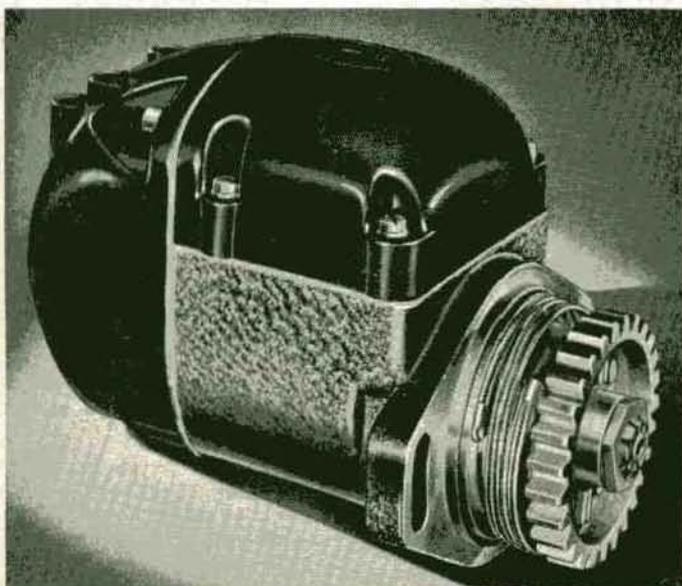


# CASE AIRCRAFT MAGNETOS

*Operator's Manual*



**Type 4 CAMA — Aircraft Magneto**



**J. I. CASE CO.**

**RACINE - WIS. - U. S. A.**



## **WARRANTY**

J. I. Case Company warrants each new Case magneto manufactured by it to be free from defects in material and workmanship. The Company's obligation under this warranty is limited to the furnishing at our factory of any parts of said equipment which shall, within ninety (90) days after delivery to the actual customer, be returned to an authorized service station and subsequently to the factory with transportation charges prepaid, and which examination shall disclose to our satisfaction to have been thus defective.

This Warranty is in lieu of all other warranties, expressed or implied; and we do not authorize any person to assume for us any other liability in connection with the sales of our equipment.

This Warranty shall not apply to any magneto which has been subjected to misuse, neglect or accident, nor shall it apply to any magneto which has been repaired or altered outside of our factory so as in our judgement to affect its stability or reliability.

## **WARRANTY ADJUSTMENT PROCEDURE**

Whenever there is reason to believe that the inoperative magneto comes within the terms of the J. I. Case warranty, the following procedure should be followed in obtaining adjustment.

The magneto should be submitted to the nearest authorized J. I. Case Magneto Service Station and a formal request made for adjustment.

The magneto will then be examined by the service station and if found to be actually defective, and within the Warranty period, such magneto will be placed in proper operating condition and no charge made for either labor or material.

In all cases deliver the magneto to an Authorized Service Station. Do not return the magneto to the Company at Rockford, Ill.

## **PARTS AND SERVICE**

It is just as important that replacement parts should be J. I. Case made as that the original parts were genuine. Patronize Authorized J. I. Case Service Stations as a protection to yourself.

The use of "will fit" parts automatically cancels the J. I. Case Warranty.

**J. I. CASE COMPANY**

# INTRODUCTION

The purpose of this manual is to give you, in brief, the minor instructions for the care and inspection of our aircraft magneto so you will receive from it the many hours of dependable service to which you are entitled.

This is not intended to be a Service Manual, as our many Service Stations throughout the world have these instructions along with the necessary testing equipment and special tools which are necessary to do a competent service job. Too often the life of a magneto has been shortened because a Serviceman has attempted to overhaul these instruments without the proper testing equipment, tools and information.

Although the J. I. Case Company is a new name in the aviation field, and J. I. Case magnetos are new to most aircraft personnel, we are not new in the magneto field, as we have been developing and manufacturing magnetos in quantity more than fifteen years.

You will find some of our methods are different from those to which you are accustomed, but after you have studied them and see their simplicity you will agree they are an advancement in magneto design.



**022CMT Timing Gage**

## TIMING GAGE

Due to the location of the magneto on the airplane engine, it is very complicated to assemble or periodically check the magneto and usually takes a lot of time, because of interferences and the fire wall being so close to the magneto.

We have developed a very unique device for use with our aircraft magnetos, which simplifies the timing of the magneto within itself, as well as the assembly of the magneto onto the airplane engine. This is our Aircraft Magneto Timing Gage 022-CMT.

Remove the Case magneto from the engine, take it to bench, remove the distributor cap and disc, inspect thoroughly. Then, with the assistance of this gage, you can, if necessary adjust the contact points, reassemble the distributor disc and cap, and assemble the magneto back on the engine. It is not necessary to remove the distributor cap while the magneto is on the engine. This gage enables you to do a much better job in much less time if you will carefully follow these instructions.



Fig. 1. Timing Magneto

### TIMING THE MAGNETO TO THE ENGINE

With the magneto held in an upright position, hold the spark plug wire leading from the hole marked No. 1 on the distributor cap, about  $\frac{1}{4}$ " from one of the four top cover screws (as shown in Fig. 1.)

If the magneto has no impulse, turn the magneto clockwise, accelerating (or flipping) it through the magnetic lock of the rotor (if the magneto has an impulse, trip the impulse) until a spark jumps the gap from the wire to the screw. Be sure to hold the gear firmly when the spark occurs. Then back the magneto up or turn it anti-clockwise until you feel the magnetic lock. Turn the magneto over and slip the timing gage into the hole, which is about in the center of the ventilating hole as shown in Fig. 2. Press the gage in firmly, locking the rotor. Fig. 3.

Set the No. 1 piston of the engine at its firing position. Follow instructions in the engine manual.

With the timing gage locking the magneto rotor, assemble the magneto onto the gear case of the engine, being careful to mesh the magneto drive gear with the driving gear in the engine. If the magneto has an impulse coupling, be careful not to wind up the impulse coupling spring when assembling and meshing the gears in the accessory case.

Lock the magneto in position with the nuts on the studs.

**Withdraw the timing gage.** The magneto is then properly timed to the engine.

After removing the timing gage before assembling the spark plug wires, turn the engine very slowly until the impulse trips. This should occur at top center. (Marked on propeller hub TC).



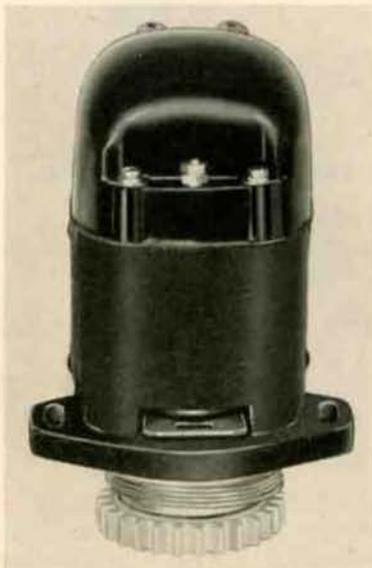
**Fig. 2. Timing Hole and Gage**

The lag angle on this magneto is 30°.

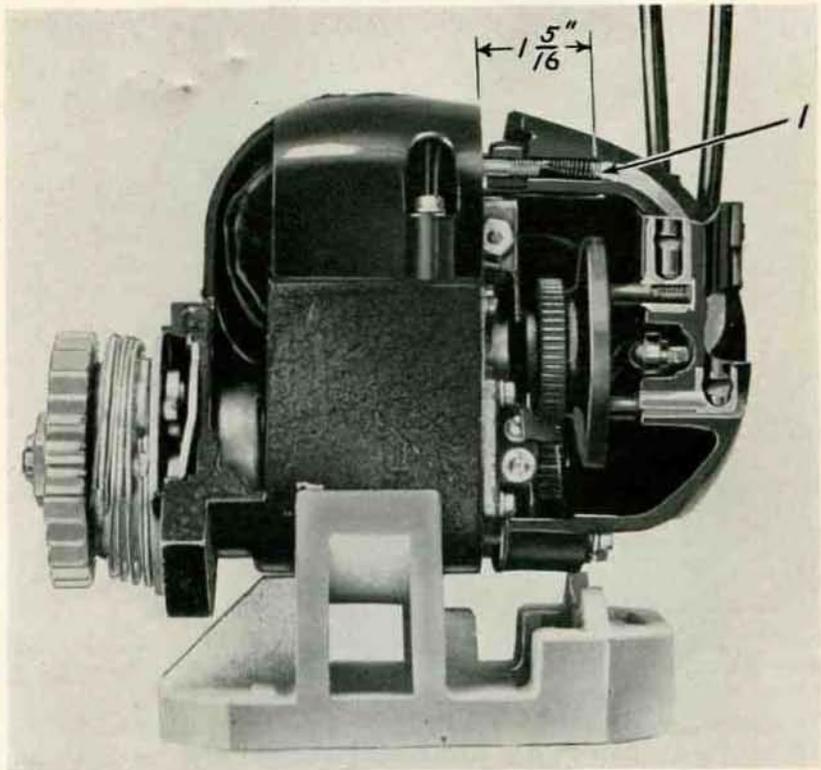
Check to see impulse trips freely to give a good starting spark. Should it bind from interference with the cam gear, shim out by placing extra gaskets on flange of magneto, until you are positive it is free.

When assembling the spark plug cables in the magneto distributor cap, be sure to push them down to the bottom of the holes. Holes No. 2 and No. 3 are  $1\frac{3}{4}$ " deeper than holes No. 1 and No. 4. (Holes are marked, see Fig. 1).

Should you not get the cables into the brass insert in the bottom of these holes, this would eventually burn through the distributor block insulation causing the engine to miss fire.



**Fig. 3. Timing Gage in Place**



**Fig. 4. Sectional View of Magneto**

### **INSPECTION**

At each periodic inspection, or about each 100 hours of operation, the following inspections are recommended:

Remove the magneto from the engine.

### **IMPULSE COUPLING**

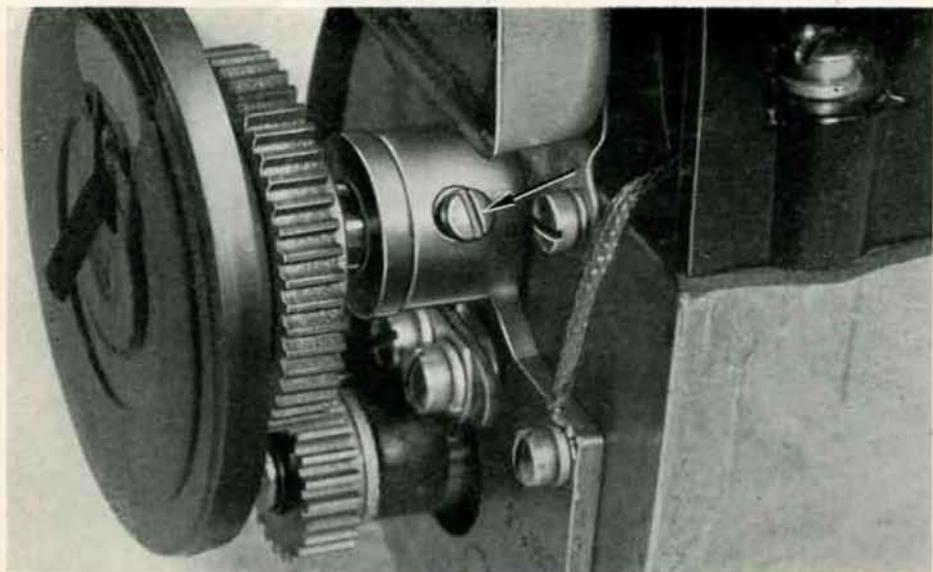
The impulse should latch up and trip freely. There should be no binding while the spring is being wound up. The operator must accustom himself to how a correctly operating impulse coupling feels.

### **DRIVE GEAR — NO IMPULSE**

Should be tight on shaft and nut tight against gear with cotter key or lock wire tight in slots in nut. If this is loose, it may wear off and fall out.

### **FREENESS OF ROTOR**

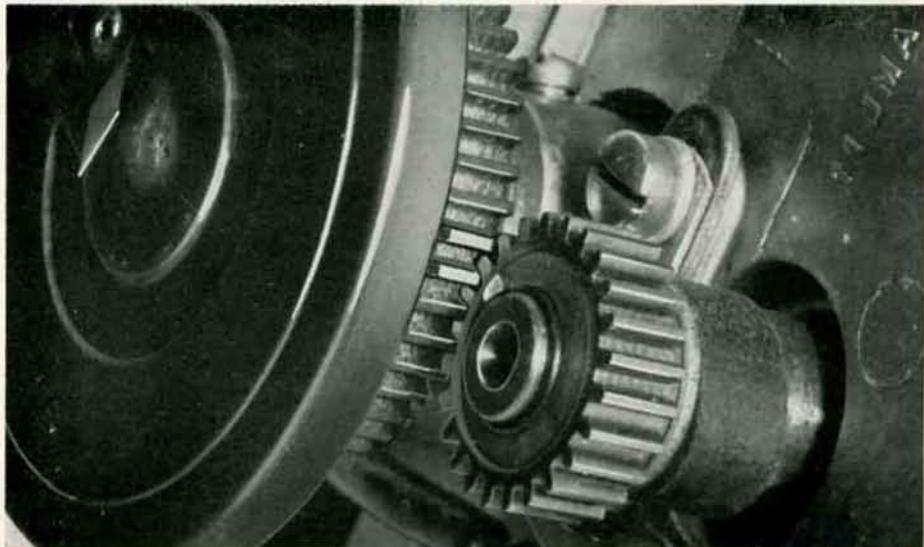
Turn the drive gear by hand in both directions. The magneto should be free without any interference with the exception of the magnetic lock which occurs every 180° of travel. If it has an impulse coupling, turn the magneto upside down, then the impulse will not engage during this test.



**Fig. 5. Screw Holding Distributor Disc Gear**

### **DISTRIBUTOR CAP**

Make sure distributor cap gasket is not broken. Be sure the springs are on the brushes straight and brushes are free in the distributor block. Test with tips of fingers; you should not be able to make these stick in any position. Be sure center brush is not worn down below brass retainer. There will be some carbon dust worn off the brushes around in the block. This is not detrimental unless it becomes extremely heavy. Wipe out with a soft cloth, being careful not to damage the brushes or springs. The spring on the end of the coil lead wire must not be bent, and must be long enough so it makes contact with the insert in the distributor block after the block is assembled onto the magneto as shown in (1) Fig. 4.



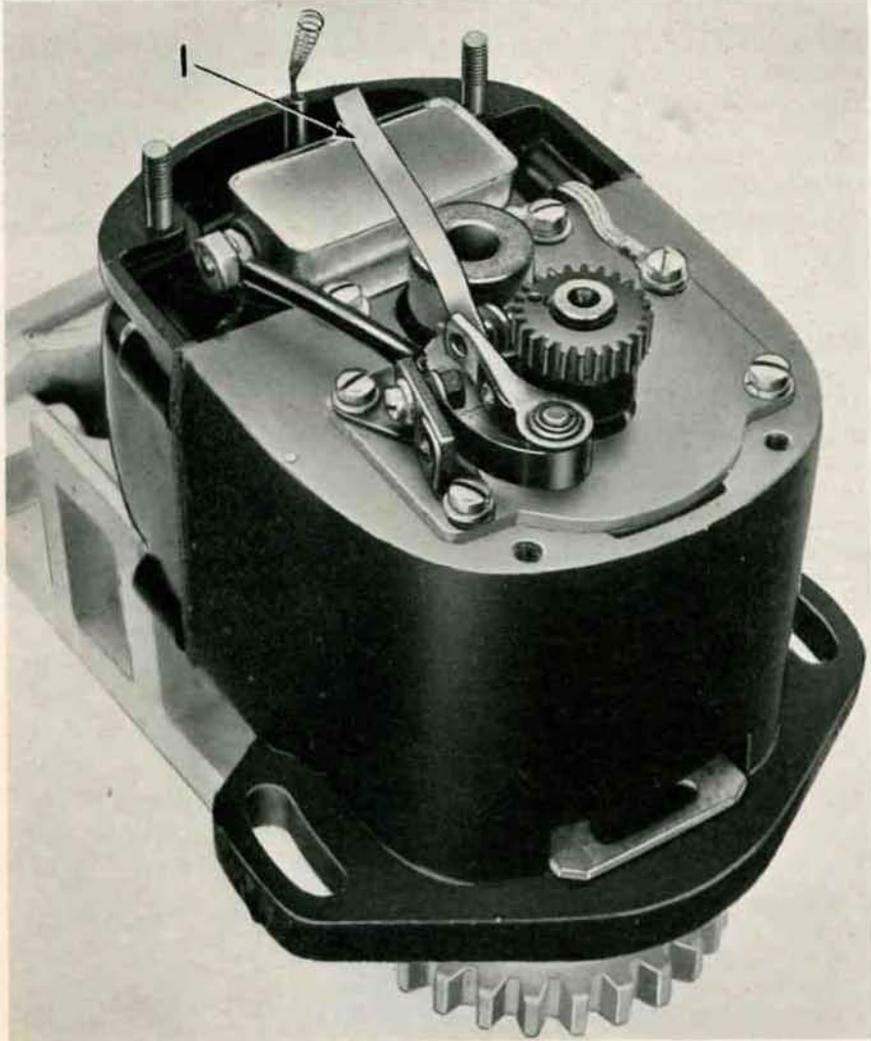
**Fig. 6. Meshing Distributor Disc Gears**

### **DISTRIBUTOR DISC**

Distributor Disc should be clean and smooth in the brush track. If there is an excessive black coating in this track, it can be removed with an ink eraser. Unless excessive, this is not harmful.

The screw shown in (Fig. 5) holds the distributor disc shaft in the bearing. This prevents it from falling out. Loosen this screw  $\frac{1}{16}$ " (2 turns), to remove the disc.

When reassembling the disc, be sure the teeth of the gears are meshed correctly. The tooth directly over the dot on the steel gear must be meshed between the two beveled teeth on the distributor gear shown in (Fig. 6). The bevel on the two teeth on the canvas base Bakelite distributor gear must be on the side of the gear next to the distributor disc.



**Fig. 7. Contact Points**

### **ADJUSTING CONTACT POINTS**

Slip the square pin of the timing gage into the hole in the rotor shaft as seen through the ventilating hole in bottom of the magneto (Figs. 2 and 3). Tap it down firmly so it locks the rotor. This is the position where the contacts should open.

With the distributor block and distributor disc off the magneto, adjust the sliding contact to a good full face fit to the contact point on the breaker arm, with the points just breaking about 0.001" to 0.002". This can be checked with a thin piece of paper or cellophane, (see 1, Fig. 7) the same as you would check the magneto when timing on the engine. With the points adjusted correctly, lock the adjustable contact in place, and the magneto is timed within itself to the gage.

Remove the timing gage; be sure the magneto is clean and reassemble the distributor disc and block.

## **OILING THE MAGNETO**

The magnet rotor in this magneto is carried on two shielded ball bearings and requires no lubrication throughout the life of the bearings.

The Oilite distributor shaft bearing does not require oil as long as it is free. Should it become sluggish, clean and oil with one drop of light machine oil. Do not oil excessively.

Do not oil or grease the breaker cam.

Oil, grease, or the fumes therefrom are very detrimental to contact point life.

## **SERVICING MAGNETOS**

Many Magnetos are ruined because they are tampered with by inexperienced operator's, under dirty, dusty conditions, or at places where proper service tools and testing equipment are not available.

Should your Magneto require attention other than that described herein, take it to one of the authorized Service Stations listed in our Magneto Service Station directory.

**NOTE:** No Warranty Service Work will be approved should it be done on a Case Aircraft Magneto by any one other than an authorized Case Magneto Service Station or Case Magneto Depot Station as they have all the necessary tools and equipment to do this work in a satisfactory manner and are familiar with handling Magneto Warranty Service.



**Established 1842**