SERVICE INSTRUCTIONS AND PARTS LIST

BATTERY DISTRIBUTOR MODELS

DB



WICO

The Prestolite Company
Division of ELTRA Corporation

TOLEDO, OHIO

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BATTERY DISTRIBUTOR SYSTEMS

The system is designed to produce high voltage surges which are directed to the spark plugs. The sparks are timed to appear at the plug at the right moment.

DISTRIBUTOR FUNCTION

The distributor opens and closes the low tension circuit between the battery and the coil by means of breaker points so that the primary winding is supplied with intermittent surges of current. Each surge builds up a magnetic field in the coil. The breaker cam opens the points making the magnetic field collapse causing the coil to produce a high voltage surge. The distributor times the surges according to engine specifications. The distributor sends the high voltage surge through the rotor, cap and high tension wire to the plug that is ready to fire.

A top view and cross section of the Wico distributor indicating the major parts is shown in figures 1 and 3. An exploded view of the parts is shown in figure 6.

HOW IT WORKS

The primary circuit is opened and closed by the breaker mechanism (breaker arm and fixed contact plate) and the breaker cam. The cam is rotated by the distributor shaft in conjunction with the centrifugal advance parts. The shaft is driven by a coupling or gear within the engine usually by the engine camshaft. The shaft and breaker cam are rotated at ½ engine speed and the breaker cam has the same number of lobes as there are cylinders. (There are some exceptions to this rule.) As the cam opens the points a high voltage surge is produced. For example on a four cylinder, four cycle engine one complete revolution of the distributor fires all four cylinders. Thus, with every two crankshaft revolutions or every complete breaker cam revolution, each cylinder will fire once.

The condenser is connected across the contact points to produce a quick collapse of the coil field so that a high voltage will occur. The condenser prevents the points from arcing. After the surge is produced in the coil it is conducted through the high tension lead to the center terminal of the cap. It then continues down to the rotor and to the outer terminal in the cap under which the distributor rotor contact is positioned at the time the surge occurs. The plug that is ready to fire is connected to this outside terminal by a high tension lead. Thus, a system for distributing high voltage surges to the correct spark plug is produced by means of the cap, rotor and high tension leads.

SPARK ADVANCE

Timing of the spark with relation to piston position has to vary in order to obtain best engine performance. The spark must occur at the plug earlier in the compression stroke at high speed to allow the fuel-air mixture adequate time to ignite and burn, giving power to the piston as it starts down on the power stroke. Under throttled operation a smaller amount of fuel-air mixture goes into the cylinder and is less highly compressed. Because of this, advancing the spark will allow fuller use of the fuel-air mixture introduced.

CENTRIFUGAL ADVANCE UNIT

Wico distributors have a centrifugal advance which moves the cam in advance of the distributor shaft by means of centrifugal weights which moves the cam ahead of the distributor shaft. The unit is made up of a breaker cam, an advance weight group, a stop weight group, advance and stop weight springs, and a drive shaft group. Figure 6 shows these parts in an exploded view and Figure 2 shows the parts assembled. The weights are made so that one end of the weight works freely in an outward and inward motion. The other end of the weight, which appears to be a hook, fits in the slot located at the bottom of the breaker cam. As the speed is increased the weights through centrifugal force move outward causing the hooked end of the weight to exert force against the side of the slot in the breaker cam moving it to an advanced position as shown in Figure 5. The springs in the advance unit are primarily necessary to produce a specific type of advance curve and to return the weights to a "no advance" position as shown in Figure 4.

In the Wico type advance, springs having various characteristics are employed to produce advance curves for different applications. Such surves are more or less special or tailored to individual engine requirements.

SERVICE INSTRUCTIONS

DISTRIBUTOR CAP & ROTOR

After removal of the distributor cap, wipe with clean cloth and check for tracking or cracks. Check the carbon brush and spring for wear and free movement in the distributor cap. If the carbon is worn and needs to be replaced, it is recommended that the group consisting of the carbon and spring be used.

Inspect the rotor for cracks and carbonized paths which would allow leakage to ground. Such a defect would mean replacement was necessary.

DUST SEAL & CAM WIPER FELT

Examine the dust seal and replace if felt is dirty, hard or worn. This also applies to the cam wiper felt. Lubricant should not be applied to the cam wiper felt, it should be changed if dry.

CONTACT POINTS

The points should be adjusted to .019-.022 when fully opened. To adjust the contacts, loosen the contact support clamp screw just enough to permit movement of the plate. Insert the end of the screw driver in the adjusting slot and set to .019-.022 with a clean plastic feeler gauge. To get an accurate check on the opening of old or rough points a dial indicator or cam angle meter should be used.

To replace the contacts remove the contact support clamp screw, remove the first battery connection nut and lock washer, loosen the second nut and the contact set can be taken out. If they are badly worn or pitted they should be replaced. It is recommended that a complete set be used when making replacement.

When replacing contacts apply a small amount of Essoleum "C" cam lubricant to the shoe or rubbing block on the breaker arm. BE SURE THAT THE POINT SURFACES ARE FREE OF DIRT, DUST AND OIL BEFORE INSTALLING.

Spring tension should be measured at the center line of the breaker shoe coincident with the line of action and be within the limits shown on the chart on page 7.

CONDENSER

To remove the condenser, first disconnect the condenser lead by loosening the battery connection in the same manner as in the removal of the contacts, then remove the condenser clamp screw and the condenser clamp. When replacing the condenser make sure it is properly placed and that the screw is securely tightened. Loose mounting can cause high series resistance. For testing condenser capacity see table on test data on page 7.

CENTRIFUGAL ADVANCE

Before removal check the advance mechanism for freeness of operation by turning the breaker cam in the direction of rotation and then releasing it. It should return to its original position if it is functioning properly. If it does not, the advance will require servicing and means the distributor will have to be removed from the engine.

The distributor should be checked on a distributor tester using the test data shown on page 7.

To service the advance unit, remove the Breaker Plate Clamp screws and remove the Breaker Plate, then remove the coupling or drive gear. Clean off any burrs caused by the removal of the roll pin and the entire advance mechanism can be lifted out.

On tachometer drive units the drive adapter pin 9828, the drive adapter X30266, and the tach drive take-off shaft 30245 must be taken out before the advance mechanism and drive shaft unit can be removed.

Take off the cam retaining ring and remove the breaker cam. When removing advance springs care should be taken to make certain they are not distorted, stretched or damaged in any way. At the time of removal make note of the manner in which the springs are assembled. Unless original springs are in good condition they should not be used. When installing new springs the same care should be taken as given in their removal. Advance springs should be replaced in sets only, so for your convenience they are sold only in sets.

BUSHINGS

Should the porous bushings be damaged or worn they can be replaced with a special tool, part number S-15295. Lubrication from porous bushings is dependent upon a uniform amount of oil seeping through the bushing. Reaming, scrapping or filing the bushings will affect the amount of oil seepage and should not be done. Considerable care must be taken when replacing bushings and it is important that only the grade of oil specified be used.

On tachometer drive units there are oil seals under the bushings. New oil seals should be used when replacing bushings.

LUBRICATION

When assembling the advance mechanism a drop of S.A.E. 10W oil should be applied to the weight pivots and on both ridges of the advance weight plate on which the weights ride. Lubriplate "Aero" grease should be applied to bottom face of the breaker cam and to both sides of the cam slot. Place a drop of S.A.E. 10W oil on the cam bearing journals before installing the cam. When the advance weight unit is ready to install apply a drop of S.A.E. 10W oil to the shaft areas which come in contact with the housing bushings.

WICO BATTERY DISTRIBUTORS

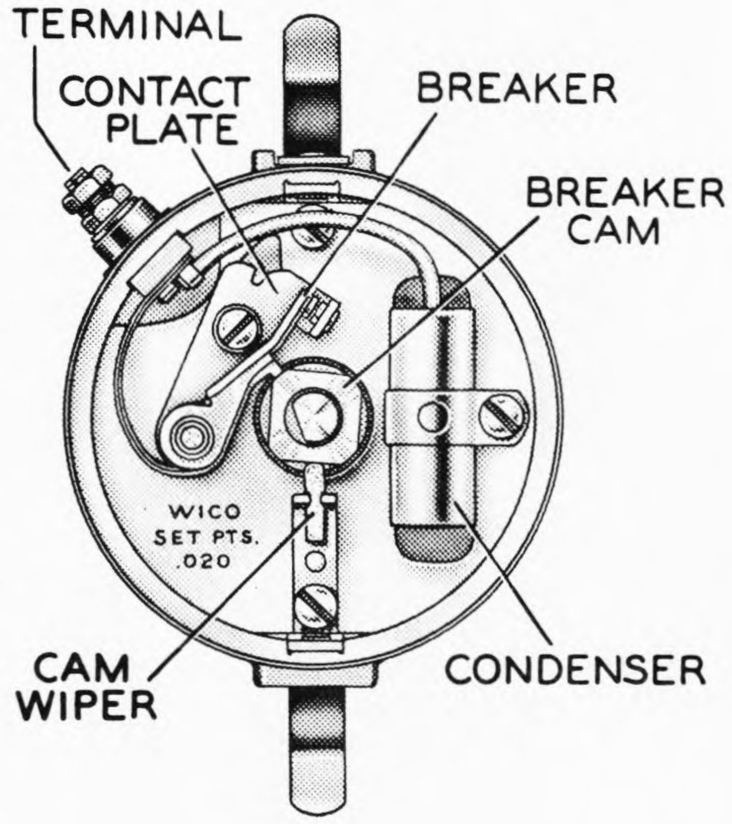


FIG. 1

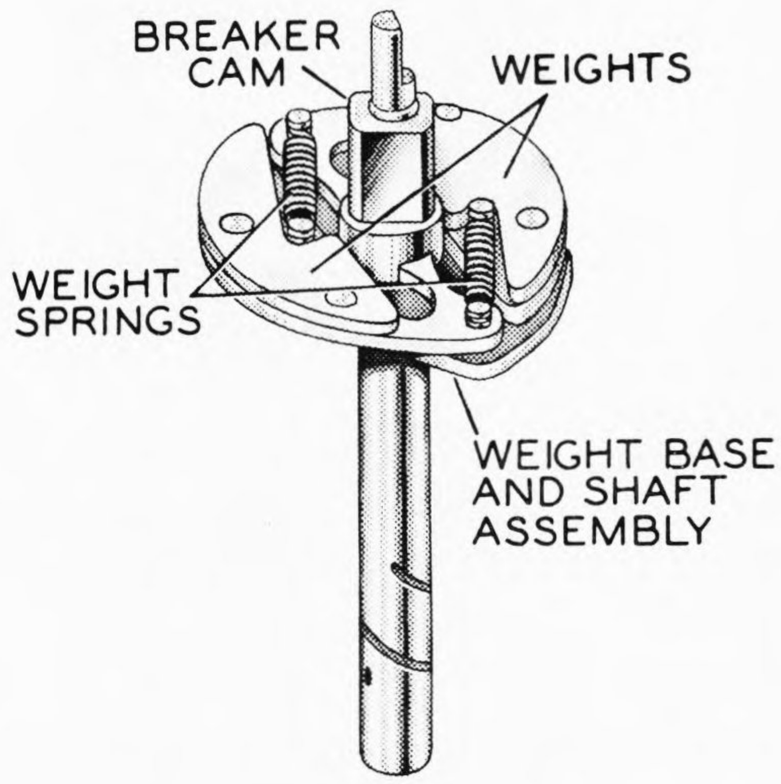


FIG. 2

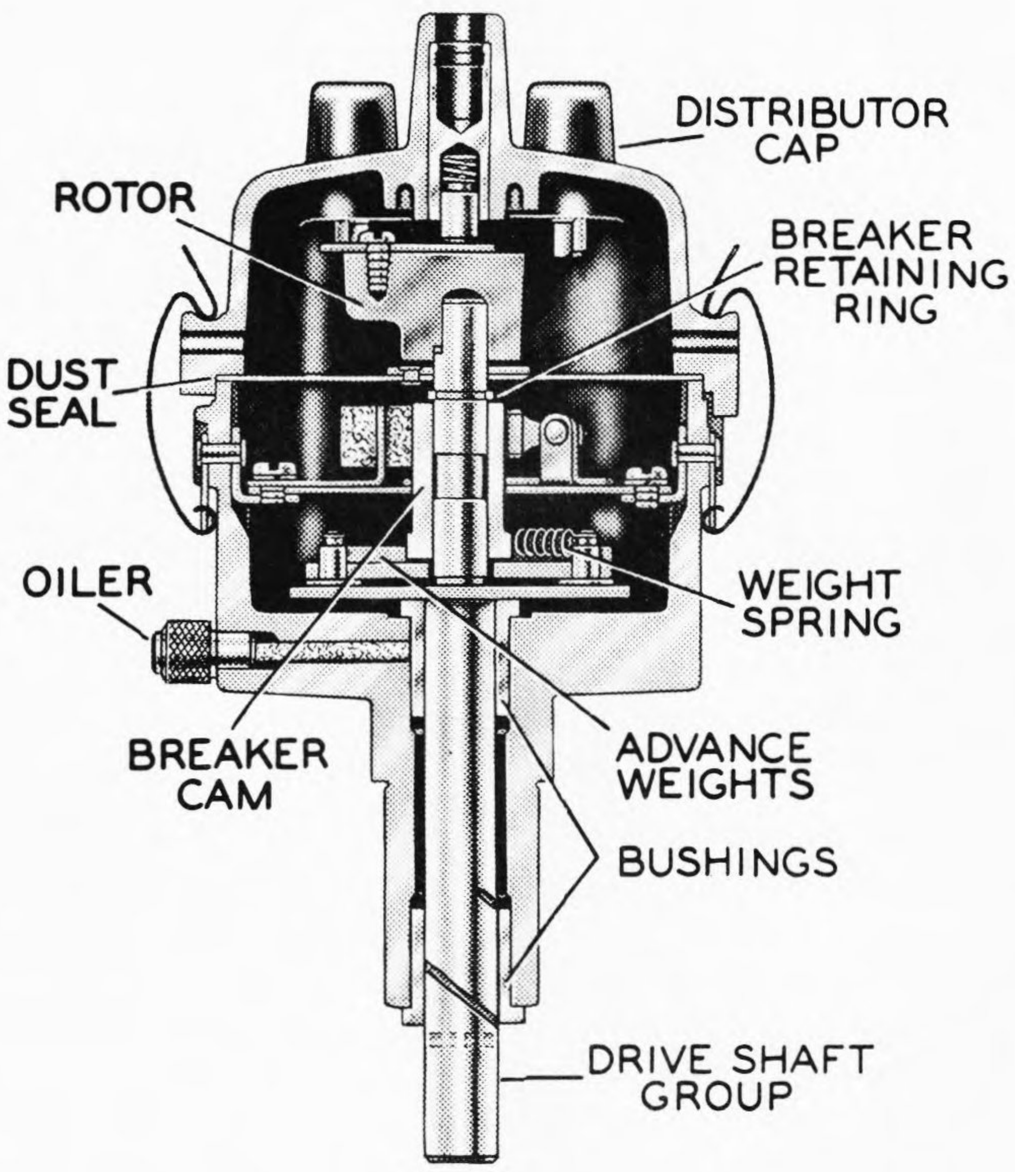


FIG. 3

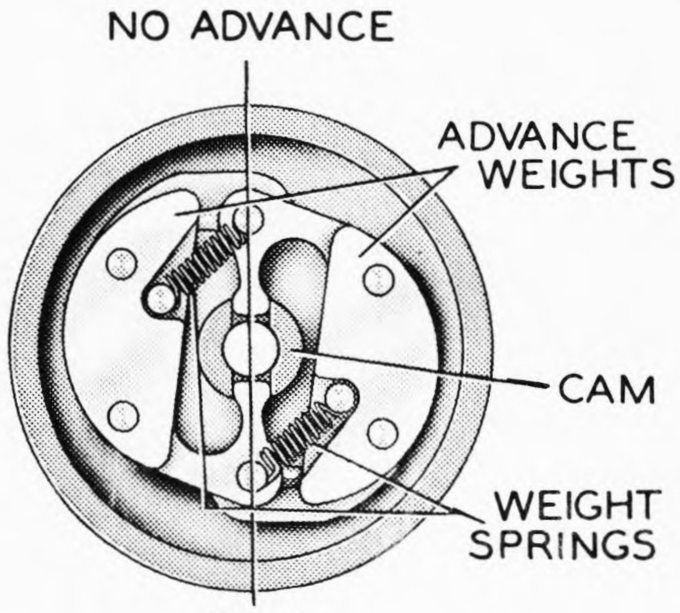


FIG. 4

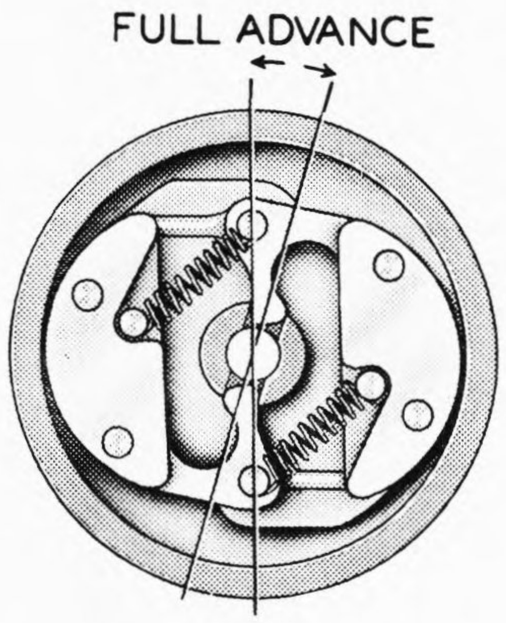


FIG. 5

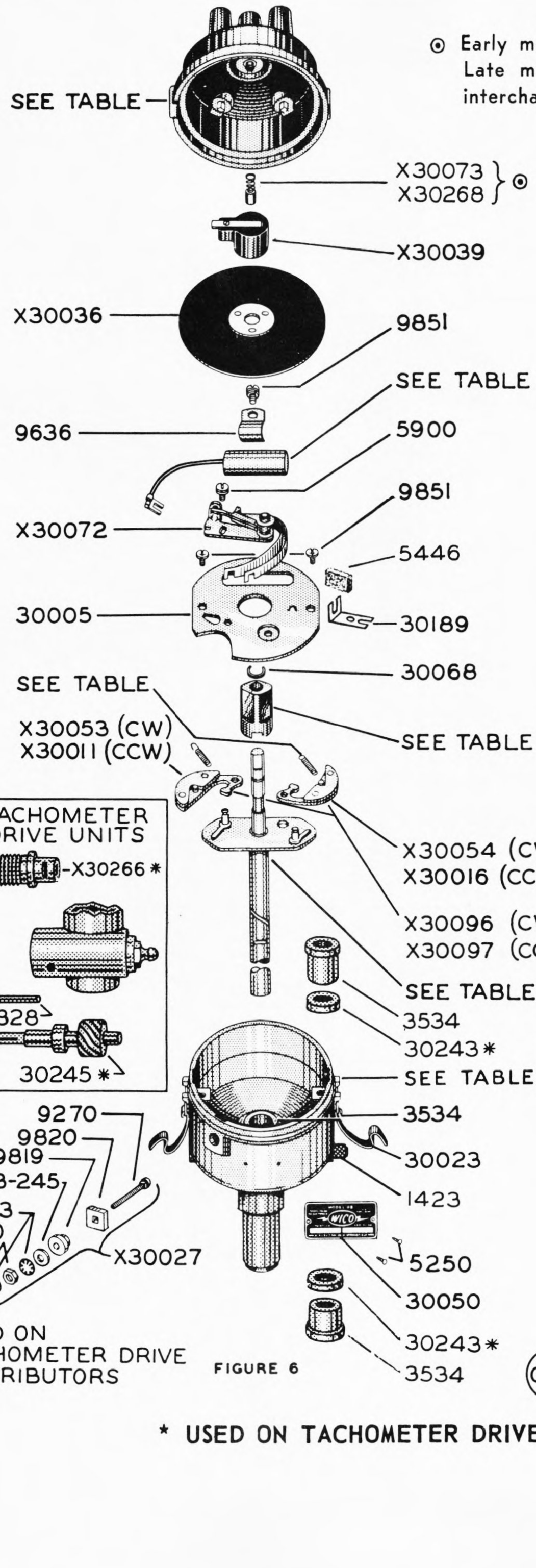
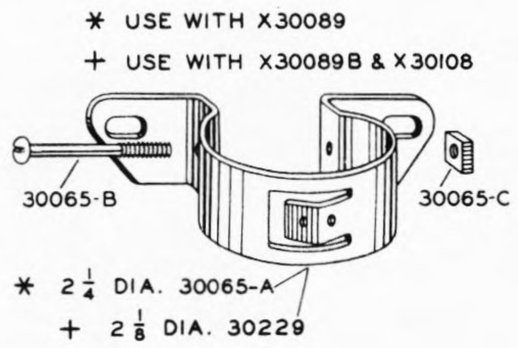
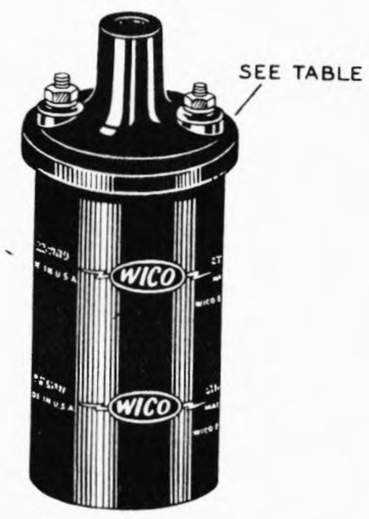
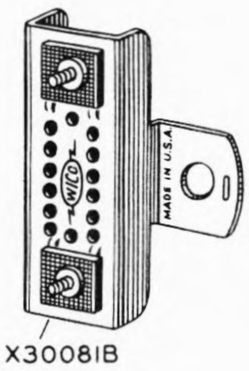


FIGURE 6

⊙ Early model caps with brass sleeve use X30073 — Late model with no sleeve use X30268. Do not interchange.







X30081B

025

* USED ON TACHOMETER DRIVE DISTRIBUTORS

TABLE OF VARIABLE PARTS

Part No.	Customer	Dist. Cap	Cond.	Adv. Spring Set	Brk. Cam	Stop Weight Group	Adv. Weight Group	Shaft	Housing Group	(2) Coil *	Gear or Coup.
X30077	J. Deere Dubuque	X30119	X30188 **	X30099	30122	X30011	X30016	X30121	X30098	X30108	30006
X30080	J. Deere Waterloo	X30060	X30028 **	X30083	30058	X30053	X30054	X30051	X30085	X30089B	30034
X30082	J. Deere Waterloo	X30060	X30028 **	X30084	30058	X30053	X30054	X30051	X30085	X30089B	30034
X30091	J. Deere Dubuque	X30042	X30188 **	X30099	30025	X30011	X30016	X30007	X30098	X30108	30006
X30114	Wisconsin	X30042	X30028	X30084	30025	X30011	X30016	X30200	X30215	X30089B	30210
X30137	LeRoi	X30042	X30028	X30145	30025	X30053	X30054	X30141	X30098	X30089B	5027 5028
X30159	LeRoi	X30042	X30028	X30218	30025	X30053	X30016	X30175	X30098	X30089B	5015 5027 5028
X30164	J.I. Case	X30119	X30028	X30193	30122	X30053	X30053	X30256	X30248	X30089B	30104
X30169	J.I. Case	X30042	X30188	X30193	30025	X30053	X30053	X30182	X30103	X30108	30104
X30170	J.I. Case	X30119	X30188	X30193	30122	X30053	X30053	X30183	X30103	X30108	30104
X30230	J.I. Case	X30042	X30028	X30237	30025	X30053	X30053	X30232	X30103	X30089B	30104
X30234	J.I. Case	X30042	X30028	X30237	30025	X30053	X30053	X30242	X30248	X30089B	30104
X30255	Conti-nental	X30119B	X30188	X30218	30122	X30011	X30016	X30261	X30248	X30108	30104
X30269	J.I. Case	X30042B	X30028	X30237	30025	X30053	X30054	X30272	X30284	X30089B	30273
X30275	U.S. Motors	X30042B	X30188	X30289	30025	X30011	X30016	X30285	X30248	X30108	30104
X30278	Conti-nental	X30042B	X30188	X30293	30025	X30011	X30016	X30291	X30248	X30108	30104

1.* Does not include bracket. When ordering bracket & parts see illustration on page 5.

2. Part Number X30072 contact set used on all model DB units.

3.** X30280 condenser will supercede X30188 & X30028 on J. Deere applications only.

TEST DATA

Dist. Part No.	Manufacturer	No. Cyl.	Rotation *	Cond. Capacity	Spring Tension Ounces	Cam Angle	Distributor Advance			
X30077	J. Deere-Dubuque	6	CCW	.30-.34	20-28	32°			10°-600	15°-1100
X30080	J. Deere-Waterloo	2	CW	.18-.23	20-28	45°	0°-200	1°-250		10°-650
X30082	J. Deere-Waterloo	2	CW	.18-.23	20-28	45°	0°-325	1°-350		10°-550
X30091	J. Deere-Dubuque	4	CCW	.30-.34	20-28	45°			10°-600	15°-1100
X30114	Wisconsin Motor	4	CCW	.18-.23	20-28	45°	0°-275	1°-300		13°-600
X30137	LeRoi	4	CW	.18-.23	20-28	45°	0°-250	1°-275		15°-650
X30159	LeRoi	4	CCW	.18-.23	20-28	45°	0°-300	1°-350	5°-500	9°-1000
X30164	J. I. Case	6	CW	.18-.23	20-28	32°	0°-275	1°-300	10°-500	12°-750
X30169	J. I. Case	4	CW	.30-.34	20-28	45°	0°-275	1°-300	10°-500	14°-1000
X30170	J. I. Case	6	CW	.30-.34	20-28	32°	0°-275	1°-300	10°-500	12°-750
X30230	J. I. Case	4	CW	.18-.23	20-28	45°	0°-275	1°-300	9°-500	17°-1000
X30234	J. I. Case	4	CW	.18-.23	20-28	45°	0°-275	1°-300	9°-500	17°-1000
X30255	Thermo-King	4	CCW	.30-.34	20-28	45°	0°-300	1°-350	5°-500	10°-1200
X30269	J. I. Case	4	CW	.18-.23	20-28	45°	0°-275	1°-300	9°-500	17°-1000
X30275	U. S. Motor	4	CCW	.30-.34	20-28	45°		1½°-200	4°-500	7°-1100
X30278	Continental	4	CCW	.30-.34	20-28	45°	0°-300	1°-400	2°-500	8°-1000

For straight twelve volt systems (No dropping resistor) use Wico condenser number X30188. For 6 volt systems, and 12 volt systems using a dropping resistor, use Wico condenser number X30028.

* As viewed from the distributor end.

APPLICATION INFORMATION

DISTRIBUTOR PART NUMBER	EQUIPMENT MANUFACTURER	ENGINE MODEL OR EQUIPMENT
X30077	J. Deere-Dubuque	POWER UNITS EA-217-G,HA-217-G, HA-217-L,HB-217-G,NA-217-G,NA-217-L & OPTIONAL ON TA-217-G,TA-217-L & TA-217-N.
X30080	J. Deere-Waterloo	520 & 530 TRACTOR
X30082	J. Deere-Waterloo	620, 720, 630 & 730 TRACTOR
X30091	J. Deere-Dubuque	POWER UNITS HA-145-G,HA-145-L, & OPTIONAL ON TA-145-G & TA-145-L
X30114	Wisconsin Motors	VG,VH, VR 30 HP ENGINE
X30137	LeRoi	D-201 ENGINE, 125 RG2 COMPRESSOR 226 ENGINE (TRACTAIR)
X30159	LeRoi	CONTINENTAL F-140 ENGINE 85 RG1 COMPRESSOR
X30164	J. I. Case	A377 LP ENGINE 1600 RPM "940 TRACTOR A377 LP ENGINE 1800 RPM POWER UNIT A377 NG ENGINE 1800 RPM POWER UNIT
X30169	J. I. Case	TRACTOR MODELS 700, 800, 410, 710 & 810 MODEL 719 COMBINE ENGINE
X30170	J. I. Case	MODEL 910 TRACTOR (BUTANE)
X30230	J. I. Case	A284G ENGINE 2000 RPM "1000" COMBINE A284LP " 2000 RPM "1000" COMBINE A251G " 2000 RPM "800" COMBINE A251LP " 2000 RPM "800" COMBINE
X30234	J. I. Case	A284G ENGINE 1700 RPM "840" TRACTOR A284LP " 1700 RPM "840" TRACTOR A284G " 1900 RPM "840" TRACTOR & POWER UNIT A284LP " 1900 RPM "840" TRACTOR & POWER UNIT A-284NG " 1900 RPM POWER UNIT A251G " 1700 RPM "740" TRACTOR A251LP " 1700 RPM "740" TRACTOR A251G " 1900 RPM "740" TRACTOR A251LP " 1900 RPM "740" TRACTOR
X30255D	Continental	MODEL F244 ENGINE
X30269	J. I. Case	MODEL W9A GASOLINE LOADER
X30275	U. S. Motors	MODEL FA162 — CONTINENTAL ENGINE
X30278	Continental	MODEL Y69 ENGINE

G - Gasoline, NG - Natural Gas, LP - L.P. Gas