

The

SUBJECT TO 30% INCREASE
FROM THE 1st. SEPTEMBER 1951

NORMAN

MODEL "C"
AUTO CYCLE

98 c.c. UNIT 2.F.

**Operating Instructions
and Spare Parts List**

**NORMAN CYCLES LTD.
ASHFORD - KENT**

PRICE 4/6

IMPORTANT

When ordering Spare Parts whether for the engine or for the Motor Cycle generally, always quote both the frame and engine numbers of the machine for which these are for. Also give the list number of the part required and the illustration number.

If any doubt exists in connection with any part required, send the old part as pattern and in any case give the frame and engine number of the machine.

Observance of the above instructions will ensure prompt service.

All prices appearing in this list are subject to 20% advance as from 1st September, 1951, and due to ever increasing costs this percentage is subject to being revised without further notification. Items ordered will be invoiced at price ruling at date of despatch.

NORMAN CYCLES LTD.

MOTOR CYCLE SPARES DEPARTMENT

BEAVER ROAD

ASHFORD, KENT

NORMAN

Model C, 98 c.c.

AUTO CYCLE

SPARE

and

REPLACEMENT

PRICE LIST

for

ENGINE & CYCLE

REPAIR SERVICE

Our Works at Ashford, Kent, are fully equipped and are available for the repair of engines or complete machines.

All work is attended to by specialists in repairs, and the work is carried out under the terms of our usual guarantee as given below.

We advise you to obtain your Spare Parts from your recognised Norman Dealer or direct from our Service Department, as there is no economy in fitting cheap imitation parts.



GUARANTEE

Any motor cycle, motor cycle combination or sidecar sent to us to be plated, enamelled or repaired will be repaired upon the following conditions, i.e., we guarantee that all precautions which are usual and reasonable have been taken by us to secure excellence of materials and workmanship, such guarantee to extend and be in force for 3 months only from the time such work shall have been executed, and this guarantee is in lieu and in exclusion of all conditions and warranties, statutory or otherwise, and all liabilities whatsoever, and the damages recoverable are limited to the cost of any further work which may be necessary to amend and make good the work found to be defective.



ESTIMATES

If required, we are always prepared to give an estimate before proceeding with any repair. This entails a certain amount of labour in dismantling to ascertain what new parts will be required, and therefore, in the case of any estimate not being accepted for special reasons, a small charge is made for our mechanic's time in taking down the parts for report.

Estimates must be treated as APPROXIMATE only. We reserve the right to include additional parts should these be found, on further examination, to be necessary to make the repair satisfactory.

SPARE OR REPLACEMENT PART ORDERS

All Spares and replacement parts, including engine parts, can be sent against receipt of remittance or under the Post Office C.O.D. system.

Business in connection with spare parts must always be treated on a Cash basis, and sufficient should be included to cover the cost of postage. If this is not done, a surcharge of 5 per cent. to cover postage or carriage and packing will be charged (subject to a minimum of 6d.).

Unless otherwise instructed, all spare parts will be sent by C.O.D. post (weight permitting) when remittance does not accompany the order.

When making remittances by telegraph money order, the name and address of the sender **MUST** be included in the space provided on the Post Office requisition form for a private message from remitter to payee ; unless this is done the Post Office does not give this information upon a telegram.

When sending parts for replacement, repair, or as pattern, the name and address of the owner must always be securely attached and full instructions explaining what is required should be sent separately by post.

Old or worn parts sent as pattern are not returned unless specially asked for by the owner at the time of sending them to us.

In the event of correspondence relating to Spare parts or repairs always quote our Invoice Number.

FURTHER REMINDER.—Do not forget to quote both the engine and frame Numbers with all orders.

MODEL "C" AUTO CYCLE PARTS

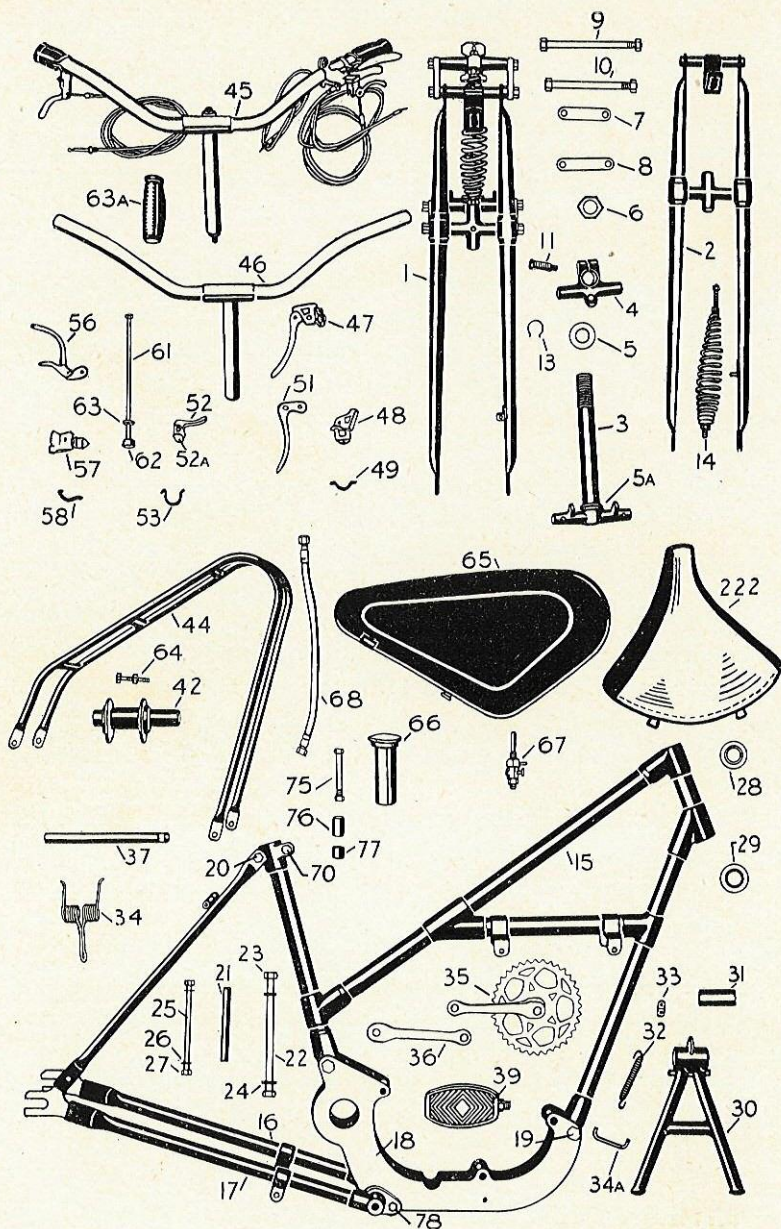


FIGURE 1.

FORKS.

COMPONENT.	Illus. No.	Part No.	No. per Set.	£ Price Each.	s.	d.
Fork Complete ...	1	B110 FK/O	1	6	3	0
„ Blade Assembly ...	2	B110 FK21	1	3	8	0
„ Stem Assembly ...	3	B110 FK20	1	1	0	0
„ Head Clip Lug ...	4	B110 FK1	1	8	6	
Screwed Race ...	5	B110 FK13	1	3	0	
Fork Crown Race ...	5A	B110 FK14	1	3	0	
„ Stem Locknut ...	6	B110 FK17	1	1	6	
„ Links, Top ...	7	B110 FK6	2	2	6	
„ „ Bottom ...	8	B110 FK5	2	2	6	
Link Bolt, Bottom ...	9	B110 FK7	2	2	9	
„ „ Washers ...		B110 FK24	4		3	
„ „ Nuts ...	10	B110 FK25	2		6	
„ „ Top ...		B110 FK8	2	2	3	
„ „ Washers ...		B110 FK24	4		3	
„ „ Nuts ...		B110 FK25	2		6	
Fork Head Clip Lug Bolt ...	11	B110 FK26	1	1	0	
„ „ „ „ Nut ...	N/1	B110 FK27	1		2	
„ Spring ...	14	B110 FK11	1	6	9	
Top Head Race ...	28	B110 FK16	1	3	0	
Bottom Head Race ...	29	B110 FK15	1	3	0	

FRAME.

Frame Centre ...	15	B110 F26	1	4	5	0
Rear Stays, Nearside ...	16	B110 F27	1	1	6	6
„ „ Offside ...	17	B110 F28	1	1	6	6
Engine Plates, L.H. or R.H. ...	18	B110 F21	2		8	6
„ Plate Bolts ...	19	B110 F37	2		10	
„ „ „ Nuts... ...		B110 F38	2		3	
„ „ „ Washers ...		B110 F38A	2		2	
Seat Stay Bolt ...	20	B110 F42	1		9	
„ „ „ Nut ...		B110 F43	1		2	
„ „ „ Washer ...		B110 F44	1		1	
Chain Stay Distance Piece ...	21	B110 F22	1	1	4	
„ „ Bolt ...	22	B110 F30	1	2	6	
„ „ „ Nuts ...	23	B110 F32	2		3	
„ „ „ Washers ...	24	B110 F31	2		2	
Mudguard Bridge Bolts ...	25	B110 F46	2	2	4	
„ „ „ Washers ...	26	B110 F48	4		2	
„ „ „ Nuts ...	27	B110 F47	4		3	
Engine Plate Spacers ...	31	B110 F25	1	1	0	
Seat Lug Bolt ...	70	B110 F52	1		6	
„ „ „ Nut ...		B110 F53	1		2	
„ „ „ Washer ...		B110 F54	1		1	
Engine Bolts ...	75	B110 F40	3		10	
„ „ „ Nuts ...		B110 F41	3		3	
„ „ „ Washers ...		B110 F39	3		2	

FRAME—contd.

COMPONENT.	Illus. No.	Part No.	No. per Set.	£ s. d. Price Each.
Engine Spacers, Long ...	76	B110 F23	2	8
" " Short ...	77	B110 F24	2	6
Chain Stay Lug Bolts ...	78	B110 F33	2	6
" " Bolt Nuts ...		B110 F34	3	2
" " Washers ...		B110 F35	3	1
Brake Anchor Clip ...	201	B110 F20	1	6
" " Bolt Nut ...	N/1	B110 F56	1	2
" " Washer ...	N/1	B110 F57	1	1
" " " " ...	N/1	B110 F55	1	4
Mudguard Stay Stud ...	N/1	B110 F45	2	4
" " Nut ...	N/1	B110 F45A	2	2
" " Washer ...	N/1	B110 F45B	2	1

STAND.

Stand ...	30	B110 S7	1	12 0
" Spring (fitted on Models between 1949/50½ ...	32	B110 S9	1	1 6
Spring Clevice (fitted on Models between 1949/50½ ...	33	B110 S8	1	6
Spring Clevice Bolt ...	N/1	B110 S11	1	3
" " Nut ...	N/1	B110 S12	2	1
" " Washer ...	N/1	B110 S13	2	1
Spring (fitted on Models after 1950½) ...	34	B110 S9/1	2 per pair	3 0
Spring Anchorage Clip (fitted on Models between 1949/50½) ...	34A	B110 S16	1	6
Grease Nipple for Stand ...	N/1	B110 S14	1	4
" " Washer ...	N/1	B110 S15	1	1

BOTTOM BRACKET.

Chainwheel and Crank ...	35	B110 B5	1	14 6
Crank, Left Hand ...	36	B110 B4	1	6 6
Bottom Bracket Axle ...	37	B110 B2	1	4 0
Cotters c/w Nuts and Washers	N/1	B110 B6	2	6
Pedals ...	39	B110 B7	1 per pair	9 3
Spring Washer for Bottom Bracket Axle ...	N/1	B110 B10	1	6
Fibre Washer for Bottom Bracket Axle ...	N/1	B110 B9	1	4
Bottom Bracket ...	42	B110 B1	1	14 6
" " Grease Nipple	N/1	B110 B8	1	8
" " Adjusting Stud	64	B110 B3	1	4
" " Adjusting Stud		B110 B12	2	2
" " Nut ...				
" " Adjusting Stud	64	B110 B13	1	1
" " Washer ...				

HANDLEBARS.

COMPONENT.	Illus. No.	Part No.	No. per Set.	£ Price Each.	s. d.
Handlebar Complete ...	45	B110 H1	1	4	0 0
" Bend ...	46	B110 H2	1	1	0 0
Brake Lever Complete ...	47	B110 H7	1	9	0 0
" " Body Saddle ...	48	B110 H8	2	4	0 0
" " " Strap ...	49	B110 H9	2	1	6 0
" " Pivot Screw ...		B110 H11	2		10 0
" " " " Nut ...	N/1	B110 H12	2		2 0
" " " " Washer		B110 H13	2		1 0
Brake Lever ...	51	B110 H10	2	6	0 0
" " Body Strap Bolts ...		B110 H14	4		6 0
" " Body Strap Bolt					
" " " " "D" Nuts	N/1	B110 H15	4		3 0
Compression Release Valve Lever	52	B110 H29	1	2	6 0
Compression Release Valve Lever					
Body Saddle ...	52A	B110 H28	1	4	0 0
Compression Release Valve Lever					
Body Strap ...	53	B110 H30	1	1	6 0
Fulcrum Bolt and Nut ...	N/1	B110 H33	1		9 0
Strap Bolt...	N/1	B110 H31	1		5 0
Release Valve Lever Complete...	N/1	B110 H27	1	8	0 0
Clutch Lever ...	56	B110 H18	1	6	6 0
" " Body Saddle ...	57	B110 H17	1	4	0 0
" " " Strap ...	58	B110 H20	1	1	6 0
" " Pivot Bolt and Nut		B110 H24	1	1	0 0
" " Body Strap Bolt ...		B110 H21	1		7 0
" " Body Strap Bolt					
" " " " "D" Nut	N/1	B110 H22	1		2 0
Expander Bolt ...	61	B110 H4	1	1	3 0
" " Cones ...	62	B110 H5	1		6 0
" " Washer ...	63	B110 H6	1		4 0
Handlebar Grips...	63A	B110 H3	2 per pair	2	6 0
Clutch Lever Complete...	N/1	B110 H16	1	10	6 0
Front Brake Cable Clip...	13	B110 C31	1		6 0
Clutch Cable Complete...	184	B110 C11	1	5	0 0
Release Valve Cable Complete...	185	B110 C32	1	5	0 0
Rear Brake Cable ...	186	B110 C6	1	5	0 0
Front Brake Cable ...	187	B110 C1	1	5	0 0
Metal Cable Clips ...	N/1	B110 C15	2		2 0
Rubber Cable Clips ...	195	B110 C14	4		4 0

PETROL TANK.

Petrol Tank ...	65	B110 P1	1	3	10 0
Filler Cap ...	66	B110 P5	1	9	0 0
Petrol Tap ...	67	B110 P2	1	7	9 0
" Pipe ...	68	B110 P4	1	5	6 0

MODEL "C" AUTO CYCLE PARTS

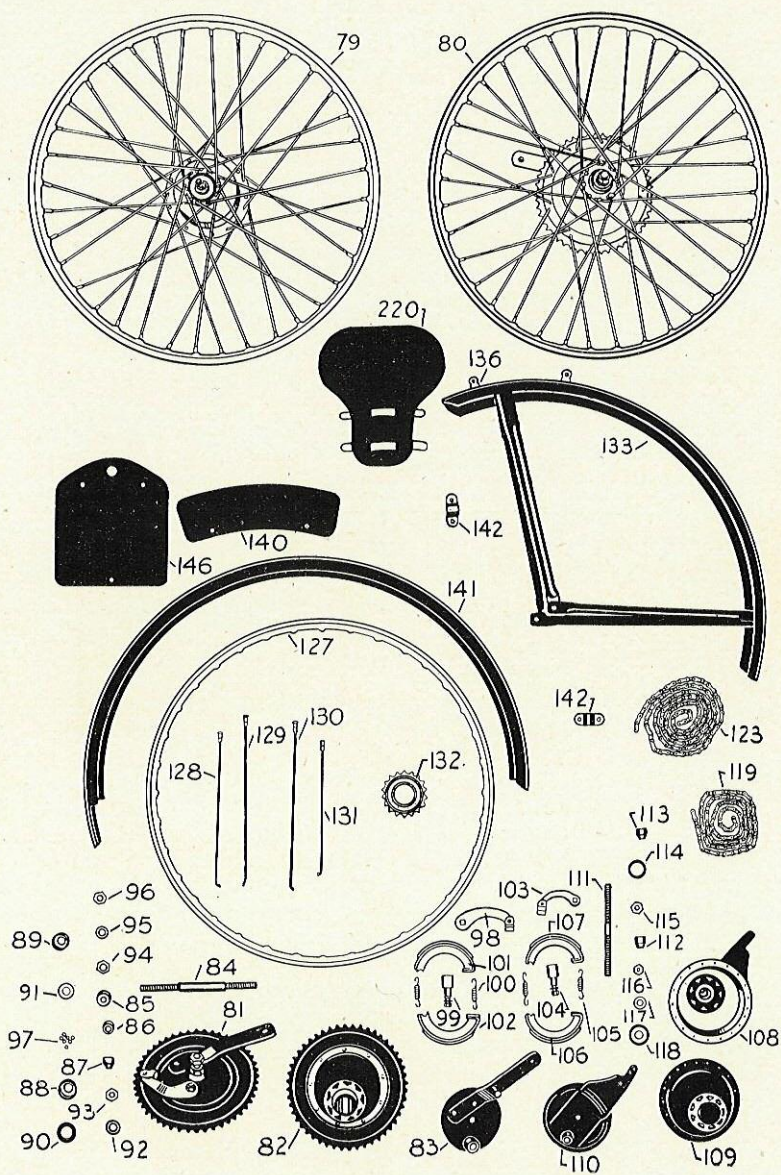


FIGURE 2.

PETROL TANK—contd.

COMPONENT.	Illus. No.	Part No.	No. per Set.	£ Price Each.	s. d.
Petrol Tap Washer ...	N/I	B110 P9	1		2
„ Tank Buffer ...	N/I	B110 P8	8		3
„ „ Setscrew Washers ...	N/I	B110 P7	4		2
„ „ Setscrews ...	N/I	B110 P6	4		8

WHEELS. Figure 2

Front Wheel Complete, less tyre	79	B110 W77	1	3	10	0
Rear Wheel Complete, less tyre	80	B110 W76	1	4	15	0
„ Hub Complete ...	81	B110 W1	1	2	15	0
„ „ Shell, with cups and dust caps ...	82	B110 W2	1	1	10	0
„ Brake Plate, Cam and Lever	83	B110 W4	1		15	0
„ Wheel Spindle ...	84	B110 W22	1		3	0
Brake Plate Distance Piece, R.W.	85	B110 W24	1			3
Cone, Fixed, R.W. ...	86	B110 W18 ✓	1		2	0
„ Adjusting, R.W. ...	87	B110 W19 ✓	1		2	0
Cup, Large, R.W. ...	88	B110 W25	1		2	0
„ Small, R.W. ...	89	B110 W26	1		2	0
Dust Cap, Nearside, R.W. ...	90	B110 W27	1			3
„ „ Offside, R.W. ...	91	B110 W28	1			3
Spindle Washers, R.W. ...	92	B110 W23	2			3
Cone Locking Nut, R.W. ...	{ 93 } 94	B110 W21	1			3
Spindle Washers, R.W. ...	95	B110 W23	1			3
„ Nuts, R.W. ...	96	B110 W20	2			6
Ball Bearings, R.W. ...	97	B110 W17	10 per set		2	0
Brake Operating Arm, R.W. ...	98	B110 W5	1		2	3
„ Shoe Cam, R.W. ...	99	B110 W16	1		2	3
„ „ „ Nut, R.W. ...	{ 100 } 101	B110 W6	1			3
„ „ „ Washer, R.W. ...	102	B110 W7	1			2
„ „ Spring, R.W. ...	103	B110 W15	2			3
„ „ Complete ...	{ 104 } 105	B110 W11	1 per pr.	10		0
„ Operating Arm, F.W. ...	106	B110 W46	1		1	6
„ Shoe Cam, F.W. ...	107	B110 W57	1		2	3
„ „ „ Nut, F.W. ...	{ 108 } 109	B110 W47	1			3
„ „ „ Washer, F.W. ...	110	B110 W48	1			2
„ „ Springs, F.W. ...	111	B110 W56	2			3
„ „ Complete, F.W. ...	{ 112 } 113	B110 W52	1 per pr.	10		0
Front Hub Complete ...	108	B110 W43	1	1	15	0
„ „ Shell, with cups ...	109	B110 W43A	1	1	2	6
„ Brake Plate ...	110	B110 W45	1		15	0
„ Wheel Spindle ...	111	B110 W63	1		2	6
Cone, Fixed, F.W. ...	112	B110 W59	1		2	0
„ Adjusting, F.W. ...	113	B110 W60	1		2	0

WHEELS—contd.

COMPONENT.	Illus. No.	Part No.	No. per Set.	£ s. d. Price Each.
Dust Cap, Large, F.W. ...	114	B110 W66	1	3
" " Small, F.W. ...	114	B110 W67	1	3
Cone Locking Nut, F.W. ...	115	B110 W62	1	3
Spindle Nuts, F.W. ...	116	B110 W61	2	6
" Washers, F.W. ...	117	B110 W63A	2	2
Cup, Large, F.W. ...	118	B110 W65	1	2 0
" Small, F.W. ...	118	B110 W65A	1	2 0
Ball Bearings, F.W. ...	N/I	B110 W58	10 per set	2 0
Pedal Chain ...	119	B110 W75	1	7 6
" " Connecting Link, Complete	N/I	B110 W75A	1	4
Driving Chain ...	123	B110 W74	1	10 6
" " Connecting Link	N/I	B110 W74A	1	4
Rim, Front or Rear ...	127	B110 W34	2	1 0 0
Wheel Spokes, Front Offside ...	128	B110 W72	18 per set	2 0
" " " Nearside ...	129	B110 W72A	18 per set	2 0
" " " Rear Nearside ...	130	B110 W35	18 per set	2 0
" " " Offside ...	131	B110 W35A	18 per set	2 0
Free Wheel ...	132	B110 W33A	1	5 3
Brake Shoe, less Linings, R.W....	N/I	B110 W12	1 per pair	7 0
" " Linings, R.W. ...	N/I	B110 W13	1	} per set 3 0
" " " Rivets, R.W. ...	N/I	B110 W14	12	
Rear Hub Grease Nipple ...	N/I	B110 W32A	1	4
Chain Adjusters ...	205	B110 W40	2	9
Tyre ...	N/I	B110 W38	2	} Current list price.
Inner Tube ...	N/I	B110 W39	2	
Spoke Nipples and Washers ...	N/I	B110 W36	36 per set	3 0
Brake Shoe, less Linings, F.W....	N/I	B110 W53	2 per pair	7 0
" " Linings, F.W. ...	N/I	B110 W54	2	} per set 3 0
" " " Rivets, F.W. ...	N/I	B110 W55	12	
Front Hub Grease Nipple ...	N/I	B110 W71	1	4

MUDGUARDS.

Front Guard ...	133	B110 M1	1	12 6
" " Bolt and Nut ...	N/I	B110 M3A	1	6
" " " Washer ...	N/I	B110 M3B	1	1
" " Rubber Buffer ...	N/I	B110 M19	1	3
Front Number Plate Clips ...	136	B110 M7	2	9
" " " Nuts ...	N/I	B110 M10	2	2
" " " Clip	N/I	B110 M11	2	1
Setscrews				

MUDGUARDS—contd.

COMPONENT.				Illus. No.	Part No.	No. per Set.	£ s. d. Price Each.
Front Number Plate	Clip	Set-					
	screw Nuts ...		N/I	B110 M12	2	1	
"	"	Plate Clip					
	screw Washers		N/I	B110 M12A	2	1	
"	"	Plate ...	140	B110 M6	1	1	6
Rear Guard	...	...	141	B110 M4	1	12	6
"	"	Bridge Clips	142	B110 M5	2	6	
"	"	"	"	Bolts...	N/I	4	4
"	"	"	"	"			
	Nuts		N/I	B110 M14	4	2	
"	"	"	"	"			
	Washers		N/I	B110 M13A	4	1	
"	"	"	"	"			
	Spring Washers		N/I	B110 M15B	4	1	
"	Number Plate	...	146	B110 M8	1	2	6
"	"	"	"	Bolts	N/I	1	4
"	"	"	"	Bolts Con-			
	cave Washer		N/I	B110 M23	1	3	
"	"	"	"	Bolts Washers	N/I	1	1
"	"	"	"	Bolts Nuts	N/I	1	2
"	"	"	"	Setscrews ...	N/I	2	1
Rear Number Plate	Set-screw						
Spring Washers	...	...	N/I	B110 M18A	2	1	
Rear Number Plate	Set-screw						
Washers	...	...	N/I	B110 M18	2	1	
Rear Number Plate	Set-screw						
Nuts	...	...	N/I	B110 M17	2	1	
Carrier	...	...	44	B110 CR5	1	1	0 0
Front Number Plate	Clip Nuts...		136	B110 M10	2	2	
Carrier Bridge Bolt	...	...	N/I	B110 CR6	1	9	
"	"	"	"	Nut	N/I	1	2
"	"	"	"	Washer	N/I	1	1
Front Guard Mudflap	...	...	220	B110 M3	1	3	6

MODEL "C" AUTO CYCLE PARTS

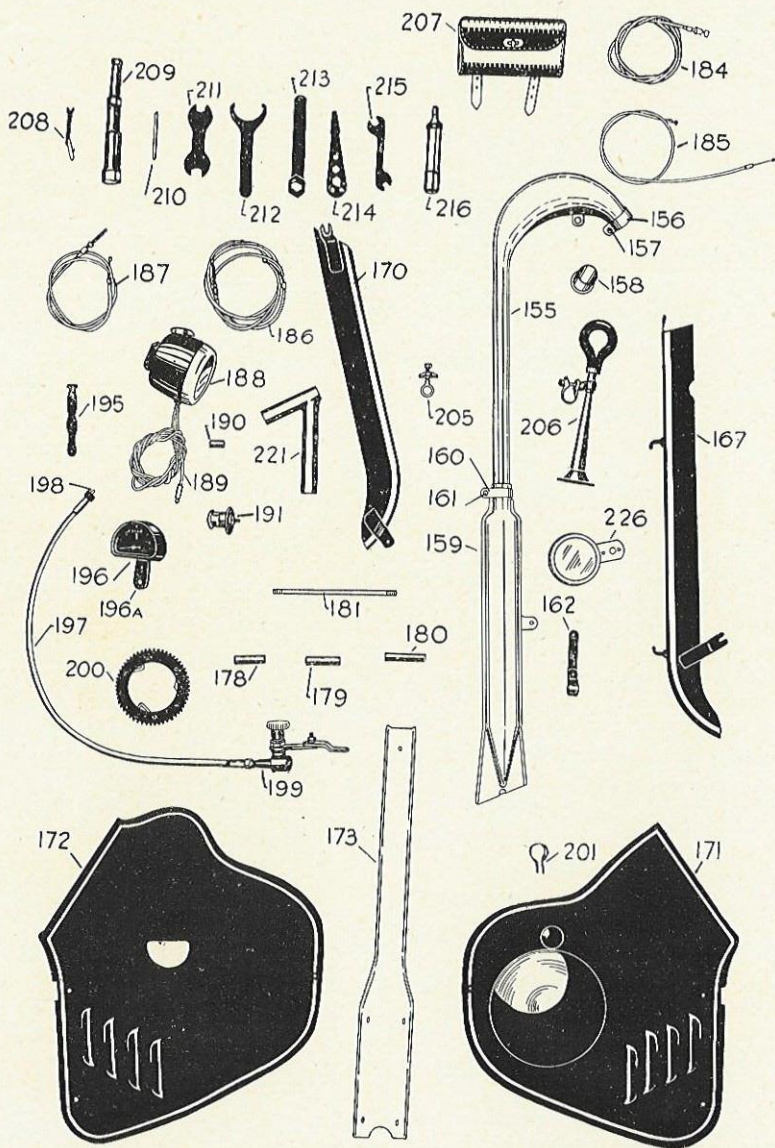


FIGURE 3.

EXHAUST SYSTEM. *Figure 3*

COMPONENT.	Illus. No.	Part No.	No. per Set.	£ s. d. Price Each.
Exhaust Pipe	155	B110 E1	1	1 5 0
" " Welded (1950 $\frac{1}{2}$ onward)	155	B110 E1W	1	1 7 6
" " Clip	156	B110 E4	1	9
" " " Bolt and Nut	157	B110 E4A	1	3
" " Union	158	B110 E5	1	2 6
Silencer	159	B110 E6	1	1 5 0
" Clip	160	B110 E4	1	9
" " Bolt and Nut	161	B110 E4A	1	3
" Attachment Clip	162	B110 E7	1	6
" " " Bolt...	N/1	B110 E11	2	4
Silencer Attachment Clip Bolt Washer...	N/1	B110 E13	2	1
Silencer Attachment Clip Bolt Spring Washer	N/1	B110 E14	2	1
Silencer Attachment Clip Bolt Nut	N/1	B110 E12	2	2

CHAINGUARDS AND ENGINE SHIELDS.

Driving Chainguard	167	B110 G4	1	6 0
Chainguard Bolt	N/1	B110 G15	1	4
" " Washer	N/1	B110 G16	1	1
Pedal Chainguard	170	B110 G8	1	5 6
Engine Shield, Offside	171	B110 G10	1	1 2 0
" " Nearside...	172	B110 G9	1	1 2 0
" " Bridge	173	B110 G23	1	8 0
" " Bolts	N/1	B110 G19	4	4
" " " Washers ...	N/1	B110 G20	4	1
" " " Setscrews ...	N/1	B110 G21	5	2
" " " Washers ...	N/1	B110 G22	5	1
" " Spacer Short ...	178	B110 G12	1	3
" " " Centre ...	179	B110 G13	1	3
" " " Long	180	B110 G11	1	5
" " Bolt	181	B110 G14	1	1 6
" " " Washers ...	N/1	B110 G18	2	1
" " " Nuts	N/1	B110 G17	2	2

LIGHTING SYSTEM.

Lighting Set Complete	N/1	B110 LI	1	1 11 3
Head Lamp, with Cables	188	B110 LIA	1	1 2 3
Wiring Harness	189	B110 LIB	1	Not supplied separately.
Lighting Connection	190	B110 LIC	1	9
Tail Lamp	191	B110 LID	1	4 0
" " Fixing Screws	N/1	B110 LIE	3	} per set 4
" " " " Nuts	N/1	B110 LIF	3	
Flat Battery	N/1	B110 A22	1	9

SUNDRIES.

COMPONENT.	Illus. No.	Part No.	No. per Set.	£ Price Each.	s. d.
Speedometer Head	196	B110 A3	1	2	0 0
„ Drive Cable Comp. N/I		B110 A6	1	16	0 0
„ Cable Outer Casing 197		B110 A7	1	8	0 0
„ Cable Inner Driving Cable ...	198	B110 A8	1	8	0 0
„ Drive Gearbox ...	199	B110 A4	1	18	0 0
„ „ Gear Ring... 200		B110 A5	1	6	6 6
„ Set Complete ... N/A		B110 A2	1	3	3 6
Bulb Horn	206	B110 A1	1	9	6 6
Saddle Bag	207	B110 ST3	1	5	0 0
Seat Pillar	221	B110 ST1	1	3	6 6
Saddle	222	B110 ST2	1	18	6 6
Licence Holder	226	B110 A11	1	4	0 0
Inflator	N/I	B110 A19	1	7	0 0
Speedometer Head Bracket ...	196A	B110 A3A	1	1	3 3
„ Drive Enclosed Gearbox N/I		B110 A4E	1	12	0 0
Speedometer Drive Cable Complete for Enclosed Drive ...	N/I	B110 A6E	1	16	0 0
Speedometer Drive Outer Casing for Enclosed Drive ...	N/I	B110 A7E	1	8	0 0
Speedometer Drive Inner Driving Cable for Enclosed Drive ...	N/I	B110 A8E	1	8	0 0

TOOLS.

Magneto Spanner	208	B110 A16A	1	5	
Box Spanner, $\frac{1}{2}$ " B.S.W....	209	B110 A12	1	5	0 0
„ „ $\frac{5}{16}$ " — $\frac{3}{4}$ " B.S.W. ...		B110 A13			
„ „ $\frac{3}{16}$ " — $\frac{1}{4}$ " B.S.W. ...		B110 A14			
Tommy Bar	210	B110 A15	1		
Cone Spanner	211	B110 A16	1	1	3 3
Exhaust Pipe Spanner	212	B110 A17A	1	3	0 0
Plug Spanner	213	B110 A21	1	1	6 6
Screw Driver	214	B110 A18	1	1	6 6
Spanner, D.E.	215	B110 A17	1	1	6 6
Grease Gun	216	B110 A20	1	4	6 6

The VILLIERS Mk. 2.F. AUTO CYCLE ENGINE

SPECIFICATION.

The Mark 2.F. Engine is built in unit with a countershaft clutch, the drive from engine crankshaft being by an endless roller type chain running in an oil bath case.

A deeply finned cast-iron cylinder with one exhaust and two transfer ports of unique design is used, the carburetter being mounted on a stub at the rear.

Secured to the cylinder by four bolts is an aluminium alloy head in which is fitted a 14 mm. sparking plug (Lodge H14). The aluminium flat-topped piston carries a floating gudgeon pin located endways by circlips. The "big end" bearing consists of two rows of steel rollers running on a crankpin fitted in double crankwebs carried by a large ball journal bearing on each side.

Power is taken through a two-plate cork insert clutch, control being by Bowden cable and lever fitted on cycle handlebar.

Final drive to rear wheel is by a roller chain. A Villiers Junior pattern carburetter is fitted at the rear of cylinder, control being by a single lever. A strangler for easy starting, and within the reach of the rider, is provided, and a gauze type air filter prevents the entry of dirt and water.

A decompressor to assist in starting the engine is fitted in the cylinder head, control being by Bowden cable and lever fitted on the handlebar.

The ignition and lighting current is provided by the Villiers flywheel magneto, a special model giving increased output having been developed. The headlamp now carries a 6 volt 12 watt bulb.

SPECIFICATION

Bore	47 mm. = 1.8504 inches.
Model	MK. 2.F.
Stroke	57 mm. = 2.244 inches.
Capacity	98 cc. = 6 cubic inches.
Horse-Power, Maximum	2.0 at 3,750 r.p.m.
Engine Sprocket	17 Teeth.
Clutch Sprocket	42 Teeth.
Ratio, Engine to Clutch ...	2.47.
Final Drive Sprocket ...	11 Teeth, $\frac{1}{2}$ inch Pitch for "COVENTRY" Chain No. 112045.
Chain Line, Final Drive ...	$1\frac{7}{8}$ inches.
Final Gear Ratio	10.76—I with rear wheel sprocket, having 48 Teeth. Tyre size 26 inches.
Exhaust Pipe	$1\frac{1}{4}$ inch external diameter.
Sparking Plug	14 mm. Lodge H14, Point Gap .018" to .025".
Carburetter	Villiers "Junior" Type.
Carburetter Jet Size ...	Marked J8.
Carburetter Taper Needle	No. 2 $\frac{1}{2}$. Setting $\frac{29}{32}$ " out.
Ignition Timing	$\frac{1}{8}$ " before Top Dead Centre.
Contact Breaker	Point Gap .015" Maximum.
Lubrication, Engine ...	Petrol Mixture in Fuel Tank (Oil S.A.E. 30).
Lubrication, Chaincase ...	Castrol "D" Oil (S.A.E. 140) filled to level plug. See Fig. 1.
Lighting Set	Head Lamp Bulb, 6 volt 12 watt S.B.C. Head Lamp Pilot Bulb, 4 volt .3 amp. M.E.S. Tail Lamp Bulb, 4 volt .3 amp. M.E.S. Parking Battery, Ever-Ready No. 1289.

INSTRUCTIONS FOR USING THE VILLIERS MARK 2.F. UNIT.

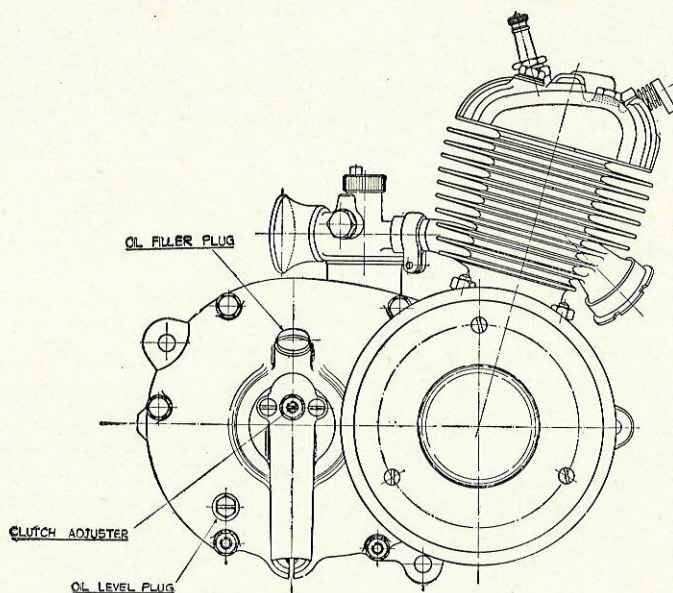
BEFORE USE.

CHAINCASE.

Remove the chaincase oil filler and oil level plugs, see Fig. 1, and with the cycle off the stand pour in CASTROL "D" OIL (S.A.E. 140) until it runs out at the level plug hole. Refit plugs securely. Examine every 500 miles and top up if necessary.

FUEL TANK.

Fill up tank with "PETROIL" mixture made by mixing thoroughly half a pint CASTROL XL OIL (S.A.E. 30) with one gallon of PETROL. On no account must the oil be put into the tank before mixing, and it is advisable to pour the mixture through a fine mesh gauze when putting into tank.



STARTING THE ENGINE

Where the owner has had no previous experience of driving it is advisable to become accustomed to the use of the various controls, and, therefore, before attempting to start the engine, the cycle should be put on its stand, the rear wheel being off the ground.

The carburettor control lever is moved by the right hand and opens inwards to increase the speed of the engine.

The decompressor or compression release valve, as it is sometimes called, is controlled by a small lever usually fixed on the underside of the left handlebar and immediately in front of the clutch control lever.

The function of the decompressor is to release the pressure in the cylinder head, so making it possible to rotate the engine by means of the pedalling gear when starting by this method.

The fuel tap can now be turned to the ON position, and the strangler closed by lifting the lever at rear of carburettor. Open the carburettor control lever about one-third its total movement, and flood the float chamber by depressing tickler. Rotate engine by pedalling whilst sitting on the saddle, and the engine should start when the decompressor lever is released. As the engine warms up after running for half a minute or so, the strangler can be gradually moved to the fully open position. In very cold weather it may not be possible to do this immediately, in which case leave strangler partly closed until engine is warmed up. If opened up too quickly spitting back through carburettor will occur. When the engine is warm from previous running, it should not be necessary to either flood the carburettor or use strangler when restarting.

Having started the engine by the pedals, the machine still being on the stand, withdraw clutch by pulling up the clutch control lever, on some machines the lever is held in the "OUT" position by a spring loaded trigger. The machine can now be pushed off the stand, the rider still being astride the saddle, and a get-away can be made by gently letting in the clutch at the same time opening the throttle to take the load.

An alternative method of starting is by pushing the machine. Flood the carburettor, open the throttle and depress the compression release valve as before, wheel the machine forward a couple of yards and release the valve control lever, and then, as the engine fires, pull up the clutch control lever. With the clutch disengaged and the engine running, the rider can then mount the machine and move off by clutch and carburettor control.

The engine is stopped by moving the control lever to the closed position, and just before coming to rest the release valve should be used to prevent the engine jerking over compression.

FAILURE TO START.

If the engine will not start after a reasonable number of attempts, ascertain if this is due to lack of compression, no fuel or faulty ignition. **COMPRESSION** should be felt whilst rotating the engine by the pedalling gear, with the throttle partly open.

FUEL SUPPLY. Depress tickler at side of carburetter body. If fuel is reaching float chamber, it will spurt from vent hole in tickler cap.

FAULTY IGNITION. Unscrew spark plug from cylinder head and with the ignition cable attached place on a flat metal part of engine. When the engine is rotated a spark should be visible at the points. If no spark, detach cable and hold end $\frac{1}{8}$ " from cylinder whilst rotating engine.

If these preliminary tests prove negative a more detailed examination will have to be made, and reference should be made to "Tracing Engine Troubles" on pages 25-27.

RUNNING IN

For the first 500 miles the engine must not be over-driven, and during this period the throttle should not be fully opened. The engine must not be allowed to race, or run at a high speed under a light load. Do not exceed 20 m.p.h. during the running-in period, and after covering about 500 miles it will very likely be necessary to weaken off the mixture by lowering slightly the taper needle in carburetter. How to do this is explained in the section dealing with the carburetter.

PERIODICAL ATTENTION.

It is advisable, in order to enjoy trouble-free riding, that the engine and machine should have periodical attention, and the following hints will help to keep the engine in good running order :—

Every 500 miles inspect level of oil in clutchcase by removing Level Screw (see Fig. 1). Top up if necessary with grade of oil previously recommended.

Examine the contact breaker points after the first 500 miles have been completed, as the points may require slight adjustment after initial bedding in. The correct gap when points are fully open is .015". They should also be kept free from oil.

Every 2,000 miles remove cylinder head and scrape out carbon. The edges of the exhaust port in the cylinder can be cleaned when the piston is at the bottom of the stroke. Clean piston top.

It should not be necessary to remove barrel and piston every 2,000 miles ; every 4,000 miles should be sufficient.

Every 2,000 miles remove and clean silencer, exhaust pipe and carburetter air filter.

Occasionally check clutch control cable adjustment. There should be a very small amount of slack in the clutch cable when clutch is engaged. Adjust clutch cable by means of adjustment screw on clutch bridge casting (see Fig. 1). Screw adjuster in until there is just a trace of slack in the cable ; this is essential, otherwise the clutch may be slightly disengaged and cause slipping. Tighten locknut after adjustment.

Periodically examine joints, cylinder head, cylinder base, crankcase and clutch case for gas or oil leaks, and tighten if necessary. Examine all visible nuts, bolts and screws for looseness.

CARBURETTER.

The Villiers Junior Carburetter is used with the Mark 2.F. Engine, and it should not be necessary to alter the setting obtained by the maker (except for needle adjustment) after road-testing the machine.

OPERATION OF CARBURETTER.

The function of the Carburetter is to supply a mixture of petrol and air in correct proportion under all conditions. In the Villiers Carburetter the float chamber surrounds the jet and centrepiece, and in the chamber an annular float rises as the fuel enters the chamber until the correct level is obtained, then the forked lever which rests on the top of the float lifts the fuel needle, which has a conical end and shuts off the fuel supply by closing the hole in the bush fitted in carburetter body.

Fuel enters the centrepiece through a hole in the side and passes through the calibrated jet fitted in the bottom of centrepiece.

The throttle operated by the cable is fitted with a taper needle, which extends below the throttle and into the centrepiece. When the throttle slide closes the air supply, the largest diameter of the needle nearly closes the fuel outlet, but when the slide is lifted, admitting more air, the smaller diameter of the needle now in the centrepiece allows more fuel to pass. A suitable combination jet size, needle position and taper will give a correct mixture strength on all throttle openings.

The fuel level is maintained by a float and needle valve, and under no circumstances should any alteration be made either to the above or to the float lever.

The amount of fuel supplied to the engine is controlled by one jet, which is fixed in the bottom of the centrepiece, and by the taper needle which is carried in the throttle and operates in the top end of the centrepiece.

The jet is not detachable from the centrepiece and is not supplied separately.

The Carburetter is automatic in action and gives a correct mixture over the whole range of throttle openings, the only available adjustment being the position of the taper needle in the throttle (which controls the size of the jet orifice), and is necessary to suit individual engines.

The needle controls the mixture strength from tickover to approximately two-thirds throttle, the jet controls the remainder.

The position of the taper needle in the throttle is determined during testing at the works, but should it be necessary to alter the setting this is done by the needle adjusting screw situated in the centre and top of throttle. Screw in to weaken mixture, i.e. lower needle. The screw should not be loose in the throttle slide, as it is likely to move and alter the setting. It is split to make it grip the hole. Should the screw be loose the split portion should be gently prised apart before fitting.

NOTE.—The taper needle spring should be fitted with the small coil under the head of needle.

TO DISMANTLE CARBURETTER.

TO REMOVE THROTTLE FROM BODY.

Open throttle to full open, undo top ring, throttle can now be withdrawn. Take care not to damage or bend the taper needle. Return throttle to fully closed position, the guide peg attached to top disc will then be exposed and, if necessary, the control cable can be detached by compressing throttle spring, the inner cable then being lifted out through the slot.

TO REMOVE CENTREPIECE AND FUEL NEEDLE.

Unscrew the bottom nut underneath the float chamber cup. Next remove the fibre washer, the cup with float inside, and, if loose, the fibre washer between cup and carburetter body. Then remove the small centrepiece locking screw situated below and to the rear of the banjo petrol pipe union, the centrepiece with fibre washer under head can now be pushed up through the throttle bore.

When the centrepiece is removed the fuel needle lever can swing round and will thus allow the fuel needle to drop out of its seating; the needle should therefore be removed at the same time as the centrepiece and kept in a safe place until required for reassembly. No attempt should be made to remove the fuel needle lever from the carburetter body.

TO REMOVE TICKLER.

This should not be necessary unless the vent hole in base of body is blocked, in which case remove the split cotter pin at end of tickler, which will release the tickler and its spring. One vent hole is at the bottom of the hole where the spring fits, the other being in the side of the tickler cap.

CARBURETTER SETTING.

The Carburetter is fitted with a taper needle marked $2\frac{1}{2}$ on the parallel portion under the head, a centrepiece marked J8 on the head, and the jet (which is not detachable) marked 8 on the hexagon portion. The normal taper needle setting is $\frac{2\frac{1}{2}}{32}$ " from the bottom of the throttle to the end of the needle, but this is usually a matter of individual adjustment to suit each engine.

REASSEMBLY OF CARBURETTER.

This, of course, is the reverse process to that already described ; the fuel needle should be fitted point first, the fuel needle lever should then be placed so that it holds the needle in position whilst the centrepiece is replaced. Care should be taken to see that the centrepiece complete with fibre washer is fitted so that the locking screw locates in the slot in the head of the centrepiece. When refitting float do not overtighten bottom nut as this may distort the jet.

FLYWHEEL MAGNETO

The Villiers 6-Pole Flywheel Magneto provides alternating current for both ignition and lighting. A connector is fitted to the lighting cable and this must be unscrewed should the engine be removed. Keep the rubber sleeve in position over the connector, otherwise a short circuit may occur.

The armature plate which carries the ignition coil, lighting coils, and contact breaker mechanism is secured to the engine crankcase by four screws. The H.T. Lead from ignition coil to sparking plug is detachable by unscrewing from armature plate and when refitting it is important to make sure that the brass pad carried by the spring and secured to the terminal makes contact with the soldered disc on the outside of the ignition coil.

In the magneto flywheel are fitted four permanent magnets and two dummies, and it is very important should these be removed at any time that they are replaced in the original position in relation to the peak of the cam profile ground on the centre boss which is rivetted to the arms of the flywheel.

CONTACT BREAKER ASSEMBLY.

This is of the latest improved type requiring a screwdriver only to adjust the contact points. To adjust the contact points proceed as follows :—

Turn flywheel until rocker pad is on top of cam profile of flywheel boss. Release the screw "A," see illustration, Fig. 2.

Position Bracket "B" with .015" feeler gauge between contact points, tighten screw, taking care not to use too much force. It is not necessary to disturb screw "C" when adjusting point gap.

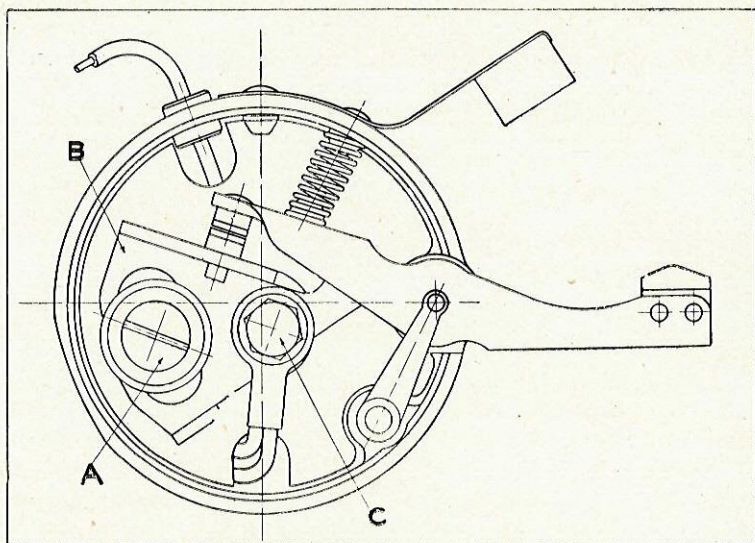


FIG. 2.
CONTACT BREAKER ASSEMBLY.

A felt pad is used to keep the cam in a slightly oily condition, and is impregnated when new with grease. This can, if visibly dry, be oiled with a small amount of the heaviest oil available. It is better, however, to soak the pad in a molten high temperature grease if it is convenient to detach the box itself for this operation. If too much oil is put on the felt pad it may creep along the Rocker Arm, get on the contact points and so cause ignition trouble.

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 nut is imprisoned in the flywheel and acts as an extractor when turned anti-clockwise looking at the Magneto.

Before access can be made to the nut, of course, the flywheel cover has first to be removed by releasing the three screws holding cover to flywheel.

TIMING OF THE MAGNETO.

The contact breaker points should commence to open when the piston is $\frac{1}{8}$ " before top of stroke. Timing marks are stamped on both the armature plate and flywheel rim.

The mark on the armature plate is stamped on a small boss on the rim of the armature plate, and the mark on the flywheel rim coincides with this mark when the piston is at the top of the stroke. On

checking timing it is only necessary to remove the sparking plug ; turn flywheel until the two marks are opposite when the piston should be at top of stroke.

When timing ignition after dismantling loosely fit the flywheel to shaft and, having set piston $\frac{1}{8}$ " from top of stroke, rotate flywheel without turning the crankshaft until the contact points commence to open. Tighten up flywheel centre nut sufficiently tight for crankshaft to be rotated. Check to see that the flywheel has not slipped. Finally tighten the centre nut with the special hammer tight spanner, refit cover and screws.

LIGHTING SET

The head and tail lamps are fitted with single pole, single contact bulbs, and it is essential that both lamp bodies make metal to metal contact with the cycle frame to ensure a good EARTH for the lighting circuit.

The correct bulbs are listed on the DATA page, and the dry battery fitted in the head lamp is the EVER-READY No. 1289, or one of similar size and capacity.

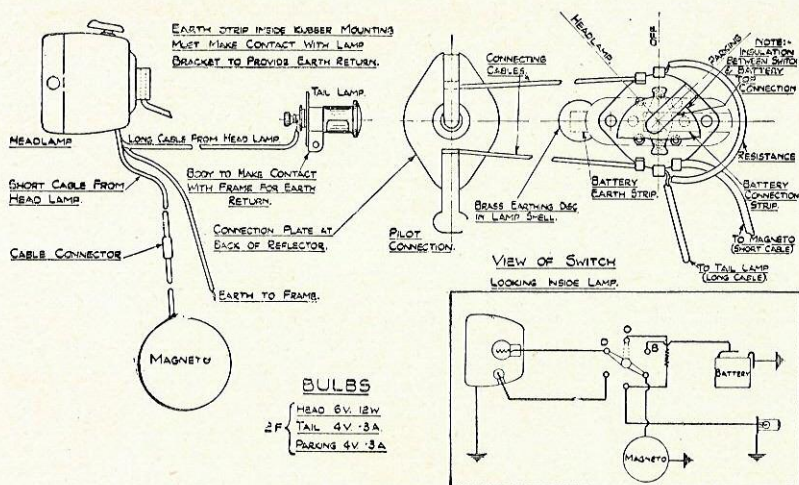


FIG. 3.
WIRING DIAGRAM Mk. 2.F.

TRACING TROUBLES

For the satisfactory running of any Villiers Engine it is essential that three main conditions are fulfilled, and by making a systematic and intelligent investigation the faults can usually be located and rectified. Usually when the engine stops, symptoms give a clue to the cause, but where this is not the case, the trouble can be more easily diagnosed by following a definite method of investigation.

The three conditions mentioned above are as follows :—

1. The required quantity of combustible mixture (petrol and air) must enter the engine, which means that a sufficient supply of fuel must be available at the carburetter and that the throttle should open and close freely.
2. There must be a good spark at the plug points, when under compression, and at the correct time in relation to the position of piston on its upward stroke.
3. The engine must be in good mechanical condition, there must be good compression in cylinder and crankcase, and no air leaks at the various joints.

When cause of the trouble is not evident carry out a preliminary examination covering the following points, but if this fails to trace the cause reference should be made to the Fault Finding Charts.

Having made sure that there is "petrol" in the tank, and tap is in the ON position, depress tickler to check if there is any stoppage or obstruction in the fuel supply either in the tap, fuel pipe, banjo union or fuel needle seating. Being satisfied that fuel is reaching the carburetter, next unscrew sparking plug and with high tension lead attached lay on cylinder head. Test by turning engine by pedals with cycle on stand, and if the spark is satisfactory it is possible that the timing is incorrect. Finally examine the carburetter controls to make certain the throttle is actually opening when the control lever is moved.

FAULT FINDING CHART

Sequence of Testing	Possible Trouble	Remedy
ENGINE WILL NOT START. Depress tickler on carburetter to check whether fuel is reaching carburetter.	No fuel reaching carburetter. Air lock in petrol pipe.	Turn tap to ON, refill tank, clear air vent in filler cap. Turn on reserve tap where fitted.
If no fuel, even when tap is on and fuel is in tank.	Choked petrol pipe, filter on tap, filter in banjo.	Remove and clean out.
Test for spark by holding sparking plug body on cylinder head.	Fuel needle sticking in seating. Leak along insulation of plug or high tension lead.	Dismantle carburetter and fit new needle. Try a new plug of the type recommended and/or new H.T. Lead.
If still no spark : Test for spark at end of H.T. Lead held $\frac{1}{8}$ inch from cylinder fins.	Plug points may be oily or sooted up. If no spark at end of H.T. Lead, contact breaker point gap may be too narrow or points pitted or dirty, or oily. Moisture on insulation of Condenser box. High tension pickup not making good contact on ignition coil due to corrosion or misplacement. Cracked insulation of adjustable contact breaker point. Damaged insulating sleeving on wires connecting contact breaker to coil or condenser. Faulty connection to low tension wire of ignition coil. Faulty condenser. Faulty ignition coil.	Clean plug or fit new one. Adjust point gap to .015 inches. Clean. Clean and dry out. Clean and correct. Renew. Replace with new sleeving. Correct. Replace. Replace.
If above tests are OK but engine will not start.	Mixture may be too rich due to use of Strangler, or raising of taper needle when engine is warm, or incorrect setting of taper needle. Air leaks at carburetter stub or manifold joint, causing weak mixture. Incorrect ignition timing due to flywheel having slipped on driving shaft taper.	Open throttle wide and depress kickstarter several times to clear engine of petrol mixture. Adjust taper needle, drain crankcase. Correct. Check, following instructions given for respective type of engine.

ENGINE FOUR OR EIGHT STROKES.

Strangler may not be fully open or taper needle control in the "RICH" position. Air filter where fitted may need cleaning.

Check by watching for excessive smoke from exhaust pipe or silencers.

Mixture too rich.

Engine may four stroke for a little while after standing due to accumulation of oil in crankcase.
Flooding of carburettor.

ENGINE LACKS POWER.

Engine out of tune, bearings worn. Unsuitable sparking plug.
Loss of compression.

Incorrect "Petroil" mixture.

Excessive carbon deposit on piston crown, and cylinder head.
Exhaust system choked with carbon.

Incorrect carburettor setting.

Air cleaner choked.

Obstruction in fuel supply.

Incorrect ignition timing.

Brakes binding.

Driving chains too tight.

Weak mixture due to air leaks at carburettor stub or manifold joint, crankcase and cylinder base joints.

Crankcase drain screw loose or missing.

Worn crankshaft bearings or leaking compression gland.

Ignition timing too far advanced.

Sparking plug lead detached.

Plug points bridged by oil, carbon, or deposit caused by use of leaded petrol.

Short circuit of high tension current by water on H.T. Lead.

Lower taper needle by moving to "WEAK" position. Lower needle by adjuster where fitted in throttle.

Usually ceases when engine has been running for a few minutes unless too much oil has been mixed with the petrol.

Persistent flooding is usually due to dirt under fuel needle seating, or sticking fuel needle, or damaged seating or punctured float.

Overhaul. Replace with recommended type.

Tighten cylinder head bolts. Worn piston rings.

Correct mixture is 1 part Oil—16 parts Petrol.

Decarbonise.

Clean out Silencer and Exhaust Pipes.

Check with Setting Chart.

Wash in petrol, drain and dip in thin oil

Clean out tap, fuel pipe and filters.

Check against Timing Chart.

Adjust.

Tighten all joints.

Tighten or replace.

Replace.

Correct.

Replace and tighten nut.

Clean or replace.

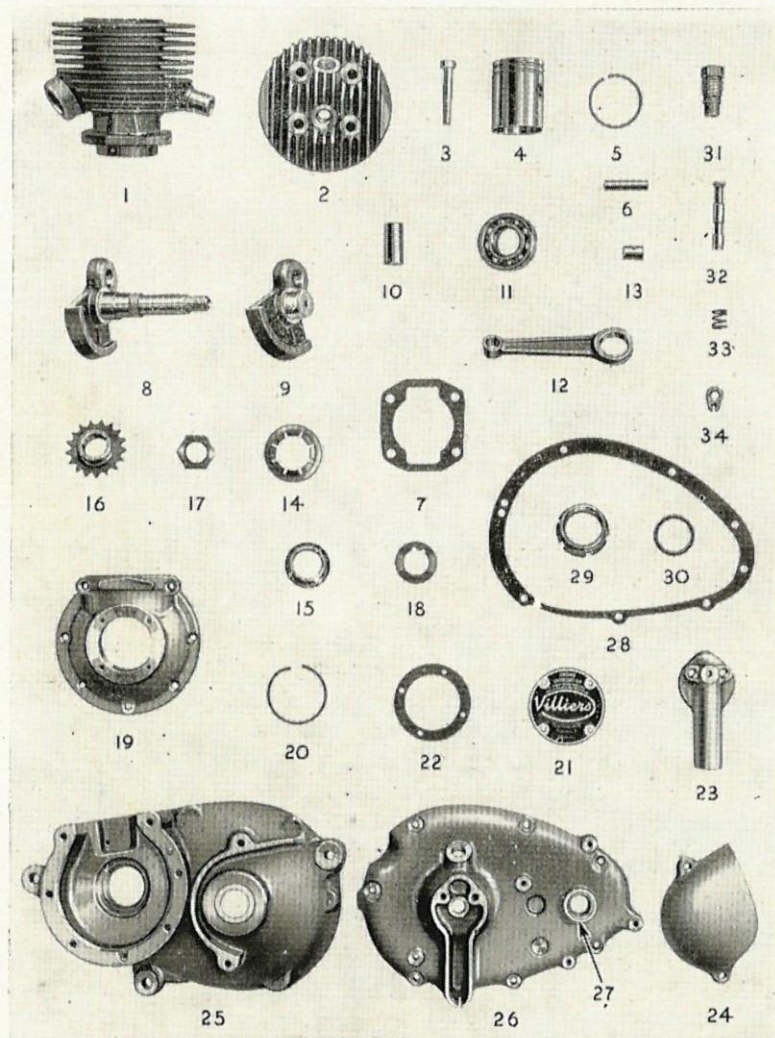
Dry out.

ENGINE WILL NOT RUN SLOWLY.

ENGINE SUDDENLY STOPS FIRING.

MARK 2.F. ENGINE UNIT.

ENGINE.



Always quote Engine Number when ordering spares.

VILLIERS

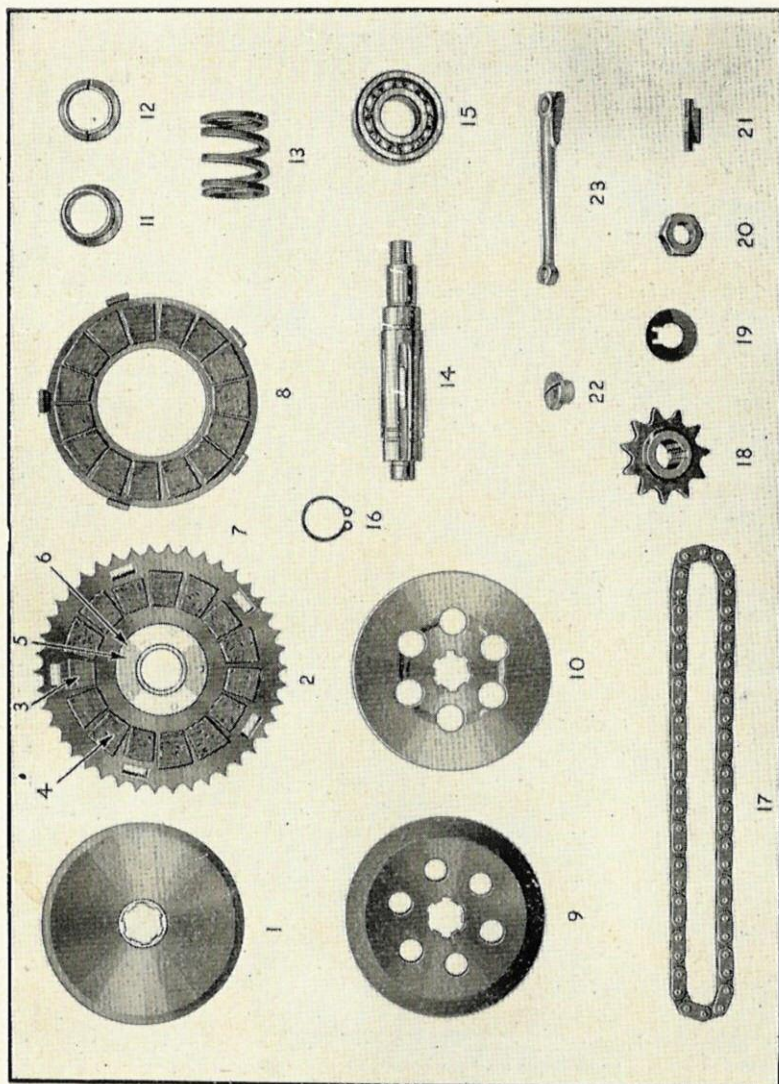
MARK 2.F. ENGINE UNIT

ENGINE.

COMPONENT.	Illus. No.	Part No.	No. per Set.	£ Price Each.	s. d
Cylinder	1	B7261/2	1	2	10 0
„ Head	2	B7455	1	16	0
„ „ Bolt	3	E3907	4		8
Piston, Bushed, Standard Size ...	4	C7045	1	1	0 0
„ Ring, Standard Size ...	5	E6141	2	1	9
„ „ .015" Oversize ...	5	E7516	2	1	9
„ „ .03" „ ...	5	E7518	2	1	9
Gudgeon Pin	6	E7198	1	2	6
Joint Washer, Cylinder Base ...	7	E7168	1		4
Driving Shaft, Right Hand ...	8	D7266	1	1	10 0
„ „ Left „ ...	9	D7267	1	12	0
Crankpin, .001" Oversize ...	10	E7493	1	4	6
Ball Bearing, Driving Shaft ...	11	6205	2	—	
Con. Rod, .001" Oversize ...	12	D7494	1	12	6
„ „ Small End Bush ...	13	E6192	1	2	6
Crankcase Gland Spring ...	14	E6221	1	1	0
„ „ Bush ...	15	E6724/1	1	4	0
Engine Sprocket	16	E6725	1	7	0
„ „ Nut	17	E6930	1		9
„ „ Lockwasher ...	18	E7197	1		4
Crankcase, Left Hand ...	19	B7262	1	1	0 0
„ Bearing Circlip ...	20	E7189	1		6
„ End Plate	21	E7275	1	2	0
„ „ „ Washer ...	22	E7276	1		3
Clutch Bridge	23	D7410	1	6	0
Chain Cover	24	D7413	1	5	0
Crank and Clutchcase ...	25	A7408	1	2	0 0
Clutch Cover	26	A7409	1	1	15 0
„ „ Bush	27	E7385	1	2	6
„ „ Washer	28	C7417	1		4
Nut, Exhaust Pipe	29	E3934	1	1	3
Washer for Nut	30	E4453	1		3
Body, Release Valve	31	E3064	1	3	0
Stem, „ „	32	E1280	1	1	9
Spring, „ „	33	E1163	1		5
Nut, „ „	34	E1276	1		3

MARK 2.F. ENGINE UNIT.

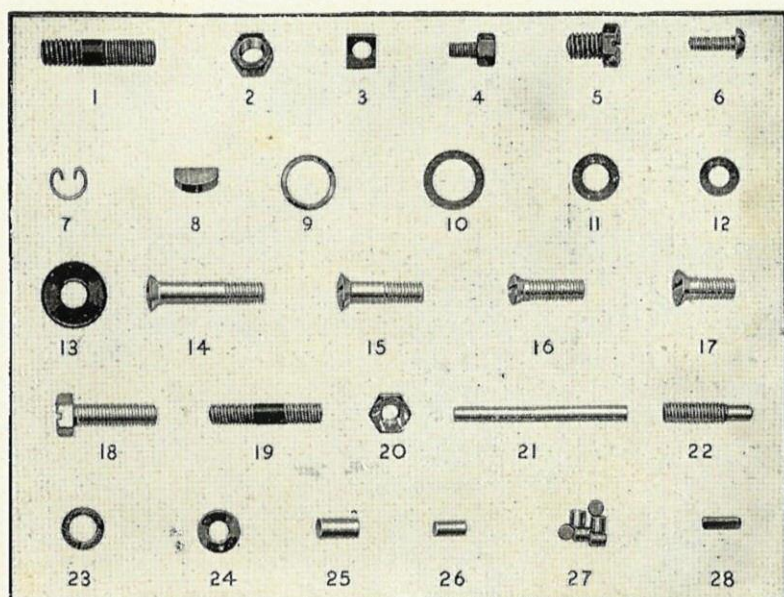
ENGINE—*contd.*



Always quote Engine Number when ordering spares.

ENGINE—contd.

COMPONENT.	Illus. No.	Part No.	No. per Set.	£ Price Each.	s. d.
Clutch Plate, Outer ...	1	D5433	1	5	3
" Sprocket, Assembly ...	2	D5232	1	11	6
" Cork, Small ...	3	E5220	5		1
" " Large ...	4	E4960	25		1
" Sprocket Side Plate ...	5	E4955	2		5
Rivet for Side Plate ...	6	E5001	5 per set		2
Sprocket Ball Race ...	7	E4948	1	2	3
Clutch Plate, Corked ...	8	D5233	1	5	9
" " Outer ...	9	D4951	1	5	3
" " Centre, Dished ...	10	D4954	1	5	3
" Spring Bush, Long ...	11	E5556	1	1	6
" " " Short, Split ...	12	E7608	1 per pair	1	6
" Spring ...	13	E5558/1	1	1	2
" Shaft ...	14	C7411/1	1	10	0
" " Ball Bearing ...	15	6204	2	—	
" " Circlip ...	16	E7454	1		9
Primary Chain, 54 Pitches ...	17	110037	1	12	0
Drive Sprocket, 11 Teeth ...	18	D7415	1	6	6
" " Lockwasher ...	19	D6125	1		4
" " Nut ...	20	E3931	1		6
Clutch Cotter ...	21	E4944	1		10
Oil Filler Plug ...	22	E4104	1		10
Clutch Lever ...	23	D7412	1	2	6

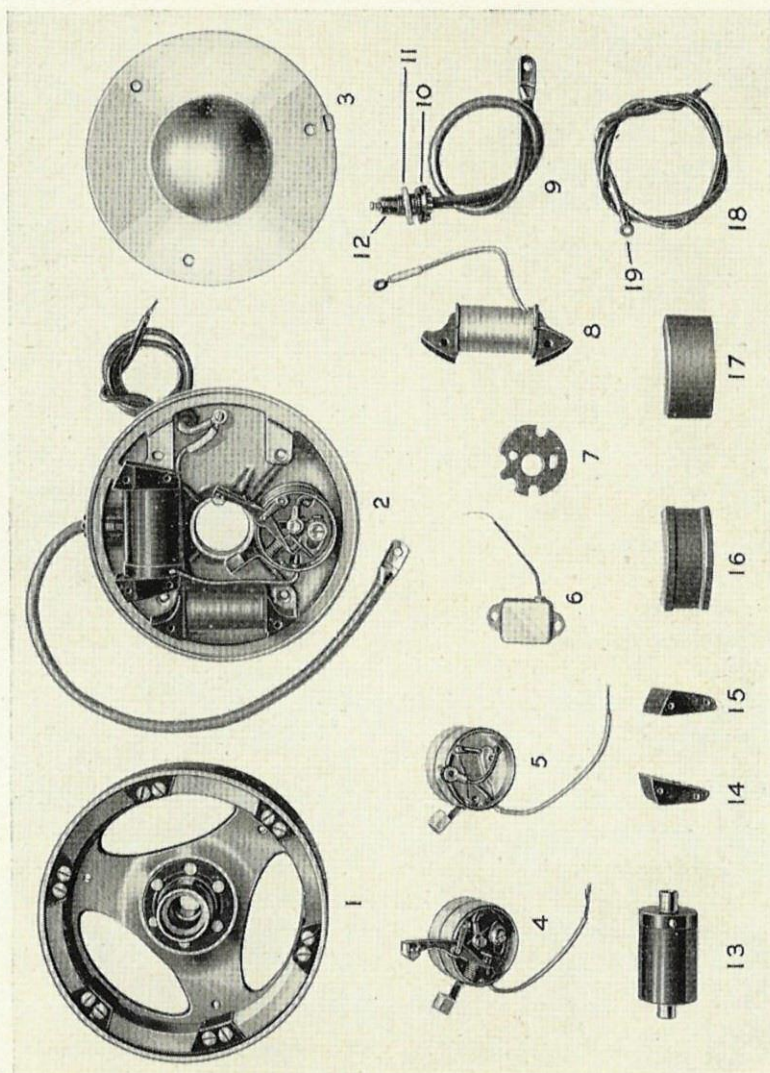


ENGINE—contd.

COMPONENT.	Illus. No.	Part No.	No. per Set.	£ s. d. Price Each.
Cylinder Base Stud	1	E363	4	3
Nut for Stud	2	E3961	4	2
Clamp, Release Valve	3	E1545	1	2
„ Screw, Release Valve ...	4	E6737	1	2
Oil Level Plug	5	E1962	1	4
Screw, Crankcase End Plate ...	6	E7530	4	2
Circlip, Gudgeon Pin	7	E5218	2	4
Key, Drive Sprocket	8	E5581	1	3
Joint Washer, Release Valve ...	9	E3318	1	2
„ „ Oil Filler Plug ...	10	V107×3	1	2
„ „ Level Screw ...	11	E1905	1	2
„ „ Crankcase Drain Screw ...	12	V476	1	1
Washer, Cylinder Head Bolt ...	13	E5808	4	2
Crankcase Screw, $1\frac{5}{16}'' \times 90^\circ$...	14	E7271	2	5
„ „ $\frac{3}{4}'' \times 90^\circ$...	15	E7128	4	4
Clutch Bridge Screw, $1\frac{3}{16}'' \times 60^\circ$...	16	E4934	4	3
„ Cover Screw, $1'' \times 90^\circ$...	17	E7326	2	3
„ „ Bolt & Drain Screw ...	18	E3222	4	6
Stud, Clutch Cover, $\frac{1}{4}'' \times 1\frac{5}{16}''$...	19	E5107	2	3
Nut for Stud, Small Hex. ...	20	E2539	2	2
Nut for Clutch Adjuster Screw	20	E401	1	2
Clutch Operating Rod	21	E7414	1	9
„ Adjuster Screw	22	E6567	1	6
Spring Washer, $\frac{5}{16}''$	23	E1050	4	2
Plain Washer, $\frac{1}{4}''$	24	E2924	5	1
Dowel, Clutch Case	25	E7619	2	3
„ Crankcase	26	E2677	1	3
Crankpin Roller	27	E7452	28	2
Key, Engine Sprocket	28	E5124	1	3

MARK 2.F. ENGINE UNIT.

MAGNETO.

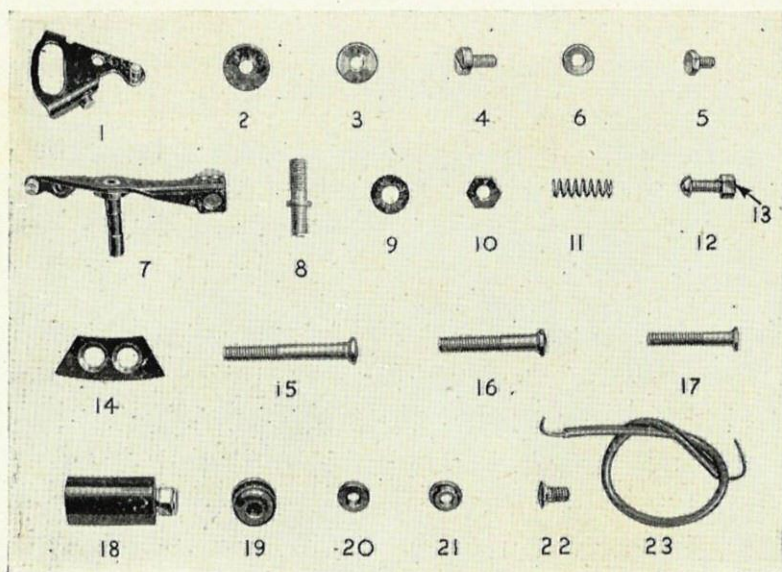


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MAGNETO.

COMPONENT.	Illus. No.	Part No.	No. per Set.	£ Price Each.	s. d.
Flywheel Assembly, less Cover...	1	R110	1	4	12 0
Armature Plate Assembly ...	2	A107	1	4	0 0
Flywheel Cover ...	3	M1580	1		4 0
Con. Box Assembly ...	4	M1864	1		18 6
" " Only with Oil Pad ...	5	M1872	1		5 0
Condenser ...	6	M1750	1		4 6
Insulating Pad, Con. Box ...	7	M1803	1		3
Lighting Coil Assembly ...	8	M2049	1		12 0
H.T. Lead Complete ...	9	1148×4	1		4 6
" Terminal ...	10	1124×8	1		1 0
" " Felt Washer ...	11	E869	1		3
" Spring ...	—	1010×11	1		2
" " Pad ...	12	1046×13	1		2
" " Screw ...	—	$\frac{5}{8}$ "×No. 2	1		2
" Coil ...	13	M1361	1	1	0 0
" Coil End, L. Hand ...	14	M1855	1		3 0
" " " R. " ...	15	M1856	1		3 0
Dummy Magnet ...	16	M1553	2		2 0
Magnet ...	17	M1354	4		4 0
Lighting Lead ...	18	125/114	1		7
" " Terminal ...	19	M1291	1		1
Point Bracket ...	1	M1873	1		2 3
Fibre Washer, Locking Screw ...	2	M1805	1		2
Brass " " " ...	3	M1802	1		2
Locking Screw, Point Bracket ...	4	M1801	1		4
Contact " " " ...	5	1006×3	1		2
" " Washer ...	6	1113×5	3		1
Rocker Arm with Point and Pad	7	M1714	1		4 6
Stud, Con. Box Fixing ...	8	1053×1	2		3
Spring Washer for Stud ...	9	1002×13	2		2
Nut for Stud ...	10	1002×15	2		2
Rocker Arm Spring ...	11	1047×3	1		3
Terminal Screw ...	12	M1670	2		3
Nut for Screw ...	13	1113×4	2		1
Top Plate, Pole Shoe ...	14	M1822	6		3
Fixing Screw Pole Shoe ...	15	1002×9	12		3
" " Arm Plate and					
Lighting Coil ...	16	1124×9	6		3
" " H.T. Coil Ends ...	17	M1383	4		3

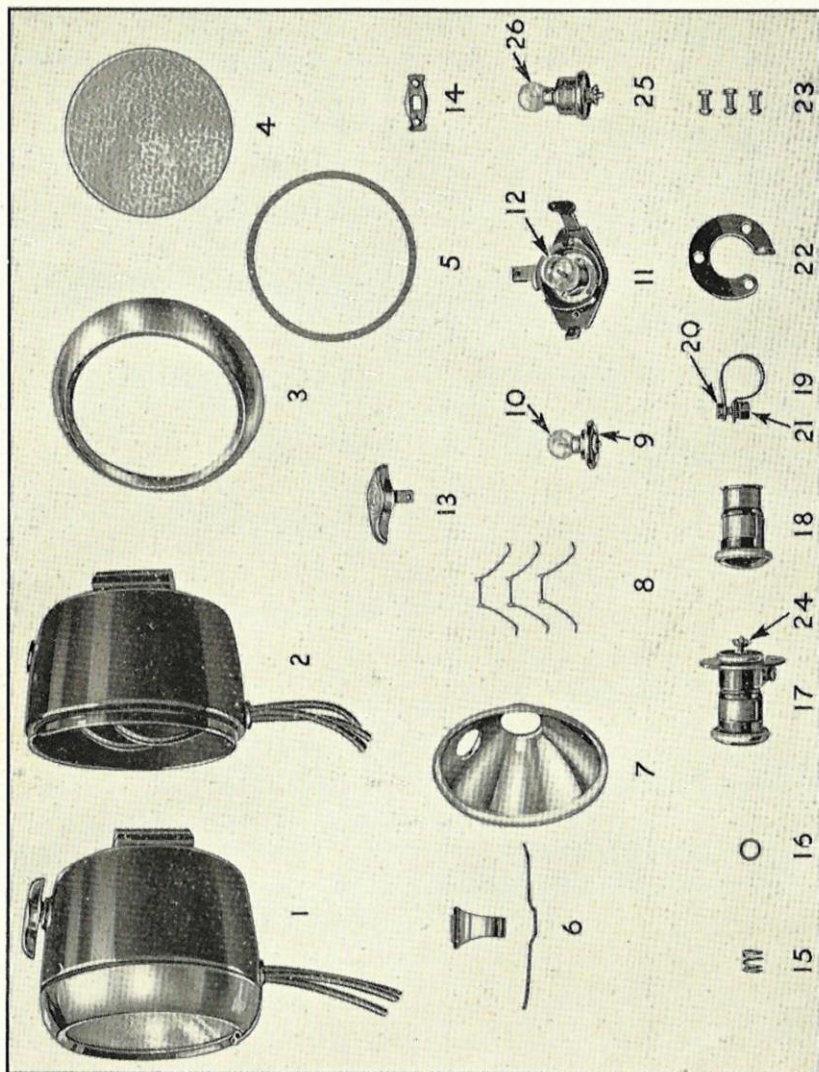
MAGNETO.



MAGNETO—contd.

COMPONENT.	Illus. No.	Part No.	No. per Set.	£ s. d. Price Each
Lighting Lead Connector ...	18	1106×14	1	7
Rubber Grommet ...	19	M1232	1	2
Terminal Bush, Inside ...	20	1013×13	2	3
" " Outside...	21	1013×12	2	3
Screw, Flywheel Cover ...	22	M1228	3	3
L.T. Lead, H.T. Coil to Point Bracket ...	23	482	1	6

LIGHTING SET.

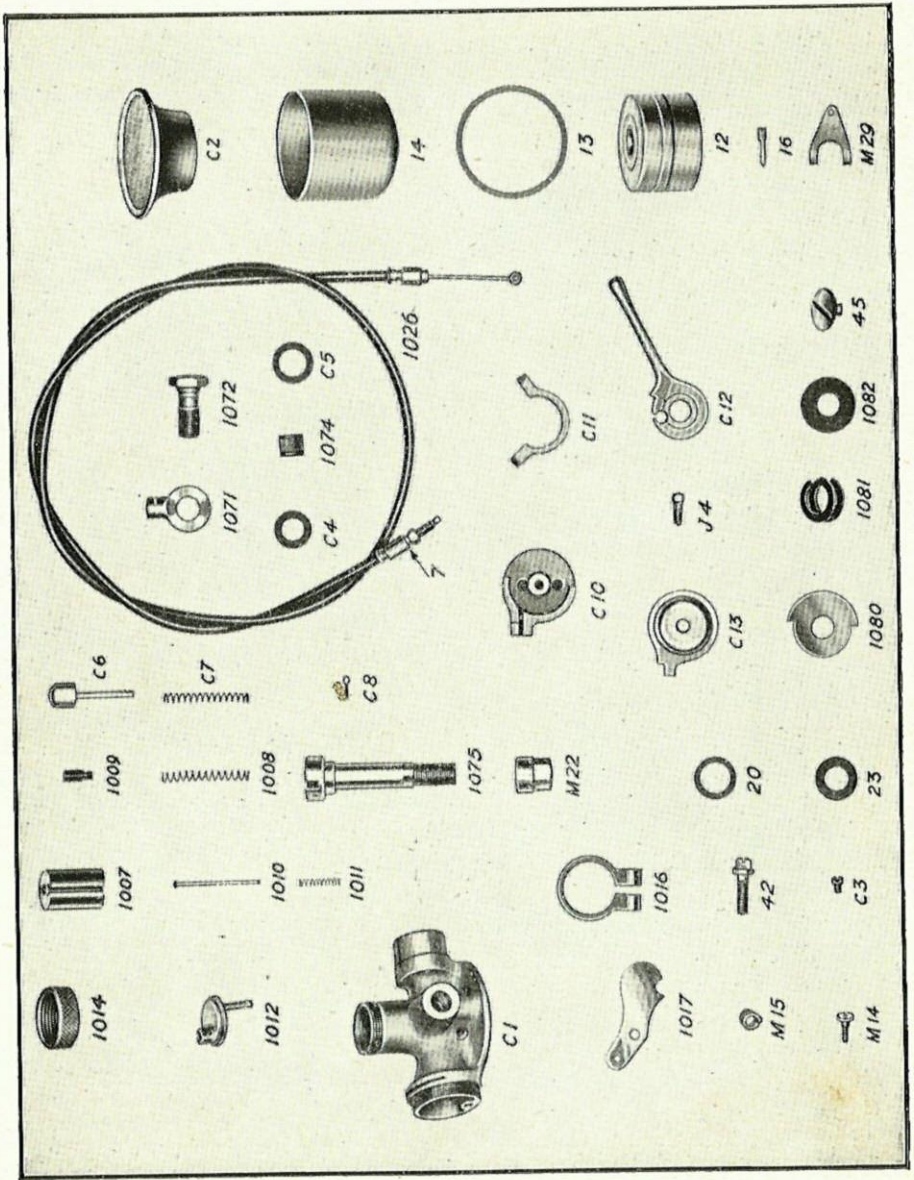


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LIGHTING SET.

COMPONENT.	Illus. No.	Part No.	No. per Set.	£ s. d. Price Each.
Complete Lighting Set, with Head Lamp, Tail Lamp, Bulbs and Cables	—	VRS.304	1	
Head Lamp complete with Cables	1	64004B & D	1	
Head Lamp Body Assembly with Bracket and Cables	2	608094	1	
Front Rim	3	608254	1	
„ Glass	4	608340	1	
Rubber Packing for Glass ...	5	600307	1	
Front Clip and Fixing Wire ...	6	608190	1	
Reflector	7	608552	1	
„ Retaining Wire	8	608073	3	
Pilot Bulb Holder	9	608025	1	
„ „ 4 V.—.3A, Screw Cap	10		1	
Main Bulbholder Assembly ...	11	601036	1	
„ Bulb, 6 V.—12 W.	12		1	
Switch Knob Assembly	13	608179	1	
„ Arm	14	608033	1	
„ Spindle Spring	15	608030	1	
„ „ „ Washer... ..	16	699009	1	
Cable, Head to Magneto, 23" ...	—	601087A	1	
„ „ Tail, 82"	—	608076F	1	
„ „ Earth, 29"	—	631067A	1	
Resistance	—	601081	1	
Tail Lamp complete, type V.T.31	17	606212A	1	
„ „ Body	18	601082	1	
„ „ „ Clip	19	606216	1	
Clip Screw	20	126520	1	
„ „ Nut	21	165190	1	
„ „ Washer	—	G1405	1	
Fixing Plate	22	601084	1	
„ „ Screw and Nut	23	608177	3	
Terminal Nut	24	630050	1	
Bulb Holder Assembly	25	606207	1	
Bulb, 4 V.—.3A, Screw Cap ...	26		1	
Parking Battery, Ever-Ready No. 1289	—		1	

CARBURETTER.



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CARBURETTER.

COMPONENT.				Illus. No.	Part No.	No. per Set.	£ s. d. Price Each.
Carburetter Body	C1	V508	1	9 3
Top Ring	...	...	...	1014	V367	1	1 3
" Disc	...	...	...	1012	V665	1	2 0
Throttle	...	...	...	1007	V365	1	2 3
" Spring	...	...	...	1008	V369	1	6
Taper Needle, No. 2½	...	...	...	1010	V651	1	1 0
" " Adjuster	...	...	...	1009	V413	1	6
" " Spring	...	...	...	1011	V107×7	1	3
Centrepiece and Jet J.8	...	...	...	1075	V408	1	4 0
" Washer	...	...	...	20	V107×3	1	2
" Locating Screw	...	...	...	C3	V424	1	3
Bottom Nut	...	...	...	M22	V172	1	1 0
" " Washer	...	...	...	23	V107×4	1	2
Float	...	...	...	12	V107×1	1	3 6
" Cup	...	...	...	14	V146×6	1	3 3
" " Washer	...	...	...	13	V107×2	1	6
Fuel Needle	...	...	...	16	V355	1	9
" " Lever and Pin	...	...	...	M29	V257	1	7
Body Clip	...	...	...	1016	V326	1	2 0
" " Screw	...	...	...	42	V107×16	1	6
Strangler Plate	...	...	...	1017	V373	1	9
" " Screw	...	...	...	M14	V626	1	3
" " " Washer	...	...	...	M15	V146×2	1	2
Air Cleaner	...	...	...	C2	V148×3	1	3 0
Banjo Union	...	...	...	1071	V381	1	1 9
" " Bolt	...	...	...	1072	V382	1	1 0
" " Filter Gauze	...	...	...	1074	V404	1	6
Fibre Washer, Large Hole	...	...	...	C4	H104×8	1	3
" " Small	...	...	...	C5	V383	1	3
Tickler	...	...	...	C6	V207	1	5
Tickler Spring	...	...	...	C7	V21	1	3
" Split Pin	...	...	...	C8	V111×2	1	1
Control Cable Complete	...	...	...	1026	V234B.C.G.	1	4 6
" Body	...	...	...	C10	V405	1	3 6
" " Handlebar Clip	...	...	...	C11	V142×7	1	1 6
" " " Screw	...	...	...	J4	V142×5	2	2
" Lever	...	...	...	C12	V406	1	3 0
" Top Cover	...	...	...	C13	V387	1	1 3
" Body Friction Plate	...	...	...	1080	V429	1	6
" " Spring Washer	...	...	...	1081	V142×11	1	3
" " Fibre Washer	...	...	...	1082	V142×10	2	3
" " Top Screw	...	...	...	45	V117×5	1	6
Cable Nipple, Control End	...	...	...	—	V123×15	1	2
" " Throttle End	...	...	...	—	V145×16	1	2
" " Sleeve	...	...	...	—	V108×4	1	4
" Adjuster	...	...	...	7	V105×1	1	7
" " Locknut	...	...	...	7	V105×2	1	2

ESTIMATES

If required, we are always prepared to give an estimate before proceeding with any repair. This entails a certain amount of labour in dismantling to ascertain what new parts will be required, and therefore, in the case of any estimate not being accepted for special reasons, a small charge is made for our mechanics' time in taking down the parts for report.

Estimates must be treated as approximate only. We reserve the right to include additional parts should these be found, on further examination or on bench test, to be necessary, to make the repair satisfactory.

We do not undertake to fit to engines sent to us for overhaul any parts specified by the customer when we consider that other parts are necessary to make an efficient repair. In such cases we are prepared to supply the customers' requirements in spares, but we do not undertake to fit them.

TERMS OF BUSINESS

Repairs and spares must always be treated on a cash basis. Ledger accounts will be opened for items of £5 (five pounds) and upwards for approved accounts.

An extra amount must always be included in remittances to cover the cost of postage or carriage and packing on spare parts. This is 5 per cent. extra up to £5 value. Minimum extra is 6d. Stamps cannot be accepted for items over 1/- (one shilling) in value.

When making remittances by telegraph money order, the name and address of the sender must be included in the space provided on the Post Office Requisition Form for a private message from remitter to payee. Unless this is done, the Post Office does not give this information upon the telegram.

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.

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 to be in force for six 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 refit 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 six 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.

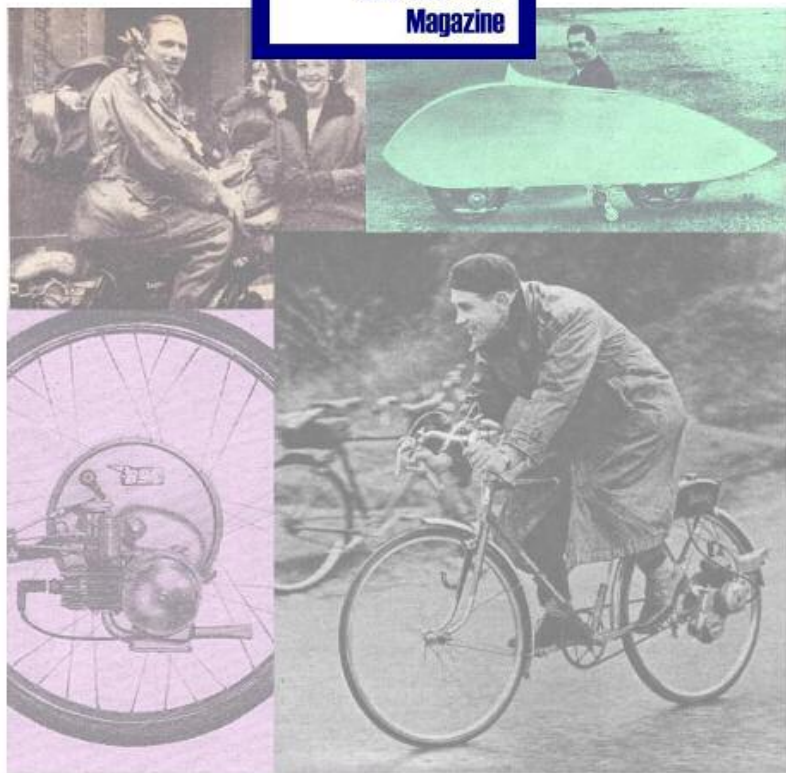
CONDITIONS OF GUARANTEE.

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.

THE TERM "AGENT" is used in a complimentary sense only, and those firms whom we style our agents are not authorised to advertise, incur any debts, or transact any business whatsoever on our account other than the sale of goods which they may purchase from us, nor are they authorised to give any warranty or make any representations on our behalf or sell subject to or with any conditions other than those contained in the above guarantee.

The guarantee becomes void if any parts not made or supplied by the VILLIERS ENGINEERING COMPANY, LTD., are fitted to a VILLIERS engine. To safeguard his own interests, the owner should always insist upon genuine VILLIERS parts.

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