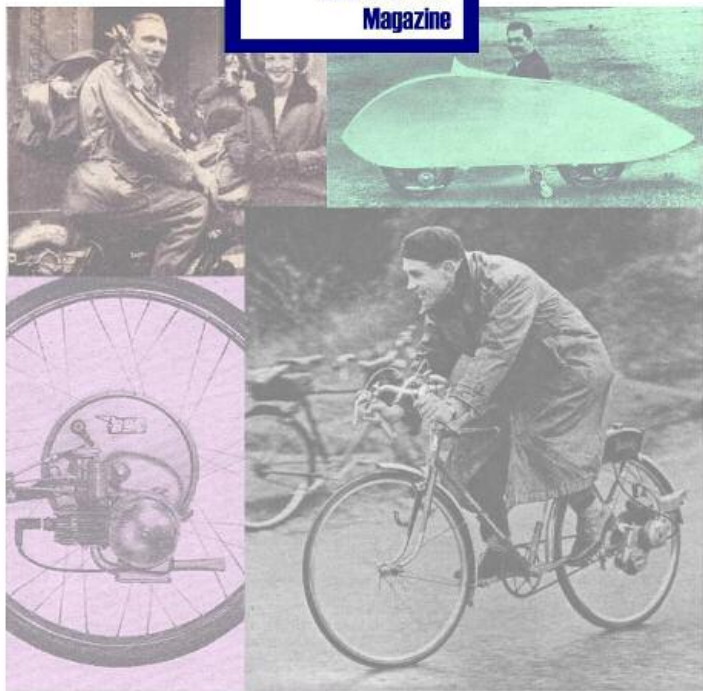


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The VILLIERS

"JUNIOR"

98 c.c.

ENGINE UNIT

WITH

COUNTERSHAFT CLUTCH



Manufactured by

THE VILLIERS ENGINEERING Co. Ltd.,
WOLVERHAMPTON, ENGLAND.

Telephone No.
21666 (3 lines).

Telegrams: "VILLIERS,
WOLVERHAMPTON."

Code: BENTLEYS.

(Printed in England).

The Villiers "Junior" Engine.

SPECIFICATION.

The VILLIERS 98 c.c. "Junior" horizontal Engine is an extremely compact unit in one assembly with a Countershaft Clutch and incorporates a neat and efficient Silencer underneath. The Engine is fitted with Ball Bearings throughout.

It has the latest type of VILLIERS Flywheel Magneto, smaller in size than the type standardised on the larger engine models, but built on exactly the same principle, and equally efficient both for ignition and lighting. The Magneto is fitted with a cover which renders it dust-proof and water-tight.

A VILLIERS Midget type Carburetter with a really efficient Air Intake Filter is standardised on this Engine.

The Complete Specification of the Engine includes:—

Flywheel Magneto, providing Ignition and Lighting.

Carburetter with Single Lever Control.

Air Filter and Strangler for easy starting.

Sparking Plug (14 m/m.)

Final Drive Sprocket for $\frac{1}{2}$ " \times $\frac{3}{16}$ " \times .305" dia. Roller Chain.

Clutch—Two Plate with cork inserts running in oil.

Lubrication of the Engine is by Petroil, whilst a separate Filler and Level Plug is provided for the Clutch Case.

SIZE OF ENGINE:—

50 m/m. Bore \times 50 m/m. Stroke = 98 c.c.

RUNNING INSTRUCTIONS

TANK.

Fill Tank with a mixture of Petroil. Half a pint of Patent Castrol X.L. Lubricating Oil to one gallon of any No. 1 Petrol, the mixture to be made and well stirred before putting into Tank.

CLUTCHCASE.

This should be inspected periodically for oil level. Remove Filler Plug on Magneto side just underneath the Drive Sprocket, and insert as much Castrol "D" Oil as will enter, the plug hole being so placed as to act as a level with the machine standing vertically. This should only be necessary about every 2,000 to 2,500 miles.

STARTING.

When Cold.—Turn Petrol on, then flood the Carburetter by depressing the Tickler; there is no need to allow any petrol to run to waste. Close the Strangler and open the Throttle Lever about one-third, the Engine is now ready for starting. First of all lift Clutch Lever, then after pedalling for a few yards and gradually releasing the lever the Engine should start. Gradually push the Strangler down to its fully open position, as Engine warms. In very cold weather it may not be possible to do this immediately, in which case leave partly open until Engine is warmed up.

The Engine being fitted with a Release Valve, another method of starting can be used. As before, turn petrol on and flood Carburetter, then open the Throttle about one-third. Lift the Release Valve Lever and wheel the machine forward, then on releasing the lever the Engine should fire. Immediately lift the Clutch Lever, and the machine is ready for riding away, by gradually letting in the Clutch.

When Hot.—Do not flood Carburetter, and leave Strangler open.

STOPPING THE ENGINE.

If the Engine is stopped by turning off the Petrol Tap instead of closing the Throttle, an easier re-start will be made if the machine has to stand for a long time.

SPECIAL DETAILS.

- General instructions regarding the Engine, Magneto and Carburetter, etc., are given in the Villiers Handbook, "How to get the best results from VILLIERS TWO STROKE ENGINES," but there are certain special features of the "Junior" not covered by the Handbook.

ENGINE.

The Gudgeon Pin is parallel and held in position by circlips which can be removed with a pair of thin-nosed pliers.

To remove Cylinder first of all detach Silencer.

CLUTCH.

Excessive play between end of Push Rod in Clutch Shaft and Clutch Operating Lever is taken up by screwing in Operating Pin after slackening Lock Nut. Slackness in Clutch Cable is taken up by means of adjuster at the bottom of Clutch Case.

MAGNETO.

The Flywheel should not be removed unless absolutely necessary, and then it is advisable to use a Villiers "Hammer-tight" Spanner for the Centre Nut. The Centre Nut is a right-hand thread, and will unscrew a small distance and then tighten again as the Flywheel is extracted. When replacing the Flywheel the correct timing, which is $\frac{7}{8}$ " before top dead centre, is obtained by placing the mark on Flywheel rim opposite mark on Armature Plate (near the H.T. Terminal) with the Piston at dead top of stroke. After checking this lock up the Centre Nut.

Access to Contact Breaker Points, etc., is obtained by removing the cover from front of Magneto, this is held in place by three small Screws which must be tight when replaced.

A connection is provided in the Lighting Cable, a short distance from the Magneto; unscrew this when removing Engine from Frame. Do not attempt to remove Cable from inside Magneto; keep in position the Rubber Sleeve over the connection, otherwise a short circuit may occur.

In the Villiers Lighting Set used with this Flywheel Magneto the correct Bulbs are:—

Head Lamp Main Bulb, 6 v.—.5 amp.

Pilot Bulb, 4 v.—.3 amp. Screw-in Cap.

Tail Lamp, 3.5 v.—.3 amp. Screw-in Cap.

CARBURETTER.

A specially designed Midget type Carburetter is employed, having an efficient screw-on type of Air Intake Filter, the gauze of which should be cleaned at intervals by dipping in petrol.

DISMANTLING.

To adjust the Needle, first of all remove Throttle by unscrewing the top ring. At the head of the Throttle there is a small screw. Turning this in a clockwise direction, which lowers the Needle, will give a weaker setting. Turning in an anti-clockwise direction will give a richer setting. For adjustment give approximately half a turn at a time until found to be correct.

If the Float Cup has to be removed at any time for cleaning, etc., when reassembling do not use too much force in tightening the bottom nut.

Periodically see that the gauze in the Petrol Pipe "Banjo" Connection is free from dirt, etc., or the petrol will not flow freely.

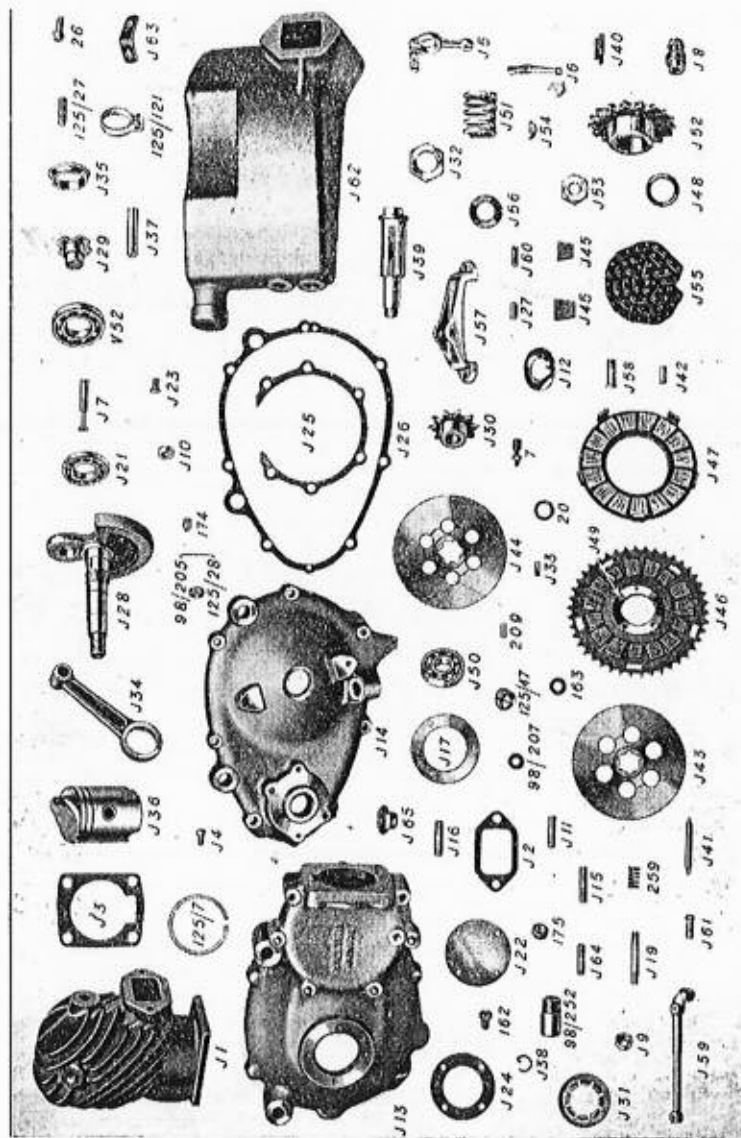
A FEW GENERAL HINTS AND TIPS.

1. Avoid all sharp bends in the Carburetter Control Wires, otherwise the inner Cables will not work freely.
2. It is wise to filter your petrol through fine wire gauze before filling your tank.
3. Common causes for irregular running are as follows:—
 - (a) A dirty Sparking Plug.
 - (b) An obstruction in the Petrol Supply Pipe.
 - (c) Incorrect timing of the Magneto.
4. A common cause for loss of power is obstruction in the Silencer Tail Pipe. This should be kept clear of carbon, etc.
5. The makers really know which is the best type of Sparking Plug to suit each Engine, and it is never advisable to experiment with cheap Plugs.
6. Don't use any cheap or unknown fuels. No. 1 quality of any of the well-known Petrols is always safest.
7. The Engine number and prefix letters are stamped on the Crankcase and should always be quoted when writing to the makers.

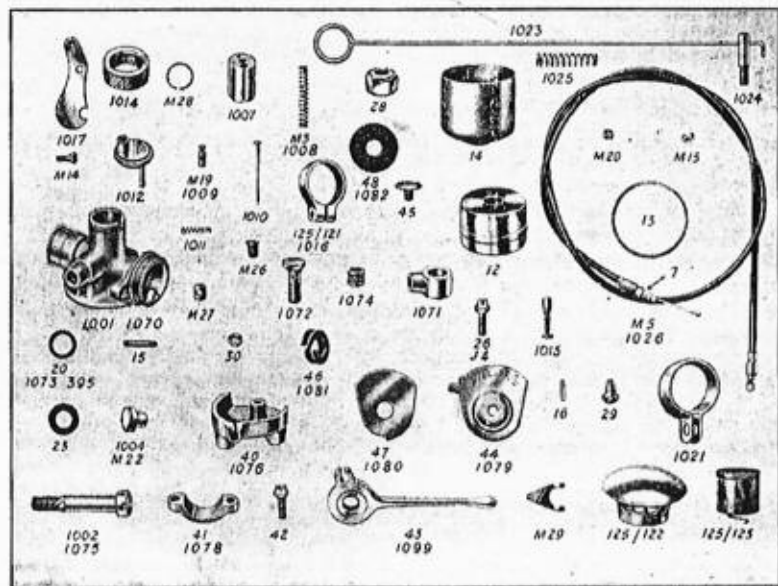
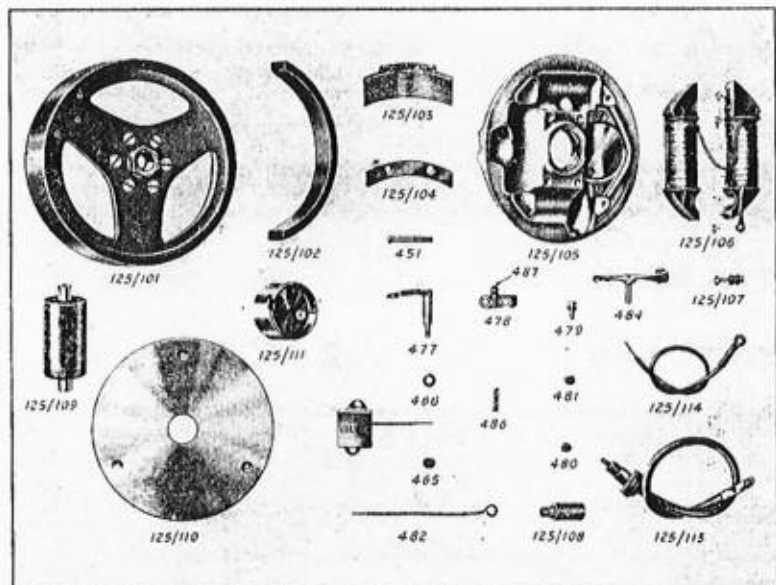
LIST OF REPLACEMENT PARTS FOR VILLIERS "JUNIOR" ENGINE.

(All prices in this list are increased by 5%).

REF. No.	DESCRIPTION.	PRICE EACH.	
		s.	d.
J.1	Cylinder	27	6
J.2	" Joint Washer		3
J.3	" Base Joint Washer		3
98/252	Carburettor Stub		4
J.5	Release Valve Bracket	1	9
J.6	" " Lever		6
J.7	" " Stem	1	0
259	" " Spring		3
J.4	" " Bracket Screw		1
J.8	" " Body	1	6
7	" " Cable Adjuster and Nut ...		6
J.9	" " Outside Cover		3
J.10	" " Inner Cover		3
J.11	Silencer Stud (Cyl.) Nut and Washer ...		3
J.12	Lock Washer, Engine Sprocket		1
J.13	R.H. Crankcase and Clutch Case (less Bearings)	20	0
J.13a	Crankcase Half (less Bearings)	7	6
J.14	Clutch Cover with Bush	17	6
J.15	Clutch Cover Stud, Short		2
J.16	" " " Long		2
J.17	Bearing Plate		3
J.23	" " Screw		1
J.19	Crankcase Stud		2
J.20	" "		1
162	" Drain Screw		2
163	" " " Washer		1
125/47	" Filler Plug		3
20	" " " Washer		1
J.21	Ball Bearing Driving Shaft (Inner) Type EE8	7	3
J.22	End Cap		4
J.23	" " Screw		1
J.24	" " Joint Washer		2
125/27	Cylinder Base Stud		1
125/28	" " " Nut		1
174	" " " Washer		1
98/205	Crankcase Stud Nut		1
98/207	" " Washer		1



REF. No.	DESCRIPTION.	PRICE EACH	
		s.	d.
J.25	R.H. Crankcase Joint Washer		2
J.26	Clutch Cover Joint Washer		3
J.27	Dowel Pin		3
98/205	Clutch Cover Stud Nut		1
98/207	" " Washer		1
J.28	Driving Shaft	12	6
J.29	Crankpin with Rivet and Washer	4	0
J.30	Engine Sprocket	3	0
J.31	Gland Spring		6
J.32	Sprocket Lock Nut		3
J.34	Connecting Rod with Bush	9	0
209	Big End Rollers per set	1	6
J.33	Engine Sprocket Key		2
V.52	Ball Bearing Driving Shaft (Outer) Type EE6	6	3
J.35	Gland Bush	1	6
J.36	Piston only, with Bushes	12	0
125/7	" Ring	1	3
J.37	Gudgeon Pin	1	6
J.38	Circlip		3
J.39	Clutch Shaft	10	0
J.40	" " Cotter		6
J.41	" Push Rod (long)		4
J.42	" " " (short, centre)		2
J.42a	" " " (" outer)		2
J.43	Clutch Plate (outer)	2	6
J.44	" " (centre)	2	0
J.46	" Sprocket (corked) with ball bearings	8	0
J.47	" Plate (corked)	5	0
J.48	" Ball Race		9
V.52	" Ball Bearing, Type EE6	6	3
J.50	" " " (Drive Side) Type LS7	8	9
J.51	" Spring		9
J.52	Driving Sprocket	3	0
J.53	" " Nut		3
J.54	Clutch Shaft Key		2
J.55	Chain	5	0
J.56	Clutch Plate Packing Washer		2
J.57	Clutch Bridge with Bush	2	0
J.58	Fulcrum Pin		3
J.59	Clutch Operating Lever	1	6



REF. No.	DESCRIPTION.	PRICE EACH	
		s.	d.
J.60	Clutch Adjusting Screw		2
98/205	" " Locknut		1
J.61	Screw for Bridge		2
J.62	Silencer	12	6
J.63	" Support Link		6
J.64	" " Stud		2
175	" " " Nut		1
174	" " " Washer		1
125/121	" Tail Pipe Clip	1	6
26	" " " Screw		3
J.65	" Plug		2
MAGNETO.			
125/101a	Flywheel with Cam and Nut	12	6
125/102	Magnets	per pair	12 0
125/103	Pole Shoes	per pair	2 0
125/104	Pole Shoe Top Plates	per pair	2
451	Pole Shoe Screws	each	1
125/105	Armature Plate		6 0
125/106	Lighting Coils	per pair	10 0
125/107	Lighting terminal screw		3
125/108	Cable Connector and Sleeve		6
125/109	Ignition Coil complete with Core	15	0
125/110	Magneto Cover	3	0
125/111	Condenser Box only	3	0
125/112	Condenser only	5	0
478	Point Clamp		6
479	Point Clamp Screw		1
480	Point Clamp Top Bush		1
481	Point Clamp Bottom Bush		1
1474	Rocker Arm with Contact Point and Pad	3	0
487	Screwed Contact Point with Lock Nut	2	0
125/113	High Tension Lead complete	2	9
745a	6 volt, .5 amp. Single Contact Main Bulb	2	6
793a	Pilot Bulb		6
793a	Tail Lamp Bulb		6
125/114a	Lighting Cable, 2 ft.		3
125/117a	Fibre Washer		3
CARBURETTER.			
1070	Body	7	0
1071	Banjo Union	1	6
1072	" " Screw		6
1073	Fibre Washer		3

REF. No.	DESCRIPTION.	PRICE EACH	
		s.	d.
395	Fibre Washer		3
1074	Banjo Screw Gauze		6
1075	Centrepiece and Jet	3	0
14	Cup	2	0
M.22	Bottom Nut		4
23	" " Washer		1
20	Centrepiece Washer		1
13	Cup Washer		3
1006	Locating Peg for Centre Piece		3
1007	Throttle	1	8
1008	Throttle Spring		3
1009	Needle Adjusting Screw		5
1010	Needle		4
1011	Needle Spring		2
1012	Top Disc	1	0
1013	Guide Pin		3
1014	Top Ring		9
1015	Tickler complete		8
M.31	Fuel Bush		3
16	Fuel Needle		6
M.29	Fuel Needle Lever and Pin		6
M.26	Filter		3
29	Union Nipple		3
28	Union Nut		3
1016	Body Clip	1	6
42	Clip Screw		3
1017	Strangler Plate		6
M.14	" " Screw		2
M.15	" " Washer		1
12	Float	2	0
125/122	Dust Cap Tube with End Cap	3	0
125/123	Air Cauze with Spring	1	6
1026	Control Cable with Nipple and Disc	2	6
7	Cable Adjuster and Lock Nut		6
1076	Control Body	2	6
1077	" Lever	2	0
1078	" Body Clip	1	0
J.4	Clip Screw		1
1079	Top Cover	1	0
1080	Friction Plate		3
1081	Spring Washer		1
45	Top Cover Screw		3
1082	Fibre Washer		3

Guarantee.

We give the following guarantee with VILLIERS Engines and Accessories, in place of any implied guarantee by statute or otherwise, all such guarantees being in all cases excluded. No statement or representation contained in this catalogue shall be construed as enlarging or varying this guarantee. In the case of engines and accessories which have been used for " hiring out " purposes, or from which our trade mark, name, or manufacturing number has been removed, no guarantee of any kind is given or is to be implied.

In the case of Engines and accessories used for purposes other than Motor Cycles, no guarantee is given or implied unless the purpose for which they are used has been approved and agreed in writing by us to come under this 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 three months only from the date the engines or accessories are despatched by us, and the damages for which we make ourselves responsible under this guarantee are limited to the replacement of a part manufactured by us which may have proved defective.

We do not undertake to re-fit or bear the cost of replacement or refitting such new part. We guarantee, subject to the conditions mentioned below, to make good at any time within three months any defects in these respects. As VILLIERS Engines and Accessories are liable to derangement by neglect or misuse, this guarantee does not apply to defects caused by wear and tear, misuse and neglect.

CONDITIONS OF GUARANTEE.

If a defective part should be found in our engines or accessories, it must be sent to us carriage paid and accompanied by an intimation from the sender that he desires to have it repaired free of charge, under our guarantee, and he must also furnish us at the same time with the number of the engine, and full particulars of purchase. Failing compliance with the above, no notice will be taken of anything that 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.

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