

Section 18

SCINTILLA MAGNETO TYPES SF4RN-8 AND SF4LN-8

SERVICE INSTRUCTIONS

a. General.

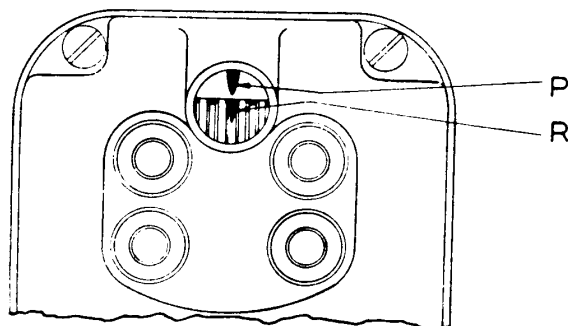
These new magnetos are characteristic of all Scintilla magnetos in principle and construction. The outstanding features incorporated are the new and powerful rotor and a coil of new design which increase their efficiency and ability to give dependable service for longer periods of time. Their general appearance is somewhat changed which is due mostly to the new feature incorporated for the distribution of the spark. In place of distributor blocks, separate terminals, which protrude from the main cover, are provided for the installation of the spark plug cables.

These magnetos are radio shielded and provision is made for attaching radio shielded cables. A screened ventilator on each side of the housing and one in the base insure adequate ventilation for the magneto.

b. Installing and Timing to the Engine.

Before installing the magneto, insure that it has been correctly timed and checked in accordance with the section entitled "Adjustment of the Breaker Contact Points." It is installed to the engine in the following manner:

- (1) Set the piston of cylinder No. 1 at its firing position.
- (2) Place the breaker in its full advance position (if variable spark magneto).
- (3) Rotate the magneto drive shaft until the timing mark R on the chamfered tooth of gear, Fig. 41, and timing pointer P are opposite each



Showing Magneto Timing Markers — Figure 41

other as seen through the timing window in the magneto cover. At this position the breaker contacts should begin to open.

- (4) All adjustments for exact timing to the engine are made at the drive end and not by altering the position of the contact points. Insure that the mounting faces are clean and smooth. With the timing marks P and R (Fig. 41) opposite each other, install the magneto on the engine and secure with its mounting bolts. Exact timing is obtained by turning the magneto through the angle provided by the slots in the magneto flange. A convenient way of checking this adjustment is to place a strip of .0015" shim stock between the contact points and pull on it slightly. When the shim stock slips, the contact points are just opening. (Fig. 42.)



Timing Magneto — Figure 42

MAGNETO SERVICE INSTRUCTIONS — Continued

When the exact timing to the engine has been made, tighten and lock the mounting bolts and recheck the adjustment.

c. Installation of the Cables.

(1) The new type of individual high tension terminals for each cylinder used in these series magnetos eliminates the use of cable-piercing screws. It permits the use of a snap terminal clip on the cable end which can be quickly attached to or disconnected from the distributor terminals which protrude from the main cover. The cable outlets are water-tight and are separated sufficiently to prevent flashing between the cables.

The number discs adjacent to the high tension terminal bushings on the main cover indicate the serial firing order of the magneto and are not engine cylinder numbers.

Attach the high tension cables to the magneto as follows:

1. Slip the knurled nut, brown bakelite collar, and the rubber gland over the cable in the order named.
2. Strip the insulation from the cable end for about $\frac{1}{4}$ " and attach the terminal clip which is provided with the magneto. Insert the bare cable strands through the hole of the terminal clip and secure with a drop of solder.
3. Push the cable into the terminal with a steady and firm pressure until the crimped portion on the terminal clip snaps into the groove inside of the terminal. ALWAYS MAKE SURE that the cable is pushed all the way in. The terminal clip must snap into the groove.

After the cable is properly installed, tighten the knurled nut.

d. Care in Operation.

The ball bearings of the magneto are packed in grease and require no lubrication except when the magneto is disassembled for overhaul. At such times the grease should be washed out and replaced with Keystone No. 44 grease or its equivalent.

At routine inspection intervals, take off the breaker cover by loosening the two securing screws and remove any excess oil. Thoroughly clean and dry the breaker mechanism to insure that oil will never touch the breaker contacts.

e. Adjustment of the Breaker Contact Points.

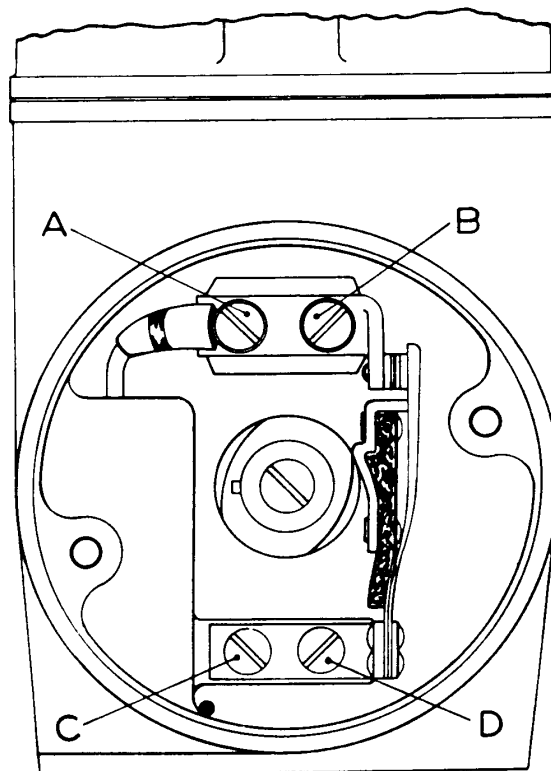
During major overhaul periods, at intervals which should not exceed 400 hours operating

time, the contact points are adjusted in the following manner:

(1) Place the breaker in its full advance position (if variable spark magneto).

(2) Turn the drive shaft until the mark R (Fig. 41) on the chamfered tooth of the large distributor gear is opposite the timing pointer P inside the magneto cover as seen through the timing window. When these two marks are opposite each other, the breaker contacts should be just opening. A convenient way of checking this adjustment is to place a strip of .0015" shim stock between the contacts and pull against it slightly. When the shim stock slips, the contacts are separating.

(3) If the contacts do not open at the proper time, loosen the two screws, A and B (Fig. 43), which hold the adjustable contact assembly in place and move the adjustable contact assembly to right or left until the two contacts separate when the timing marks are opposite each other. It should be noted that the contact points are not adjusted for any fixed clearance between them.



Breaker Mechanism — Figure 43

CONTINENTAL A 50 , A 65 , A 75 , A 80 ENGINES

MAGNETO SERVICE INSTRUCTIONS — Continued

(4) If the contacts do not line up properly, the location of the contact and cam follower assembly can be adjusted by loosening the two screws, C and D (Fig. 43), which secure the contact and cam follower assembly to the housing. The hole for screw D is slightly oversize to permit this adjustment. After retightening the screws, recheck this adjustment to insure that it is correct.

(5). Insure that the lubrication felt attached to the cam follower is soft and moist with oil. This felt supplies a very minute quantity of lubricant to the breaker cam. If oil appears on the surface when the felt is squeezed between the fingers, do

not add any more oil. If the felt is dry, however, moisten with a few drops of medium bodied mineral lubricating oil, SAE 60 or equivalent. Do NOT give it all it will hold.

Before replacing the breaker, wipe out any dirt or excess oil which may have entered into the breaker compartment during adjustment.

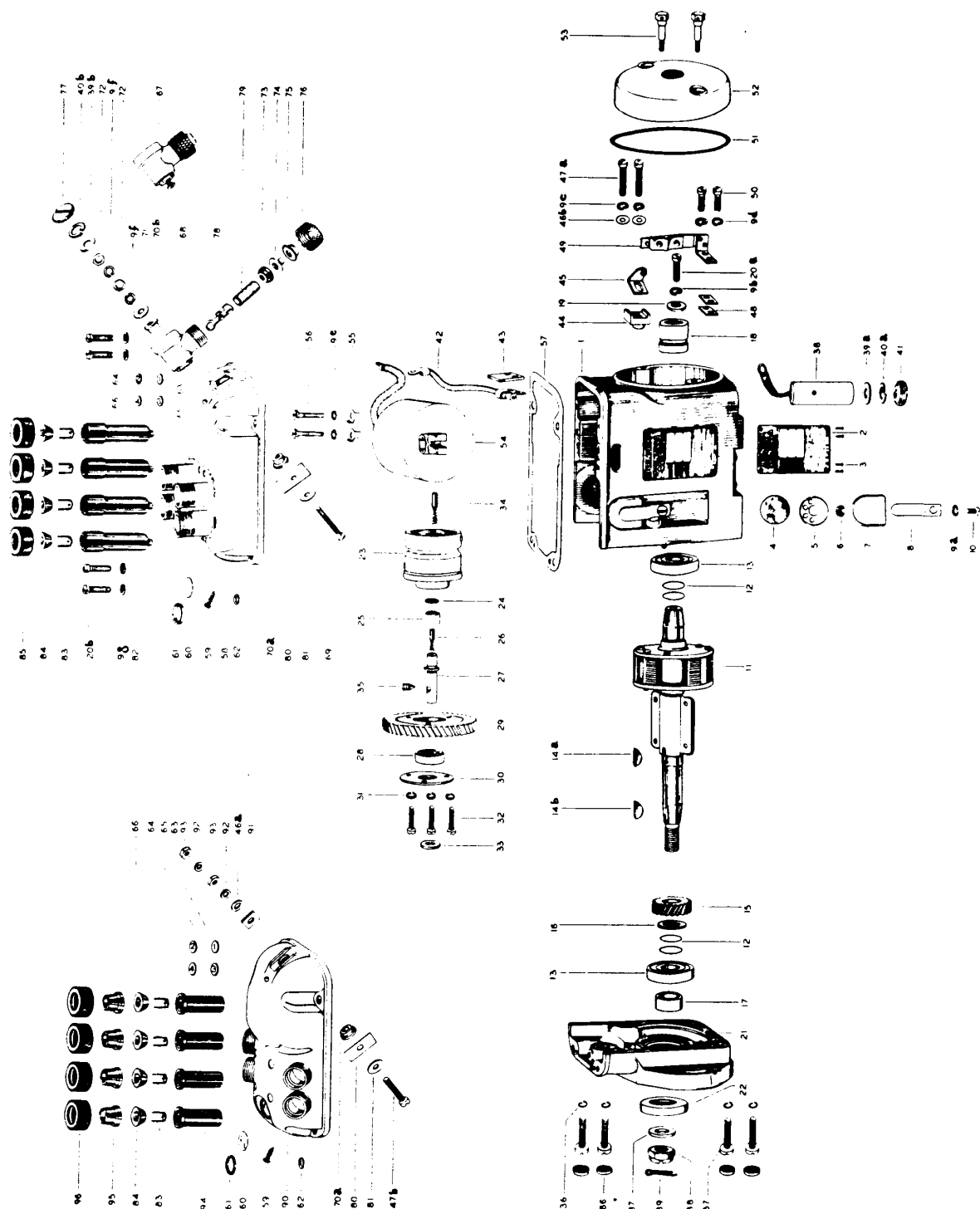
NOTE: On production magnetos now supplied, the breaker cam is staked in position on its shaft thereby eliminating the use of a cam key. The same cam is used for both clockwise and anti-clockwise magnetos, and therefore the directional arrow on the cam has been discontinued.

SCINTILLA MAGNETO TYPES SF4RN-8 AND SF4LN-8

SERVICE PARTS LIST

AIRCRAFT MAGNETOS			
Ref. No.	Part No.	Description	No. Required
1	10-19805	Housing — Magneto.....	1
2	10-12042	Plate — Magneto Identification.....	1
3	2-783	Drive Screw (Identification Plate).....	4
*	10-14673	Ventilator Assembly — Side..... (Includes 10-3132, 10-7441, 10-13795, 10-13796, 10-13797, 10-13798, 10-15444)	2
4	10-13797	Screen — Side Ventilator.....	2
5	10-7441	Retainer — Side Ventilator Screen.....	2
6	10-13796	Spacer — Side Ventilator Shield.....	2
7	10-13795	Shield — Side Ventilator.....	2
8	10-13798	Clamp — Side Ventilator.....	2
9	10-3132	Washer — Lock	
9a		(2, Side Ventilator Clamp Screw)	
9b		(1, Cam Screw)	
9c		(2, Adjustable Contact Assembly Screw)	
9d		(2, Contact and Cam Follower Assembly Screw)	
9e		(2, Coil Core Screw)	
**9f		(2, Ground Terminal Shield Screw Nut, Shielded Ground terminal Only)	
9g		(4, Magneto Cover Screw)	
10	10-15444	Screw — Fastening (Side Ventilator Clamp).....	2
11	10-15828Y	Magnet — Rotating.....	1
12	2-161-1	Washer — Shim — .0025" thick	
	2-161-2	Washer — Shim — .004" thick	
	2-161-3	Washer — Shim — .005" thick	
	2-161-4	Washer — Shim — .008" thick	
	2-161-5	Washer — Shim — .010" thick	
	2-161-6	Washer — Shim — .012" thick (Magnet End Play Adjusting)	
13	10-3057	Bearing — Ball (Magnet, Drive and Breaker Ends).....	2
14	2-295Z	Key — Woodruff.....	2
14a		(1, Small Gear)	
14b		(1, Drive Shaft)	
†15	10-25457	Gear — Distributor-Small-Clw.....	1
	10-25458	Gear — Distributor-Small-Anti-Clw.....	1
16	10-8672	Spacer — Plain (Between Small Gear and Bearing).....	1
†17	10-25788	Sleeve — Magnet Shaft (Bronze).....	1
18	10-8524	Cam — Breaker.....	1
19	10-3659	Washer — Plain (Cam Screw).....	1
20	10-16487	Screw — Fastening.....	5
20a		(1, Cam)	
20b		(4, Magneto Cover)	
†21	10-29049	Plate — Front End.....	1
†22	10-27448	Oil Seal — Drive Shaft.....	1
23	10-12046Y	Cylinder — Distributor.....	1

CONTINENTAL A50, A65, A75, A80 ENGINES



MAGNETO ILLUSTRATED PARTS — Figure 44

CONTINENTAL A 50, A 65, A 75, A 80 ENGINES

MAGNETO PARTS LIST — Continued

Ref. No.	Part No.	Description	No. Required
24	10-12643	Disc — Distributor Axle Carbon Brush (Cylinder)	1
25	10-8560	Bushing — Distributor Axle (Cylinder)	1
26	10-12647	Carbon Brush (Axle)	1
27	10-9476	Axle — Distributor Cylinder	1
28	10-2935	Bearing — Ball (Distributor)	1
†29	10-25459	Gear — Distributor — Large	1
30	10-8561	Retainer — Bearing	1
31	10-7501	Washer — Lock (Bearing Retainer Screw)	3
32	10-16483	Screw — Fastening (Bearing Retainer)	3
33	10-8523	Spacer — Plain (Between Distributor Bearing and End Plate)	1
34	10-9595	Carbon Brush (Cylinder)	1
35	10-13370	Screw — Fastening (Distributor Axle)	1
36	10-3677	Washer — Lock (End Plate Screw)	4
37	10-16768	Screw — Fastening (Front End Plate)	4
38	10-17892	Condenser	1
39	10-17025	Washer — Plain	
39a		(1, Condenser Plug)	
**39b		(1, Ground Terminal Shield Plug, Shielded Ground Term'l Only)	
40	10-3793	Washer — Lock	
40a		(1, Condenser Plug)	
**40b		(1, Ground Terminal Shield Plug, Shielded Ground Terminal Only)	
41	10-9489	Plug — Retaining (Condenser)	1
42	10-15832	Connector — Primary (Breaker to Ground Terminal)	1
43	10-9939	Insulator — Connector	1
44	10-3316	Insulator — Adjustable Contact Assembly	1
45	10-20236	Adjustable Contact Assembly	1
46	10-3317	Washer — Plain	
		(1, Ground Contact Screw Nut, Non-shielded Ground Terminal only)	
46a			
46b		(2, Adjustable Contact Assembly Screw)	
47	10-16489	Screw — Fastening	
47a		(2, Adjustable Contact Assembly)	
47b		(1, Ground Contact, Non-shielded Ground Terminal only)	
48	10-3464-1	Spacer — Shim — .025" thick	
	10-3464-2	Spacer — Shim — .028" thick	
	10-3464-3	Spacer — Shim — .032" thick	
	10-3464-4	Spacer — Shim — .035" thick	
	10-3464-5	Spacer — Shim — .020" thick	
		(Contact and Cam Follower Assembly)	
49	10-20237	Contact and Cam Follower Assembly	1
50	10-16486	Screw — Fastening (Contact and Cam Follower Assembly)	2
51	10-8664	Gasket — Breaker Cover	1
52	10-18955	Cover — Breaker	1
53	10-19722	Screw — Fastening (Breaker Cover)	2
54	10-15829V	Coil	1
55	10-3983	Washer — 2 Ear Lock (Coil Core Screw)	2
56	10-5600	Screw — Fastening (Coil Core)	2
57	10-8665	Gasket — Magneto Cover	1
58	10-13457Z	Cover — Magneto (Vertical Outlet)	1
59	10-9477	Pointer — Timing	1
60	10-9976	Window — Timing	1

CONTINENTAL A 50, A 65, A 75, A 80 ENGINES

MAGNETO PARTS LIST — Continued

Ref. No.	Part No.	Description	No. Required
61	10-9975	Washer — Plain (Timing Window Retaining)	1
62	2-319	Disc — Rotation Direction	1
63	2-321	Disc — No. 1	1
64	2-322	Disc — No. 2	1
65	2-323	Disc — No. 3	1
66	2-324	Disc — No. 4	1
67	10-16507	Shield Assembly — Ground Terminal (Shielded Ground Terminal only)	1
**68	10-16140Z	Shield — Ground Terminal	1
**69	10-16584	Screw — Fastening (Ground Terminal Shield)	1
70	10-8014	Bushing — Insulating, Round	
70a		(1, Ground Contact Screw)	
70b		** (1, Ground Contact Nuts)	
**71	10-5534	Washer — Plain (Ground Contact Nuts)	1
**72	10-14990	Nut (Ground Terminal Shield Screw)	2
**73	10-2674	Grommet — Rubber (Ground Terminal Cable)	1
**74	10-7029	Ferrule — Inner (Ground Terminal Cable)	1
**75	10-7030	Ferrule — Outer (Ground Terminal Cable)	1
**76	10-3657	Nut (Ground Terminal Shield)	1
**77	10-13242	Plug — Ground Terminal Shield	1
**78	10-19021	Terminal Clip — Ground Wire	1
**79	10-21847	Tube — Insulating (Ground Wire Terminal Clip)	1
80	10-16203	Insulator — Primary Connector	1
81	10-3220	Washer — Plain (Primary Connector Insulator)	1
82	10-13458	Terminal — High Tension (Vertical Outlet Cover)	4
83	10-12360	Clip — High Tension Cable	4
84	10-2617	Grommet — Rubber (High Tension Terminal)	4
85	10-14855	Nut — High Tension Terminal (Shielded Installations)	4
86	10-13182	Plug — Leather (End Plate Screw Hole)	4
87	10-4093	Washer — Plain (Drive Shaft Nut)	1
88	10-4092	Nut — Drive Shaft	1
89	2-393	Pin — Cotter (Drive Shaft Nut)	1
90	10-12945Z	Cover — Magneto (Angle Outlet)	1
91	10-9543	Plate — Insulating (Ground Contact Screw Nut, Non-shielded Ground Terminal only)	1
92	2-339	Washer — Lock (Ground Contact Screw Nut, Non-shielded Ground Terminal only)	2
93	10-16497	Nut (Ground Contact Screw, Non-shielded Ground Terminal only)	2
94	10-9994Y	Terminal — High Tension (Angle Outlet Cover)	4
95	10-9993	Collar — High Tension Cable (Non-shielded Installations)	4
96	10-9571	Nut — High Tension Terminals (Non-shielded Installations)	4

*Not illustrated.

**Included in 10-16507 Ground Terminal Shield Assembly.

†Current production magnetos incorporate distributor gears of the helical or angle-cut tooth design, where formerly they incorporated gears of the spur or straight-cut tooth design.

Therefore, when replacing either the large or small spur tooth gears, it is necessary to order both the large and small helical tooth gears as a set, the gears not being interchangeable individually.

‡When replacing the drive shaft oil seal (Ref. No. 22) on magnetos incorporating the "Garlock" seal inserted from the outside of the front end plate, the bronze bushing (Ref. No. 17) and the new type "Chicago Rawhide" seal must be used.

When replacing the Garlock seal on magnetos with the oil seal inserted from the inside of the front end plate, the front end plate must be reworked in accordance with Scintilla Service Bulletin No. 93.