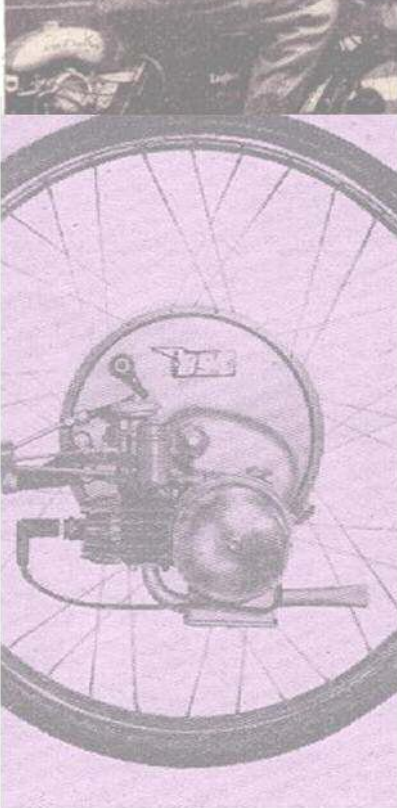


IceniCAM Information Service



www.icenicam.org.uk

WIPAC SERIES *Ninety* MAGNETO

COMPLETE SERVICE INSTRUCTIONS

The WIPAC "Series NINETY" magneto is a flywheel Ignition Generator, approximately 4 ins. in diameter and weighing about 30 ozs., yet capable of producing 9,000 volts at 350 r.p.m. It is suitable for engines up to 100 c.c. When employed to produce a current for ignition only the type number of the magneto is prefixed with the letter I. Thus: I.1263. When employed to give ignition and lighting currents, the letters IG prefix the type number. Thus: IG.1184.

THE PARTS OF A WIPAC "NINETY" MAGNETO

There are only two main parts in this type of magneto. One is the flywheel and the other is the stator plate. The flywheel contains permanent magnets but due to its design and construction a "Keeper Ring" is NOT necessary when removing it from the stator plate. (This feature applies to all WIPAC built magnetos.)

The stator plate contains a laminated core with ignition coil (and a smaller coil for lighting if it is an "IG" unit), condenser and contact breaker set. The cam which operates the contact breaker set is attached to the engine crankshaft.

The stator plate is held stationary in relation to the engine whilst the flywheel revolves around it.

The magneto is highly efficient and requires very little attention in normal use. It is designed to give a powerful and stable spark over a very wide range of speeds. A spark performance of 9,000 volts at 350 r.p.m. rising to 12,000 volts at 6,000 r.p.m. is obtained, with a large enough air gap maintained between the flywheel and stator to ensure a trouble-free system. Frequent adjustment of the contacts is unnecessary and a fair tolerance for the accuracy of their setting has been allowed for.

"Ninety" magnetos fitted with a lighting coil will give an exceptional and reliable light at low speed without flicker yet will not seriously overload the bulbs if the engine runs at extremely high speeds. Two standard lighting coils are employed, either a 7.8 watt output or a 9 watt output, depending on the Engine Manufacturer's specification.

Flywheels are also made in two types. Finned or Plain.

The finned type is employed with a cowl to give the engine extra cooling air and is usually fitted to stationary industrial engines. The plain flywheel has large slots in its face so that the contact breaker points can be adjusted without removing the flywheel. These flywheels are drilled and tapped around the boss for attaching a flywheel extractor tool which is made and supplied by WIPAC.

RUNNING MAINTENANCE

Occasionally

Check the contact points for cleanliness. (It is impossible to lay down a definite time for doing this as conditions will vary, e.g. the "points" will need watching more during a long spell of muddy weather.)

If dirty, clean by inserting a piece of tissue paper between the contacts and withdrawing, while in the closed position. Do not allow the engine to run with oil or petrol on the contacts or they will burn and turn black. If this has happened, polish with extra fine emery cloth.

Every 5,000 miles

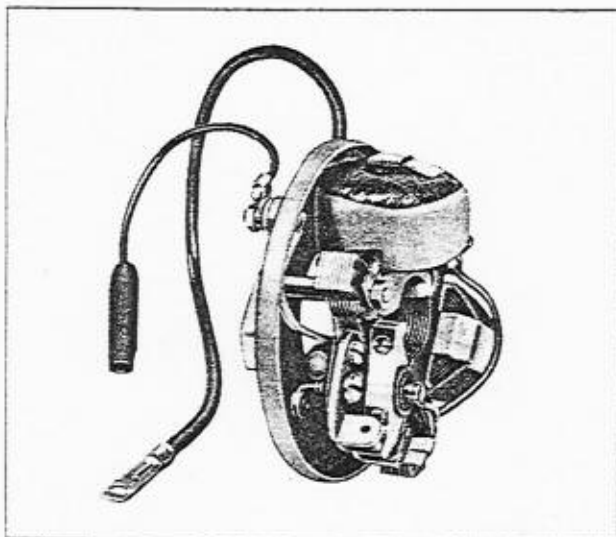
1. Check contact points for gap setting. If adjustment is necessary see "Adjustment of Breaker Points" below.
2. Re-lubricate the cam oil pad. To do this, slide the pad out from its holder and squeeze and work into it a Summer grade of motor transmission grease. Do not use oil.
3. Check the plug lead for chafing and see that the terminal at the spark plug end of the lead is gripping tightly.

GENERAL MAINTENANCE

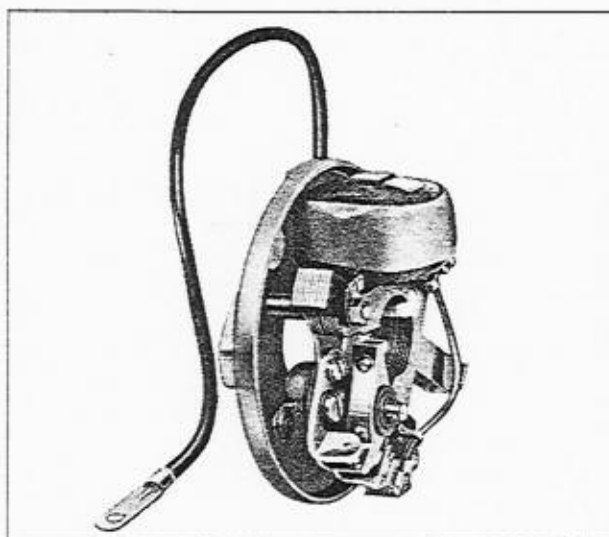
Checking magneto for spark

If the engine fails to start and there is indication that the magneto is at fault:—

- A. Disconnect H.T. lead from the spark plug and hold it about $\frac{1}{8}$ " away from some unpainted portion of the frame or engine. Rotate the engine and a spark should jump this gap.
- B. If no spark is visible:—
 1. Check H.T. lead for continuity.
 2. Make sure there are no metallic particles inside the unit.



Series 90 Stator Plate with H.T. and Lighting Coils



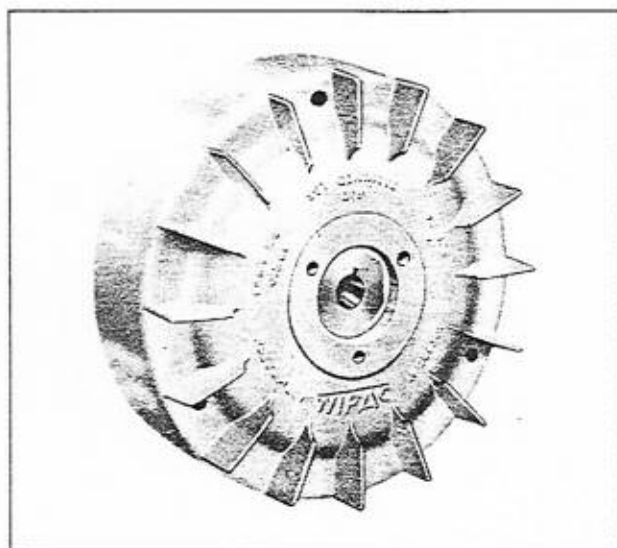
Series 90 Stator Plate with H.T. Coil only



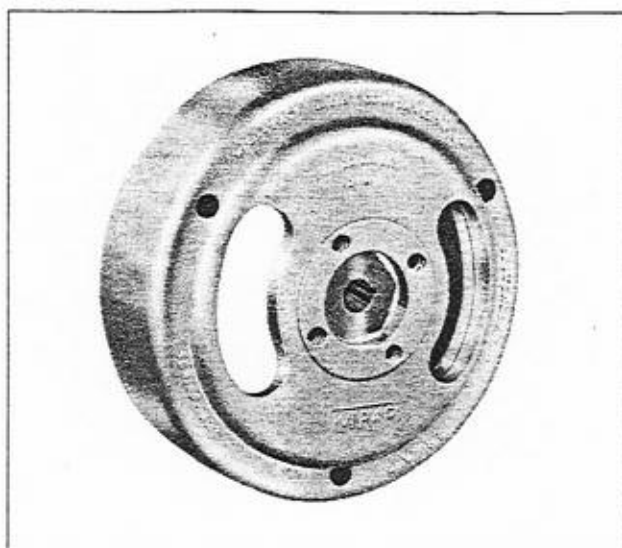
George says

"SERIES 90" MAGNETOS

ARE FITTED TO MOST
MAKES OF CYCLE POWER UNITS



Series 90 Flywheel with Fins



Series 90 Plain Flywheel
The Slots allow easy adjustment of "Points"

3. Check contact breaker points for correct gap setting and see that the breaker arm is free to move. See that the breaker points are clean. If burnt and badly pitted this will indicate a faulty condenser (renew), or magneto run with dirt between the points. (Renew "points" if they are in this condition.)
4. Check breaker point adjustment screws for tightness. Make sure the nut securing the flywheel is tight and that there is no free play of the flywheel.
5. By removing the flywheel examine the internal leads for breaks and see they are all properly secured. Make sure covered leads are not chafed and earthing.
6. If the insulation of the H.T. coil has broken down it will show signs of charring on the outside but it is unlikely that this will happen in normal use.

(Note: The ignition coil can only be tested with a high voltage A.C. voltmeter.)

H.T. coil

Removal. First remove the laminated core complete, then take off the coil. The core is held to the stator plate on three studs. If a lighting coil is fitted as well, see that the thin wire from it is not wrenched when removing the core. The H.T. coil will slide off the core pole after straightening up the brass tab seen at the top. Sometimes a fibre wedge may be found between the coil and core but this is only used to ensure a tight fit and may not be necessary if another coil is refitted. Due to their individual manufacture, coil sizes vary slightly.

Replacement. The small brass tab protruding from the side of the coil must face towards the flywheel being at the corner nearest to the felt, cam lubricating pad. The two leads should come out from under the coil when it is on with the short lead nearest the stator plate. This short lead is attached to the core stud for earthing. The long lead is attached to the breaker arm spring block together with the condenser lead. Bend the leads so that they do not foul the flywheel or cam. It is most important to refit the red plastic band round the coil and H.T. lead attachment and to see that it is in good condition.

Lighting coil

Removal. This is the smaller coil and can be removed without dismantling the core. First, remove the terminal from the stator plate. Straighten the brass tab of the core and slide the coil off.

Replacement. Replace in the same manner. Bend the brass tab back over the coil after fitting to secure tight fit.

Condenser

A weak or faulty condenser can be detected by badly burnt and pitted contacts or a continuous, intense blue spark across the contacts when running. A very small white spark across the points when running is normal.

Removal. Release the condenser lead from the breaker arm spring nylon block. Take out the clamp screw seen near the top of the condenser and ease the condenser out. The bottom

clamp is attached to the stator plate only. Replace in the same manner.

Flywheel

This unit is robustly constructed and it is unlikely that any faults will ever develop. They are scientifically balanced before leaving the factory and made of a rust-proof metal. Attachment of the flywheel to the crankshaft is by taper shaft and key, locked with nut and shakeproof washer. The magnets cast into the rim of the wheel are made of a special alloy and will not de-magnetize in normal use. A keeper ring is not necessary when dismantling.

Removal. Extractor tools are made and supplied by WIPAC and should be used when removing the flywheel to save damage to engine parts.

First, remove the flywheel nut and lock washer. Screw back the main bolt of the extractor to its fullest travel, then screw the smaller bolts into the flywheel. Continue tightening the main bolt until the flywheel is freed. It is important to use the small bolts supplied as they are designed to fit without causing internal damage.

When replacing the flywheel make sure metalized dust or small steel items have not been attracted onto the magnets. Clean the flywheel inside and outside.

The finned-type flywheel must be removed to check the contact breaker points as there are no slots.

The contact setting is cast on each type of SERIES "NINETY" flywheel.

Flywheel extractors

Two types are available as there are two classes of flywheel. One wheel has three holes drilled and tapped for an extractor and the other has four holes. The THREE-hole extractor is Part No. 00586, price 5s. 0d. The FOUR-hole extractor is Part No. 00494, price 5s. 0d.

Contact breaker points

Gap adjustment. Turn the engine over until the breaker points are fully open.

Test with feeler gauge between "points". The correct setting is cast on the flywheel but most "NINETY" magnetos should be 0.018".

If the "points" require adjustment two screw heads will be seen beside them. Slacken the large screw and carefully turn the small screw, which is eccentric, until the correct gap is obtained. Tighten large screw.

Removal. The complete contact set may be removed by taking out the large-headed screw mentioned above and undoing the two leads in the nylon block.

It is essential for the best performance to use only WIPAC spare parts and where possible the name WIPAC is stamped or cast on the parts. All "SERIES NINETY" magnetos are guaranteed for six months from date of purchase and should any fault develop within this time, return it complete to a WIPAC agent or send it direct to the WIPAC GROUP.

THE WIPAC GROUP — BLETCHLEY — ENGLAND
TELEPHONE: BLETCHLEY 320 TELEGRAMS: WICOMAGSCO BLETCHLEY

WIPAC SERVICE BULLETIN

SERIES 90 MAGNETOS FOR POWER PAK UNITS

INTERCHANGEABILITY

OF SPARE PARTS WITH PRICES

PART NUMBERS		ITEM	INTER CHANGE- ABLE	CODE PRICE
IG.1161 MARK 1	IG.1223 MARK 2			
Y77-90	00480	FLYWHEEL (C.W.) MAZAK	YES	563
XNC3 ¹ D		FLYWHEEL COVER & CLIP	NO	221
	01145	FLYWHEEL COVER UNIT	NO	233
75A-90	00473	CAM (C.W.)	YES	197
76-90	00479	CAM SPRING	YES	155
85-90	00488	CAM KEY	YES	151
X70-90	00695	BREAKER ASSEMBLY	NO	239
X62-90	00755	CONDENSER ASSEMBLY	NO	221
65-90	00689	BREAKER FIXING PLATE	NO	155
	01091	L.T. TERMINAL GROUP	NO	161
X78-90	00484	IGNITION COIL	NO	329
X103-90	00485	LIGHTING COIL (7.8 WATT)	YES	209
X72A-90	00466	H.T. LEAD (22")	YES	173
56-90	00460	RUBBER GROMMET	YES	152
68-90	00453	NUT-HEXAGON) USED FOR	NO	151
67-90	00464	LOCK WASHER) CORE ATTACH- MENT TO STATOR PLATE	YES	151
71-90		NUT - ROUND) USED FOR	NO	151
67-90		LOCK WASHER) BREAKER ASS-	NO	151
IXA-256		PLAIN WASHER) EMBLY ATT- ACHMENT TO CORE UNIT	NO	151
X100-90	00500	L.T. LEAD (4")	YES	161
X74E-90	00628	STATOR PLATE ASSEMBLY (7.8. WATT)	YES	573
X102D-90	01090	STATOR PLATE & CORE GROUP	YES	309
	01113	H.T. COIL SHIELD	NO	151
NC.90	00605	LEAD CONNECTOR PLUG	YES	152
23-90	00440	SLEEVING	YES	151
2264A	2264A	) COIL WEDGE	YES	151
2264B	2264B)		
X7-90	00742	COIL CORE	NO	197
	5152	COIL LEAD CLAMP	NO	151
64-90	00462	SCREW	YES	151
63-90	M52XC	LOCK WASHER	YES	151
7-58	7-58	NUT	YES	151

REF. No.	SEP.6253	CANCELS	SEP.5253
DATE OF ISSUE	26TH JUNE 1953	INSERT THIS BULLETIN INTO:- NO.2 MANUAL	
AUTHORITY	W.R.F.		

WICO-PACY SALES CORPORATION LTD. BLETCHLEY ENGLAND
NORTHERN AREA BRANCH AND SERVICE DEPOT 7 PARK SQUARE, LEEDS

SPARE PARTS LIST

MAGNETO SPECIFICATION

SERIES 90

To convert price code number into actual price, refer to master price code sheet.

TO ENSURE RECEIVING CORRECT SPARES ALWAYS QUOTE THE MAGNETO SPECIFICATION TOGETHER WITH PART NO. REQUIRED.

Price Code No.	Description	Qty.	Part No.	Parts in Exploded View	Part No.	Qty.	Description	Price Code No.
155	Flywheel Cover Clip		NC22C					
215	Flywheel cover		NC21B					
159	Flywheel Key		1146F					
					Y77-90 (Mazak) AY77-90 (Aluminium)		Flywheel	563
					76-90		Cam Locating Spring	155
					85-90		Cam Key, 2" long	151
197	Cam (Part No. differs according to rotation)		75A-90 (C.W.) 75B-90 (A.C.W.)		71-90 (2) 67-90 (2) IKA-256 (2)		Breaker Bracket Nut Lock Washer Washer	151 151 151
239	Breaker Assembly		X70-90					
151	Screw		64-90					
151	Lock Washer		63-90					
221	Condenser Assembly		X62-90					
209	Lighting Coil		X103-90					
302	Stator Plate and Core Group		X102-90 X102D-90					
161	L.T. Lead		X3-90					
152	Rubber Grommet		56-90					
	H.T. Lead Group		X72-90					
					X96-90		Ignition Coil	329
					X96-90		L.T. Terminal Group	161
							(includes Copper Bolt shown above Stator Plate)	
167	12" Length and Under							
170	13" up to 18"							
173	19" up to 24"							
176	25" up to 30"							
179	31" up to 36"							

* The following magneto specifications use Stator Plate Part No. X102-90
 I.G.1184 Fitted to Trojan
 I.G.1185 Fitted to Trojan
 The following Magneto specifications use Stator Plate Part No. X102D-90
 I.G.1166 Fitted to Cyclaid
 I.G.1161 Fitted to Power Pak

*The following magneto specifications use Stator Plate Part No. X102-90
I.G.1184 Fitted to Trojan
I.G.1185 Fitted to Trojan
The following Magneto specifications use Stator Plate Part No. X102D-90
I.G.1166 Fitted to Cyclaid
I.G.1161 Fitted to Power Pak

BRITISH BUILT
BY THE WIPAC GROUP

REF. B.138

WIPAC SERVICE BULLETIN

SERIES 90 MAGNETOS FOR CYCLEMASTER UNITS

INTERCHANGEABILITY

OF SPARE PARTS WITH PRICES

PART NUMBERS		ITEM	INTER CHANGE ABLE	CODE PRICE
IG-1183 MARK 1	IG-1222 MARK 3			
Y77-90	00482	FLYWHEEL (A.C.W.) MAZAK	NO	563
75B-90	00474	CAM (A.C.W.)	YES	197
76-90	00479	CAM LOCATING SPRING	YES	155
85-90	00488	KEY CAM (3" LONG)	YES	151
X70-90	00695	BREAKER ASSEMBLY	NO	239
X62-90	00755	CONDENSER ASSEMBLY	NO	221
64-90	00462	SCREW) USED FOR CONDENSER	YES	151
63-90	M52XC	LOCK WASHER) SER ATTACHMENT	YES	151
65-90	00689	BREAKER FIXING PLATE	NO	155
X96-90	00499	L.T. TERMINAL GROUP	YES	161
X78-90	00484	IGNITION COIL	NO	329
X103-90		LIGHTING COIL (7.8 WATT)	NO	209
	00743	LIGHTING COIL (9 WATT)	NO	209
X72B	00467	H.T. LEAD (12")	YES	167
56-90	00460	RUDDER GROMMET	YES	152
68-90	00453	NUT - HEXAGON) USED FOR CORE	NO	151
	00464	LOCK WASHER) ATTACHMENT TO		
		STATOR PLATE	YES	151
71-90		NUT - ROUND) USED FOR BREAKER	NO	151
67-90		LOCK WASHER) ASSEMBLY ATTACH-	NO	151
IXA-256		PLAIN WASHER) MENT TO CORE UNIT	NO	151
X100-90	00500	L.T. LEAD (4")	YES	161
X74C-90		STATOR PLATE ASSEMBLY (7.8WATT)	NO	573
	00745	STATOR PLATE ASSEMBLY (9WATT)	NO	573
X102C-90	01089	STATOR PLATE AND CORE GROUP	NO	309
	01113	H.T. COIL SHIELD	NO	151
X7-90	00742	COIL CORE	NO	197
2264A	2264A	) COIL WEDGE	YES	151
2264B	2264B)		
	5152	COIL LEAD CLAMP	NO	151
7-58	7-58	NUT) USED FOR CON-	YES	151
64-90	00462	SCREW) DENSER ATTACH-	YES	151
63-90	M52XC	LOCK WASHER) MENT	YES	151

REF. No.	SED. 7253	CANCELS	SED. 4253
DATE OF ISSUE	1ST JULY 1953	INSERT THIS BULLETIN INTO:- NO. 2 MANUAL	
AUTHORITY	W.R.F.		

WICO-PACY SALES CORPORATION LTD. BLETCHLEY ENGLAND
NORTHERN AREA BRANCH AND SERVICE DEPOT 7 PARK SQUARE, LEEDS

WIPAC SERVICE BULLETIN

FITTING THE NEW SERIES 90 CONTACT BREAKER ASSEMBLY (PART No. 00696-90) IN PLACE OF THE ORIGINAL ASSEMBLY (PART No. 70-90)

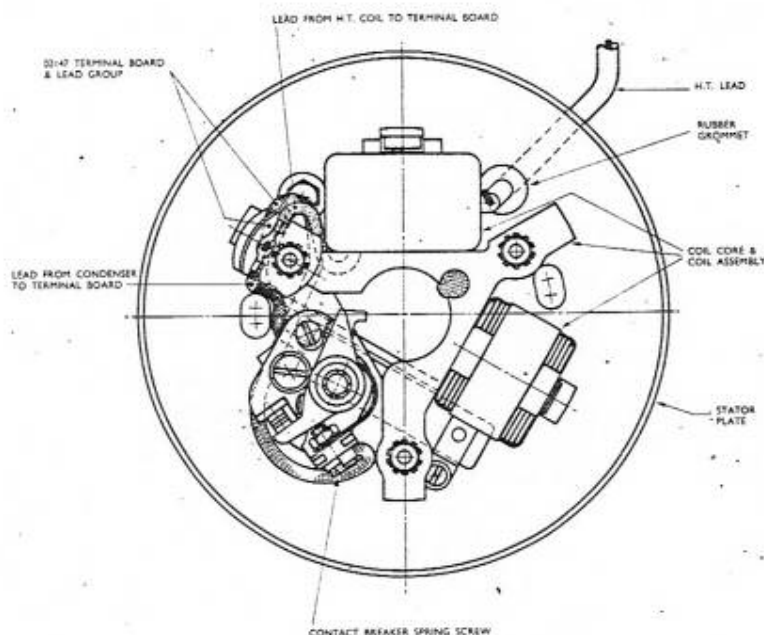
It has been decided to discontinue the manufacture of the 70-90 contact breaker assembly, and to simplify the fitting of the new contact assembly part number 00696, in its place we have introduced a terminal board and lead group part number 02147.

To remove the old assembly unsolder the condenser lead and coil lead on the contact breaker assembly. Remove the contact breaker assembly. Remove the coil core and coil assembly, easing the H.T. lead a little through the rubber grommet to ensure that no strain is put on the H.T. coil terminal. Finally remove the contact breaker support plate.

Next assemble the new contact assembly, part number 00696-90. If necessary slightly reposition the condenser so that the contact plate seats correctly on the two securing pillars.

Refit the coil core and coil assembly at the same time assembling the 02147 terminal board and lead group on the left hand stud nearest the H.T. coil passing the lead round the pillar of this stud and then outside the condenser to the contact breaker spring screw (see illustration).

Before finally tightening the three nuts securing the coil core and coil assembly it will be necessary to centralise the core. At the Works we have a specially designed fixture for doing this, but it is



possible to centralise the core by assembling the stator plate and flywheel to the engine and placing a feeler gauge between the three pole pieces of the core and the laminations in the flywheel.

Now ease the H.T. lead back through the rubber grommet to its original position so that it will not foul the flywheel, and solder the lead from the condensers and the lead from the coil to the terminal board 02147. It may however be found necessary to shorten the lead from the H.T. coil by approximately one inch to eliminate the possibility of this fouling the flywheel.

Finally tuck all leads away to clear both the flywheel and the contact breaker cam.

REF. No.	SEB. 9253	CANCELS	
DATE OF ISSUE	NOVEMBER 1953	INSERT THIS BULLETIN INTO:- No. 2 MANUAL	
AUTHORITY	E.G.W.		

THE WIPAC GROUP — BLETCHLEY — ENGLAND
TELEPHONE: BLETCHLEY 320 TELEGRAMS: WICOMAGSCO BLETCHLEY

SERVICE WIPAC BULLETIN	SUBJECT	SERIES 90 CONTACT BREAKERS		
	Ref. No.	257	CANCELS	NIL
	AUTHORITY	F.K.M.	INSERT THIS BULLETIN INTO :-	MANUALS No. 1, 2, and 3
	DATE OF ISSUE	15-2-57		

The sketches show that this style of contact breaker has been fitted with rocker arms which differ from each other in the angle and style of the heel or shoe.

Also given below is a list of the models of engine, etc., with the appropriate contact breaker.

For the sake of clarity, only the rocker arm is shown.

No. 1

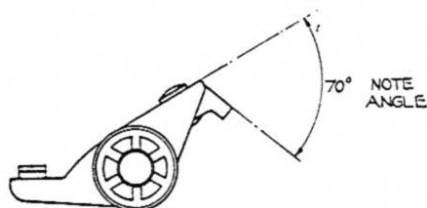
BRITISH SALMSON	..	..	..	..	CYCLAID
B.S.A.	..	..	..	..	DANDY
					(Before 6.12.56—up to Serial DSE 1307)
B.S.A.	..	..	..	..	WINGED WHEEL
CYCLEMASTER	..	..	..	..	CYCLEMASTER
CYCLEMASTER	..	..	..	..	CYCLEMATE
CYCLEMASTER	..	..	..	..	PIATTI
J.A.P. ..	..	..	..	..	J.A.P. MODEL 0
J.A.P. ..	..	..	..	..	J.A.P. MODEL 80
MERCURY	..	..	..	..	MERCETTE
PLUVIER-LUTERPRO	..	..	..	..	BERINI
P.P. ENGINEERING CO.	..	..	..	..	POWER PAK
TEAGLE ENGINEERING	..	..	..	..	TEAGLE

No. 2

ARIEL	..	..	..	..	COLT L.H.
B.S.A.	..	..	..	..	C.10L
FRANCIS BARNETT	..	..	..	..	CRUISER 80
JAMES	..	..	..	..	COMMODORE

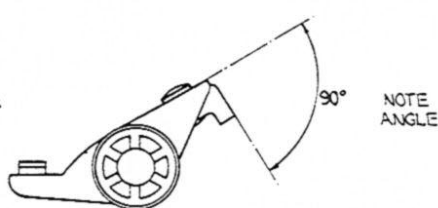
No. 3

B.S.A.	..	..	..	..	DANDY
					(After 6.12.56 from Serial DSE 1308)



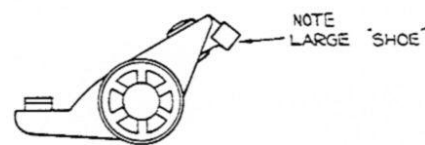
No. 1

Complete Breaker
Part No. 00695



No. 2

Complete Breaker
Part No. 01823



No. 3

Complete Breaker
Part No. S0275

THE WIPAC GROUP — BLETCHLEY — ENGLAND
TELEPHONE: BLETCHLEY 3321 TELEGRAMS: WICOMAGSCO BLETCHLEY



SERVICE WIPAC BULLETIN	SUBJECT	SERIES 90 FLYWHEELS "MAGNETISM"		
	Ref. No.	90/858	CANCELS	NIL
	AUTHORITY	FKM	INSERT THIS BULLETIN INTO :-	MANUALS Nos. 1 & 3
	DATE OF ISSUE	AUGUST 1958		

SERIES 90 FLYWHEELS — MAGNETISM

A number of the above flywheels used on magnetos for lawn mowers etc., are returned to us under complaint as "having lost magnetism".

Where a small flywheel magneto has no LIGHTING coils, only ONE magnet is used, giving two poles magnetised and FOUR "dead".

The lighting models have THREE magnets, giving all six poles magnetised.

A steel rule or screw driver blade test will indicate the difference.

