

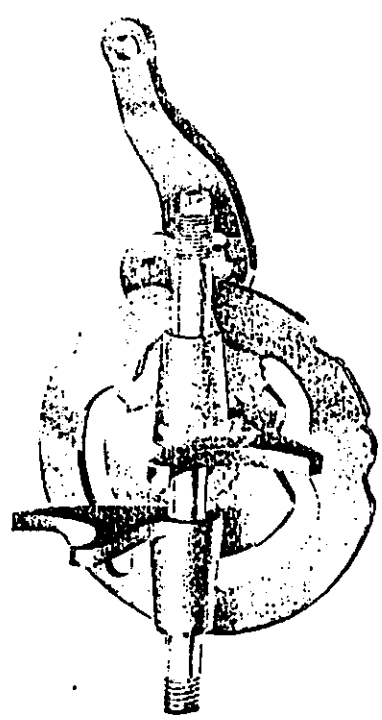
WATERPROOF  
PAPER

THE ORIGINAL

WATERPROOF

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CAM GEAR OPERATING MECHANISM  
ON HEAVYWEIGHT 4-SPEED GEAR

## INTRODUCTION.

### STURMEY ARCHER 4-SPEED GEAR.

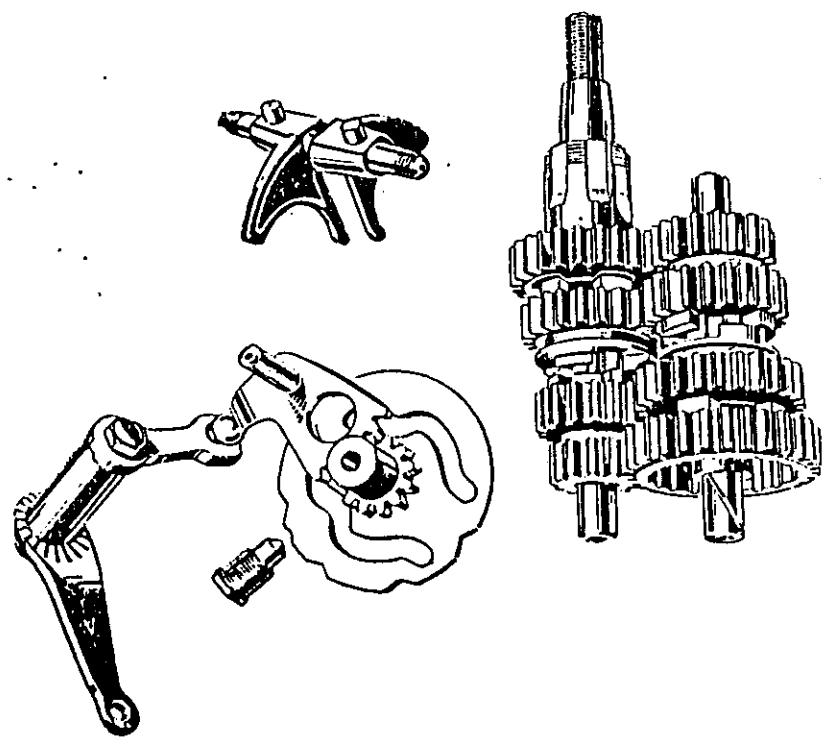
Can be supplied in two models.

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 Sturmeley."



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

### 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-clockwise 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 dished 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-assembling. 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. Sturney-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.

If the control is not mounted directly on the box, any adjustments made to the chains will interfere with the setting of the control.

### 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

Gargoyle Mobiloil "D" is recommended for 4-speed Sturney-Archer Gearboxes and is used by us. For the Lightweight Gear charge with  $\frac{1}{2}$ -pint and re-charge with  $\frac{1}{4}$ -pint every 1,000 to 1,500 miles. For the Heavyweight Gear charge with  $\frac{3}{4}$ -pint and re-charge with  $\frac{1}{4}$ -pint every 750 to 1,000 miles.

**LUBRICATION—contd.**

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

No. of teeth on Engine Sprocket × No. of teeth of Gear Sprocket  
 = Top Gear Ratio.

$$\frac{42}{21} \times \frac{55}{20} = \frac{11}{4} = 2\frac{3}{4} = 2\frac{1}{2} \text{ to } 1 \text{ Top Gear}$$

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	6.51	8.01
3½	3.93	7.05	9.65
3¾	4.24	7.59	10.39
3⅞	4.54	8.14	11.14
4	4.84	8.68	11.88
4½	5.14	9.22	12.62
4¾	5.45	9.76	13.36
4⅞	5.75	10.31	14.11
5	6.05	10.85	14.85
5½	6.35	11.39	15.59
5¾	6.66	11.93	16.33
5⅞	6.96	12.46	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
4½	5.66	8.33	12.62
4¾	6	8.82	13.36
4⅞	6.33	9.31	14.11
5	6.66	9.80	14.85
5½	7	10.29	15.59
5¾	7.33	10.78	16.33
5⅞	7.66	11.27	17.08
6	8	11.76	17.82
6½	8.33	12.25	18.56
6¾	8.66	12.74	19.30
6⅞	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

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

## BEARINGS

DIV 26	L.H. Bearing, 2 1/4 in. x 7/8 in. with 1 3/8 in. hole	6	0	0
DIV 25	L.H. Oil Retaining Washer (Steel) for DIV 26, one used each side of Bearing	1	1	1

**BEARINGS—continued.**

	£	s.	d.
BS 15A	1	0	0
BS 110C	3	0	0
DIV 38	1	0	0
DIV 39	2	0	0
DIV 60	2	0	0

Main Axle Bronze Right-hand Bush ...  
 Main Axle Adjusting Screw, 1 1/2 in. long ...  
 Layshaft Bronze L.H. Bearing ...  
 Felt Oil Retaining Washers (fits behind rear Sprocket) ...  
 Oil Retaining Leather Washer (fits behind rear Sprocket) ...

**GEARS AND SHAFTS**

	£	s.	d.
DIV 3	11	0	0
DIV 32	11	0	0
DIV 32D	11	0	0
DIV 4	10	0	0
DIV 6	8	0	0
DIV 8	12	6	0
DIV 9	3	6	0
DIV 10	7	6	0
DIV 11	7	6	0
DIV 15	4	6	0
DIV 16	6	0	0
DIV 17A	9	0	0
DIV 18A	8	6	0

Main Axle, 7 1/2 in. long. Takes Ball Bearing CS 33 (Matchless Model "A")  
 Main Axle, 7 1/2 in. long (A.J.S. Models S5 and S12 and Coventry Eagle)  
 Main Axle, 7 1/2 in. long (Dunelt & Raleigh)  
 Layshaft, 4 1/2 in. long ...  
 Main Axle Thrust Washer ...  
 Main Axle Gear Wheel, 24T with Main Gear Wheel Bush (DIV 7A) fitted ...  
 Low Gear Pinion, 13T ...  
 Main Axle Sliding Pinion, 21T ...  
 Main Axle Dog Pinion, 17T ...  
 Layshaft Pinion, 18T ...  
 Layshaft Dog Pinion, 21T ...  
 Layshaft Sliding Pinion, 25T ...  
 Low Gear and Kick Starter Wheel, 29T

**GEAR OPERATING PARTS**

	£	s.	d.
DIV 19A	5	0	0
DIV 20	3	0	0
DIV 21	1	6	0
DIV 22	3	0	0
DIV 22A	3	0	0
DIV 23	6	0	0
DIV 28	6	0	0
AIV 22	3	0	0
AIV 25	1	0	0
MJ 70	1	0	0
EIV 22B	2	6	0
E 878	3	0	0
E 879	1	0	0

Cam Plate ...  
 Striker Fork ...  
 Striker Fork Shaft ...  
 Cam Plate Spindle, 1 1/2 in. (Matchless Model "A" only) ...  
 Cam Plate Spindle, 1 1/2 in. long ...  
 Cam Plate Quadrant with Spindle, 1 1/2 in. long (Matchless Model "A" only) ...  
 Cam Plate Quadrant (No spindle) ...  
 Cam Plate Spindle Washer ...  
 Cam Plate Spindle Spring Washer ...  
 Cam Plate Spindle Bolt, 1 1/2 in. long ...  
 Cam Plate Quad Lever, 2 1/2 in. centres, 1/2 in. offset (Matchless Model "A" only) ...  
 Indexing Plunger, 3/8 in. long ...  
 Indexing Plunger Bush ...

**GEAR OPERATING PARTS—continued.**

	£	s.	d.
E 880	...	...	2
E 880A	...	...	2
DIV 57	...	...	3
DIV 58	...	...	2
ML 16	...	...	2
DIV 27	...	...	1
DIV 29	...	...	0

Indexing Plunger Spring, 3/4 in. long ...  
 Indexing Plunger Spring, 1 in. long (Matchless Model "A" only) ...  
 Indexing Plunger, 1 1/2 in. long with 1/4 in. dia. nose (Matchless Model "A" only) ...  
 Indexing Plunger Bush (Matchless Model "A" only) ...  
 Striker Fork Shaft Lock Nut ...  
 Cam Plate Quad Bush ...  
 Cam Plate Quad Pin ...

**KICK STARTER MECHANISM**

	£	s.	d.
DIV 34	11	6	0
DIV 34A	11	6	0
LS 438	1	3	0
LS 439A	1	3	0
BS 26D	1	0	0
BS 100	1	0	0
LS 395B	1	0	0
LS 395G	1	0	0
BS 25	1	0	0
BS 20	1	6	0
DIV 35	11	0	0
LS 85	1	0	0
BS 28	1	0	0
BS 23	1	0	0
BS 24	1	0	0
LS 435	3	0	0
CS 74	1	0	0

Kickstarter Axle, fitted with Bush BS 15A (4 3/8 in. overall), (fitted to A.J.S. Models S5 and S12, and Matchless Model "A") ...  
 Kickstarter Axle, fitted with Bush, BS 15A (5 1/8 in. overall) (fitted to Coventry Eagle, Dunelt and Raleigh) ...  
 Kickstarter Pawl ...  
 Kick Starter Pawl Pin ...  
 Kickstarter Return Spring, with arm 1 3/8 in. long (Matchless Model "A", A.J.S. Models S5 and S12) ...  
 Kickstarter Return Spring (Coventry Eagle Dunelt and Raleigh) ...  
 Kickstarter Return Spring Cover, 2 in. long, 1 in. dia. hole (A.J.S. Models S5 and S12 and Matchless Model "A") ...  
 Kickstarter Return Spring Cover, 2 3/8 in. long, 3/4 in. dia. hole. (Coventry Eagle Dunelt and Raleigh) ...  
 Kickstarter Cam ...  
 Kickstarter Bush ...  
 Kickstarter Crank ...  
 Kickstarter Cam Rivet ...  
 Kickstarter Stop Piece ...  
 Kickstarter Pawl Spring ...  
 Kickstarter Pawl Spring Plunger, 3/4 in. long ...  
 Kickstarter Crank Clamp Bolt, 1 1/8 in. long overall ...  
 Spring Washer for Kickstarter Clamp Bolt



**FINAL DRIVE**

		£	s.	d.
DIV	12		7	6
DIV	12A		7	6
DIV	12B		7	6
CS	63		4	
DIV	13		8	
DIV	14		3	
S	35		1	

Axle Sprocket 18T,  $\frac{1}{2}$  in. x  $\frac{1}{8}$  in.,  $\frac{1}{2}$  in. thick (Matchless Model "A") ...  
 Axle Sprocket, 20T  $\frac{1}{2}$  in. x  $\frac{1}{8}$  in., (Coventry Eagle, Dunelt and Raleigh) ...  
 Axle Sprocket 18T,  $\frac{1}{2}$  in. x  $\frac{1}{8}$  in., overall thickness,  $\frac{3}{8}$  in. (Special Chain Line) (fitted to A.J.S. Models S5 and S12) ...  
 Axle Sprocket Locking Nut ...  
 Axle Sprocket Locking Nut ...  
 Axle Sprocket Distance Washer ...  
 Axle Sprocket Locking Plate Screw ...

**CLUTCH OPERATING MECHANISM**

LS	388		4	0
BS	149		3	6
LS	396A		3	8
DIV	33		2	
DIV	33A		2	
CS	106A		1	

Clutch Operating Lever,  $4\frac{1}{2}$  in. centres from Fulcrum to Wire. (A.J.S. Models S5, S12 and Raleigh) ...  
 Clutch Operating Lever,  $3\frac{1}{2}$  in. centres from Fulcrum to Wire. (Coventry Eagle and Dunelt) ...  
 Clutch Operating Lever Adjusting Screw,  $1\frac{1}{2}$  in. overall ...  
 Clutch Operating Fulcrum Screw,  $1\frac{1}{2}$  in. long (Coventry Eagle & Dunelt Models) ...  
 Clutch Operating Fulcrum Screw,  $1\frac{1}{2}$  in. long (A.J.S. Models S5 and S12 and Raleigh) ...  
 Lock Nut for Clutch Adjusting Screw LS 396A ...

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

**GEAR CONTROL MECHANISM**

BS	205		2	0
BS	206		1	3
BS	207A		2	6
BS	207D		2	6
BS	208		9	

Gear Control Spindle ...  
 Gear Control Spindle Arm ...  
 Short Gear Lever,  $2\frac{1}{2}$  in. centres,  $\frac{1}{8}$  in. offset (A.J.S. Models S5 and S12) ...  
 Short Gear Lever,  $2\frac{1}{2}$  in. centres,  $\frac{1}{8}$  in. inset (Coventry, Eagle, Dunelt and Raleigh) ...  
 Gear Control Spindle Bolt ...

**GEAR CONTROL MECHANISM—continued.**

		£	d.
BS	211		2
BS	219		6
CS	151		1
CC	18		2

Ball for Gear Control Ball Joint ...  
 Gear Control Spindle Washer per doz. ...  
 Lock Washer for BS 208 ...  
 Lock Nut for BS 208 ...  
 Parts from BS 211 to BS 207D inclusive, are not used on Matchless Model "A."

**D.E. TWO PLATE CLUTCH**

BS	52		9	0
BS	57		8	
DIV	24		12	0
BS	66A		16	0
BS	66B		16	0
BS	67		4	0
TS	8		5	
TS	34		10	
BS	68		2	3
TS	52B		1	8
TS	55		6	
TS	56		4	
TS	57		4	
TS	77		3	0
CS	118		1	
CS	166		2	3
CS	167A		2	3
CS	173A		1	6
LS	94		9	

Clutch Rod. See under special parts for length required ...  
 Clutch Adjuster Nut ...  
 Clutch Centre, tapered with slots  $\frac{1}{8}$  in. deep ...  
 Clutch Sprocket, 42T  $\frac{1}{2}$  in. x  $\frac{1}{8}$  in. ...  
 Clutch Sprocket, 50T  $\frac{1}{8}$  in. x  $\frac{1}{8}$  in. with Corks (Matchless Model "A" only) ...  
 Clutch Friction Plate, with Corks ...  
 Main Axle Nut ...  
 Ball Retainer ...  
 Clutch Back Plate ...  
 Clutch Spring ...  
 Clutch Spring Collar ...  
 Clutch Cork Inserts,  $\frac{1}{8}$  in. dia. per doz. ...  
 Clutch Cork Inserts,  $\frac{1}{8}$  in. dia. per doz. ...  
 Clutch Spring Cup with flange set back 1 in. ...  
 Clutch Centre Flat Washer ...  
 Clutch Centre Plate (dished) ...  
 Clutch Outer Plate (flat) ...  
 Clutch End Cap ...  
 Thrust Pin for Clutch. See under special parts for length required ...

**TWO PLATE MULTI SPRING SHOCK ABSORBER CLUTCH**

LS	50B		2	
LS	72A		6	
LS	91		3	
LS	93A		1	
LS	93B		2	
LS	172B		17	6
LS	175		1	0
LS	176		6	

$\frac{1}{2}$  in. x  $\frac{1}{8}$  in. Rollers ...  
 $\frac{1}{2}$  in. dia. Balls (set of 16) ...  
 Clutch Sprocket Back Plate ...  
 Clutch Driver Screw ...  
 Rubber Shock Absorber,  $\frac{1}{2}$  in. dia. hole ...  
 Rubber Shock Absorber, solid ...  
 Clutch Centre ...  
 Sprocket Locking Plate ...  
 Clutch Spring Stud ...

**GATE CONTROL FOR MATCHLESS MODEL** —continued.

		£	s.	d.
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	per doz.	6
CS	137	Gear Connection Lock Nut	...	1

**SPECIAL PARTS FOR RALEIGH MODEL.**

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

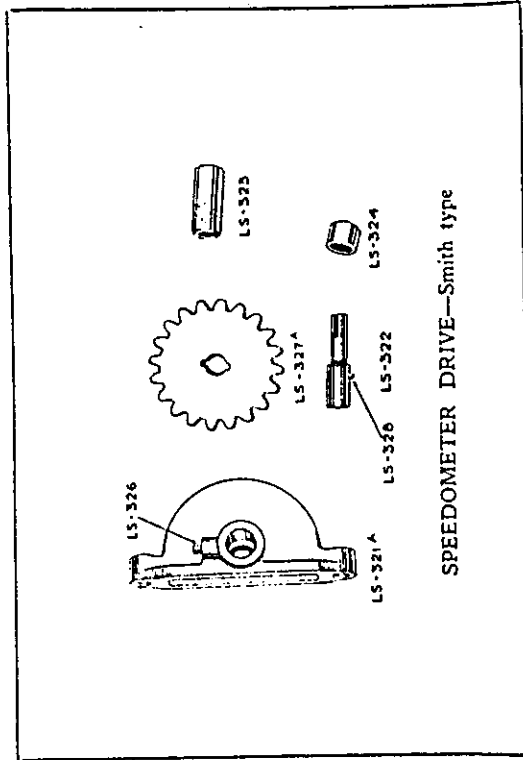
**GATE TANK CONTROL**

DIV	36D	Gear Control Gate	...	...	3	6
CS	183	Gear Control Fulcrum Screw	...	...	...	10
CS	184j	Gear Control Lever $5\frac{1}{2}$ in. centres for Short Arm with 12in. set outwards	...	...	8	0
CS	186	Gear Control Spring Screw	...	...	2	2
CS	94A	Gear Control Knob	...	...	...	9
CS	95A	Gear Control Knob Washer	...	...	1	1
CS	98	Collar for Quad Knob	...	...	2	2
CS	87	Gear Connection	...	...	10	0
CS	89	Gear Connection Pin	...	...	2	2
CS	97	Gear Connection Washer	...	...	1	1
CS	108	Split Pin	per doz.	...	6	6
CC	18	Gear Control Rod	...	...	1	0
		Rockingshaft Nut for Fulcrum Screw	...	...	...	2

**SPEEDOMETER DRIVE PARTS FOR A.J.S.**

**MODELS S5 AND S12.**

		£	s.	d.
LS	339B	Pinion Casing	...	...
LS	322	Pinion Spindle	...	2
LS	323	Connection Bush	...	6
LS	324	Spindle End Bush	...	1
LS	325	Spindle End Washer	...	3
LS	326	End Bush Fixing Screw	...	1
LS	328	Pin for Coupling Spindle to Speedo Pinion	per doz.	1
LS	331	Casing Fixing Screw Washer	...	6
LS	404A	Speedo Pinion 24T	...	1
CS	139A	Casing Fixing Screw	...	0
		Speedometer Drive complete	...	7



SPEEDOMETER DRIVE—Smith type

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