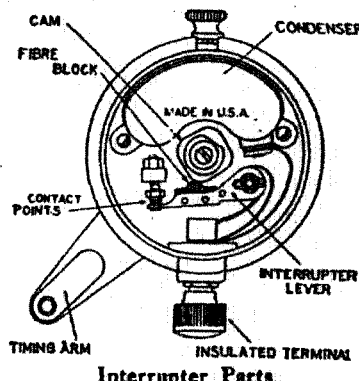




BOSCH BATTERY IGNITION SYSTEM FOR FORDS—Continued

ENGINE, TURN THE HOUSING TO THE LEFT UNTIL THE BREAKER POINTS OPEN SLIGHTLY. Tighten the clamp screw in the timing arm so that the



Interrupter Parts

housing will be held in this position. Fasten cable holding bracket in position on top of the engine. Replace the rotor and distributor cap, noting under which terminal of the distributor cap the metal segment of the rotor rests. Connect this terminal to the spark plug in No. 1 cylinder by means of the high tension cable furnished (cables are marked Nos. 1, 2, 3, and 4 on the flat section of the Rajah

terminals; these numbers designate the spark plug to which they are to be connected.) The cable should be led from the distributor cap through the cable holding bracket to the spark plug (the distributor cap ends of the spark plug cables are provided with special terminals. It is only necessary to push these ends all the way into the holes in the towers on the distributor cap for they automatically lock themselves in place.)

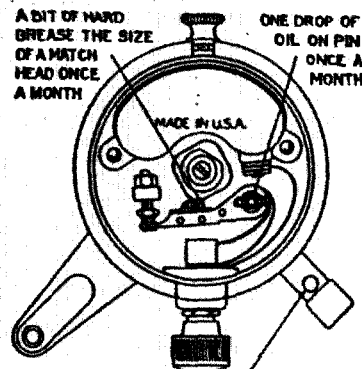
The distributor rotor rotates in a clockwise direction and the Ford engine fires one, two, four, three. Therefore, connect the next terminal on the distributor cap in the direction of the distributor rotor rotation to No. 2 spark plug, the next to No. 4 spark plug and the remaining terminal to No. 3 spark plug. Connect the center distributor cap terminal to the middle terminal of the spark coil. Connect the insulated terminal on the side of the distributor housing to the lower terminal of the coil by means of the low tension cable furnished.

10. Testing and Adjusting: Before replacing the fan assembly, radiator, hood, etc., screw up the cam shaft thrust screw in the engine front plate until it rests on the end of the cam shaft; then back it out one-half turn. Run the engine about half a minute and readjust the thrust screw making it tight and then backing out a quarter of a turn. Having made this adjustment, replace fan assembly, radiator, hood, etc.

Important: For ordinary running the spark control lever on the steering column should be set near the full advance position (at the bottom of the quadrant). This lever requires little or no operation under ordinary driving

conditions. For hand cranking set the lever in full retard position (top of the quadrant).

11. Lubrication: There are only three parts of the outfit which require lubrication; namely, the governor, the pivot which carries the interrupter lever and the fibre block upon the interrupter lever. The governor is oiled through the oil cap at the side of the timer housing. Pull back the cap and put in oil until it runs over. Do it often. Put one drop of oil (less rather than more as it should not be over-oiled) on the pivot which carries the interrupter lever and a bit of hard grease the size of a match head on the side of the interrupter block nearest the pivot which carries the interrupter lever. Follow these oiling directions once a month.



PULL CAP BACK AND PUT OIL IN HOLE UNTIL IT RUNS OVER — ONCE A MONTH

Lubrication Diagram

Note: This outfit has not been designed to run on the current furnished by the Ford magneto. The red wire which you disconnected from the Ford terminal block No. 5 on the dash disconnects the Ford magneto from the ignition system. However, if at any time your battery fails, the engine may be started by reconnecting this red wire to terminal No. 5 of the Ford terminal block, turning the dash switch to the "Mag" position and fully retarding the hand lever at the steering wheel. If the engine does not start with a few turns of the crank, advance the hand lever about a half inch and try again. Somewhere between full retard and half advance the Ford magneto will give enough current to start the engine. If after starting, the engine runs in "jumps," advance or retard the hand lever until it runs smoothly.

This should be done only in emergencies for the Bosch Compensating Battery Ignition outfit will not perform satisfactorily on the current furnished by the Ford magneto.

If the dash ammeter shows "charge" after starting, the dash switch may again be turned to the "battery" side but the red wire should be disconnected from the terminal block as soon as the battery is again put in condition.

SERVICE PARTS and PRICES

All prices are subject to change without notice

Fitting Parts

Cat. No.	Description	Price
T-4208	Ed. 1 Bosch Compensating battery ignition distributor	\$15.00
TC-30	Bosch ignition coil, 6 volts	6.00
70070	Coil fastening wood screw No. 14x $\frac{7}{8}$ "	.05
70349	Coil fastening bolts $\frac{1}{4}$ "x $\frac{3}{4}$ "	.05
67300	Coil fastening lock washers	.05
71251	Coil fastening bolt nut	.05
66313	Engine front plate	4.05
66811	Engine front plate paper gasket	.10
67038	Distributor shaft hole plug	.05
65282	Cam shaft gear adjusting screw	.10
65533	Cam shaft gear adjusting screw lock nut	.10
66329	Fan belt adjusting screw	.20
66323	Distributor set screw	.15

Cat. No.	Description	Price
66320	Cam shaft gear	1.60
65935	Cam shaft gear keyed nut	.40
67520	Cam shaft gear keyed nut washer	.05
66321	Distributor gear	1.90
66324	Distributor gear dowel pin	.05
66322	Distributor gear spring ring	.05
66438	Control lever pivot post	.15
66437	Control lever pivot post lock nut $\frac{3}{8}$ "-24	.05
45531	Control lever pivot post washer $\frac{3}{8}$ "	.05
55820	Control lever pivot post cotter pin	.05
66308	Control lever	.40
66618	Control rod—short	.10
68309	Control rod—long	.15
51198	Control rod washer $\frac{1}{4}$ "	.05



BOSCH BATTERY IGNITION SYSTEM FOR FORDS—Continued

braided tube. The other ends of these wires are connected to the timer at the front of the engine. Disconnect them from the timer and cut them off where they leave the front end of the braided tube. Be careful not to cut the lamp wires by mistake.

4. Control: The Bosch fitting was originally designed for replacement on Ford cars prior to the 1922 models, and for this reason the long control rod on the engine front plate was furnished to screw into the Ford ball joint at the end of the steering column. However, on the later models of Ford cars this ball joint is eliminated and the timer control arm is bent and fastened to the steering column by means of a cotter pin. In order to take care of this change in the Ford cars, the control rod furnished with the Bosch fitting was redesigned, the threads being eliminated and the end bent and drilled.

If the fitting furnished you is supplied with a threaded control rod, unfasten the Ford control rod at the timer and unscrew it from the ball joint at the end of the steering column.

If no ball joint is furnished unfasten the Ford control rod at timer, take out cotter pin and remove the rod.

5. Removing Ford Timer: Loosen the spring which holds the timer assembly in place and remove the timer.

Unscure the hexagon nut on the end of the cam shaft and pry off the roller and arm with a screw driver. Now take off the engine front plate but be sure to save

(a) the lock nut on the fan belt tension adjusting bolt (b) the paper gasket (if the paper gasket is damaged it should be replaced by the new paper gasket which we furnish) (c) the oil cover and (d) the semi-circular felt packing which is in the groove where the engine front plate sets around the crank shaft. These parts are all used later.

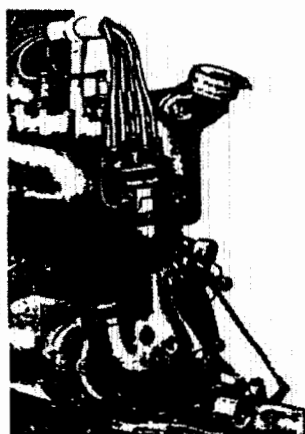
6. Mounting the Bosch Coil: Fasten the Bosch Coil to the dash a little to the right of the center so that you can easily connect the black wire which formerly led to the Ford Coil, to the screw terminal of the Bosch Coil. Use wood screws on Fords previous to 1923 Model. For metal dash use bolts and nuts furnished.

7. Mounting the Cam Shaft Driving Gear: Unscrew the nut which holds the timing gear in position and place washer on cam shaft just over timing gear. Replace the nut with keyed nut furnished, drawing the keyed nut up firmly against the washer. Put the driving gear on the cam shaft so that the two tongues on the nut which holds the timing gear fit into the slots in the back of the driving gear. Fasten the gear firmly in place by means of the hexagon nut which previously held the Ford timer mechanism on the cam shaft. Put plenty of oil on the gear.



Driving Gear Mounted on Cam Shaft

8. Mounting Bosch Timer and Engine Front Plate: Loosen the lock nut and back up cam shaft thrust screw in the engine front plate until it is flush with the inner surface.



Front view of Fitting installed

Remove from the engine front plate the set screw which is provided to hold the timer in place and set the timer distributor in position, at the same time attaching the timing arm. Place this set screw back in the plate, making sure that the timer distributor turns freely after tightening the set screw. Put plenty of oil on the timer distributor shank, timer gear and cam shaft gear. The timer housing should rotate freely and should be well lubricated.

Shellac the paper gasket on the engine front plate and set the engine front plate in place, carefully meshing the gears. Fasten the engine front plate to the crank case, using the original Ford cap screws and bolts, but be sure that all bolts are in place before any are tightened. The Cap Screws through the Flange at the bottom of the Engine Front Plate must be put in first. Be careful when tightening up the cap screws not to lose the alignment established between the two gears. Gears out of alignment ruin the system. The cap screws should be tightened gradually and must not be screwed all the way home, one at a time.

Should the gears not mesh at once do not force them. Look for some interference. Do not use a wrench on the cam or wedge a tool in the timer in order to force the gears into mesh.

Set spark control lever at the steering wheel in the full retard position (top of quadrant).

If the Bosch fitting is supplied with the threaded control rod, it is to be connected as follows: Remove the long control rod from the lever mounted on the engine front plate, and screw the threaded end into the ball joint at the end of the steering column. (Ball joint must be attached if not furnished on the car.)

If the Bosch fitting is supplied with the bent control rod, connect the free end to lever on the steering column by means of cotter pin.

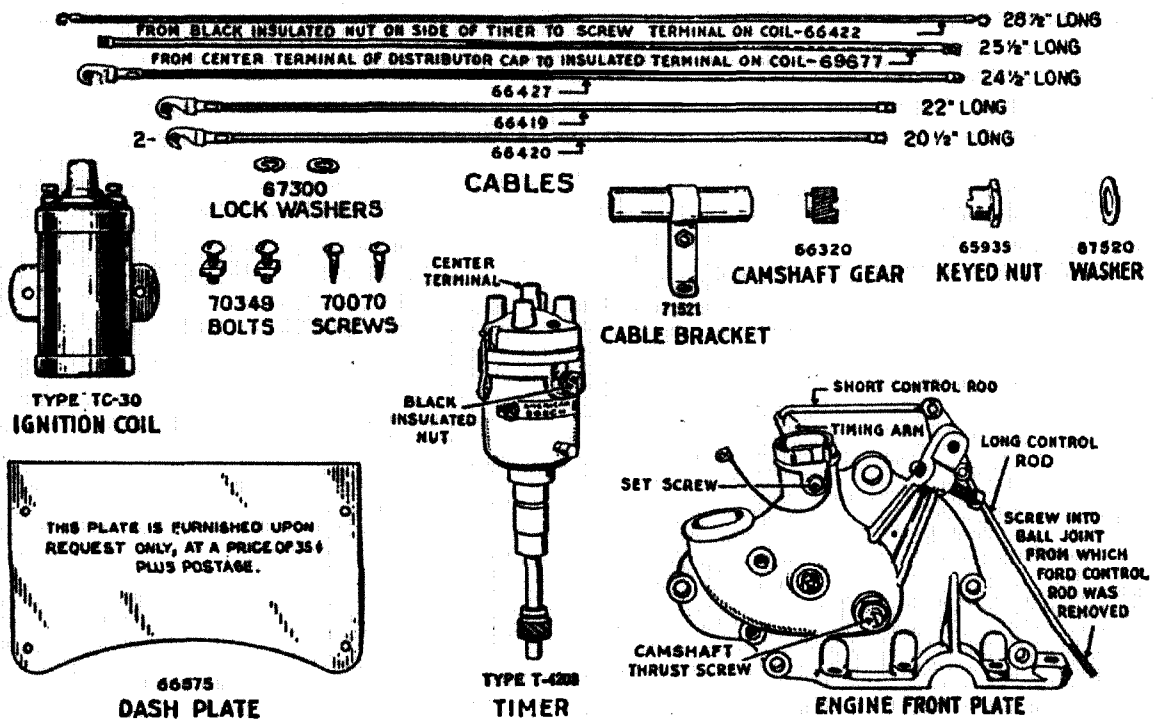
Set the fan pulley on the crank shaft in its original position and fasten with pin and cotter.

The grounding cable which is fastened to the control arm of the timer distributor should be fastened to the screw at the end of the generator. On some of the first fittings this cable was grounded to a screw on the front of the engine front plate, but it should be changed and grounded on the generator so that there is no chance of it getting caught in the fan.

9. Timing: Put the ignition switch in off position, and take out the spark plug in No. 1 cylinder. Turn over the engine until the piston in No. 1 cylinder comes up to top dead center position (highest point) on the compression stroke. Remove the distributor cap from the timer, lift the timer until the gears are out of mesh and remesh with the distributor rotor insert (metal finger) toward No. 1 spark plug.

Loosen the clamping screw which holds the timing arm on the timer.

Remove the distributor rotor. POINT THE TIMER HOUSING OIL CUP TOWARD THE REAR OF THE



SERVICE PARTS AND PRICES—Continued

Cat. No.	Description	Price	Cat. No.	Description	Price
60343	Control rod cotter pin.....	.05	66209	Terminal screw inner insulating block	.10
66361	Distributor grounding wire.....	.30	66944	Terminal screw insulating bushing	.10
66362	Grounding wire fastening screw to engine front plate, 10-32-1/4"	.05	69254	Terminal screw brass washer—square hole... ..	.05
71521	Cable bracket	.15	1288	Terminal screw lock washer	.05
66575	Metal dash plate (Furnished on request only)	.35	67138	Terminal screw hexagon nut	.05
66420	High tension cable-hook and free 20 1/2" long (2)	.40	60070	Terminal nut	.05
66419	High tension cable-hook and free 22" long ..	.45	67270	Condenser—complete	2.00
66427	High tension cable-hook and free 24 1/2"	.45	67271	Condenser fastening rivet	.05
69677	High tension cable-free and free 25 1/2" long ..	.25	72258	Distributor shaft with governor and cam....	3.50
66422	Low tension cable loop and loop 28 1/2" long..	.35	70890	Interrupter cam	1.50
Type T-4208 Ignition Distributor Parts			68165	Interrupter cam spring ring	.05
73152	Distributor housing with holding springs.....	3.00	65687	Distributor rotor with insert	.70
70823	Distributor plate holding spring	.15	66696	Distributor rotor insert	.05
69302	Distributor plate holding spring rivet	.05	463	Distributor rotor insert fastening screw	.05
66102	Distributor shaft felt wick	.05	66880	Distributor block with center brush	2.50
70347	Distributor shaft oil cup	.15	65936	Distributor block terminals	.02
66964	Interrupter housing with condenser and interrupter	5.25	64759	Distributor block center brush and spring ..	.25
65649	Interrupter housing with riveted parts—only..	.90	64757	Distributor block center brush spring ring ..	.05
65142	Interrupter lever pivot post with insulating plate	.15	65620	Distributor block holding spring	.15
65889	Pivot post insulating plate rivet.....	.05	66223	Distributor block holding spring rivet	.05
66786	Interrupter lever with contact point.....	.85	66423	Control arm with screw	.80
65772	Interrupter lever spring clip	.05	65619	Control arm screw	.05
65650	Interrupter lever operating spring	.05	66321	Distributor gear	.60
65626	Interrupter lever lead to terminal	.05	66324	Distributor gear dowel pin	.05
66047	Contact screw with nut—long.....	.50	66322	Distributor gear spring ring	.05
438	Contact screw nut	.05	66774	Distributor shaft felt washer	.05
65627	Interrupter housing insulated terminal screw ..	.25	66314	Distributor shaft collar	.15
			66315	Distributor shaft collar set screw	.05
			68234	Adjusting wrench for distributor	.10
			Type TC-30 Ignition Coil Parts		
			69478	Terminal screw	.05
			762	Terminal screw plain washer	.05
			65936	Terminal clip	.02

AMERICAN BOSCH

Main Office and Works: - Springfield, Massachusetts

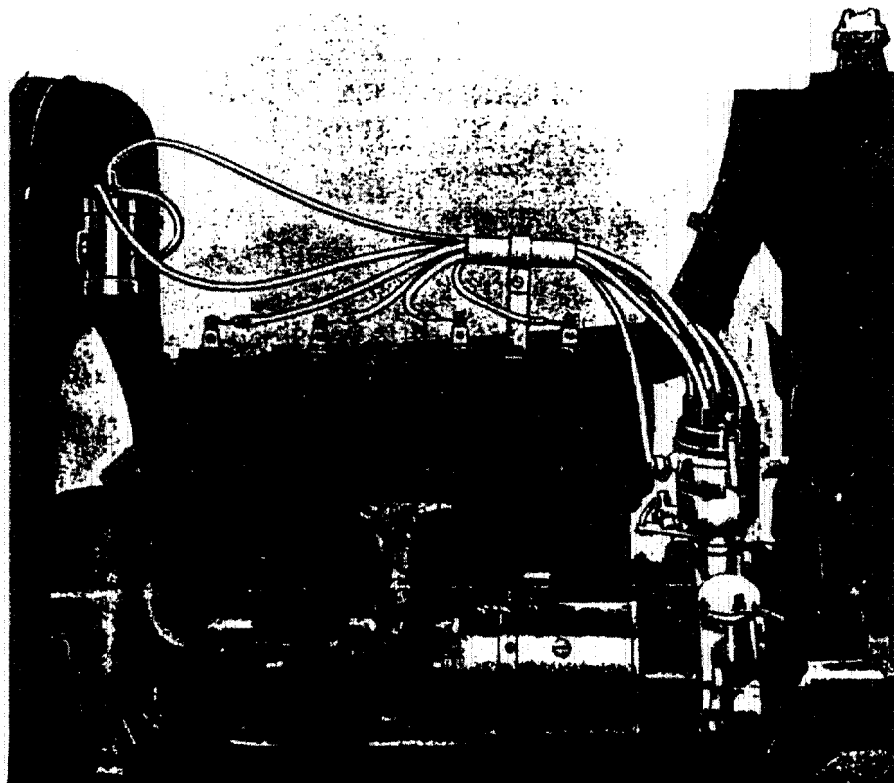
**MAGNETO CORPORATION**

Branches: New York - Chicago - Detroit - San Francisco

BOSCH DE LUXE IGNITION SYSTEM FOR FORDS

TYPE FI-513

Instructions for Installing the Bosch Compensating Battery Ignition System on Fords of 1919 and later, that are Equipped with Generator and Battery.



Study this picture carefully. It will show you the location of all parts of the outfit. The oil cup on the Timer housing **MUST** point towards the rear of the engine.

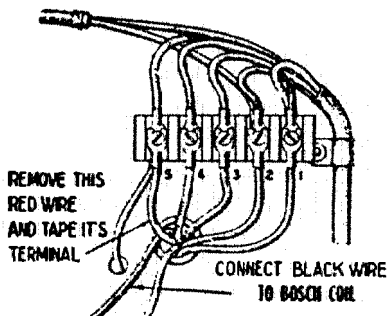
Read instructions carefully before making installation. THEY ARE IMPORTANT.

Proceed step by step as outlined in these instructions.

1. Removing Radiator: Take off the engine hood, loosen the lock nut on the radiator brace rod and unscrew the rod from the radiator. Drain the water from the radiator and unfasten the water connections at the engine. Unscrew the hold-down nuts at the side of the radiator and lift off the radiator.

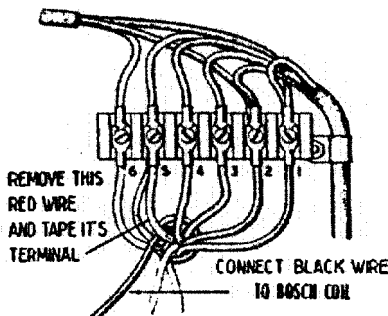
2. Removing Fan and Bracket: Take out cotter pin and drive out pin which goes thru hub of fan pulley on crankshaft. Move the pulley forward as far as possible.

3. Wiring: The 1922 models of Ford cars are equipped with a six-way terminal block; previous models have a five-way terminal block, as shown in the illustrations above.



Ford Terminal Blocks

Remove the red wire which comes thru the dash in a woven tube from the terminal marked "5" in the illustration, and cover the terminal on this red wire with tire tape and leave it hanging.



Remove and discard the four wires which connect the spark plugs to the terminals on the coil box. Disconnect the wire connected to the single coil terminal underneath, being careful not to damage it, as later it will be connected to the Bosch Coil.

On 1922 models, this wire is blue with a yellow tracer; on previous models it is black.

Disconnect the four wires leading to the upper coil terminals and cut them off where they come out of the