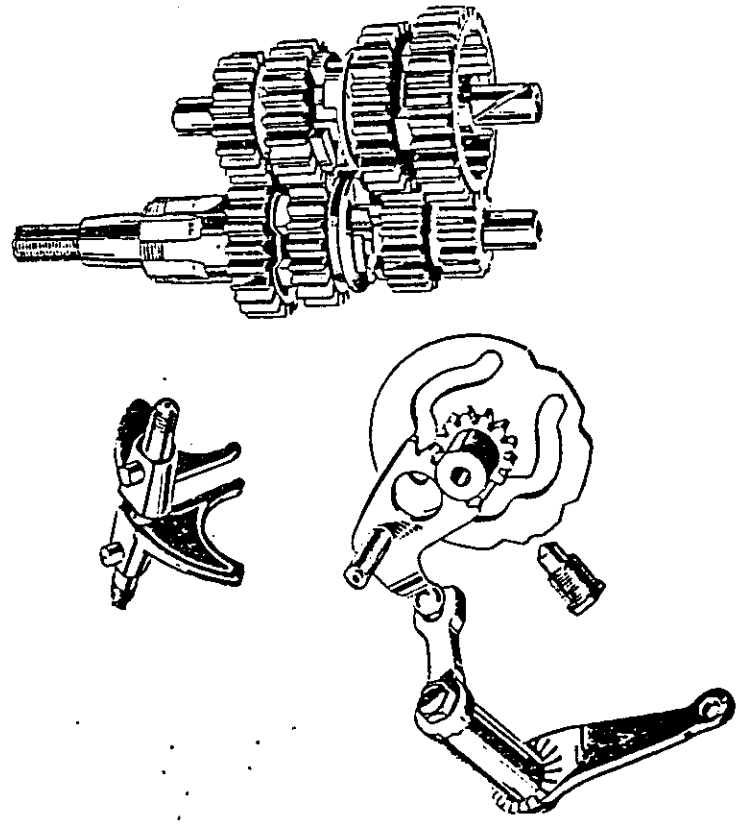


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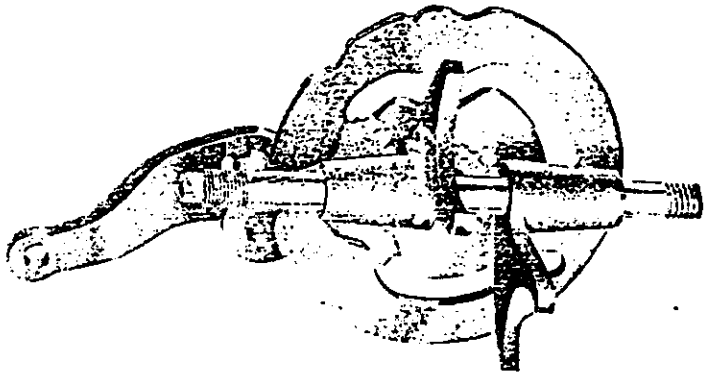
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ARRANGEMENT OF GEARING
ON LIGHTWEIGHT 4-SPEED GEAR
AND CAM OPERATING MECHANISM

CAM GEAR OPERATING MECHANISM
ON HEAVYWEIGHT 4-SPEED GEAR



INTRODUCTION.

STURMEY ARCHER 4-SPEED GEAR.

Can be supplied in two models.

A LW. suitable for Engines up to 350 c.c.

A HW. suitable for Engines of 500 c.c. and over.

We have every confidence in placing our new 4-Speed Gears on the market, as they have been fully tested during the past racing season, and not a single failure has been reported.

The outstanding features of this gearbox are its silent running, its easy gear change, the excellence of the quality of the materials used, and its reliability under all conditions. Owing to its exceptional silence, this Gear has become known to its friends as the "silent SturmeY."

THE GEARS—continued.

(4). Fourth or top gear is engaged by moving pinion F into neutral position and then engaging pinion C with A; this couples the main axle I to sleeve gear A and gives direct drive.

CLUTCHES

For Light Weight Gears a single spring 2-Plate solid Clutch is fitted.

For higher powered engines Multi-Spring Clutches are used; these can be supplied with or without Shock Absorber, and fitted with 2, 3 or 4 plates according to the power of the engines.

CLUTCH ADJUSTMENT

We might here explain the correct order for the three parts comprising the clutch rod. This is important.

- (1). The mushroom shaped Thrust Pin lies next to the Spring Box Plate, and has to be fitted when assembling the clutch.
- (2). The long Clutch Rod passes inside the axle, and up to the Thrust Pin.
- (3). The short Clutch Rod is slightly larger in diameter than the long Rod and must not enter the Axle. It passes through the Clutch Nut in the Gearbox Cover, into contact with the long Clutch Rod.

It is important to ensure that there is $\frac{1}{16}$ in. clearance between the end of the short Clutch Rod and the ball ended Adjusting Screw in the clutch operating lever when the clutch is fully engaged, to avoid clutch slip.

When fitting up the Clutch Cable ease off the bends as much as possible; otherwise the clutch will be difficult to operate.

TO DISMANTLE CLUTCHES
SINGLE SPRING CLUTCHES

First unscrew the Clutch End Cap CS. 173A. If a special spanner is not available use a hammer and punch for this purpose.

It has a right-hand thread, and must be unscrewed in an anti-clock-wise direction. The Clutch Adjuster Nut is then exposed, and should be unscrewed, bearing in mind that it also has a right-hand thread. Remove Clutch Spring with the Collar and then the Spring Cup. The Plates can now be withdrawn, noting particularly the direction in which the dish centre portions of these face, as they vary, and it is important that they are replaced exactly as they were found originally.

With these points carefully noted there should be no difficulty in re-assembly. If the inserts are fairly thin, but otherwise in good condition, one of the Washers used under the Clutch Adjuster Nut may be removed in order to obtain additional spring tension; also be sure the End Cap is screwed up thoroughly tight.

MULTI SPRING CLUTCHES

The six screws which hold the Clutch Springs should be unscrewed first, afterwards lifting out the Springs and Spring Boxes. The Spring Box Plate and the other clutch plates are then lifted apart as described for the Central Spring Clutches. No adjustment of the spring tension is provided, but extra strong springs are available in case of need. We do not recommend fitting these unless absolutely essential, as they are inclined to make the Clutch more difficult to release.

SHOCK ABSORBER CLUTCHES

The Clutch Portion can be dismantled as described for the plain type. The Shock Absorber may present some difficulty, as the screws holding the parts together are burred over, to prevent the lock nuts from working loose.

After the four screws have been removed, the Driver can be withdrawn, and the rubbers taken out of the slots in the body of the Sprocket.

The positions of the rubbers should be carefully noted. The solid rubbers are fitted in the driving side, and those with the small hole, on the opposite side.

To remove the Sprocket from the bearing in the Multi Spring type, it is necessary to unscrew the six nuts on the Clutch Spring studs. The small plate and the Sprocket can then be removed.

The Sprocket bearing in the Clutches is composed of loose $\frac{1}{16}$ in. dia. Balls and Rollers placed alternately. These should be assembled with grease.

GEAR CONTROLS

Special arrangements are made by most motor cycle manufacturers and careful note of any remarks under the heading "Special Parts" should be taken.

We supply Gate Controls to operate alongside the tank or Disc Controls fixed direct to an extension of the gearbox cover. We are also introducing a special Positive Stop Foot operated control attached to the gearbox cover. On this a patent design of single pawl is used which provides the positive stop for all gears when changing either up or down.

CHANGING GEAR

When starting from rest, with engine running and gear in neutral, release clutch and push gear control lever sharply into first or low position, when throttle may be opened to the required amount, and clutch engaged gradually. As sufficient momentum is obtained, clutch and gear control may again be manipulated for second and finally high gear as above.

We would emphasize that gear boxes are meant to be used. Sturmey-Archer gears are particularly easy to change, therefore never allow the engine to labour, or resort to slipping the clutch on a hill. Change down to a lower gear! Keep the engine revving freely, and you will find that a much faster climb can be made without punishing the engine.

GEAR CONTROL ADJUSTMENT

As the gears are automatically indexed inside the box independent of the lever in the gate, it is important to see that the positions of the gate lever harmonize with the indexing mechanism inside the Box. To check this, place the Rocking Shaft Lever in second or third position and remove the pin from the top connection. If the holes in the two pieces do not coincide, give the connection one turn or half a turn up or down until the pin engages both freely without being forced.

TO TAKE THE GEARS APART

Instructions for removing the Gearbox from the machine cannot be given here, owing to the many variations adopted by different motor cycle makers. These details should be described in the makers own booklet.

To examine the interior of the gearbox it will in any case be necessary to disconnect the Clutch wire from the Operating Lever. On the small gears where the Gear Operating Lever is fitted through the gearbox cover, the Gear Control Rod must also be disconnected by removing the Gear Connection Pin which passes through the Operating Lever.

Then remove the Gearbox Cover Nuts and the Fork Shaft Lock Nut, and draw off the Gearbox Cover. If this proves stiff give a few gentle taps on the inner side of the Kickstarter Crank with a mallet. Do not use a screwdriver to part the joint or oil may leak afterwards. The internals will now be exposed.

The Kickstarter Wheel can be lifted out, the Low Gear Pinion must be drawn off the splined end of the Axle, and the Fork Shaft should be unscrewed (it is formed with square head for this purpose). Then turn the striking forks to disengage them from the Operating Cam and lift them out with the next two pinions from each shaft. The Layshaft and its splined on pinion can also be lifted out.

If it should be necessary to dismantle the Cam Gear, first unscrew the Plunger Stud, then the two set screws outside the box. This releases all the internal parts. Be careful to re-assemble in the same relative positions. The Clutch must be dismantled and the clutch centre pulled off the splined end of the axle before the axle itself can be taken out. Then the Sprocket Locking Plate Screw may be removed with the

TO TAKE THE GEARS APART—continued.

Locking Plate, and the Sprocket Lock Nut unscrewed (L.H. Thread on H.W. Gear and R.H. Thread on L.W. Gear). The Rear Drive Sprocket fits over splines on the Main Gear Wheel and can now be pulled off, so that the Main Gear Wheel may be withdrawn from the inside of the box.

When re-assembling, the Operating Cam must be in position first. Then fit the Main Gear Wheel and Axle Sprocket and the Axle with Thrust Washer. Next assemble the clutch. Now fit one of the Forks to the Axle Sliding Pinion and slip both over the Axle and turn the Fork to engage its peg in the Cam.

Next fit the Fork Rod, and place the Gearbox Cover in position and test to make sure that the Axle Slider moves freely. Place the lever in high gear position, then remove the gearbox cover and note that the Cam Plunger is engaging the gear position correctly. The Fork Rod must now be removed and the Cam turned to the Second Gear notch. Fit the Layshaft Dog Gear on the Layshaft and push on the Layshaft Pinion right up to its shoulder on the shaft. The recessed side of this pinion faces outwards to the Bronze Bush in the shell. Make sure that the Dog Gear revolves freely and fit the end of the Layshaft in its bearing bush. Now fit the second fork to the Layshaft Slider and slip both into position and screw in the Fork Rod. Note that the Cam must be in Second Gear to admit of the fork peg being turned into the cam slot. Next fit the Axle Dog Gear and the Low Gear Pinion. Push the latter down as far as the shoulder on the Axle splines and again see that the Dog Gear revolves freely. Then fit the Kickstarter Wheel and Gearbox Cover and again test the gear operation. Place the outside lever in low gear this time and then remove the Cover and note that the low gear dogs are fully in mesh with the Kickstarter Wheel and that the Cam Plunger is correctly engaging the Low Gear notch.

When referring to the Gearbox Cover in the preceding paragraph, the cover with all the Kickstarter parts assembled should be inferred. The assembling of these parts in the cover does not call for any special notes. This Cover can now be finally fitted up, the spring washers placed over the studs and the Cover Nuts screwed up. These nuts should be screwed up finger tight only at first, then proceed to tighten them up a few turns at a time going all round every one before finally tightening any one fully.

LUBRICATION

Gargyle Mobiloil "D" is recommended for 4-speed Sturmey-Archer Gearboxes and is used by us. For the Lightweight Gear charge with 1/2-pint and re-charge with 1,000 to 1,500 miles. For the Heavyweight Gear charge with 1/2-pint and re-charge with 1-pint every 750 to 1,000 miles.

LUBRICATION—contin.

It is very important to see that these instructions are carefully observed. No harm is done by an additional charge, but on the other hand we find that a large percentage of gear trouble can be directly attributed to insufficient lubrication or by using a lubricant which is not suitable.

It is not advisable to use thick grease, as it may prevent the free operation of the Kickstarter Pawl.

The various joints in the gear changing lever mechanism should be kept oiled regularly to ensure freedom of action. Inject a little vaseline or grease between the index and quadrant plate on the Disc pattern control. This type of control is only designed for H.W. Gear.

DO NOT lubricate the Clutch, as this is designed to run dry.

Formula for Finding the Top Gear Ratio
 No. of teeth on Clutch Sprocket × No. of teeth on Rear Sprocket
 = Top Gear Ratio

Example
 $\frac{42}{21} \times \frac{20}{11} = \frac{42}{11} \times \frac{20}{11} = \frac{84}{121} = 5\frac{1}{2}$ to 1 Top Gear

A variation of the top gear ratio can be secured by altering the number of teeth on the engine, or small gear sprockets.

GEAR RATIO TABLES.

Heavyweight Gearboxes—Ratios 1 : 1.21 ; 2.17 ; 2.97

Top (4th)	Third	Second	First (Low)
3	3-03	0-31	8-91
3½	3-93	7-03	9-65
3¾	4-24	7-59	10-39
3¾	4-54	8-14	11-14
4	4-84	8-68	11-88
4¼	5-14	9-22	12-62
4¼	5-45	9-76	13-36
4½	5-75	10-31	14-11
5	6-05	10-85	14-85
5½	6-35	11-39	15-59
5½	6-66	11-93	16-33
5¾	6-96	12-48	17-08
6	7-26	13-02	17-82

GEAR RATIO TABLES—continued.

Light Weight Gearboxes—Ratios 1, 1-33, 1-96, 2-97

Top (4th)	Third	Second	First (Low)
4	5-33	7-84	11-88
4¼	5-66	8-33	12-62
4½	6	8-82	13-36
4¾	6-33	9-31	14-11
5	6-66	9-80	14-85
5½	7	10-29	15-59
5½	7-33	10-78	16-33
5¾	7-66	11-27	17-08
6	8	11-76	17-82
6¼	8-33	12-25	18-56
6½	8-66	12-74	19-30
6¾	9	13-23	20-05
7	9-33	13-72	20-79

NOTES AND RULES FOR ORDERING SPARES

1. All prices refer to one only, unless otherwise stated.
2. Prices do not include cost of postage or carriage, but goods value £5, or more will be sent carriage paid.
3. All prices of spares and replacement parts are subject to revision or modification, at our discretion, without notice.
4. Our Four-Speed Gearboxes are stamped with a letter followed by the Roman numerals IV, preceding the box number. This lettering indicates to us the details of such fittings as the Kickstarter extension, sprocket, sizes, type of clutch and chain lines, and it is often essential that we should be advised of this lettering, in order to know which part to send. It is therefore always advisable to quote these symbol letters from the box when ordering spares. The number need only be quoted in the case of claims for replacement under guarantee.
5. We have endeavoured to provide such dimensions as will enable customers to identify any parts which they may be requiring, but there are some parts, notably gear control rods, where the shapes required to suit some machines are quite impossible to describe lucidly. We strongly recommend customers to return the original parts if renewals are necessary in these cases.

NOTES AND RULES FOR ORDERING SPARE continued.

- 6. If in doubt regarding correct name of part, it is advisable to send old part as pattern. (See notes seven and eight). We also recommend giving some description if at all possible, such as shaft, gearwheel, bearing, etc.
- 7. All parts sent as patterns should be clearly marked with sender's name and address on the label or package so that they may readily be identified.
- 8. Patterns are not returned unless specially requested at time of ordering, as this avoids excess postage. We cannot in any case return parts for which replacements are supplied under the terms of our guarantee.
- 9. Do not enclose cash with goods. Remittance should be sent by letter post.
- 10. Customers having no account with us should not fail to remit when sending the order, and also include postage. If the remittance exceeds the cost of the parts, the balance will always be refunded with our invoice and receipt.
- 11. If goods are urgently needed a Telegraph Money Order will ensure immediate attention. But customers must send their name and address as part of the message. The name and address written on the back of the form is not transmitted to us.
- 12. Goods will be sent by C.O.D. post if desired, but we do not use this service unless requested to do so.
- 13. We do not despatch spares or gearboxes by Passenger Train C.O.D. If a repair is urgently required, we will, if requested, wire the cost immediately after examining the gears, and customers can then remit by post or by Telegraph Money Order to avoid delay. As an alternative a blank cheque could be sent with letter of advice. Invoice would then be posted when box is returned showing the charge for repairs.
- 14. We are willing at all times to give customers the benefit of our advice regarding any queries or difficulties which may be experienced. We, therefore, invite all owners to write us for any information required which cannot be found in this booklet.

FOUR SPEED LW. GEARBOX PARTS

GEARBOX SHELL

1	DIV	1	Gearbox Shell (Matchless Model "A," stamped DIV)	1 10 0
1	DIV	30	Gearbox Shell (Dunell, stamped QIV) ...	1 10 0
1	DIV	30	Gearbox Shell (Raleigh, stamped FIV) ...	1 10 0
1	DIV	30B	Gearbox Shell (Coventry Eagle, stamped OIV)	1 10 0
1	DIV	30C	Gearbox Shell (A.J.S. Models S5 and S12 stamped JIV) ...	1 10 0
1	DIV	2	Gearbox Cover, takes Ball Bearing to support end of Mainshaft (Matchless Model "A") ...	16 0 0
1	DIV	31A	Gearbox Cover, to suit Long Clutch Operating Lever (horizontal). Uses bronze Bush to support end of Mainshaft. (Dunell, Raleigh, A.J.S. Models S5 and S12) ...	16 0 0
1	DIV	31C	Gearbox Cover, to suit Short Clutch Operating Lever (vertical) (Coventry Eagle) ...	16 0 0
2	DIV	40A	Paper Washer (Matchless Model "A" only)	2 2 0
2	DIV	40	Paper Washer ...	2 2 0
8	CS	8G	Oil Filler Plug, 3/8 in. long (A.J.S. Models S5 and S12, Dunell & Raleigh)	8 8 0
8	CS	8D	Oil Filler Plug, 1/2 in. long (Coventry Eagle)	8 8 0
8	CS	8E	Oil Filler Plug, to take Grease Gun Nipple ML 184D (Matchless Model "A" only)	8 8 0
9	CS	9	Gearbox Cover Stud, 1 3/8 in. long.	9 9 0
3	CS	10	Gearbox Cover Nut ...	3 3 0
2	CS	11	Spring Washer for Cover Stud ... doz.	2 2 0
6	BS	217	Gearbox Cover Stud, 1 1/2 in. long.	6 6 0
3	ML	184D	Grease Gun Nipple (Matchless Model "A" only)	3 3 0
3	ML	184D	Grease Gun Nipple (Matchless Model "A" only)	3 3 0
26	DIV	26	L.H. Bearing, 2 1/4 in. x 1 1/2 in. with 1 3/8 in. hole	26 26 0
26	DIV	26	L.H. Oil Retaining Washer (Steel) for DIV 26, one used each side of Bearing	26 26 0

BEARINGS

BEARINGS—continued.

BS	15A	Main Axle Bronze Right-hand Bush	1	0
BS	110C	Main Axle Adjusting Screw, 1/8 in. long	1	3
DIV	38	Layshaft Bronze L.H. Bearing	1	0
DIV	39	Felt Oil Retaining Washers (fits behind rear Sprocket)	2	2
DIV	60	Oil Retaining Leather Washer (fits behind rear Sprocket)	2	2

GEARS AND SHAFTS

DIV	3	Main Axle, 7/8 in. long. Takes Ball Bearing CS 33 (Matchless Model "A")	11	0
DIV	32	Main Axle, 7 1/2 in. long (A.J.S. Models S5 and S12 and Coventry Eagle)	11	0
DIV	32D	Main Axle, 7 1/2 in. long (Dunell & Raleigh)	11	0
DIV	4	Layshaft, 4 1/2 in. long	10	0
DIV	6	Main Axle Thrust Washer	8	0
DIV	8	Main Axle Gear Wheel, 24T with Main Gear Wheel Bush (DIV 7A) fitted	12	6
DIV	9	Low Gear Pinion, 13T	3	6
DIV	10	Main Axle Sliding Pinion, 21T	7	6
DIV	11	Main Axle Dog Pinion, 17T	7	6
DIV	15	Layshaft Pinion, 18T	4	6
DIV	16	Layshaft Dog Pinion, 21T	6	0
DIV	17A	Layshaft Sliding Pinion, 25T	9	0
DIV	18A	Low Gear and Kick Starter Wheel, 29T	8	6

GEAR OPERATING PARTS

DIV	19A	Cam Plate	5	0
DIV	20	Striker Fork	3	0
DIV	21	Striker Fork Shaft	1	6
DIV	22	Cam Plate Spindle, 1 1/2 in. (Matchless Model "A" only)	3	0
DIV	22A	Cam Plate Spindle, 1 1/2 in. long	3	0
DIV	23	Cam Plate Quadrant with Spindle, 1 1/2 in. long (Matchless Model "A" only)	6	0
DIV	28	Cam Plate Quadrant (No spindle)	6	0
AIV	22	Cam Plate Spindle Washer	3	0
AIV	25	Cam Plate Spindle Spring Washer	1	1
MJ	70	Cam Plate Spindle Bolt, 1/2 in. long	1	1
EIV	22B	Cam Plate Quad Lever, 2 1/2 in. centres, 1/2 in. offset (Matchless Model "A" only)	2	6
E	878	Indexing Plunger, 3/8 in. long	3	3
E	879	Indexing Plunger Bush	1	0

GEAR OPERATING PARTS—continued.

E	880	Indexing Plunger Spring, 3/8 in. long	2	2
E	880A	Indexing Plunger Spring, 1 in. long (Matchless Model "A" only)	2	2
DIV	57	Indexing Plunger, 1 1/2 in. long with 1/2 in. dia. nose (Matchless Model "A" only)	3	3
DIV	58	Indexing Plunger Bush (Matchless Model "A" only)	3	3
ML	16	Striker Fork Shaft Lock Nut	2	2
DIV	27	Cam Plate Quad Bush	1	0
DIV	29	Cam Plate Quad Pin	6	0
DIV	34	Kickstarter Axle, fitted with Bush BS 15A (1 1/2 in. overall), (fitted to A.J.S. Models S5 and S12, and Matchless Model "A")	11	6
DIV	34A	Kickstarter Axle, fitted with Bush, BS 15A (5/8 in. overall) (fitted to Coventry Eagle, Dunell and Raleigh)	11	6
LS	438	Kickstarter Pawl	1	3
LS	439A	Kick Starter Pawl Pin	3	3
BS	26D	Kickstarter Return Spring, with arm 1 1/2 in. long (Matchless Model "A," A.J.S. Models S5 and S12)	1	0
BS	100	Kickstarter Return Spring (Coventry Eagle Dunell and Raleigh)	1	0
LS	395B	Kickstarter Return Spring Cover, 2 in. long, 1 in. dia. hole (A.J.S. Models S5 and S12 and Matchless Model "A")	1	0
LS	395G	Kickstarter Return Spring Cover, 2 1/2 in. long, 3/8 in. dia. hole. (Coventry Eagle Dunell and Raleigh)	1	0
BS	25	Kickstarter Cam	1	0
BS	20	Kickstarter Bush	3	3
DIV	35	Kickstarter Crank	1	6
LS	85	Kickstarter Cam Rivet	1	1
BS	28	Kickstarter Stop Piece	4	4
BS	23	Kickstarter Pawl Spring	1	1
BS	24	Kickstarter Pawl Spring Plunger, 3/8 in. long	3	3
LS	435	Kickstarter Crank Clamp Bolt, 1 1/2 in. long	3	3
CS	74	Spring Washer for Kickstarter Clamp Bolt overall	1	3

KICK STARTER MECHANISM

£ s. d.

£ s. d.

FINAL DRIVE

12	DIV	Axle Sprocket 18T, 1/2 in. x 1/2 in., 1 1/2 in. thick	7
12A	DIV	Axle Sprocket, 20T 1/2 in. x 1/2 in., (Coventry Eagle, Dunell and Raleigh) ...	7
12B	DIV	Axle Sprocket 18T, 1/2 in. x 1/2 in., overall thickness, 1 1/2 in. (Special Chain Line) (fitted to A.J.S. Models S5 and S12) ...	7
63	CS	Axle Sprocket Locking Plate	4
13	DIV	Axle Sprocket Locking Nut	8
14	DIV	Axle Sprocket Distance Washer	3
35	S	Axle Sprocket Locking Plate Screw	1

CLUTCH OPERATING MECHANISM

388	LS	Clutch Operating Lever, 4 1/2 in. centres from Fulcrum to Wire. (A.J.S. Models S5, S12 and Raleigh) ...	4
149	BS	Clutch Operating Lever, 3 1/2 in. centres from Fulcrum to Wire. (Coventry Eagle and Dunell) ...	3
396A	LS	Clutch Operating Lever Adjusting Screw, 1 3/4 in. overall	3
33	DIV	Clutch Operating Fulcrum Screw, 1 1/2 in.	2
33A	DIV	Clutch Operating Fulcrum Screw, 1 1/2 in. long (A.J.S. Models S5 and S12 and Raleigh)	2
106A	CS	Lock Nut for Clutch Adjusting Screw	1
		LS 396A	

N.B.—These parts are not used on Matchless Model "A". See list of special parts for this Model.

GEAR CONTROL MECHANISM

205	BS	Gear Control Spindle	2
206	BS	Gear Control Spindle Arm	1
207A	BS	Short Gear Lever, 2 1/2 in. centres, 1/8 in. offset (A.J.S. Models S5 and S12)	2
207D	BS	Short Gear Lever, 2 1/2 in. centres, 1/8 in. inset (Coventry, Eagle, Dunell and Raleigh)	2
208	BS	Gear Control Spindle Bolt	9

GEAR CONTROL MECHANISM—continued.

Parts from BS 211 to BS 207D inclusive, are not used on Matchless Model "A".

211	BS	Ball for Gear Control Ball Joint	2
219	BS	Gear Control Spindle Washer	6
151	CS	Lock Washer for BS 208	1
18	CC	Lock Nut for BS 208	2

D.E. TWO PLATE CLUTCH

52	BS	Clutch Rod. See under special parts for length required	9
57	BS	Clutch Adjuster Nut	8
24	DIV	Clutch Centre, tapered with slots 1/2 in. deep	12
66A	BS	Clutch Sprocket, 42T 1/2 in. x 1/2 in.	16
66B	BS	Clutch Sprocket, 50T 1/2 in. x 1/2 in. with Corks (Matchless Model "A" only)	16
67	BS	Clutch Friction Plate, with Corks	4
8	TS	Main Axle Nut	5
34	TS	Ball Retainer	10
68	BS	Clutch Back Plate	2
62B	TS	Clutch Spring	1
55	TS	Clutch Spring Collar	6
56	TS	Clutch Cork Inserts, 1/2 in. dia. per doz.	4
57	TS	Clutch Cork Inserts, 1/2 in. dia. per doz.	4
77	TS	Clutch Spring Cup with Flange set back 1 in.	3
118	CS	Clutch Centre Flat Washer	1
166	CS	Clutch Centre Plate (dished)	3
167A	CS	Clutch Outer Plate (flat)	3
173A	CS	Clutch End Cap	1
94	LS	Thrust Pin for Clutch. See under special parts for length required	9

TWO PLATE

MULTI SPRING SHOCK ABSORBER CLUTCH

50B	LS	1/2 in. x 1/2 in. Rollers	2
72A	LS	Clutch Sprocket Back Plate	2
91	LS	Clutch Driver Screw	1
93A	LS	Rubber Shock Absorber, 1/2 in. dia. hole	2
93B	LS	Rubber Shock Absorber, solid	2
172B	LS	Clutch Centre	17
175	LS	Sprocket Locking Plate	1
176	LS	Clutch Spring Stud	6

continued.

178	TS	Clutch Spring Stud Nut	...	2
179	TS	Clutch Back Plate	...	2
180	TS	Clutch Centre Plate	...	3
181	TS	Clutch Outer Plate	...	3
182B	TS	Clutch Spring Box Plate	...	3
183A	TS	Clutch Friction Plate with Corks, 8 lugs	...	2
184A	TS	Clutch Driver, 8 slots	...	3
187A	TS	Clutch Sprocket, 42T $\frac{1}{2}$ in. x $\frac{1}{2}$ in.	1	0
56	TS	Clutch Corks, $\frac{3}{8}$ in. dia.	per doz.	4
57	TS	Clutch Corks, $\frac{1}{2}$ in.	per doz.	4
13	CS	Axle Nut	...	3
16	LS	Axle Nut Lock Washer	...	1
59	CS	Clutch Spring Box	...	4
60	CS	Clutch Spring	...	2
61B	CS	Clutch Spring Screw	...	2
503	MC	Nut for Clutch Drive Screw	...	2

STRAIGHT PULL CLUTCH CONTROL

73	CS	Nipple for Clutch Wire (Worm Lever end)	...	5
73B	CS	Nipple for Handle Bar Lever	...	5
100F	CS	Handle Bar Lever only	...	3
101E	CS	Fulcrum, 1 in. Bar	...	2
101G	CS	Fulcrum, $\frac{3}{4}$ in.	...	2
102A	CS	Half Clip, 1 in. Bar	...	0
102B	CS	Half Clip, $\frac{3}{4}$ in. Bar	...	0
104A	CS	Fulcrum Pin	...	1
106A	CS	Fulcrum Pin Nut	...	1
106	CS	Bowden Wire Stop	...	1
106A	CS	Bowden Wire Stop Lock Nut	...	1
198	CS	Thimble	...	1
199	CS	Swivel for Handle Bar Lever	...	1
90	X	Fixing Screw	...	4
111	X	Clip Nut	...	1
43	CS	Bowden Wire Stop Spring	...	2
...	...	6 ft. Clutch Inner Wire	...	8
...	...	5 ft. 8 in. Outer Bowden Cable	...	8
...	...	Straight Pull Clutch Control, complete	...	11
...	...	Straight Pull Clutch Control, less Wires	...	7

SPECIAL PARTS FOR A.J.S. MODELS S5 AND S12

12B	DIV	Axle Sprocket, 18T $\frac{1}{2}$ in. x $\frac{1}{2}$ in. overall	...	7
30C	DIV	Gearbox Shell (stamped J1V) thickness $\frac{1}{8}$ in. (Special Chain Line)	...	6
...	...	...	...	1
...	...	...	...	10
...	...	...	...	0

31A	DIV	Gearbox Cover, to suit Long Clutch Operating Lever (horizontal)	...	16
32	DIV	Main Axle, 7 $\frac{1}{8}$ in. long	...	11
33A	DIV	Clutch Operating Fulcrum Screw, 1 $\frac{1}{8}$ in. long	...	2
34	DIV	Kickstarter Axle, 4 $\frac{1}{8}$ in. overall	...	11
20D	BS	Kickstarter Return Spring, with arm 1 $\frac{1}{8}$ in. long	...	1
207A	BS	Short Gear Lever, 2 $\frac{1}{8}$ in. crs., $\frac{1}{16}$ in. offset	...	2
393B	LS	Kickstarter Return Spring Cover, 2 in. long	...	2
398	LS	Clutch Operating Lever, 4 $\frac{1}{8}$ in. crs., from lin. dia. hole	...	1
63	DIV	Clutch Rod, 7 $\frac{1}{8}$ in. long	...	9
94B	LS	Thrust Pin, 1 $\frac{1}{8}$ in. long	...	9

SPECIAL PARTS FOR COVENTRY EAGLE MACHINES

12A	DIV	Axle Sprocket, 20T $\frac{1}{2}$ in. x $\frac{1}{2}$ in.	...	7
30B	DIV	Gearbox Shell (stamped O1V)	...	1
...	...	...	...	10
31C	DIV	Gearbox Cover, to suit Short Clutch Operating Lever (vertical)	...	16
32	DIV	Main Axle, 7 $\frac{1}{8}$ in. long	...	11
33	DIV	Clutch Operating Fulcrum Screw, 1 $\frac{1}{8}$ in. long	...	2
34A	DIV	Kickstarter Axle, 5 $\frac{1}{8}$ in. overall	...	11
100	BS	Kickstarter Return Spring	...	1
149	BS	Clutch Operating Lever, 3 $\frac{1}{8}$ in. centres, from Fulcrum to Wire	...	3
207D	BS	Short Gear Lever, 2 $\frac{1}{8}$ in. centres, $\frac{1}{8}$ in. inset	...	2
393C	LS	Kickstarter Return Spring Cover, 2 $\frac{1}{8}$ in.	...	2
63	DIV	Clutch Rod, 7 $\frac{1}{8}$ in. long	...	9
94B	LS	Thrust Pin, 1 $\frac{1}{8}$ in. long	...	9

SPECIAL GATE TANK CONTROL FOR COVENTRY EAGLE

36A	DIV	Gear Control Gate	...	3
87	CS	Gear Connection	...	10
89	CS	Gear Connection Pin	...	2
94A	CS	Gear Lever Knob	...	9
95A	CS	Gear Lever Knob Washer	...	1
97	CS	Gear Connection Washer	...	1
98	CS	Collar for Lever Knob	...	2

SPECIAL GATE TANK CONTROL FOR GOVERNOR EAGLE—

CS	108	Split Pin	... ..	6
CS	137	Gear Connection Lock Nut	... ..	1
CS	183	Fulcrum Screw	... ..	10
CS	184E	Gear Control Lever, 5 $\frac{1}{2}$ in. centres for short arm	... ..	8
CS	186	Gear Control Spring Washer	... ..	2
EIV	45H	Long Gear Rod	... ..	1

SPECIAL PARTS FOR DUNELT

DIV	12A	Axle Sprocket, 20T 1 $\frac{1}{2}$ in. x 1 $\frac{1}{2}$ in.	... ..	7
DIV	30	Gearbox Shell (stamped QIV)	... ..	1
DIV	31A	Gearbox Cover (horizontal)	... ..	16
DIV	32D	Main Axle, 7 $\frac{1}{2}$ in. long	... ..	11
DIV	33	Clutch Operating Fulcrum Screw, 1 $\frac{1}{2}$ in. long	... ..	11
DIV	34A	Kickstarter Axle, 5 $\frac{1}{2}$ in. overall	... ..	11
BS	100	Kickstarter Return Spring (anchors to K.S. Axle)	... ..	1
BS	149	Clutch Operating Lever, 3 $\frac{1}{2}$ in. centre from Fulcrum to Wire	... ..	3
BS	207D	Short Gear Lever, 2 $\frac{1}{2}$ in. centres, 1 $\frac{1}{2}$ in. inset	... ..	2
LS	395C	Kickstarter Return Spring Cover, 2 $\frac{1}{2}$ in. long, 3 $\frac{1}{2}$ in. dia. hole	... ..	1
DIV	63	Clutch Rod, 7 $\frac{1}{2}$ in. long	... ..	9
LS	94	Thrust Pin, 1 $\frac{1}{2}$ in. long	... ..	9

SPECIAL GATE TANK CONTROL FOR DUNELT

DIV	36A	Gear Control Gate	... ..	3
CS	87	Gear Connection	... ..	10
CS	89	Gear Connection Pin	... ..	2
CS	94A	Gear Lever Knob	... ..	9
CS	95A	Gear Lever Knob Washer	... ..	1
CS	97	Gear Connection Washer	... ..	1
CS	98	Collar for Lever Knob	... ..	2
CS	108	Split Pin	... ..	6
CS	137	Gear Connection Lock Nut	... ..	1
CS	183	Fulcrum Screw	... ..	10
CS	184	Gear Control Lever, short arm 4 $\frac{1}{2}$ in.	... ..	8
CS	186	Spring Washer	... ..	2
CS	87	Long Gear Rod	... ..	1

continued.

f s. d.

SPECIAL PARTS FOR MATCHLESS MODEL "A"

DIV	1	Gearbox Shell (stamped DIV)	... ..	1
DIV	2	Gearbox Cover (takes Ball Bearing to support end of Mainshaft)	... ..	16
DIV	3	Main Axle, 7 $\frac{1}{2}$ in. long (takes Ball Bearing CS 33)	... ..	11
DIV	12	Axle Sprocket, 18T 1 $\frac{1}{2}$ in. x 1 $\frac{1}{2}$ in., 1 $\frac{1}{2}$ in. thick	... ..	7
DIV	22	Cam Plate Spindle, 1 $\frac{1}{2}$ in. long	... ..	3
DIV	23	Cam Plate Quadrant, 1 $\frac{1}{2}$ in. long	... ..	6
DIV	34	Kick Starter Axle, 4 $\frac{1}{2}$ in. overall	... ..	11
DIV	40A	Paper Washer	... ..	2
DIV	57	Indexing Plunger, 1 $\frac{1}{2}$ in. long with 1 $\frac{1}{2}$ in. dia. nose	... ..	3
DIV	58	Indexing Plunger Bush	... ..	2
EIV	22B	Cam Plate Lever, 2 $\frac{1}{2}$ in. centres, 1 $\frac{1}{2}$ in. offset	... ..	2
E	850A	Indexing Plunger Springs, 1in. long	... ..	2
BS	26D	Kickstarter Return Spring with arm 1 $\frac{1}{2}$ in. long	... ..	2
BS	60	Clutch Nut Washer	... ..	1
LS	395B	Kickstarter Return Spring Cover, 2in. long, 1in. dia. hole	... ..	1
CS	8E	Oil Plug	... ..	1
CS	33	R.L. + Sketko Bearing	... ..	4
ML	154D	Grease Gun Nipple	... ..	3
BS	52	Clutch Rod, 6 $\frac{1}{2}$ in. long	... ..	9
LS	94A	Thrust Pin, 1 $\frac{1}{2}$ in. long	... ..	9

CLUTCH OPERATING MECHANISM

CS	69B	Clutch Worm	... ..	1
CS	70A	Clutch Worm Lever, 1 $\frac{1}{2}$ in. centres	... ..	2
BS	54A	Clutch Worm Nut	... ..	3
BS	73	Oil Retaining Rubber Sleeve (fits over CS 69B)	... ..	2
BS	60A	Oil Retaining Washer	... ..	1

GATE CONTROL FOR MATCHLESS MODEL "A"

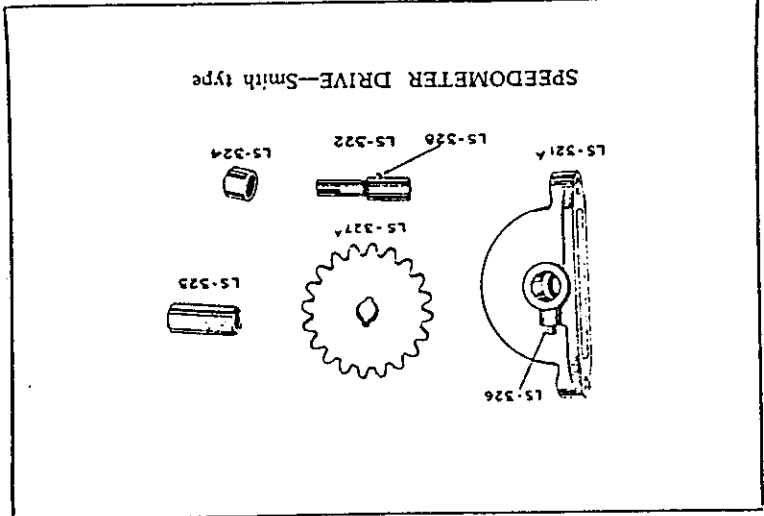
EIV	45C	Top Gear Rod	... ..	1
EIV	45D	Bottom Gear Rod	... ..	1
EIV	46	Control Gate	... ..	3
DIV	37	Gate Lever (Fulcrum to Gate, 5 $\frac{1}{2}$ in. and short arm 2 $\frac{1}{2}$ in. centres)	... ..	8
LS	120	Sleeve Nut for Gate Control	... ..	5
LS	121	Spring Washer	... ..	4
CS	87	Gear Connection	... ..	10

5) EDOMETER DRIVE PARTS FOR A.J.S.)

MODELS S5 AND S12.

(Smith type 2,240 Revs. per mile)

LS	339B	Pinion Casing	...	...	2	6
LS	322	Pinion Spindle	...	...	1	3
LS	323	Connection Bush	...	...	1	6
LS	324	Spindle End Bush	...	...	8	
LS	325	Spindle End Washer	...	...	1	
LS	326	End Bush Fixing Screw	...	...	1	
LS	328	Pin for Coupling Spindle to Speedo Pinion	...	...	6	
LS	331	Casing Fixing Screw Washer	...	...	1	
LS	461A	Speedo Pinion 24T	...	...	2	0
CS	139A	Casing Fixing Screw	...	...	1	1
CS	...	Speedometer Drive complete	...	...	7	6



GATE CONTROL FOR MATCHLESS MODEL

CS	89	Gear Connection Pin	...	...	2	2
CS	94A	Gear Lever Knob	...	...	9	
CS	95A	Gear Lever Knob Washer	...	...	1	
CS	97	Gear Connection Washer	...	...	1	
CS	98	Collar for Lever Knob	...	...	2	
CS	108	Split Pin	...	...	1	6
CS	137	Gear Connection Lock Nut	...	...	1	

SPECIAL PARTS FOR RALEIGH MODEL.

DIV	30	Gearbox Shell (stamped FIV)	...	...	1	10
DIV	31A	Gearbox Cover (horizontal)	...	...	16	0
DIV	12A	Axle Sprocket, 20T 3/4 in. x 1/2 in.	...	...	7	6
DIV	32C	Main Axle, 7/8 in. long	...	...	11	0
DIV	33A	Clutch Operating Fulcrum Screw	...	...	2	
DIV	34A	Kickstarter Axle, 5/8 in. overall	...	...	11	6
CS	8G	Oil Filler Plug, 3/8 in. long	...	...	8	
BS	100	Kickstarter Return Spring (double peg fitting)	...	...	1	0
LS	388	Clutch Operating Lever	...	...	4	0
LS	395G	Kickstarter Return Spring Cover, 2 1/8 in. long, 3/8 in. dia. hole	...	...	1	0
BS	63E	K.S. Distance Sleeve	...	...	3	
BS	207D	Short Gear Lever, 2 1/8 in. centres, 1/8 in. inset	...	...	2	6
DIV	63A	Clutch Rod, 7/8 in. long	...	...	9	
LS	94A	Thrust Pin, 1 1/8 in. long	...	...	9	

GATE TANK CONTROL

DIV	36D	Gear Control Gate	...	...	3	6
CS	183	Gear Control Fulcrum Screw	...	...	10	
CS	184J	Gear Control Lever 5/16 in. centres for Short Arm with 1 1/2 in. set outwards	...	...	8	0
CS	186	Gear Control Spring Screw	...	...	2	2
CS	94A	Gear Control Knob Washer	...	...	1	
CS	95A	Gear Control Knob	...	...	9	
CS	87	Gear Connection	...	...	10	
CS	88	Gear Connection Pin	...	...	2	
CS	97	Gear Connection Washer	...	...	1	
CS	108	Split Pin	...	...	6	
CS	...	Rockingshaft Nut for Fulcrum Screw	...	...	1	0

SPEEDOMETER DRIVE PARTS FOR COVENTRY, EAGLE

AND DUNELT MODELS

LS	322	Pinion Spindle	...	...	1	3
LS	323	Connection Bush	...	...	1	6
LS	324	Spindle End Bush	...	...	1	8
LS	325	Spindle End Washer	...	...	1	1
LS	326	End Bush Fixing Screw	...	...	1	1
LS	328	Pin for Coupling Spindle to Speedo Pinion	...	...	1	6
LS	331	Casing Fixing Screw	...	...	1	6
LS	339A	Pinion Casing	...	...	2	6
LS	464C	Speedo Pinion 20T	...	...	2	0
CS	139A	Casing Fixing Screw	...	...	1	1
...	...	Speedometer Drive complete	...	...	7	6

SPEEDOMETER DRIVE PARTS FOR MATCHLESS

MODEL "A"

LS	410B	Pinion Casing	...	...	2	6
LS	412	Pinion Spindle	...	...	1	3
LS	413	Intermediate Pinion	...	...	1	0
LS	414	Final Pinion	...	...	1	0
LS	415	Final Pinion Spindle	...	...	1	3
LS	465	Pinion 23T	...	...	2	0
LS	323	Connection Bush	...	...	1	6
LS	328	Pin for Coupling Spindle to Speedo Pinion	...	...	1	6
LS	326	Grub Screw for Fixing Bush	...	...	6	0
LS	349A	Speedo Casing Fixing Screw	...	...	1	2
...	...	Speedometer Drive complete	...	...	9	0

SPEEDOMETER DRIVE PARTS FOR RALEIGH

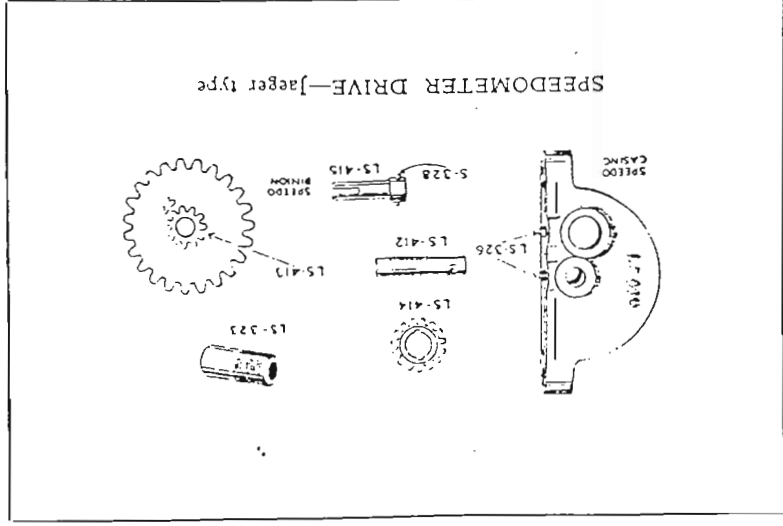
LS	322	Pinion Spindle	...	...	1	3
LS	323	Connection Bush	...	...	1	6
LS	324	Spindle End Bush	...	...	8	1
LS	325	Spindle End Washer	...	...	1	1
LS	326	End Bush Fixing Screw	...	...	1	1
LS	328	Pin for Coupling Spindle to Speedo Pinion	...	...	6	0
LS	331	Casing Fixing Screw	...	...	1	6
LS	339A	Pinion Casing	...	...	2	6
LS	464B	Speedo Pinion 21T	...	...	2	0
CS	139A	Casing Fixing Screw	...	...	1	1
...	...	Speedometer Drive complete	...	...	7	6

SPEEDOMETER DRIVE PARTS FOR AJS.

MODELS S5 AND S12.

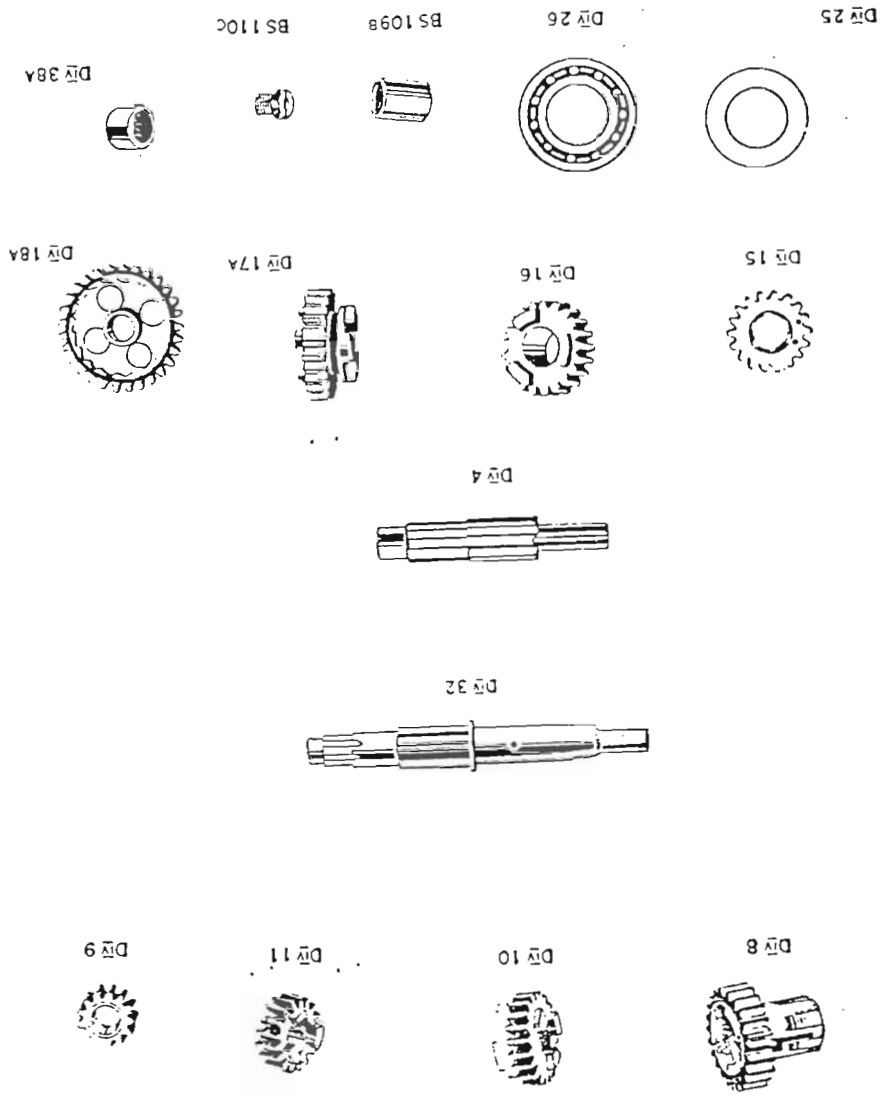
LS	461	Pinion Casing	...	...	2	6
LS	412	Pinion Spindle	...	...	1	3
LS	413	Intermediate Pinion	...	...	1	0
LS	414	Final Pinion	...	...	1	0
LS	415	Final Pinion Spindle	...	...	1	3
LS	465A	Pinion 24T	...	...	2	0
LS	323	Connection Bush	...	...	1	6
LS	328	Pin for Coupling Spindle to Speedo Pinion	...	...	1	6
LS	439A	Casing Fixing Screw	...	...	2	6
LS	326	Grub Screw for Fixing Bush	...	...	1	1
...	...	Speedometer Drive complete	...	...	9	0

(Jaeger type, 1,609 Revs. per mile).



SPEEDOMETER DRIVE—Jaeger type

GEARS AND SHAFTS BEARINGS
LIGHTWEIGHT GEARS



GEAR OPERATION FINAL DRIVE
CLUTCH OPERATION
LIGHTWEIGHT GEARS

