*, heard with only one ear, saw with only one eye.

Somehow he reminds us of the machine gunner who lackadaisically learns enough to pull the trigger on his gun and aim it - but who dies like a wild man on the battlefield trying clumsily to unjam his jammed gun with the enemy coming over fast. Awake at last - too late.

A soldier - a military truck-operator - has to know how, has to be sharp and quick and full of fast reflexes. He's got to be trained.

In the Army he's set down in a world of training, in the middle of a military education; all he needs is one thing to make it a part of him.

Fear.
He's got to be afraid of not knowing every little thing a military truck driver has to know.

That was Charlie Armstrong's trouble. Charlie was a big, strong guy - not afraid of anything, heart of a bull.

Not even afraid to go overseas, where the world is burning, as a half-baked truck driver.

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ARMY MOTORS is published monthly for the Motor Transport Service by the Technical Service Division, Holabird Quartermaster Motor Base, Baltimore Md. Your contributions of ideas, articles and illustrations are welcomed. Address all correspondence to the Editor, at the above address.



SUPPRESSION

J.P. Goebbels will call it 'unorthodox'

From unimpeachable sources in Germany named Joe Goebbels, we get stories of German artillery in the Libyan desert picking off British trucks without even looking, without benefit of either ground or aerial observation.

British mechanized equipment, so the story goes, will be creeping across the desert in what they think is a surprise attack - then suddenly the Germans will open up with big guns and wipe them out.

How do they do it without looking? Well, says the story, the Germans have very sensitive radio receiving equipment that picks up the impulses thrown off by the electrical system of the British vehicles. This tells them where to shoot.

This same story has been circulating around our own Motor Transport and certain indignant individuals have demanded why haven't we got sensitive radio receivers to help us shoot up the Germans.

The answer is, the Germans don't have sensitive radio receivers at all. What they've got is vivid imaginations and big mouths.

However, all this fuss and bother serves to focus attention on a new wrinkle in Motor Transport.

The new wrinkle is 'Suppression.' The electrical and other parts of a vehicle do send off radio waves that can be picked up by sensitive receivers - but these don't travel very far. The Germans would have to be right up within 1/4 to 1/2 mile, at certain wavelengths, to take advantage of it. At that distance all they'd have to do is open their eyes - and there would be the British.

But the radio waves given

*Joseph Paul Goebbels

off by the electrical system are a pain in the rompers for another reason. They fill broadcasting and receiving full of static if the truck is radio equipped. They also interfere with the broadcasting and receiving of any other radio-equipped truck or field radio installation that happens to be in the neighborhood.

Radio waves are simple things, easily generated. Take two pieces of wire hooked up to a battery and tickle them back and forth over each other and you're broadcasting radio waves. Remember this next time you're stranded on a desert island - with nothing but a pack of beautiful women to keep you busy.

The secret is that any time you set up a magnetic field (a current flowing through a wire sets up a magnetic field) and then disturb it with an oscillating (alternating) electric current, you send radio waves flying out into the atmosphere.

In the case of the tickled wires, the magnetic field is set up by the current flowing through the wires; the oscillations occur as the tickling breaks the current flow, on and off.

Practically this same thing happens in all the electrical parts of a vehicle: In the ignition system and in the low voltage circuit (generator, regulator). The result is a nut-house full of noises on any radio in the vicinity - including your own.

Besides this, we get static electricity from the loose moving parts of the vehicle (wheels, tires, the body panels). Remember the line of blue sparks that appeared on a roll of common, black, friction

tape when you pulled one end out quickly? That's static electricity. Amplify it, and it sounds on your radio like a pack of chickens on a hot tin roof.

As if all this isn't bad enough, the ungrounded metal sections of your truck pick up and broadcast the waves generated at other places on the vehicle.

To stifle this hideous, electrical uproar spitting out from all over your truck, the Signal Corps (hallowed be their name) have been working day and night (well, day anyway) and just recently emerged with a double-armful of what they call resistor-suppressors, filters, bonds and shields (Fig. 1, 2, 3, 4).

Scattered strategically over the electrical system, these will absorb, 'damp out' and imprison the annoying noises.

You will no doubt be mildly surprised upon receiving newly 'suppressed' vehicles, to find them all trimmed and fancied up with silver boxes, bright cables, small black fixtures,

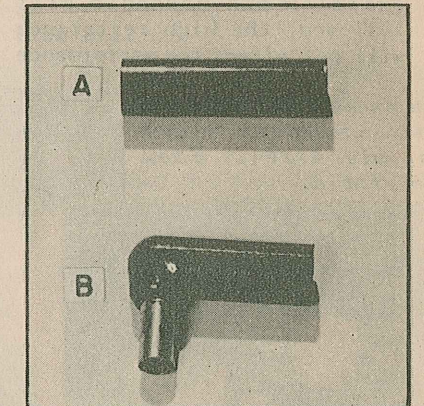


Fig. 1 - Resistor-Suppressors (A) For the distributor wire, (B) For the spark plugs.

etc. But it is the Signal Corps' earnest hope that you will soon recover from your surprise and begin to appreciate the value of the new suppressors - and understand the large part they play in keeping communication by radio clear and free of interference.

In other words, pull yourself together and swear to keep the suppressors clean, dry and tight.

The first source of static or radio interference the Signal Corps tackled, was the spark plugs, and they tackled it with "resistor-suppressors". Static shoots out from the spark plugs because the electricity, instead of fading out after 'sparking', insists on running back and forth through the spark-plug wires.

The Signal Corps fixed this by setting a trap for the wild current. They put a resistor-suppressor (a high resistance) in the wire just where it enters the spark plug (Fig. 5). The high-resistance, allows the current entering the plugs to pass without any appreciable loss but swallows up the wild 'remnants' of it (weakened after 'sparking') as they try to race back through the wire. The high resistance which is merely a chunk of carbon, offers a hard road back. The wild current struggles a ways up this road, finally dies and passes off as nothing more harmful than heat.

Contrary to what many a grizzled old mechanic will tell you, the high resistance will not affect the performance

of the engine.

Dynamometer tests on 'suppressed' engines have shown time and time again, that the resistor-suppressors don't bother the engine. Believe us.

Distributor noises were neatly suppressed by inserting a resistor-suppressor (Fig. 1A) in the high tension wire leading from the coil to the center of the distributor cap. You'll find this suppressor sitting right there in the middle of the cap. It takes care of the oscillations from the rotor.

One warning though: Spark-plug and distributor resistor-suppressors will not work if loose, wet, or dirty. Keep them clean of dirt and moisture - keep them tight. In cleaning, remove them one at a time and wipe with a clean cloth. While you're at it, examine them carefully; and if cracked or scorched, replace with a new one. New suppressors are put on by cutting the wire flush and screwing the suppressor in - be sure the screw enters the strands of wire. Get a good, tight connection. Throw the old suppressors away, they cannot be repaired.

Should you suspect a resistor-suppressor of being bad, your best method of testing, is to replace with a new one and check for static on your own or a nearby radio.

Next in line for suppression are the parts of the low tension circuit - the generator, regulator, etc. On the generator for instance, the brushes discharging in rapid order across the commu-

tator bars, generate a rising and falling current - like hills and valleys.

A fluctuating current like this, being a broadcasting station of the old school, a little suppression is in order.

This is done with a filter (Fig. 6). A filter is simply a couple of condensers and a few turns of wire (Fig. 7). Remembering that condensers have the habit of gathering up current (electrons) like a squirrel gathers up nuts - we are not at all surprised to learn that the filter stores up current at the high point of generator output and lets it go at the low point of generator output. Sort of smooths out the hills and valleys to a flat plateau. Removing the fluctuations this way, it automatically removes the noisy interference.

You'll find a filter on the side of the distributor housing (Fig. 5) doing a job on the breaker points. You'll find one taking care of the ignition coil (Fig. 8). There are a couple of them sprinkled about the firewall taking care of a number of items (Fig. 9).

You can best inspect filters by checking against manufacturer's maintenance manuals. The manufacturers are right now preparing supplements to their manuals giving all the dope on suppression as it is set up in their particular trucks. It won't hurt you to earmark a couple of hours for study of these supplements.

Types of filters are easily identified by 'type and placement part numbers'. You'll find numbers like 'F1,14 or F1,12' stenciled on the filters indicating what kind it is and where it belongs. The numbers are there because most filters look more or less alike on the outside - like tin cans. But they're different on the inside.

Incidentally, the filters are hermetically sealed and filled with oil to prevent sweating on the inside. Don't worry about the insides though - as we say, the filters are sealed.

Care of the filters is simple (but important): See that the terminal connections and wiring make good electrical contact; see that the mounting and grounding bolts are drawn good and tight. The mounting surfaces, the tops and bottoms of all filters and their nests on the vehicle must be clean and free of paint and dirt.

For emergency operation of your truck there's a couple of things you can do to keep bad filters from holding you up. If you suspect your filter on the generator, for instance, of being on the blink, check for an internal short circuit.

Take the filter off its mounting, start up your engine, then touch it lightly to the mounting again. If you get a lower ammeter reading - that is, an ammeter reading showing a lower output from the generator - the chances are your filter is shorting. Replace

it with a new one. If you don't have a new one, you can take the wires off the filter and splice them together (Fig. 10) to complete the circuit and get your vehicle going.

Don't forget though, you're not getting suppression with the filter out - put a new one on, the first chance you get.

Two other sources of interference are the ungrounded metal parts (they pick up electrical impulses from other parts of the vehicle and radiate them off antenna-style); and the loose parts of the vehicle that move around and generate static electricity.

To stifle this interference, a system of bonding is used. Bonding simply means connecting the separate parts by one means or another, usually by braided metal straps (Fig. 11). Bonding - for all electrical purposes - makes the separate pieces one big mass of metal, and allows any current picked up or generated, to flow easily to ground through paths of low-resistance and 'impedance'.

Thus the hood, firewall, radiator and splash pans are bonded together to form one big mass.

The three methods of bonding used are: flexible metal straps forming a low-resistance path between separate parts; adjoining units held together by nuts and bolts at prepared or 'tinned' spots to form good contacts; and 'internal-external-type' of shakeproof-lockwashers that penetrate

through painted or corroded surfaces to make good contacts.

As with the other suppressors, bonds must be clean, tight and in good condition. This goes for the mounting surfaces, the tops, bottoms, both ends of the bonds and their placement positions.

Replace broken or frayed bonds even though they don't seem to be affecting the system. Keep the mounting bolts clean and tight.

If damaged fenders, brush guards or other body units have to be replaced, make sure the bonds or shakeproof washers are replaced exactly as they were before...give special attention to cleaning the mounting surfaces. Prepared or tinned spots must be carefully cleaned - go easy though, a hard sanding will scratch off the tinning and leave the surface open to rust and corrosion.

Wires in the electrical system give off interference. To ground and stifle it, shielding is used. Although shielding may be any kind of metal case, box, plate, etc. to imprison or shut off interference; on wires it's simply a metal jacket fitted like insulation (being grounded at each end of the wires).

The metal screens over the hood-side-panels (Fig. 13) are just some more shields - don't let them bother you. Previously used freely, shielding has lately fallen from grace and is now used only where nothing else will do.

Fig. 2 - Filters - all kinds, all sizes. They eat up static.

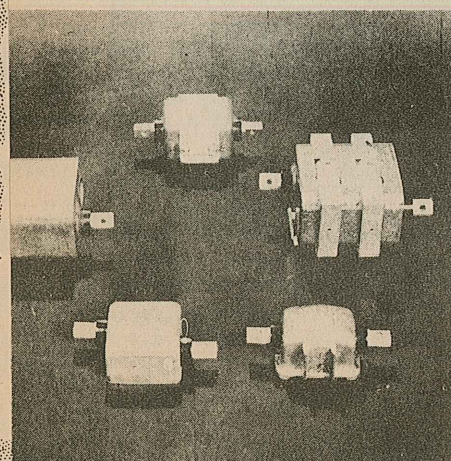


Fig. 3 - A bond - a path for electricity between separate parts.

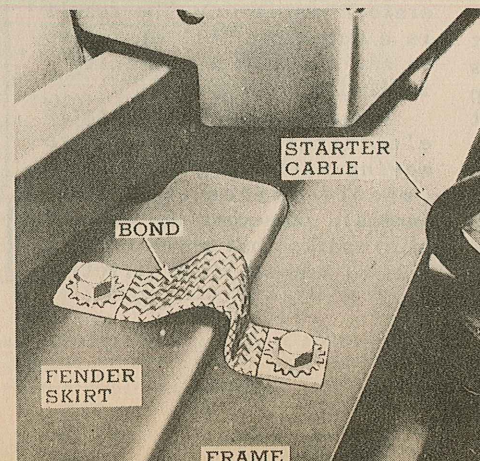


Fig. 4 - A shield - on wires it's usually a braided metal jacket.

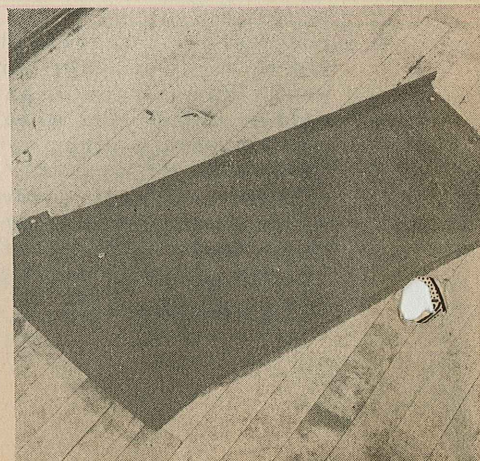


Fig. 5 - Spark plug suppressors at work. Also the filter on the distributor.

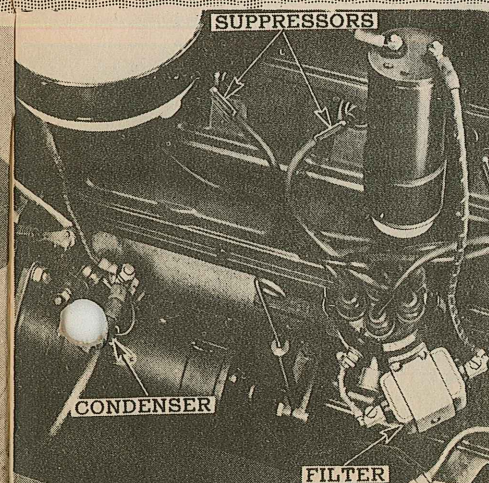


Fig. 6 - The filter on the generator. The condenser handles part of the job.

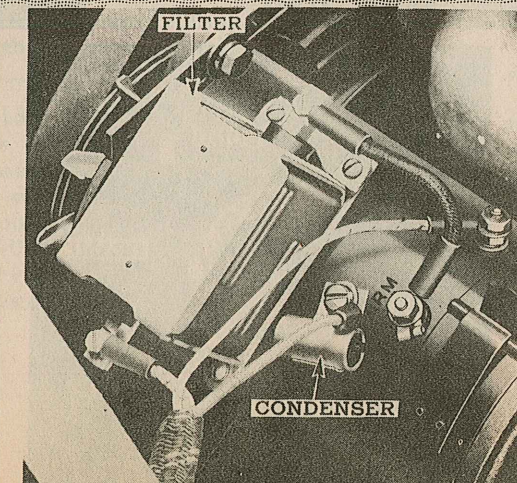
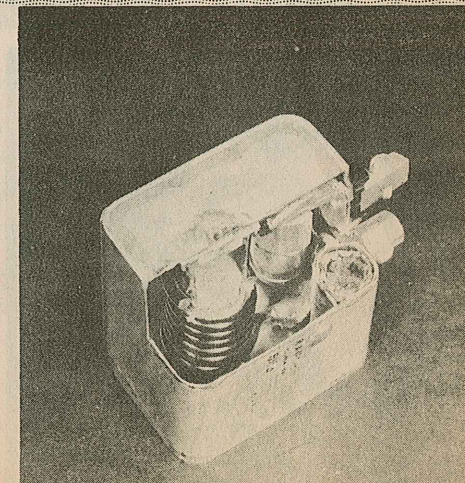


Fig. 7 - Filter exposed! Nothin' but some condensers and a turn of wire.



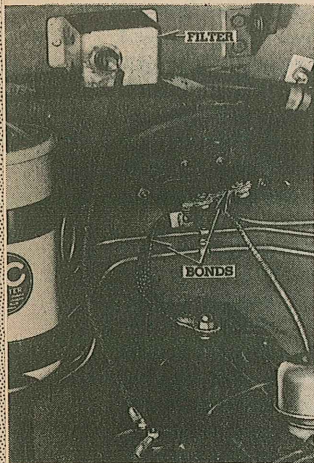


Fig. 8 - One filter in the coil. Notice the bond from the valve cover to dash.

Fig. 9 - Armature (1), Field filter (2), Ammeter Filter (3) on the fire wall.

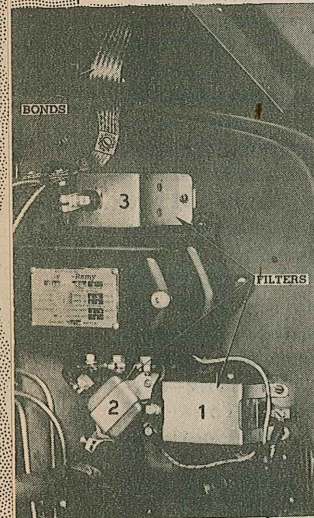
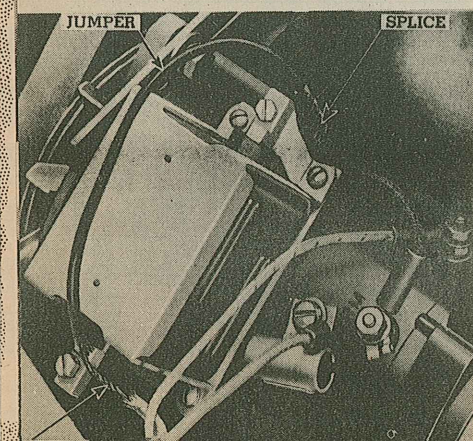


Fig. 10 - Cutting out a shorted filter by splicing wires around it.



You'll find shielding on such places as the wire from the voltage regulator to the generator, on the low tension cable from the coil to the distributor. Keep the mounting and grounding bolts clean and tight to form good electrical contact and your shielding won't let you down. Replace broken or frayed shielding if you don't have any way you can repair it effectively.

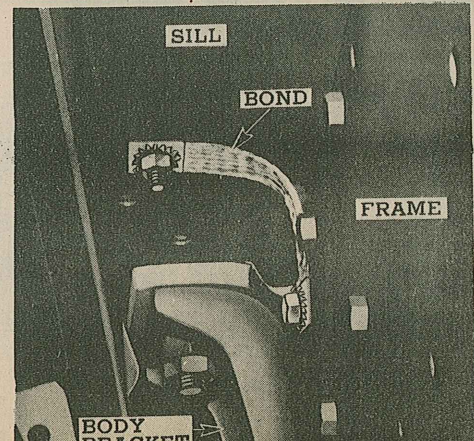
Keep this in mind: The rest of your electrical system must be in good shape if you expect results from your suppressors. Dirty distributor caps, incorrect spark-plug gaps, burnt or pitted breaker-contact points, broken or oil-soaked wires, loose electrical connections, and poor battery connections - all hinder the work of the suppressors. Get after them.

Although suppressing static interference is as old as radios in automobiles, it is brand new as far as all-out suppression of all Army vehicles is concerned. Of course many hundreds of our radio-equipped vehicles

We'll have an article next month on testing suppression equipment. If there's anything you'd like to say on the subject, don't be afraid to send it in - we like to get fan mail.

We'd especially like to hear from jeep personnel. Jeeps, you know, have been suppressed for a long time.

Fig. 11 - Any bonds today? Yes, plenty. Defense bonds against static.



were suppressed in the past, but the new all-out program raises many new problems.

First, what about all our unsuppressed vehicles in the field? New vehicles have complete suppression equipment built in, but vehicles already chasing around the world will probably have to get suppression kits.

From what we hear, the Signal Corps is preparing such kits and cutting them down to the bone to make installation quick and easy. But who's going to install them on field vehicles is anybody's guess. Maybe we'll have Signal Corps crews to install or direct. We'll let you know later.

Then again, who's going to maintain the new suppressors? From where we stand it looks like a job for the first and second echelons.

At any rate, suppressors, filters, bonds, and shields are another drop in the maintenance bucket, something we'll all have to study up on.

Reach for them maintenance manuals, podner.

Fig. 12 - The inside story of how bonds are attached. Keep them tight - always!

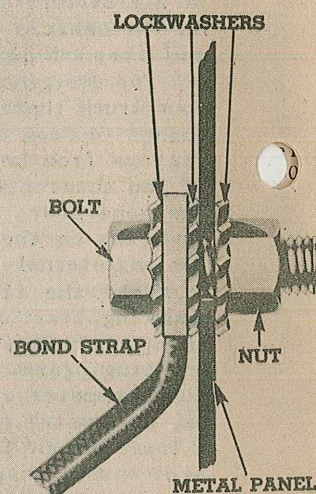
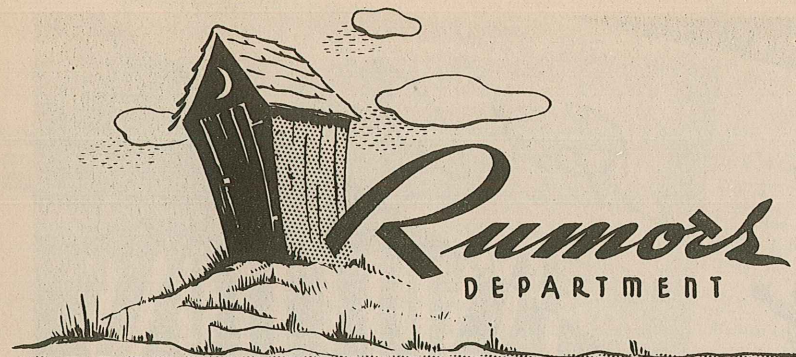
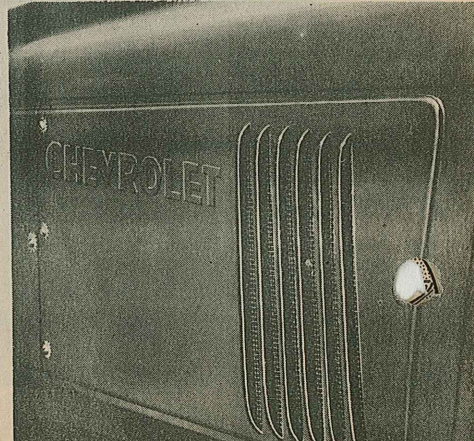


Fig. 13 - The shielding on the hood side-panel. Free Chevrolet advertising.



There's an ugly rumor abroad that Motor Vehicle Service-Records, Q.M.C. Form 248, are not getting out to the field 'til long after the vehicles are issued to organizations in the field - as long as six months afterwards in some cases. Our agents report that they're getting out of Holabird without any undue holdup - the delay or holdup seems to be elsewhere. Of course, it may all be just an ugly rumor - anybody have anything to say about it?

What's this we hear about the carbon dioxide fire-extinguishers (on gas dispensers, etc.)? Our correspondents complain that no practical provision has been made for refilling them, once they've been used.

We've heard complaints and seen evidence of the fact that the straps on the pioneer tool bracket don't hold the tools tight enough. The equipment jiggles, the straps wear. One truck we saw had wire neatly wound around the whole works.

'Sure wish somebody in the field would send us a good idea on holding the pioneer tool equipment firm and tight.

Talking about pioneer tool equipment, why don't some of the boys, whose tool equipment is all rust-speckled, get out the old paint brush and touch it up. Our 'Paint Touch-Up' article in last February's ARMY MOTORS tells you how.

One thing we are getting good and tired of seeing, is the way the wild Indians in Post Garages handle trucks. Somebody brings in a truck to be parked, or maybe half a dozen trucks have to be moved to make space. First thing you know, some no-good redskin jumps in a truck and starts slamming it back and forth. He bangs the gears around, speeds up and slams on the brakes until the tires holler murder, races the engine and raises cain all around.

By gosh, if we were you, we'd bang the tar out of the next wild Indian we came across. (If you're a wild Indian, step right up and have your head knocked off).

There's one truck company full of maintenance maniacs out in the field, who don't stop at anything. The other day they were let loose with a paint brush to do a little touch-up work. Before anybody could call a halt on them, they had painted up the whole works - engines included. Electrical connections didn't faze them, they painted those too: spark plugs, distributor caps, high-tension wires, coils - everything.

Don't know how much trouble it'll cause since the conductivity of our synthetic paints isn't very high. But that paint on the porcelain jackets of the spark plugs is going to make the plugs misfire, just as rain-water

causes the electricity to run up the outside of the plug. What'll they do next?

Our eye fell on five little bottles full of honey-colored liquid standing on somebody's desk the other day. Glancing around quickly and cautiously, we pulled the cork on one of them and took a swift swallow. It turned out to be engine oil.

"For cripes sake, McWortle, we shouted angrily at the officer on whose desk the bottle stood, "what's the big idea!"

"Oh shut your big trap," McWortle said, "those are samples of oil taken at random from five different trucks."

"I don't give a good g..." "Notice that grey sediment at the bottom of each of the test tubes?" McWortle continued, "that's lead - from gasoline. Notice the red color of the oil? That's dye from the gasoline. It comes from driving with the choke out."

"I don't care if they drive with their tongues out!"

"Driving with the choke out," McWortle said, talking to the wall, "forces too much gasoline into the combustion chamber. The gasoline spills down past the rings and on down into the engine oil - dilutes it, ruins it."

"Is that a fact!" exclaimed the wall, "and the lead in the gasoline accumulates in the oil."

"The lead probably wouldn't hurt anything," explained McWortle, - "the diluted oil does all the damage - but it's a good tipoff to excess choking."

"Unbelievable," said the wall.

"Oh, a lot of funny things have happened around here," murmured McWortle busying himself in the papers on his desk.





Right up to this late date if you're a driver, you're probably still muttering in your beard about the time a total stranger halted your truck, said, "Spot-Check Inspection," and had you drive it over a pit where three or more monkeys went over it with a fine tooth comb.

What you were a victim of, was an important new program. A new program designed to 'improve the general level of automotive maintenance and training,' calculated to furnish a little more incentive to the practice of Preventive Maintenance.

In other words, you never know when a bunch of banshees are going to drop out of a tree and spot-check your neglected truck - hang you and your dirty laundry out in the breeze for all to see.

The seeds of the new program were planted about January 21st of this year when an 'immediate-action' letter went out setting up an 'Automotive Officer...on the staff of each division and higher unit, each Corps Area, port of embarkation and similar administrative headquarters provided with a general staff...to supervise the combined operations of 3rd and 4th echelon maintenance units...'

One month later the plant sprang into hideous (for neglectful drivers) bloom with the appearance of a second

immediate-action letter. This one said quietly, "Spot-Check Inspections."

And then the fun began. 'Commissioned Assistants' (Inspectors) went scurrying to all posts, camps and stations.

There they set up in business, licked their chops and prepared to snatch unwary trucks off the road. One inspections group we saw, pitched its tent in a clump of bushes just off the most-traveled road in camp. Whenever a particularly juicy morsel of a truck came waltzing down the road, they flew forth from their nest like so many hungry vultures and dragged it and the trembling driver back to their pit - where the mortified driver writhed and squirmed under each discovery of a neglected spot, like a fly having its wings pulled off.

It only took about a week until that most-traveled road in camp became as barren of trucks as a road through a desert. Drivers would take ridiculous 'long-cuts' all the way around camp to get away from the inspectors. It got so that the inspectors took to lurking in the bushes beside other far-flung roads - to come gleefully back to the nest with an unhappy truck in tow. They even toyed with the idea of a mobile tent to follow the changing route of travel.

Whatever else it did to

the nervous system of the unlucky driver, the spot-check inspections caused an immediate improvement in the level of vehicle maintenance both in the camp and in the surrounding areas - for no matter whose trucks they were or where they came from, any truck setting foot in camp was subject to spot-check inspection...and the news got around.

That's the way it's working out as of today: the element of shocked surprise stimulating better maintenance.

The weapons in the hands of the inspectors are four spot-check forms. Form 'A' - the check sheet to be applied to individual vehicles - is the most fearsome of all. This is the measuring-stick employed against trucks snatched off the road. At least six of these forms must be filled out daily.

To get an idea of how complete the Form 'A' check-up is, study Figure 1. Lest you draw back in horror at the amount of time you estimate such a thorough check to take, let us quiet you with the news that the inspectors can knock off a truck in a swift, fifteen minutes - ten if they have to. Usually, however, they plan on a 30 minute session which includes a brief lecture to the driver and many helpful hints.

The second form, Form 'B', (Fig. 2) is the check sheet to

Figure 1

(Form - A) SPOT CHECK INSPECTION REPORT SHEET
AUTOMOTIVE EQUIPMENT

*To: 1. Spot check by officers of G-4 Section, disclosed the following conditions in a vehicle of _____ Location _____ Date _____
Date of Inspection _____ Time _____, Place _____, USA _____
Driver _____, (regular driver) _____, Make _____
Model _____, Mileage _____, Date and mileage of last maintenance records up to date _____, Are vehicle _____

CHECK if correct; X if incorrect

Remarks or Defects Noted	Remarks or Defects Noted
Bumper, Tow Hooks (Loose, broken, bent)	Frame (Alignment, Loose Rivets & Shackles Plates)
Winches & Body Hoists (Appearance & Condition)	Body, Fenders & Hood (Appearance & Condition)
Engine (Condition, Appearance and Setting) Governor Seal (Setting and action)	Steering (Linkage, Unusual play & noises, Housing to Frame)
Cooling System, (Radiator Grill guard, Fan & Belt, Hose), Water Level, Cap, Pressure Valve & Gasket	Tarpaulin, Bows Canvas (Tears, Ropes)
Fuel System (Tank, Lines, Connections, Filter & Gage)	Brakes (Proper functioning, Leakage, Hydraulic Cylinders, Leaks, Air lines, Pedal Height sufficient, Brake Linkage, Clearance)
Lubrication System (Pressure, Lines, oil condition)	Tires (Cuts, Tears & Blisters, Treadwear, Proper inflation, Valve Caps, Alignment, Matching of Duals, Rotation of Tires)
Ignition System (Distributor, cap, rotor, point gap, wiring, plugs, gasket, heat range, porcelain, gap, condenser, insulator, pig tail)	Lights (Switches, Head, Tail, Stop, Directional Side, Blackout, and Blackout Stop)
Starting & Lighting System (Starter, Generator, cables, Wiring, battery Tight in Carrier, C.V. Regulation functioning at 900 RPM, Water Level, Terminals Clean and Tight)	Horn, (Wiring, Button & sound)
Front Axle Assembly (Tie Rod, Springs, Shackles, Seats, Leakage, Hub, Flange Nuts, Wheels, Steering Stops, Vents, Trunion Caps)	Mirrors & Reflectors (Side and Rear)
Transmission, Transfer Case & Universal Joints (Leakage, Loose Parts, Lubrication, Vents, Companion Flanges, Pillow Block Assembly, and Mountings)	Test Motor Idling Speed
Rear Axle Assembly (Springs Seats, Leakage Wheels, Trunion Bearings, Torque Arm Attachment & Vents, Shackles)	Oil Levels
	Differentials
	Transmission
	Transfer Case
	Winch
	Fire Extinguisher (In Place & Filled)
	Windshield Wiper
	Clutch Pedal for Free Travel
	Condition of Air Cleaner on Carburetor
	Brake and Steering Test while in Motion
	Speedometer Operating

*To be directed to the C. G., Reg't. Commanders, and Automotive Officers for file follow-up.

(Form B) SPOT CHECK INSPECTION REPORT SHEET
AUTOMOTIVE EQUIPMENT
SECOND ECHELON

*To: 1. Spot check by an officer of the G-4 Section disclosed the following facts which are recorded for your information _____ 194 _____

Date of Inspection	Time	Place	Number of Mechanics for duty	No. of Vehicles Maintained
_____	_____	_____	_____	_____
WAS MOTOR (MAINTENANCE) OFFICER PRESENT? (If not, on what duty was he?)			YES	NO
WAS MOTOR (MAINTENANCE) SERGEANT PRESENT? (If not, on what duty was he?)			YES	NO

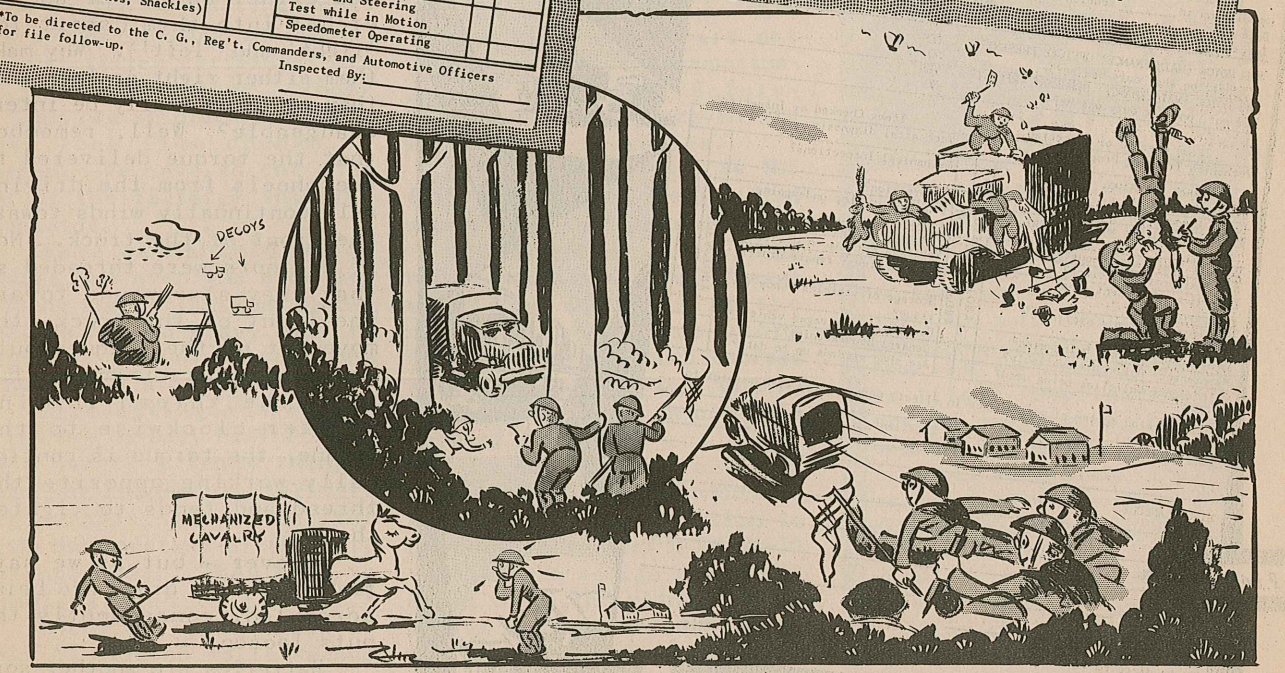
Items Checked or Inspected	YES	NO	Items Checked or Inspected	YES	NO
Was shop clean?			Does Lubricant reach the points intended?		
Were mechanics clean?			Are proper lubricants used?		
Were manuals & bulletins available?			Do records suffice to control frequency of lubrication?		
In use?			Are inspections before and after operation in accordance with BFM 25-10?		
Was prescribed lubricating equipment available and in use?			Is shop executing the 1,000 or 6,000 service schedules?		
Were lubricating personnel properly trained?			Do trip tickets show routine reports of mechanical defects?		
Were lubricants and containers clean and properly stored?			Does applied maintenance service include completeness & effectiveness?		
Were all tools and equipment provided for Second Echelon maintenance available?			Were vehicle inspection and lubrication records being properly used?		
Were lubricants being applied at proper intervals?			How many vehicles were on dead line? (Why? Explain under 'REMARKS')		
Is the echelon system of maintenance being followed?					

REMARKS _____

INSPECTED BY: _____

*To be directed to the C. G., Reg't. Commanders, and Automotive Officer's file for follow-up.

Figure 2



be applied against the second echelon. At least one of these must be filled out weekly. Notice it goes into such detail as, 'Were the mechanics clean?' And sensibly enough, it doesn't stop at the question, 'Were manuals and bulletins available?' but goes on to ask, were they 'In use?'

Form 'C' (Fig. 3) is used in inspecting the 'service echelons' - the 3rd and 4th. It is somewhat similar to Form 'B' and like it, is calculated to speed up and improve the level of repair going through these organizations. One Form 'C' is executed weekly.

Form 'D' goes thoroughly into the condition and equipment of tanks. Two other sections of this sheet are for checking diesel-powered vehicles and half-tracks.

The excuses and protests of the drivers stopped for vehicle spot-check are a thing to see, "I'm in an awful hurry

- the old man wants this stuff delivered."

"This ain't my truck, I'm drivin' it for this trip."

"How about if I come back tomorrow?"

"Battery dry? What battery?"

"We're kept so busy we never get time to take care of our trucks."

One driver was loud in his praise of the new spot-check inspections, "Yes sir!" he proclaimed, "I sure am glad to see that somebody gives a darn about our trucks. Great arrangement!"

The first thing the inspectors uncovered on his truck, was no water in the radiator. He sat back quietly for the rest of the inspection.

The parts neglected on trucks as revealed by the inspections, are sometimes obscure parts unknown to many drivers - but for the most part, it is, as you and I have

suspected, just plain neglect of well-known parts that need only common-sense attention on the part of the 1st and 2nd echelon. Tires for instance, the inspectors find under-inflation rampant: 40 pounds in a tire that calls for 50. Directional tires are very often mounted wrong. One inspector said, "We see them come in from the factory mounted wrong and the organizations are either confused or don't bother to change them."

Dual tires are mounted improperly so that the holes in the wheels don't line up, and it's impossible to reach the tire valve on the inner tire for checking or inflating. Valve caps are conspicuous by their absence. If the inspectors are lucky enough to find the spare tire with more than a level tablespoonful of air in it, it's an occasion for rejoicing.

Brake drums are often mounted wrong - left-hand drums are put on the right-hand wheel and vice versa. Maybe you've always considered them interchangeable but they're not. To prove it, look at the lug nuts. You'll see either an 'R' or an 'L' etched into them (short for 'right' and 'left'). Why make them either right or left when they could so easily be interchangeable? Well, remember that the torque delivered to the wheels from the driving axle continually winds toward the front of the truck. Now if the nuts were threaded so that they also wound toward the front of the truck, the movement of the torque would tend to loosen the nuts. But with the thread running counter-clockwise to the torque, the torque is continually working opposite the thread and tends to tighten the nut.

Clever - but as we say, right and left drums are being scrambled, consequently the nuts loosen.

Batteries are another sore point. Many cells are found dry or almost dry; advanced

stages of battery-cradle corrosion resulting from spilled electrolyte are common. On dump-trucks, the inspectors have come to expect and usually find, a half-inch layer of mud on top of the batteries sifting in through or clogging up the vent. "It evidently filters in during the dumping operations," said one of the inspectors.

"Overlubrication of gear housings occurs on so many trucks," said the inspector, "we could just mark an 'X' on on the check-sheet before starting to inspect, and we'd be right about 7 times out of 10. Especially on differential housings which are 'way over-filled. The breather-vents being usually clogged up, the lube in the heat of operations blows - busts - through the oil seals and spills into the wheels. You can see the stain around the hub, or a pretty pattern of grease on the inside of the rear tires. Talking about blown oil-seals, there's an epidemic of them in transfer cases, transmission housings and steering-knuckle flanges."

Steering gear troubles are popular too. Housings are loose on the frame, drag links (now called connecting rods) are loose, tie-rods are loose.

Oil-filter cartridges are in pretty bad shape. "Some of them are so black and hard, they look like chunks of carbon. We have to cut them out of the filter," said the inspector.

Many windshield-wiper blades and even the arms are missing - especially on trucks that have seen heavy duty in brush or wooded areas. And windshields are always dirty.

Fire-extinguishers are often dry or only half-filled. "And here's a funny thing," said the inspector, "drivers are surprisingly unfamiliar with the location of the fire-extinguisher. They have to fumble around to find it."

Motor officers would do well to develop split-second operation of fire-extinguishers by holding a drill now and

then. At least it would familiarize the drivers with the location and use of the extinguisher. Fire, like the race horse that Sam Goldwyn had to get rid of because 'he ate like a horse,' spreads like fire. It takes quick action to combat it - especially on trucks loaded with fuel or ammunition.

Rear tow-hooks are 'frozen' for lack of a little oil poured over them. Hooking up a gun behind a truck in some circumstances, is a matter of touch-and-go. With a frozen tow-hook, it's all touch, and no go.

Last, but not least among the items standing high on the neglect-parade, are dirty engines, bent splashguards and fenders, loose fan-belts and broken reflectors.

From the foregoing recital, it is obvious that there is much sloppy work coming out of the 1st and 2nd echelon. The excuses given by drivers are many and colorful and usually freshly-coined on the spot. But, two excuses pop up so frequently that, in the opinion of the inspectors, there might be something in them.

The first excuse is that they (the drivers) are not given enough time or opportunity to carry out 'Before-Operation', etc., preventive maintenance schedules.

That second excuse is the fact that drivers are shuffled around from vehicle to vehicle.

Of the first excuse, the new consciousness among general and field officers of the needs of motor transport (being promoted by such courses as the 'C' course for 'motor-minded' officers) should take care of that.

Of the second excuse, shuffling drivers and vehicles is in direct contradiction to procedure suggested in FM 25-10, which would assign every vehicle to an individual driver as far and as permanently as possible. Of course, efficient operation sometimes calls for 'pooling', and a certain amount

of 'shuffling' is necessary - but the less we do of it, the better maintenance we get. The simple psychology of 'personal ownership' tells us that.

The suspicion may have been lurking in the back of your head that the new Spot-Check Inspections are a kind of 'spy' or 'gestapo' arrangement. Forget it. Like most other things that have come to be known as 'American', they're strictly open and above-board.

The inspection score-cards are not turned into any office that will use them as a weapon against any individual - they're turned back to the unit commander responsible for the vehicles, for corrective action.

As the immediate-action letter of February 21st says, the basic idea is to improve automotive maintenance by calling attention to deficiencies or irregularities noted, and by advising the interested personnel on performance of their duties in a more efficient manner.

In other words, the heat's on.

SPOT CHECK INSPECTION REPORT SHEET
AUTOMOTIVE EQUIPMENT
SERVICE ECHELONS

(FORM - C) _____ 194 _____

*To: _____

1. Spot check by officers of G-4 Section discloses the following conditions in _____ Echelon Shop _____ Number of Mechanics for duty _____ Number of vehicles maintained _____

Date of Inspection _____ Time _____ Place _____

WAS MOTOR (MAINTENANCE) OFFICER PRESENT? YES _____ NO _____
 (If not, on what duty was he?)

WAS MOTOR (MAINTENANCE) SERGEANT PRESENT? YES _____ NO _____
 (If not, on what duty was he?)

Items Checked or Inspected		Mechanical diagnosis	
Mechanics Training Program		Mechanical Inspections?	
Repair shop location, accessibility?		Supervision?	
Space Adequate?		Vehicles in shop undergoing repair?	
Repair scheduling and planning?		Vehicles in shop waiting parts?	
Present equipment adequate?		Vehicles waiting on deadline?	
New equipment sufficient?		Date of oldest repair order?	
Condition of present shop equipment?		Storage of vehicles ready for issue?	
Maintenance Manuals available?		Handling of salvaged vehicles?	
Maintenance Manuals being used?		General Housekeeping?	
Maintenance Bulletins available?		Are shop records up to date?	
Maintenance Bulletins being used?			

Is the echelon system of maintenance in effect, particularly with respect to job allocation? Superior _____ Excellent _____ Very Satisfactory _____
 Quality of work performed: Satisfactory _____ Unsatisfactory _____

MISCELLANEOUS REMARKS: _____

Inspected By: _____

*To be directed to the C. G., Reg't. Commanders, and Automotive Officer's for follow-up.

Fig. 3

TIRE TIPS

Summer heat multiplies the wear tires get at high speed: causes ply separation, carcass failure. At 60 mph, summer heat wears tires 50% more than at 40.

Know what overloading does to tires? Overloading scrubs away rubber and weakens the carcass so it can't be retreaded. Bad as overloading bearings.

Break in new tires on front wheels, then change to driving wheels - then to trailer wheels or dead axles.



★ LOOSE SCREWS ★

There's been some fretting about loose drive-flange screws on 1½-ton, 4x4 Chevvy front wheels (Fig. 1). The fretters, who blame the looseness on the metal locking-rings, are laboring under a slight hallucination.

The metal locking-rings are not to blame - as a matter of fact the locking rings do a fine job. They were put on there to replace paper gaskets that were formerly used - the paper gaskets used to loosen up the screws. But the locking rings won't ever loosen up anything - let alone screws. Even if the little nibs on the locking rings are broken off or not bent up into the place provided for them, they won't contribute to looseness and can be used over and over again without any trouble.

This last point also settles the worry of those who think that the locking rings ought to be replaced by lock-washers because in removing

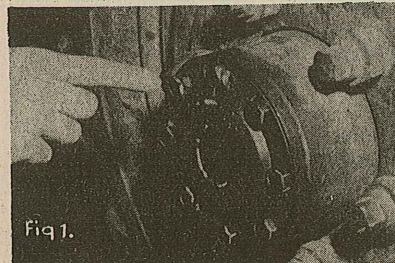


Fig. 1.

Lock rings won't loosen nuts. Missing nibs won't hurt.

the axle shaft screws, the little nibs are frequently broken off. Use 'em with or without the nibs.

But coming back to looseness of the drive flange screws: The only thing that contributes to looseness of the drive-flange screws, is the careless driver.

Let the first echelon check the screws as part of daily inspection, and there shouldn't be any excessive looseness. If there is, something else is wrong. Let us know.

★ Flywheel Dowels ★

Willys announces a change-over on the MB jeep - of interest mainly to the 4th echelon.

Instead of the two tapered dowels formerly used in attaching the flywheel to the crankshaft flange, two straight bolts will now be used.

Why? Well, in order to fit the two tapered dowels correctly, the holes they seat in have to be tapered - reamed out correctly. And this is a hard job in the field.

The Willys people never liked the idea of reaming out the two holes at the factory because they felt that you couldn't get proper balance of the flywheel unless you reamed out the holes at the time of assembly. And as we just mentioned, it's too hard

to do this in the field.

So for service replacements in the field, we have the two special, snug-fitting bolts to be used in place of the tapered dowels. The bolts are part No. 116295, and a supply of them, together with Nut, Part No. 52804, and Lock-washer, Part No. 52330, is being shipped to the various corps area parts depots.

Here's the way you'll do the job now:

Remember how the two tapered dowels were formerly used, together with four straight bolts? Well, now you assemble the crankshaft and flywheels in proper relation by installing these four straight bolts, but instead of the two tapered dowels, you'll prepare the holes for the two special, snug-fitting bolts mentioned above. Enlarge the tapered holes with a 35/64" drill, then ream the holes with a 9/16" (.5625) straight reamer. Now, install the two special bolts in place of the dowels previously used.

As the man with the short haircut from the Willys plant says, "This procedure ought to overcome the difficulty in correctly tapering these holes in the field."

★ Oil Pump Intake ★

Here's something about the oil pump intake on GMC 228, 236, 248, 256, 270 engines.

TSB M-13, April 1, 1942 reveals that the old 'floato' oil pump float, which occasionally broke away from its moorings and floated into the whizzing connecting rods, has

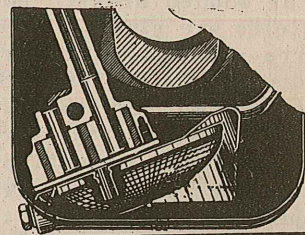


Fig. 1 - The new stationary intake of the oil pump.

been replaced by a 'stationary screen-type oil-pump intake' (Figure 1) on vehicles now in production. As we recall it, the wandering 'Floato' was later reinforced at the 'stop' - but as we say, it's now been entirely replaced by a 'stationary' type of intake. However, you won't be getting them as replacements until the present depot stocks of the old reinforced 'Floatos' are exhausted.

Anyway, it wouldn't hurt you to get hold of MTSB M-13 and paste it in your parts book. It carries the Part Numbers and prices of the new 'stationary' type oil-pump intake.

★ Shut Off Cock ★

Are you driving or responsible for a 1½ ton, 4x4 Chevrolet built before August 6, 1941? Or, putting the question another way: Does your 1½ ton Chevvy have a 'Water By-Pass Shut-Off Cock?' Some don't - but ought to.

This Shut-Off Cock controls the flow through the steam-relief tube. In case you didn't know, the steam-relief tube allows the steam that forms in the pocket at the rear of the engine to escape to the radiator where it is condensed with cooler water in the radiator and at the same time permits the water to cool the rear of the engine where the steam pocket

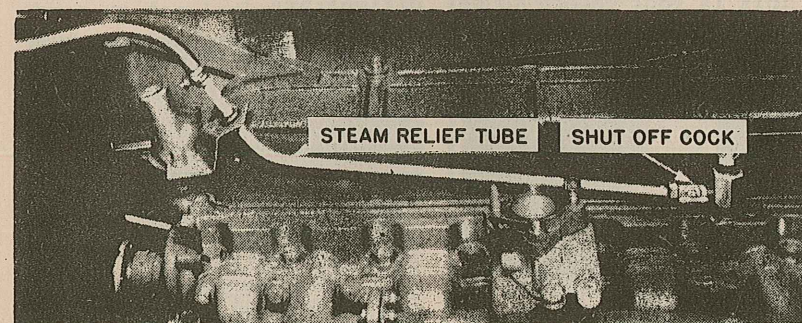


Fig. 1 - The shut-off cock for the 1½ ton Chevvy. Get busy and requisition them, you guys without one.

may have formed. This condition may exist only when the truck is backing up or laboring down extreme grades (45% or over). In order to negotiate these grades, it will also be necessary to drive with the front axle engaged.

Under ordinary operating conditions, the shut-off cock should be kept closed, and opened only when operating both in warm climates above 60° Fahrenheit and on extreme grades as noted above. Why? Because in the lower temperatures and operating on grades below 45% you won't have steam forming in pockets in the rear of the engine. But with the shut-off cock still open, the relief tube will still be open, and you'll have liquid coolant flowing through. And when it flows through, it by-passes the thermostat. With the coolant by-passing the thermostat, you have an overcooled engine (remember the thermostat is there to keep the temperature of the coolant high enough). An overcooled engine leads to the formation of a lot of troublesome 'emulsion-type' sludge - sludge which will make the oiling system of your engine a hollow mockery. (Gad!) Why fill up the engine's stomach with foamy-acid type of sludge!

Anyhow, in spite of the fact that Circular Letter 295 advised 1½ ton Chevvy personnel to requisition these shut-off cocks, business has been terrible. As a matter of

fact there's some 4700 of the cocks up at the Ft. Wayne depot waiting to be given away free to them as needs them.

So take a look at your 1½ ton Chevvy and see if there's a shut-off cock on the steam-relief tube where it belongs (Fig. 1). If not requisition your 'Shut-Off Cock and Caution Tag Assembly, Part No. 606116' from the C.O., QM Motor Supply Depot, Fort Wayne, Detroit Michigan. Your requisition should bear the notation, 'Added equipment. No funds required for the cost of material.'

When you get the cock, put it on the truck this way: (1) Remove the steam-relief tube where it connects at the heat indicator adapter and install shut-off cock at this point (2) Shorten the steam-relief tube as required.

Hurry up.

NOTE:- On the very latest Chevrolet 4x4 - 1½ ton truck, the by-pass from the rear of the cylinder enters directly into the water pump. The water by-pass shut-off cock is not necessary as the water or any steam which may form at the rear of the engine will be passed on and condensed with the water in the pump. The water will then be recirculated through the engine. The engine-water thermostat will function in its regular manner.

★ Oil Pump Relief Valve ★

In spite of the fact that TSB M-10 went out December 15, 1941, our Intelligence Department reports that the 'Oil Pump Pressure-Relief Valve' on the GMC 228, 236, 248, 256, 270 engines are not being changed.

Seems that the present relief valve (Fig. 2) has a small hole which is supposed

to by-pass excess oil pressure. But the little hole works too well - it doesn't allow enough pressure to get built up. And you dassent let engines run around with too-low oil pressure.

The TSB suggests that you trade your old valve, Part No. 1293647, for replacement part No. 1247328. Or, if you're lazy, you can simply plug up the hole in your old valve by careful welding or soldering. It'll do the job.

But don't try to relieve the low oil pressure by stretching or shimming the valve-spring - you'll ruin it.

And don't forget that certain other things can cause low oil pressure:

Dirty or clogged oil pump screen.

Oil-pressure relief-valve stuck open.

Flukey oil gage (use a test gage or one you know is accurate.)

Excessive oil dilution (sometimes from too much choking).

Excessively-worn oil pump.

Excessive crankshaft or con-rod bearing clearance.

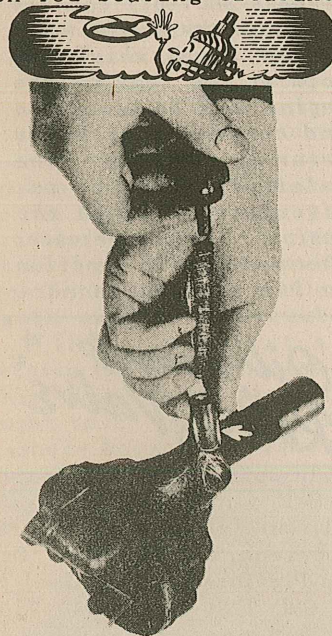


Fig. 2 - Plug up the hole in the little slug (oil pump relief valve) or requisition a new one.

Colonel Thee's DEPARTMENT

If we open the morning's mail and don't find in it a contribution from Lt. Colonel Walter C. Thee, C.O., 53rd QM Regiment, Fort Bragg, North Carolina, we look at each other in puzzlement and faint alarm. For Col. Thee has been such a prolific contributor, we are beginning to consider him a member of the staff. As a matter of fact, we are so overwhelmed with warm feelings for the Colonel that in this issue we are dedicating a department to him. 'Col. Thee's Department' - as it will no doubt be known to history - contains only a few of the Colonel's recent contributions.

Hydrovac Air Cleaner

There's a baby air-cleaner on the hydrovac brake-boosters (Figure 3) that's being neglected. The hydrovac brake booster as you all know (ha-ha) is an auxiliary power unit that supplies additional force - to help you to put on the brakes. Since it uses air and has delicate parts, it has an air cleaner to keep out dirt.

But, it's being neglected - mostly, we suspect, because the drivers never heard of it. But take our word for it, if you've got a 1½-ton Chevy, a late-model 2½-ton GMC or even a 2½-ton International, you'll probably find a hydrovac unit with an air cleaner on it.

This is your chance to be



Fig. 3 - Look for an air cleaner on things that suck in air and have delicate parts.

a wise guy. Not many people know about it - so next time your truck is in the line with the others for weekly check-up, just casually take it off the truck. As the crowd gathers, screw off the cover, remove the top strainer, cleaning element and bottom strainer. Wash the element well in cleaning solvent, put it aside to dry, and clean all dirt from inside of the cleaner housing. When the element is dry, dip it in No. 10 engine oil and allow it to drain.

By this time, they're not calling you 'Horsetail' anymore - they got respect for you, see - so just reassemble the cleaner (as shown in the maintenance manual) and put it back on the truck.

If anybody wants to know, tell 'em it's to be cleaned about once a week or oftener, according to how dusty conditions are.



Fig. 4 - Swish the element around in solvent to clean it.

Pillow Block

As we pointed out in the item just above, there are some parts of a truck that not many people know about; the 1st or 2nd echelon man who is seen attending to such parts, immediately becomes the object of curiosity and worship among his colleagues.

The 'pillow block' on the 2½ ton, 6x6 GMC is one of these. The pillow block (Fig. 5) (now called the propeller-shaft center-bearing) rests up on top of the forward rear axle and connects the propeller shaft on both sides of this axle - you might call it a 'union'. It has its own shaft and two tapered roller bearings which are adjustable (by authorized personnel only)

As you would suspect, it needs lubricant - 5/8 of a pint of the same kind as used in the differential or transmission. Its filler plug has a breather vent in the center which must be kept open.

But right here is where the trouble begins: shop statistics show too many of these pillow blocks coming in suffering from lack of lubrication; what's more, the breather holes are usually stuffed up.

You can guess what happens: the shaft and bearings either burn up for lack of lube, or the clogged breather-vent causes excess heat and ex-



Fig. 5 - Maybe you call it the 'pillow block' - anyway it's not being lubricated.

pansion - forcing lube to burst through the oil seals at each end of the pillow block.

Hell to pay.

Of course, as we say, a 1st or 2nd echelon man can prevent all this and cover himself with glory by attending to the pillow block. Just wait for the end of a particularly dusty run, then slide under and inspect the breather vent. When you come out and the boys ask you what's up, polish your fingernails abstractly on the front of your jacket and say, "Oh nothing," then murmur something about a "pillow block".

From there on in, your name is Keen. (Don't forget the lubrication though, Keen).

Do it if you have to DEPT.

Here's a trick it's nice to know about in an emergency, (which is slightly off the reservation ordinarily):

You can fit Ignition Point Set IGW 3028 S from the Willys

jeep onto the Indian motorcycle distributor. These points are Auto Lite points and identical in size. The only difference lies in the method of anchoring the points in the distributor.

Murderous Rims

Colonel Thee calls our attention to the danger of improperly mounted tires on split-rim type wheels. For a long time we've been hearing the distant thunder about soldiers severely injured and even killed when poorly seated rims shot off. We have one picture of a face swollen, disfigured, and bandaged after a rim smashed into it. Some time ago we ran the report of the death of a soldier at Fort Leonard Wood in the same kind of accident.

Be careful - make sure the beads of the tire are securely seated on the split-rim type of wheel before fully inflating.

INTERNATIONAL Brakes

Brake trouble is brewing for them as has International 4x2 Dump trucks.

Here's the details: The left rear-brake hose (Fig. 1) is perched just above the shock-absorber link (inside the frame) and as the truck groans along under load, the link keeps coming up and punching the hose in the belly. It doesn't take long before the hose springs a leak - with obvious results.

Fortunately the fix is easy. There's one small bolt on the bracket holding the brake hose out where the link can hit it. All you have to

do is loosen the bolt, move the bracket about 1/2 inch (Fig. 2) and your worries are over. The link can't hit the brake hose.

If this issue is just reaching you at Christmas time, rush right out and take a look at your brake hose. If it's worn to the point where it's just about to spring a leak, kiss your lucky rabbit foot and change it.

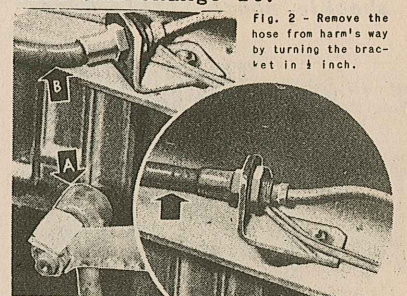


Fig. 1 - Link (A) chafes hose (B).

Fig. 2 - Remove the hose from harm's way by turning the bracket in 1/2 inch.

Motorcycle AMBULANCE

Pulling a disabled motorcycle in from the field for repairs, is like riding a bicycle through a revolving door - anything can happen.

A disabled truck can be towed - but practically the only provision for hauling broken motorcycles consists of throwing them in the back of a truck - where, likely as not, they get as scrambled as a bag of broken eggs with other crippled cycles and equipment.

The regimental motor maintenance platoon of the 113th Cavalry constantly ran into this headache down in the Louisiana maneuvers. The headache lingered on even after they returned home - until one day Pvts. J. E. Myers and W. E. Sprott passed by the salvage dump at Camp Bowie, Texas.

There, minding its own business in the sun, they spotted an unattached front axle assembly off a 1931 Chevrolet, and beside it, a pile of 1½ inch and 2-inch gas pipe. With the speed of light, an idea struck home - and a 'Motorcycle Ambulance' was born.

You see it in the accompanying photographs. It can carry either one, two or three motorcycles with the greatest of ease, maintaining proper load distribution, balance and weight on the hitch. It weighs 350 lbs. empty and not more than 1900 lbs. fully loaded, and can be towed behind any truck of 1/2 ton capacity, on up.

Pvts. Sprott and Myers describe how they went about building it:

"After obtaining the C.O.'s

approval, we submitted a requisition to the Salvage Officer for 300 lbs. of salvage 1½-inch and 2-inch pipe, one 1931 Chevrolet (reversed Elliot type) front axle assembly, two 7.00 x 15 wheels and tires, and a broken 1 inch driving axle.

"We took these materials to our shop where we stood three Indian motorcycles up on their center stands. We placed 2-inch pipe in a rectangle around the motorcycles thus outlining the frame. Then by marking the positions of the wheels, we placed pipe across and lengthwise, welding them together to obtain the strongest structure, using as little material as possible.

"We used electric-welding on the entire vehicle.

"After completing the frame, we lengthened the axle 10 inches by cutting it in two and welding a piece of 1½-inch pipe on each half of axle. Then we turned the complete axle assembly over to obtain a higher road-clearance for axle and body. We removed the tie-rod and steering-knuckle arms and after giving the wheels one degree camber with 1/16-inch toe-in, and zero caster, we welded a 1/2-inch iron block in the yoke, making it stationary at the axle.

"To design the 'hitch' (the assembly holding the lunette) we blocked the frame up behind a GMC 6x6 and placed two pipes from the corners to the center of the 'lunette' and welded them together at both ends.

"The lunette itself was the broken 1-inch driving axle bent into the shape of cruller (3 inches inside diameter)

with a tail left on it. This tail was inserted into the center pipe of the hitch. The five pipes of the hitch were then welded onto this arrangement.

"For additional strength - and to take up some of the strain of pulling - we added three shorter pipes between them. A hunk of 1/4-inch metal welded to the bottom of the outside pipe of the hitch and to the topside of the front pipe of the frame, serves as a brace.

"The cradles or runways for the motorcycle wheels to set in are a couple of old channel-iron bumpers welded to the frame.

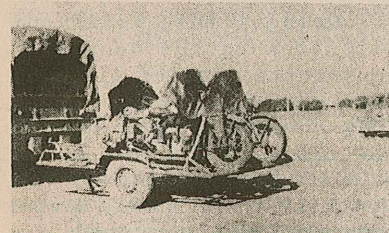
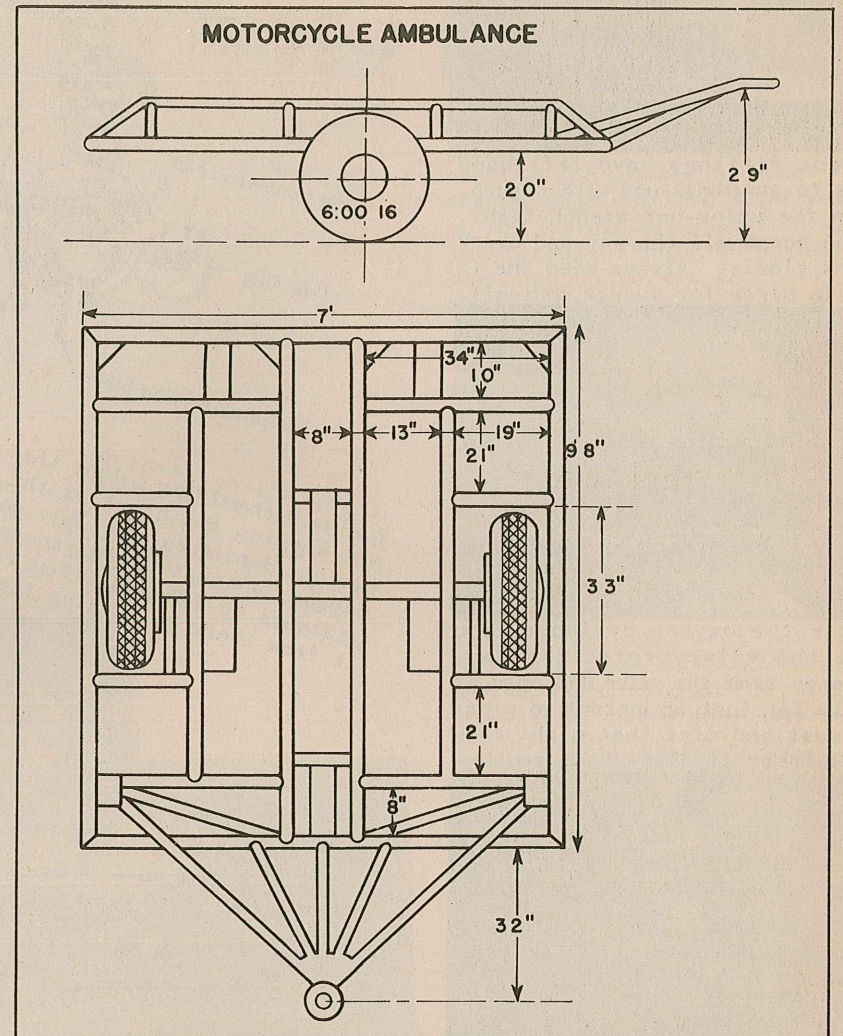
"For improved appearance and stability, an outside rail of 1½-inch pipe was welded along the outside of the frame above the wheels.

"Of course there had to be tail lights - so clearance lights were welded at each rear corner and the wiring runs inside the frame to the front of the vehicle - giving the utmost in protection to the wiring.

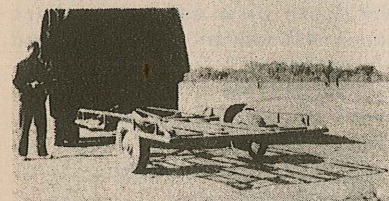
That the 'Motorcycle Ambulance' will give long and satisfactory service is attested to by both Pvts. Sprott and Myers who stand up on their hind legs and chirp, "Our organization has towed this vehicle approximately 3,000 miles under 2/3 or full load with not even so much as a flat tire."

And we have it on good authority that Washington says, "Amen."

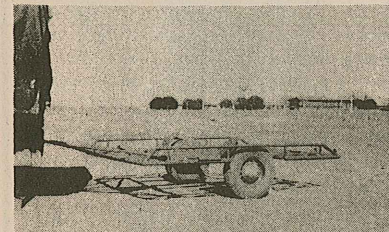
follow the simple directions



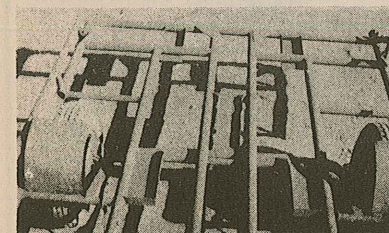
Full house - 3 motorcycles ride the 'ambulance'.



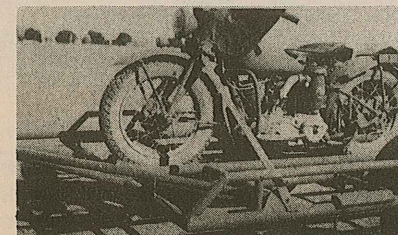
The mighty mite riding bareback - decks cleared.



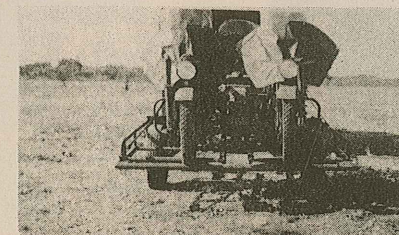
A closeup - nothing ramshackle about little Nemo.



Cradles for wheels. Splash guards add protection.



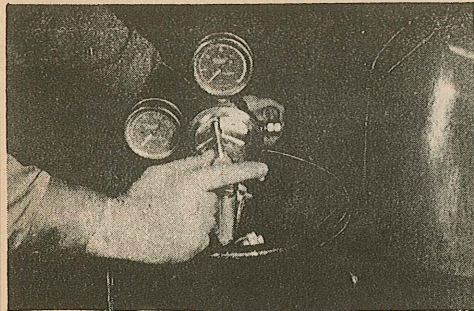
Notice the braces holding the cycle upright.



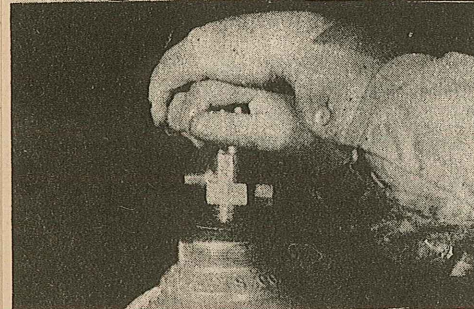
Rear view - plenty of room. No crowding.



If the windshields were down, the streamlining would be improved.



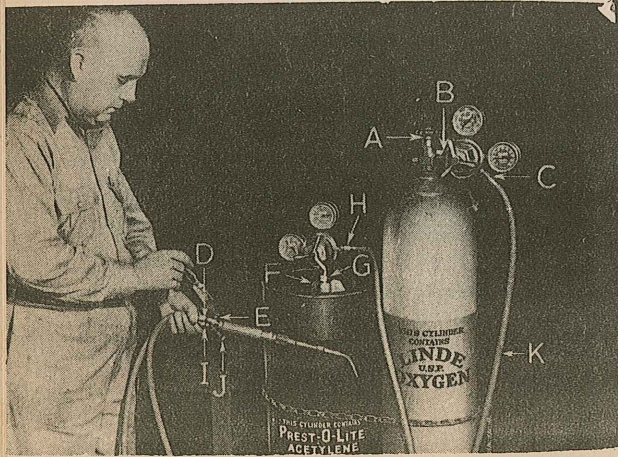
Acetylene fittings have left-hand threads to avoid mix-ups with oxygen. Tighten the union-nut wrench-tight, open the screw all the way and crack the tank slowly. Always keep the T-wrench in place for a quick shut-off.



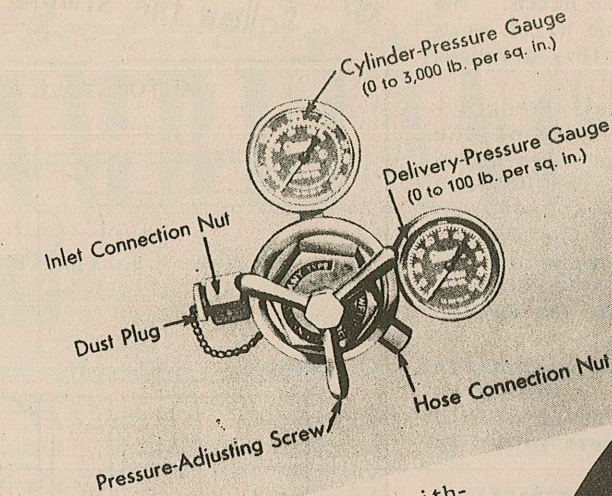
To crack the oxygen cylinder, you remove the valve-protecting cap, stand away from the valve and open it slightly for just an instant to clear it of dust and dirt that might ruin the regulator if allowed to remain.



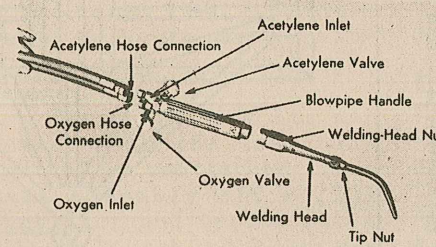
When you attach the oxygen regulator pull up the union-nut tightly with the regulator-wrench. Never use oil or grease on these or any other parts that come in contact with oxygen. Unless you want violent fireworks.



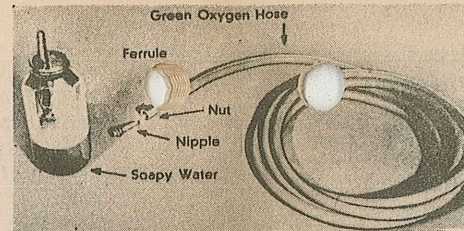
A surprisingly small amount of raw, or nascent, oxygen will make smoldering objects leap into flame. It's important for this reason as well as to save material to keep your equipment tight. Check these eleven points.



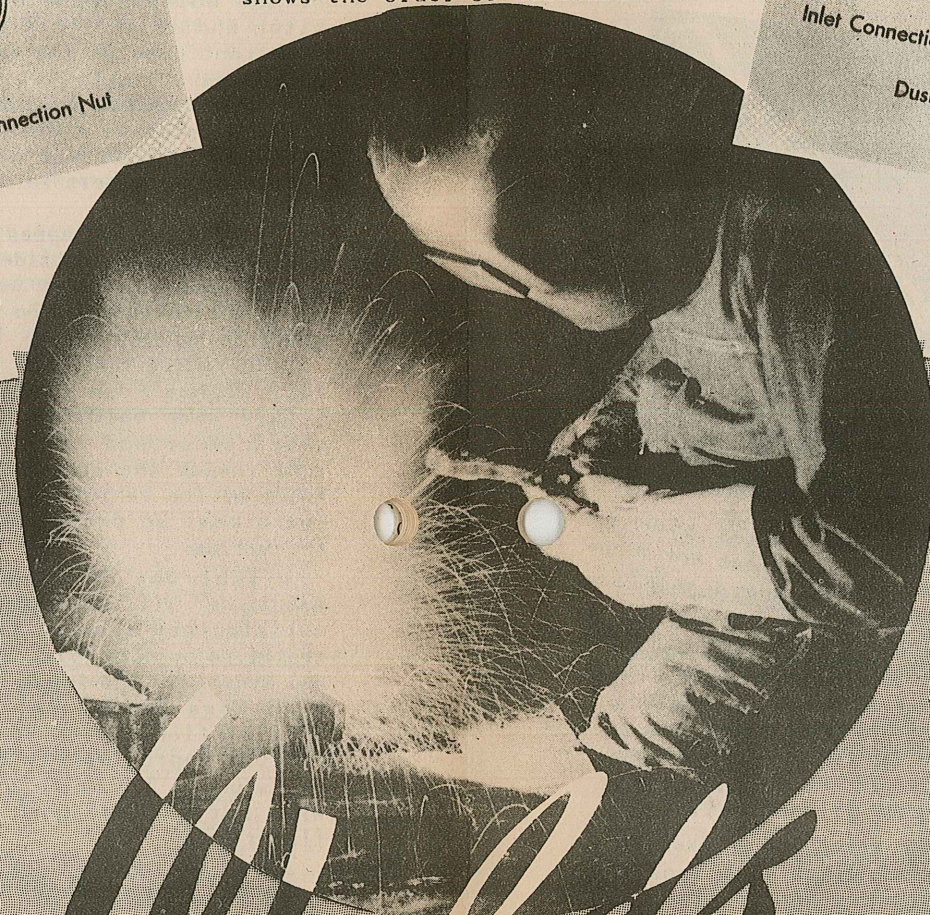
You've been welding a long time without knowing the names of the gauge parts. Here they are. This one, for oxygen, automatically reduces tank pressure to 125 lbs. You regulate it from there by turning the screw.



Torch to you, Jack - it is properly called a blowpipe and welding head. It mixes and produces an oxy-acetylene mixture in correct proportion and velocity for whatever type of flame you need. Keep it clean, Jack.



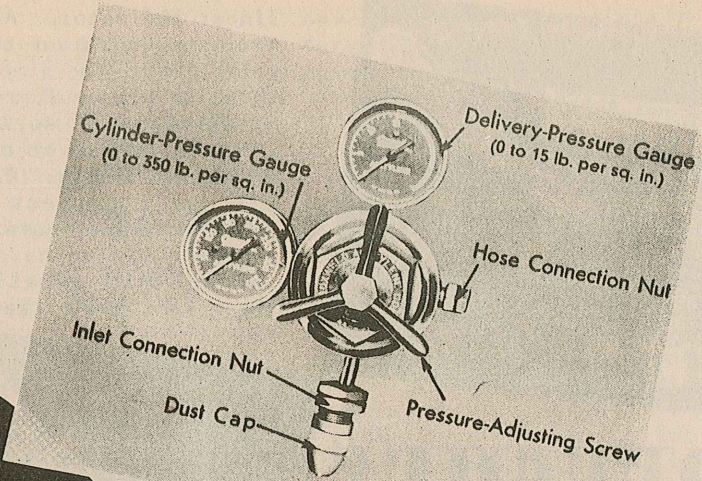
You've gotta make good connections when you're playing with oxygen. Remember, oxygen hose is green and acetylene hose is red. Be sure to use the correct ferrule. The picture shows the order of installation.



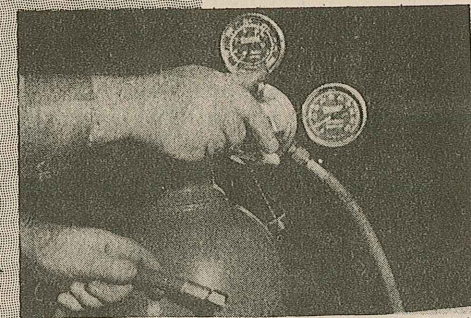
Welders ARE ONLY AS GOOD AS YOUR EQUIPMENT

Photographs courtesy of THE LINDE AIR PRODUCTS CO.

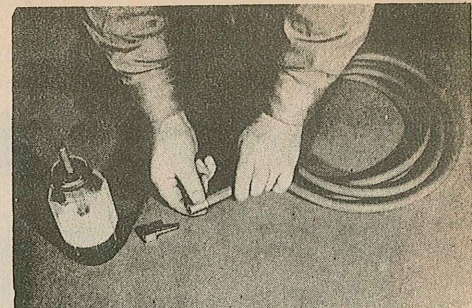
They tell us a pilot's first hundred hours are the safest. No doubt it's because he has a healthy respect for his equipment only until his first hundred hours convince him "nothin' ain't gonna happen to me." It's the same with welders. Once they've mastered the technique, they forget they're still playing with bottled lightning. These pictures are reminders that experience isn't all - you've still got to take care of your tools.



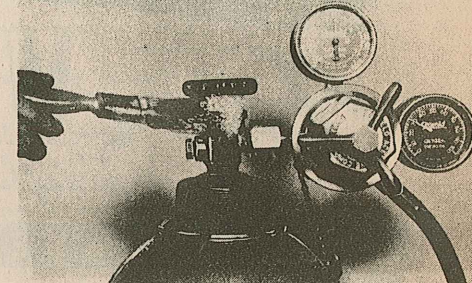
Similar in purpose to the oxygen regulator, this one for acetylene reduces the cylinder pressure to 50 lbs. automatically. Working pressure up to 15 lbs. is maintained by turning the pressure-adjusting screw.



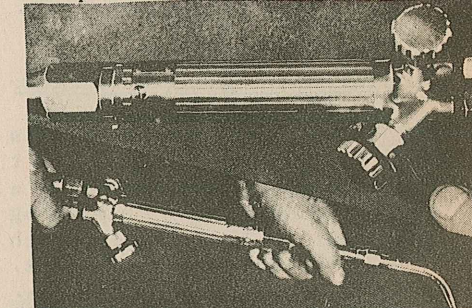
The hoses too, must be clean. Hold a finger over the free end, set the screw for 5 or 10 lbs., then keep covering and opening the hose so the oxygen blows through in puffs. Never blow out a hose with acetylene!



Important in getting good hose-connections is square-cut hose. Paint the end with soap-and-water solution so the ferrule will slide on easily. The ferrule should be pushed onto the hose up to its shoulder.

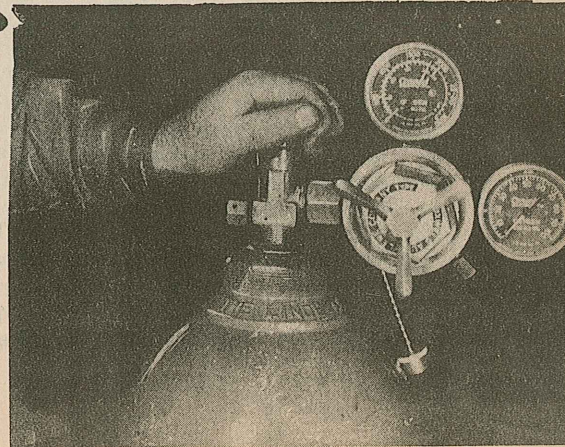


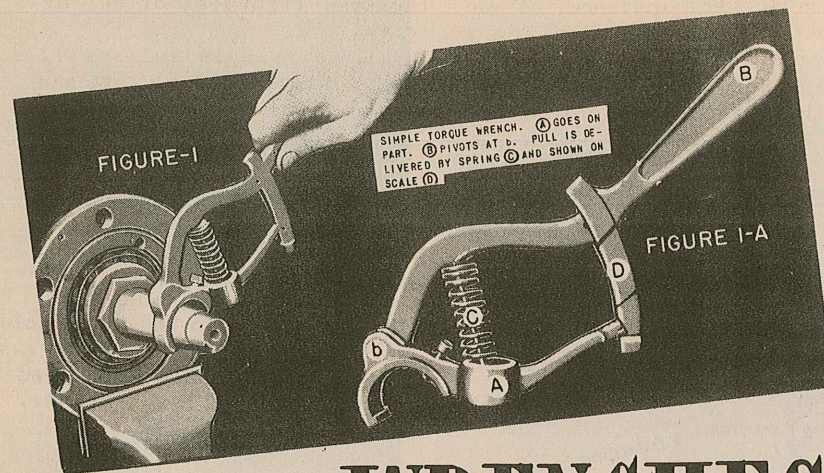
This picture shows the best way to check your equipment for leaks. Whip up a soapy lather and brush it on each connection on the tanks, the regulators, hoses and blowpipe with the pressure on at about 20 lbs.



A few nevers: never use a wrench on the welding head; never use oil or grease on any fittings; never use the blowpipe without tightening valve-stem-packing nuts; never interchange differently threaded fittings.

There's no end to caution around this equipment. Always stand aside to crack the tanks. Loosen the pressure-adjusting screw all the way, open the tank-valve a little at a time until the gauge-hand stops, then all the way.





Torque WRENCHES

a left-handed Monkey Wrench

From TIMKEN AXLE NEWS

Something new has been added to the well-known family of monkey wrenches, Stillson wrenches, end wrenches, socket wrenches, etc. Here's a nut-shell education on the what, why, and how of this new wrench.

The name *torque wrench* is not a good one and it doesn't really describe the tool. It's like asking for a 'hammering hammer'. Torque and wrench mean the same thing - to twist.

Torque wrench is the commonly used name for a wrench that 'clocks' the resistance offered by the nut, bolt, or part under the wrench. It takes the guesswork out and keeps you from applying more pressure than the part was meant to have.

In this way, it prevents the musclemen among us from tearing nuts apart stripping threads. And, of course, it allows the clumsiest mechanic to make an adjustment worthy of the most precise surgeon.

The torque wrench is made in many forms. The simplest form is shown in Figure 1. It consists of three main parts. (A) is the wrench which

is applied to the part to be turned. In this case, the wrench is the spanner type, with a tongue to fit into the keyway of a shaft. (B) is the wrench handle which is pivoted on the wrench at b. Any pull on the wrench handle is delivered downward to the wrench by means of spring (C) and is shown on the scale (D). In other words, you push down on the spring and it pushes down on (A) which turns the part to be turned. The scale travels past the pointer and 'clocks' the power exerted.

The size of the spring determines the torque capacity - the pulling power - of the wrench. Naturally, a light spring will permit only a relatively light pull - the spring closes easily. The various stages of the spring compression (as you apply power to the handle) are indicated by the pointer as the scale on the wrench handle moves by. See Figure 1-a. A heavier spring allows you to apply more force to the handle.

Two other forms of the torque wrench are shown in Figure 2. These are the snap-on type, for use with standard sockets. One has a circular

indicator and the other a linear indicator. All torque wrenches work on the basic principle of the simple wrench shown in Figure 1, regardless of the type of spring used.

Well, why do we use torque wrenches? Answer: To provide uniform tightness of such parts as studs, nuts and capscrews. It is the answer to the age-old question, 'how tight is tight'. We all know

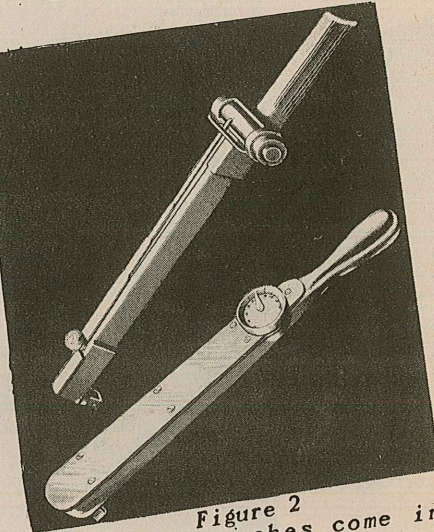


Figure 2
Torque wrenches come in many types. These are snap-ons for standard sockets.

that, with a long enough wrench handle and enough pull, the head of a capscrew can be twisted off and a stud can be pulled in two. This is the result of exceeding the strength of the material.

Take steel for an example. All steel gives with impact, it stretches when pulled, it compresses under load, and it bends under load. And if not pulled beyond its tensile limit, it snaps back to its original shape like a rubber band. The degree of temporary change in shape depends upon the quality of the steel and its heat treatment which result in definite physical properties.

A bar of steel under pull, or tension, will resist stretching up to a certain point. Over this point it will take a 'set' and remain permanently stretched and a further in-

crease in load will result in failure. You can throw it away. See test specimens in Figure 3.

This explains the experience every mechanic has had at least once. Capscrews or stud nuts are pulled home very tight in the afternoon. The next morning it is discovered that the screws or nuts can be turned very slightly for additional tightening. What happens is that the elastic limit of the steel is exceeded and it takes a permanent set - elongating, stretching out overnight. This explains loose cylinder-head nuts, loose axle-shaft, drive-stud nuts, loose carrier-flange capscrews, leaking gaskets after the job has been tightened with an ordinary wrench and a lot of 'beef'. A more scientific tool for 'tightening nuts', the torque wrench, is used by the automotive industry and should be used in all maintenance shops.

Torque wrenches are available with scales reading in pounds-inches or pounds-feet depending upon the job to be done.

A measurement of 25 pounds-feet means a pull of 25 pounds at a 1 foot lever length - or 50 pounds at a 1/2 foot lever length.

In other words, the 'lever length' or length of the wrench handle determines the amount of force your fist at the end of the handle will have to exert to do a particular piece

of work. For instance, if you have a nut that requires a force of 25 pounds to turn it, using a 1 foot lever (handle) - then with a 2 1/2 foot lever, it'll only require a force of 10 pounds; with a 5 foot lever, 5 pounds, etc. The longer the handle, the less force you have to exert.

Whether the mechanic uses a piece of pipe to increase the length of the wrench for easy pull is of no importance as long as he stops at the correct reading on the indicator scale.

The correct reading for each job, of course, has to be determined before-hand. The thread fit must be taken into consideration. A very tight thread-fit will require more pounds-feet pull than a loose fitting thread to get the same degree of tightness of the nut or head against the part.

In Timken axles for example, the majority of capscrews and studs used are in the range of sizes as follows and this chart may be used as an approximate guide in using torque wrenches.

Diameter	Pounds-Feet
3/8"	20-22
7/16"	45-55
1/2"	55-65
9/16"	65-75
5/8"	75-85

The above applies to standard threads only. For fine pitch threads, less wrench pull is required for

the same tightness of nut or screw.

A few simple rules will guide you to more accurate and faster use of the torque wrench.

1. Know what pull is correct to use.
2. Be sure indicator (dial or pointer) is properly set before starting pull.
3. Work on clean, dry threads.
4. If threads are cleaned and oiled, reduce torque applied by approximately 10 per cent.
5. Use the torque wrench for tightening only. Always loosen or remove studs or nuts with a standard wrench.
6. Pull smoothly up to the torque desired. Don't stop, then start again - more torque is required to start up once you have stopped, and you'll be misled by the reading.

Continued on page 84

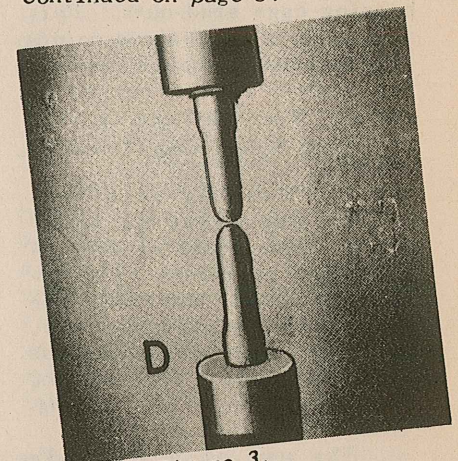
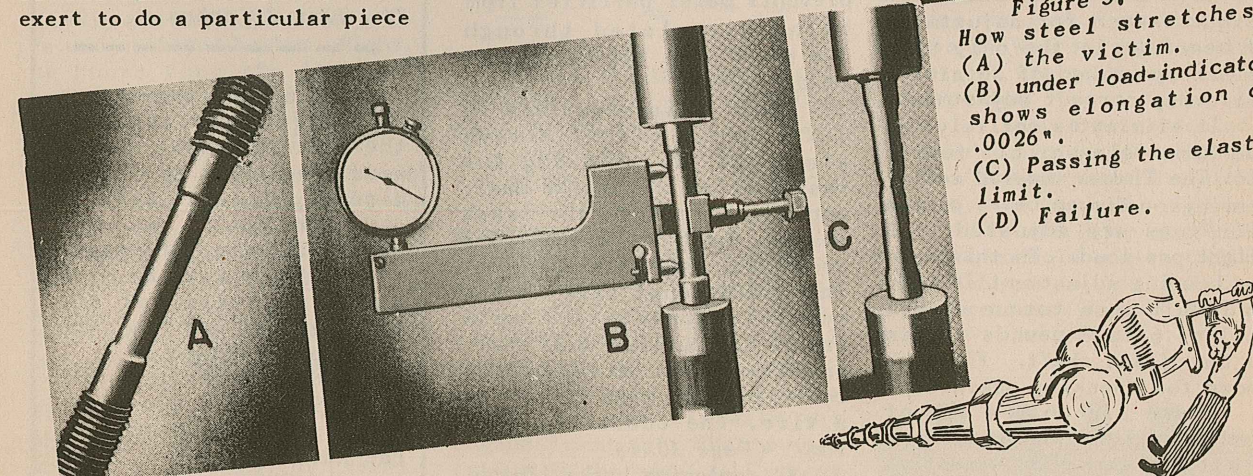


Figure 3.
How steel stretches.
(A) the victim.
(B) under load-indicator shows elongation of .0026".
(C) Passing the elastic limit.
(D) Failure.



A few examples of parts on Timken axles absolutely demanding correct and uniform tightness of nuts and screws are:

A. Differential bearing - cap stud-nuts and capscrews. *Improper tightening at these points may alter the differential bearing adjustment.*

B. Differential-case capscrews attaching the case halves. *It is important that the halves be in perfect alignment to insure proper differential-gear tooth-contact.*

C. Bevel-gear to spur-pinion cross-shaft-mounting capscrews on double-reduction type differential-carrier units. *Improper capscrew tightening at these points may cause gear run-out, or may cause premature capscrew failure and gear damage.*

D. Bevel and spur-pinion bearing-cage stud-nuts. *Uniform tightening at these points is important because bearing adjustment is controlled by shims. Bearing-case to shim pressure should therefore be uniform.*

E. Bearing retainer-washer capscrews on spur-pinion cross-shaft of double-reduction carriers. *The retaining washer controls the spur-pinion-bearing adjustment. Capscrew tightening should be uniform to provide full bearing of washer against the bearing-cone.*

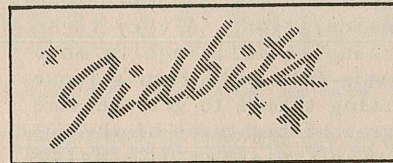
The use of a suitable torque wrench for adjustment of bearings is the only satisfactory method of obtaining uniformly correct adjustment.

It eliminates entirely the human element of 'feel', etc. The Timken tapered roller bearings on Timken bevel pinion mountings are adjusted to a slight pre-load. In this case the bearing adjustment is made to result in a torque wrench pull of 6 to 8 pounds-inches on the pinion shaft. Figure 2 shows the checking operation.

These are only a few of the situations where the use of a torque wrench is essential for correct adjustment - see

your maintenance manual for those that apply to the particular cases you run across. You'll discover that nearly all tightening operations include a specification on torque. Don't try to see what happens when they are changed a little. Too-tight strains bolts - not-enough is worse.

Warning to the beginner: A torque wrench has nothing to do with engine torque, so don't let a wise guy fool you. However, we now have a 'left-handed monkey wrench,' because a torque wrench will pull one way only.



Your maintenance manual isn't all deadwood and dry reading, in many cases it's bright, fresh, and lively - full of interesting news and juicy tips. Read it once in a while. Here's a couple of samples....

From the Chevrolet 1½ ton TM 10-1127:

The transfer case drain-plug is a magnetic plug which attracts any small metal particles, such as a small chip off a gear, and thereby prevents metal particles from being circulated through the gears with the lubricant. (Page 7-103)

When it is necessary to interchange tires, always place the tire showing the most wear on the inside dual, and the tire with the least wear on the front wheels. The reason for this is simply that the inside dual tire is the hottest running tire on a truck, the outside dual next, and the front tire is the coolest. The less rubber on a tire, the cooler it will run. (Page 10-1)

In replacing brake lining, satisfactory performance can

be obtained by replacing only the forward shoes when the reverse linings do not show excessive wear. Tests have shown that in most cases the reverse lining will outlast two sets of forward linings. This is true of both front and rear wheel brakes.

Shoes should be changed in sets; that is, both forward shoes on front wheels or both forward and reverse shoes on front wheels. The same is true on the rear wheels. (Page 5-5)

Should water be lost from the cooling system and the engine overheats, do not add water immediately - allow the engine to cool down while running at idling speed. Then add water slowly while the engine is still running.

If water is poured into the radiator while the engine is hot, there is danger of cracking the cylinder head. (Page 6 - 201)

FLEXIBLE LINES

(Continued from page 45 of the May ARMY MOTORS)

One of our make-up men - the one with the slack jaw and conspicuous fangs - saw no reason why we should run the last 3 inches of our story on 'Flexible Lines' last month - so he just left them off. We, however, are firmly determined to see the thing through. Here they are: The last 3 inches.

One of the advantages of the fittings used, is the fact that they can be used over again since the assembly doesn't distort either the nut or the body of the fitting. However, a new sleeve must be used as this portion of the fitting does not have the re-usable feature.

Anyhow, mark our words, this kit should prove one of the handiest things you can have around the Maintenance Shop.

Booster BRAKES

A Sermon for Bloody Fools

The following article is taken from "B.F.'s" - short for "Bloody Fools", a magnificent little British manual dedicated to, and biographizing the "eternal dope," as applied to Motor Transport. It is strictly the figment of the British mind and tongue - complete with all the strange, charming language and dry humor. Reliable reports over the inter-

national grapevine reveal that it is currently sweeping through the British and Allied Forces overseas like wild-fire - leaving a wide swath of improved motor maintenance and high morale behind it. Where can you get a copy? Hell, we don't know - we've been going crazy trying to get another for ourselves, ever since the Colonel swiped the one we had.

Coasting down a steep hill with the engine switched off has always appealed to us as the next best thing to flying. No sound from under the engine hood...a beautiful 'swish' as the air rushes past...and a lovely feeling that nothing else matters...until something appears 'round a bend.

Yes, until something appears 'round a bend. The question is "What does 'A' do then?" - 'A' being the B.F. who is rushing down the slope like a holiday-maker on a scenic railway.

Let us suppose that he is driving a D.N.D. vehicle equipped with booster, or vacuum-assisted brakes. Right, he knows that the lightest touch on the pedal will bring the vehicle smoothly and steadily under control. Perhaps he has even understood some of the things he has been taught about booster-brakes - how the suction power of the engine is used to save his muscles so that the lightest pressure on the pedal provides powerful braking - and so on.

What he forgets is that the engine can only develop that suction power, or vacuum, when it is running. By careen-

ing down a hill with a 'dead' engine, he is asking for the same adjective to be placed reverently in front of the word driver.

Have you got that? We don't mean that the brakes are useless when the engine is switched off. They are not. They can still be used, but the vacuum assistance just isn't there, and the driver has to supply all the push with his foot.



What's all the fuss about then, you ask. A reasonable question and we'll try to give it a reasonable answer.

If we remember right, we left our friend, the B.F., whizzing down a hill with his engine switched off. Something, a herd of cows say, had just come into view 'round a bend. Now, this is where we go all psychological. Our friend knows, because he has generally driven the vehicle with the engine 'running', that a mere caress of the pedal will arrest

his progress. Through sheer force of habit he tries the caress - and nothing happens. His hair stands on end. For a split-second he is too dumfounded to do anything about it. Then, he rams the pedal down hard. But he is too late. A lot of things can happen in a split-second, and cows are not very quick on the uptake. All that is left is a lot of spilt milk to cry over.

This, as we have said before, is an article for B.F.'s. That being so, we might as well record the obvious moral. Don't coast with the engine switched off. It saves gasoline, we know, it's exhilarating; and it is one of the few ways of achieving a good speed which can't be checked by a carburetor governor. But it's also very, very foolish. Unless of course, you feel quite sure in your own mind that a pint or so of gasoline is worth more to the country than you are.

Don't for BLOODY FOOLS

Don't allow the small vent holes in gasoline tank caps to become plugged. Failure to allow air into the tank prevents the gasoline flowing freely in the fuel line. If you don't believe us, try drinking from a bottle without letting air in.

Don't replace glass in a window or windshield without finding out how it was broken. Unless it was struck by some object, it was probably caused by abnormal frame tension. If so, it should be corrected, in order to avoid a repetition.

Don't disengage the clutch, step hard on the gas, slam out the clutch and jump yourself out of a mudhole and on to dry land. Sure you're out, but so's the clutch and the transmission - permanently out of order.





Thar's trouble in them thar mountings - the steering gear, engine, cab and radiator mountings.

Anyway that's what GMC says. They say that a lot of driving over rough country will shake these mountings loose and maybe out of alignment. So, for the sake of GMC's peace of mind, will the echelons concerned kindly put away that comic book and listen to these directions on how to adjust and tighten the the steering gear, engine, cab and radiator mountings. Otherwise the jiggling of the loose cab will bang the steering mechanism and radiator connections - causing damage to same.

First there's adjustment of the cab mountings. Before adjusting and tightening these, you've got to loosen the steering column to prevent any binding of the column in the dash panel.

On conventional models, you do this by loosening the four bolts used to attach the steering-gear flange to

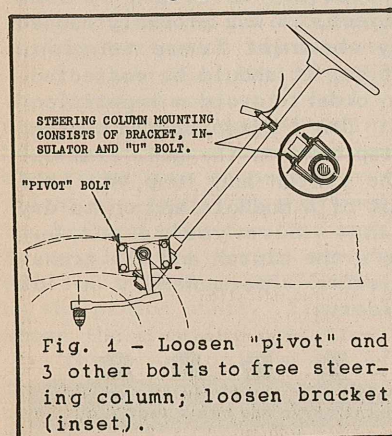


Fig. 1 - Loosen "pivot" and 3 other bolts to free steering column; loosen bracket (inset).

the frame. Just look under the left-front fender and you'll see these four bolts (Fig. 1). On cab-over-engine models, you loosen the four bolts holding the trunnion cap to the frame bracket (Fig. 2).

Finish loosening up the steering column by reaching under the dash and loosening the 'steering-column clamp nuts' (inset Figs. 1 and 2).

Now you're ready to line up and tighten the cab mounting bolts. GMC has a mounting

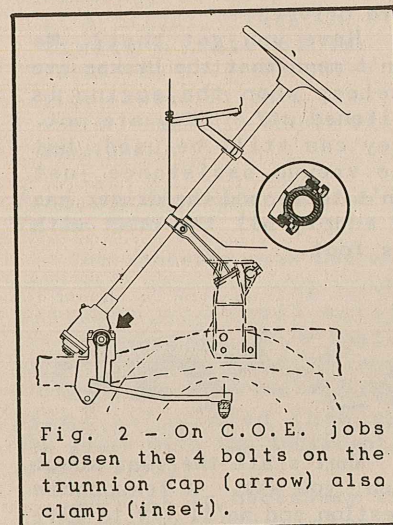


Fig. 2 - On C.O.E. jobs loosen the 4 bolts on the trunnion cap (arrow) also clamp (inset).

bolt in the front corners of the cab - right and left - and one in the center rear of the cab (Fig. 3). Line up the mounting parts (bolts, spacers and insulators) in each front corner and center rear of the cab, making sure that the cab is lined up properly so that the steering column will not bind when tightened into position. Don't use any lubricant on the bolts to make

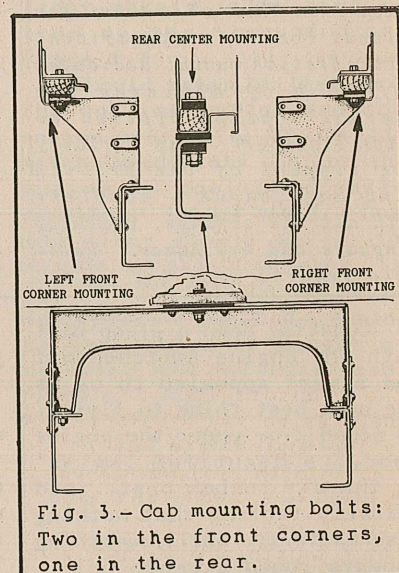


Fig. 3 - Cab mounting bolts: Two in the front corners, one in the rear.

them tighten easier - it'll make them loosen easier.

Your second adjustment is of the steering column. You've got it loosened already so on the conventional models, move the steering column up or down slightly to prevent binding, tighten the three clearance bolts on the frame mounting (Fig. 1) - then tighten the pivot bolt (the fourth bolt).

For the cab-over-engine models, you follow the same procedure to prevent binding of the steering column, then tighten the four trunnion cap bolts on the frame bracket.

Remember the steering column should be aligned so that it slides into position at the dash mounting without binding. It doesn't take much to break the steering column.

Your third adjustment is of the engine mountings.

Go underneath the cab and you'll find a strut-rod from the transmission to a cross-member behind it. This strut-rod pulls back slightly on the engine and transmission and keeps the fan from nosing the radiator core. Loosen the adjusting nut on the strut-rod then get up and take a look at the engine mountings on each side at the rear of the engine. Inspect the mounting and replace any worn or damaged spacers, bolts or insulators. Draw the mounting bolts up tightly.

Don't lubricate these bolts - oil or grease will rot the rubber of the mountings.

There's two other engine mounting-bolts holding the front of the engine - slide underneath, find them on the cross-member and tighten them.

Now, go back to the strut rod and adjust it enough to cause a slight backward pull on the transmission and the engine. As we say, this prevents the engine from walking the fan into the radiator core ... maintains proper radiator to fan blade clearance.

Your fourth adjustment is of the radiator mountings.

At the lower end of the radiator you'll find two mounting bolts. Loosen these - so that the radiator core will be free while you are making an adjustment of the tie rods (which you are just about to do). These tie rods are adjusted at the far corners underneath the dash. Loosen the adjusting nuts (in the corners under the dash) on both rods and adjust until you get a 3/4" clearance between the fan blades and radiator core at the bottom. Now tighten the radiator mounting (don't use lubricant).

In making this adjustment, be careful to see that the hood closes properly. Otherwise the whole works are out of wack.

As GMC says, rough driving over bumpy terrain tends to loosen up all these mountings. Inspect them once in a while and keep out of trouble.



A few notes from Cactus Haven, known officially as Desert Training Center: As you probably know, this dusty paradise is in reality a proving ground for new ideas and equipment concerning desert-warfare troops. The terrain consists of coarse sand, rocks, mountains, cactii, and low clumps of brittle mesquite. The temperatures are now running pretty close to 100° Fahrenheit in the shade. The natives say it gets pretty hot out here in the summer! It is also rather dry; one shower (approximately .0037 of an inch) in the last month.

Our first and most serious problem is what happens to tires when about six inches of brittle mesquite is driven through casing and tube. Our desert tactics often require mad dashes at appalling speeds, with no opportunity to avoid rocks, ditches, bushes or other natural barriers. The results are horrible. On a recent problem in which fifty of our vehicles participated, the score was twenty-five flat tires in twenty-four hours. Nearly all the tires had splinters of mesquite driven through them, and fifteen were so badly damaged, that they had to be evacuated. Three tubes could not be replaced. Just a small affair, fifty trucks - twenty-five tires. Think nothing of it.

But we have these problems every day, and the stream of tires that comes into our shop, with little hunks of mesquite sticking out, is making me slightly sick.

Investigation of a number of these casualties has revealed that the majority occur on rear wheels. Apparently the front wheels break down and splinter the brittle mesquite, and the rear wheels get it in the neck. The only attempt at a solution has been to remove one wheel from each of the rear duals. This reduces the number of wheels on the ground and consequently the number of casualties. We're still testing to see whether or not loss of flotation is too serious. Inflation and age or condition of tires seem to have little or no effect on susceptibility to puncture.

Another serious difficulty we're running into is the inability of our wheeled vehicles to negotiate soft sand. Even jeeps in front-wheel drive have been known to stay in one spot and jump up and down.

The two-and-a-half-ton, six-by-six is even worse, and the 1/2-ton is just awful. Apparently tires are too small all up and down the line, and the tendency is to dig in.

Here's another thing: We are experiencing some difficulty in maintaining satisfactory operating-temperatures in many of our new Willys MB jeeps. These wagons often run dangerously hot despite proper radiator level, fan belt adjustment, etc. The trucks are all new (1500-1600 miles maximum), and they are still in pretty good shape. Our altitude here, incidentally, is about 1700 feet.

Also on these same jeeps, we find that points are pitting badly, sometimes requiring replacement at 1200 to 1400 miles. What we don't know, is why!

And add to that, why do so many of our six by sixes have low blood (oil) pressure when the grade, condition, and level of the oil is O.K., when the oil gage and pump operate satisfactorily, and when all lines are tight and clean. We thought of bad rod and main bearings, but the engines sound O.K., though of course, that is not definite proof. Again - what or why?

The article on rail movement in the March Army Motors was fine and should be a lot of help. We had just completed a two thousand two hundred (2200) mile movement by rail when we received that issue, and we agree with you completely. We moved two hundred vehicles, ranging from motorcycles to four-ton six-by-sixes without a hitch, using the strap method. We used a perforated steel strap, and clinched it with spikes. All the jobs held beautifully, though several straps were attached too taut and snapped en route. Train-guards inspected all vehicles at each halt, and all these breaks were caught immediately.

Generally speaking, we heartily recommend perforated straps, and the methods outlined in your article.

Just to keep you Quartermaster people from getting bigheaded, we present this little tale. Recently Company 'A' -th Quartermaster Battalion (LM) sent back to my shop, a Dodge half-ton pick-up with a replacement motor just brimming over with two (2) quarts of good ole erl in the crankcase. We don't have quite all the muttonheads - not quite.

Enough for now, except, we still think Army Motors is the book of month.

WILLIAM C. ROBINSON
2nd Lieut., 1st Signal Armored Battalion
Battalion Motor Officer

Well, it's sure better than working - scampering around on the beach in all that good sunlight and vitamin D.

Anyhow, most of your questions have yet to be answered by our own desert testing crew. However, you might look over our little item on the oil-pump pressure-relief-valves in the 'Ways and Means Dept.' (page 74). Maybe it'll answer your oil pressure problem.

Give our regards to the sand dunes. - Editor.

Sgt. "HALF-MAST" McCANICK'S Question Dept.



Dear Half-Mast:

We've had trouble with water collecting in the shield around the distributor of our 1/2-ton Dodge radio-reconnaissance trucks. We think the trouble can be corrected by drilling a 3/16-inch hole at the lowest point of the shield on a slant toward the base of the engine. I'm enclosing a diagram to show what I mean.

What do you know about it?

S/Sgt. G.L.H.

Dear Sergeant:

According to your diagram, the distributor shields on your trucks have no covers on them. While your drainage idea would be an efficient solution to the water problem, I imagine you are having difficulty with poor radio-reception, which drilling a hole wouldn't correct.

The whole purpose of those shields and covers is to eliminate noises that interfere with radio-reception; take the cap off, and you've eliminated your static eliminator. If you don't have covers for your shields, order them; they're part #C-27774.

If your trouble is due to condensation in the shield and not to wash or rain water, you can be consoled by the fact that radio engineers are working fast and furious to do away with this kind of shielding as far as possible.

There's more about this on page 65.

Half Mast

Dear Half-Mast:

I've been a spasmodic Army Motors reader for some time; i.e., whenever I get my hands on a copy. I think it's swell and doing a good job.

But I've got a gripe.

Why isn't each post, camp, and station given a static-and-dynamic wheel-balancer? I'd say that 90% of the 1/2-ton weapons carriers and recon cars have cupped tires. Even a lot of the new ones shimmy, and I think it's a ruthless waste of rubber. Cost of installing these machines could be made up in a couple weeks. Switching the tires usually adds up to additional wear, and I don't call a tire worn out this way, fair wear and tear.

M/Sgt. N.M.J.

Dear Sergeant:

You wouldn't be an ex-garageman would you? Almost anybody working in field automotive-service will agree with you right down to the ground. You've got something!

Wheel-balancing on Army vehicles has been under test for years, but there isn't much evidence that Army vehicles need it on all wheels.

Although I agree that wheel balancing on fast passenger vehicles reduces vibration, tramp, shimmy, and tire wear, as well as reducing driver-fatigue, tests made so far don't prove this is a cure-all for flat spots on the slower vehicles. These same

marks are cropping up on the tires of the heaviest machines that never reach a speed where unbalanced wheels are troublesome. So let's be satisfied to say that misalignment, poor steering geometry, and under-inflation are the causes of spotty tire-wear on heavier vehicles. I really don't think a balancer at every post is the answer to all the grief.

Meanwhile, we'll keep on testing those balancers and let you know the results. Happy bouncing.

Half Mast

Dear Half-Mast:

Request you give a little information on the installation of Pioneer Tool Brackets on the several makes and models of trucks we have. We've got 'em, but we don't know where to put 'em.

S/Sgt. A.J.B.

Dear Sergeant,

You'll find the information you need in Motor Transport Technical Service bulletin, No. X-7. The various installations for all truck body-styles are described and illustrated in this bulletin.

Get it and you'll know where to put 'em.

Half Mast

Dear Half-Mast:

Operating Chevrolets and GMC's in our California mud is anything but a picnic. We drive cross-country in wet weather and over all kinds of terrain. Under these conditions it would be ruinous to linings and drums if we didn't take the wheels off every day and clean the drums and shoes thoroughly.

My question is, why can't we just drill a couple holes in the dust shields, (one at the top and one at the bottom), screw in a garden hose, turn on the water and put an end to

the wearisome, time-and-soldier-wasting job of pulling wheels every day.

Lieutenant H.V.H.

Dear Lieutenant:

Good idea, I thought, until I showed it to the nearest engineer.

"Pretty good," he said, "played around with the idea myself... But though it's easy, it's not fully effective. It's like cleaning carburetors by dunking them - half the dirt sticks to the lee side of the irregular-shaped parts. When it dries, grit sifts into the working parts and fine surfaces."

Snap...crackle...crunch.

Another reason; there's no way (that works) to dry out the brake assembly - then comes the rust.

Half Mast

Dear Half-Mast:

I've been put in command of a Quartermaster Truck-Company; and since my former duties were of an entirely different nature, I wonder if you could tip me off on the where, when, and how of some good motor-transport literature. In the meantime, please put us on the mailing list for Army Motors.

Lieutenant A.O.P.

Dear Lieutenant:

I'm sending Army Motors out by the next rocket-ship. Hope it's a big help in your new job. You'll find all the publications a truck-company needs, listed in FM 21-6, (List of publications for training, including training films and film strips). Get the newest release of this manual, dated February 1, 1942 - it'll save you many a snipe-hunt.

Half Mast

Dear Half-Mast:

In your April question department in Army Motors you said, "You can solve one problem by standardizing on a No. 2 chassis grease of the Marfak type for all joints". Is this to be taken to be official that a No. 2 chassis grease in the grease gun can be used as the correct lubricant for all types of propeller-shaft universal-joints? Even though it is against the manufacturer's specifications?

Major B.W.G.

Dear Major:

My procedure - which is a compromise - has been superseded by Training Circular 32.

TC-32 is now the "Bible" on lubricants for Army vehicles. Instead of what I said, TC-32 lists number 1 chassis grease as the best possible compromise for all universal-joints.

While some vehicle manufacturers' specs disagree with my compromise, the U-joint makers bear me out as proved by the following: MECHANICS; "We are at the present time using Marfak #1...We believe that Marfak #2...is also satisfactory." SPICER; "Our axle division chief engineer...has not approved... gear oil (because) it tends to cause rusting in the presence of moisture. If the selection must be made between universal gear lubricant or Marfak No. 2...the writer's* preference, for Army service, would be Marfak No. 2." Many vehicle-manufacturers' specs will also differ from TC-32's "best possible compromises". But it's all for the best. We know it's an impossibility to cart around all the greasing equipment needed to do an ideal job on every fitting and lube-reservoir in all the makes and models assigned to field use. So in consideration of all the pros and cons, and in sympathy with the many-sided problems to be met, the manufacturers all agree that a good compromise is far better than impractical perfection.

Write soon again Major, I like people to check me up.

*Universal Joint Division Engineer.

Half Mast

Dear Half-Mast:

Sorry to bother the busiest sergeant in the Army, but I'm lugging up a nine-percent grade with a hot-box and I need help.

I've got three locomotives to take care of (vintage 1907) and all I know about locomotives is which window to throw snowballs at when you need a week's supply of coal. Kindly give me a few tips on how to grease these hogs, will you?

Lieutenant A.H.

Dear Lieutenant:

You came to the right man. As an old hog-greaser from way back, my own private formula goes like this:

The valve and steam-cylinder oil for saturated steam-engines is Cylanto T-150 (Socony Oil Company); Car-journal lubricating oil is SV Machine oil #5 (Socony Vacuum); Engine driving-box (with collars), order a cake grease, stipulating the journal size (any railroad or oil company); for the air end of the compressor, use Diol - 55, Napthenic Base (Socony Oil Company) and for the steam end of the compressor, use the valve and steam cylinder oil. Requisition all lubricants through channels, or draw them from any railroad company.

Pour it to 'em brother, there ain't nothin' faster than a greased hog...greased by my own private formula.

Half Mast

(Turn the page)



Dear Half-Mast:

Most display ads I've ever seen usually carry a line or two on where to get the merchandise and how much it costs. Or maybe your magazine's got to be different. I mean about that Fiddlestick you advertised in your own bizarre way on the back cover of the April issue.

Come clean - where can I get one and what's the ante?

Lieutenant J.L.C.

Dear, dear Lieutenant:

Just as I was wrapping you up a Fiddlestick and all ready to mail it with a fancy price tag, the Colonel gently drags me out by the ear (the one with the slight colleyflower that shows in the picture) and tells me to cut it out and what the Hell's the idea of using the mails to defraud.

Seems that Fiddlesticks are being turned out like toothpicks and pretty soon there'll be one - the 'truck driver's delight' model - for every truck in the Army.

Company commanders will have the super-accurate 'slightly colossal' model Fiddlestick as a double check on the drivers' Fiddlesticks.

General Officers will have the super-extra-super-accurate 'Floy-Floy-model with-a-dash-of-vanilla Fiddlestick as a double check on company commanders.

Sorry I couldn't charge you - I'd of made a neat profit.

Half Mast

SCOOP

Time is marching so fast we can't keep up with it. Last month we showed you a 'typical gas can bracket installation' on the splash guard of a truck. Now we hear that they've decided to build trucks without splash guards to save metal.

Somebody is trying to make a liar out of us. But our printer scooped 'em - you couldn't tell from the picture whether it was on a splash guard or just bolted to the middle of the night.

Dear Half-Mast:

I just managed to steal a copy of the February issue of dear old "Army Motors" and am I proud of it. If the person who belongs to it finds out about it, I'll be in a concentration camp for petty thievery for the duration.

Why can't Army Motors be placed on a cash subscription basis so that some of us grease-monkeys who really need the benefit of it can get a copy? Our Army Motors come to organization headquarters; everybody picks up a copy and pretty soon somebody discovers an interesting item and proclaims it choice reading. Then the grease-monkey who does the work, will hear some portion of it three or four months later by word of mouth.

The articles in this issue are fine, and we would like to see more of them, especially that fine little grease dispenser on page 314, Fig. 12 and 13. We've made a change in the plunger that releases the ball cut-off in the nozzle of the hypoid hose and the gear lube hose, so the plunger point won't break off when some mechanic happens to press too hard on the release handle. Also in regard to the nozzles, never bump your head under a truck and drop one of these nozzles because of the brittle metal they are made of. The worst part is, this metal is in abundance on all our greasing equipment, and it's always being broken. Replacements on broken parts? Mister, don't say that, cuz, there ain't none.

The article on fast charging is a dandy.

We hope to hear more on the maintenance shelters; the State of Washington would make a wonderful proving ground for a few of them. About the article on a new portable dynamometer, we hope the Q.M. Engineers push some of them into the field under actual service conditions. We bet that new data will be forthcoming pronto with bug-less vehicles in the offing. The contribution by Major A. E. Corpe was the most wonderful version I have read for a long time, and it's the truth - because I was there.

I say, give the 3rd Echelon outfits an air-compressor that'll fit a trailer, hold enough air to blow up one of Sally Rand's balloons, with a gas engine (that'll burn leaded gas) and doesn't look like a fugitive from a model airplane. It should also have a dependable auxiliary AC-DC electric-motor for bivouac use. We are disgusted with the idea of hauling around a lot of white gas in our very few vehicles, just to run a bunch of gadget gasoline engines that remind you of a certain little fellow who wasn't there when you want him. When we go to the field as an organization, we carry our Hobart plant, which is one of the best machines ever issued to us, and we use it practically from the time we hit camp til we hit the hay, for power, lighting, welding, and even electric razors. Why can't we plug our (we hope) AC-DC motor on our air compressor and be able to furnish air for every truck that drives up, instead of having to cuss the aforementioned fugitive? Before you can get underway the driver has pushed off with the remark, "To heck with the tires, I'm tired." Also we'd like to have an electric "steam jenny" that we could use at home station, with a gas engine we could swing into a creek bottom when in the field - drop the suction hose into the water light her up, and go to work. The lousiest mechanic alive appreciates a clean motor to work on, and statistics prove that a clean vehicle will leave the shop sooner.

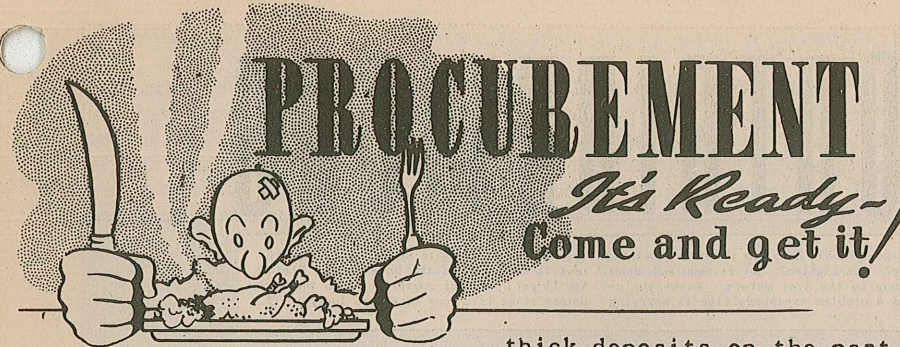
Yours, until supply reaches bivouac within twenty-four hours of 3rd echelon.

T/Sgt. J.Q.M.

Dear Sarge:

What can I say?

Half Mast



*Parts **
CLEANER

Comes word from the Fort Wayne Depot of the purchase of 3000 three-gallon drums of a cleaner for metal parts, Stock Number 51-S-4345, for distribution to eight depots.

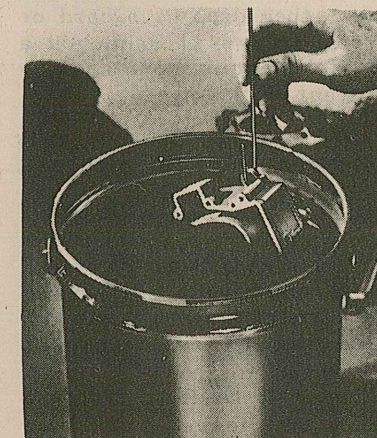
Unlike the run-of-the-mill solvents most of us have been using for cleaning purposes, this cleaner is not a solvent at all - it does not clean by dissolving carbon, grease, etc. What it does is lift the dirt off; it has a high penetrating or 'wetting' action, they say. It sneaks in under the grease or carbon, hoists it up and carries it out of small passages and intricate parts.

Because it doesn't dissolve the grease or carbon into itself, the cleaner never gets diluted or 'dirty' - the dirt settles to the bottom of the cleaning tank and the clean cleaner can be poured off and used again and again, says the enthusiastic manufacturer. Also no dirty 'scum' forms on the surface during cleaning to be skimmed off. The cleaner, which is a cold immersion cleaner (dip your parts in it without heating), will not attack brass or alloys of tin, lead, zinc, aluminum, die-cast metals, babbitt or solder.

Use it full strength. For normal cleaning submerge the part for fifteen to thirty minutes (Fig. 1). Tough or

thick deposits on the part will probably need a little more time - but don't worry about it, the cleaner won't hurt the part no matter how long it stays in.

To protect your hands use



a wire hook or basket to immerse the part. Cleaners like this usually dry out the natural oils on the hands and lead to chapping and irritation. Move the part around in the bath to hurry up the action.

When the part is finally clean, take it out and let it drain for a few seconds (this cleaner drains off fast) and put it in a rinsing bath of 'Stoddard Solvent' (Fort Wayne has also purchased 50,000 gallons of Stoddard Solvent for distribution to the eight depots). The rinse removes the small amount of cleaner that doesn't drain off immediately.

By the way, don't throw away the rinsing fluid. After a while it gets so much cleaner in it, that although it's no good as a rinse, it's fine for

flushing assemblies you are overhauling. Use it to flush out oil pans, gear cases, housings, and similiar parts, to get them ship-shape for the 'operation'. It's better than gasoline for these purposes and a lot less dangerous.

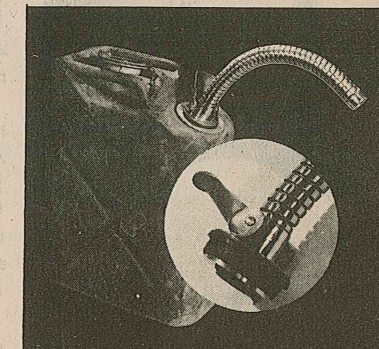
Although you can clean the metal parts of the hydraulic brake system with the cleaner, keep it away from the rubber parts. And don't ever use it to flush out the hydraulic brake system. The cleaner is a petroleum derivative and attacks rubber at the slightest provocation. For the same reason, use denatured alcohol as a rinse in cleaning hydraulic brake parts. (Stoddard Solvent is also a petroleum derivative and attacks rubber).

Requisition the cleaner from your nearest depot, Federal Stock Number 51-S-4345 together with an ample supply of Stoddard Solvent, Federal Stock Number 51-S-4385.

*Gas Can **
NOZZLE *

Here's a preview of a new, improved nozzle for use on your five-gallon gas can. Remember how you fumbled around for some forty-five seconds getting your old nozzle screwed in? Well, this nozzle has an expanding synthetic rubber plug. Just put it into the gas can hole, pull the lever, the rubber plug expands and you're all set to pour.

You shouldn't fumble around any more than three seconds with this new nozzle.





CONTRIBUTIONS

Got a good idea? Have you invented something lately? Got a gripe? Jot it down and shoot it along to the Army Motors. Maybe you've solved a problem everybody else is worrying about. Pass it along to us and we'll buck the news to the rest of the boys in the field. You'll get a personal subscription to the Army Motors if we like your idea - you lucky stiff.

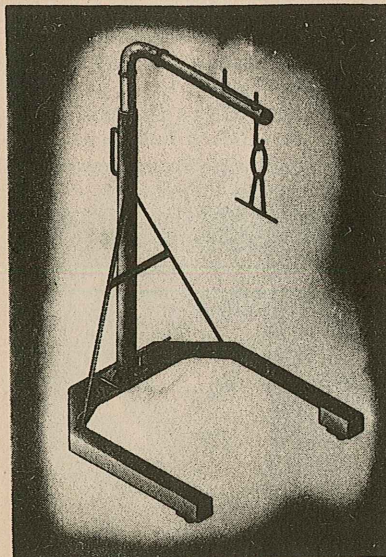
Not everybody has a G.I. lifter for pulling and pushing heavy-duty duals.

People without lifters will undoubtedly get sprained backs if they try to move 'em around without lifters.

Being much impressed with these simple truths, Lieutenant James O. Guthrie, M.T.O. at Randolph Field, sent us plans for a smart little device he saw in action down at Foster Field, Texas.

It's Technical Sergeant Buckner's idea, and it's built entirely from stuff he found lying around the shop. Except for the issue hydraulic-jack which Buckner thinks he put to good use, so why worry about it?

As you see by the picture, the lifter is adjustable to various heights and can be moved around on its ball-bearing casters. It has an easily turned fine-adjustment screw so that wheel bearing assemblies



Isometric view of the lifter.

aren't injured while being pulled.

If you like the idea, if you haven't got a lifter in your shop, if you think you could make one from a set of plans; then drop us a card or letter and we'll send you a set of blueprints prepared by Sergeant Buckner.

T/Sgt. Paul R. Buckner, Air Corps Advanced Flying School, Victoria, Texas.

Did you ever drive a four-ton, Diamond T wrecker over a hill covered with Carolina pines? Well, we did - . And it's hard on the front fenders. For the bumper on these babies is a little too short to protect the fenders, and leaves their outer edge wide open for right-crossovers, upper-cuts, and jabs.

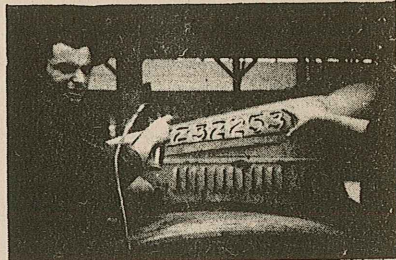
Our prescription was to slip 20-inch lengths of 1/2-ton Chevy bumper into the ends of the wrecker bumper and weld them firmly. They keep the trees off the reservation.

M/Sgt. T.L. Sasser

Have you ever wondered how to replace the numbers on a truck after repainting it?

I've made a removable-number stencil for numbering Army vehicles. It gets the job done for me, so I'd like to pass the information on. If anybody can suggest improvements for it, I'd like to hear from them.

The stencil is made of transparent celluloid, (stencil paper will do), and I traced original regulation-



And then give 'er the gun.

numbers for size. Each number is on an individual sheet, with a tang on the top and bottom. The form is made to hold seven numbers, spaced with a half-inch margin and double slots for the tangs.

So that there'll be no broken numbers; zeros, fours, sixes, (sixes and nines are interchangeable) and eights have no centers. The centers for these numbers are made of masking tape, and are stuck to the truck surface after the form has been taped on.

When it's all set, the paint does the rest.

Private Ralph Pierro
Hq. & Hq. Squadron
6th Air Force, Albrook
Field, Canal Zone.

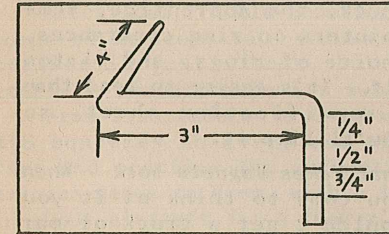
You open for ideas? Here's one for checking the oil-level in transfer cases and what-not. We use it daily, and it works swell.

I made a right-angle bend, 1" from the end of a good stiff eight-inch piece of welding rod. On the 1 inch portion (the part to be dunked in the lube through the oil-level hole), I made quarter-inch calibration marks with a file. Then, 3 inches back on the other portion of the rod.

I made another right-angle bend, so placed that when this last portion is sitting horizontal, and parallel to the axle - the calibrated end will be vertical. Then we know it is entering the oil at the correct angle.

When we know the exact level of the lube in relation to the oil-level hole - we know whether or not it is necessary to give it another shot.

Put. Anthony Zotto
Hq. Troop. 101st Cavalry
Fort Devens, Mass.



From an old favorite contributor, Tech Sergeant Norman E. Runyon (location secret), comes an improvement on an improvement. He says the Engineers moved his outfit's vehicles by rail exactly like we said they should be handled, and although their trip covered many miles of rough track everything was shipshape on arrival.

But here's the way they went us one better. Instead of storing the ramp material, (R.R. ties & the like), they used it to support and roof-over their dugouts. How about that - can you top it?

Sergeant Runyon, always a cover-to-cover Army Motors reader winds up by saying, 'The editorial...going to bat for the driver is excellent. I can say, for my regiment, that drivers are assigned to trucks and no one else is permitted to drive them. It helps a lot when you get a driver to the point where he refers to 'old number 49' as 'MY TRUCK'. Thanks again Sarge - for the dugout tip and we've renewed your personal subscription. ED.

You never need a cleaning-tank more than when you haven't got one. And when you have a man trained to the point where he's really a good mechanic, he's going to insist on clean parts. The problem is to get the mechanic the parts and cleaning facilities together when you're making field repairs.

We solved it economically and practically by a few pieces of scrap material, and an old oil drum of 15, 30 or 55-gallon capacity (depending on its purpose) from which we made up several portable cleaning-tanks that can really stand the gaff.

1. With a ripping-chisel or torch we make one longitudinal cut across the full length of the drum and to the bead at each end.

2. Just inside and parallel to both the top and bottom beads we cut half way around the circumference of the barrel. We then opened up the two portions like a valise.

3. We shaped pieces of sheet metal to close the opening at the ends and welded them to the sides.

4. Made and welded two

brackets to the tank to act as legs.

5 - Made and welded an angle-iron rim to the top opening of the tank, to act as stiffener, to protect against cuts, and to which a lid may be fastened.

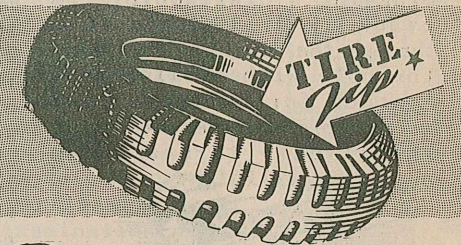
O. E. Schott
Sr. Foreman of Mechanics
Columbus, General Depot
Utilities Office
Columbus, Ohio

Keeping track of tires on some of the multi-wheelers is no snap. With tires all over the truck, you make a switch, for either a puncture or a scheduled rotation, and your records are all shot. So we made up a little tire record-chart that has helped us a lot. We're passing it on to you in the hope that it'll be of assistance to others. For ready reference, the chart is kept in the vehicle-service-record book.

Cpl. Carl F. Sward
4th Squad Leader
712th QM Co. (TRK)
Paine Field, Wash.

(Illustration on page 96)

Your truck is traveling sideways when wheels are out of alignment. Your wheels aren't rolling - they're scraping (rubber off).



To paraphrase the old man with a razor-strap, it hurts us more than it does you when we have to say no to your requests for personal subscriptions to Army Motors. We've only so many copies to send out and each one has to serve a lot of readers. But just to prove it's easy to earn your own monthly copy of the magazine, look over the following little contribution that earned a one-year subscription for Master Sergeant BERTRAM WOODRUFF, at Fort Eustis, Virginia.

If you're breaking ventipanes in '41 and '42 Ford staff cars, stop trying to shut them by pulling on the finger-pull catch. Grab the glass in the middle of the rear edge, pull it shut and turn the catch without an inward pull. This avoids glass breakage caused by twisting the frame.

READING REVIEW

Current Magazines

COMMERCIAL CAR JOURNAL, May, 1942. *How Tires Affect Axles* - A slick little article with all the proof. Lots of little things like the fact that a flat inside-dual throws four times more weight than the outer wheel bearing is built to stand. Mismatching the tires is another thing destructive to axle units. Includes many other tips that prove constant tire-attention can save you from important mechanical failures. In other words, neglected tires can be homicidal as well as suicidal, and we ain't woofin'.

Shop Hints - Some neat little tips that might come in handy in shop or field. One about plugging a distributor-cap crack by drilling a hole through the crack, and filling the hole with sealing wax. Another for an improvised bearing pressure-tester, using an oil-pump turned by an electric drill.



THE CAVALRY JOURNAL, May-June, 1942. "The jeep is our most valuable motor vehicle for reconnaissance, but as a transport vehicle it unquestionably is the most extravagant of all motor trucks in proportion to the gas and rubber expended." Says who? The Cavalry Journal, in an editorial titled, 'Facing Realities'. They maintain that the expression 'Horse and Buggy Days' has built up a prejudice in the minds of Americans to the point where they overlook the vital im-

portance of horses in warfare. They want to see jeeps tearing over terrain where horses could do the job better, says the editorial, even though animals are easier on rubber. Provocative.-

Trailers Solve Many Problems - A good account of the versatility of trailers in military operations. Pictures of some of the heavier units.



AUTOMOTIVE AND AVIATION INDUSTRIES, May 1, 1942. *Silver's Importance* - The use of silver in industrial work. Its application in airplane manufacture was beginning to shape up before the loss of the Malay states; now its importance as a brazing agent has doubled and redoubled since tin has become scarce. It may be we'll have to use it in the field. Put it on your shelf for future reference.

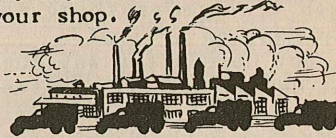
Six-Wheel-Trailer Design - Braking problems on multi-wheel vehicles. This might lead you to a solution for your brake service problems.



MOTOR, May, 1942. *Truck Clutch Service* - An authoritative discussion of the Lipe and the Fuller clutches, and the method of servicing them. As usual Motor's service man, Edward Barry, does the whole job for you, with comments on proper mechanical practice.

MOTOR AGE, May, 1942. *Installing New Piston Rings* - A basic course for mechanics on re-ringing a motor. Pop gives Chuck, the apprentice, some pointers on ring clearances, choice of rings, and piston fit. It's easier to read than a specification sheet, so you'll like it.

What Makes Magnets Work - When you come to think of it you couldn't get a truck or car to work without magnetism; so this discussion of magnetism and the application to automotive vehicles is important. The illustrations are strictly down in the shop. "What's wrong here?" Only a picture but we thought we'd mention it. Shows some goof swinging on a badly mushroomed chisel, using a hammer with a loose head. Maybe you'd like to hang it in your shop.



AUTOMOBILE DIGEST, May, 1942. - They've abandoned the usual service departments and commentaries this issue in order to use the space for their 'Production for Victory' stories. If you're interested in the source of your equipment, and how the manufacturers got their plants under full-draft in order to make deliveries, you'll read the magazine through from cover to cover. Includes some of the larger problems encountered in changing the giant peace-time automotive industry into war production plants.

Latest Books

Electrical Trouble-Shooting on the Motor Car, by A. H. Packer; published by A. H. Packer, 8130 Harper Avenue, Chicago, Illinois. Fifth Edition \$4.00.*

Electrical Trouble-Shooting might be compared in scope to a volume of AR's - neither is just a book, but rather a complete education on its subject.

From its preface to the back cover, ETS squeezes in every bit of theory, fact and practice the automotive electrician needs to know, with a lot thrown in about aircraft for a 'baker's dozen'.

In fact, the preface itself is the key to the whole works. Packer stated his purpose on the opening page and then proceeded to carry it out. The following condensed version of the author's introductory theme will give you a fair idea of the kind of book it is. He says:

"Today is a day of specialization, and the troubleshooter who knows what he's doing when he lifts the hood will make each motion count.

"The axle expert doesn't try this nut and that washer - he knows which piece to use in each step of the assembly. Electricity doesn't seem quite as easy because its operation can't be seen. But if its fundamentals are understood, it's possible to move with equal certainty in testing and repairing.

"Theory alone is worthless, but when applied to some practical problem, it's a tool worth all you have to pay. To study a book full of theory and then go out in the shop and try to use it, is to ask the memory to do a job it isn't fitted for. To take one idea, however, see it clearly, and then go out and use it before it evaporates, is a practical way of increasing your knowledge.

"This book is written on that basis; and if you find a bit of theory that may be dry and uninteresting, re-

member that in a few pages it will blossom into a sharp and useful working tool that can't be purchased in any store."

From there; having stated his reasons, and his methods, the author proceeds to carry through in an admirable way.

This book is lush with tests, test devices, test boards and layouts, test benches, and test charts. And performing the tests is made easy by the straightforward descriptions of procedures.

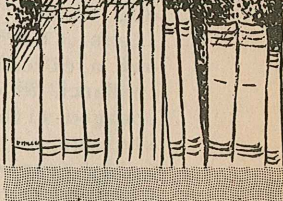
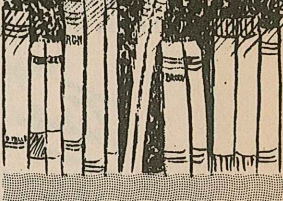
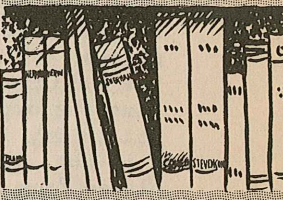
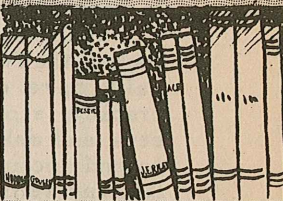
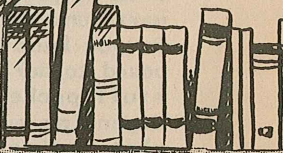
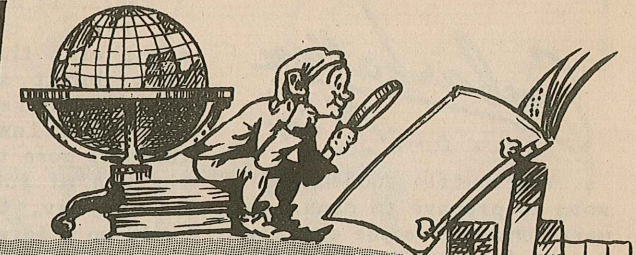
The illustrations are above average - well above. They go a long way toward clarifying the basic (and often otherwise obscure) theory vital to a book of this kind, but rarely grasped at first-try by the non-collegian.

The most interesting, easy-to-use index helps locate specific subjects with a minimum of wandering through non-essential material. The chapter-headings themselves are almost an index, being broken down more-than-usually fine into meaty discourses on each phase of the vehicle electrical system. Just enough in each for one good meal.

The author has gone to considerable trouble to select a pertinent list of questions for self-examination after each chapter has been digested by the would-be electrician. This feature is excellent for classroom use of the book because of the questions' accurate coverage of the preceding chapter. The answers are in the back of the book if you get stuck.

This latest edition has been brought up to date by inclusion of several chapters on new magnetos and voltage regulators, but is otherwise the same dependably-accurate volume known as a standard work to many thousands of old readers through four previous editions.

*Except when purchased on certain club-plans which the publisher will explain on request.



Embarkation

Your outfit suddenly gets word to prepare to depart for parts unknown - maybe overseas. Do you know what you're supposed to do? You can get your stuff packed in a day or so depending on who you are and what you're doing - but how about those couple of trucks in need of overhaul or repair?

Well, according to Washington, the Ports of Embarkation take care of all packing, crating, stowing aboard ship, etc. and make all repairs up to and including 3rd echelon. But any vehicle needing more repair than that must be evacuated, by the organization responsible for it, to the nearest 4th echelon shop. If the vehicle is fixed by the time the organization is all set to go, it goes along too - if not, the vehicle is replaced from a pool maintained by the Port of Embarkation. Does that settle your mind?

In any case, one rule should be taken to heart by every Motor Transport Officer, "No vehicle, which will require overhauling within a year, should be sent overseas."

There'll be a few other duties for you on the other side - and you won't want your hands tied by crippled trucks.

Tire Flaps

A low growl of displeasure arose from the OQMG the other day on the subject of tire flaps. Seems that they sent out a circular letter (#136) on March 28 ordering personnel charged with tire inspection, storage and issue, to carefully remove all serviceable tire flaps taken from un-serviceable tires and turn them back to the using organization with new tires and tubes issued.

Well, it ain't being done. There's usually nothing wrong with the tire flaps - they don't wear much and there's no reason why they shouldn't last the life of three or more tires. So what's the use of junking them?

Anyway, the plan is to build up a large stock of good second-hand flaps and issue them just like new ones to outfits requisitioning tires.

Which, we all agree, is a good idea. Let's join in.

Chevy Oil Filler

A couple of 3rd echelon shops are laboring under the impression that Chevy engines don't have oil filler necks or breathers any more.

As the Chevy company explains it, replacement engines are shipped to 3rd echelon shops with the 'combination oil-filler and breather-vent assembly' separate - so the assembly won't get crushed and broken. To keep dirt out of the engine, they put a sheet-

metal plug in the oil-filler pipe hole.

Some of the 3rd echelon shops that don't know about all this, go ahead and install the engine without the oil-filler and breather assembly. To put oil into the crankcase, they use the breather up on top of the valve cover.

As a result the trucks go out without an oil-filler neck and breather. The crankcase not being ventilated, oil-dilution sets in.

Watch out for this, you 3rd echelon guys - knock that plug out and get that assembly in there.

Purchase Orders

The Quartermaster General cordially invites all Motor Supply Depots, QM Motor Bases, Post QM's and Maintenance units in the field to submit to the Motor Transport Division OQMG, Washington, D. C. one copy of all purchase orders on spare parts and parts common materials bought in the field. Beginning now.

CONTRIBUTIONS (Continued from page 93)

TRUCK NO. 44222	
SERIAL NUMBER & MAKE OF TIRE	
1. 1657711 - FIRESTONE	
2. 1345678 "	
3. 7123459 "	
4. 2468101 "	
5. 3456789 "	
6. 9876430 "	
7. 1112134 "	
8. 12171919 "	
9. 20212223 "	
10. 1299764 "	
11. 4873121 "	

Corporal Carl F. Sward's system to end all systems for keeping track of tires for inventory and rotation.

NEWS FLASHES

Huzzah

WHEN WE BLITHELY TOLD YOU TO ORDER COOLING-SYSTEM CLEANER AND INHIBITOR ACCORDING TO SPECIFICATIONS ES 733 AND 734, WE KNEW THAT THERE WERE THOUSANDS OF CANS IN ALL THE WAREHOUSES. WE BLITHELY DIDN'T KNOW THAT YOU WERE GOING TO HAVE A HELL OF A TIME GETTING THE STUFF OUT OF WAREHOUSES AND INTO YOUR COOLING SYSTEMS IF YOU DIDN'T KNOW THE FEDERAL STOCK NUMBERS. WITHOUT ANNOYING YOU WITH ALL THE DETAILS OF WHAT WE WENT THROUGH TO GET THE STOCK NUMBERS, HERE THEY ARE:

CLEANER AND NEUTRALIZER ES733 51-C-1568-500
RUST INHIBITOR ES734 51-C-1600

IT MIGHT BE A GOOD IDEA TO JOT THEM ON YOUR COPY OF TECHNICAL SERVICE BULLETIN C-4 AS WELL AS ON PAGE 17 OF THE APRIL ARMY MOTORS. AND YOU CAN STOP WORRYING ABOUT WHAT SIZE CAN TO USE WHERE THE DIRECTIONS SAY USE ONE CAN TO SO MANY GALLONS OF WATER. ALTHOUGH THERE ARE SEVERAL SIZES OF CANS ON HAND AT THE VARIOUS DEPOTS, IT'S BECAUSE THE COMPOUNDS ARE CHEMICALLY DIFFERENT. THE SIZE OF THE CAN HAS BEEN VARIED TO STANDARDIZE THE DILUTION FOR ANY OF THE BRANDS USED. IN OTHER WORDS, WHETHER YOUR CLEANER COMES IN AN EIGHT-OUNCE CAN OR A SIXTEEN-OUNCE CAN, YOU STILL FOLLOW THE DIRECTIONS THAT TELL YOU TO USE ONE CAN TO SO MANY GALLONS OF WATER.

Chevy Bumper

IF YOU'RE OPERATING CHEVROLETS COVERED BY TM 10-1475, YOU'LL WANT TO MAKE THE FOLLOWING CHANGE ON PAGE 281:

REAR-SPRING BUMPER RETAINER
From To
3863781 385372

Coolant Funnel

OUR RECORD WAS SLIGHTLY CRACKED WHEN WE REPEATED THE CAPTION OVER BOTH DIAGRAMS ON PAGE 80 OF THE MAY ARMY MOTORS. THE ONE ON THE RIGHT SHOULD READ: FUNNEL FOR DRAINING THE BLOCK NOT THE RADIATOR OF A 2½-TON GMC. SO SORRY...SO SORRY.

Piston Pins

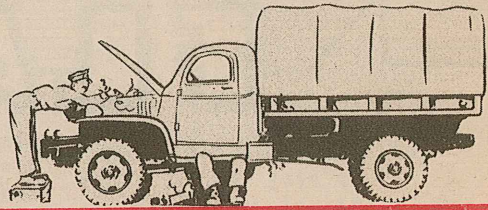
WHATEVER ELSE YOU'VE BEEN DOING WITH YOUR OLD-PISTON PINS, THE THING TO DO NOW, ACCORDING TO A WIRE FROM GENERAL GREGORY, JUNE 16, IS RECOVER ALL YOU CAN FIND LYING AROUND THE SHOP, SCRAP BARRELS, AND SALVAGE PILES: COAT THEM WITH A RUST INHIBITOR AND SAVE THEM IN A SEPARATE STORAGE UNTIL FURTHER NOTICE.

Dodge Rod Bearings

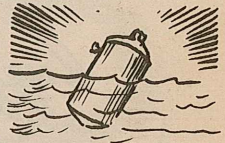
IT'S MUCH EASIER TO GET THE RIGHT PARTS ON A REQUISITION IF YOU KNOW THE RIGHT PART NUMBER. HERE'S SOME CHANGES FOR YOUR DODGE PARTS-BOOKS NUMBERS TM 10-1378 AND TM 10-1154 GROUP 0104 PAGE 01-11 IN BOTH BOOKS:

CONNECTING ROD BEARINGS
OLD NUMBER NEW NUMBER
933437 951291
863242 863670
891422 951292
864248 864245

NEGLECT *Means trouble!*



We could go on now and give you some more of that who-struck-john about how quick dirty oil or a low level of oil in your crankcase can ruin your engine. But we'll just leave you with this thought: How far do you think you'd go with mud in your blood? How far do you think you'd go with no blood at all? While we're at it, what about changing that oil-filter cartridge? It's no good dirty.



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Hear that new superstition going around? They say if you don't keep your tire pressure up, your tires'll go flat and wear out quick. It's a superstition like the U. S. Bureau of Standards is a superstition.



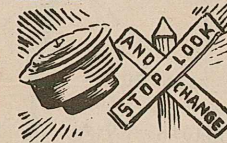
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When we say 'blown seals,' we don't mean walruses with gas on the stomach - we mean oil-seals busted by lube forced out of overfilled gear housings. Put lube in only as high as you're supposed to, whether it be to the level plug or a half-inch below according to what the book says. Also keep an eagle eye on the breather vents. Keep them open and keep them clean.



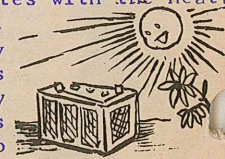
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Harvest your oil-bath air-cleaner lately? We ain't kiddin' - ther's a normal oil-level and a caution oil-level on it. If the oil is up to the caution mark, it has been raised up there by the nice crop of dirt and dust gathered out of the air on its way into the engine. The time to harvest it (change it) is as soon as it has reached the caution level.



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Look at your battery water twice as often during the summer season - it evaporates with the heat. And keep the vent-plugs tight - spilled electrolyte is battery power wasted. It also corrodes the cradle and other nearby metal-parts. Keep the vents in the filler caps open so the battery'll have a chance to breathe. Keep the terminals clean and in good contact so there'll be no current drain from high resistance connections.



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