HOWARD 810 c.c. TWIN CYLINDER ENGINE—RE-CONDITIONING

Twelve questions and answers to assist in reconditioning a Howard 810 c.c. Twin cylinder engine are given below:

Q.1. What are the standard and undersize dimensions of the Big End Journals?

A.1. The standard size is 1.500/1.499" and there are three undersizes -0.010,—0.020 and—0.030, giving 1.490/1.489, 1.480/1.479 and 1.470/1.469" respectively.

Q.2. How do I order Big End Shells to suit the journals?

A.2. You order the Big End Shells in pairs. The standard shells are bottom half No. 25217 and top half No. 25216. The undersize shells are of course -0.010, -0.020, and -0.030 and are designated as the standard shell/amount of undersize. i.e. 25216/20 is Top half shell, -0.020

Q.3. What is the standard cylinder bore, and how many times can I rebore the block. Can I resleeve the bores?

A.3. The standard bore is 3.000/3.001 and you can rebore the block twice, + 0.020 and +0.040 giving oversize bores of 3.020/3.021 and 3.040/3.041. The bores cannot be resleeved.

Q.4. What is the part number of the standard piston assembly complete with rings, gudgeon pin and circlips, and how do I order oversize assemblies?

A.4. The standard piston assembly is No. 25290 and the two oversize assemblies are known simply as 25290 + 20 and 25290 + 40.

Q.5. Is it possible to order the piston alone, without rings, gudgeon pin and circlips?

A.5. Yes, ask for piston No. 26904, 26904 + 20 26904 + 40, according to your bore requirements.

Q.6. What is the simplest way to set the valve timing if I have to replace the timing gear and consequently have no marks to guide me?

A.6. (a) Set the front piston at T.D.C.
(b) Turn on to 5° A.T.D.C.
(c) With the exhaust valve just opening, select the correct keyway on the timing gear 25204, so that the teeth mesh correctly with the timing pinion on the crankshaft. Mark the gear for future reference.

Q.7. I have been told to set the ignition timing with the magneto in the fully advanced position, is this correct and how do I set about it?

A.7. This is correct, and you proceed as follows:
(a) Bring the front piston to T.D.C with both valves closed
(b) Turn the crankshaft back to 35° B.T.D.C. for petrol or 30° B.T.D.C. for T.V.O. This gives the correct crankshaft position for firing in the fully advanced state.
(c) Assemble magneto with the points just breaking and the automatic advance held open manually.

Q.8. Contrary to your method given in A.7 I have always set the ignition in the fully retarded position, I have never experienced any trouble after having done this, therefore I assume I am correct too?

A.8. You too are correct in your procedure which should be as follows:
(a) Bring the front piston to T.D.C. with both valves closed.
(b) Turn the crankshaft back 5° B.T.D.C. for petrol or leave at T.D.C. for T.V.O.
(c) Assemble the magneto with the points just breaking and automatic advance mechanism held in the fully retarded position.
N.B. If using this method the ignition must be checked in the fully advanced position.

Q.9. I have removed the cowling 26597 and through the hole have observed some dots on the flywheel fins and housing, what are these?

A.9. There is one mark on the housing at T.D.C. and by matching the mark 'I' on the flywheel fin this gives you the T.D.C. position, by matching the '35' (30 for T.V.O.) on the fin to the housing mark gives you the firing point FULLY ADVANCED.

Q.10. I have removed the engine from the machine and on the back of the flywheel and housing have observed some marks, what are these?

A.10. On the housing there is a mark denoting the T.D.C., and on the flywheel there are marks 'I' and '35' (30 for T.V.O.) for T.D.C. and ignition respectively.

Q.11. There are marks on the camshaft timing gear and on the crankshaft and magneto pinions, could you tell me exactly what they signify?

A.11. (a) On the camshaft timing gear there is a mark against the keyway used, two marks on adjacent teeth to mesh with the crankshaft timing pinion, and one mark on a tooth to align with a similar mark on the magneto timing pinion
(b) On the crankshaft timing pinion there is one mark on one tooth to mesh between the two marks on the camshaft gear.
(c) On the magneto timing pinion there is a mark to align with the corresponding mark on the camshaft timing gear.

Q.12. What carburettors have been fitted to the 810 c.c. engine?

A.12. From No. 32510/2 the carburettor was an Amal 225/22. From No. 32511/2 until present production the Amal is type 348/10 for petrol and 348/12 for T.V.O.

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HOWARD ROTAVATOR SERVICE BULLETIN - H28

APRIL 1963

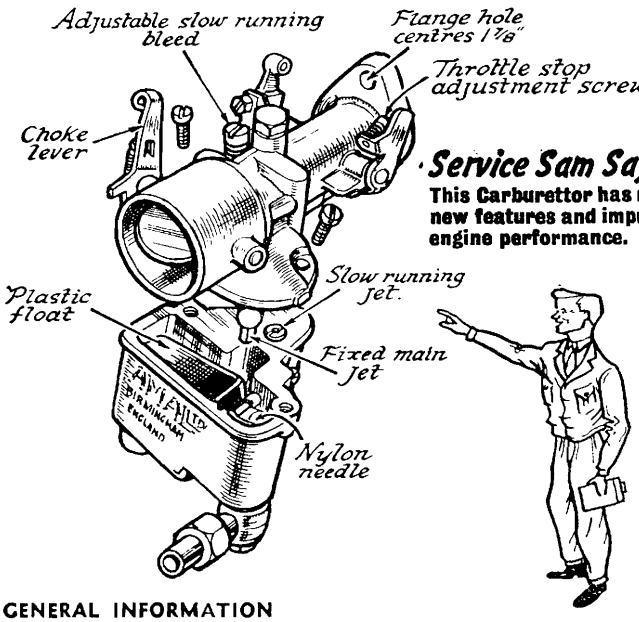
* *Do not file, use this. Bring it to the attention of your sales and service engineers.*
* **Ne classez ce bulletin de service mais prenez note de son contenu et portez en connaissance a l'attention de vos representants et de vos ingenieurs.**
* *No lo archive, uselo. Hagalo conocer de vendedores y mecanicos.*
* *Achtung! dieses merkblatt ist fur den kundendienst und fur die verkaufer bestimmt und nicht fur den aktenschrank.*

HOWARD—810cc. TWIN CYLINDER ENGINE

As from Engine No. 2611166 a new type Carburettor—Amal type 397/1 will be fitted to the 810cc. Twin Engine replacing the present Amal 348/10. This will also include fitting a new fuel pipe (Part No. 27047) which replaces (Part No. 26895) fuel pipe.

Carburettors supplied as spare parts include the banjo coupling (Part No. 376/090) which will convert the existing fuel pipe to the new type.

These carburettors have been tested here at West Horndon, in Australia, South Africa, U.S.A. and Holland over the last two years. Favourable reports have been received and it has now been introduced because of its compactness and greater range of adjustment, accuracy of running and certain operational improvements.



GENERAL INFORMATION

It has a fixed Main Jet—size 160.

An adjustable air bled slow running jet—size 40.

A nylon Fuel needle operated by a plastic float is included and the plastic material from which the float is manufactured is bouyant and is not affected by petrol or punctures.

The float chamber is of very small capacity with jets situated centrally, permitting tilting of the carburettors without changing the fuel level in the jet wall.

The distance between the main jet and slow running jet centres has been kept to a minimum, thus reducing the possibility of a flat spot at the change over period from slow-running to main jet.

Carburettor flange stud hole centres are 1⅞".

SERVICE SAM SAYS

That when fitting type 397/1 to an Induction Pipe having 2" centre studs in the induction manifold, the carburettor flange holes must be elongated to suit. Make certain you have an air-tight joint.

There is only one variable adjustment, i.e.: the slow running adjustment effected by the Air Bleed Screw situated between throttle control and choke lever. To set the carburettor, screw down air bleed screw, i.e.: bottoms on seating (do not force or needle seat will be damaged). Unscrew ½-turn, start engine, allow to warm up and settle the adjustment by screwing in or out until desired slow running is achieved.

'300'

The Picktine Rotor conversion is not suitable for this machine and will not be included in the ancilliary range.

The two Caps (Part No. 65475) and 5/16" Bolt (Part No. 65476) included in the tool kit are provided for the purpose of covering the rotor drive shaft splines when the rotor sections are removed.

'400'

The bolt supplied with the tool kit on this machine is provided for the purpose of removing the Flywheel from the engine crank shaft when necessary.

GENERAL INFORMATION

At this time of the year the Howard Rotavator is probably used more than at any other time, and delays in tracing faults can prove very expensive to the user. Here are a few tips on engine faults and remedies in "Question and Answer" form from Service Sam:—

Question: What is the proper way of setting plug gaps?

SERVICE SAM SAYS

Gaps should be adjusted by bending the "shell" electrode and never by bending the centre electrode. The correct setting will be found in the Engine Instruction Book.

Question: If one or more cylinders tend to foul spark plugs, what are the most likely reasons?

SERVICE SAM SAYS

1. Compression may be weak in the cylinders in question. The engine should be checked to determine which cylinders are weak. Difficulty may be either in piston or rings, worn cylinder bores, worn valve guides and stems, or defective oil seals on the valve stems. A valve stem may be stuck, the seat damaged or the valve tappets may not allow the valves to close.
2. The cable leading from distributor to the spark plug may be faulty or broken.
3. Petrol distribution may not be uniform.

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