GP150/200 Workshop Manual

All contents in this section is taken from, ***Lambretta GP150/GP200, Workshop Manual, Instructions for repair shops, Scooters India Limited, Lucknow (India).***

Please note that we do not recommend that you use all the information printed from the Workshop Manual. There is some information printed in the Manual that we do not agree with. We have added a note next to that information.

Main Features

Maximum Length		1800mm
Maximum width		680mm
Maximum Height		1012mm
Wheelbase		1292mm
Unladen weight		115kg
Total fuel tank capacity		8.10lits
Reserve		0.75lt
Maximum Speed	GP150	85km/h
	GP200	105km/h
Frame		Central beam type in steel tubing
Body		In pressed steel sheet
Front Suspension		Trailing links actuating against two helical springs and shock absorber. Swinging engine unit coupled to shock absorber with coil spring/s
Fuel Consumption	GP150	56 $\pm$ 6 km/ltr at 40 km/h
(under ideal conditions)	GP200	35 $\pm$ 5 km/ltr at 40km/h
Engine		Single Cylinder, 2 Stroke, forced air cooled
Bore	GP150	57mm
	GP200	66mm
Stroke		58mm
Capacity	GP150	149cc
	GP200	198cc
Compression Ratio	GP150	7.8 :1
	GP200	7.3 :1
Maximum output at crankshaft	GP150	9.4 bhp at 6300 rpm
	GP200	11.9 bhp at 6200 rpm
Lubrication	Petrol Mixture	Castrol 2T Supreme/Servo 2T kh
		3% during running in
		2% after running in
Starting		By Kick Start Pedal

Gear Ratio **Climbing Ability**

Gear	GP150	GP200	GP150	GP200
1st Gear	1:15.35	13.05	36%	40%
2nd Gear	1:9.70	1:9.14	23%	28%

3rd Gear	1:6.72	1:6.20	15%	18%
4th Gear	1:4.82	1:4.81	9%	9%

Carburettor	GP150	MIKCARB
	GP200	JETEX-SOI-100
Air Filter		Washable K & N incorporated in air inlet box
Ignition		Flywheel magneto with external H.T. coil and spark plug and Electronic C.D.I Unit
Ignition timing		23° ± 1° B.T.D.C (corresponds to 2.90 ± 0.23 mm)
Spark Plug		MICO W 5 DC or Modi Champion N4C (Gap 0.5 to 0.6mm)
Clutch		Multi disc type in oil bath
Transmission		Duplex chain drive in oil bath with a damper.
		Chain: No. 6.1 Duplex IS:2403/1964; pitch 3/8 in
Gear Box		Four speed constant mesh type in oil bath

Wheels and Brakes

Wheels	Interchangeable
Rims	Pressed steel in two halves
Tyre size	3.50 x 10
Tyre Pressure	
Front	1.25 kg/cm²
Rear (rider only)	2.00 kg/cm²
Rear (with pillion)	2.25kg/cm²
Brakes	Internal expansion type with cable control

Electrical Equipment

Flywheel Magneto		6 Pole
		At the centre of the handle bar 4 position, clockwise type
	Position	0 = Lights out, Ign. out
		1 = Lights out, Ign. on, stop light on
		2 = City light on, Ign. on, tail light on, stop light on, speedo light on
		3 = H/L on tail light on, stop light on, speedo light on
Dipper, Horn and Turn signal switch		On right hand handle bar near the twist grip

Bulbs

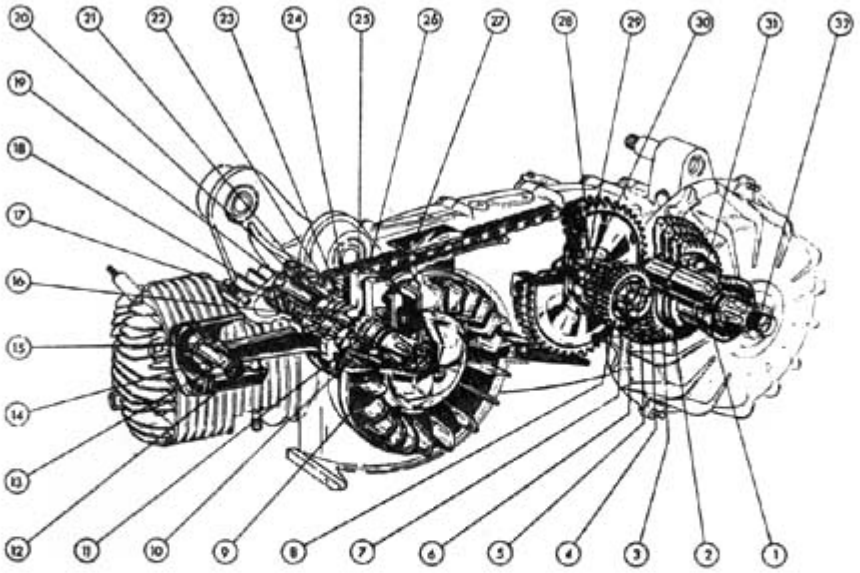
Position	Application	No. of	Characteristics	Type	Base
Head Lamp	Dazzle and Anti Dazzle	1	12V-35/35W	Spherical	BA20-d
City Lamp	City Light	1	6V-5W	Festoon	S8.5-9.5
Turn Signal	Direction Indicator	4	6V-5W	Festoon	S8.5-9.5
Tail Lamp	Number Plate and stop light	1	6V-5W	Spherical	BAY 15d
Speedometer	Lighting Speedometer	1	6V 1.5 Watt	Spherical	BA 9S

Pilot Lamp	Turn Signal	1	6V 2W
Indicator Lamps			
Pilot Lamps	For headlight beam	1	6V 2W

Horn 12 Volt AC

Please note that we do not recommend that you use the voltage information in the table above. Although the information is taken from a Scooters India Workshop Manual, we believe that there has been a misprint in the manual. The voltage should read, and we recommend is 12V for all lamps.

Layout of Engine and its Functioning



1. Bearing for layshaft. 2. gear Selector ball. 3. 4th gear. 4. 3rd gear 5. 2nd gear 6. 1st gear with frontal teeth for K/shaft piston 7. roller bearing for cluster gear 8. cluster gear 9. flywheel magneto 10. oil seal flywheel side 11. roller bearing flywheel side 12. piston 13. gudgeon pin 14. connecting rod 15. small end needle bearing 16. big end needle bearing 17. shock damper spring 18. disc for damper spring 19. bolt fixing damper to crank shaft 20. damper sliding dog 21. damper sleeve 22. drive sprocket 23. drive shaft main ball bearing 24. drive side oil seal 25. crankshaft 26. chain 27. chain guide 28. big sprocket 29. clutch needle bearing 30. cluster gear ball bearing 31. gear selector sleeve 32. Layshaft.

Electrical Equipment

Electronic Magneto

This magneto consists of pick up coil on stator plate assembly in place of C.B Point and condensor, extended poles on Rotor and C.D.I Unit.

Pick Up Coil

Pick up coil is a transducer which converts angular position of flywheel rotor into electrical pulse. Pick up coil sends a pulse to the gate of S.C.R in C.D.I. unit when it comes in front of extended poles while rotating.

Extended poles on rotor

Extended poles in an electronic system are used to energise the magnetic pick up coil. This

happens at a particular angular position on flywheel rotor, so this way it works like the cam of normal system/

C.D.I. Unit (Capacitor/Discharge Ignition Unit)

C.D.I. Unit contains different types of electronic components, like S.C.R (Silicon Controlled Rectifier) P.N. Junction diode and condensor, on receiving signal pulse from pick up coil, SCR starts acting like switch and the condensor which was charged by source coil, discharges into the H.T. Coil.

Timing Setting with Timing Light (Stroboscopic Gun)

The timing once set, will not later in Electronic type Ignition System. If ignition timing is found to be not correct check the CDI unit and magento and replace any faulty part

Checking of Timing Setting with Stroboscopic Gun

a) Remove the magneto cowl

b) Connect timing gun

1. Circuit Diagram of AC Type stroboscopic Gun

2. Circuit Diagram of DC Type Stroboscopic

c) Timing is correct if the index mark on the magneto flange aligns the timing mark (arrow on the rotor within 3° at 1200 rpm

d) If index mark is not aligning with timing mark, remove flywheel rotor and adjust stator plate accordingly, to get correct Ignition timing.

In case there is no index mark either on flywheel or magneto flange, remove cylinder head and assemble the dial gauge with its bracket tool No.57988 for GP150 and 68186 for GP200 at the cylinder top, take the piston at TDC Position. Set the dial at 'O' Rotate the flywheel in anticlock direction slowly. When the dial shows the reading 1.75mm corresponding 18° BTDC, mark the position at flange. A MARK is at the window of flywheel and a white line mark is at pickup coil. Align both he mark at this position. Rotate the flywheel further when he dial shows the reading 2.9mm corresponding 23° BTDC, mark this second position also at flange.

While checking the timing with gun-

The first mark of magneto flange should align with rotar index mark at idling rpm and at the rmp of 3000 and above, the second mark should coincide. If it is not so adjust the stator plate.

Trouble Shooting

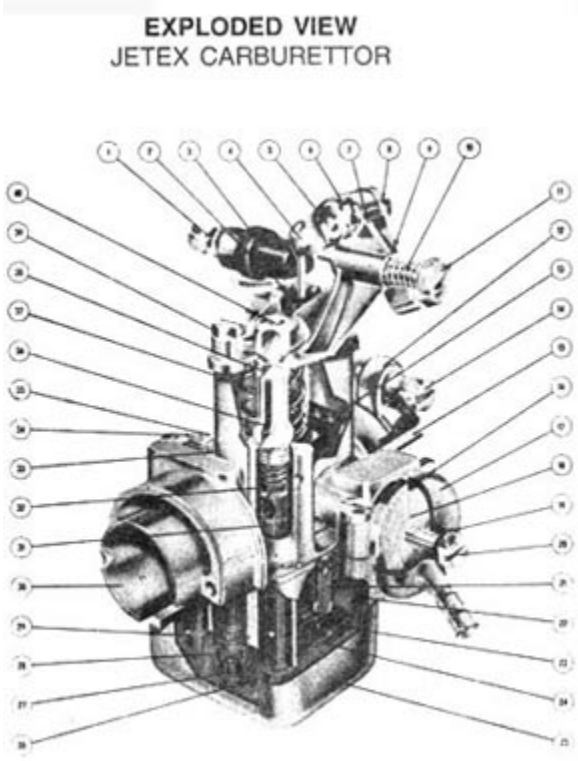
It is advised while rectifying the fault of this magnet, Machanic should have service CDI Unit and pick up coil. In the eventuality of spark not coming on spark plug, after checking plug and H.T. Coil, CDI Unit should be checked with the service CDI Unit. If no improvement the Pick up Coil should be checked with service pick up coil. Similarly the same is applicable for the checking of source coil. Service source coil may be used to check and replace faulty source coil.

For pick up one of the possible cause is CDI Unit.

Precaution

Never earth the output of CDI Unit (i.e. violet wire) while engine is running. It may damage CDI Unit.

Jetex Carburettor



1. Adjusting Bush
2. Washer
3. Rubber Cap
4. Pull Rod
5. Nut
6. Spring Washer
7. Mixing Chamber Cover
8. Spindle
9. Lever
10. Spring
11. Screw
12. Clip
13. Throttle Valve
14. Screw
15. Adaptor
16. Washer
17. Banjo
18. Filter
19. Washer
20. Screw
21. Petrol Stopping Needle
22. Rubber Ring
23. Float
24. Float Toggle Spindle
25. Float Chamber
26. Starter Jet
27. Main Jet
28. Emulsion Tube
29. Pilot Jet
30. Carburettor Body
31. Starter piston
32. Spring
33. Spring
34. Screw
35. Screw
36. Housing
37. Spring
38. Nut
39. Screw
40. Adjusting Bush

Fig - 47

Assembly Tolerances and Wear Limits for Cylinder and Piston (Lambretta GP150)

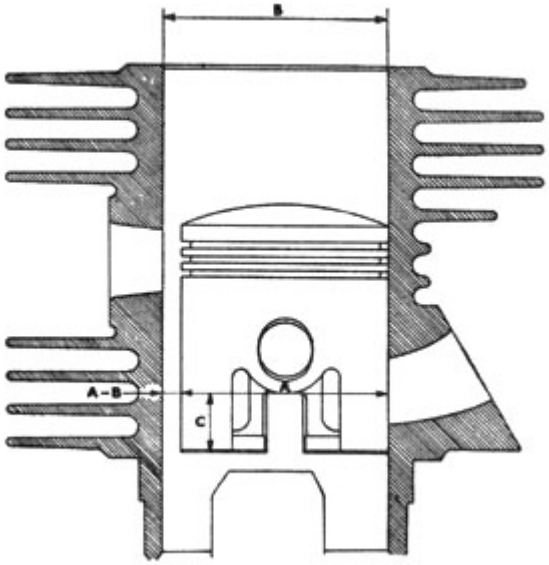
Sl. No.	Grading	Standard		1st Oversize		2nd Oversize		3rd Oversize		Cylinder N Micro Clearance		Piston Max
		Cylinder	Piston	Cylinder	Piston	Cylinder	Piston	Cylinder	Piston	B - A		Wear Limit
		B	A	B	A	B	A	B	A	Max.	Min	
1	-	+0.018 +0.012 57	+0.062 +0.056 56.9	+0.018 +0.012 57.2	+0.062 +0.056 57.1	+0.018 +0.012 57.4	+0.062 +0.056 57.3	+0.018 +0.012 57.6	+0.062 +0.056 57.5	62	50	150
2	0	+0.025 +0.019 57	+0.069 +0.063 56.9	+0.025 +0.019 57.2	+0.069 +0.063 57.1	+0.025 +0.019 57.4	+0.69 +0.063 57.3	+0.025 +0.019 57.6	+0.069 +0.063 57.5	62	50	150
3	+	+0.032 +0.026 57	+0.076 +0.070 56.9	+0.032 +0.026 57.2	+0.076 +0.070 57.1	+0.032 +0.026 57.4	+0.076 +0.070 57.3	+0.032 +0.026 57.6	+0.076 +0.070 57.5	62	50	150
4	+ +	+0.039 +0.033 57	+0.083 +0.077 56.9	+0.039 +0.033 57.2	+0.083 +0.077 57.2	+0.039 +0.033 57.4	+0.085 +0.077 57.3	+0.039 +0.033 57.6	+0.083 +0.077 57.5	62	50	150

Assembly Tolerances and Wear Limits for Cylinder and Piston (Lambretta GP200)

						Cylinder -Piston

Sl. No.	Grading	Standard		1st Oversize		2nd Oversize		3rd Oversize		Clearance B-A in mm Max	
		Cylinder	Piston	Cylinder	Piston	Cylinder	Piston	Cylinder	Piston		
		B mm	A mm	B mm	A mm	B mm	A mm	B mm	A mm	New Part	Wear Limit
1		66.0 +0.013 +0.019	65.9 +0.057 +0.063	66.2 +0.013 +0.019	66.1 +0.057 +0.063	66.4 +0.013 +0.019	66.3 +0.057 +0.063	66.6 +0.013 +0.019	66.5 +0.057 +0.063	0.050 to 0.062	0.200
2	0	66.0 +0.020 +0.026	65.9 +0.064 +0.070	66.2 +0.020 +0.026	66.1 +0.064 +0.070	66.4 +0.020 +0.026	66.3 +0.064 +0.070	66.6 +0.020 +0.026	66.5 +0.064 +0.070	0.050 to 0.062	0.200
3	+	66.0 +0.027 +0.033	65.9 +0.071 +0.077	66.2 +0.027 +0.033	66.1 +0.071 +0.077	66.4 +0.027 +0.033	66.3 +0.071 +0.077	66.6 +0.027 +0.033	66.5 +0.071 +0.077	0.050 to 0.62	0.200
4	+ +	66.0 +0.034 +0.040	65.9 +0.078 +0.084	66.2 +0.034 +0.040	66.1 +0.078 +0.084	66.4 +0.034 +0.040	66.3 +0.078 +0.084	66.6 +0.034 +0.040	66.5 +0.078 +0.084	0.050 to 0.062	0.200

Assembly Tolerances and Wear Limits

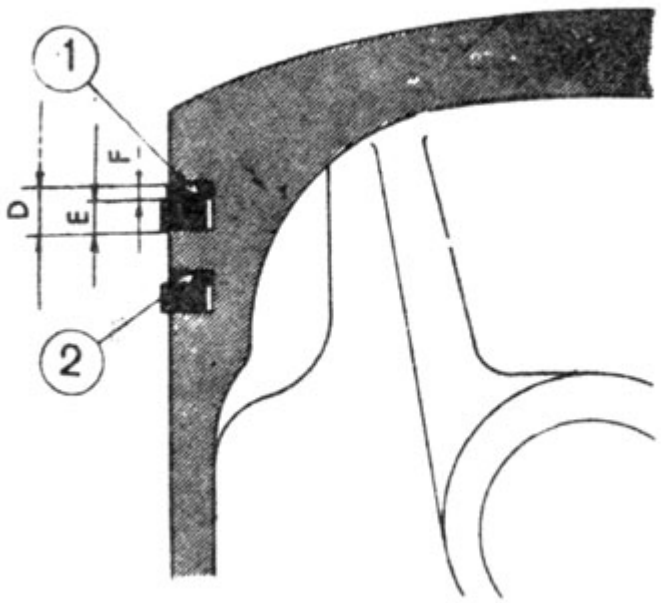


Note: The prescribed roughness is obtained as follows:

1. Bore 0.05 to 0.07 mm undersize.
2. Fisnish by honing with abrasive nr. 180
3. Spread a mixture of emery nr.80 and petroleum on the inside surface of Cylinder and keep passing up and down with helical movement a piston of the same nominal diameter as cylinder until piston is moving free-use an old piston without rings. Fit on it a connecting rod as handle.
4. Wash out very carefully cylinder and ports with pressure water. Immediately after plunge cylinder in petroleum.

Assembly Axial Play and Wear Limits Between Piston Ring Groove and Rings (GP150)

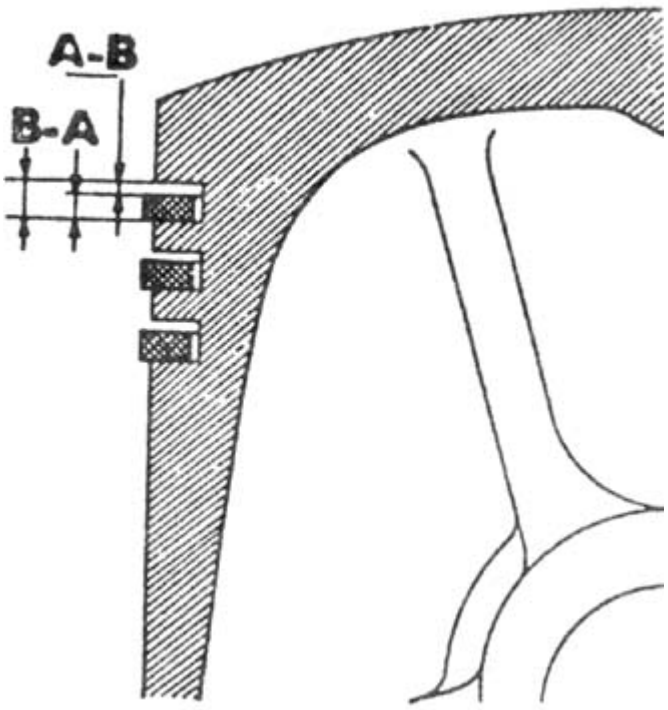
SL No.	Piston Groove	Height of Groove 'D' mm	Ring Thickness 'E' mm	'F' Microns at Assy of New Part		Max. Limit of 'F' due to Wear Microns
				Max.	Min.	
1.	1. +0.085 2	+0.065 -0.022 2	-0.010	107	75	190
2.	2. +0.045 2	+0.065 -0.022 2	-0.10	87	55	180



End Play During Assembly and Wear Limits Between Piston Ring Grooves and Rings (GP200)

Piston Groove	Groove Height A in mm	Piston Ring Thickness B in mm	End Play during assy. of new part A-B in mm		Permissible wear limit A-B in mm
			MAX	MIN	

1	2.00 +0.085 +0.065		0.107	0.075	
2	2.00 +0.65 +0.45	2.00 -0.01 -0.022	0.087	0.055	0.20
3	2.00 +0.065 +0.045		0.087	0.055	



Assembly Tolerances and Wear Limits Between Piston and Gudgeon Pin

GP150 & GP200

Piston A in mm	Gudgeon Pin B in mm	Permissible wear limit C
16.00 +0.003 -0.003	16.00 +0.002 -0.033	0.01

Colour Code	Gudgeon Pin in mm	Piston Boss in mm
White	16.00 +0.002 -0	16.00 +0.003 -0
Black	16.00 -0.001 -0.003	16.00 -0.001 -0.003

Note: The piston and gudgeon pin are marked with a spot of paint for the colour coding. During assembly it is to be ensured that these two parts are correctly matched according to the colour coding.

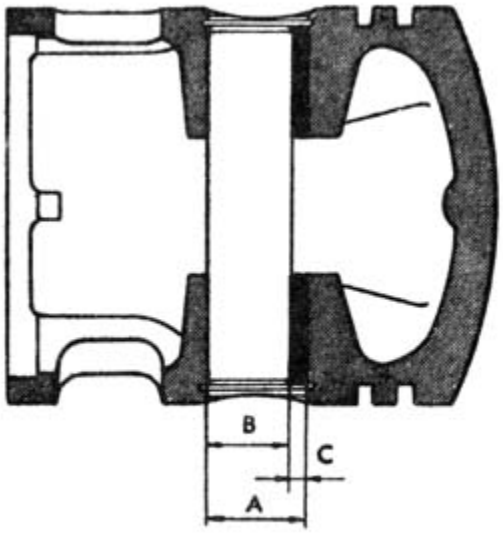


Fig - 67

Assembly Tolerances and Wear Limits Between Crankshaft and Con.Rod Big End

Width of Crankshaft Boss in mm (C)	Width of Con.Rod Big End in mm (A)	Roller Cage width in mm (B)
+0.1 15.8 -0.05	15.5+0 -0.5	__0.2 15.7 __0.55
Assembly Clearances		

(C-A)		(C-B)	
Min.	Max.	Min.	Max.
0.25	0.45	0.25	0.75

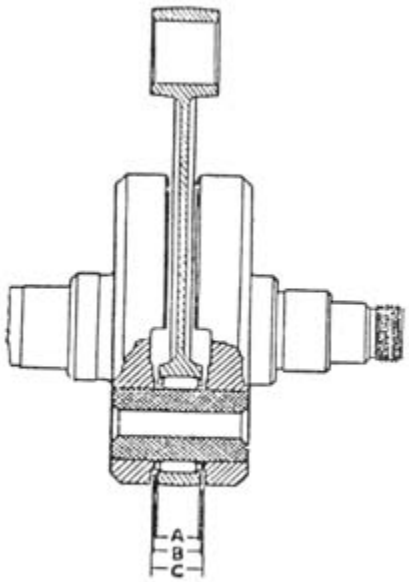


Fig. 68

Wear Limit and Assembly Tolerances for Piston Ring End Gap

Of Sl.No.	Type	Nominal (mm) L		Piston Ring Gap 'G' Microns at Assy. Of New Part	MAX. Limit 'G' due to Wear Microns
		GP150	GP200		
1.	Standard	57.0	66.0	200 - 350	600
2.	1st Oversize	57.2	66.2	200 - 350	600
3.	2nd Oversize	57.4	66.4	200 - 350	600
4.	3rd Oversize	57.6	66.6	200 - 350	600

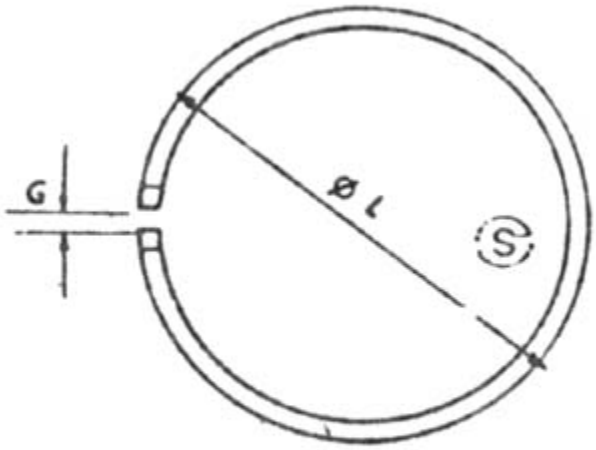


Fig. 68 A

Clearances Allowable in Layshaft Assembly

Sl. No.	Thickness of Shims Available 'P' mm.	MAX. Clearance Allowable Microns
1.	2.0	100 - 150
2.	2.2	100 - 150
3.	2.4	100 - 150
4.	2.6	100 - 150

Recommended Torque Values for Various Nuts Bolts & Studs

1.	Stud for flange	0.48 - 0.53 kg-m
2.	Stud for Cylinder (Inlet & exhaust)	0.48 - 0.53 kg-m
3.	Brake Shoe Pin	0.48 - 0.53 kg-m
4.	Nut for Magneto flange Assy	0.48 - 0.53 kg-m
5.	Magneto Stator fixing nuts	0.48 - 0.53 kg-m
6.	Magneto Rotor nut	6.0 - 6.5 kg-m
7.	Cylinder Head Nuts	1.9 - 2.2 kg-m
8.	Internal Lever Screw	0.48 - 0.53 kg-m
9.	Flange fixig nuts	1.00 - 1.2 kg-m
10.	Clutch bell Assy. fixing nut	6.7 - 7.5 kg-m
11.	Damper bolt	3.0 - 3.5 kg-m
12.	Double lever fixing bolts	0.48 - 0.53 kg-m
13.	Crankcase cover fixing screw	0.48 - 0.53 kg-m
14.	Rear Drum nut	12.00 - 14.00 kg-m

15.	Rear Wheel lock washer screw	1.40 - 1.50 kg-m
16.	Trailing link fixing screw	5.50 - 5.60 kg-m
17.	Front axle nut	5.50 - 5.60 kg-m
18.	Wheel rim nuts	2.00 - 2.30 kg-m

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