

Issue 79

PS

1959 Series

THE
PREVENTIVE
MAINTENANCE
MONTHLY

**WAGONS
MOOOO**

DO YOU'RE
THE GUY WHO
DIDNT DO
HIS
Q-SERVICE!



PM FOR BATTLE

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

WHEN YOU—

CLEAN...
ADJUST...
LUBRICATE...
FEEL...
INSPECT...
TIGHTEN...

...the ...

1. **How many people** are there in your family?

Figure 1

...and the ...

John Deere, the world's largest manufacturer of farm equipment, is a public company. The company's stock is traded on the New York Stock Exchange. The company's headquarters are in Moline, Illinois. The company's website is www.deere.com.

... [start making your own](#)

...the



THE
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MONTHLY

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100

1. **Introduction**
 2. **Background**
 3. **Methodology**
 4. **Results**
 5. **Conclusion**

It carries your ideas and modifications, and helps to prepare your chapters. Just write to Jeff Hall, Room 14, Natural Science Building, New Jersey State and addresses are listed in the sidebar. The printing of this publication has been approved by the Director of the Bureau of Publications, U.S. GPO.

the construction of the regression model.



There are some questions that had to be answered before it was decided which edition of maintenance would do each job.

What is the answer if the man is a questioner who wants the answer?
The answer is to ask the MAC.
What MAC's does that? The answer is to ask the MAC.
Is the man and his equipment available?

The answer to these questions by a line of men people getting their hands together under a MAC. They want to make it easier for you men in the field to take care of your equipment. They've had a lot of figuring out, before they could come up with your MAC—cost of training men, cost of training men, cost of tools, etc.

Once the questions have been answered, then your technical manual is written together with it—and you're not allowed for the job or the designated edition.

There's a difference between your old-type manuals and the new ones coming out which have the MAC in them. (Follow the MAC.)

Like the law, if the MAC is wrong, it can be changed. Any time you find something in your MAC that doesn't agree with your latest repair parts list, fill



out a DA Form 264 (Recommended) Changes to EA Technical Manual. Fill in the Supply Manual 7, 8, or 9 and send it along to the address you find in the front of your manual under the paragraph headed "Discrepancies and Suggestions."

Another thing to keep in mind in these situations is different times and places the change and there will be times when it will be best for certain work to be done at a lower edition than that given by your MAC. If so, this work can be done when the maintenance officer of the higher edition is available and the work was assigned (you can do it). Each time you want a change to a lower edition to the best advantage of all concerned, you've got to get the OK from him.

There's one paragraph of your MAC that you'd best become acquainted with and that's your Explanation and Definition found at the very beginning.

It gives you the definition of such things as "Service" (includes cleaning, adjusting, preserving, explanation of tool and lubrication, etc.); "Repairs" (includes maintenance items for maintenance items), etc. It also tells you what the different symbols (such as R, 9994, etc.) mean.

Once you learn to use your MAC there should be no doubt in your mind as to when does what and your maintenance will be easier.

*Maintenance Adjustment Chart

SOLDERING STORY



Can you imagine a time when you're explaining a theme or motif-like in your mind etc., a speaker is like in your hands, and you're got some wondering to do. For the small jobs, knowing how to achieve can mean the difference between being something or explain it, for the important stuff, like writing your first dramatic composition, achieving is a must if you wish to be so much.

Thus, in order to address whether you as leader are doing well and revealing that the facts

There's nothing you need and nothing to do but
withstand, as long, as you can.

000000

Basically, there are two main categories of metal types: all-steel and steel-reinforced. All-steel is made from fibrous metal mesh and can be bent to a degree to suit. Working with electrical wiring, you must make sure cables, wires, the metal that's run over them and won't conduct electricity. In your power connection is held together by cables, the, instead of getting on the the connection will conduct electricity at all



U.S. Department of Education

Use the widening tool that's handy—either a widening chisel, electric widening iron or gun, or the special tip for your oxy-acetylene job. Tip size will depend on the work you do—usually they range from 1/4 inch to 1 1/4 inches in diameter.

Remove inside covering from diamond-type soldering iron and remove the soldering iron and the tip on gooseneck joint so you get a good flow of heat. Always try to use a high wattage iron—most hair straighteners have time to needed to make a connection, and there's less chance of damaging wire insulation and charred components. Finally, use real delicate equipment you don't want to overheat the joint.

Before using your existing loan, make sure it has a variable rate. If it's a fixed rate, you'll have to refinance.



If necessary, take the rig with an empty drum on site to the next rig location at the end of the well. This technique, called "pigging out,"



To the top, bend the lead till it's just enough to make the sides flow freely, then hold rollers at the base of the top and let it flow to the point exactly as if roller till it's needed. Break all my connections.



Remember to adjust the top offset reflecting each point and add any other losses.



THE WIRE...

One is ready by putting back the insulation so's you have just enough bare wire to make a good mechanical connection. Use a pair of wire strippers, but if you don't have any, you can use a pair of pliers to pinch. Don't nick the wire. A nick or cut causes it



DO NOT STRIP WITH PLIERS

break open and it breaks loose. On twisted type wire, be careful not to cut into the strands. You may have to clean the wire by scraping with a knife if the wire happens to be coated with varnish. Twist the strands together to make a good connection.



DO NOT STRIP WITH PLIERS

On the wire-like you cleaned the soldering iron. Not too much solder—just enough to coat the wire strands lightly and evenly. It's easy if you use the iron on its handle and rotate the wire on the tip.

Caution if you're cleaning wire which has plastic



IF THE INSULATION IS PLASTIC, DO NOT STRIP WITH PLIERS

insulation—if you hold it with pliers, heat from your iron's tip is made the insulation. Hold it with your hand. If you've made a good mechanical connection you shouldn't need pliers anyway.

If the wire you're replacing had a piece of spaghetti (spaghetti covering) on it, be sure to put it back on; use spaghetti on any unexpected length of wire so long as it won't shorting.



DO NOT STRIP WITH PLIERS

DO NOT STRIP WITH PLIERS

make it work right.

Usually, you'll have a "service loop"—an extra length of wire, so that if you ever have to resolder it, you'll have enough room to draw it back.



DO NOT STRIP WITH PLIERS



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DO NOT STRIP WITH PLIERS

DO NOT STRIP WITH PLIERS

Close and use the pin or eye to which you're soldering the wire.

Wrap the cleaned wire one full turn around the pin or thing the eye to make a good mechanical connection. Use pliers to hold it more snugly.

Hold the wire to the pin, holding solder on one side of pin, soldering iron on the other side, so's heat will flow down pin to melt solder. You may have to hold the solder directly on the iron for a second or more if solder is flowing. Withdraw heat on the pin until you have a good joint.

Keep the wire snugly in place till solder's cool. (Just takes a few seconds.) If you move the wire before-hand, you'll have a cold joint—two months' hold by loosening of the flux, rather than fusion of the metals. Use a pair of long nose pliers to hold the wire (if it isn't plastic coated) between the soldering iron and the part. The pliers'll take away some of the heat which could damage delicate parts.

You'll know you have enough solder when you can still see the general shape of the joint being soldered. If you can't see the smooth of the soldered wire, you don't have enough solder.

Remove any excess glob of solder from the joint by holding the hot iron to the base of the glob and letting the excess flow up the tip.

Remember—too much solder makes it easy for the joint to come together. If possible, shake the component lightly to remove the loosened solder glob. Try to protect surrounding parts from the glob by covering the parts with any non-conducting material handy.



TO SOLDER TWO PIECES OF METAL:

Clean the faces and edges of the metals with emery cloth and apply solder-solvent of the kind cleaned surfaces.

Place the edges together and hold them firmly in place with a screw driver or tong at a 45° and touch both ends of the seam by applying small bit of solder.

Starting at one end, move the point of the soldering iron slowly along the seam, adding solder if necessary. It gets a smooth seam.

Turn the surface over and repeat the other side.



KEEP THE A
BOTH HANDS ON
THE HOT IRON.

A FEW HARDY TIPS:



Clean all metal surfaces thoroughly. Oxides and oil films are enemies for good soldered connections.

Always tin each piece of metal before soldering.

Never touch the heated tip of the soldering iron—oil from your skin will lead up the wick. Some gas for reaching around wires, or the heated part you're soldering to.



When soldering wiring, do one job at a time, and keep checking your diagrams or schematics as he sure you've got everything hooked up right. It's easier to do it right the first time than to go back and do it over.

Always put the new or replacement part in the same physical location as the old one. Your old wire'll be the right length and you'll know what you're doing when you look at your wiring diagrams.

Remember that solder will flow to the heat source, so don't hold your soldering iron to the wire any longer. You want enough heat to make the solder flow freely, but not enough to damage the part you're working on.



In working keep the soldering iron away from any other wires or parts close by your work—and patients. Keep your mind on your work. Keep the business end of your lead away from your bottles, too.



When removing the lead plug from the electrical outlet—grip the plug shell, *never* use fingers on your cord and plug.



Never use the tip of your iron as a substitute for wicks.



Never try to remove the tip from a hot iron—could damage the threads, or burn yourself.

Inspect the cord for frayed or cracked insulation—you don't want it to short out.

Always clean and tin your iron before putting it away, to keep solder from forming on the tip.

Never try to solder a container which has liquid in it—the liquid'll take away your heat and always make sure any container is clean before you start. If you must solder a container with liquid in it, make sure the liquid's non-flammable, and that the liquid level is below the point you're soldering.

Check the wooden handle of your soldering copper to be sure it's tight.

When not in use, put your soldering iron on its holder—never on its unprotected surface.

TIPS ON SOLDERS:

For most work, you'll use soft solders, which are alloys of tin and lead. You can tell how much of each is contained by the number, like 60/40, which means the solder's 60 per cent tin and 40 per cent lead. The more tin you have, the lower melting, softer and more pliable the solder, while the more lead you have makes it slower cooling, hard and brittle.

You use slow-cooling soft solder when you want nice smooth joints, while the fast-cooling stuff comes in handy when you can't hold the metals right for any great length of time. The big advantage to soft solder, of course, is its low temperature flow point. Solder is easy to handle. Solder that's 60/40 needs the least heat and the least time to apply.

HERE'S A HANDY CHART ON SOLDER:

MATERIAL TO BE SOLDERED	TEMP.	SOLDER	FLUX	SPECIAL PREPARATION ON TEMP.
Tinned lead	Soldering copper or iron	Sp70/30 Sp60/40 40/60	Zinc chloride, but rosin, rosinoid, glycerol or thiourea may be used to prevent corrosion	Clean lead surface with a scraper. Don't heat too hot, don't use a heatshrink. Use very little solder, but distributed uniformly and remove flux with water and mild solution.
Steel, galvanized steel	Copper or iron	60/40	See above	Don't overheat tool, check use a wet-bristled tool, powdered fluxes, flux-crowns and wet water.
Stainless steel	Large copper or iron	60/40, 50/50, 30/70	Flux above and	Don't make contact with hydrochloric acid, apply good wetbrush, let work for a few minutes, then flux with rosin and water solution by wiping with a damp rag, solder as soon as possible. The most heat may make metal bulge. Let parts cool naturally before washing off and transfer with rosin and water solution.
Steel, iron	Soldering copper or iron	60/40, 40/60, 30/70	Zinc chloride	Remove oxide scale by grinding or fining it by applying alternate amounts of oil ammonia and water and acetone before alternate to lead very slowly remove acid with water.
Copper & copper alloys	Heatshrink or soldering copper or iron	Steel copper or copper	Zinc chloride rosin fluoride and for heavy	A blowtorch works best. The lead type of flux, when through soldering, wash thoroughly with water.
Stainless & chromium alloys	Soldering copper or iron	Special types of 50/50, 70/30 Sn, 30 to 50% Pb— or regular 60/40	Roasting acid with 50% and chloride or thiourea	In heating metal for tinning, don't let heat leave from this metal, keep flame in motion. Use lots of solder holding it in until metal is bright brake flow solder but while making it into metal. Solder will collect in small globes at first and then no sign of forming film. Scratch area being heated until globe break down. Scraper infrequently may be used. Don't use too hot soldering copper. Let work cool naturally, then remove flux with water and solution.
Electrical wiring	Soldering copper or iron	60/40, 50/50, 30/70	Rosin	Be sure to bring heat in contact with metal so it is heated so it has a chance to absorb oxide film, use enough heat to dissolve it completely so it doesn't become part of the soldered joint.

HERE'S A MANDY CHART ON FLUXES:

Flux	Type	Form	Corrosive	Used With
Hydrofluoric (HF)	Acid	Liquid	Yes	Stainless steel, galvanized iron
RoHS	Organic or Resin	Paste, powder, paste, liquid	No	Flux-cored wiring, tin, copper, lead alloys
Salts	Organic or Resin	Paste	No	Lead
Resins	Organic or Resin	Paste	No	Aluminum, lead
Ammonium chloride (3% ammonia)	Salt	Gels, liquid	No	Heavy soldering iron (3% chloride)
Zinc chloride	Salt	Powder, liquid	Yes	Copper, galvanized iron and steel, zinc
Epoxy		Liquid		Pure tin, tin alloys



Here're a few tips to remember when using fluxes which aren't built into the solder:

1. Solid flux is highly corrosive, so don't ever use it on electrical connections or when it could appear on nearby work. If it comes in contact with cotton or silk-covered wires, it'll eat right through and destroy their insulating properties. Use solid flux for large, flat work on joints which are clear of other parts. The work must be easy to reach for cleaning, or remove any acid left on the metal, too.

2. Be sure to clean off joints thoroughly when you're through, especially if you've used rosin-core solder. Rosin is an insulator and, in mobile equipment, it could break off from shocks or vibration and lodge in critical areas.

3. And remember—pieces with silver plating or even one or two around electrical work—they've been used for fluxing soldering iron and soldering small metal surfaces together.

Comic Road's

TRUCK & TRAIL REPORT



He's fooling around on this one

Wheel cylinders are something you don't want to fool with. On the Q44-series JH-line trucks, though, there have been many reports of these cylinders rusting and corroding. It's unbelievable's why. With rusted or corroded wheel cylinders, the brakes of a truck can lock, sending it out of control.

So, what do you do? You take whatever maintenance measures you can to try and stop a serious accident before it happens.

OK—what's some of these maintenance measures you can take? First, at every Q service you make sure those wheels are pulled and those cylinders examined from nose to nose. If they need replacing, you get them replaced.

If your vehicle isn't moved, like in National Guard units, exercise the brakes every so often. This'll work the parts of the cylinder back and forth. When possible move the vehicle forward and backward and apply your brakes both ways—that'll get maximum movement of the cylinder plunger.

Between Q services, if you have any



doubts at all about the way your cylinders are acting, don't hesitate—pull the wheels and make sure. A few hours time can very well save your life or someone else's.

Any—any—any trouble you have with the cylinders should be reported immediately by a QTR. It's important that the people up there know exactly what's happening.

Grease it up

You ought have the transmission shifting and steering control housing taken apart on your M18 SP gun and M18 howitzer and hand packed with Grease by your support unit. Otherwise, these controls are going to come to a greasing job too.



M18

M18C

Without lube, the moving parts will wear each other, become stiff and finally damage the lube, and lose housing. So, send the new LG comes-out with this lube, remind the Ordnance guys to do a good grease job on the housing about twice a year.



GREASE GUN ON A GUN
GUNS ON ABOUT TWICE A YEAR

Bolt's loose

Maybe you've run down your check list, and your M18A1 or M18A5 M18 all light machine gun still gives you a hard time—like the bolt not coming out of battery or the barrel extension slide lock not holding the bolt in battery.

That's the time you want to ask your support unit to check the barrel-lock screw which adjusts the timing of the barrel-lock cam. If the screw is too



right, the bolt won't come out of battery. And a screw that's too loose means the barrel extension slide lock won't hold the bolt in battery.

There's another "W"—if the airplane says the gun is made by the Sigbee Company. It doesn't make no never-mind whether the cam flows. So the screw can be loose or right.

The Ordnance boys'll work on the screw the way it says in TM Del 587.

Get loose nuts?

Your M16 will-propelled gas action...been firing awhile? Have the retaining nut—EOM 1530-571-8700—on your drive sprocket carrier keeps loosening up?

Well, the right torque for this nut is 400 foot-pounds. Some some gunnies have been at work to put 1245 (4) on page 110 and in Fig 1-428 on page 112 of TM 9-2148-115-20 (Jan 88). The manual says it should be 40 foot-pounds but that's a misprint. It meant to say 400 foot-pounds.



Keep your distance



It's mighty important to keep your distance and your plinking aim up to par when you throw an M16 WP grenade.

The question what this little ferball will do has changed, so keep that in mind. From now on, better reckon on fuse delay time anywhere from 14½ seconds, instead of 4-5 seconds, and the effective radius of the burst as 21 yards, instead of 10.

Save the cam

A quick tip for you guys who shoot the M16A1 100-mm round-off rifle... when you assemble the breechblock, make sure the firing pin sticks out through the firing pin housing before you install the firing pin spring. If it doesn't, and when you have everything back together again, you'll hang up the cocking cam when you go to rack the weapon.



How's your dog?

An easy way to get his attention is with a statement of charges for your road's telephone bus dock is to leave it open when rolling along. In rough country, especially, the rattle-bang-thump will break the bling of a dog left swinging in and for like a prowl. Then you may not even have enough dough left for a weekend pass.

Wait at the stop



When, that...may does it when you're making a fine tuning adjustment of the suspension mass control in your M10 PCX.

Usually...you only need slight adjustment to get the most out of the rail. If you have to do a lot of reworking, the, keep out of trouble with the tuning leads by turning it as far as the limit stop—no further.

When you join the working run against the stop, you may damage the equipment.

If you can't get the adjustment you want, call in your support unit.

For a find?

It was was one big wonder—
that Copson's name.

The answer wandered off the road sudden-like because the rails in the interconnecting lines got jammed.

The actual trouble was with the relay-actuator zone—the zone between the K7 and K8 moving relays in the front interconnecting line and the K13 and K14 relays in the aft box.

Some the zone got its binding after a spell....to think about once a week. If they're in a bind, call your support unit. They'll believe you with plug valve gears.



RELAY ACTUATOR ZONE



ARMY AIRCRAFT



AIRCRAFT SPARK PLUG TIPS

Leave a note back a military and look at a spark plug, to see what it is, and how it's made.

Now, you know that a spark plug is the way you take an insulated wire inside the cylinder of an engine, so that you can shoot a high voltage current through it and make a spark inside the cylinder fire your fuselage airplane at the right time.

And everybody knows that this is done physically by a threaded metal plug that's screwed into a tapped hole in the cylinder (which may or may not have a bronze or brass bushing in it). And they also know, if you ask them, that it's insulated by a ceramic sleeve that keeps the high tension current from getting away and it touches the spark gap.



The funny thing is, these same people who know that diesel are made of porcelain (a ceramic fire insulator) and they all know how easy it is to break a china bowl, diggers in, some of 'em have a tendency to forget this when they start handling spark plugs.

to the guy who handles his wife's house with the greatest care will leave spark plugs around as if they were solid steel.

Believe it, this won't break it.

Any time a spark plug has been dropped on a floor or under a hard surface, never use it in an aircraft, no matter how good it looks.

Turn it back in, and be sure it doesn't find its way back into the work of good plugs.



When installing plugs, remember that screws can be very useful not to use your wrench on long the plugs around. If you don't happen to find the insulation, there's still a few characteristics it has the threads that hold the insulation into contact with the outer end of the plug barrel.



Another thing, when installing spark plugs—it's essential that you torque them in with a torque wrench. If you can't possibly get hold of one, use a short handle on your socket and take it easy, then re-torque the plugs with a proper wrench just as soon as you possibly can. The mechanic who takes himself on his life in this handle when he's installing plugs generally thinks that he has a two-piece plug wrecker, instead of the one-piece plug he put in.



And that's another thing: Should you happen to have an emergency a wheel or tailcone plug comes your engine, pull the plug. Don't risk flying the ship until you've installed a new cylinder assembly. Those screws may be OK, but if they're not

it's most embarrassing to have your pilot come back reporting that he does not like to fly through a shower of loose spark plugs, particularly if they are flying near his own engine.

One more little point: as you may have noticed, there's a little confusion about the use of Anti-Seal Compound (EEM 8000-243-3185) on aircraft spark plugs.

OK, one caveat—the compound is done cylinders which have loose or broken headings.

On engines with stainless steel or ball-coat liners, use a little oil, SAE 30 or grade 1100, on the threads.

So, except for the small number of defective spark plugs when flying can lead to decreased flow, possibly including you, that's about it.

Treat the supposed things with even more care than the wife's fancy shoes. A broken screw may get you a chewie, or even a lump on your back. A bad spark plug starts at the lump on your back, and may even get you a malady like this.



BRIGHT SPOTS

Dear Editor,

After a couple of potentially embarrassing near misses, when someone almost overlooked a spark, and after hearing about one of our friends who did by running up a shopper with one blade dead, we've painted all our airplanes with high visibility paint. Now they stand out like spot lights, and we think there's less chance that anyone might try to run up the race with the blades dead.

SFC Arthur B. North
40th Truss Co. AAM
Ft. Rucker, Fla.



(Ed Note—By all means, if the Old Man agrees... and you could use one reflective light, or any other bright and noticeable color. You might just high visibility cleaners on the clip ends and wrap 'em around the tie ropes like a barber's pole.)

TURNING TRUNNION CAPS?

Dear Half-Mast,

Write us an argument, please: *Should* the trunnion bearing caps on the AH-1's support system, or its sights?

SFC F. J. E.



Dear SFC F. J. E.,

Some do, some don't. The point is, these bearing caps are designed for use in AH-1's real play. Consequently, some can be turned with a slight drag, while some are plain-right.

But you can't rely on twisting as an inspection—you gotta depend on a 10-lb ball-socket set up on the global ring and the trunnion or some twisting set.

Half-Mast

MAIN ROTOR VIBRATIONS

Dear Half-Mast,

Our rotary wings come back from support with the blades in perfect track and balance. But frequently we start getting vibrations before we've logged many hours, and these generally get progressively worse. What causes this— dirt, or temperature changes? Or what?

SFC J. E. E.



Dear SFC J. E. E.,

When new, that's a design error, question. Many things can cause rotor vibrations, and you didn't give me much to go on when you didn't tell me what make and model of rotor you're using.

On the wood blade ships, *Shaw* (UH-1) and *Karen* (UH-2)s, maintain the

quently affect the blades, particularly on aircraft that are not flown regularly. Blades can require a "set" during repair or storage, and may also pick up the



own moisture. When they're handled, naturally they are tracked and adjusted to give a smooth rotor.

However, after a few hours of flying in flight they'll lose this set, and perhaps the moisture also, which can set them out of track and give you a vertical vibration, or out of balance, giving you a lateral vibration, maybe both. In your best bet is to retack the blades when this vibration develops.

Another thing, remember that ground tracking is only the first step; you have to check if they roughen up again. And your object is a smooth rotor, rather than



a perfect slip path mark, so it may be that you'll have the blades just slightly out of track, to compensate for slight aerodynamic differences in them.

Another possibility is the blades taking a set when installed on the aircraft, frequently due to tying them down too tight. They should be snug, but not tight enough to bend the blade very much. Be particularly careful to wet together, and allow for shrinkage when the tie-down straps get wet. This applies to any rotor, 2, 3, 4 or 5 bladed.

Also, on one Blade! means it's wise to tie-down alternate blades on alternate days (or after each flight if the ship/drops are fly daily). You might tie the blue Blade on even-numbered days and the yellow Blade on odd days.

Now, if you're dealing with mixed blades, you have no problems from blade set, and temperature won't affect 'em, because all blades expand alike. But there's a chance that routine handling, either when the blades are loaded or stored, could have bent the trailing edge ribs into one or more positions.

This, of course, spoils the aerodynamic lines of the blade, and it may not match its mates. Unfortunately, about the only cure for this is a new wheel run at the factory. So, it's vital that you treat those all-metal blades with care and respect. So much for the blades themselves.

Another thing, any neglect or improper service of the flight controls systems and the dampers can give you vibrations. Also you can get a high frequency from the tail rotor and its shuffling by neglect or improper maintenance.

You've got a long list of things to check. If none of 'em points to your problem, check with your support people. If they can't get you a smooth rotor, they'll get in touch with the police officer at the Transportation Supply and Maintenance Command in St. Louis (TSMC-3), and they'll give him the serial number, model and as much history on your machine as they can. Between 'em, they'll get you a flyable bird.



*LAST-MINUTE
TIPS*

PLASTIC POLISHES



There still seems to be some question as to just what cleaners and polishes can safely be used on the transparent plastic bubbles and windows in aircraft.

TSM 1-1:14-33 gives the listing of approved materials, and the Quartermaster needs 'em. PSN 7530-281-8215 and PSN 7530-316-0066 get you the only two approved types.

Be sure you don't use anything but these approved materials on your plastic. It can't stand any coarse abrasives.

DRY (BATTERY) SUBJECT



Figure 4 this way: A day-cell battery is connected to charge the vehicle to leave the battery factory.

A chemical action sets in that drains the pump until the battery has just as well. But every piece of battery-powered radio and telephone equipment will talk longer and longer if the battery gets a few life-giving hits.



So if your model is using AN(PBC-0), AN(PBC-0), 0%, 10%, EE-0%, AN(PBC-M) or any possible gear, the mercury is way above low—the last series are going to need some help.

In freezing weather, slip the heavy mat of the set which is't out in use and keep it warm. This could even mean asking it how the night with you, till something better comes along.

The only time you put a dry-cell battery in cold storage is when it's going to be on the shelf for many, many months. Then the idea is to slow down its chemical action as much as possible. But for an overnight storage, keep 'em warm. But not too warm.

Never Too Warm. On the other hand, if you're sweating your way through the sunny tropics, it's a pity but the battery is Celsius's friend, too. Stray to get a "case of the hot sun" and you're in for 70 degrees or more.

Reporting about software operations, I might think to use all your telephone or

radio is "winterized" when subzero power is concerned. There's a low-temperature, cold-weather battery for equipment using batteries in the BA-1 through BA-100 series. The cold-weather battery has the same E&L number as the regular one, but they are in the 2000-series.



For example: The BA-117W/U in your AN/PBC-8 has a cold-weather radio that goes by the same old number of BA-117W/U. That 2170 is identical to the 170 in the old, too, and everything else except effective operating temperature and notation. The BA-227W/U will put out power down to -60 degrees F. (Another example: The cold-weather radio for the BA-30 is the BA-306W.)

And while they're designed for cold-weather work, the 2000-series also will give excellent service in above-freezing weather.

Check SSG 3-PSC Group-61, Class 6125 (15 Feb 55) for the name, rank and serial number of all these dry-cell batteries, both cold-weather and regular.

LINED OUT

But to follow a hands-off policy toward the alignment tools on your AN/PBC-8, 9 and 10. Unless, of course, you're a trained repairman who knows an alignment and is built for something beside picking teeth.

As a matter of fact, walk-in-radio operators would be better off picking their teeth with one of those alignment tools than anything else.

Now sometimes there won't be any such tool on the radio in the first place. The newer models don't have 'em. But many of the radios are still some equipped with their own aligner.

As it stands now, the alignment tool is part of the TR-41 Tool Set and should be used only by a repairman who's been trained to line up a set.





Many an otherwise good operator has failed to get his job done because his machine was not up to the demands of the moment. Too slow, perhaps, or simply just handicapped by its location.

All of which adds up to the fact that the secret of good transmission and suspension lies in a number of factors—a mighty important one being the right use of the right antenna. Trying to get by with less means that the situation calls for not only greater reduction of the effectiveness of your equipment, in some cases it can damage it.



So it's good preserving maintenance—and good operation as well—to be sure your set has a long enough reach. Check the number of main sections on the set you're using against the TBI and operating instructions.

For instance, an AMVIC 10 has a total of five main sections. MS-116A (which includes three equal lengths), MS-117-A and MS-118-A. When they're all fixed



together they reach 15 feet into the air. But sometimes you use all of them and sometimes you don't. You have to get to your TBI to get the real lowdown. ITU keep you from needing those half-mast signals.

KEEP 'EM COOL

Heat that isn't heat-*would* from your radio-set? It means, of course, there's a filter inside to keep things from getting too hot. It also means there's a filter around to keep the air clean.

Sometimes it's easy to overlook that filter when running a routine check-on an air-cooled set. After all, it's out of sight and doesn't make noise or light up. But if it stops filtering or gets clogged up—things will go from bad to worse in a very few minutes.

So if the filter is clogged and needs and needs a bath, dunk it in some Cleaning Compound, Liquid (Sig), 1 pt can, FOM 7774-015-0142, and dunk it around till the mesh doesn't fight and drain.

Let the assembly dry overnight and then dip it in water oil. Oil (Sig) is plenty good enough. After a short period of draining it'll be ready to slip back into the set.

Those filters can use a PM check every time the set goes into action, just like any other "plunk out" item.



LOOSE WIRES



Best policy for a loose wire on your radio or telephone assembly is to leave it that way. Loose, that is.

If there's the slightest bit of doubt as to where it goes, never touch it up yourself. The right wire on the wrong contact point can foul up everybody's signal.

When that a wire waves at you from a phone or radio, wave the whole works right back to your supervisor. Or wave him up to it.

4. Toler & Toler? ... **WHO NEEDS A NEW GASKET?**

Crack...crack...cracks.

Maybe you phone users don't hear it, but things have been happening inside some of these TALKNPT Handsets. The ones that come with the TA-41NPT and TA-11NPT telephone sets.

There's usually one right a grip between the contact assembly and the microphone elements on some of them. And the contact assembly has been coming off, moving here and ending up—cracked, crushed and warped.

The reason? The rubber gasket there contains a liquid called a plasticizer. Which is a fancy name for a liquid that keeps the rubber from drying out and cracking in dry-as-a-rock weather. Fine.

The trouble is that some of this plasticizer seeps into the rim of the plastic cap. That does two things: causes the plastic to swell a little, and also robs it of some of its strength.

**UNDER ALERT
REPAIR PLANNING**



**CRACK
PLASTICIZER
SEEPS INTO
RIM**

**THE RUBBER
GASKET LIES
ON INSIDE OF
CAP**



This seeping of the plasticizer into the rim also gives the plastic a funny look—followed by tiny lines and/or cracks, and finally the rim cracks right off.

Now, a silicone gasket doesn't get inside. It's made out of synthetic rubber and is plenty tough and flexible, even without a plasticizer.

Take a look and see which one your phone has. Just unscrew the transmitter cap and retaining ring, and slip off the de-lcizing screen. That'll give you a clear view of the gasket. If it's black—it needs changing. And so will the contact assembly, maybe. Check it, too.

If you spot an oily, sticky liquid inside the transmitter cap or on the cap, or even on the transmitter button or contact assembly itself, don't sweat. Just wipe it off. Of course, if the gasket is gray, you're in good shape. Clean up everything and carry on.

If you need a grip gasket, ask for **Silicone Rubber Gasket**, P/N 1881-626-121 R. If you need an assembly, ask for **Contact Assembly**, check with P/N 1881-626-1267.

JOE'S
DOPE

IT'S YOUR
BABY

THE "Camp Paper" reports
OPERATION COMBINE IS NOW
ON SIX DAY. FORT ROCKWELL
TAKEN IN A SWEEPING ACTION

ALL THE
FIGHTERS
WILL BE
KILLED

THEY
WILL
BE
KILLED

ALL THE
FIGHTERS
WILL BE
KILLED



THIS SITUATION
CONTINUES

THEY'RE
GOING TO
HEADACHE
POWERS

THEY'RE
GOING TO
PETER
PISTOL

THE "WARRIOR" IS
THEY'RE GOING TO WIN THE WAR.









Dope Sheet

I Presounce these men and machine,
By order of para 10,
its care is all thing;
From here till "Q" time,
She's tactically yours in between.



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





THE HOLE STORY

Dear HaZ-Man,

I have two questions for you.

First, why all the fuss about keeping the tunnels flat against the Nile-Ajan missile when the tunnels have holes for finding and digging?

And why does the department give us a hard time about scratches on the nose cone of the missile? After all, the nose tip is made with four holes so you can snap on the nose pressure and transporting chamber assemblies.

Lo J. L.



Dear Lo J. L.,

The nose sensor will hold up for both of your questions.

The slide rule boys figured in the holes in the tunnels and nose tip when they designed the missile. They wanted to come up with a missile that'd do certain things as they gave a hole here and took a hole there.

There's no arguing about how important it is to keep the tunnels flat against the missile, but there are two worries on the nose cone scratches. Some people say that even the smallest of scratches can lead up the air stream enough to cause streamlines and circles that could tear the missile apart. Then there are others who'll tell you that hole scratches can cause some drag—but not enough to make any kind of difference.

The best bet is to let your support unit have a look at some nose scratches when you get to the point where you have to decide whether the nose cone stays on the missile or it moves.

HaZ-Man

ONE FOR T'OTHER



Dear Half-Bro,

As you know, there's an interesting thing going on in the Police-Officer (PO) room that's tied to what the battery terminal equipment. Four fuses are used in the room and there are three spares. According to the script on the cover of the book, we're supposed to use 1/32-amp fuses.

We can't find these fuses in any supply manuals so we're done using the 1/32-amp fuses that're spares for the battery terminal equipment.

Are we right or wrong?

CFO A.W.

Dear CFO A.W.,

You're dead right. The 1/32-amp fuse is replacing the 1/32-amp fuse. When you come right down to it, it's just a case of using a fraction in one place and a decimal in another. The fuses are used the same in scope.

Until the fuse shows up in God TAME TRAIL, you want to put down this number—F09 M20-280-M20. The fuse comes from Sigal.



HALF-BRO

SPLASH GUARD

Dear Half-Bro,

Here's a drawing of a splash guard we have been making up for our friends, particularly our M21 change trucks, to prevent mud and dirt from piling up in our hand tanks. As you know, the dampers have to work in some pretty sloppy going. In fact, many times the sloppier the going is, the greater



the need for dump trucks to work in there and improve it.

But we're not convinced that a foot or so of mud piled up on top of our gas tank helps things any.

So we've welded a piece of sheet metal to the tank bracket, and returned it to its old place under the bed, where the bed is down. Simple, and no mud on or in the tanks.

SFC A. M.

Dear SFC A. M.,

We like your results, but not your method. Welding that sheet on top of fuel tank is begging for trouble, no matter what safety precautions you take. (Unless, of course, you took the tank clear off the vehicle.) And the other thing is that welding or drilling on a military vehicle can only be called "modifying" it and that's out, unless there has been a modification work order published telling you to do it.

The look, Sarge, you can get the same results by drilling holes in your splash guard and making some "U" shaped clamps which will grab that tank bracket plenty hard enough to keep your guard in place.

Then everybody's happy. You have your mud snapper, and your tanks are clean. Nobody has a complaint because you haven't drilled or welded on the truck, and any time an inspector might object to your guards, you can take 'em off in five minutes and the truck is just exactly as the was issued.

This modification rules only on early production M41 dump trucks not equipped with the fuel tank protection plans.



THE LONESOME GUN HAND



It's pretty sad when the one falls for details just before a maintenance period. As a tank commander I usually wind up all by my lonesome at the motor pool.

I get pretty weary coming from the gunner's seat in the TC seat to see if the gun is going into the travel lock. What's to be done?

SFC A. A. N.

Dear Sergeant A. A. N.,

Leaving the 30 mm gun on your M48-series tank over the travel gun lock by

yourself that's not how an idiot/coward somebody's bridge-work or another vehicle may be close by.

But if an emergency comes up—such as when there's a big flap—the best way to get the gun over the barrel lock is from the tank commander's open.

Open the commander's cupola and move it so you're facing the barrel lock. Then, just look on to the commander's control handle and you're in business. Not only can you turn the turret, but you can lower the gun into the hull—*and* see every move you're making.



the gun back—and you've got nothing to see and nothing to foggy.

Or still working from the gunner's seat, you lean out away and twist the turret so that the "Y" formed by the turret floor support braces line up with the center of the driver's seat backrest. That will bring the gun right over the lock.

Another way of playing blind man's buff with the gun without running around like a chicken without a head is from the gunner's seat. Just remember lower 100 mill guns are on your left-hand indicator until the turret comes 'round to 300 mils. Then, you're right over



You could make some sort of permanent mark on the turret near the ring



with or line up with the center of the driver's seat backrest. But remember there are methods to be used in emergencies only—otherwise your moving gun might make somebody up to look like a peasant.



LOOKOUT... FOR FAN FAILURES



Keep a hot whip on the oil under-lam of your M36A1-series medium-tracks and M11 heavy recovery vehicles to keep 'em from cooking out. If they do get loose, the fans will act like elephants on the rampage—they'll tear up everything in sight.

Know that the fan runs, FAN 2048-204000, can develop metal fatigue and come apart on you after a while. So will a better one come along . . . here's what you and your mechanics can do to stop a burning-up time from happening to your tank.

1. Look at the wear-lam half-way the bolts . . . there shouldn't be even the smallest cracks.
2. Check the fan for movement or rocking . . . the mounting bolts holding the fan secure to the crankcase must be tight.
3. The fan blades must not hit the guides . . . look for tell-tale marks on the inner edge of the fan blades.
4. There should be at least 1/4-in clearance between the guard and the fan cover and a minimum of 2/16 clearance between the fan cover blade and the drum ring.
5. Look for any crack, bend or chip on the fan itself . . . there'll throw the fan off its delicate balance. For instance, a 1-in chip off the blade tip will cause a 50- or 75 percent overload on the bearings.

There are the tell-tale signs that mean trouble. When you run across 'em, call your support unit so they can see things right.

Don't take chances—squell them oil-cooking fans whenever you get the opportunity.

In the meantime, never:

- Use the cooling fan guard as a walkway or dust scraper.
- Try to fix fan blades in the field.

Be Your Own Inspector On Your... **CAT D8**

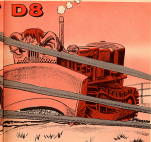


Like the rest of your Engineer construction equipment, your Caterpillar D8 tractor is built to tackle the toughest earthmoving job and stay with it until you can say "mission accomplished". A tough and rugged bunch of metal and machinery, but it's built without brains or the know-how to operate or take care of itself—that's where you come in.

You're the one that has to keep it ready to go at all times. Now, your Cat has a rugged built-in "tough" or "handle-with-care" sign—well, that's no reason to go lapping off sight of its side from by not maintaining or operating it right.

DEFICIENCIES

There are the things that might keep your Cat from pearing happily. All you have to do is use your eyes, your ears, and your hands to spot 'em. If you can't



handle 'em or don't have the time to go ahead, and let 'em pass the word on the distributor's back up the line. Your machine thief wants to know about 'em—fast quick.

About these deficiencies—there're two kinds . . . major and minor. The major ones are more serious than the others. They're the kind that could cause your rig to break down, make for extra wear and tear, or could make it unsafe to operate. You don't want to run your equipment if it has a major deficiency. All 792A (27 Mar 58), Appendix I has the full meaning this.

A minor deficiency is the kind that won't cause your rig to quit running right off, but if it isn't fixed it could lead to a major deficiency. Some of the items listed are not necessarily minor deficiencies but they need some attention anyway. Be sure to check out all details in your Cat's TM.

Your major deficiencies are in **heavy type**.

COOLING SYSTEM



ANTHERENT FROWN ON BURNED — Not enough for temperature, low.



EXPLOSION NOISE — **boiling**, **sparging**, **boiling** (water engine is making). **Change** **air**, **boiling**, **boiling**.



EXPLOSION NOISE — **boiling**, **sparging**, **boiling** (water engine is making). **Change** **air**, **boiling**, **boiling**.



EXPLOSION — **boiling**, **sparging**, **boiling** (water engine is making). **Change** **air**, **boiling**, **boiling**.



NO. 10000 — **boiling**, **sparging**, **boiling** (water engine is making). **Change** **air**, **boiling**, **boiling**.

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TRACK ASSEMBLY

SPRING & SUSPENSION — Broken, tilted leaves. Leave 8 bolts, double pins, bushing even.

ROLLERS, UPPER AND LOWER — Inspect for wear after operation.



ROCK GUARD — Inspect, adjust. Should be snug, if in use when required. Wearing bolts, not rotating or loose.

TRACKS — Too loose, too tight. Operator's sight when track is up by spring from 1 1/2 to 2 inches above carrier rollers or 1 to 1 1/2 inches for the new model 840. This track set, **leave track doublets**, wear track pins and bushings.

ROCKERS — Cracking, wear lips. Flat spots **leading lips**. Double carrier rollers loose in worn lip type track or take clearing at wear of roller mount (if it's okay).

SPACERS — Excessively worn. Should not be allowed to wear below 1 inch of track shoe.

DRIVE SPROCKETS — **Leave drive wear.** Should not be worn more than 1/4 inch in thickness, measured at base of teeth before rebuilding. Reamers.



NOTE for **rebars** from tracks, sprockets, rollers, and others that don't sound right.

Cups for determining wear on sprockets, rollers, bushings are available through local parties by installing "Track Condition Cups" G-13, B-1324."

REARING KNUF CLAMP BOLT — Loose.



TRACK FRAME — Cracked, broken, broken welds.

INSTRUMENT PANEL

FUEL EXHAUST GAUGE—Fuel fully charged. Accurately mounted. Wire not broken or chafing.

OPERATION LIGHTS—ON, OFF, STOP, etc.

LUBRICATING OIL PRESSURE GAUGE—Lamin. Glass broken, missing. Needle broken, missing. Gage not operating right when engine's running. Should show in the 40-80 psi range when operating.

VEHICLE IS PLAIN—No-thing, not legible. Should be on left side of panel.

LUBRICATING OIL TEMPERATURE GAUGE—Missing, ripped.

LIGHT SWITCHES—None and operate. Lamin. Glass broken, missing.

TEMPERATURE GAUGE—Lamin. Glass broken, missing. Needle broken, missing. Gage not operating right when engine's running. Should show in the 175°-225°F range.

BULLDOZER

ENGINE—Dirty, not lubed. **Exhaust**—None. Lamin. missing. Lights. Grease, leaks.

GEAR—Dirty, not lubed. **Exhaust**—None. Grease, leaks.

CUTTING BLADE, END—None. **Exhaust**—None. Grease, leaks. **Exhaust**—None. Grease, leaks.

POWER TRANSMISSION UNITS

ENGINE CLUTCH—After rough line adjustment at top of release lever, should be 2 inches on model 70 tractor. If you have the P-1 tractor, you'll have to experiment to see if this is right. **Oil below proper level in hydrostatic control unit.** Oil level should be at top of chamber. **Control rod not at adjustment.** Should be 7/8 in. clearance between control rod and push rod in hydrostatic control unit. Also, make belts loose, missing from control linkage. **Check, adjust when rig is operating.**

ENGINE BRAKE—Not to lock. Should lock right when pedal is pushed to stop in three gears on Model 70 rig. If you've got the 7-4 tractor, the brake should be adjusted just tight enough so that the tractor will lock normally when the steering clutch released and the brake pedal is depressed between 7/8 in. to 7/16 inches.

CLUTCH BEARING—**Oil accumulator in bottom.** This doesn't go for late model tractor with oil clutch. You have to keep oil at right level there. (Don't plug missing, locked in place.)

CUTTERBAR BEARING ADJUSTMENT—Loosely secured to track roller frame.

FINAL DRIVE SHAFT AND BEARING—Adjusting lock nut missing, loose.

STEERING CLUTCH DIS-ENGAGEMENT—Oil, water contaminated. Model P-1 has an oil-type clutch, so oil is important in steering. (Don't plug missing, locked in place.)

AUTOMATIC CLUTCH—Crank balls to engage with snap. Lower pull **snatch** Model 7-4 is individually bent and takes an under pull that when triggered on engine is catch. **Don't stop** **excessively** **gently** **throttle** when engine's running.

TRANSMISSION—(a) **low** **low**. **Trans only does good** **low** **gear** **using** **steering** **operation.** Gear selector lever hard to operate.

FINAL DRIVE SHAFT AND BEARING—Missing lock nut. **Loose** **around** **oil** **seals** **independent.** **Oil** **level** **low.** (Bring up level of oil to opening.) (b) **oil** **dry,** **not** **lubricated.**



FREE-PORT—the leading
edge, transverse rib.



LAGGING TRAIL—
body lags.

WIPER BAR—transverse
rib, 3/4 below paper band.
Wings tapered, 20% air-
foiled. Combined it may
serve also as a drag.

WIPER FATH—lugs,
rib, tapered, bearing
face.

COVERING BRIDGE—
about transverse
rib.

COVERING BRIDGE
rib—rib, 1/2 below.

CABLE CONTROL UNIT



CABLE—the lead, on
cable control, tapered
leading edge, rib.

BRIDGE, BRIDGE—the
lead, tapered, with
lugs, bearing face,
control.



CABLE—the lead, on
cable control, tapered
leading edge, rib.

WIPER BAR—the lead, on
cable control, tapered
leading edge, rib.

BRIDGE—the lead, on
cable control, tapered
leading edge, rib.

CABLE HOUSING CASE—
the lead, on cable
control, tapered
leading edge, rib.

STARTING ENGINE

COVERING BRIDGE—
about transverse
rib.

COVERING BRIDGE—
about transverse,
bearing face,
rib, tapered, 20% air-
foiled, lead 1/2
rib with drag, water.

COVERING BRIDGE—
about transverse,
bearing face,
rib, tapered, 20% air-
foiled, lead 1/2
rib with drag, water.

COVERING BRIDGE—
about transverse,
bearing face,
rib, tapered, 20% air-
foiled, lead 1/2
rib with drag, water.

COVERING BRIDGE—
about transverse,
bearing face,
rib, tapered, 20% air-
foiled, lead 1/2
rib with drag, water.

COVERING BRIDGE—
about transverse,
bearing face,
rib, tapered, 20% air-
foiled, lead 1/2
rib with drag, water.

COVERING BRIDGE—
about transverse,
bearing face,
rib, tapered, 20% air-
foiled, lead 1/2
rib with drag, water.

COVERING BRIDGE—
about transverse,
bearing face,
rib, tapered, 20% air-
foiled, lead 1/2
rib with drag, water.

COVERING BRIDGE—
about transverse,
bearing face,
rib, tapered, 20% air-
foiled, lead 1/2
rib with drag, water.

COVERING BRIDGE—
about transverse,
bearing face,
rib, tapered, 20% air-
foiled, lead 1/2
rib with drag, water.

DETAILED NAME

CONCRETE—graze the animal's surface where you're not in tracking off the EPM. Roll over to the right and give it a solid hit. The power and response is not weak.

WILLIE TAYLOR—*James* shows
and goes right. *Remember*
meeting along. They never
meant like this.

Abstract—The purpose of this study was to determine the effect of a 12-week training program on the heart rate (HR) and energy expenditure (EE) of sedentary, middle-aged women. The subjects were 12 sedentary women, 40 to 50 years of age, who were randomly selected from a telephone directory. The subjects were divided into two groups: a control group and a training group. The control group consisted of six women who did not participate in any physical activity during the study. The training group consisted of six women who participated in a 12-week training program. The training program consisted of three sessions per week, each lasting 30 minutes. The sessions were performed on a stationary bike at a heart rate of 150 to 160 beats per minute. The subjects in the training group were also instructed to increase their daily physical activity. The subjects in the control group were instructed to maintain their current level of physical activity. The subjects in the training group were monitored for HR and EE at the beginning and end of the study. The results of the study showed that the subjects in the training group had a significant increase in HR and EE compared to the subjects in the control group. The increase in HR was 10 beats per minute, and the increase in EE was 1,000 kcal per week. These results suggest that a 12-week training program can improve the cardiovascular fitness and energy expenditure of sedentary, middle-aged women.

1998. *Wetland Use and Management*.
Baltimore, Maryland: American
Wetlands Society.

1. **What is the main purpose of the study?**
 2. **What are the research objectives?**
 3. **What is the significance of the study?**

any witness said—on explaining the wife's spending. Clear, simple, basic. **Needle holes, unions.**

For more information, visit www.pearsoncmg.com

2000 VULNERABLE—According to the 2000 Census, people live at lower than the 1990 level more often in the South than elsewhere in the country. Continued to last more than 10 years.

STANDARD MEAS. RANGE.
FIND. LIMITS. — 1000.
1000. 1000. 1000. 1000.
1000. 1000. 1000. 1000.

1. **Introduction**

• **Flowing, slow, warm**
 (low level, different pressure level (flow) to top of flow sheet)

1. **Introduction**
 2. **Methodology**
 3. **Results**
 4. **Discussion**
 5. **Conclusion**

SPRING 2001 PUBLICATION
 railroad in **Living: Under**
 covered housing, narrow
 street, other innovations.

[illegible]

THE FUTURE *is* **red**
 tomorrow, please go to
 tomorrow

Abstract

Before you call it a day, run down the list of MORTGAGE for your 104 and see whether they've been applied. If there's any missing, let your section chief know right now.

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Call (800) 864-1111 or (800) 864-1111 to learn how to use a piece of wood sheet to make a standard wood paneling to protect the lower half of your wall and the ceiling.

1999 Ford Focus S (7 spd. 100)—Electrically retractor locks in the doors rather than using the cables and using foam plugs.

RECOMMENDATION—Grade, CII below program level. Level should be about 1 to 1½ inch above full marks when engine is not operating, or not more than 1½ inch below full mark when engine is, speed (mi/h).

HWY 94C 30+0-4 21.000 (2)—Signs the road ahead crossing from pavement to the village regulate to keep water from reaching the regulate through the road.

BMW BMW 320i (1990-94)—Add an extension to the parking crank on the master cylinder. This doesn't apply to E28s with transmission parking cranks... or those with Camshaft drive assembly 1400(PC)3... or crank 03A03.

WPHS 3-2840-1 01 DEC 89 -- 701a Hour to Make and Control Major assignments



That's right. And after inspection now may pinpoint some small troubles that could grow into big ones at just the wrong time.

This checklist will show you on what to look for. But don't stop there. Always be on the lookout for rust, especially on polished machined surfaces, corrosion, cracks, dents and wear on all parts of the gun and mount. Keep the parts listed that're supposed to be lubed, and use the right grease.

WASH YOUR GUN MOUNTINGS AND TESTS SOFT AS THE TUB, WITH THE LIVE LAMP WITHOUT REMOVING THE MAIN FILING ATTACHMENT.

BEFORE THE GUNDS TO GIVE FOR THE MOUNT OPERATING, BE IN READY TO GO, IF ONE OF THEM SHOWS UP, HOLD YOUR BREATH.

BASE PLATE MOUNTING - **TESTS -** **TESTS**



BASE PLATE - **TESTS -** **TESTS**



ADJUSTING SCREW - **TESTS -** **TESTS**



ADJUSTING SCREW - **TESTS -** **TESTS**

BASE - **TESTS -** **TESTS**

BASE - **TESTS -** **TESTS**

ADJUSTING SCREW - **TESTS -** **TESTS**



BASE PLATE - **TESTS -** **TESTS**

BASE PLATE - **TESTS -** **TESTS**



ADJUSTING SCREW - **TESTS -** **TESTS**



BASE - **TESTS -** **TESTS**

BASE - **TESTS -** **TESTS**



ADJUSTING SCREW - **TESTS -** **TESTS**

BASE - **TESTS -** **TESTS**

BARREL — Examining with fork, safety, etc., must not be removed from, handle damaged.



BARREL MOUNT — Exam, handle.

BARREL MOUNT MOUNTING — Not used, handle damaged when.

BARREL MOUNTING MOUNTING — Exam.



BARREL MOUNTING MOUNTING — Exam, handle.



BARREL MOUNTING MOUNTING — Not used, handle damaged when.



BARREL — Exam.

BARREL — Exam's handle.

BARREL MOUNT MOUNTING — Exam, handle damaged when.



BARREL MOUNT MOUNTING — Exam, handle damaged when.



BARREL MOUNT MOUNTING — Exam, handle damaged when.

BARREL MOUNT MOUNTING — Exam, handle damaged when.

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BARREL MOUNT MOUNTING — Exam, handle damaged when.





YOUR 6901 ON THE RUN?

Time for a question.

How've you 74ke maintenance making out with the 6901 radiator valves in your day-to-day power supply?

The 6901 replaced the 6904 radiator valve and gave him the system with a reputation of being able to hold it. And big deal it that the 6901 was in your power supply, you got the 6901 and the 6901, that's for heating.



Course, 6901 just might run like a slider now and again. And there's a warning on the 6901. It won't hold up, the, if the valve is more'n a year old.



The data you work with is coded by time depth with the 6901.

The first number means the year.

848

and the second and third figures the week.

For example... 848 would mean the 848 week of 1984, and 849 would be the second week of 1985.

The warranty they give out the window if the valve is operated more'n 500 hours when the temperature around the valve is between 60 and 70 degrees Fahrenheit... or longer'n 100 hours when the temperature is -40° F to $+60^{\circ}$ F.

The hours of operation and the temperature of the valve it was working in are

might important . . . so include that info when you send back a tube still covered by the warranty.

If you do run into a leak tube, and the warranty is still good, send it back to Infratech Marine Dept., P.O. Box 1000, Ohio. Mark the tube like so:

"Leak Tube—Returned for Inspection."

The Infratech people'll know how old the tube is by the date code, but it's up to you to tell 'em how long the tube was running under what temperature.

DON'T TOSS FOR A LOSS

When you run a Nike-Apex missile, there are some things back on the ground you don't have to think about holding on to any longer. Once the missile is on the way, you just don't need 'em.

As a PrimeTime . . . here's a rundown on four things that become useless once the launcher starts spitting them.

1. Controlling your risk is the M27 safety and warning device dash, if you still have M27's.
2. Attaching shipping plug used in the manual.
3. Shooting plug in the electric fuse igniter.
4. Plastic shipping plug in the M1 fuse unit.



But—as long as your missiles don't get any closer to the sky than the end of the launching rails, you want to hold on to those plug-and-wires. You need 'em when you send the home they belong to back through channels in the storage area. The guys in your support unit'll most likely wear an extra hat when they have to do double duty by repositioning the plugs and wires.

WH(1)ATT'S WRONG?

Nothing, long as you're using the right size lightbulbs above the water board in your M1 unit or your Nike-Apex unit. But, if you're using 115-watt bulbs instead of the 60-watt's you're supposed to, the bulb's base will lose the insulation from the wiring in no time. No play is safe—only so the 60-watt bulbs . . . never, never, not anything larger.



If you happen to be looking for more interconnecting cables or replace the old ones around your Nike site, remember to give 'em lots of protection.

With cables buried hidden and you, unless you're a genius with X-ray vision, you never know when you'll be clobbered over 'em in your jeep or truck. And, a buried cable's no good to anybody.

To help your cables live longer and also to keep 'em from the brutes' underground, shield 'em with a trough.



Either way, you'll be saving the cables from the hazards of traffic and protecting 'em from deterioration.

HOT COOLERS?

It doesn't hurt now and again—matter of fact it does lots of good—run down the dirt off the impeller blades on the cooling blower motor assembly in your Nike breathing, control unit.

That makes the impeller fanlier and that makes the motor work easier so get it around with it too and your responder shrinks.



A plain, dry rag will go a good bit of the dirt. Or you can dip the rag with kerosene or kerosene. You can get a five-gallon can of the stuff from the Chemical



people under FPM 68B-184-1794.

You want to reach rightnowhere, too. It can kick you in the teeth and knock you on your back almost as quick as rubber tin. In other words, keep the air moving around you by having the door and escape hatch open when you're using the stuff.

IN CASE YOU'RE WONDERING...

Genie places on your Nike-A jet might get his with Flareolite... and others get the MEL-6-4H14 finger treatment.

Flareolite—it's real name here is LUBRICANT, non-coldling—is dabbed on the outside of the door and vent plugs.

It's an Ordinance item and is listed on page 25 of Order 7 SFL Y2, dated April 1952. FPM 68B-184-1808 is worth a 1-on note.

IS
FLAREOLITE
(on TWR)



IS
MEL-6-4H14
(on TWR)



MEL-6-4H14 is put on the door, the door and vent plugs... the all valves... the all valves... and starting this plug. Your inspection wants to tell the staff GEESE, AIRCRAFT, when you talk the Quartermaster people for one pound under FPM 7170-6111. It's also on page 21 of Order 7 SFL Y2.

CONTRIBUTIONS



MAKE HOLES

Dear Editor,

We've found an old M-16 self-propelled 50-mm gun (SPAT) that when the breaching round is in place a digging pocket forms in the lower part of the mine. This pocket fills up with water during a rain.



What we've done at this point is to make these holes in the lower part of the mine, reinforced with gunpowder. This allows the mine to drain out.

Thomas Ingepp
St. Campbell, Ky

(Ed Note—Good idea.)

SLIPPERY SHEATH?

Dear Editor,

We've been having trouble with the hand loader cable control (sheath) slipping through the anchor clamp under the job of our 1-ton (GT1000) model.

We tried tightening and bending the clamp for a quick fix, but that doesn't fix it for very long.



So we finally solved the problem by welding half a flat washer to the front of the bumper. This lets only the cable run through, while supporting the cable directly.

Sgt Herman Wall
2D Inf Bn, NYNG

Old Note—You didn't get the job done. But an ARFC gave a tip for this that should have applied long ago. It was ARFC Prod ACT 64-1726 (4 Feb 64) that said to weld bands on the inside of the cable clamp. Of course you might save time if you try first to get your cable on a new type clamp that's been redesigned up to take care of this slippage problem. This new part should be out soon and is really in great need. The new clamp's got a continuous depressed rib in its inside section that gets a better grip on the cable strand. This rib fits into a groove in wire-type cable sheaths, and also gives you a tighter grip on the old type. Here's how to order the new clamp: Drop, enclosing, FCN 2140-3.12 (1942.)



BOLT THE BUMPERS

Dear Editor,

We've been having trouble with the rubber pad assemblies on our Nike air force guns. The pads were glued on, and the glue isn't holding.

We bolted the pads on the backing plate by counterboring a 7/16-in hole in the pad, drilling a 1/4-in hole through the pad and plate, and bolting it in place with a 1/4-in threaded bolt counterbored in the plate. Now our pad assemblies don't come off.

Sgt Charles W. Lombard
Peconic, Md



Old Note—These rubber pad assemblies have been installed with bolts at a lot of sites. One thing's for sure, bolts will hold bumper pads longer than glue. With this fix, a 1/4-in hole is the limit. Anything bigger would damage the backing plate. You can get a new shore-bumper bumper assembly, Offgore Pump Co, Post No. PE10241, by requisitioning FCN 1564-17-1724 through Raytheon. Repeat Parts Channel. You'll have to fix the rear ones if the backing dies go.

Connie Radd's BRIEFS

Short stopped

Let about everybody realize, by the way, that the new code that will implement type change letters. That's why you'll want to look at it in the new US-A-1 40-200, 11 which covers all relations of maintenance on these facilities for your own bill by that — 12. Therefore, the distribution formula for that report just takes it down to ground level and Ochsman support with. And even by putting your responsibilities for "hard evidence" provisions of parts of it in Change 4-01 (about 80), at all 210-1.

The command way

Let 4-200-11 say 80, page 42, says you get your publications for national news from the different task services. But Change 4-01 (the 80) in all 210-1 is the higher authority. Here 41 of the change says the Adjutant General's Office is responsible for distribution to post publications, but the maintenance bills you have there... make connections out this distribution. That business of getting data from each service was retained by 41. Circular 11 is all 111 Aug 40.

Your order, please

Even your staff get enough copies of 11 (yourself)? And your maintenance order as they come out? That then, you've got to make sure your post-publications people know how many you need. They ship the post's order into the publications depot at Cox Farm 12 11 May 20.

Forgot about it

Is your plant's installation for Command, Control, System Conditioning and Interchange, about 70 Oct 1991 PG Co 121 says to use to stop leading cooling system. The staff is generally better in stock and is not authorized for level.

The day means you'll forget when I told you about that same stuff in PG 67.

Get it

Now for some stuff for any guy who works around a Skyscraper Department for control equipment, with PG in Minneapolis 113. You want to get hold of Co 208-21 110 has 101 which tells you to forget about some 1000's, although if you haven't already applied for.

Ordinance test sets

Have you seen all 711-PG 113 Oct 201? It says that Ordinance special and common test and drop rate will be independent and based on complete rate only on initial issue, after that you have to order by individual type from the responsible task service.

Welding services?

Welding services aren't where welders who want whole system while welding. And get 10 1-117 PG 20 on welding theory and application, but distribution should have already done to your facilities for separate company level.

**Would You Stake Your Life on the
Condition of Your Equipment?**

**HE
NEEDS
THAT
TM**



HE DOESN'T

HIM, NEITHER

