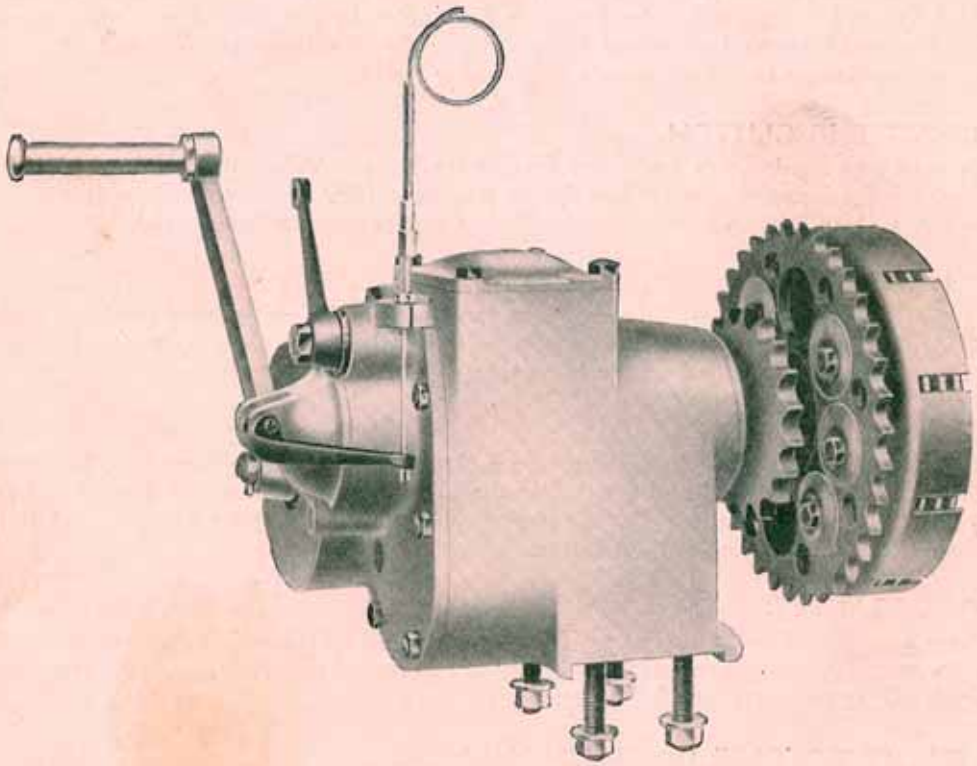
BURMAN

GEAR BOXES

For Motor Cycles.

CATALOGUE AND SPARE PARTS PRICE LIST

For Model "Q" Heavyweight Gear Box.



Burman & Sons Limited

Lee Bank Works, Ryland Road, **BIRMINGHAM**

England

Telegrams: "Burmanth, Birmingham."
Telephone: Midland 3877-8. Code: A.B.C. 5th Edition.

BURMAN GEARS

INSTRUCTIONS AND HINTS TO USERS.

USING THE KICK STARTER.

Put Gear Lever in Neutral and push Kick Starter Pedal down until Compression is felt. Then loose it back to its original position and lift Exhaust Lever.
Put some force behind it, and push down Pedal as far as it will go, releasing Exhaust Lever just as the push down is well started, before reaching half way.

FOR STARTING OFF.

Set Carburetter for running slowly.
Release Clutch and put Gear Lever in Low.
Gradually open Throttle; at the same time, steadily let in Clutch. DO NOT try to put in any Gear with Engine running until Clutch is released.

CHANGING GEAR.

When changing from a LOW to a HIGHER GEAR, use the Clutch, and make a slight pause in Neutral
Changing from a HIGH to a LOWER GEAR, use the Clutch and make a slight pause in Neutral. Loose Clutch gently and move the Lever into next position.
The length of the pause is subject to so many varying factors that no definite rule can be laid down, but it should be long enough to enable the engine either to gain speed for a Lower Gear, or lose speed for a Higher Gear, relative to the Road Wheel, about proportionate to the difference in the Gear Ratio.

ON SLIPPING THE CLUTCH.

This must not be done to assist the Engine up Hills. When the Engine begins to labour, change into the next Lower Gear; but, in traffic, or for cornering, it is quite in order, and will do no harm if not carried to excess under a heavy load.

CLUTCH ADJUSTMENT

Is rarely necessary, and all is correct, so long as the Adjusting Nuts are level with the face, and the Spring Plate lifts equally. If not, the Nuts should be eased off on the Low side, and tightened on the High side.

CLUTCH ROD CLEARANCE.

It is important that there should always be a clearance of not less than $\frac{1}{32}$in. between the end of the Clutch Rod and the Ball in the Clutch Lever at the Kick Starter end of the Box. Failure to allow this clearance will mean a slipping Clutch, and will probably result in burning out the Corks.

CONTROL BRACKETS.

If these are clipped on to the Frame Tube, care should be taken that they are screwed up securely, otherwise the Bracket is likely to slip round the Tube, and will interfere with the Gear positions inside the Box.

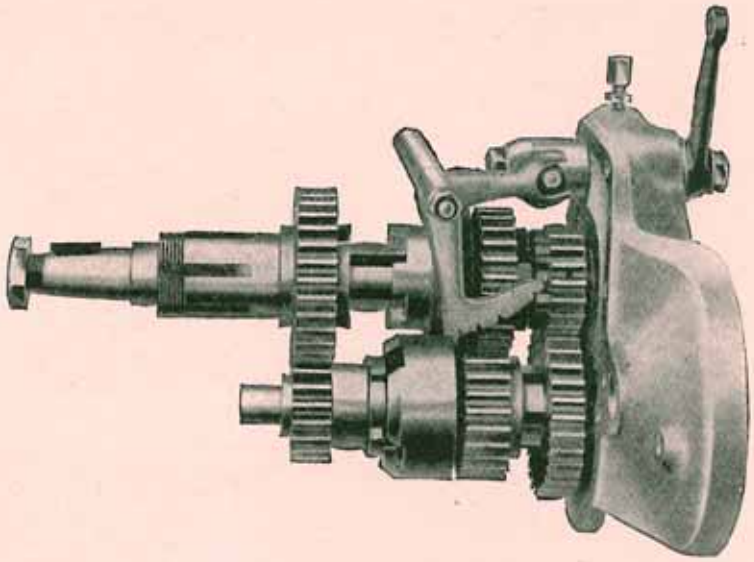
ADJUSTMENT TO TAKE UP CHAIN WEAR.

Take great care that when the Box is finally tightened up in the Frame, the CHAINS ARE NOT TIGHT; pull round slowly for at least two turns of the largest of the two Wheels, and see that there is a slight sag in the Chain, even in the tightest place. After Chain adjustment test the Gear Positions, particularly on Tank Control Models.

LUBRICATION.

All Boxes are sent out filled with Grease, and should be replenished every 1000 miles with GARGOYLE MOBILUBRICANT EXTRA SOFT. The Box should not be completely filled or grease will be forced out through the Bearings. We do not recommend the use of oil or heavy grease.

BURMAN GEARS



ARRANGEMENT OF GEARS IN MODEL "Q."

The main reasons for the universal popularity of the Burman Box, both from the manufacturers and the public point of view, are as follows: —

GEAR CONSTRUCTION.

The Gears are always in mesh and all changes are made by means of dog clutches. The design of the dogs is such that a very easy change is obtained with practically no back lash in gears. The whole of the gears are made of oil toughened Chrome Nickel steel of the very best make, thereby giving the strength of full section of teeth as against other gears with a soft core which only give a very thin hardened case to take the whole strain.

The loss of power due to internal friction in the Burman Gears is lower than that of any other make.

THE KICK STARTER

does NOT operate on the layshaft, as in other makes of gear box. This practice is unsound, as it leads to noisy gears, badly worn bearings and insufficient motion to turn over the engine quickly enough. The Burman Kick Starter has none of these faults. It is strong, efficient and reliable, and entirely separate from the gear mechanism.

THE BURMAN CLUTCH

is known to be the sweetest and to give the easiest control of any clutch made. Agents therefore confidently recommend machines fitted with the Burman Clutch. as they know that besides ease of control and joy in riding, motor cycles fitted with the Burman Gears have a longer life and give less trouble.

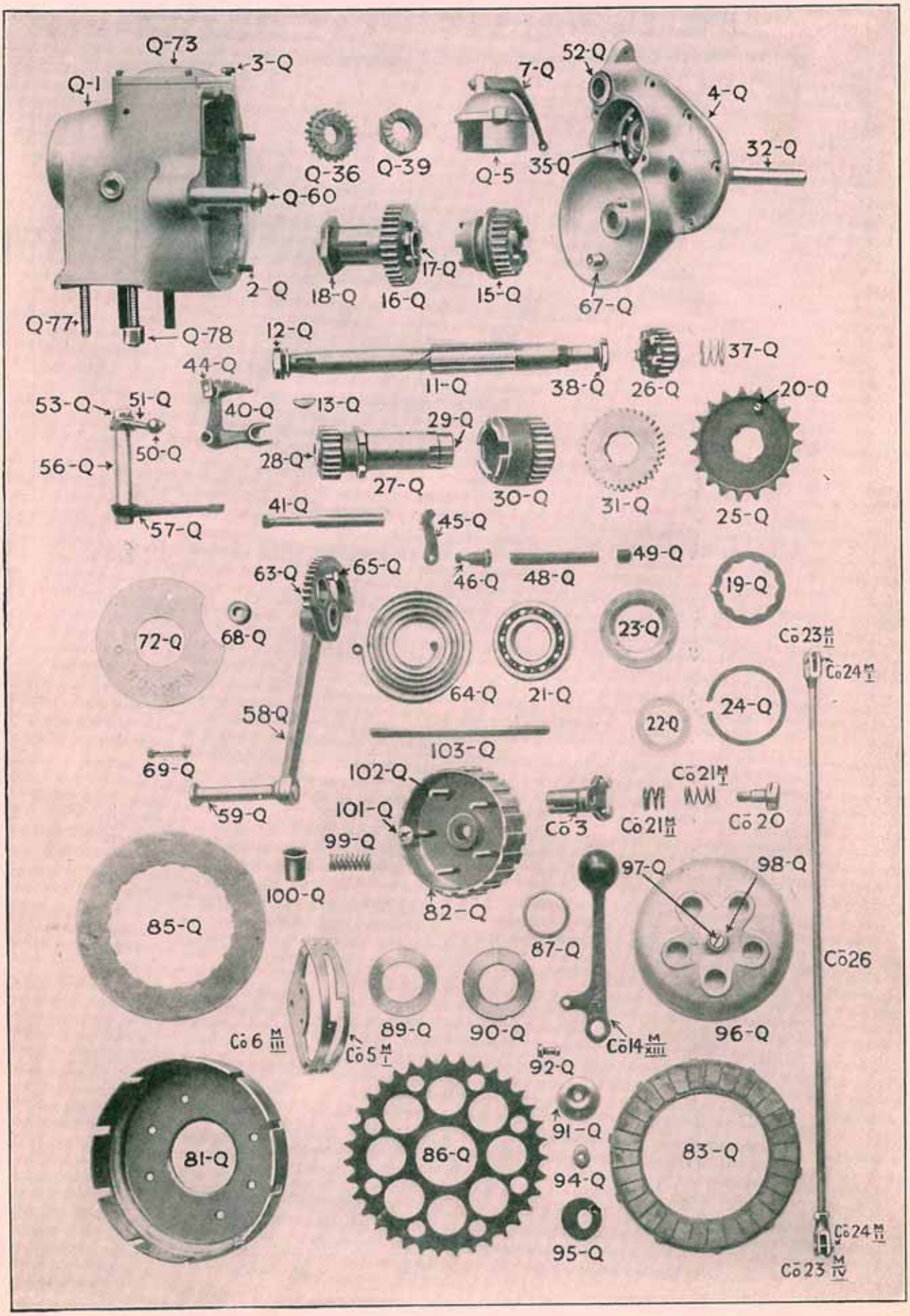
SHOCK ABSORBER.

All Burman Boxes are fitted with our patent Shock Absorber. This prevents any sudden jar on Chains, etc., when engine is pulling slowly on hills, etc., and lengthens life of Chains and Engine.

GEAR POSITIONS

are locked by means of our patent rack and pawl inside the box, all parts being free from dust and running in lubricant.

COMPONENT PARTS—BURMAN MODEL "Q."

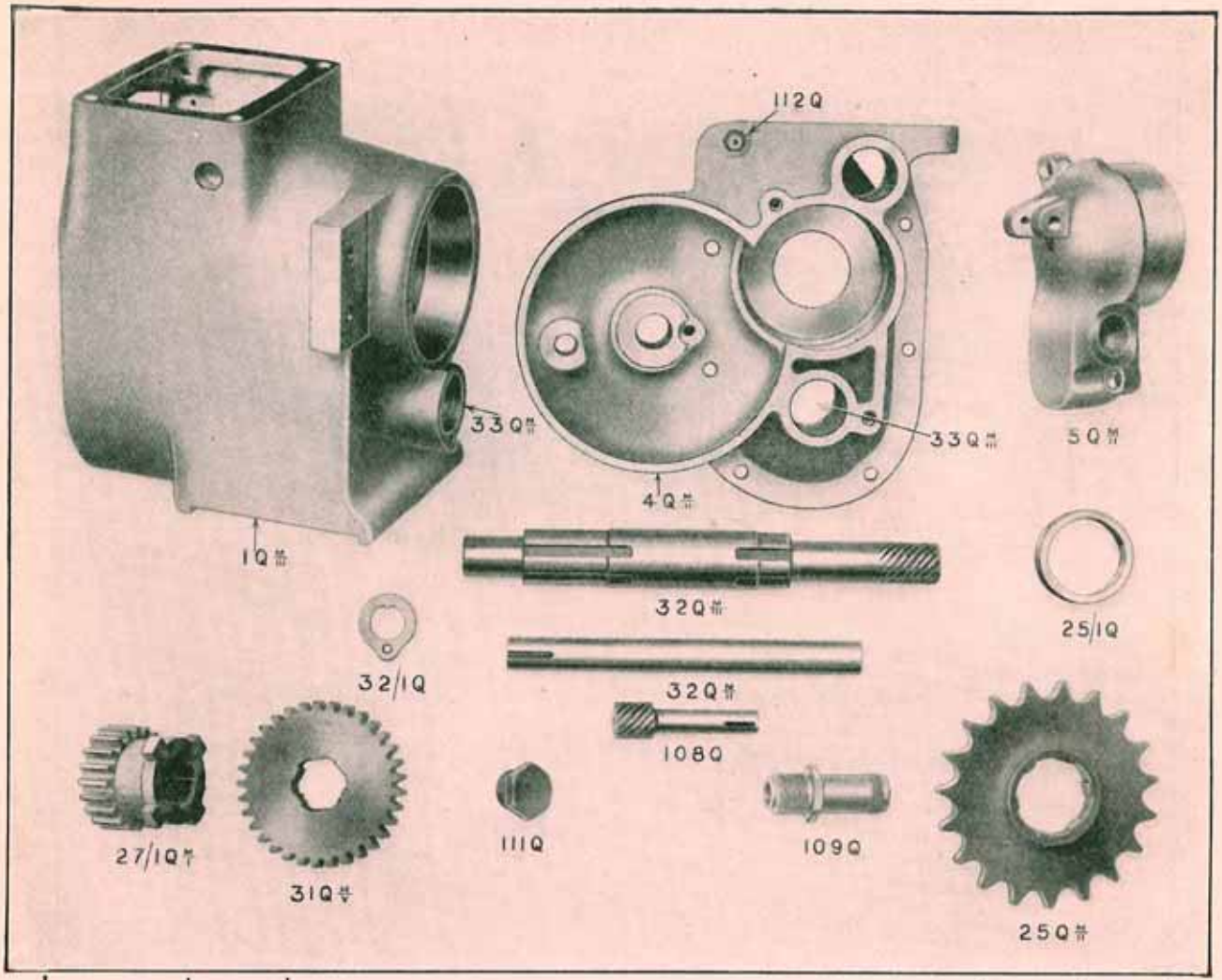


WHEN ORDERING SPARES STATE NAME AND TYPE OF MACHINE, ALSO LETTER AND NUMBER OF GEAR BOX, AND, IF POSSIBLE, SEND PARTS AS PATTERNS.

Part No.	Mark No.	Name of Part	Weight. grms.	Price s.	d.
1-Q	....	Gear Box	1344	27	6
2-Q	....	,, Studs	5		2
3-Q	....	,, ,, Nuts	3		1
4-Q	....	Kick Starter Case	575	17	6
5-Q	....	Clutch Lever Bracket	115	5	6
6-Q	....	,, ,, ,, Screws	6		2
7-Q	....	,, Operating Lever	45	3	0
8-Q	....	,, ,, ,, Pin	10		2
9-Q	....	,, Lever Pin Nut	3		1
10-Q	....	,, ,, Ball	2		1
11-Q	....	Mainshaft	775	27	6
12-Q	....	,, Nut	20		2
13-Q	....	,, Key	3		3
14-Q	....	,, Spring Washer	3		1
15-Q	....	,, Sliding Gear (26 Teeth)	470	17	6
16-Q	I	Driving Gear (High Standard) (31 Teeth)	680	27	6
16-Q	II	,, ,, (Low ,,) (32 Teeth)	715	27	6
17-Q	....	,, ,, Bush	110	6	0
18-Q	....	,, ,, Nut	50		9
19-Q	....	,, ,, ,, Lock Plate	22		5
20-Q	....	Lock Plate Screw	1		1
21-Q	....	Driving Gear Bearing	350	15	0
22-Q	....	,, ,, Washer	3		1
23-Q	....	Bearing Dust Cover	16		2
24-Q	....	,, Retaining Ring	6		4
25-Q	....	Driving Sprocket (19 Teeth)	307	9	0
26-Q	I	Third Driving Gear (High Standard) (22 Teeth)	165	8	0
26-Q	II	,, ,, ,, (Low ,,) (19 Teeth)	112	8	0
27-Q	I	Layshaft (High Standard) (21 Teeth)	690	25	0
27-Q	II	,, (Low ,,) (20 Teeth)	673	25	3
28-Q	....	,, Bush (Large)	53	3	0
29-Q	....	,, ,, (Small)	34	2	0
30-Q	....	,, Sliding Gear (26 Teeth)	452	22	0
31-Q	I	,, Large Gear (High Standard) (30 Teeth)	270	10	0
31-Q	II	,, ,, ,, (Low ,,) (33 Teeth)	346	10	0
32-Q	....	,, Spindle	250	6	0
33-Q	....	,, ,, Bush	20		9
34-Q	....	,, ,, Glut	1		1
35-Q	....	Mainshaft Bearing	219	10	6
36-Q	....	Ratchet Pinion (21 Teeth)	110	6	0
37-Q	....	,, ,, Spring	1		3
38-Q	....	,, ,, ,, Nut	18		3
39-Q	....	Driving Ratchet	76	4	6
40-Q	....	Bell Crank Inner Lever	125	7	0
41-Q	....	,, ,, Spindle	84	1	0
42-Q	....	,, ,, ,, Washer	1		1
43-Q	....	,, ,, ,, Nut	3		1
44-Q	....	Operating Block	5	1	0
45-Q	....	Pawl	18	1	0
46-Q	....	,, Bearing Screw	17		6
47-Q	....	,, Screw Nut	1		1
48-Q	....	,, Spring	14		4
49-Q	....	,, ,, Plug	8		6
50-Q	....	Trunion Ball	8		9
51-Q	....	Control Inner Lever	48	4	6
52-Q	....	,, Lever Bush	85	2	0
53-Q	....	,, Inner Lever Bolt	60		6
54-Q	....	,, ,, ,, ,, Nut	5		1
55-Q	....	,, ,, ,, Lock Washer	1		1
56-Q	....	,, Lever Extension Sleeve	107	2	0

WHEN ORDERING SPARES STATE NAME AND TYPE OF MACHINE, ALSO LETTER AND NUMBER OF GEAR BOX, AND, IF POSSIBLE, SEND PARTS AS PATTERNS.

Part No.	Mark No.	Name of Part	Weight, grms.	Price s.	Price d.
57-Q	....	Outer Lever	70	4	0
58-Q	....	Kick Starter Lever (Cranked)	391	10	0
59-Q	....	,, ,, ,, Pedal	142	2	6
60-Q	...	,, ,, Centre Pin	350	3	9
61-Q	....	Centre Pin Washer	2		1
62-Q	....	,, ,, Cotter	1		1
63-Q	....	Kick Starter Quadrant (22 Teeth)	171	5	0
64-Q	....	,, ,, Spring	70	1	6
65-Q	....	Quadrant Spring Pin	3		2
66-Q	....	Starter Case Spring Pin	2		2
67-Q	....	Kick Starter Stop Peg	11		6
68-Q	....	Stop Peg Rubber	2		2
69-Q	....	,, ,, Bolt	5		2
70-Q	....	,, ,, Nut	2		1
71-Q	....	,, ,, Washer	1		1
72-Q	....	Kick Starter Case Cover	36		9
73-Q	....	Inspection Cover	80		9
74-Q	....	,, ,, Studs	3		1
75-Q	....	,, ,, Nuts	3		1
77-Q	....	Frame Studs	20		3
78-Q	....	,, ,, Nuts	20		3
79-Q	....	,, ,, Washers	5		1
81-Q	....	Clutch Case	775	10	0
82-Q	....	,, Centre	778	16	6
83-Q	....	Cork Plate	103	5	0
84-Q	....	Clutch Corks	12		
85-Q	....	Plain Plate	237	2	0
86-Q	I	Chain Wheel $\frac{5}{8}$" × $\frac{3}{8}$" (35 Teeth)	578	18	0
86-Q	II	,, ,, $\frac{5}{8}$" × $\frac{1}{4}$" (35 Teeth)	578	18	0
87-Q	....	Roller Race	17	2	9
88-Q	....	Rollers ....per Set	17	3	6
89-Q	....	Roller Race Washer	31		9
90-Q	....	,, ,, Nut	119	2	9
91-Q	....	Buffer Cover Plate	8		3
92-Q	....	Chain Wheel Bolt	8		2
93-Q	....	,, ,, ,, Nut			
94-Q	....	Buffer Sleeve	10		6
95-Q	....	,, Rubber	8		2
96-Q	....	Spring Plate	237	3	6
97-Q	....	,, ,, Adjusting Screw	6		4
98-Q	....	,, ,, ,, Nut	11		4
99-Q	...	Clutch Springs	8		3
100-Q	....	Spring Cups	9		3
101-Q	....	,, Adjusting Nuts	9		4
102-Q	...	,, Studs	9		2
103-Q	....	Clutch Operating Rod	100	1	0
		ADDITIONAL PARTS (1929) SPEED Q DRIVE MODEL.			
1-Q	II	Gear Box (1928)	1429	27	6
1-Q	III	Gear Box Speedometer Drive (1929)	1455	27	6
4-Q	II	Kick Starter Case Speedometer Drive (1929)	700	17	6
5-Q	II	Clutch Lever Bracket Speedometer Drive	185	6	0
16-Q	III	Driving Gear (T.T.A.) 29 Teeth	635	27	6
25-Q	II	Driving Sprocket (1928-9)	264	9	0
25/1-Q		Spocket Spacing Collar (1928-9)	31		4
26-Q	III	3rd Driving Gear (T.T.A.) 23 Teeth	185	8	0
27-Q	III	Layshaft (T.T.A.)	705	25	0
27/1-Q	I	Layshaft Small Gear (High Standard) 21 Teeth	225	15	0
27/1-Q	II	Layshaft Small Gear (Low Standard)20 Teeth	220	15	0
27/1-Q	III	Layshaft Small Gear (T.T.A.) 23 Teeth	230	15	0



Part No.	Mark No.	Name of Part.	Weight. grms.	Price s.	d.
30/1-Q		Layshaft Sliding Gear Bush (1929)			
31-Q	IV	Layshaft Large Gear Speedometer Drive (High Standard) 1929, 30 Teeth	105	1	0
31-Q	V	Layshaft Large Gear Speedometer Drive (Low Standard) 1929, 33 Teeth	326	10	0
31-Q	VI	Layshaft Large Gear Sreedometer Drive (T.T.A.) 1929 29 Teeth	335	10	0
			317	10	0
32-Q	II	Layshaft Spindle	247	6	0
32/1-Q		Layshaft Spindle Collar (for 32Q.m/11) 1929	8		1
32-Q	III	Layshaft Spindle Speedometer Drive (1929)	663	20	0
33-Q	II	Layshaft Spindle Bush Speedometer Drive Clutch End (1929)	60	2	6
33-Q	III	Layshaft Spindle Bush Speedometer Drive Kick Starter End (1929)	60	2	6
40-Q	II	Bell Crank Inner Lever (1928-9)	125	7	0
45-Q	II	Pawl (for 40Q.m/11) 1928-9	18	1	0
48-Q	II	Pawl Spring (1928-9)	14		4
58-Q	II	Kick Starter Lever (1928-9)	391	10	0
59-Q	II	Kick Starter Pedal, $\frac{9}{16}$" (1928-9)	142	2	6
60-Q	II	Kick Starter Centre Pin (1928-9)	350	3	9
83-Q	II	Fabric Plate	180	6	0
86-Q	III	Chainwheel, $\frac{1}{2}$" × ·305" (1928-9)	632	18	0
94-Q	II	Buffer Sleeve (1928)	10		6
99-Q	II	Clutch Spring (for 83Q.m/11)	10		3
106-Q		Grease Retaining Washer	7	1	0
107-Q		Layshaft Cover Washer	3		1
108-Q		Speedometer Spindle	50	4	6
109-Q		Speedometer Sleeve	69	2	0
110-Q		Speedometer Thrust Button	2		1
111-Q		Speedometer Drive Plug	25		3
112-Q		Grease Gun Stud	5		1

GEAR RATIOS

OBTAINABLE FOR MODEL "Q" GEAR BOX.

1927. RATIOS.

$\frac{5}{8}$" Pitch. 35 Tooth Clutch Chain Wheel.

No. of Teeth in Engine Sprocket	HIGH STANDARD			LOW STANDARD			T.T.A.		
	High	Mid.	Low	High	Mid.	Low	High	Mid.	Low
16	5·41	8·00	10·87	5·41	8·65	15·03	5·41	6·8	8·66
17	5·09	7·53	10·23	5·09	8·14	14·15	5·09	6·43	8·15
18	4·81	7·11	9·66	4·81	7·69	13·37	4·81	6·06	7·7
19	4·55	6·73	9·14	4·55	7·28	12·64	4·55	5·73	7·3
20	4·33	6·40	8·70	4·33	6·93	12·04	4·33	5·47	6·94

1928-9. RATIOS.

$\frac{1}{2}$" Pitch, 44 Teeth Clutch Wheel, $\frac{5}{8}$" Pitch to Rear.

No. of Teeth in Engine Sprocket.	HIGH STANDARD			LOW STANDARD			T.T.A.		
	High	Mid.	Low	High	Mid.	Low	High	Mid.	Low
20	5·45	8·05	11·0	5·45	8·75	15·2	5·45	6·86	8·75
21	5·2	7·7	10·5	5·2	8·35	14·5	5·21	6·56	8·35
22	4·95	7·3	10·0	4·95	7·9	13·75	4·95	6·25	7·9
23	4·73	7·0	9·5	4·73	7·6	13·2	4·73	5·95	7·6
24	4·53	6·7	9·1	4·53	7·25	12·6	4·53	5·7	7·25

ABRIDGED SPECIFICATION.

MODEL "Q" with 3 Plate Clutch for 500 cc. O.H.V. Single Cylinder Engines, or for 1000 cc. Twin Cylinder Engines.

All Chain Drive, incorporating Burman Shock Absorber. Engine Chain Line, $3\frac{7}{8}$". Rear Chain Line, $2\frac{7}{8}$". Suitable for use with balloon tyres.

Weight 30 lbs.