DESCRIPTION

Single cylinder, two stroke with twin transfer ports.

Aluminium alloy cylinder with hard chrome plated bore.

BORE: 38·97 mm.

STROKE: 41·8 mm.

CUBIC CAPACITY: 49·85 c.c.

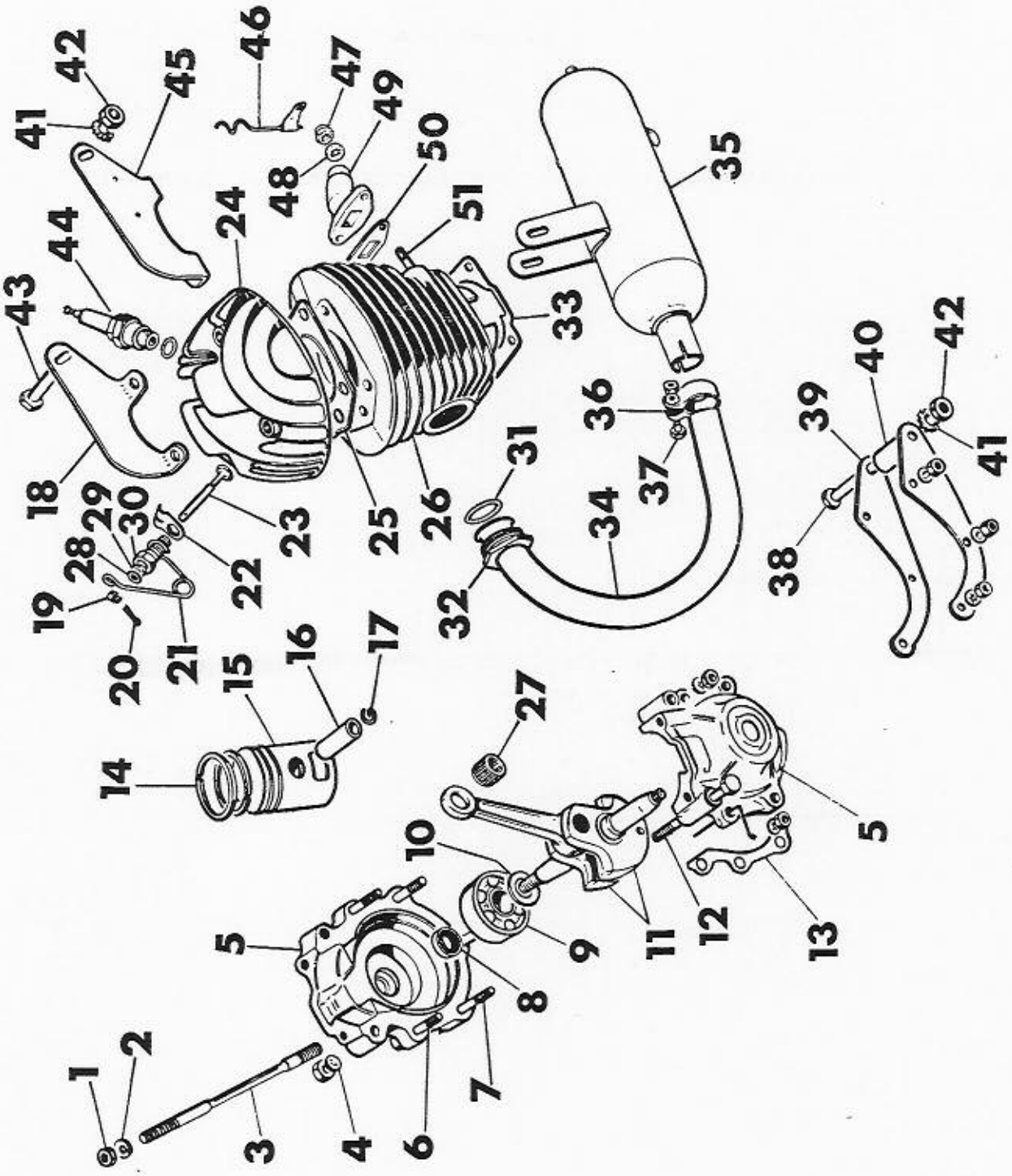
Aluminium alloy cylinder head and piston.

Two cast iron piston rings.

Ball journal main bearings.

Needle roller big and small end bearings.

MAXIMUM B.H.P.: 1·4 developed at 5,000 R.P.M.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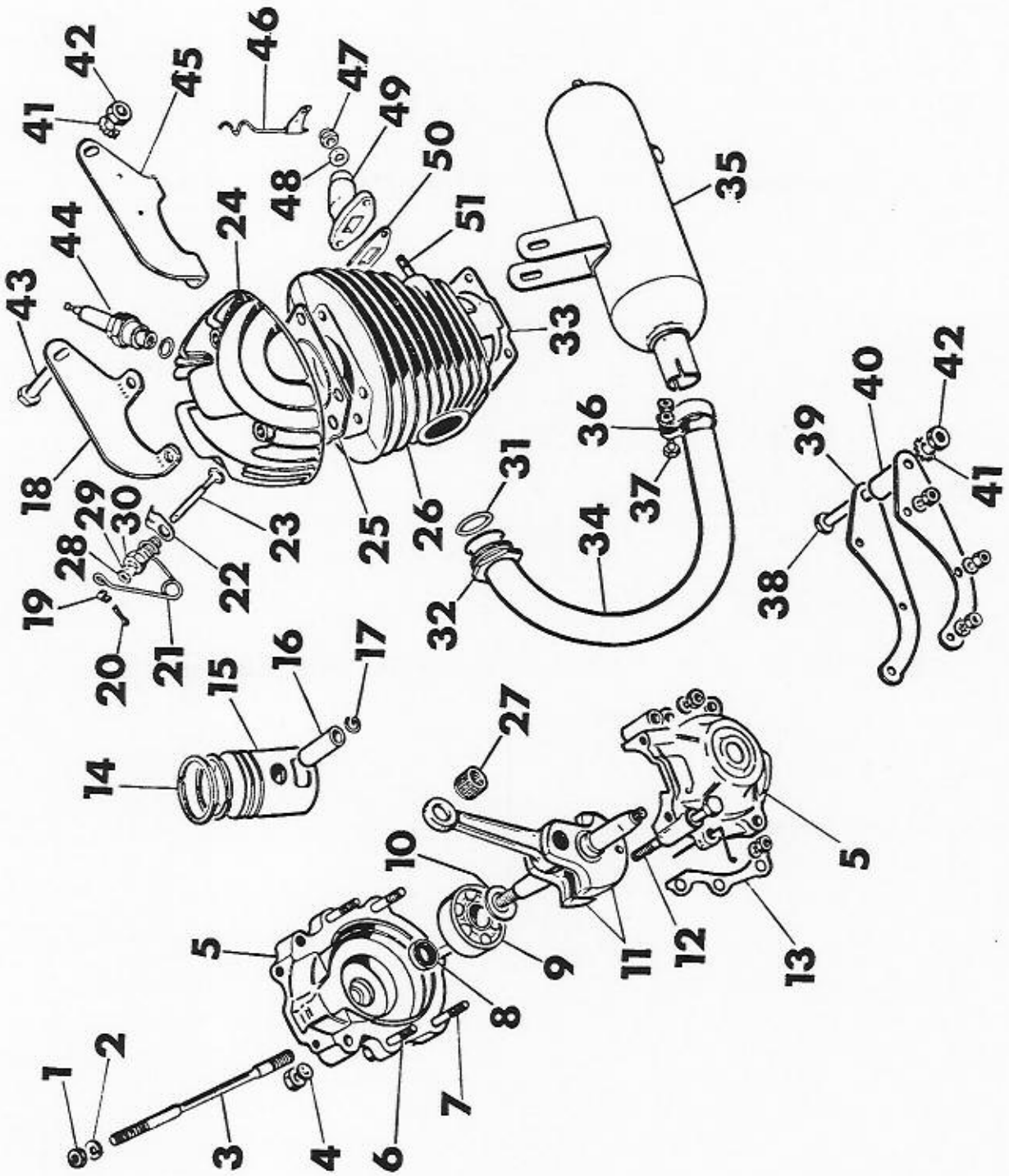
ILLUS. NO.	SALES NO.	DESCRIPTION	NUMBER OFF
1	MMN148	Nut, ø 7 mm. × 1 mm.	9
2	MMW171	Spring washer, ø 7 mm.	4
3	MTA134	Cylinder stud	4
4	MMW172	Shakeproof washer, ø 7 mm.	7
5	MTA135	Crankcase halves (pair only)	1
6	MMB146	Crankcase bolt, 7 × 1 × 30 mm.	2
7	MMB147	Crankcase bolt, 7 × 1 × 47 mm.	3
8	MTA131	Oil seal, crankshaft	2
9	MTA132	Ball journal bearing, crankshaft	2
10	MMW168	Shim washer, crankshaft, 0·1 mm.	V
10	MMW169	Shim washer, crankshaft, 0·2 mm.	V
10	MMW170	Shim washer, crankshaft, 0·3 mm.	V
11	MTA310	Crankshaft assembly c/w nuts, 11 mm.	1
12	MMB145	Crankcase bolt, 7 × 1·25 × 45 mm.	2
13	MTA136	Joint, crankcase	1
14	MTA123	Piston ring, 39 mm.	2
or 14	MTA124	Piston ring, 39·1 mm.	2
15	*MTA122	Piston assembly c/w parts 14, 16 and 17	1
16	MTA125	Gudgeon pin	1
17	MTA126	Circlip, gudgeon pin	2
18	MTA101	Engine mounting bracket, R.H. upper	1
19	MTA105	Yoke, decompressor valve	1
20	MTA106	Pin, decompressor valve	1
21	MTA107	Hairpin spring, decompressor valve	1
22	MTA110	Anchor plate	1
23	MTA112	Decompressor valve complete	1
24	MTA115	Cylinder head, c/w decompressor valve	1
25	MTA116	Gasket, cylinder head	1
26	MTA117	Cylinder c/w matched piston	1
27	MTA127	Needle roller bearing, small end	1
28	MMW165	Retaining washer, decompressor valve	1
29	MTA108	Seal, decompressor valve	1
30	MTA109	Body, decompressor valve	1
31	MTA139	Gasket, exhaust pipe	1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ILLUS. NO.	SALES NO.	DESCRIPTION	NUMBER OFF
32	MMN149	Nut, exhaust pipe	1
33	MTA121	Joint, cylinder base	1
34	MTA140	Exhaust pipe	1
35	MTA329	Silencer assembly	1
36	MTA141	Clip, exhaust pipe	1
37	MMP130	Bolt and nut, exhaust pipe clip	1
38	MMP129	Bolt, nut and washer, lower engine mounting	1
39	MTA137	Engine mounting plates (lower)	1 pr.
40	MTA138	Spacer, lower mounting plates, 30 mm. long	1
41	MMW164	Shakeproof washer	2
42	MMN146	Nut, engine mounting bolt	2
43	MMP128	Bolt and nut, upper engine mounting	1
N.I.	MTA330	Spacer, upper mounting plates, 52 mm. long	1
44	MTA113	Sparking plug	1
45	MTA102	Engine mounting bracket, L.H. upper	1
46	MTA284	Retainer, L.T. cable	1
47	MMN147	Self-locking nut, 6×1 mm.	2
48	MMW181	Shakeproof washer, 6 mm.	2
49	MTA328	Inlet adaptor	1
50	MTA119	Joint, inlet flange	1
51	MTA118	Stud, inlet flange	2
N.I.	MTA144	Set of engine joints and gaskets	1
N.I.	MTA145	Cylinder shim, 0·2 mm.	V
N.I.	MTA146	Cylinder shim, 0·4 mm.	V

N.I.=Not illustrated
ø=Diameter
V=Varies
*=Piston can only be supplied if cylinder forwarded to works for matching.

TYPE 'A' AUTOMATIC CLUTCH

DESCRIPTION

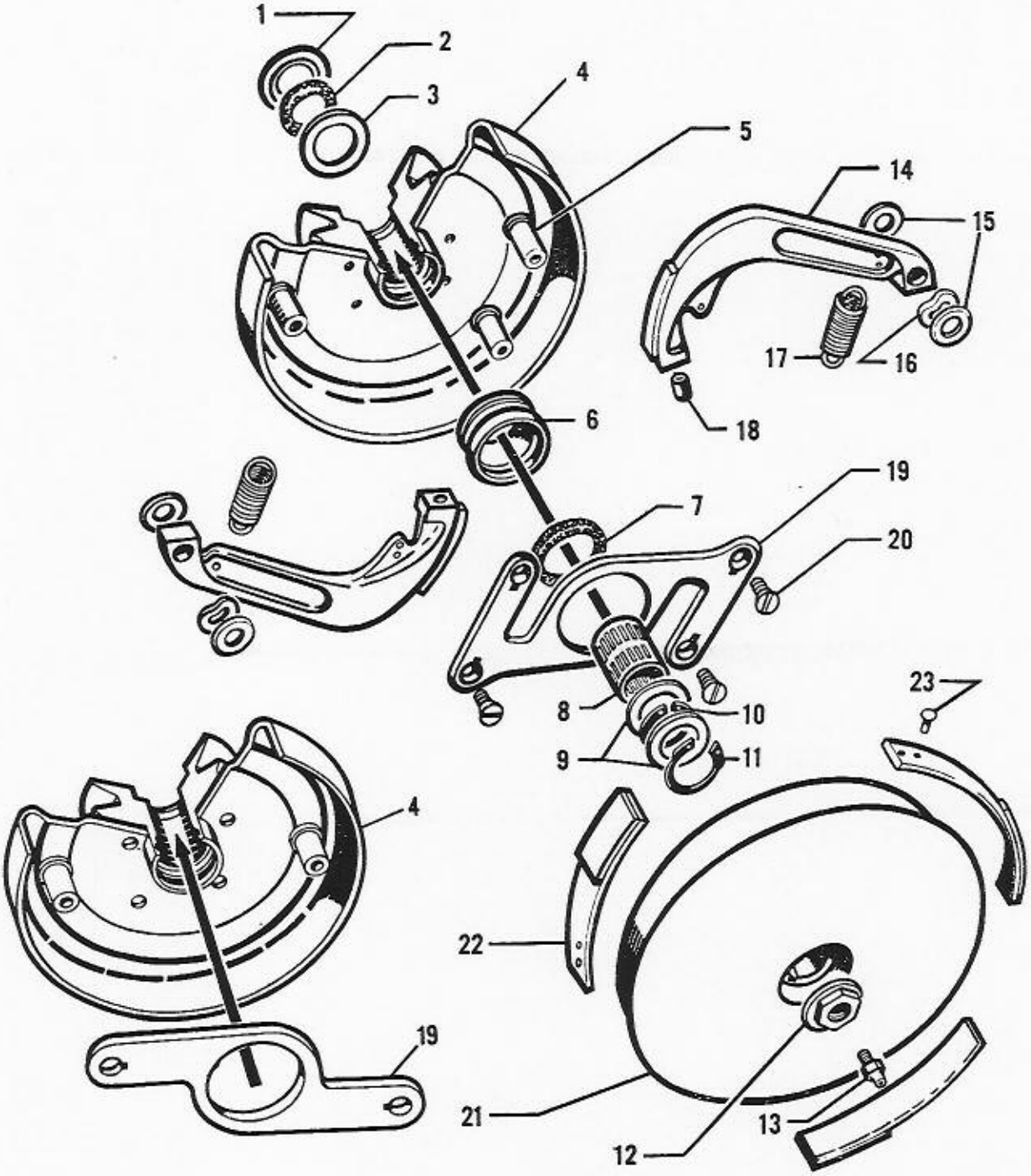
Double action, centrifugally operated, engine speed clutch.

Mounted on twin track needle roller bearings.

Drum diameter 5".

AUTOMATIC CLUTCH

TYPE 'A'



TYPE 'A' AUTOMATIC CLUTCH

ILLUS. NO.	SALES NO.	DESCRIPTION	NUMBER OFF
1	MMW200	Dished washer, inner felt	1
2	MTB101	Felt seal, inner	1
3	MMW101	Plain washer, inner felt	1
4	MTB167	Clutch hub with retaining plate and screws, 2-pin type. (Parts 4, 19 and 20)	1
or 4	MTB169	Clutch hub with retaining plate and screws, 4-pin type. (Parts 4, 19 and 20)	1
5	MTB159	Fulcrum pin, clutch shoe	V
6	MTB104	Retaining sleeve, outer felt	1
7	MTB105	Felt seal, outer	1
8	MTB106	Needle roller bearing, clutch hub	1
9	MMW202	Locating washer, clutch hub	2
N.I.	MMW203	Shim washer, clutch hub, 0·1 mm.	V
N.I.	MMW204	Shim washer, clutch hub, 0·25 mm.	V
N.I.	MMW205	Shim washer, clutch hub, 0·4 mm.	V
10	MTB107	Circlip, external, ø 15 mm.	1
11	MTB108	Circlip, internal, ø 22 mm.	1
12	MMN166	Nut, clutch drum, 11 mm. thread	1
13	MTB109	Grease nipple	1
14	MTB110	Clutch shoe, c/w lining	2
15	MMW206	Plain washer, ø 8 mm.	4
16	MMW207	Spring washer, curved	2
17	MTB111	Return spring, clutch shoe	2
18	MTB112	Rubber stop, clutch shoe	2
19	MTB168	Retaining plate, c/w screws, 2-pin type. (Parts 19 and 20)	1
or 19	MTB170	Retaining plate, c/w screws, 4-pin type. (Parts 19 and 20)	1
20	MMB164	Countersunk screw, ø 4×0·75×10 mm.	V
21	MTB116	Clutch drum, c/w lined springs	1
22	MTB117	Leaf spring, c/w lining and rivets	3
23	MTB118	Rivet, leaf spring	6
N.I.	MTB119	Key, clutch drum	1
S.A.	MTB132	Clutch, complete	1

ø=Diameter
N.I.=Not illustrated
S.A.=Sub assembly
V=Varies

DESCRIPTION

CARBURETTOR

Gurtner, model A.R.2.10.667.

Single jet type.

Standard main jet size 20·5.

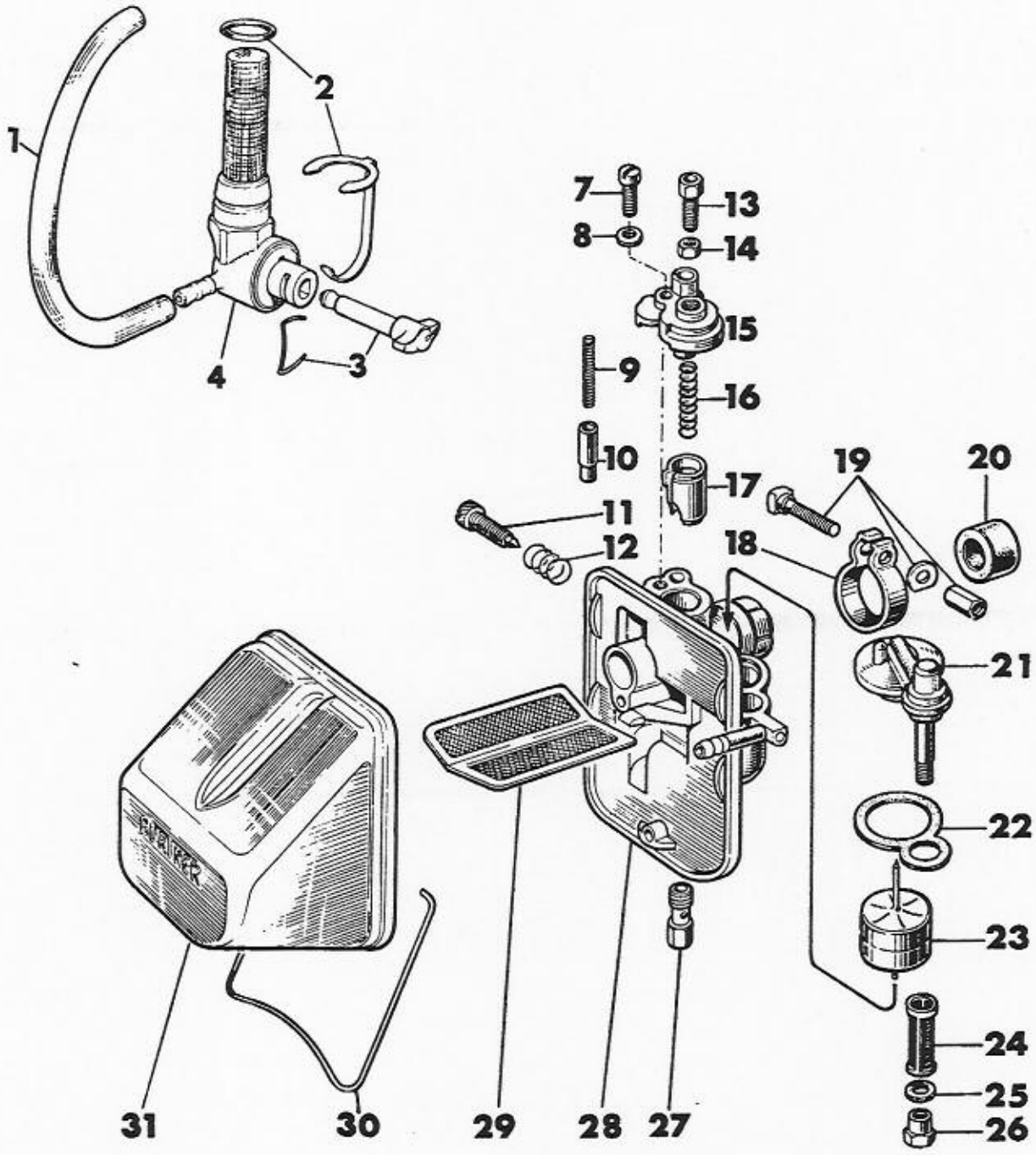
Rich mixture provided by cable operated plunger.

FUEL TAP

Karco, 3 position type with removable control lever.

CARBURETTOR AND FUEL TAP

TYPE 'A'



TYPE 'A' CARBURETTOR AND FUEL TAP

ILLUS. NO.	SALES NO.	DESCRIPTION	NUMBER OFF
		FUEL TAP	
1	MTH242	Fuel pipe, 12"	1
2	MTH244	'O' ring and securing spring	1
3	MTH243	Tap lever extension c/w spring	1
4	MTH241	Fuel tap complete	1
N.I.	MTP249	Clip, fuel pipe retaining	2
		CARBURETTOR	
7	MTH235	Screw, mixing chamber cover	1
8	MMW263	Washer, mixing chamber cover screw	1
9	MTH110	Return spring, enrichment plunger	1
10	MTH111	Enrichment plunger	1
11	MTH229	Adjusting screw, slow running	1
12	MTH123	Spring, adjusting screw	1
13	MTH106	Adjuster, throttle cable	1
14	MMN180	Locknut, cable adjuster	1
15	MTH231	Mixing chamber cover	1
16	MTH108	Return spring, throttle slide	1
17	MTH239	Throttle slide	1
18	MTH117	Clip, carburettor stub	1
19	MMP142	Clip bolt, c/w nut and washer	1
20	MTH118	Insulating sleeve, carburettor stub	1
21	MTH246	Float chamber cover	1
22	MTH234	Joint, float chamber cover	1
23	MTH225	Float	1
24	MTH115	Fuel filter gauze	1
25	MMW248	Fibre washer, cap nut	1
26	MTH233	Cap nut, float chamber cover	1
27	MTH224	Main jet, No. 20-5	1
or 27	MTH223	Main jet, No. 21	1
or 27	MTH237	Main jet, No. 22	1
28	MTH245	Carburettor complete. (Parts 7 to 31)	1
29	MTH128	Air cleaner gauze	1
30	MTH228	Spring clip, air cleaner	1
31	MTH236	Air cleaner, complete. (Parts 29 to 31)	1

N.I.=Not illustrated

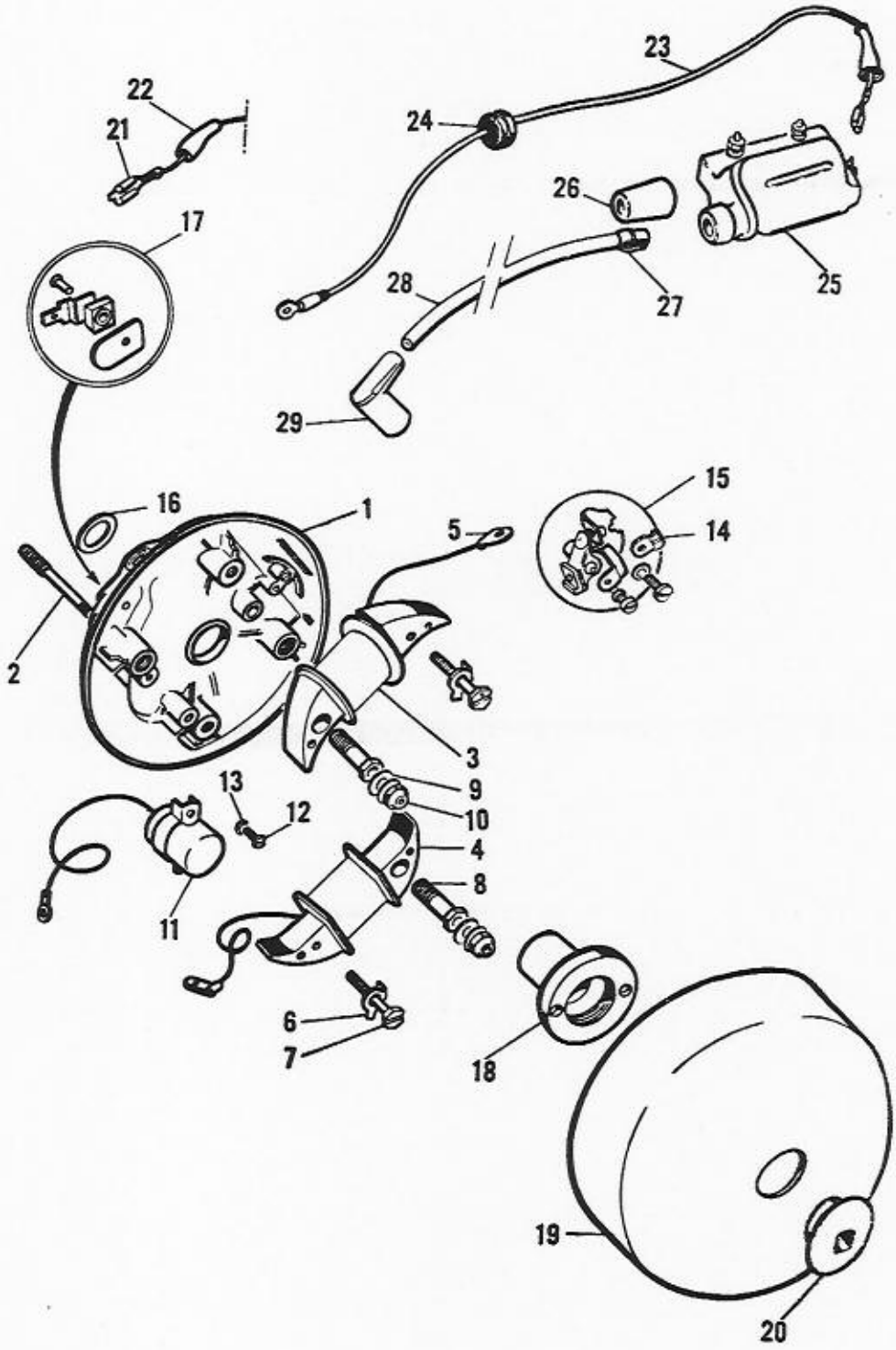
TYPE 'A' FLYWHEEL MAGNETO

DESCRIPTION

Novi model 120 flywheel magneto alternator, internal L.T. ignition and lighting coils, with externally mounted H.T. coil.

FLYWHEEL MAGNETO

TYPE 'A'



TYPE 'A' FLYWHEEL MAGNETO

ILLUS. NO.	SALES NO.	DESCRIPTION	NUMBER OFF
1	MTM157	Stator plate, bare	1
S.A.	MTM158	Stator plate, complete	1
*S.A.	MTM167	Stator plate, complete	1
2	MTM129	Stud, stator plate securing	2
3	MTM130	Lighting coil	1
*or 3	MTM166	Lighting coil	1
4	MTM131	Ignition coil, L.T.	1
5	MTM132	Terminal tag, internal coils	2
6	MTM133	Locking tab, coil securing screw	2
7	MMB236	Screw, coil securing	2
8	MMB237	Hollow screw, coil securing	2
9	MMW307	Belleville washer, ø 5 mm.	4
10	MMN226	Self-locking nut, ø 5×0·75 mm.	2
11	MTM134	Condenser	1
12	MMB238	Screw, ø 4×0·75×10 mm.	4
13	MMW308	Spring washer, ø 4 mm.	4
14	MTM135	Adjusting clip, contact breaker	1
15	MTM136	Contact breaker, complete	1
16	MTM137	Sealing ring, stator plate	1
17	MTM138	Lighting terminal, complete	1
18	MTM139	Cam	1
19	MTM159	Magneto flywheel	1
*or 19	MTM165	Magneto flywheel	1
20	MMN227	Nut, flywheel retaining, 11 mm. thread	1
21	MTP161	Terminal tag	2
22	MTP162	Plastic cover, terminal tag	2
23	MTM143	Ignition L.T. lead, complete	1
24	MTM144	Grommet, L.T. wire	1
25	MTM145	H.T. ignition coil, external	1
26	MTM146	Rubber insulating cap	2
27	MTM147	Terminal, H.T. lead	1
28	MTM148	H.T. lead, c/w terminal	1
29	MTM153	Suppressor cover, sparking plug	1
S.A.	MTM151	Flywheel magneto complete, less external coil	1
*S.A.	MTM164	Flywheel magneto complete, less external coil	1

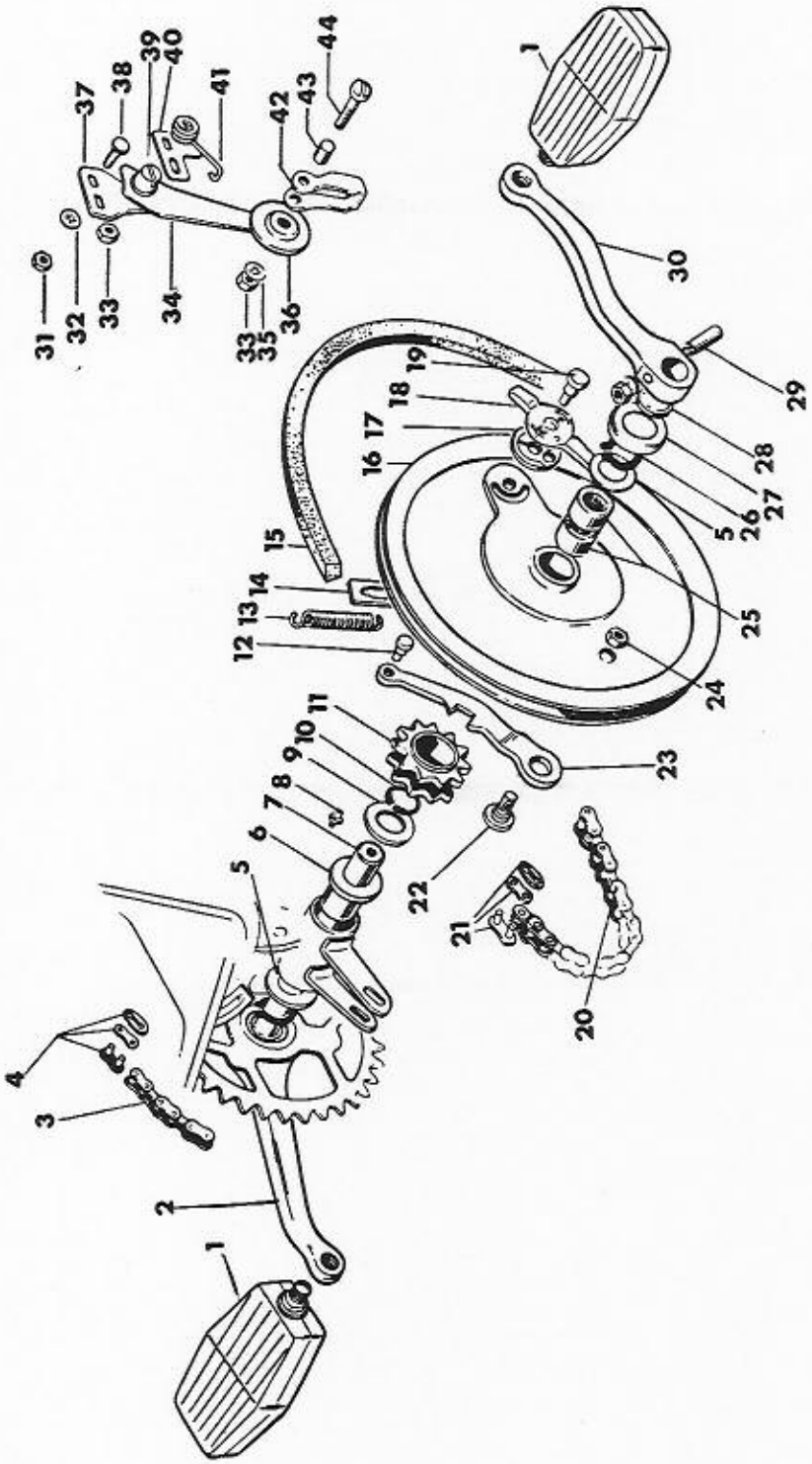
*=Fitted to engines after No. R.109000
S.A.=Sub assembly
ø=Diameter

DESCRIPTION

Primary reduction drive: From engine to bottom bracket by vee belt and pulleys.

Final reduction drive: From bottom bracket to rear wheel by chain and sprockets.

Automatic spring tensioner on pedal chain.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ILLUS. NO.	SALES NO.	DESCRIPTION	NUMBER OFF
1	MTD264	Pair of pedals	1 pr.
2	MTD261	Chainwheel and R.H. crank, 46T × 6⅜"	1
3	MTD263	Pedal chain, 94 pitches	1
4	MTD198	Spring link, pedal chain	1
5	MMW231	Spacing washer, ø 16·5 × 27 × 1 mm.	V
6	MTD211	Bush, bottom bracket	2
7	MTD178	B.B. axle	1
8	MTD179	Grease nipple	1
9	MMW232	Spacing washer, ø 16·5 × 33 × 0·8 mm.	1
10	MTD182	Inner circlip, B.B. axle	1
11	MTD254	Sprocket, 12T, 26 mm. bore	1
12	MTD190	Rivet, lock lever spring	1
13	MTD188	Spring, lock lever	1
14	MTD189	Guide plate, lock lever spring	1
15	MTD246	Drive belt	1
16	MTD187	B.B. pulley c/w sprocket, locklever and bearings	1
17	MTD191	Spring disc, turn button	1
18	MTD220	Turn button, lock lever	1
19	MTD192	Fulcrum rivet, turn button	1
20	MTD262	Drive chain, 89 pitches	1
21	MTD195	Spring link, drive chain	1
22	MMP135	Fulcrum bolt c/w nut, lock lever	1
23	MTD235	Lock lever assy., c/w parts No. 12, 13, 14 and 24	1
24	MMN276	Nut, fulcrum bolt	1
25	MTD 184	Needle roller bearing, B.B. pulley	2
26	MTD 181	Outer circlip, B.B. axle	2
27	MTD 185	End cap, pulley hub	1
28	MTD186	Spacer, L.H. crank	1
29	MTD177	Cotter pin, complete	2
30	MTD260	Pedal crank, L.H., 6⅜"	1
31	MMN171	Nut, fixing screw, chain tensioner	2
32	MMW233	Shakeproof washer, ø 5 mm., chain tensioner	2
33	MMN152	Nut, spindle screw, chain tensioner	2
34	MTD229	Chain tensioner complete. (Parts 31 to 44)	1
35	MMW234	Shakeproof washer, ø 6 mm.	1
36	MTD201	Wheel, chain tensioner	1
37	MTD224	Fixing plate, chain tensioner	1
38	MMP133	Fixing screw, c/w nut, chain tensioner	2
39	MTD226	Pivot pin, c/w nut, tensioner arm	1
40	MTD225	Spring stop plate, tensioner arm	1
41	MTD238	Spring, chain tensioner	1
42	MTD228	Chain guide	1
43	MTD203	Bush, chain tensioner spindle	1
44	MMP134	Spindle screw, c/w nut, chain tensioner	1

ø = Diameter. V = Varies

TYPE 'A' FRONT FORK AND STEERING HEAD BEARINGS

DESCRIPTION

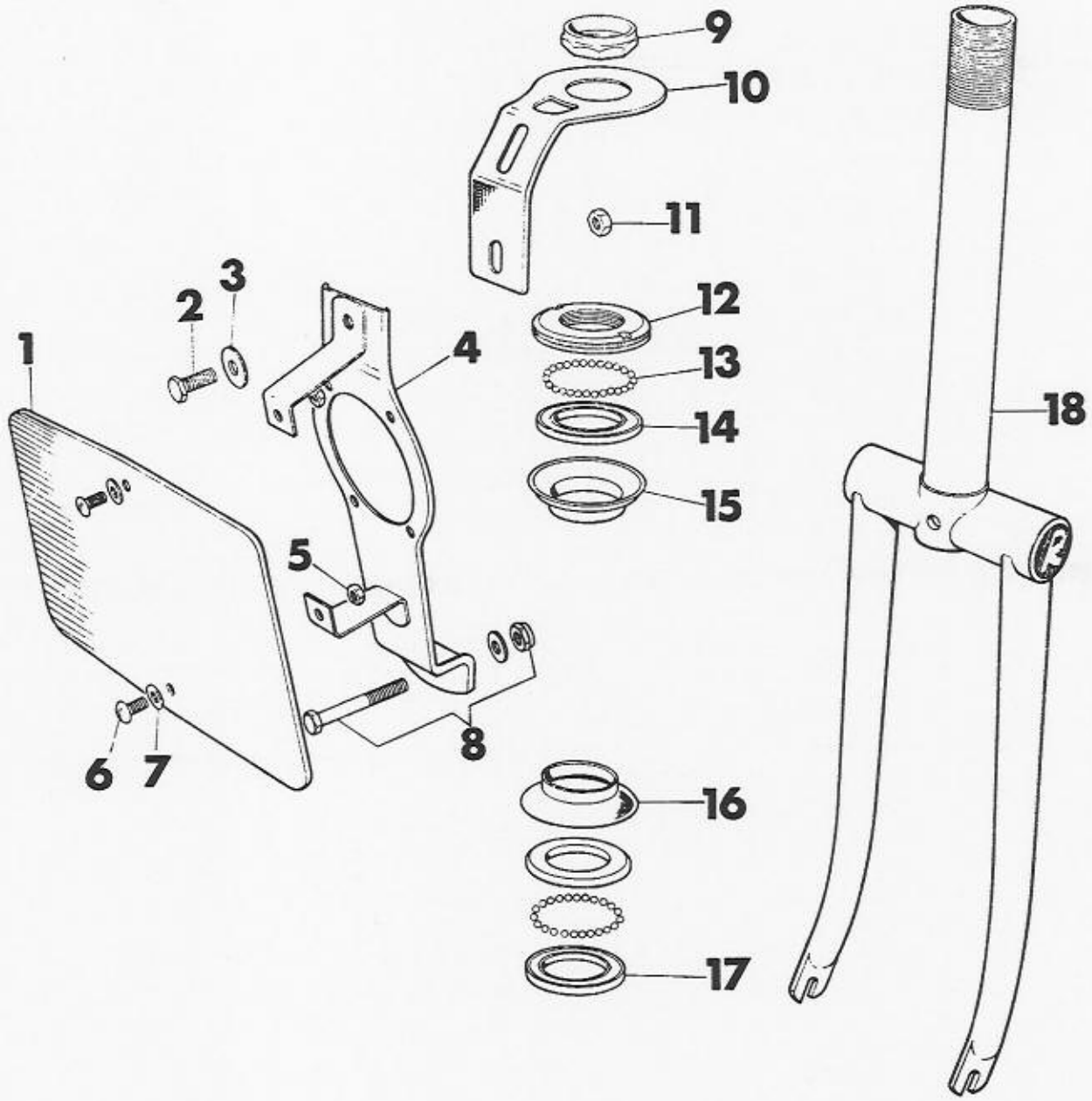
Rigid type fork.

Tubular steel construction with brazed joints.

Adjustable steering head bearings.

FRONT FORK AND STEERING HEAD BEARINGS

TYPE 'A'



TYPE 'A' FRONT FORK AND STEERING HEAD BEARINGS

ILLUS. NO.	SALES NO.	DESCRIPTION	NUMBER OFF
1	MTL511	Front number plate	1
2	MMB275	Bolt, $\frac{3}{16}$" × $\frac{1}{4}$" B.S.F.	1
3	MMW101	Washer ø $\frac{1}{4}$"	1
4	MTL513	Horn bracket	1
5	MMN219	Top locknut, $\frac{3}{32}$" × 28 T.P.I.	2
6	MMB354	Screw, $\frac{3}{16}$" × $\frac{3}{8}$"	2
7	MMW105	Washer, ø $\frac{3}{16}$"	2
8	MMP221	Bolt complete, 1 $\frac{3}{16}$" × $\frac{1}{2}$"	1
9	MAK101	Locknut, steering head	1
10	MTL512	Bracket, headlamp/No. plate mounting	1
11	MMN189	Top locknut, $\frac{1}{2}$" B.S.F.	1
12	MAL102	Adjustable bearing race, steering head	1
13	MML104	Ball bearing, ø $\frac{3}{16}$"	42
14	MAN103	Bearing race, steering head	2
15	MAM102	Frame cup, upper	1
16	MAN102	Frame cup, lower	1
17	MAP102	Bearing race, fork crown	1
18	MTJ239	Front fork. Spanish gold	1
or 18	MTJ238	Front fork. Fiesta blue	1

ø=Diameter

TYPE 'A' FRAME, FUEL TANK AND MUDGUARDS

DESCRIPTION

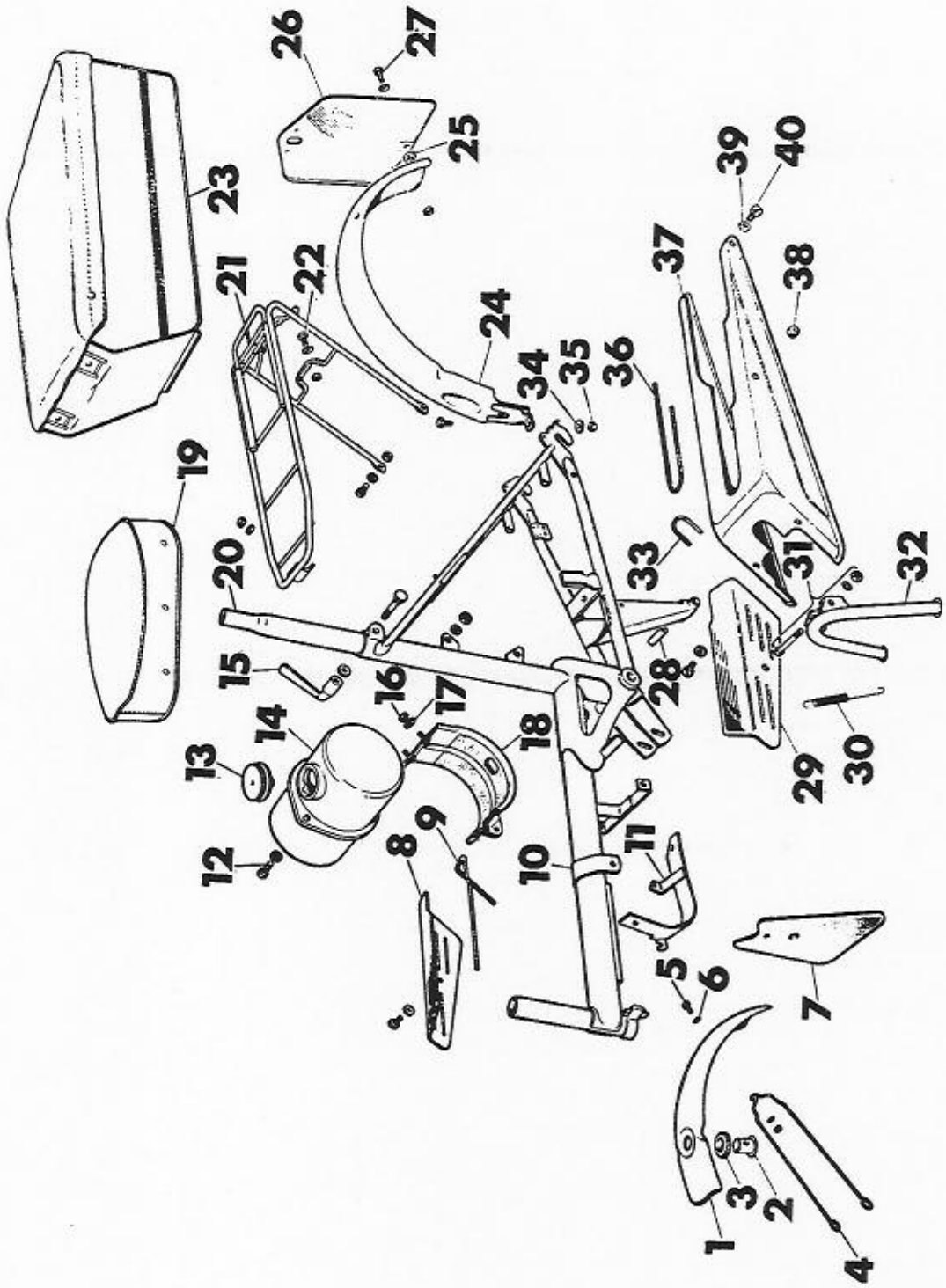
Tubular steel, welded frame.

Pressed steel mudguards.

Fuel tank capacity 4¾ pints.

FRAME, FUEL TANK AND MUDGUARDS

TYPE 'A'



TYPE 'A' FRAME, FUEL TANK AND MUDGUARDS

ILLUS. NO.	SALES NO.	DESCRIPTION	NUMBER OFF
1	MTL516	Front mudguard less mudflap. Spanish gold	1
or 1	MTL517	Front mudguard less mudflap. Fiesta blue	1
2	MTL521	Tube, front mudguard mounting	1
3	MTL520	Grommet, front mudguard mounting	1
4	MTL518	Mudguard stay. Spanish gold	1
or 4	MTL519	Mudguard stay. Fiesta blue	1
5	MMB206	Bolt, $\frac{1}{4}$" × $\frac{5}{16}$"	3
6	MMW404	Washer, ø $\frac{1}{4}$"	2
7	MTL514	Mudflap c/w washer and rivet	1
8	MTL523	Engine fairing, R.H. Chrome	1
9	MTL515	Plastic edging strip, 12"	2
10	MTF212	Frame. Spanish gold	1
or 10	MTF213	Frame. Fiesta blue	1
11	MTF214	Vee belt guard. Silver	1
12	MMB194	Bolt, $\frac{1}{4}$" B.S.F.	2
13	MTL102	Filler cap	1
14	MTL528	Fuel tank. Spanish gold	1
or 14	MTL529	Fuel tank. Fiesta blue	1
15	MMP220	Seat bolt complete, $1\frac{3}{4}$" × $\frac{5}{16}$"	1
16	MMN189	Locknut, $\frac{1}{4}$" B.S.F.	5
17	MMW101	Washer, ø $\frac{1}{4}$"	7
18	MTL530	Fuel tank cradle c/w packing strip. Spanish gold	1
or 18	MTL531	Fuel tank cradle c/w packing strip. Fiesta blue	1
19	MZA326	Saddle. Black	1
or 19	MZA327	Saddle. White	1
20	MTF216	Seat pillar, 13"	1
21	MTL534	Rear carrier assembly. Chrome	1
22	MMB354	Screw, $\frac{5}{16}$" × $\frac{3}{4}$"	2
23	MYC545	Holdall. Black	1
or 23	MYC546	Holdall. White	1
24	MTL532	Rear mudguard. Spanish gold	1
or 24	MTL533	Rear mudguard. Fiesta blue	1
25	MMW139	Spacer, rear number plate	1
26	MTL123	Rear number plate	1
27	MMB140	Bolt, $\frac{5}{16}$" × $\frac{3}{4}$"	1
28	MTF103	Spacer tube	1
29	MTL522	Engine fairing, L.H. Chrome	1
30	MTF123	Spring, stand	1
31	MMP136	Bolt complete, stand, 7 mm.	1
32	MTF217	Stand	1
33	MTL526	Plastic edging strip, front, frame fairing, 6"	1
34	MMW105	Washer, $\frac{5}{16}$"	6
35	MMN219	Locknut, $\frac{5}{16}$"	7
36	MTL527	Plastic edging strip, rear, frame fairing, 12"	1
37	MTL524	Rear frame fairing. Spanish gold	1
or 37	MTL525	Rear frame fairing. Fiesta blue	1
38	MTL535	Grommet, rear fairing	1
39	MMW289	Washer, fairing screw	6
40	MMB336	Fairing screw	6
N.I.	MTL541	Transfer, rear fairing	2
N.I.	MTL542	Transfer, frame	1 pr.
N.I.	MTL543	Transfer, 'on-off-reserve'	1
N.I.	MTL157	Transfer, Raleigh crest	1
N.I.	MTL144	Transfer, fuel ratio	1

ø=Diameter. N.I.=Not illustrated

TYPE 'A' FRONT WHEEL

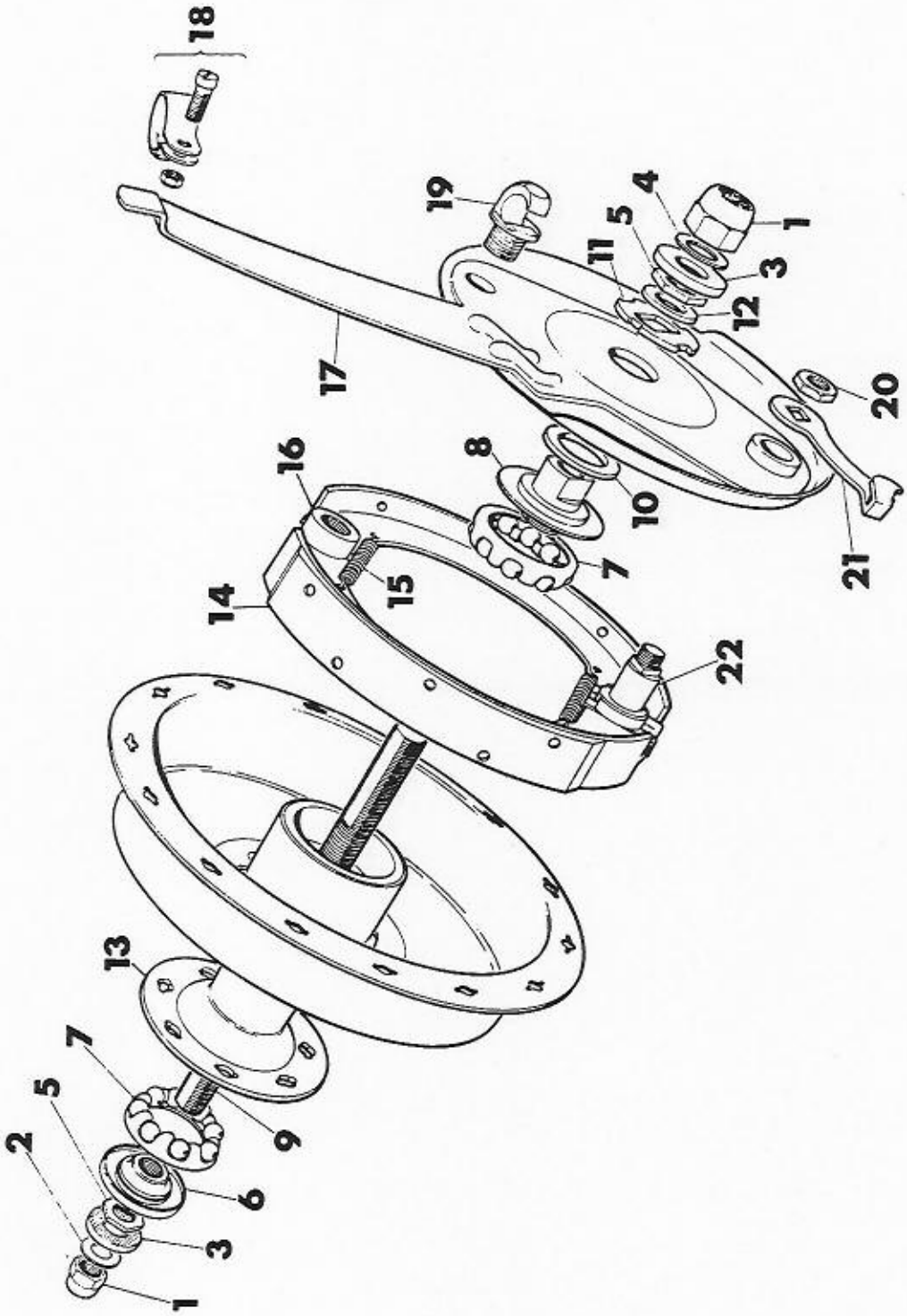
DESCRIPTION

Chromium plated 12″×2·00″ Endrick section rim. 28 spokes.

Sturmey Archer 3½″ internal expanding hub brake, cable operated.

FRONT WHEEL

TYPE 'A'



TYPE 'A' FRONT WHEEL

ILLUS. NO.	SALES NO.	DESCRIPTION	NUMBER OFF
1		Axle nut	2
2		Axle washer, $\frac{1}{16}$" thick	1
3		Serrated washer	2
4		Axle washer, $\frac{1}{8}$" thick	1
S.A.	MTK290	Set of axle nuts and washers (Parts 1-4 inc.)	1 set
5		Cone locknut	2
6		R.H. cone with dustcap	1
7		Ball cage with bearings	2
8		L.H. cone with dustcap	1
S.A.	MTK291	Set of cones and bearings (Parts 6-8 inc.)	1 set
9	MTK289	Front axle assembly complete (Parts 5-12 inc.)	1
10		Spacing washer	1
11		Notched washer, cone adjusting	1
12		Packing washer	1
13	MTK287	Front hub complete (less parts 1-4)	1
14	MSB210	Brake shoes complete with springs and end caps	1 pr.
15	MSB208	Brake shoe springs	2
16		Brake fulcrum sleeve	1
17	MTK286	Front brake plate complete with brake shoes (Parts 14-17 and 19-22 inc.)	1
18	MSL703	Brake arm clip with screw and nut	1
19		Cable guide	1
20		Cam lever nut	1
21		Cam lever	1
22		Brake cam	1
S.A.	MTK292	Brake Plate Parts (Parts 19-21 inc.)	1
N.I.	MGA152	Spoke, $4\frac{7}{8}$", 14G	14
N.I.	MGA153	Spoke, $5\frac{1}{2}$". 14G	14
N.I.	MGB101	Spoke nipple. 14G	28
N.I.	MTK282	Rim tape	1
N.I.	MTK285	Rim, 12" × 2". 28-hole	1
N.I.	MTK288	Front wheel complete, less tyre and tube	1

S.A.=Sub assembly
N.I.=Not illustrated
Parts with no Sales Number not supplied separately.

TYPE 'A'

REAR WHEEL

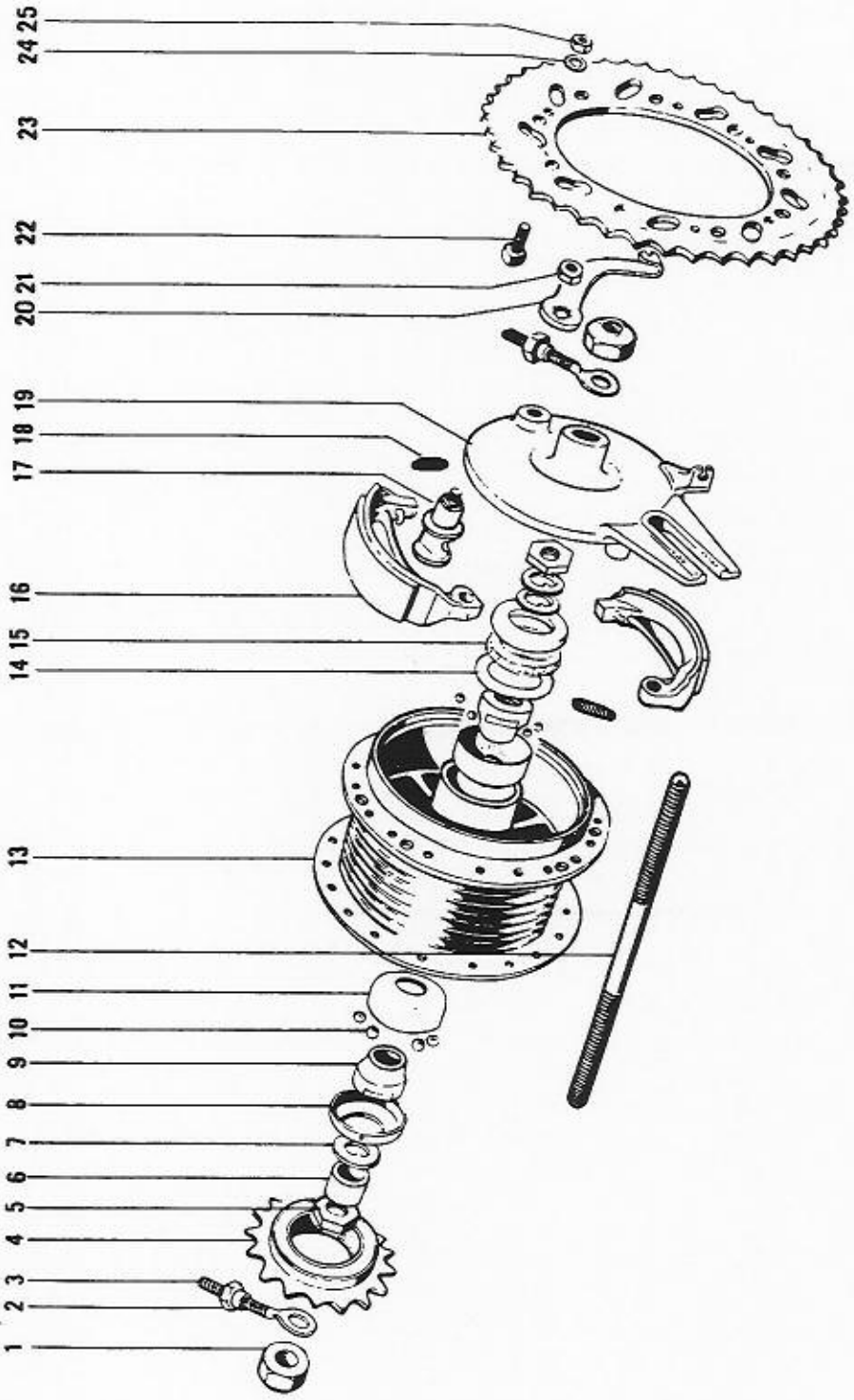
DESCRIPTION

Chromium plated 12″ × 2·00″ Endrick section rim. 36 spokes.

Maillard 3½″ internal expanding hub brake, cable operated.

REAR WHEEL

TYPE 'A'



TYPE 'A' REAR WHEEL

ILLUS. NO.	SALES NO.	DESCRIPTION	NUMBER OFF
N.I.	MTK279	Rear wheel c/w sprockets, less tyre and tube	1
N.I.	MTK280	Wheel rim, 12″×2″, 36-hole	1
N.I.	MTK281	Spoke, rear wheel, 4⅛″×13G.	36
N.I.	MTK104	Nipple, 13G.	36
1	MMN196	Nut, rear wheel axle	2
2	MMN203	Nut, chain adjuster	2
3	MTK131	Chain adjuster c/w nut	2
4	MTK132	Freewheel	1
5	MMN198	Cone locknut	2
6	MTK124	Distance piece, 6·5 mm. long	1
7	MMW273	Keyed washer	3
8	MTK196	Dust cap, wheel bearing	2
9	MTK112	Bearing cone	2
10	MML106	Ball bearing, ø ⅜″	22
11	MTK197	Bearing cup	2
12	MTK205	Rear wheel axle, c/w nuts, cones and washers	1
13	MTK194	Rear hub complete with sprocket	1
14	MMW281	Shield washer, bearing	1
15	MTK135	Felt seal	1
16	MTK200	Brake shoes, c/w linings	1 pr.
17	MTK201	Brake cam	1
18	MTK145	Spring, brake shoe	1
19	MTK202	Brake plate, c/w shoes	1
20	MTK203	Lever, brake cam	1
N.I.	MTK258	Return spring, cam lever	1
21	MMN201	Nut, brake cam	1
22	MMB201	Bolt, rear sprocket	6
23	MTK204	Sprocket, rear wheel. 44T	1
24	MMW266	Shakeproof washer, ø 6 mm.	6
25	MMN152	Nut, rear sprocket bolt	6
N.I.	MTK282	Rim tape	1

N.I.=Not illustrated
ø=Diameter

TYPE 'A' HANDLEBARS AND CONTROL CABLES

DESCRIPTION

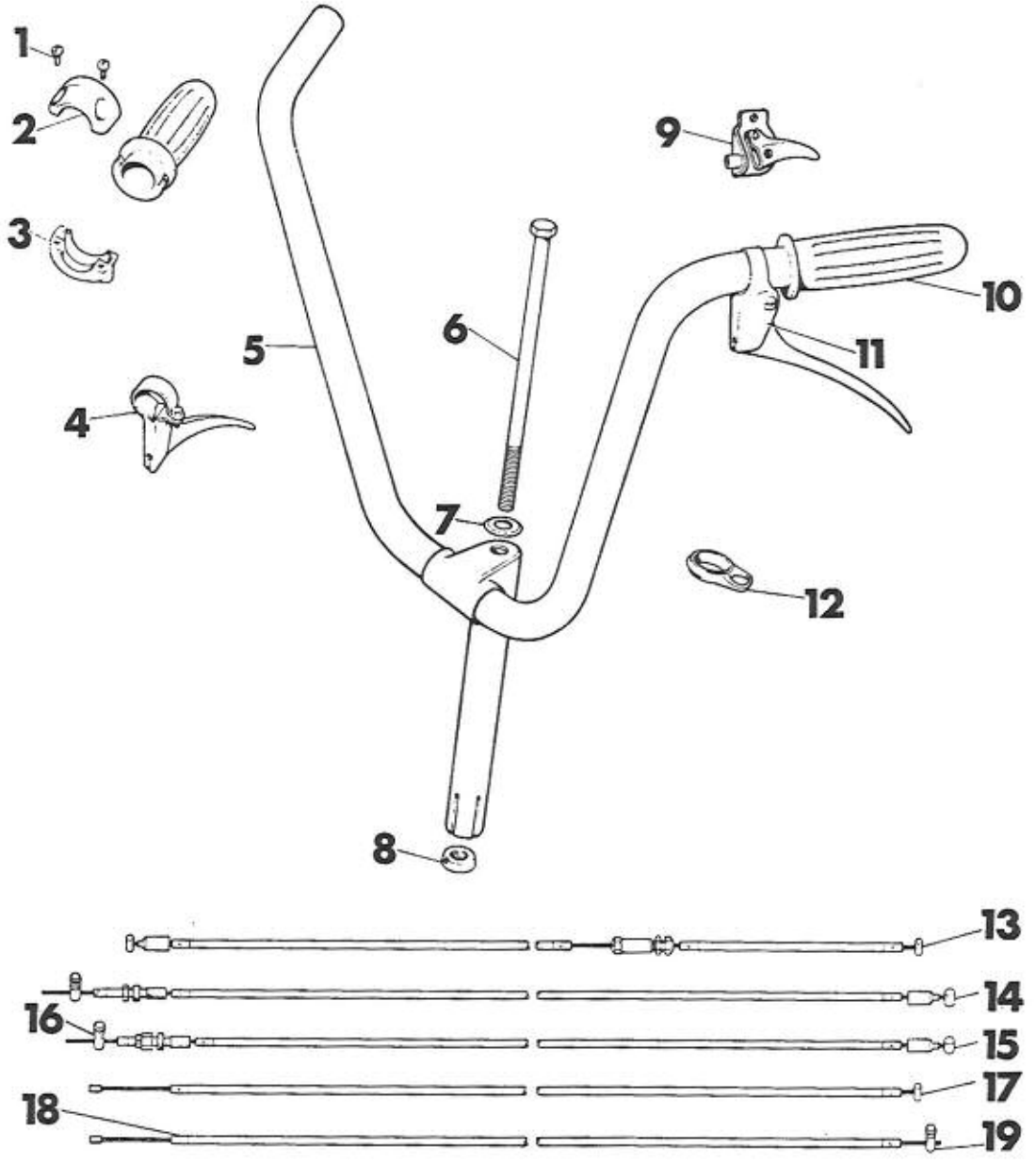
Chromium plated tubular steel one-piece handlebar and stem.

'Air cushion' handgrips.

'Twistgrip' engine control.

HANDLEBARS AND CONTROL CABLES

TYPE 'A'



TYPE 'A' HANDLEBARS AND CONTROL CABLES

ILLUS. NO.	SALES NO.	DESCRIPTION	NUMBER OFF
1	MMB273	Fixing screw, twistgrip body	2
2	MTN111	Twistgrip body, top	1
3	MTN112	Twistgrip body, bottom	1
S.A.	MTN271	Twistgrip comp., less handlebar grip	1
4	MTN263	Brake lever assembly, R.H.	1
or 4	MTN107	Brake lever assembly, R.H.	1
5	MTN262	Handlebar assy., less expander bolt	1
6	MTN274	Expander bolt	1
7	MMW110	Washer, expander bolt	1
8	MNM117	Cone, expander bolt	1
S.A.	MTN275	Expander bolt, c/w cone and washer	1
9	MTN115	Choke lever complete	1
10	MTN272	Handlebar grips. Black. (Supplied in pairs only)	1 pr.
or 10	MTN273	Handlebar grips. White. (Supplied in pairs only)	1 pr.
11	MTN264	Brake lever assembly, L.H.	1
or 11	MTN108	Brake lever assembly, L.H.	1
12	MTN270	Plastic cable holder	2
13	MTN265	Decompressor cable, complete	1
14	MTN269	Rear brake cable, complete	1
15	MTN268	Front brake cable, complete	1
16	MTN118	Solderless nipple	1
17	MTN266	Throttle cable, complete	1
18	MTN267	Choke cable, complete	1
19	MTN125	Solderless nipple	1
N.I.	MTN126	Plastic sheath, control cables	2
N.I.	MTP249	Cable clip, rear brake cable retaining	3
N.I.	MTJ241	Rubber cable band. White	1

S.A. = Sub assembly
N.I. = Not illustrated

TYPE 'A' LIGHTING AND ELECTRIC HORN

DESCRIPTION

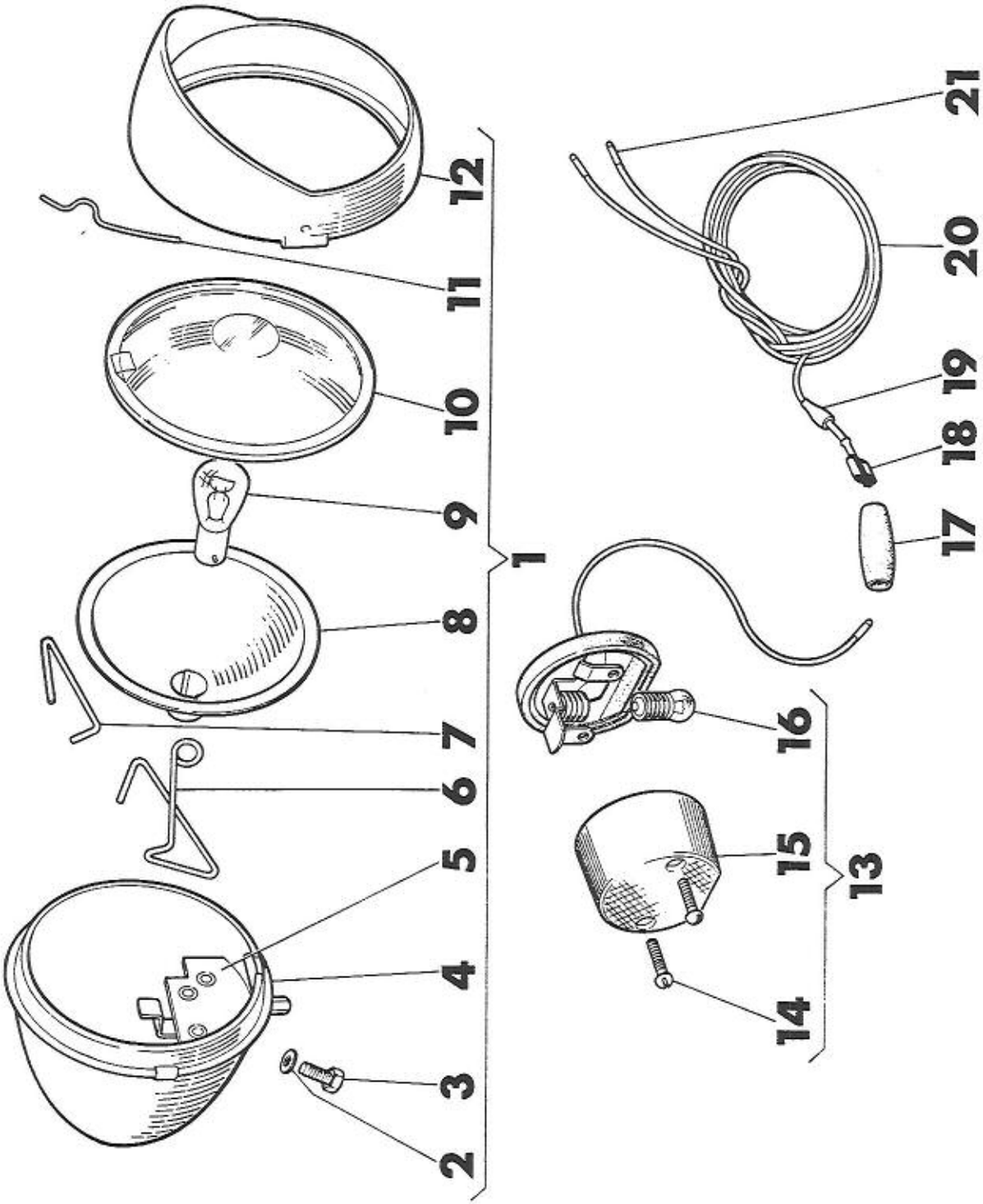
Chromium plated single beam prefocus headlamp.

Rearlamp incorporating reflector.

A.C. electric horn.

LIGHTING AND ELECTRIC HORN

TYPE 'A'



ILLUS. NO.	SALES NO.	DESCRIPTION	NUMBER OFF
1	MTP300	Headlamp complete	1
2	MMW157	Shakeproof washer, headlamp fitting	1
3	MMB194	Bolt, headlamp fitting	1
4		Headlamp body	
5	MSD338	Switch complete	1
6	MSD369	Earth and reflector spring clip	1
7	MSD334	Spring clip, reflector	2
8	MSD370	Reflector	1
9	MTP136	Bulb, 6v.15w. S.C.C.	1
10	MSD330	Headlamp lens	1
11	MSD339	Hinge pin	1
12	MSD331	Headlamp rim	1
N.I.	MMW148	Washer, headlamp fitting	1
		TAIL LAMP (WIPAC)	
13	MTP308	Tail lamp complete	1
14	MMB335	Screw, tail lamp lens	2
15	MTP225	Tail lamp lens	1
16	MTP309	Bulb, 6v.6w. M.E.S.	1
N.I.	MMN234	Nut and washer, tail lamp fixing	2
		WIRING	
17	MTP120	Connector	1
18	MTP161	Spade terminal	1
19	MTP162	Plastic sleeve	1
20	MTP302	Wiring harness	1
21	MSD327	Ferrule	2
N.I.	MTP155	Connector nipple	1
N.I.	MMM153	Retaining clip	1
		ELECTRIC HORN	
N.I.	MTP304	Electric horn	1
N.I.	MTP305	Horn button	1
N.I.	MMP154	Screw, complete, 3.B.A., horn mounting	4

N.I.=Not illustrated

Parts with no Sales Number not sold separately

TOOLS AND ACCESSORIES

TOOLS

GROUP NO.	SALES NO.	DESCRIPTION	NUMBER OFF
1	MTR104	Tool wallet	1
2	MTR107	Plug spanner	1
3	MTR139	Ring spanner, $\frac{5}{16}'' \times \frac{1}{4}''$ B.S.F.	1
4	MTR374	Carburettor spanner	1
5	MTR110	Combination spanner, 12 mm. × 14 mm.	1
6	MTR140	Combination spanner	1

ACCESSORIES

GROUP NO.	SALES NO.	DESCRIPTION	NUMBER OFF
7	MTR101	Inflator	1
8	MTR377	Legshields. Spanish gold	1
9	MTR378	Legshields. Fiesta blue	1
10	MTR379	Windscreen	1

SERVICE EXCHANGE

SERVICE EXCHANGE

ILLUS. NO.	SALES NO.	DESCRIPTION	NUMBER OFF
1	MTX185	Basic engine unit, 1·4 B.H.P.	1
2	MTX186	Engine unit, complete with magneto and clutch, but less carburettor	1
3	MTX172	Carburettor complete, less air cleaner and control cables	1
4	MTX117	Crankshaft and connecting rod assembly, complete with small end bearing and gudgeon pin. (Engine No. R100101 onwards)	1
5	MTX142	Stator plate, complete with coils, contact breaker and condenser, but less external ignition coil (blue lighting coil)	1
6	MTX167	Stator plate, complete with coils, contact breaker and condenser, but less external ignition coil (violet lighting coil((Engine No. R.109000 onwards)	1
7	MTX106	Clutch complete.	1
8	MTX108	Clutch shoes, re-lined	1 pr.
*9	MTX175	Clutch drum c/w lined springs	1
10	MTX132	Brake shoes, re-lined, rear wheel	1 pr.
		*Clutch drums which are not suitable for this scheme can be fitted with new leaf springs at our works	

CONDITIONS OF SERVICE EXCHANGE

This service enables the exchange replacement units listed to be readily available to the owners of our machines.
Thus off-the-road time can be cut to a minimum and the owner also has the benefit of a unit overhauled to the most rigorous standards and guaranteed by the factory.
The attention of all concerned is drawn to the following points:—

1. The fullest details should be quoted of the model and type of machine for which the replacement unit is required.

2. This service is essentially an exchange service and only provides for the supply of a standard replacement unit in exchange for the original. It does not provide for the overhaul and return of individual units or for the supply of advance replacements.

3. We cannot undertake to return to the previous owner any component part of a displaced unit and no allowance can be made in respect of any new material which may have been fitted to the unit prior to exchange.

4. All replacement units are built to standard specifications and an extra charge will be made at the current price in respect of any component deficient from the displaced unit.

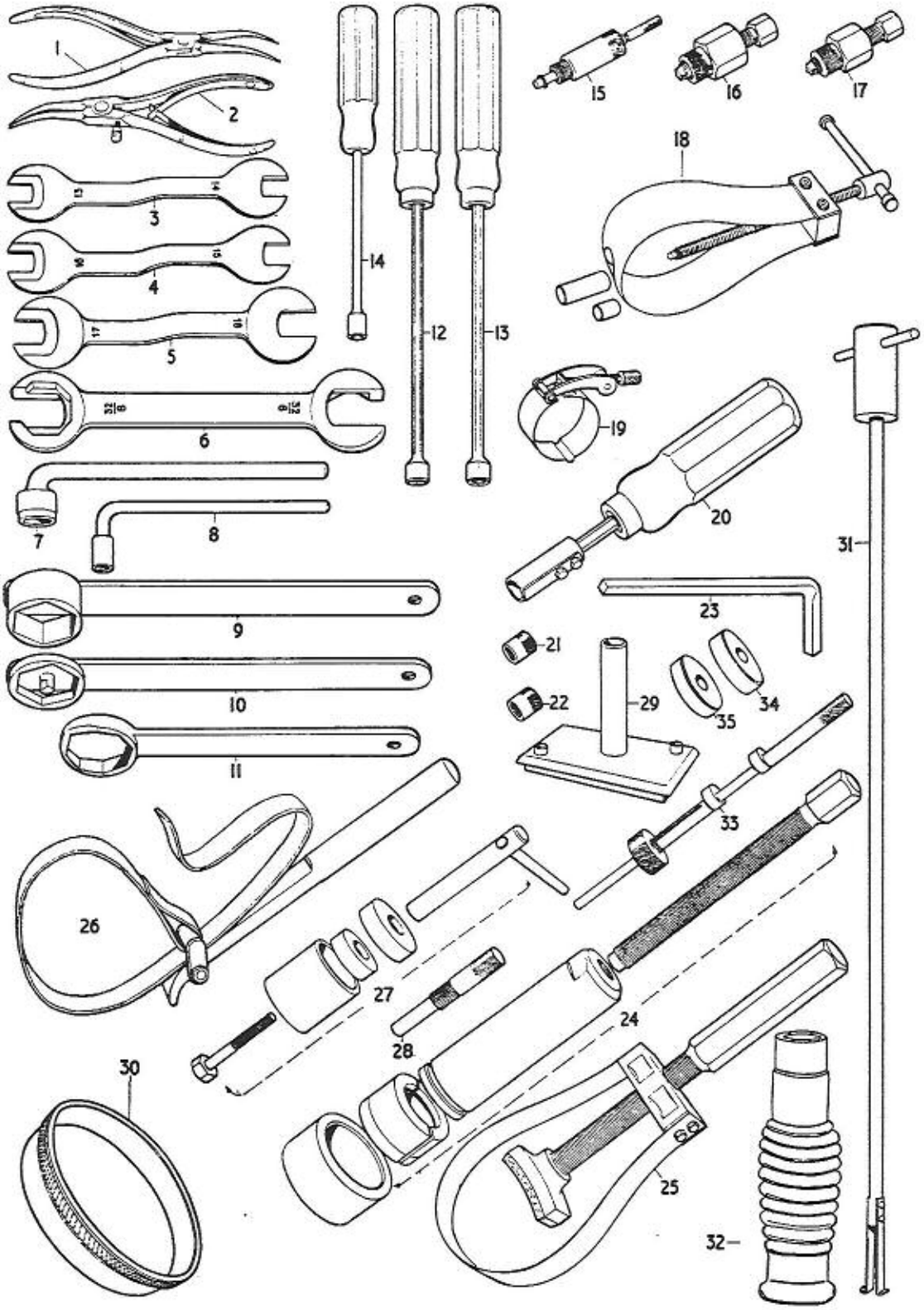
5. We reserve the right to make an extra charge, based on the current price, in respect of any major component of the displaced unit found to be damaged or broken due to accident or to be beyond repair.

6. Only units built within the limits of the standard specifications can be supplied and orders stipulating any particular or special specifications cannot be accepted through the medium of this service.

7. It is helpful to remind owners of their statutory obligation to notify the local licensing authority of any change in engine number which may be involved.

SPECIAL WORKSHOP TOOLS

SPECIAL WORKSHOP TOOLS



SPECIAL WORKSHOP TOOLS

ILLUS. NO.	SALES NO.	DESCRIPTION
1	MTR218	Circlip pliers, internal type
2	MTR219	Circlip pliers, external type
3	MTR232	Cone spanner, 13×14 mm. A.F.
4	MTR233	Cone spanner, 15×16 mm. A.F.
5	MTR234	Cone spanner, 17×18 mm. A.F.
*6	MTR230	Steering head locknut spanner, double ended
7	MTR215	Clutch drum nut wrench, 14 mm. A.F.
8	MTR221	Cylinder head nut wrench, 10 mm. A.F.
*9	MTR216	Clutch hub nut wrench, 35 mm. A.F.
*10	MTR229	Steering head lower bolt spanner, 32 mm. A.F.
*11	MTR228	Steering head locknut spanner, 32 mm. A.F.
*12	MTR225	Jet socket spanner, 9 mm. A.F.
13	MTR226	Jet socket spanner, 8 mm. A.F.
14	MTR227	Grease nipple socket spanner, 6 mm. A.F.
15	MTR182	Ignition advance gauge
16	MTR207	Magneto cam extractor
17	MTR208	Clutch drum extractor
18	MTR181	Gudgeon pin extractor
19	MTR223	Piston ring clamp
20	MTR217	Clutch key positioning tool
21	MTR209	Thread protector, 10 mm. R.H.
21	MTR281	Thread protector, 11 mm. R.H.
22	MTR210	Thread protector, 10 mm. L.H.
22	MTR211	Thread protector, 11 mm. L.H.
23	MTR212	Flywheel nut wrench, 10 mm. square
24	MTR224	Crankshaft bearing extractor
25	MTR214	Flywheel holding tool, steel band type
26	MTR213	Flywheel holding tool, webbing strap type
*27	MTR231	Engine mounting rubber bush fitting tool
28	MTR180	Piston stop
*29	MTR237	Clutch holding tool
30	MTR301	Coil centralising ring
*31	MTR239	Fork bush removal tool
32	MTR241	Magnetic extractor for clutch washers
33	MTR242	Crankshaft—crankcase gauge
34	MTR243	Dummy bearings, 42×15×13 mm.
35	MTR244	Dummy bearings, 42×16×13 mm.
*N.I.	MTR245	Rear hub bearing extractor
*N.I.	MTR240	Replacement springs and rivets for MTR239 fork tool
N.I.	MTR247	Exhaust nut spanner
N.I.	MTR373	Reamer, bottom bracket bush

N.I.=Not illustrated
A.F.=Across flats
*=Items marked thus are not applicable to this machine

SHIM WASHERS FOR ADJUSTMENT PURPOSES

SHIM WASHERS FOR ADJUSTMENT PURPOSES

These are obtainable from our Spare Parts Department for the adjustment of the various assemblies, as set out below.

(A) **For the adjustment of crankshaft end float**

Part No.	Description
MMW 168	Shim washer, crankshaft, 0·1 mm. thick.
MMW 169	Shim washer, crankshaft, 0·2 mm. thick.
MMW 170	Shim washer, crankshaft, 0·3 mm. thick.

(B) **For the adjustment of cylinder height**

Part No.	Description
MTA 145	Cylinder shim, 0·2 mm. thick.
MTA 146	Cylinder shim, 0·4 mm. thick.

(C) **For the adjustment of clutch end float**

Part No.	Description
MMW 203	Shim washer, clutch hub, 0·1 mm. thick.
MMW 204	Shim washer, clutch hub, 0·25 mm. thick.
MMW 205	Shim washer, clutch hub, 0·4 mm. thick.

(D) **For the adjustment of bottom bracket end float**

Part No.	Description
MMW 231	Washer, 27 × 16·5 × 1 mm. thick.
MMW 344	Washer, 27 × 16·5 × 2·5 mm. thick.
MMW 345	Washer, 27 × 16·5 × 3·2 mm. thick.
MMW 346	Washer, 27 × 16·5 × 0·5 mm. thick.
MMW 347	Washer, 27 × 16·5 × 0·8 mm. thick.
MTD 212	Washer, 27 × 16·5 × 2 mm. thick.
MMW 232	Washer, 33 × 16·5 × 0·8 mm. thick.
MMW 341	Washer, 33 × 16·5 × 2 mm. thick.
MMW 342	Washer, 33 × 16·5 × 1·5 mm. thick.
MMW 343	Washer, 33 × 16·5 × 2·3 mm. thick.

APRIL 1967

RALEIGH INDUSTRIES LIMITED

A TI COMPANY

SPARE PARTS

TRADE PRICE LIST

SUPPLEMENT

COVERING THE 'WISP' MODEL

Sales No.	Description	£	s.	d.
MTK279	Rear wheel complete	3	4	0 ea.
MTK280	Rim, rear wheel 12″×2″, 36H.		8	6 ea.
MTK281	Spoke, 4⅜″ 13G., rear wheel		6	0 gr.
MTK282	Rim tape			11 ea.
MTK285	Rim, front wheel 12″×2″, 28H.		8	6 ea.
MTK286	Front brake plate complete		12	6 ea.
MTK287	Front hub complete, 28H.	1	6	6 ea.
MTK288	Front wheel complete	2	19	8 ea.
MTK289	Front axle assy.		6	0 ea.
MTK290	Set of axle nuts and washers		2	0 ea.
MTK291	Set of cones and bearings		2	6 ea.
MTK292	Set of brake pivot assemblies		3	0 ea.
MTL511	Front number plate		2	3 ea.
MTL512	Bracket, headlamp/number plate mounting		2	0 ea.
MTL513	Horn bracket		3	0 ea.
MTL514	Mudflap c/w washer and rivet		2	6 ea.
MTL515	Plastic edging strip			11 ea.
MTL516	Front mudguard less mudflap, Spanish gold		7	0 ea.
MTL517	Front mudguard less mudflap, Fiesta blue		7	0 ea.
MTL518	Mudguard stay, Spanish gold		1	6 ea.
MTL519	Mudguard stay, Fiesta blue		1	6 ea.
MTL520	Grommet, mudguard mounting			8 ea.
MTL521	Tube, mudguard mounting		1	0 ea.
MTL522	Engine fairing Chrome L.H.		3	6 ea.
MTL523	Engine fairing Chrome R.H.		3	6 ea.
MTL524	Rear frame fairing, Spanish gold		10	0 ea.
MTL525	Rear frame fairing, Fiesta blue		10	0 ea.
MTL526	Plastic strip, front, 6″			6 ea.
MTL527	Plastic strip, rear, 12″			11 ea.
MTL528	Fuel tank, Spanish gold	1	15	0 ea.
MTL529	Fuel tank, Fiesta blue	1	15	0 ea.
MTL530	Fuel tank cradle, Spanish gold		5	6 ea.
MTL531	Fuel tank cradle, Fiesta blue		5	6 ea.
MTL532	Rear mudguard, Spanish gold		7	6 ea.

Sales No.	Description	£	s.	d.
MMB370	Bolt, $\frac{3}{16}$"×$\frac{7}{8}$"		3	0 dz.
MMM153	Retaining clip		3	4 dz.
MMP220	Seat bolt complete		2	6 ea.
MMP221	Bolt complete			10 ea.
MMW404	Washer $\frac{1}{2}$"			8 dz.
MGA152	Spoke 4$\frac{7}{8}$" 14G. front wheel		5	4 gr.
MGA153	Spoke 5$\frac{1}{2}$" 14G. front wheel		5	4 gr.
MGB101	Spoke nipple 14G.		4	0 gr.
MSB208	Brake shoe springs		3	4 dz.
MSB210	Brake shoes complete		6	8 pr.
MSL703	Brake arm clip complete		1	0 ea.
MTA328	Inlet adaptor		6	6 ea.
MTA329	Silencer assembly	1	0	0 ea.
MTA330	Spacer, upper mounting plates, 52 mm. long			8 ea.
MTB169	Clutch hub with ret. plate and screws	2	11	7 ea.
MTB170	Retaining plate with screws		1	8 ea.
MTD260	Pedal crank L.H.		6	3 ea.
MTD261	Chainwheel and R.H. crank		11	4 ea.
MTD262	Drive chain 89p.		9	0 ea.
MTD263	Pedal chain 94p.		7	6 ea.
MTD264	Pedals		7	11 pr.
MTF212	Frame, Spanish gold	8	0	0 ea.
MTF213	Frame, Fiesta blue	8	0	0 ea.
MTF214	Vee belt guard, Silver		3	1 ea.
MTF216	Seat pillar		3	9 ea.
MTF217	Centre stand		8	11 ea.
MTH241	Fuel tap complete with all fittings		7	9 ea.
MTH242	Fuel pipe 12"			11 ea.
MTH243	Tap lever extension c/w spring		1	8 ea.
MTH244	'O' ring and securing spring		1	0 ea.
MTH245	Carburettor complete	4	8	4 ea.
MTH246	Float chamber cover		6	10 ea.
MTJ238	Front fork, Fiesta blue	1	0	0 ea.
MTJ239	Front fork, Spanish gold	1	0	0 ea.
MTJ241	Cable band, White		3	0 dz.

Sales No.	Description	£	s.	d.
MTL533	Rear mudguard, Fiesta blue		7	6 ea.
MTL534	Rear carrier assembly	1	0	0 ea.
MTL535	Grommet, rear fairing			8 ea.
MTL541	Transfer, rear fairing		4	0 dz.
MTL542	Transfer, frame		1	0 pr.
MTL543	Transfer, On-Off-Reserve		4	0 dz.
MTN262	Handlebar less expander bolt		16	10 ea.
MTN263	Brake lever assy. R.H.		3	7 ea.
MTN264	Brake lever assy. L.H.		3	7 ea.
MTN265	Decompressor cable complete		3	0 ea.
MTN266	Throttle cable complete		2	4 ea.
MTN267	Choke cable complete		2	4 ea.
MTN268	Front brake cable complete		2	6 ea.
MTN269	Rear brake cable complete		3	0 ea.
MTN270	Plastic cable holder		3	6 dz.
MTN271	Twistgrip complete less handlebar grip		7	0 ea.
MTN272	Handlebar grips, Black		3	0 pr.
MTN273	Handlebar grips, White		3	0 pr.
MTN274	Expander bolt			9
MTN275	Expander bolt complete		1	4 ea.
MTP300	Headlamp complete		12	7 ea.
MTP302	Wiring harness		2	8 ea.
MTP304	Electric horn		11	8 ea.
MTP305	Horn button		3	0 ea.
MTP308	Tail lamp complete		6	9 ea.
MTP309	Bulb, 6v. 6w. M.E.S., tail lamp	(+4d. P. Tax)	1	3 ea.
MTR377	Legshield, Spanish gold		2 16	0 ea.
MTR378	Legshield, Fiesta blue		2 16	0 ea.
MTR379	Windscreen		3 10	0 ea.
MTR380	Spares List and Workshop Manual		12	6 ea.
MTX185	Basic engine 1·4 B.H.P. Service exchange		9 16	11 ea.
MTX186	Engine complete 1·4 B.H.P. Service exchange		15 13	4 ea.
MYC545	Holdall, Black	(+9/5 P. Tax)	1 15	6 ea.
MYC546	Holdall, Shadow White	(+9/5 P. Tax)	1 15	6 ea.
MZA326	Saddle, Black		1 10	0 ea.
MZA327	Saddle, Shadow White		1 10	0 ea.

SPARE PARTS LISTS AMENDMENTS

Please correct your WISP Spares List as indicated below:—

PAGE S.L.C. 3

Illustration No. 12
Delete MTH 123 Insert MTH 151

PAGE S.L.E. 3

Illustration No. 20
Delete MTD 262 Drive Chain 89 Pitches Insert MTD 268 Drive Chain 85 Pitches
Insert after **Illustration No. 21:**
or MTD 265 Spring Link, Drive Chain

Illustration No. 23
Delete MTD 235 Insert MTD 243

PAGE S.L.F. 3

Insert after **Illustration No. 17**
S.A. MTJ 194 Steering Head Bearings Complete (Parts No. 9, 12-17)

PAGE S.L.I. 3

Illustration No. 23
Delete MTK 204 Sprocket, Rear Wheel, 44T Insert MTK 295 Sprocket, Rear Wheel, 36T

Illustration No. 24
Delete MMW 266 Shakeproof Washer, 6 MM. Insert MMW 425 Shakeproof Washer, 6 MM.

ENGINE

Special Tools Available for Engine Servicing

MTR181	Gudgeon pin extractor and fitting tool.
MTR224	Crankshaft bearing extractor.
MTR244	Dummy bearings, 16 mm. I.D.
MTR242	Crankcase/crankshaft gauge.
MTR223	Piston ring clamp.

REMOVING ENGINE UNIT

First make sure that the petrol tap is in the 'OFF' position and remove the tap lever extension, then remove all fairings. These are secured by slotted screws. Disconnect the sparking plug cap and the low tension wire from the external ignition coil. (See Fig. 1.) Pull off the lighting wire which is clipped to the terminal behind the magneto stator plate. (See Fig. 2.) To disconnect the decompressor cable, depress the valve in the cylinder head with the fingers and guide the inner cable out from the loop in the end of the valve spring. Now remove the sparking plug and unhook the cable nipple from the stop plate on the

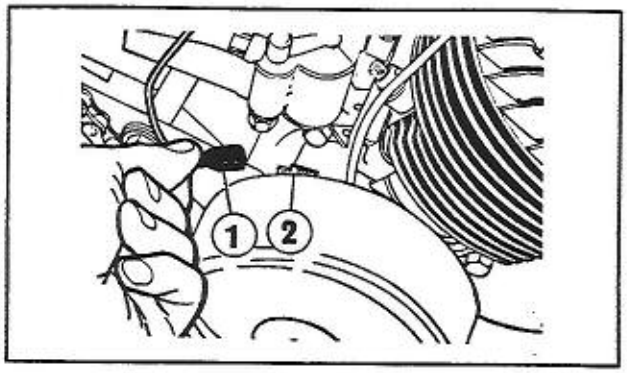


Fig. 2
1. Lighting wire 2. Lighting terminal

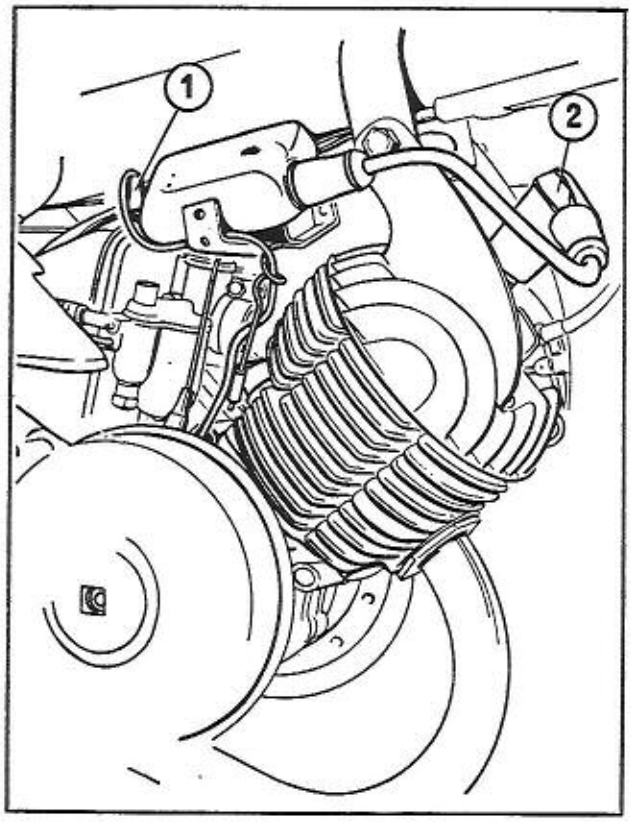


Fig. 1
1. Ignition low tension wire
2. Sparking plug cap

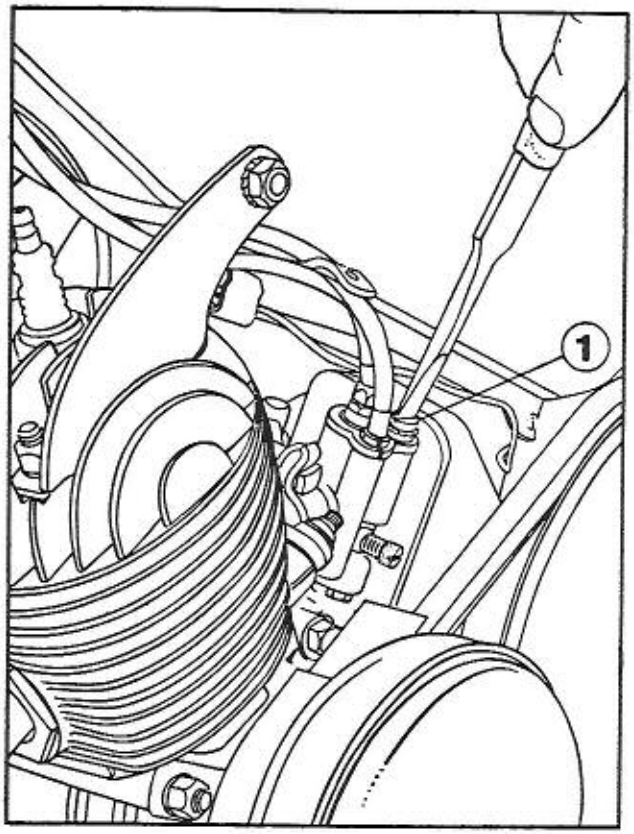


Fig. 3
1. Mixing chamber cover screw

cylinder head. Disconnect the fuel feed pipe at the carburettor end. Remove the screw from the carburettor mixing chamber cover (see Fig. 3) and carefully lift off the cover together with the throttle and enrichment valves. (See Fig. 4.)

At this stage it would be preferable to loosen the large nut at the exhaust port.

Loosen both the top and bottom engine mounting bolts (it is easiest to loosen the lower bolt from the chain wheel side); push the engine to its rearmost position in the drive belt adjustment slots and loop the drive belt off the bottom bracket pulley. (See Fig. 5.) Now push the engine forward in the slots until the lower mounting bolt is clear of the pedal chainwheel, remove the nut and washer and take out the bolt. (If there should be insufficient clearance between the bolt and the chainwheel, remove the chain from the chainwheel. Now unscrew the exhaust nut and

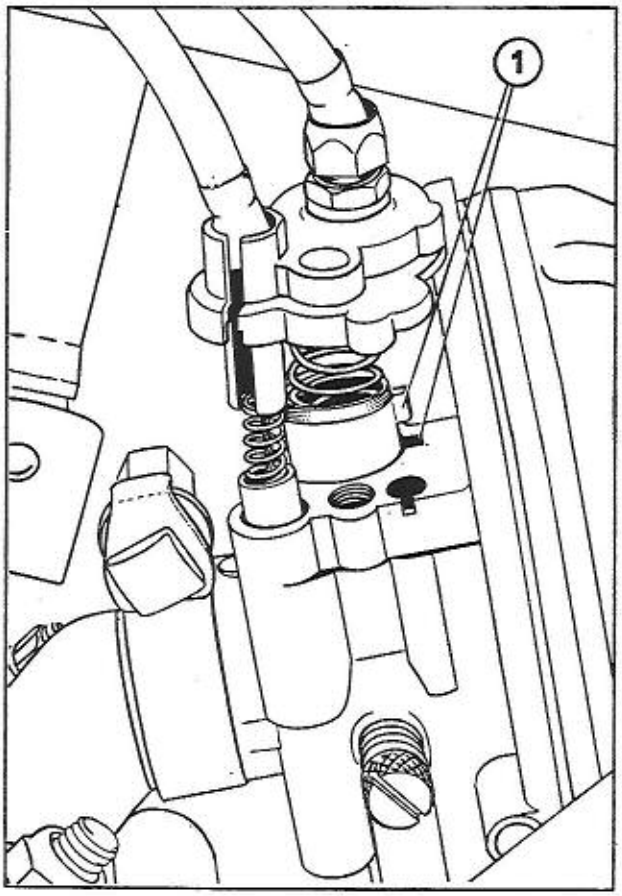


Fig. 4
1. Throttle valve guide and slot

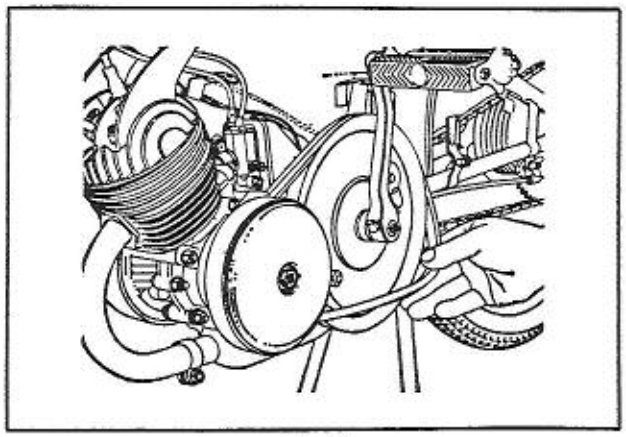


Fig. 5
Removing the drive belt

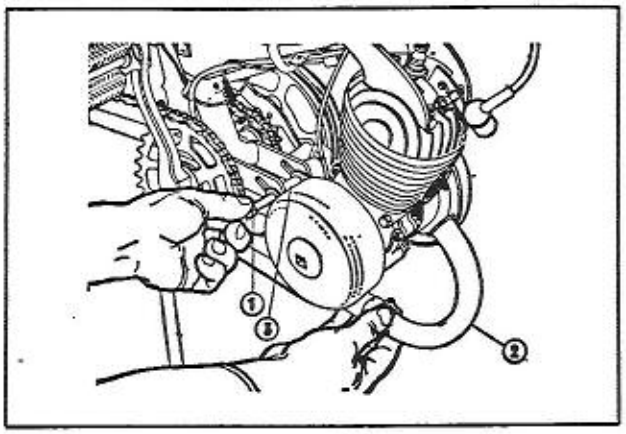


Fig. 6
1. Lower mounting bolt
2. Exhaust system
3. Tubular distance piece

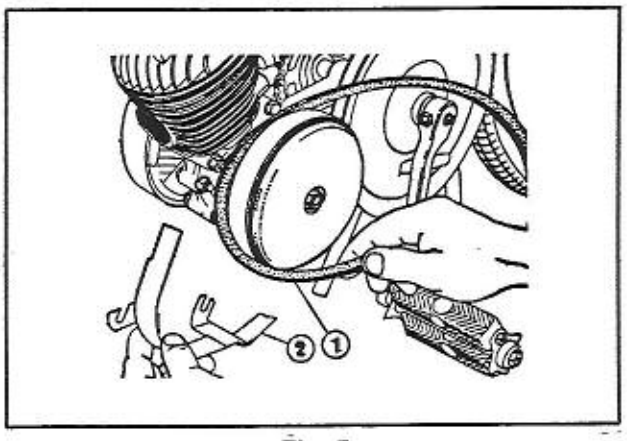


Fig. 7
1. Drive belt. 2. Belt guard

take off the exhaust system complete. (See Fig. 6). Support the engine by hand; remove the top mounting bolt and lower the engine to the bench. Note the tubular distance piece fitted inside the upper frame bracket and the similar, but shorter one fitted between the lower engine plates. If you wish to remove the drive belt, loosen the two crankcase bolts which hold the belt guard, then remove the guard and the belt. (See Fig. 7.)

If required, the carburettor body can be removed from the inlet stub, after the clip bolt has been loosened.

REFITTING ENGINE UNIT

Refit the carburettor body if it has been removed, and fit the engine so that the position of the carburettor is above the lower frame plates. Support the engine in the frame by means of the top mounting bolt, making sure that the upper distance piece is in position, but do not tighten the nut. Place the distance piece for the lower mounting bolt in position between the lower engine plates, replace the exhaust system complete and insert the lower mounting bolt. (Do not forget to fit a new copper-asbestos gasket in the exhaust port.) Tighten the exhaust pipe nut. The drive belt may now be refitted and tensioned. To adjust the belt tension, insert a suitable lever, such as a screwdriver, between the centre stand and the rear of the silencer (see Fig. 8), and without using undue force, lever the engine forward by the required amount, then tighten both engine mounting bolts. When the belt is correctly tensioned, finger pressure on the belt midway between the pulleys should produce just a trace of up and down movement.

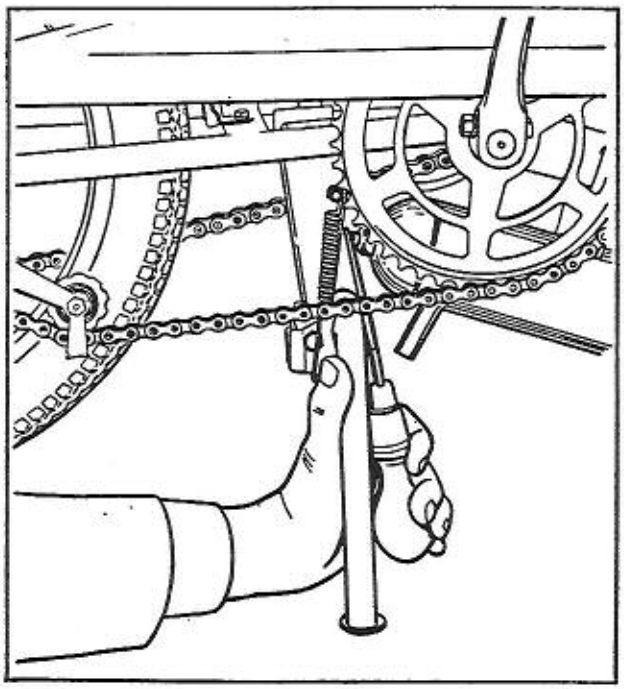


Fig. 8
Adjusting belt tension

Refit the carburettor mixing chamber cover, together with the throttle and enrichment valves. (Note that the throttle valve has a small projection at the top which must engage correctly in the guide slot in the carburettor body, see Fig. 4. Ensure that the carburettor is vertical.) Refit the fuel pipe.

Connect the lighting wire to the terminal behind the stator plate and reconnect the low tension wire to the external ignition coil, then refit the sparking plug, and replace the H.T. lead and suppressor cap and the decompressor cable.

Refit the pedal chain if necessary.

Re-check the tightness of all mountings, etc., refit the fairings and the tap lever extension.

DECARBONISING

With any two-stroke engine, build-up of carbon in the engine and exhaust system will cause a marked deterioration in performance.

In addition, if the exhaust system is obstructed so that the hot gases cannot freely escape, this will have a detrimental effect on the life of the engine.

It is, therefore, most important that the work of removing the deposits of carbon is not neglected. This should preferably be carried out as a matter of routine and not left until a fall off in power and performance makes it necessary.

DECARBONISING THE EXHAUST SYSTEM

At intervals of about 6 months or 3,000 miles, or more frequently if the machine is used mainly for short runs, or stop and start riding, the deposits of carbon should be removed from the exhaust system.

Remove the exhaust pipe after unscrewing the large exhaust port nut and slackening the silencer clip. Scrape the carbon out of the pipe. (A good way to do this is to thread an old bicycle chain through the pipe, place the pipe on the floor and with your foot on the pipe pull the chain to and fro through the length of the pipe.)

Turn the piston to its lowest position and

clean out the exhaust port. Take care to keep the dislodged carbon out of the cylinder.

The silencer can be dismantled for cleaning. Take off the nut and washer from the end nearest to the tailpipe, take off the end cap and scrape the carbon from the silencer interior.

The built-up deposits tend to reduce the effective diameter of the internal holes. Make certain that these are cleaned out properly.

DECARBONISING THE ENGINE

This may not require attention as frequently as the exhaust system but decarbonising should be undertaken at intervals of not more than 6,000 miles, dependent, of course, on the type of use that the machine receives.

Remove the engine fairings, disconnect the sparking plug lead and the decompressor cable and take out the sparking plug. Remove the upper engine mounting bolt and the four cylinder head nuts and washers and take off the upper engine mounting brackets. The engine is now only supported by the lower mounting bolt and care should be taken to prevent it swinging too far forward and hanging on the carburettor cables. Now withdraw the cylinder head, taking great care not to lift the cylinder in the process and thus break the joint between the cylinder and the crankcase.

For the actual work of removing the deposits of carbon a soft metal (copper, aluminium, etc.) scraper should be used. Hold the cylinder and turn the flywheel to bring the piston to the top of its stroke. Scrape the carbon from the crown of the piston. (See Fig. 9.) Turn the flywheel until the piston is at the bottom of its stroke. Clean out the carbon from the exhaust port. Scrape the carbon from the cylinder head combustion chamber.

Remove all traces of loose carbon from all the components, preferably with a jet of compressed air. When refitting the cylinder head, use a new gasket and tighten the head nuts alternately, a little at a time, to avoid any distortion. Refit the remaining components in the reverse sequence.

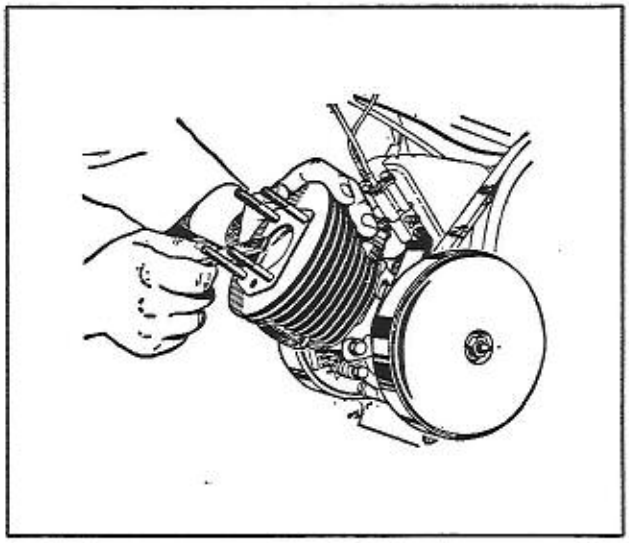


Fig. 9
Decarbonising piston crown

DECOMPRESSOR VALVE

Should the decompressor valve require attention, the cylinder head will have to be removed. It is recommended, therefore, that the valve is serviced as a matter of routine when decarbonising the engine.

To remove the valve, cut off the head of the spring retaining pin and remove it, taking care not to let the component parts fly apart. Push out the valve. Examine the seating surfaces and if any pitting or burning is noticeable, grind in the valve, using a fine grinding paste. Wash off all traces of grinding paste with paraffin or petrol.

DISMANTLING CYLINDER AND PISTON

Remove the engine from the frame and remove the clutch and magneto as described in the appropriate sections. Take out the stator plate mounting studs. Unscrew the sparking plug and detach the cylinder head.

The cylinder barrel may now be lifted off (see Fig. 10), taking care not to impose any side loads which may bend the connecting rod. Remove the piston rings. (See Fig. 11.) Take out the gudgeon pin circlips (see Fig. 12) and after warming the piston to approximately 250°F., press out the gudgeon pin with the special gudgeon pin tool. (See Fig. 13.) It is essential that the correct tool is used for this operation in order to prevent damage to the small end needle roller bearing. Remove the tool from the piston and push out the pilot drift with the fingers. The piston is now free. Remove the needle roller bearing to a safe place.

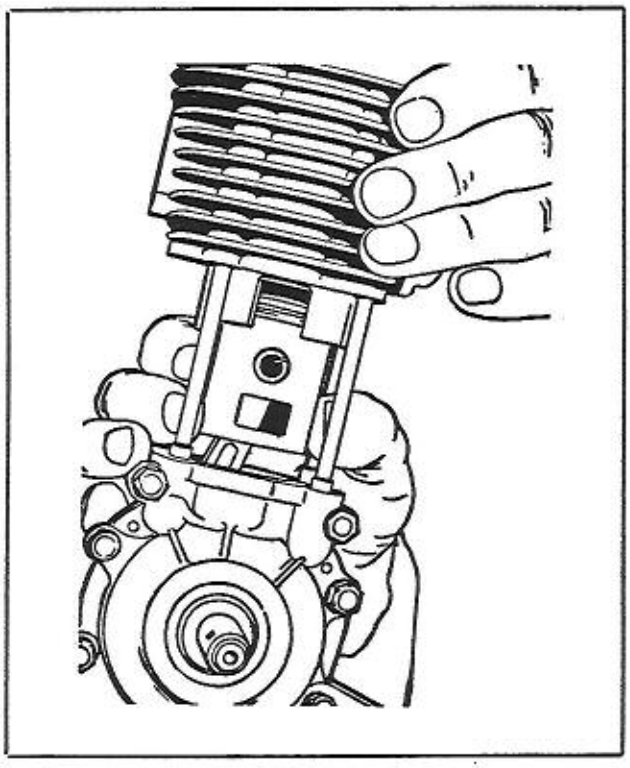


Fig. 10
Removing cylinder barrel

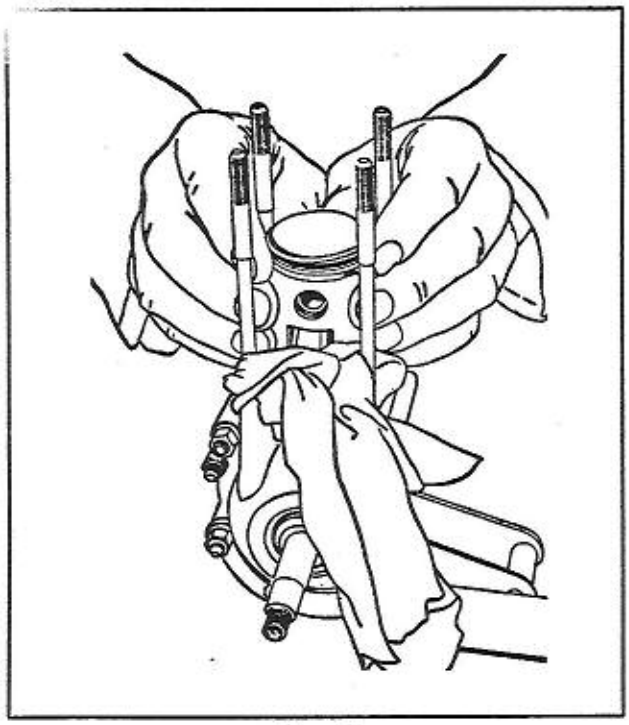


Fig. 11
Removing piston rings

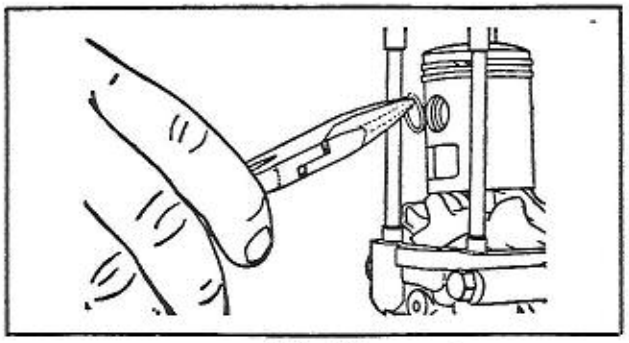


Fig. 12
Removing gudgeon pin circlips

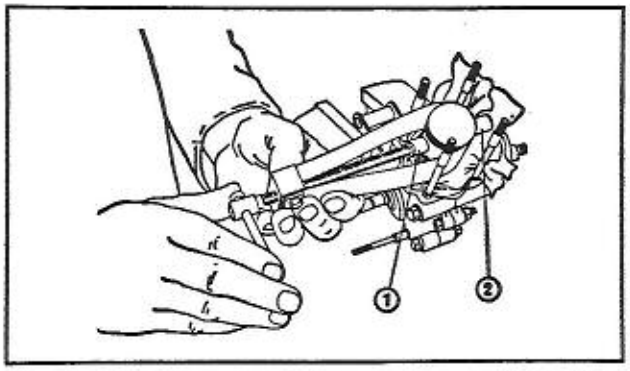


Fig. 13
Pressing out gudgeon pin
1. Pilot drift. 2. Gudgeon pin

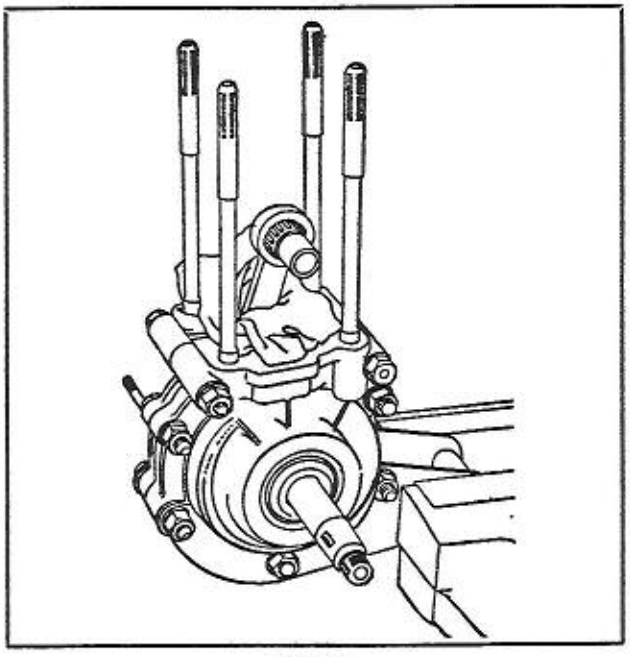


Fig. 14
Small end assembly, less piston

DISMANTLING CRANKCASE

Take out the seven bolts which hold the crankcase together and remove the engine plates. Note that the bolts which are threaded into the crankcase at the top have a coarser thread than the others. To free the crankcase from the main bearings, it will be necessary to heat the crankcase to about 250°F. If a direct source of heat is used, i.e., a blowlamp or gas flame (see Fig. 15) care must be taken that the case is heated evenly. Tap the ends of the crankshaft on a wooden bench to free the crankcase halves. (See Fig. 16.)

Prise out the crankcase oil seals and throw them away, as they may have been damaged by the heat of the dismantling operation.

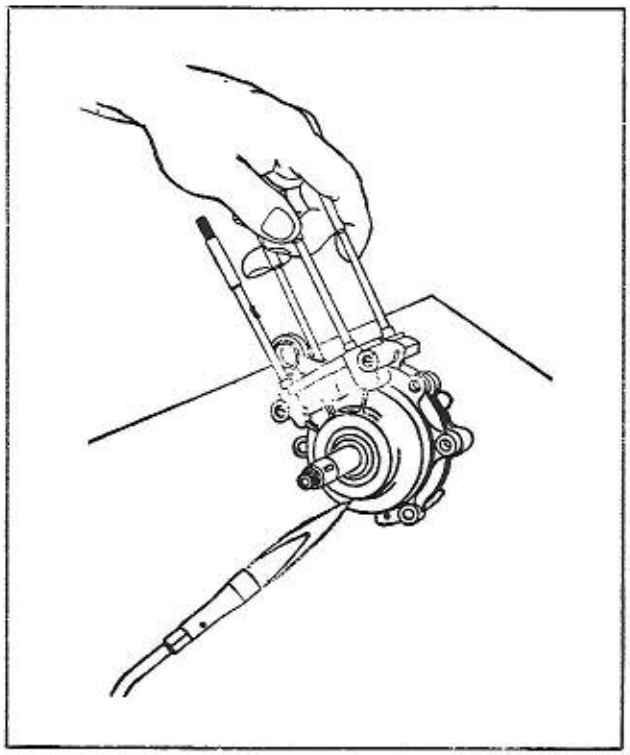


Fig. 15
Heating the crankcase

REMOVING MAIN BEARINGS

If it is desired to remove the main bearings from the crankshaft, use the special tool as illustrated in Fig. 17. Take note of the position and thickness of any shims fitted between the main bearings and crankshaft webs.

It is not recommended that the repair of the crankshaft or big end should be attempted.

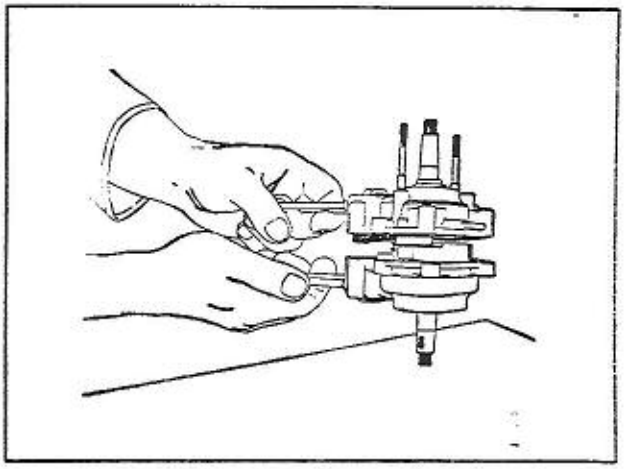


Fig. 16
Splitting the crankcase

This operation calls for special equipment which is normally possessed only by the Factory Service Department. An exchange crankshaft scheme is in operation, which provides guaranteed Factory Rebuilt units at an economical price.

REASSEMBLING CRANKCASE

If a new or replacement crankcase is to be fitted, the end float of the shaft must be checked and adjusted, if necessary. The most convenient way of doing this is to obtain a pair of dummy bearings which are a sliding fit on the shaft and in the crankcase, but are of the exact width of the orthodox bearings. These are obtainable from our Spare Parts Department. Mount the crankshaft in the crankcase using the dummy bearings and fit shims between the crankwebs and bearings until the required end float is obtained, i.e., ·004" approximately.

Alternatively, the crankcase/crankshaft gauge can be used to measure the outside dimensions of the crankshaft and the inside dimensions of the crankcase. The difference (less ·004") is the amount needing to be taken up by shims.

Do not forget to allow for the thickness of the crankcase gasket and, if possible, distribute the shims to ensure equal thickness at each side.

When the end float has been adjusted, the main bearings may be assembled on to the crankshaft in the following manner. Place a piece of metal, $\frac{1}{16}$" thick between the crank-

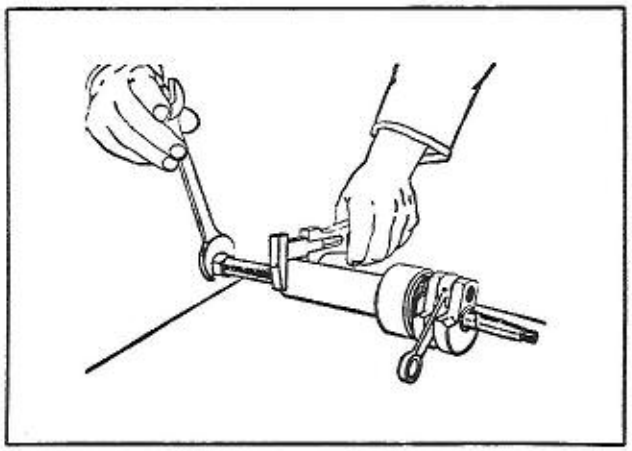


Fig. 17
Removing main bearing from crankshaft

webs and support the metal on a vice as shown in Fig. 18. Check that the correct shims are in place and use a piece of tube of about ⅝" inside dia. to drive the bearings on to the shaft. Force should only be applied to the inner race of the bearing.

Slide the new oil seals on to the crankshaft, making sure that the 'lips' of the seals are

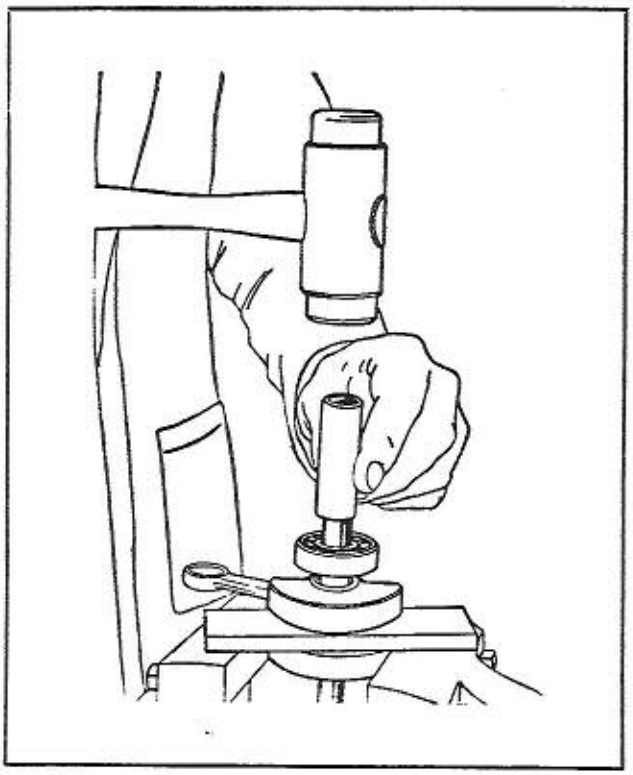


Fig. 18
Fitting a main bearing

outwards (away from the crankwebs). Take care not to damage the seals. Apply clean oil to the main and big end bearings. Warm up one half of the crankcase to about 250°F. and fit the crankshaft as quickly as possible. (Make sure it is the correct way round.) Place a new crankcase gasket in position on this half, held by a little grease if necessary, warm up the second half of the crankcase and fit the two halves together.

Do not forget the lower engine mounting plates when putting in the crankcase bolts. (The projecting ends of the plates go to the rear, and the magneto mounting studs protrude from the right-hand crankcase half.) Tighten up the bolts evenly a little at a time. Do not overtighten.

PISTON AND PISTON RING SIZES

In order to achieve the long life for which these engines are noted, very close tolerances are employed when fitting the piston to the cylinder. It would be impractical to manufacture pistons and cylinders to such fine limits as to make them all interchangeable; therefore, each piston is exactly matched to the correct cylinder at the Factory. If a replacement piston only is required, it will be necessary to quote the letter on the top face of the cylinder barrel. These run from 'AA' to 'P' giving a range of sixteen sizes. Should the cylinder be unmarked, individual matching will be required and it should be returned to our Works. Please pack carefully to avoid damage to the cylinder fins in transit.

Two sizes of piston rings are supplied as spare parts: 39·0 mm. (Part No. MTA123) and 39·1 mm. (Part No. MTA124).

The smaller ring (39·0 mm.) should be fitted to all engines marked from 'A' to 'J' and the 39·1 mm. ring should be fitted to engines marked 'K' to 'P.'

REFITTING PISTON

Continuing the assembly of the engine unit, oil the small end needle roller bearing and place it in position in the connecting rod eye. Then place the piston in position, making sure it is the right way round, i.e., with the small square cutaway in the skirt to the rear. Insert the long pilot drift of the gudgeon pin tool as a temporary gudgeon pin to align

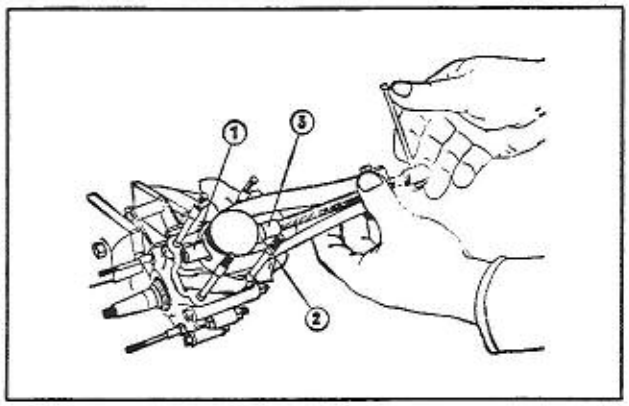


Fig. 19
Refitting gudgeon pin
1. Long pilot drift. 3. Short pilot drift
2. Gudgeon pin

the assembly. Warm the piston and press in the gudgeon pin with the special tool, at the same time pushing out the temporary pin, thereby maintaining the alignment and preventing damage to the bearing. Fit new circlips, ensuring that they are properly located in their grooves.

PISTON RINGS

Before refitting the piston rings, the gaps must be checked and adjusted if necessary by the following method to the clearance shown in the Technical Data.

Place each piston ring in turn in the cylinder bore and ensure that it is absolutely square to the axis of the cylinder by pushing it half an inch or so down the bore with the piston. Check the gap between the ends of the piston ring with a feeler gauge. (See Fig. 20.) If the gap is too small, file the ends of the ring carefully and re-check.

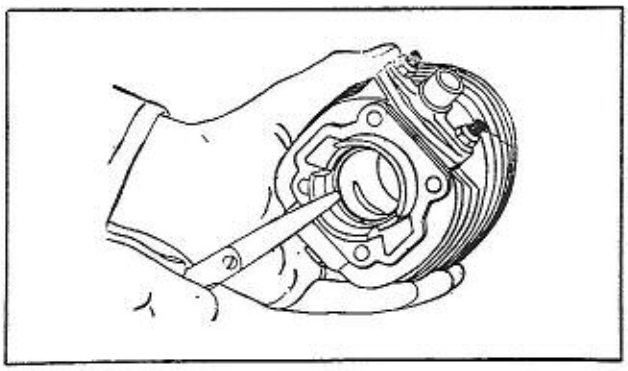


Fig. 20
Checking the piston ring gap

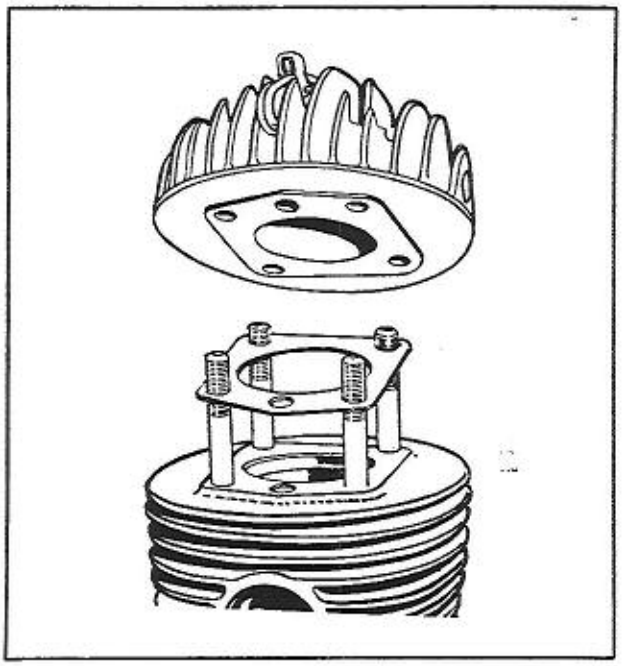


Fig. 21
Refitting cylinder head and gasket

If the gap is too large, new piston rings must be fitted, not forgetting, of course, to check the gap of the new rings. When the gap of both rings is satisfactory, refit the rings to the piston.

REFITTING CYLINDER

Place in position a new cylinder base gasket, check that the rings are located in relation to the pegs, oil and refit the cylinder. A piston ring clamp is available, if required, to facilitate this operation.

When the cylinder is in position, check that the piston does not protrude above the top face of the cylinder at 'top dead centre.' The edge of the piston must be level with the top face of the cylinder. Shims are available to fit beneath the cylinder to adjust the height, if necessary.

Replace the cylinder head, using a new gasket. Ensure that the hole in the gasket for the decompressor outlet is in line with the hole in the cylinder. (See Fig. 21.) Do not forget the upper mounting plates. Tighten the cylinder head nuts evenly, a little at a time, in order to prevent distortion.

The clutch and magneto may now be replaced and the engine refitted to the frame as described in the appropriate sections.

AUTOMATIC CLUTCH

Special Tools Available for Clutch Servicing

MTR208	Clutch drum extractor.
MTR213	Flywheel holding tool (webbing strap wrench type).
or MTR214	Flywheel holding tool (screw operated steel band type).
MTR215	Clutch drum nut wrench, 14 mm.
MTR217	Clutch key positioning tool.
MTR218	Circlip pliers, internal type.
MTR219	Circlip pliers, external type.
MTR180	Piston stop.
MTR227	Grease nipple socket spanner with wooden handle.
MTR241	Magnetic extractor, clutch washers.

The automatic clutch is really two clutches in one. The primary clutch is connected to the engine crankshaft and its operation is therefore governed by engine speed. The secondary clutch is coupled via the Vee-belt and the driving chain to the rear wheel and its operation depends on road speed. With the machine at rest, increasing the engine speed by opening the throttle causes the primary clutch to come into operation and starts the machine moving. When a road speed of about 4 m.p.h. has been reached the secondary clutch also comes into effect and locks up the drive, eliminating any slip.

When the twistgrip is turned to the 'neutral' position and the speed of the machine is brought below 4 m.p.h. the clutch drive disengages and the machine can come to a standstill with the engine idling.

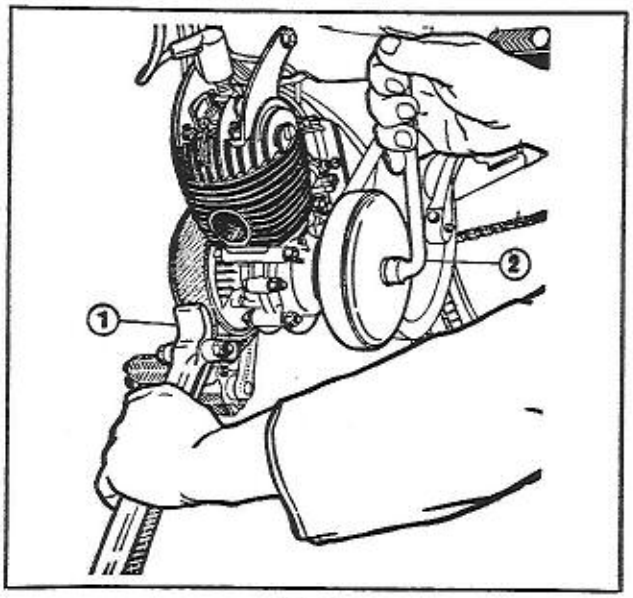


Fig. 1

1. Strap wrench 2. 14 mm. spanner

REMOVING CLUTCH DRUM

The clutch drum is fitted on a taper on the crankshaft. Prevent the crankshaft turning, preferably by holding the magneto flywheel with a strap wrench (see Fig. 1), or by using a piston stop screwed into the sparking plug aperture. Take out the central grease nipple, using a 6 mm. box spanner. With a 14 mm. spanner unscrew the clutch drum nut. Fit a thread protector on to the crankshaft thread and screw the clutch drum extractor fully into the hub. Tighten the extractor bolt. (See Fig. 2.)

If the drum is not loosened by means of reasonable pressure on the bolt, tap the head of the bolt with a hammer and retighten, repeating this sequence until the drum is free. Remove the extractor, unscrew the thread protector and take off the drum. Now remove the key from the shaft.

REMOVING CLUTCH BODY

The clutch body is located on the crankshaft by circlips. Extended nose circlip pliers are required to remove them. (See Fig. 3.) The order of dismantling is as follows:—

1. Internal circlip, 22 mm. dia. 2. Shims, as necessary, to adjust end movement of the clutch. 3. Thick locating washer. 4. External circlip, 15 mm. dia. 5. Another thick locating washer. 6. Needle roller cartridge. The clutch body can be pulled off the crankshaft with these last two in position.

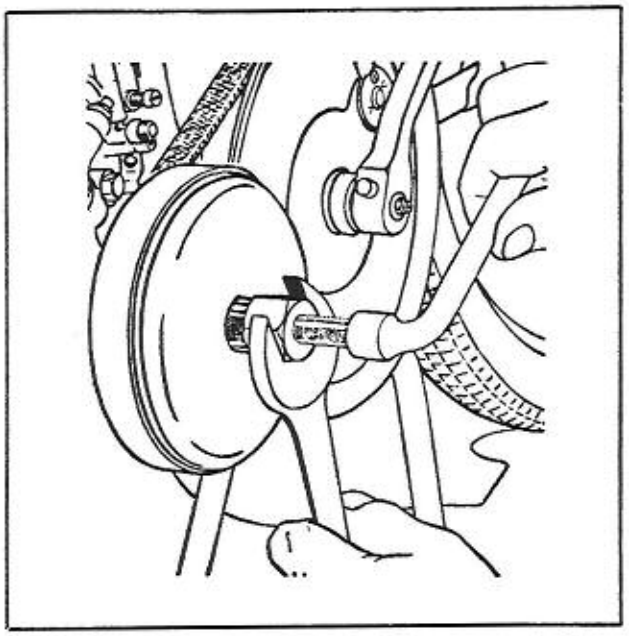


Fig. 2
Removing clutch drum

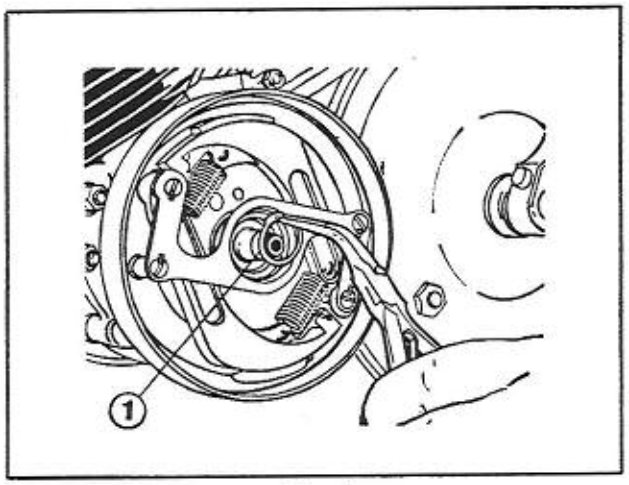


Fig. 3
1. Internal type circlip

REFITTING CLUTCH

Circlips should not be re-used. Thoroughly clean all parts, lightly grease the needle roller bearing and place it in position in the clutch hub (see Fig. 4), followed by a thick locating washer, the smaller circlip, a second locating washer and any thin shims necessary. Refit the larger circlip, ensuring that it is properly seated in its groove, centralise the smaller circlip in relation to the washers and push the

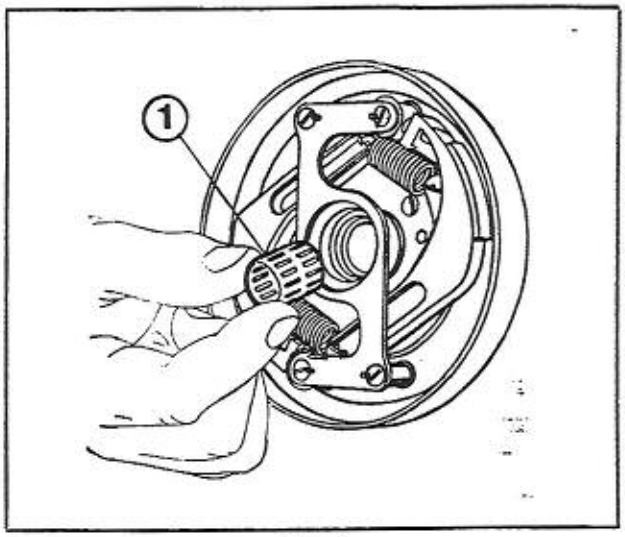


Fig. 4
1. Clutch needle roller bearing

clutch hub on to the crankshaft until the small circlip clicks into its groove on the shaft. Locate the clutch drum key in the crankshaft slot. Note that this key has a projection to prevent it being dislodged when fitting the drum. The key should be fitted with the projection away from the crankcase. Replace the clutch drum and locknut and refit the grease nipple.

The clutch body should have approximately 0·1 mm. end float on the crankshaft. To adjust this, remove or add shims behind the large circlip. Shims of various sizes are listed in the Spare Parts List.

RELINING CLUTCH DRUM

Remove the drum as detailed previously. File or grind off the rivet heads and remove the rivets with a pin punch. Take note of which way the leaf springs were fitted and fit the new ones in the same manner. Care must be taken when removing or fitting rivets that the drum is properly supported to prevent distortion. After the riveting operation, the drum should be placed in a lathe and the rivet heads machined level with the inside surface of the drum.

DISMANTLING CLUTCH BODY

Remove the clutch from the crankshaft. Lift out the locating washer and needle bearing from the clutch hub. Take out the countersunk

screws from the shoe retaining plate and detach the plate together with the felt seal. Although the countersunk screws are locked in position by having a portion of the rim pressed into a recess in the plate, no difficulty will be experienced in removing them, using a properly ground screwdriver of the correct size. Now take particular note of the position of the plain and spring washers on the clutch shoe pivots. Remove these washers and lift off the shoes together. Disengage the clutch shoe springs. The felt retaining sleeve is a light press fit on the clutch hub. It should not be necessary to remove this for normal repair or overhaul. To replace the felt seal on the pulley side of the clutch, carefully cut away the tabs which retain the cap and lift out the cap and seal. Place the new seal in the cap, insert both into the clutch hub and lock them in position by punching over the rim of the recess.

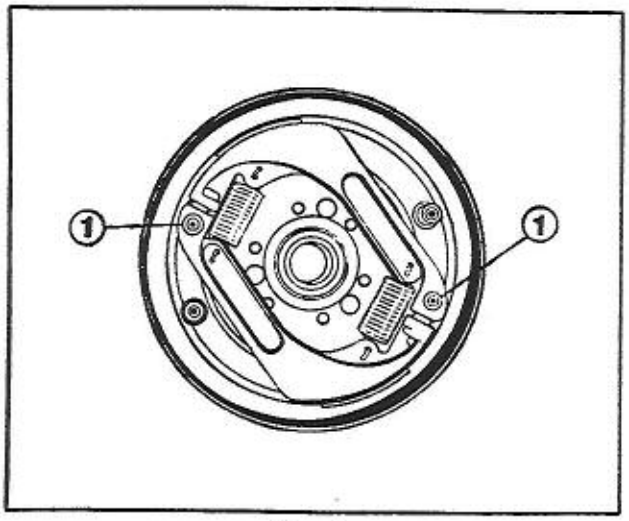


Fig. 5
1. Clutch shoe pivot pins

REASSEMBLING CLUTCH

Two types of retaining plate are in service. For the two-pin type, there is, of course, only one pivot per shoe, but on the four-pin type (illustrated) it will be noticed that the four pivot pins are irregularly spaced. Place one washer over each pivot. (Each pivot which is clockwise from its closest neighbour in the case of four pins.) Assemble the shoes and springs, fitting the springs in the holes which give the most tension. Fit the shoes over the pivots with the washers, so that the lining of each shoe is anti-clockwise from the pivot of the same shoe. (See Fig. 5.) Place one curved spring washer, followed by one plain washer, over each clutch shoe pivot, then replace the felt seal and fit the retaining plate. New countersunk screws should be used and locked after tightening in a similar manner to that employed originally. (See Fig. 6.)

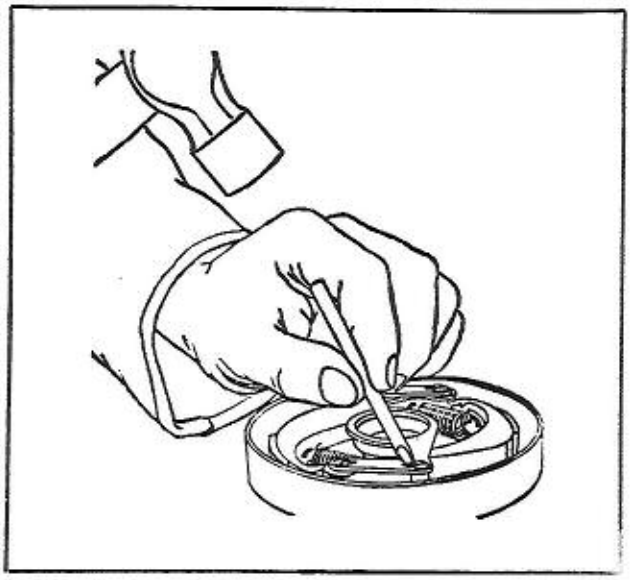


Fig. 6
Locking countersunk screws

FUEL SYSTEM

REMOVING CARBURETTOR

First make sure that the petrol tap is in the 'OFF' position and remove the tap lever extension, then remove all the engine fairings. Disconnect the fuel feed pipe and loosen the nut on the carburettor stub clip. (It may be advisable to disconnect the magneto lighting lead to avoid damage to it.) Remove the screw which secures the cover of the mixing chamber, together with the throttle and enrichment valves. Prise off the air cleaner spring clip and push the air cleaner well back to clear the carburettor body. Slide the carburettor off the inlet stub.

To replace carburettor, reverse above procedure.

DISMANTLING CARBURETTOR

Remove the carburettor from the machine as described above. Slide the filter screen from the plastic body. Unscrew the cap nut at the bottom of the fuel filter chamber and remove the float chamber cover, the float and the fuel filter gauze. Screw out the main jet and the throttle stop screw. (See Fig. 2.) No further dismantling is necessary to carry out normal cleaning, but the following parts are detachable should the need arise:- Stub fixing clip and screw and the plastic insulation sleeve in the outlet of the carburettor.

To detach the throttle valve from its cable, compress the valve spring until the cable nipple can be released from its recess in the valve. The enrichment valve may be detached by loosening the clamp screw at the small handlebar lever and pulling the inner cable through the outer.

CARBURETTOR ADJUSTMENT

The only adjustment normally required on this carburettor is to the throttle stop screw, which controls the 'tick-over' speed of the engine. This should be set at the point where the engine runs at the lowest speed possible consistent with reliability. Screwing in the throttle stop screw (2, Fig. 2) increases the 'tick-over' speed, whilst unscrewing it will decrease the speed.

Mixture strength at speeds above 'tick-over' is controlled by the size of the main jet. In the unlikely event of adjustment being required to the mixture, alternative sizes of main jet are available, i.e., Nos. 21 and 22, No. 20·5 being the standard size. Nos. 21 and 22 provide a richer mixture.

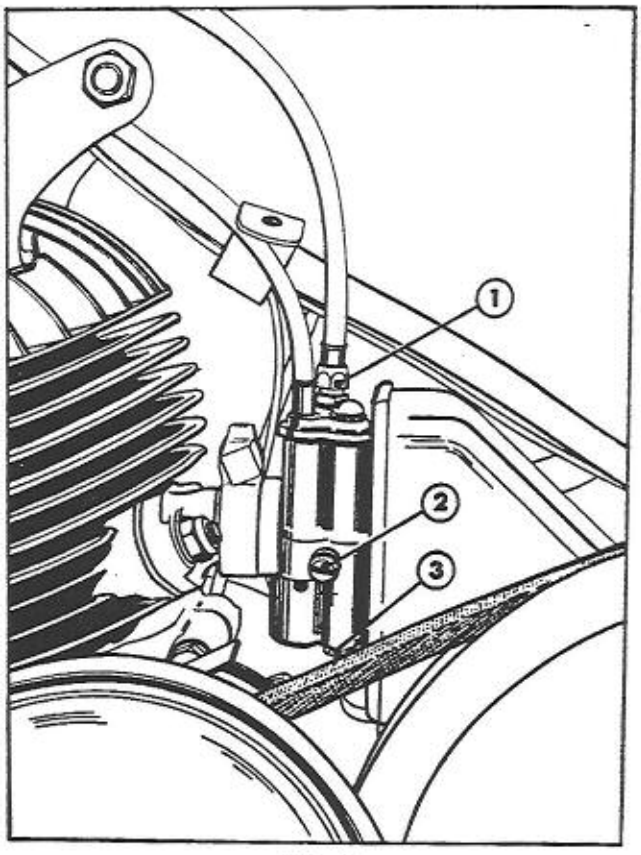


Fig. 2

1. Throttle cable adjuster
2. Throttle stop screw
3. Main jet

Before any alteration is made to the jet sizes, it must be ascertained that the fault does not lie elsewhere; for example, float damage, a tilted carburettor, blocked drillways or poor joints causing an air leak, will all affect mixture strength.

REASSEMBLING CARBURETTOR

All components should be thoroughly cleaned in petrol and dried, with compressed air if possible. Ensure that all drillways and jets are absolutely clean.

Replace the float (point uppermost) and the fuel filter gauze in their respective chambers (see Fig. 3) and fit the float chamber cover, using a new gasket and a fibre washer under the cap nut. Do not overtighten the cap nut. Refit the main jet and throttle stop screw.

Replace the filter screen in the air cleaner body.

REFITTING CARBURETTOR

Push the air cleaner body into the well of the frame between the pedal chainwheel and the drive pulley.

Push the carburettor on to the inlet stub and replace the mixing chamber cover and the throttle and enrichment valves. The small projection at the top of the throttle valve must engage in the guide slot in the carburettor body. (See Fig. 4.) Tighten the mixing chamber cover screw, make sure that the carburettor body is vertical and tighten the nut of the stub clip. Refit the air cleaner and the air cleaner clip, replace the fuel feed pipe and the fairings and refit the tap lever extension.

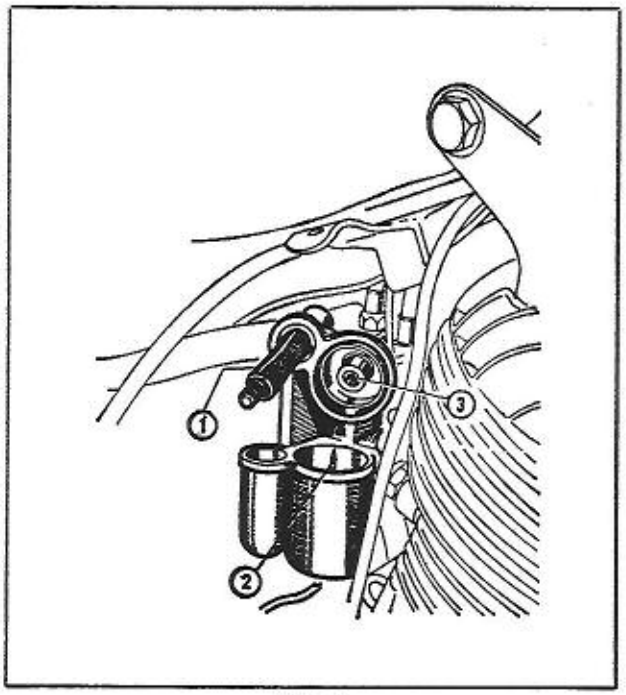


Fig. 3

1. Fuel filter gauze
2. Float needle
3. Float needle seat

FUEL TAP—TYPE A

The tap is a push fit into the fuel tank and is fitted with a plastic 'O' ring which seals the tap to the tank, the whole being held in position by a strong securing spring.

The tap is operated by the tap lever extension, which passes through a grommet fitted in the L.H. side of the rear frame fairing and fits into the tap body where it is securely held by a 'D' clip.

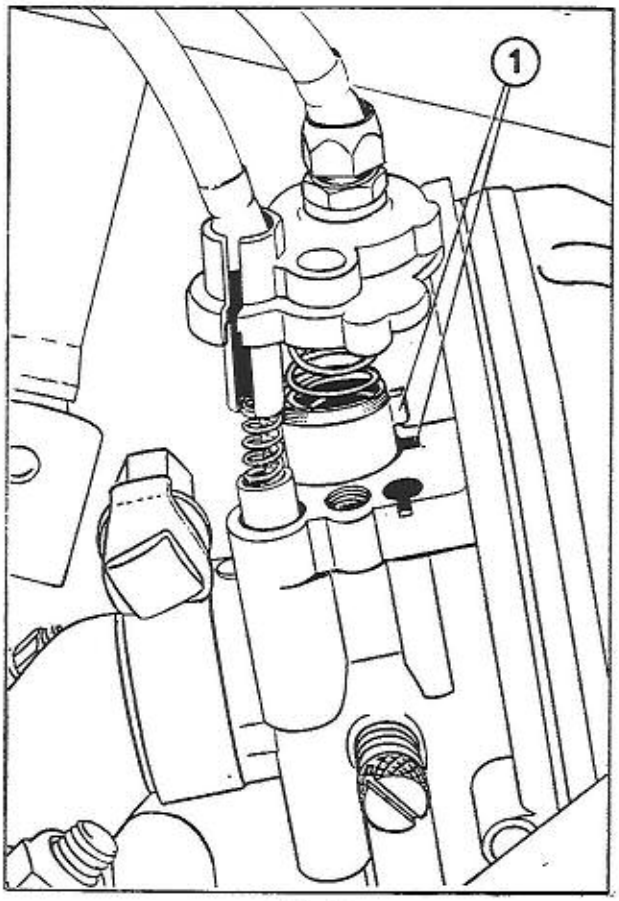


Fig. 4

1. Throttle valve guide and slot

REMOVING FUEL TAP

First make sure the petrol tank is empty, turn the petrol tap lever to the .off' position, then pull out the tap lever extension, remove the chrome engine fairings and also the rear fairing. The tap is fitted under the L.H. side of the petrol tank. The securing spring clip is removed by gently prising away the bottom end from the tap body then sliding the top end away from the tank boss. Ease the tap out of the tank with a straight downward pull to avoid damage to the fuel filter.

Replace in reverse order to that described above.

A gauze filter is fitted to the fuel tap. Should the filter require cleaning remove the tap from the fuel tank, wash in clean petrol and blow through with compressed air in the reverse direction to normal flow.

MAGNETO AND LIGHTING

Special Tools Available for Magneto Servicing

	MTR207	Magneto flywheel hub/cam extractor.
	MTR212	Flywheel nut key, 10 mm. square.
	MTR213	Flywheel holding tool (webbing strap wrench type).
or	MTR214	Flywheel holding tool (screw operated steel band type).
	MTR182	Ignition advance gauge.
	MTR180	Piston stop.
	MTR301	Coil centralising ring.

REMOVING AND REPLACING FLYWHEEL

Hold the magneto flywheel, either with a strap wrench or by fitting a piston stop in the sparking plug aperture in the cylinder head, and with a 10 mm. square-ended key unscrew the central cap nut which has a LEFT-HAND thread. (See Fig. 1.) The flywheel can then be pulled off its register on the cam, the cam itself remaining in place on the crankshaft. (See Fig. 2.) When refitting the flywheel, ensure that the pegs on the flywheel are properly located in the holes in the cam.

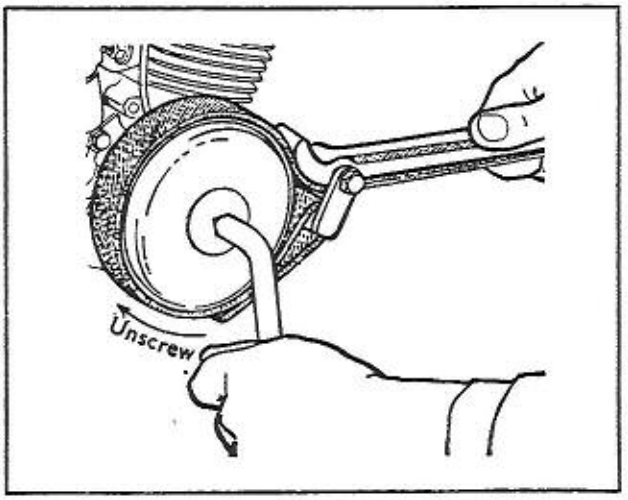


Fig. 1
Removing flywheel nut

CONTACT BREAKER POINTS

To obtain access to the contact breaker, remove the flywheel as detailed above.

Check the condition of the points and if oily or dirty, clean with a non-fluffy rag dipped in pure petrol or methylated spirit. If the points are blackened, they can be cleaned by inserting a strip of very fine glass paper between them. Close the points on to the glass paper and draw it through several times with the abrasive side towards each point in turn. Points that are slightly pitted may be refaced using a special contact file, but badly pitted or worn points should be replaced.

To check the contact breaker points gap, rotate the engine until the points are fully open and insert a feeler gauge between them. To adjust, loosen the fixed contact locking screw and move the contact as required by inserting the blade of a screwdriver into the slot in the spring clip and twisting slightly in the required direction. Tighten the locking screw and re-check the gap. (See Fig. 3.)

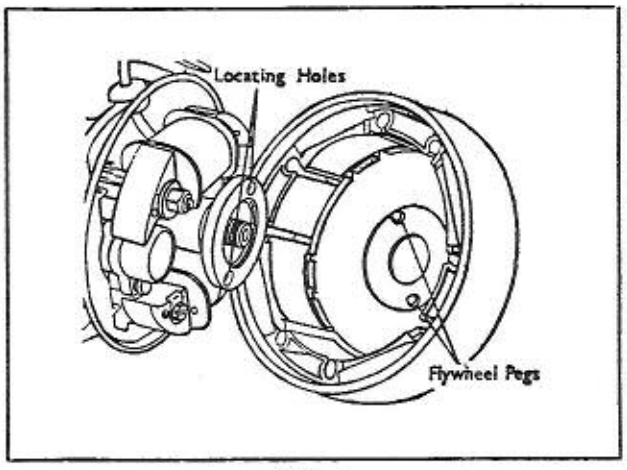


Fig. 2
Removing flywheel

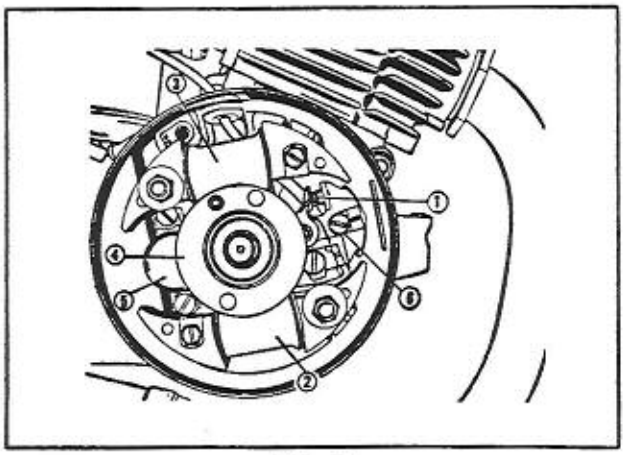


Fig. 3

1. Contact breaker points
2. Ignition low tension coil
3. Lighting coil
4. Cam
5. Condenser
6. Fixed contact locking screw

REPLACING CONTACT BREAKER

Remove the screw and washer and take off the three leads from the insulated terminal. Loosen the fixed contact locking screw and remove it, together with the spring clip. Take out the contact breaker. Ensure that the new contact breaker is perfectly clean and place it in position, locating the spindle peg in the drilled boss in the stator plate. Re-connect the three leads to the insulated terminal and fit the fixed contact locking screw, washer and spring clip. Make sure that none of the three leads are trapped between the contact breaker and stator plate and adjust the points gap to 0·016"–0·018".

MAGNETO TIMING

It should not be necessary to disturb the initial setting of the cam but if for any reason the cam has to be removed, the special extractor should be used, in conjunction with a crankshaft thread protector. (See Fig. 4.)

Screw the body of the extractor fully home and tighten the central screw WITHOUT USING UNDUE FORCE. With a hammer, give the end of the screw a sharp tap, which should free the cam from the shaft. If not, repeat the process.

To retime the ignition when replacing the cam, take out the sparking plug and screw in its place the ignition advance gauge. Provisionally replace the cam and turn it until the contact breaker points are fully open. Check

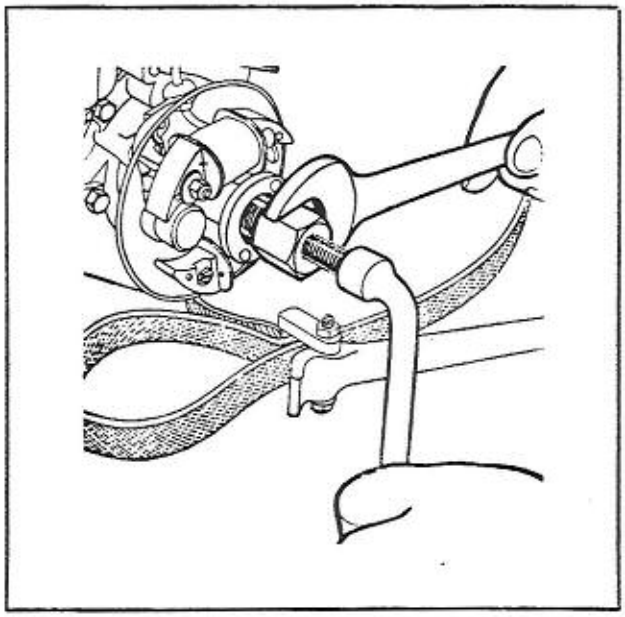


Fig. 4
Removing flywheel cam

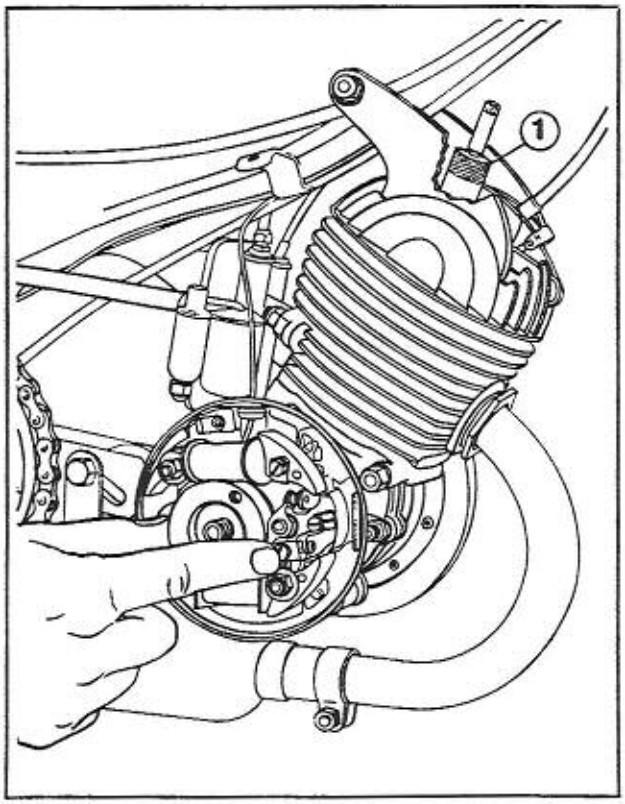


Fig. 5
1. Ignition advance gauge

the points gap and, if necessary, adjust it to 0·016"–0·018". Remove the cam. Rotate the engine and, as it turns, the plunger in the centre of the tool will rise until at top dead centre it reaches its highest point. (See Fig. 5.) Turn the engine back until the plunger has fallen by the amount shown under 'ignition advance' in the Technical Data Section, and keeping the engine from turning any further, replace the cam in such a position that the points are just beginning to open. Give the cam a sharp tap with a wooden implement to fix it on the taper and refit the flywheel.

REPLACING CONDENSER

Remove the two condenser fixing screws and washers and disconnect the condenser lead from the contact breaker insulated terminal. Remove the condenser.

When fitting the new condenser, make sure that the lead is run well away from the moving parts.

REPLACING COILS

Each coil is attached to the stator plate by a hollow screw and a hexagon screw with a slotted head. The stator plate itself fits over two studs which project from the crankcase and protrude through the two hollow screws. Washers are fitted over the ends of these studs and self-locking nuts screw on to the studs and clamp the stator plate firmly to the crankcase.

The L.T. ignition coil can be removed without disturbing the ignition timing.

First disconnect the coil output lead from the contact breaker connection. Unscrew the self-locking nut (8 mm. spanner) and remove the washers from beneath it. The slotted hexagon screw is locked in place by a tab washer with the tab turned over one flat of the screw. Flatten out the tab washer and remove this screw. Take out the hollow screw and remove the coil from the stator plate.

The lighting coil can be removed in a similar manner, but due to the riveting of the output lead to the terminal on the stator plate, it is usually more convenient to remove the whole stator plate from the machine. The lead can then either be unsoldered from the terminal, or the terminal rivet drilled out, in which case a new terminal will be required when refitting.

When replacing coils, it is essential that they should be fitted correctly in order to provide a constant minimum clearance between their pole pieces and the flywheel. A coil centralising ring must be used to position them accurately.

The coils are assembled loosely on the stator plate, the centralising ring pushed over them and located on the four small tongues protruding from the threaded bosses on the stator plate. (See Fig. 6.)

Press the laminated pole pieces of the coils against the inside surface of the ring and tighten the coil screws. Fit the two self-locking nuts and their washers and tighten up the nuts. Fold over the tab washers to secure the two slotted screws. Remove the centralising ring by turning it slightly and pulling.

REMOVING STATOR PLATE

Remove the cam. Unscrew the two self-locking nuts on the coil pole pieces (8 mm. spanner) and take off the washers. Disconnect the wire from the lighting terminal at the rear of the stator plate. Disconnect also the L.T. ignition wire from the external ignition coil and pull the wire clear of the frame.

The stator plate will now pull off the mounting studs. Take care not to lose the small sealing ring fitted to the crankshaft behind the stator plate. (See Fig. 7.)

Refit in reverse order to dismantling.

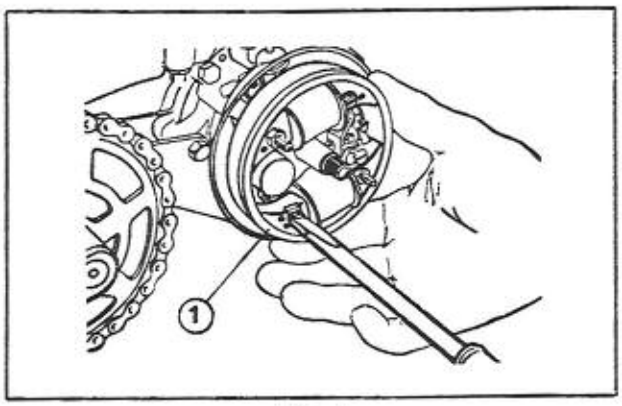


Fig. 6

1. Coil centralising ring

LIGHTING

Current is supplied from the magneto-alternator to the lighting switch terminal,

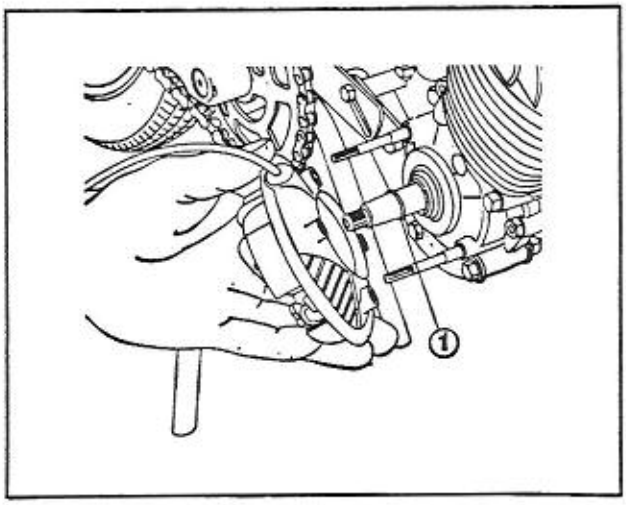


Fig. 7
1. Sealing ring

from which point the horn supply wire is also taken. The remaining wire, on the other terminal, supplies current to the rear lamp, the headlamp bulb connection being through the spring blade. Moving the switch through one position will complete the circuit, joining the two terminals of the switch together and operating both head and rear lamps. (See Fig. 8.)

The second switch position is not used.

HEADLAMP

To remove the lighting switch, file or grind off the switch mounting rivets. Small screws are provided with replacement switches in place of the rivets.

To replace the headlamp bulb, remove the reflector clips and take the reflector out of the rim. The bulb is a 'bayonet' fit in the reflector.

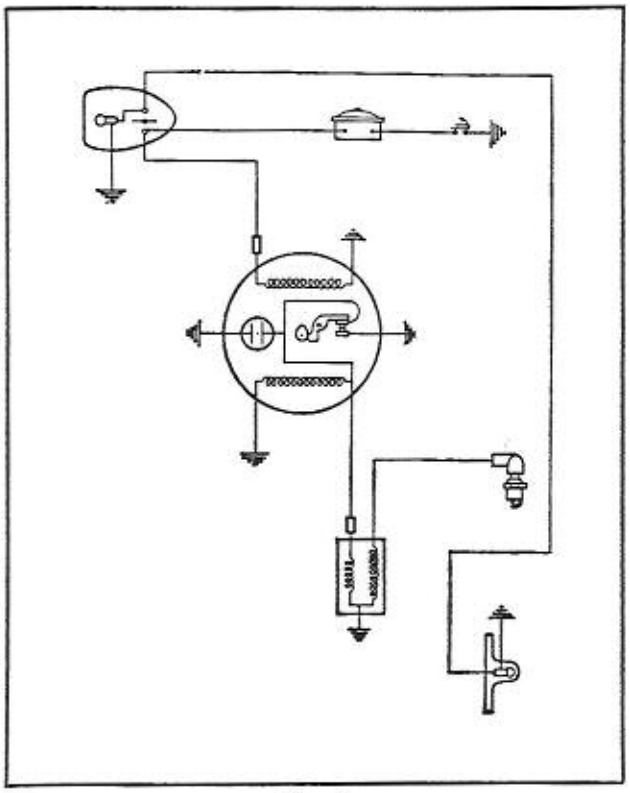


Fig. 8
General wiring diagram

Care must be taken not to touch the polished surface of the reflector as this is only 'flash-aluminised.' This process gives a highly reflective surface but is destroyed if the surface is touched or rubbed in any way.

REARLAMP

To change the rearlamp bulb, remove the plated screws which retain the rearlamp lens. When refitting, ensure that the rubber seal behind the lens is not damaged or displaced.

TRANSMISSION

REMOVING BOTTOM BRACKET PULLEY AND AXLE

Detach the fairings and remove both chains, slacken the engine mounting bolts and loop the drive belt off the bottom bracket pulley. Take out the right-hand crank cotter pin (see Fig. 1) and remove the crank and chainwheel. After the circlip and washer have been removed, the crank axle may be pulled out from its bearings, together with the pulley assembly and sprocket. Take particular note of the positions and sizes of the packing washers. They will need to be replaced in the correct positions to maintain the required degree of 'end float' on the shaft.

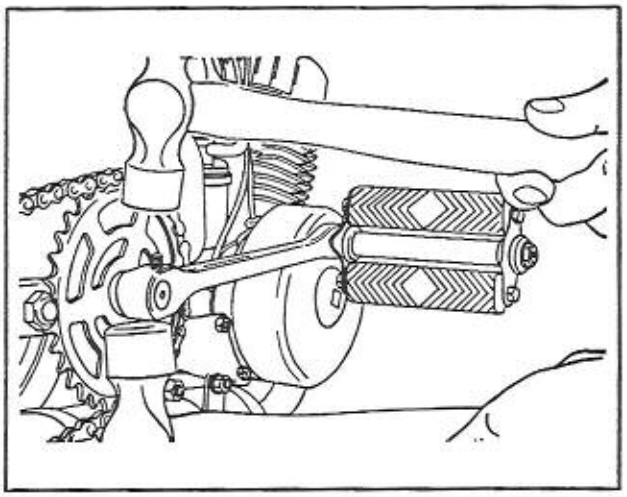


Fig. 1
Removing crank cotter pin

REPLACING BOTTOM BRACKET AXLE BEARINGS

The flanged bushes which support the bottom bracket axle are a press fit in the frame and are made of a special self-lubricating material for which no routine maintenance is required. The life of the drive side bush, however, will be greatly prolonged if, during routine greasing of the bottom bracket axle, sufficient grease is pumped through to make a seal between the sprocket and the bush flange. This will effectively keep out abrasive grit thrown up from the road. If occasion arises to replace these bushes, they must be reamed to size (16 mm.) after being pressed into the frame.

DISMANTLING BOTTOM BRACKET PULLEY

Continue the dismantling operation as follows:—Remove the left-hand crank cotter pin and crank. Slide off the distance tube from the crank axle and pull off the cap, which is lightly pressed on to the pulley hub. (See Fig. 2). Remove the circlip and washer and then the pulley assembly complete can be removed from the axle. Note the special shape of the circlip remaining on the axle.

The drive sprocket is a free running fit on the hub of the pulley, retained in position by the 33 mm. O.D. washer which is fitted to the bottom bracket axle between the frame and the pulley.

To transmit the drive from the pulley to the sprocket a locking lever is employed, operated by a turnbutton on the outside of the pulley. (See Fig. 3). To dismantle the locking lever, remove the nut on the outside of the pulley, take out the bolt and prise the spring off the peg on the turnbutton. (See Fig. 4.)

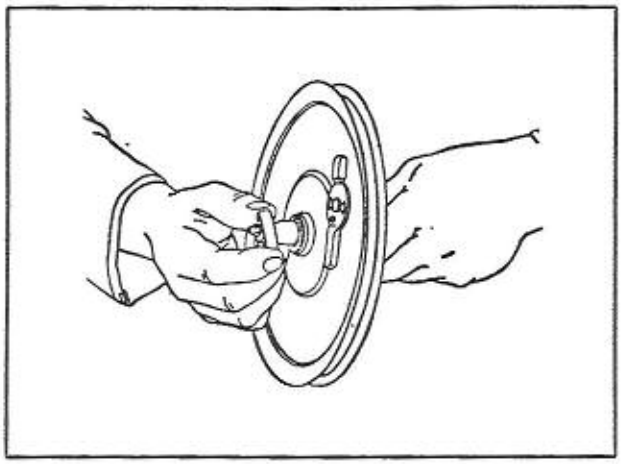


Fig. 2
Removing pulley hub cap

REPLACING BOTTOM BRACKET PULLEY BEARINGS

The pulley rotates about the axle on two needle roller bearings, which are replaceable if necessary. Use a suitably shaped drift to drive the old bearings out of the pulley hub. (See Fig. 5.) On no account must bearings which have been removed be re-used. Two very important conditions must be observed when pressing in the new bearings. Firstly,

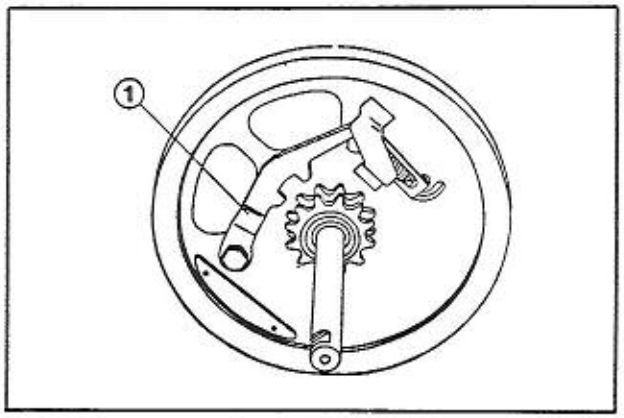


Fig. 3
1. Drive locking lever

the pressure required to fit the bearings in the hub must be applied only to the thick edge of the bearing shell, i.e., the end with the maker's identification numbers embossed. (See Fig. 6.) Secondly, the bearing on the frame side of the pulley must be recessed inside the pulley hub a distance of 1·5 mm. to provide clearance for the middle circlip.

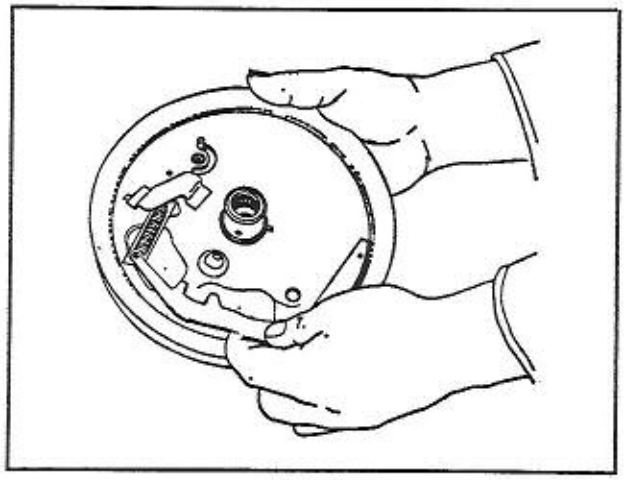


Fig. 4
Removing drive locking lever assembly

REFITTING BOTTOM BRACKET AXLE

Fit the specially shaped circlip in the middle groove on the crank axle and place the largest diameter washer next to the circlip, towards the longest side of the axle. Insert the shaft in the frame, with the washer and circlip to the left side of the frame. Place a packing

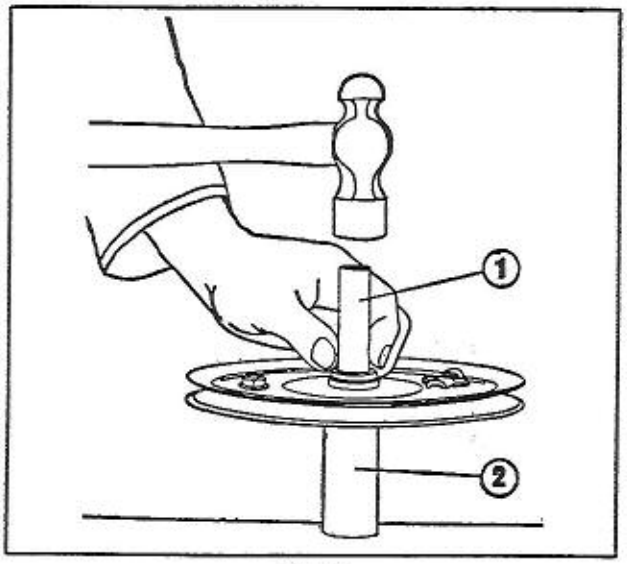


Fig. 5
1. Drift 2. Tubular support

washer on to the axle on the right side of the frame, followed by a circlip. There should be a slight amount of 'end float' on the axle, i.e., approximately ·004". Should it be necessary to adjust the 'end float,' alternative washers of different thickness are available, as listed in the spare parts list. The right-hand crank may now be refitted.

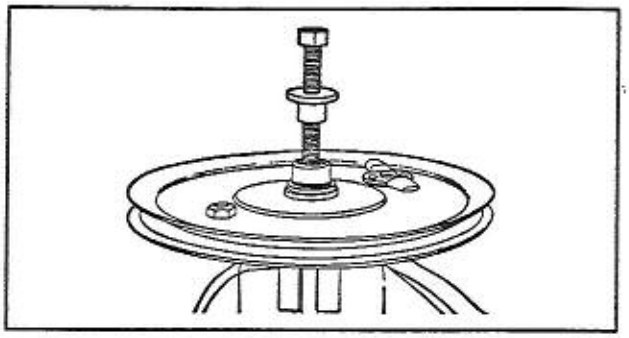


Fig. 6
Drawbolt arrangement for fitting pulley needle roller bearings

REASSEMBLING BOTTOM BRACKET PULLEY

Refit the locking lever to the pulley, locking the nut on to the fulcrum bolt by lightly centre punching the threads in a similar manner to that employed originally. Fit the sprocket.

Slide the pulley on to the crank axle, holding the engine forward to give sufficient clearance. Fit the packing washer, circlip, hub end cap, tubular distance piece and pedal crank, in that order. Loop the drive belt on to the pulley and tension the belt as described on page w.m.A.4 (Engine Section). Refit both chains. Ensure that the needle bearings are adequately lubricated and replace the fairings.

CHAIN ADJUSTMENT

First put the machine on its stand and rotate the rear wheel to check the drive chain for slack. You will find that it is least slack at one particular spot, and chain adjustment must be carried out at this position.

To adjust, loosen the rear wheel spindle nuts, slacken right off the brake adjustment, then with a 12 mm. spanner turn each chain adjuster by an equal amount, moving the wheel backwards or forwards in the slotted chain lugs until $\frac{1}{2}$" to $\frac{3}{4}$" up and down movement is possible at the centre of the bottom chain run. (See Fig. 7.) Partially tighten the wheel spindle nuts and check the wheel alignment.

Misalignment has a detrimental effect on the steering, and it is most important that it is carefully checked by a straight edge or line as shown. (See Fig. 8.)

When properly aligned, the straight edge should touch each tyre in two places (as shown in Fig. 8). Maximum misalignment must not exceed $\frac{1}{8}$".

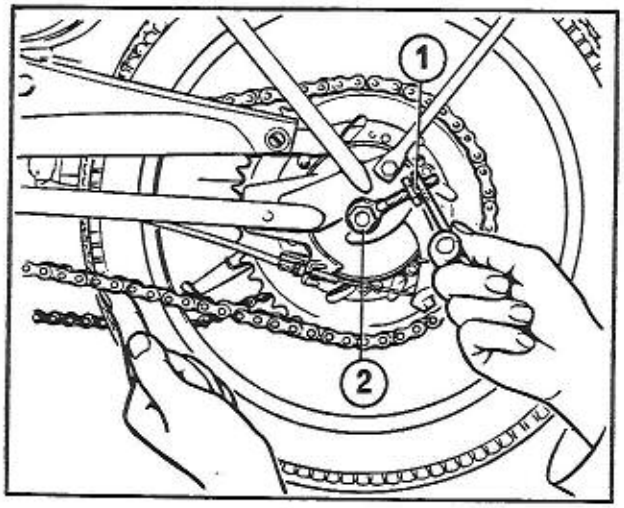


Fig. 7
Adjusting drive chain
1. Chain adjusting nut 2. Wheel spindle nut

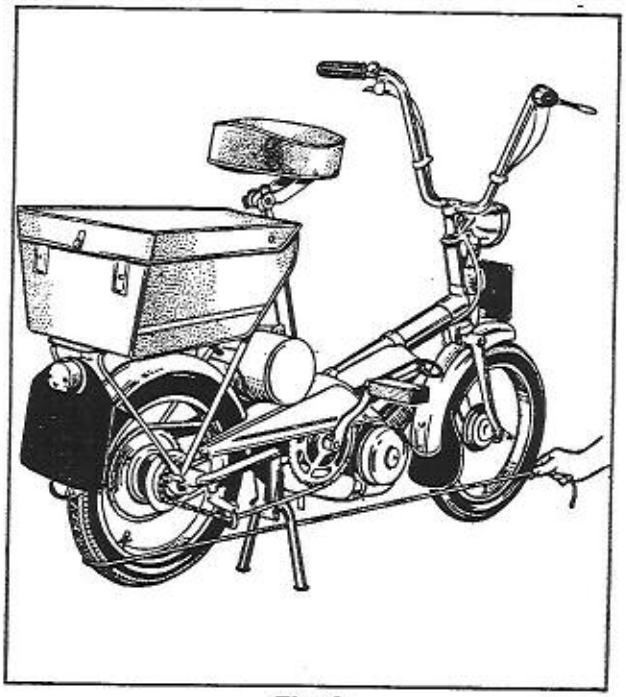


Fig. 8
Checking wheel alignment

The wheels can be brought into line by independent use of the rear wheel chain adjusters.

If adjustment is correct, tighten the spindle nuts, and adjust the brake.

The rear brake plate is prevented from rotating by a fixed stop on the frame, and the pedal chain is automatically adjusted to the correct tension by the chain tensioner assembly.

CHAIN LUBRICATION

The chain should be oiled regularly to ensure adequate lubrication, but to make certain that the lubricant penetrates to the internal rollers it is best to remove the chains and wash them thoroughly in a bath of clean paraffin, using a stiff brush. Then wipe dry.

Check each chain for wear at this stage by placing it on a level surface along side a rule and stretching it tight. 23 complete pitches (distance between centres of adjacent rollers) will come to the $11\frac{1}{2}$" mark on the rule when the chain is new. When the chain wears to a measurement of $11\frac{3}{4}$" for 23 pitches it should be replaced.

Immersion in a tin of warm SAE 50 grade oil or a specialised chain lubricant for 15 minutes or so will allow the lubricant to soak right into the bearing surfaces. Warm the lubricant by standing the tin in very hot water. When the chain is thoroughly soaked, remove it and hang it up to drain off all surplus lubricant. Clean the sprockets before refitting the chain.

It is important when replacing a chain to make sure that the spring clip on the connecting link has its closed end pointing in the forward direction of chain travel.

FITTING A NEW DRIVE BELT

Remove the fairings and loosen both engine mounting bolts. Slacken off the two crankcase bolts which secure the drive belt guard and remove the guard. Pull the engine back to its rearmost position in the adjustment slots and remove the belt, taking it off the bottom bracket pulley first. (See Figs. 5 and 7 in Engine Section).

Fit the new belt, placing it on the clutch pulley first. Adjust the belt tension as described on page w.m.A.4. Replace the drive belt guard and fairings.

FRAME

FRONT FORK

REMOVING AND REFITTING FRONT FORK

Support the front of the machine and take out the front wheel. Remove the mudguard, which is held in place by the mudguard stay and a mounting tube secured by the lower horn bracket bolt. Release the handlebar stem expander bolt and drop the handlebars to their lowest position. Slacken the twistgrip clamping screws and slide off the twistgrip assembly. Detach both brake cables from the levers, and remove the enrichment cable from its lever. Remove the handlebar. Loosen the bolt which holds the headlamp bracket to the horn bracket, then screw off the steering head locknut and remove the headlamp and the bracket, unscrew and remove the adjustable steering head race and remove the fork.

There are 21 $\frac{3}{16}$" ball bearings at each end of the steering column. Inspect and replace any faulty head races or ball bearings before reassembling the fork.

ADJUSTING STEERING HEAD BEARINGS

The steering head is correctly adjusted when there is no trace of play in the bearings but the handlebar still turns freely. If the adjustment is too tight the steering will be stiff in operation and the bearings may be damaged. If too loose, there will be a judder when the front brake is applied and the steering may wobble.

To adjust, slacken the steering head locknut and turn the knurled adjusting collar as required, clockwise to decrease the amount of play and anti-clockwise for more play. Tighten the locknut and check the adjustment by applying the front brake and rocking the machine backwards and forwards, with your finger on the gap between the adjusting collar and the top frame cup where it will be possible to feel any play.

HANDLEBAR, CONTROLS AND CABLES

HANDLEBAR ADJUSTMENT AND REMOVAL

The handlebar is secured to the steering stem through the medium of an expander cone, in the same manner as a pedal cycle. To adjust the height or to remove the handlebar, loosen off the expander bolt at the top of the handlebar stem no more than two full turns and tap the head of the bolt with a mallet or a block of hardwood to free the expander cone. The handlebar should then be free for adjustment or removal. To secure the handlebar it is only necessary to retighten the expander bolt. It is very important that at least 2½" of handlebar stem should remain within the steering head, to provide adequate security.

TWISTGRIP

The twistgrip is secured to the handlebar by two screws. Remove these screws to give access to the cable operating drum and cable nipples. In the lower half of the twistgrip body is a spring and an adjusting screw to regulate the friction of the twistgrip. This should be set so that there is just sufficient friction to prevent the throttle from closing when the grip is released.

ADJUSTING CONTROL CABLES

Screw type cable adjusters are fitted to all cables except the one which operates the carburettor enrichment plunger. The throttle cable adjuster is situated on top of the carburettor, the decompressor cable adjuster is fitted in the cable adjacent to the handlebar and the brake cable adjusters are at the ends of the cables. The enrichment control cable is adjusted by repositioning the solderless nipple on the cable at the control lever.

REPLACING CONTROL CABLES

Brake Cables

Both brake cables may be changed, if

necessary, simply by disconnecting each end and threading the complete cable through the frame attachments.

Decompressor Cable

Remove the two screws which clamp the twistgrip to the handlebar, lift off the top of the grip body, unhook the decompressor cable nipple from the operating drum, detach the other end of the cable from the engine and remove the cable from the frame attachments. When refitting, attach the cable at the engine end first, thread the other end into the lower half of the twistgrip body, together with the throttle cable, so that the two nipples lie on the joining face of the body. Push the lower half of the body into position on the twistgrip drum, when the nipples will spring into engagement with the drum. Be sure they are the right way round, i.e., decompressor cable to the rear. Refit the twistgrip top and securing screws.

Throttle Cable

The throttle cable may be removed and replaced in a similar manner to the decompressor cable, except, of course, the lower end, which is attached to the throttle valve.

Enrichment (Choke) Cable

Remove the carburettor mixing chamber cover and detach the enrichment valve and cable through the slot in the cover.

Loosen the clamp bolt on the control lever and pull out the inner cable, together with the valve and spring. Note which way the valve and spring are fitted, take them off the cable and refit them to the new inner cable in the same manner. Thread the inner cable through the outer, reassemble the cable to the mixing chamber cover and refit the cover to the carburettor. Re-connect the cable to the control lever. Ensure that there is a little free play ($\frac{1}{16}$") in the cable when in the 'Off' position and tighten the clamp bolt.

WHEELS

FRONT WHEEL

REMOVING AND REFITTING FRONT WHEEL

Support the front of the machine by placing a box under the engine. Slacken off the front brake adjuster (B. Fig. 1) then remove the cable from the brake arm (C. Fig. 1). Loosen the screw on the brake arm securing clip (D. Fig. 1) and slide the clip up the fork blade until it disengages from the brake arm tongue. Take off the wheel axle nuts, spring the mudguard stays out of the way, and withdraw the wheel from the forks.

When replacing the wheel ensure that the axle is fully home in the fork ends before tightening the axle nuts, and that the wheel rim is equi-distant from the fork blade on each side.

It is essential that the securing clip is properly engaged over the brake arm tongue before the screw is tightened.

HUB BEARING ADJUSTMENT

The hub bearings are adjusted by means of the cone on the left-hand (brake plate) side. It should be adjusted so that there is a barely perceptible sideways movement of the wheel rim.

The right-hand cone is fixed in position when the hub is assembled and must not be disturbed for wheel adjustment in the normal way. When reassembling the hub after dismantling for inspection or repair, the right-hand cone should be screwed home until it is finger tight, then locked with a special lockwasher and locknut. Wheel adjustment is then made in the normal way with the left-hand cone.

If the right-hand cone races are being inspected, the left-hand cone must first be screwed well back so that it does not interfere with the resetting of the right-hand cone.

Cones can be replaced when worn but if the cups are worn, the hub should be replaced.

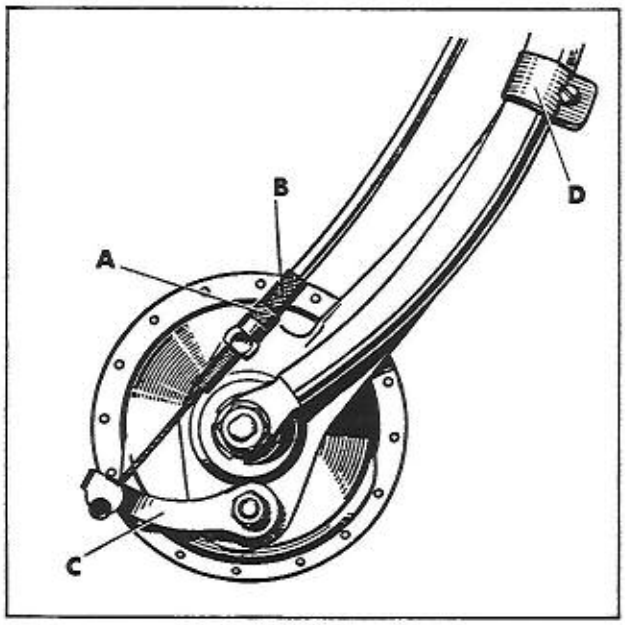


Fig. 1

FRONT HUB BRAKE ADJUSTMENT

When brakes are new they may have to be adjusted frequently (until the shoes have become properly bedded in).

The small locknut (A. Fig. 1) is first slackened off and then the knurled adjuster (B. Fig. 1) is tightened until the brake shoes are felt to be rubbing on the inner surface of the hub shell. The adjuster is then slackened just enough to allow the wheel to revolve without brake friction and the locknut is tightened up again.

REPLACING FRONT WHEEL BRAKE SHOES

With the wheel removed from the machine and the axle nuts off the spindle, unscrew and remove the left-hand cone locknut with the washers behind it.

The brake plate assembly can now be pulled off the hub axle.

To remove the brake shoes, unscrew the cam lever nut and remove the cam lever:

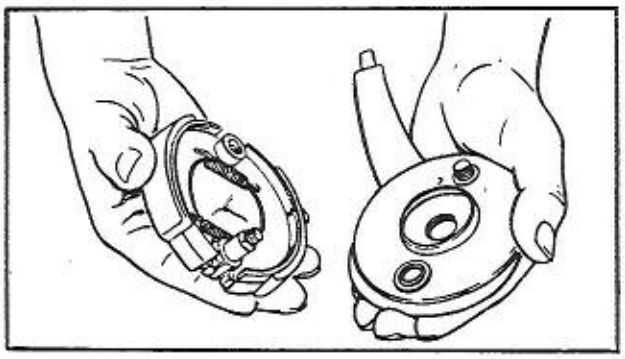


Fig. 2
Removing and refitting front brake shoes

next, unscrew the wire guide, which passes through the brake plate into the fulcrum sleeve and pull the brake shoe assembly away from the plate. (See Fig. 2.)

Note that there are two return springs fitted, and that hardened steel end caps are fitted to the ends of the shoes.

Refit the brake plate to the hub in reverse order to that described.

New brake shoes are supplied with brake cam, fulcrum sleeve, end caps and springs already fitted.

It is therefore a relatively simple matter to offer the brake shoe assembly to the brake plate, ensuring that the fulcrum sleeve is to the top of the brake plate. Screw the wire guide through the brake plate, into the fulcrum sleeve; fit the cam lever over the brake cam and screw on the nut and the brake plate assembly is ready for refitting to the hub.

REAR WHEEL

REMOVING AND REFITTING REAR WHEEL

To remove the rear wheel, first pull the pedal chain tensioner upward towards the chainstay, where it will clip into the raised position, thus releasing the chain tension.

Unscrew the wheel spindle nuts far enough to enable the chain adjusters to be pulled out of the slots in the frame lugs and push the wheel forwards. Lift both chains from their sprockets and disconnect the rear brake cable. The wheel can now be withdrawn from the frame.

Note. It is not necessary to take out the spring links and split the chains when removing the rear wheel.

Refit the wheel in the reverse sequence to dismantling, ensuring that the chains are placed on the sprockets before entering the spindle into the frame lugs. Chain adjustment is dealt with on page w.m.E.4.

Do not forget to release the pedal chain tensioner arm by pushing the spring blade at the tensioner arm pivot with a screwdriver.

REPLACING REAR WHEEL BRAKE SHOES

Remove the spindle nuts and chain adjusters and take off the brake plate.

After the brake cam lever has been removed the brake shoes may be detached, together with the cam, by sliding them off the fixed pivot on the brake plate.

REPLACING REAR WHEEL BEARINGS

With the wheel removed, take off the brake plate, remove one cone locknut and screw off the cone. Withdraw the spindle from the opposite side, taking care not to lose any of the ball bearings as the cones are removed. Gently prise out the dust covers at each side of the hubs and tap out the bearing cups, using a copper or brass drift from the opposite side of the hub. Ensure that the bearing cups are tapped out squarely, in order to prevent them from binding in the hub shell.

Clean out all the old grease from the hub and fit the new bearing cups, again taking care that they are absolutely square in the hub. Repack with new grease of the recommended grade.

Remove the remaining worn cone from the spindle and replace it with a new one; place new steel balls in the cups, 11 each side and holding them with a little grease, insert the spindle and screw on the other new cone. (Do not mix used and new ball bearings.)

Replace the bearing dust cap at each side, place the keyed washers in position and fit the cone locknuts. Tighten the locknut on the brake side, adjust the bearing with the other cone and tighten the locknut. Replace the brake plate and refit the wheel to the machine.

R0130R
51 + 38 + 5 = 94
Q P E R

R0130R

SPARE PARTS LIST
AND
SERVICE DATA

ISSUED BY RALEIGH INDUSTRIES LIMITED

A TI COMPANY

MOTORISED DIVISION SERVICE DEPARTMENT
LENTON BOULEVARD
NOTTINGHAM

Telephone: NOTTINGHAM 77761 Telegrams: RALIND NOTTINGHAM
Telex: NOTTINGHAM 37681

CONTENTS

Quote part number MTR 380 when ordering this publication

SECTION 1

SPARE PARTS LIST

CONTENTS

INTRODUCTION

This loose leaf reference system has been designed to contain all the Raleigh Motorised Division Service literature in one volume and has the added advantage of being kept up to date easily by the addition of supplementary pages, if modifications or new models are introduced.

The spare parts list is divided into sections corresponding to major assemblies and each assembly is given a 'type letter,' e.g., 'Type A.'

The initial information contained in the spare parts list applies to the 'WISP,' introduced in April 1967, and all assemblies relating to this model are given the type letter 'A.'

When minor modifications are made to an assembly, the alterations will be published in a supplement which will bear the original type letter, but as completely new assemblies are introduced they will be given a different type letter for identification.

For later models, an additional 'Assembly Reference List' will be published for each model, detailing the build-up of major assemblies involved.

INSTRUCTIONS FOR ORDERING

It is essential that the following information is provided with every order for spare parts:—

1. Type and Model of the machine.
2. Frame and Engine numbers.
3. Part number, description, colour and quantity of each spare part required.

Failure to provide this necessary information will inevitably lead to delay in fulfilling the order.

DEALERS PLEASE NOTE

SELLING UNIT

Spare parts orders are now processed and invoiced by computer, and all items are classified by 'selling unit.'

There can be no departure from the selling units employed, and if you will quote the correct selling unit on all your orders the possibility of quantity errors will be greatly diminished.

Example:—For selling unit 'Dozen.'

1. It is not possible to order a quantity of *less* than one dozen.
2. If you require one dozen, please do not order '12.' Otherwise you will receive '12 dozen.'

We are using a computer to enable us to give a more efficient service. Please help us to use it properly in your own interest.

Every effort is made to ensure that spare parts are readily available in all areas. Members of the public should note that should any part not be immediately available from your local dealer, he will be pleased to order the parts for you. It is not our normal practice to supply spare parts direct to the public.

NOTE:—We reserve the right to alter or vary the specification of parts herein listed without prior notice.

The terms issued from time to time by our Motorised Division and the Conditions of Sale in our Guarantee apply.

RO1302A

SECTION 2

WORKSHOP MANUAL

CONTENTS

INTRODUCTION

In its initial form, the Workshop Manual describes the 'WISP,' introduced into service in April 1967.

The manual is divided into sections, each of which refers to a major assembly of the vehicle and its associated components.

Each section is identified by a reference letter, e.g.: Engine—Section 'A.'

If the introduction of a new assembly, or a new model requires different servicing instructions from those contained in the basic section, further sections will be added, where needed.

These sections will have a double reference letter, e.g.: Engine—Section 'AA.'

NUMBERING OF PAGES

The pages are numbered consecutively within each section, e.g., w.m.A.1, w.m.A.2, etc.

NOTES ON
WORKSHOP PRACTICE

PRELIMINARY CLEANING

Before commencing any dismantling or repair work it is always advisable to clean the machine thoroughly, or at least the parts on which the repair work is to be carried out and those adjacent. It often happens that during this preliminary cleaning, one can spot faults which otherwise might pass undetected, such as loose or missing nuts and bolts, damaged or worn components, etc.

Too much emphasis cannot be laid on the need for tidiness and cleanliness of the work-bench, the tools and all the other equipment to be utilised.

A plentiful supply of clean rags or cotton waste should be at hand, as it is all too easy to transfer dirt and grit to vital working parts by using soiled rags.

TOOLS

For all dismantling and assembly work, use spanners, tools and extractors in good condition. Avoid the use of improvised or inferior equipment, which often results in a loss of time and is liable to damage the parts.

SEQUENCE OF DISMANTLING

When dismantling, take careful note of the sequence of removal of the various components, in order to be able to reassemble them in the correct order. On no account mix the parts with similar ones belonging to other machines.

GASKETS

As a general rule, always use new gaskets. These should be smeared with grease. The use of adhesive jointing compounds is to be avoided, due to the difficulty of removing them once they have set.

BALL BEARINGS

The bearing tracks and balls must show a surface which is uniformly polished and bright. If signs of roughness or pitting are detected at any point, the bearing must be changed. Check that the cages, too, are in perfect condition.

If play is apparent after the bearing has been washed in clean paraffin and re-oiled, it is worn and should be discarded. Bear in mind, however, that the interference fit of the bearing in its housing tends to reduce the running clearance.

FITTING SHIMS

Carefully note the position of all washers and shims when dismantling and replace them when reassembling. A list of washers and shims supplied for adjustment purposes is given at the back of the spare parts list.

RECOMMENDED LUBRICANTS

		BP	Castrol	Esso	Filtrate	Mobil	National Benzole	Shell
Engine (Petrol/oil ratio shown in brackets)	Two-Stroke Oils	Energol Two-Stroke Oil (20 : 1)	Two-Stroke Self-mixing Oil (16 : 1)	Esso Two-Stroke (2T) Motor Oil (16 : 1)	Filtrate "Plus dag" Two-Stroke Oil (32 : 1)	Mobilmix TT (16 : 1)	—	Shell 2T Two-Stroke Oil (20 : 1)
	Pre-Mixed fuels	BP-Zoom (20 : 1)	—	—	—	—	Hi-Fli* (20 : 1)	Shell 2T Mixture (20 : 1)
Chains	Grade	Energol SAE 50	Grand Prix	Esso Extra Motor Oil 40/50	Linklyfe	Mobiloil BB	—	Shell X-100 50
Working Joints, Control Cables, etc.	Grade	Energol SAE 20W	Castrolite	Esso Extra Motor Oil 20W/30	Zero 20/20W	Mobiloil Arctic	—	Shell X-100 20W
All Greasing Applications	Grade	Energrease L2	Castrolease LM	Esso Multi-purpose Grease H	Super Lithium Grease	Mobil-grease MP	—	Retinax A

*NATIONAL BENZOLE CO. LTD., ALSO MARKET SHELL AND BP LUBRICANTS

'WISP'

TECHNICAL DATA

ENGINE

Single cylinder, two-stroke with twin transfer ports. Aluminium alloy cylinder with hard chrome plated bore. Aluminium alloy cylinder head and piston. Two cast iron piston rings.

Bore: 39 mm.

Stroke: 41·75 mm.

Cubic capacity: 49·9 c.c.

Piston clearance (bottom of skirt): ·0004″ min., ·0008″ max.

Piston ring gap: ·004″ min., ·008″ max.

Crankshaft end float: ·004″ min., ·008″ max.

IGNITION

NOVI flywheel magneto with external H.T. ignition coil.

Contact breaker points gap: ·016″–·018″.

Ignition advance: ·076″ ± ·004″ before T.D.C.

Sparking plug: Champion L86 or equivalent.

Sparking plug electrode gap: ·016″–·018″.

CLUTCH

Automatic, centrifugally operated.

PRIMARY DRIVE

Vee-belt.

Ratio: 3·76 : 1.

FINAL DRIVE

Roller chain.

Ratio: 3·67 : 1 (12t to 44t).

Chain size: $\frac{1}{2}$″ × $\frac{3}{16}$″ × ·305″ roller × 89 pitches.

OVERALL GEAR RATIO: 13·8 : 1.

PEDAL DRIVE

Roller chain.

Ratio: ·563 : 1 (32t to 18t).

Chain size: $\frac{1}{2}$″ × $\frac{1}{4}$″ × ·305″ roller × 94 pitches.

ELECTRICAL SYSTEM

NOVI flywheel magneto/alternator.

Headlamp bulb: 6 v., 15 w.

Rearlamp bulb: 6 v., 6 w.

FUEL SYSTEM

Tank capacity: 4$\frac{1}{4}$ pints including a reserve supply of $\frac{1}{8}$ of a pint.

Carburettor: GURTNER AR.2.10.667.

Main jet size: No. 20·5.

TYRES

Size: 12″ × 2″.

Pressures (lbs. per sq. in.): Front, 23; Rear, 35.

FRAME NUMBER POSITION

Centre stand pillar.

ENGINE NUMBER POSITION

Lower front of cylinder barrel.

'WISP'

ROUTINE SERVICING

WEEKLY

Check tyre pressures.

Check drive chain tension and adjust if necessary.

Check all controls for smooth and correct operation and lubricate and/or adjust as necessary.

Apply grease gun to nipple on left-hand side of bottom bracket axle.

MONTHLY

Clean sparking plug and set gap at 0·016"—0·018".

Oil the freewheel, all working joints and moving parts and the exposed inner wires at the ends of control cables.

Oil both chains and check drive chain tension.

Check the tightness of all nuts and bolts.

EVERY TWO MONTHS

Carry out monthly service.

Check belt tension and adjust if necessary.

Give ONE stroke of grease gun to central nipple on automatic clutch.

EVERY SIX MONTHS

Carry out two-monthly service.

Check contact breaker points gap (0·016"–0·018").

Decarbonise engine and exhaust system. The need for decarbonising will vary considerably with the use to which the 'Wisp' is put. It may be necessary to decarbonise at more frequent intervals; loss of power usually indicating that decarbonising is necessary.

RO1303E

SECTION 3

FAULT FINDING

AND

GENERAL INFORMATION

FAULT FINDING

In the event of any difficulty being experienced, it should not be hard to remedy if it is tackled systematically with the aid of the following fault finding procedure. **IF THE ENGINE WILL NOT START OR STOPS OF ITS OWN ACCORD** it may be because of:—

(A) Faulty carburation due to:—

(1) Absence of fuel: refill the tank.

(2) Fuel tap not turned on: open the tap.

(3) Carburettor loose causing air leak: tighten.

(4) Carburettor jet blocked: remove and clean the jet. At the same time clean the float chamber and filter and blow through the internal passages in the carburettor.

(5) Fuel feed line blocked: clean out fuel pipe, tap and filters, preferably by blowing through with compressed air. Before replacing the pipe on the carburettor connection, turn on the tap to verify that fuel is flowing.

(6) Fuel filler cap air vent blocked: clear vent.

(7) Flooded carburettor: turn off the fuel tap, dry the carburettor by opening the throttle wide and kicking the engine over as rapidly as possible. If it does not fire after a few attempts, dry and clean the sparking plug. Before replacing, turn over the engine several times in order to eject the excess fuel from the cylinder. Then turn on the fuel tap again and carry out normal starting procedure. Should flooding still occur, check the float, float needle and seating.

(8) Engine flooded with fuel due to excessive use of choke control: remedy as in point 7.

(9) Choke plunger in carburettor not returning: check plunger and operating cable and adjust as necessary. Remedy as in point 7.

(10) Water in fuel: drain fuel system, clean out carburettor. Refill with correct fuel.

(B) Faulty ignition due to:—

(11) Dirty or oiled sparking plug: clean the plug.

(12) Sparking plug electrode gap too wide: reset the gap. If the electrodes are badly burnt or corroded, replace the plug.

(13) Faulty or broken sparking plug insulator: replace the plug.

(14) Sparking plug lead disconnected: refit.

(15) Insulation of H.T. lead to sparking plug faulty and spark shorting to earth: wrap the lead temporarily with insulating tape and replace it as soon as possible.

(16) Dirty or loose connection in ignition circuit: check all connections and clean or tighten as necessary.

(17) Dirty, burnt or maladjusted contact breaker points: clean or re-face points and set to correct clearance.

(18) Condenser or external H.T. ignition coil faulty: have them checked.

(19) **Note**—The sparking plug could get "wetted" with fuel due to carburettor flooding or to faulty ignition. It could be fouled by descending a long hill without opening the throttle occasionally or by letting the engine run light for too long. A sparking plug running too hot may cause the engine to stop due to 'whiskering,' which is the formation of a conducting filament between the electrodes. A sparking plug running too cold fouls easily.

(C) Mechanical trouble, as follows:—

(20) Leakage at a crankcase joint, or at the crankshaft oil seals. Leakage at cylinder head gasket or at decompressor valve.

IF THE ENGINE STARTS, BUT STOPS IMMEDIATELY

(21) In winter with a cold engine: let the engine warm up with the cold start control in operation.

IF THE ENGINE STOPS WHEN THE THROTTLE IS OPEN

(22) Engine still cold: allow it to warm up.

(23) Carburettor jet blocked: clean it.

(24) Fuel having difficulty in reaching carburettor: clean petrol pipe, tap and filters (see also points 1, 4, 5 and 6).

IF THE ENGINE DOES NOT RUN PROPERLY OR LACKS POWER

(25) Mixture too weak: see points 1, 3, 4, 5, 6 and 20. Jet too small: fit one size larger jet.

(26) Mixture too rich (air cleaner blocked with dirt, float not maintaining correct fuel level, jet loose): wash the air cleaner in petrol or adjust or repair the carburettor as necessary. Jet too large: fit one size smaller jet.

(27) Too much oil in petroil mixture: correct the mixture.

(28) Sparking plug dirty or of unsuitable type, or with electrodes corroded or with incorrect gap: clean plug and set gap, or if necessary replace plug.

(29) Contact breaker, condenser or ignition coil not functioning properly: have them checked.

(30) Exhaust port or exhaust system choked with carbon: decarbonise and thoroughly clean.

(31) Sparking plug loose in head: tighten securely.

(32) Mechanical trouble: see points 3 and 20.

(33) Piston rings gummed-in or excessively worn: clean grooves. Clean rings or replace if necessary.

IF THE ENGINE FOUR-STROKES EXCESSIVELY

(34) Mixture too rich: remedy as indicated in point 26.

(35) Exhaust system choked: remedy as indicated in point 30.

Note—If the four-stroking is caused by too rich a mixture, this can easily be verified by turning off the fuel tap whilst riding the machine. Just before the engine stops due to lack of fuel, it will begin to fire correctly. If this does not prove to be the cause, then it is probably due to carbon deposits obstructing the exhaust system.

MISFIRING

(36) Fault with ignition equipment: check all items.

(37) Fuel feed deficiency producing a weak mixture (usually accompanied by spitting back in the carburettor: see points 1, 3, 4, 5 and 6).

IF THE ENGINE STOPS OF ITS OWN ACCORD

(38) Fuel feed deficiency or absence of fuel if the stoppage is preceded by spitting back in the carburettor and back-firing in the exhaust.

(39) Ignition defect if the stoppage is preceded by a bout of misfiring.

IF THE ENGINE RACES BUT THE MACHINE DOES NOT INCREASE SPEED

(40) Driving belt slipping: check condition of belt and adjust or renew as required. (The belt can be contaminated by grease or oil due to excessive lubrication of the transmission.)

FAILURE OF LIGHTS (Engine running)

(A) This can be the result of blown bulb(s). Check by substitution of both headlamp and rearlamp bulb together. Otherwise if the headlamp bulb is defective the rearlamp bulb will blow due to overloading.

(B) If, after checking as described in (A) the bulbs still do not light with the engine running, proceed to check the generating coil as follows:—

(1) Connect a test load, consisting of a spare headlamp and rearlamp bulb connected in parallel to give an 18 watt load across the main lead from the generator and a convenient point on the engine. With the engine running at a fast tick-over, the bulbs should light to near full brilliancy.

(2) If, after carrying out the test described in (1) the test bulbs light, proceed to check each stage of the circuit from the generator to the lighting switch, referring to the wiring diagram for open-circuits (breakages, etc.). Should any of these faults exist, the bulb will not light. Also check for bad connections, etc., if the bulbs are dim.

LIGHT FLICKER

Examine the wiring for loose or dirty connections, or short circuits caused by faulty cable insulation. Check the bulb contacts. Rectify as necessary.

HEADLAMP ILLUMINATION INSUFFICIENT

Check for discoloured bulbs or sagged filaments, replace the bulbs if necessary. Check the reflector; if tarnished or discoloured it should be replaced, as aluminised reflectors should not be cleaned or polished in any way whatsoever.

NOTES ON ELECTRICAL FAULTS

Of the moped electrical components which are returned to the Service Department as claims under Guarantee, a large percentage prove, under subsequent electrical tests, to be in perfect condition.

We fully appreciate that everyone does not possess sophisticated test equipment and that the easiest means of eliminating trouble without such equipment is to check by substitution. In these circumstances we feel that the following hints may assist in dealing with electrical faults:—

CONTACT BREAKERS

These are normally checked by visual examination, and if the contact faces look good, are assumed to be in good working order. There are, however, two faults which are worth checking:—

1. Contact resistance

Contact sets are usually made of tungsten steel, and if these have been stored for any length of time under certain conditions a coating of oxide will form on the contact faces, thus creating complete insulation at low starting voltages. This will, of course, also happen to new magnetos which have been stored for some time before use. The best solvent for this tungsten oxide is plain water.

New contact sets have a protective plastic coating, and this should be cleaned off with petrol before use.

2. Wear in the pivot pin and bush

Wear in the pivot pin and bush causes the contact faces to 'slide' apart instead of breaking clean and square, as with a new contact set. This slow breaking action results in the voltage never building up to the value required to jump the spark plug electrode gap.

This fault shows up in bad starting and running and may be temporarily cured by reducing the contact breaker gap. New contacts should be fitted.

CONDENSERS

Care should be taken to ensure that the live earth connections of the condenser are both clean and tight. Even a very slight increase in the condenser circuit resistance will make the condenser inoperative, and a large number of condensers have been condemned and replaced because of this fault. When a new condenser is fitted, one naturally makes sure that the connections are tight, and the same result would often be obtained if the old unit had been replaced properly.

EXTERNAL H.T. COILS

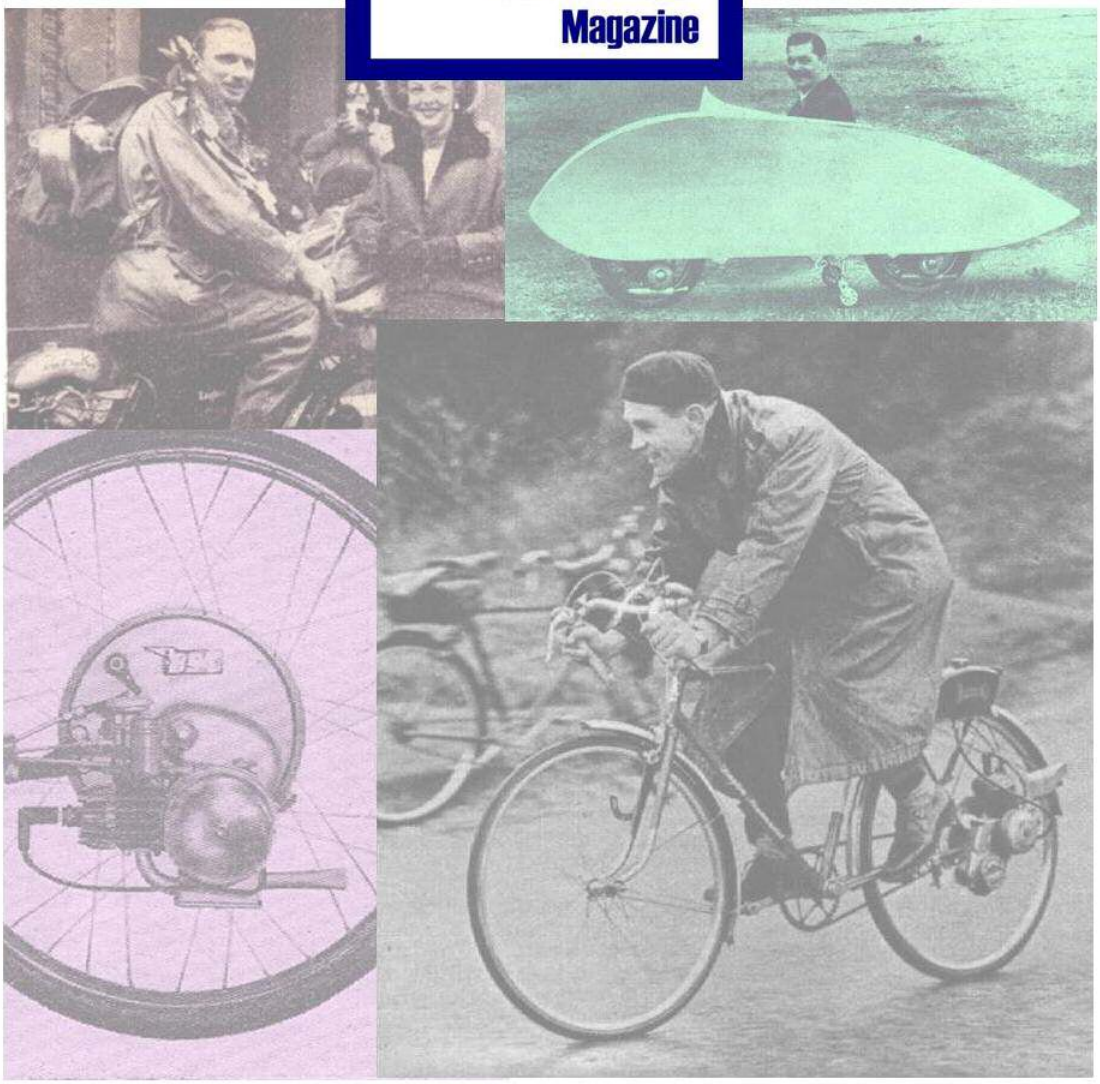
The earth and the H.T. and L.T. connections must be clean and tight. The coil earths through the fixing screws so that it is essential that a good metal-to-metal contact be made at this point. It may be necessary to scrape paint from the frame if there is any doubt about effective earthing. The possibility of the H.T. lead connection aperture in the coil having become corroded, due to damp, should not be overlooked and this is easily cleaned out with emery or glass paper after pulling out the H.T. lead.

TEST EQUIPMENT

There is no doubt that much time and therefore expense can be saved in the tracing and elimination of electrical faults by the use of suitable test equipment. In this connection we believe that the competitively priced 'Red Box' testometer, supplied by Messrs. Morrel and Whiteley Limited of 400 Liverpool Road, Southport, Lancs., should prove a sound investment. Full particulars may be obtained from the suppliers.

IceniCAM
Information Service

The Iceni CAM Magazine
Cyclemotor Autocycle & Moped



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