Issue 143

PS

1964 Series

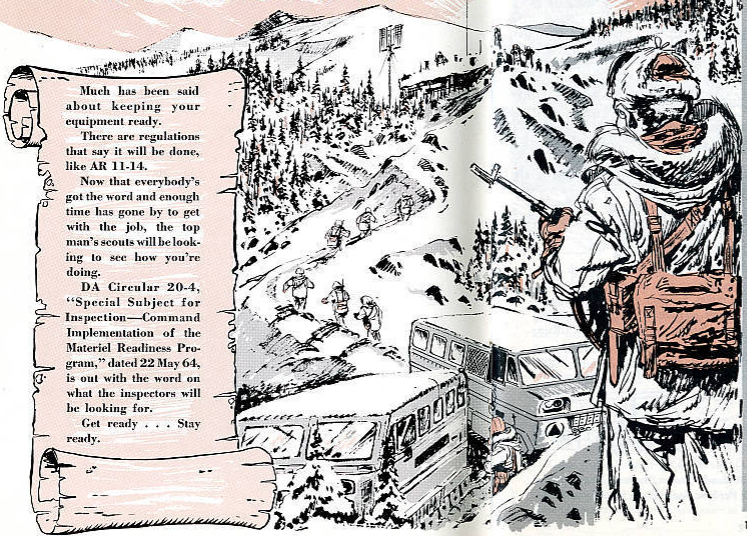
THE PREVENTIVE MAINTENANCE MONTHLY

And thereby hangs a tale-

SEE PAGE 29

"If it be now, 'tis not to come;
If it be not to come, it will be now;
If it be not now, yet it will come:

The Readiness is All"



Much has been said about keeping your equipment ready.

There are regulations that say it will be done, like AR 11-14.

Now that everybody's got the word and enough time has gone by to get with the job, the top man's scouts will be looking to see how you're doing.

DA Circular 20-4, "Special Subject for Inspection—Command Implementation of the Materiel Readiness Program," dated 22 May 64, is out with the word on what the inspectors will be looking for.

Get ready . . . Stay ready.

PS

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THE PREVENTIVE MAINTENANCE MONTHLY

Issue No. 143 1964 Series

IN THIS ISSUE

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PS wants your ideas and contributions, and it also answers your questions. Name and address are kept in confidence. Just write to:

Sgt. Half-Mast,
PS Magazine,
Fort Knox, Ky.
40121

"THE WINTER'S TALE"...

SNUGGLE UP...BUT DON'T GET COZY

These days when the outside temp takes a nose dive, and your teeth start chattering, your natural impulse is to snuggle up to a heater.

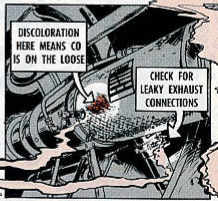
Heaters come in many sizes, shapes and makes, but they all have one danger in common. When you burn fuel in the heater, or transfer heat from an engine manifold to fresh air, you always get that colorless, tasteless, odorless villain —**carbon monoxide** (CO).

Whether your heater's in an aircraft, vehicle, maintenance area or living quarters, regular preventive maintenance is a must to guard against this sneaky menace.

CHECK BIRD HEATERS

Say, for example, you've one of those jim-dandy Janitrol heaters in a Choctaw (CH-34). The Daily, Intermediate and Periodic inspection can fill you in on checking out the heater.

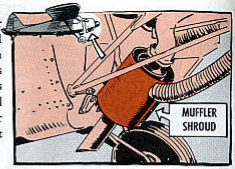
One place you want to give the big eye to is the outside of the heater. Any discoloring here will mean that you've a ruptured combustion chamber. You know what that can mean—fumes and CO! Another place to check for leaks is the exhaust tube connections.



'Cause those Janitrol gas heaters don't present too big a problem as far as exhaust leaks go, since the heat comes directly from burning fuel. But those heaters that are run off the exhaust manifold in fixed wing birds are a different story. Here the heat comes from waste gases of fuel burned in the engine.

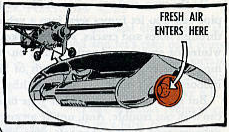
MORE

Take the Bird Dog (O-1). Fresh air is ducted to a shroud wrapped around the muffler. The muffler has studs which transfer the heat from the exhaust gases to the flowing fresh air as it passes through the shroud and is then ducted into the cabin. Any hole in the muffler is naturally going to give you exhaust fumes in the cabin.

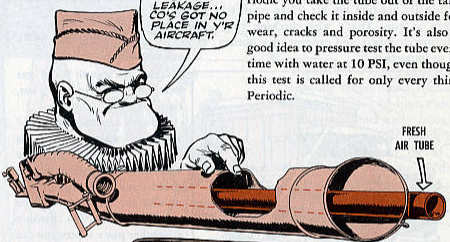


So when you pull a Periodic on the Bird Dog to check for leaks, try this for size.

You've the same problem of possible contaminated heated air if you have a Beaver (U-6). Fresh air enters the intensifier tube and is heated by the exhaust gases. Any leak in the tube will let exhaust fumes enter it and be carried right into the cabin.



That's the reason why on every Periodic you take the tube out of the tailpipe and check it inside and outside for wear, cracks and porosity. It's also a good idea to pressure test the tube every time with water at 10 PSI, even though this test is called for only every third Periodic.

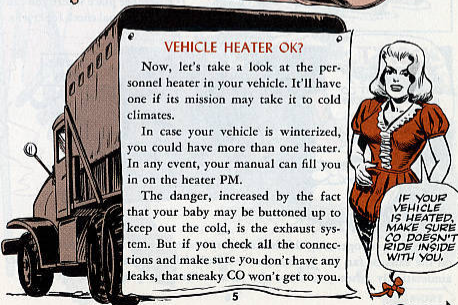


VEHICLE HEATER OK?

Now, let's take a look at the personnel heater in your vehicle. It'll have one if its mission may take it to cold climates.

In case your vehicle is winterized, you could have more than one heater. In any event, your manual can fill you in on the heater PM.

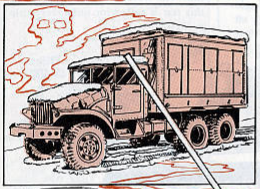
The danger, increased by the fact that your baby may be buttoned up to keep out the cold, is the exhaust system. But if you check all the connections and make sure you don't have any leaks, that sneaky CO won't get to you.



PS MORE

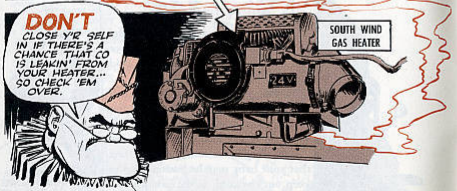
By the way, a shot engine muffler or tail pipe can also let fumes seep into a vehicle, through holes and cracks, real easy-like . . . **winter or summer.** Another point on running your engine for any length of time indoors—don't do it . . . 'taint healthy.

But it's in cold weather that your heater can dish out trouble. And, unlike an engine exhaust pipe which channels the exhaust fumes out and away from you, your heater is usually blasting hot air (clean or dirty) right at you. That's why checking combustion chambers and exhaust pipe outlets is so important.



Take the South Wind gas heater you have in a 2½ ton, 6x6 shop van.

You get a certain amount of vibration when the van is moved from place to place and the exhaust pipe coupling could crack. You might check around the weld of the pipe too. The combustion chamber is another place where you can make a visual check for cracks.



One point on operating this heater—any heater—you want to be sure to turn on the exhaust fan just in case you've a leaky heater. On some jobs this is done automatically when you shoot the juice to the glow plug to fire up.

CHECK PORTABLE JOBS

Stash that chap stick a second and let's take up a couple of mighty valuable portable heaters, like the Herman Nelsons and the M40 Slave Kit.

Your Herman Nelsons can heat up a bird, hangar, tent—almost anything. The maintenance manuals on these are, TM 10-4520-201-20 (21 Nov 63) and TM 5-4520-200-12 (15 Jan 60).

If you run 'er inside be sure you extend the exhaust stack outdoors. The stack should be high enough to keep the fumes away from the suction of the propeller intake fan.

'Course you never try to get more heat by connecting the ducts or other conduits to the exhaust stack either—that'd be askin' for it!

MORE

M40 SLAVE KIT

But when it really comes to cold weather—talkin' about 50 below—you need a heater to thaw out engines, accessories and such. Here's where your M40 Slave Kit comes into the picture. This baby puts out enough BTU's to heat a seven room house. It'll thaw out just about any piece of equipment you have. TB ORD 390 (18 Jul 52) has all the dope on it.

But, good as the M40 is, you don't want to go around trying to heat any shelters, cabs, or the inside of vehicles with it. The fuel combustion gases and the air supplied by the blowers are blown out the heater outlet together. So you've got contaminated air for real—the kind that can lay you low for keeps.

There's no doubt about it, it's combustion that lets the CO villain on the loose. So where there's fire, that's where you'll find the brute.

EYE STOVE PIPES

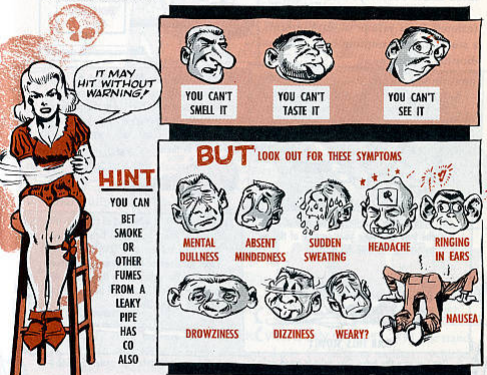
He's also in your tent where the only thing between you and the cold is a tent and, maybe, an M1950 Yukon heating stove. You want to check your chimney closely to be sure all the CO goes up and out the stove pipe—not into the tent. TM 10-735 (Feb 52) can fill you in on "old reliable."

The same careful attention to the stove pipe goes for the M1941 tent stove, like it says in TM 10-725 (19 Mar 52) . . . or any other heater you might have.

THE WHAT AND HOW OF CO

So what is carbon monoxide?

Well the Medics say it's a poison gas produced by the incomplete combustion of carbonaceous fuels. When you breathe in the stuff it goes to work in the blood cells. Like a sponge soaks up water, the blood cells soak the gas up twenty times faster than they do oxygen. Therefore, the body gets starved for lack of oxygen. If you inhale enough of it—you've had it! Even in small amounts the brute can be deadly.



HINT

YOU CAN BET SMOKE OR OTHER FUMES FROM A LEAKY PIPE HAS CO ALSO

If you have them, or notice your buddy doesn't look in the pink, get to fresh air pronto. You can do this by going outside, opening windows, and turning on fans. Then **call the Medics**, fast! This is important because treatment of this poisoning is continuous, using artificial respiration and oxygen, if needed.

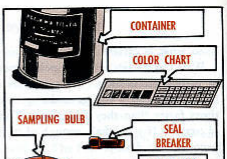
But chances are, if your equipment is in good shape you'll put this brute on the run out the exhaust pipe of any engine.

Still, if you have the **slightest doubt** about the air you're breathing, there's one positive check you can make.

MORE

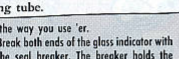
The little jewel to use is Detector Kit, Carbon Monoxide, Colorimetric, M23, FSN 6665-618-1482. The detector kit is listed in SM 3-4-6665-A37 (23 Feb 60). This kit can be used for the same purpose as the one in the Army Aircraft Organizational Maintenance A Supplemental, B, and C Tool Kits listed under FSN 6665-283-0654.

What you have in the kit is a chart (colored from yellow to dark green), a seal breaker, sampling bulb, and indicating tube.



Here's the way you use 'er.

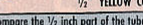
1. Break both ends of the glass indicator with the seal breaker. The breaker holds the broken glass ends until you find a place to dump them.



2. Put the partially filled end of the glass tube into the sampling bulb. Notice that the ½ inch yellow color in the center of the tube is the sealed color before you broke the tube ends. Yellow means there's no CO in there.

3. Squeeze the bulb to get rid of the air in the bulb and take your sample of the air by letting the bulb fill slowly.

4. Compare the ½ inch part of the tube with the color chart in natural light. This will tell you what per cent CO you have. Air types take two or more samples at several places in the cabin where they might suspect the brute, like around heaters, vents, and the engine firewall.

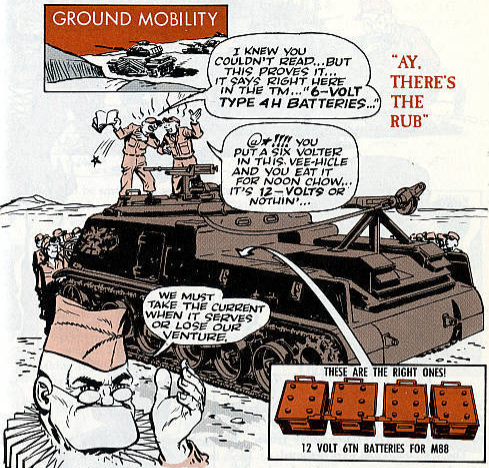


5. Don't re-use the tube. One tube is good only for one-time use. Spare tubes go under FSN 6665-276-7545.

Remember if the yellow color in your tube stays that way you've no CO. But if it has shades of yellow-green, all the way to dark green, then you're breathing the CO in varying percentages from a little to a lot . . . and any amount is too much. So you want to locate the source of the CO and get your equipment in shape—but quick.

Yessir, heaters are great little friends to help you accomplish your mission. But you don't want to cuddle up in a corner with one all by your lonesome. Snuggle up to one but don't get cozy. Otherwise you could be headed for the long . . . long . . . winter sleep.

28 END



The right battery for your M88 VTR is FSN 6140-057-2554, the standard 12-volt 6TN battery used on about 40 different military vehicles. Your authorized stockage list, TM 9-2300-223-20P (Dec 63), has this battery on page 12—but not for the M88.

Instead, the TM calls for a 6-volt Type 4H battery. This really puts a fly in the pie, because a 6-volter couldn't team up right with the 12-volters on an M88.

What prob'ly happened, the idea of a 6-volter for the M88 was picked up from the M88 supply manuals—TM 9-2320-222-20P (Apr 61) and TM 9-2320-222-35P/1 (Jun 61).

This'll all be squared away the next time they revise the three TM's. For now, just keep in focus that the 12-volt 6TN battery, FSN 6140-057-2554, is the right one for your M88 VTR load list.

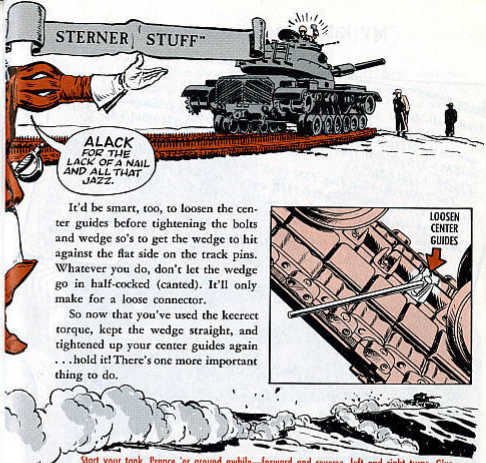
And this about sums up the story on the new end-connectors for the T97E2 track on your medium tanks and the M103-series heavy tanks.

The new connectors were designed to make it easier to remove and replace 'em from the outer side of the track. The hold-down bolt screws into the threads in the connector body instead of into the wedge, like with the old type.

Trouble is, the bolt in the new connector has a tendency to walk out of the body threads . . . and that's no good. A connector flying loose can cause all sorts of damage to man, and beast.

So latch on to a copy of MWO 9-2300-268-20/1. It gives you the poop on using a lockwasher, FSN 5310-012-1574, to help hold the bolt in place.

Be sure to put no more than 140-160 foot-pounds on the bolt when using the lockwasher, else the lockwasher'll lose its locking ability and you won't gain anything.



It'd be smart, too, to loosen the center guides before tightening the bolts and wedge so's to get the wedge to hit against the flat side on the track pins. Whatever you do, don't let the wedge go in half-cocked (canted). It'll only make for a loose connector.

So now that you've used the keerect torque, kept the wedge straight, and tightened up your center guides again . . . hold it! There's one more important thing to do.

Start your tank. Prance 'er around awhile—forward and reverse, left and right turns. Give 'er a real good work-out.

Those bolts should now be ready for a re-torque job. The wedges should've repositioned themselves while the tank was going thru its capers.

If you use the ¾-in sq-drive socket (FSN 5130-293-1411) found in your OVE list, grind 'er down per the MWO poop. Or, you might have a ½-in sq-drive socket (with 15/16-in open-end) handy and you can forget the grind-job. Take your choice.

The new connector (Part No. 10893586), bolt (Part No. 10911218) and wedge (Part No. 10893587) has no FSN. This means that their shelf life'll be short. When you run short on 'em, you'll have to use the old jobs.

You've gotta remember this info each time you get a new 8-shoe section (FSN 2530-337-6969) with these new connectors. Or if your track came with 'em, play it safe and use the lockwashers.

"MY KINGDOM FOR A HOIST"

Dear Half-Mast,

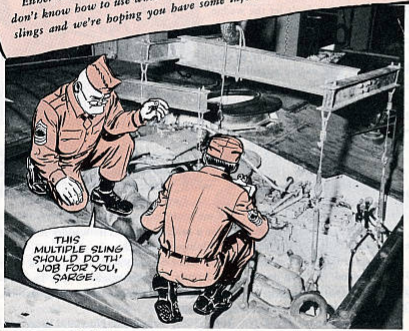
Believe me you can't safely pull the power pack on the M107 SP 175mm gun or the M110 8-in howitzer with the slings and eye bolt combination listed in TM 9-2300-216-20 (Jun 62) page 12 and shown on page 17 of TM 9-2300-216-35/1 (Jul 62).

The TM's say to use sling, FSN 4910-798-7584 along with sling, FSN 4910-473-7556, sling, FSN 4910-860-5447, and eye bolt FSN 5306-708-3672.

It took our shop a whole day to pull the pack on an M107, with these slings, and then we damaged the chassis.

Either the book OK's the wrong slings, or we got the wrong ones, or we don't know how to use what we got. We didn't get any instructions with the slings and we're hoping you have some info on 'em.

SFC R. McK.



Dear Sergeant R. McK.,

Roger. The slings listed in the -20 (Jun 62) and -35/1 (Jul 62) have been deleted. The new PP slings you're to ask for (for use on either weapon) are: Sling, power plant lifting, FSN 4910-066-7088 (10984673), and Sling, multiple leg, engine lifting, FSN 4910-078-4096 (10984679).

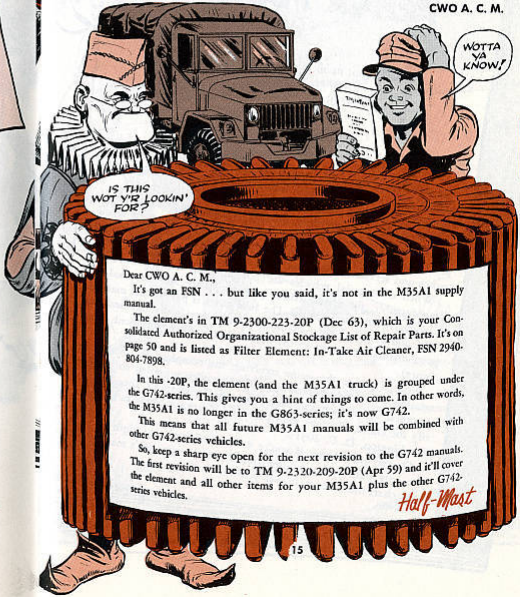
Half-Mast

"YET THERE'S METHOD IN IT..."

Dear Half-Mast,

In searching thru the parts manuals on my M35A1, G863 multi-fuel truck, I couldn't find the FSN for the air-cleaner element. Step 3 on page 61 of TM 9-2320-235-20 (Jan 62) shows the critter, so I'm sure it's in supply. Do you know its FSN?

CWO A. C. M.



Dear CWO A. C. M.,

It's got an FSN . . . but like you said, it's not in the M35A1 supply manual.

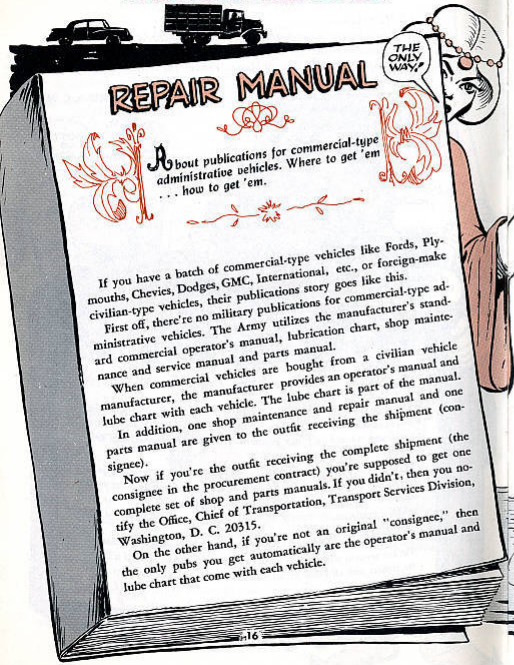
The element's in TM 9-2300-223-20P (Dec 63), which is your Consolidated Authorized Organizational Stockage List of Repair Parts. It's on page 50 and is listed as Filter Element: In-Take Air Cleaner, FSN 2940-804-7898.

In this -20P, the element (and the M35A1 truck) is grouped under the G742-series. This gives you a hint of things to come. In other words, the M35A1 is no longer in the G863-series; it's now G742.

This means that all future M35A1 manuals will be combined with other G742-series vehicles.

So, keep a sharp eye open for the next revision to the G742 manuals. The first revision will be to TM 9-2320-209-20P (Apr 59) and it'll cover the element and all other items for your M35A1 plus the other G742-series vehicles.

Half-Mast



REPAIR MANUAL

About publications for commercial-type administrative vehicles. Where to get 'em . . . how to get 'em.

If you have a batch of commercial-type vehicles like Fords, Plymouths, Chevies, Dodges, GMC, International, etc., or foreign-make civilian-type vehicles, their publications story goes like this.

First off, there're no military publications for commercial-type administrative vehicles. The Army utilizes the manufacturer's standard commercial operator's manual, lubrication chart, shop maintenance and service manual and parts manual.

When commercial vehicles are bought from a civilian vehicle manufacturer, the manufacturer provides an operator's manual and lube chart with each vehicle. The lube chart is part of the manual.

In addition, one shop maintenance and repair manual and one parts manual are given to the outfit receiving the shipment (consignee).

Now if you're the outfit receiving the complete shipment (the consignee in the procurement contract) you're supposed to get one complete set of shop and parts manuals. If you didn't, then you notify the Office, Chief of Transportation, Transport Services Division, Washington, D. C. 20315.

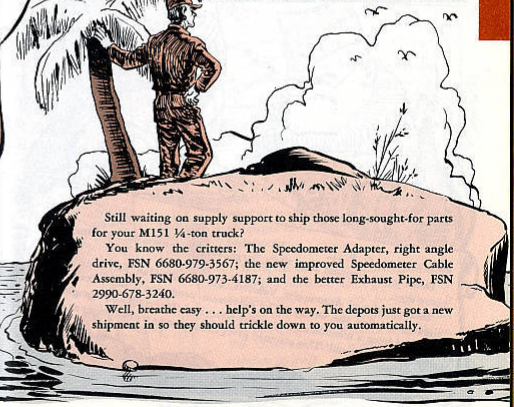
On the other hand, if you're not an original "consignee," then the only pubs you get automatically are the operator's manual and lube chart that come with each vehicle.

So where do you get the shop maintenance and service and parts manual?

You get 'em from the manufacturer of the vehicle, or from the manufacturer's local dealer.

How? Through local purchase. Your go-ahead is AR 715-30. This AR covers local and regional purchases of civilian type off-the-shelf items.

This is the only way to get those pubs.



Still waiting on supply support to ship those long-sought-for parts for your M151 ¼-ton truck?

You know the critters: The Speedometer Adapter, right angle drive, FSN 6680-979-3567; the new improved Speedometer Cable Assembly, FSN 6680-973-4187; and the better Exhaust Pipe, FSN 2990-678-3240.

Well, breathe easy . . . help's on the way. The depots just got a new shipment in so they should trickle down to you automatically.

"THE DIE IS CAST..."

Dear Half-Mast,

A couple of us here in the motor pool are having an argument. We want to know what percent of water to mix with the ethylene glycol to get the greatest amount of antifreeze protection for our trucks.

Do you get more protection the more ethylene glycol you add or is there such a thing as overdoing it?

Sgt G. F. U.

Dear Sergeant G. F. U.,

Don't try to outguess your TM's, Sarge. They'll give you the right answer every time.

In Principles of Automotive Vehicles, TM 9-8000 (Jan 56), page 122, para 85 we find the word—"The maximum protection from freezing is obtained from a solution of 40 percent water and 60 percent ethylene glycol antifreeze compound. This mixture gives protection at temperatures as low as –65° F."

The mixture is what counts for protecting your cooling system in cold weather. Pure ethylene glycol will protect down to about zero; water freezes at +32° F. Various mixtures of the two protect down to various temperatures. The 60 percent glycol and 40 percent water mixture gives the most protection—down to around –65° F.

TB ORD 651 (Apr 64) is the bible for antifreeze info. What it says goes, regardless of what you might read other places.

It also gives you the dope on adding corrosion inhibitor, FSN 6850-664-7123, of which you use five ounces for every ten quarts of water. You dissolve the corrosion inhibitor in warm water and pour it into the radiator while you idle your engine.

You use this same proportion, five ounces for every ten quarts of water, whether you add ethylene glycol or whether you don't. The ethylene glycol is not counted in figuring how much corrosion inhibitor to add.

After you've prepared the ethylene glycol antifreeze solution like it says to on the container, test with a hydrometer (antifreeze tester) to be sure you've figured the freezing point of the solution right. TM 9-2858 (May 45) pages 72-74 tell you how to work the hydrometer.

If you use arctic grade antifreeze—which you will if you think you're going to run into temperatures below –55° F—just pour it in your radiator as it comes from the can. You don't add either water or an inhibitor. The arctic antifreeze is ready-mixed and complete in itself.

Half-Mast

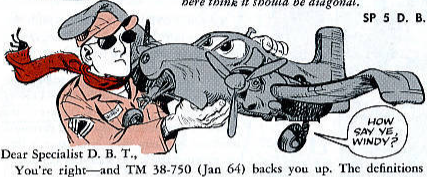
"AND MARK YOU WELL"

Dear Windy,

What symbol should be used on a three-day runup? It's an inspection, because you wouldn't just run up the engine without checking the same things you check on a daily inspection.

I say it should be carried on a dash, others here think it should be diagonal.

SP 5 D. B. T.



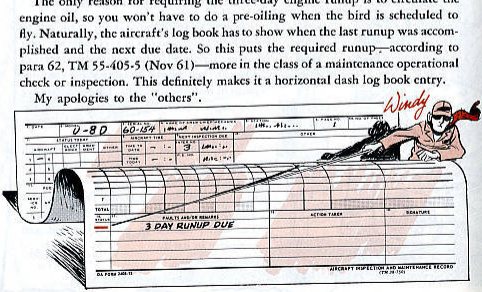
Dear Specialist D. B. T.,

You're right—and TM 38-750 (Jan 64) backs you up. The definitions of both symbols on page 4-2 point out the big difference between a dash and a diagonal type entry.

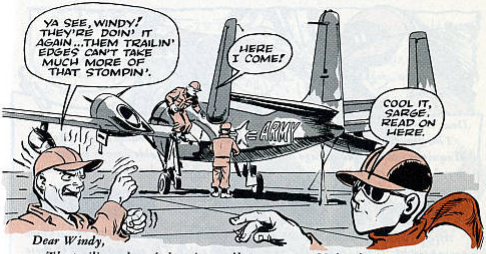
A diagonal is used where a **fault** exists on the equipment. The fact that an engine is in flyable storage does not mean anything's wrong with the engine.

The only reason for requiring the three-day engine runup is to circulate the engine oil, so you won't have to do a pre-oiling when the bird is scheduled to fly. Naturally, the aircraft's log book has to show when the last runup was accomplished and the next due date. So this puts the required runup—according to para 62, TM 55-405-5 (Nov 61)—more in the class of a maintenance operational check or inspection. This definitely makes it a horizontal dash log book entry.

My apologies to the "others".



"GIVE HER GOOD WATCH, I PRAY YOU"



Dear Windy,

The trailing edge of the wing walkways on our Mohawks (OV-1) have been taking it on the chin. Some maintenance types are planting their brogans on this edge when they mount or dismount the bird wing.

Is there any way we can prevent this type of damage?

SP 4 R. E. A.

Dear Specialist R. E. A.,

There is.

The 2-in black border around the walkways should go **all-around**. For an example, take a peek at TB AVN 7 (9 Sep 63), "Painting and Marking of Army Aircraft." Pages 89 and 91 show the all-around border for the Seminole (U-8), but the same principle goes for the Mohawk. So keep an eyeball peeled for a revision to TB AVN 7, pages 135-137.

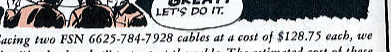
Meanwhile, ask your CO for the green light to add the 2-in black border at the trailing edge. Then maintenance types will be encouraged to step past the trailing edge, even if it means using a maintenance stand to reach the walkway.

Windy

"YOU MUST ACCOMPLISH AS YOU MAY"

Dear Windy,

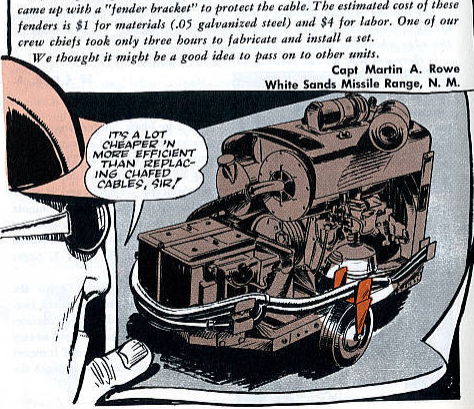
This generator set issued for aircraft organizational maintenance tool kits comes ill equipped for proper storage of the power cable. The cable droops just enough to rub against the wheels, and the insulation is damaged each time the generator's moved.



After replacing two FSN 6625-784-7928 cables at a cost of $128.75 each, we came up with a "fender bracket" to protect the cable. The estimated cost of these fenders is $1 for materials (.05 galvanized steel) and $4 for labor. One of our crew chiefs took only three hours to fabricate and install a set.

We thought it might be a good idea to pass on to other units.

Capt Martin A. Rowe
White Sands Missile Range, N. M.



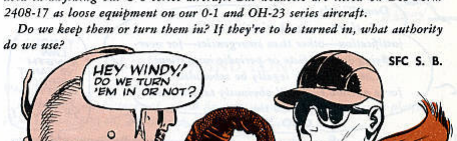
"UNTO THY HEAD AND BOSOM YET..."

Dear Windy,

DA recently published a TWX stating that H-101/U headsets would not be used in anything but U-8 series aircraft. But headsets are listed on DA Form 2408-17 as loose equipment on our 0-1 and OH-23 series aircraft.

Do we keep them or turn them in? If they're to be turned in, what authority do we use?

SFC S. B.



Dear Sergeant S. B.,

Keep 'em! Since the APH-5 helmet is only authorized as a personal item to aviators and crew members assigned to an aircraft, there'll never be enough available for other types of personnel.

These other types, of course, are passengers, observers, line mechanics authorized to taxi aircraft and avionics people making equipment checks.

Eventually these headsets may become TOE or TA items, at which time you'll be able to turn in all headsets excess to your TOE or TA allowance.

Windy

"MUCH ADO ABOUT SOMETHING"

If you're a part of the hi-altitude flying game, better pay attention to Change 2 (4 Mar 64) to MWO 10-8415-202-20/1. This MWO is the authorization to install oxygen mask retention devices on APH-5 helmets used by Mohawk (AO-1) crews. The change extends the modification to Caribou (CV-2B) crews, establishes a cutoff date of 1 Nov 64 and requires all Mohawk and Caribou units to report this modification on DA Form 2407.

IT'S A LOCAL DECISION, BUT . . .

"BETTER TOO SOON THAN TOO LATE"

Dear Mr. J. E. M.,

Like TB AVN 23-67 (Dec 62) and the new series of PM checklists all say: "The inspection intervals . . . **should not** be exceeded."

The rule used to read "should never" be exceeded. But since some types don't appreciate tight regs, the new wording was put in to allow a maintenance officer some flexibility.

So the decision to authorize an extension of an inspection interval belongs to the unit's maintenance officer. He's the only one, with the CO's approval, who can make that overtime mission legal . . . and he'll base his decision on past maintenance experience with that particular flying machine.

Next to safety of flight comes protection of the aircraft itself. There are situations, such as combat or severe weather forecasts, which would encourage a maintenance officer to justify an extension and authorize overflying the inspection due time in order to save lives or the aircraft.

However, most other times the question of extending inspections need never come up. Para 3c of TB AVN 23-67 says a maintenance officer can increase the scope and frequency of his maintenance and inspections to insure safe operation whenever unusual mission requirements rear their heads.

This means that when operations types forecast a heavy operational load, you can pull your intermediate or periodic inspections early on those birds **approaching their inspection due time.**

The wording should be a little easier to follow in a future revision to this TB.

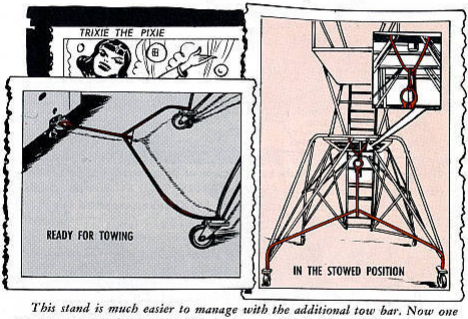
Windy

THE SAFE WAY . . .

"THE SHORT AND LONG OF IT"

Dear Windy,

Here are some pictures of a field fix on a crew-chief maintenance platform, FSN 1730-628-8146, authorized for CH-37 helicopter units.



This stand is much easier to manage with the additional tow bar. Now one man can steer and maneuver this stand around helicopters without danger of damaging rotor blades or fuselage skins. It also lends itself well to towing up and down the maintenance line.

Our best estimate of cost is about $11.50 for tubing and bolts, and it took us about six manhours to construct.

By the way, the Incentive Awards Committee here has adopted this idea.

ERDA AVN Section (Army)
White Sands Missile Range, N.M.

(The Aviation Section has a right smart idea here. Maybe units with other types of aircraft would be interested in this field fix, too—Windy.)

"SUIT THE ACTION TO THE WORD"

How good is your memory on listing certain condition components on a DA Form 2408-16?

Right-good, you say!

Fine. A sharp memory of what's in TB AVN 23-65 (Nov 63) "Aircraft Condition Components Requiring Historical Data" goes a long way toward better record keeping. But it's not enough. You may not be aware of changes to the basic pub unless you crack the pub binder.

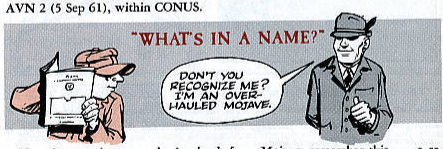
Take Change 1 (26 Mar 64) to TB AVN 23-65. In it you'll find that a coupla components have been added to the list . . . like the carburetor for the Beaver (U-6) and the tail rotor blade for the Choctaw (CH-34). There're also two items taken out—the fuel boost pump on the Otter (U-1) and the axial piston hydraulic pump on the Shawnee (CH-21).

So, when you don't find a component in the Time Change and Fatigue Life lists of your maintenance pub, be sure to eye TB AVN 23-65—every time.

"AS YOU LIKE IT"

If your bird's been singin' the blues because of an over-rich diet of 115/145 AvGas, stop the music! Message AMSSM-M3-1115 (5 Mar 64) says you can now use either the high-grade or the low-grade 80/87 juice, as spelled out in TB AVN 2 (5 Sep 61), within CONUS.

"WHAT'S IN A NAME?"



If you're carrying around a log book for a Mojave, remember this . . . a remanufacture job is nothing more than a super overhaul combined with a colossal modification. The tail number doesn't change.

So when it comes to recording modifications on your bird's DA Form 2408-5, continue to list all the old A model Modifications, too—even though your bird is now officially called a CH-37B. The only exception is where an old modification was peculiar to the A model only.

"'TIS A CONSUMMATION..."

You've heard the bit about a mechanic "not being able to do a job unless he has the right tools." It's never truer than when he tries to check the torque on the Choctaw (CH-34) carburetor holddown nuts. Chap 2, Sect IV, Para 4-69 of TM 55-1520-202-20 (6 Dec 63) calls for checking the torque of 275-300 inch-pounds.

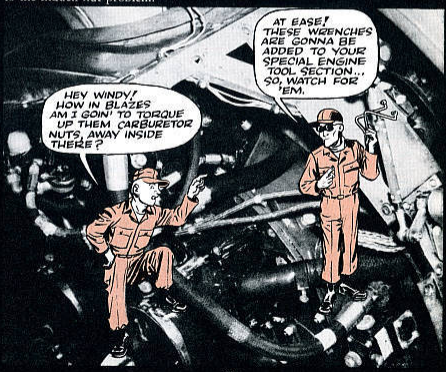
So mechs everywhere have faced up to the problem of shaping open-end wrenches to fit those hidden carburetor nuts.

With a locally-made wrench, however, the best they could do was to make sure the nuts were good and tight. There wasn't any way to connect a torque wrench into the deal.

The carburetor wrenches they needed to check the torque, FSN 5120-674-0346 and FSN 5120-674-0347, were only listed in the special engine tools section of TM 55-1520-202-35P (11 Oct 63).

The trick was to have the wrenches added to the special engine tools section of the -20P, via the DA Form 2028 route . . . and that's just what's happening.

So, keep an eye peeled for the newest change to the parts pub, and the solution to the hidden nut problem.



THE REPORTABLES

Have you seen the new AR 711-140 (list of reportable items) dated Jun 64? It's distributed all the way down to you company and battery types.

PRIME STOCK

For the name, FSN, commodity command and other identification dope you may need, try SB 725-1 (17 Feb 64), "Primary Weapons and Equipment." It supersedes SB 5-84 (Mar 61), SB 9-209 (7 Jun 62) and SB 11-228 (Jul 62).

A selected list of recent publications of interest to Organizational Maintenance Personnel. This is a list compiled from recent Adjutant General's Distribution Center Bulletins. For complete details see DA Pam 310-4 with latest changes.

TECHNICAL MANUALS

TM 3-4240-219-15, Jun Mask, Protective, Aircraft, M24.
TM 5-270, May Cableways and Tramways.
TM 5-3805-201-20P, May Loader, Scoop Type: Frank G. Hough Model H-90CM.
TM 5-4110-208-20, Jun Refrigeration Unit, Army Models SPE 34 and SPE 34a.
TM 5-4300-204-65C, Jun Compressor, Rotary, 210 CFM, 100 PSI, Trk-Mtd.
TM 5-4310-229-65C, Jun Compressor, Rotary 210 CFM, 100 PSI, Trk-Mtd.
TM 5-6100-201-65C, Jun Gen Set, Elec, Port, 5 KW, G.E.D. 120/208V, 60 Cycle, Skid-Mtd.
TM 5-6665-202-15, Jun Detecting Set, Mine Aural Indication: Portable Transistorized: w/Case (Paton Model P153) (Oregon Technical Products Model MD-M).
TM 9-1005-249-14, Jun Rifle, 5.56 MM, M16 and Rifle, 5.56-MM, XM16E1.
TM 9-1055-201-14, May Launchers, Rocket, 3.5-Inch M20A1 and M20A1B1.
TM 9-1345-200, Jun Land Mines.
TM 9-1410-202-13P/1, Jun Sergeant, Operation & Maint.
TM 9-1430-250-12P/3/2, Jun Nike-Herc, Nike-Herc (Imp), Ground Con Equip.
TM 9-1430-268-12/4, Jun Nike-Herc, Nike-Herc (Imp), Training Devices (Alt).
TM 9-1430-503-12P/1, Jun Hawk, Ground Control Equip, USAR: None.
TM 9-1430-503-12/2, Jun (CMH) Hawk, Ground Con Equip.
TM 9-1450-250-12, Jun Nike-Herc, Nike-Herc (Imp), Spt & Svc Equip.
TM 9-1550-201-15, Jun Target Mdh, Operation & Maint.
TM 9-4910-422-12, Jun All A/C.
TM 9-4935-250-15, Jun Nike-Herc, Nike-Herc (Imp), Test Equip (Grd).
TM 9-4935-501-12P/1, Jun Hawk, Test Equip (Grd).
TM 9-4940-313-12P, Jun Sergeant, Test Equip (Grd).
TM 10-252, Jun Loading Insert Containers & Cargo Transporters.
TM 10-500-22-3, Jun Rigging M36SP 90MM Gun.
TM 10-500-56-3, Jun Rigging 2½-Ton Utility Trailer.
TM 10-500-64, Jun Airdrop—Rigging Fabric, Collapsible, 500 Gal Liquid Fuel Drum.
TM 11-5230-200-12P, Jun Trucks V-18A/MTQ and V-18B/MTQ.
TM 11-5820-505-20P, Jun Radio Terminal Set AN/MRC-68.
TM 11-5820-517-12P, May Allocation Chart, Antenna AT-903/G.
TM 11-5820-519-12P, Jun Radio Terminal Set AN/TRC-90B.
TM 11-5830-236-20P, May Public Address Set AN/UII-4.
TM-11-6730-210-20P, May Projection Set, Motion Picture Sound AS-7A.
TM 55-1100-375-12-1, Jun CH-37.
TM 55-1520-201-10CL, May UH-19.
TM 55-1520-204-10CL, May OH-13.
TM 55-1520-209-20P, Jun CH-47.
TM 55-1520-211-20P, May UH-1.
TM 55-1940-201-12P, May Marine.

MODIFICATION WORK ORDERS

MWO 55-1510-206-34/52-34/61, Jun CV-2.
MWO 55-1520-202-34/6-34/18, Jun CH-34.
MWO 55-1520-203-34/3, Jun CH-21.
MWO 55-1520-209-20/12-34/27, Jul CH-47.
MWO 55-2900-200-40/1, Jul All Fixed & Rotor Wing.
MWO 55-8115-200-40/2, Jun All Rotor Wing.

TECHNICAL BULLETINS

TB 9-4935-204-25/1, Jun Little John, Mtl Operation & Maint.
TB 55-1510-203-34/1, Jul U-6.
TB 55-1510-204-34/6, Jun OV-1.
TB 55-1510-206-20/16-20/17-20/18-20/20 & -20/21, Jun CV-2.
TB 55-1510-206-34/13-34/14, Jun CV-2.

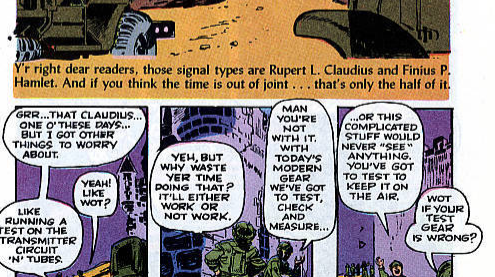
MISCELLANEOUS

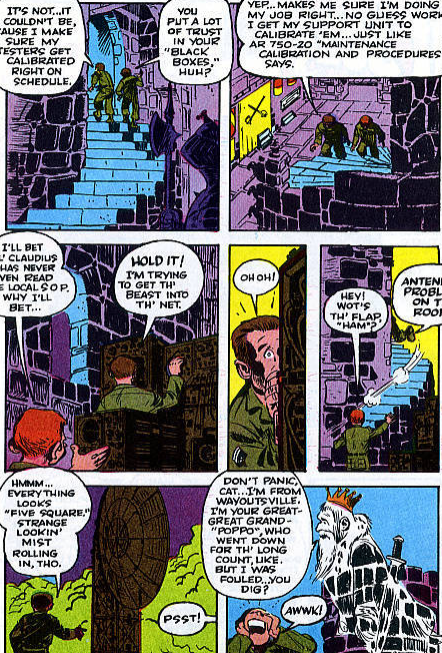
AR 711-140, Jun Logistics Responsibilities, Functions and Procedures.
Da Cir 750-3, Jun Preventive Maintenance Services for Army Material.
DA Pam 310-4, May TM Index.
LO 3-3805-231-15, Jun Scraper, Earth Moving, Towed: (Euclid Model 58SH-G).
LO 5-4310-253-15, Jun Compressor, Air: Reciprocating, 15 CFM, 175 PSI, (Champion Pneumatic Model OEH-454-ENG-1).
LO-10-3930-234-30, May Truck, Lift, Fork,(Baker Model FJF-040, Army Model MHE-188).
LO 55-1940-201-12, May Marine.
LO 55-3950-206-12, May Marine.
SC 1090-93-CL-E03, Jun Equipment Repair Set, Snipescope.
SC 2090-93-CL-E03, Jun Repair Kit, Plastic Boat.
SC 3830-93-CL-E06, Jun Pneumatic Tool Outfit: 210 CFM; Trailer Mounted.
SC 5410-93-E78, Jun Bridge, Floating: Aluminum: Foot.
SC 6675-93-CL-E07, May Camouflage Net, Sale Emp Aircraft.
SC 6675-93-CL-E29, Jun Surveying Set, Artillery Fire Control: 4th Order.
SM 11-4-5180-826, Jun Tool Kit TK-61/SR.
SM 11-4-5180-827, Jun Tool Kit, Photographic Radar TK-116/GF.
TB AVN 7, C2, May Painting.
TB SIG 265, Jun Lubrication of Teletypewriter Equipment.

JOE'S DOPE

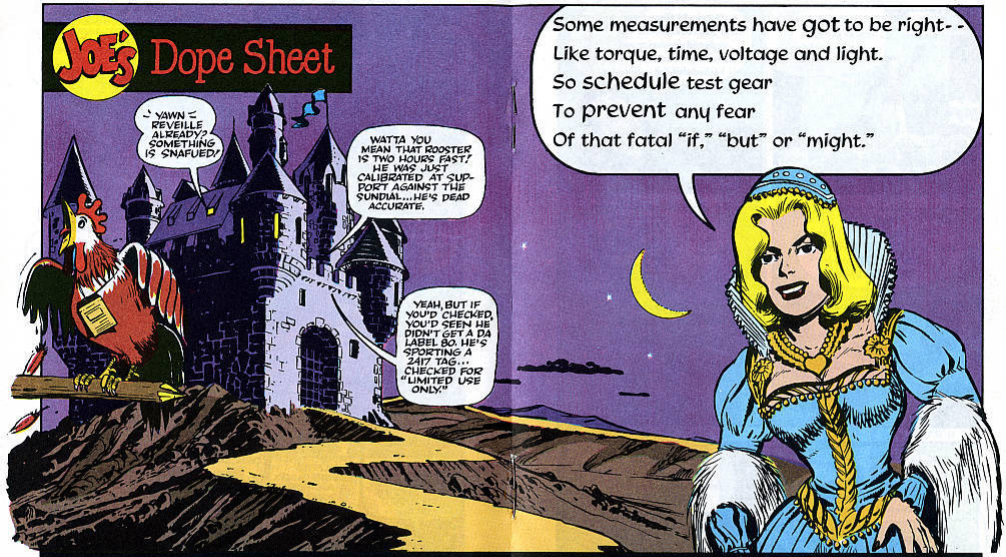
MEASURE FOR MEASURE . . . OR SOMETHING LIKE THAT.

Y'r right dear readers, those signal types are Rupert L. Claudius and Finius P. Hamlet. And if you think the time is out of joint . . . that's only the half of it.




IT'S NOT...IT COULDN'T BE, 'CAUSE I MAKE SURE MY TESTERS GET CALIBRATED RIGHT ON SCHEDULE.
YOU PUT A LOT OF TRUST IN YOUR "BLACK BOXES," HUH?
YEP...MAKES ME SURE I'M DOING MY JOB RIGHT...NO GUESS WORK. I GET MY SUPPORT UNIT TO CALIBRATE 'EM...JUST LIKE AR 750-20 "MAINTENANCE CALIBRATION AND PROCEDURES" SAYS.
I'LL BET OL' CLAUDIUS HAS NEVER EVEN READ THE LOCAL SOP. WHY I'LL BET...
HOLD IT! I'M TRYING TO GET TH' BEAST INTO TH' NET.
OH OH!
HEY! WOT'S TH' FLAP "HAM"?
ANTENNA PROBLEMS ON TH' ROOF!!
HMMM... EVERYTHING LOOKS "FIVE SQUARE." STRANGE LOOKIN' MIST ROLLING IN, THO.
PSST!
DON'T PANIC, CAT...I'M FROM WAYOUTSVILLE. I'M YOUR GREAT-GREAT GRAND-"POPPO", WHO WENT DOWN FOR TH' LONG COUNT, LIKE. BUT I WAS FOULED...YOU DIG?
AWWK!

Next a.m. about 0945 hrs . . .



WE HAVE THE WORLD'S BEST EQUIPMENT ... *Take care of it*

IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BULLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.


ON WITH THE PLAY...
Odds Bodkins! Yon testing devices are not true unto themselves . . . I fear . . .
HUH!
WOT?
. . . something is rotten in Denmark! Gaze upon these sick, sad, abused and neglected measuring and testing devices . . . and none yet scheduled for calibration.
Alas . . . . . poor equipment . . . I knew them well, Horatio, when they were certified accurate by your support.
And! Wot is this I see before me? Unreadable calibration labels (DA label 80) . . . and they are not attached to the item they certify . . . woe is unto me.
But . . . I have been told this meter is accurate, but . . . gaze upon this expired calibration label . . .
Bah!
'Tis a tale told by an idiot . . . full of sound and fury, signifying nothing . . . but poor PM.


Double bubble, toil and plenty o' trouble will result if you don't request calibration on DA Form 2407 and enter the service on DD 314 when checks completed.


HUH? HEY! IT SOUNDS LIKE THEM ACTOR TYPES ARE HECKLIN' ME AND MY PM PROCEDURES.
HEY! SHADDAP UP THERE.


Hark villain! If the shoe fits, wear it... and woe to the hand that ruined this costly equipment.


So, fool... take to your hand... a DA Form 2407 and beseech yon support to provide this poor, poor, unloved gear with new calibration labels.


HE IS TALKING ABOUT ME!
SHADDAP!
QUIET!

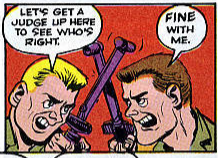

Confusion now hath made this your masterpiece... so listen well...


So that if a man's PM is bad, it will not improve by burning.
HOLD IT! I'VE HAD IT... HAMLET, YOU RAT... WHERE ARE YOU?


MAKE AN EIGHT-BALL OUT OF ME IN FRONT OF THE MEN, HUH? I'M GONNA WHUP IT TO YA.
OK... BUT I DON'T THINK YOU KIN CUT IT...


GLAD YOU SAID THAT! HERE...CATCH... I'M GONNA PROVE IT, ONCE AND FOR ALL...


GRRR
GRRR


LET'S GET A JUDGE UP HERE TO SEE WHO'S RIGHT.
FINE WITH ME.

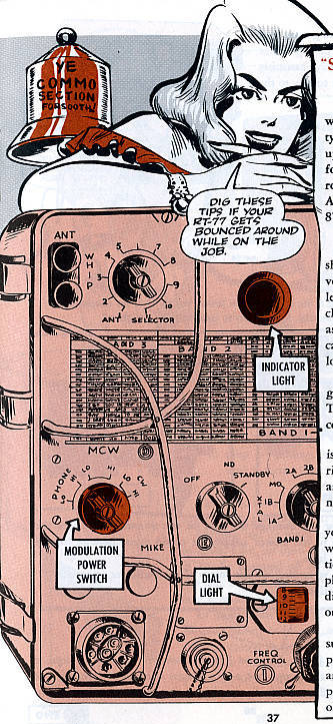

WOW! IS THAT OFF IN FOOT POUNDS... CLAUDIUS!


CUT!
WRAP IT UP! CALIBRATION TRAINING FILM... SEVENTEEN MINUTES.
WOT SEVENTEEN MINUTES...Y'R TWO MINUTES SHY.


ARE YOU KIDDIN' I JUST HAD THIS TIMER TESTED.
AGAINST WOT?


AGAINST TH' CHRONOMETER DOWN AT REPAIR.
BIG DEAL! DID YOU NOTICE THE DATE ON THE CALIBRATION LABEL?


HEH, HEH! AS SOME TROOP ONCE SAID, "WHAT FOOLS THESE MORTALS BE".



"SO CATCH THE NEAREST WAY"

Vibration, moisture, the wrong angle and a natural-type "blackout" can work up some unnecessary sweat for you with the RT-77 receiver-transmitter of your AN/VRC-34 or AN/GRC-87 radio sets.

But—they don't have to. F'rinstance, the shake-shake-shake of a moving vehicle is enough to jar the lens of the indicator light clear off the transmitter sub-assembly. In the least, you can expect the lens to work loose.

Natcherly, the lens can get either lost or broken. That's where the sweat comes in.

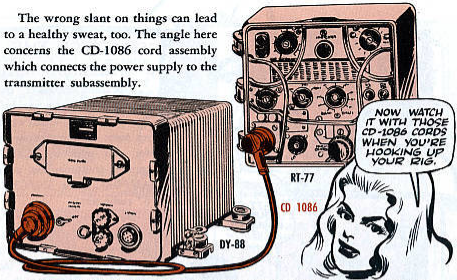
The simplest thing to do is reach back after a long ride, tighten the lens holder, and forget it . . . until the next ride. No sweat.

'Nother bit that may bug you is the dial light, like when you flick the modulation power switch to the phone (voice) position, the dial light pulls the "blackout" act.

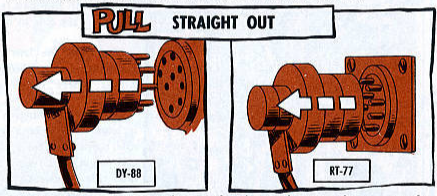
Relax. The light's not supposed to go on in that position. It's for the MCW and CW positions (after you push the dial light switch, of course).

MORE

The wrong slant on things can lead to a healthy sweat, too. The angle here concerns the CD-1086 cord assembly which connects the power supply to the transmitter subassembly.



The connector on each end of the cord should be pushed straight in to the receptacles on the power supply and the transmitter. And . . . they've gotta be pulled straight out.

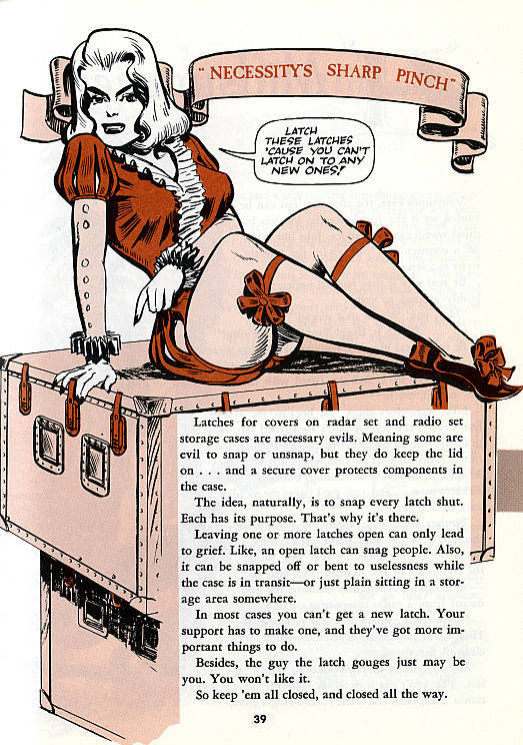


A half-cocked connector can damage the pins on the transmitter . . . or the connector head that goes to the power supply. It could even damage the insulators the male ends go into.

As a wrap-up consider wrapping up the joints of the radio set's antenna . . . after you assemble the sections.

Moisture seeps into the joints, like you know. However, a strip of tape at the right spots keeps the dewdrops out and prevents corrosion, freezing and other conditions that contribute to binding and poor transmission and reception.

END



Latches for covers on radar set and radio set storage cases are necessary evils. Meaning some are evil to snap or unsnap, but they do keep the lid on . . . and a secure cover protects components in the case.

The idea, naturally, is to snap every latch shut. Each has its purpose. That's why it's there.

Leaving one or more latches open can only lead to grief. Like, an open latch can snag people. Also, it can be snapped off or bent to uselessness while the case is in transit—or just plain sitting in a storage area somewhere.

In most cases you can't get a new latch. Your support has to make one, and they've got more important things to do.

Besides, the guy the latch gouges just may be you. You won't like it.

So keep 'em all closed, and closed all the way.

A Midsummer Night's Dream ... *Maybe*

Sometimes even the simplest jobs can be fouled up if the Joe doing the job lets his mind wander off someplace. Jobs like takin' off a connector . . . or givin' the finishin' twist to a screw.

Be real nice if they had an understandin' buddy around to yell:

"Hey, you! Watch that screw!"

Or . . . "Watch it, Bing! You'll lose the ring!"

Be extra real nice if a wide-awake buddy were around when those sleepy-time boys were workin' with the H-138/U handset (used with the new FM radios, etc.).

Like, some Joes think just because the H-138 has screws, the screws gotta be turned. So, they grab the nearest gadget (even a screwdriver, sometimes), and turn. 'Twouldn't be too bad if they stopped if the screw were snug, but they give it an extra turn . . . and, crac-c-c-k! goes the molded part of the handset.

'Nother bit: With their mind on something else, some Joes don't even notice it when the rubber moisture seal ring inside the connector of the headset cord falls out —or dangles—when they remove the connector from a radio component or such.

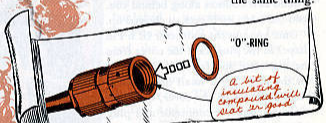
Maybe it snagged on the audio jack or somethin'. Then again, maybe it worked loose when they were cleanin' the connector.

Anyway, when they find out it's missin', it's too late. You can't get a new one (moonlight requisitionin' excepted), and if the rubber ring's gone,

moisture and water can seep into the contact points of the connector and jack.

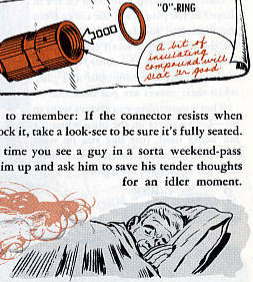
No need to elaborate on what that stuff does. A dab of insulating compound (FSN 5970-621-0139) on the ring will help it slip off and on the connector easy-like . . . and keep it from snagging. The compound also helps the connector to seat right and saves the bayonet pins from being sheared off when you lock the connector in place.

If you don't have the compound, a moistened finger applied to the ring'll do about the same thing.



A point to remember: If the connector resists when you try to lock it, take a look-see to be sure it's fully seated.

So-o-o, next time you see a guy in a sorta weekend-pass trance, wake him up and ask him to save his tender thoughts for an idler moment.



"THE UNKINDEST CUT OF ALL"

About all two wrongs ever do is make one real big wrong.

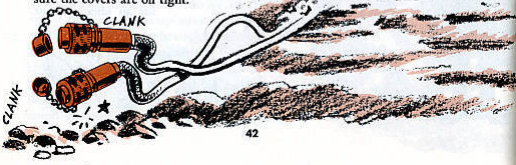
Take a power cable—the kind you find here, there and everywhere at a missile site—as a f'rinstance. It's bad enough when you don't use a cover on the connector when it's not hooked up to a plug. But when you drag the connector along the ground like it's an old piece of rope—oy, yoy.

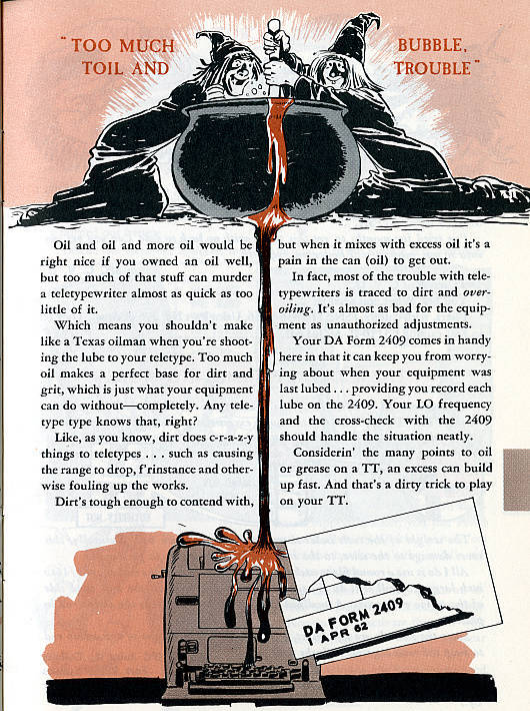
When you do the dragging with the cover off the connector, dirt and other junk can get in the connector. And it takes a first class beating.

OK . . . so maybe the dirt and stuff stays outside the connector as you pull it across the ground with the cover on. But the connector still gets knocked around as it bounces along behind you. And the cable itself gets all chewed up.

Once you put the connector (if it's in shape) in the plug, take the cover from the connector and fasten it to the one for the plug. It's a small thing, but it keeps dust out of the cover, dust that could get into the connector and plug when their covers are put back on.

That's something you always want to do—keep a cover on the plug when it's not being used, just like you do with the cover for the connector. And make sure the covers are on tight.





Oil and oil and more oil would be right nice if you owned an oil well, but too much of that stuff can murder a teletypewriter almost as quick as too little of it.

Which means you shouldn't make like a Texas oilman when you're shooting the lube to your teletype. Too much oil makes a perfect base for dirt and grit, which is just what your equipment can do without—completely. Any teletype type knows that, right?

Like, as you know, dirt does c-r-a-z-y things to teletypes . . . such as causing the range to drop, f'rinstance and otherwise fouling up the works.

Dirt's tough enough to contend with, but when it mixes with excess oil it's a pain in the can (oil) to get out.

In fact, most of the trouble with teletypewriters is traced to dirt and *overoiling*. It's almost as bad for the equipment as unauthorized adjustments.

Your DA Form 2409 comes in handy here in that it can keep you from worrying about when your equipment was last lubed . . . providing you record each lube on the 2409. Your LO frequency and the cross-check with the 2409 should handle the situation neatly.

Considerin' the many points to oil or grease on a TT, an excess can build up fast. And that's a dirty trick to play on your TT.

"WE'LL PLUCK A CROW TOGETHER"

Dear Half-Mast,

SM 11-4-5180-R08 (Dec 61) and PS 109 list "Pliers, w/cutters, Utica #296 or equal, 6½-inch," etc., as a component of Radar and Radio Repair Kit TK-87/U. There's no FSN.

I've tried for months to get this tool—with no luck to date. Can you get any info so our support will honor my request?

SFC C. V. O.

Dear Sergeant C. V. O.,

You bet. What you need is:

Pliers, with cutters, FSN 5110-856-5646, Utica Part No. 296 or equal. They're in FSC catalog C5110-IL-A (Jul 64).

Half-Mast

"THESE DREARY BUMPS—NO MORE"

Dear Editor,

To keep our RL-159/U reels from bouncing and rolling while on our wire trucks, I bolt three of them together with excess rods from ammo boxes, like so:

The weight of the reels holds them steady in the truck bed. Naturally, this saves damage to the wire, to the reel, and possible injury to personnel.

All I do is use a round file to make three of the six holes in the reel about 1/16th inch larger (a drill will do the same thing), and then I cut the bolt head side of the ammo rod to size. A modified "U" on the cut side keeps the ammo rod in place.

Since the threads are left intact, I just use the butterfly nut of the ammo rod to keep the reels together. Works fine!

SFC Juan A. Collazo
Fort Riley, Kansas

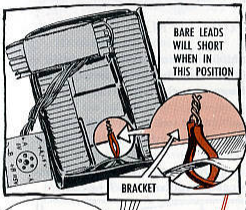
(Ed Note—Sounds like a winner to me, and unused ammo rods are easy to come by.)

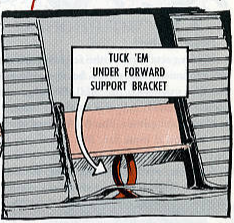
THERE'S TIME ENOUGH FOR THAT

Right you are. There's always time to check the lead-in wires of your radiosonde battery before you add water. With the newer Ray-O-Vac jobs, a check is a must.

Those bare leads from the side cells gotta go under the middle cell's support bracket . . . or you'll short your BA-259 when you add water. Net result will be a burned out battery.

Before the situation balloons away from you, lift the middle cell assembly





and peek under it. If those two side cell leads are laying on the forward cardboard support bracket, you just saved yourself a battery. Quick-like tuck 'em under the bracket so's the middle cell can't touch 'em.

The cardboard bracket acts as an insulator and keeps the cell from shorting.

Now you can activate the cells with water, and may your weather be clear and warm.

Like you know, the batteries are used in radiosondes AN/AMT-2A, -4B, -12, -15, and others.

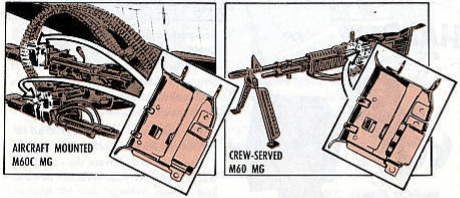
"WITH HONEST DOUBT PROCEED"

Heads up, hey!

If you gotta replace the feed tray on the M60C machine gun in your chopper's M6 armament subsystem, be almighty sure you don't foul up by putting in the one that goes with the M60. Else that airborne chatterbox's gonna make a dead silence when friend pilot needs 'er most.

Here's the pitch: The M60's feed tray will fit real well in the M60C . . . and the weapon'll even fire. But, sooner or later it'll jam up the cartridge links and clam up that cheerful chit-chat.

So, make with the double-take. Both trays go by the same name (Tray Assembly, Cartridge Feed) but they look different and get different stock numbers.



The M60C feed tray looks like this and comes with these numbers: (7792096) . . . FSN 1005-987-9682.

The M60 tray looks like this and fidgets to these digits: (7269308) . . . FSN 1005-608-5276.

"TAMING OF THE SHREW"

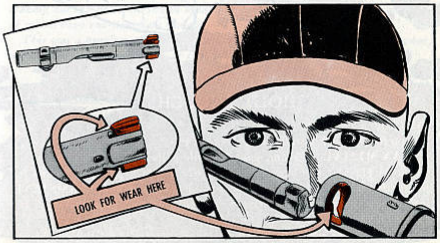
It's elementary, man!

One of the basic reasons for ruptured cartridges in small arms is an increase in headspace. And the M60 or M60C machine gun is no exception.

What can happen, after your machine gun fires umpteen rounds, is that the rear of the bolt locking lugs begin to wear. The barrel socket also comes in for its share of wear, where the locking lugs seat. The result is an increase in headspace, and boocoo cartridge ruptures.

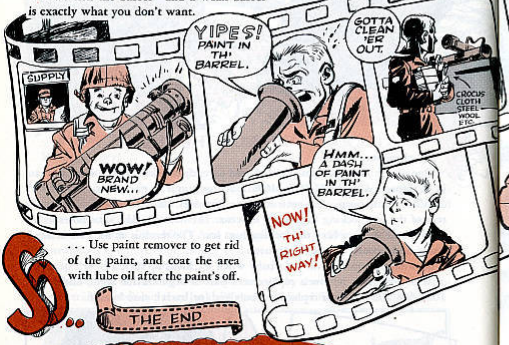
So what do you do with your baby when she kicks up such a fuss?

Well—the bolt is now a replacement part at organization level, under FSN 1005-608-5034. So you replace the bolt and/or barrel, sure 'nough.



SHE'S THIN ENOUGH

If you're the Unlucky Pierre type, you may draw a brand-new 3.5-in rocket launcher with paint inside the bore. Ugh. Just remember one thing, tho: Never use crocus cloth, steel wool or any other abrasive to remove the paint. It'll weaken the barrel—and a weak barrel is exactly what you don't want.



So... Use paint remover to get rid of the paint, and coat the area with lube oil after the paint's off.

THE END

"HOLD, ENOUGH!"

And, double check it!

If you handle the big stuff, make a note of this:

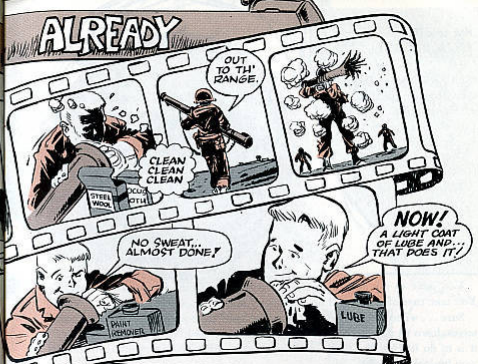
The **VX M121A1, 155 mm, gas projectile** is the **PERSISTENT** type.

Altho in Fig 51.1 of Change 4 (11 Sep 62) to TM 9-1300-203 (ammo for antiaircraft, tanks, artillery and FA Weapons) it calls itself **NON-PERSISTENT.**

So correct any notions you have to reflect this baby's true character. It's **PERSISTENT.**

The 155mm gas projectile which is non-persistent is the GB M121A1.

ALREADY



"ONCE MORE INTO THE BREECH?"

Dear Half-Mast,

Now that TM 38-750 (Jan 64) is here, what serial number do we use when making out log books on towed howitzers and the heavy motorized gun, none of which have end-item data plates?

This was a puzzlement in the past. Some used the breech ring serial number, while others used the carriage or tube serial number.

SFC W. R. J.

Dear Sergeant W. R. J.,

Good question, Sarge. The system now calls for using the serial number, date of manufacture and manufacturer's name as listed on the carriage data plate.

The carriage, being a nonreplaceable main part of the end item, is most likely to outlast all other components. So, the dope on its data plate's likely to remain the most reliable identification for the weapon, right?

This goes specifically for the 105mm (M101A1), 155mm (M114 and M114A1) and 8-in (M115) howitzers and the 280mm (M65) heavy motorized gun. Incidentally, latest production models of these weapons will have end-item data plates located on their carriages.

Half-Mast

FIRE CONTROL, SIGHTING AND OPTICAL EQUIPMENT . . .

"GAZE ON'T WITH VIGILANT EYE!"

You have to say one thing for fire control, sighting or optical equipment. You take care of it and it'll do a job for you.

Sure . . . when you're out in the boondocks and your teeth are chattering themselves down to the gums, it's a lot easier to say something oughta be done than it is to do it. Half the battle with fire control and sighting equipment, tho, is won by looking ahead.

F'rinstance . . . if your LO says to use oil for extreme cold, then you lube it lightly with OAI instrument lubricating oil. And if the LO calls for using grease, then you make like a miser when you apply some GL aircraft and instrument grease.

Keep 'em Cool

Your fire control and sighting equipment is best left outside with your weapon—covered so's snow and wind can't get at it. But when you have to take the gear into a warmer place, work things out so the equipment doesn't get hit with a sudden, warmer temperature change.

This kind of move puts beads of water—condensation—on the outside and inside of the equipment. And the condensation "steams" optics and makes metal parts ripe for rusting.

If you don't get rid of the moisture, you'll have "trouble in spades" when the equipment is taken outside again. The stuff on the optics will freeze, making it impossible to use 'em. They could even bust.

Handle All Glass . . . With Care

Skip the stove and dry a lens this way. Rub away the moisture with a piece of lens tissue paper that's been dampened with a few drops of lens liquid cleaning compound. Finish up by wiping the lens with lens paper that's been folded twice to keep oil on your skin from getting through to the lens. Rub from the middle outward in a spiral.

You can use ethyl alcohol if you don't have any lens liquid cleaning compound. But be careful with the stuff. Too much will mess up the lens sealing compound.

If you don't have any cleaning compound or alcohol, don't look for trouble. Just use a dry piece of lens tissue paper.

Don't make like you're trying to grind the lens. There's a coating on it that you can take off by rubbing too hard.

A clean cloth will do a good job of cleaning the metal parts you can get at. With equipment you can't get into 'cause it's not for your level of maintenance, you'll have to send a call for help to your support unit.

MORE

A "Tote Box"

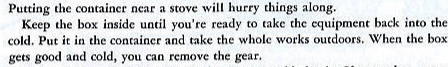
You can call a halt to condensation before it ever gets started by rigging up a container for carrying your fire control and sighting equipment from the outside to the inside. What you do is line a box (big enough to hold the gear) with some material, like aluminum foil, on all sides, the top and the bottom. The entire container oughta be as airtight as you can make it. And the lid, or top, wants to fit right tight.

The box is left outside and when you're ready to take some fire control or sighting equipment into a warm spot —maybe for repairs—put it in the box . . . close the cover . . . and make your move.

After you do this a few times, you can tell about how long to leave the equipment in the box before you can remove it without running into condensation. Putting the container near a stove will hurry things along.

Keep the box inside until you're ready to take the equipment back into the cold. Put it in the container and take the whole works outdoors. When the box gets good and cold, you can remove the gear.

What the box does is let the equipment get cold slowly. If you take—say a telescope—from a warm place into a cold spot, it'll lose the heat so fast a lens could crack. The heat disappears a lot slower when the 'scope is in the box.



Snow Go 'Way

As you've already read, when your fire control and sighting equipment is outside, it should be protected. That means all sides—including the bottom. The idea is to use brush, boughs or whatever you can get your hands on to keep things like BC 'scopes out of the snow. If you use a brush, go easy. Don't try to beat off the snow.

Sometimes you won't have any choice . . . you'll be working with the equipment while it's snowing. You just have to keep brushing or using something like a syringe to get rid of the snow.

Don't try to blow the snow away—especially from eyepieces. Your breath will melt the snow and it'll freeze fast. You let yourself in for the same kind of trouble when you breathe on a lens before you try to clean it—don't do it.

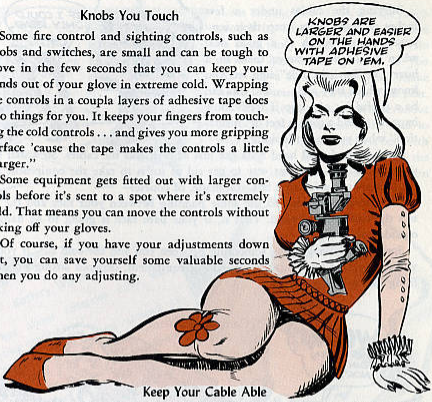
You can save yourself possible grief by sticking some loose wads of lens tissue paper into eyepieces and objective tube extensions when you take your eye away from them for a spell. The paper keeps the snow where it belongs and comes out in a flash when you're ready to do some more looking.

Knobs You Touch

Some fire control and sighting controls, such as knobs and switches, are small and can be tough to move in the few seconds that you can keep your hands out of your glove in extreme cold. Wrapping the controls in a coupla layers of adhesive tape does two things for you. It keeps your fingers from touching the cold controls . . . and gives you more gripping surface 'cause the tape makes the controls a little "larger."

Some equipment gets fitted out with larger controls before it's sent to a spot where it's extremely cold. That means you can move the controls without taking off your gloves.

Of course, if you have your adjustments down pat, you can save yourself some valuable seconds when you do any adjusting.



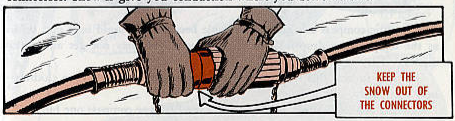
Keep Your Cable Able

Extreme cold doesn't do rubber or plastic-coated fire control cables one bit of good. They get stiff and brittle. And all it takes is one bend or twist in the cable and you'll have two sections instead of one.

If you have to change the direction of the cables for any reason, warm them first. And be sure they're warm before you head out into the cold to lay 'em. They'll get cold again mighty fast.

Watch the connectors for condensation if you take the cables inside. Get rid of the stuff before you head outside again.

If it's snowing when you go to connect the cables, keep the snow out of the connectors. Snow'll give you conduction where you don't want it.



Burying the cables under a few inches of snow helps keep their temperature up—which is a good deal when you have to move them in a hurry. A "Buried Cable" sign lets you know where they are . . . and this can be a useful bit of scoop if fresh snow happens to add a coupla feet of "insulation" when you're not looking.

Rubber check and head rests get just as brittle as the cables. So watch how you handle 'em. The best way to get rid of ice is to take the equipment to a warmer spot—inside that box you made, of course.

It's also a good idea to use some padding between your face and the rest so's the cold'll be blocked. That is, if your bare face is going to be hanging outside your ruff.

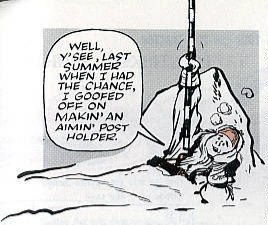
Speaking about keeping something between you and the cold . . . if you sit while operating fire control and sighting equipment, do your sitting on something like a blanket.

Compass Pointers

A lensatic compass can give you trouble because the liquid in it gets thicker as the temperature drops. When this happens, you may not get an accurate reading.

One way to beat this is to carry the lensatic compass inside your clothing—near your body.

Extreme cold, of course, doesn't bother the dry-type compass one bit.



An aiming post won't do you much good if it's bent. And a post can take on some fancy angles when you try to drive it into frozen ground. If you can't dig a hole for the post, make yourself a stand that'll support the post.

When it comes to snow, it takes about 26 inches of the packed white stuff to hold a post upright. Your best bet, with anything less, is to put together the kind of stand you'd use on frozen ground.

END

ON YOUR DW-20M TRACTOR

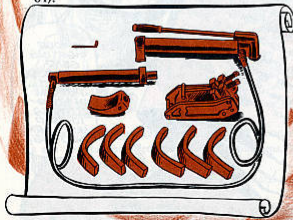
"TO STRIKE A MIGHTY BLOW, 'TIS BETTER YET"

Some call 'em double-T tires, but there's a difference of opinion on what the TT stands for. Maybe it's Tubeless and Tough.

When it comes to changing 'em on your Cat DW-20M wheeled tractor, tho, you're more likely to agree that they're Tough and Tight.

So, here's an updated tire-changing procedure to give you a boost with para 110 of TM 5-2420-202-20 (13 Mar 59) and with tires on other earth moving equipment.

First, get your grimy hands on Kit, tire remover, hydraulic, FSN 4910-773-9341, from the shop equipment set (Davey No. 3), FSN 4940-294-9518, listed in SM 5-4-4940-S13 (10 Feb 64).

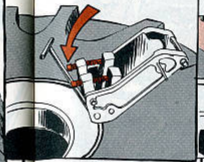


Then go into your presto-change routine . . . like so—

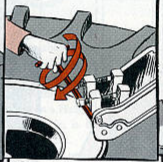
1. Deflate the tire (if it's not already flat). To make sure all air's out it's best to take out the valve core.

   Slip the clamping jaws of the hydraulic tool over the outer edge of the outer flange of the wheel ('way out, that is).

2. Tighten the adjusting screws at the bottom of the jaws. When tightened, these should attach the frame of the tool securely to the flange.

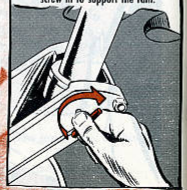


3. Set the hand screw against the lock ring and adjust till the jaw assembly is at right angles to the plane of the flange.



4. With the tip of the head down and the ram in retracted position, slip the head and the ram between the open sides of the frame. Put the tip of the head between the tire bead and the flange.

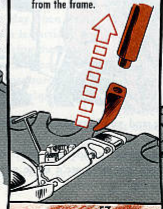
5. Lift the rim till the trunnion engages the frame shoulder support and move the stop screw in to support the ram.



6. Use the pump to apply pressure to the ram and head till the head moves the tire bead toward the center of the rim so you can place a bead wedge between the bead and flange on each side of the tool.

Watch It: Take special care to adjust the hand screws so the head won't scrape the bead.

7. Release the pump pressure. Then take the head and ram from the frame.



8. Loosen the clamping jaw bolts and take off the frame. Turn it about 90 degrees (at a right angle) from the first loosening position and repeat the operation, step by step, till the tire's free.

When you're ready to mount the tire again, or to mount another one, here are . . .

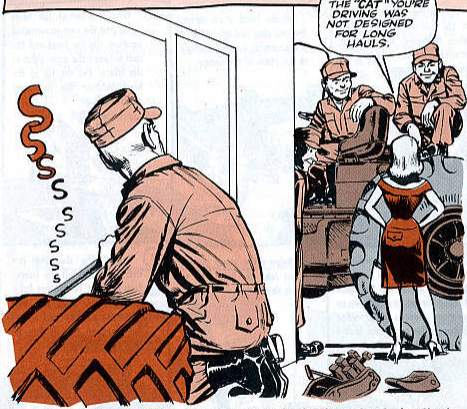
MORE

A Few Special Tips

Make sure that none of the rim parts are damaged or missing. Lubricate the rubber packing with a thin solution of good-grade soap flakes and water.

Next, make sure all rim parts are assembled and interlocked in the right place before you start to inflate the tire. Use an inflation cage or safety chains when inflating. And, even with these, stand to the side of the tire, away from the lock ring. This thin steel doughnut can cut you in two if it lets go.

Inflate the tire to 75-PSI to seat the beads against the flange. Once they're seated, drop the tire pressure to the level recommended by the TM.



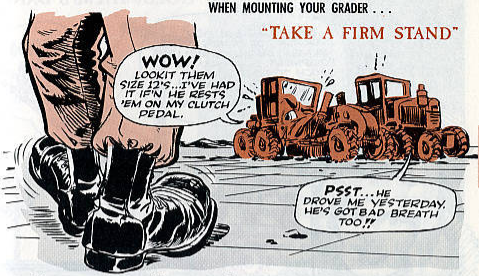
Just remember one thing and you'll never be far from that hydraulic tire tool when you need it.

This four-wheel-drive low-speed tractor was never meant for use on long hauls. It shouldn't be used on trips of more'n three miles at one time. That's a good rule to keep that Cat cool.

END

WHEN MOUNTING YOUR GRADER . . .

"TAKE A FIRM STAND"



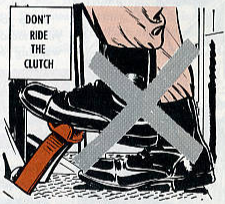
You can always tell a top-notch grader jockey. He's the type that keeps both feet on the cab floor. None of that riding the clutch for him!

He knows that one of the fastest ways to burn out the clutch on a Huber-Warco Model 4D, for example, is to use the clutch pedal as a foot-rest.

He's always aware that the pedal stop is adjusted to give three inches of free play—less than two inches and the clutch'll start slipping.

There's not enough play when riding the pedal, so the clutch is partially engaged. The release bearing then comes in contact with the clutch-release levers. This cuts down the pressure on the clutch plates, giving you slippage and a lot of extra wear.

If this slipping goes on long enough, the turning release bearing will get hotter and hotter (it's only lubed for normal clutch engagements) until it seizes up.



Such a revoltin' development can happen. The clutch won't "go" on you, tho, if you take a firm stand and make this daily operation check.

At the first sign of a slipping clutch, just make the pedal and brake adjustments called out in Chap 3, Sect IX of TM 5-3805-210-10 (Aug 62). That's all it takes to keep the clutch in your grader.

"HOLD! THERE'S DANGER IN THE VERY AIR!"

Keep your eye on the equipment's caution plate that you should find right near your controls. This hot-line warning reads like so:

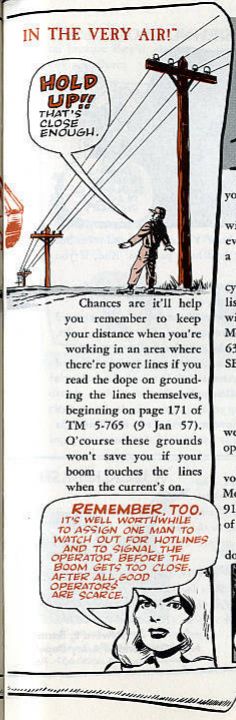
> "THIS EQUIPMENT SHALL NOT BE OPERATED IN A POSITION WHERE ANY PART OF THE MACHINE, SUSPENDED LOAD OR LINES, CAN BE BROUGHT CLOSER THAN 10 FEET OF POWER LINES, UNLESS THE CURRENT HAS BEEN SHUT OFF AND THE WIRES GROUNDED."

This same info is listed in all Engineer equipment pub safety requirements.

Besides, you'll want to latch onto a copy of DA Cir 385-1 (4 Feb 64) which spells out the latest info on hot-line hazards, safety devices, and safe operating procedures.

For one thing, it tells you that the best safeguards found so far are crane boom dielectric shields and insulated swivel links installed in lifting lines above the hooks.

But there's no known protection, even with these, if lifting lines above the insulated swivel link hit a hot-line.



Chances are it'll help you remember to keep your distance when you're working in an area where there're power lines if you read the dope on grounding the lines themselves, beginning on page 171 of TM 5-765 (9 Jan 57). O'course these grounds won't save you if your boom touches the lines when the current's on.

"A CURSE ON THIS DARKNESS"

Still in the dark because of lack of power for your Light set, FSN 6230-299-7077?

It's a general purpose set that can be used with any AC, 60-cycle, 120-volt generator set—even tho SM 5-4-6230-S01 (Apr 64) calls for a 1.5-KW 115-volt set.

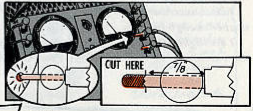
Generator set, gasoline engine, 1.5-KW, 60-cycle, AC 120-v, skid mtd, FSN 6115-245-2522, listed on page 2-2-107 of SB 700-20 (13 Sep 63) will do the job. It's requisitioned from USA Mobility Equipment Center, St. Louis, Mo. 63166; you ought to cite both the SM and the SB on your requisition.

"LEND ME YOUR EARS"

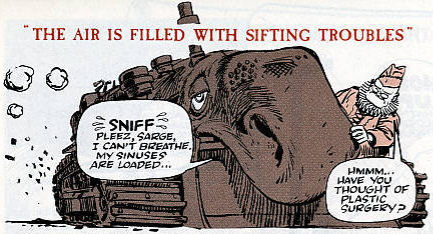
A hot tip may pay off in some operations like welding, or betting, but it'll sure wreck other operations.

For instance, some of the automotive low-voltage circuit testers manufactured by the Ram Meter Co., Part No. 62F151, FSN 4910-092-9136, have long tips on the test cables and one of them will contact a screw and short out.

If you have some of these long tips, cut them down to ⅞ in. Then file off the rough edges.



"THE AIR IS FILLED WITH SIFTING TROUBLES"



Ever try to breathe with your nose stopped up? You can gasp and snort but you still have to do something to clear your breathing passages. And, if you don't get air you know what happens.

The air cleaner on your construction equipment does the same job for its engines that your nose does for you—it cleans the air.

The service life of an engine depends on how well the intake air is cleaned before it enters the engine. By keeping abrasive material, like dust and dirt, from entering the engine, there's less wear on the cylinder walls.

You ought to inspect your equipment's air cleaner after every eight hours of operation, or more often if it's been run where it's real dusty or where there's a lot of chaff and stuff, like leaves, weeds, pollen and such.

On the other hand, if you've been operating your equipment in damp weather or where there's little or no dust, you don't have to service the air cleaner as often.

Here're some things about your air cleaner that you've got to keep an eye on because they'll play havoc with the engine and cause loss of power and engine failure:

So, if you want good service out of your air cleaner and better engine performance, check out the air cleaner often . . . and clean and service it right. On diesels with starting engines, make sure you check the starting engine air cleaner, too.

REMEMBER—when you're in dusty areas and you're having trouble breathing—your engine's having the same trouble, so give it some attention.

"A QUICK DASH... AND 'TIS DONE"

Dear Editor,

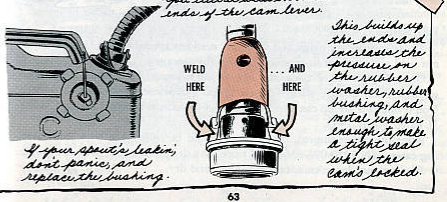
Here's a fast and simple way to repair the flexible jerry-can spouts (FSN 7240-177-6154) when they fail to make a tight seal in the can.

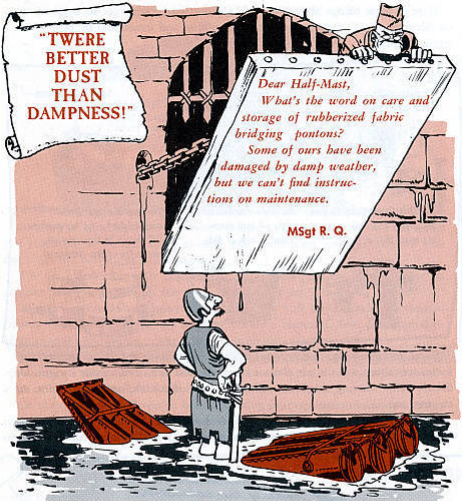
Build up both ends of the cam lever ⅛ of an inch with electric weld, using mild steel rod.

This'll increase the pressure on the rubber washer, rubber bushing and metal washer enough to make a tight seal when the cam's locked.

This slight repair will make the spouts serviceable and you don't have to replace the bushing (FSN 7240-132-6431), and rubber washer, (FSN 5330-228-6638).

Edward E. Barnet
New Cumberland Army Depot, Pa.





Dear Sergeant R. Q.,

Those pontons are tough and shouldn't need any special care as long as they're not used and are kept in carrying cases in dry storage.

Once they're out of cases, tho, the pontons should be washed, dried thoroughly, then treated with Talc, technical (soapstone), FSN 6810-270-9992. You'll find this pound can listed on page 84 of Federal Supply Catalog C-6800-IL dated 1 July 1963.

After the talc treatment, the pontons should be rolled, put back into carrying cases, FSN 5420-098-6368, and stored in a dry place, under cover if possible.

In short, just keep 'em clean, powdered and dry.

Half-Mast

MORE CALIBRATION YET!

Got an item in your tool set that needs calibration, or field maintenance checking?

If you're not sure, take a look at TB Ord 1060 (20 Feb 64) "Calibration and Field Maintenance Comparison Checks, Test and Measuring Equipment (Tool Sets)."

The TB tells what tool set items get checked, how often, who does the chore, and the publication your support uses for testing each item.

PM PAMPHLET PM

Your commanding officer no doubt has got his copy of that new DA Pamphlet 750-1, "Preventive Maintenance Guide for Commanders," (June 64). It's a loose-leaf job, so get him Binder, 7¾ x 5 inches, 3-ring, FSN 7510-285-1764 to keep the pamphlet in. GSA has the binder in stock.

CHANGE YOUR PARTNERS

Did you get it . . . ?

The OK to make some very important changes on your TB's covering Equipment Serviceability Criteria (ESC)? You'll find it in TB 9-2300-266 (13 Mar 64) "Equipment Serviceability Criteria for Army Vehicles."

The TB's loaded with scoop which updates your equipment readiness SOP on a slew of stuff.

FOR ON-SITE GUARD UNITS

The new supply forms, DA Form 2765 and 2765-1, Request for Issue or Turn-In, (AR 711-17) do apply to air defense on-site National Guard units. See Change 1 (6 Aug 64) to AR 711-17. Other Guard units and Reserve units continue to use DA Form 1546. See PS 141, page 2 for a rundown on the new supply forms.

EQUIPMENT RECORDS PAM

There's a new pamphlet out on the Army Equipment Records and Procedures, DA Pam 750-38 (25 Aug 64). Like PS Magazine, it's especially designed so you can understand the system easier . . . with lots of pictures and forms. Order your copies from the Baltimore pubs center today. You'll notice there's been a number switch . . . PS 140 listed it as 38-750, but for sure now, it's Pamphlet 750-38.

DA Form 10-233

DA Form 10-233, "Handreceipt for Expendables and Non-Expendable Items," is a current form. PS 138, page 65, didn't mean to kill it outright. But the form's no longer used in connection with AR 735-35 for issue of any type of items.

Would You Stake Your Life right now on the Condition of Your Equipment?


WHEN YOU DON'T HAVE A JULIAN CALENDAR HERE'S HOW TO GET YOUR JULIAN DATES FOR TEN YEARS... ...FOR YOUR EQUIPMENT RECORDS.
*1964
1965
1966
1967
*1968
1969
1970
1971
*1972
1973
0 0 0 JAN
0 3 1 FEB
0 5 9 MAR
0 9 0 APR
1 2 0 MAY
1 5 1 JUN
1 8 1 JUL
2 1 2 AUG
2 4 3 SEP
2 7 3 OCT
3 0 4 NOV
3 3 4 DEC
PUT LAST FIGURE OF THE YEAR IN THIS BLOCK → 4
PUT THE THREE FIGURES FOR THE MONTH IN THESE BLOCKS → 2 7 3
PUT DAY OF MONTH IN HERE (ONE OR TWO FIGURES) → 1 2
*LEAP YEARS ONLY. ADD 1 HERE FOR MARCH THRU DECEMBER → 1
NOW ADD 'EM UP! LIKE SO—
4
2 7 3
1 2
1
+
4 2 8 6
Julian style date for 12 Oct 1964