

**J.A.P.**



**TWO-STROKE  
ENGINES  
MODELS**

**80**

**C.80**

**R.80**

**RS.80**

**S.80**

**USER'S HANDBOOK**

SB/O/11

5/59

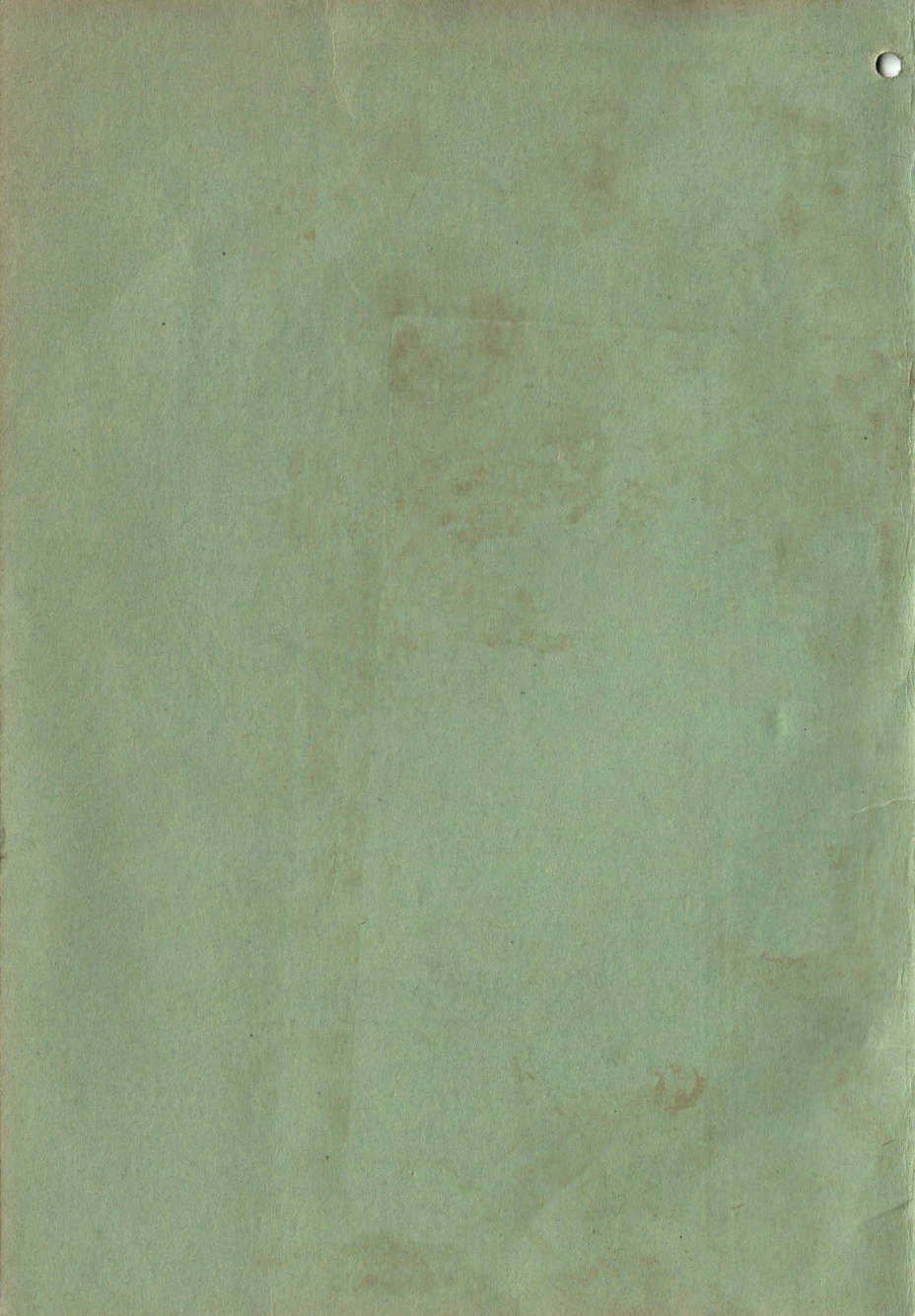
---

---

---

**J. A. PRESTWICH INDUSTRIES LTD.  
CHELMSFORD ROAD  
SOUTHGATE, LONDON, N.14**

**Phone : FOX Lane 1101**



## ENGINE DATA AND SERVICING INSTRUCTIONS

---

Air cooled two stroke engine.

Bore—46 millimetres. Stroke—48 millimetres.

Cubic Capacity—79.7cc.

Rotation—Anti-clockwise. looking at driving shaft.

Ignition—Wico Magneto, Type FW.1269Z or I-1259, as fitted. Timing 25° before top dead centre.

Carburetter—Amal 379 or 360 as fitted. Single lever control. Strangler integral with air filter.

Air Filter—Where AMAL oil bath filter is fitted, see instructions on page 8 **BEFORE USING ENGINE.**

Lubrication—Petrol mixture.

### RECONDITIONING DIMENSIONS

Cylinder Bore—Diameter 1.831" or 1.851"

Oversize Pistons Available—+ .020" and + .040"

### DESCRIPTION

Detachable aluminium alloy **CYLINDER HEAD** fixed to cast iron **CYLINDER** by three high tensile steel bolts, between cylinder head and cylinder there is a steel **GASKET**.

Flat top **PISTON** of low expansion aluminium alloy, fitted with two **COMPRESSION RINGS**, each secured in position by a peg and fully floating **GUDGEON PIN**. The **CONNECTING ROD** is a steel stamping with phosphor bronze gudgeon pin bush and hardened **BIG END** for single track of  $\frac{1}{4}$ " dia.  $\times$   $\frac{1}{8}$ " long rollers.

The **CRANKSHAFT** with balanced flywheel is mounted on ball bearings.

The **CRANKCASE** of aluminium alloy is fitted with two seals thus preventing any leakage.

**IGNITION** by flywheel magneto, with a built-in fan and cowling which directs the air round the cylinder and cylinder head.

**NOTE.—ANY CORRESPONDENCE OR SPARE PARTS ORDERS MUST BE ACCOMPANIED BY THE COMPLETE ENGINE NUMBER WITH ALL PREFIXES, WHICH ARE STAMPED ON THE ENGINE CRANKCASE.**

## STARTING AND SERVICING INSTRUCTIONS

### PETROIL MIXTURE

Fill the petrol tank with a mixture of 24 parts petrol to one part Castrol Oil XL (SAE 30).

When using Castrol Two-Stroke Self-mixing Oil the mixture is 20 parts petrol to one part oil.

NOTE.—If it is not possible to mix the petrol and oil beforehand, pour the oil into the tank *first* and add the petrol *afterwards*, then stir the mixture or agitate the tank.

If a quantity of the mixture has been left in the tank for several hours, rock the machine or agitate the tank before using. This is not necessary when self-mixing lubricating oil is used.

### STARTING ENGINE FROM COLD (see also page 6)

Turn the fuel tap to "ON" position.

Close strangler shutter (if fitted), set throttle valve about 1/4 open.

Where starter pulley is fitted, wind the cord around the pulley groove and pull sharply.

Where recoil starter is fitted, pull smartly on handle.

The handle must be returned slowly and kept in a light grip until fully returned.

When engine commences firing open the strangler shutter and throttle down to an idling speed. If on opening the strangler the engine begins to falter, partly close again until engine runs regularly, then fully open strangler and leave open.

### FAILURE TO START

If engine does not fire, slightly more throttle opening may be found necessary, the best position can only be determined by trial. Care must be taken not to overdose the engine and an inspection of the sparking plug will reveal fuel on the electrode when this occurs. To overcome this condition, turn "off" fuel, fully open throttle and strangler, with sparking plug still removed, revolve engine a few times. Refit the sparking plug, start the engine and when speed commences to pick up, the throttle should be eased and the fuel tap turned "ON."

### STARTING WHEN ENGINE IS WARM (see also page 6)

The strangler shutter, if fitted, should be in its fully open position, the throttle should be slightly opened before starting engine.

If failure of the recoil starter should occur, an emergency means of starting is provided. Proceed as follows: Remove the starter mounting screws and the starter body complete. A length of cord may then be wrapped round the emergency starter pulley with the knotted end inserted in pulley notch.

Start the engine in the usual manner.

Do not allow the engine to "rev" unnecessarily or to race without load

## MAINTENANCE

Attention to the following details is all that is necessary to ensure satisfactory service from the engine.

1. **MAGNETO.** Periodically check the contact breaker points gap with the appropriate feeler gauge. (See Wico Magneto service instructions, pages 10 and 11.)
2. **SPARKING PLUG.** Periodically check points gap, clean plug and if necessary adjust gap to .025".
3. **CARBURETTER AND AIR FILTER.** Periodically inspect and clean. (See Carburetter maintenance, pages 6 to 9.)
4. Periodically remove silencer, exhaust pipe, cylinder head, and cylinder for decarbonising. Symptoms that engine requires decarbonising are: loss of power and liability to four-stroke.

## DECARBONISING

Occasionally the engine will require decarbonising

Remove silencer and exhaust pipe and clean internally.

The cylinder head and barrel should be carefully removed, taking care that the barrel is kept straight to prevent damage to the piston rings and ports.

Remove carbon deposit from the cylinder head, piston crown and exhaust port with a suitable piece of soft aluminium or brass. Gummed piston rings should be carefully eased free, removed and cleaned. The piston ring grooves should be cleaned free of gummed or lacquer deposits by means of a petrol-soaked brass wire brush.

Thoroughly clean parts and wash in clean petrol or paraffin.

When re-fitting old piston rings, replace in the same groove from which they are removed. Take care that the recesses in end of piston rings engage the location pegs in the piston, compress rings with fingers and gently press cylinder barrel into place.

It is important that air leaks be avoided.

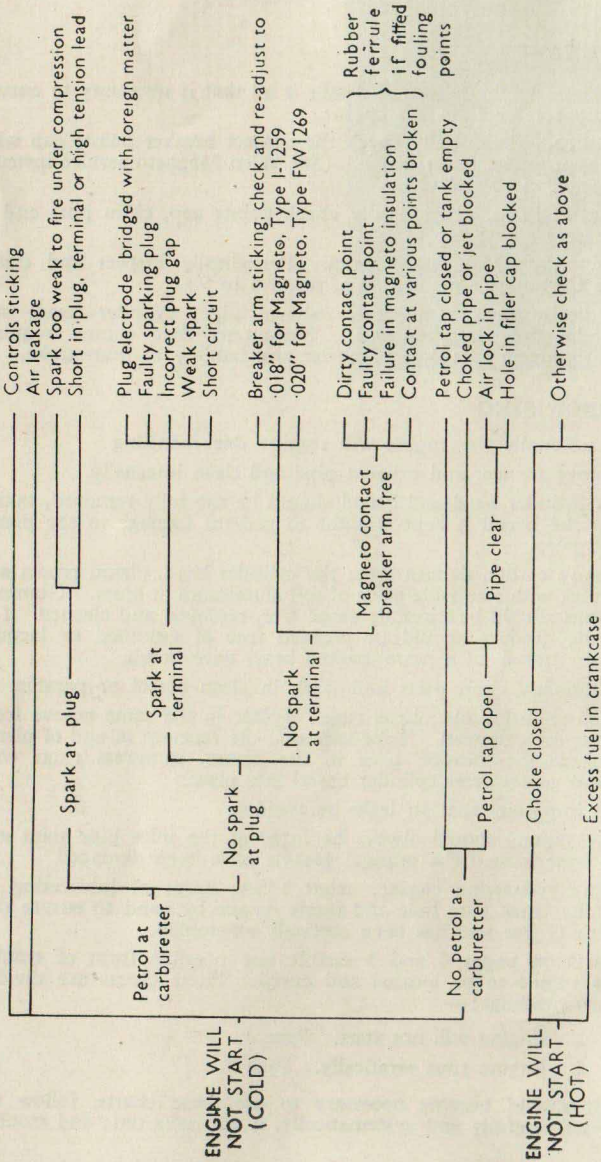
New gaskets should always be fitted at the inlet pipe joint and cylinder base joint if the original gaskets have been damaged.

Before re-starting engine, insert a few drops of lubricating oil through the spark plug hole and rotate engine by hand to ensure that the engine is free and has been correctly assembled.

Charts on pages 4 and 5 enable any possible form of trouble with the engine to be located and cured. These charts are divided under two headings:—

1. Engine will not start. Page 4.
2. Engine runs erratically. Page 5.

If it should become necessary to use these charts, follow the instructions carefully and systematically, it will save time and trouble.



Controls sticking

Air leakage

Spark too weak to fire under compression

Short in-plug, terminal or high tension lead

Plug electrode bridged with foreign matter

Faulty sparking plug

Incorrect plug gap

Weak spark

Short circuit

Breaker arm sticking, check and re-adjust to .018" for Magneto, Type I-1259

.020" for Magneto, Type FW1269

Dirty contact point

Faulty contact point

Failure in magneto insulation

Contact at various points broken

Rubber ferrule if fitted

fouling points

Petrol tap closed or tank empty

Choked pipe or jet blocked

Air lock in pipe

Hole in filler cap blocked

Otherwise check as above

Damaged needle or seating  
 Foreign matter in float chamber  
 Punctured float

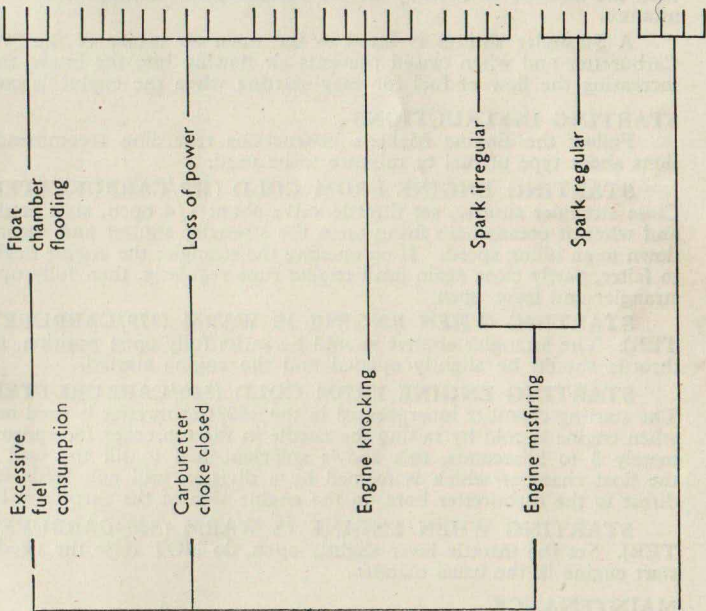
Exhaust choked (clean carbon from port)  
 Leaking crankcase seals  
 Partly blocked fuel supply  
 Choked silencer  
 Worn cylinder bore  
 Worn piston ring  
 Ignition timing incorrect  
 (should be 25° before top dead centre)  
 Incorrect petrol mixture  
 Carburettor jet partly blocked  
 Choked air cleaner

Heavy carbon deposit  
 Unsuitable sparking plug  
 Overheating  
 Ignition timing too advanced  
 Worn cylinder bore or piston

Dirty or unsuitable plug  
 Dirty or sticking contact breaker  
 Points too close  
 Faulty high tension lead

Mixture too weak  
 Water in fuel  
 Starved carburettor  
 Partially blocked air filter

Overloaded  
 Incorrect fuel  
 Insufficient air or cooling system blocked  
 Incorrect ignition setting



ENGINE RUNS  
ERRATICALLY

ENGINE  
OVERHEATS

## CARBURETTER—AMAL TYPE 379 & 360

### HOW CARBURETTER WORKS

The float chamber maintains a constant level of fuel at the jet and cuts off the supply when the engine stops. On fuel flowing from the float chamber the float falls, and its needle coming away from its seating allows fresh fuel to enter. Depression caused by movement of the engine piston causes, via the throttle opening, air to flow into the main air intake and fuel to flow through the needle jet into the cross bore and mix with the incoming air forming a fuel/air mixture.

Correct fuel/air proportions for various throttle openings are governed by: **The size of the main jet** which controls the amount of fuel fed to the needle jet at 3/4 to full open throttle. **The taper of the jet needle** which, operating in the needle jet, controls the amount of fuel fed at lesser openings. **The parallel portion of the jet needle** which, on entering the bore of the needle jet and in conjunction with the amount of cutaway on the throttle valve, controls the idling mixture.

A **Strangler** shutter is fitted to the main air intake of the 379/Carburetter and when closed prevents air flowing into the intake thus increasing the flow of fuel for easy starting when the engine is cold.

### STARTING INSTRUCTIONS

Follow the Engine Maker's instructions regarding recommendations about type of fuel or mixture to be used.

#### STARTING ENGINE FROM COLD (379/CARBURETTER).

Close strangler shutter, set throttle valve about 1/4 open, start engine and when it commences firing open the strangler shutter and throttle down to an idling speed. If on opening the strangler the engine begins to falter, partly close again until engine runs regularly, then fully open strangler and leave open.

**STARTING WHEN ENGINE IS WARM (379/CARBURETTER).** The strangler shutter should be in its fully open position, the throttle should be slightly opened and the engine started.

#### STARTING ENGINE FROM COLD (360/CARBURETTER).

The starting chamber incorporated in the 360/Carburetter is used only when engine is cold by raising the needle in the top cover for approximately 3 to 5 seconds, this allows sufficient fuel to fill the well in the float chamber which is formed by a division wall and feeds fuel direct to the carburetter bore on the engine side of the throttle valve.

**STARTING WHEN ENGINE IS WARM (360/CARBURETTER).** Set the throttle lever slightly open, do NOT raise the needle, start engine in the usual manner.

### MAINTENANCE

**REMOVING AND FIXING CARBURETTER.** If the carburetter is removed from the induction pipe, see that on re-fixing it is pushed right home on the pipe before locking the clip. Never fit the carburetter to a pipe on which it is slack, nor ever drive it on to a tight one. The carburetter should be a good push fit on to the inlet pipe, and should be pushed on true with a screwing motion, after



having put a little oil on the pipe. Erratic slow-running can be caused if there are air leaks at the point of attachment of the carburetter to the cylinder.

**DISMANTLING WHEN INSPECTING OR TUNING.** The float chamber, float or its needle may be inspected by removing the float chamber cover which is secured by two screws. The banjo bolt must be removed and then the float needle is removed by pushing the needle downwards through the float and extracting it through the needle seating in the base of the float chamber; on re-assembling see that the spring bow on the float engages with the groove in the needle. Ensure when replacing the cover that the joint washer is undamaged.

The throttle valve complete with jet needle and attached to the cable can be withdrawn from the carburetter after the knurled mixing chamber top has been unscrewed.

To separate the throttle valve and jet needle from the cable, release the cable at the control end and push the inner cable forward until the nipple in the throttle valve clears its hole, then withdraw the cable through the slot in the throttle valve, the nipple passing through the hole at the extreme end of the slot. On re-assembling pass the nipple through this hole via the inside of the throttle valve, ensure that the portion of the jet needle clip that falls in towards the jet needle is opposite the cable slot in the throttle valve, and then draw the cable forward until the nipple will pass over the end of the throttle valve and sink into its hole. On putting back this throttle valve assembly into the body, see that the key in the carburetter body engages the key-way opposite the cable slot in the throttle valve, and that the jet needle is entering the needle jet, before attempting to push the assembly home. Access to the main jet is by removing the main jet cover nut and withdrawing the filter gauze. When replacing the main jet take care not to over-tighten.

**FILTER GAUZE.** A filter gauze, which is a push fit over the main jet and needle jet, should be periodically examined and cleaned if necessary by washing in clean petrol.

**FUEL FEED.** Ensure that the fuel tap and pipe are kept clear.

**FLOAT CHAMBER.** Ensure that there is no continual flooding of the float chamber.

**EXCESSIVE FUEL CONSUMPTION** may be due to continual flooding of the float chamber: check that the float needle is not worn or bent, that the float is not leaking, that no impurities have got into the float chamber and lodged on the float needle seating. Nearly all flooding with new machines is due to impurities (grit, fluff, etc.) in the fuel tank—so clean out the float chamber periodically until the trouble ceases. If the trouble persists, the fuel tank may be drained, swilled out, etc.

**CABLE CONTROLS.** See that the cable control fully opens and closes the throttle valve, a cable adjuster with locknut is provided in the top of the carburetter and can be adjusted until correct movement is obtained. Avoid sharp bends in the cable.

**AIR FILTER MAINTENANCE.** To ensure efficient air filtration it is important to periodically inspect and clean.

Where air filter is incorporated in carburetter, the elements must be periodically removed and washed in petrol, then dipped in thin oil and allowed to drain before replacing in carburetter.

#### **OIL BATH AIR FILTER—TYPE 384/**

Before using engine, remove filter top cover by inserting a coin between Top Cover and Boss on side of filter body. A slight twist will release.

Pour sufficient lubricating oil to cover the absorbent pad and retaining gauze—no more.

Saturate metal wool pack in top cover with lubricating oil. Pour off surplus and replace top cover.

Under normal conditions the filter should be cleaned and lubricated as above after each eight to ten working hours, it may be necessary to reduce this time if conditions are very dusty or dirty.

After considerable usage it may be necessary to renew the felt absorbent pad.

#### **CARBURATION FAULTS**

There are only two possible faults in carburation, either richness or weakness of mixture.

##### **INDICATIONS OF:—**

###### **RICHNESS**

Black smoke in exhaust.  
Petrol spraying out of carburetter.

Two strokes, four-stroking.  
Heavy, lumpy running.  
Sparking plug sooty.

If richness or weakness is present, check if caused by:—

- (1) Petrol feed.
- (2) Air leaks.
- (3) Defective or worn parts.
- (4) Air filter elements obstructed.

###### **WEAKNESS**

Spitting back in carburetter.  
Erratic slow-running.

Overheating.  
Poor acceleration.  
Engine goes better if:—  
Throttle valve is not wide open, or if strangler is fitted this is partly closed.

Choked filter gauze on main jet.  
Check that the main jet, needle jet and passages are clear and that there is ample flow of fuel.  
Check there is no flooding of the float chamber.  
At the connection of the carburetter to the engine.  
As a loose-fitting throttle valve, worn needle jet, or loose needle jet or main jet.

#### **PARTS WITH WHICH THE CARBURETTER IS ADJUSTED OR TUNED**

The MAIN JET is calibrated and numbered, so that its exact discharge is known. Two main jets of the same number are alike, never reamer a main jet out, get another one of the right size, the bigger the number the bigger the flow, the numbers varying, for example, 20, 22, 25, 27, 30, 32.

The **THROTTLE VALVE**. The slope is called the cutaway, and its number is stamped on the bottom. Throttle valves can be had with different cutaways—the bigger the cutaway and number, the weaker the mixture produced for small throttle openings.

The **JET NEEDLE** is positioned in the throttle valve by the jet needle clip. The top of the jet needle is grooved and by springing the clip off and springing it on again in another groove the position of the jet needle in the throttle valve is altered, either being raised or lowered.

## ADJUSTMENT OR TUNING OF CARBURETTER

A certain amount of adjustment is provided for on the carburetter to ensure that a correct mixture is obtained. The correct mixture is one that is neither too rich nor too weak. See that there are no faults as outlined in "Maintenance" as these would affect the correct functioning and adjustment of the carburetter. Check that the ignition, timing, etc., is functioning correctly.

Carburetters as supplied by the makers for fitting to specific machines should under normal conditions only require adjustment of the position of the jet needle to ensure best general running with maximum fuel economy, the jet needle being raised if the mixture appears to be weak and lowered if the mixture is rich.

For special conditions or adaptations, or where it is suspected that the carburetter may have had an unsuitable throttle valve or main jet substituted, as these parts vary according to engine requirements it will be necessary to completely re-tune the carburetter. See "Complete Tuning of Carburetter."

## COMPLETE TUNING OF CARBURETTER

To remedy weakness or richness, proceed as follows:—

<b>Position of Throttle.</b>	<b>To cure richness.</b>	<b>To cure weakness.</b>
At 3/4 to full throttle.	Fit smaller main jet.	Fit larger main jet
At 1/4 to 3/4 open, as for general running.	Lower jet needle.	Raise jet needle.
Up to 1/4 opening, as for idling and light running.	Fit throttle valve with larger cutaway.	Fit throttle valve with smaller cutaway.

Finally, if any alteration has been made to the throttle valve cutaway, it may be necessary to alter the jet needle position again: putting in a throttle valve of smaller cutaway may require the jet needle lowering by a groove, and alternatively a larger cutaway may necessitate raising the jet needle.

# SERVICE INSTRUCTIONS FOR WICO MAGNETOS

## FW.1269Z OR I-1259, AS FITTED

---

### SERVICE INSTRUCTIONS

#### Checking Magneto for Spark

It is recommended that if there is an indication of the magneto causing trouble, a test be made before attempting to repair.

If the engine refuses to start, the magneto can be checked by holding the H.T. lead  $\frac{1}{8}$ " away from a point on the frame of the engine. When the engine is cranked over in its usual way, the spark from a properly performing magneto should jump this gap.

If the engine misses at high speed, first check the spark plug. With the plug in good condition and properly adjusted the magneto should fire a spark without missing while the H.T. lead is held  $\frac{1}{8}$ " away from the spark plug terminal.

The only adjustable part of the Magneto is the breaker plate which provides adjustment for the breaker points.

#### Removal of Flywheel

1. Where recoil starter is fitted, remove engine cowl with starter assembly intact, remove starter plate assembly and distance piece by releasing the six securing screws.

Where rope starter pulley is fitted, remove engine cowl and release the screws which secure the pulley to the flywheel.

2. Remove the flywheel fixing nut.

3. Carefully remove the flywheel from the tapered shaft, a suitable extractor for this purpose can be supplied. Failing this, grasp the flywheel firmly and whilst attempting to pull it off, tap the end of the crankshaft with a mallet or lead hammer, taking care not to damage the crankshaft thread.

#### Adjustment of Breaker Points—FW.1269Z Magneto

Where a rubber ferrule is fitted over the contact breaker points to prevent ingress of foreign matter, it is essential to carefully remove this when checking or adjustment of points is necessary. When replacing, care must be taken to ensure that the ferrule is not trapped between points.

Rotate the engine until the breaker points are fully open and measure opening with a feeler gauge. The opening should be .018" to .020". If points need adjusting loosen the two screws which lock the breaker plate and move the latter, to give the proper point setting. Then lock the plate securely again by tightening the breaker plate screws. The breaker plate moves about the axis of the breaker arm stud and thus assures proper alignment of contact surface.

### **Adjustment of Breaker Points—I-1259 Magneto**

The full opening of the breaker points is as above, but the method of adjustment is slightly different. Loosen the screw which locks the breaker plate and move the plate to adjust points by carefully turning the eccentric headed screw. Lock the plate securely again by tightening the locking screw.

The breaker point setting should only be adjusted in the manner described and **at no time should the fixed contact be loosened or the breaker arm bent to provide adjustment.**

The moving contact is integral with the breaker arm. If the contact points need replacement it is recommended that both the fixed and movable points be replaced at the same time.

The breaker arm bearing is packed with cam lubricant at the time of assembly and should not need any other lubrication. A small amount of this lubricant is also packed on the breaker arm shoes and wipes off on the cam surface, providing, permanent lubrication between these rubbing surfaces.

### **Magneto Cam**

When the cam is removed, care must be taken on replacing to ensure that the arrow stamped on the end is pointing in direction of engine rotation.

### **Removal of Condenser**

To remove the condenser, disconnect the condenser lead from the breaker arm spring and remove the screw holding the condenser clamp. The primary earth connection is held under the inner clamp screw. Make sure all connections are clean and tight when replacing the condenser.

### **Replacement of Coil**

To remove the coil, disconnect the earth and the lead attached to the breaker arm spring terminal. The coil is held on the core by a wedge and considerable force may be necessary to remove the coil from the core.

# Guarantee

---

*WE GUARANTEE, subject to the conditions mentioned below, that all precautions which are usual and reasonable have been taken by us to secure excellence of materials and workmanship; but this guarantee is to extend and be in force for six months only from date of purchase, and the damages for which we make ourselves responsible under this guarantee are limited to the replacement of any part which may have proved defective.*

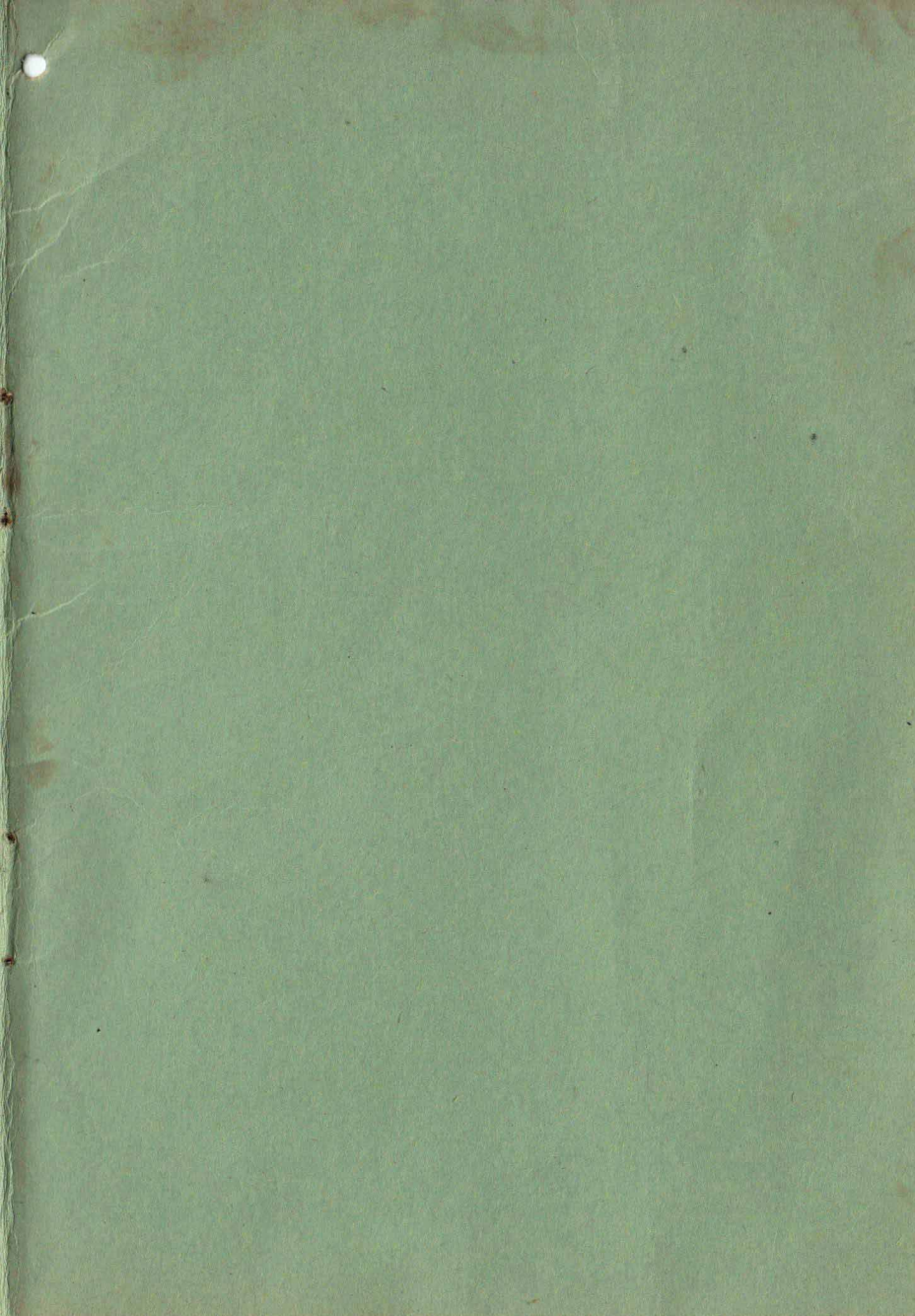
*WE UNDERTAKE, subject to the conditions mentioned below, to make good at any time within six months any defects in these respects. As equipment is easily liable to derangement by neglect or misuse, this guarantee does not apply to defects caused by wear-and-tear, misuse or neglect.*

## CONDITIONS OF GUARANTEE

*If an alleged defective part should be found in our equipment, it must be sent to us, carriage paid, and accompanied by an intimation from the sender that he desires to have it replaced free of charge, under our guarantee, stating clearly the nature of the fault, and he must also furnish us at the same time with the number of the Engine, the name of the Agent from whom he purchased, and the date of the purchase. Failing compliance with the above, no notice will be taken of anything which may arrive, but such articles will lie here at the risk of the sender and this guarantee or any implied guarantee, shall not be enforceable.*

## COMPLAINT

*In all cases of complaint the full nature of the complaint must be stated.*



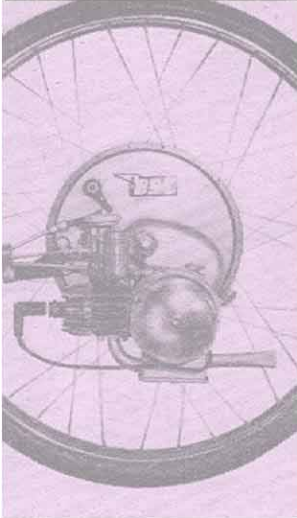
11326

FOR QUICK REFERENCE AND  
SPARE PARTS ORDERING, RECORD  
ENGINE NUMBER WITH PREFIXES  
HERE

---



# IceniCAM Information Service



[www.icenicam.org.uk](http://www.icenicam.org.uk)