

Issue 162

PS
★

1966 Series

THE
PREVENTIVE
MAINTENANCE
MONTHLY

Now, all you gotta do is identify each part so we can get it back into supply channels fast!

Now this is **RELIABLE** part of the problem is... **WHAT IS IT??**

SUPPLY
SUPPORT

SPECIAL FEATURE
SUPPORT
BY JOHN L. J. AND M. J.

John L. J.

2001 98-11

COMPLETE SUPPLY

One of the biggest problems keeping many a supply and maintenance man these days is how to get all the little odds and ends of common hand tools, fittings, cleaning materials—the "miscellaneous" type stuff which may not appear in your equipment's parts manual. So, where do you find them?

The place to look are—

Just Call and Order!
 Order *Call's* supply catalogs.

These catalogs are listed in EA Pamphlet 5006. Also, some items are in the

General Services Administration (GSA) Source Catalog.

You've got to have these catalogs on hand if you expect to be able to get supplied those "miscellaneous" type things.

You can get the EA and *Call's* supply catalogs on plus-plus distribution by writing up your order for them on EA Form 12-85. You order by Fed EA Form 12-85. You order by Fed EA Form 12-85 and conveniently identification group and conveniently identification listed on the form. You might need Group 00 for Bags, Chains and Fittings, for example, the Group 01 for Hand Tools, or Group 25 for Hardware and Accessories. From the index, Form 12-85, read right.

Get the latest GSA supply order address from your supply unit and send them for a copy of the latest January 1982 GSA catalog. It is your find pipe fittings, paint, cleaning compounds, hand tools and much of other items. Ask GSA to get your stuff on the list for new catalogs.

You've got with the complete story on supply orders you're up on the EA, GSA and the supply side. You've got it all.



THE PS COMPANY
 1001 10th Street
 St. Louis, MO 63101

GROUP MOBILITY 101
 101-101-101
 101-101-101
 101-101-101

REPAIRS 101
 101-101-101
 101-101-101

BY MOBILITY 101
 101-101-101
 101-101-101

COMMUNICATIONS 101
 101-101-101
 101-101-101

GENERAL AND SUPPLY 101
 101-101-101
 101-101-101

EA 101-101-101
 101-101-101
 101-101-101

EA 101-101-101
 101-101-101
 101-101-101



GSA SOURCE CATALOGS
 GSA SUPPLY CATALOGS
 GSA STORES CATALOGS

EA 101-101-101
 101-101-101
 101-101-101



GROUND MOBILITY
LIKE IT'S 1988.

With nothing more than the right combination of rubber and sealed water working on land planes, your battery pumps are clearing lakes from the cold, cold waters of your equipment, saving it from a like-for-lump of rusted-out metal loss, a gas-billing, "crash!" or "panic" performance.

Just like a bear, it'll pump out the life substance your equipment needs over and over again. A battery is recharged or made good and healthy again when electricity is pumped back down it opposite from the way it came out. This reverses the chemical action in the Mark Two and your things back pump much the way they were.

Your battery can go on pumping out, getting pumped, getting recharged, getting out, etc. For a long time — if it got the right care.

**THAT
LITTLE
BLACK
BOX**



THE ONLY WAY TO
KEEP YOUR BATTERY
WORKING IS TO
KEEP IT FULL OF
WATER. THAT'S
WHY YOU SHOULD
BUY A BATTERY
WITH A WATER
PUMP. IT'S THE
ONLY WAY TO
KEEP YOUR
BATTERY
WORKING.

**FEED THE BATTERY WATER
INSIDE**

The little behind-the-scenes like of a battery is the guy who runs or operates the piece of equipment it's in. All he has to worry about inside the battery is the water that's already mixed in with the acid. In the battery business this is called the electrolyte. The water you add to the electrolyte is all the food it needs. —but it must be pumped out with care.

How much of the acid is there to get out? Not the water is needed — not the water — in the form of vapor — just about all the time your battery is working. So you've got to make sure there's enough electrolyte for adding water when it's needed.

If the electrolyte drops below the tops of those lead plates, air will blow into the lead tops and the plates will go to gas and soon. Then your battery is just another work ticker and won't put out like it's supposed to.



100
AMP
12V
P.A.B.

**100 AMP
12V P.A.B.**



100
AMP
12V
P.A.B.

**100 AMP
12V P.A.B.**

WHAT KIND OF WATER?

Distilled water is what your battery wants when it's thirsty. Distilled water doesn't have any minerals or other chemicals to build up the toxic chemical action needed to keep the battery healthy.

WORKING WITH THE BCI—UNION

In a pinch, if you're in a hurry, you can use tap water. This'll raise your electrolyte level above the top of the cells, so you'll have to top water down to the correct level at whatever you can find. But if you have to use water that looks okay, let it stand for a while in the jar. This'll settle out the minerals, then carefully siphon the water off the top.



And remember to be mighty careful when adding water during freezing weather. Be sure the equipment's operational first so there's no heat after adding water or the electrolyte'll freeze.

USE AN ICE

The right time for the electrolyte is about 40-45°F above the top of the plates.

The more water is in the lead-acid cells, the better. Overfilling, on the other hand, may flood out some of the acid. An excess of acid will weaken the electrolyte.

And that acid in the electrolyte will attack any metal it reaches—like clamps, bolts, nuts, cables, lifting hardware and the bus or cables.



CONVERTBACK

Conversion on and around batteries is fast enough anyway, what with the acid fumes that've always crawling out the vents and settling on the battery top and nearby metal parts. The battery's got to be washed to relieve corrosion, so you've got to be on your toes to keep corrosion away.

When those fumes and vapors dry on top of your battery and become "electrolyte ruts," your battery will discharge across the top. Clean and dry on top of your battery will do this, too, when it's damp. If you've got those batteries with soft tops, you may find these ruts under, so cleaning is needed more often.

All you need to fight these ruts is a brush, baking soda solution, fresh water—and elbow grease.

FACING ACID TEST

After you've washed and scrubbed the battery top and cable connections with fresh water, go ahead and wipe with the soda solution. This'll neutralize any acid falling out in little ruts and crevices.

Most of the acid should get inside the battery to weaken the electrolyte. Make sure caps are tight and that electrolyte isn't flooded into the holes in the caps or other ruts.

After the hosing has stopped, rinse off the battery top and dry it good.

If you have to add the distilled charge off to get at all the corrosion,

use a thin coat of grease on the posts and clamp/bolts pending 'em back on.

Whether you grease the battery post before or after the cleanup job, you don't want much difference in how it is done to an adjacent, good main contact either way with it one way or the other. What's important is to get all exposed parts of the post and clamp covered with a thin coat of grease—especially the bottom of the post, the underside of the clamp and the steel bolt and nut. Make sure, too, that any old corrosion and dirt are cleaned off before greasing.



EXTRA GRUB



If you want to go right by the book—TM 541-40-208-01 (2d Ed), Storage Division, Land-Air-Typewriter-Sea and Adhesive Grout (GMA). It's rightly known as Sealing Compound, PN 9050-208-000 121-lb pails. It's the same grout from adhesive paste you'll find in Sealing Kit for water proofing.

**STAY STRONG
WITH IT OVER
STITCHES**



**DO THE
HEAVY JOB
WHEN
STITCHING
TENDS TO
DRIFT**

NOV NOV



**AND IT'S
EASY TO
DO. USE
THE
STICKER
ON THE
TENDS TO
DRIFT.**

LIKE SO



**USE A TUBE
OF THE
ADHESIVE
TO SEAL
AND
JOIN
THE
TENDS TO
DRIFT.**

NEW PARTS

Some batteries like the TM-541-40-208-01 (2d Ed) are used in many places. All batteries are held together in metal boxes or in metal trays by metal fasteners. This is a lot of metal offering an excellent connection.

**THE NEW
PARTS
ARE
EASY TO
USE**



**THESE NEW
PARTS
ARE
EASY TO
USE**



**THESE NEW
PARTS
ARE
EASY TO
USE**



MOVING AND CHANGING



**THE MOVING IS
EASY TO DO
AND THE
MOVING IS
EASY TO DO.**

CHANGING AND MOVING MOVING AND CHANGING



**MOVING IS A
EASY TO DO
AND THE
MOVING IS
EASY TO DO.**

**THESE NEW
PARTS
ARE
EASY TO
USE**



**THESE NEW
PARTS
ARE
EASY TO
USE**



**THESE NEW
PARTS
ARE
EASY TO
USE**



USE A TOOL TO GET UNDER THE BATTERY AND LIFT IT OUT OF THE CAR BAY

WORK
AND
EASE
IT
OUT
AND
LIFT
IT
OUT OF
THE
CAR
BAY
IF YOU
SEE ONE
BATTERY
OR
BATTERIES



DAMAGE BATTERY

Inside cradles could cause bulging or cracking, but most often battery damage comes from rough handling and poor maintenance—dropping or hitting them on edge. Hitting them has to be long enough to keep the battery from rolling around but not so tight that the battery is squeezed to death. Freezing is another cause of cracking.

Cables may be hard to see, so you want to get suspicious if you smell of the battery even demanding more water than the rest of 'em. It's bad enough to be losing electrolyte, but when acidulation leaks onto fuel lines and other metal parts of your equipment, you'll have more headaches than a week in dead battery. That's especially likely to happen to parts on the 1000, 1000-1 and 1000-2 units because of their position near the batteries.

Normally, if your battery is leaking electrolyte, you want to check around and see if this stuff is getting on other parts of your equipment and clean it off fast.

STEP 4: SPARKS

Then gas coming out of your battery, if it's ignited, may blow the battery to smithereens, sock you with chunks of the battery and shower you with acid.



Always, using a torch, smoking cigarettes or smoking quads around batteries is bad for your health.

A freshly-charged battery is ready on account of pouring out a lot of hydrogen gas. It should sit for an hour or so after coming off the charger so the "acid" off. If it has to go right to your equipment, be careful you don't drop a wrench or instrument on the battery as it bridges the terminals and throws a spark.



When you want to take the cables off the posts, or put 'em on, take the ground (negative) cable off first and put it on last. And make sure all electrical switches are off. Then you'll get no sparks jumping to that hydrogen gas. On vehicles like trucks that have several ground cables, remove them all *before* you start.

Some commercial vehicles and engine equipment, tho, have a positive ground instead of negative. Then it's the positive cable that comes off first and goes on last. Check your TM to be sure.

STEP 5: WIRE

GROUND CABLE CONNECTED TO BODY,
BOTH ON ENGINE BATTERY



WIRE AND CABLE IN PLACE
ON ENGINE BATTERY



If some heavy-lined galvanized metal of the posts so you can't recognize 'em easy, polar leads "+" and "-" symbols on the side of the battery close to the right post or point the top of the positive post end. This's a help, too, in making so the cables don't get put on the wrong posts. The wrong hookup will reverse the battery's polarity and soon ruin the battery. **ALWAYS** substitute your CG or GC mark with the wire tag.

Connections between slide legs and clamps and between the clamp and battery posts have to be clean and tight or your battery won't deliver the punch you need. You could get dangerous sparking, too, if these connections are sloppy. Loose, and watch off that hydrogen gas.



HOW TO CHECK

You use a hydrometer to check your battery's "state of charge." This tells whether you've got the right balance in your electrolyte—about 38 percent sulfuric acid by weight. The acid is heavier—of denser—than water, so the hydrometer float will ride higher in electrolyte that's got the right amount of acid in it. It'll sink lower if the electrolyte is short on acid due to chemical reaction.



TEMPERATURE CORRECTION

When the temperature is below 80° F you should get a specific gravity reading of 1.280 on your hydrometer. The hydrometer scale is figured for 80°, so you have to make a correction on the reading if the temperature is lower or colder. Subtract four from the reading for every 10 degrees below 80° or add four to the reading for every 10 degrees above 80°.

Usually a reading anywhere between 1.280 and 1.300 (corrected for temperature, of course) means your battery's in good shape.

STATE OF CHARGE AND SPECIFIC GRAVITY CORRECTION TABLE

SPECIFIC GRAVITY	STATE OF CHARGE PERCENT
1.280	75
1.290	80
1.300	85
1.310	90
1.320	95
1.330	100% FULL BATTERY
1.340	OVERCHARGE

As the specific gravity goes down, the percentage of charge goes down.

HOW TO TELL 'EM

In the engine your battery's electrolyte is usually diluted every 100 miles to give a fully-charged reading of 1.280 to 1.310.



You can tell if your battery has been prepared for service in the engine by a special tag, giving the full-charge specific gravity, attached to the battery, and there'll be a one-inch white spot painted on the battery top. If your battery is the non-military type, it may have exposed cell connector strips and these'll be painted white.



In snow-and-ice country, water in the electrolyte can freeze, so be careful to keep the specific gravity up. Besides, your battery has to work a lot harder—pushing the water and engine against cold-thickened oil, feeding the lights during more hours of the day and running heaters.

Table IV in CH 9-61 (65-288) 1-9 gives the freezing point of electrolyte at different levels of specific gravity.

1.300	-10
1.280	-15
1.260	-20
1.240	-25
1.220	-30
1.200	-35



BUM READINGS

Whether you're where it's hot or cold, this, too, you won't get a truly specific gravity reading if your electrolyte is low on water. And if you do have an add water, hold off on making a hydrometer reading until the battery has been charged for an hour or so—either on a charger or in your vehicle—so



mix in the new water.

In the engine preparation will need your water lower than where it's cooler.

Water shouldn't be added where there's danger of freezing unless the battery's in a warm place or unless it'll be in operating equipment for at least an hour. Otherwise, you could wind up with a frozen or burst battery.

If a battery does get frozen, it should be thawed out slowly. And never put a frozen battery on a charger.

You'll get a true hydrometer reading, too, if you've just put a heavy load on the battery—like long cranking of the engine. The electrolyte will be stronger at the top because heavy discharging uses some of the acid near to the plates. So you wait a couple of hours for the electrolyte to even out.

And at anytime if you find a variation between cell readings in excess of 25 points have your support look over the battery and adjust the acid, if it's necessary.

POOP TEST

Did your battery get the jump or take care of all the electrical demands — and still bounce back to do it all over again?

Your company workbooks can find out for you by using either the resistance method or a low-voltage circuit tester.



or the voltage scale of a multimeter.



Both instruments are in the M6, 1 supplemental tool kit for organizational maintenance contracts and on. But for this simple test, the multimeter is handier because it's smaller and easier to handle.

Steps for testing are pretty much the same in all types of equipment.

Check the voltage with a multimeter or a low-voltage circuit tester. If the voltage is low, the battery is probably bad.



BAKE TEST

The trick here is to do the charging in 15 to 20 minutes. Turn the engine off and let the battery rest for 15 minutes before you start the test. If the battery is good, the voltage will be 12.6 to 12.8 volts.

Then, with the multimeter set to the "V" position . . .



1 Connect the negative (-) lead of your multimeter to the negative (-) post of the final battery — across the ground cable's terminal.



2 Connect the positive (+) lead from the multimeter to the positive (+) terminal of your second battery — the one the owner cable's terminal is trying to lose sleep, long sometimes. But not worries will not show on scale of the voltage that should show up on the multimeter.



3 Turn the battery to 15 with 15. You should read between 12.6 to 12.8 volts on the meter scale. If it shows you've got the water contained right.



4 With the positive cable of your multimeter — better not more than 10 seconds — and watch your meter while that's going on. If your meter reads 10 volts or more, your battery is OK.



You've got battery trouble if the voltage drops well below 10 while you're cranking the engine — maybe like glass heated time from the terminals. Then you sure look better in and get a new one. Your battery man will check out the old one and match one or both of 'em up with others.

UNMATCHED BATTERIES

When the batteries in your electrical system are matched, they act like a pair of trained horses. The lead isn't put on only one part of the team. Unmatched batteries can cause damage to the average one and will eventually shorten the life of the whole set.

The telltale sign of unmatched batteries is when you find a variation of more than 2% specific gravity points or a difference of 0.2 volts or more between batteries. When you run across this condition take your batteries out and have your battery man check 'em according to paragraph 45 c, in TM 9-6140-200-11 (Jul 58).

Unmatched batteries is one big reason for a battery's early death.



CHARGING AND TESTING

Whether your batteries last as long as they should may depend on whether they were given an initial charge before being put into service. Charge 1 in TM 9-6140-200-15 strongly recommends initial charging and gives the steps to do this.

And every battery has to have a service date stamp on it. The "battery TM" gives the rules and how to do it, too. Even tho a battery may come with an attached tag giving instructions for painting the service date on the battery, you don't use that. You use the die stamps in your toolbox and set. They're Model 224 Set, Numerical, FON 5110-200-0004, and Alphabet, FON 5110-200-0007.



Having A1 equipment is not a lucky accident—it takes team work along with a "maintenance" feeling. It all boils down to the operator, crew and mechanic joining together with their good maintenance habits to keep the old lead-acid horse chugging like from your truck, tank, APC, down, etc, etc.

GOT A BUM STEER?

PLUMBING
DON'T WORRY—
WE'LL TAKE CARE
OF IT.

IT'S POSSIBLE
THAT YOUR
STEERING
WHEEL IS
THE PROBLEM.

Steering trouble in your GM®-made 20-year truck is not always the fault of the steering gear — but it could be. A good "trunk doctor" can find out.

Some of the repair parts you need are separately available in Parts Kits, including, FSN 2530-727-7136. Like the new steering knuckle gaskets, Felcons™, that come under the FSN. Make your own — and only in the kit.

THE PARTS IN THIS KIT
WILL DO IT FOR YOU.

Upper Ball Joint

Lower Steering Knuckle

Upper, Lower Ball Joint, Lower Ball Joint

Lower Ball Joint

Lower Ball Joint, Lower Ball Joint

Spring, Lower, Upper, Lower Ball Joint

Ball Joint, Lower Ball Joint and Lower Ball Joint

Lower Ball Joint, Lower

The kit's listed in Federal Supply Catalog (1110-E-4-CR) (Jan 66)

PREVENT POSSIBLE PINTLE PROBLEMS



You can really buy yourself a load of troubles if you don't keep track of things when you take apart the plate assembly on your M370, M360 or M350 4-ton truck or truck chassis.

Some there's one bracket and a reinforcement on the plate assembly for these vehicles — and they're interchangeable. If you lose any of 'em — as some guys have — it can take a little doing to get replacement parts.

You can try manufacturing . . . getting your support people to make what you need . . . or buying through local procurement.

At present, the only source for the two manufacturers' part numbers shown is
 1-800-368-5828



You can't switch a plate assembly for a B1 model truck or truck chassis with one from a plain M37, M36 or M35. The earlier models have a plate shaft flange, which was replaced by the bracket and reinforcement in the B1 trucks. But you can't use the flange on the B1 models.



NEW FSN FOR BOOT

Now the hose for your M370 4-ton truck's hydraulic brake master cylinder comes under FSN 1500-517-0070. It's the same hose that's listed in TM 9-2120-213-200 (Feb 68) with FSN 1540-011-0705. Use the new FSN and you'll be sure to get the right item.



SEAL NEEDS SEALANT



Oil leaking from the differential of your M1700 4x4 truck may mean the plastic oil seal never got its dose of sealant when they were assembled by the manufacturer.

Your support will have to replace the seal with a new one: Seal, plastic coated, PSM 1500-171-1741. Even the new seal, if it's been sitting on the shelf for a long time, may be one of those without sealant. The best bet is to take an element and get sealant to anyway.

The new seal should be cleaned good. Then a coat of sealant, PSM 8030-683-6839, has to be applied on the surface between the seal and sealant. The sealant's supposed to set for about 30 minutes before the parts are reassembled.

FINCH OR JIVE ...

ENOUFF IS ENUFF



No how come when you put a quart of oil in your M1700 4x4 truck's winds — like LO 9-2109-112-12 (4q) 641 says to do — doesn't quite an over-flow in the check hole?

No mystery — the tolerance during manufacture isn't that critical, so the capacity may be off an ounce or two. This goes for both the winds wear case and wind clean and shaft case.

So, when you're putting oil in either case, keep the level check hole open and put in just enough oil so it means to run over the check hole. And no more.

BOOKS! BOOKS! ... TWINS - ALMOST



Some get the Model 48C and some get the Model 3 Deckman cutting and welding torch set on their 5-ton wrenchsets.

Torch tips and other replaceable parts — except one — are the same for both models. The exception is the Stem, Valve Assembly. It's P/N 4411-011-7480 for the Model 48C. To get this part for the Model 3, order by Part Number 45071-08C — make sure you mention it's for the Deckman Model 3 set and note "No substitution."

You can hardly tell the difference inside! It's, um, unless you've got a late Model 3 set that has a spline-shaped valve stem handle instead of hex-shaped.

Except for that one part, the Model 48C parts (the 1966 P/N's) that appeared in PB 152 can be used for the Model 3, too.

NOB WE CAN SAVE YOU

A complete oxygen-acetylene cutting and welding torch set for the M52, M246, M141 or M144A1 wrench set is under P/N 4411-004-8749. You might get either of the Deckman sets or the Victor set or the National Cylinder set. P/N's for parts in the Victor and National Cylinder sets are listed in Change 3 to TM 9-2386-211-00 (Mar 63).



ROPE'S END

AS STATED EARLIER,
THE NEW LEAD
ROPE RIDER

THE NEW!
LEAD ROPE!
THE NEW!
LEAD ROPE!
THE NEW!
LEAD ROPE!

If so, then the only way you can replace them is by local purchase — since they are not in the supply system. This means your support supply people can use AS 713-58 as their local purchase authority to buy them for you or to stock the quantity you want.

This metal device, or clip, is commercially known as "Clip, rope binding, single type" and is the preferred item for all your track rope down-down ropes. The old method of whipping lead rope ends to keep the strands from unraveling with wear showed no end is OK. But showed no end unravels too fast when the rope flaps in the wind.

They save time in work and in quality during maintenance, and whipping with wire saves your hands. So the metal clip is your best replacement item.

The source of supply for the clips is the nearest distributor for any of these companies:



Distributors

Rockwell Mfg. Corporation, Ltd.
Ingram-Valley Co., Forest, MD.
Eck Sales, Inc., Detroit, Mich.
Or any other company that may have a "rope" clip.

Part Number

28278
28279
28282



MPH VS KmPH

Kinda important you know how to carry up miles per hour and kilometers per hour if the speedometer on your vehicle reads in MPH and all the local signs say in KmPH — as they are sure to be almost every place but the good ol' USA.

TO OBD 611-Dep 584 says to put the figure on a piece of gummed, water-proof paper and stick the paper on the instrument panel near the speedometer.



GOOEY GLUE CLUE



Need a good, goopy glue to keep rubber pads and mats in place on your tank or personal carrier? Well, there's one listed on page 81 of Federal Supply Catalog CROCK-2-A (Jan 68).

It's resistant to oil and water (but not to fuel) and will bond either natural or synthetic rubber. Don't order more than you'll need for a three-month supply because it takes so long if it sticks around the bag before it's used.

15# 1040-02-083	7 1/2 ounce tubs
15# 1040-02-114	1 pint tubs
15# 1040-02-020	1 gallon tubs (2A form)
15# 1040-02-021	1 quart can tubs (2A form)



M88 VTR CRASH PAD



Here's that! You slip the crash pad on the commander's seats of your M88 VTR & all heat up! You can order it as ESN 2140-001-0089, pad, complete housing, complete vehicle assembly.



GASSING ABOUT GASKETS

The best time to work on the valve cover gaskets for the 2004-2007 Chevy is the time you're not driving. Get all the facts here.



Have your support color gaskets, valve cover cover, PCM 1891-808-5881. It's Item 4, page 183 of TM 9-2800-128-15 (Dec 64), and the part number is 11863-082-0007.

The next thing to know about these gaskets is that they should be worked in all before you get 'em on. The oil seals them up and makes them work better.

The third thing to know is that the machine screws on the valve cover shouldn't be too tight or they'll over-compress the gaskets. Make 'em snug or a lug but not tight is not tight.

The correct torque is 20 to 25 pounds foot like it says on page 183 of TM 9-2800-128-15 (Dec 64).

MIL COMBAT LOCK LOCATION

The locator combat lock for the power plant door on your MIL family of vehicles is real safety insurance ... so why doesn't everybody use it?

Well, some drivers forget it's there, even though it's shown on page 25-Fig 2A(1) of TM 9-1308-104-10 (Nov 61).

Just work around the corner from your door and check around and you'll find the lock behind the wire.

Keep the door locked from the inside and you'll have no worries about

midnight requisition getting their hot little hands into your power plant gaskets.





Hot, soapy water is no real substitute for hose cleaner for small areas, but it can be used if you can't get your hands on the cleaner—but with these restrictions:

Be sure you get rid of all traces of moisture in the hose and chamber—and especially the gas system—throughout. Otherwise your engine'll come back with a bad case of rust.



Well, it sure did make some good cleaning suggestions to make the job simpler, didn't it? Now you can save your money and use hot, soapy water. (You can't.)

Never use it on the air intake—unless you've not collected the fuel to remove the gas primer—or the carburetor jets—where it's impossible to do a real thorough drying job inside the gas hole.



WATCH YOUR FOLLOE-BROUO

Think, if you use hot water in place of foot cleaner, you use the water just like your pants with you to use foot cleaner.



Now, as water flows (washes) you are allowing a wet patch through the boot, the patch is going to "soak-up" some water from the gas system. And as water flows back you try, you're not going to be able to absorb all of the moisture out again. Result: The water that stays in there is going to cause trouble even though the gas system's material is corrosion-resistant.

That's why taking the gas plug off and taking the gas system apart and drying each part thoroughly is so important.

Master of Ice, any time your weapon's gas system gets real wet—like from a dunking or heavy rain or fog—you want to take it apart and give it the drying routine. Just like your pants say.



Like in everything else, of course, there's a precaution for this trouble: Some manufacturers of gas systems they won't run out of foot cleaner by making a habit of having a couple guys wash away a couple of those 2-in. cans of CR (2025 2025-2025-2025) with their gear before heading out on a mission. A little goes a long way, y'know.

FOR TRAINING PURPOSES ONLY... **BLANK FIRING ATTACHMENTS**

A blank firing attachment is required to use your M73 machine gun. For more information, contact your instructor. (FOR TRAINING PURPOSES ONLY.)

This weapon

M19 Rifle
(2.03 cal)



M1903A1 Machine Gun
(.243 cal)



M1919A1 Machine Gun
(.24 cal)



M48 Machine Gun
(2.03 cal)



M27 Machine Gun
(.50 cal)



Use this attachment

M73 blank firing attachment
(FN 100-103-200)



M2
(FN 100-103-204 (2) 100-103-205)



M1
(FN 100-103-206 (2) 100-103-207)



M10
(FN 100-103-242 (2) 100-103-243)



(Special Note: Do not use your M73 blank firing attachment with the following rifle guns:



Like it says to...

Item 4, FN 100-103-212 (2) 100-103-213

Item 1, 100-103-214 (2) 100-103-215 (2) 100-103-216 (2) 100-103-217 (2) 100-103-218 (2)

FN 100-103-219 (2) 100-103-220 (2) 100-103-221 (2) 100-103-222 (2)

FN 100-103-223 (2) 100-103-224 (2) 100-103-225 (2)

Before you can rig your M73 with a blank firing attachment, you will first require approval from your Army Headquarters. Then you will submit this approval request to the Army Weapons Command, Fort Belvoir Arsenal, Illinois, which is now will furnish complete steps for developing the M73. The goal of it is that you direct requests only to the one filter place that go with the M73 machine gun. And finally, show filter places on the following list only.

A CRISP MESSAGE

Here're five basic things to keep in mind whenever you're using blank firing attachments on any of these small arms:

1. Be careful when putting the attachment on or off that you don't lose the parts of your weapon.
2. Never try to use the muzzle attachment unless the carriage stop attachment's in its proper place in the breech.
3. Always ensure the muzzle attachment before removing the carriage stop attachment. This'll eliminate any chance of firing live ball ammo with the muzzle attachment in position.
4. Before firing, make sure the muzzle attachment's clean inside.
5. After firing, clean the barrel real good to get rid of carbon buildup. And make sure you do this cleaning job before firing any other type of ammo.

M73 MACHINE GUNNERS!

If you have a blank firing attachment (FN 100-103-200) for your M73 machine gun, don't use it from 4 on down.

The gunner's been treated hard working... choose for various training, special training, make way to a number, show M73 is no longer authorized and they'll not use it. (100)

(DON'T ASK TO REUSE THE M73 BLANK FIRING ATTACHMENT)



That's why, whenever you mix any of these fluids, always get down on your DA Form 3408-5 (Equipment Maintenance Record) how many quarts or gallons you added to the overall system. This way, you or any other guy using the weapon will know right off how much cold weather it can take without developing some trouble. TB OHD 506 used to say you should color code the filler plugs to show what type of oil's in there. You can throw away the paint job now, though, since you keep this information in your log book.

DRINK YOUR OIL —

The other big point — making sure the oil you're using is in A-1 shape — is about as important as getting the right oil in there. Any hydraulic fluid that's too full is contaminated with water or gets out under your recoil mechanism.

Your TM'll probably run you on how to check the amount of the gunny. But, in case it doesn't, here's a simple rule-of-thumb test you can make any time.

Take a quart of oil from your weapon into a clear glass bottle or jar.



Let it sit for a couple days longer. You should be able to spot any dirt, water or other stuff easy enough. If there's water in it, the water'll settle to the bottom.



If you don't see any water, try holding the container up into the sun and holding it to the light. Any water droplets will catch clearly through the oil.



This won't do it for you most times. But, if you suspect water or dirt is in there and you still can't find it, let your support people have a try at it.

Once you feel there's contamination in the oil, give it more a minute. Get hold of your support guys who will drain the system, flush it out and refill it for you with good clean fluid of the right type.

Of course, the best deal is to make sure no moisture or dirt gets in the overall oil in the first place. This means, among other things, keeping the oil containers covered tight and away from real hot heat . . . keeping the filler plugs and servicing equipment openings close . . . and such-like.

Just bear in mind that your recoil mechanism needs a certain kind of fluid oil — and that this fluid's got to be wholesome and pure.

A weapon with a poke in the recoil system is a real pitiful sight to behold.

JOE'S
DOPE

HOW "FREE" the TURN-IN

Once upon a time, stationed in a far-away place, there was this outfit.

It was a very good outfit and they worked hard to keep their equipment ready to GO at any moment. They did this by good operation, careful maintenance, and good supply... and besides, they were subsidized free turn-in.

But one day things began to go wrong... and then they heard their supply support go out.

**SUPPLY
SUPPORT**



WHAT IS THAT PILE OF STUFF?



Said **CONNIE FORD**, who just happened to be over this day!

WE'RE GETTING HARRASSED BY THE SUPPLY AGENTS AND GONNA KEEP THE PLACE DAMAGED!



Said the Supply boys, really.

YOU WANT?



Said he, showing **CONNIE** his work there.

EVERY TIME "FREE TALK-IN" TIME COMES, WE GET HARRASSED... I GOT FIFTY HRS. WORK DONE BUT SORTING STUFF THAT GONNA BE DE-DENTED AND WE'RE SO DAMN BEHIND SCHEDULE!



BUT DON'T WERE TALK-IN COMING-UP... 'CAUSE IT SAID SUPPLYING THE MONEY AND SUPPLYERS! AND DON'T IT TAKE JOB TO SORT AND RE-DAMNED FREE TALK-IN SUPPLY?



She asked.

SURE!



By day!

BUT LISTENING UNOBTAINED! I'M AN UP POLISHED THE WORK LOAD AND BELOW THE WORKS UP-KEEP DOWN THE LINE!



SO,
COME
GET OUT
TO HELP!

FREE
FLOWER
TODAY

HOLD ON!
DANCE... WHAT
DANCE HERE?

HEY, JOHNSON, WE'RE
TALKING IN FRENCH AND
YOU TALK TO AND
AS TO - NO DANCE!



BUT, HOW?
WELL, HOW?

?



PEOPLE
ARE BEING
SCORCHED.
THEY'RE BURNING
WILLS - BURN!

ANNIE...
ANNIE...
WE GOT NO
TIME!



WHY NOT
MOVE FORWARD
A LITTLE FURTHER
IF THERE
WAS SOME
SUPPORTIVE
TO GET WHAT
WE NEED.

THAT'S JUST THE POINT! THE
MOMENT IT COMES TIME TO ADVANCE
AND YOU WILL HAVE
SUPPORTIVE THIS AND
THAT AS SUPPORT
AND YOUR HELP WILL
BE YOUR HELP AND
YOUR HELP WILL BE YOUR
HELP AND YOUR HELP
WILL BE YOUR HELP

LET ME
KNOW NOW!





Dope Sheet

IDENTIFY THE PARTS YOU
TURN IN AS CLEARLY
AS YOU CAN

HANDLE CAREFULLY SO
PARTS WILL NOT BE
DAMAGED IN TRANSIT

**FREE
TURN-IN**

AUTHORIZED BY
THIS COMMAND
BY ORDER OF C.O.



Those "EXTRA" IT items you've got
May be just the things that've "WOT"
Tag 'em up, turn 'em in—
Help fill the supply bin
For issue to those who have MOT!

SUPPLY

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

IF YOU WANT TO DISPLAY THIS CENTERPAGE ON YOUR BULLETIN BOARD, OPEN DISPLAY, GIFT IT OUT AND PIN IT UP.

NOW!

—She said



THERE IS A WRONG WAY AND A RIGHT WAY... THE RIGHT WAY IS TO SPEAK TO THE STUFF YOU TALK IN WITH ITS HOMECOMING, FOR THAT NUMBER OF CHANGING BENTY.

THAT SHOULD NOT BE TOO HARD... HAVE WE'RE THE ONE BENTY? "IS IS... HE COULDN'T KNOW WHAT THEY ARE!"



OF COURSE, AND THEN WITH THAT, THAT YOU DON'T FEEL YOU CAN ALMOST GET FROM A DESCRIPTION, WHERE THEY DO... OR WHAT ABOUT THE ONE BEING WITH ANYTHING THAT'S CLEAR THE SUPPLY FOLD.

THAT'S BENTY.



NEXT WHEN YOU NEED IN FACTS... PROTECT AND MANAGE THEM WELL, DO THEY'LL BE IN CONTACT TO RESEMBLE WHEN THEY ARRIVE!

BUT...



...BUT—AS—NO—MUCH... YOU SHOW THAT A LOT OF THEM ARE AVAILABLE... AND WHEN A PIECE TWO, THEY CAN GO RIGHT BACK INTO THE SYSTEM?

AND THIS BRINGS UP THE MATTER OF DRIFTING.



SHIPPING??



YES... YOU ARE GOING TO CHANGE YOUR ATTITUDE TOWARD PLAIN "UNEMPLOYED" BACK TO SUPPLY!



WELL, WHO CARES ABOUT OLD FASHION??



YOU SHOULD!



BECAUSE PARTS THAT GET BRANDED UP IN TERROR ARE LESS THAN USUAL... THERE'S NO POINT IN BUYING PARTS THAT ARE STILL POSSIBLE, HEAVENLY, SOMEONE ELSE—MAYBE EVEN YOU—MIGHT NEED IT REAL SOON.



WELL, ACTUALLY WE "PROTECT" OURSELVES... THAT'S WHY WE'VE BEEN STRONG!



THAT'S ANOTHER POINT: WHEN YOU DON'T GET BACKS PLAYING THE FULL OF THE SYSTEM,



WOW!

BECAUSE YOU'RE ASSUMING ONLY A FEW "WELL" AND SUPPORT NEEDS ON THE BASIS OF YOUR BRANDED DEMANDS? WHEN YOU GIVE MORE THAN YOU ACTUALLY NEED YOU CREATE MASS DEMAND WFO, WHICH CAN CAUSE SUPPORT TO UNDERSTOCK OR OVER-

STOCK—DEPENDS ON HOW YOU PLAY YOUR DOUBLE-DROPS.



WOW! YOU'VE MADE AN IMPRESSION!

And so, after this was explained and they realized that fair play and teamwork were desperately needed... And that free turn-in isn't for kids and conveniences... it really saves skin... things began to change!

BARTS came into supply easily identified (which cut processing time)

BARTS came in well protected... so they were quickly restored to service. (Many had not even been taken out of their original waterproof packages.)

And, outfits that had too much of an **ICE SENT** in their assets and requested actual needs, which helped support stock more rationally.

So, outfits that were hurting began to get their parts...

**...AND
THEY ALL
LIVED HAPPILY
EVER
AFTER!**



FREEZE!

WANT
TOUGH TREAD
AND TRACTION?

If you're searching for that perfect set of plugs to drain your machine—**freeze!**

Tactical Equipment—If yours is a "combat-ready" piece of equipment there should be a fresh supply of tread-bars on hand or within reach to prepare it for temperatures between +32° and -55° F. If it's not your choice, the machine that's already in your equipment's cooling system.

The latest trend in machine tread is tactical equipment (tracks, carriers,

gridders, dozers, scrapers, etc.) is in TR Cord 691 (Aug 69).

Although you normally have your equipment's cooling system protected only to the maximum low temperature for your area, you may be called in a hurry to go someplace where the mercury hits 35° below.

Administrative Vehicles—With these jobs you do like TR 38-6002 (Aug 69) says... drain machines only when it shows signs of being overhauled.

A special set of tread patterns is offered to manufacturers using these tread bars. It's a standard tread pattern which has been designed to provide extra traction and wear life on hard surfaces.

TRACTION TREADS

TRACTION TREADS are available in a wide variety of sizes and are made from a special tread bar.

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AIR MOBILITY

Who says that you're about to pull a Freewheel Maintenance Daily on your back? Good deal. Just may have and play it cool, man.

To really check out the object of your attention let's capitalise on developing a "seeing eye" and make the "look" test.

Hey, for example, you're running down a TM 71-4320-204-20942-117 for 600 on your floor (284-124, 600) for 120 days to eye the other (leave No. 120 days to eye the other (leave for obvious damage and don't, work in front of you (with the heavy switch out in a non-rolling hot gear) ... and the shop was just re-looked!

ORDERING OUT A BIG PARTY!

**EYE IT —
TRY IT**



The bold one! Before you decide the gear is happy here's a good place to see the "seeing eye" technique, man. Well, all you do is trace the element wire from the gage to the fuel tank.



Deliciously like this wire would be printed up on the PMS, 600, No. 121, but when you're dealing with vibration, fatigue and engine heat to heat you never see will when the wire covering will be go.

No, it's not unusual for the wire covering to wear down to the bare wire, showing out the fuel gage. Finding the real problem will save you a lot of the 600 and allow you to.



Take another example—checking the fuel tank and support for damage and security as called for in 600, No. 120 of the latest PMS. Now here's where you can put some real feeling into your work.



Place your index on the tank support and use a little back-and-forth wobble power. Any movement or popping sound will tell you that you've got a faulty tank support that needs to be fixed before the bird is released for the flight.

Now ... play it cool when you pull the PMS. If that wire is broken, a correct job is missing, or a nut is loose, you'll spot the problem by adopting the "seeing eye" and "look" techniques. Give it a try.

DRESSED TO LIVE?

When you rally back to work the weather's good, you're dressed to kill, right? But how many the next time you're scheduled to take off on a mission, are you dressed to live?

If you have any doubts, schedule a showing of Training Film 40-5025. It'll show you the benefits of wearing the M1A1 helmet, the weather checking, gloves and boots ... in color, so-bad-



TO SPRING UP AN AGING BEARER ...

DIG-DIG-DIG, MAN!

★ STUNNING ★
SUPER SONG

MAN OF
IRON,
COPPER,
SILVER, ETC.

POW! ZAP! BOOM!



When your Bearer (1-8) gets ready to do jobs, stick to the lanes and a little path around the gills, chains and shaf'ts for an extra dose of generative maintenance on the Portland.

Now, C/P Reliable gets regular PM every 100 hours. But it's during those 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th PMP's that you want to dig deeper ... pulling moisture on an aging bird you might not.

BIRD'S FOUR BEST 1

Take the wing area listed in TM 11-1103-209-20/PMP 038 Jul 04. Normally you just eye the metal for damage. But on the 1st PMP you take out the working bolts and give them a straight-up parallel check.



You also eye the most working locations for cracks, corrosion and soot, and check the most loadings in the location for elongated or twisted bolts. You're allowed 0.003-in. wear between the loadings and bolts.

While you're at it, too, this is a good place to trim your staff. (Make with a hole saws on the end, before you usually take it off.) Then you'll be able to tell if there's any "crack" boom from.



This dig-a-little-deeper bit gets off inches from water-ups and lets down close the your bird. Remember that the PM standards are the minimum inspection requirements. So go to it!

PM 100 0000 100

Another wrap-up that you might head off is a shaking, shivering, all wheel. The loadings area, where the gear is attached, gets a good going over every 1st PMP and the wheel gets a lot of attention on the PMP.

Don't remember the old line, get over-

looked. It's not a good idea to start changing gear parts until you first check the tire rubber. If you have an oil-resistant tire for the bird's blow-pipe. (This also has a decided effect on the pilot?)

For a non-rolling bird you need rubber on both edges of the rail wheel rim, not both.



KEEP BIRD CONTROL (BY

When you eye the various compartments for damage and soot on the PMP, be sure you've checked the 20-117/ABC-04 and C-1817/ABC-05 control panel cover on the top of your Bearer. If these panels get wet the controls will corrode and the pilot's life with the one.

To see them on radio squawks, be sure you take the cover off and dry the compartments thoroughly.



THE BIRD COVER TO GET CONTROL PANEL



That's it, it takes a heap of PM to put an aging Bearer back on shape. Even brushing a coat of varnish on the steel frame will prevent the wood and give the time and expense of a job change.

So, the next time you face up to a PMP—dig in. Be keep your Bearer in the blue you need all the savvy in your command.

THE TIE THAT BINDS



FR-4044-B1

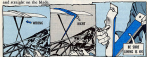
Sombody ought to grab a big, fat rubber stamp and mark flags in bold red letters on the main rotor blades on their Bess B and C models and the B and C model Raven choppers. These sling wings are made of wood, and you can nick 'em without even tryin'.

First-time, all you gotta do is tie 'em down wrong, or let the tie-down assembly get a little worn and loose, and booby, you've got problems.

All it takes is a little wind and the anchored blade starts moving. If the tie-down assembly is set wrong or loose, chances are it'll slip sideways, and the next thing you know the front trailing edge of the rotor blade has a big nick in it. The nick can be serious in . . . minutes can ruin the whole blade.

Keep an eagle-eye on those tie-down assemblies, and you'll save yourself a headache, and the elbow grease it takes to repair the blades.

Make sure the tie-downs aren't come out of the top of the assembly and fall down across the edge of the blade. This will give you a more secure anchor job. Be sure there's a healthy lining in there, too. That'll help keep it tight and straight on the blade.



If your bird's got metal blades, they have rubber liners' case, also, and the same tie-down slope applies to 'em all.

RAVEN PUB POOP



Dear Windy,

We've been using TM 1-20-200-8 (20 Oct 88) as the guide for pulling together. Most on our Boeing (20-200), but the other day somebody said we ought to be using TM 22-120-200-30 PWD, PFI, and PMP checkbooks.

How are we to do it. Can you help us out?

SPE B. A.

Dear Specialist B. A.,

TM 22-120-200-30 PWD, PFI and PMP are used for the D, F and G models only.

For the B and C models keep right on using TM 1-20-200-8 (20 Oct 88) as your guide.

Windy

STOP FAST STARTS



A jackhammer user might be OK in a new but it's not when you crank up a reciprocating chopper like the Boeing (20-200).

TM 22-120-200-30 PWD, PFI and PMP says to open the throttle until you feel the device and then back off slightly. This will give you the RPM just above idle, which is just what you want.

If the throttle is open up beyond the device you'll get a fast start and on an un-loaded engine that is similar to runaway drive shafts.

It only takes a few fast starts to weaken the generator drive shafts—the one. With continued fast starts the shaft will show off and that means a deadlined bird, for real.

So, stick with the Pilot's Checklist . . . no matter what bird you crank up.

MUSCLE-BOUND?

WANT MORE JOBS?
TRY THE NEW
MUSCLE-BOUNDED
MILK!



WANT MORE JOBS?
TRY THE NEW
MUSCLE-BOUNDED
MILK!

Dear Wanda,

Before I develop a muscle-bound arm, can you give me some tips on how to check the Mojave (20-27) shoulder harness lock?

Does it fit or fit 50-1 (500-500-50000)? I'd love to see to check the positive locking. The manual position is no problem but no matter how hard I yank on the seat cable in the automatic position, it won't lock.

What gives?

SP8 E. R. E.

Dear Specialist E. R. E.,

There were two types of inertia reels put in the Mojave.

The older reel, MA-1 type, P/N 21-0111-21-000, can be field tested only for positive manual locking since the automatic feature depends on wear/tear of the whole reel.

It looks like you have the old type — but don't worry it. Just pull the manual check.

The newer reel, MA-3 type, P/N HR56-1001-00-1A, should be tested for both manual and automatic locking. With the control handle in the automatic position and all the check cable reeled in, a quick jerk on the cable will lock the reel.

Wanda



PUT 'EM UP OR DOWN TO STAY

It may be hard to believe, but an empty Over passenger seat can spell extra work and trouble for you if it's not locked up, or locked down in post-close properly.

That U-1 seat is not very big, or heavy, but if it slips loose from the wall and falls, chances are it'll put a couple healthy dents in the aluminum fuselage sheet it's mounted on.

Without the legs of the seat in place, the seat will fall past its normal position, forcing the hinges into the case. The same thing can happen if the legs are not locked in position and fold up under the seat with a passenger in the seat.

The maintenance instruction chart in TM 11-2118-206-20 (Jul 60) says badly damaged doors have to be replaced, and that replacement is an organizational job. If the door's not damaged enough

to need replacing, there direct support can lock out the door for you.

The easiest thing to do, then, is to put 'em up or down in way . . . that's the preventive maintenance way.



RETURN OF AIRCRAFT REPAIRS



LEAD-ACID
AREA



KEEP
YOUR

NI-CADS

CLEAN

NI-CAD
AREA



Every thing about a nickel-cadmium battery. It does pretty much the same basic job that the lead-acid type does in your vehicle... but with a difference in the making! You might say it has a personality of its own.

You could add that it goes for the clean life even more than a common vehicle's. In other words, if you keep it clean and charge it right, your nickel can outlast the alternator, cranks or other equipment it's power' the power to.

You can't say the same for your lead-acid battery. Not then, the nickel can a much bigger handle. Which makes it worth worrying about.

To guarantee some juice, consider the electrolyte for the nickel.

The potassium hydroxide — distilled water electrolyte is a different pump-out from the stuff that keeps lead-acid batteries juiced up. Like, it doesn't react

chemically during charge or discharge, and there's no noticeable change in specific gravity of potassium hydroxide (KOH) electrolyte whether it's sucked or pooped. But in, the KOH takes for itself comes out of the bottle at 1.285 specific gravity. But performance of the battery may vary with the same whether the specific gravity reads anywhere from 1.200 to 1.280.



Enough for the background. The point is, there's no hydrogen smell

enough to measure the little bit of electrolyte that rides above the plates in the separate nickel cells. Which makes a nice balance. It makes no sense mind that there's not enough liquid in that a hydrocarbon bulb. Because a specific gravity reading would do nothing for you anyway.

What really bugs battery performance is contamination of the KOH electrolyte. The worst kind of KOH killer is acid. Like the kind that's in the electrolyte of a lead-acid battery.

Since you can't get a contamination reading on a hydrocarbon, you've got to be extra-careful to keep your nickel juice clean. Keep acids, hydrocarbons and other items used with hydroacid electrolyte away from the KOH. This leads problems come up when the lead electrolyte for the nickel is checked before it's put in the nickel cells.

You can poison your alcohol by using the same hydrometer for it and lead-acid batteries.



No, use the 10-200-70 hydrometer (PN 6600-001-1111) that's in the 10-50071 alcohol and its . . . and keep it clean within brackets' distance of lead-acid hydrometers. In a bind, you can substitute the standard marine pool hydrometer (PN 6600-171-0171). Put in both bins, and keep it away from lead-acid eyes.

In normal storage, the specific gravity of KOH doesn't change and should not require checking. Besides, a specific gravity check wouldn't indicate the state of charge.

When does give you the clue on the state of charge is the liquid level in the cells. Pick the right class on book, though. Like, when you're finished charging the batteries, wait at least three hours to check, add or remove electrolyte.

NEVER CHARGE WITH WARM WOOD. IT BURNS INSIDE, YOU BURN OUTSIDE. BY THE WAY, DON'T.



IF YOU USE THE 10-200-70 HYDROMETER FOR BOTH, DON'T MIX UP THE LIQUID. SO THROUGH THE PROCESSING AT LEAST THREE THREE TIMES!



After the battery cell . . .

10-cells lead charge . . .

After 10 hr

10-cells

Otherwise, the liquid level can fool you. First-time, when the alcohol's discharged there may be no electrolyte visible above the cell plates. You could be tempted to add KOH . . . but don't!

When alcohol discharges, the KOH is sipped up by the porous cell plates and you can't see it. When the cell is charged, the KOH is forced out of the plates.

Which means if you add electrolyte before charging, you're playing with charge. Like, when the liquid is forced from the plates during charging, the cell you put in prior to charging cannot retain power — and, may be explosive.

Your entire liquid compounds the same by overfilling and creating car-



not drain through the case. Naturally, your battery discharges in a way that should be avoided.

So, to, keep electrolyte away all you manage the battery. After a full charge and proper waiting period (5 hours), the liquid should cover the plates. They level from the top of the plates to one-fourth inch above them is good.

If the level's too low, add the ready-mix alcohol electrolyte (PN 6600-011-0111). If you don't have the ready-mix, be careful how you mix the potassium hydroxide and distilled water. If you mix it wrong, you could make big problems.

KOH (potassium hydroxide) generates heat, it's corrosive, and dangerous to you, if you inhale it.

Don't inhale and splash, heat heat!

The KOH gets there just you sniffed or drank water directly into the KOH. The hot heat hold up on what it is your face... which means you, don't work, in the correct splashes and water!

If the KOH splashes on your clothes, hands or wherever, flush the splashed area with the cold water—or then



prevent further acid solution. If it hits your eyes, splash generously with the water or hydro acid and make sure you splash.

The way to avoid these problems is to add the KOH to the water. Pour the KOH in a little at a time so that it has time to dissolve. Which means pour the KOH slowly slowly.

For best protection, follow the rules and wear the gear provided—like rubber gloves, rubber apron and protective goggles. These items aren't passed

PROTECT



out just as they could fill a drawer. They're for serious use.

Be careful with the liquids already. It's time for solid advice.

Like, keep your records close, and keep 'em dry.

Prevention, mostly, don't use containers your battery as badly as full-back acid. The clean, or any other for-rip conditions, can discharge the acid cells. To guard against that possibility, keep the records covered.



To ensure that no dried electrolyte (white film), use a stiff brush or nylon brush. If you can, flush the tops of the cells with tap water; use the brush on moisture wall, and let the tap water drain and dry. This can give the drying process a boost with compressed air, if you have it.



Now you're all charged up about this old-time, old-time's best to skip the charge in the battery.

- 1 CONSTANT CURRENT
- 2 STOPPED CONSTANT CURRENT
- 3 REST
- 4 CONSTANT VOLTAGE CONSTANT POTENTIAL

ARE YOU IN THE CHARGING BUSINESS?

NO, DON'T! IT'S NOT A JOB, IT'S A LIFE!

STOPPED CONSTANT CURRENT
is not a half-life!

The stopped constant current method is for rapid charging and goes like so:

After discharging, start the charge of a 36-ampere-hour battery at 54 amperes charging rate. When it begins to gas (about 45 min. time), work out the same formula you did for constant current. Like, 54 amperes-hours divided by five gives you 10.8. Drop the charging rate to 10.8 amperes. At the gassing point, when you drop the charging rate, the battery will be about 70 percent charged. Stop the charge when the voltage of the battery reaches 14 or 13 volts for a 19-volt battery, if necessary, drop to 11 volts above 12V, and go to 11 volts below 12V.

For both constant current and stopped constant current, the battery must first be completely discharged. An IRE-1074 (P/N 5001-60) 2450 can be used, for instance, to discharge a 24V battery to less than 10V, or 12V job to less than 7V.



- 1 - 4 AMPERS

STOP CHARGING RATE
IS 1.8 - 0.8 AMPERS
9.0 IS 10% CHARGE

Naturally, if you have a 36-ampere-hour battery, you'd start the stopped constant current charge at 50 amperes, drop it to four amperes on gassing, and so on . . . adjusting the charge to your ampere-hour rating.

With either constant current method you can use a resistor to a more-constant battery charge.

THE FORMULA FOR FAST CHARGING IS SIMPLE.

It's 1.8 volts per cell for fully charged batteries but with other lead-acid would you have something than charged. I.R.A., if you've got a 19-volt, 24-volt battery, you should charge it at 10.8 volts (which is the result of 19 times 1.4, divided).

THIS CHARGE REQUIRES CURRENT LIMIT FOR BATTERY ONLY TO PREVENT DAMAGE!



+ 5 -

CHARGE RATE

CHARGE AT THAT RATE FOR 7 HOURS.

FOR EXAMPLE:



- 5 -

4.8 AMPERS

CHARGE AT THAT RATE FOR 7 HOURS.

If you get too much gassing or spitting, lower the charging ampereage or stop-the-charge. Stop it, do not!



19V
1.8
34.2

19V
1.8
34.2



Most common, and preferred, is the constant voltage or constant potential charge. Naturally, it's the simplest, most satisfactory and dependable method, since batteries can be charged in as little as one hour . . . without first being discharged.

The constant voltage charge is applied by a voltage-regulated generator or a battery charger like the PP-111. The charging current is automatically regulated by the battery—which means you can't overcharge said battery.

The formula is simple: Compare the voltage rating of 1.6 (1.5 volts is an average) volts per cell. With a 10-cell battery, you'd charge it at 16 volts. Set the regulator to cut out at between 15.5 and 16.5 volts when you have an average temperature of 70°. Below 60°, set it to cut out at 14.5 volts per cell, and above 100°, set it at 1.55 per cell.

HERE'S ONE OF THE FORMULA WORDS

$$10 \text{ CELLS} \times 1.6 \left(\frac{1.6 \text{ PER CELL}}{\text{AVG. TEMP.}} \right) = 16 \text{ VOLTS}$$



TEMPERATURE	REGULATOR SETTING
Above 70°	BETWEEN 15.5-16.5
Below 60°	1.45 PER CELL
Above 100°	1.55 PER CELL

Another tip: When you charge a 10-cell, 36-volt battery through a 16-volt outlet, you could be charged at 36.4 volts at 70°F. Yep, the "36.4" is the result of 18 times 1.6. Below 50°F, use 51.0 volts, and at 100°F, use 37.8. Any time you get more gassing, lower the rate one volt at a time, until gassing stops.

THE CASE FOR CHARGING

Some newer batteries (such as the IM-412 with its PU-512 generator) now have their own charging systems and generators, with instructions spelled out in TR's and TM's. If that's the case, use the specific pub instructions.

If your battery has general application, you can use the charging procedures spelled out in TR 11-4148-105-11 G (p. 40). —the operator and organizational maintenance TR for all such.

With all models, you keep the vent plugs in place, but loose, during charging.

Some final words on charging:

Battery cells need balancing because of age, state-of-charge and so on. Therefore, for best performance, a complete cycling is needed. That is, discharge all cells completely to zero volts and then recharge them ... which brings all cells up evenly. You may even have to do the whole cycle two or three times.

And ... when a battery needs full charge, bubbling and gassing increases. The gas fumes are flammable. So, work in a ventilated area and keep off the



smoking when around aircraft under charge. No kidding.

Also ... temperature affects charging voltage too much like you're already warned from the different settings. The wrong setting can short cells or keep the battery from being charged.

For instance, when charging with an aircraft generator, correct setting for the 15-cell, 24-volt battery mentioned before would be 28.5 volts (as per the formula). The 28.5 would be good for any temperature range from 52°F to 80°F.

The formula's easy for cold or hot climates: For any range under 52°F, add a volt (for 15 cells it would be 29.5 volts charging rate). For any range over 80°F, drop a volt (27.5 for 15 cells).

NOTE
FOR DIFFERENT
AGE
HOT AND
COLD
CLIMATES

FOR
TEMPERATURES

UNDER
52°
OR
80°

ADD 1 VOLT

DROP 1 VOLT



THE CASE OF THE METER MAYBES

HALP! MURDER

That incomprehending MPO meter on your RT-660 does all sorts of mysterious things you'd be just like a lot of our little female types, sometimes.

Like, it can buzz ... but all it ever really appears to be on the numbers. It won't pay you no interest or jump no conclusions on either side.

First-time, see you're putting out a message down the line on your Galaxy-6 radio set. You catch the MPO meter of the RT-660 in the corner of your eye—and crash for the panic button.

Why? Because there's not even a flicker of power output showing on the meter. So, you figure your set's stopped putting out for you.

But—maybe right there!

Things may not be what they seem, so don't push the Pile-up ... yet.

Actually, there's a nice status-meter glass that can do more than the ordinary system. Maybe the only thing wrong with your set is that the glass looks funny—call it a flicker!—but turned out. It does not affect the output of your transmitter one little bit.

The trouble don't get off the set just because your meter goes out. Keep operating, and you'll find out soon enough whether you've got a bad set or just a more meter. Naturally, if you find out the set's not putting out, it's time to call in your equipment.



Another time that your meter might get stuck on you is when after no gun power is shown, you find the antenna swinging away contact. In this case, your meter shows lots of output power ... but the peak over your set you get about 100 per cent.

You get a good meter reading by most of the correct read various close to and most, but that, however, is about as good as a drink-up from heaven.

If you're not getting anywhere even though your meter tells you you are, you'd better make a trip to your repairshop.



ELECTRICAL

"I'd just finished connecting the wires to the power source."

"Oh, yes."

"Good!"

It's the same old same with different words, but you've heard it before . . . "For the want of a washer for a connector, or a detail in the waterproof-electrical system went out and the truck was lost."

You don't have to find yourself in a spot like that. Mo Stewart. All you have to do is to know how to match up your connectors, FID's, accessories, and wire gauges.

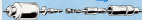
Remember, these electrical connectors are in addition to the Douglas and Bendix connectors you find in M4 9-4-5014-5011 (May 62).

These connectors aren't found in a kit in our EM. You'll find them listed in your DWD catalog and supply catalogs.

FOR THE 240 TO 2400 CABLE
The 11 gauges do not run parallel closely

"Oh, that's right! The design of the cable is important."

DOUBLE CONNECTION



DOUBLE CONNECTION



CONNECTORS

Concrete Key "T"
 Sags Wire 12, 14, 16
 FSN 2872-299-8928



Ball, Bolt (Ballrod)
 Sags Wire 14
 FSN 2877-288-2762



Ball, Bolt (Ballrod)
 Sags Wire 14
 FSN 2882-292-8262



Ball, Bolt, Fitted
 Ballrod
 Sags Wire 14
 FSN 2882-299-8872



Ball, Bolt (Ballrod)
 Sags Wire 12
 FSN 2890-298-7876



Ball, Female (Ballrod)
 Sags Wire 14
 FSN 2892-299-8287



Ball, Female (Ballrod)
 Sags Wire 16
 FSN 2892-292-8244



Ball, Female (Ballrod)
 Sags Wire 12
 FSN 2896-299-8877



Female, Female
 Connector
 Sags Wire 14
 FSN 2896-297-2722



Female, Female
 Connector
 Sags Wire 14
 FSN 2896-297-2722



Female, Female
 Connector
 Sags Wire 12
 FSN 2896-297-2722



Female Any Female
 Ballrod
 Sags Wire 12, 14, 16
 FSN 2882-298-2887



Female Any Female
 Straight
 Sags Wire 12, 14, 16
 FSN 2890-299-8876



Wedge, "T" Female
 Endring
 Sags Wire 14
 FSN 2870-288-8887



Wedge, Female "T"
 Female Endring
 Sags Wire 14
 FSN 2870-292-8887



Wedge "C" Female
 Endring
 Sags Wire 12
 FSN 2870-292-7888



Wedge, Flat,
 Female Endring
 Sags Wire 12 Inset
 FSN 2870-298-8882



Wedge, Inset Flat
 Sags Wire 14, 16
 FSN 2870-298-8882



CALL
 800-255-7800
 FOR
 DETAILS



In case you're not quite sure how a good connection is made, here're some tips.

You push the wire through the male shell and strip off the insulation. Then you put the stripped wire through the small hole in the washer. Next slip a nut on the stripped wire, then crimp or solder in place.

SEE WORKSHEET
ON 120-70-0001



There're two types of male shells — ribbed and plain — you can use to identify the housings on polarized wires.

The ribbed type female contact terminals would spread on the male terminal had your nut and/or wire at all, so a metal ring was added to the female. The ring keeps the terminal from spreading and it keeps the terminal round so you'll get a good contact.

You'll find two female metal terminals in the supply system. They both have that metal ring. You should know how to attach the wire to each.

SEE THE WORKSHEET



SEE WORKSHEET

If you're using 12-gauge wire, it's better to use the crimped type. You can use the soldered or crimped type with the 14 or 16 AWG wire.

When you do have to use the soldered-on type for the 12-gauge wire, you have to use the small washer (PN 1142-208-0004). Peel off the insulation far enough for slipping the washer on, bend the tube over, and solder the wire in place. The washer goes between the insulation and terminal.

Insulating Compound, Electrical, will help when peeling on or taking off the shells. It also makes the connection more waterproof. You can get the compound in a 3-oz tube (PN 1070-214-5271), or an 8-oz tube (PN 1070-224-1276).



INSULATING COMPOUND

Those shells don't go for cheap bonding business. If you can't get them apart by pulling, then insert something bonding cheap down between the shells and pry out like you'd they come apart.



MALE SHELL



PLAIN



PLAIN

WASHER FOR

TERMINAL



WASHER FOR

TERMINAL



LITTLE LIST FOR LIGHT



HEY, THERE!
SOMEONE'S
SHOOTING LIGHT AT AN
INFRARED LIGHT SOURCE.
WHAT'S THAT?

HEY!
THE
BATTERY
ISN'T
WORKING!
LOOKS
OK
ANOTHER

All you trying to make things look cooler with your ME-004 flashlight (PN 8150-004-0001)? Well then, get yourself an infrared light filter, using PN 8150-008-0001. It's listed in SC 1000-01, dated Mar 84.



And, while you're at it you can go through Vol 2 of C 6200-01, A (Jan 84) and find out how:



For showing a little light on the subject, it'll take power like you get from a RA-58 battery (PN 8150-100-0000) which is in SC 6021-00-01, dated Mar 84.

TOOL CHECK



Dear Staff-Meat,

How about the special tool sets authorized by a vehicle's TM (MOT)? Are they part of the HRL? Do they belong on the PLE? Or, are they accounted for in the unit's property book? And, how about when you need only specific components of a special tool set? How are the components accounted for?

GRE G. L. S.

Dear SAC, L. T.,

A special tool set (see A or B) is not a component of the vehicle's TM's authorization; a special tool set only when a unit is authorized organizational mechanics, or, the tool set is definitely not part of the HRL.

Furthermore, a tool set, whether it costs \$1 or \$100 is based on a non-expendable item. And, that means it must be accounted for in your property book. This applies even if some, or many, of the set's components are expendable items.

If your unit needs only specific components of a tool set, you account for 'em in the property book only if the components are non-expendable items. See part 1-2.11, AR 115-11 (25 Oct 85).

The only records you need on individual, expendable tools are those the O&M Man sets up to make sure authorized quantities are on-hand and that the tools are being properly used and maintained.

And, last but not least, expendable tools don't belong on a PLE. A PLE takes only repair parts and supplies, such as acids, compounds, greases, seal wax, sandpaper, welding supplies, equipment cleaning supplies, pipes, etc., that are authorized by equipment manuals. Part 4-2 in AR 115-11 tells the story.

ROD CARD CANCELING

Dear Friends,

What's the proper way to cancel a request entered on RA Form 1507?

IRA R. L. D.

Dear Applicant R. L. D.,

Easy.

If one other carrier follows the request you're canceling, you do it this way: Line out the entire entry and over-price it "cancelled."

Then you make the next entry as per usual.

When one or more carriers follow the one you're canceling it makes a little more care. Care is in addition to lining out and over-pricing like before, you must also erase and correct the printed carrier in the balance-of-load column. You also fix through and correct the entry in the cumulative demands column.

Also, remember to make the cancellation note in your document register, if it's needed. See AER 719-15 (2) (2) (a) (i) Fig 6-2.



Cowley Radd's BRIEFS



Roll Records

If you're working on the Army's roll-
road, you can forget DA Form 800, 801 L,
843, 844, 846, 847 and 848. Instead of
them use DA Form 1404 from TM 28-
750. Also use DA Forms 1408-1 and
1408-2 instead of 20 Form 843. Hang
your 20 Form 842, though. You still need
that as spelled out in DA Cir 730-10 (1
Aug 65). The director's year authority still
falls 24-201, 202 and 203 and AR 730-
100-1 get updated.

All the Same Now

If you're confused about screen-back
pencil free travel for the G743-series
2½-ton trucks, watch for Change 1 (20
Dec 65) to TM 9-2000-209-20 (Apr 65).
It corrects item 2 on page 23 to read the
same as page 180 on page 263 of the
TM, which sets clutch pencil free travel at
1½ to 2 inches.

FM's Go Pigeon

Now you can send in your order to
have Army doctrinal publications (those
include your FM's) sent to your unit's
pigeon distribution. You use DA Form
12-11 and it goes to the Baltimore Publi-
cation Center, DA Circular 210-3 (Jan
64) gives the word.

Hardware: H-E-L-P!

Anything you replace a shock in your
front system makes sure and purchase the
unserviceable unit goes back to support!
These shocks have to be repaired or
rebuilt real fast to keep the supply lines
flowing—and this can't be done if
they're gathering dust in your shop. So
make 'em-down, dig 'em-up and send 'em
back for repair instead! The shocks you
save may be your own!

Vehicle Cover Change

The closure covers used to protect
vehicles during shipment are now un-
available items and they're no longer
expedient. TM 9-2000-379-20 (Dec 65)
has the specs. So... a little more care
and another is called for in handling and
using these big boxes.

WSS At States 78-700

Replacement armor for the 2½-ton
military truck with the 121 477-3 en-
gine is TM 9-200-765-2145, but if the
original armor is still good, your support
will set you up with the same design as
the new armor by applying AND 9-
200-126-20-1 (Dec 65).

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

YOU MAY NOT BE AS
"PROTECTED" AS YOU
THINK... BECAUSE,

HEY, MAN,
LET THE
OTHER GUY
WORK!

DEARLY
BOSS!

YOU ARE THE
OTHER GUY!

DEARLY
BOSS!

HEY, MAN,
LET THE
OTHER GUY
WORK!

WHEN YOU BUILD UP A LOAD OF PARTS TO
"PROTECT" YOUR OUTFIT AGAINST THE FUTURE
YOU'RE NOT BEING AS SMART AS YOU THINK!

WHY?... BECAUSE UNREALISTIC PARTS ORDER-
ING CREATES UNREALISTIC STOCKING AT SUP-
PORT AND THE RESULT IS, SOMEBODY ELSE WILL
BE HURTING!

NOW, IF THE OTHER GUY DOES TO YOU WHAT
YOU DO TO HIM... YOU GET HURT.

SO ORDER WHAT YOU NEED IF, WHEN, AND AS
YOU NEED IT. NO MORE NO LESS.

THE SYSTEM WORKS IF YOU MAKE IT WORK!