

TRACTOR MAGNETO 101 WITH JOHN WALLS: Farmall Model H4 Magneto

– Part I: Teardown

Progression of magnetos most used on Farmall/McCormick-Deering/International Harvester tractors over the years:

- Dixie Aero Magneto by Splitdorf Corporation
 - (Found on numbered McCormick-Deering tractors)
- IHC E4A Model Magneto
 - (Found on early pre-F-series McCormick-Deering & Farmall tractors)
- IHC F4 Model Magneto
 - (Pre-WWII, F-series tractors)
- IHC H4 Model Magneto
 - (For most Farmall tractors, excluding Cubs; 4 is for the number of cylinders).
 - Farmall Cubs use a Model J4 Magneto.

Teardown:

Tools needed:

- IHC impulse coupling puller (from rebuiltmags.com or ebay) **not required, but definitely handy!*
- Cabinet screwdriver or longer flathead screwdriver with width at bottom that is as narrow as the shaft, preferably.
- Handyboy (by Diamond Tool) if you're lucky enough to have one! (4-in-1 tool). Or:
 - Pliers
 - Adjustable wrench
 - Screwdriver
 - Wirecutter **not needed for this teardown*
- Penetrating oil (Ballistol **highly recommended by John*, PB Blaster, etc.)
- Impact wrench or ratchet
- 6-point, 11/16 chrome socket
- Vise grips
- Razor blade

For cleaning:

- Ultrasonic cleaner **if you have one. If not, Use really warm water (almost hot) and a brush.*
- Solution for cleaner:
 - Equal parts:
 - Water
 - Ammonia
 - Dawn dish soap

Teardown of the H4 Model magneto, step-by-step:

WORK FROM THE TOP DOWN

1. Remove the coil cover (4 screws and washers) and gasket. **Use cover to put all parts in so you don't lose them!*
2. Remove the 2 screws holding the coil. They're countersunk and machine screws, so DON'T LOSE THEM!
3. Remove the 2 screws (with washers) on the steel plate on the left side covering the condenser, remove the plate, along with the gasket.
4. Spray penetrating oil to lubricate the screw holding the condenser inside the aluminum housing, as well as the screw where the kill-wire is fastened to the other end of the condenser outside the housing.
5. Remove the 2 screws for the condenser (one in the interior of the housing and one exterior)
 - a. Interior screw has a clamp that holds and grounds in the housing and keeps the condenser tight when the tractor is moving.
 - b. Remove the exterior kill wire screw where the wire on the condenser is connected with a brass nut. Don't force it. You can go back and forth (loosening and tightening), letting it work its own way out.
 - c. Exterior screw will have a washer.
6. Remove brass nut off the end of the condenser, being careful not to strip. (on the exterior of the magneto). DO NOT LOSE THIS!
7. Using your screwdriver, push the condenser through the wide opening where steel plate was removed in Step 4.
 - a. You can test the condenser, but it will most likely need replacing. In fact, replace it! You'll eventually have to do this and might as well do it while the magneto is torn down. They're fairly cheap... NAPA sells them every day, and Steiner has them for about \$11.99 for these magnetos.
 - b. DO NOT WASH THE CONDENSER, REPLACE IT. (That felt self-explanatory but need to make this note regardless.)
8. Remove the coil – put something, like your screwdriver, underneath it and push it out.
 - a. To remove the iron core from the coil, spray the ends of the iron coil with penetrating oil and lightly tap on the end of the iron core with a piece of wood. Don't beat on it – this will destroy the coil, rendering it useless.
 - b. Test the coil with a multimeter (this will be shown in the upcoming video).
9. Remove paper covers on the ends of the coil (these are like insulators for the coil that prevent wear).
10. Lubricate the insulating washer so it is for easier removal (in a later step).
11. Remove washer with bushing where the nut for the condenser was.

Distribution (Front End) Disassembly

12. Remove distributor cap (2 clips).
13. Remove rotor button.
 - a. *Special note: Brass contacts are the best option.*
14. Remove points cover (outer 3 screws) and gasket. Not the two screws in the center that hold the gear cover plate. Lift the points cover STRAIGHT UP AND OFF OF THE ARMITURE. If it's dirty or tight, insert a screwdriver between the case and the points cover and gently twist the screwdriver to help move the points cover up. Spray with penetrating oil if needed. DO NOT FORCE IT.
15. Remove screws (with washers) on top of gear cover plate (2.)
16. Carefully remove plate and gasket. You can use a razor blade to remove the gasket if it doesn't come off easily, try not to tear it up.
17. Slide gear off.
 - a. The gear will have an "R" or "L" on it for right- or left-handed.
18. Remove little gear that runs off the end of the armature.
 - a. It will just be sitting in the grease at this stage.
19. Scoop out as much of the grease as you can. Wipe the remainder out with a paper towel.
20. Remove the points.
 - a. Starting with the movable (larger) half of the points, look at it carefully. The movable side of the points pivots on the round post opposite the end where the contact points are fastened. Follow the spring around the armature to where it ends at the bottom with a phenolic block that is square on the right side and angled on the left side. The block is held onto the spring with a nut that can be seen under the block. Gently pull the movable side of the points up and off of the round pivoting post and slide the phenolic block out of its metal housing. Do not take off the nut. It will come out with the block and spring.
 - b. On the left side a screw holds the bottom half of the points. Remove the screw and the bottom half of the contact points.
 - c. Inspect the two halves of the points. Look for burning, pitting, or uneven wear to the two contacts. They will be dirty but should be smooth and relatively flat.
21. Remove the impulse coupling
 - a. John's recommendation: take your impact wrench, hold one of the ears on the impulse coupling with your vise grip pliers while gently removing the nut. It's not torqued down! He uses a chrome socket – an impact socket won't always go between the ears and into the hole. Use a 6-point, 11/16 chrome socket. If using an impact wrench, a short burst should loosen it nicely.
 - b. There is a split-washer included with the nut.
22. Remove the special washer (with a "catch" on it) that seats in the keyway.
23. *Time for the special tool to shine!* The impulse coupling puller has the same threads as the bushing in the impulse coupling where you removed the nut.
 - a. Screw down the threaded bolt part of the tool into the bushing, then thread the bolt into the inside of the puller.
 - b. Tighten the bolt until the impulse coupler releases from the armature.
DO NOT USE YOUR IMPACT WRENCH TO TIGHTEN THIS BOLT!
24. Remove key from armature shaft (half-moon key).

25. Remove the 4 screws for the flange mount (top plate).
26. Remove mounting (back) plate from magneto housing.
27. Take the flyweights out of the housing.
28. Remove the spring from the housing by prying it out with a screwdriver. Be careful not to shoot it across the room!
29. Take “hairpins” out of the flyweights using a screwdriver and gently prying them out.
30. Remove the spring from the back of the flyweights (easily done with just your fingers).
31. Take out the plate.
32. Pull the armature out through the back of the housing.
33. Mix up your solution (1-1-1): water, ammonia, and Dawn dish soap. Warm it up a bit and let your parts soak for an hour or two, depending on how dirty they are.
 - a. If you have an ultrasonic cleaner, turn it on to let it do its thing!