Kawasaki

KLR 600
(Electric Starter)



Motorcycle Service Manual Supplement

Quick Reference Guide

To use, bend the manual back and match the desired chapter below against the black spot showing at the edge of these pages.



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This warning may apply to any of the following components or any assembly containing one or more of these components:—

Brake Shoes or Pads
Clutch Friction Material
Gaskets
Insulators

SAFETY INSTRUCTIONS

- Operate if possible out of doors or in a well ventilated place.
- Preferably use hand tools or low speed tools equipped, if necessary, with an appropriate dust extraction facility. If high speed tools are used, they should always be so equipped.
- If possible, dampen before cutting or drilling.
- Dampen dust and place it in properly closed receptacle and dispose of it safely.

Foreword

This KLR600 (Electric Starter) Service Manual Supplement is designed to be used in conjunction with the KLR600 Motorcycle Service Manual (P/N 99924-1050-01). The maintenance and repair procedures described in this supplement are only those that are unique to the KL600 (Electric Starter) motorcycle. Most service operations for these models remain indentical to those described in the base Service Manual. Complete and proper servicing of the KL600 (Electric Starter) motorcycle therefore requires both this supplement and the base Service Manual.

The base Service Manual and this Supplement are designed primarily for use by motorcycle mechanics in a properly equipped shop. However, they contain enough detail and basic information to make them useful to the operator who desires to perform his own basic maintenance and repair work. A basic knowledge of mechanics, the proper use of tools, and work shop procedures must be understood in order to carry out maintenance and repair satisfactorily. Whenever the operator has insufficient experience or doubts his ability to do the work, the adjustments, maintenance, and repair should be carried out only by qualified mechanics.

In order to perform the work efficiently and to avoid costly mistakes, the mechanic should read the text, thoroughly familiarize himself with the procedures before starting work, and then do the work carefully in a clean area. Whenever special tools and equipment are specified, makeshift tools or equipment should not be used. Precision measurements can only be made if the proper instruments are used, and the use of substitute tools may adversely affect safe operation of the motorcycle.

How to Use this Manual

In preparing this manual, we divided the product into its major systems. These systems became the manual's chapters. All information for a particular system from adjustment through disassembly and inspection is located in a single chapter.

The Quick Reference Guide shows you all of the product's systems and assists in locating their chapters. Each chapter in turn has its own comprehensive Table of Contents.

The Periodic Maintenance Chart is located in the General Information chapter. The chart gives a time schedule for required maintenance operations.

If you want spark plug information, for example, go to the Periodic Maintenance Chart first. The chart tells you how frequently to clean and gap the plug. Next, use the Quick Reference Guide to locate the Electrical System chapter. Then, use the Table of Contents on the first page of the chapter to find the Spark Plug section.

Whenever you see these WARNING and CAUTION symbols, heed their instructions! Always follow safe operating and maintenance practices.

WARNING

○**This warning symbol identifies special instructions or procedures which, if not correctly followed, could result in personal injury, or loss of life.**

CAUTION

○**This caution symbol identifies special instructions or procedures which, if not strictly served, could result in damage to or destruction of equipment.**

This manual contains five more symbols (in addition to WARNING and CAUTION) which will help you distinguish different types of information.

NOTE

○*This note symbol indicates points of particular interest for more efficient and convenient operation.*

- ●Indicates a procedural step or work to be done.
- ○Indicates a procedural sub-step or how to do the work of the procedural step it follows. It also precedes the text of a WARNING, CAUTION, or NOTE.
- ★Indicates a conditional step or what action to take based on the results of the test or inspection in the procedural step or sub-step it follows.
- ☆Indicates a conditional sub-step or what action to take based upon the results of the conditional step it follows.

General Information

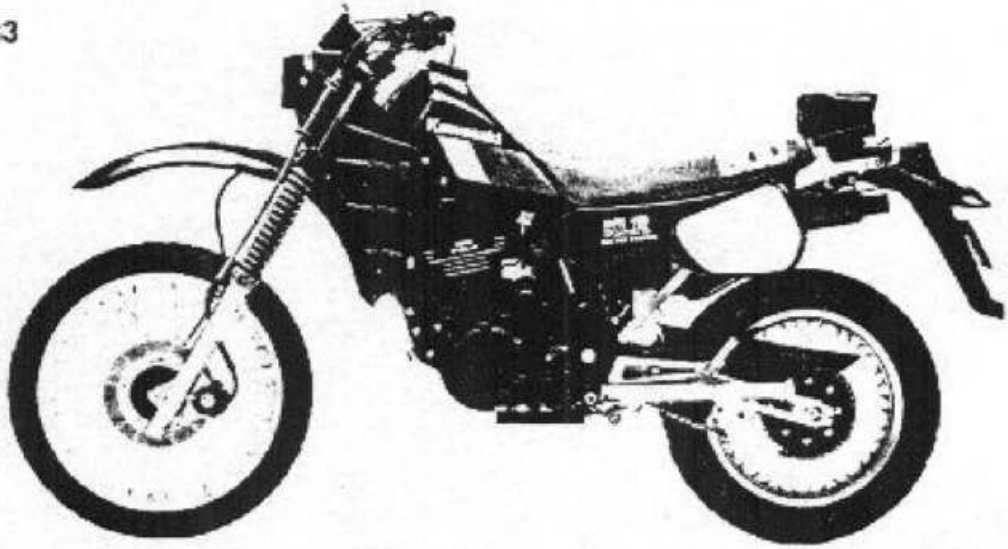
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KL600-B1



KL600-B2/B3



KL600-B4/B5



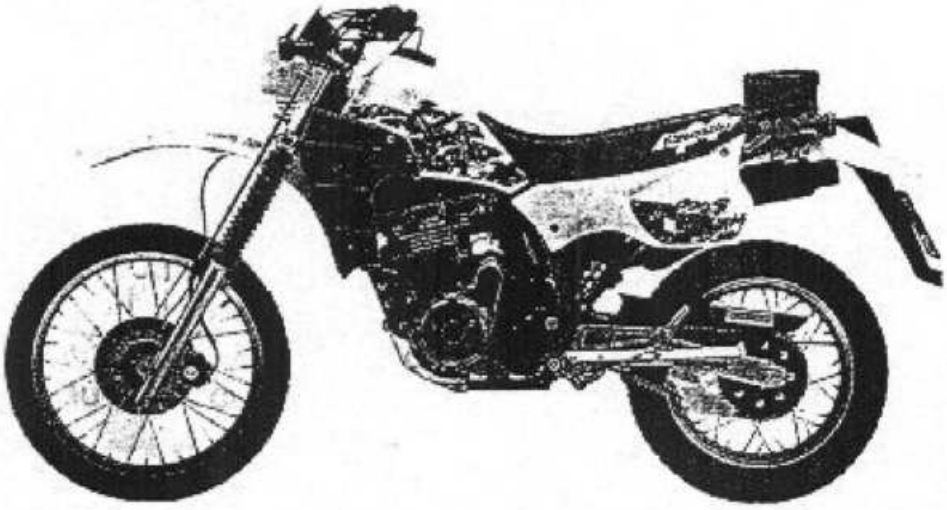
KL600-B6



KL600-B7



KL600-B8/B9



Specifications

Items		KL600-B1, B2, B3, B4, B5, B6, B7, B8, B9
Dimensions:		
Overall length		2,240 mm, Ⓒ Ⓒa Ⓤ 2,230 mm, Ⓢ Ⓦ 2,260 mm
Overall width		875 mm
Overall height		1,225 mm
Wheelbase		1,470 mm
Road clearance		280 mm
Seat height		870 mm
Dry weight		1,430 N (146 kg), Ⓒa 1,435 N (146.5 kg)
Curb weight:	Front	735 N (75 kg), Ⓒa 740 N (75.5 kg)
	Rear	865 N (88 kg)
Fuel tank capacity		11.5 L
Performance:		
Climbing ability		32°
Braking distance		12.5 m from 50 km/h
Minimum turning radius		2.2 m
Engine:		
Type		4-stroke, DOHC, 4-valve, 1-cylinder
Cooling system		Liquid cooled
Bore and stroke		96.0 x 78.0 mm
Displacement		564 mL
Compression ratio		9.5 : 1
Maximum horsepower		30.9 kW (42 PS) @7,000 r/min (rpm) Ⓦ 19.9 kW (27 PS, DIN) @6,000 r/min (rpm) Ⓖ 19.9 kW (27 PS, DIN) @6,500 r/min (rpm)
Maximum torque		46.1 N-m (4.7 kg-m, 34.0 ft-lb) @5,500 r/min (rpm), ⒼⓌ 39.2 N-m (4.0 kg-m, 28.9 ft-lb) @3,000 r/min (rpm)
Carburetion system		Carburetor, Keihin CVK40
Starting system		Electric and kick
Ignition system		CDI
Timing advance		Electronically advanced
Ignition timing		B1 : From 10° BTDC @1,300 r/min (rpm) to 40° BTDC @3,000 r/min (rpm) B2 and after : From 10° BTDC @1,300 r/min (rpm) to 35° BTDC @3,000 r/min (rpm), Ⓐ From 10° BTDC @1,300 r/min (rpm) to 35° BTDC @3,500 r/min (rpm)
Spark Plug		NGK DPR8EA-9 or ND X24EPR-U9, ⒶⒸⒾⓈⓊ NGK DP8EA-9, or ND X24EP-U9

Items			KL600-B1, B2, B3, B4, B5, B6, B7, B8, B9
Valve timing:			
	Inlet	Open	19° (BTDC)
		Close	69° (ABDC)
		Duration	268°
	Exhaust	Open	55° (BBDC)
		Close	25° (ATDC)
		Duration	260°
Lubrication system			Forced lubrication (wet sump)
Engine oil:			
Grade			SE or SF class
Viscosity			SAE10W40, 10W50, 20W40, or 20W50
Capacity			2.0 L
Drive Train:			
Primary reduction system:			
Type			Gear
Reduction ratio			2.428 (68/28)
Clutch type			Wet multi disc
Transmission:			
Type			5-speed, constant mesh, return shift
Gear ratios:	1st		2.437 (39/16)
	2nd		1.529 (26/17)
	3rd		1.181 (26/22)
	4th		0.954 (21/22)
	5th		0.791 (19/24)
Final drive system:			
Type			Chain drive
Reduction ratio			2.866 (43/15)
Overall drive ratio			5.511 @Top gear
Frame:			
Type			Tubular, diamond
Caster (rake angle)			29.5°
Trail			122 mm
Front Tire:			
Type			Tube type
Size			90/90-21 54S
Rear Tire:			
Type			Tube type
Size			130/80-17 65S
Front suspension:			
Type			Telescopic fork (pneumatic)
Wheel travel			230 mm

Item	KL600-B1, B2, B3, B4, B5, B6, B7, B8, B9
Rear suspension:	
Type	Swingarm (uni-trak)
Wheel travel:	
Brake type:	
Front	Single disc
Rear	Drum
Electrical Equipment:	
Battery	12 V 14 Ah
Headlight:	
Type	Semi-sealed beam
Rated output	14 A @8, 000 r/min (rpm), 14 V
Voltage regulator:	
Type	Short-circuit

Specifications are subject to change without notice, and may not apply to every country.

Abbreviation

(A): Australian Model
(B): U.K. Model
(C): Canadian Model
(Ca): California Model
(E): European Model
(F): French Model
(G): West German Model
(I): Italian Model
(N): Norwegian Model
(S): South African Model
(SW): Swedish Model
(U): U.S. Model
(W): Swiss Model
(Gr): Greek Model

Fuel System

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Service Data

The following specifications are only those that are changed and therefore unique to the KL600B models only. For all other data refer to the Base Manual.

Item	KL600-B1 ~ B4	KL600-B5~B9
Carburetor Specifications:		
Make/type	Keihin/CVK40	←
Main jet	#135	←
Main air jet	#50	←
Needle jet	#6	←
Jet needle	N24B Ⓤ N24F	←
Pilot jet	#40	←
Pilot air jet	#70	←
Pilot screw	1 3/8 (turns out) Ⓤ–	← Ⓖ 1½ (turns out)
Starter jet	#48	←
Service fuel level (above the bottom edge of the carburetor body)	0.5 ±1 mm	←
Float height	17.5 mm	←

Ⓖ: West German Model
Ⓤ: U.S. Model

Carburetor

High Altitude Performance Adjustment (U.S. model)

○To improve the EMISSION CONTROL PERFORMANCE of vehicles operated above **4,000** feet, Kawasaki recommends the following Environmental Protection Agency (EPA) approved modification.

●Change the main jet and pilot jet for high altitude use.

High Altitude Carburetor Specifications

Main Jet:	#132
Pilot Jet:	#38

Engine Top End

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Service Data

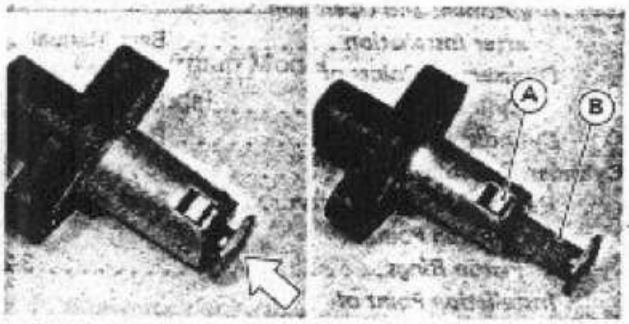
The following specifications are only those that are changed and therefore unique to the KL600B models only. For all other data refer to the Base Manual.

Item		Standard	Service Limit
Camshaft, Chain:			
Inlet cam height		36.75 ~ 36.85 mm	36.65 mm
Exhaust cam height		36.18 ~ 36.28 mm	36.08 mm
Valves:			
Valve spring free length:	Inner	37.6 mm	36.2 mm
	Outer	40.5 mm	39.0 mm
Cylinder Head:			
Cylinder compression			
Kick starter		510 ~ 835 kPa (5.2 ~ 8.5 kg/cm², 74 ~ 121 psi)	
Electric starter		380 ~ 635 kPa (3.9 ~ 6.5 kg/cm², 55 ~ 92 psi)	

Camshaft Chain Tensioner

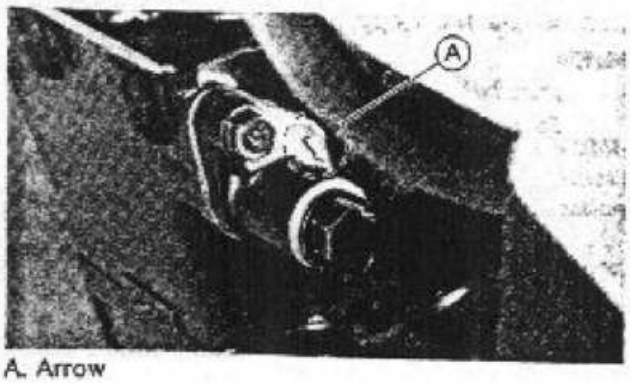
Installation

- Remove the cap bolt and take off the spring.
- Unlock the ratchet stopper and push the rod into the tensioner body.



A. Ratchet Stopper B. Push Rod

- Install the chain tensioner with the gasket so that the arrow on it points down wards.



A. Arrow

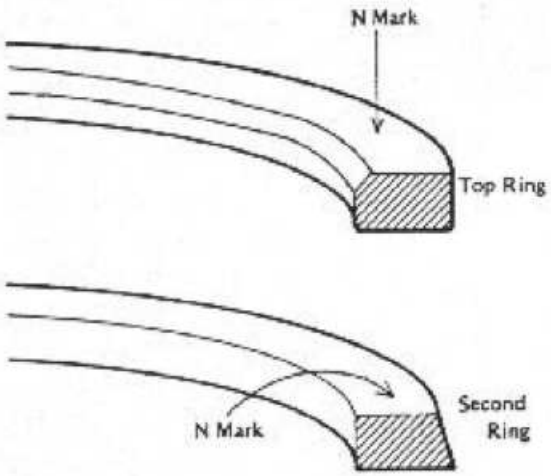
- Install the spring and tighten the cap bolt with the gasket.

Cylinder, Piston

Installation Points of Piston Rings

Refer to the Base Manual, noting the following.

Cross Section of Piston Rings (Top and Second)



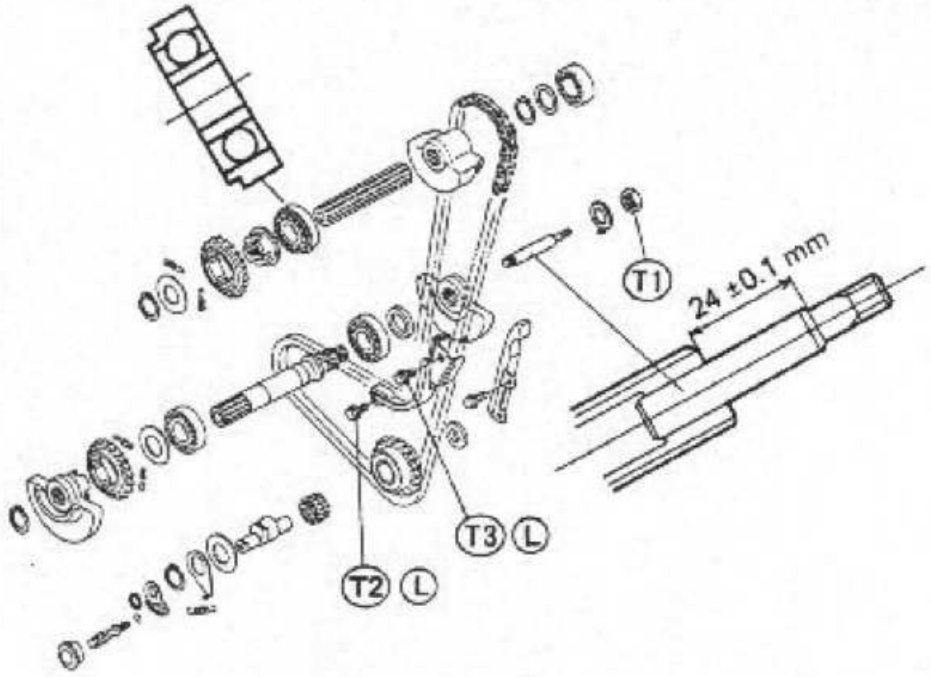
oDo not mix up the top and second rings. The top and second rings are not symmetrical and must be installed with the marked side facing up.

Engine Right Side / Left Side

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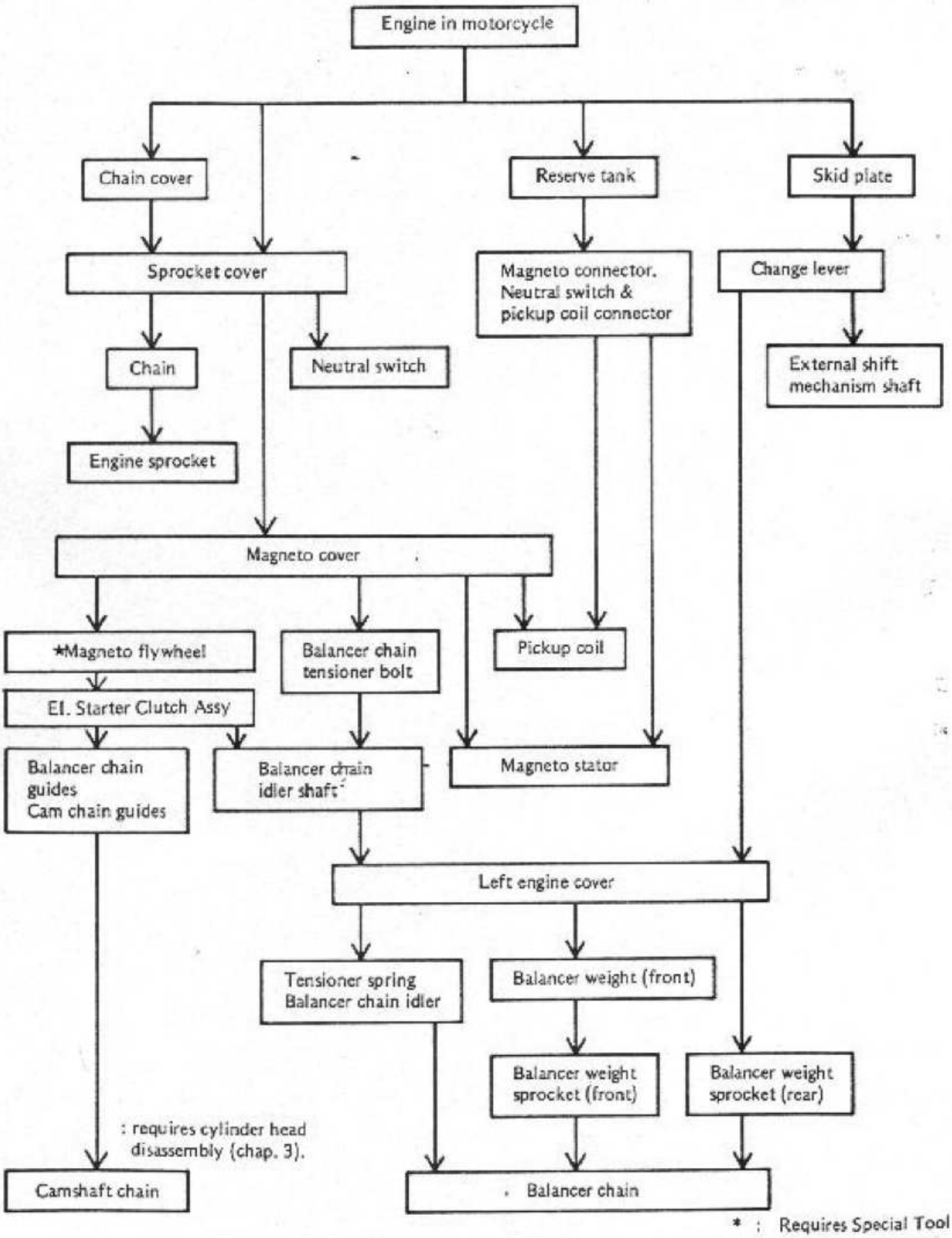
Exploded View



T1: 44 N-m (4.5 kg-m, 33.0 ft-lb)
T2: 12 N-m (1.2 kg-m, 8.5 ft-lb)
T3: 25 N-m (2.5 kg-m, 18.0 ft-lb)
L : Apply non-permanent locking agent.

Flow Chart — Left Side Part Removal

○The following chart is intended to be an aid to proper removal. Select the component you wish to remove and follow the arrows to that point on the chart.



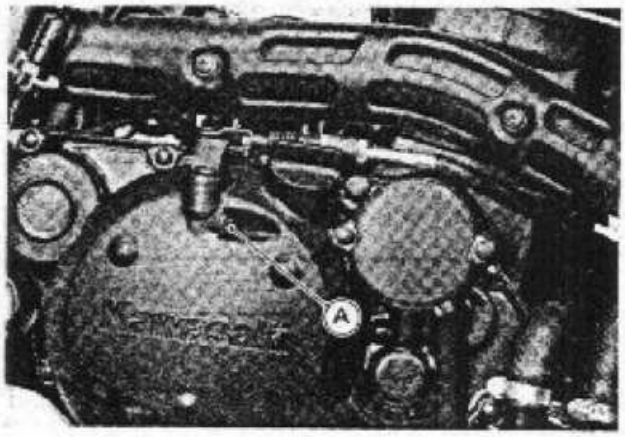
* : Requires Special Tool

Clutch

Clutch Release Removal

Refer to the Base Manual, noting the following.

- Before pulling out the clutch release lever and shaft assembly, take out the shaft positioning bolt.



A. Positioning Bolt

CAUTION

- **Do not remove the clutch release lever and shaft assembly unless it is absolutely necessary. If removed, the oil seal replacement may be required.**

Clutch Release Installation

Refer to the Base Manual, noting the following.

- Before installing the lever and shaft assembly, check the oil seal and replace it if necessary.

Balancer Mechanism

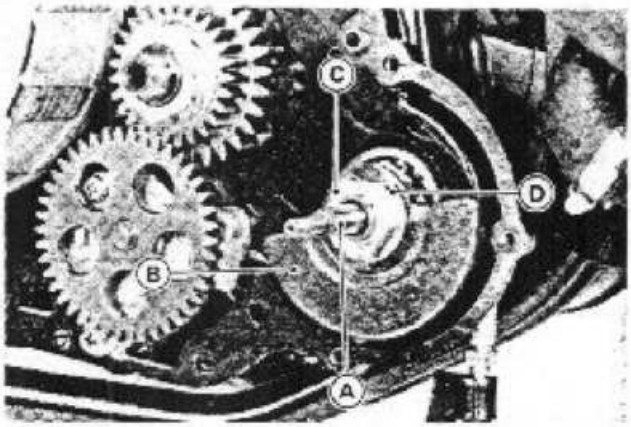
Assembly Point

- Install the collar, the right weight, thoothed lockwasher and tighten the nut to the specified torque.

Tightening Torque

Nut: 44 N-m (4.5 kg-m, 33 ft-lb)

- After nut tightening, bend the lockwasher over the nut.



A. Water Pump Shaft
B. Right Weight
C. Nut
D. Toothed Lockwasher

Cooling System

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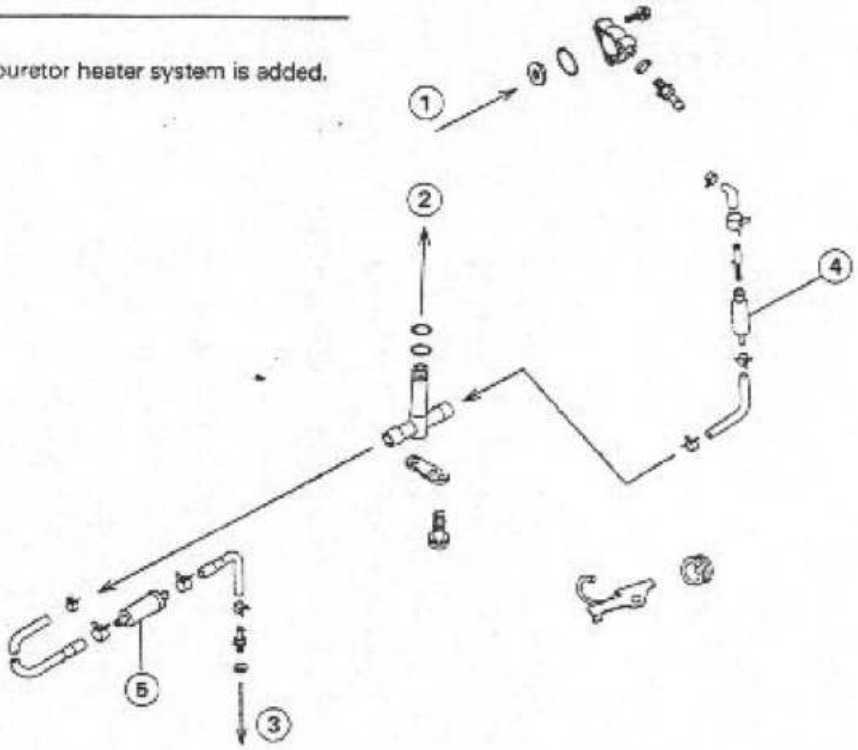
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Exploded View

For '94 model, the carburetor heater system is added.

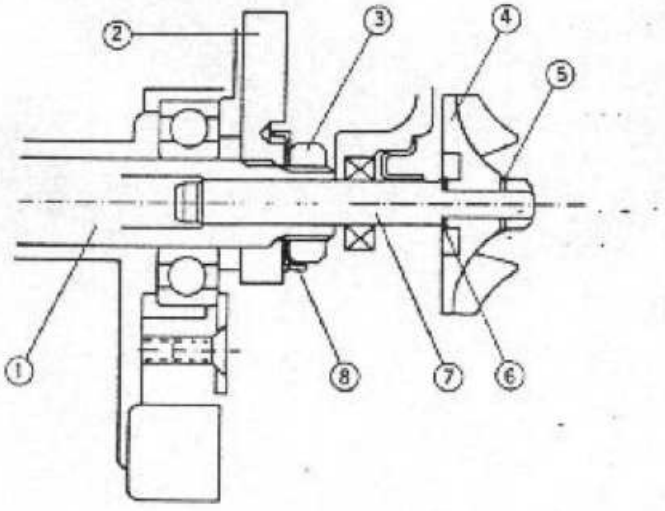


1. From Cylinder Head
2. To Carburetor
3. To Water Pump
4. Filter
5. Valve

Water Pump, Mechanical Seal

Assembly Point

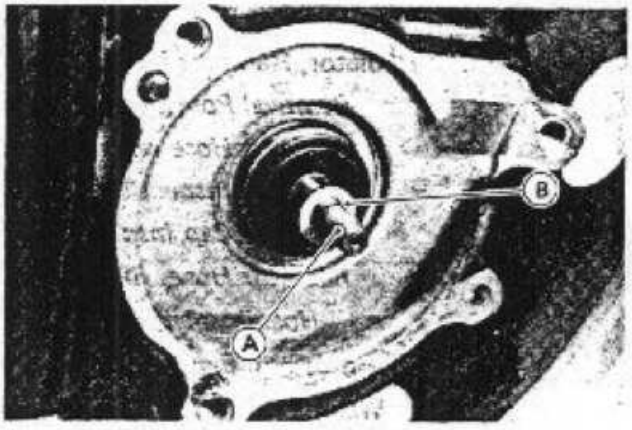
Water pump installation



1. Balancer shaft
2. Right weight
3. Nut
4. Impeller
5. Washer
6. Shim
7. Impeller shaft
8. Lockwasher

Standard Impeller Shim

	Shim No.	Thickness
5.9 mm ~ 6.5 mm	92025-1503	0.8 mm



A. Water Pump Shaft B. Shim

● Installing the standard shim, the impeller (with O-ring) and washer, tighten the impeller locknut to the specified torque.

Tightening Torque

Impeller Nut: 7.8 N-m (0.8 kg-m, 69 in-lb)

Engine Removal, Installation

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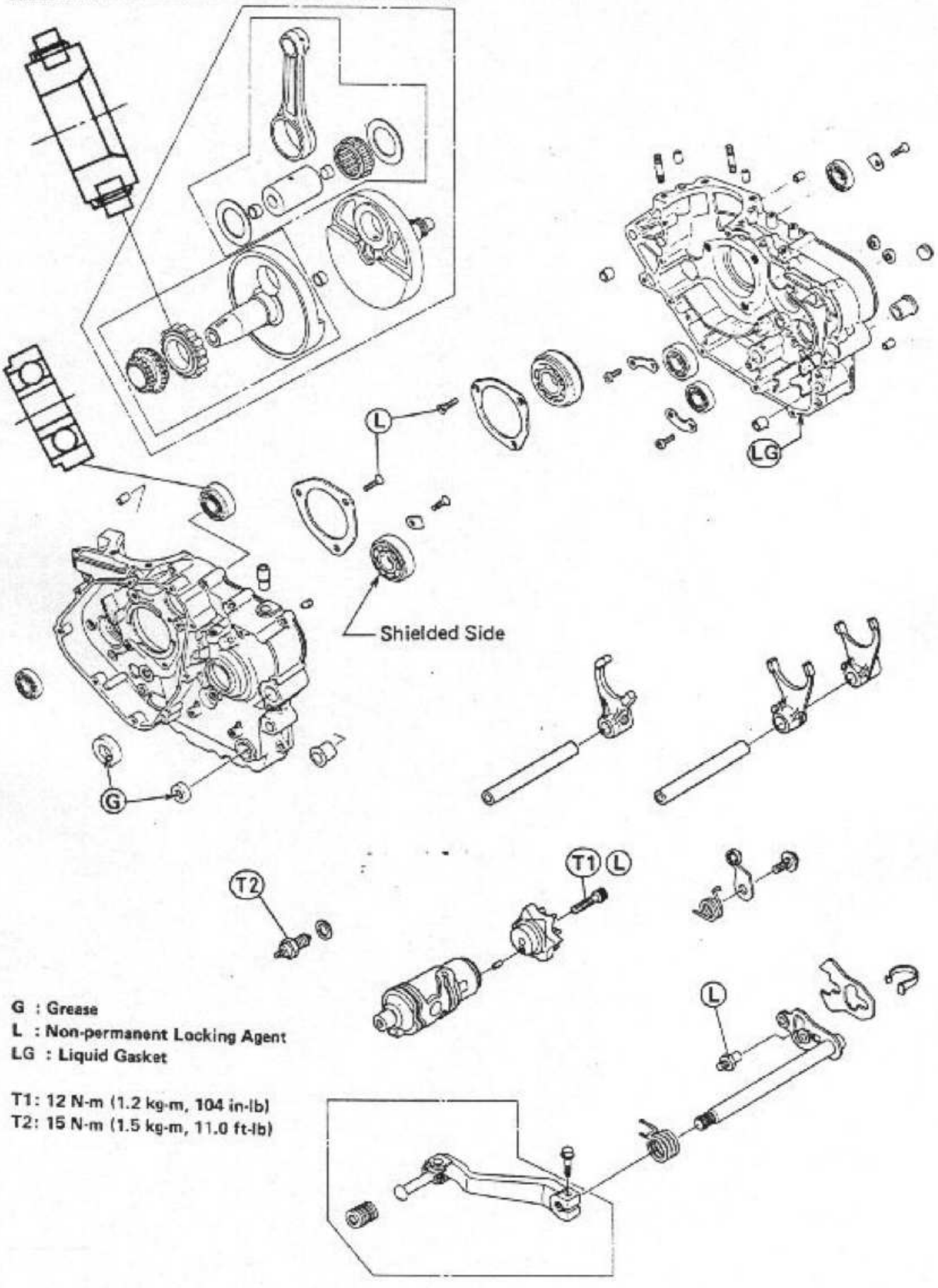
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Exploded View



G : Grease
L : Non-permanent Locking Agent
LG : Liquid Gasket

T1: 12 N-m (1.2 kg-m, 104 in-lb)
T2: 15 N-m (1.5 kg-m, 11.0 ft-lb)

Wheel and Tires

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The following specifications are only those that are changed and therefore unique to the KL600B models only. For all other data refer to the Base Manual.

Item	Standard	
Front Tire		
Make & type	DUNLOP K750	
Tire size	90/90-21 54S	
Air pressure	150 kPa (1.5 kg/cm², 21 psi)	
Tread depth	6.4 mm (service limit: 2 mm)	
Rear Tire		
Make & type	DUNLOP K750	
Tire size	130/80-17 65S	
Air pressure	Up to 956 N (97.5 kg, 215 lb):	147 kPa (1.5 kg/cm², 21 psi)
	956 – 1 770 N (97.5 – 180 kg, 215 – 397 lb):	196 kPa (2.0 kg/cm², 28 psi)
	Ⓔ	
	Up to 956 N (97.5 kg, 215 lb):	147 kPa (1.5 kg/cm², 21 psi)
	956 – 1 820 N (97.5 – 187 kg, 215 – 412 lb):	172 kPa (1.75 kg/cm², 25 psi)
Tread depth	8.8 mm service limit: 2 mm	

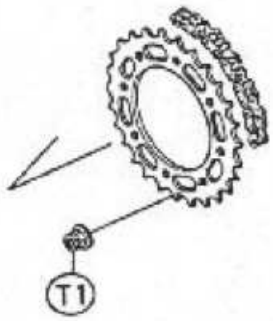
Ⓔ : European Model

Final Drive

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Removal Point
Installation Point

Exploded View



T1: 32 N-m (3.3 kg-m, 24 ft-lb)

Brakes

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Inspection . . . . . Base Manual
Adjustment . . . . . Base Manual
Removal . . . . . Base Manual

Service Data

The following specifications are only those that are changed and therefore unique to the KL600B models only. For all other data refer to the Base Manual.

Item	Standard	Service Limit
Front Brake:		
Disc thickness	3.8 – 4.1 mm	3.5 mm

Recommended Disc Brake Fluid

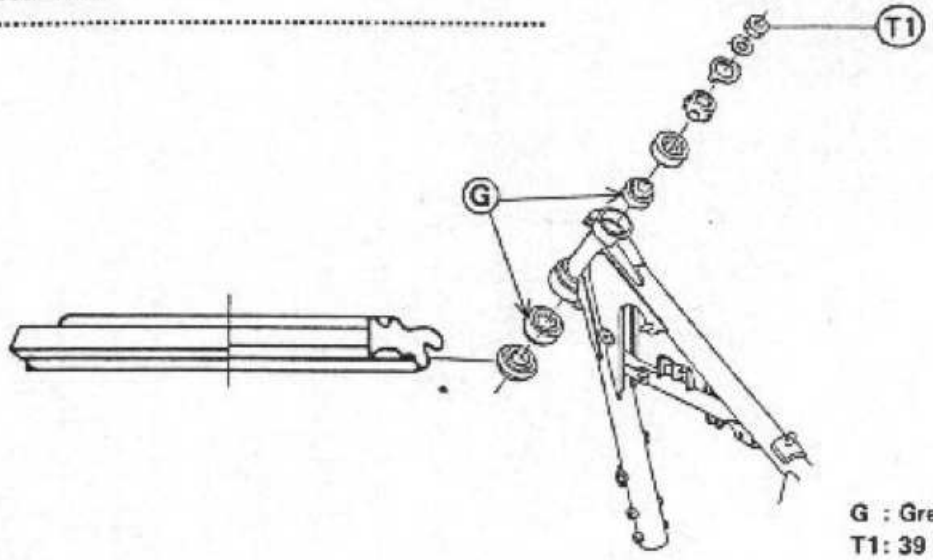
Type:	D.O.T.3
Brand:	Atlas Extra Heavy Duty
	Shell Super Heavy Duty
	Texaco Super Heavy Duty
	Wagner Lockheed Heavy Duty
	Castrol Girling-Universal
	Castrol GT (LMA)
	Castrol Disc Brake Fluid

Suspension

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Exploded View



G : Grease
T1: 39 N-m (4.0 kg-m, 29 ft-lb)

Service Data

The following specifications are only those that are changed and therefore unique to the KL600B models only. For all other data refer to the Base Manual.

Item	Standard	Service Limit
Front Fork:		
Air pressure	Atmospheric pressure	
Oil amount	362 ±4 mL	– – –
Oil Level*	190 ±2 mm	– – –
Oil viscosity	SAE 10W	
Rear Shock Absorber:		
Spring preload	1 471 N (150 kg, 330.7 lb)	– – –
Damper setting position	2	– – –

*Distance from the top of the inner tube, measured with the fork tube fully compressed and with the main spring removed.

Uni-Trak

Uni-Trak Spring Preload Adjustment

Spring Preload Setting

Standard Adjusting Nut Position:	104 mm
	74 – 114 mm
(Initial Spring Preload):	1 471 N (150 kg, 330.7 lb)
(Preload change per turn of the nut):	73.5 N per turn (7.5 kg, 16.5 lb)

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Installation ..... Base Manual

Throttle Grip

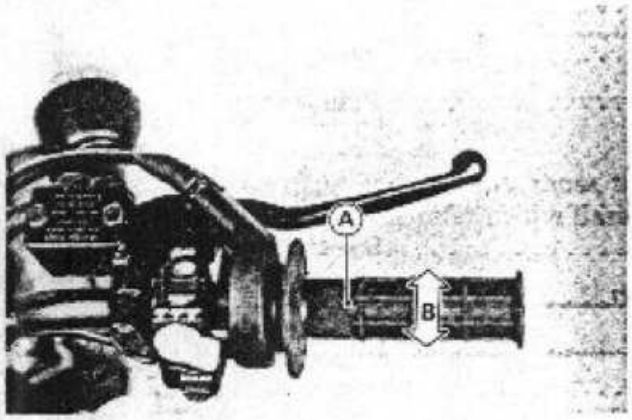
There are two throttle cables: an accelerator cable for opening the throttle valves, and a decelerator cable for closing them.

If the throttle grip has excessive free play due to cable stretch or misadjustment, there will be a delay in throttle response. Also, the throttle valves may not open fully at full throttle.

On the other hand, if the throttle grip has no play, the throttle will be hard to control, and the idle speed will be erratic. Check the throttle grip play periodically in accordance with the Periodic Maintenance Chart, and adjust the play if necessary.

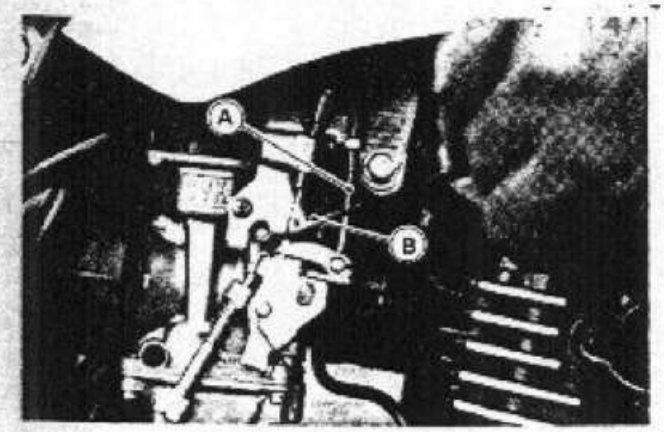
Inspection

•Check that there is 2 – 3 mm throttle grip free play by lightly turning the throttle grip back and forth.



A. Throttle Grip B. 2 – 3 mm

•With the throttle grip closed, check that the decelerator inner cable is tight by touching it at the lower end with a thin-bladed screwdriver.



A. Inner Cable B. Screw Driver

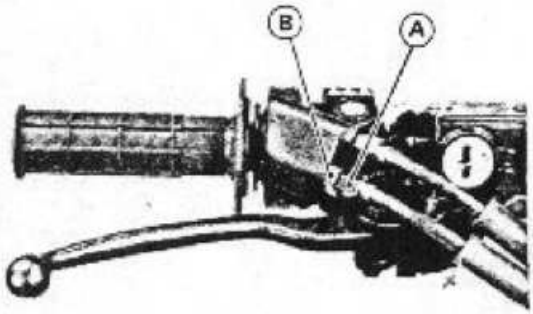
*If the throttle grip free play is incorrect or the decelerator inner cable is loose with the throttle closed, adjust the throttle cables.

Adjustment

•Loosen the locknuts, and screw both throttle cable adjuster nuts in fully at the upper end of the throttle cables to give the throttle grip plenty of play.

•With the throttle grip completely closed, turn out the decelerator cable adjuster nut until the inner cable just becomes tight.

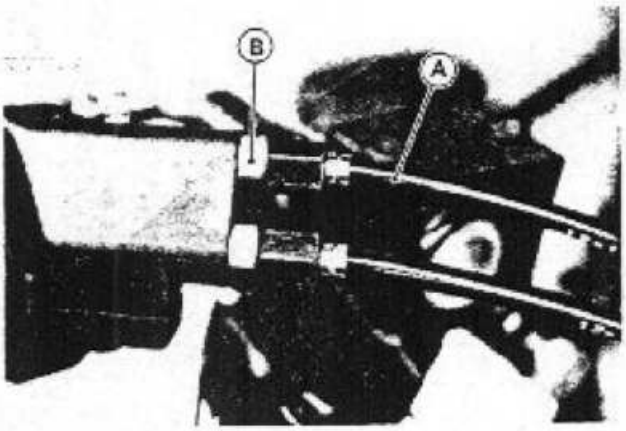
•Tighten the locknut.



A. Decelerator Cable Adjuster Nut B. Locknut

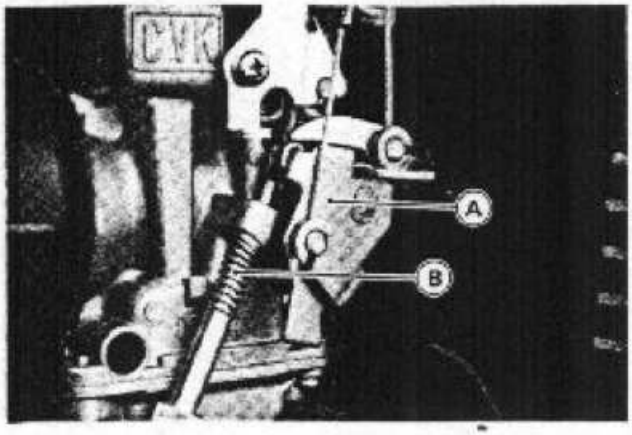
•Turn the accelerator cable adjuster nut until the correct throttle grip free play obtained.

•Tighten the locknut.



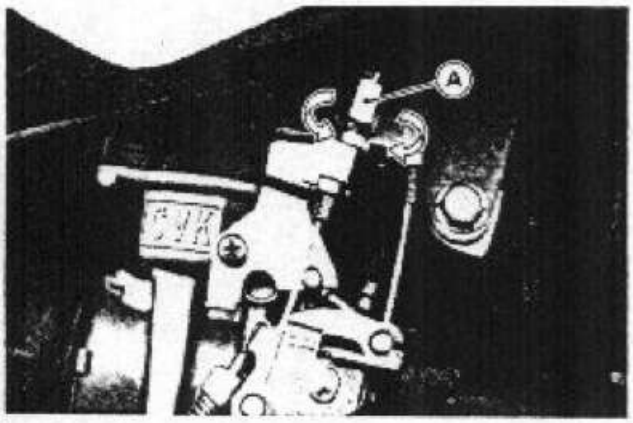
A. Accelerator Cable B. Locknut

•Check that the throttle linkage lever stops against the idle adjusting screw with the throttle grip closed.



A. Throttle Linkage Lever B. Idle Adjusting Screw

★If the throttle cables cannot be adjusted by using the cable adjuster nuts at the upper ends of the throttle cables, use the cable adjusters at the lower end of the throttle cables as follows.



A. Cable Adjuster

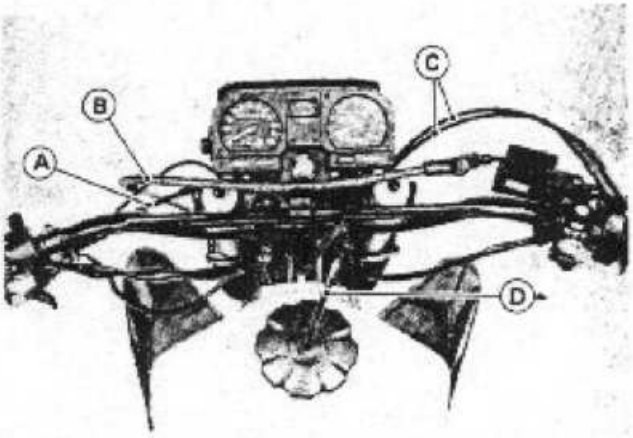
○Remove the accelerator cable adjuster and locknut.
○Adjust the decelerator cable.
○Reinstall the accelerator cable adjuster, and then adjust it.
○Be sure to tighten the adjuster locknuts.

Frame

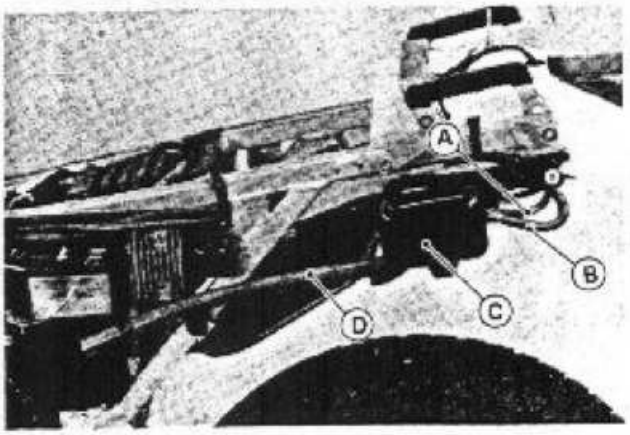
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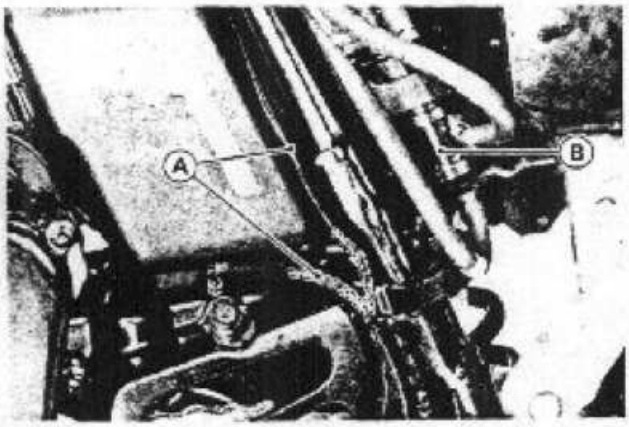
Suggested Cable or Hose Routing



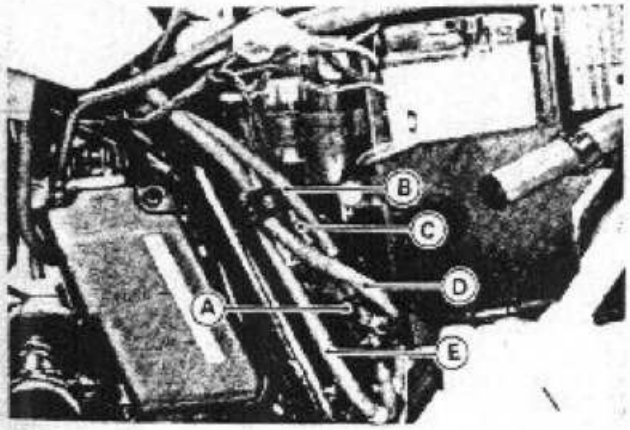
A. Clutch Cable
B. Brake Hose
C. Throttle Cables
D. Breather Tube



A. Breather Hose (Blue)
B. Purge Hose (Green)
C. Canister
D. Hose



A. Alternator Leads
B. Separator (California Model)



A. Separator (California Model)
B. Breather Hose (Blue, Fuel Tank – Separator)
C. Breather Hose (Blue, Separator – Canister)
D. Fuel Return Pipe (Red)
E. Vacuum Hose (White)

Electrical System

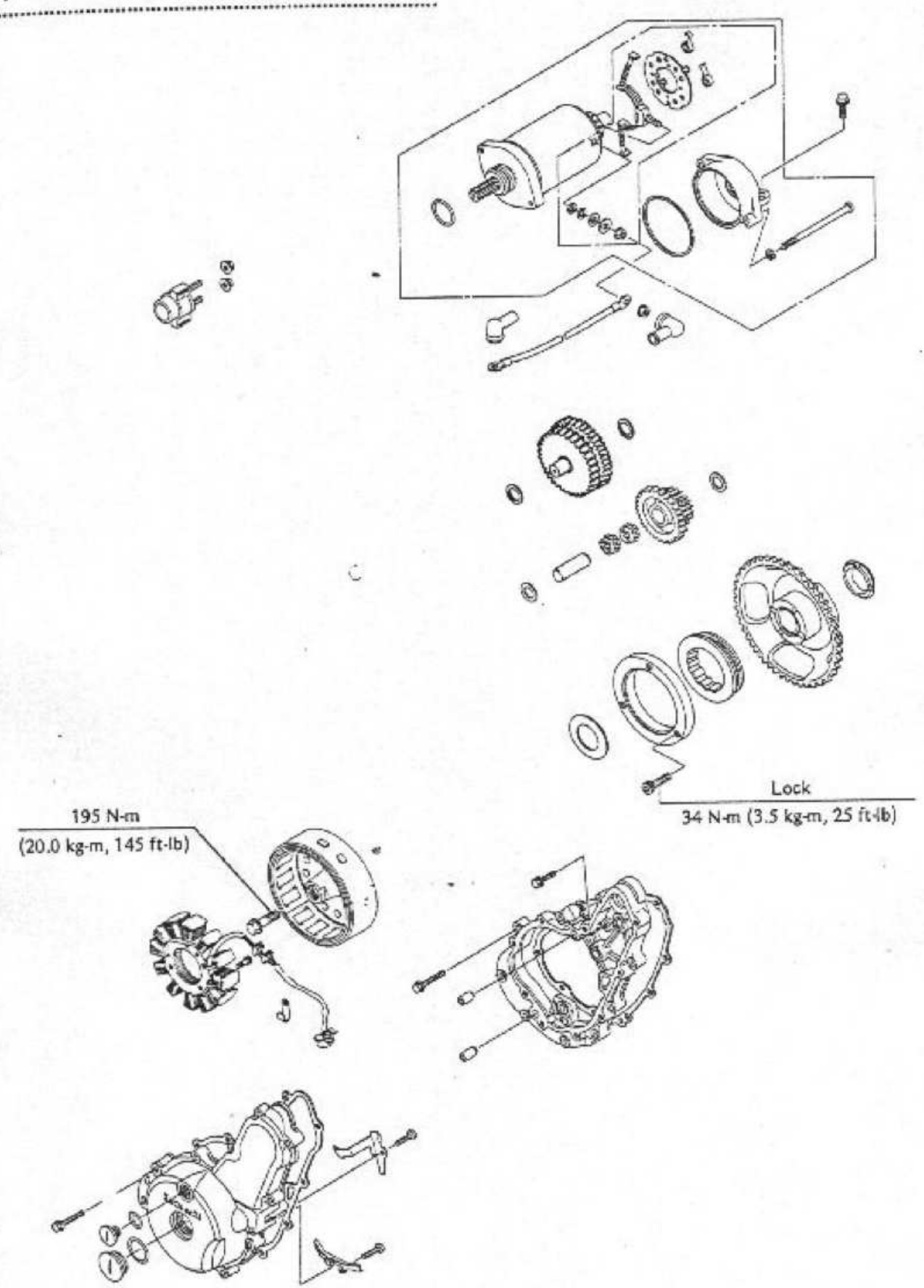
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* : Newly Introduced

Exploded Views



Lock: Apply a non-permanent locking agent to the threads

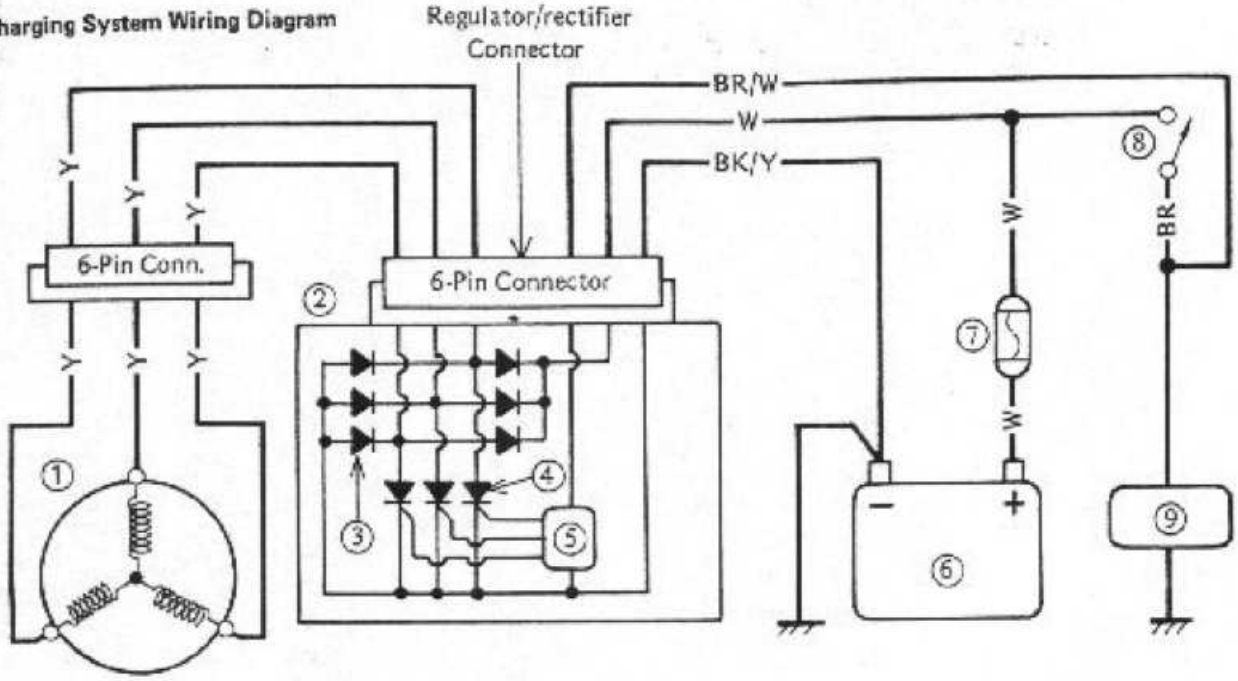
Service Data

The following specifications are only those that are changed and therefore unique to the KL600B models only. For all other data refer to the Base Manual.

Item	Standard
Battery:	
Capacity	12 V 14 Ah
Electrolyte amount	900 mL total
Charging system:	
Stator coil resistance	0.1 – 0.8 Ω
Ignition system	
Spark plug gap	0.8 – 0.9 mm
Starter System	
Starter motor:	
Carbon brush length:	Standard: 12 mm Service Limit: 8.5 mm
Commutator diameter:	Standard: 28 mm Service Limit: 27 mm

Charging System

Charging System Wiring Diagram



1. Magneto
2. Regulator/rectifier
3. Diodes
4. Thyristors
5. Control circuit
6. 12 V battery
7. 20 A fuse
8. Ignition switch
9. Loads

Stator Coil Resistance

Meter Connections:	
Lead location	Male regulator/rectifier connector (disconnected)
Meter range	x 1 Ω
One meter lead →	One yellow lead
Other meter lead →	Another yellow lead
Meter Reading:	0.1 – 0.8 Ω

Ignition System

Spark Plug Cleaning and Gapping

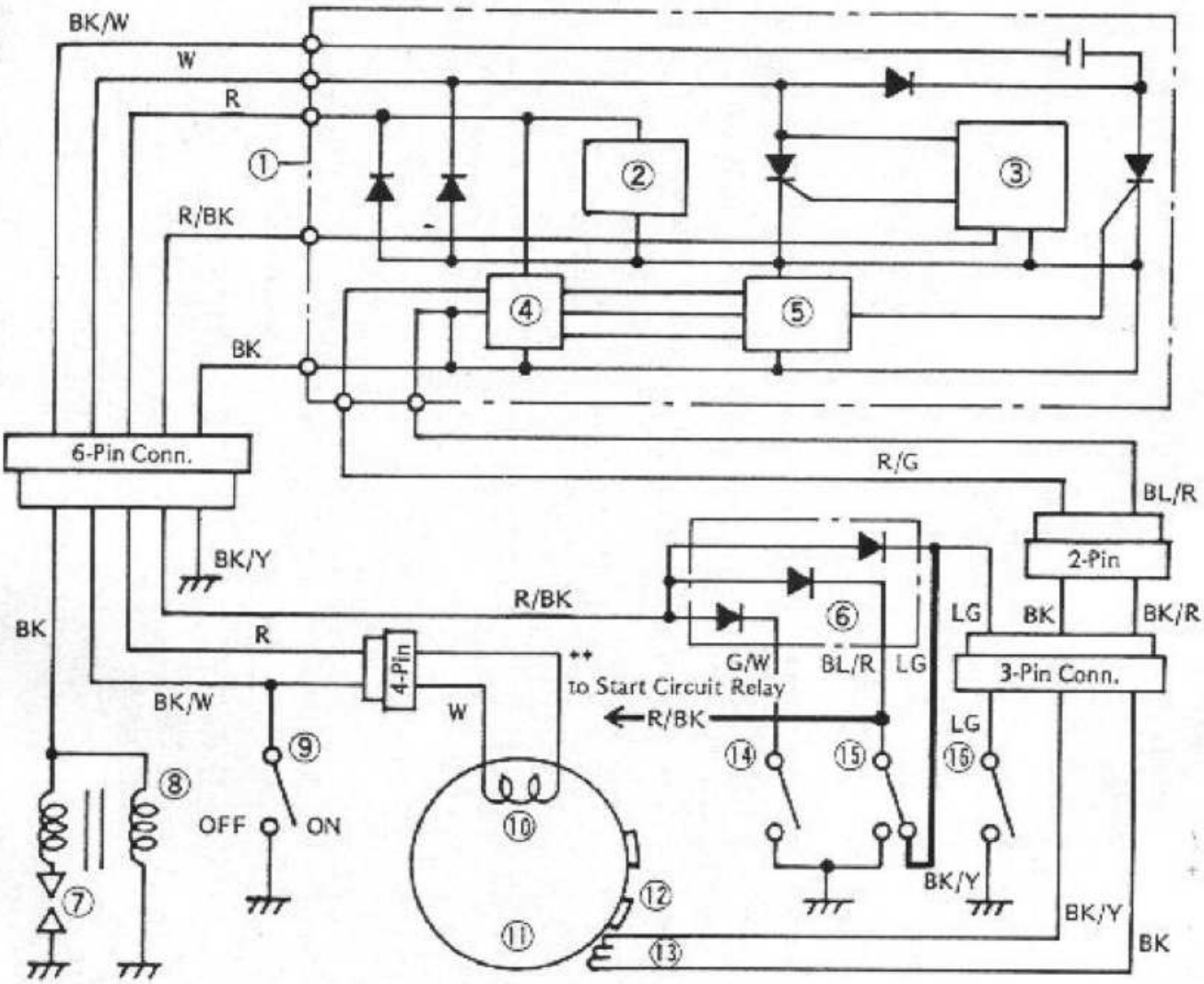
Standard Sprk Plug

Plug Type:	NGK DPR8EA-9 or ND X24EPR-U9
Ⓐ Ⓒa Ⓘ Ⓢ Ⓤ	NGK DP8EA-9 or ND X24EP-U9
Plug Gap:	0.8 – 0.9 mm
Tightening Torque:	14 N·m (1.4 kg-m, 10.0 ft-lb)

Ⓐ : Australian Model Ⓒa: California Model
Ⓢ : South African Model Ⓘ : Italian Model
Ⓤ : US model

Ignition System Maintenance

Ignition System Wiring Diagram



1. CDI Unit
2. Power Supply Circuit
3. Interlock Circuit
4. Ignition Timing Control Circuit
5. Thyristor Driving Circuit
6. Diode
7. Spark Plug
8. Ignition Coil
9. Engine Stop Switch
10. Exciter Coil
11. Flywheel Magneto
12. Timing Plate
13. Pickup Coil
14. Side Stand Switch (down)
*15. Starter Lockout Switch (engaged)
16. Neutral Switch (not in neutral)

NOTE

*The former "Clutch Switch" is renamed to "Starter Lockout Switch" (15).

**Additional wiring for starter circuit (drawn with thick lines).

Switch Inspection

Starter Lockout Switch Connections

Color	BK/Y	BL/R	LG
When the clutch lever is pulled on	○——	——○	
When the clutch lever is released		○——	——○

Color Code	
BK	Black
BL	Blue
BR	Brown
G	Green
GY	Gray
LB	Light Blue
LG	Light Green
O	Orange
P	Pink
R	Red
W	White
Y	Yellow

Engine Stop Switch Connections

	Engine Stop Switch				Starter Button		
	BK/W	BK/Y	BR			Y/R	
OFF	○——	——○					
RUN			○——	——○	○——	——○	Pushed

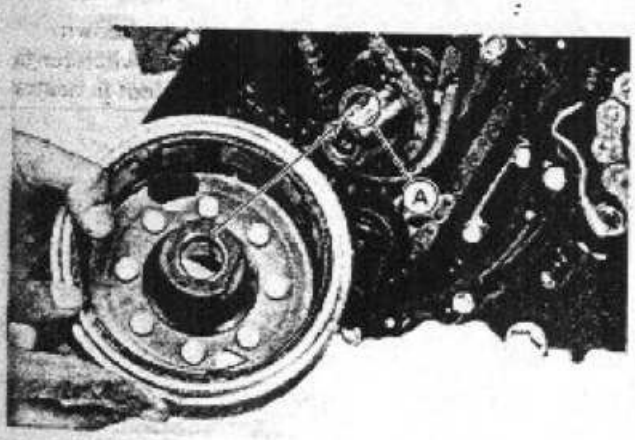
Exciter or Pickup Coil Inspection

Resistance of Exciter and Pickup Coil

Meter	:	x 10 Ω
Connections	:	female connectors (disconnected)
W – R	:	60 – 120 Ω (Exciter Coil)
BK/Y – BK	:	100 – 150 Ω (Pickup Coil)

Magneto Installation

- Clean off any oil or dirt that may be on the crankshaft taper or magneto flywheel hub.
- See that the key is fitted in place on the crankshaft properly, and then fit the flywheel in place.



A. Key

CAUTION

Oil, dirt, or incorrect tightening may cause the flywheel bolt loosening and the serious damage.

- Using the air wrench, tighten the bolt.
  Tightening torque: 110 N-m (11 kg-m, 80 ft-lb)
- Using the air wrench, loosen the bolt.
- Tighten the bolt with the air wrench.
  Tightening torque: 110 N-m (11 kg-m, 80 ft-lb)
- Using the torque wrench, tighten the bolt.
  Tightening torque: 195 N-m (20 kg-m, 145 ft-lb)

Electrical Starter System

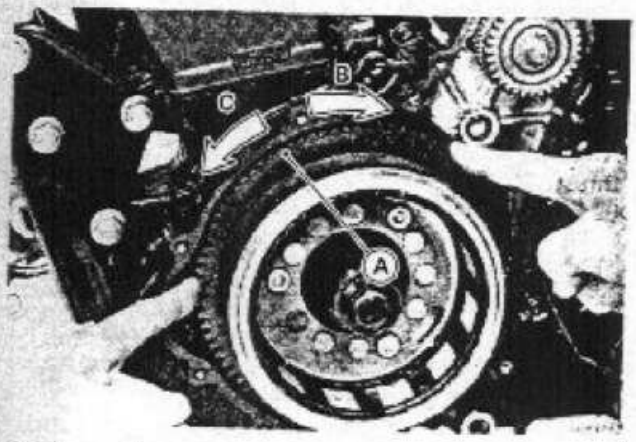
Starter Clutch:

This motorcycle uses a cam roller-type, one-way clutch for the starter clutch.

If the rollers or the starter clutch gear hub becomes damaged or worn, the rollers may lock in place so that the starter motor will not disengage when the engine starts. On the other hand, roller or gear hub damage could prevent the clutch from engaging properly, causing the starter motor to run freely without transmitting rotation.

Clutch Inspection

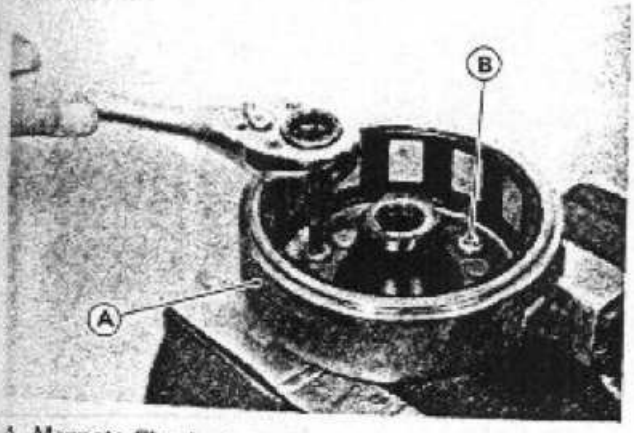
- Remove the alternator cover and starter idle gear, and turn the starter clutch gear by hand. The starter clutch gear should turn clockwise freely, but should not turn counterclockwise.
- If the clutch does not operate as it should or if it makes noise, disassemble the starter clutch, examine each part visually, and replace any worn or damaged parts.



A. Starter Clutch Gear C. Locked
B. Turns Freely.

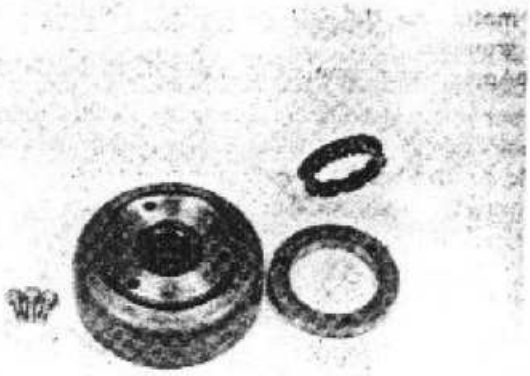
Starter Clutch Removal/Installation

- Pull off the magneto flywheel from the crankshaft.
- Holding the magneto flywheel in a vise, remove the Allen bolts (3).



A. Magneto Flywheel B. Starter Clutch Bolt

- Separate starter clutch assembly.



Installation Note

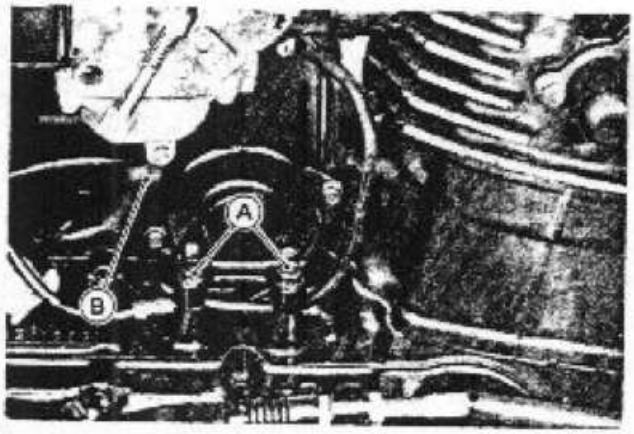
- When reassembling apply non-permanent locking agent to the threads of the Allen bolts and tightness them to the specified torque.

Tightening Torque

Starter Clutch Bolts: 34 N-m (3.5 kg-m, 25 ft-lb)

Starter Motor Removal/Installation

- Remove exhaust pipe.
- Disconnect lead from starter motor terminal.
- Unscrew starter motor mounting bolts (2) and pull the starter motor out of its guide.



A. Mounting Bolts B. Starter Motor Terminal

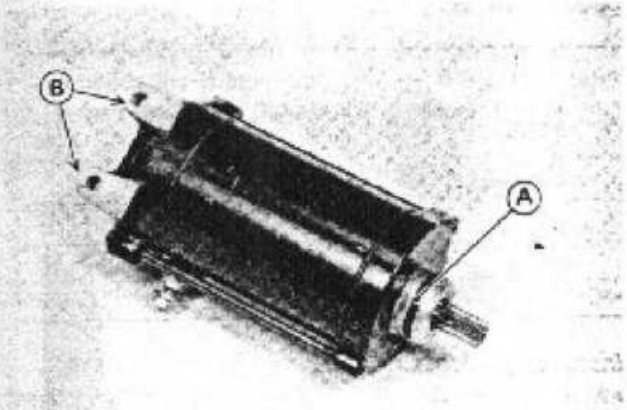
CAUTION

Do not tap the starter motor shaft or body. Tapping on the shaft or body could damage the motor.

Installation Note

•When installing the starter motor, clean the starter motor legs and crankcase where the starter motor is grounded.

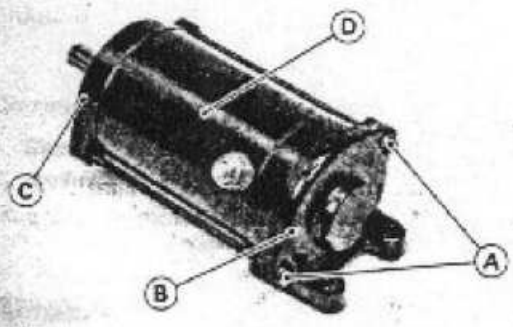
•Apply a small amount of engine oil to the O-ring.



A. O-ring B. Clean here.

Starter Motor Disassembly/Assembly

•Unscrew the retaining bolts and pull off front and rear cover.

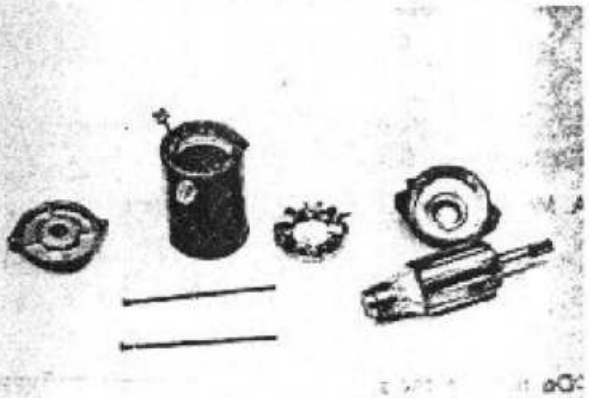


A. Retaining Bolts C. Rear Cover
B. Front Cover D. Pole Housing

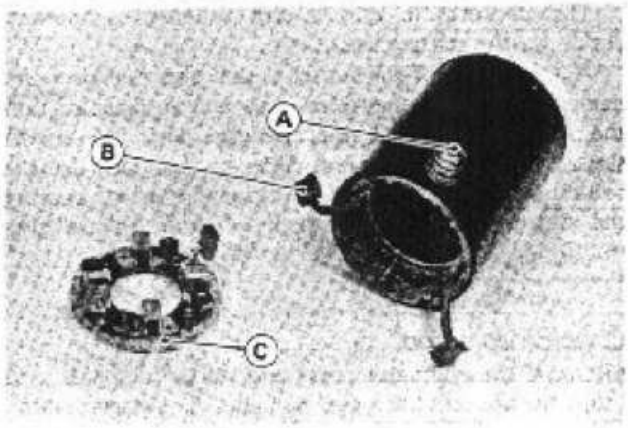
•Pull out starter motor rotor from pole housing.

•Free the carbon brushes from their holders.

•Carefully lift up the brushplate assembly and remove it.



•Remove nuts (2), washer and insulators (3) from the positive terminal and lift out the positive brush assembly.



A. Positive Terminal C. Brush Plate Assembly
B. Positive Brush Assembly

Assembling Note

○When reassembling remove the brush springs before inserting the starter motor rotor into the pole housing.

○After reinstalling the springs, check them for proper thrust.

○Be sure that the carbon brushes are not jamming.

Starter Motor Inspection

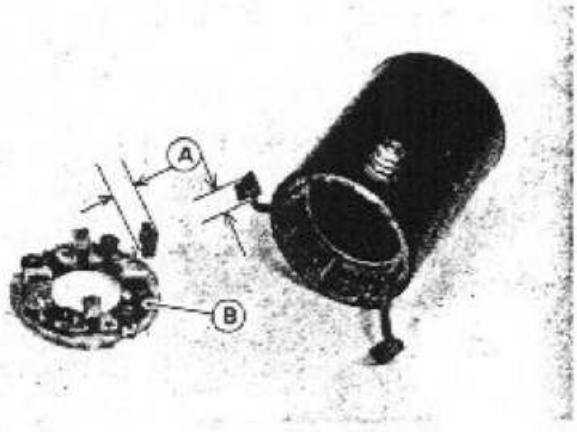
Brush Inspection

•Measure the length of each brush.

★If any is worn down to the service limit, replace all brushes.

Starter Motor Brush Length

Standard:	**12 mm**
Service Limit:	**8.5 mm**



A. Measure brush length. B. Brush Spring

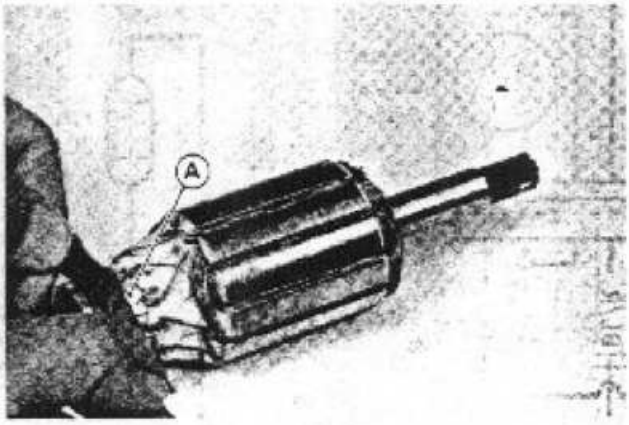
Brush Spring Inspection

•Check that the brush springs are in place and snap the brushes firmly into place.

★If not, reinstall or replace the spring.

Commutator Cleaning and Inspection

•Smooth the commutator surface if necessary with fine emery cloth, and clean out the grooves.



A. Commutator

•Measure the diameter of the commutator.

★Replace the starter motor with a new one if the commutator diameter is less than the service limit.

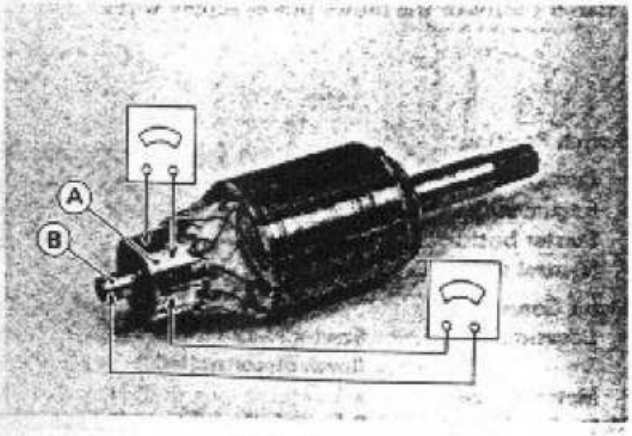
Commutator Diameter

Standard:	**28 mm**
Service Limit:	**27 mm**

Armature Inspection

•Using the x 1 Ω ohmmeter range, measure the resistance between any two commutator segments.

★If there is a high resistance or no reading (∞) between any two segments, a winding is open and the starter motor must be replaced.



A. Segment B. Shaft

•Using the highest ohmmeter range, measure the resistance between the commutator and the shaft.

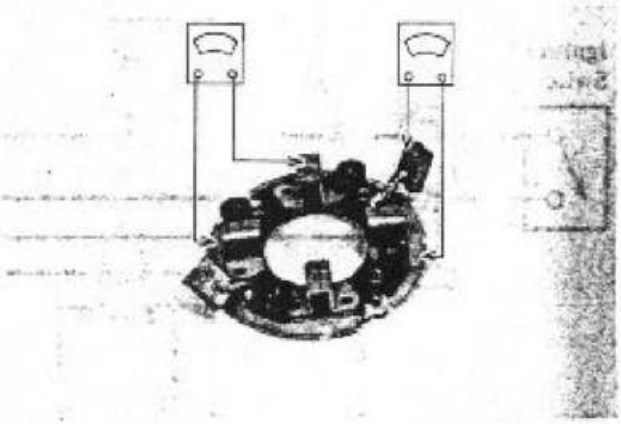
★If there is any reading at all, the armature has a short and the starter motor must be replaced.

Even if the foregoing checks show the armature to be good, it may be defective in some manner not readily detectable with an ohmmeter. If all other starter motor and starter motor circuit components check good, but the starter motor still does not turn over or only turns over weakly, replace the starter motor with a new one.

Brush Plate Inspection

•Using the x 1 Ω ohmmeter range, measure the resistand between the negative brushes and the plate.

★If there is not close to zero ohms, the brush plate must be replaced.



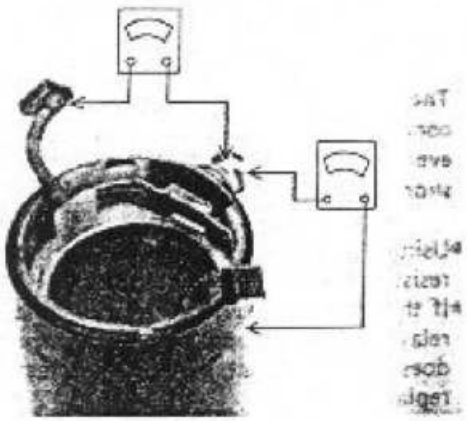
•Using the highest ohmmeter range, measure the resistance between the metal plate and the brush holders.

★If there is any reading at all, the brush holder has a short and the brush plate must be replaced.

Brush and Lead Assembly Inspection

•Using the x 1 Ω ohmmeter range, measure the resistance between the positive brush and the terminal bolt.

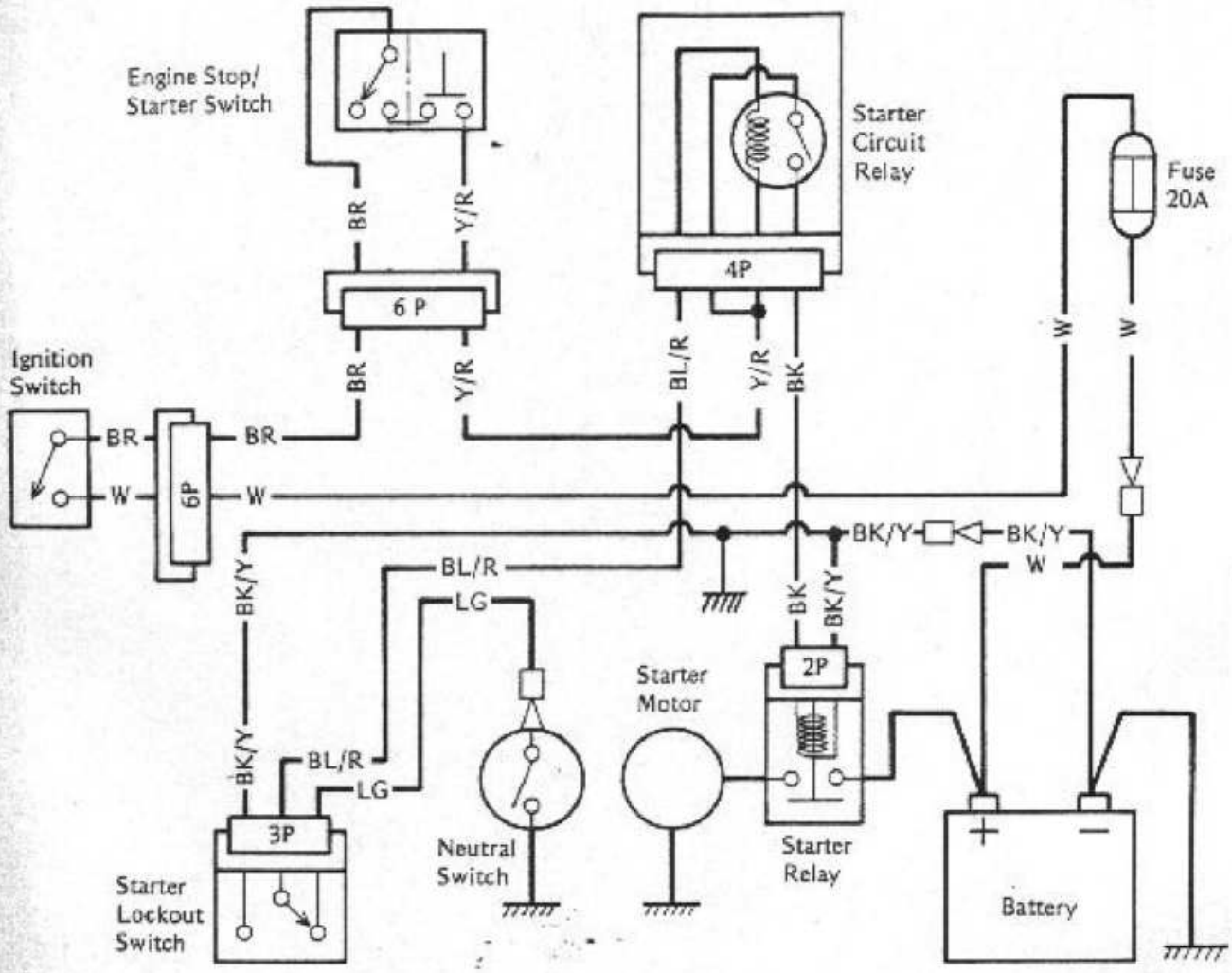
★If there is a high resistance or no reading (∞), a lead is open and the brush and lead assembly must be replaced.



•Using the highest ohmmeter range, measure the resistance between the terminal bolt and the pole housing.

★If there is any reading at all, the insulation is faulty and the positive brush assembly must be replaced.

Electric Starter Circuit System Wiring Diagram



Starter Relay Inspection

•Disconnect the starter motor lead and battery positive (+) lead from the starter relay.

CAUTION

○**The battery positive (+) lead with the rubber cap is connected directly to the battery positive (+) terminal even when the ignition switch is off, so take care not to short the removed lead to chassis ground.**

•Using the x 1 Ω ohmmeter range, measure the resistance across the relay terminals.

★If the relay clicks but the meter does not read zero, the relay is defective and must be replaced. If the relay does not click at all, the relay is defective and must be replaced.

★If the relay makes a single clicking sound and the meter reads zero the relay is good. The trouble is in the starter motor or the motor power supply wires.

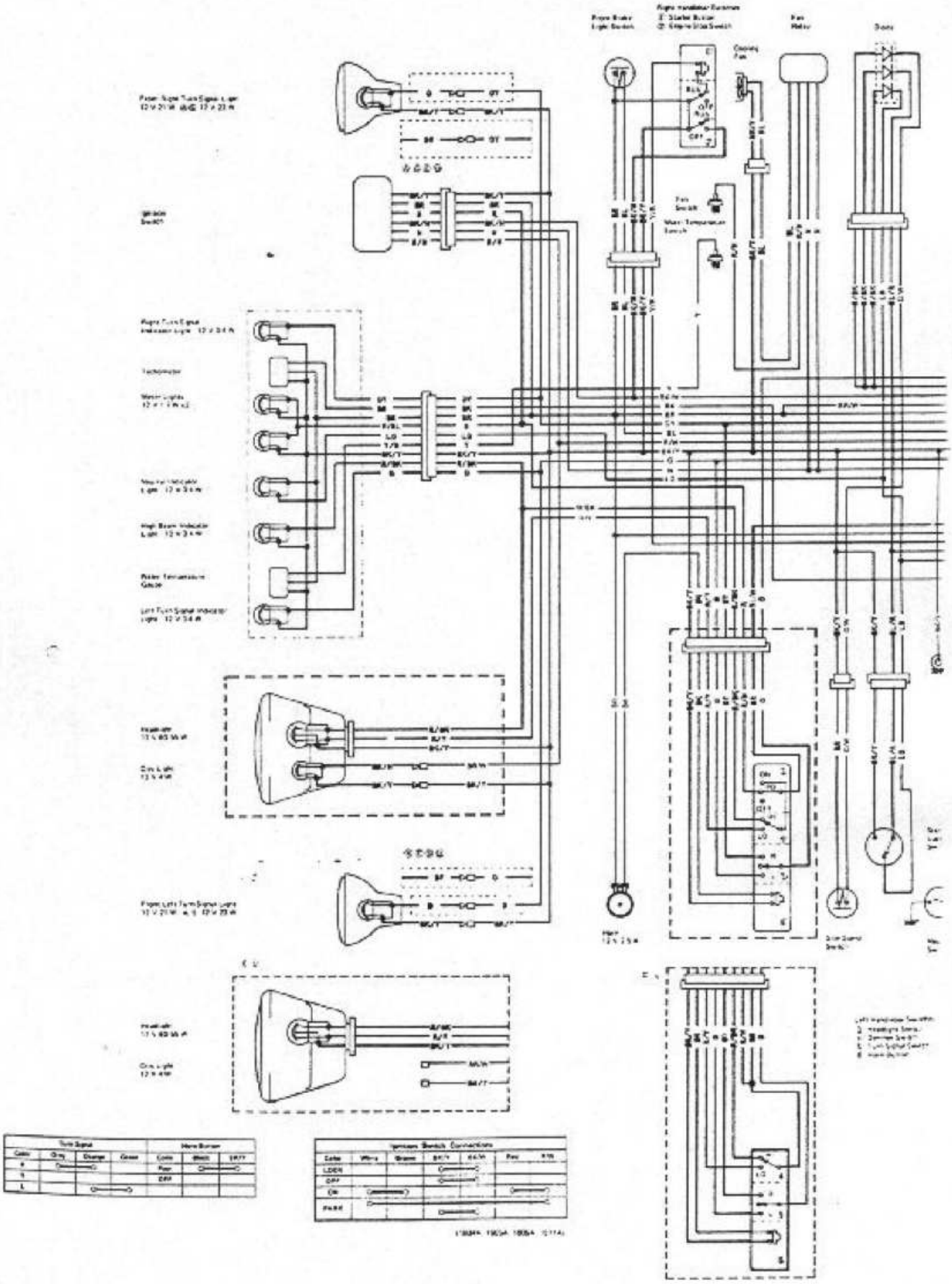
Switch Position:

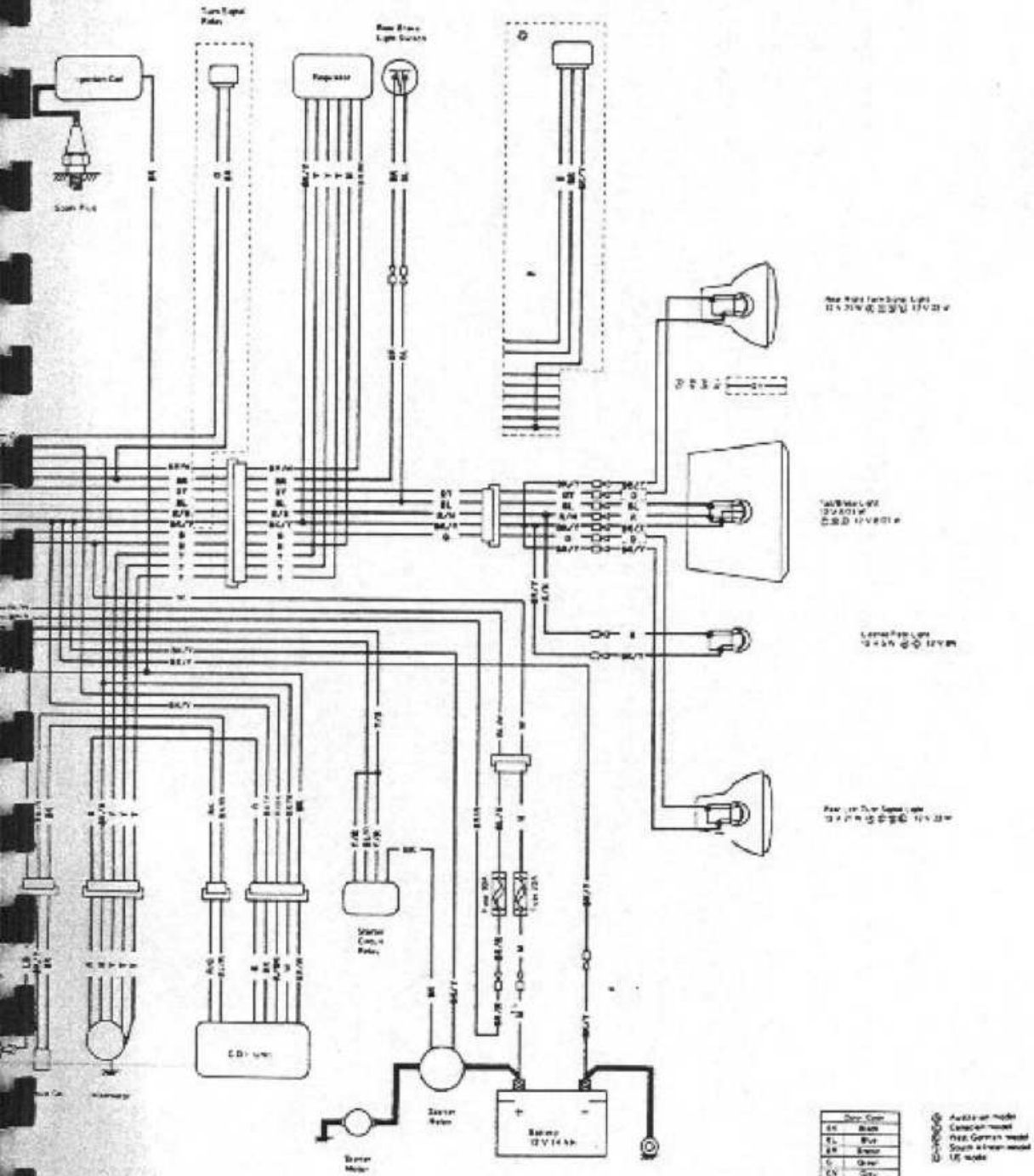
Ignition switch ON
Engine stop switch RUN
Starter button ON
Neutral switch ON (Transmission is in Neutral)

Meter Connection:

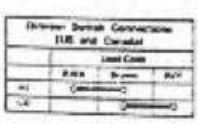
Location	**Starter relay terminals (leads disconnected)**
Meter Range	**x 1 Ω**
Meter Reading:	**0 Ω and relay clicks when starter button is pushed.**

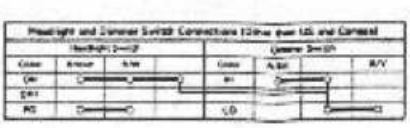
Wiring Diagram

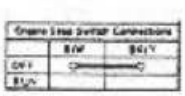












Appendix

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Carburetor ..... Base Manual

Spark Plug ..... Base Manual

Troubleshooting Guide 15-2

Unit Conversion Table ..... Base Manual

Troubleshooting Guide

The following troubleshooting guides are only those that are changed and therefore unique to the KL600B models only. For all other phenomenons refer to the Base Manual.

Engine Does'nt Start, Starting Difficulty:

Starter motor not rotating:

Starter motor damaged
Battery voltage low
Relay not contacting or operating
Starter button not contacting
Wiring open or shorted
Ignition switch damaged
Engine stop switch damaged
Engine stop switch off
Fuse blown
Starter lock out switch damaged

Starter motor rotating but engine doesn't turn over:

Starter motor clutch damaged
Alternator rotor bolt loosened