

**KYMCO**

**SERVICE MANUAL**

**GR1**

KYMCO  
OVERSEAS SALES DEPARTMENT  
OVERSEAS SERVICE DIVISION

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## PREFACE

This service manual describes the servicing procedures and special inspection/adjustment instructions for the KYMCO GRI.

In this manual, many illustrations and drawings are used for better understanding.

The information and contents included in this manual may be different with the motorcycle in case specifications are changed.

KWANG YANG MOTOR CO., LTD.  
SERVICE DIVISION  
EDUCATION SECTION



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## SPECIFICATIONS

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# SPECIFICATIONS

## SPECIFICATIONS

Name & Model			KYMCO GRI		Lubricating Oil Capacity(ℓ)		0.9		
Overall Length (m)			1.590		Air Cleaner Type & No.		Full-flow Filtration, 1		
Overall Width (m)			0.590		Fuel Capacity (ℓ)		3.0		
Overall Height (m)			0.990		Carburetor	Type		PB 80	
Wheel Base (m)			1.165			Piston Dia. (mm)		13	
Engine Type			AF18E			Venturi Dia.		14 equivalent	
Displacement (cc)			49 cc		Ignition System Type		CDI Electromagnetic Ignition		
Weight (Kg)	Front Wheel		21		Ignition Timing F Mark		17 ° BTDC / 1,800rpm		
	Rear Wheel		35		Spark Plug	NGK	BR6HSA, BR7HSA, BR8HSA		
	Total		56				ND	W20FSRW, W24FSR	
Seating Capacity			1			Spark Plug Gap (mm)		0.6 ~ 0.7	
Dry Weight (Kg)	Front Wheel		40		Battery Capacity (AH)		3 (10)		
	Rear Wheel		71		Power to Transmission Gear		Power - Transmission gear - Clutch		
	Total		111		Reduction Ratio of Power to Transmission Gear				
Tires	Front Wheel		3.00-8 2PR		Clutch Type		Dry Multi-disc Clutch		
	Rear Wheel				Transmission Gear Operation Type		Automatic Centrifugal Type		
Ground Clearance (m)			0.100		Transmission Ratio		1 Speed	3.000 ~ 0.850	
Braking Distance (m) (Initial Speed km/h)			3.5 (20)		Reduction Gear	Type		2-speed Reduction	
Min. Turning Radius (m)			1.8			1st Reduction Ratio		3.076	
Starting System			Starting Motor and Kick Starter			2nd Reduction Ratio		3.461	
Type			Gasoline, 2-stroke Motor Oil		Transmission Gear Type		Non-stage Transmission		
Cylinder Arrangement			Single Cylinder Flat		Tire Pressure (kg/cm²)		Front	1.50	
Combustion Chamber Type			Semi-sphere			Rear	1.75		
Valve Arrangement			Reed Valve with Piston		Turning Angle		45° Right and Left		
Bore x Stroke (mm)			39.0 × 41.4 mm		Brake System Type		Front	External Expanding	
Compression Ratio			7.2:1			Rear	External Expanding		
Compression Pressure(kg/cm² rpm)			10.0kg/cm² - 600rpm		Suspension Type		Front	Bottom Link Type	
Max. Output (ps/rpm)			6.8ps/7000 rpm			Rear	Swing Arm Type		
Max. Torque (kg m/rpm)			0.73kg-m/6500rpm		Absorber Type		Front	Simple Double Action	
Port Timing	Intake	Open	Automatic Controlled		Frame Type	Rear	Simple Single Action		
		Close	Automatic Controlled						
	Exhaust	Open	84 ° BBDC						
		Close	84 ° BBDC						
	Scavenge	Open	58 ° BBDC						
		Close	58 ° ABDC						
Idle Speed (rpm)			1.800 ± 100rpm						
Lubrication Type			Separate Type						
Oil Pump Type			Plunger Type						
Oil Filter Type			Full-flow Filtration						



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## GENERAL INFORMATION

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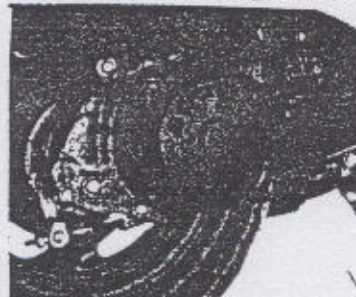


## GENERAL INFORMATION

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### ● FRAME SERIAL NUMBER/IDENTIFICATION

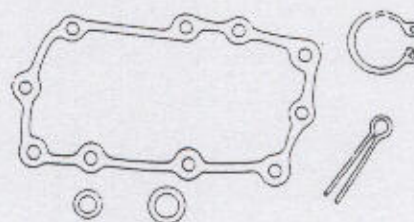
Location of Engine Number



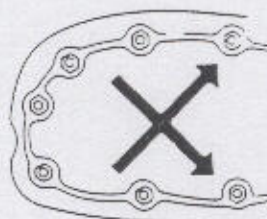
## GENERAL INFORMATION

### OPERATION PRECAUTIONS

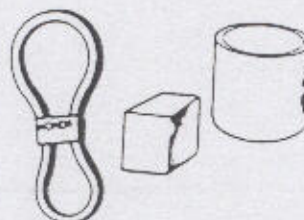
- Make sure to install new gaskets, O-rings, ring clamps, cotter pins, etc. when reassembling.



- When tightening bolts or nuts, begin with larger-diameter to smaller ones at several times, and tighten to the specified torque diagonally.



- Use genuine parts and lubricants.



- When servicing the motorcycle, be sure to use special or common tools for removal and installation.



- After disassembly, clean removed parts. Lubricate sliding surfaces with engine oil before reassembly.

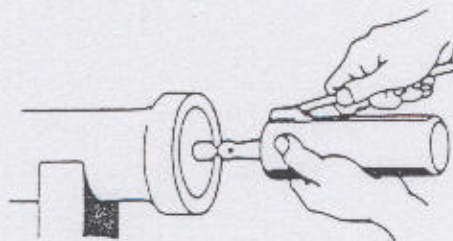




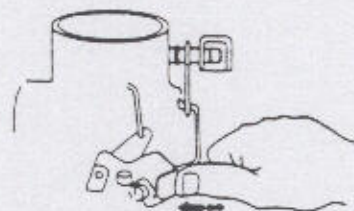
## GENERAL INFORMATION

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- Apply or add designated greases and lubricants to specified lubrication points.



- After reassembly, check all parts for proper installation and operation.

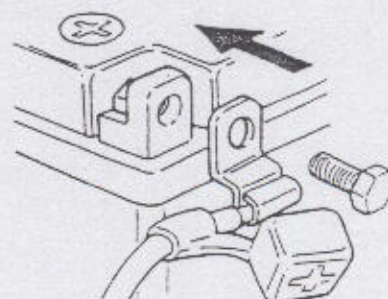
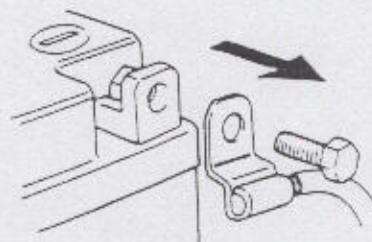


- When two persons work together, pay attention to the mutual working safety.

- Disconnect battery negative (-) terminal before operation.
- When using spanner and other tools, make sure not to damage the motorcycle surface.

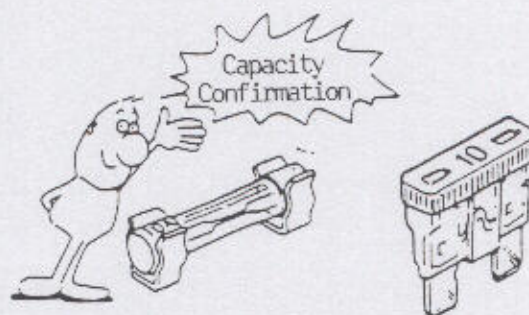


- After operation, check all connecting points, fasteners and lines for proper connection and installation.
- When connecting the battery, the positive (+) terminal shall be connected first.
- After connection, apply grease to battery terminals.
- Terminal caps shall be securely installed.

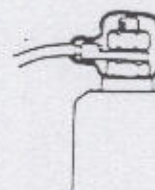


## GENERAL INFORMATION

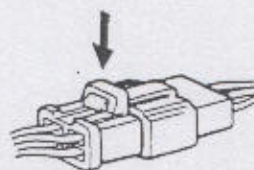
- If the fuse is burned out, find the cause and repair it. Replace with a new fuse according to designated specification.



- After operation, terminal caps shall be securely installed.



- When taking out the connector, the lock on connector shall be released before operation.

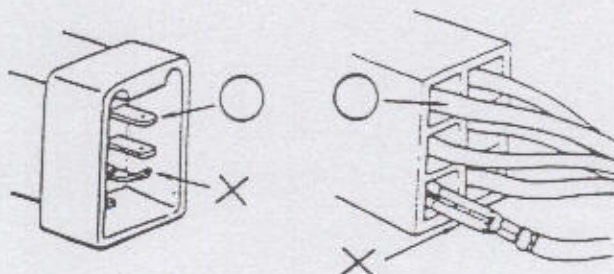


- Hold the connector body when connecting or disconnecting it.

- Do not pull the connector wire.



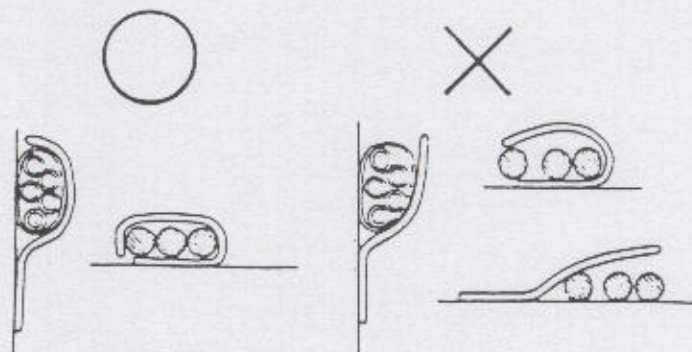
- Check if any connector terminal is bending, protruding or loose.





## GENERAL INFORMATION

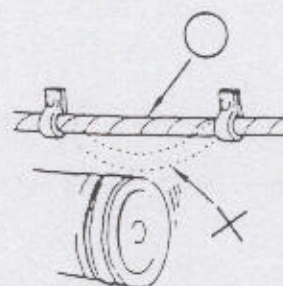
- The wire harness shall be firmly held by clips.



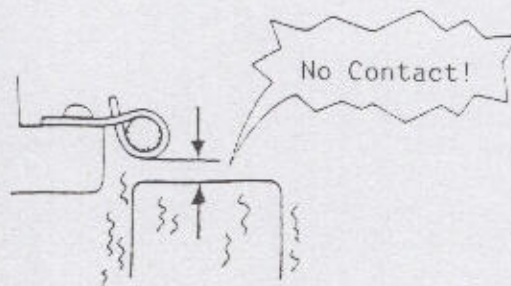
- For any clip welded on the motorcycle, do not make it hold wire at the welding point.



- When fixing the wire harness, do not make it contact the rotary, vibrating or movable parts.

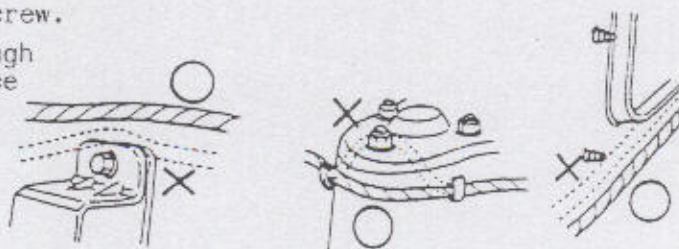


- When fixing the wire harness, do not make it contact the parts which will generate high heat.



- The wire harness shall pass through the side of sharp angle and do not place it on the pointed top of screw.

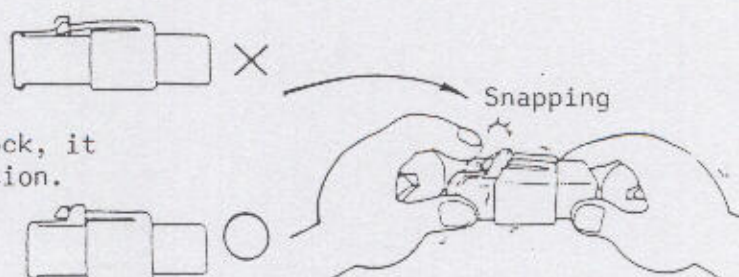
- The wire harness shall pass through the side of screw and do not place it on the pointed top of screw.



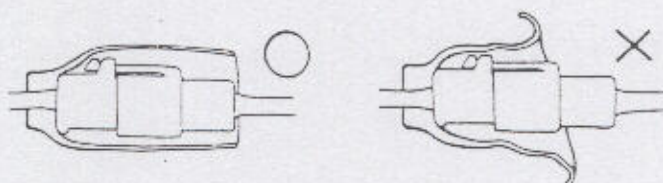


## GENERAL INFORMATION

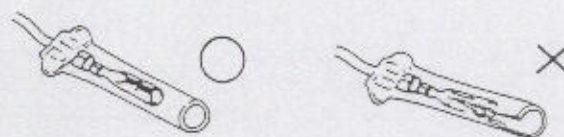
- The connector shall be completely inserted.
- If the double connector has a lock, it shall be locked at correct position.
- Check if there is any loose wire.



- Check the double connector cover for proper coverage and installation.



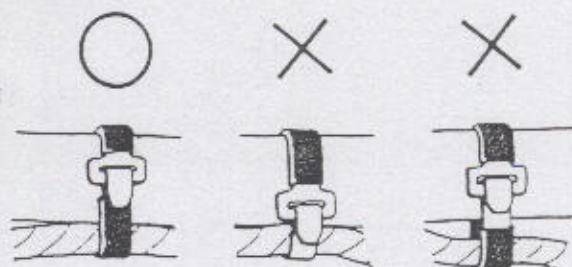
- Before connecting a terminal, check for damaged terminal cover or loose negative terminal.



- Completely insert the terminal.
- Check the terminal cover for proper coverage.
- Do not make the opening of terminal cover face up.



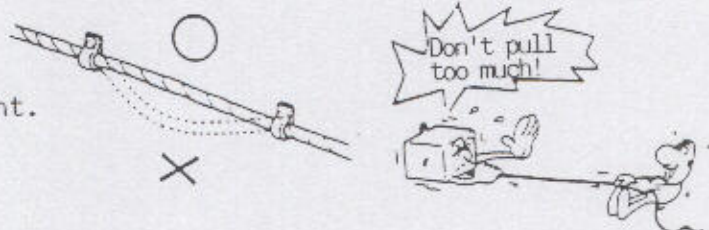
- The wire harness binding belt shall be securely fastened on the specified position. The insulator on the aluminium binding belt shall be fixed with the wire harness.



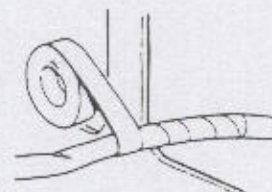


## GENERAL INFORMATION

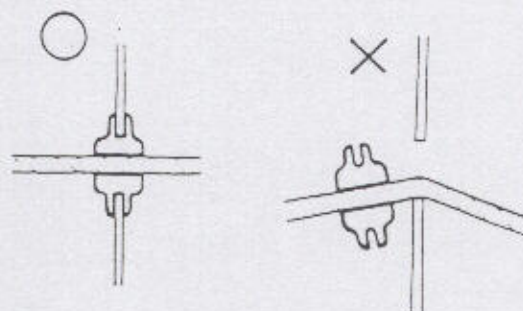
- The wire harness shall not be installed too loose or too tight.



- When wire harness has to contact sharp edge or angle, it shall be wrapped by tube or tape for protection.

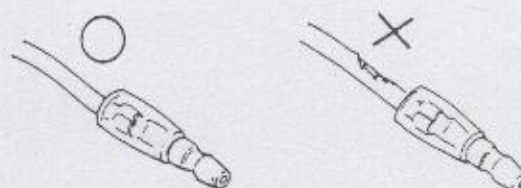


- When rubber protecting cover is used to protect the wire harness, it shall be securely fixed.

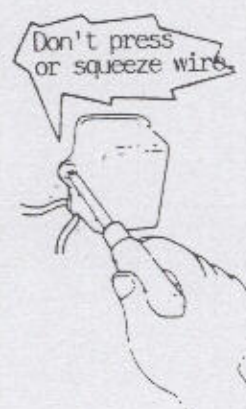


- Do not break the sheath of wire.

- If wire sheath is broken, wrap it with tape or replace it with a new one.

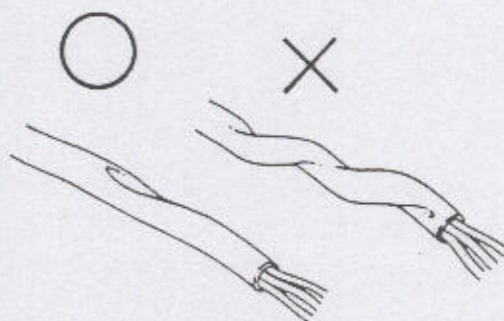


- When installing other parts, do not press or squeeze the wire.



## GENERAL INFORMATION

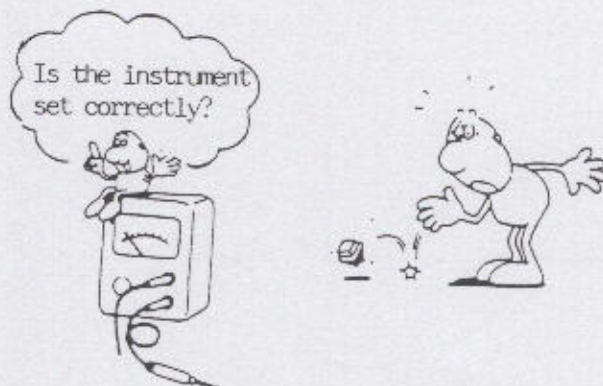
- Do not twist the wire harness during installation.



- Check if the wire harness is too loose, too tight, bending or rubbing sharp angle when the handlebar is turned right and left.



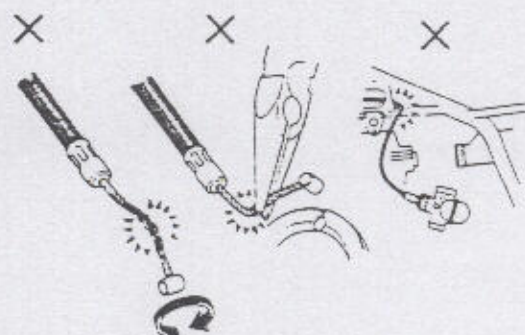
- When a testing device is used, make sure to understand the operating methods thoroughly and operate according to the operating instructions.



- Be careful not to drop any parts.



- When rust is found on a terminal, remove the rust with sand paper or equivalent before connecting.



- Squeezed, bending or damaged cable is the cause for poor operation.



## GENERAL INFORMATION

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### ■ Symbols:

The following symbols represent the servicing methods and cautions included in this service manual.



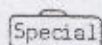
:Apply engine oil to specified points  
(Use designated engine oil for lubrication)



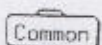
:Apply grease for lubrication



:Transmission gear oil (90#)



:Use special tool



:Use common tool



:Cautions



:Warning

(⇒12-3) :Refer to Page 12-3

## GENERAL INFORMATION

### ● SERVICE INFORMATION

#### ● ENGINE

Item	Standard (mm)	Service Limit (mm)
Cylinder head warpage	—	0.01
Piston O.D. (4mm from bottom of piston skirt)	38.960—38.965	38.90
Cylinder-to-piston clearance	0.035—0.050	0.10
Piston pin hole I.D.	12.002—12.008	12.03
Piston pin O.D.	11.994—12.000	11.98
Piston-to-piston pin clearance	0.002—0.014	0.03
Piston ring end gap (top, second)	0.10—0.25/0.10—0.25	0.40/0.40
Connecting rod small end I.D.	17.005—17.017	17.03
Cylinder bore	39.000—39.005	39.05
Drive belt width	18	17
Drive pulley bushing I.D.	20.035—20.085	20.130
Drive pulley boss O.D.	20.010—20.025	19.97
Weight roller O.D.	15.92—16.08	15.40
Clutch outer I.D.	107.0—107.2	107.5
Driven pulley spring free length	98.1	92.8
Driven pulley bushing O.D.	33.965—33.985	33.94
Driven pulley bushing I.D.	34.000—34.025	34.06
Connecting rod big end side clearance	0.15—0.55	0.60
Connecting rod big end radial clearance	0.007—0.019	0.04
Crankshaft runout A/B	0.05/0.03	0.15/0.10

#### ● CARBURETOR

Venturi dia.	1 4 mm equivalent
Identification number	PA31W
Float level	122
Main jet	#88
Idle jet	#35
Air screw opening (turns out)	$1\frac{1}{2} \pm \frac{1}{4}$
Idle speed	$1800 \pm 100$ rpm
Throttle grip free play	2—6mm
Jet needle clip notch	3rd notch



## GENERAL INFORMATION

### ● FRAME

Item		Standard (mm)	Service Limit (mm)
Axle shaft runout		—	0.2
Front wheel rim runout	Radial	—	2.0
	Axial	—	2.0
Front shock absorber spring free length		184	178
Rear wheel rim runout		—	2.0
Brake drum I.D.	Front/Rear	80/95	80.5/95.5
Brake lining thickness	Front/Rear	4.0/4.0	2.0/2.0
Rear shock absorber spring free length		229	222

### ● ELECTRICAL EQUIPMENT

Battery	Capacity	12V3AH
	Voltage	13.0~13.2V
	Charging rate	STD:0.4A/5hrs; Quick:4A/0.5hr
Spark plug		NGK BR6HSA BR7HSA BR8HSA ND W20FSR · W22FSR · W24FSR
Spark plug gap		0.6~0.7mm
Ignition coil resistance	Primary coil	0.2~0.3Ω
	Secondary coil (with spark plug cap)	8.0~9.5KΩ
	Secondary coil (without spark plug cap)	3.0~4.5kΩ
Pulser coil resistance (20°C)		50~200Ω
Ignition Timing		17° BTDC/1800rpm



## GENERAL INFORMATION

### TIGHTENING TORQUE

#### ENGINE

Item	Thread Dia (mm)	Torque (kg-m)	Remarks
Cylinder head bolt	6	0.8-1.2	(cold)
Front axle nut	10	3.5-4.0	
Drive pulley nut	10	3.5-4.0	
Clutch outer nut	10	3.5-4.0	
Driven face nut	28	5.0-6.0	
Oil level check bolt	8	1.0-1.5	
Engine mounting bolt	8	3.2-4.5	Flange U-nut
Engine hanger bolt	10	3.5-4.5	Flange U-nut
Exhaust pipe joint lock nut	6	1.0-1.4	Flange nut
Exhaust pipe lock bolt	8	2.4-3.0	Flange screw
Spark plug	—	1.1-1.7	(cold)

#### FRAME

Item	Thread Dia (mm)	Torque (kg-m)	Remarks
Handlebar lock bolt	10	4.0-5.0	Flange screw/U-nut
Steering stem nut	25.4	8.0-12.0	
Top ball race lock nut	25.4	0.5-1.3	
Front axle nut	10	4.0-5.0	Flange U-nut
Rear axle nut	14	8.0-10.0	Flange U-nut
Rear brake arm screw	5	0.4-0.7	Flange nut
Front shock absorber nut	8	2.4-3.0	Flange screw/U-nut
Front shock absorber bottom bolt	8	0.08-0.12	Cross head
Front shock absorber bottom nut	8	1.5-2.0	
Front damper lock nut	8	1.5-2.5	Apply screw locking agent
Front rocker shaft bolt	8	2.4-3.0	Flange screw/U-nut
Rear shock absorber nut	10	3.0-4.5	Flange nut
Rear shock absorber bottom bolt	8	2.0-3.0	
Rear damper lock nut	8	1.5-2.5	Apply screw locking agent

Torque specifications listed above are for important fasteners. Others should be tightened to standard torque values below.

#### STANDARD TORQUE VALUES

SH bolt: 6mm Flange 6mm bolt

Item	Torque (kg-m)	Item	Torque (kg-m)
5mm bolt and nut	0.45-0.6	5mm screw	0.35-0.5
6mm bolt and nut	0.8-1.2	6mm screw and SH bolt	0.7-1.1
8mm bolt and nut	1.8-2.5	6mm flange bolt and nut	1.0-1.4
10mm bolt and nut	3.0-4.0	8mm flange bolt and nut	2.4-3.0
12mm bolt and nut	5.0-6.0	10mm flange bolt and nut	3.5-4.5



## GENERAL INFORMATION

### ● SPECIAL AND COMMON TOOLS

#### ● SPECIAL TOOLS

Tool Name	Tool No.	Remarks	Ref. Page
Universal bearing puller	07631-0010000	Crankshaft bearing removal	10
Lock nut wrench 39mm	07916-187002	Drive face disassembly/ assembly	8
Lock nut wrench	07916-1870100	Top ball race holding	13
Lock nut wrench	07916-km10000	Steering stem nut removal/ installation	13
Crankcase puller	07935-GK80000	Crankcase disassembly	10
Crankcase puller	07935-KG80000	Crankcase disassembly	10
Bearing remover set 12mm (Remover set 12mm) (Block)	07936-1660001 (07936-1660100) (07741-0010201)	Drive shaft bearing removal	9
Bearing Remover set 15mm (Remover set 15mm) (Remover head 15mm) (Remover shaft)	(07936-kc10000) (07936-kc10500) (07936-kc10200) (07936-kc10100)	Final gear bearing removal	9
Bearing outer driver 28x30mm	07946-1870100	Bearing installation	13
Bearing driver	07945-GC80000	Driven outer bearing installation	8
Clutch spring compressor	07960-KM10000	Driven face disassembly/ assembly	8
Crankshaft assembly socket	07965-GM00100	Driven shaft, crankshaft, crankcase assembly	9-10
Crankshaft assembly shaft	07965-GM00300	Driven shaft, crankshaft, crankcase assembly	9-10
Rear shock absorber Remover A	07967-GA70101	Front shock absorber dis- assembly/assembly	13
Ball race driver	07946-GA70000	Steering stem bearing race	13
Rear shock absorber Remover B	07967-GA70200	Rear shock absorber dis- assembly/assembly	14
Absorber Compressor	07967-KM10100	Front shock absorber dis- assembly/assembly	13

#### ● COMMON TOOLS

Tool Name	Tool No.	Remarks	Ref. Page
Float level gauge	07401-0010000	Carburetor fuel level check	11
Universal holder	07725-0030000	Flywheel holding	7-8
Flywheel puller	07733-0010000	Flywheel removal	7
Driver pilot 12mm	07746-004200	Drive shaft bearing installation	9



## GENERAL INFORMATION

Tool Name	Tool No.	Remarks	Ref. Page
Bearing outer driver 32x35mm	07746—0010100	Drive shaft bearing and final gear bearing installation	9
Driver pilot	07746—0040300	Final gear bearing installation	9
Bearing outer driver 37x40mm	07746—0010200	Drive shaft bearing, final gear bearing and crankshaft bearing installation	9 10 - 13
Outer Remover 24x26mm	07746—0010700	Drive face bearing installation	8
Driver pilot 10mm	07746—0040100	Front wheel bearing installation	113
Bearing driver pilot 17mm	07746—0040400	Drive face bearing installation	8 - 9
		Drive shaft bearing, final gear bearing and crankshaft bearing installation	10
Bearing outer driver 42x47mm	07746—0010300	Crankshaft bearing installation	10
Driver pilot 20mm	07746—0040500	Crankshaft bearing installation	
Bearing outer driver handle (A)	07749—0010000	Bearing installation Drive in ball race	8 - 9 0 - 13
Bearing puller	07746—0050100	Front wheel bearing removal	13
Bearing puller head 10mm	07746—0050200	Front wheel bearing removal	13
Absorber spring compressor	07959—3290001	Front/rear shock absorber disassembly/assembly	13 - 14
Pressure Tester Set	07410—0010000 (07410—0020100) (07410—0020200)	Cylinder compression gauge	3



## GENERAL INFORMATION

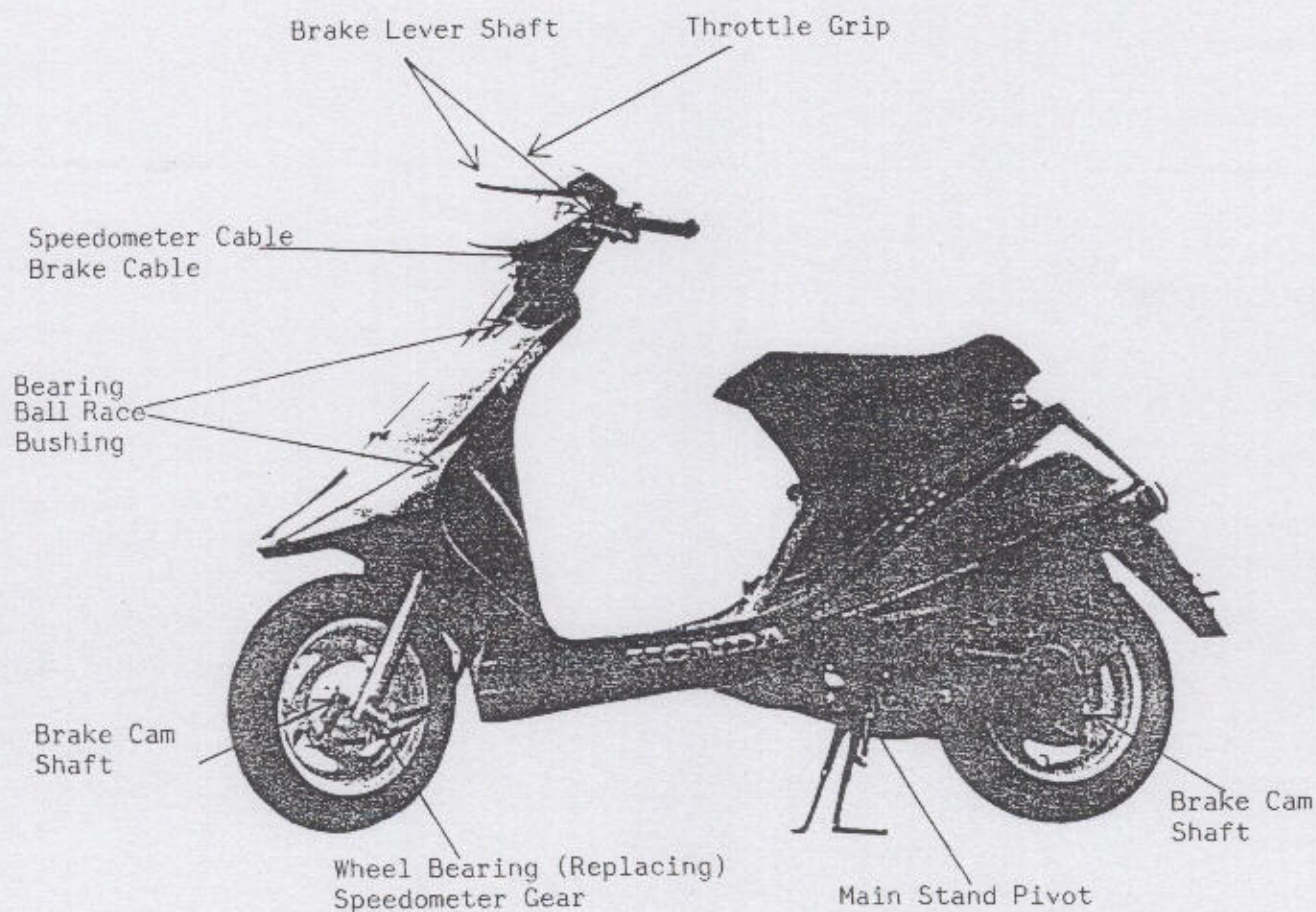
### LUBRICATION CHART

#### ENGINE

NO	Lubrication Points	Lubricant	Remarks
1	Crankcase sliding & movable parts	KYMC0 ULTRA 2-stroke Motor Oil	
2	Cylinder sliding parts		
3	Drive gearbox (Final gear)	KYMC0 SIGMA Gear Oil 90#	0.09ℓ
4	Kick starter spindle bushing	IDEMITSU Grease	
5	Movable drive face	IDEMITSU Grease オートレッツ7B	10-15g
6	Drive pinion	IDEMITSU Grease オートレッツ7B	

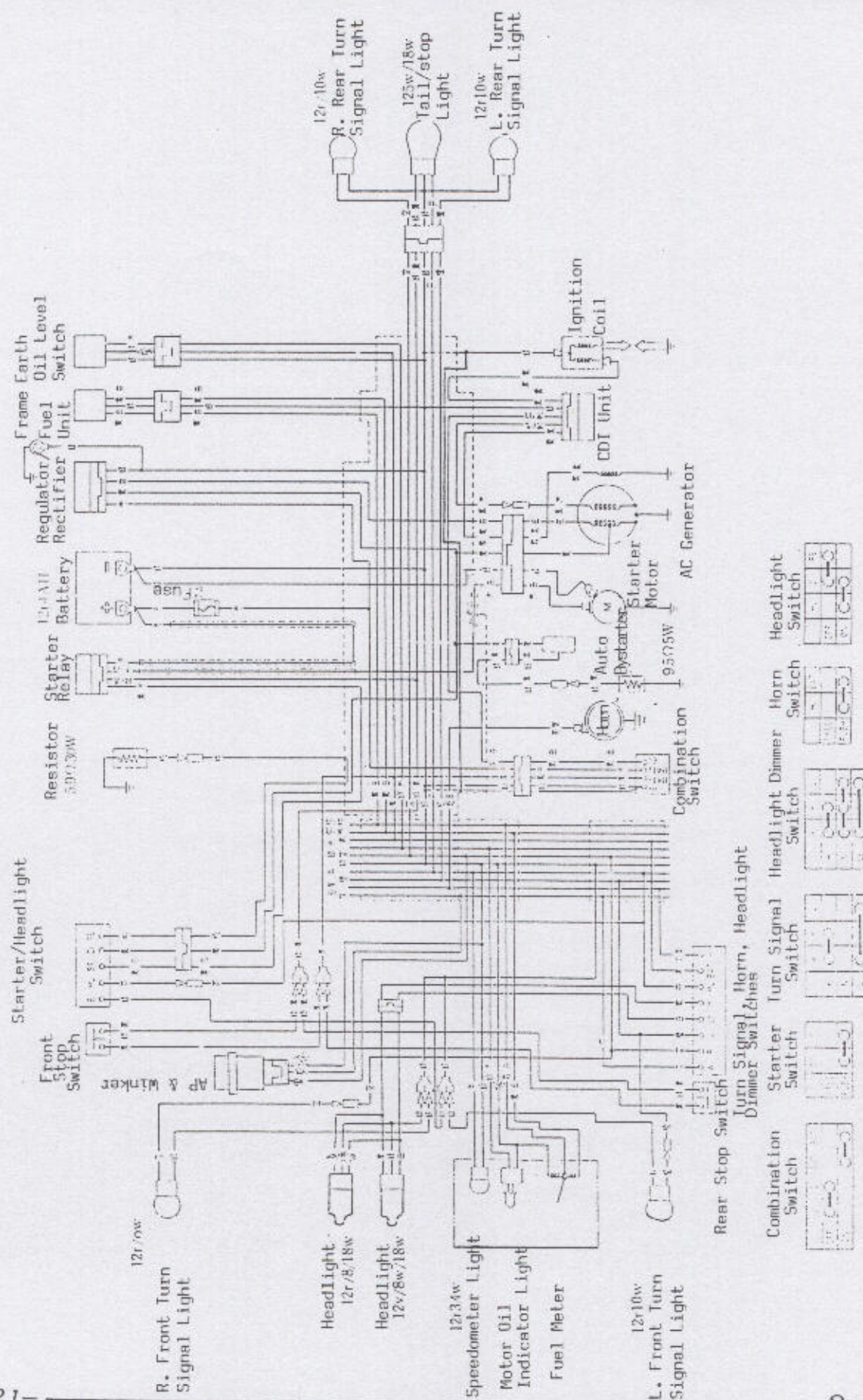
#### FRAME

Apply clean engine oil or grease to movable parts not specified. This will avoid abnormal noise and rise the durability of the motorcycle.





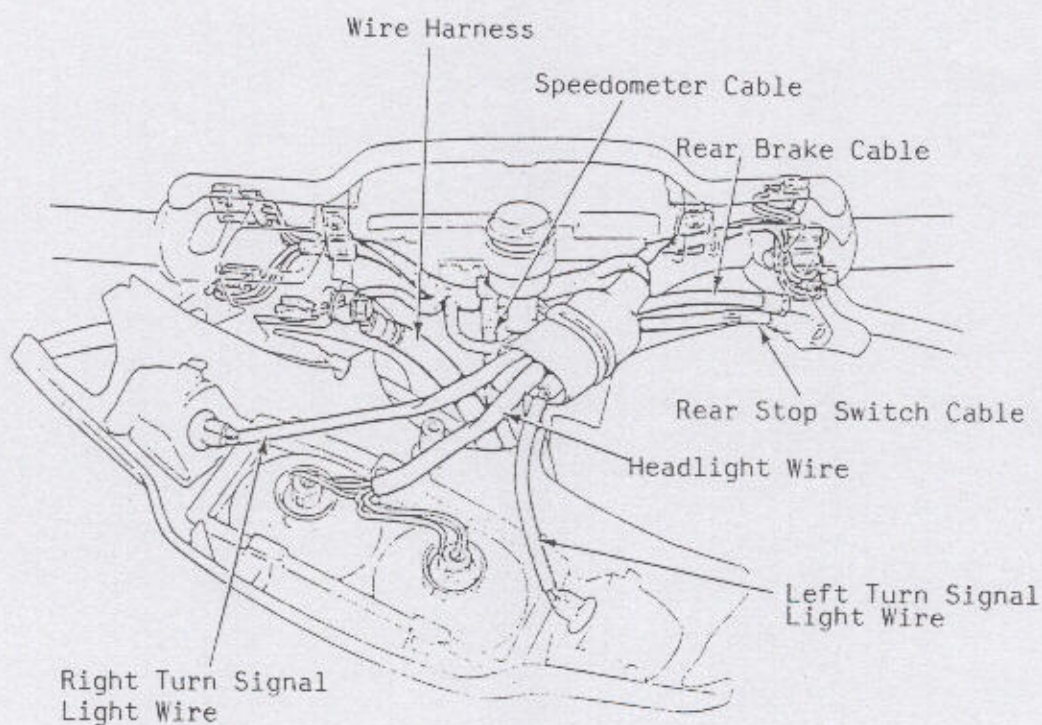
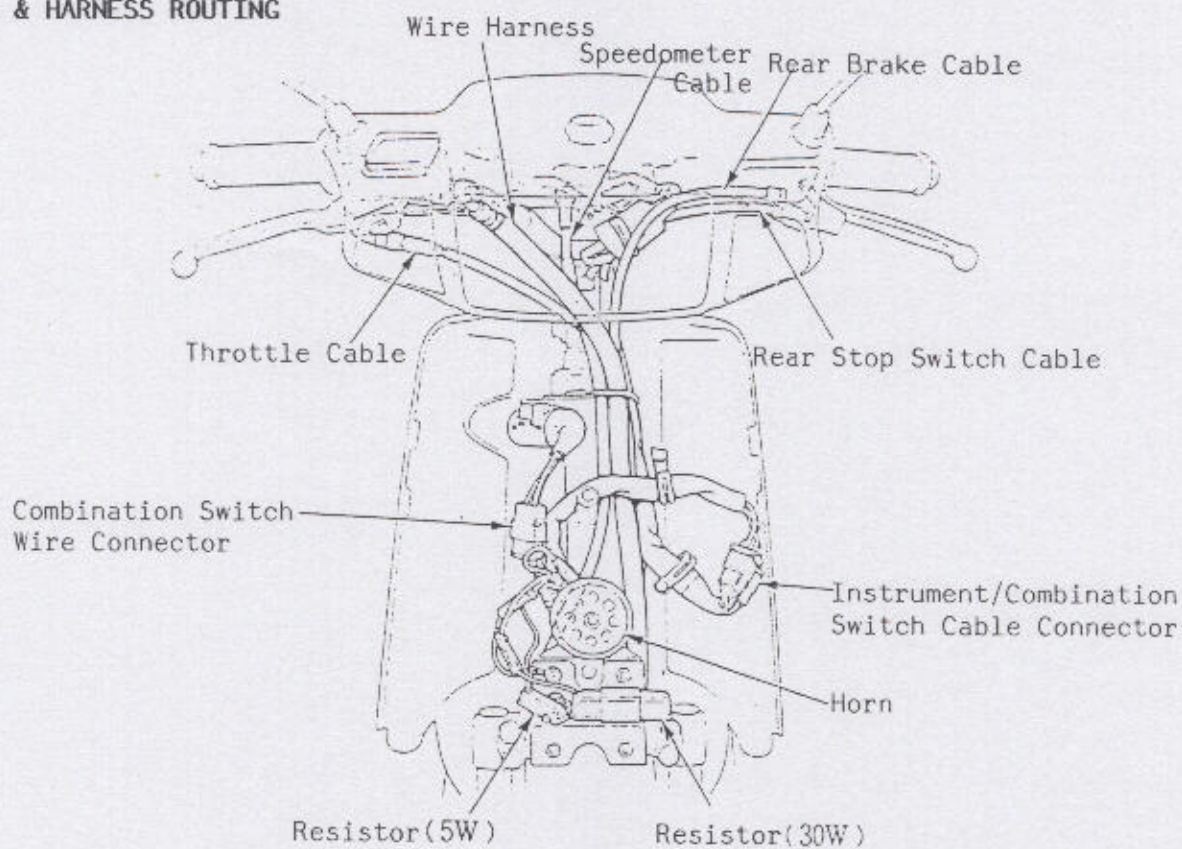
## WIRING DIAGRAM





## GENERAL INFORMATION

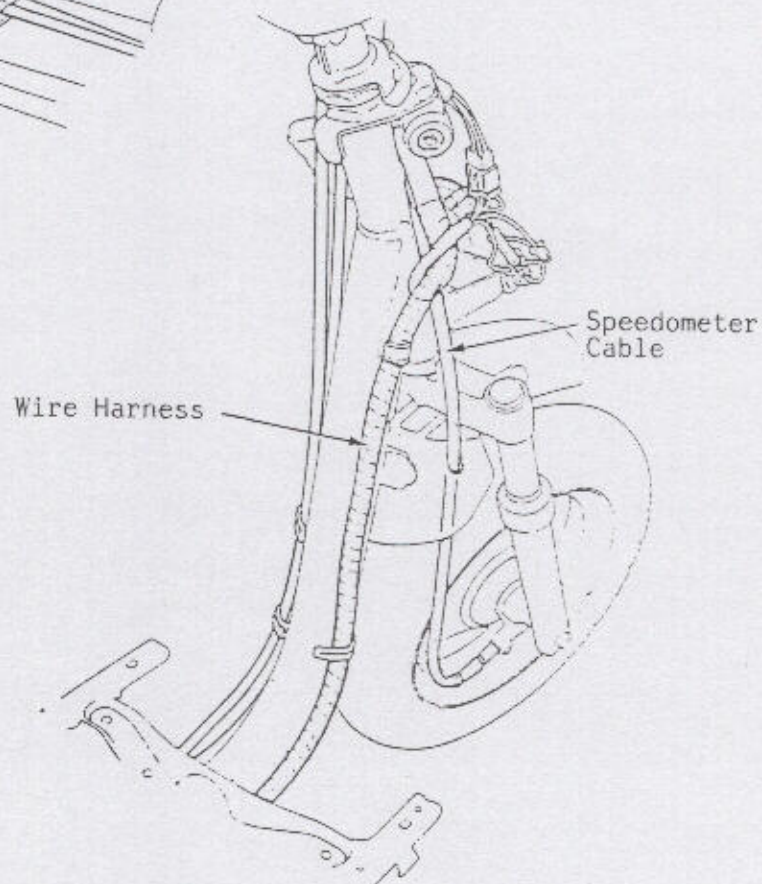
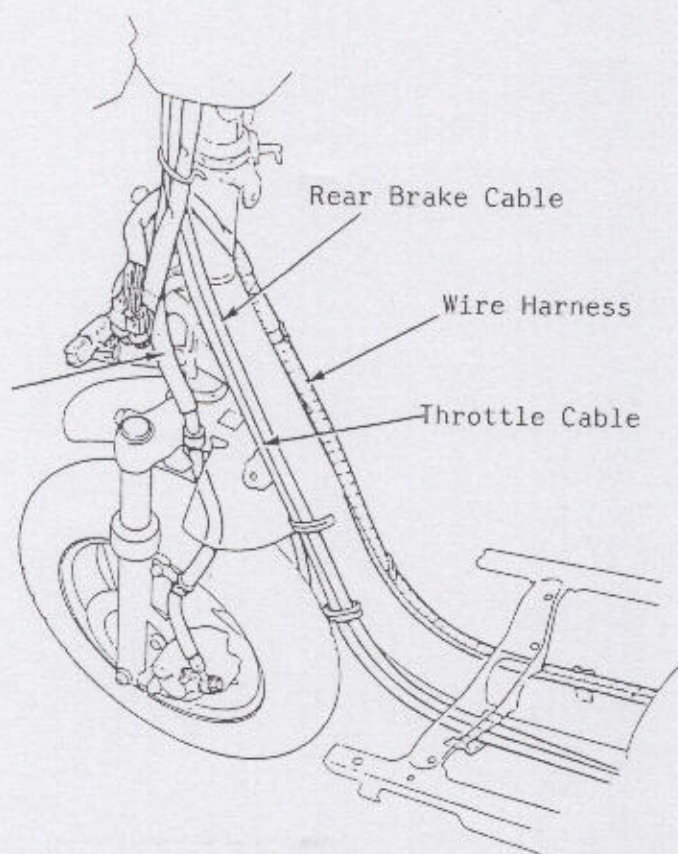
### CABLE & HARNESS ROUTING





## GENERAL INFORMATION

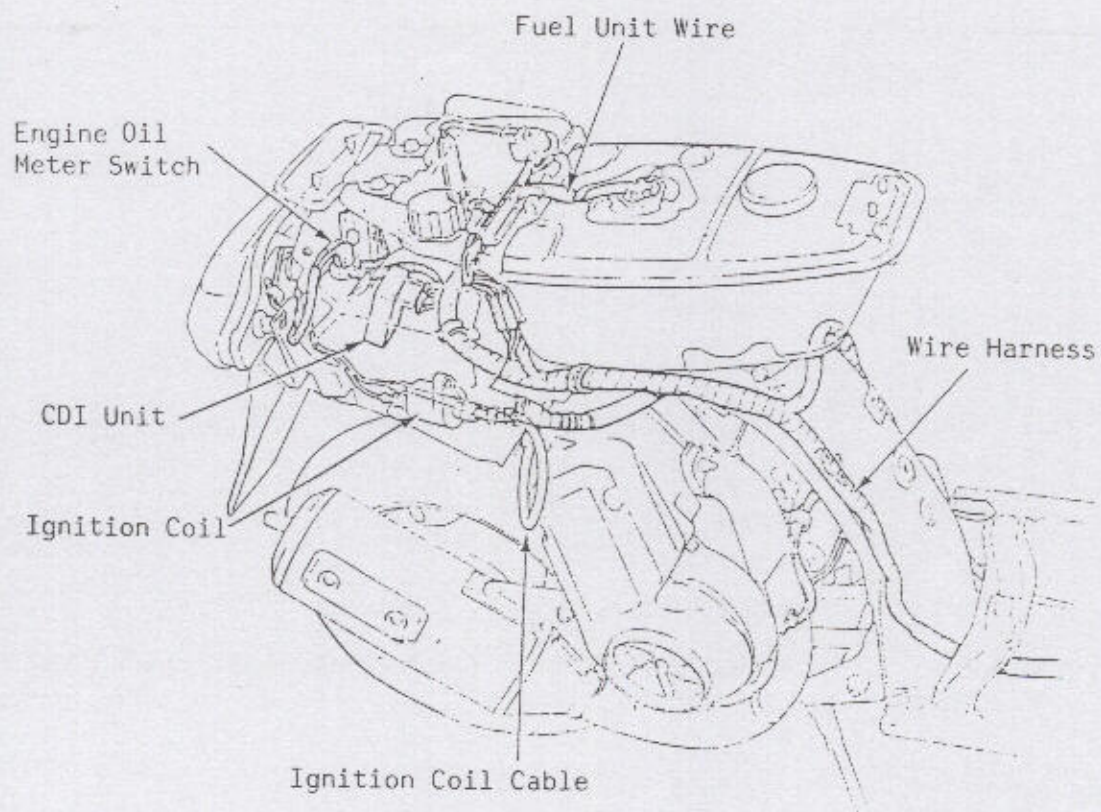
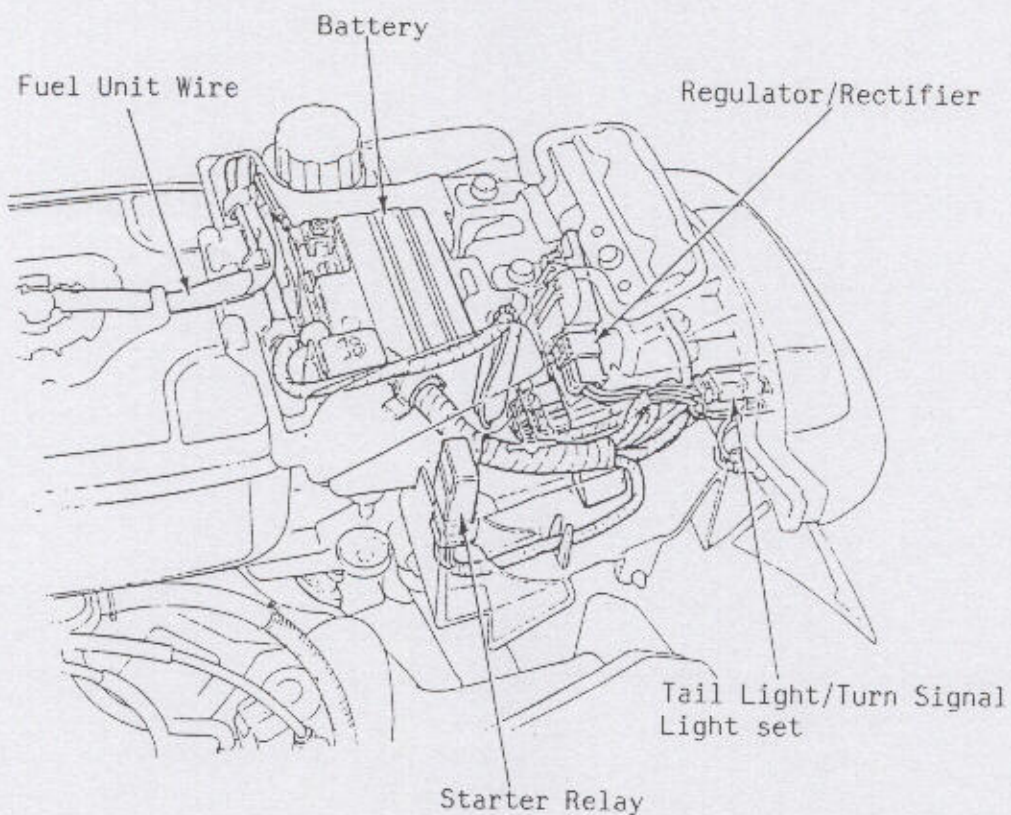
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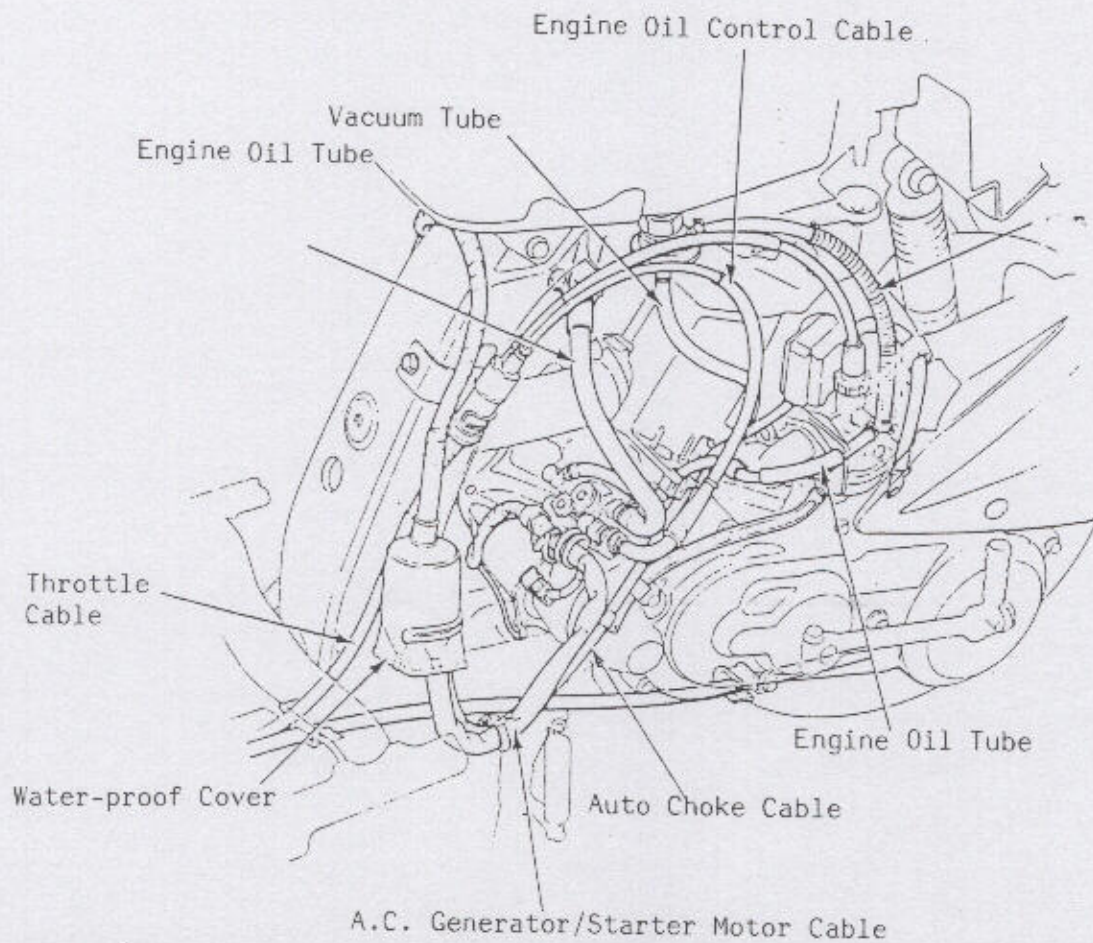


## GENERAL INFORMATION

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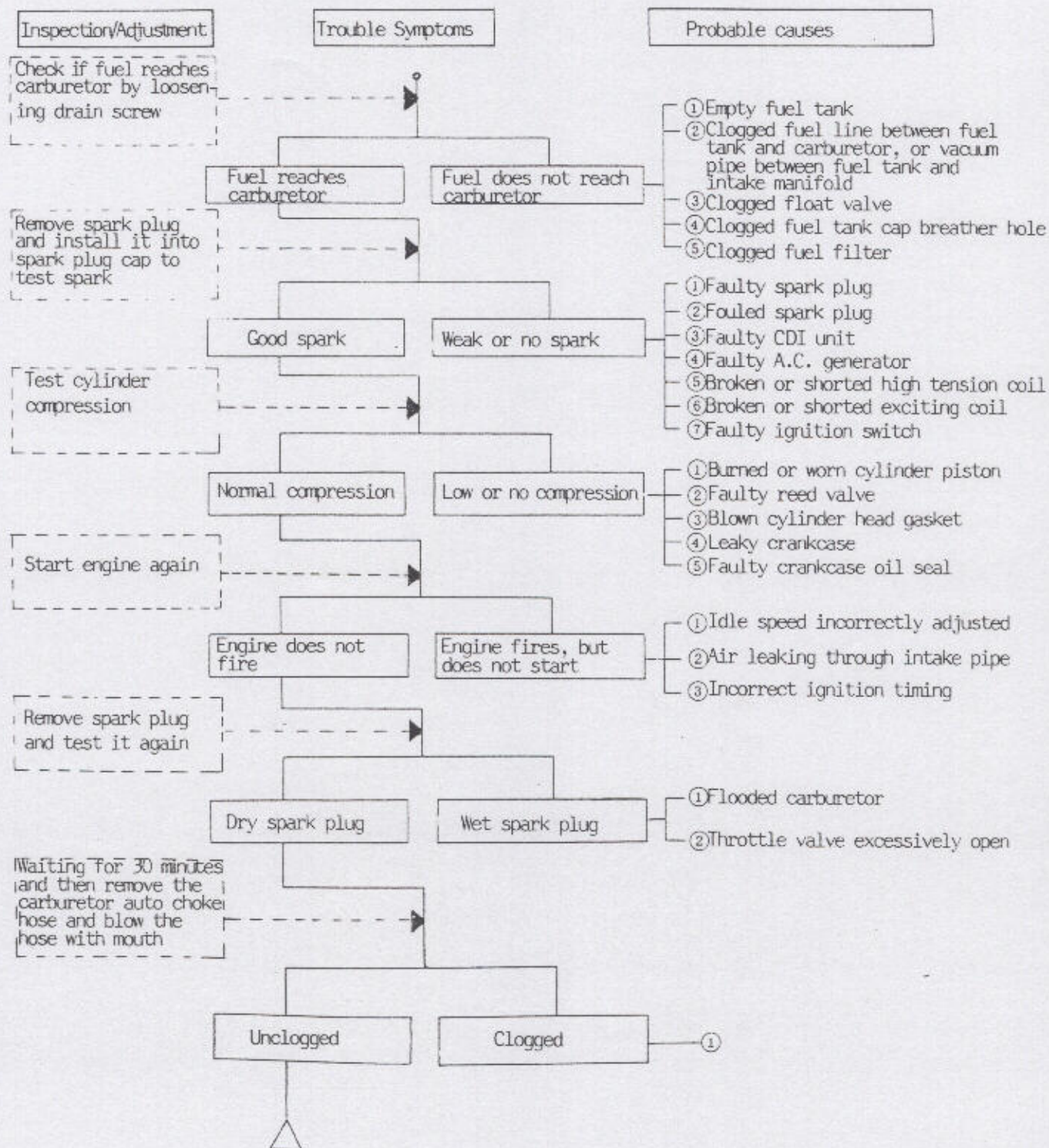




## GENERAL INFORMATION

### ● TROUBLESHOOTING

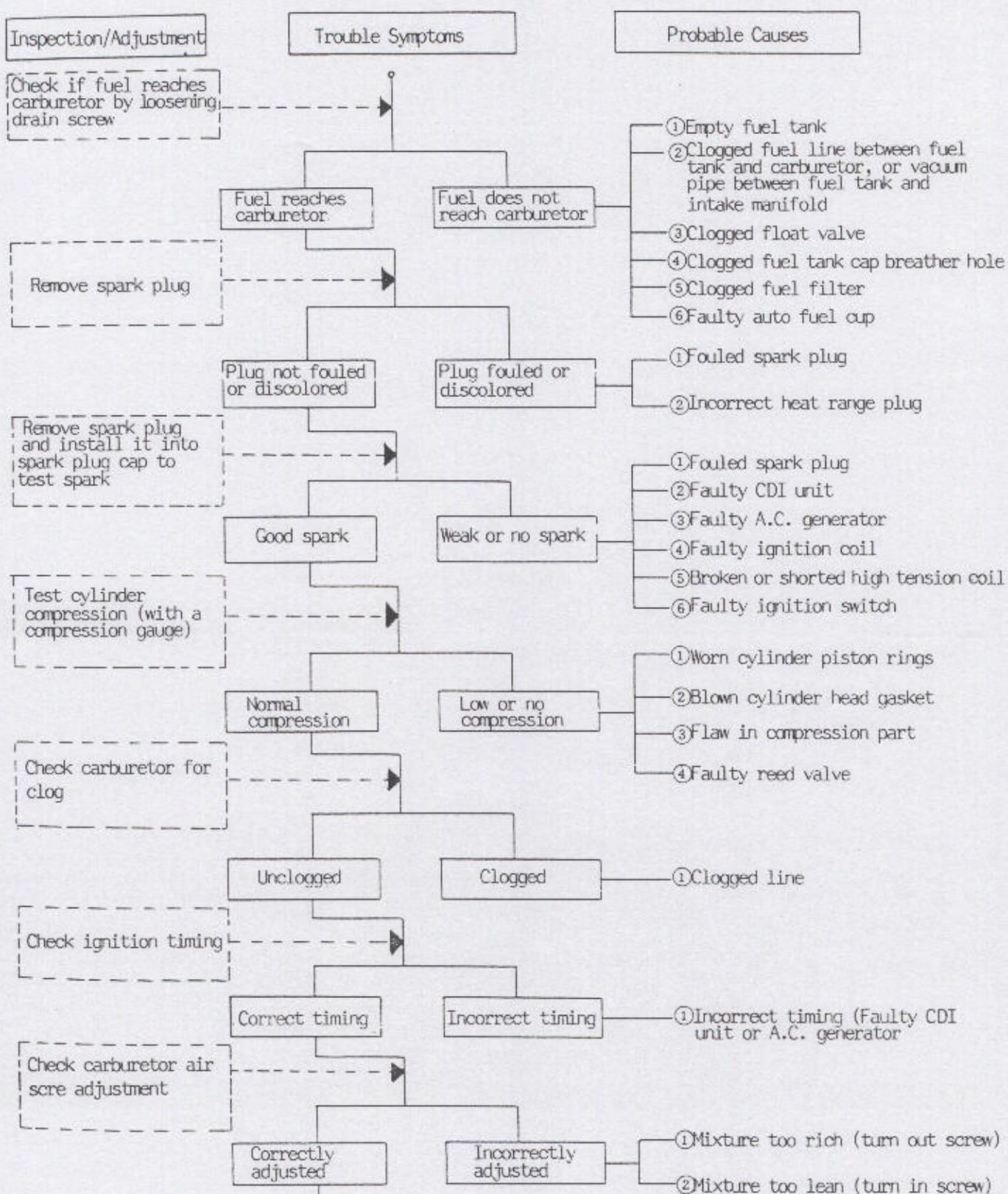
#### ● ENGINE WILL NOT START OR IS HARD TO START





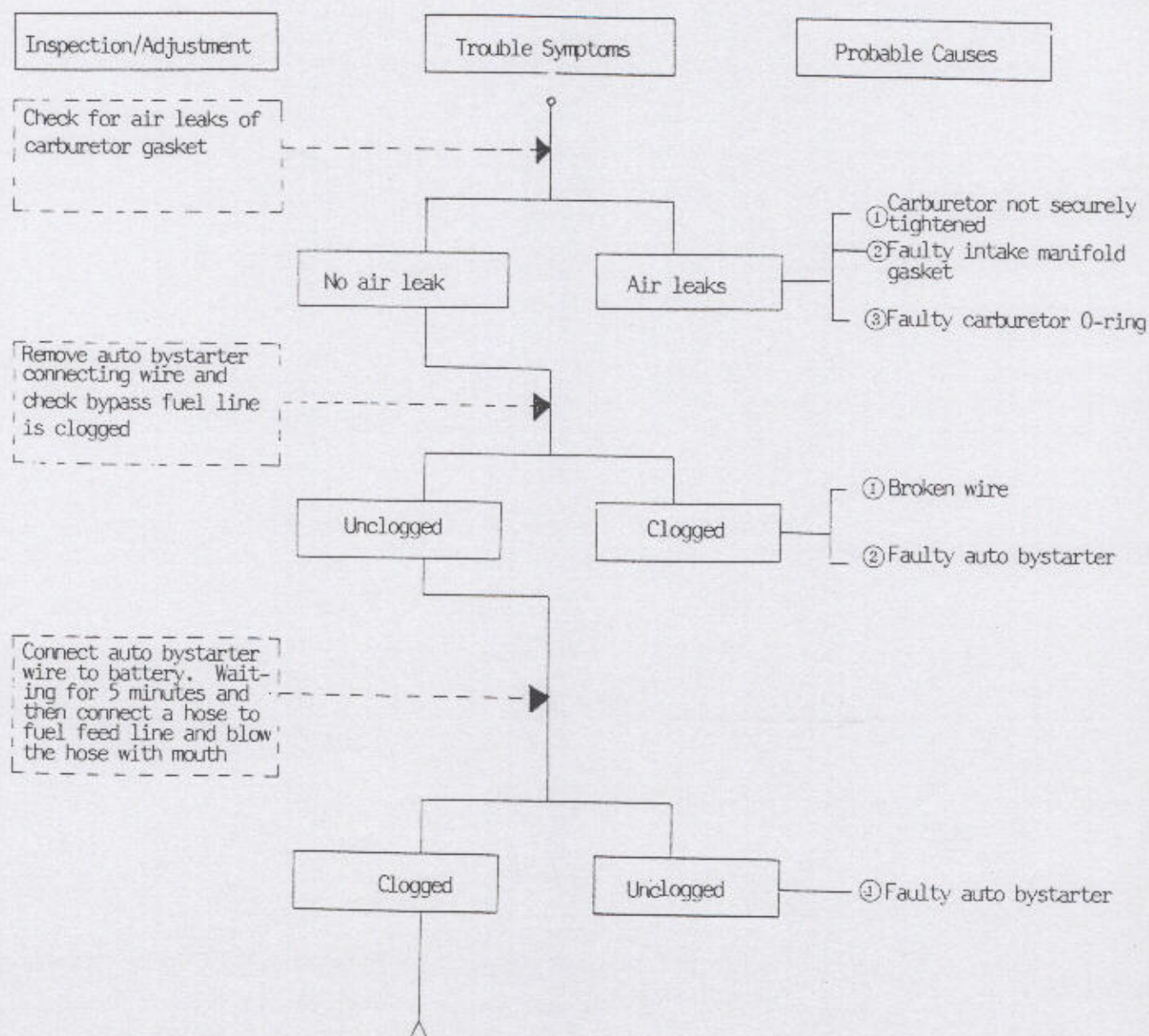
## GENERAL INFORMATION

### ● ENGINE STOPS IMMEDIATELY AFTER IT IS STARTED



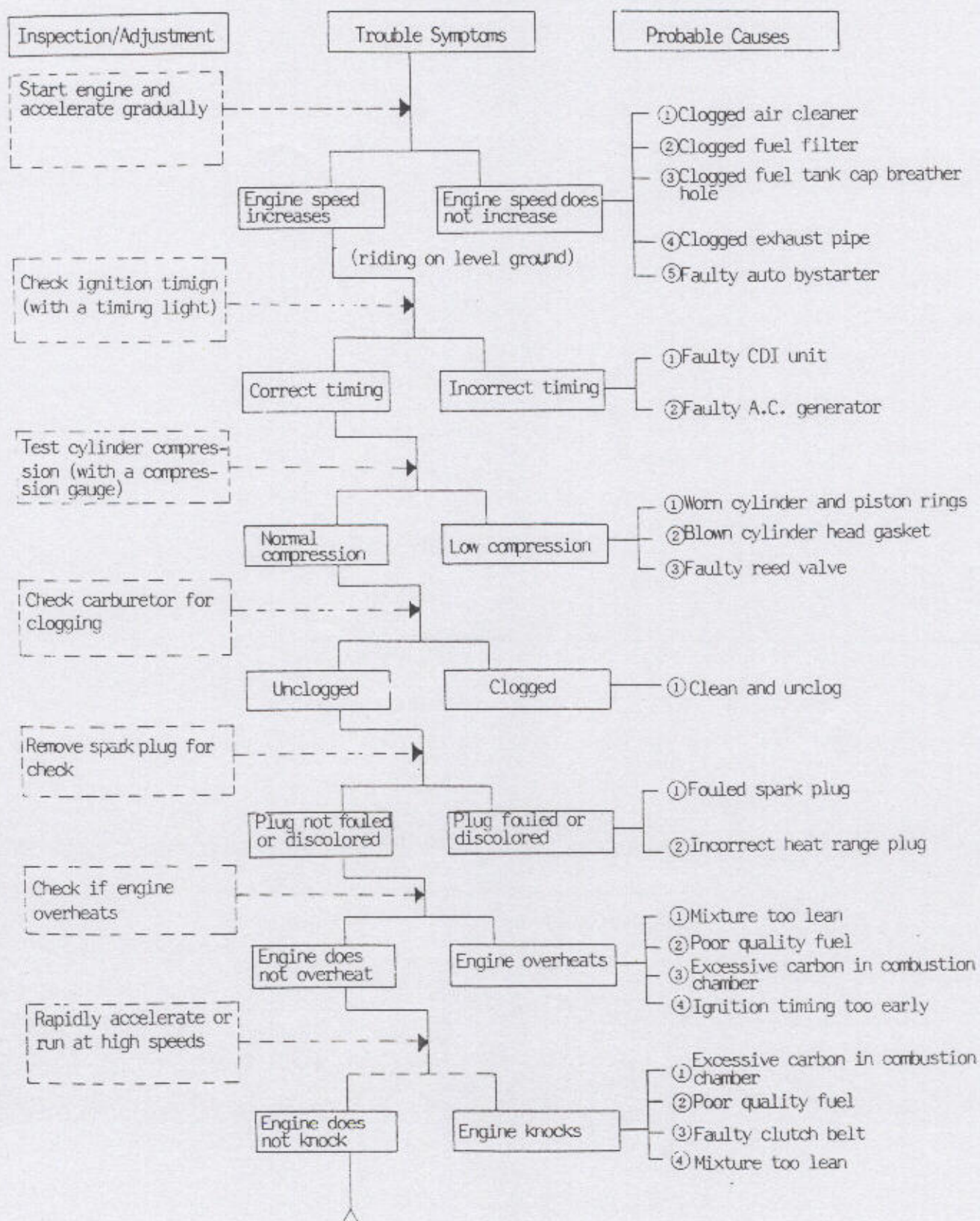


## GENERAL INFORMATION



## GENERAL INFORMATION

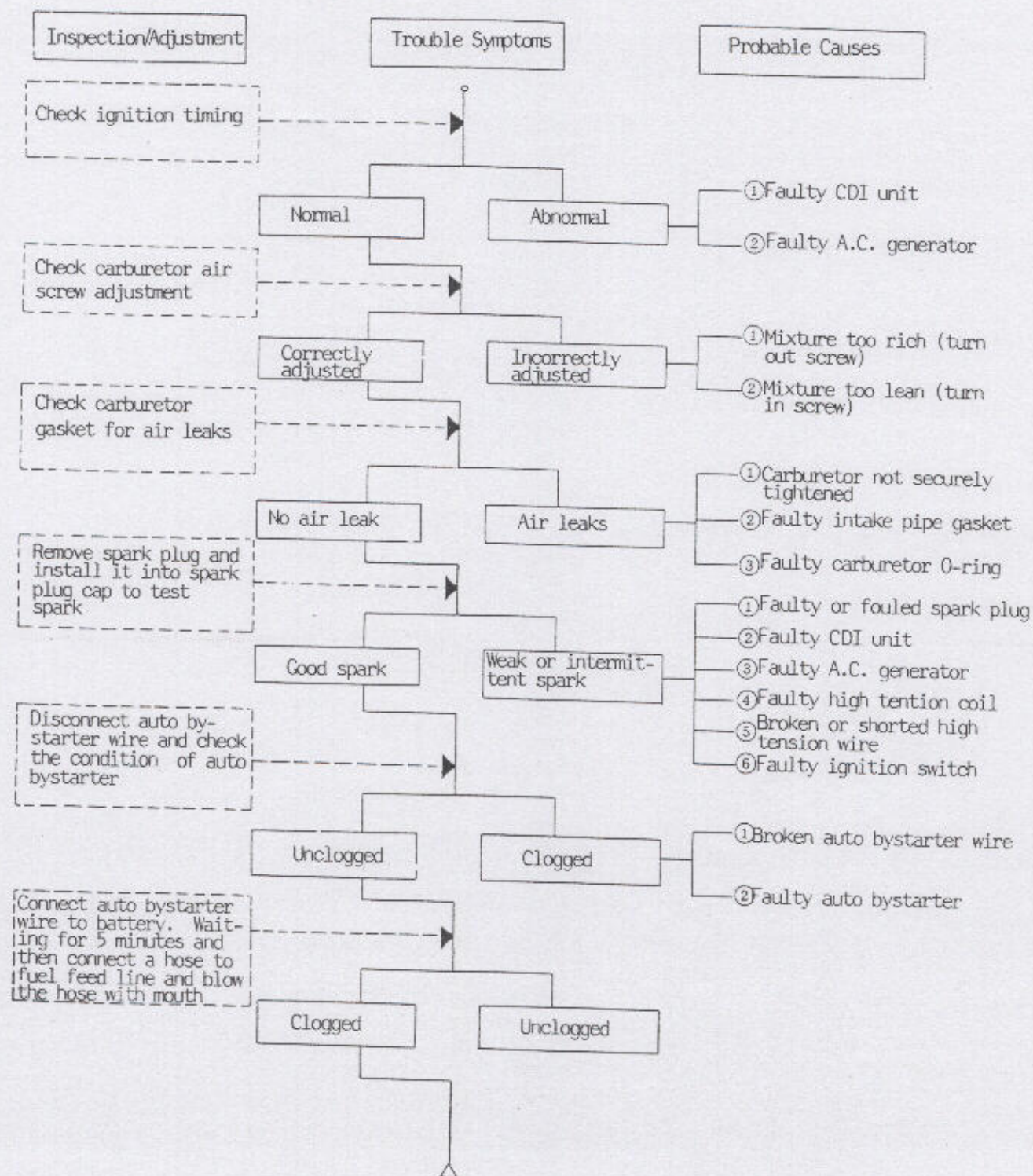
### ● ENGINE LACKS POWER





## GENERAL INFORMATION

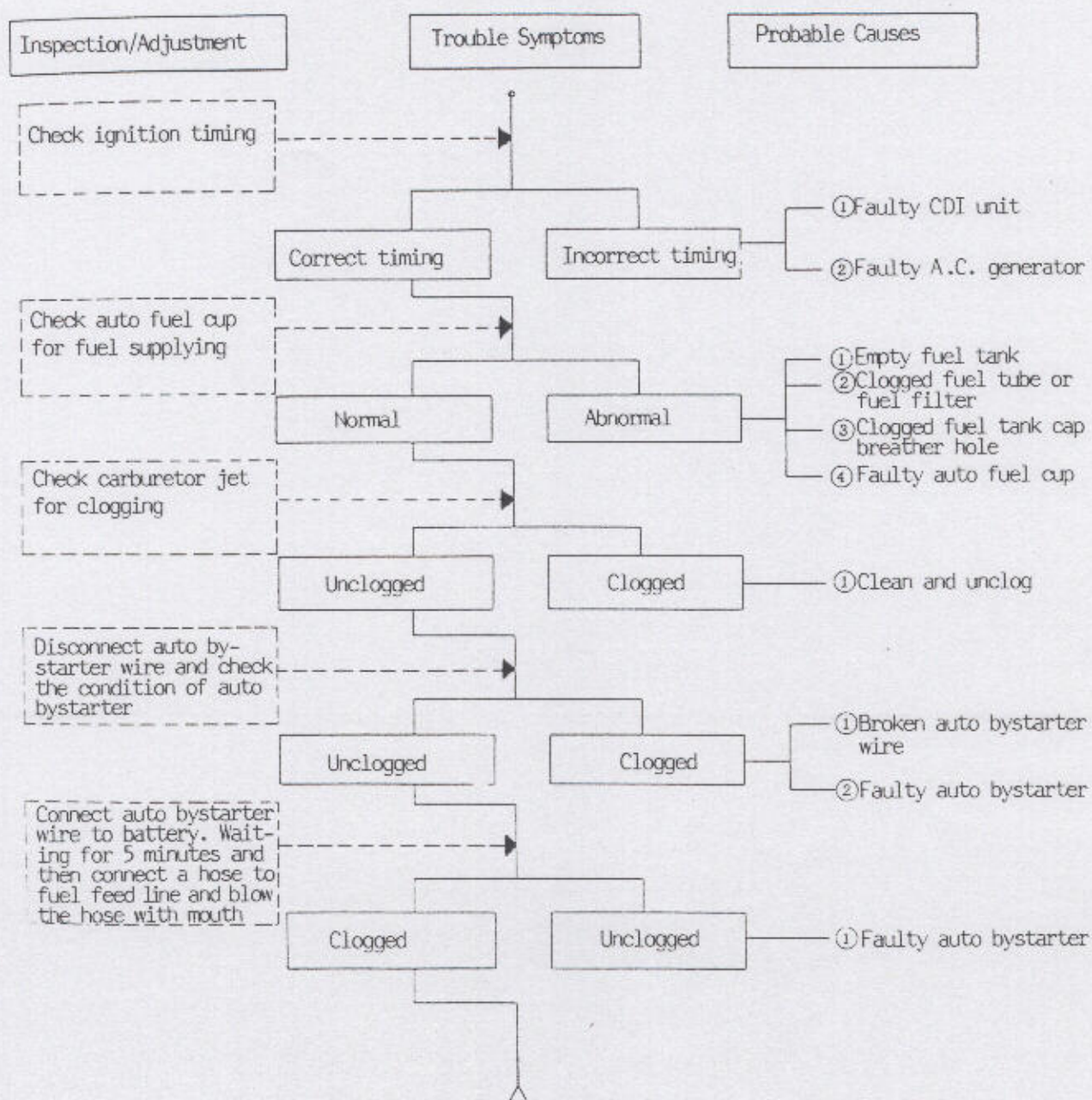
### ● POOR PERFORMANCE (ESPECIALLY AT IDLE AND LOW SPEED)





## GENERAL INFORMATION

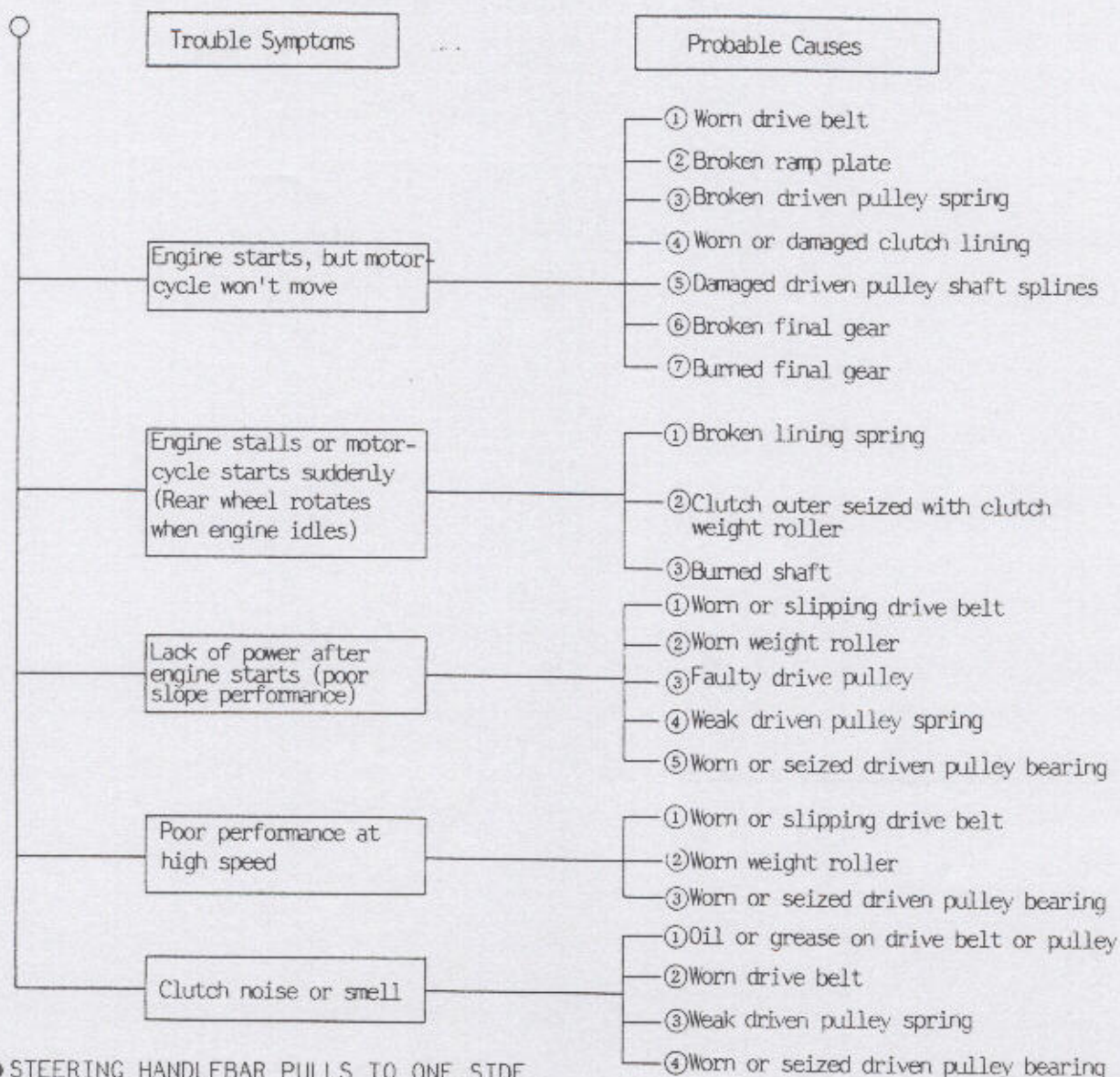
### ● POOR PERFORMANCE (HIGH SPEED)



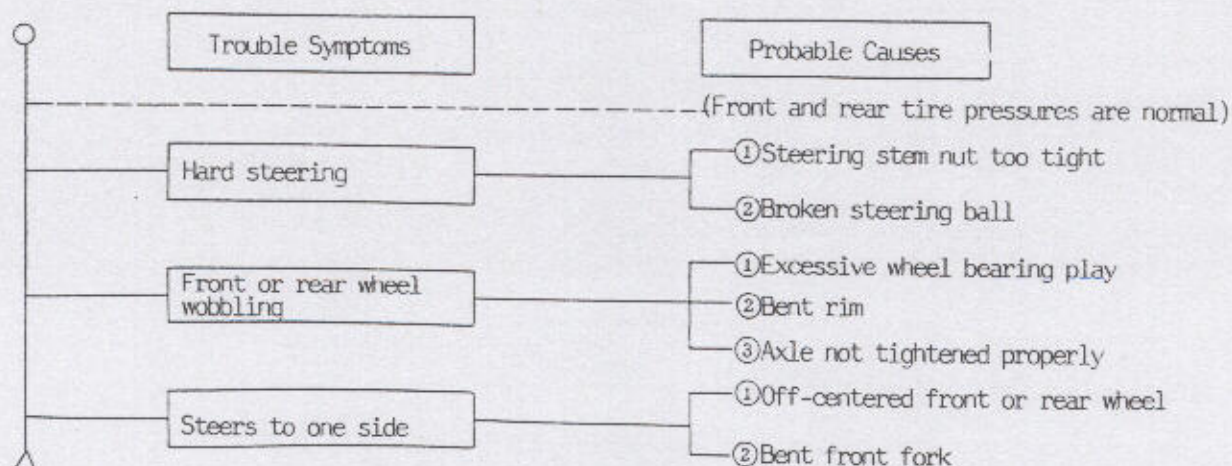


## GENERAL INFORMATION

### ● CLUTCH, DRIVE PULLEY AND DRIVEN PULLEY



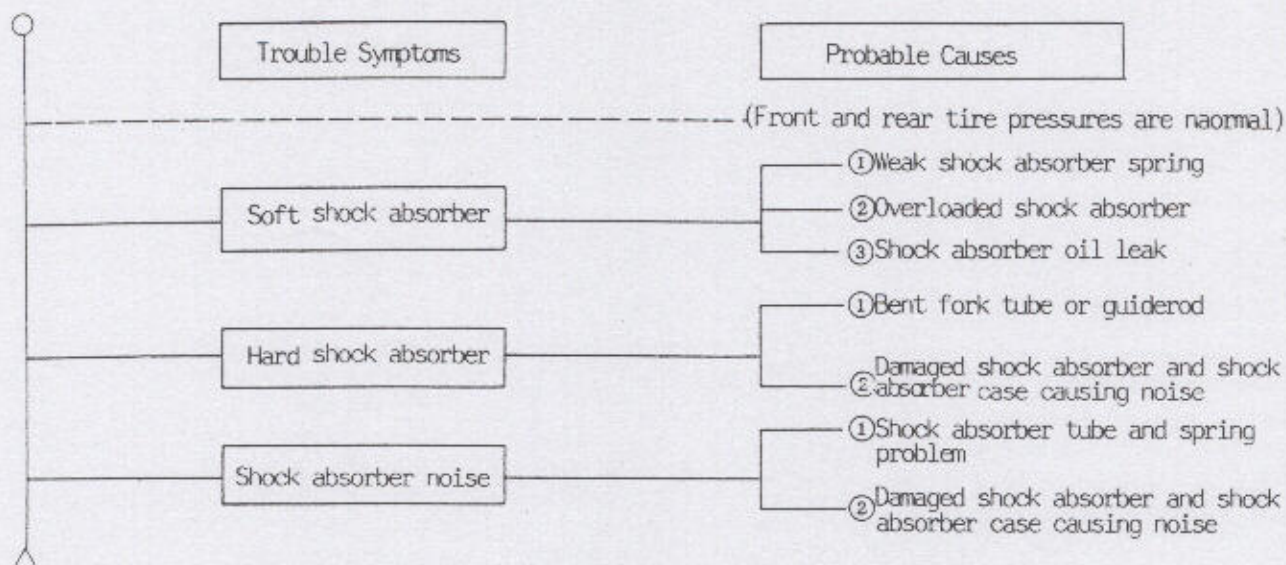
### ● STEERING HANDLEBAR PULLS TO ONE SIDE



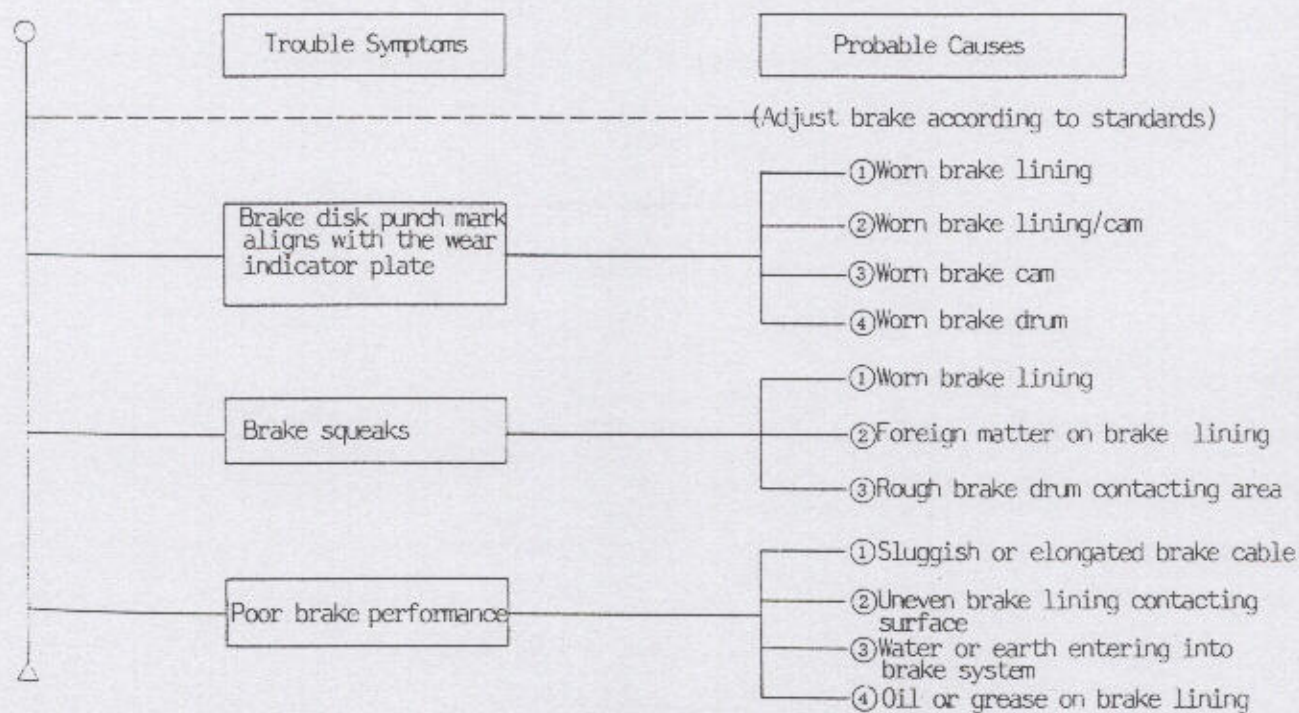


## GENERAL INFORMATION

### ● UNEVEN FRONT OR REAR SHOCK ABSORBER



### ● POOR BRAKE PERFORMANCE

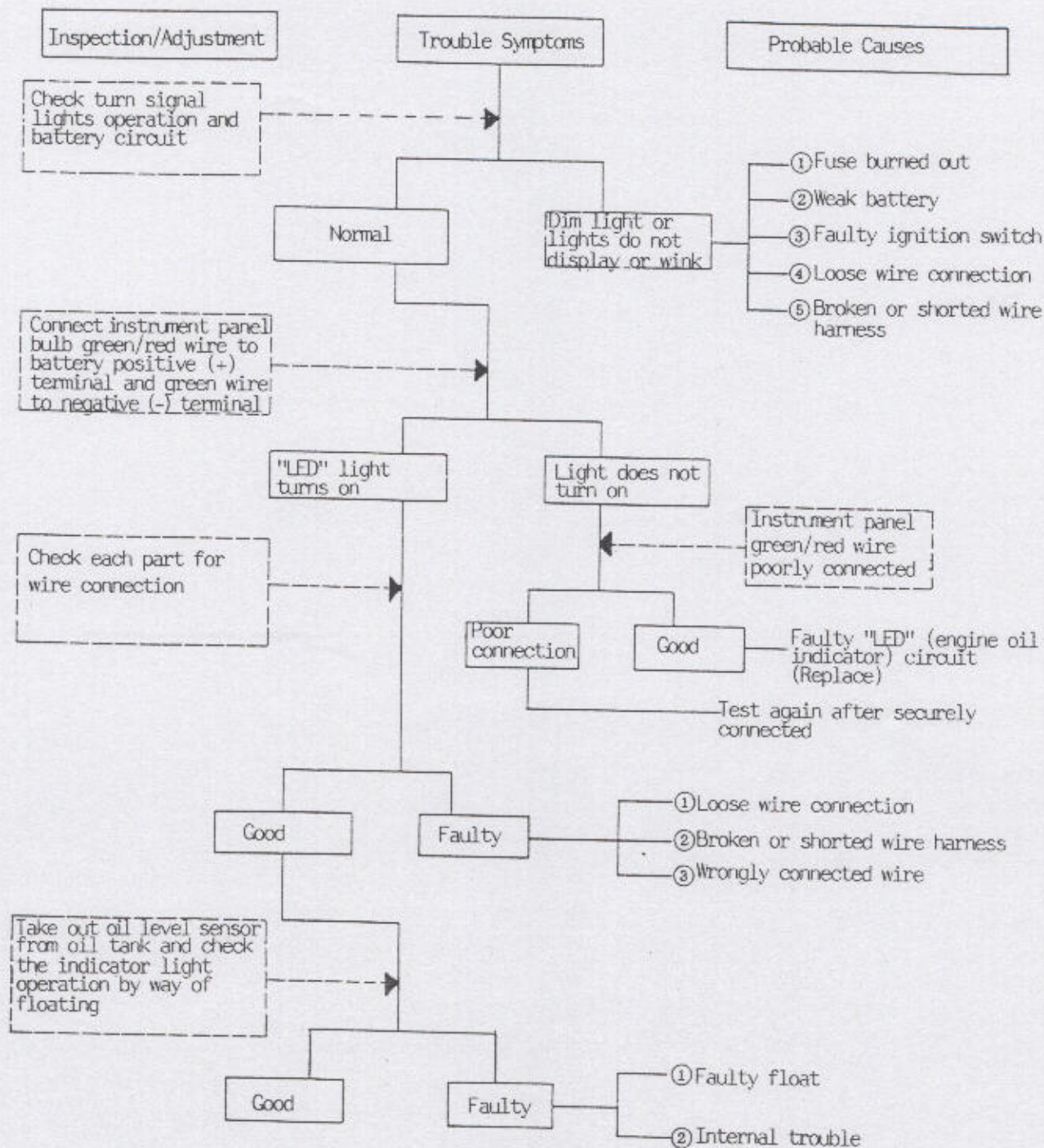




## GENERAL INFORMATION

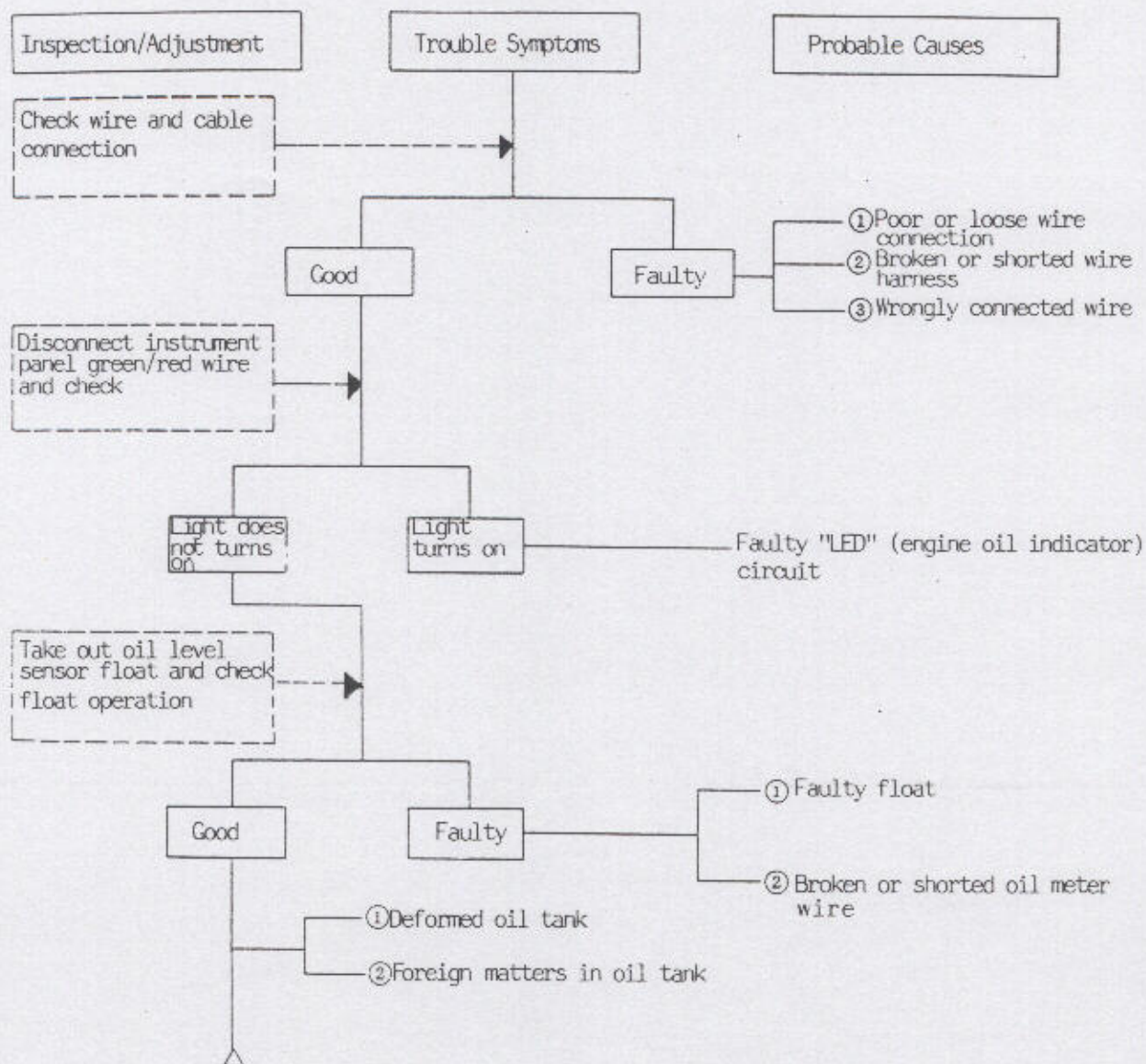
### ENGINE OIL INDICATOR

1. Engine oil indicator light does not display when there is no engine oil.  
(Ignition switch "ON")



## GENERAL INFORMATION

2. Engine oil indicator light continuously displays when there is sufficient engine oil. (Ignition switch "ON")

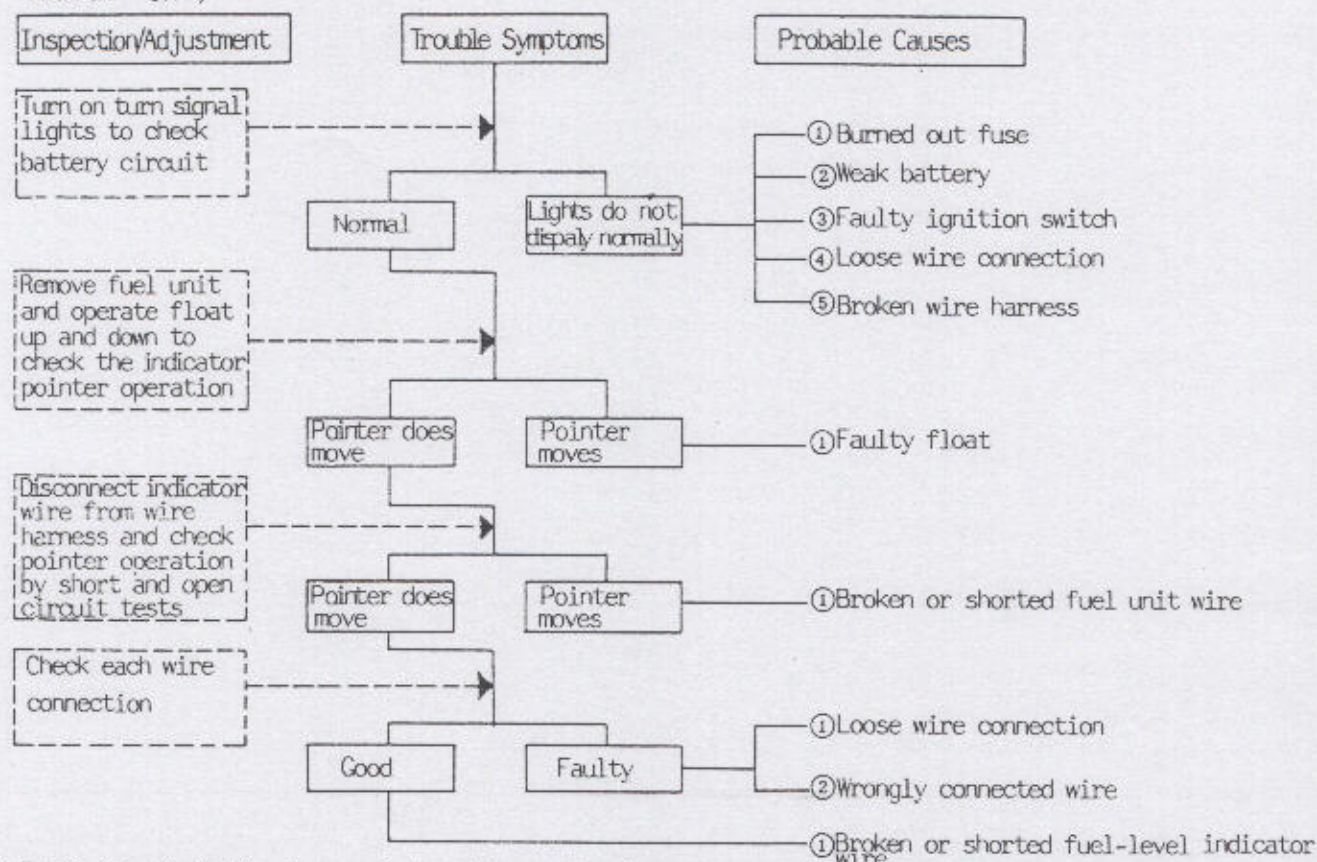




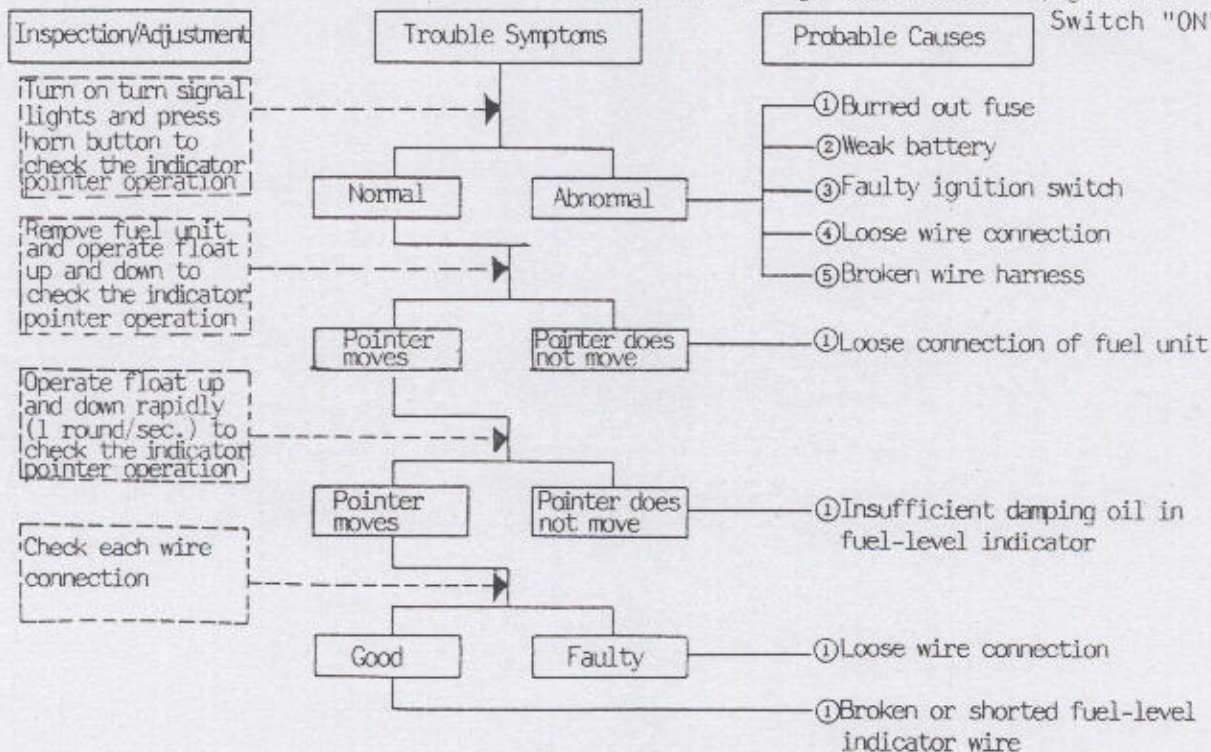
## GENERAL INFORMATION

### FUEL-LEVEL INDICATOR

1. Fuel-level indicator pointer shows incorrect gasoline volume. (Ignition Switch "ON")



2. Fuel-level indicator pointer is unsteady and swings sometimes. (Ignition Switch "ON")

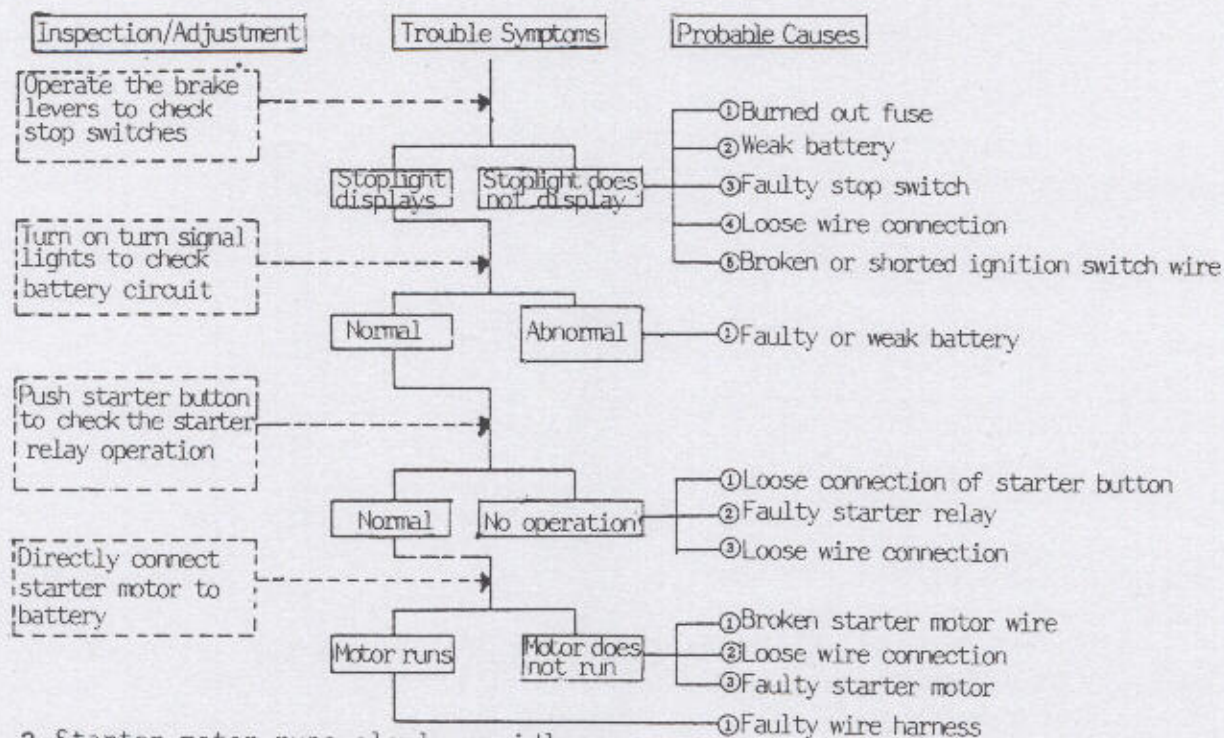




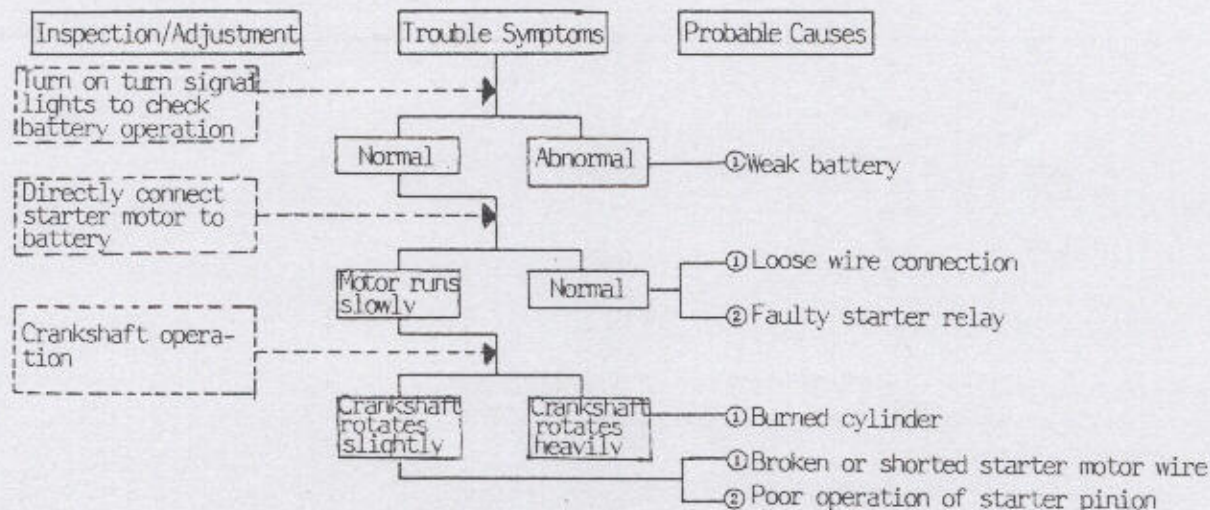
## GENERAL INFORMATION

### STARTER MOTOR

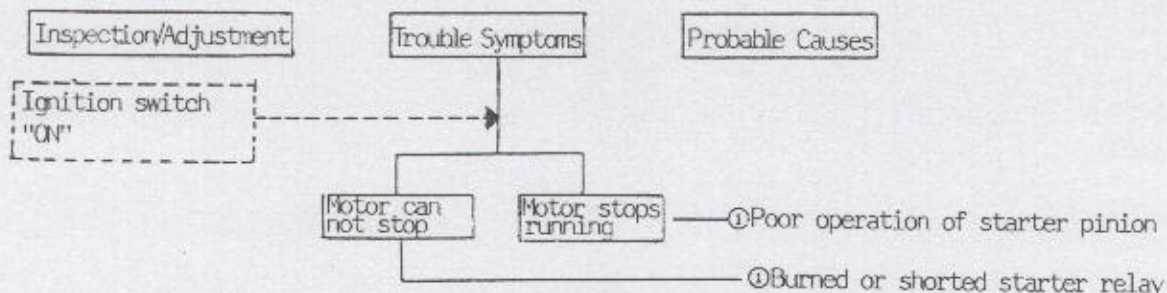
#### 1. Starter motor won't run.



#### 2. Starter motor runs slowly or idles.



#### 3. Starter motor does not stop.





## INSPECTION/ADJUSTMENT

● INSPECTION AND MAINTENANCE SCHEDULE .....	3 — 2
● BRAKE SYSTEM .....	3 — 5
● MOVING DEVICE .....	3 — 6
● DAMPING DEVICE .....	3 — 7
● POWER DRIVE SYSTEM .....	3 — 7
● ELECTRICAL EQUIPMENT .....	3 — 8
● ENGINE .....	3 — 9
● OTHERS .....	3 — 13

## INSPECTION/ADJUSTMENT

### INSPECTION AND MAINTENANCE SCHEDULE

- (Note) 1. The symbol " " means the time for inspection.  
 2. The symbol " " means regular replacement for the specified parts.

This inspection and maintenance schedule is based upon average riding conditions. Machines subjected to severe use, or ridden in unusually dusty areas, require more frequent servicing.

Inspection & Maintenance Items		Service Period				Judgement Standards	Remark								
		Pre-ride	1st month	Every 6 months	Every 12 months										
Suspension	Steering handlebar				○										
	Check for looseness & swing				○										
	Operating performance				○										
	Right/left turning angle				○										
	Damage			○	○										
	Front fork shaft part condition			○	○		Check steering stem								
Brake System	Front fork shaft part for looseness and abnormal noise				○		Check steering stem								
	Brake Lever			○	○	Free play 10-20mm									
	Front/rear brake lever free play			○	○										
	Lever operation	○													
	Brake performance		○	○	○										
	Lever/Cable		○		○										
	Looseness, abnormal noise and damage		○		○										
	Brake Drum/Shoe			○	○										
	Clearance between drum & lining			○	○										
Moving Device	Brake shoe & lining wear				○		Wear indicator plate								
	Brake drum wear and damage				○	Standard: Front 80.0mm Rear : 95.0mm Service Limit: Front 80.5mm Rear : 95.5mm									
	Tire pressure	○		○	○	<table><tr><td></td><td>Front</td><td>Rear</td></tr><tr><td>1 rider kg/cm<sup>2</sup></td><td>1.50</td><td>2.25</td></tr><tr><td>Tire Size</td><td colspan="2">3.00-10-4PR</td></tr></table>		Front	Rear	1 rider kg/cm <sup>2</sup>	1.50	2.25	Tire Size	3.00-10-4PR	
	Front	Rear													
1 rider kg/cm <sup>2</sup>	1.50	2.25													
Tire Size	3.00-10-4PR														



# INSPECTION/ADJUSTMENT

Inspection & Maintenance Items			Service Period				Judgement Standards	Remark
			Pre-ride	1st month	Every 6 months	Every 12 months		
Moving Device	Motorcycle	Tire crack and damage	○		○	○		
		Tire groove and abnormal wear	○		○	○	Groove Front about 0.8mm Rear about 0.8mm	
		Imbedded objects, gravel, etc.	○		○	○		
		Axle nut looseness			○	○	Torque Front axle nut 4.0 — 5.0 Kg—m Rear axle nut 10.0 — 12.0 Kg—m	Axle nut torque
		Wheel rim, rim edge and spoke plate for damage		○		○	Rim runout at rim end: Front: Axial : below 2.0mm Radial: below 2.0mm Rear : Axial : below 2.0mm Radial: below 2.0mm	
		Front wheel bearing for looseness and abnormal noise				○		
		Rear wheel bearing for looseness and abnormal noise				○		
Damping Device	Frame Spring	Damage						Absorber Spring
	Suspension Arm	Connecting part looseness and arm damage				○		
	Shock Absorber	Oil leakage and damage				○		
		Assembly parts looseness and abnormal noise				○		
Power Drive System	Clutch	Operation		○	○	○		
	Transmission Case	Oil leakage and oil level			○	○	Oil level Oil level check hole at lower hole edge	Rear wheel transmission case
Electrical Equipment	Ignition Device	Spark plug condition			○	○	Plug gap 0.6 — 0.7 mm	
	Battery	Terminal connection				○		
	Wires	Loose connection or damage				○		



# INSPECTION/ADJUSTMENT

Inspection & Maintenance Items		Service Period				Judgement Standards	Remark	
		Pre-ride	1st month	Every 6 months	Every 12 months			
Engine	Body	Performance and abnormal noise			○	○		
		Conditions at low and high speed		○	○	○	<input checked="" type="checkbox"/> Idle speed 1,800±100 rpm	
		Exhasuted smoke			○	○		
		Air cleaner			○	○		
	Lubrication System	Oil quantity and oil quality			○	○	<input checked="" type="checkbox"/> Oil Level Indicator Light which displays when oil is insufficient	
		Oil leakage			○	○		
		Oil level	○					
		Oil filter screen				○		
	Fuel System	Fuel leakage						
		Carburetor, throttle valve and auto bystarter				○		
		Fuel filter screen				○		
		Fuel level	○					
		Fuel tube replacement					☆every 4 years	
Lights & Winker	Operation							
	Winking action, dirt and damage	○						
Buzzer & Steering Lock	Operation				○			
Rearview Mirror & Reflector	Rearview mirror position	○					Rearview Mirror	
Reflector & License Plate	Dirt and damage	○						
Counter	Operation				○			
Exhaust Pipe	Joint looseness and damage				○			
	Exhaust pipe, muffler performance				○			
Body & Frame	Looseness and damage				○			
Abnormal Conditions Happened last time	Check if the abnormal conditions occur again.	○						
Others	Lubrication points			○	○			
	Remove carbon deposits on combustion chamber, breather hole and exhaust pipe.				○			



## INSPECTION/ADJUSTMENT

### BRAKE SYSTEM

#### Brake Lever

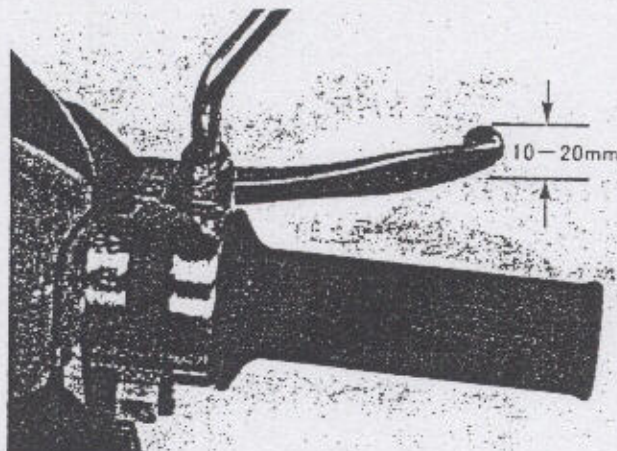
#### «Free Play»

Measure the front and rear brake lever free plays.

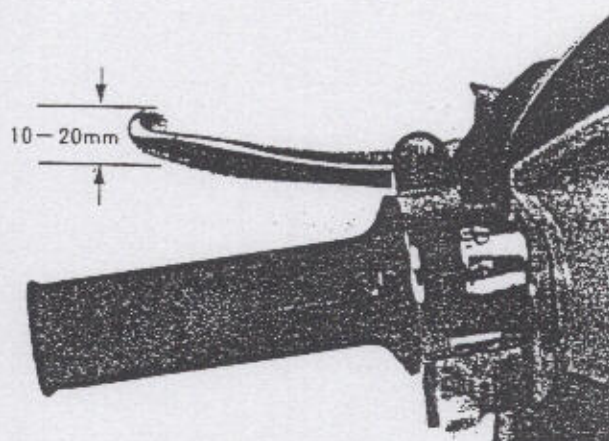
Free Play: Front 10-20mm

Rear 10-20mm

Front



Rear



If the free plays do not fall within the limits, turn the adjusting nuts for adjustment.

<Front>



<Rear>



Adjusting Nut



## INSPECTION/ADJUSTMENT

### Brake Drum/Brake Lining

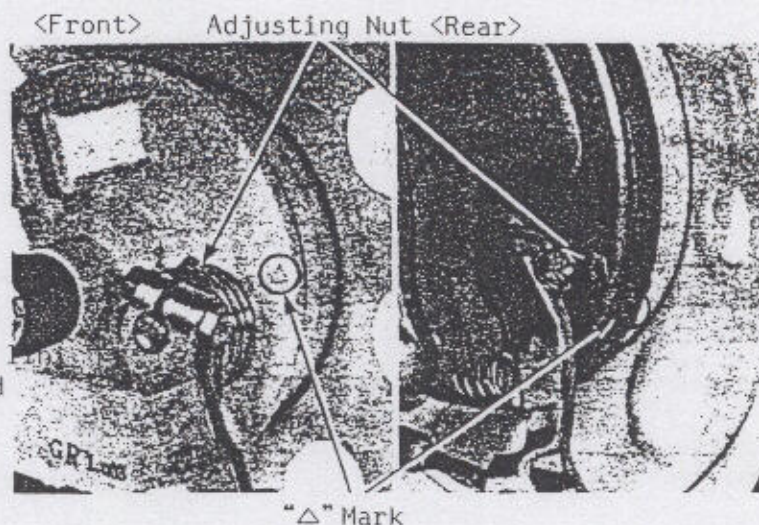
#### «Brake Shoe and Lining Wear»

If the arrow on the brake arm aligns with the "△" mark on full application of the front or rear brake, replace the brake shoes with new ones.

( 13-9 & 14-5)

#### «Brake Drum Wear/Damage»

Check the brake drum appearance for damage. Check if the brake linings are within the specified service limits. Check brake operation for abnormal noise. Check the brake drum inside for wear and damage.



### MOVING DEVICE

#### Wheels/Tires

#### «Tire Pressure»

Check the tire pressure.

\* Tire pressure should be checked when the tires are cold.

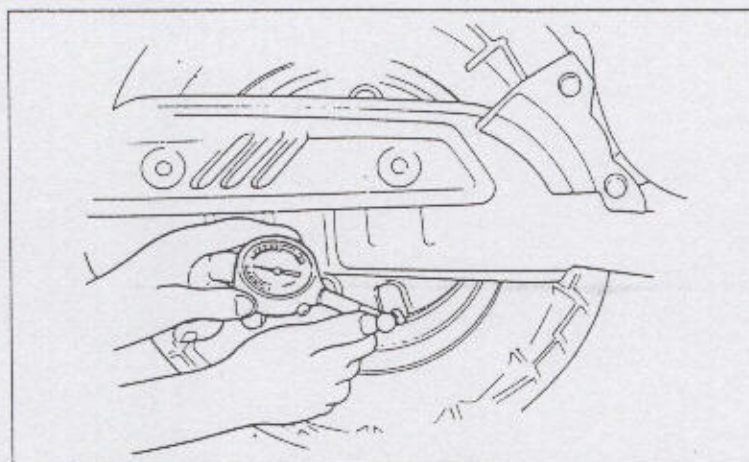
#### Tire Pressure

Front : 1.50kg/cm<sup>2</sup>

Rear : 1.75kg/cm<sup>2</sup>

#### Tire Size

Front	3.00—10 4PR
Rear	3.00—10 4PR



#### «Axle Nut/Axle Shaft Looseness»

Check the front and rear axle nuts for looseness.

If the axle nuts are loose, tighten them to the specified torques.

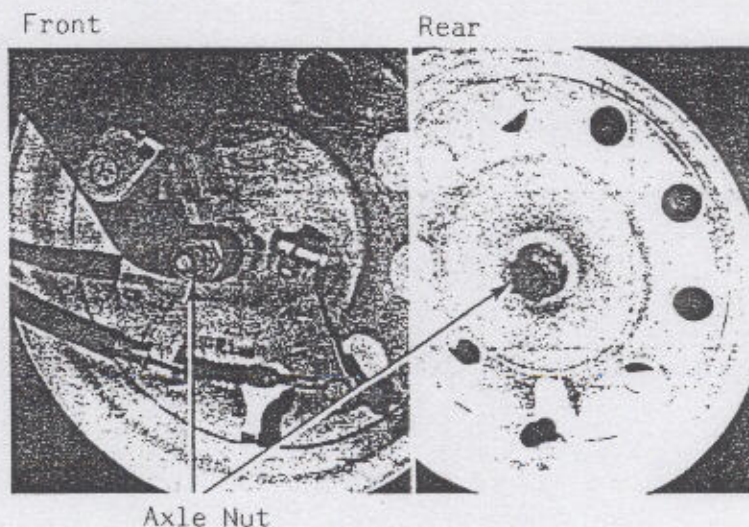
#### Torques:

Front : 4.0-5.0 kg-m

Rear : 8.0-10.0 kg-m

#### «Wheel Rim/Spoke Plate Damage»

Check the wheel rim for wear or damage and measure the rim runout.





## INSPECTION/ADJUSTMENT

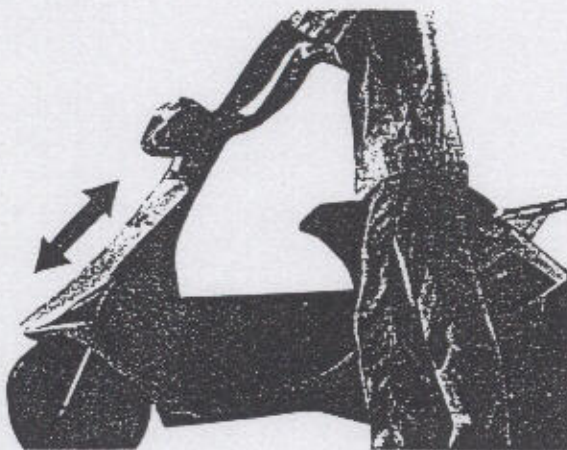
### DAMPING DEVICE

#### Shock Absorbers

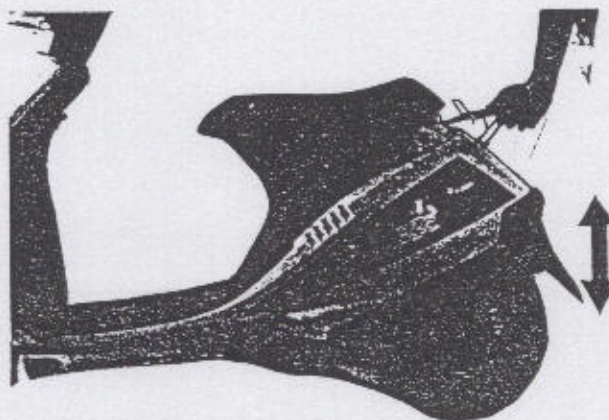
##### «Oil Leak/Damage»

Fully apply the front brake lever and check the action of the front shock absorber by compressing it up and down several times.

Check the front shock absorber for looseness or damage.



Check the action of the rear shock absorber by compressing it up and down several times. Check the rear shock absorber for looseness or damage.



### POWER DRIVE SYSTEM

#### Transmission Case

##### «Oil Leak/Oil Capacity»

Check rear wheel transmission case area for oil leaks. Stop the engine and remove the oil level check bolt.



Place the motorcycle on its main stand on level ground.

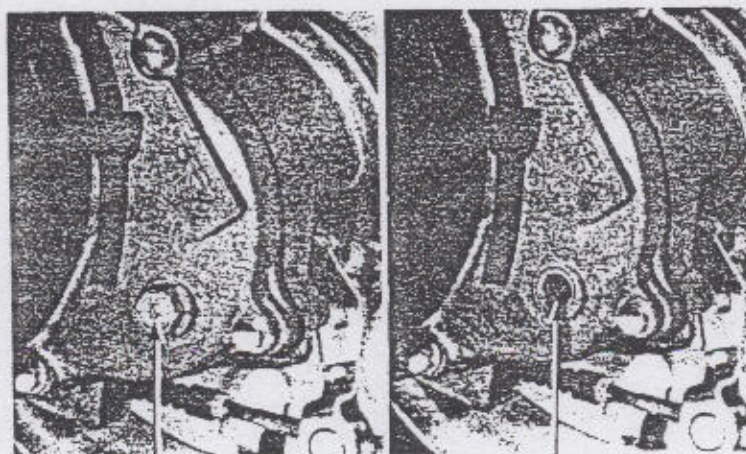
The gear oil level should be flush with the oil level check bolt hole. Add the specified gear oil to the proper level, if necessary.

**Specified Oil: KYMCO SIGMA Gear Oil (SAE 90#)**

Install and tighten the oil level check bolt.

**Torque: 1.0-1.5 kg-m**

Start the engine and check for oil leaks.



Oil Level Check Bolt

Oil Level Check Hole



## ELECTRICAL EQUIPMENT

### Ignition Apparatus

#### «Spark Plug»

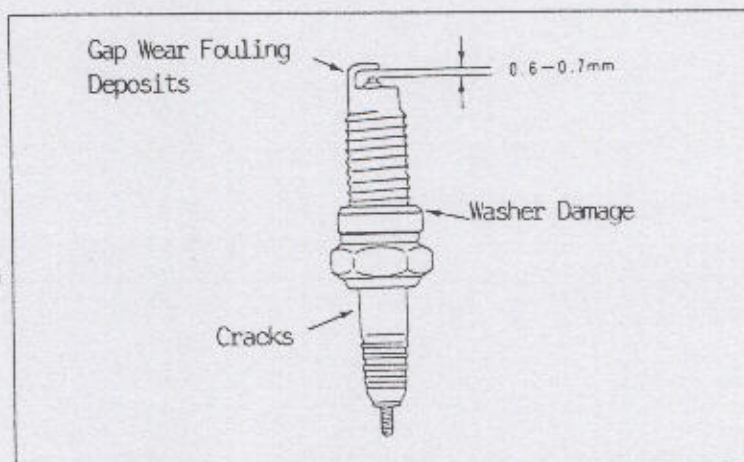
Remove the right side cover.

( 12-6)

Remove the spark plug.

Inspect the spark plug for wear, fouling deposits or damage.

Remove the fouling deposits with a spark plug cleaner or a wire-brush.



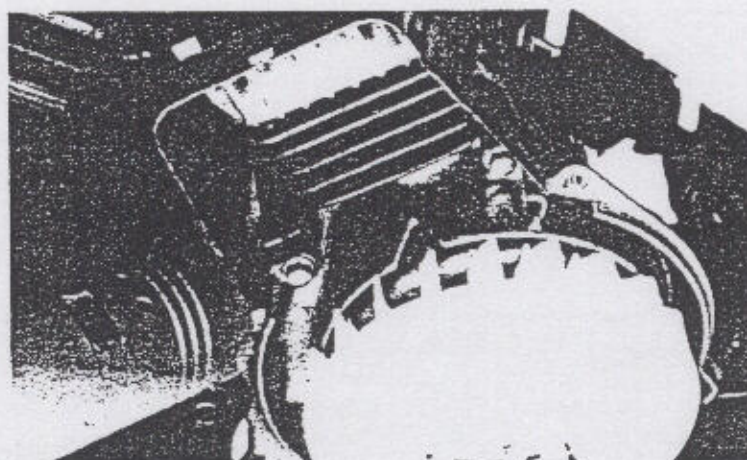
#### Specified Spark Plugs

NGK	ND
BR4HSA	W14FP-L
BR6HSA	W20FP-L
BR8HSA	W24FP-6

Spark Plug Gap: 0.6-0.7mm

#### «Ignition Apparatus»

The C.D.I. ignition timing is not adjustable.  
If the ignition timing is incorrect, check the C.D.I. unit, ignition coil or A.C. generator and replace any faulty parts.



Remove the right side cover.

( 12-6)

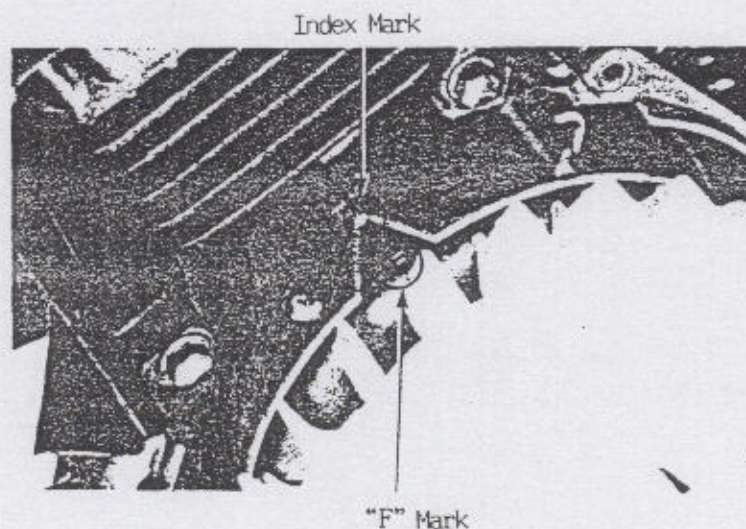
Remove the 2 bolts and remove the fan cover.

Remove the 2 fan attaching bolts and then remove the fan.

Warm up the engine and check the ignition timing with a timing light.

If the "F" mark aligns with the index mark on the crankcase within 3° at engine speed 1,800 rpm, the timing is correct.

Ignition Timing: 17° BTDC/1,800rpm





## INSPECTION/ADJUSTMENT

### ENGINE

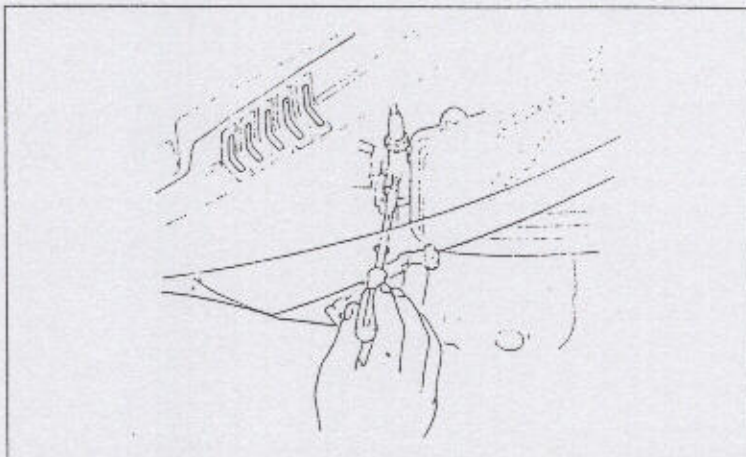
#### Engine Body

#### «High Speed and Low Speed»

The engine must be warm for accurate adjustment.

Adjust the idle speed to the specified rpm through the idle speed adjusting hole on the left side cover.

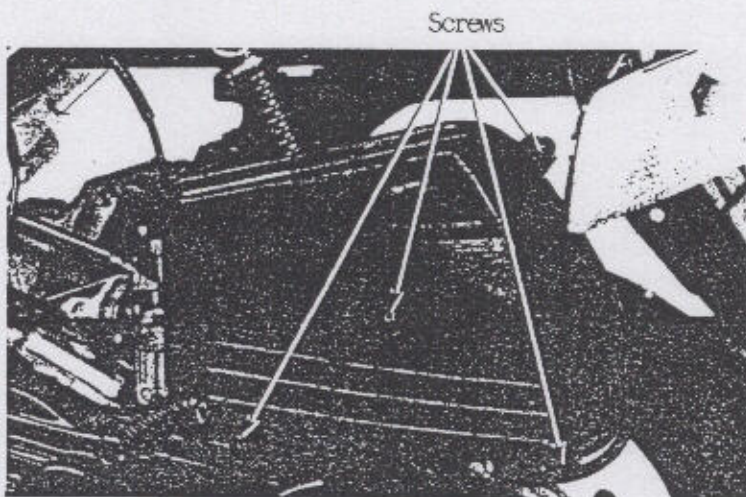
Idle Speed: 1,800  $\pm$ 100 rpm



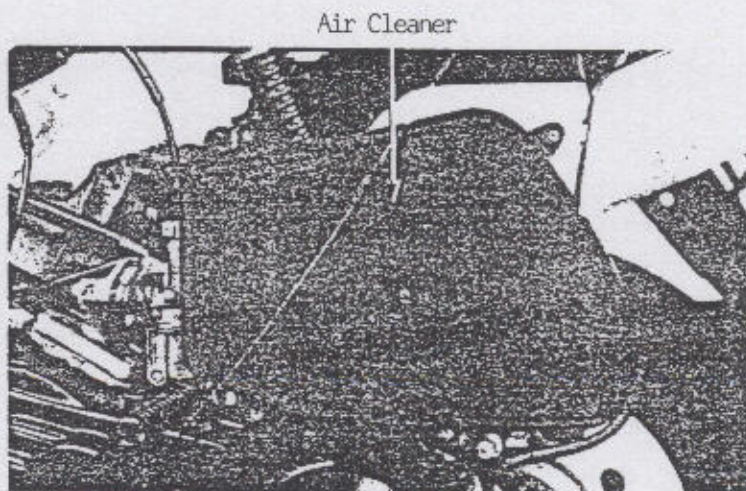
#### «Air Cleaner»

Remove the left side cover.  
( 12-6)

Remove the 5 screws and then remove the air cleaner cover.



Remove the air cleaner.



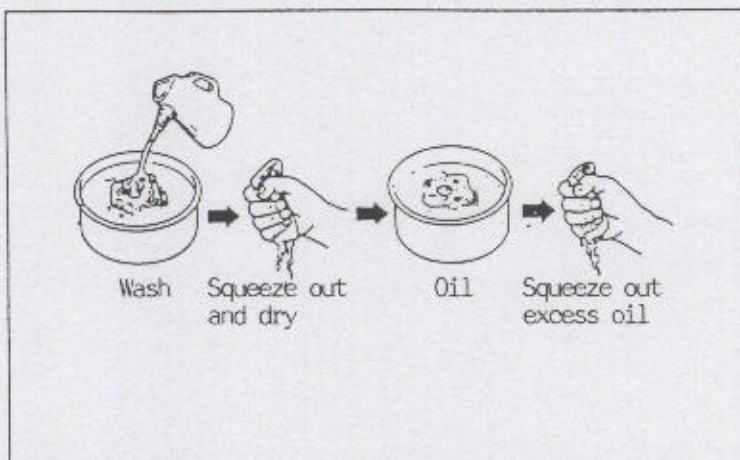


## INSPECTION/ADJUSTMENT

Wash air cleaner element in detergent oil, squeeze out and allow to dry.

Never use gasoline or organic vaporable oil with acid or alkali for washing.

After washing, soak the element in clean engine oil of API SE 10W-30 and squeeze out the excess oil. Reinstall the element and air cleaner.



### 《Cylinder Compression》

Warm up the engine before compression test.

Remove the right side cover.  
( 12-6)

Remove the spark plug and install a compression tester.

Open the throttle valve fully and push the starter button for 7-8 seconds to test the cylinder compression.

**Compression:** 10.0kg/cm<sup>2</sup>—600rpm

If the compression is too low, inspect the following items.

.Damaged cylinder head gasket

.Worn piston and cylinder

If the compression is too high, there are carbon deposits in the combustion chamber or on piston head.

### Lubrication System

#### 《Oil Filter Cleaning》

Remove the left side cover.  
( 12-6)

Disconnect the oil inlet line at the oil pump and allow the oil to drain into a clean container.

Loosen the clip on the oil line on the oil tank side and remove the oil line.

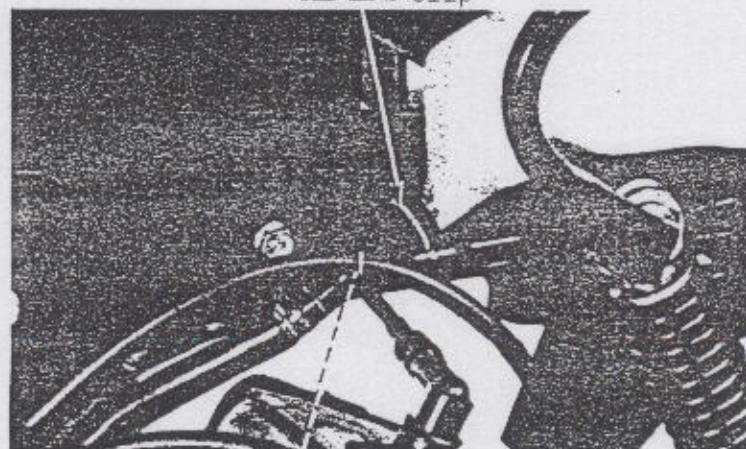
Remove the oil filter.

Common Compression Tester 07410-0010000



Compression Gauge

Oil Line Clip



Oil Filter



## INSPECTION/ADJUSTMENT

Clean the oil filter screen with compressed air.

Install the oil filter in the reverse order of removal. Fill the oil tank with the specified oil up to the proper level.

Bleed air from the oil pump and oil lines. ( 4-6)

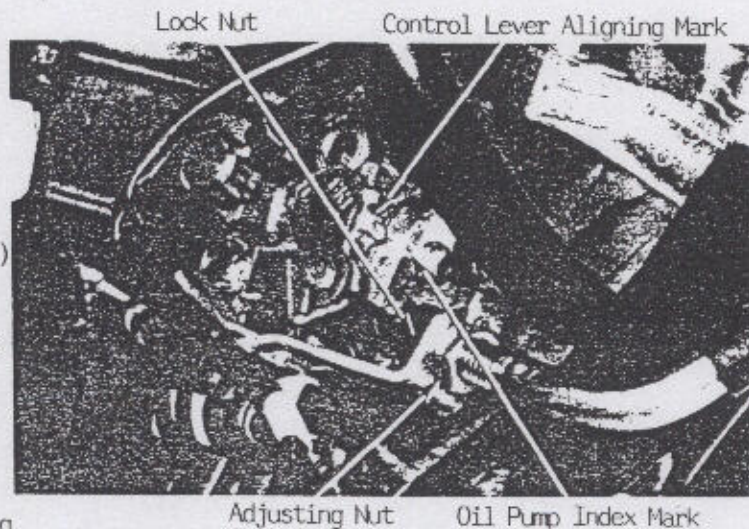
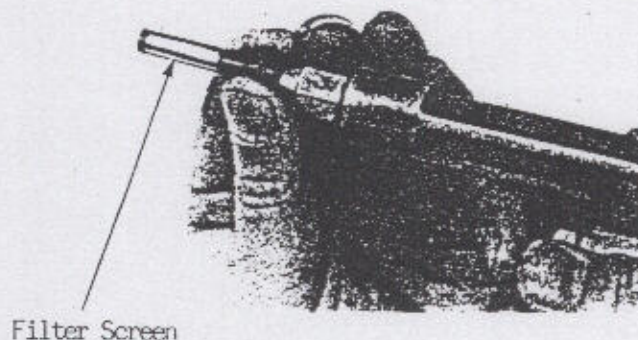
- ★.Connect the oil lines Securely.
- .Install the clip onto the oil line (on the oil tank side) and be sure to install the clip onto the oil inlet line connected to the oil pump.
- .After completing the above procedures, check for oil leaks.

### «Oil Pump Condition»

The oil pump control cable should be adjusted after the throttle grip free play adjustment.

Remove the right and left side covers and central cover. ( 12-6,7)  
Open the throttle valve fully and check if the index mark on the pump body aligns with the aligning mark on the oil pump control lever. Start and idle the engine, then slowly open the throttle to increase the engine rpm and check the oil pump control lever operation. Adjust if necessary by loosening the control cable lock nut and turning the adjusting nut.

The aligning mark on the control lever within 1mm on the open side of index mark is acceptable. However, the aligning mark must never be on the closed side of the index mark, otherwise engine damage will occur because of insufficient oil for lubrication.



If the oil pump is not synchronized properly, the following conditions will occur.

- .Excessive white smoke or hard starting due to pump control lever excessively open
- .Seized piston due to pump control lever insufficiently open



## INSPECTION/ADJUSTMENT

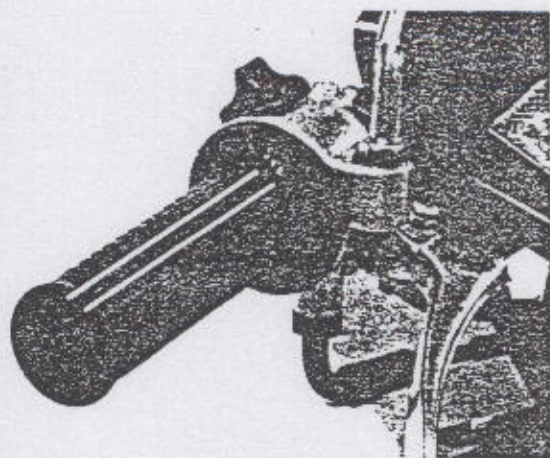
### Fuel System

#### «Throttle Grip Free Play»

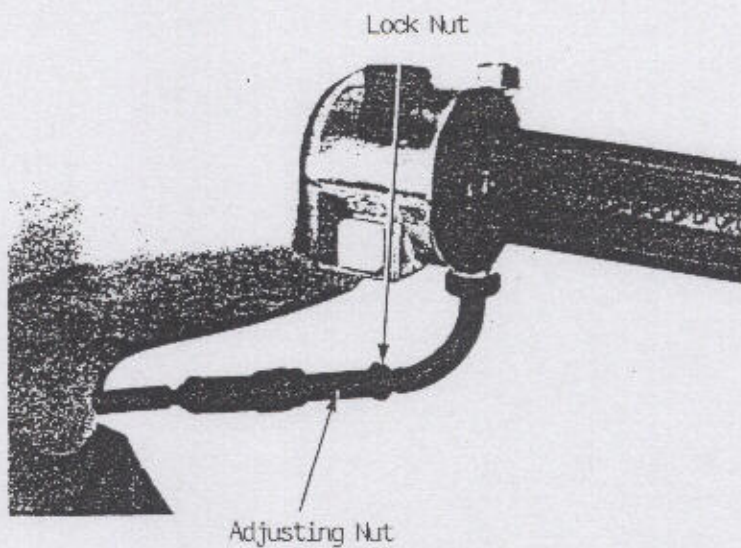
Measure the throttle grip free play.

Free Play: 2-6mm

2 - 6 mm



If the throttle grip free play exceeds the specified value, loosen the lock nut and turn the adjusting nut for adjustment.





## INSPECTION/ADJUSTMENT

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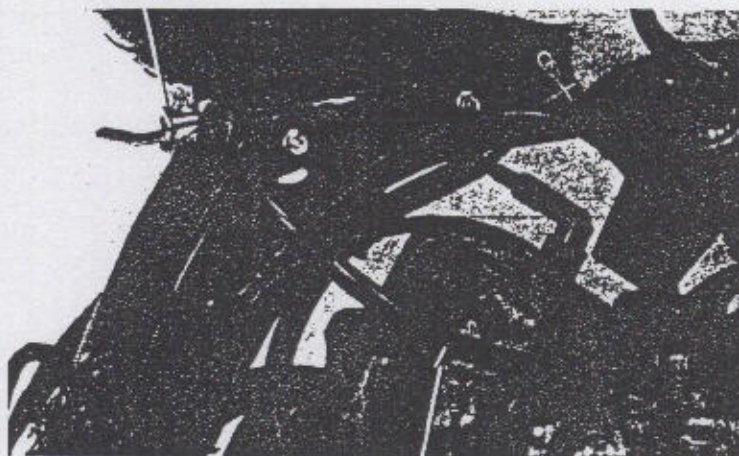
### OTHERS

#### Lights

##### «Headlight»

Loosen the headlight mounting screw to move the headlight right and left for adjustment.

Lock Screw



Mounting Screw



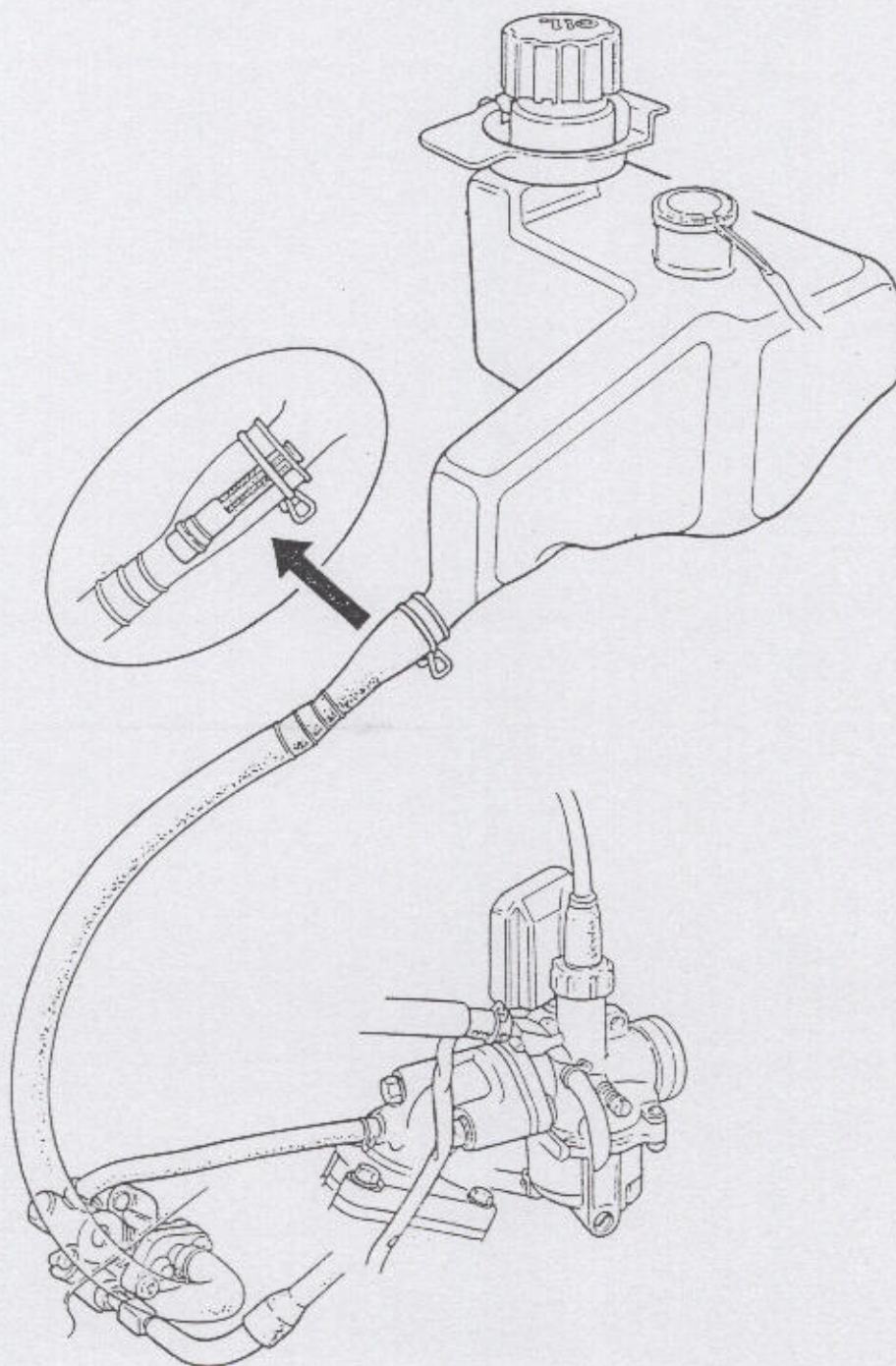
## LUBRICATION SYSTEM

● TROUBLESHOOTING	4 — 3
● SERVICE INFORMATION	4 — 3
● OIL PUMP REMOVAL	4 — 4
● OIL PUMP INSPECTION	4 — 4
● OIL PUMP INSTALLATION	4 — 5
● OIL PUMP BLEEDING	4 — 6
● OIL TANK	4 — 7



## LUBRICATION SYSTEM

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## LUBRICATION SYSTEM

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### ● TROUBLESHOOTING

#### ○ Excessive white smoke or carbon on spark plug

- Pump not properly synchronized (excessive oil)
- Poor quality engine oil

#### ○ Engine overheating

- Oil pump not adjusted properly (insufficient oil)
- Poor quality engine oil

#### ○ Seized piston

- No oil in tank or clogged oil line
- Oil pump not adjusted properly (insufficient oil)
- Air in oil line
- Faulty oil pump

#### ○ Oil not flowing out of tank to engine

- Clogged oil tank cap breather hole
- Clogged oil strainer

### ● SERVICE INFORMATION

#### ○ GENERAL INSTRUCTIONS

- Use care when removing and installing the oil pump not to allow dust and dirt to enter the engine and oil line.
- Do not attempt to disassemble the oil pump.
- Bleed air from the oil pump if there is air between the oil pump and oil line. ( 4-6)
- If the oil line is disconnected, refill the oil line with engine oil before connecting it.

#### ○ SPECIFICATIONS

- Specified Engine Oil: KYMCO ULTRA 2-stroke Motor Oil (separate oiling)
- Oil Capacity: 0.9ℓ



## LUBRICATION SYSTEM

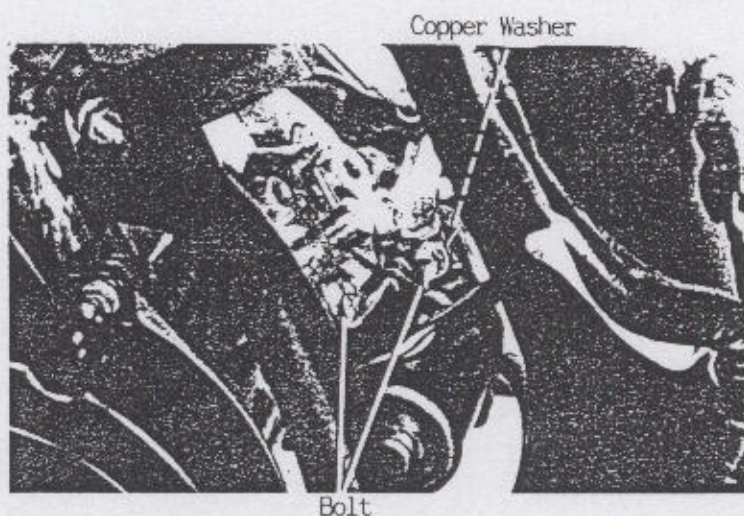
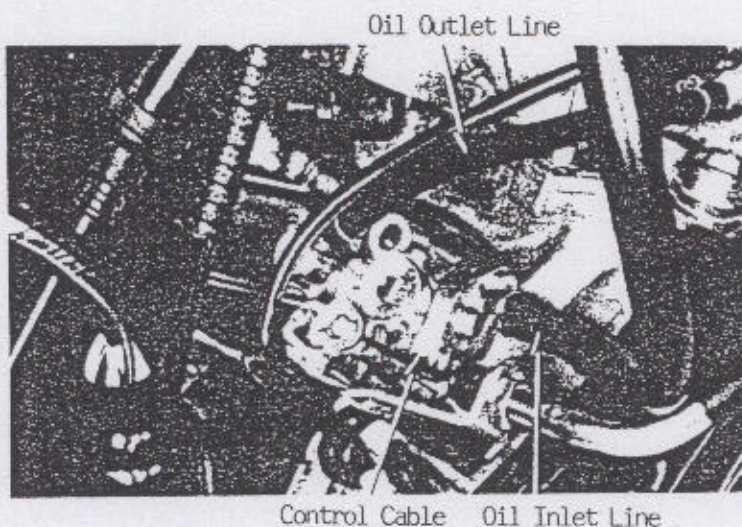
### OIL PUMP REMOVAL

Do not allow foreign matters to enter the crankcase.  
Before removing the oil pump, clean the oil pump and crankcase surfaces.

Remove the left side cover. ( 12-6)  
Remove the central cover. ( 12-7)  
Disconnect the oil pump control cable from the pump body.  
Disconnect the oil inlet line from the oil pump.  
Disconnect the oil outlet line.

\* Before disconnecting the oil line, clip the oil line to avoid oil flowing out and then plug the oil line after it is disconnected.

Remove the oil pump attaching bolts and copper washers (on the starter motor side).  
Remove the oil pump from the crankcase.

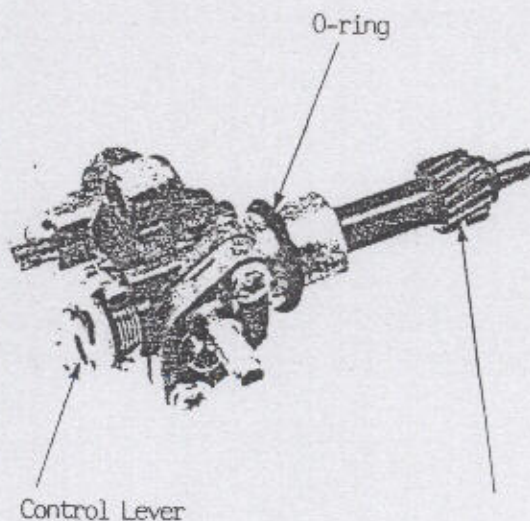


### OIL PUMP INSPECTION

Remove the oil pump and inspect the following items:

- .Weakened O-ring
- .Damage to crankcase mating surface
- .Damage to pump body
- .Control lever operation
- .Oil leaks from oil seals

\* Do not disassemble the oil pump which can not be used after disassembly.





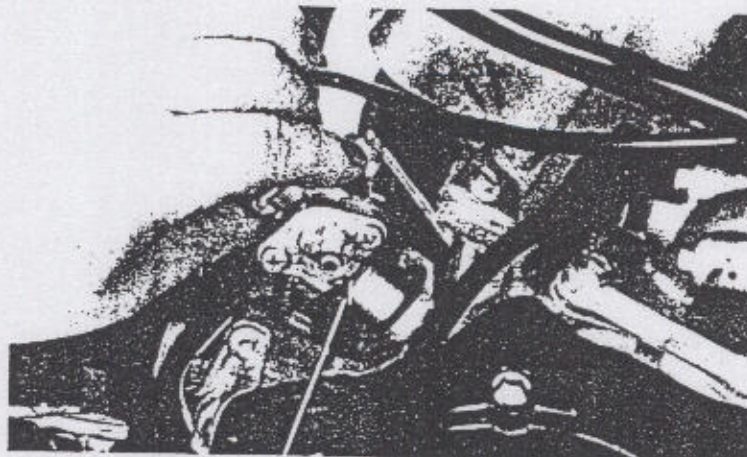
## LUBRICATION SYSTEM

### OIL PUMP INSTALLATION

Install the oil pump onto the crankcase.



- Apply grease or engine oil to O-ring and then install the oil pump.
- Make sure that the oil pump is inserted into the crankcase properly.
- Lubricate the pump gear with grease or molybdenum disulfide.



Engine Oil

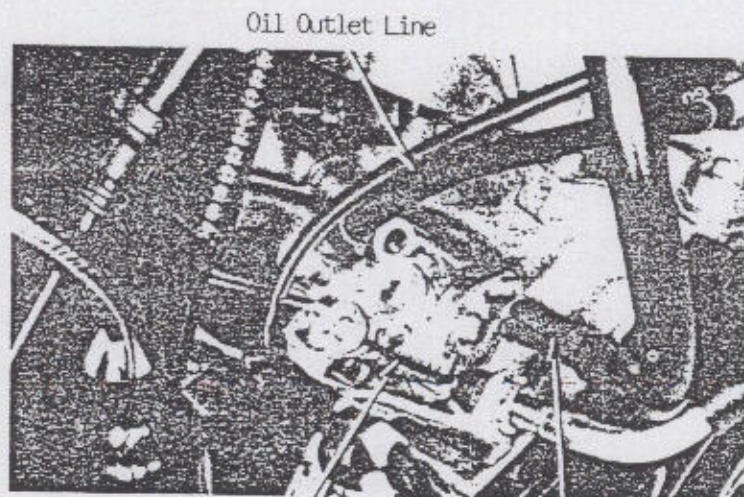
Install the oil pump attaching bolts and copper washers (on the starter motor side).



Copper Washer

Bolt

Connect the oil inlet line and oil outlet line.  
Connect the oil pump control cable.  
Adjust the oil pump control cable properly. ( 3-11)  
Bleed air from the oil pump. ( 4-6)



Oil Outlet Line

Control Cable

Oil Inlet Line



## LUBRICATION SYSTEM

### OIL PUMP BLEEDING



Air in the oil lines will block or restrict oil flow and may result in engine damage.  
Bleed air from the oil lines and oil pump whenever the oil lines or pump have been removed or there is air in the oil lines.

#### Oil Inlet Line Bleeding

Fill the oil tank with recommended motor oil.

Place a towel around the oil pump.

Disconnect the oil inlet line.  
Fill the oil pump with oil by squirting clean oil through the pump outlet hole. (About 3cc)  
After the oil line is full of oil, connect the oil inlet line.



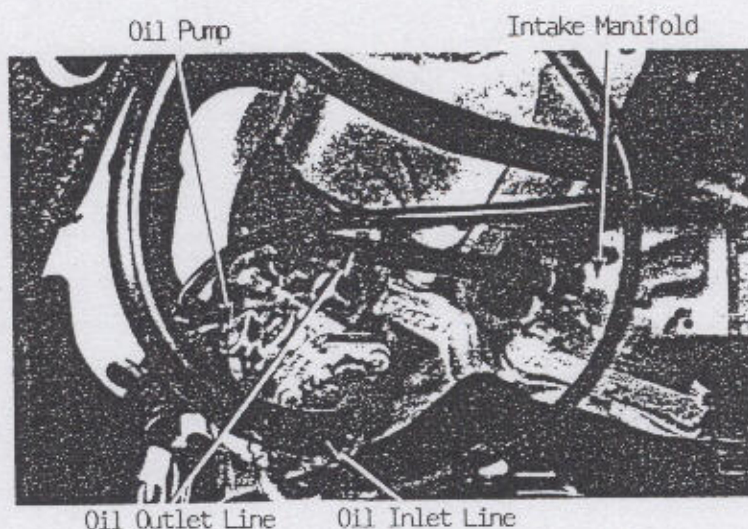
Bleed air from the oil inlet line first, then bleed air from the oil outlet line.

#### Oil Outlet Line Bleeding

1. Disconnect the oil outlet line. Bend the oil tube into U shape and force air out of the tube by filling it with oil using an oil squirt can. Connect the oil outlet line.
2. Start the engine and allow it to idle. Make sure that the oil flow is normal. Connect the oil outlet line to the carburetor. If there is no oil flowing out within one minute, bleed the air from the oil outlet line.



Never run the engine in a closed area.  
Do not increase the engine rpm at will.



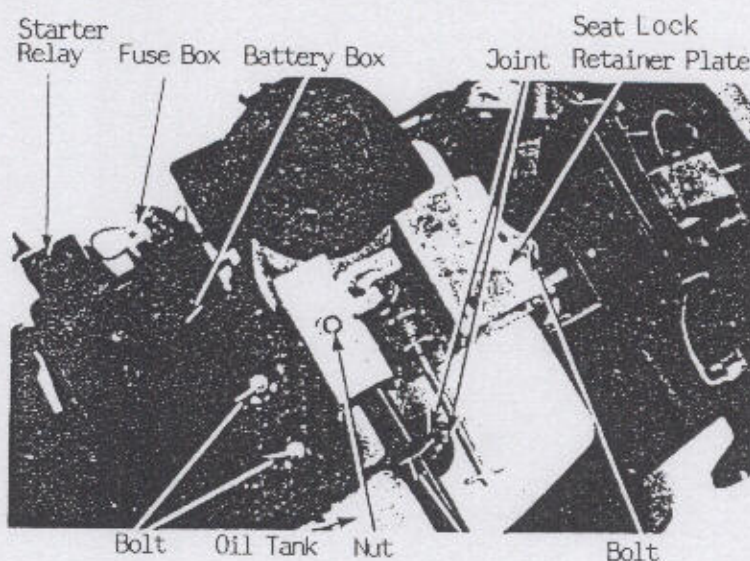


## LUBRICATION SYSTEM

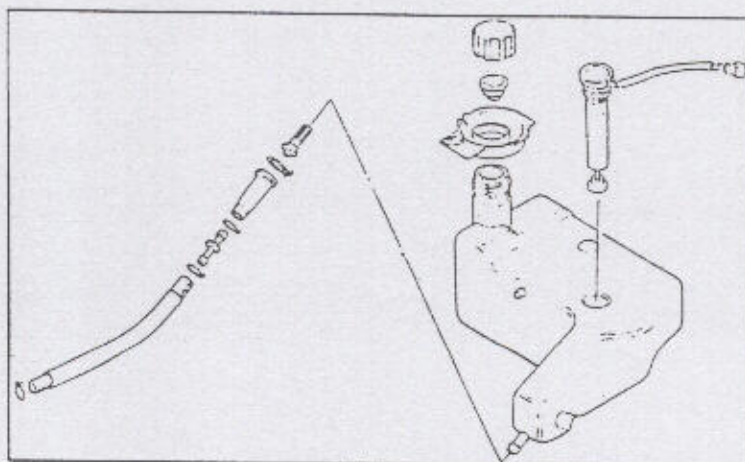
### OIL TANK

#### Oil Tank Removal

- Remove the left side cover.  
( 12-6)
  - Remove the rear carrier and rear cover. ( 12-7)
  - Remove the battery. ( 15-4)
  - Disconnect the oil inlet line and allow the oil to drain into a clean container.
  - Disconnect the engine oil indicator cable.
  - Remove the regulator/rectifier.  
( 15-6)
  - Remove the starter relay.  
( 15-12)
  - Remove the fuse box.
  - Remove the 2 bolts and take out the battery box.
  - Remove the rear shock absorber nut.
  - Remove the clip attaching nut and seat lock retainer plate.
  - Remove the oil tank.
  - Install the oil tank in the reverse order of removal.
  - Tighten the rear shock absorber nut to the specified torque.
- Torque:** 3.0-4.5kg-m



- Install the oil lines properly. ( 2-18)
- After installation, bleed air from the oil pump.  
( 4-6)
- When installing, the oil line clip (on the oil tank side) should be locked from inside.





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## ENGINE REMOVAL/INSTALLATION

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● SERVICE INFORMATION	-----5	— 2
● ENGINE REMOVAL	-----5	— 3
● ENGINE INSTALLATION	-----5	— 5



## ENGINE REMOVAL/INSTALLATION

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### SERVICE INFORMATION

#### ○ GENERAL INSTRUCTIONS

- Parts requiring engine removal for servicing:  
Crankcase  
Crankshaft

#### ○ TORQUE VALUES

Engine mounting bolt	3.2 — 3.8kg·m
Rear shock absorber bottom bolt	2.0 — 3.0kg·m
Engine hanger bolt	3.5 — 4.5kg·m



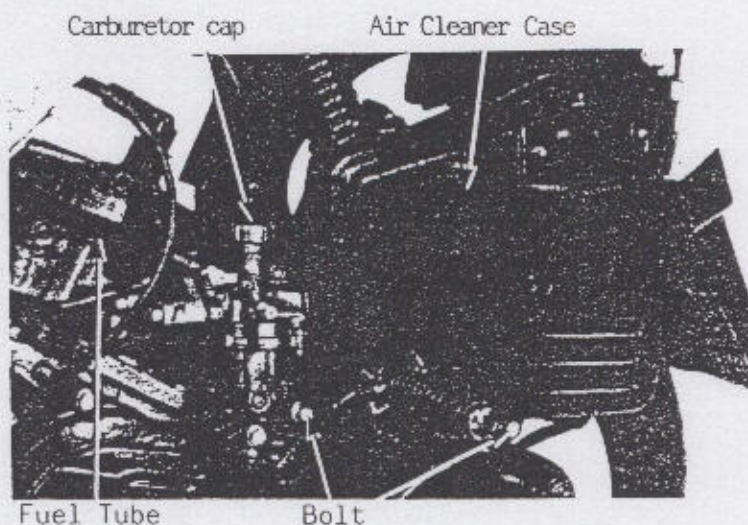
## ENGINE REMOVAL/INSTALLATION

### ENGINE REMOVAL

Remove the left side cover.  
( 12-6)

Remove the air cleaner case.  
( 11-6)

Put the fuel cup valve to "OFF"  
and remove the fuel tube.  
Remove the carburetor cap.

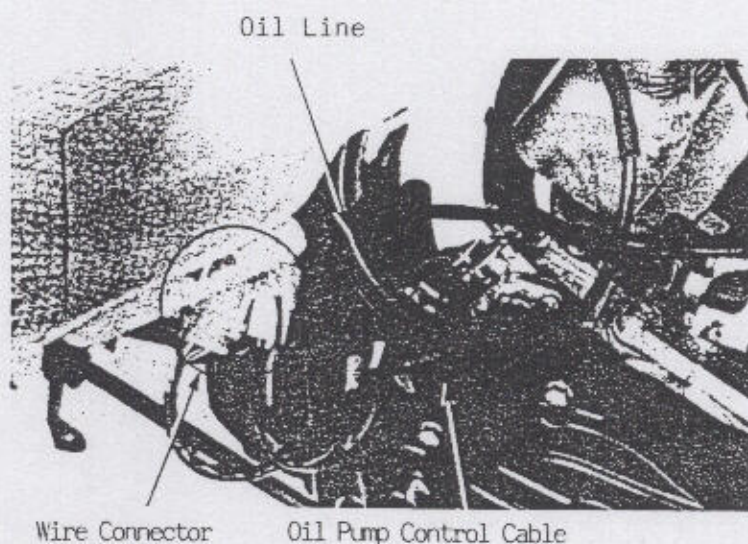


Disconnect the oil pump control  
cable from the oil pump.  
Disconnect the oil line.

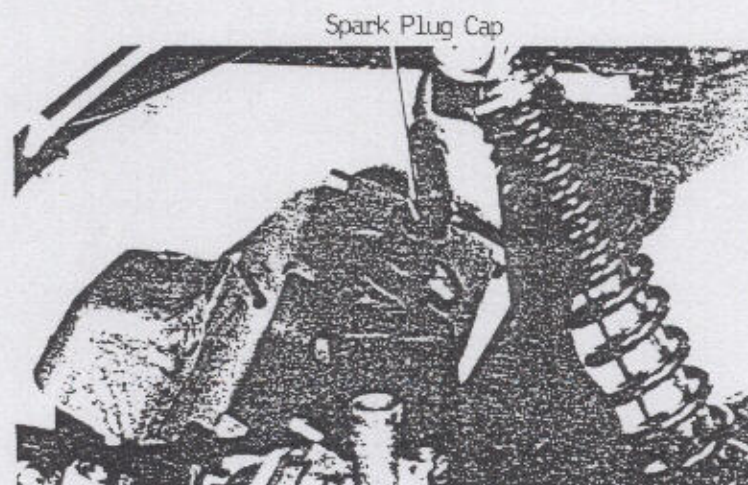


Plug the end of the oil  
line to prevent oil from  
flowing out of the tube  
after it is disconnected.

Disconnect the auto bystarter,  
A.C. generator and starter  
motor wire connectors.



Remove the spark plug cap.

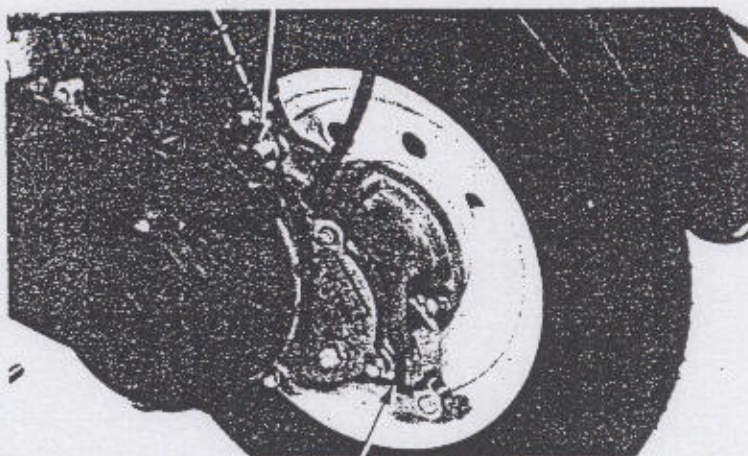




## ENGINE REMOVAL/INSTALLATION

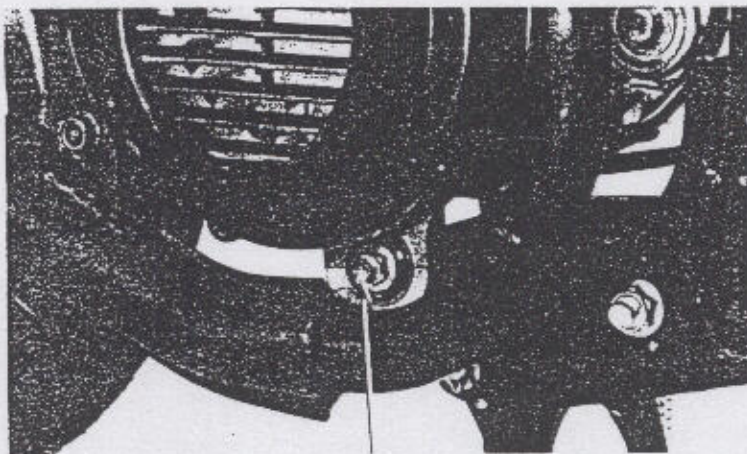
Remove the rear brake adjusting nut and remove the rear brake cable and brake lever from the crankcase.  
Remove the rear shock absorber bottom bolt.

Rear Shock Absorber Bottom Bolt



Rear Brake Cable

Remove the engine mounting bolt.  
Remove the engine from right side and be careful not to damage the rear fender.



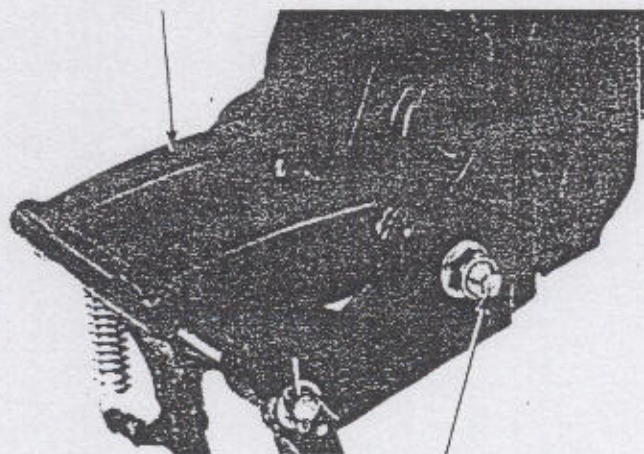
Engine Mounting Bolt

### Engine Hanger Removal

Remove the engine hanger bolt and remove the hanger.  
Install in the reverse order of removal.

**Torque:** 3.5-4.5 kg-m

Engine Hanger



Hanger Bolt



## ENGINE REMOVAL/INSTALLATION

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### ENGINE INSTALLATION

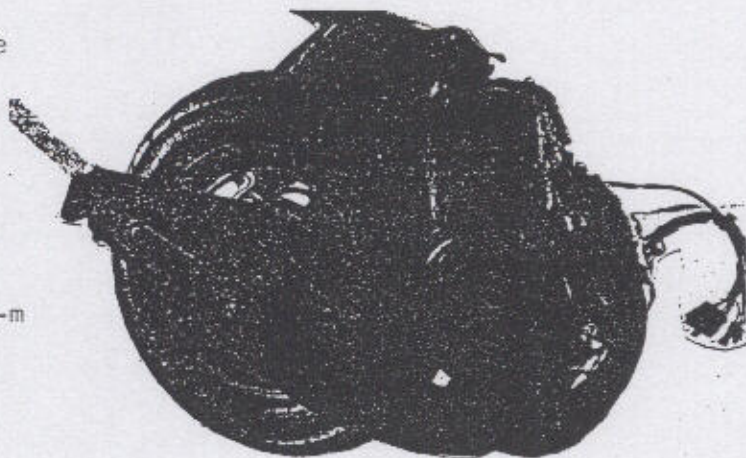
Install the engine in the reverse order of removal.

\* Cables and wires should be arranged correctly and properly. ( 2-18)

#### Torque:

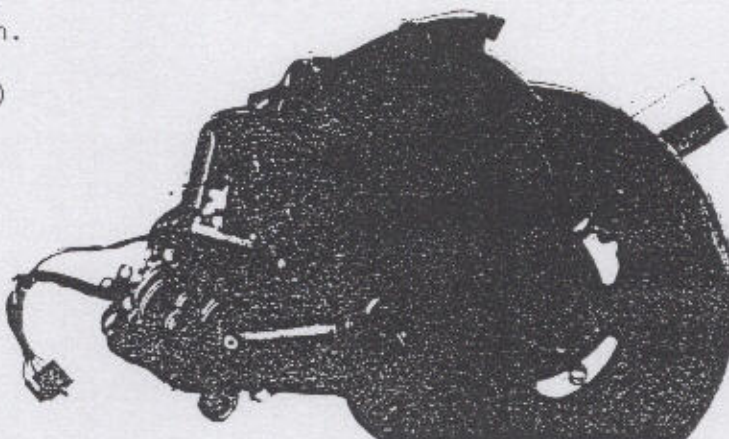
Engine Mounting Bolt: 3.2-3.8 kg-m

Rear Shock Absorber Bottom Bolt:  
2.0-3.0 kg-m



Perform the following inspections and adjustments after installation.

- .Throttle cable ( 3-12)
- .Oil pump control cable ( 3-11)
- .Rear brake cable ( 3-5)
- .Oil pump bleeding ( 4-6)







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## CYLINDER HEAD/CYLINDER/PISTON

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● TROUBLESHOOTING	-----	6	—	3
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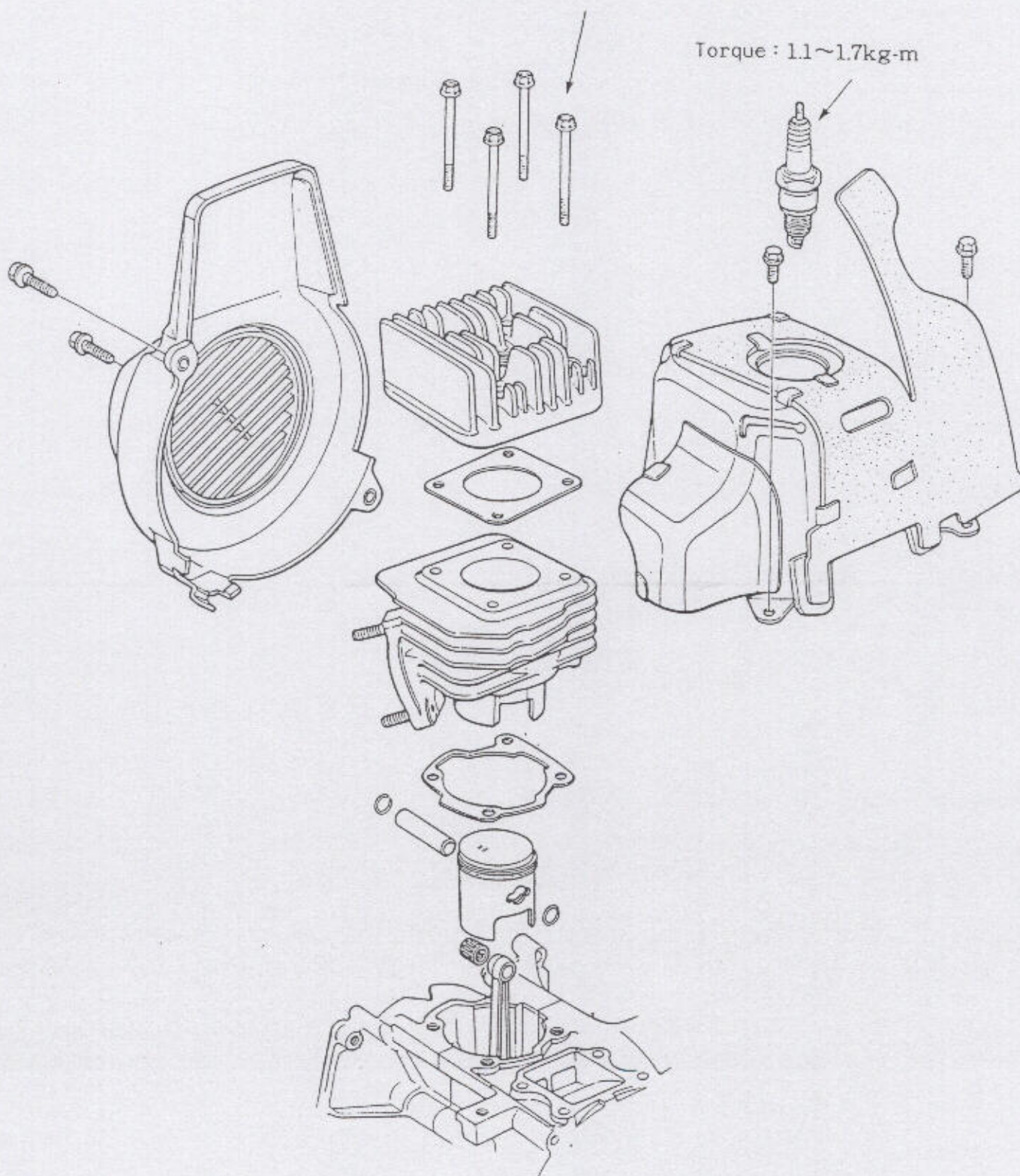


## CYLINDER HEAD/CYLINDER/PISTON

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Torque : 0.8~1.2kg-m

Torque : 1.1~1.7kg-m





## ●TROUBLESHOOTING

### ○Compression too low, hard starting or poor performance at low speed

- Blown cylinder head gasket
- Loose spark plug
- Worn, stuck or broken piston rings
- Worn or damaged cylinder and piston
- Faulty reed valve

### ○Compression too high, overheating or knocking

- Excessive carbon buildup in cylinder head or on piston top

### ○Abnormal noise-piston

- Worn cylinder and piston
- Worn piston pin or piston pin hole
- Worn connecting rod small end bearing

### ○Abnormal noise-piston rings

- Worn, stuck or broken piston rings
- Worn or damaged cylinder

## ●SERVICE INFORMATION

### ○GENERAL INSTRUCTIONS

- All cylinder head, cylinder and piston maintenance and inspection can be accomplished with the engine installed.
- Before disassembly, clean the engine to prevent dirt from entering the engine.
- Remove all gasket material from the mating surfaces.
- Do not use a driver to pry between the cylinder and cylinder head, cylinder and crankcase.
- Do not damage the cylinder inner face and piston surface.
- After disassembly, clean the removed parts before inspection. When assembling, apply designated engine oil to movable parts.

### ○SPECIFICATIONS

Item	Standard (mm)	Service Limit (mm)
Cylinder head warpage	—	0.10
Piston O.D. (4mm from bottom of piston skirt)	38.960 — 38.965	38.90
Cylinder-to-piston clearance	0.035 — 0.050	0.10
Piston pin hole I.D.	12.002 — 12.008	12.03
Piston pin O.D.	11.994 — 12.000	11.98
Piston-to-piston pin clearance	0.002 — 0.014	0.03
Piston ring end gap	0.10 — 0.25	0.40
Connecting rod small end I.D.	17.005 — 17.017	17.03
Cylinder bore	41.000 — 41.020	41.050

## ●Torque

- Cylinder head bolt 0.8—1.2kg-m
- Exhaust pipe joint lock nut 1.0—1.4kg-m
- Exhaust pipe lock bolt 2.4—3.0kg-m
- Spark plug 1.1—1.7kg-m

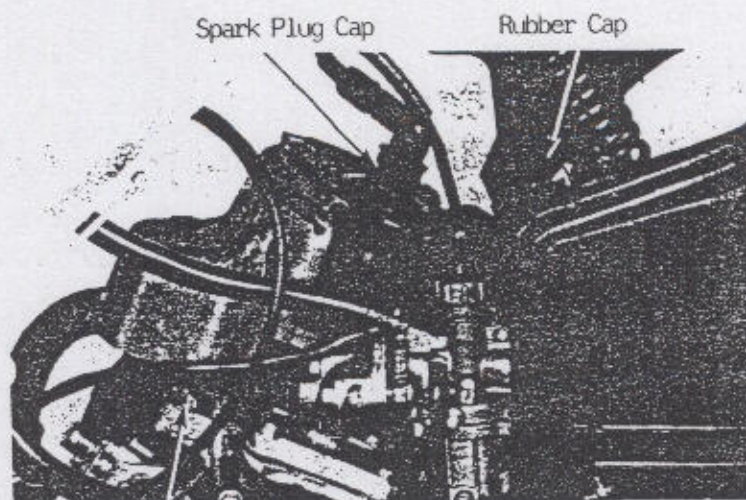


## CYLINDER HEAD/CYLINDER/PISTON

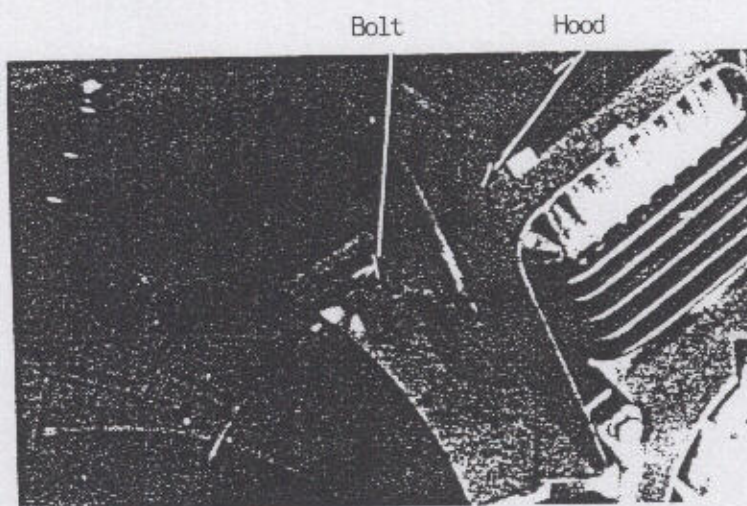
### CYLINDER HEAD

#### Removal

Remove left side cover. ( 12-6)  
Remove the spark plug cap.  
Remove the fan cover. ( 7-4)  
Remove the rubber cap and air cleaner.



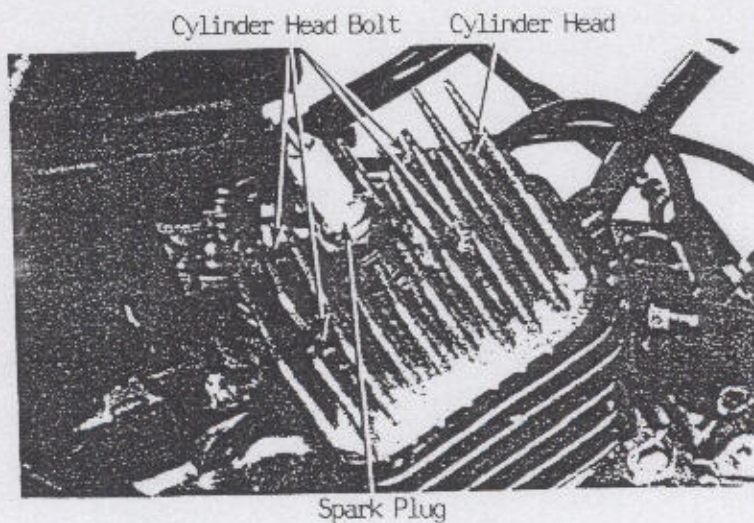
Remove the 2 bolts attaching the engine hood and then remove the hood.



Remove the spark plug.  
Remove the cylinder head bolts and remove the cylinder head.

Loosen bolts diagonally in 2 or 3 times.

Remove the cylinder head gasket.



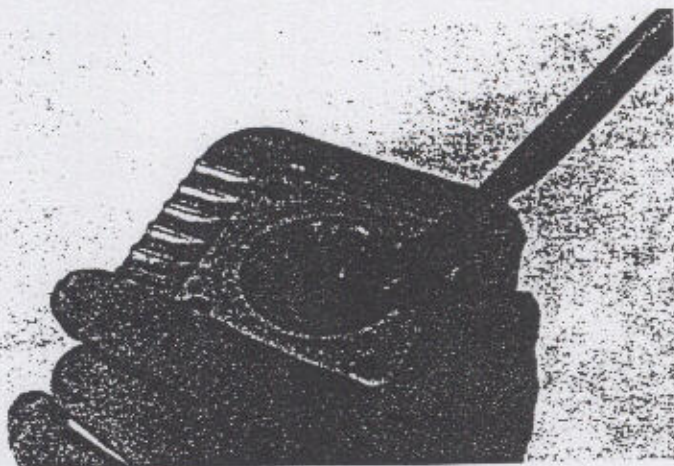


## CYLINDER HEAD/CYLINDER/PISTON

### Cylinder Head Decarbonizing

Remove the carbon deposits from the combustion chamber.

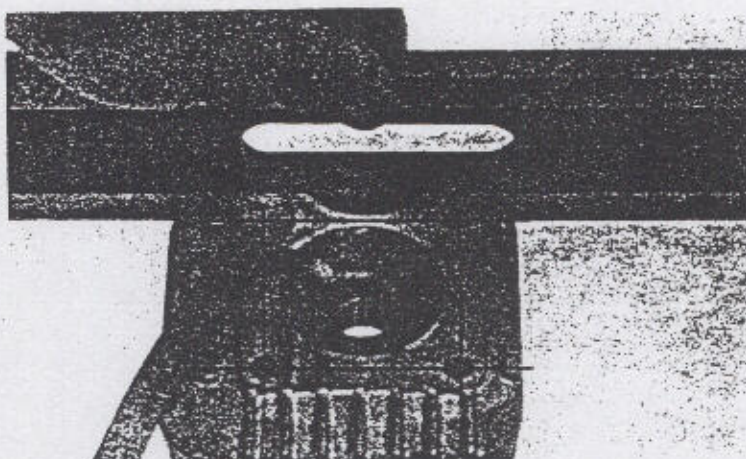
\* Do not damage the combustion chamber and cylinder mating surfaces.



### Cylinder Head Inspection

Check the cylinder head for warpage.

**Service Limit:** 0.10mm replace if over



### Cylinder Head Installation

The mating surfaces between the cylinder head and cylinder should be properly installed.

\* Be careful not to damage mating surfaces.

Install a new gasket onto the cylinder head.

Cylinder Head Gasket





## CYLINDER HEAD/CYLINDER/PISTON

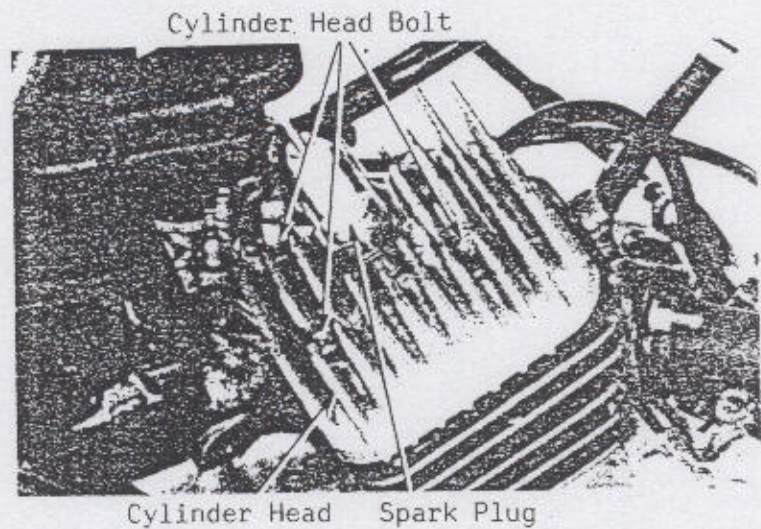
### Cylinder Head Installation

Tighten the cylinder head bolts diagonally in 2 or 3 times.

**Torque:** 0.8-1.2kg-m

Install the spark plug.

**Torque:** 1.1-1.7kg-m



### Engine Hood Installation

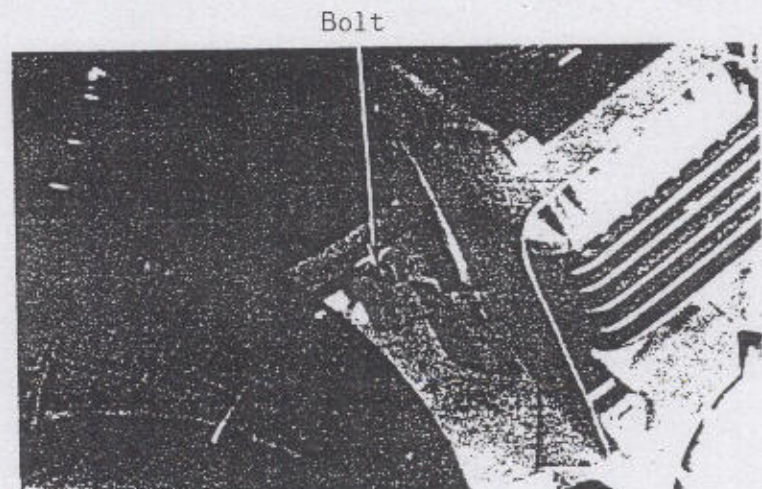
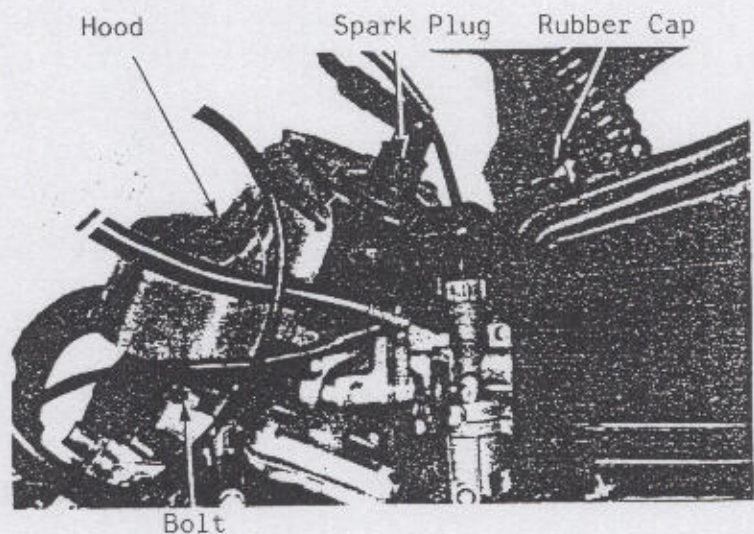
Install the rubber cap and air cleaner.

Install the spark plug cap.

Install the left side cover.  
( 12-9)

Perform the following checks  
after installation:

- .Compression test ( 3-10)
- .Abnormal engine noise
- .Secondary air leaks





## CYLINDER HEAD/CYLINDER/PISTON

### CYLINDER/PISTON

#### Cylinder Removal

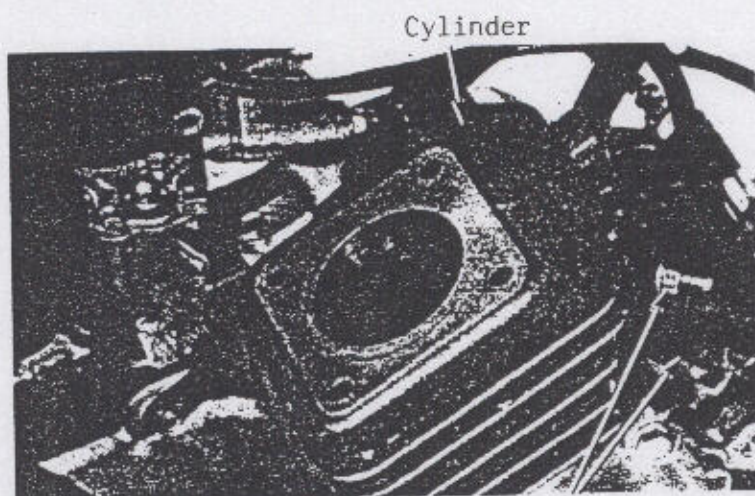
Remove the left side cover.

( 12-6)

Remove the cylinder head.( 6-4)

Remove the 2 exhaust pipe joint lock nuts and 2 exhaust pipe lock bolts. Remove the exhaust pipe. ( 14-4)

Remove the cylinder.



Do not strike the cylinder radiating fins too much.

Remove the cylinder head gasket.

#### Piston Removal

Remove the piston pin clip.

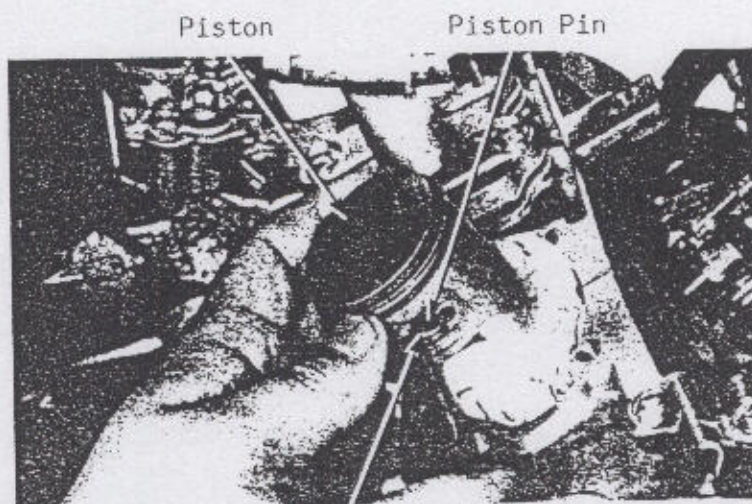
Remove the piston pin and piston.



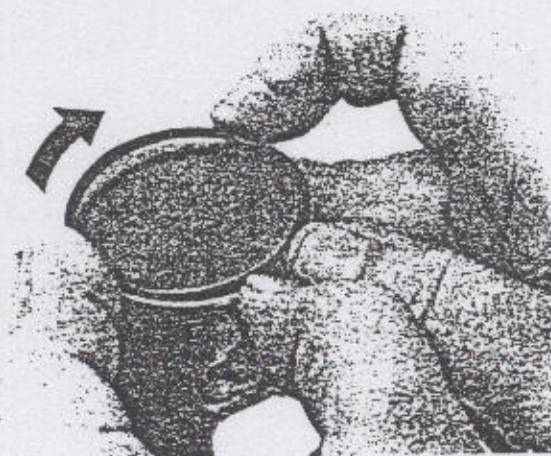
Do not damage or scratch the piston.

Do not apply side force to the connecting rod when removing the piston pin.

Place a piece of clean cloth under the piston to avoid the clip falling into the crankcase.



Spread each piston ring and remove by lifting it up at a point just opposite the gap. Remove the expander.





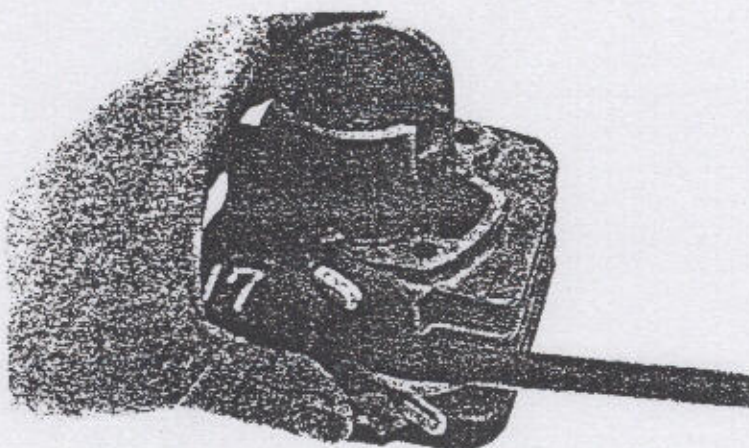
## CYLINDER HEAD/CYLINDER/PISTON

### Cylinder/Piston Inspection

Check the cylinder and piston for wear or damage.

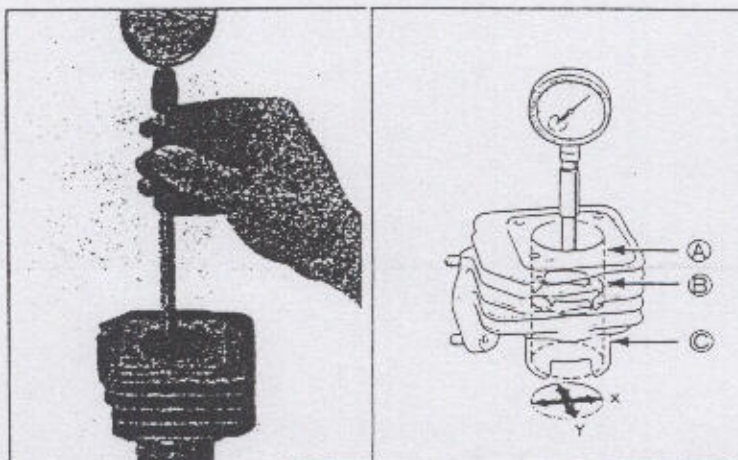
Clean carbon deposits from the exhaust port area.

\* Be careful not to damage the cylinder inner face.



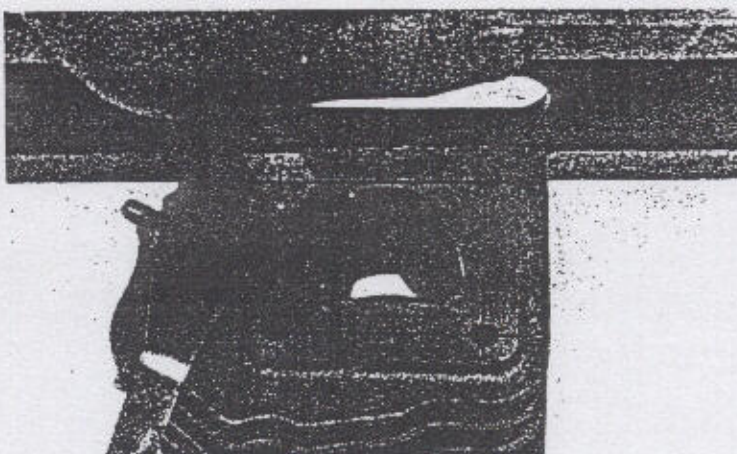
Measure the cylinder bore. Avoid the port area. Inspect the cylinder bore for wear at three levels in X and Y directions. Take the minimum figure measured to determine the cylinder wear.

**Service Limit:** 41.050mm replace if over



Check the cylinder head for warpage.

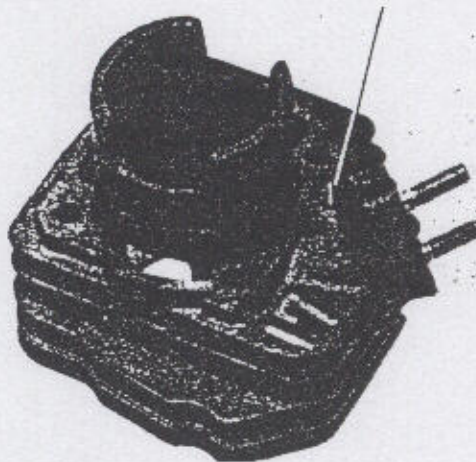
**Service Limit:** 0.10mm replace if over





## CYLINDER HEAD/CYLINDER/PISTON

\* The cylinder has an A mark or has no mark. When the cylinder is to be replaced with a new one. Use a cylinder having the same mark as the old one.

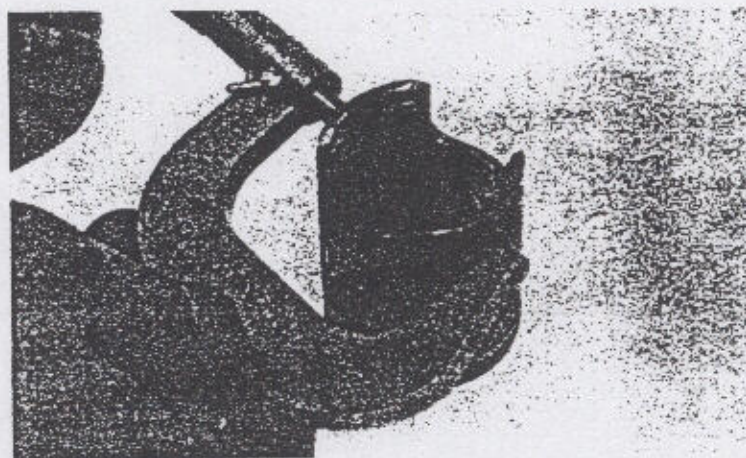


Measure the piston O.D. at a point 4mm from the bottom of the skirt.

**Service Limit:** 38.900mm replace if below

Measure the piston-to-cylinder clearance.

**Service Limit:** 0.100mm replace if over



Measure the piston pin hole I.D.

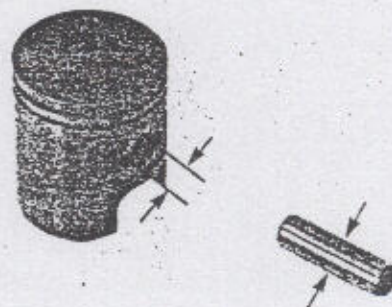
**Service Limit:** 12.030mm replace if over

Measure the piston pin O.D.

**Service Limit:** 11.980mm replace if over

Calculate the piston-to-piston pin clearance.

**Service Limit:** 0.030mm replace if over





## CYLINDER HEAD/CYLINDER/PISTON

### Piston Ring Inspection

Measure each piston ring end gap.

**Service Limit:**

**Top/Second:** 0.40mm replace if over



Press each piston ring into the cylinder in the direction of piston vertical to the cylinder wall and measure the end gap.

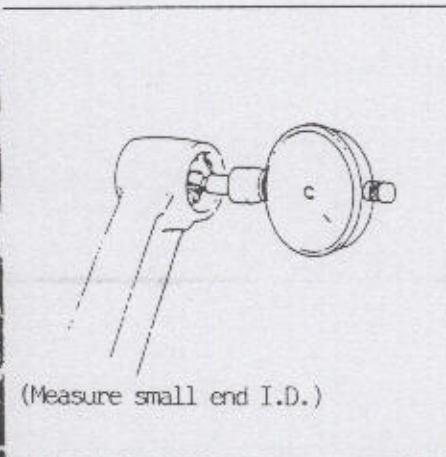


### Connecting Rod Small End Inspection

Install the piston pin and bearing in the connecting rod small end and check the piston pin for looseness.

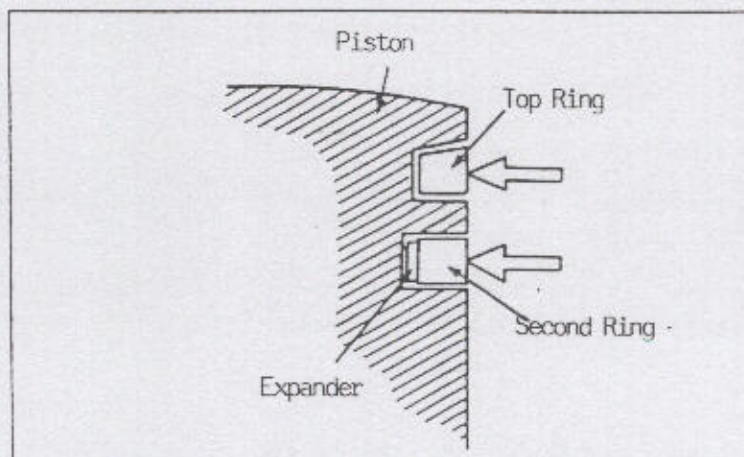
Measure the connecting rod small end I.D.

**Service Limit:** 17.03mm replace if over



### Piston/Cylinder Installation

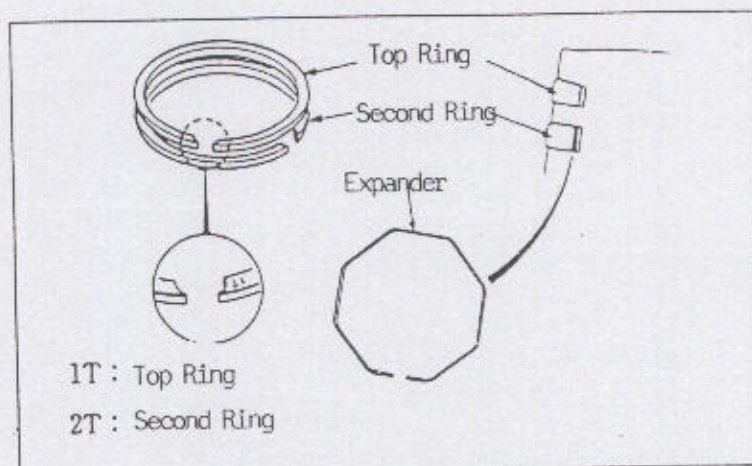
First install the expander in the second ring groove and then install the top and second rings in their respective ring grooves. The piston rings should be pressed in the grooves with even force. After installation, check and make sure that each ring is flush with the piston at several points around the ring. A ring that will not compress means that carbon deposits in the ring and groove should be cleaned.





## CYLINDER HEAD/CYLINDER/PISTON

- Install the piston rings with the markings facing up.
- The piston rings should be replaced as a set with the same brand.

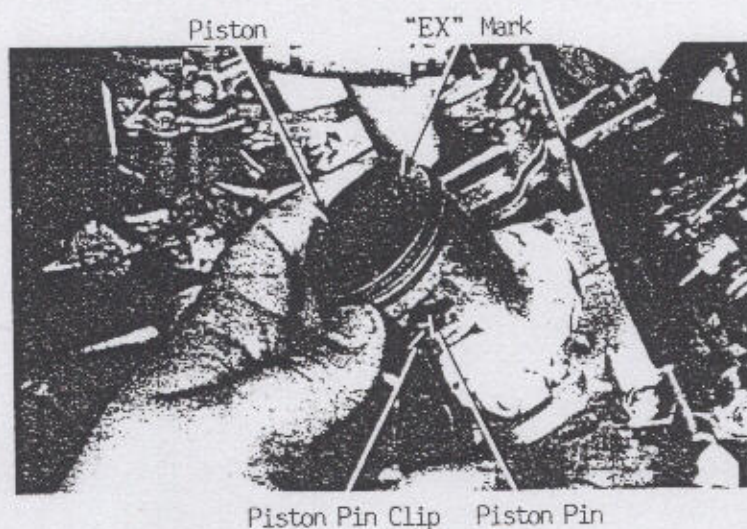


Install the piston in the connecting rod small end.

- Install the piston with the "EX" mark facing the exhaust side.
- Apply clean engine oil or molybdenum disulfide to piston pin before installation.

Install the piston pin and piston pin clip.

- Place a piece of clean cloth under the piston and above the crankcase to avoid the clip falling into the crankcase.
- If the clip is deformed, replace with a new one.



Install the cylinder gasket on the crankcase.

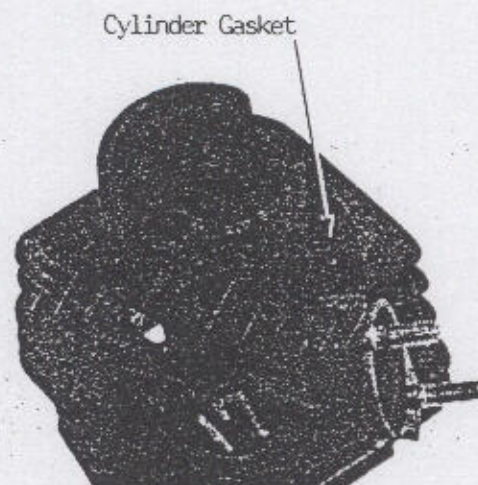
- Be careful not to damage the gasket surface.



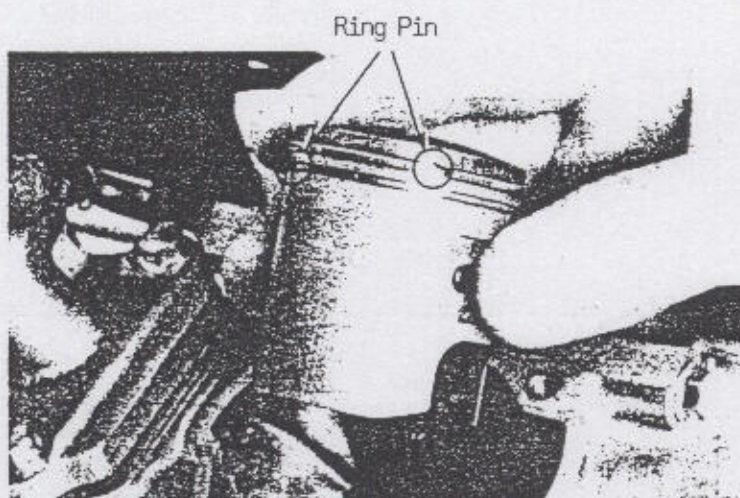


## CYLINDER HEAD/CYLINDER/PISTON

Install a new cylinder gasket on the mating surface between the cylinder and crankcase.



Be sure the ring end gaps are aligned with the piston ring pins in the ring grooves.



Lubricate the cylinder inside and piston rings with engine oil and install the piston into the cylinder while compressing the piston rings.

Be careful not to damage piston working surface.

Install the cylinder head.

( 6-5)

Install the exhaust pipe joint and exhaust pipe and install the exhaust pipe joint lock nut and exhaust pipe lock bolt.

( 14-5)

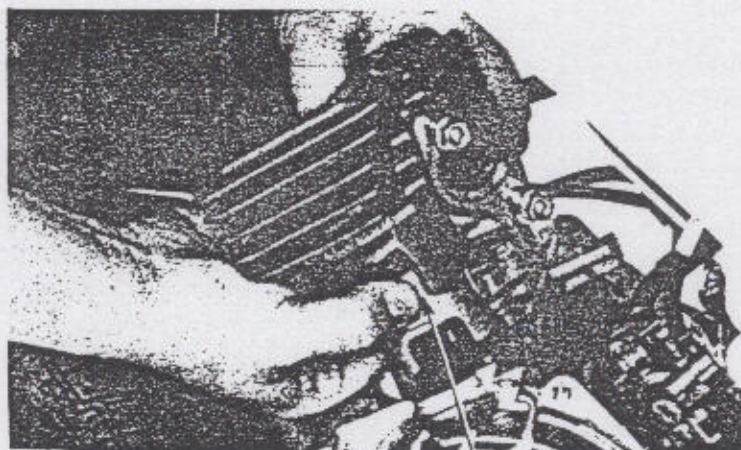
Tighten the exhaust pipe joint lock nut.

**Torque:** 1.0-1.4kg-m

Tighten the lock bolt.

**Torque:** 2.4-3.0kg-m

Install the left and right side covers. ( 12-9)





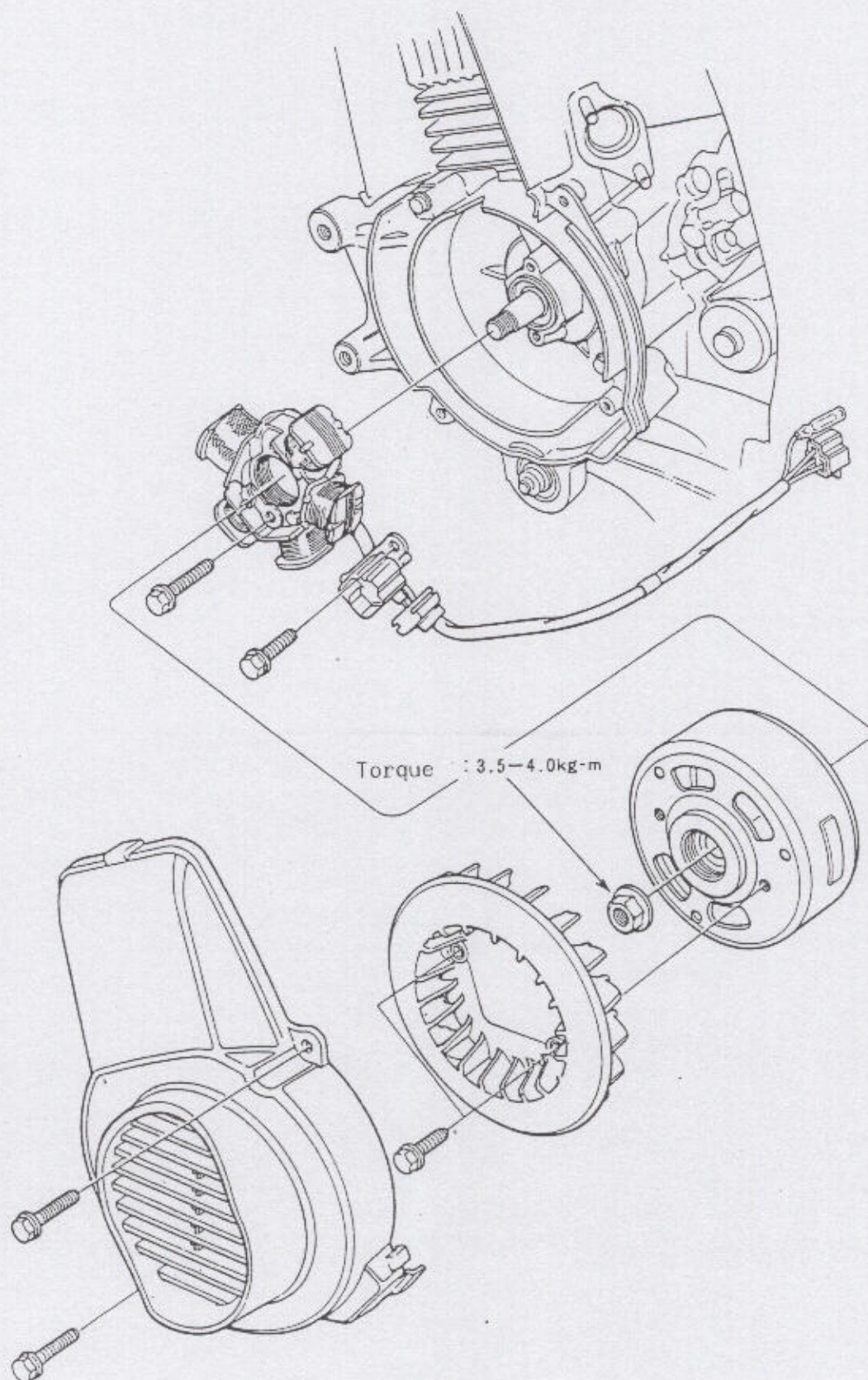
## A.C. GENERATOR

- SERVICE INFORMATION ----- 7 — 3
- A.C. GENERATOR REMOVAL ----- 7 — 4
- A.C. GENERATOR INSTALLATION ----- 7 — 5



## A.C. GENERATOR

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## A.C. GENERATOR

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### ● SERVICE INFORMATION

#### ● GENERAL INSTRUCTIONS

- All A.C. generator maintenance can be made with the engine installed.
- Refer to Chapter 15 for A.C. generator inspection.

#### ● TORQUE VALUES

Flywheel lock nut: 3.5-4.0kg-m

#### ● TOOLS

##### COMMON TOOLS

Flywheel puller	07733-0010000
Universal holder	07725-0030000

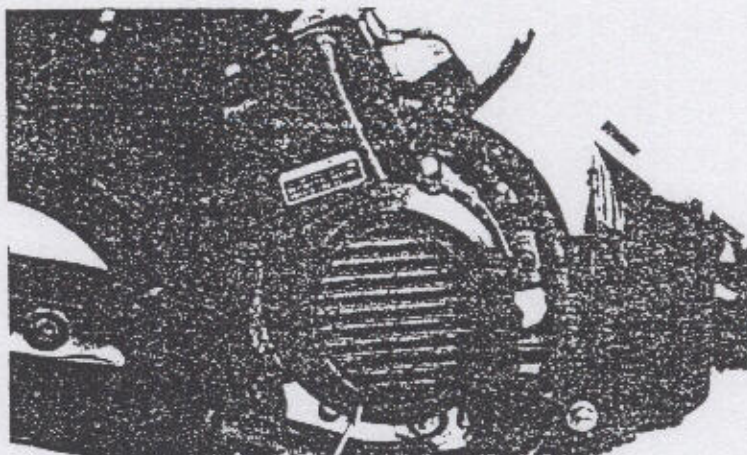


## A.C. GENERATOR

### A.C. GENERATOR

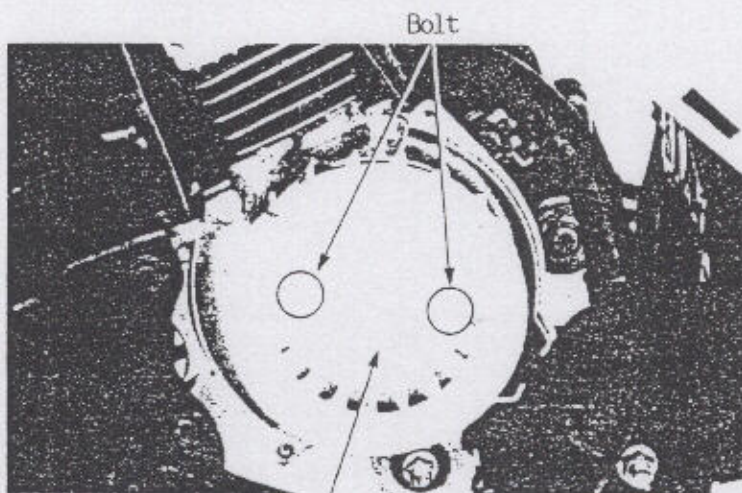
Remove the right and left side covers. ( 12-6)

Remove the fan cover.



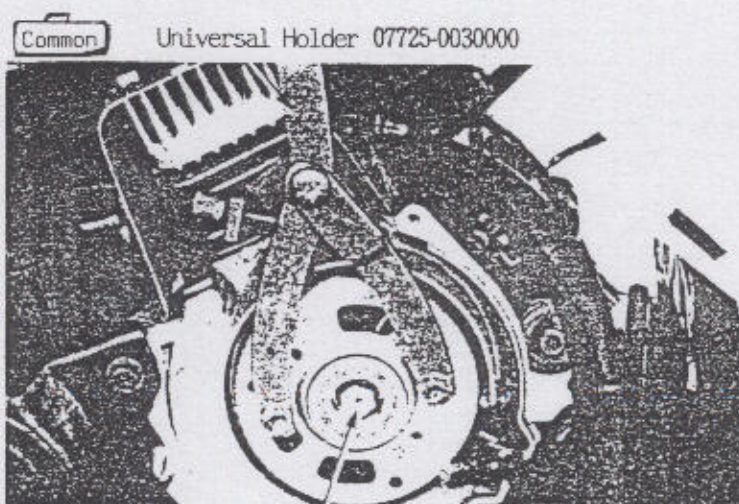
Fan Cover

Remove the 2 attaching bolts and remove the cooling fan.



Fan

Hold the flywheel with a universal holder and then remove the 10mm nut.

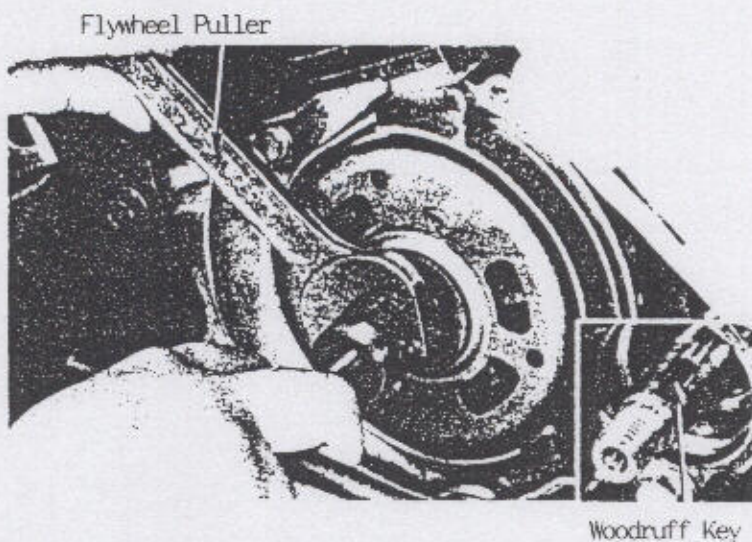


Nut

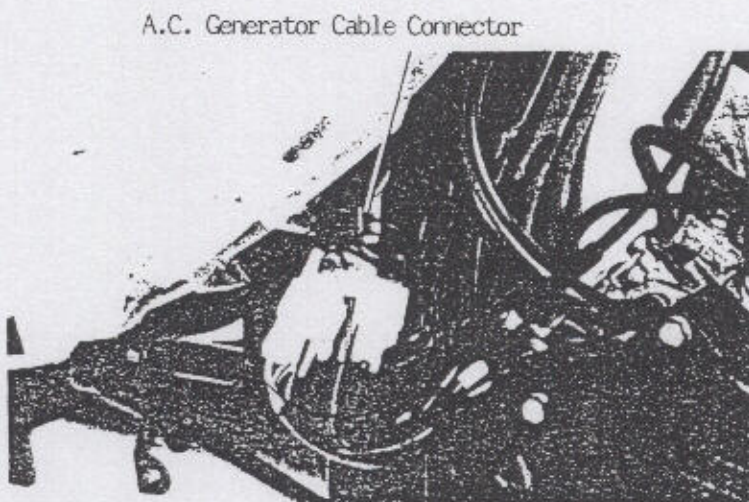


## A.C. GENERATOR

Remove the flywheel from the A.C. generator with a flywheel puller.



Disconnect the A.C. generator cable connector.



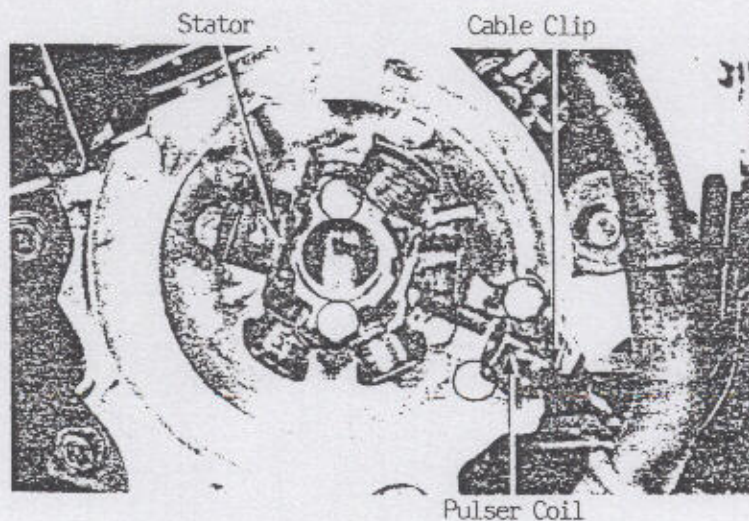
Remove the pulser coil attaching bolt and then remove the pulser coil from the right crankcase.

Remove the A.C. generator and pulser coil cable clip.

Do not damage the disconnected cable.

### A.C. Generator Installation

Install the A.C. generator and pulser coil cable clip onto the right crankcase cover and then install the pulser coil.

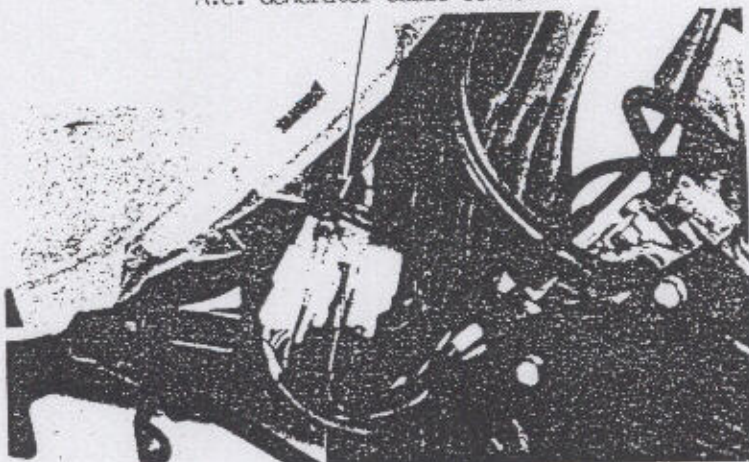




## A.C. GENERATOR

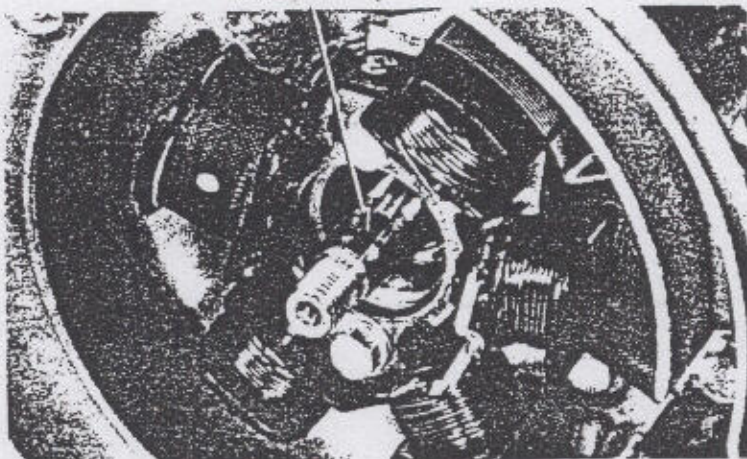
Connect the A.C. generator cable connector.

A.C. Generator Cable Connector



If the cone-shaped parts of flywheel and crankshaft are damaged, repair if necessary. Install the woodruff key in the crankshaft keyway.

Woodruff Key

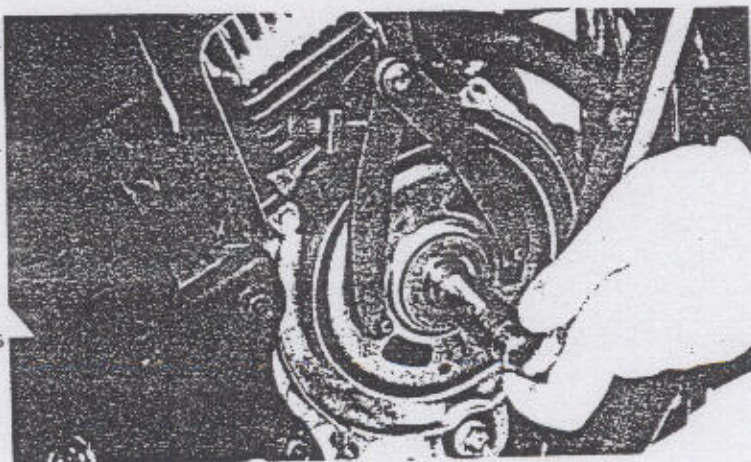


Install the flywheel onto the crankshaft with flywheel woodruff keyway aligned with the crankshaft woodruff key. Hold the flywheel with a universal holder and install the 10mm flange nut.

**Torque:** 3.5-4.0kg-m

Start the engine and check the ignition timing. ( 3-8)

The installation of removed parts is in the reverse order of removal.





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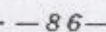
## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

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● TROUBLESHOOTING	8 — 3
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● DRIVE PULLEY	8 — 10
● STARTER PINION	8 — 15
● CLUTCH/DRIVEN PULLEY	8 — 15



## 8-2





# KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

## ●TROUBLESHOOTING

### ○Engine starts, but motorcycle won't move

- Worn drive belt
- Broken ramp plate
- Worn or damaged clutch lining

### ○Poor performance at high speed or lack of power

- Worn drive belt
- Weak driven pulley spring
- Worn weight roller
- Faulty driven pulley

### ○Engine stalls or motorcycle stops suddenly

- Broken clutch weight spring

## ●SERVICE INFORMATION

### ○GENERAL INSTRUCTIONS

- Keep grease or engine oil off the drive belt and drive pulley.

### ○SPECIFICATIONS

Item	Standard (mm)	Service Limit(mm)
Drive pulley bushing I.D.	20.35 — 20.085	20.60
Drive pulley boss O.D.	20.010 — 20.025	19.97
Weight roller O.D.	15.92 — 16.08	15.40
Clutch outer I.D.	107.0 — 107.2	107.5
Driven pulley spring free length	98.1	92.8
Driven pulley bushing O.D.	33.965 — 33.985	33.940
Driven pulley bushing I.D.	34.000 — 34.025	34.060
Drive belt width	18	17

### ○TORQUE VALUES

Drive face	3.5—4.0kg-m
Clutch outer	3.5—4.0kg-m
Driven face	5.0—6.0kg-m

### ○TOOLS

#### SPECIAL TOOLS

Lock nut wrench 39mm	07916—1870002
Clutch spring compressor	07960—KM10000
Bearing driver	07945—GC80000

#### COMMON TOOLS

Universal holder	07725—0030000
Bearing outer driver handle A	07749—0010000
Bearing driver pilot 17mm	07746—0040400
Outer remover 24x26mm	07746—0010700



## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

### KICK STARTER

#### Left Crankcase Cover Removal

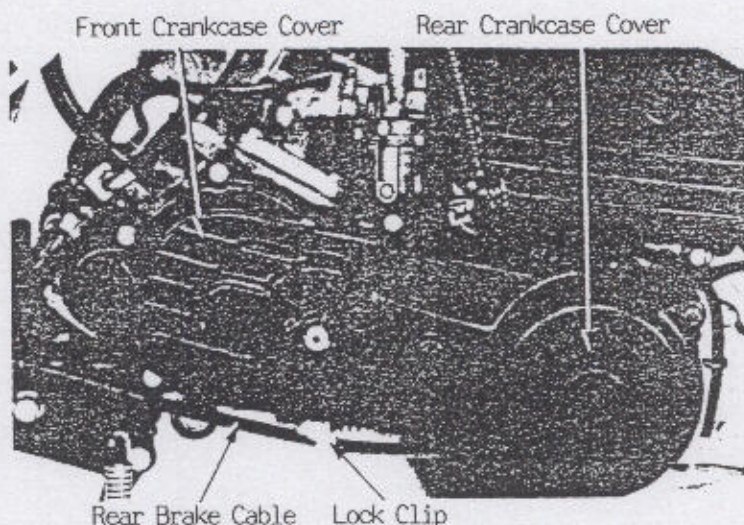
Remove the right and left side covers. ( 12-6)

Disconnect the rear brake cable from the lock clip and remove the 5 bolts from the left crankcase. Then remove the rear crankcase cover.

Check the left crankcase rear cover rubber grommet for wear and damage.

Remove the 5 bolts from the left crankcase and then remove the front crankcase cover.

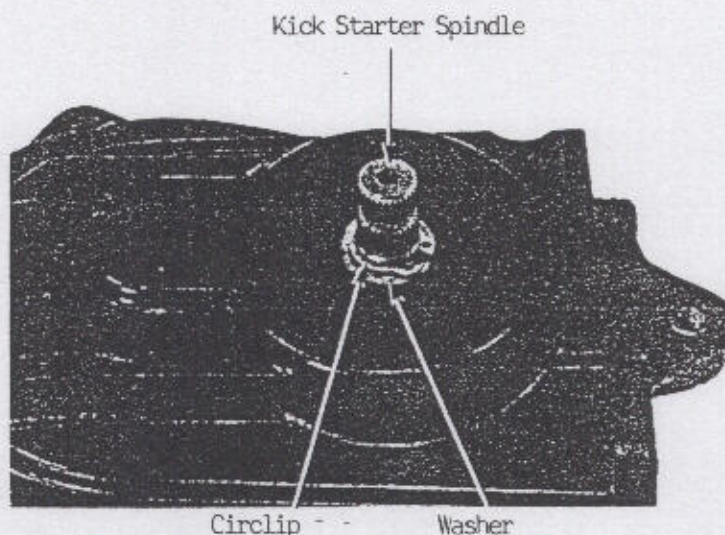
Remove the gasket and lock pins.



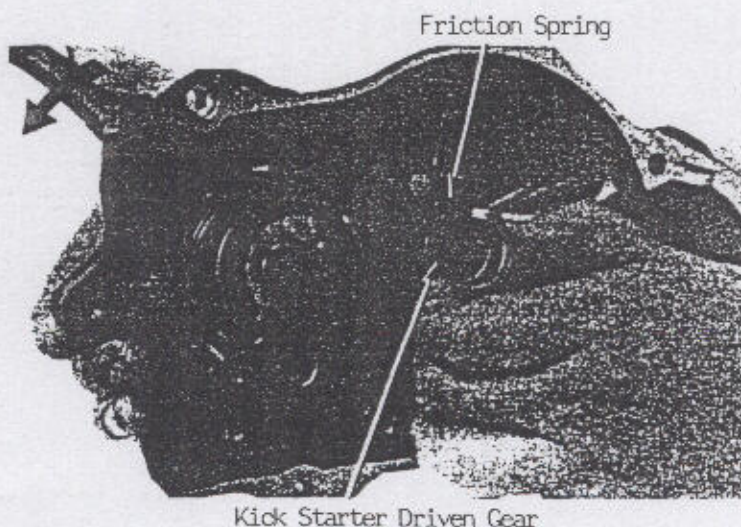
#### Kick Starter Spindle Removal

Remove the kick lever from the kick starter spindle.

Remove the circlip and washer from the kick starter spindle.



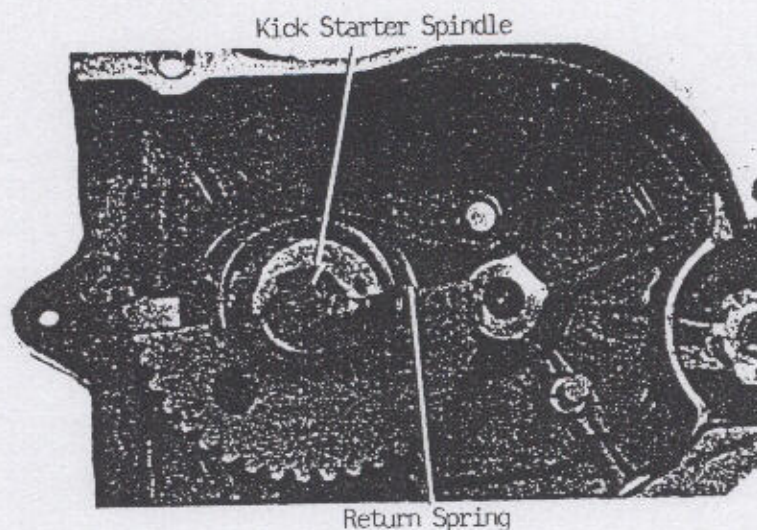
Slightly rotate the kick starter spindle to remove the kick starter driven gear and friction spring.





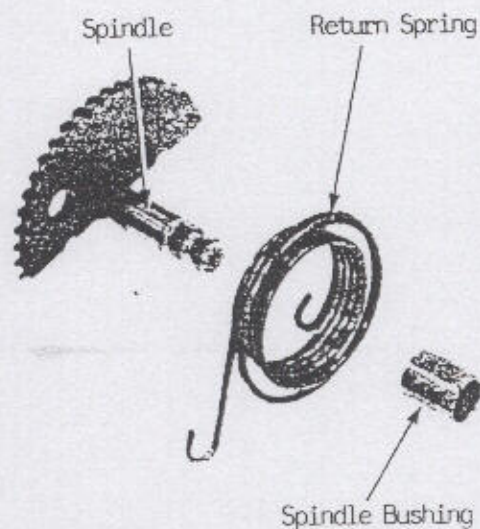
## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

Remove the kick starter spindle and return spring from the left front crankcase cover.  
Remove the kick starter spindle bushing.

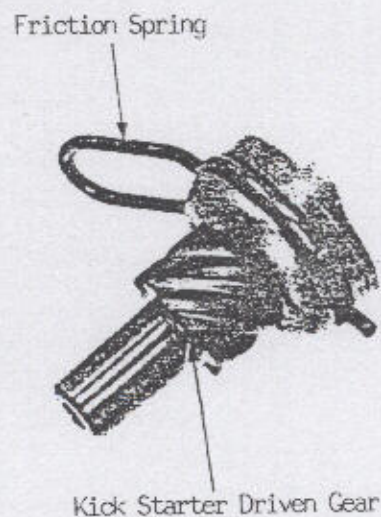


### Kick Starter Spindle Inspection

Check the kick starter spindle and gear for wear or damage.  
Inspect the starter return spring for weakness or damage.  
Inspect the kick starter spindle bushing for wear or damage.



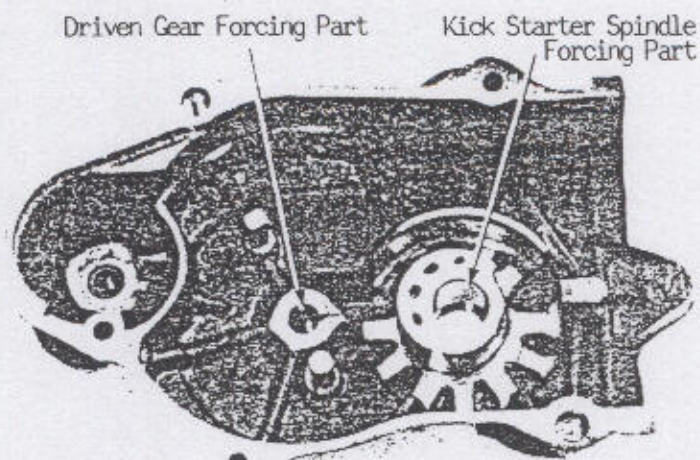
Check the kick starter driven gear for wear or damage.  
Check the friction spring for wear or damage.





## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

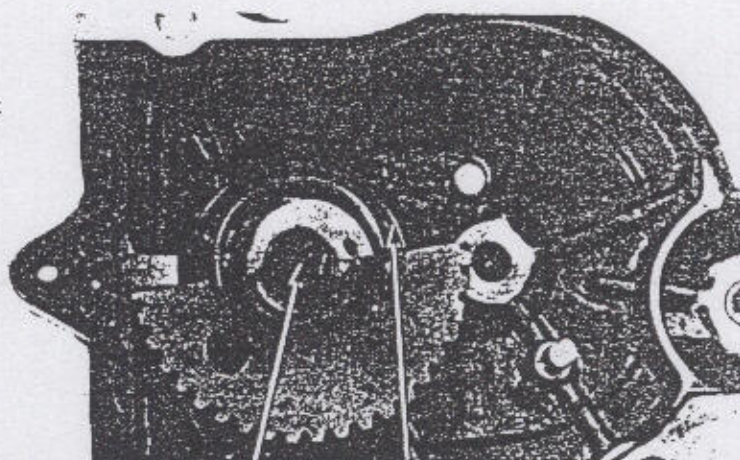
Check the kick starter spindle and driven gear forcing parts for wear or damage.



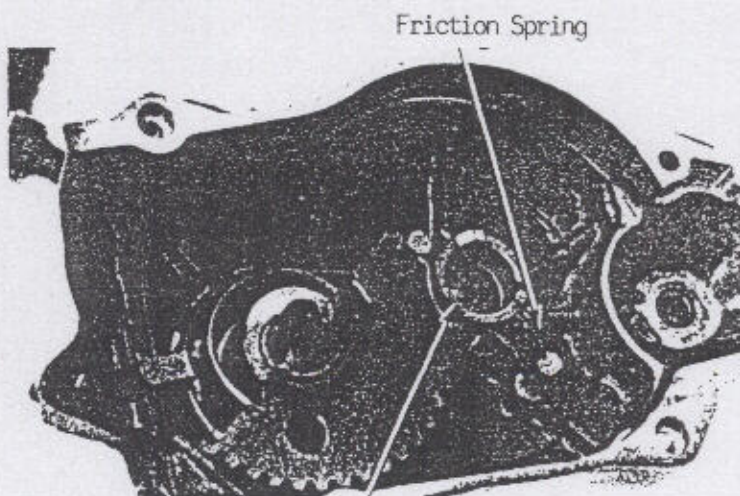
### Kick Starter Installation

Install the kick starter spindle bushing and return spring in the front crankcase cover of the left crankcase.

If the return spring two end hooks are not inserted in the kick starter spindle, use a screw driver to press them into the spindle respectively.



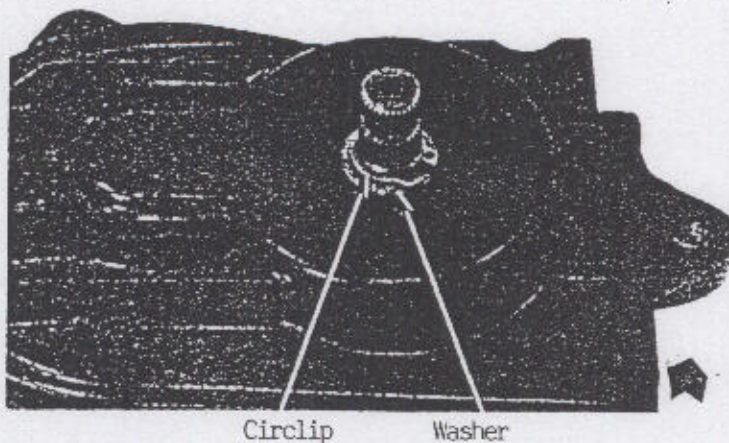
Properly install the kick starter driven gear and friction spring as the figure shown.



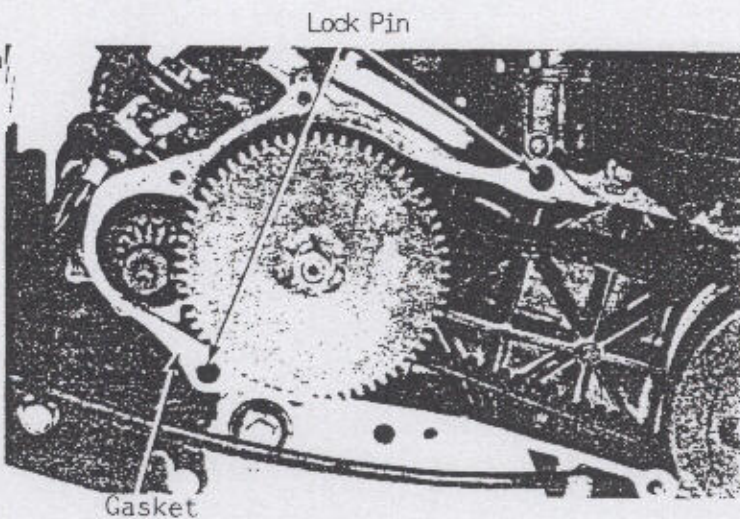


## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

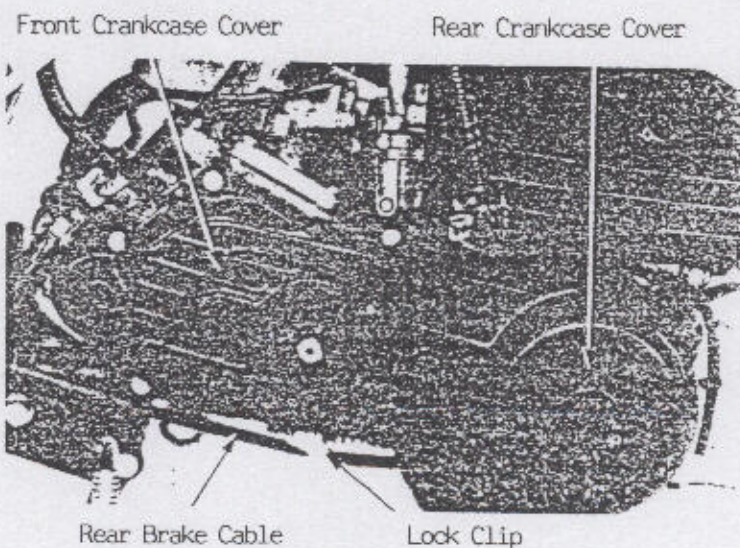
Install the washer and circlip  
on the spindle.  
Install the kick lever.



**Left Crankcase Cover Installation**  
Install the lock pins.



Install the front crankcase  
cover on the left crankcase and  
tighten the 5 attaching bolts.  
Then install the rear crankcase  
cover on the left crankcase and  
tighten the 5 attaching bolts.  
Install the rear brake cable  
and lock clip.  
Install the left side cover.  
( 12-9)





## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

### DRIVE BELT

Remove the left side cover.

( 12-6)

Remove the left crankcase cover.

( 8-4)

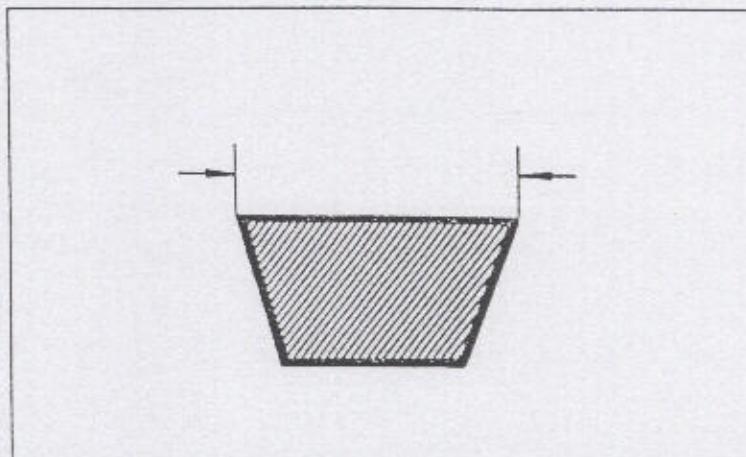
#### Inspection

Check the drive belt for cracks, separation or abnormal or excessive wear.

Measure the drive belt's width.

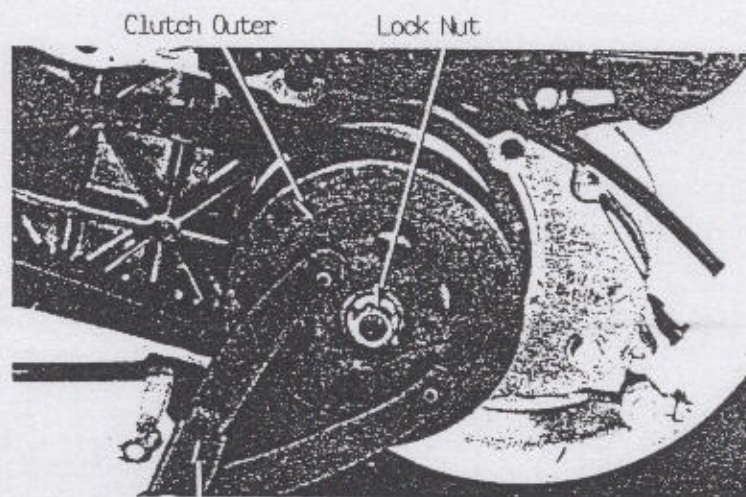
**Service Limit:** 17mm

Use specified genuine part  
for replacement.



### Replacement

Hold the clutch outer with an universal holder and then remove the 10mm lock nut.

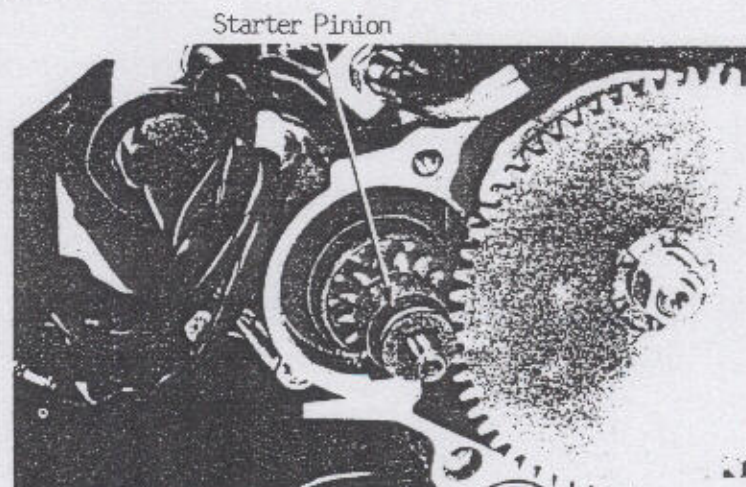


Universal Holder

07725-0030000



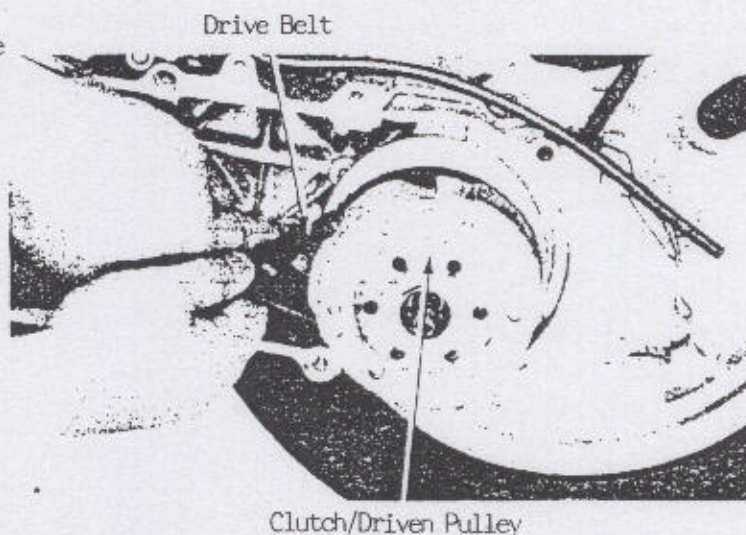
Remove the starter pinion.





## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

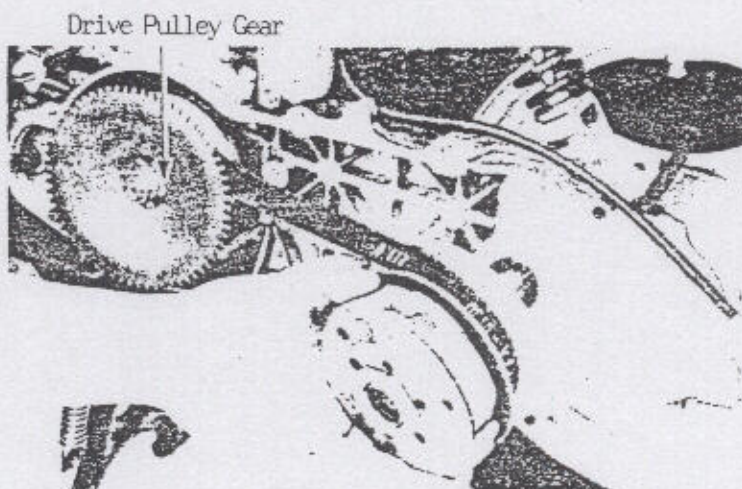
As the figure shown, expand the the clutch/driven pulley's drive belt groove. Remove the drive belt together with the clutch/driven pulley from the drive shaft.  
Remove the drive belt from the clutch/driven pulley.



Install the clutch/driven pulley in the reverse order of removal.  
Turn the clutch/driven pulley right to expand the drive belt groove and then install a new drive belt.  
Remove the new drive belt from the drive shaft after it is installed on the clutch/driven pulley.



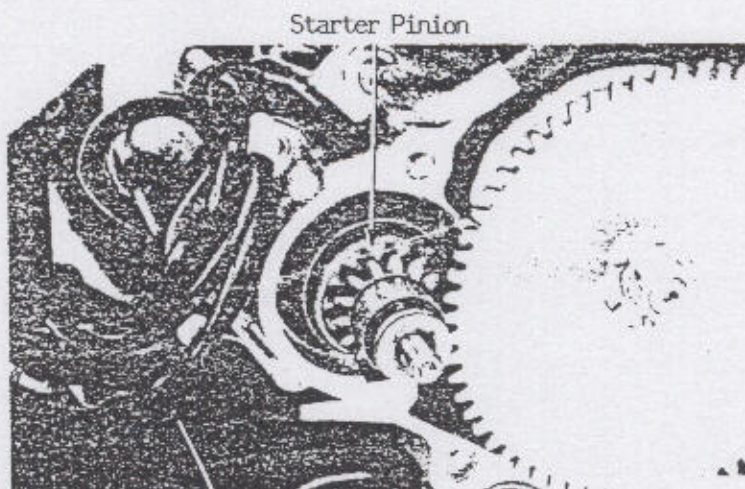
Install the drive belt on the drive pulley.  
Install the clutch/driven pulley on the drive shaft.





## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

Install the starter pinion.



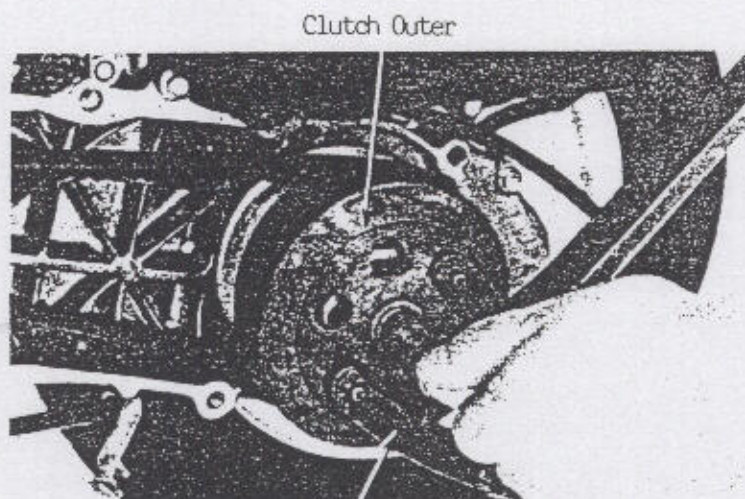
Hold the clutch outer with an universal holder.

Tighten the 10mm lock nut.

**Torque:** 3.5-4.0kg-m

Install the left crankcase cover. ( 8-5)

Install the left side cover. ( 12-9)



Common

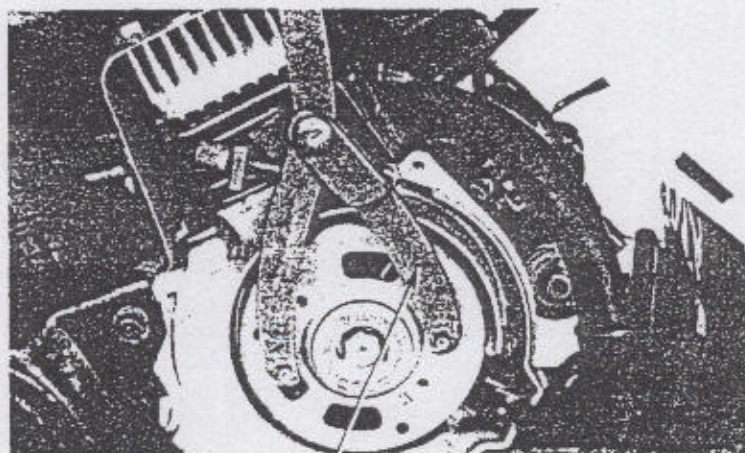
Universal Holder  
07725-0030000

### DRIVE PULLEY

#### Removal

Remove the cooling fan. ( 7-4)

Hold the A.C. generator flywheel with an universal holder and tighten the lock nut.



Common

Universal Holder  
07725-0030000

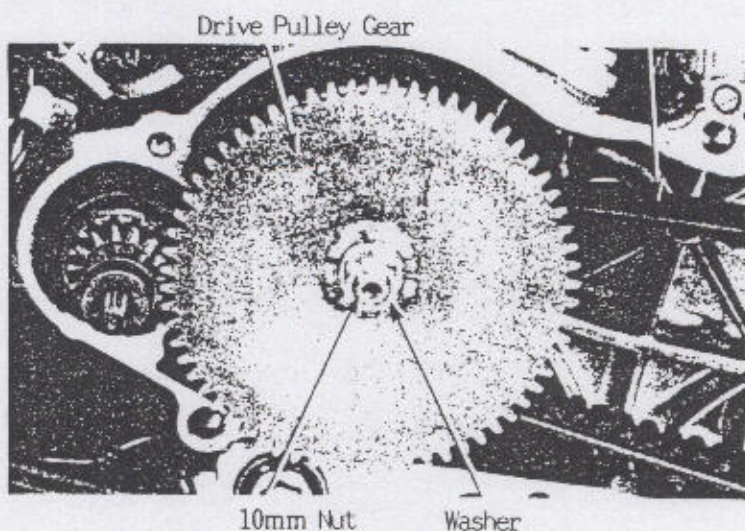


## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

Remove the left crankcase cover.  
( 8-4)

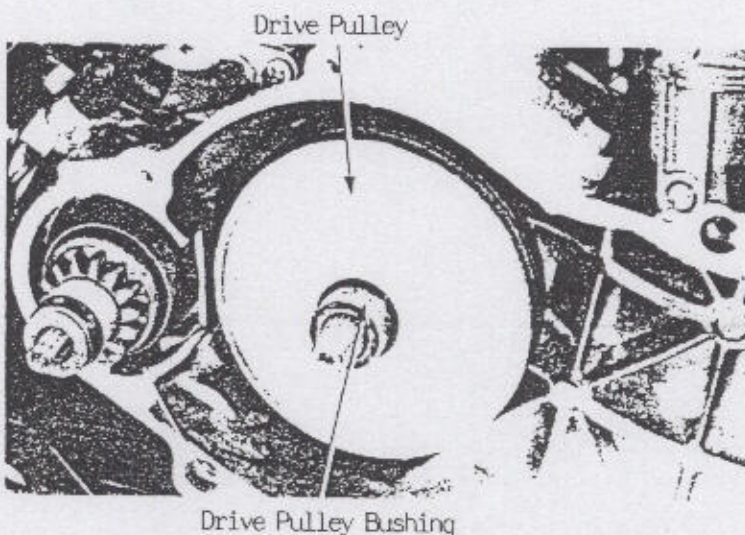
Remove the 10mm lock nut and washer and then remove the drive pulley.

Remove the drive belt from the crankshaft.

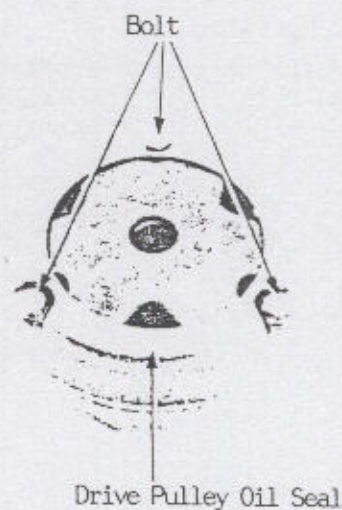


### Drive Pulley Disassembly

Remove the drive pulley and bushing from the crankshaft.



Remove the 3 attaching bolts and then remove the O-ring from the drive pulley.

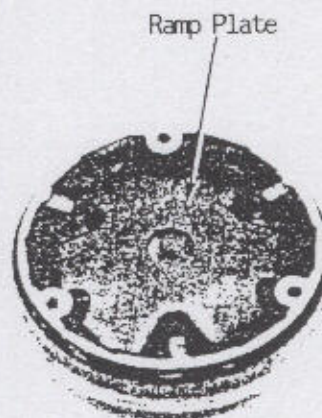




## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

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Remove the ramp plate.



Remove the weight rollers.

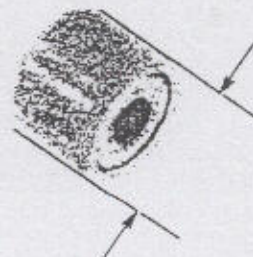


### Drive Pulley Inspection

Check each weight roller for wear or damage.

Measure each roller O.D.

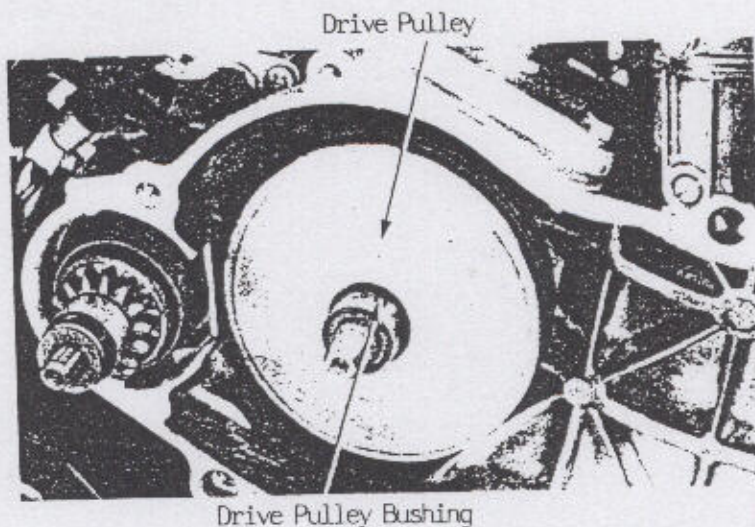
**Service Limit:** 15.40mm replace if below





## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

Install the drive pulley bushing and drive pulley on the crankshaft.



### Drive Pulley Installation

Install the drive belt on the crankshaft.

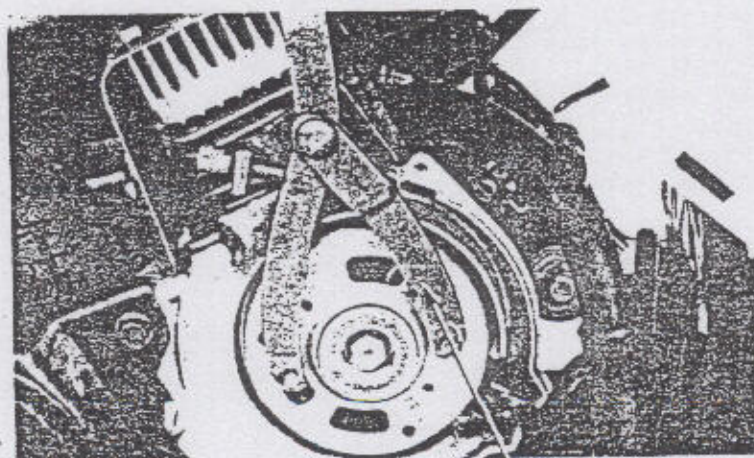
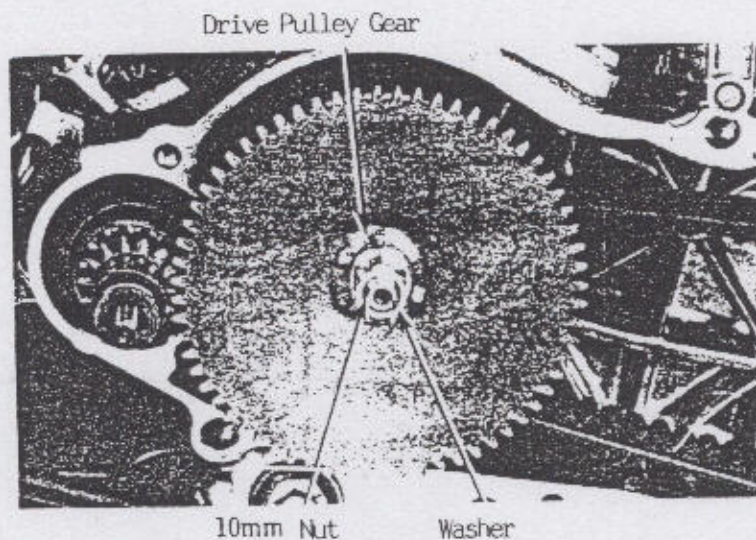
Install the drive pulley and washer. Tighten the 10mm nut. Hold the A.C. generator flywheel with an universal holder.

( 7-4)

Tighten the 10mm nut.

**Torque:** 3.5-4.0kg-m

Keep grease or oil off the drive belt and drive pulley.



Common

Universal Holder  
07725-0030000



## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

### STARTER PINION

#### Removal

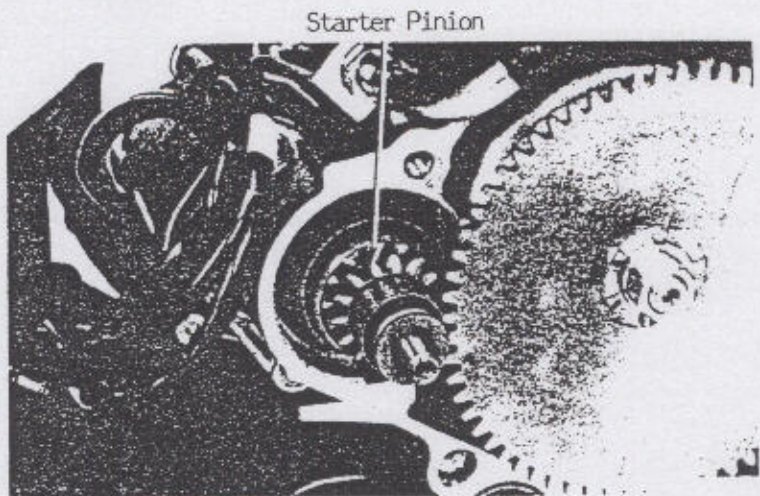
Remove the left side cover.

( 12-6)

Remove the left crankcase cover.

( 8-4)

Remove the starter pinion.



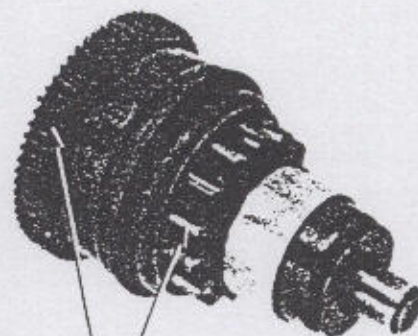
#### Inspection

Inspect the starter pinion for proper operation.

Inspect the gear and forcing part for wear or damage.

#### Installation

Apply grease to the starter pinion and install it in the reverse order of removal.

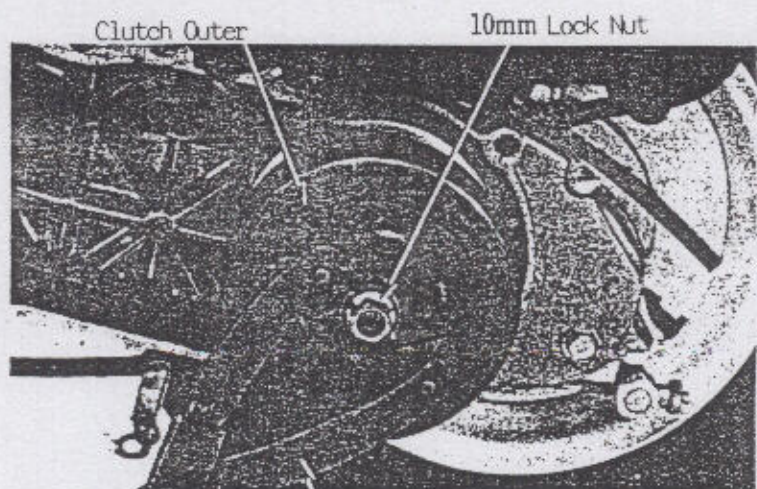


### CLUTCH/DRIVEN PULLEY

#### Clutch/Driven Pulley Removal

Hold the clutch outer with an universal holder and then remove the 10mm lock nut.

Remove the clutch outer.



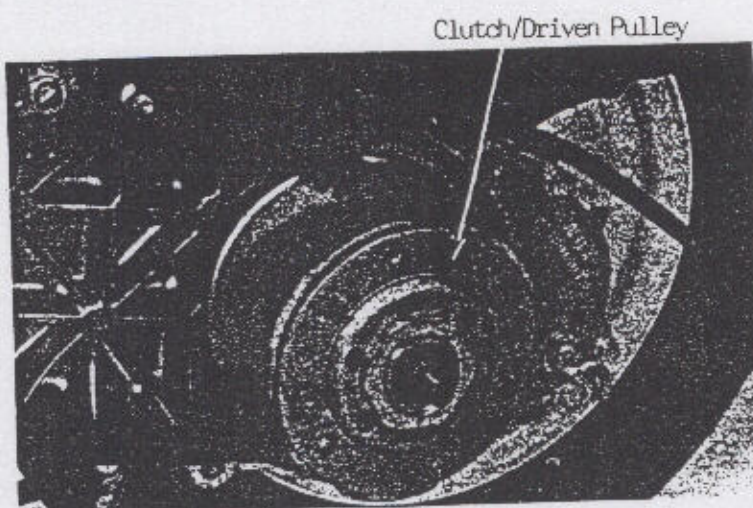
Common

Universal Holder  
07725-0030000

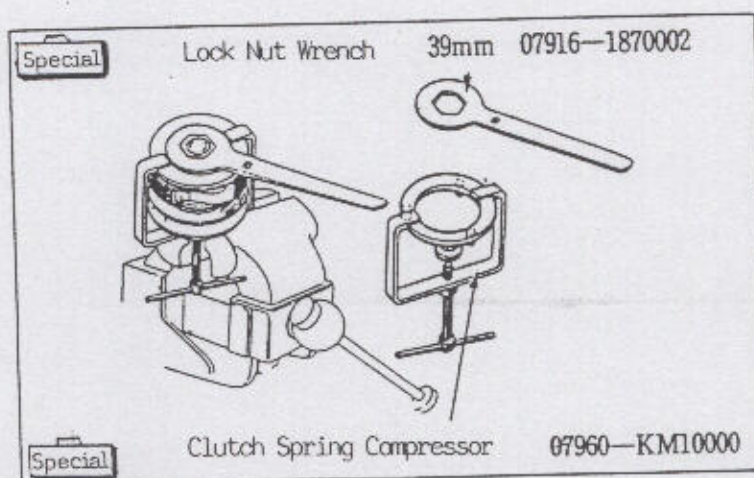


## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

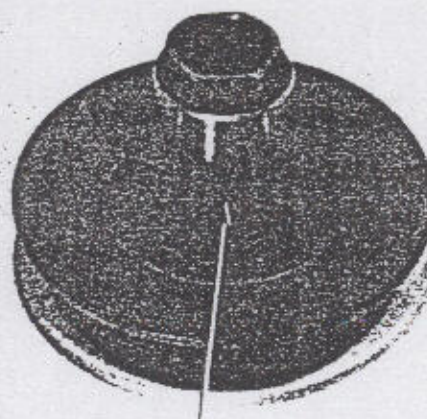
Remove the clutch/driven pulley.  
Remove the drive belt from the  
clutch/driven pulley.



**Clutch/Driven Pulley Disassembly**  
Compress the driven pulley spring  
to remove the 28mm nut with the  
clutch spring compressor.  
Remove the clutch spring.



Remove the seal collar.

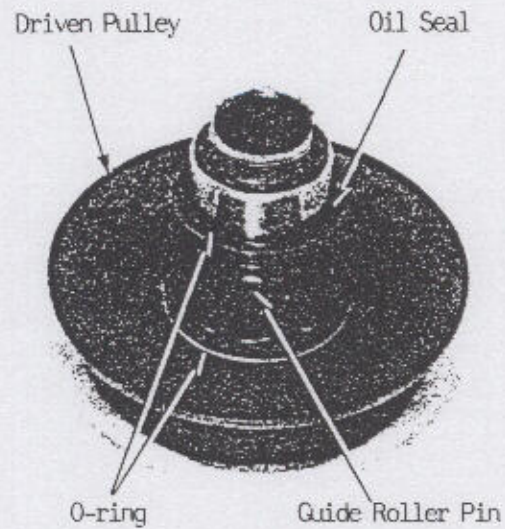




## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

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Withdraw the guide roller pin from the driven pulley and then withdraw the O-rings and oil seal from the driven pulley.

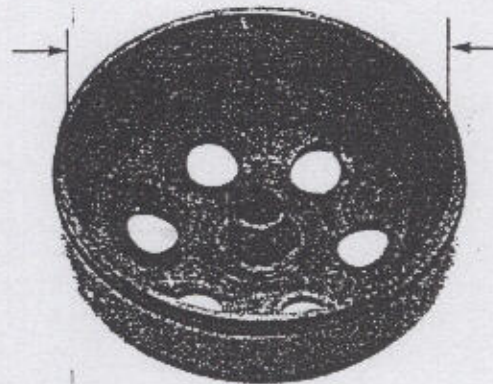


### Clutch/Driven Pulley Inspection

Inspect the clutch outer for wear or damage.

Measure the clutch outer I.D.

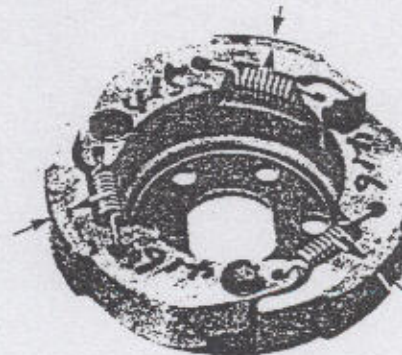
**Service Limit:** 107.5mm



Inspect the clutch linings for wear or damage.

Measure the thickness of each lining.

**Service Limit:** 2.0mm replace if below





## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

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Measure the driven pulley spring free length.

**Service Limit:** 92.8mm replace if below



Inspect the driven pulley for wear or damage.

Measure the driven pulley bushing O.D.

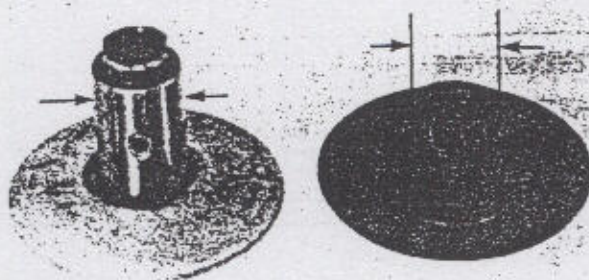
**Service Limit:** 33.940mm replace if below

Inspect the driven pulley for wear or damage.

Measure the driven pulley bushing I.D.

**Service Limit:** 34.060mm replace if over

Check the guide roller pin groove for wear or damage.

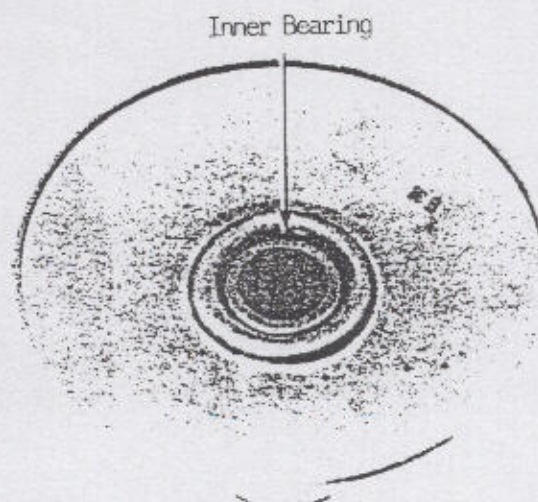


### Driven Pulley/Bearing Replacement

Check the driven pulley inner needle bearing for looseness, damage or abnormal noise.

Replace if necessary.

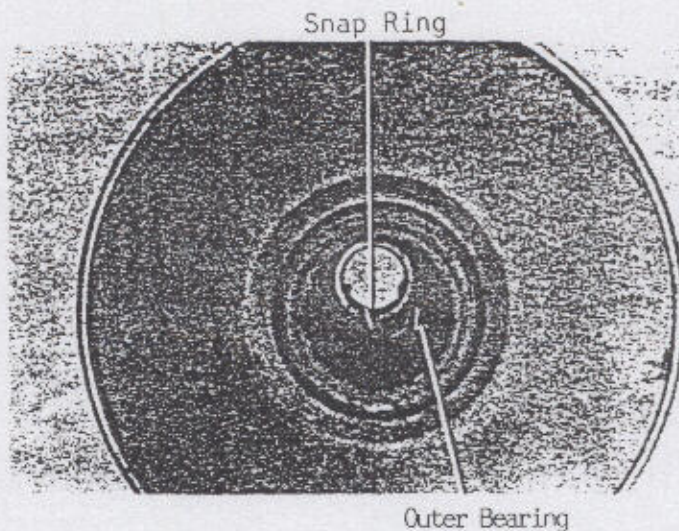
Remove the inner bearing.





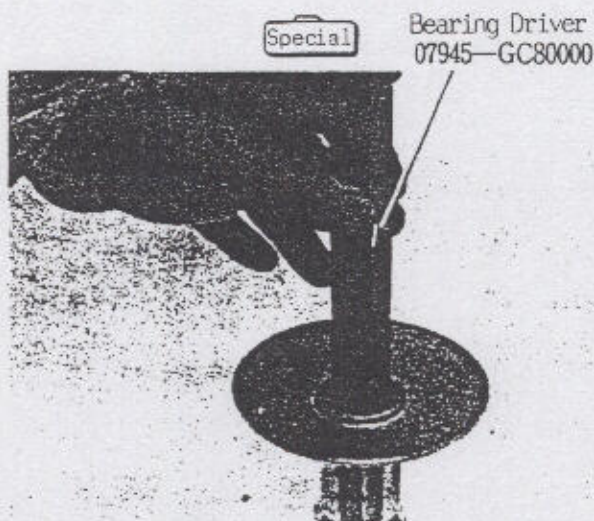
## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

Remove the snap ring and outer bearing.

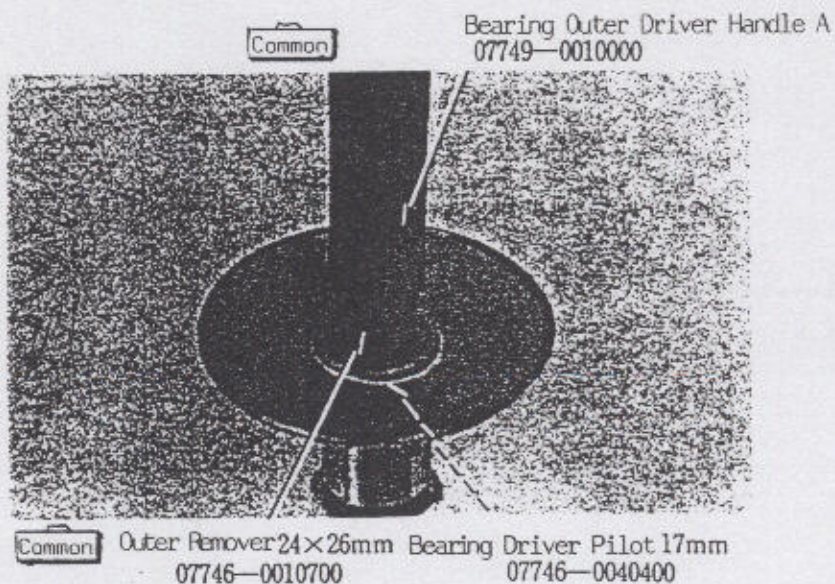


Drive in a new outer bearing and install the snap ring.

Apply 5.0-5.6g grease.  
Specified Grease:  
Mitsubishi: HD-3  
Nippon: Sekiyu Lipanox  
Delux 3  
Idemitsu: オートレツフB



Drive in the new needle bearing with the mark facing up.

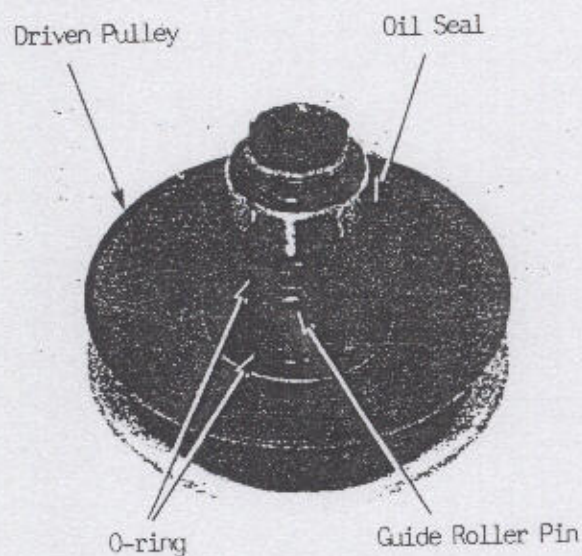




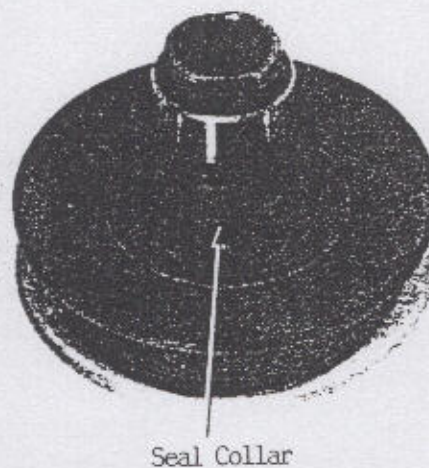
## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

### Clutch/Driven Pulley Assembly

Install the driven pulley and guide roller pin.  
Then install a new oil seal.



Install the seal collar.



Install the driven pulley and spring into the clutch by using the clutch spring compressor to compress.

Install the 28mm lock nut and tighten it.

**Torque:** 5.0-6. kg-m

**Special**

Lock Nut Wrench 39mm

07916-1870002

**Special**

Clutch Spring Compressor 07960-KM10000

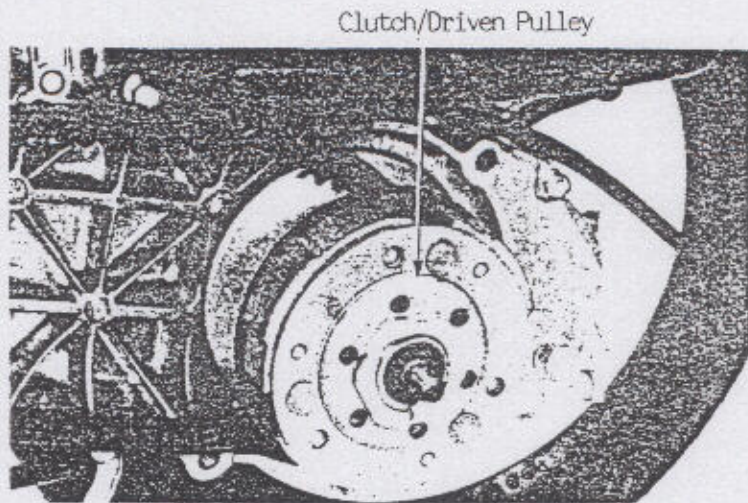


## KICK STARTER, DRIVE PULLEY AND CLUTCH/DRIVEN PULLEY

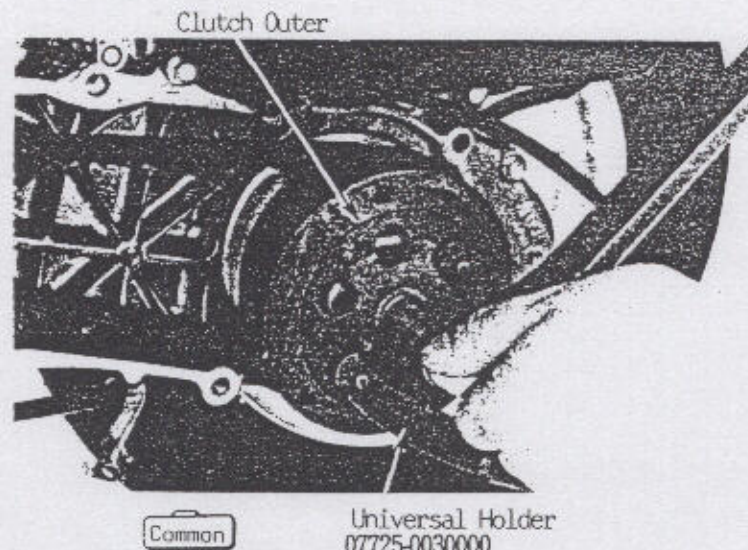
### Clutch/Driven Pulley

#### Installation

Install the drive belt on the clutch/driven pulley and install the driven pulley on the drive shaft. ( 8-9)



Install the clutch outer.  
Hold the clutch outer with an universal holder.  
Install and tighten the 10mm nut.  
**Torque:** 3.5-4.0kg-m  
Install the left crankcase cover.  
( 8-7)  
Install the left side cover.  
( 12-9)





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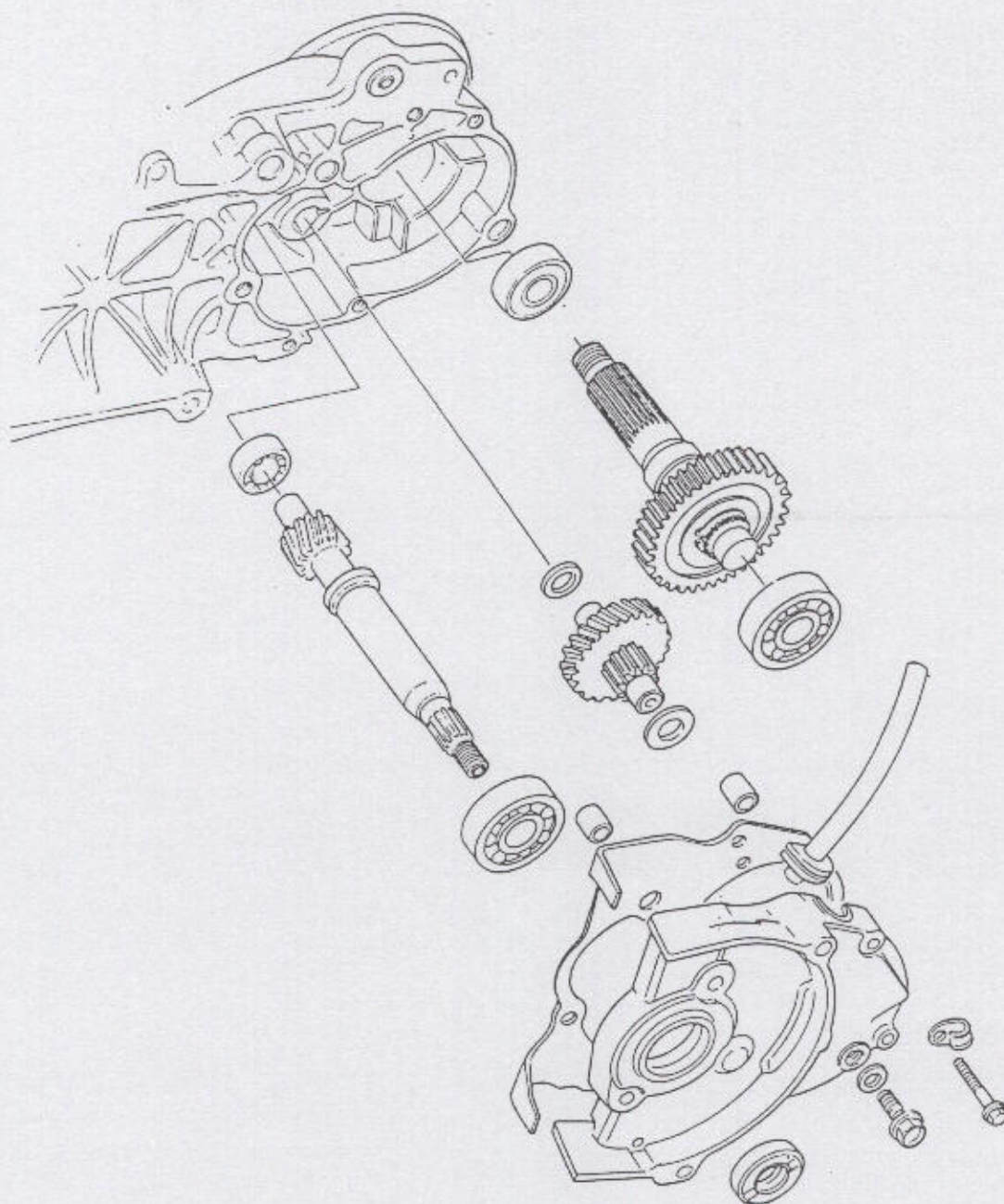
## FINAL REDUCTION

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**9**

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● SERVICE INFORMATION .....	9 — 3
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● FINAL REDUCTION INSPECTION .....	9 — 4
● FINAL REDUCTION ASSEMBLY .....	9 — 7







### ● TROUBLESHOOTING

#### ○ Engine starts, but motor-cycle won't move

- Damaged transmission
- Burned transmission gear

#### ○ Oil leaks

- Oil level too high
- Worn or damaged oil seal

#### ○ Abnormal noise

- Worn, burned or chipped gears
- Worn or loose bearing

### ● SERVICE INFORMATION

Specified oil: KYMCO SIGMA Gear Oil 90#

Oil Quantity : 0.09ℓ (Degradation)

#### ○ TOOLS

##### SPECIAL TOOLS

Bearing remover set 12mm	07936-1660001
Bearing remover set 15mm	07963-KC10000
Crankshaft assembly socket	07965-GM00100
Crankshaft assembly shaft	07965-GM00300

##### COMMON TOOLS

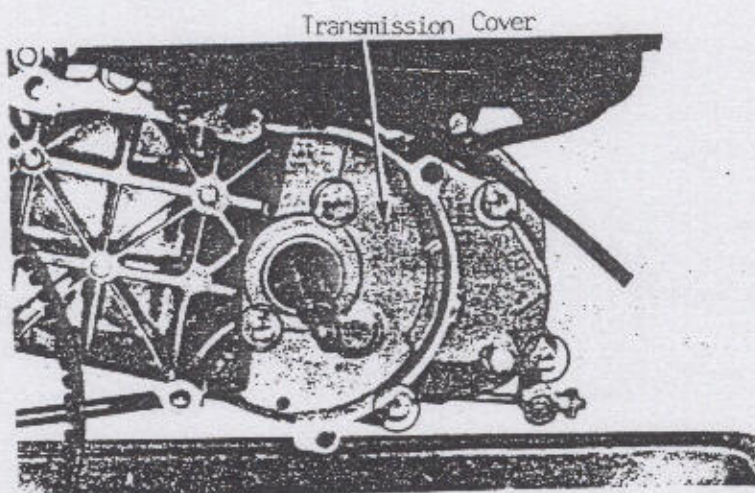
Bearing outer driver 37x40mm	07746-0010200
Bearing outer driver 32x35mm	07746-0010100
Bearing driver pilot 17mm	07746-0040400
Bearing driver pilot 15mm	07746-0040300
Bearing driver pilot 12mm	07746-0040200
Bearing outer driver handle A	07749-0010000



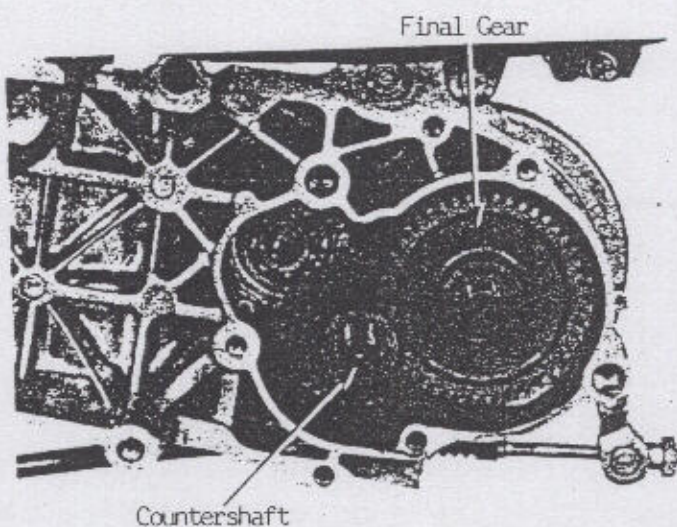
## FINAL REDUCTION

### FINAL REDUCTION DISASSEMBLY

Remove the rear wheel. ( 14-4)  
Remove the clutch/driven pulley.  
( 8-15)  
Drain the transmission gear oil  
into a container.  
Remove the transmission cover  
bolts and remove the transmission  
cover.  
Remove the gasket and lock pins.



Remove the final gear and  
countershaft.



### FINAL REDUCTION INSPECTION

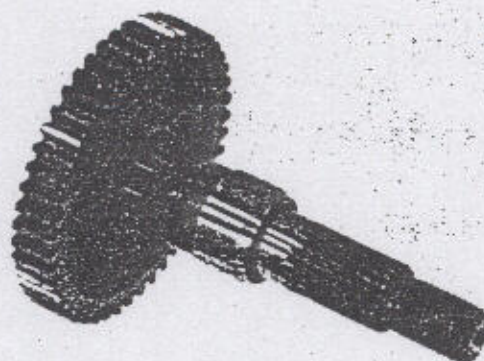
Inspect the countershaft and gear  
for wear or damage.



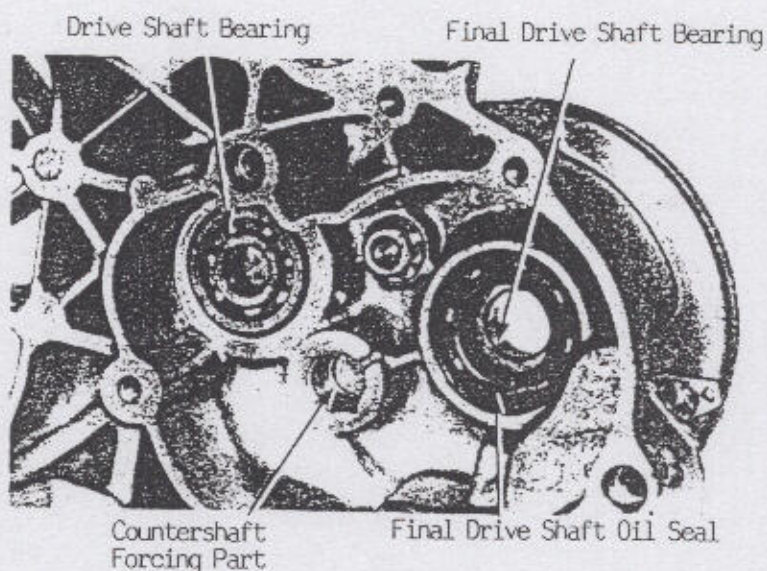


## FINAL REDUCTION

Inspect the final gear for wear or damage or signs of seizure.

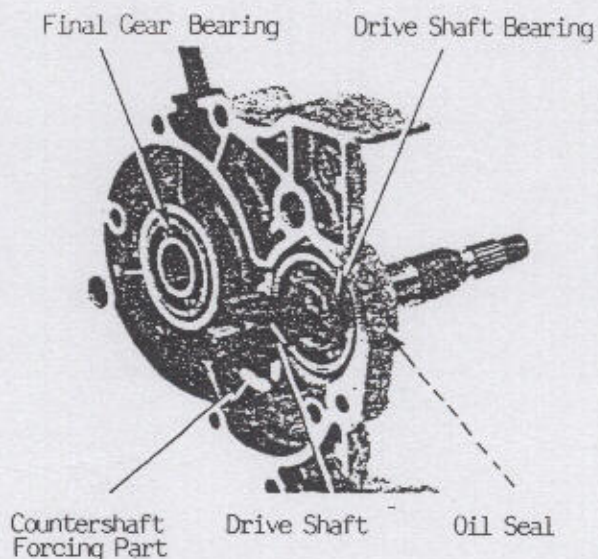


Check the left crankcase bearing and oil seal for wear or damage.



Check the drive shaft and gear for wear or damage.  
Check the transmission cover bearing and oil seal for wear or damage.

Do not remove the transmission cover except for necessary replacing of parts. When replacing the drive shaft, the bearing and oil seal should be replaced with new ones.

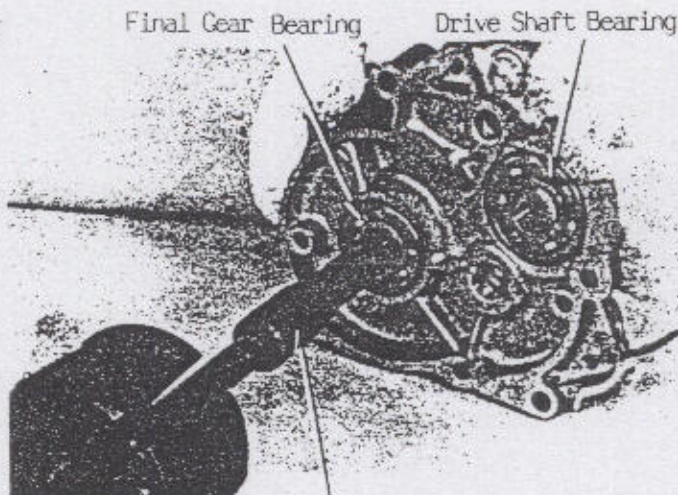




## FINAL REDUCTION

### Bearing Replacement (Transmission Cover Side)

Remove the drive shaft from the transmission cover.  
Remove the drive shaft oil seal.  
Remove the final drive shaft bearing with a bearing remover.



Special

Bearing Remover 15mm  
07936-KC10000

Common

Bearing Outer Driver Handle A  
07749-0010000

Drive a new bearing in the transmission cover.



Bearing Outer Driver 32×35mm

Common 07746-0010100  
Driver Pilot 15mm  
07746-0040300

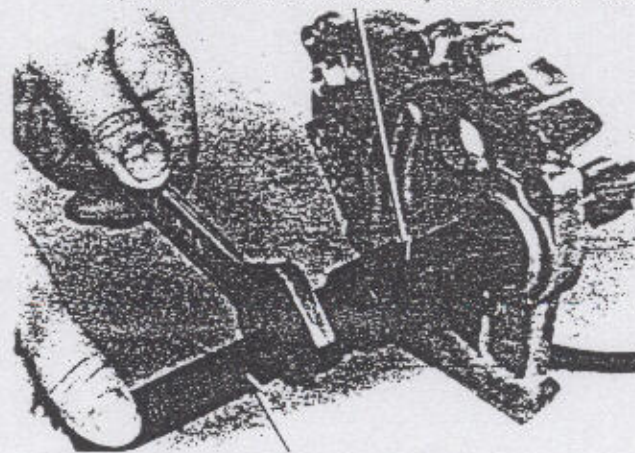


Bearing Outer Driver 37×40mm

07746-0010200  
Bearing Driver Pilot 17mm  
07746-0040400

Special Crankshaft Assembly Socket 07965-GM00100

Install the drive shaft onto the transmission cover.  
Install a new oil seal.



Special

Crankshaft Assembly Shaft  
07964-GM00300



## FINAL REDUCTION

### Bearing Replacement (Crankcase Side)

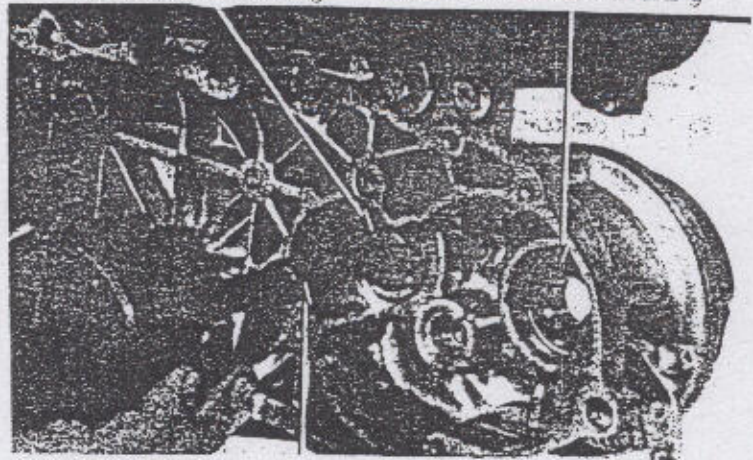
Remove the final gear bearing oil seal.

Remove the final gear bearing with a bearing remover.

Drive in a new crankcase bearing.  
Install a new final gear bearing oil seal.

Drive Shaft Bearing

Final Drive Shaft Bearing



Bearing Remover 12mm

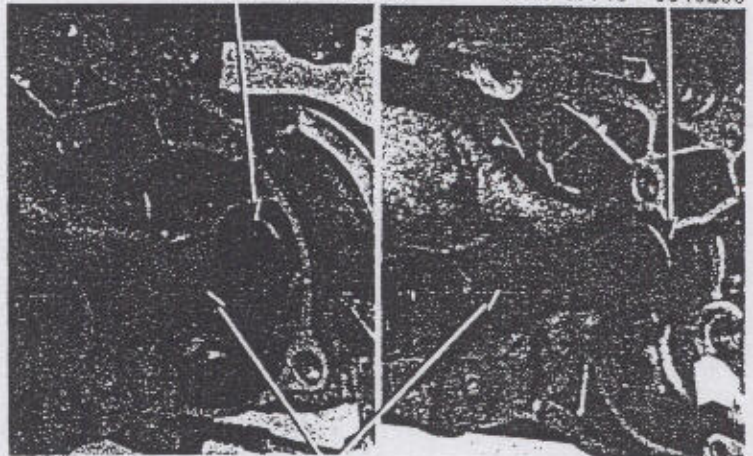
Special 07936-1660001

Bearing Outer Driver

Common

Common 37×40mm 07746-0010200  
17mm 07746-004020

32×35mm 07746-0010100  
12mm 07746-0040200

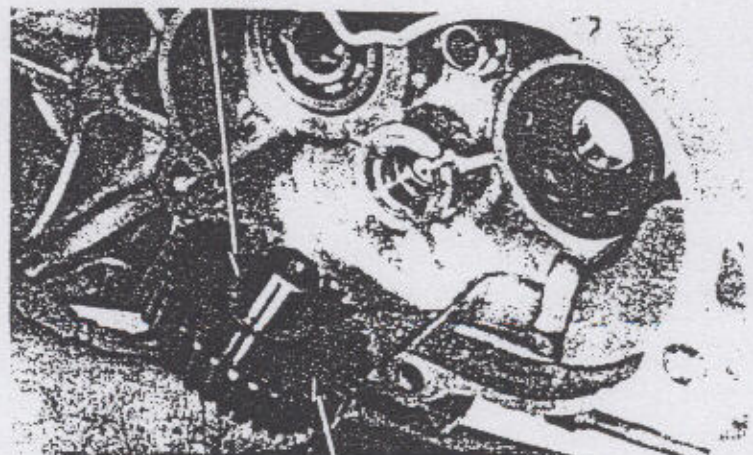


Bearing Outer Driver Handle A

Common

07749-0010000

Resin Washer



Countershaft Gear

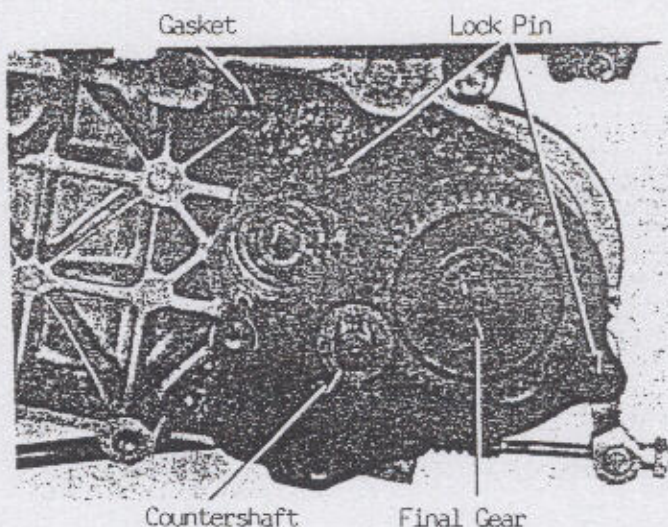
### FINAL REDUCTION ASSEMBLY

Install the resin washer of the countershaft and then install the countershaft into the crankcase.



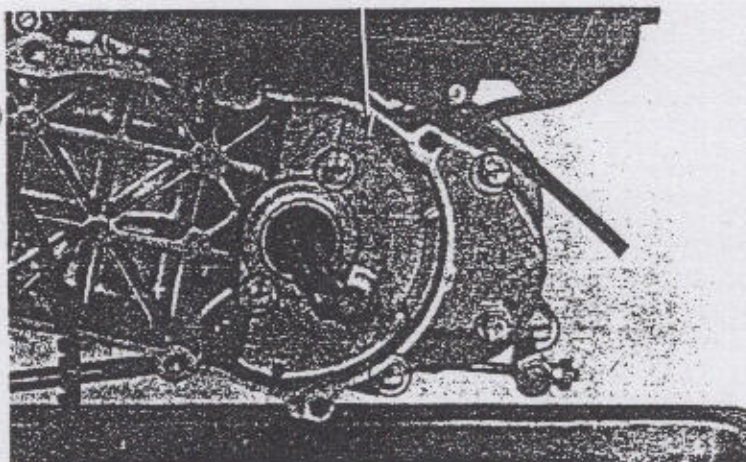
## FINAL REDUCTION

Install the final gear into the crankcase.  
Install the resin washer onto the countershaft.  
Install the lock pins and a new gasket.



Install the transmission cover.  
Install the clutch/driven pulley. ( 8-2)  
Install the rear wheel. ( 14-5)

Transmission Cover



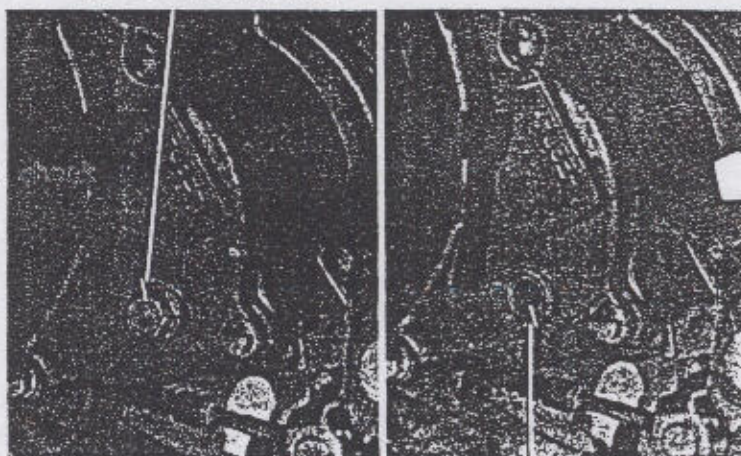
After installation, add the transmission gear oil. ( 2-6)

Place the motorcycle on its main stand on level ground.

Remove the oil level check bolt.

Check the oil seal and washer for wear or damage.

Oil Level Check Bolt



Add the specified gear oil.  
**Oil Quantity:** 0.092(Degradation)  
**Specified Oil:** KYMCO SIGMA  
GEAR OIL 90#

Install and tighten the oil level check bolt.

**Torque:** 1.0-1.5kg-m

Start the engine and check for oil leaks.

Check the oil level.

Check the oil level from the oil level check bolt hole and add specified oil if necessary.



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## CRANKCASE/CRANKSHAFT

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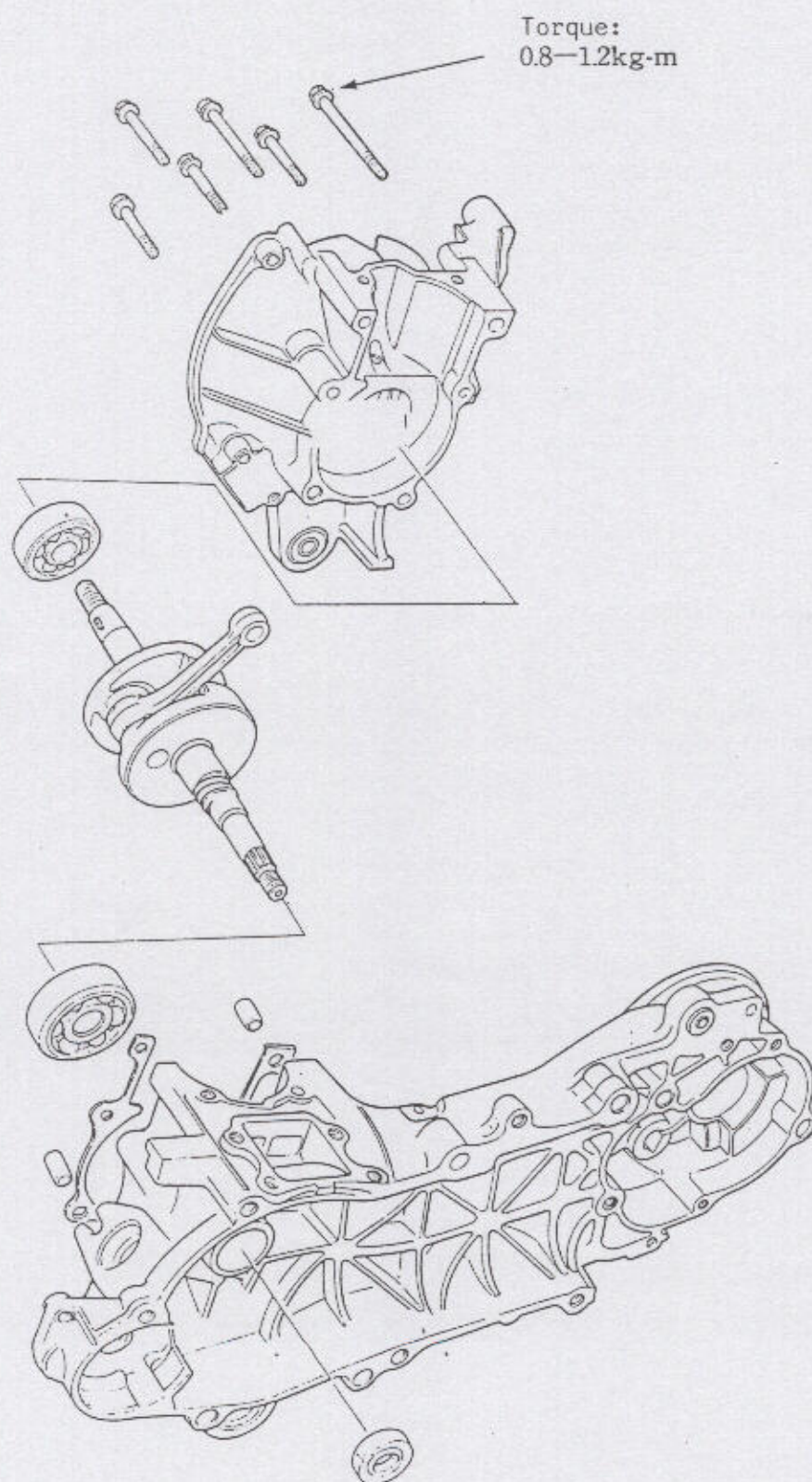
10

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●CRANKSHAFT REMOVAL	10 — 4
●CRANKSHAFT INSPECTION	10 — 5
●CRANKSHAFT INSTALLATION	10 — 6
●CRANKCASE ASSEMBLY	10 — 8



## CRANKCASE/CRANKSHAFT

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## ● TROUBLESHOOTING

### ○ Abnormal engine noise

Loose crankshaft journal bearing

- Loose crankpin bearing
- Loose transmission bearing

## ● SERVICE INFORMATION

### ○ GENERAL INSTRUCTIONS

- This chapter is the servicing procedures for the crankshaft and the operation instructions for the crankcase disassembly.
- The following parts must be removed before disassembling the crankcase.

Engine	( Chapter 5)
Carburetor	( Chapter 11)
Oil pump	( Chapter 4)
Reed valve	( Chapter 11)
Driven pulley	( Chapter 8)
A.C. generator	( Chapter 7)
Cylinder head, cylinder	( Chapter 6)

- When the left crankcase must be replaced, remove the following part according to specified servicing procedures:

Final reduction

- Special tools should be used for crankshaft and crankcase assembly. When disassembling the crankshaft, the bearing will remain in the crankcase and it should be removed. When installing the crankshaft, drive a new bearing in the crankcase and then install a new oil seal.

### ○ SPECIFICATIONS

Item	Standard	Service Limit (mm)
Connecting rod big end side clearance	—	0.6
Connecting rod big end radial clearance	—	0.04
Crankshaft runout A/B	—	0.15/0.10

### ● TOOLS

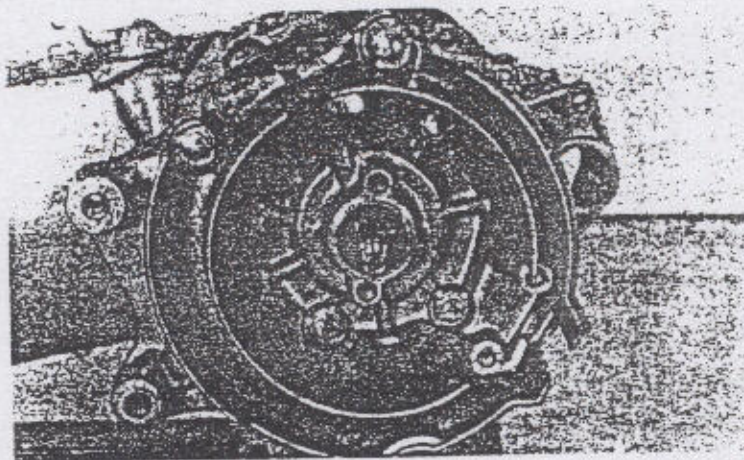
SPECIAL TOOLS	Crankcase puller	07935—GK80000
	Crankcase puller	07935—KG80000
	Universal bearing puller	07631—0010000
	Crankshaft assembly socket	07965—GM00100
	Crankshaft assembly shaft	07965—GM00300
COMMON TOOLS	Bearing outer driver handle A	07749—0010000
	Bearing outer driver 42x47mm	07746—0010300
	Driver pilot 20mm	07746—0040500
	Bearing driver pilot 17mm	07746—0040400



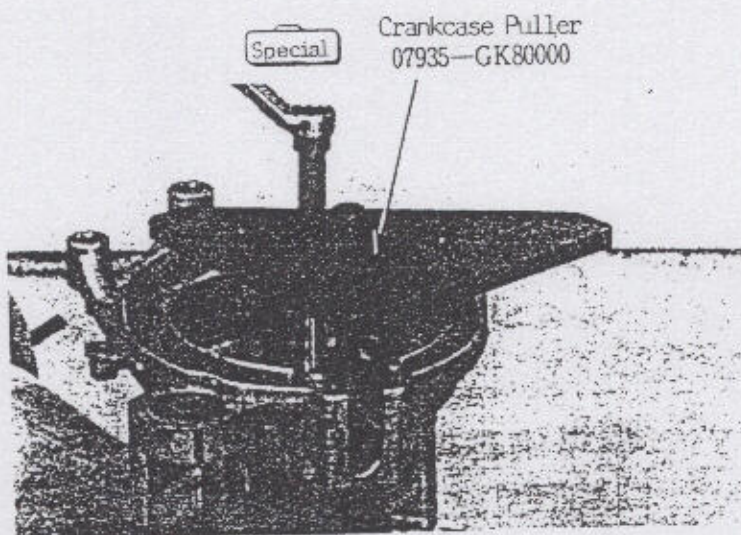
## CRANKCASE/CRANKSHAFT

### CRANKCASE DISASSEMBLY

Remove the crankcase attaching bolts.



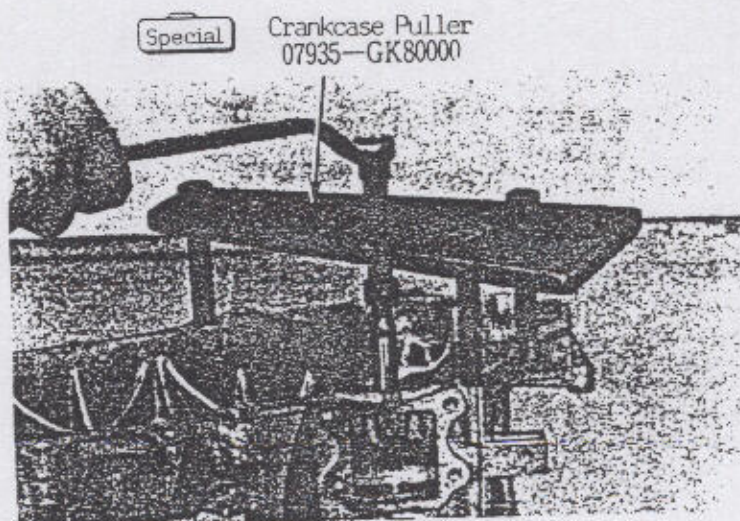
Attach the crankcase puller on the right crankcase and remove the right crankcase from the left crankcase.



### CRANKSHAFT REMOVAL

Attach the crankcase puller on the left crankcase and remove the crankshaft from the left crankcase.

When removing the crankshaft, be careful and do it slowly and slightly.

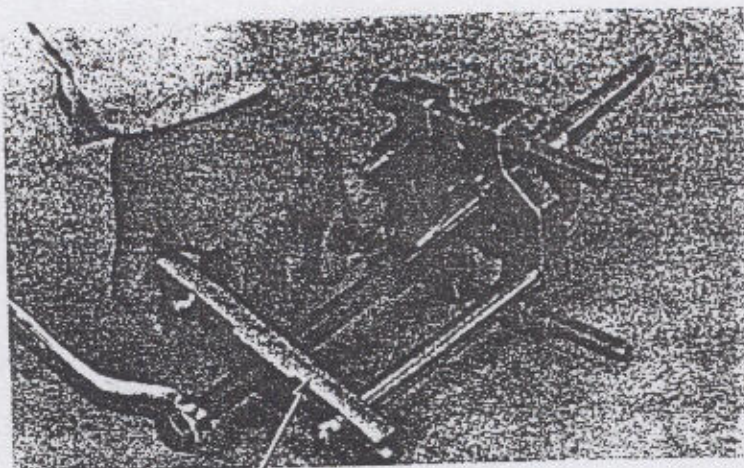




## CRANKCASE/CRANKSHAFT

Use the bearing puller to remove the remaining bearing on the crankshaft side. Remove the right and left crankcase oil seals.

When disassembling the crankcase, oil seals must be removed.  
Do not reuse the removed oil seals.



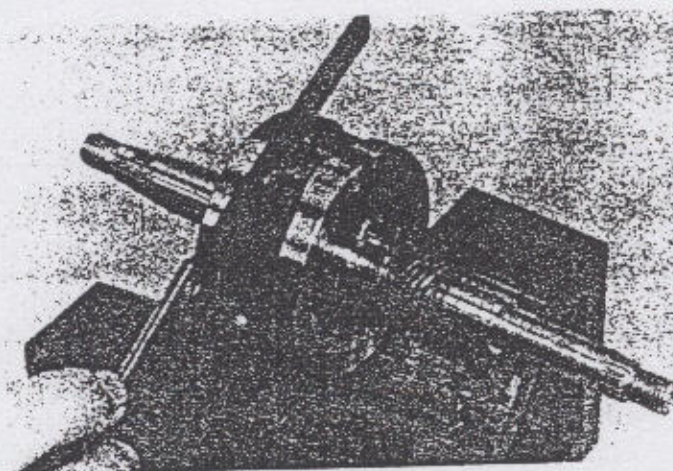
Special

Universal Bearing Puller  
07631-0010000

### CRANKSHAFT INSPECTION

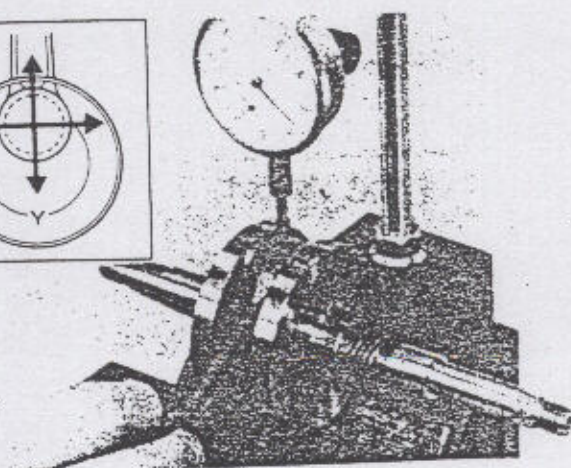
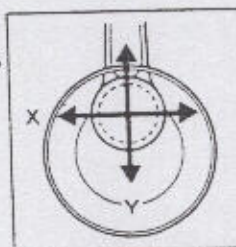
Measure the connecting rod big end side clearance.

**Service Limit:** 0.6mm replace if over



Measure the connecting rod big end radial clearance at two points in the X and Y directions.

**Service Limit:** 0.04mm replace if over

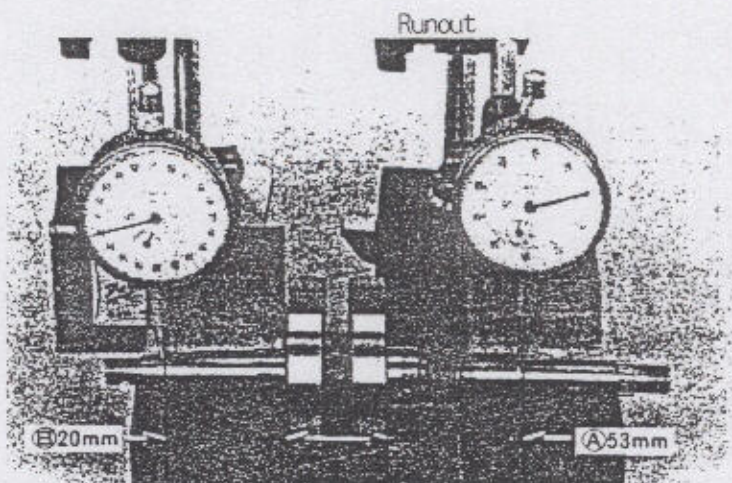




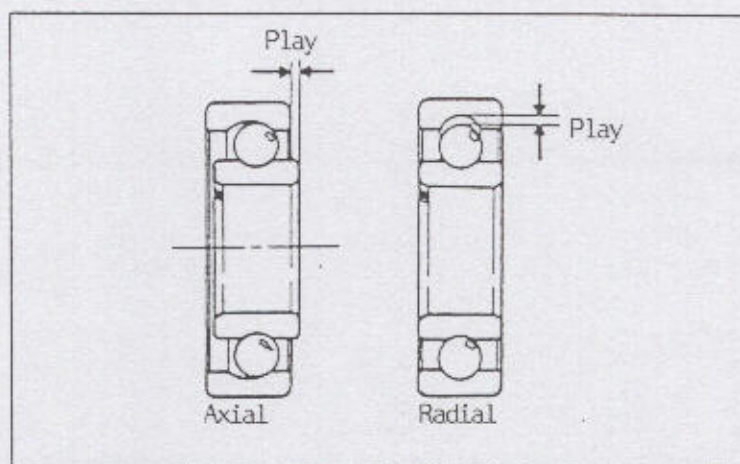
## CRANKCASE/CRANKSHAFT

Measure the crankshaft runout.

Service Limit	
A	B
0.150mm replace if over	0.100mm replace if over



Check the crankshaft bearing for play. The bearing must be replaced if it has excessive play.



### CRANKSHAFT INSTALLATION

Wash the crankshaft in solvent and check for cracks or damage.

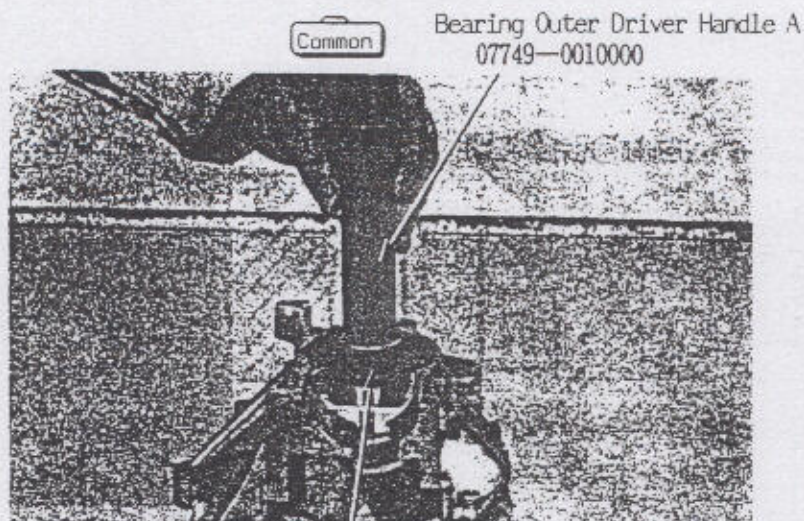
After check, apply clean engine oil to all moving and sliding surfaces.  
Remove all gasket material from the crankcase mating surfaces and crankcase gasket surface. Dress any roughness or irregularities with an oil stone.





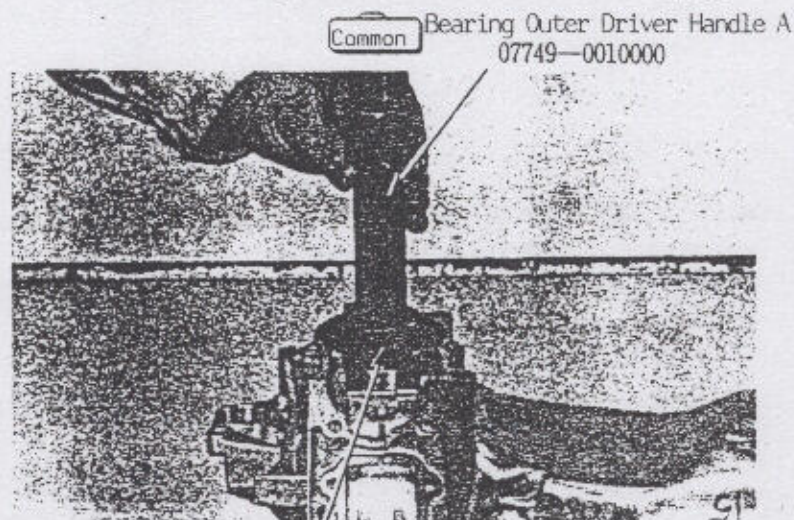
## CRANKCASE/CRANKSHAFT

Drive a new crankshaft bearing in the right crankcase.



Common Bearing Outer Driver 37×40mm 07746-0010200  
Bearing Driver Pilot 17mm 07746-0040400

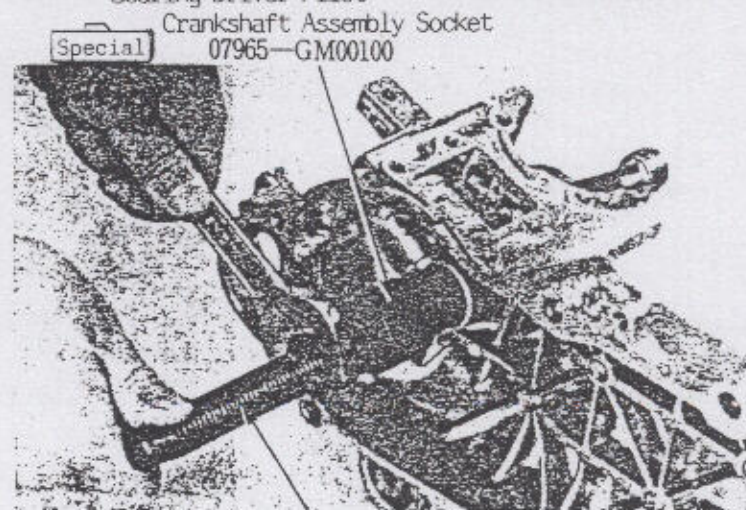
Drive a new crankshaft bearing in the left crankcase.



Common Bearing Outer Driver 42×47mm 07746-0010300  
Bearing Driver Pilot 20mm 07746-0040500

Install the crankshaft into the crankcase.

- .Apply KYMCO ULTRA 2-stroke motor oil to the crankshaft bearing and big end.
- .Apply grease to the lip of each oil seal and then install oil seals.



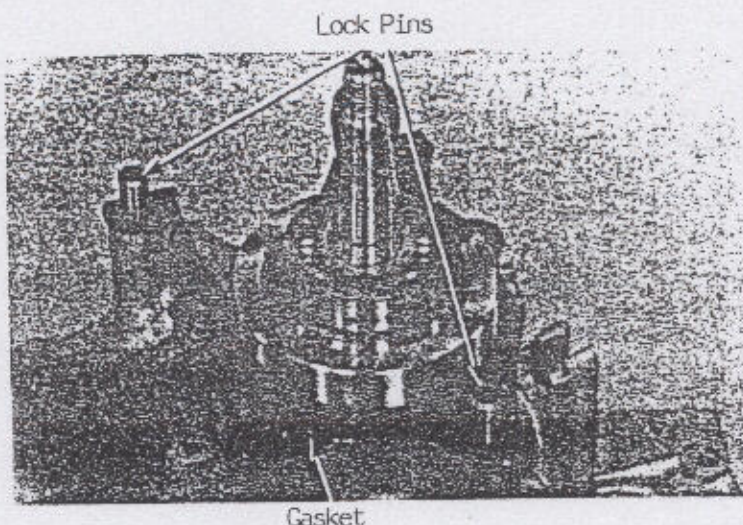
Special Crankshaft Assembly Shaft  
07965-GM00300



## CRANKCASE/CRANKSHAFT

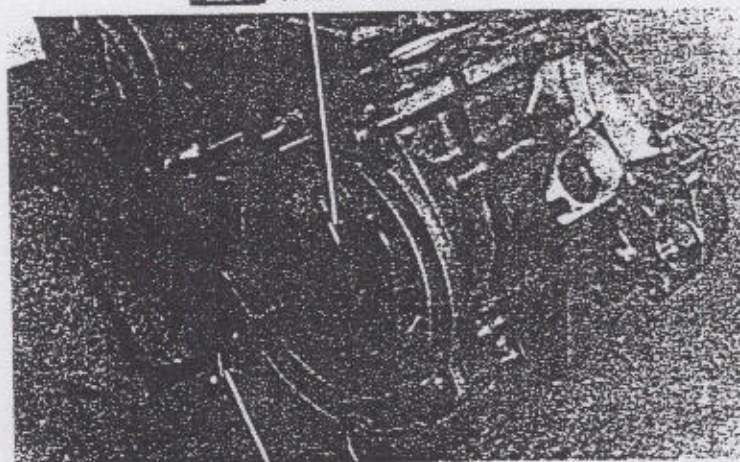
### CRANKCASE ASSEMBLY

Install the lock pins and a new gasket to the crankcase mating surface.



Assemble the crankcase.

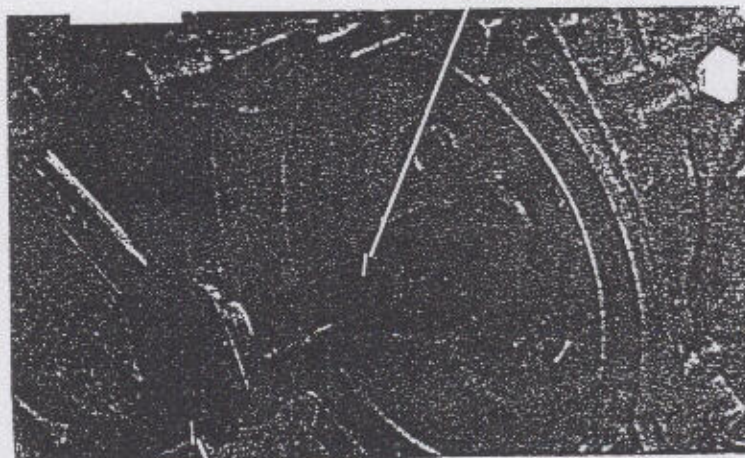
Special Crankshaft Assembly Socket  
07965—GM00100



Special Crankshaft Assembly Shaft  
7965—GM00300

Special Crankshaft Assembly Socket  
07965—GM00100

The distance between the right crankcase oil seal and crankcase surface is about 10mm.

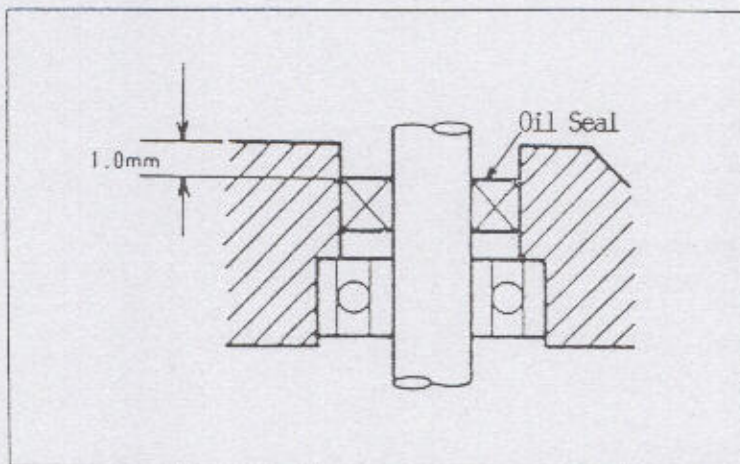


Special Crankshaft Assembly Shaft  
07965—GM00300



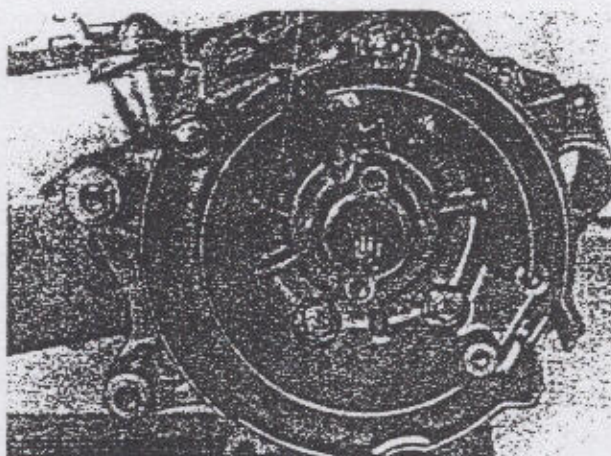
## CRANKCASE/CRANKSHAFT

The distance between the left crankcase oil seal and crankcase surface is about 1.0mm.



Tighten the crankcase attaching bolts.

After assembly, check the crankshaft for smooth operation.





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## CARBURETOR

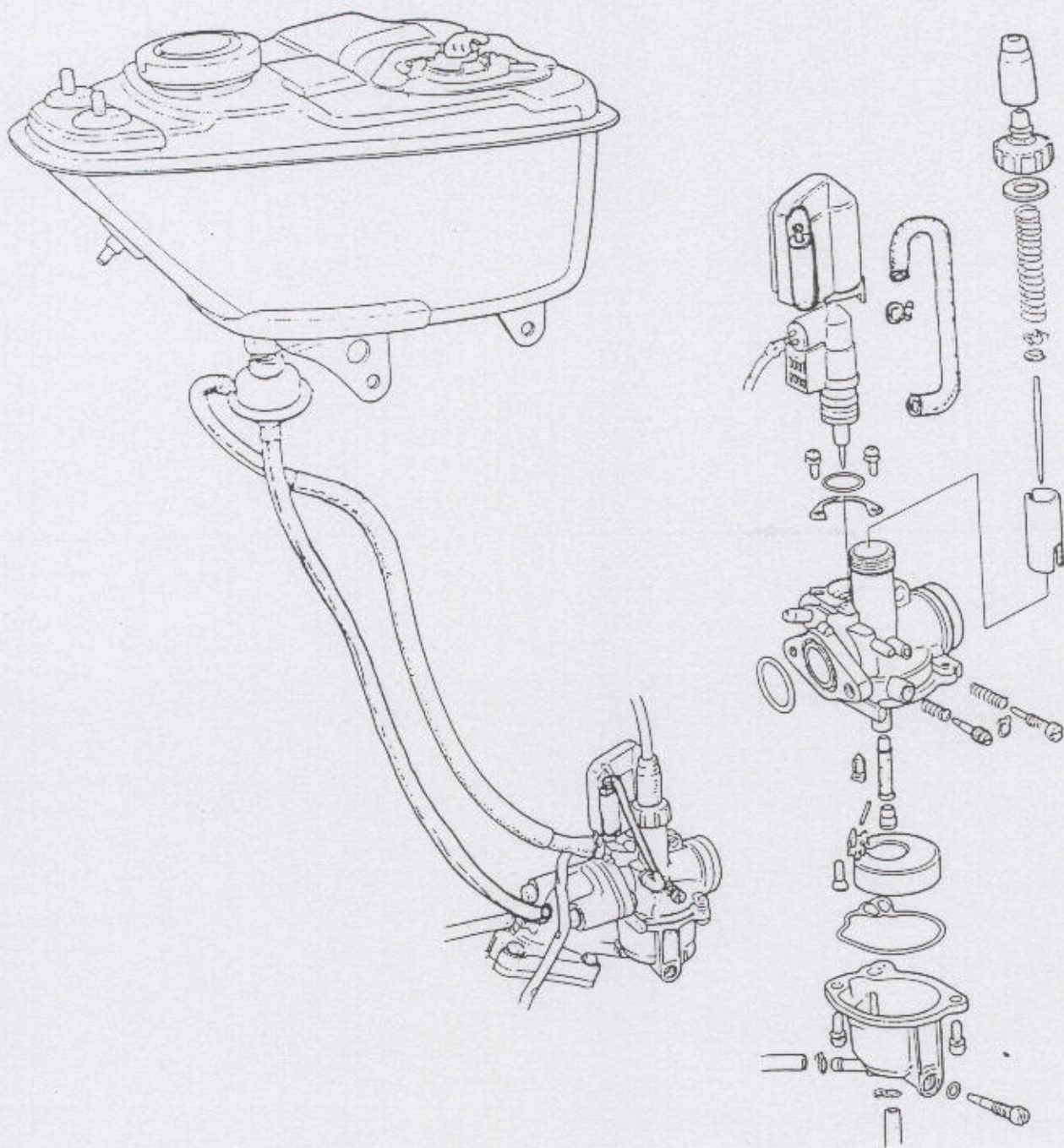
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●REED VALVE .....	11—13
●FUEL TANK .....	11—14





# CARBURETOR





## ● TROUBLESHOOTING

### ○ Engine does not start

- No fuel in tank
- Clogged fuel line
- Too much fuel getting to cylinder
- Clogged air cleaner

### ○ Engine idles roughly, stalls or runs poorly

- Incorrect idle speed
- Incorrect ignition timing
- Compression too low
- Air screw incorrectly adjusted
- Incorrect float level
- Clogged air cleaner
- Secondary air leaks
- Poor fuel quality
- Faulty reed valve
- Clogged idle fuel line or jets

### ○ Lean mixture

- Clogged fuel jets
- Clogged fuel cap vent
- Clogged fuel filter
- Bent, kinked or restricted fuel hose
- Faulty float valve
- Float level too low
- Clogged air cleaner

### ○ Rich mixture

- Faulty float valve
- Float level too high
- Clogged air jets

## ● SERVICE INFORMATION

### ○ GENERAL INSTRUCTIONS

- When working with gasoline, keep away from sparks or flames.
- Note the locations of the O-rings and replace them with new ones during assembly.
- All cables, fuel tubes and wires should be fixed at correct locations.
- Bleed air from the motor oil line whenever it is disconnected.

#### • Specifications

Venturi dia.	14mm
Identification number	PA31W
Float level	12.2mm
Main jet	#88
Idle jet	#35
Air screw opening (turns)	1 1/2 ± 1/4
Idle speed	1,800 ± 100 R.P.M
Throttle grip free play	2—6mm

#### • Tools

COMMON TOOL

Float Level Gauge

07401—0010000



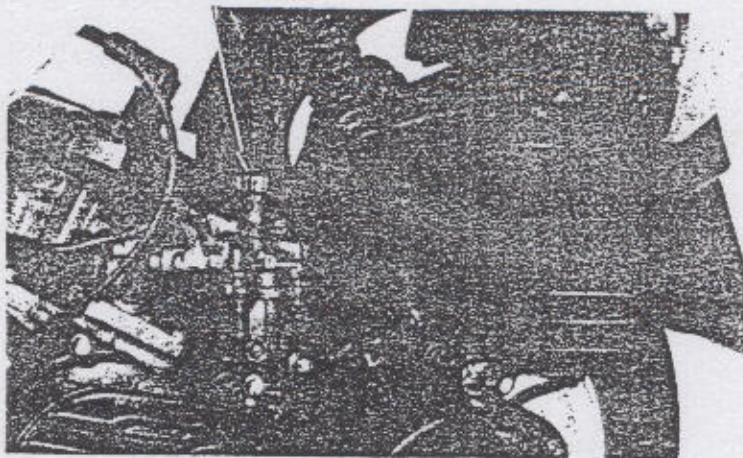
## CARBURETOR

### THROTTLE VALVE DISASSEMBLY

Remove the left side cover.  
( 12-6)

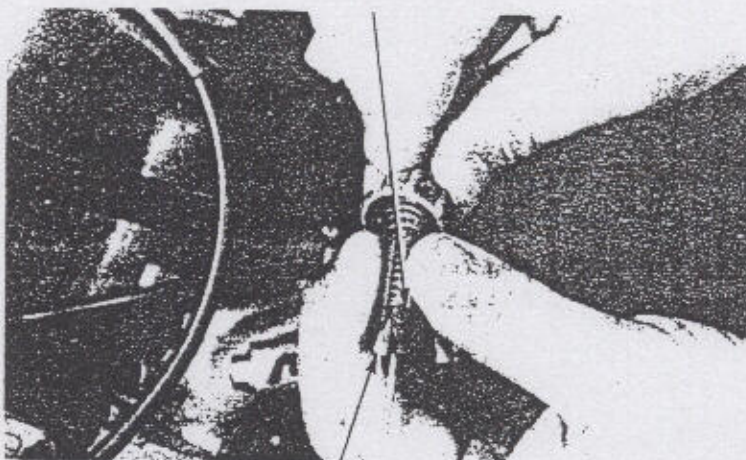
Loosen the carburetor cap and  
remove the throttle valve.

Carburetor Cap



Disconnect the throttle cable  
from the throttle valve.

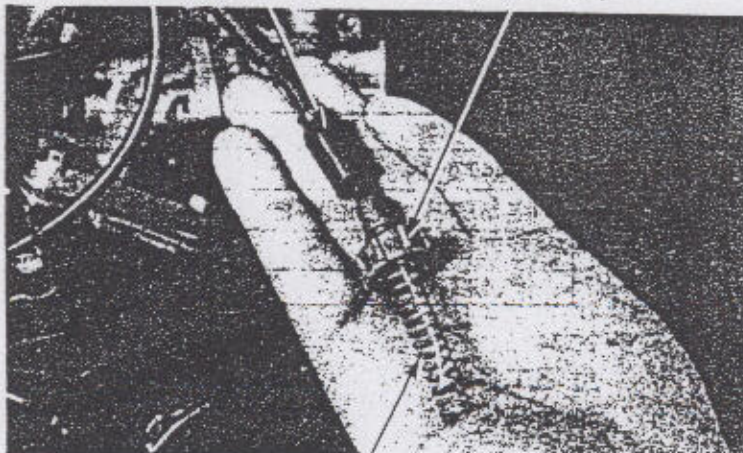
Throttle Valve



Remove the throttle valve  
spring, carburetor cap and  
cable seal cover.

Cable Seal Cover

Carburetor Cap



Spring



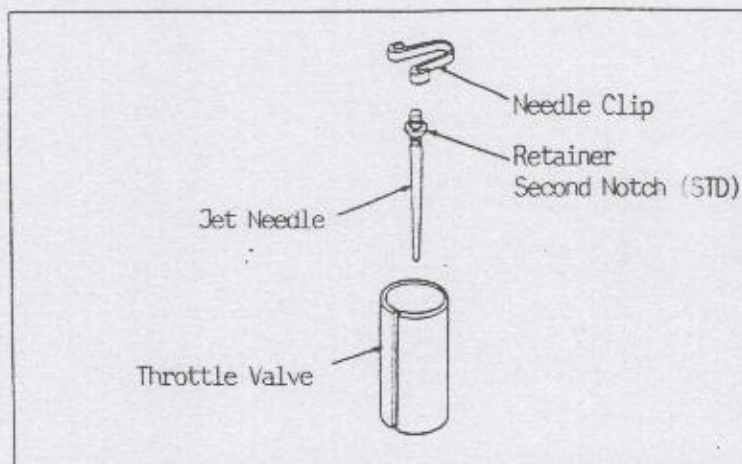
## CARBURETOR

Remove the jet needle from the needle clip.

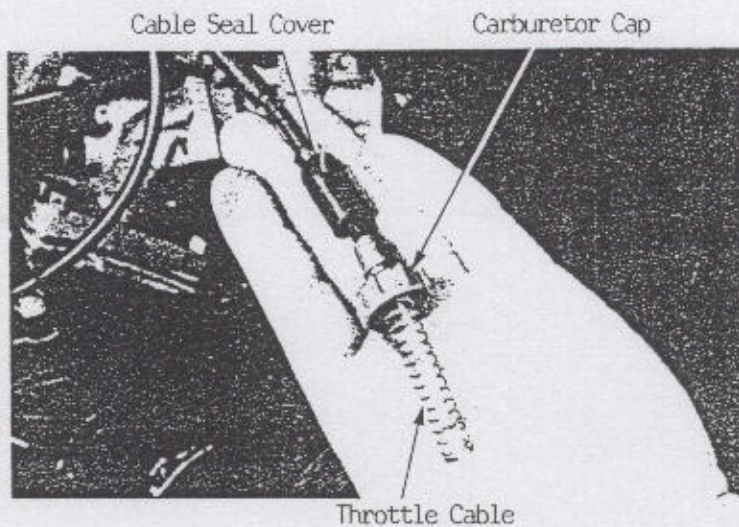
Fuel Jets, Jet Needle and Throttle Valve Inspection  
Check the fuel jet, jet needle and throttle valve for wear or damage.

### THROTTLE VALVE INSTALLATION

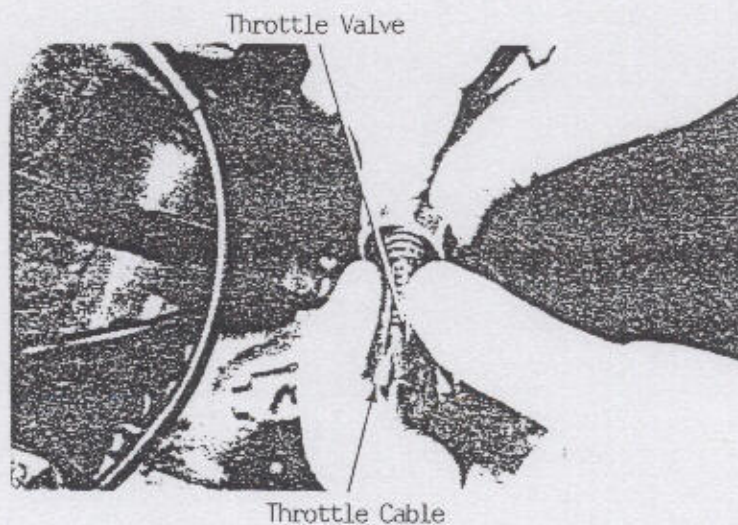
Install the jet needle on the throttle valve and secure with the needle clip.



Install the cable seal cover on the cable and then install the carburetor cap and throttle valve spring.



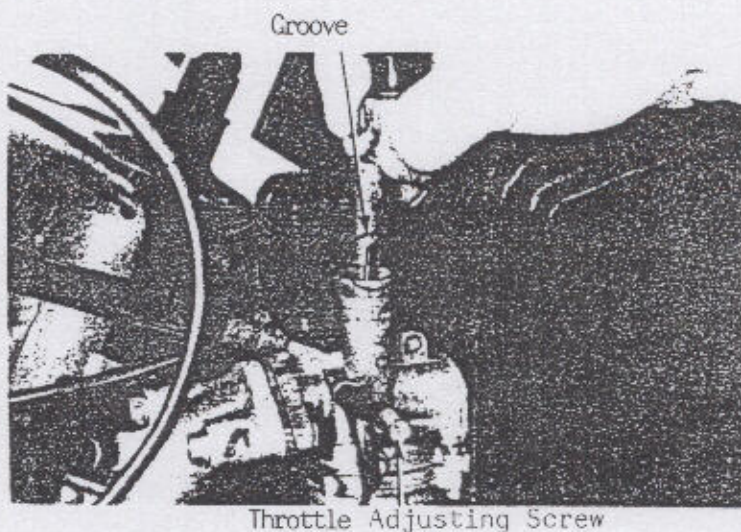
Connect the throttle cable to the throttle cable.





## CARBURETOR

Align the groove in the throttle valve with the throttle adjusting screw to install the throttle valve.



Tighten the carburetor cap.  
Install the left side cover.  
( 12-9)

After installation, perform the following adjustments:

- .Throttle cable ( 3-12)
- .Idle speed adjustment ( 3-9)



## CARBURETOR REMOVAL

Remove the left side cover.  
( 12-6)

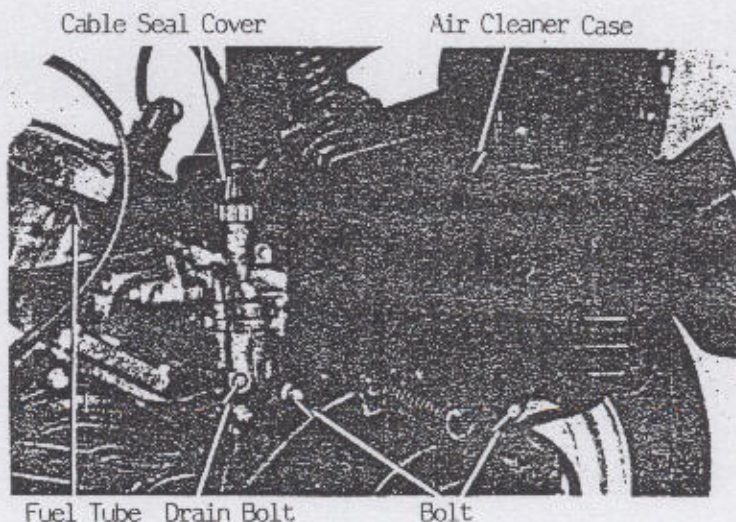
Remove the 2 attaching bolts and the air cleaner case.

Position the fuel cup to "OFF".  
Loosen the drain bolt to drain fuel from the carburetor.

Loosen the carburetor cap and then pull out the throttle valve.

Disconnect the fuel tube.

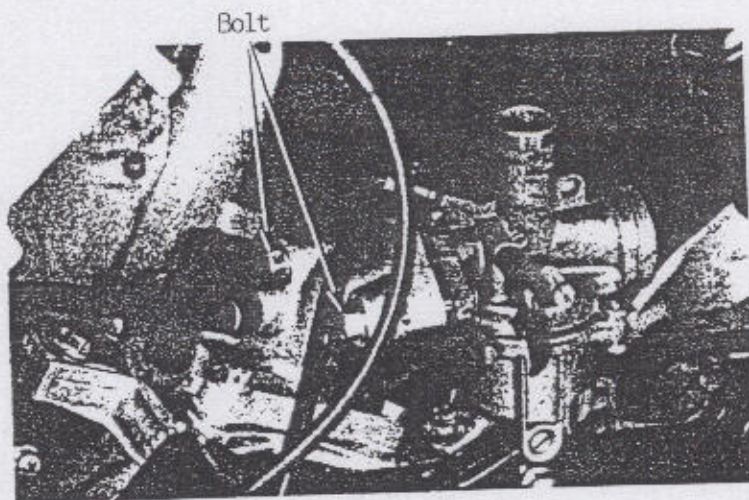
Disconnect the auto bystarter cable and remove the cable from the clamp.





## CARBURETOR

Remove the carburetor attaching bolts and carburetor.

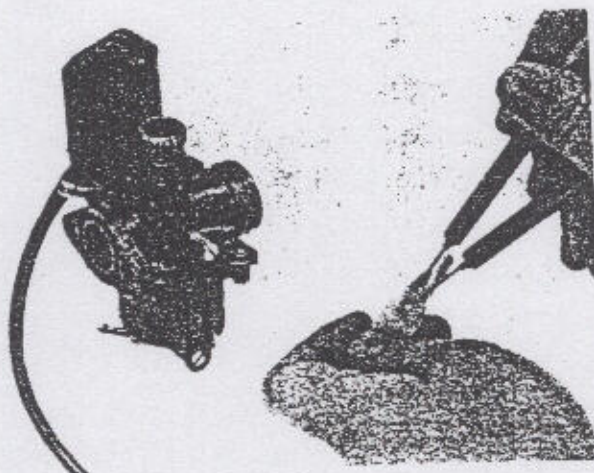


## AUTO BYSTARTER

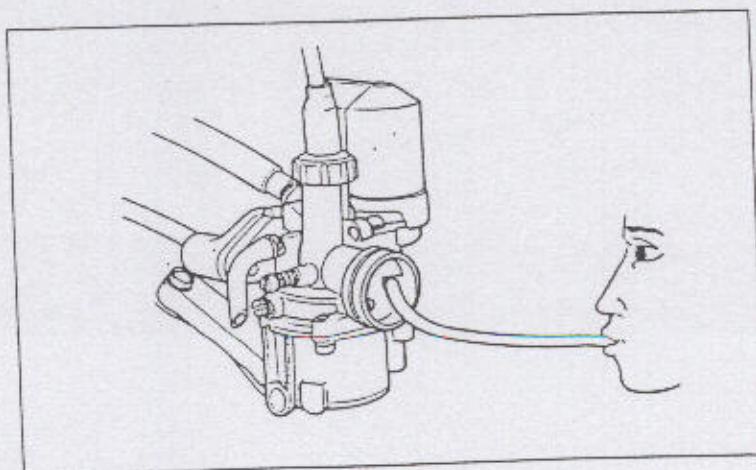
### Auto Bystarter Inspection

Check the resistance between the auto bystarter cable terminals.

**Resistance:** Below  $10\ \Omega$  (Engine stops for over 10 minutes.)  
If the resistance is over  $10\ \Omega$ , replace the auto bystarter with a new one.



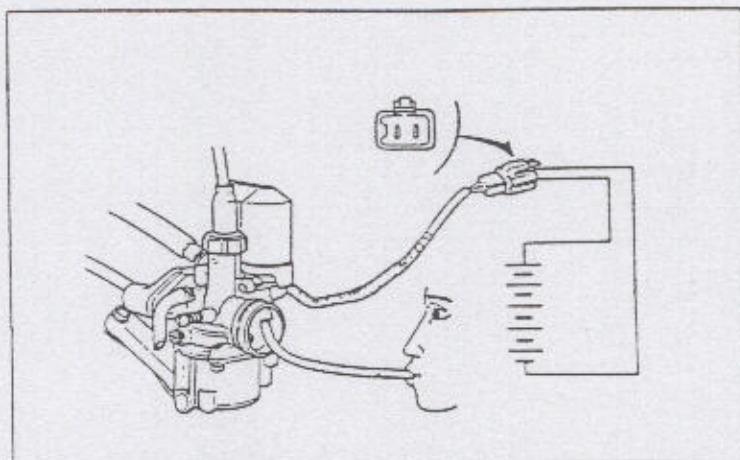
After the engine stops for 30 minutes, connect a hose to the bypass fuel line and blow the hose with mouth.  
If air cannot be blown into the hose, the auto bystarter is faulty. Replace it with a new one.





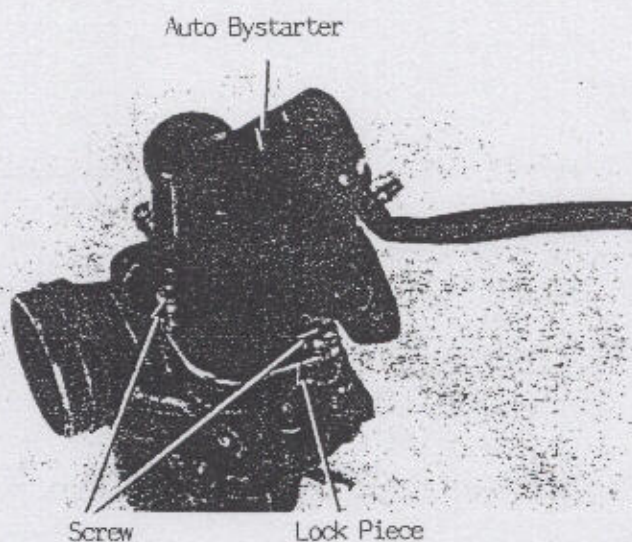
## CARBURETOR

Connect the auto bystarter yellow lead to the battery positive (+) terminal and green/black lead to the negative (-) terminal for 5 minutes. Connect a hose to the bypass fuel line and blow the hose with mouth. If air can be blown into the hose, the auto bystarter is faulty. Replace it with a new one.

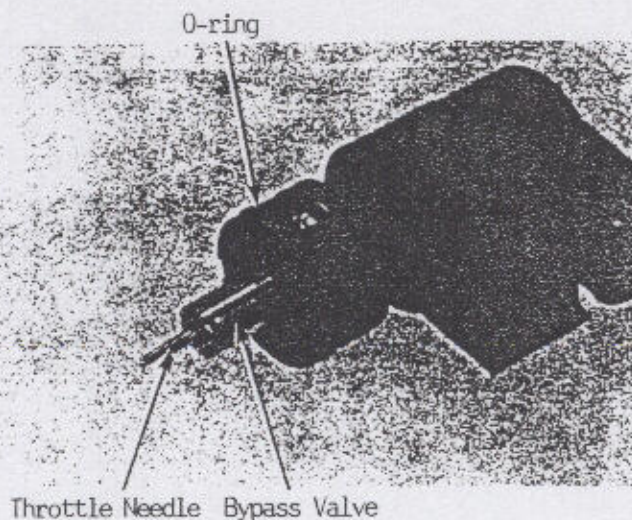


### Auto Bystarter Removal

Remove the bystarter cover.  
Remove the 2 screws attaching the bystarter lock piece.  
Remove the bystarter.



Check the bypass valve and throttle needle for wear or damage.  
Check the O-ring for wear or damage.

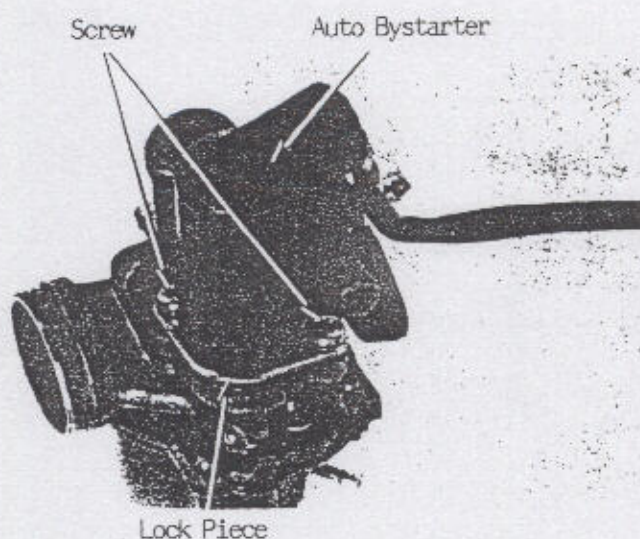




## CARBURETOR

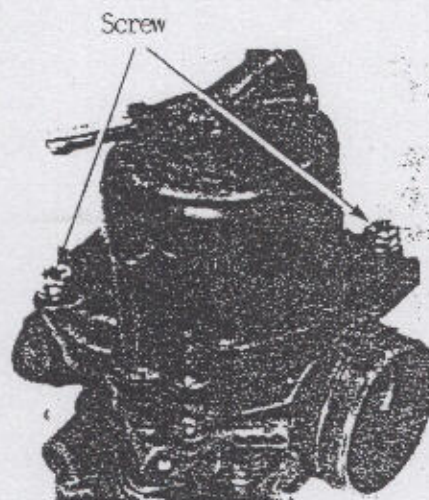
### Auto Bystarter Installation

Install the auto bystarter on the carburetor with the groove in the bystarter body flushing with the carburetor face. Install the lock piece and tighten the 2 attaching screws.

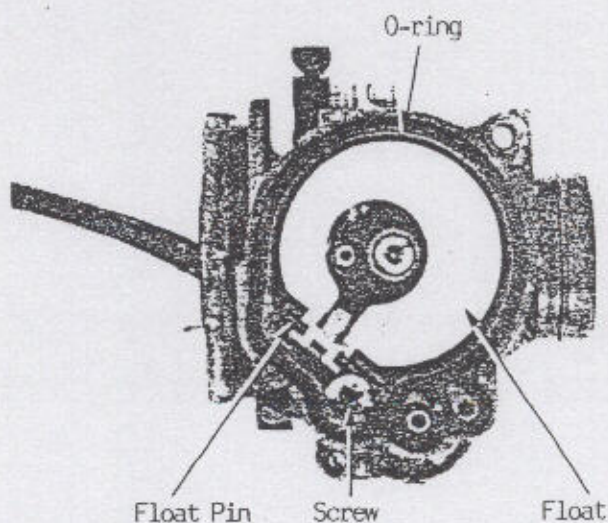


### FLOAT CHAMBER

Remove the 2 attaching screws and float chamber.



Remove the screw and O-ring. Remove the float pin and then remove the float and float valve.

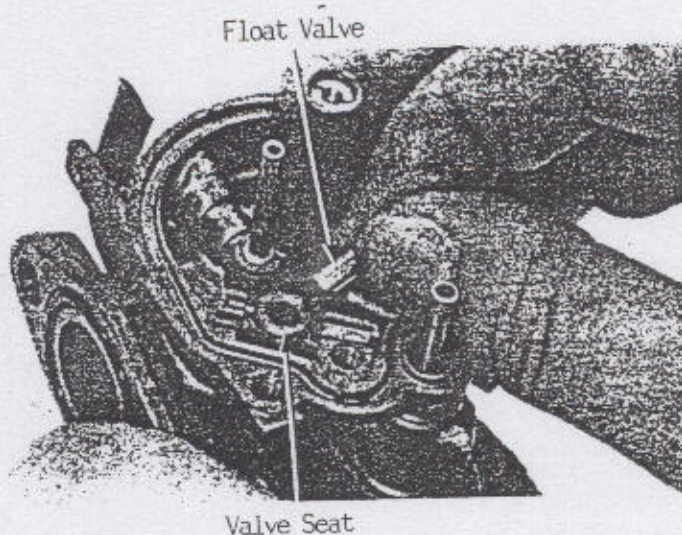




## CARBURETOR

### Float/Float Valve Inspection

Check the float for damage or fuel inside the float.  
Check the valve seat for wear or damage.

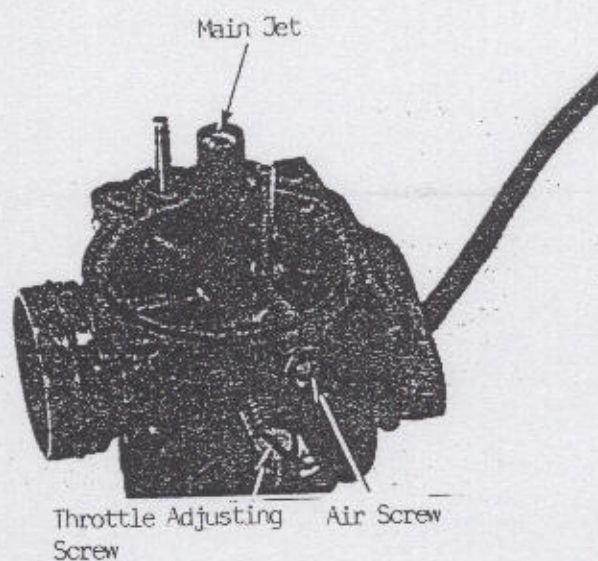


### Jets/Screws Removal

Remove the throttle adjusting screw and air screw. Tighten them and record the number of rotations before removal.

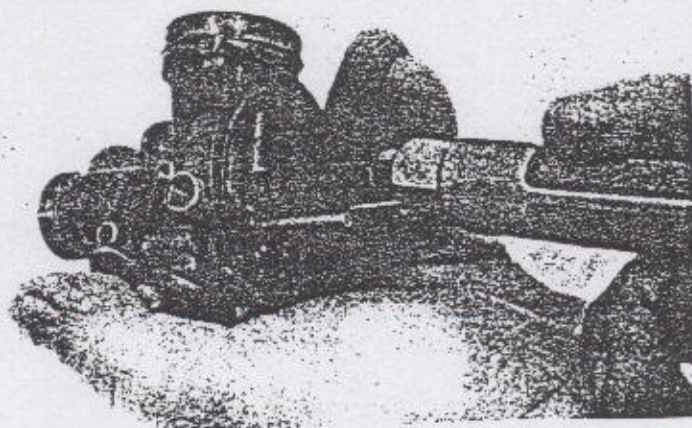
Do not force the air screw against its seat to prevent damage.

Remove the main jet and jet holder.



### Carburetor Openings Cleaning

Blow open the carburetor body openings with an air gun and clean any clogged opening.





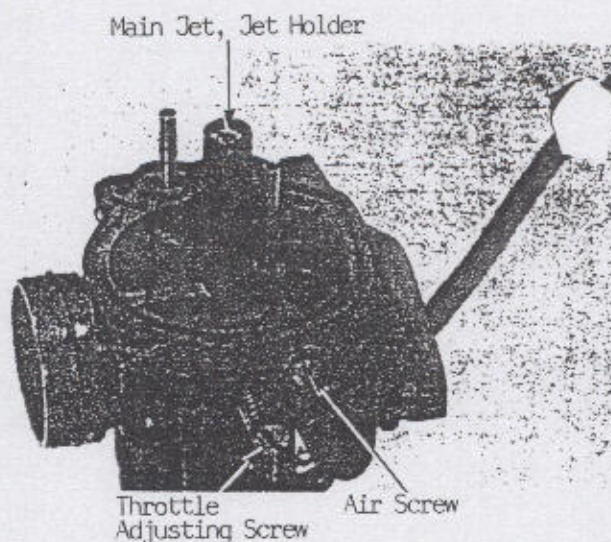
## CARBURETOR

### Float Chamber Assembly

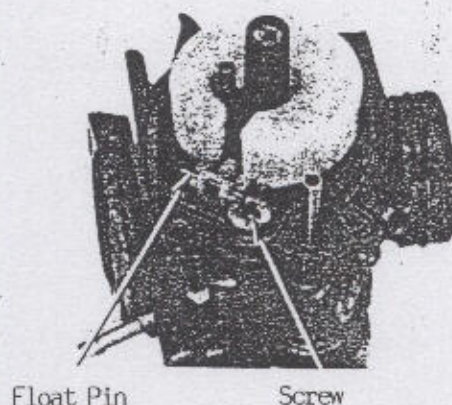
Install the main jet and jet holder.

Install the air screw and throttle adjusting screw according to the recorded number of rotations.

If the air screw should be replaced with a new one, perform the air screw adjustment once more. ( 11-12)



Install the float valve, float and float pin.  
Tighten the float screw securely.



### FLOAT LEVEL INSPECTION

Slightly incline the carburetor and measure the float level when the float valve contacts the float arm.

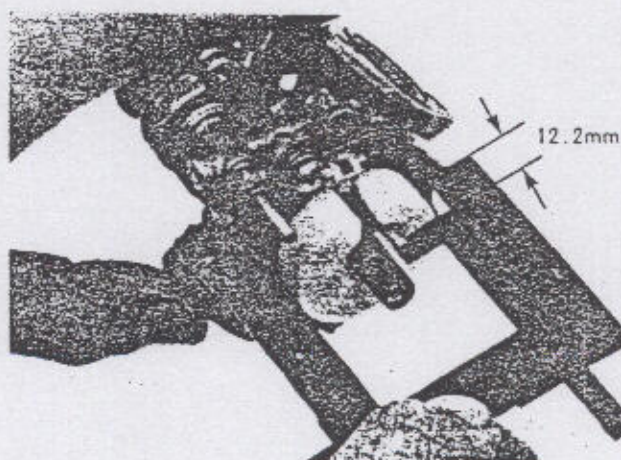
**Float Level:** 12.2mm

Replace the float if it exceeds the specified float level.

Install the O-ring.

Check operation of the float and install the float chamber.

Tighten the attaching screws.





## CARBURETOR

### CARBURETOR INSTALLATION

Do not allow foreign particles to enter the carburetor.

Check the carburetor insulating gasket and O-ring for wear or damage. Install the carburetor and insulating gasket. Connect the fuel tube. Connect the auto bystarter cable.

\* Place the bystarter cable on the correct location.

Install the carburetor cap.  
( 11-6)

Install the air cleaner case on the carburetor and tighten the 2 attaching bolts on crankcase. Connect the crankcase air tube to the air cleaner.

Install the left side cover.  
( 12-9)

After installation, perform the following adjustments:

.Throttle valve ( 3-12)

.Idle speed ( 3-9)

#### AIR SCREW ADJUSTMENT

Warm up the engine before adjusting the air screw.

Remove the left side cover.  
( 12-6)

Lightly turn the air screw to the tightened position and then turn out to the standard turns.

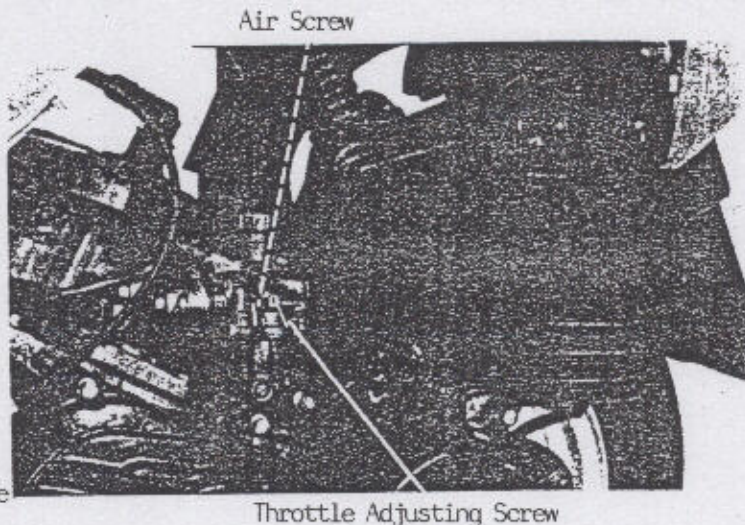
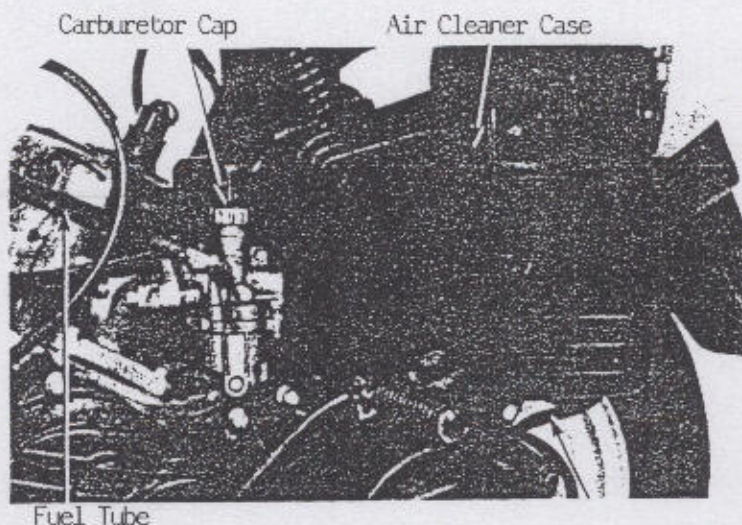
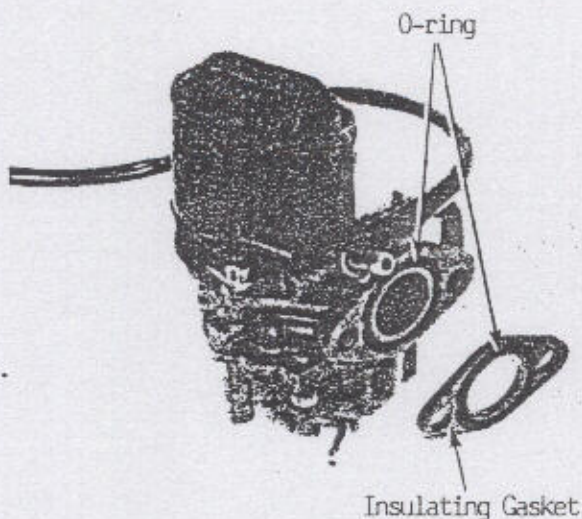
**Air Screw Opening:**  $1\frac{3}{8}$  turns

Do not force the air screw against its seat to prevent damage.

Start the engine and turn the throttle adjusting screw to obtain the specified idle speed.  
**Specified Idle Speed:**  $1,800 \pm 100$ rpm  
When the engine is idling, lightly increase the idle speed to make sure the engine operation is smooth and the idle speed is normal.

The air screw is adjusted within the range of  $\pm\frac{1}{4}$  turn.

When the air screw is unadjustable within the range, check other related items. ( 11-3)



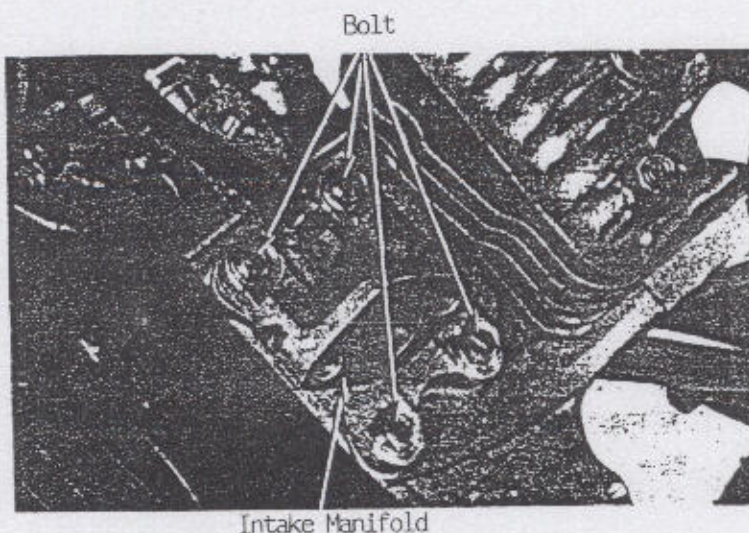


## CARBURETOR

### REED VALVE

#### Removal

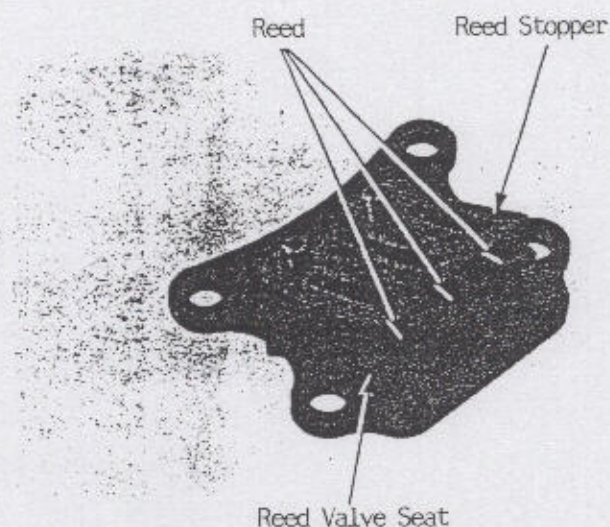
Remove the carburetor. ( 11-6)  
Remove the engine hood. ( 6-4)  
Remove the 4 attaching bolts,  
intake manifold and gasket.  
Remove the reed valve and  
gasket.



#### Inspection

Check the reed valve for damaged  
or weak reeds.  
Check the valve seat for cracks,  
damage or clearance between the  
seat and reed. Replace the valve  
if necessary.

Do not disassemble or bend the  
reed valve. To do so can cause  
loss of power and engine damage.  
If any part of the reed valve is  
faulty, replace it as a unit.



#### Installation

The installation sequence is the  
reverse of removal.

.Install a new gasket with  
the gasket protrusion  
aligning with the reed  
valve protrusion.  
.After installation, check  
for secondary air leaks.



## CARBURETOR

### FUEL TANK

No Smoking!

#### Removal

Remove the left side cover.

( 12-6)

Remove the central cover.

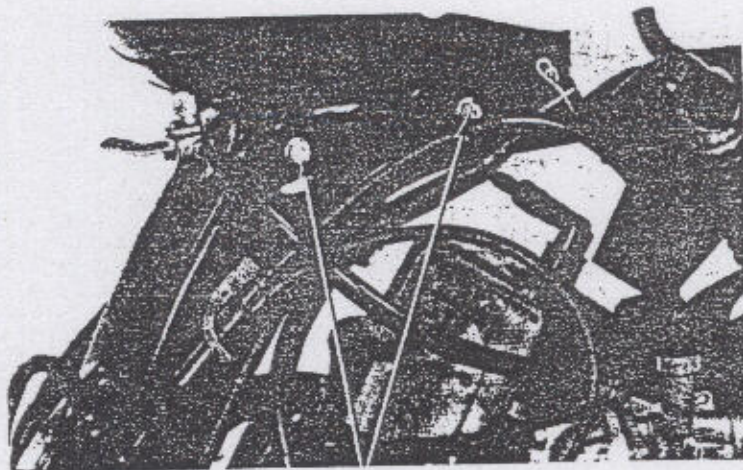
( 12-7)

Disconnect the fuel tube.

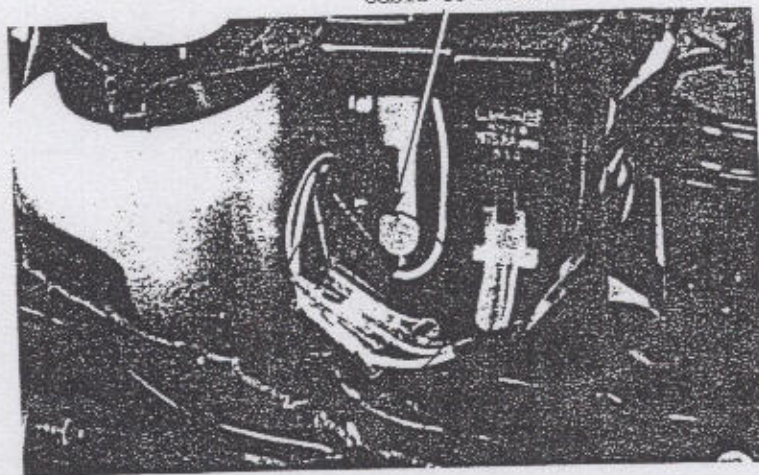
Remove the 2 seat attaching bolts  
and remove the seat.

Disconnect the fuel unit cable  
connector.

Remove the 4 fuel tank attaching  
bolts and remove the fuel tank.



Bolt



Cable Connector



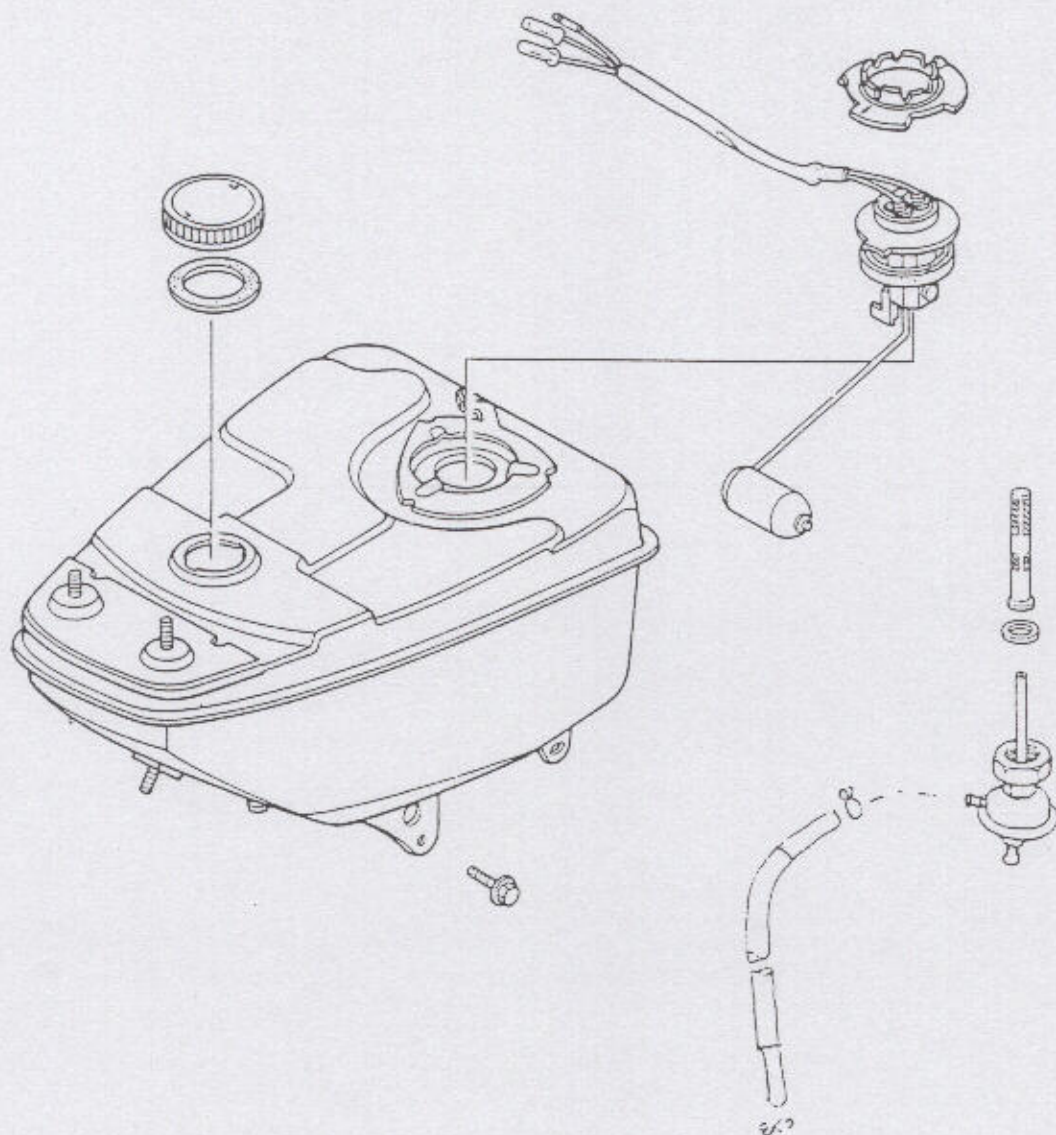
## CARBURETOR

### Installation

The installation sequence is the reverse of removal.



After installation, add gasoline and check for fuel leaks.





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## FRAME COVERS

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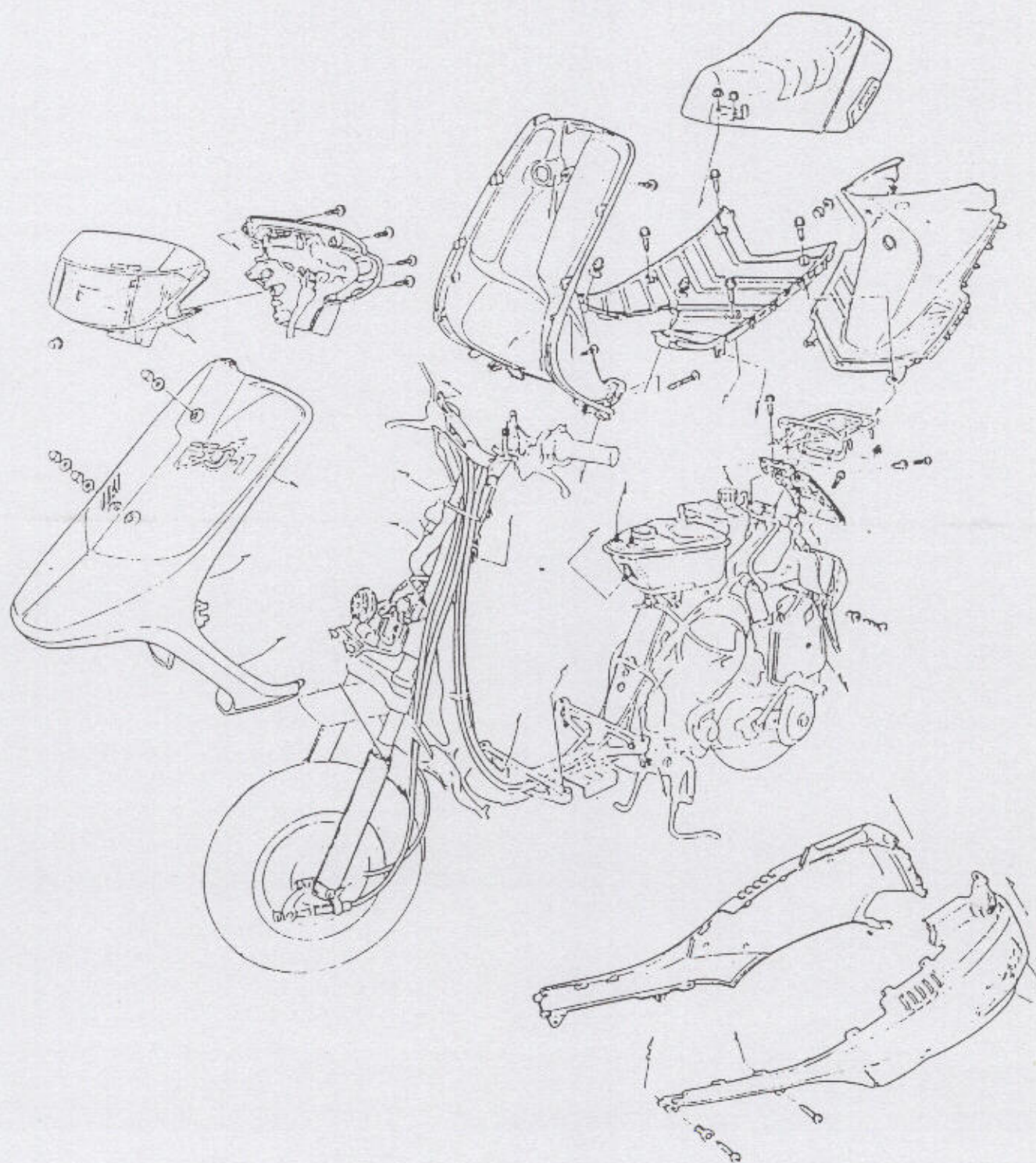
- SERVICE INFORMATION -----12— 3
- FRAME COVERS REMOVAL -----12— 4
- FRAME COVERS INSTALLATION -----12— 9

**12**



## FRAME COVERS

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## FRAME COVERS

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### ● SERVICE INFORMATION

- Use care when removing the frame external covers not to pull them by force because the claws on the joint part of each cover may be damaged.

#### Parts should be removed together

- Handlebar Upper Cover ———— Handlebar Lower Cover  
Headlight Cable Connector
- Handlebar Lower Cover ———— Speedometer Cable and  
connectors
- Rear Cover ———— Right & Left Side Covers  
Rear Carrier
- Central Cover ———— Seat  
Right & Left Side Covers
- Foot Rest ———— Right & Left Side Covers  
Central Cover
- Front Inner Cover ———— Right & Left Side Covers  
Central Cover  
Foot Rest



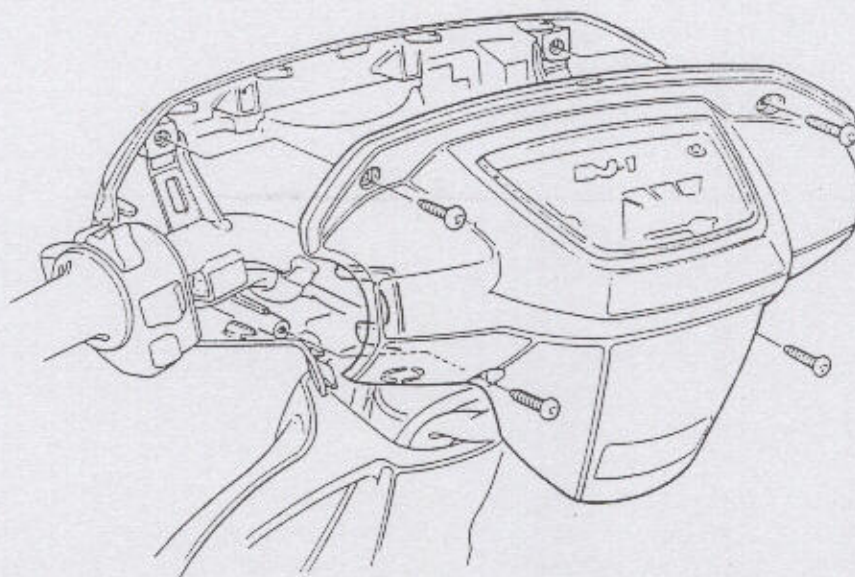
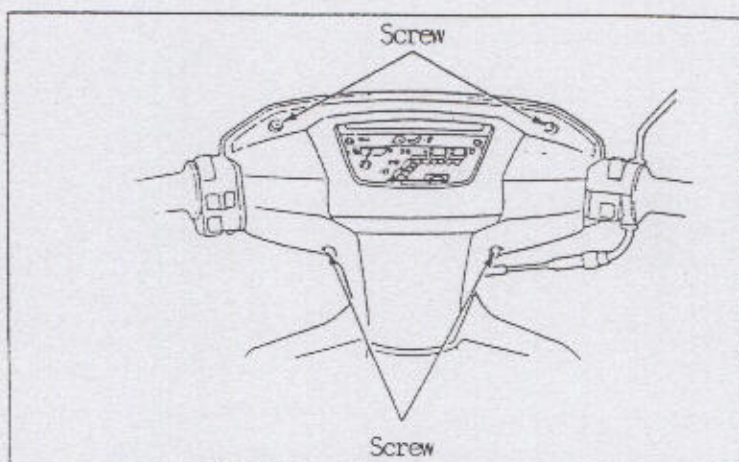
## FRAME COVERS

### FRAME COVERS REMOVAL

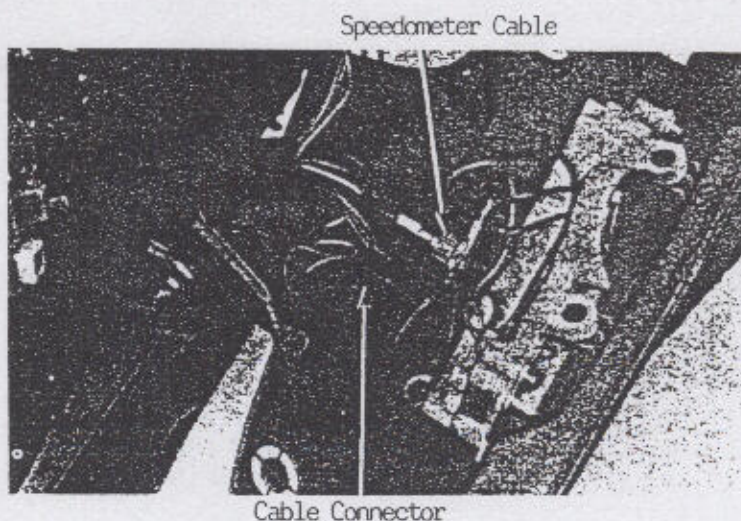
#### Handlebar Upper & Lower Covers

Remove the 4 handlebar front/rear cover attaching screws.  
Remove the handlebar rear cover.

\* During removal, be careful not to damage the claws and cavities on the handlebar front and rear cover mating surfaces.



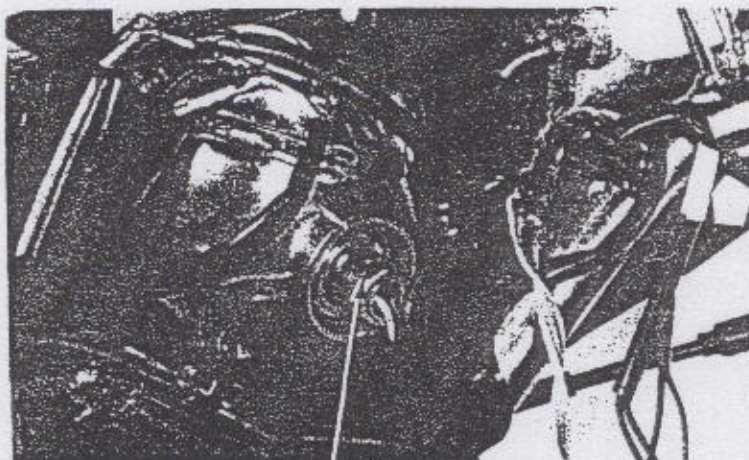
Disconnect the speedometer cable.  
Disconnect the cable connector.





## FRAME COVERS

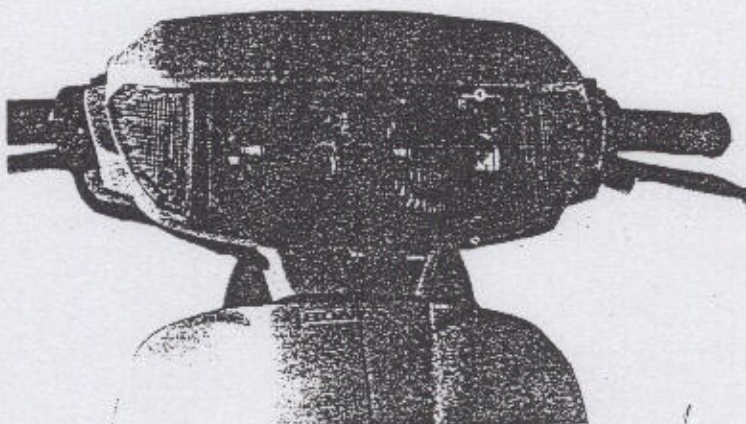
Remove the headlight socket.  
Disconnect the right and left  
turn signal lights wires.



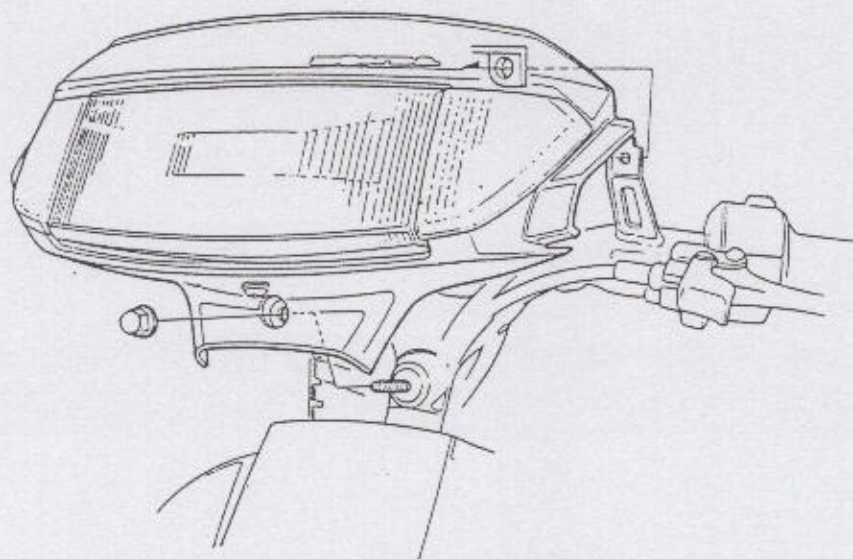
HeadLight Socket

Remove the handlebar front cover  
attaching cap nut and washer and  
remove the handlebar front cover.

\*Be careful not to damage  
the handlebar front cover  
mounting parts.



Cap Nut, Washer



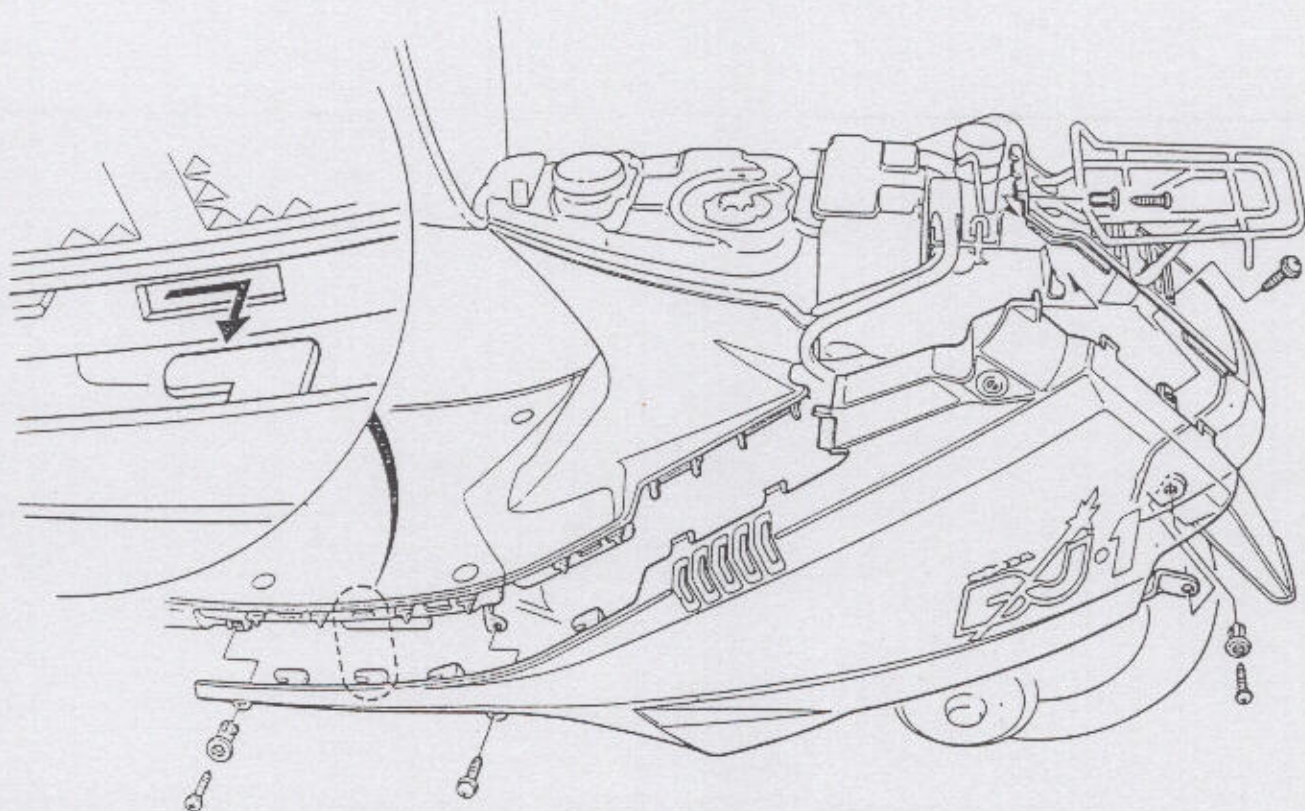
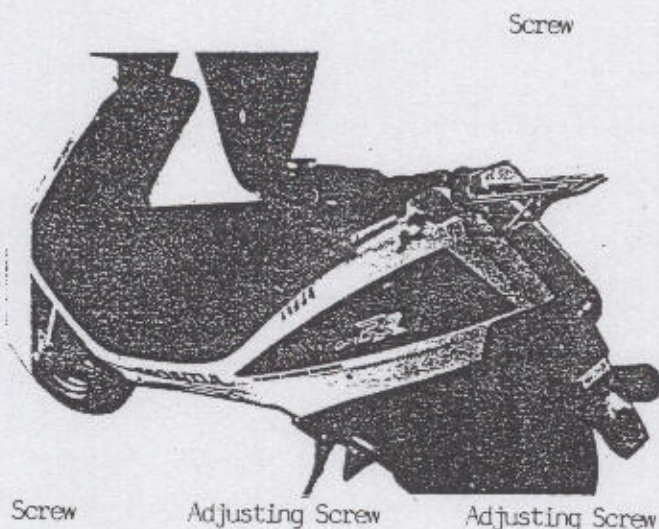


## FRAME COVERS

### Right & Left Side Covers

Remove the 2 screws and adjusting screws.  
Remove the right and left side covers.

The right and left side cover mating parts and the rear fender mating part should not be damaged. The claws and cavities of all frame covers should not be damaged.



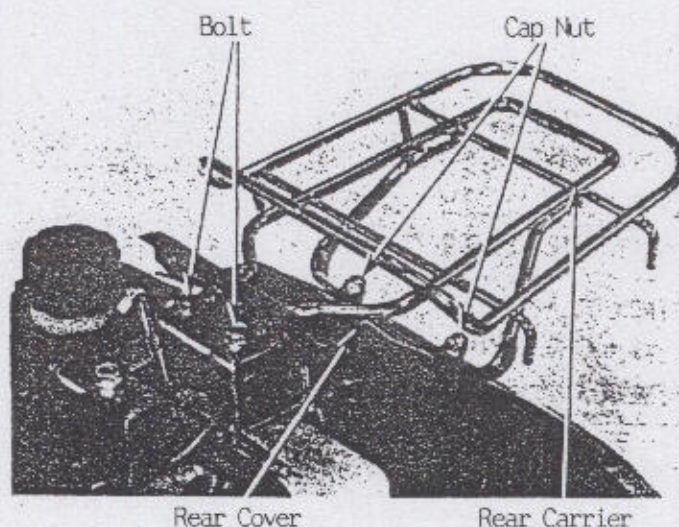


## FRAME COVERS

### Rear Cover

Remove the right and left side covers.

Remove the 2 cap nuts and 2 bolts and then remove the rear carrier and rear cover.



### Central Cover

Remove the right and left side covers. ( 12-6)

Lift the seat and remove the 2 attaching nuts and seat.

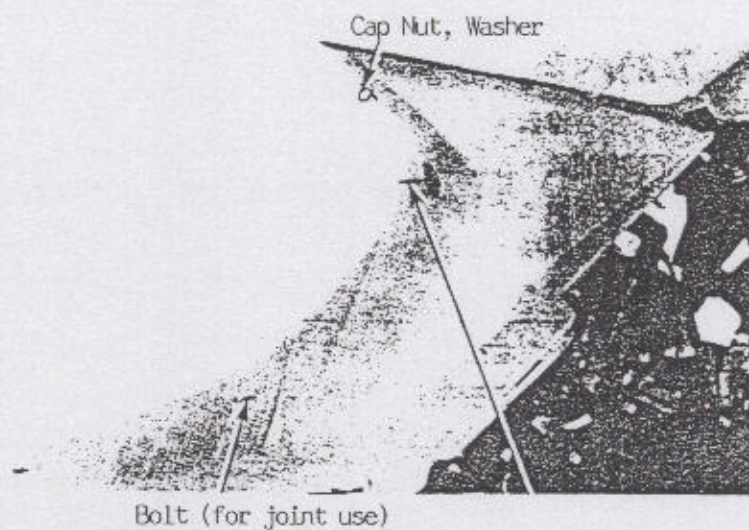
Remove the cap nut and washer.

Remove the 2 foot rest attaching bolts (jointly attaching the central cover) and other 2 bolts.

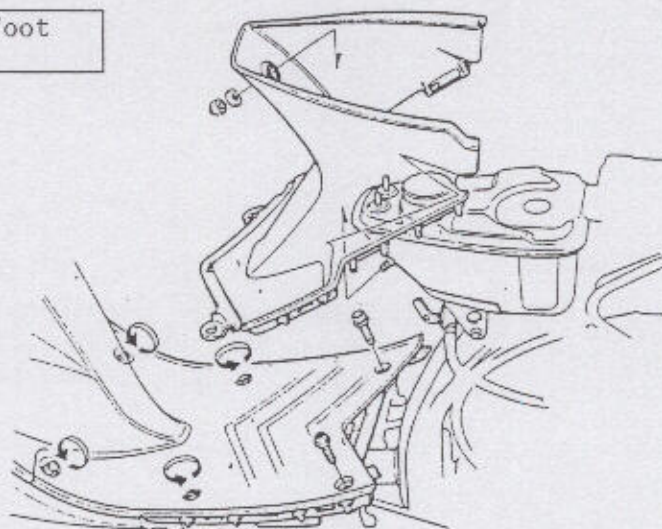
Loosen the 2 cap nuts.

Swing and lift the central cover and then press it down to separate claws from the cavities.

Lift the central cover to remove it.



Do not damage the foot rest claws.





## FRAME COVERS

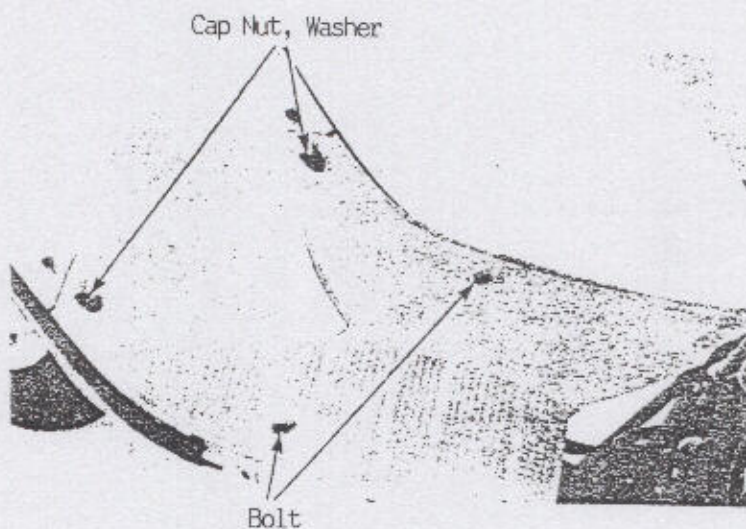
### Foot Rest

Remove the right and left side covers.

Remove the central cover.

Remove the 2 bolts, cap nut and washer and then remove the foot rest.

When removing, lift the foot rest rear mating part and do not damage the front inner cover mating claws.



### Front Inner Cover

Remove the right and left side covers.

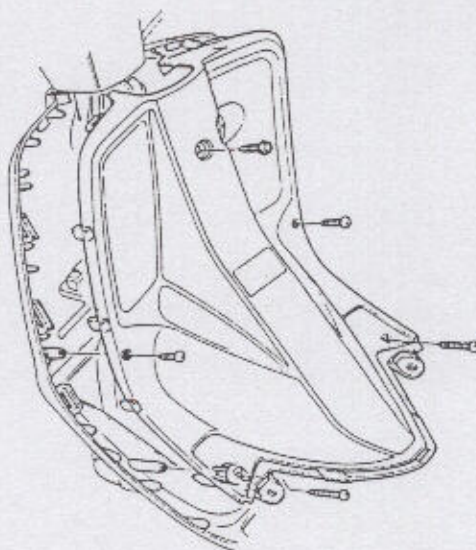
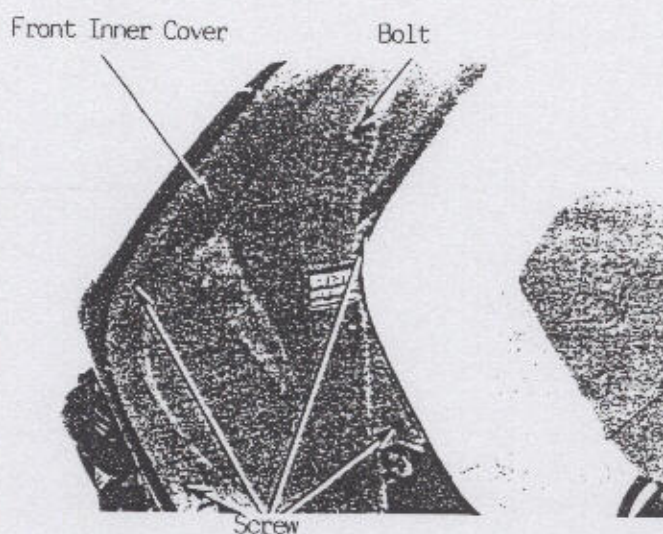
Remove the central cover.

Remove the foot rest.

Remove the 4 attaching screws.

Remove the front inner cover.

When removing, be careful not to damage the front inner cover mating claws. Do not damage the upper mating claws and cavities and press down the front inner cover to remove it.





## FRAME COVERS

### Front Cover

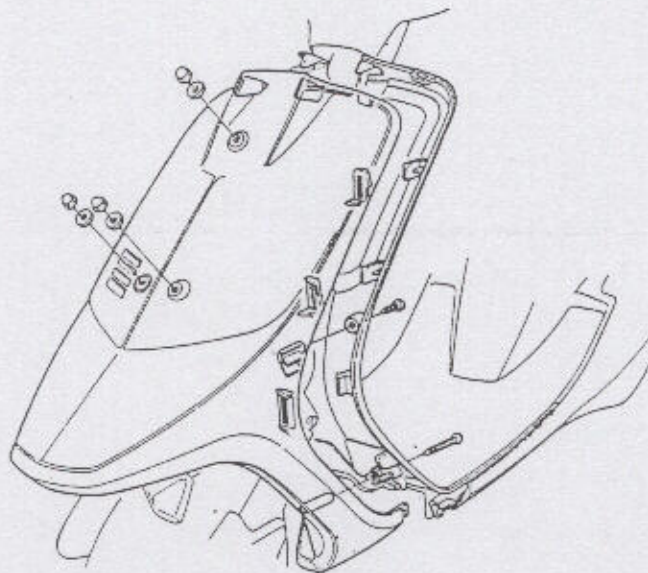
Remove the 3 cap nuts and washer.

Remove the 4 screws.

Remove the front cover.

Be careful not to damage the mating parts of cover. Pull the front cover lower part forward to remove it.

Cap Nut, Washer



### FRAME COVERS INSTALLATION

Install the frame covers in the reverse order of removal.

During installation, pay attention to the following points.

.During installation, the mating parts should be matched properly. Do not force the mating claws and cavities to prevent damage.

.Wires and cables should be properly arranged at their locations.



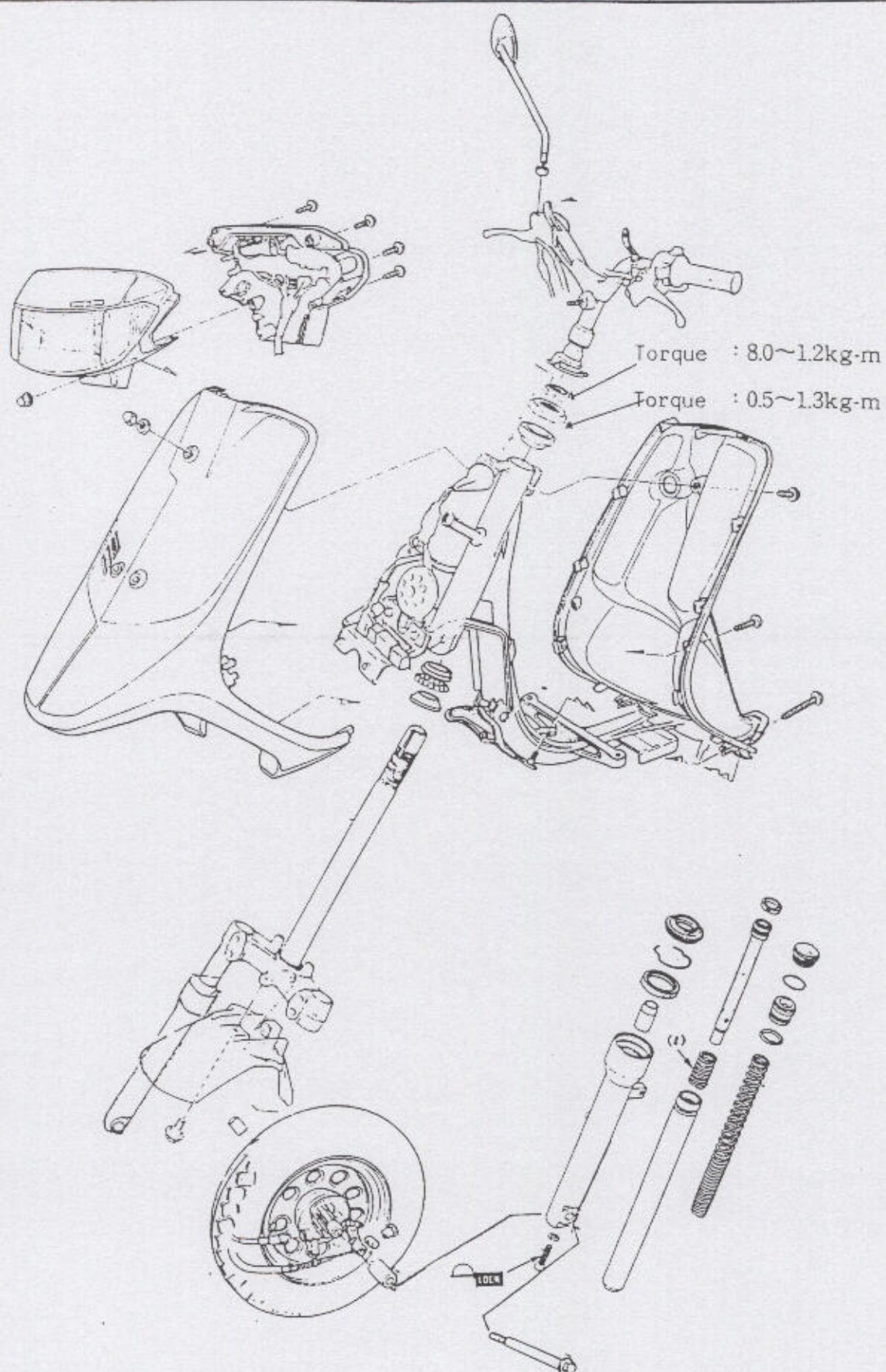
STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/  
FRONT SHOCK ABSORBER/FRONT FORK

● TROUBLESHOOTING	13— 3
● SERVICE INFORMATION	13— 3
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● FRONT BRAKE	13— 9
● FRONT SHOCK ABSORBER	13—12
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STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/  
FRONT SHOCK ABSORBER/FRONT FORK





# STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

## ● TROUBLESHOOTING

### ● Hard steering

- Steering stem top cone race too tight
- Broken steering ball
- Damaged steering stem ball races
- Insufficient tire pressure

### ● Steers to one side

- Uneven right and left absorbers
- Bent front fork
- Bent front axle or unevenly worn tire

### ● Poor brake performance

- Brake incorrectly adjusted
- Oil or grease on brake lining
- Worn brake lining
- Worn brake cam

- Worn brake drum

- Poorly connected brake arm

### ● Front wheel wobbling

- Bent rim
- Loose front axle
- Bent spoke plate
- Faulty tire
- Axle not tightened properly

### ● Soft front shock absorber

- Weak absorber spring

### ● Front shock absorber noise

- Friction of absorber case
- Loose absorber fasteners

## ● SERVICE INFORMATION

### ● SPECIFICATIONS

Item		Standard (mm)	Service Limit (mm)	
Axle shaft runout		—	0.2	
Front wheel rim runout	Radial	—	2.0	
	Axial	—	2.0	
Front brake drum I.D.		80	80.5	
Front brake lining thickness		4.0	2.0	
Front shock absorber spring free length		R:125.0 L:119.8	R:121.3 L:116.3	

### ● TORQUE VALUES

Handlebar lock bolt	4.0—5.0kg-m
Steering stem nut	8.0—12.0kg-m
Steering stem top thread Nut	0.5—1.3kg-m
Front shock absorber nut	2.0—2.5kg-m
Front axle nut	4.5—5.0kg-m
Brake arm bolt	0.4—0.7kg-m

### ● TOOLS

#### SPECIAL TOOLS

Lock nut wrench	07916—KM10000
Lock nut wrench	07716—1870100
Outer driver 28x30mm	07946—1870100
Rear shock absorber Remover A	07967—GA70101
Absorber compressor	07967—KM10100
Ball race driver	07946—GA70000

#### COMMON TOOLS

Driver Handle A	07749—0010000
Outer driver 37x40mm	07746—0010200
Driver Pilot 10mm	07746—0040100
Bearing Puller	07746—0050100
Bearing puller head 10mm	07746—0050200
Absorber spring compressor	07959—3290001



## STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

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### STEERING HANDLEBAR

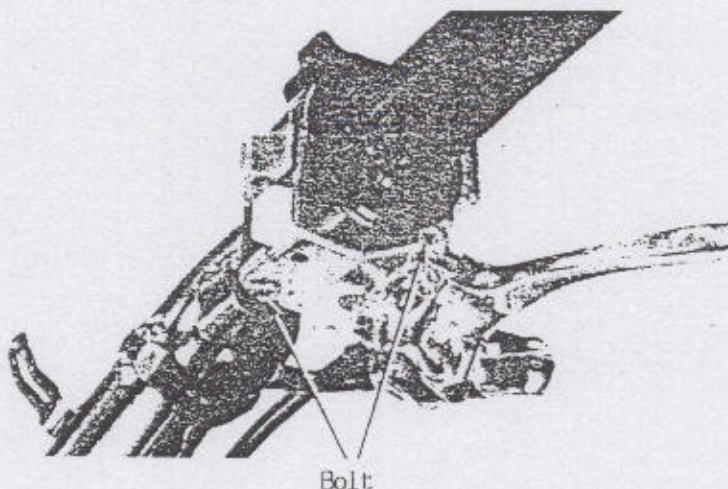
#### Removal

Remove the handlebar upper and lower covers. ( 12-4)

Remove the front cover and inner cover. ( 12-8, 9)

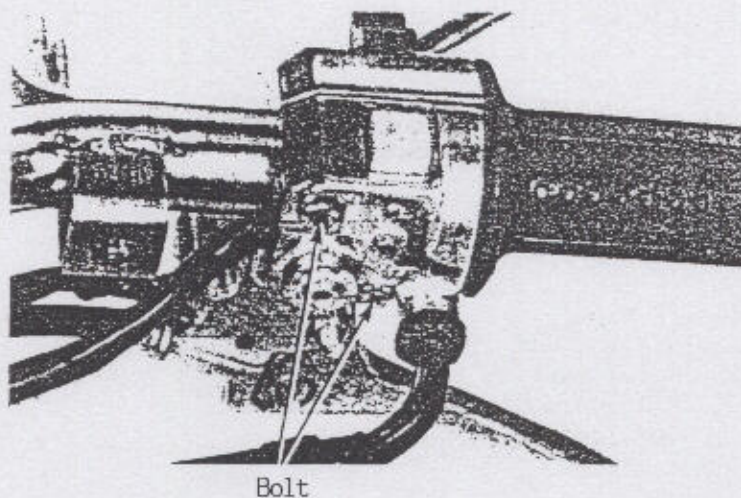
Remove the 2 left handlebar switch attaching bolts.

Remove the left handlebar switch and lever holder.

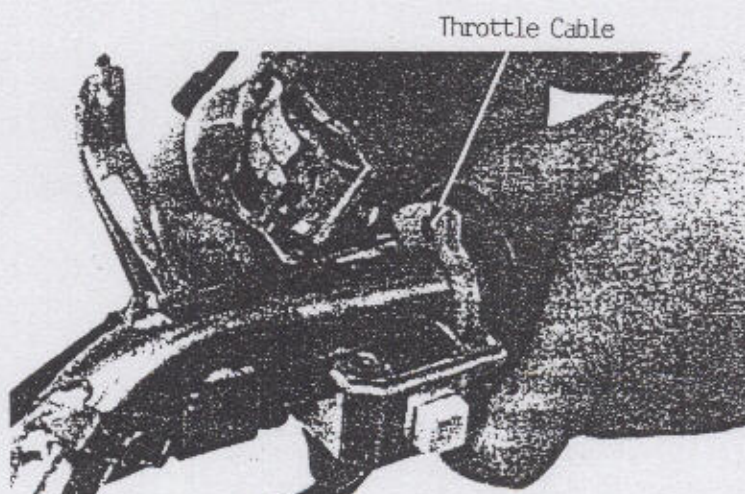


Remove the 2 right handlebar switch attaching bolts.

Remove the right handlebar switch and lever holder.



Disconnect the throttle cable from the throttle tube and then remove the throttle tube from the handlebar.





## STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

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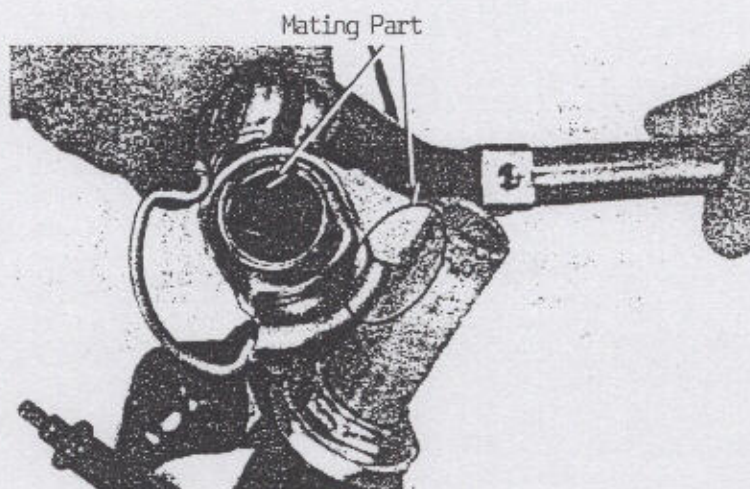
Remove the handlebar lock bolt and then remove the handlebar.



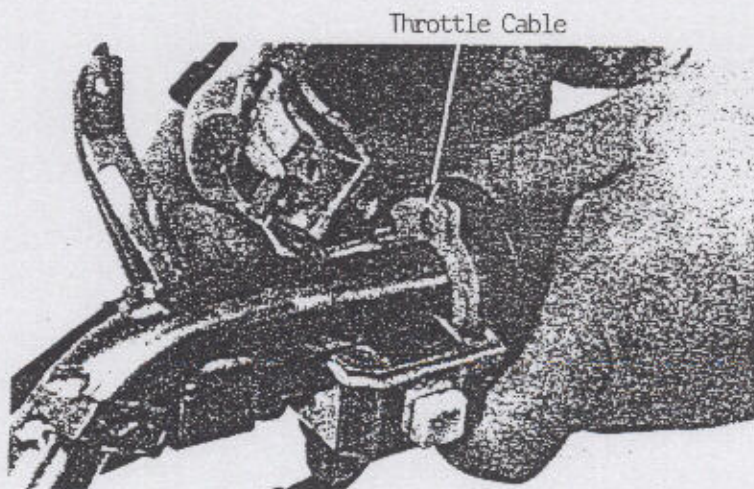
### Installation

Install the handlebar on the steering stem by aligning the tab of the handlebar with the groove in the steering stem. Install and tighten the handlebar lock bolt.

**Torque:** 4.0-5.0kg-m



Lubricate the throttle tube front end with grease. Install the throttle valve and connect the throttle cable.





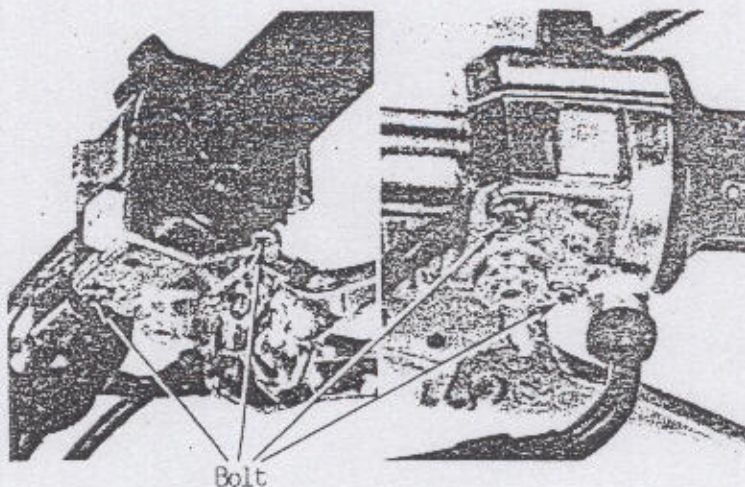
## STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

Install the right and left handlebar switches and tighten the bolts.

Install the front cover and inner cover. ( 12-9)

Install the handlebar upper and lower covers. ( 12-9)

When assembling the handlebar switch upper and lower covers, tighten the forward bolts first and then tighten the rear bolts.



### FRONT WHEEL

#### Removal

Support the motorcycle chassis with a jack to raise the front wheel off the ground.

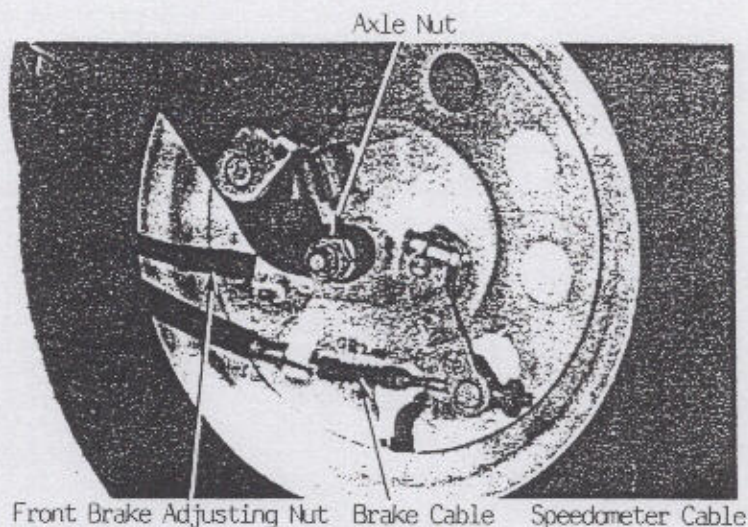
Remove the speedometer cable attaching screw to remove the speedometer cable.

Disconnect the front brake cable.

Remove the front axle nut and pull out the axle.

Remove the front wheel.

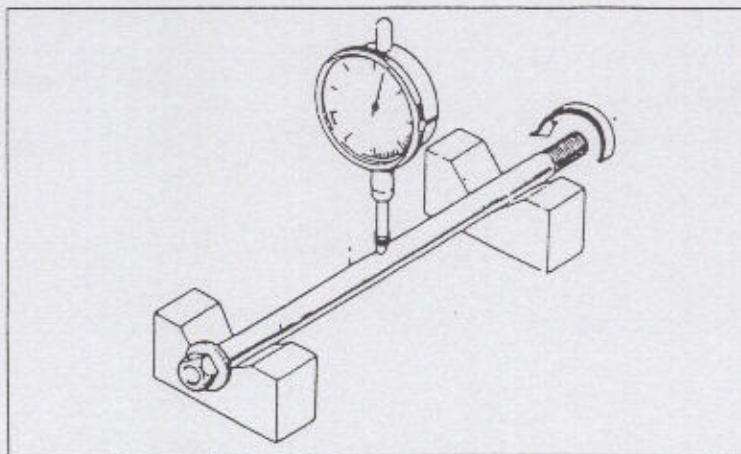
Remove the brake disk and axle collar.



#### Inspection

Measure the axle shaft runout. The actual runout is  $\frac{1}{2}$  of the total indicator reading.

**Service Limit:** 0.2mm replace if over





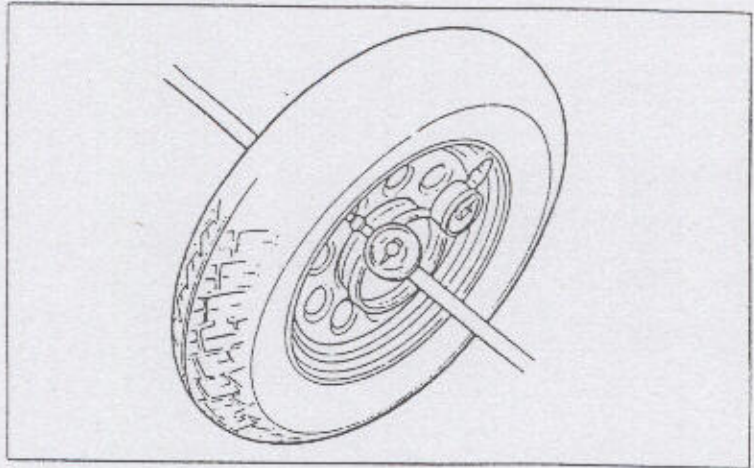
## STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

Check the wheel rim runout.

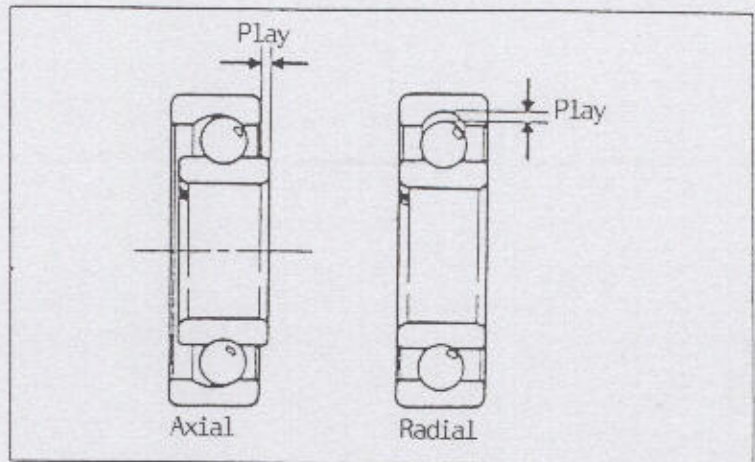
### Service Limit:

Radial: 2.0mm replace if over

Axial : 2.0mm replace if over

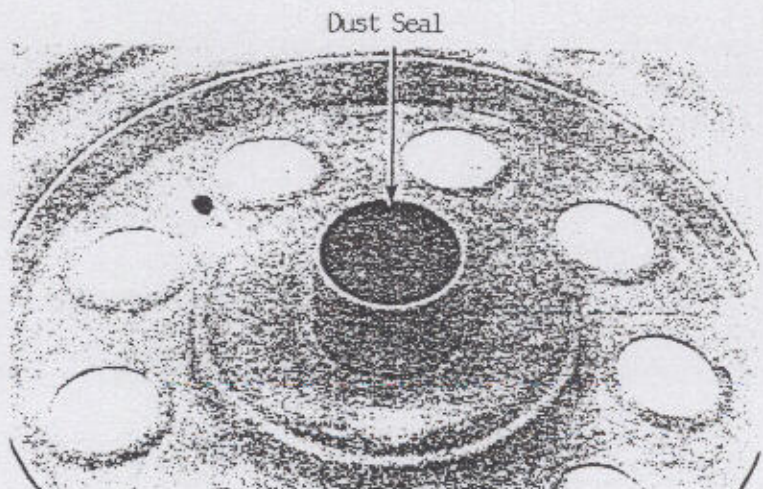


Rotate the wheel bearings and replace with a new one if there is abnormal noise or looseness.



### Disassembly

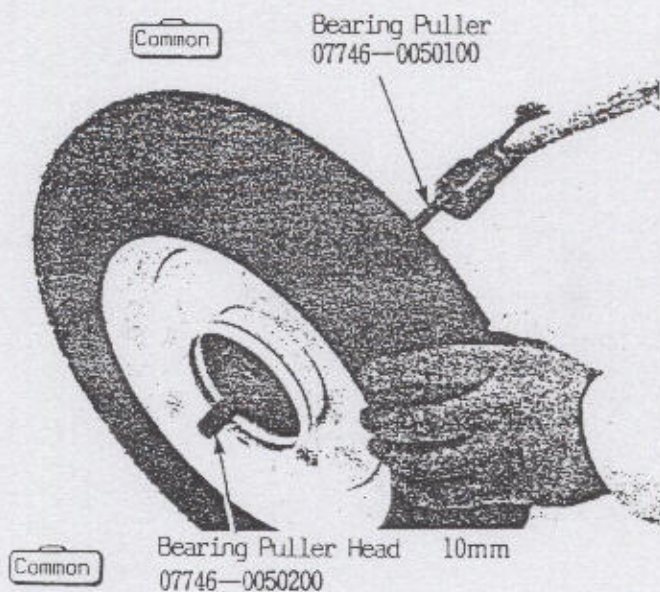
Remove the dust seal.



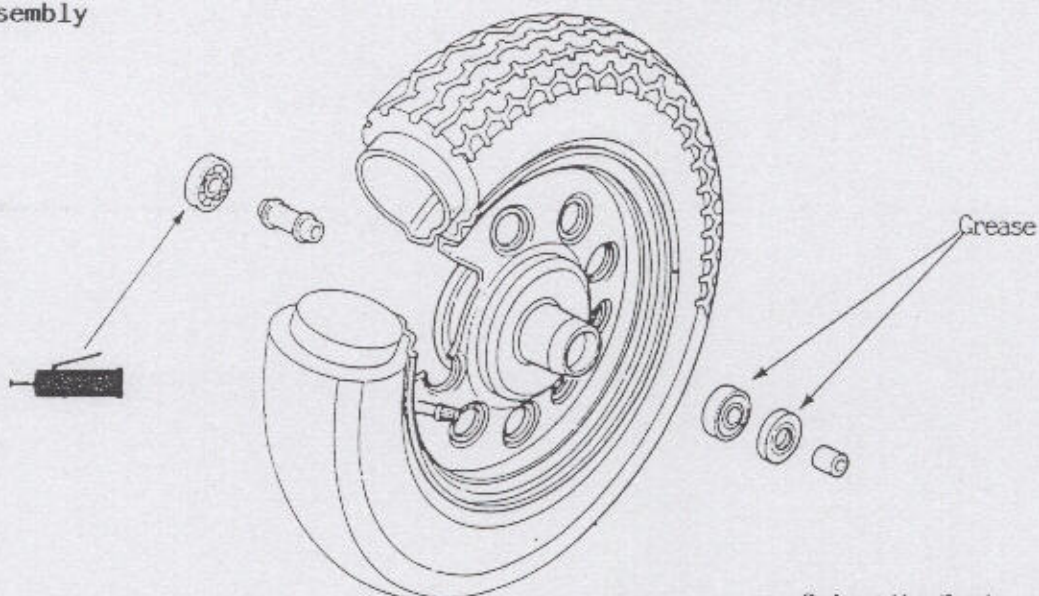


# STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

Remove the wheel bearings and distance collar.



## Assembly



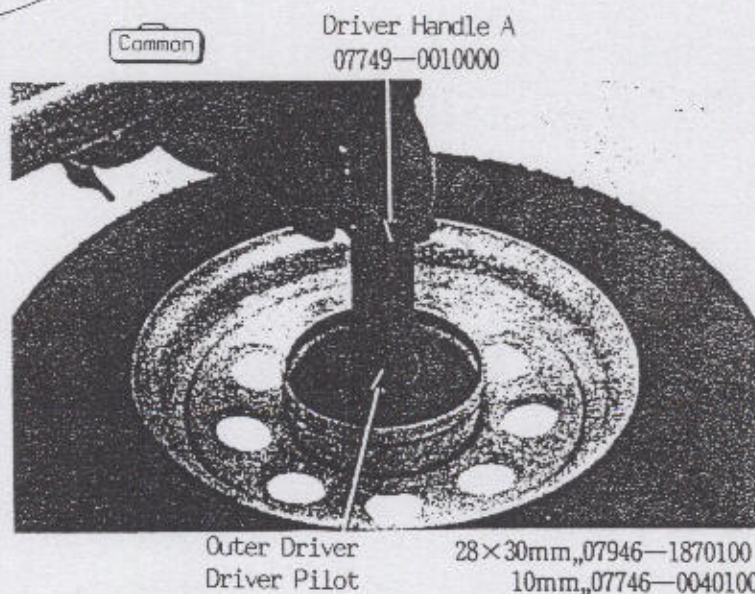
Pack all bearing cavities with grease.

Drive in the right bearing and dust seal.

Install the distance collar.

Drive in the left bearing.

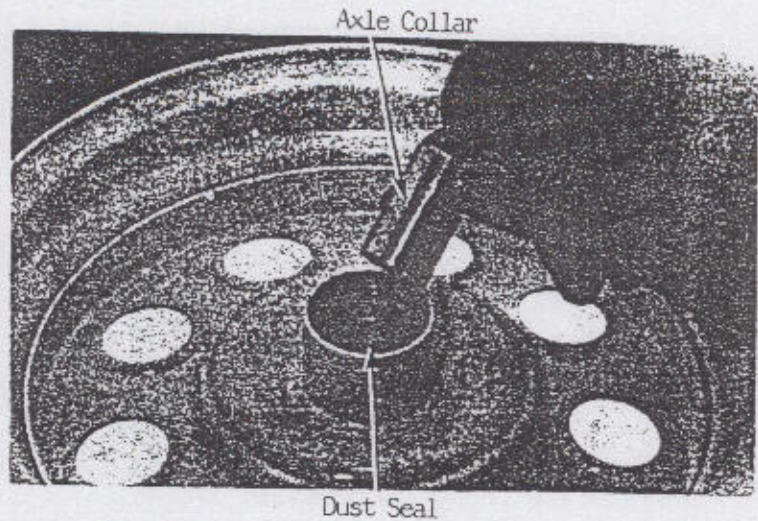
\* Drive in the bearings with the sealed end facing out.





## STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

Apply grease to the lip of the dust seal.  
Install the dust seal and axle collar.

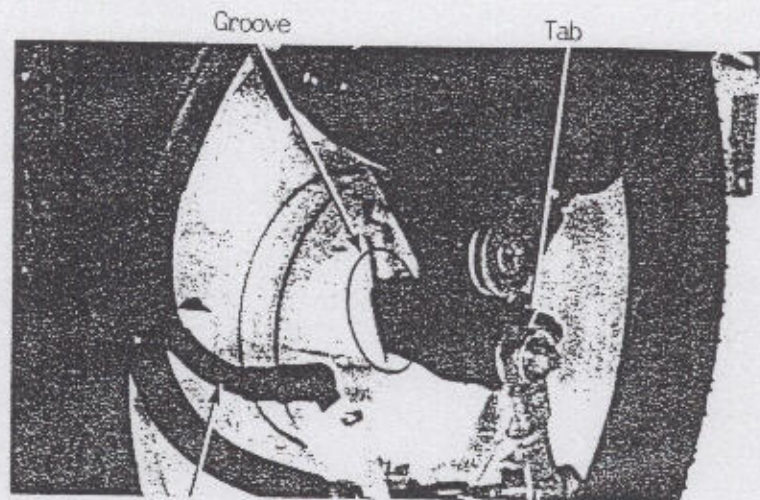


### Front Wheel Installation

Install the front wheel by aligning the groove in the front brake disk with the tab on the front fork.

**Torque:** 4.0-5.0kg-m

Connect the speedometer cable.  
Connect and adjust the front brake cable.



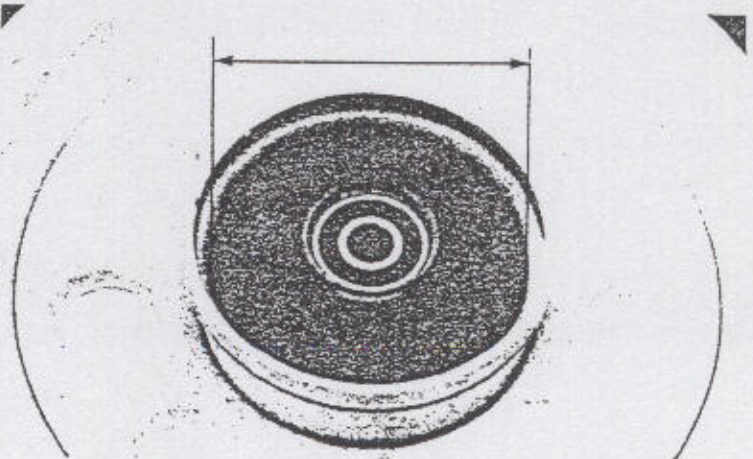
### FRONT BRAKE

Remove the front wheel. ( 13-6 )  
Remove the brake disk.

#### Inspection

Measure the brake drum I.D.

**Service Limit:** 80.5mm replace if over





## STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

Measure the brake lining thickness.

**Service Limit:** 2.00mm replace  
if below

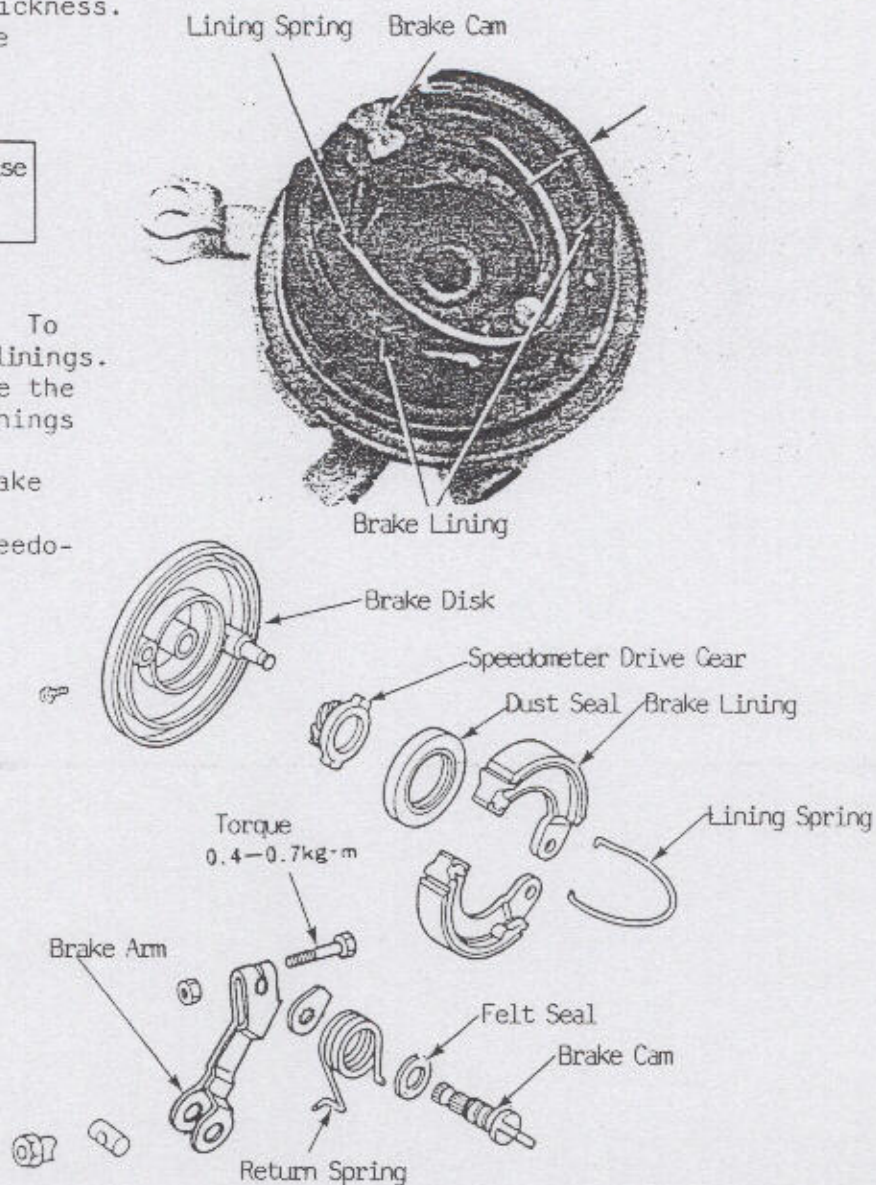
Be careful to keep oil or grease  
off the brake linings.

### Disassembly

Do not swing the brake arm. To  
do so may expand the brake linings.  
Use a screw driver to remove the  
brake lining springs and linings  
from the lock pin.

Remove the brake arm and brake  
cam.

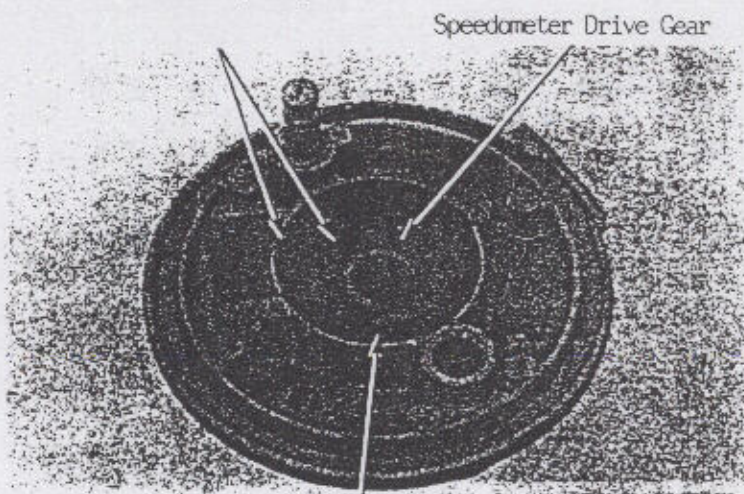
Remove the dust seal and speedo-  
meter drive gear.



### Assembly

Apply grease to the speedometer  
gear and install it into the  
brake disk.

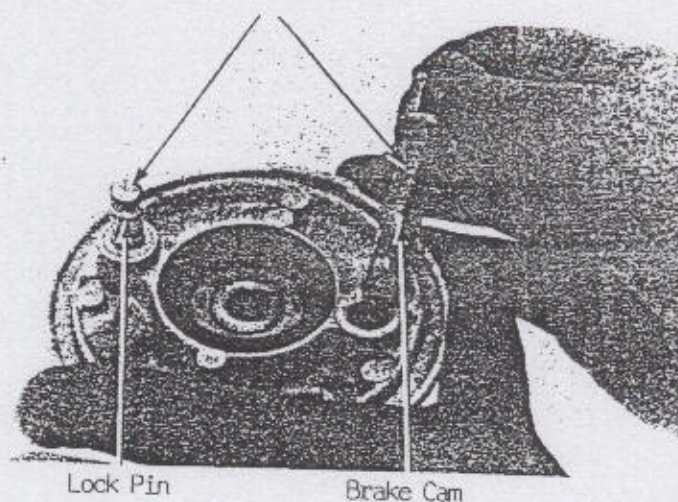
Apply grease to the lip of the  
dust seal and install it.



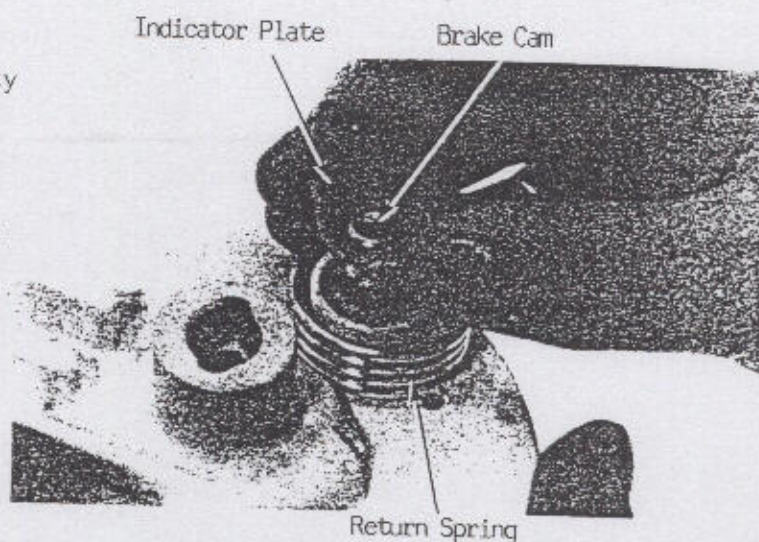


**STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/  
FRONT SHOCK ABSORBER/FRONT FORK**

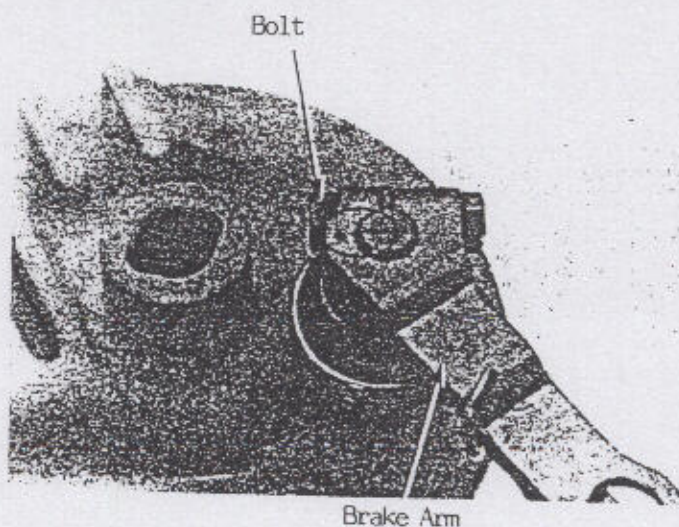
Apply grease to the lock pin  
and brake cam.  
Install the brake cam.



Align the end of the brake arm  
spring with the brake disk cavity  
and then assemble them.  
Add a small quantity of engine  
oil into the felt seal and then  
install it.  
Install the wear indicator plate  
on the brake camshaft by align-  
ing the tooth on the plate with  
the groove on the camshaft.



Install the brake arm on the  
brake camshaft by aligning the  
punch mark on the brake arm  
with the punch mark on the  
camshaft.  
Install and tighten the brake  
arm bolt.  
**Torque:** 0.4-0.7kg-m





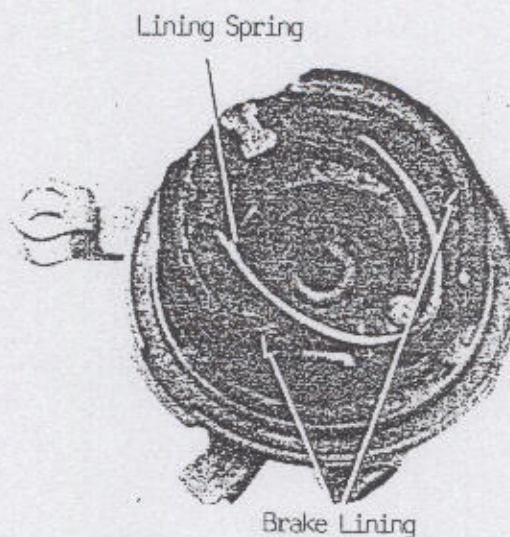
# STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

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Remove the brake linings and lining springs.  
Swing the brake arm to expand the brake linings.  
Install the lining springs onto the lock pin.

## Installation

Install the brake disk onto the front wheel.  
Install the front wheel. ( 13-9)  
Adjust the front brake lever free play.



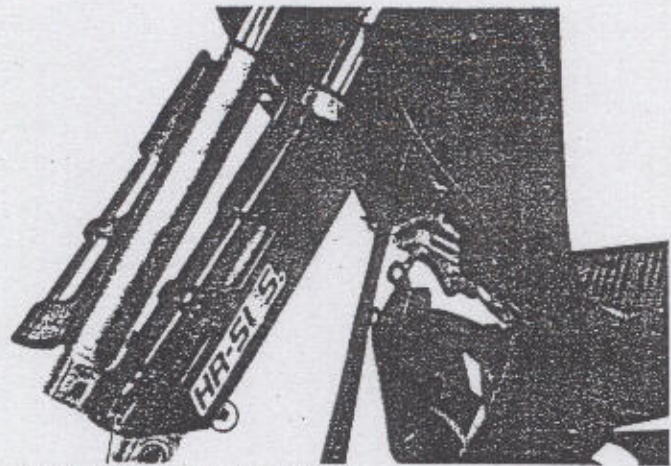


## STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

### FRONT SHOCK ABSORBER

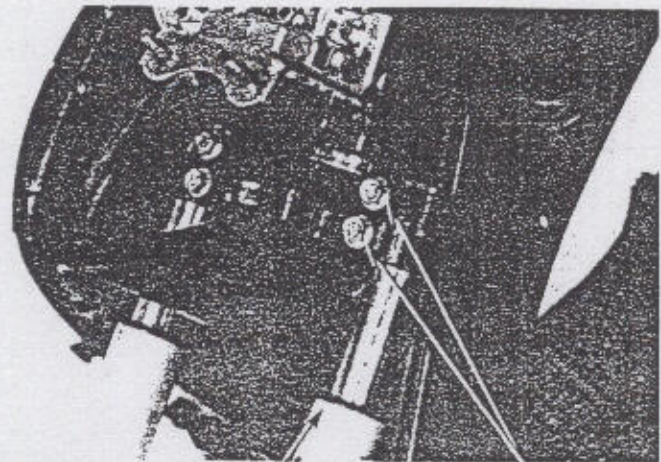
#### Removal

Remove the front wheel.  
Remove the bolt and then remove  
the front shock absorber cover.



Front Shock Absorber Cover

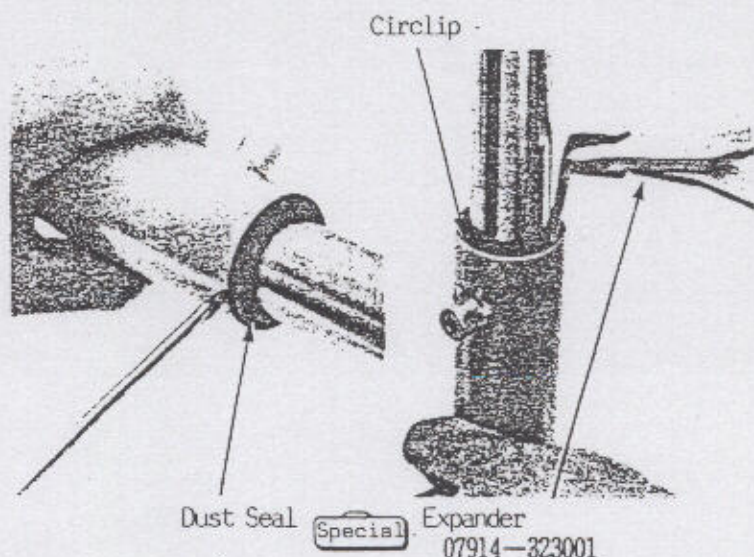
Remove the upper lock bolt.  
Loosen the lower lock bolt  
and remove the front shock  
absorber.



Front Shock Absorber Lock Bolt

#### Right Front Shock Absorber Disassembly

Remove the dust seal.  
Remove the circlip.

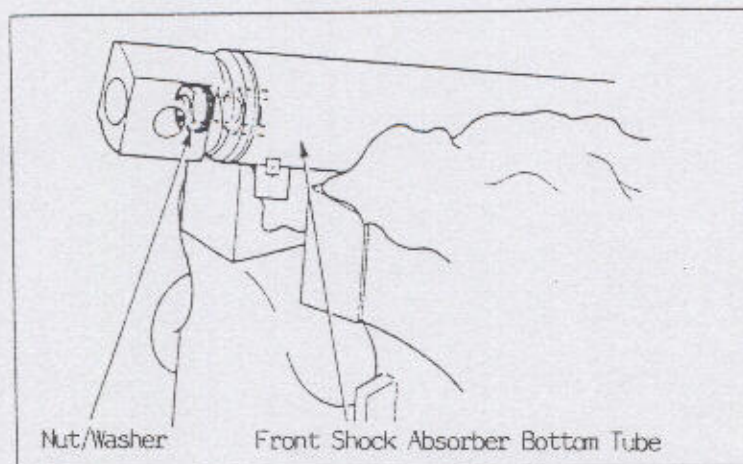




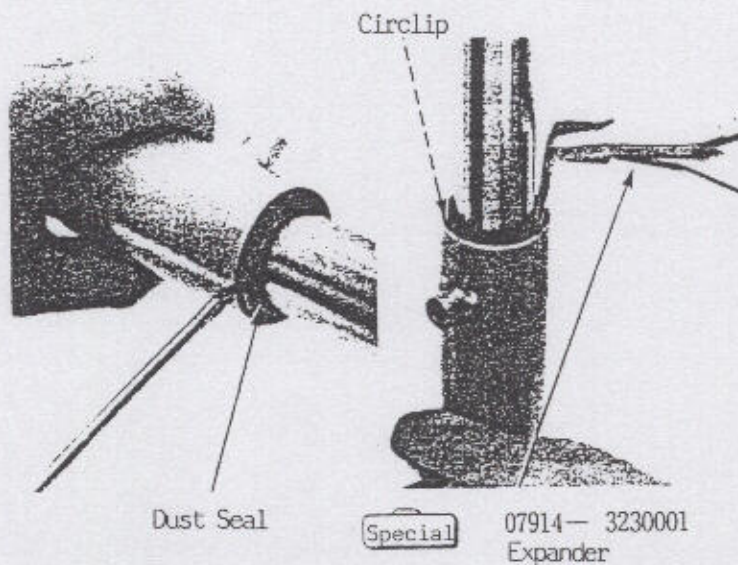
## STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

### Left Front Shock Absorber Disassembly

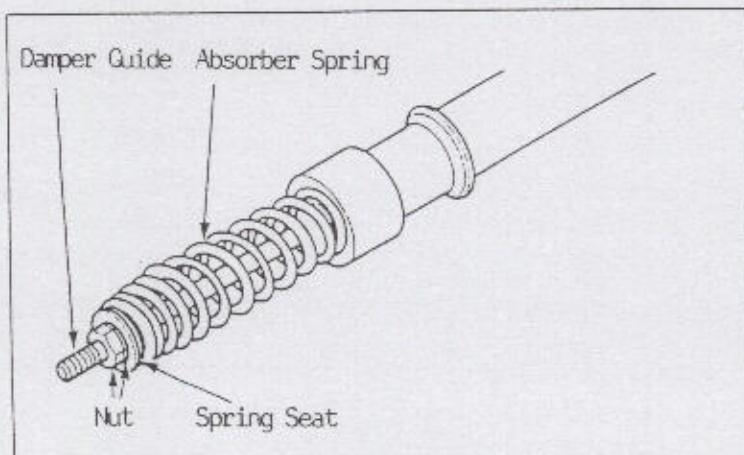
Use a vise to fix the front shock absorber bottom tube and remove the damper guide, nut and washer.



Remove the dust seal.  
Remove the circlip and remove the front shock absorber tube from the front shock absorber bottom tube.  
Remove the guide collar and damping spring from the absorber tube.



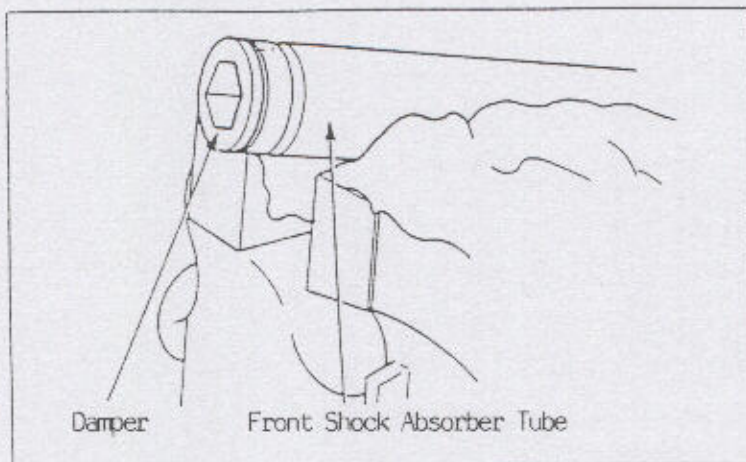
Remove the 2 nuts and remove the spring seat and spring from the damper.





## STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

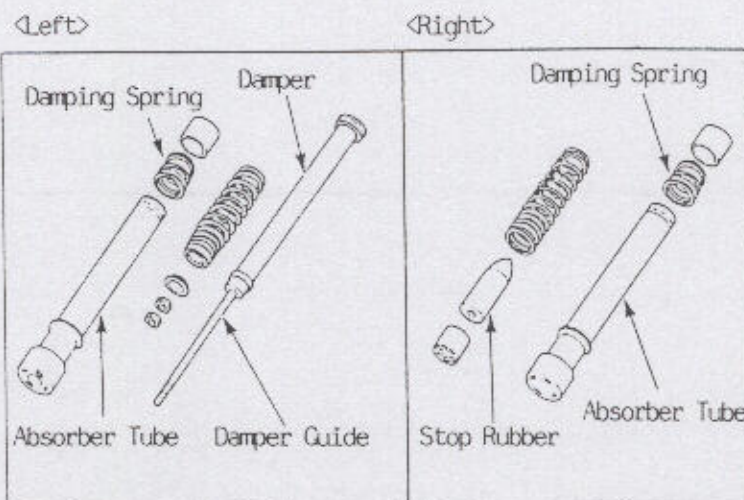
Use a vise to fix the front shock absorber tube and remove the damper from the front shock absorber tube.



### Inspection

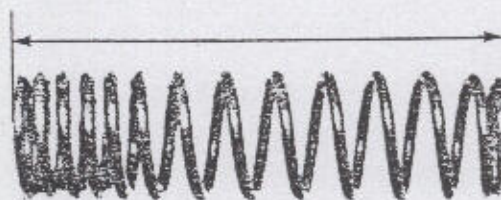
Inspect the following items and replace with new parts if necessary.

- .Front shock absorber tube bending or damage
- .Damper and damper guide bending, damage or oil leaks (Left)
- .Damping spring weakness
- .Stop rubber weakness



Measure the front shock absorber spring free length.

Service Limit: Right: 121.3mm  
Left : 116.2mm

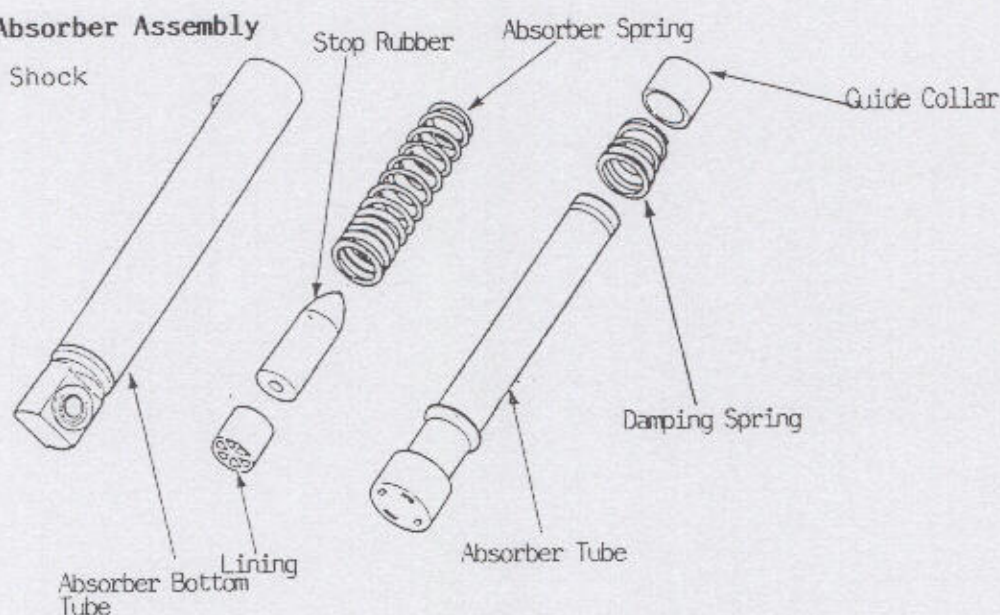




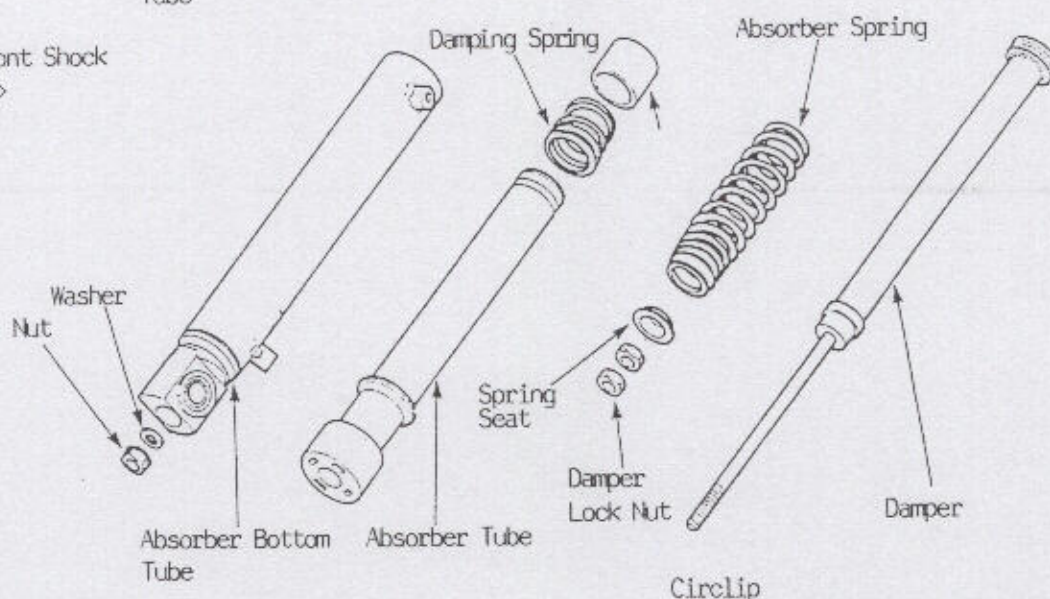
# STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

## Front Shock Absorber Assembly

<Right Front Shock Absorber>



<Left Front Shock Absorber>

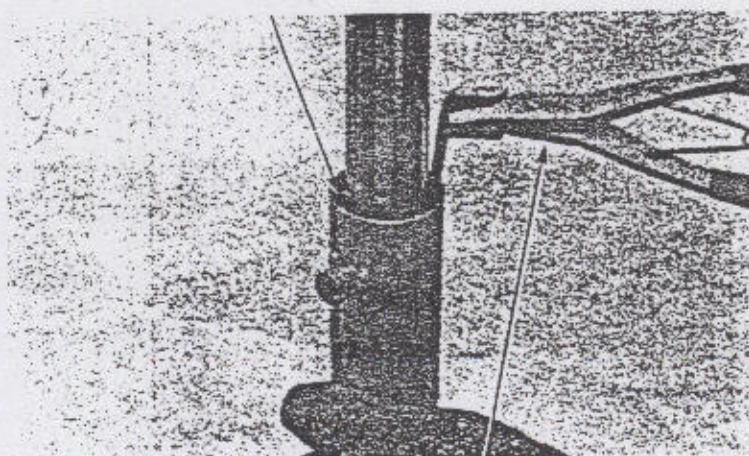


<Right Front Shock Absorber>

Install the damping spring and guide collar onto the absorber tube. Install the lining, stop rubber and absorber spring into the absorber tube.

Install the absorber spring with its cone-shaped end facing up.

Install the absorber tube into the front shock absorber bottom tube. Push down the front shock absorber to compress the absorber spring and then install the circlip. Install the dust seal.



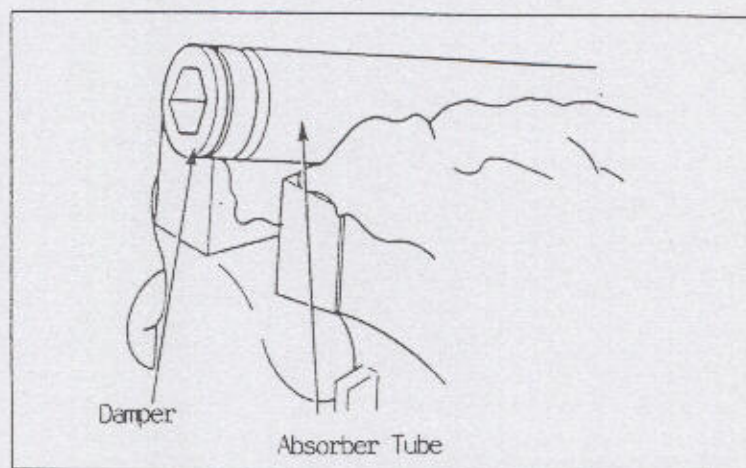
Special

07914-3230001



## STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

<Left Front Shock Absorber>  
Use a vise to fix the absorber tube.  
Install the damper into the absorber tube.

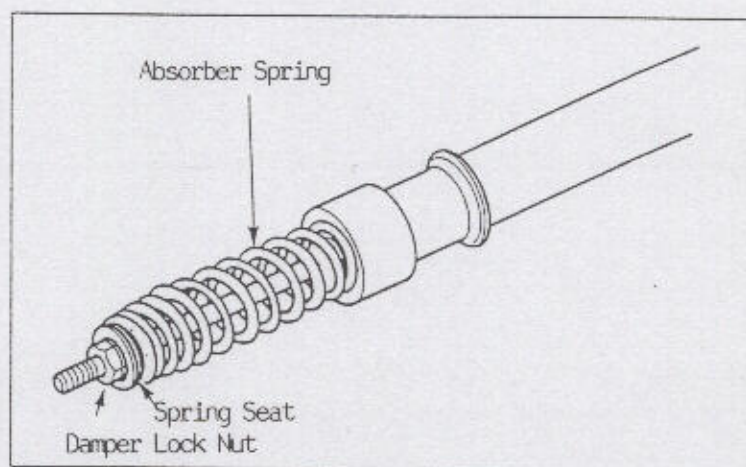


Install the absorber spring and spring seat and then install and tighten the nut.

✧ Install the absorber spring with its shorter cone-shaped end connected to the absorber tube.

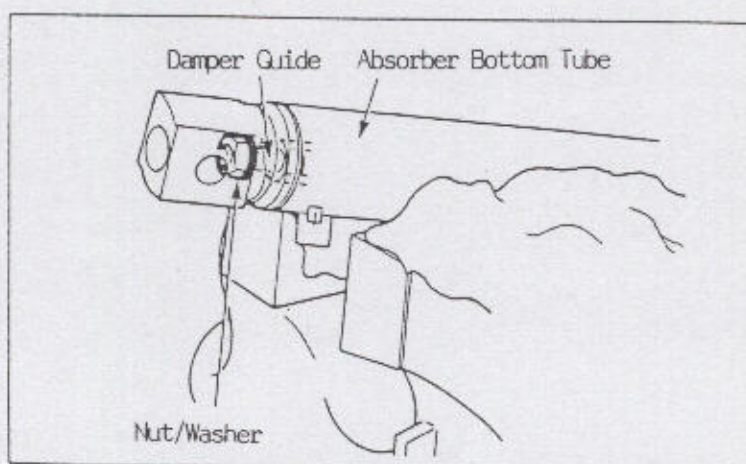
Apply thread locking agent to the damper lock nut and tighten the lock nut.

**Torque:** 1.5-2.5kg-m



Use a vise to fix the absorber bottom tube. Apply thread locking agent to the nut and install the damper washer.

**Torque:** 1.5-2.5kg-m

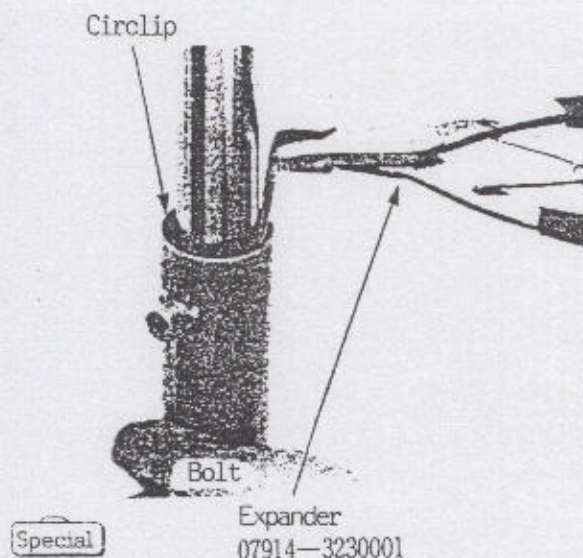




## STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

Install the absorber tube into the front shock absorber bottom tube.

Push down the front shock absorber to compress the absorber spring and then install the circlip. Install the dust seal.



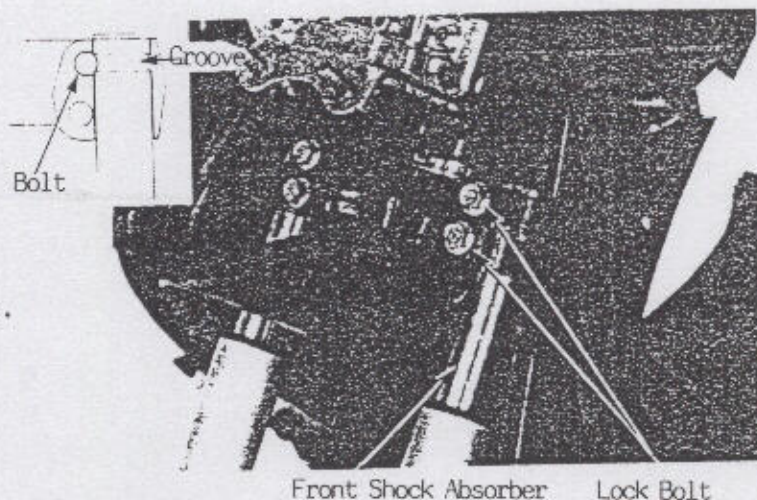
### Installation

Install the front shock absorber onto the steering stem.

Install the upper lock bolt.

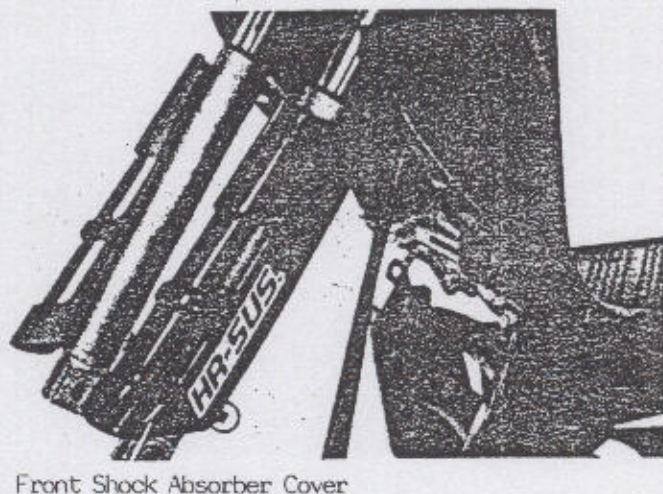
The bolt hole should align with the groove on the front shock absorber.

Tighten the upper and lower bolts.



Install the front shock absorber cover.

Install the front wheel. ( 13-9)





## STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

### FRONT FORK

#### Front Fork Removal

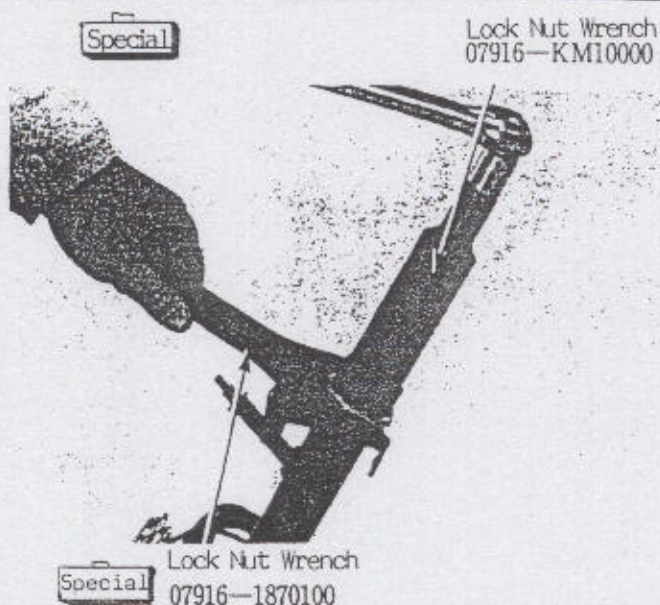
Remove the steering handlebar.

( 13-4)

Remove the front wheel. ( 13-6)

Disconnect the speedometer cable, front brake cable and remove the front fork grip.

Fix the steering stem top thread nut and remove the steering stem lock nut.



Remove the steering stem top ball race and steering stem.

\* Do not lose the steel balls. (26 in top race and 26 in bottom race.)

Inspect the ball races and cone races for wear or damage.

Inspect the balls for wear or damage. Replace with new ones if necessary.

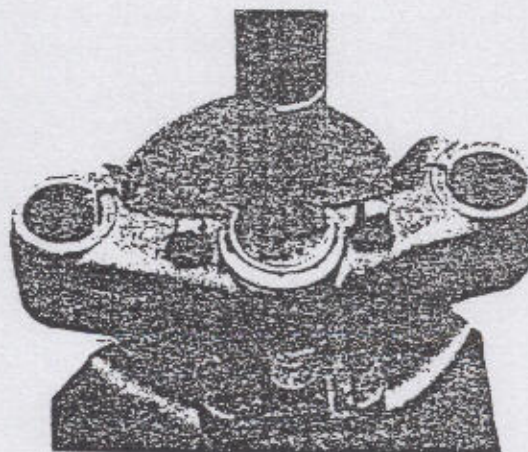


#### Bottom Ball Race Replacement

Remove the bottom ball race with a driver.

\* Be careful not to damage the steering stem and front fork.

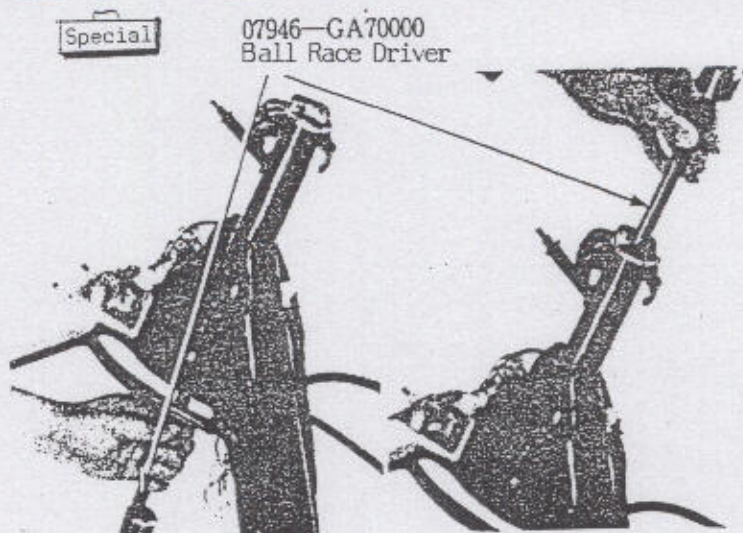
Drive in a new bottom ball race with a proper driver.





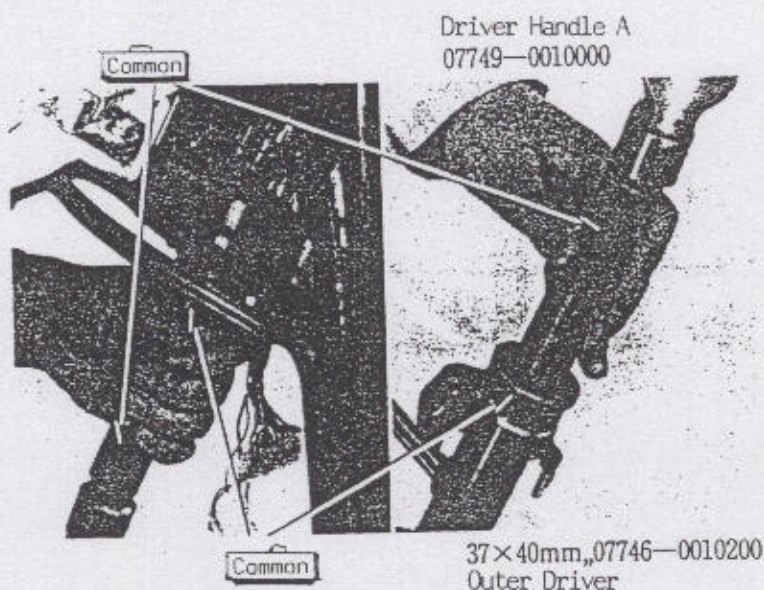
# STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

**Ball Race Replacement**  
Drive out the ball race.



Install the ball race.

\* Drive in the ball race  
completely.

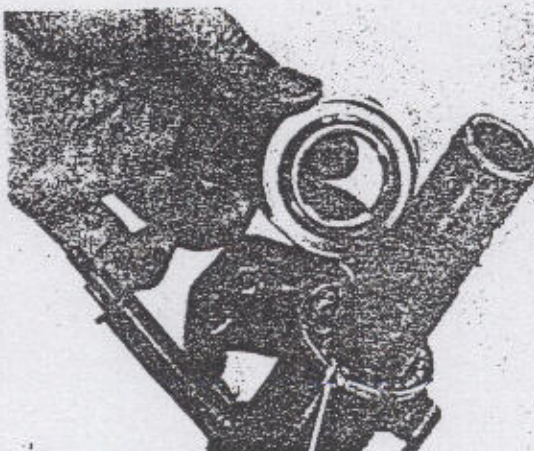


## Installation

Lubricate the ball races, steel balls (26 in top race and 26 in bottom race) and cone races with grease.

Install the Steering stem.

\* Be careful not to lose  
the steel balls.





## STEERING HANDLEBAR/FRONT WHEEL/FRONT BRAKE/ FRONT SHOCK ABSORBER/FRONT FORK

Apply grease to the top ball race and install it.  
Screw in the steering stem top thread nut and turn it right and left several times to make balls contact each other closely.  
**Torque:** 0.5-1.3kg-m

\* Check that the steering stem rotates freely without vertical play.



Top Ball Race

Fix the top thread nut and tighten the steering stem lock nut to specified torque.

**Torque:** 8.0-12.0kg-m

Install the front fork grip, and connect the speedometer cable and front brake cable.

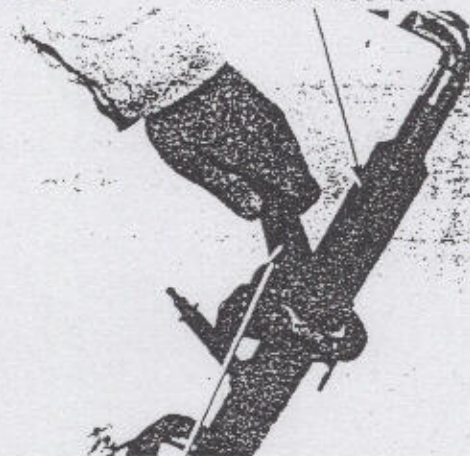
Install the front wheel. ( 13-9)

Install the steering handlebar. ( 13-5)

Special

Lock Nut Wrench

07916-KM10000



Special

Lock Nut Wrench

07916-1870100



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## REAR WHEEL/REAR BRAKE/REAR SHOCK ABSORBER

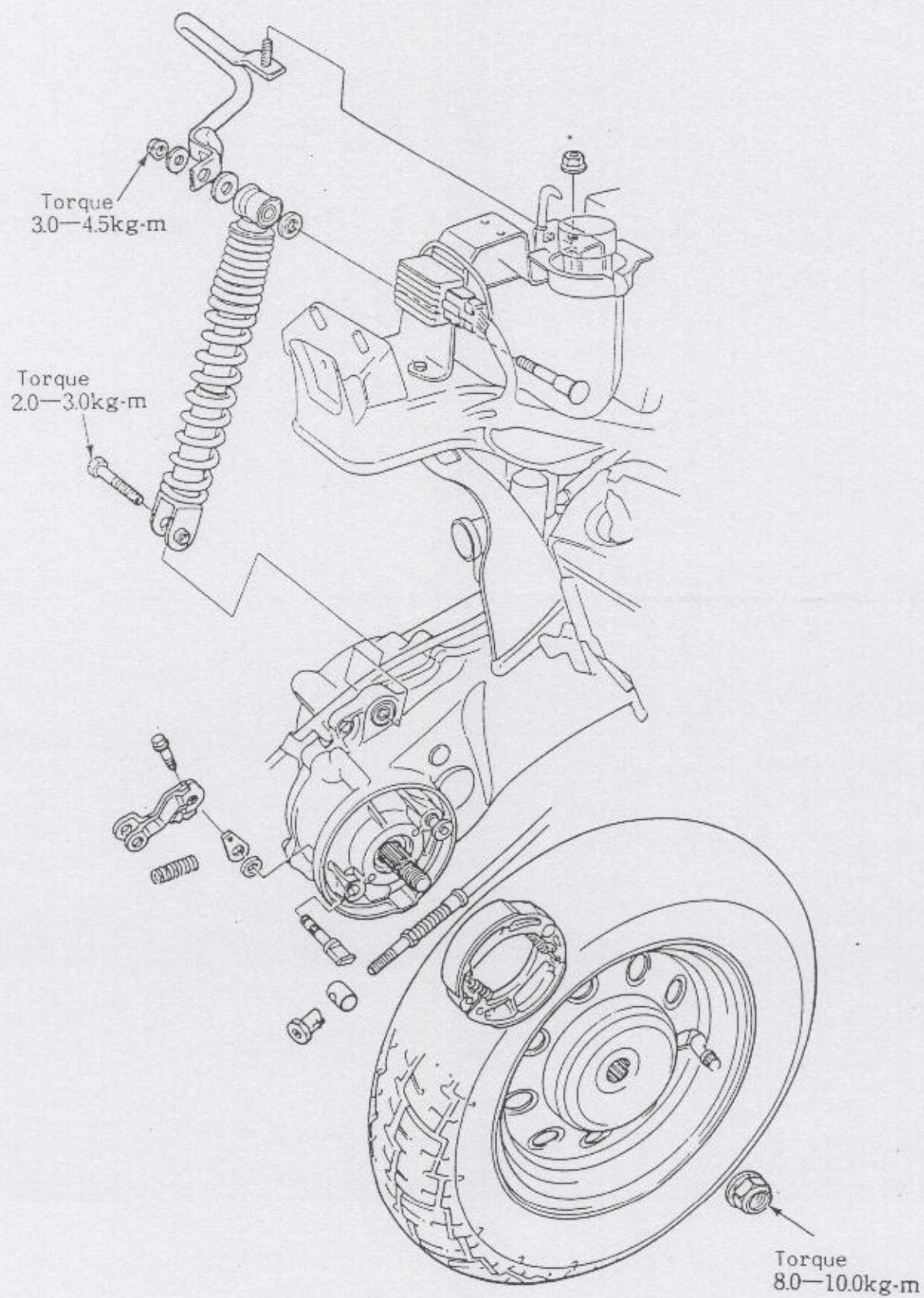
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●TROUBLESHOOTING	14— 3
●SERVICE INFORMATION	14— 3
●REAR WHEEL	14— 4
●REAR BRAKE	14— 5
●REAR SHOCK ABSORBER	14— 8





## REAR WHEEL/REAR BRAKE/REAR SHOCK ABSORBER





## REAR WHEEL/REAR BRAKE/REAR SHOCK ABSORBER

### ● TROUBLESHOOTING

#### ● Rear wheel wobbling

- Distorted rim
- Faulty tire
- Axle not tightened properly

#### ● Soft rear shock absorber

- Weak spring

#### ● Poor brake performance

- Brake incorrectly adjusted
- Oil or grease on brake lining
- Worn brake lining
- Worn brake cam
- Worn brake camshaft
- Poorly connected brake arm wear indicator plate

### ● SERVICE INFORMATION

#### • SPECIFICATIONS

Item	Standard (mm)	Service Limit (mm)
Rear wheel rim runout	—	2.0
Rear brake drum I.D.	95	95.5
Rear brake lining thickness	4.0	2.0
Rear shock absorber spring free length	229	222

#### ● TORQUE VALUES

Rear axle nut	8.0—10.0kg·m
Rear shock absorber nut	3.0—4.5kg·m
Rear shock absorber bottom bolt	2.0—3.0kg·m
Rear damper lock nut	15—25kg·m (Apply thread locking agent)
Exhaust pipe joint lock nut	1.0—1.4kg·m
Exhaust pipe lock bolt	2.4—3.0kg·m

#### ● TOOLS

##### SPECIAL TOOL

Rear shock absorber remover 07967—GA70200

##### COMMON TOOL

Absorber spring compressor 07959—3290001



## REAR WHEEL/REAR BRAKE/REAR SHOCK ABSORBER

### REAR WHEEL

#### Removal

Remove the right side cover.

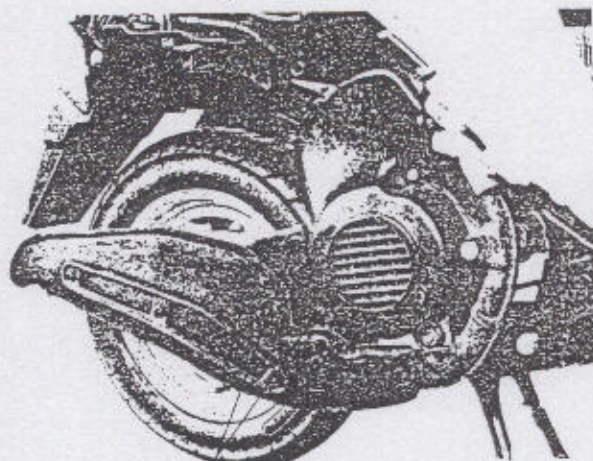
( 12-6)

Remove the exhaust pipe joint lock nut.

Remove the exhaust pipe lock bolt.

Remove the exhaust pipe.

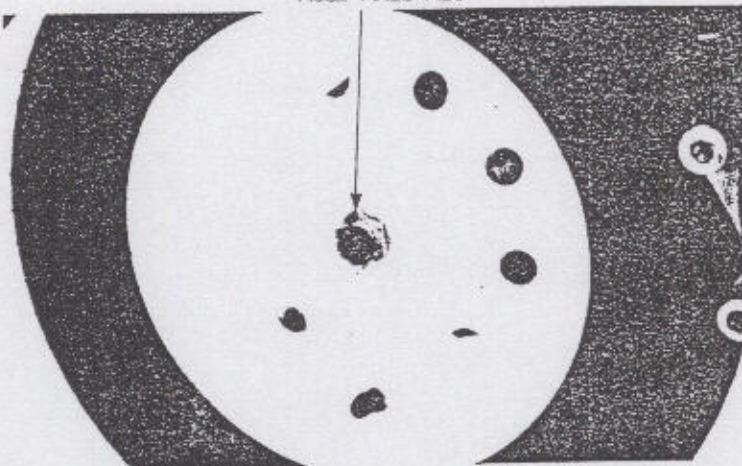
Exhaust Pipe Joint Lock Nut



Exhaust Pipe Lock Bolt

Remove the rear axle nut and rear wheel.

Rear Axle Nut



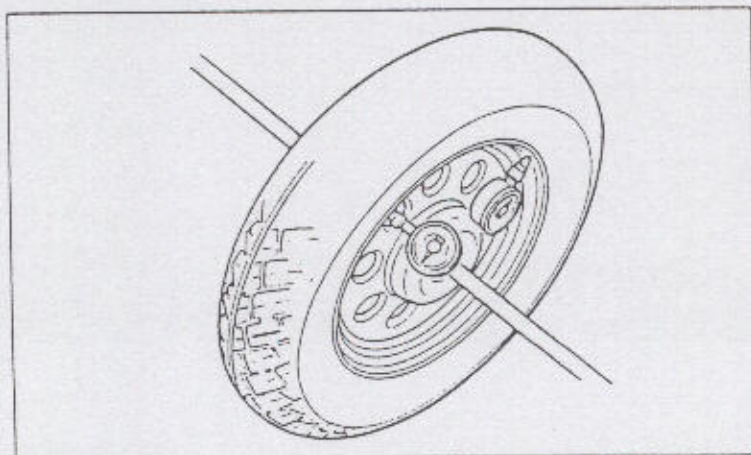
#### Inspection

Check the rear wheel rim runout.

#### Service Limit:

Radial: 2.0mm replace if over

Axial : 2.0mm replace if over



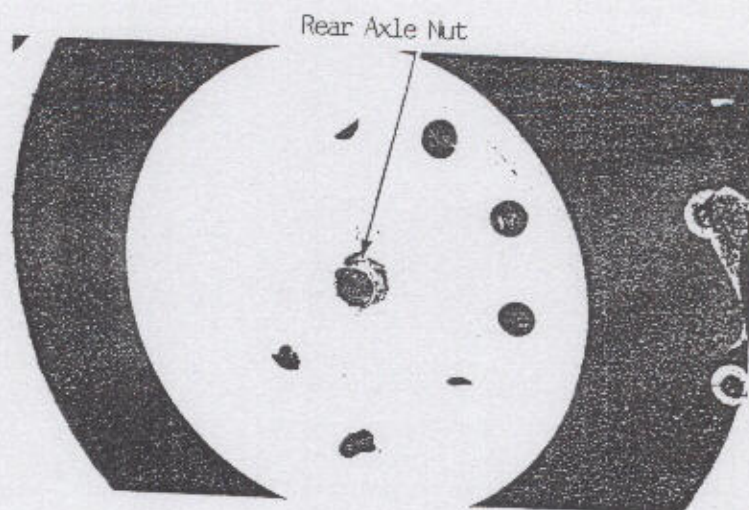


## REAR WHEEL/REAR BRAKE/REAR SHOCK ABSORBER

### Installation

Install the rear wheel and tighten the rear axle nut.

**Torque:** 8.0-10.0kg-m



Install the exhaust pipe and tighten the exhaust pipe joint lock nut and exhaust pipe lock bolt in the following order.

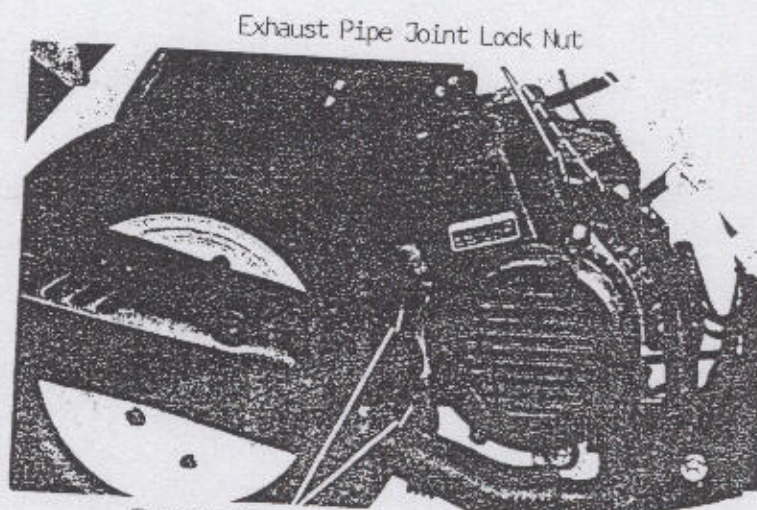
Exhaust Pipe Joint Lock Nut

**Torque:** 1.0-1.4kg-m

Exhaust Pipe Lock Bolt

**Torque:** 2.4-3.0kg-m

Install the right side cover.  
( 12-9)



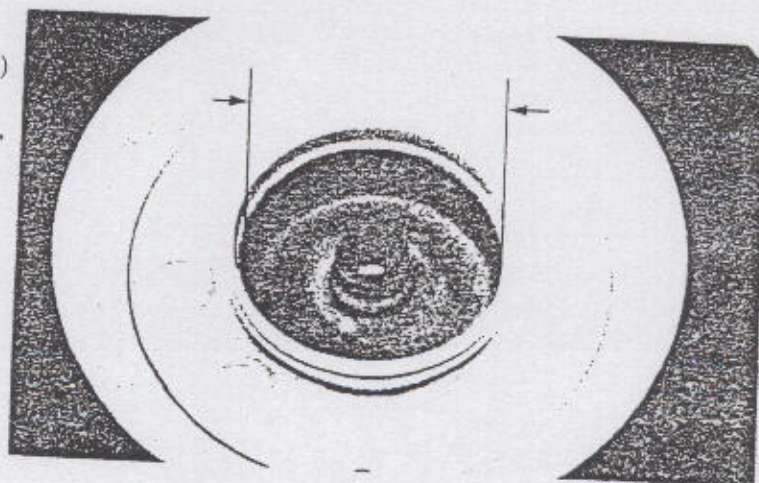
### REAR BRAKE

Remove the rear wheel. ( 14-4)

Check the rear brake drum.

Measure the rear brake drum I.D.

**Service Limit:** 95.5mm replace if over





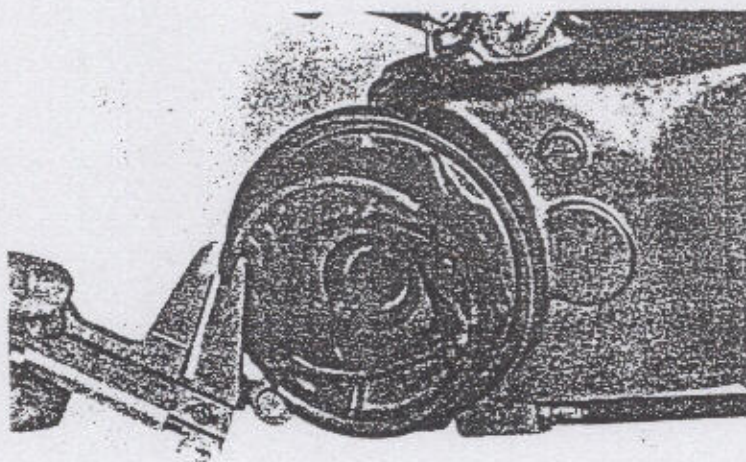
## REAR WHEEL/REAR BRAKE/REAR SHOCK ABSORBER

### Rear Brake Lining Inspection

Measure the brake lining thickness.

**Service Limit:** 2.0mm replace if below

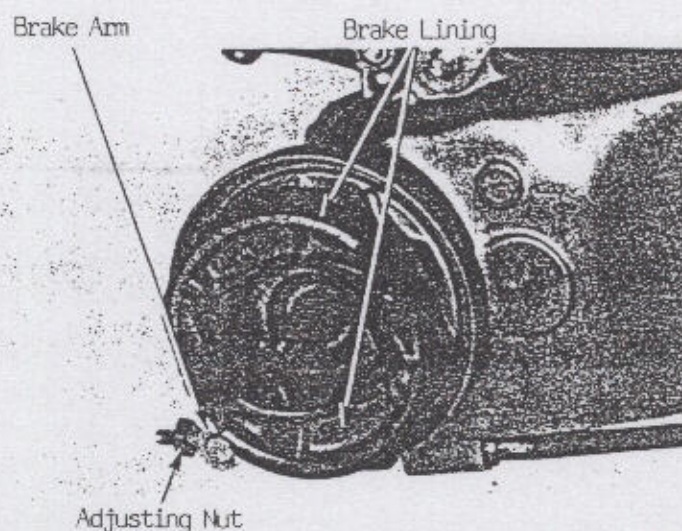
Keep oil or grease off the brake linings.



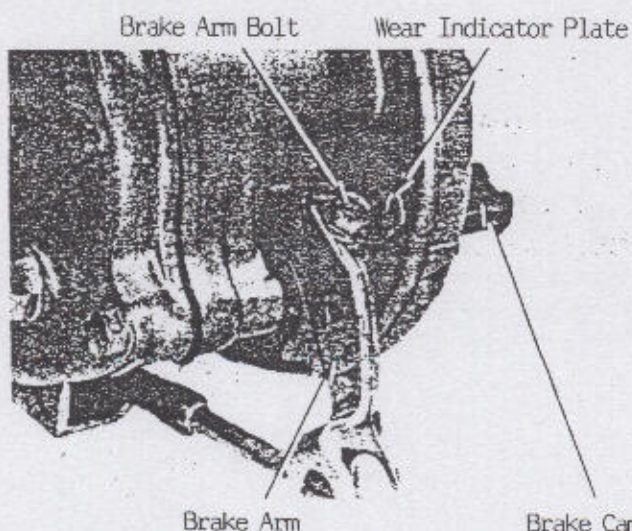
### Rear Brake Disassembly

Remove the rear brake adjusting nut and disconnect the rear brake cable.

Remove the rear brake linings.



Remove the brake arm bolt and then remove the brake arm, wear indicator plate and felt seal. Remove the brake camshaft.

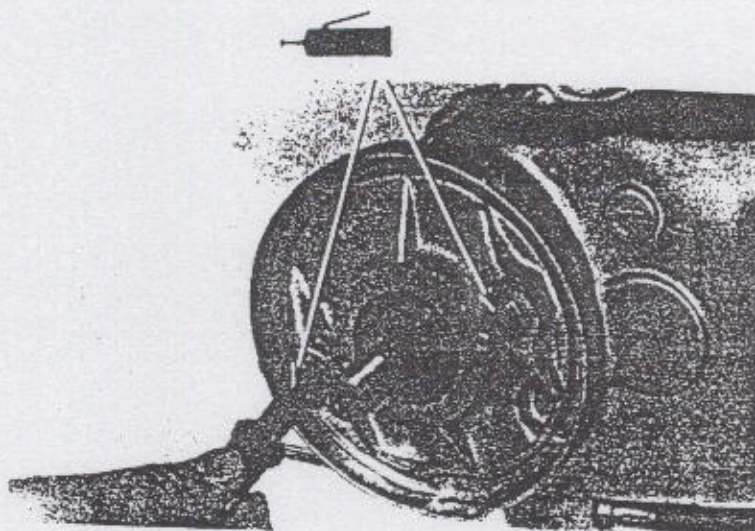




## REAR WHEEL/REAR BRAKE/REAR SHOCK ABSORBER

### Rear Brake Assembly

Apply grease to the lock pin and lining movable parts.  
Apply grease to the brake camshaft movable part and install it.  
Install the brake linings.

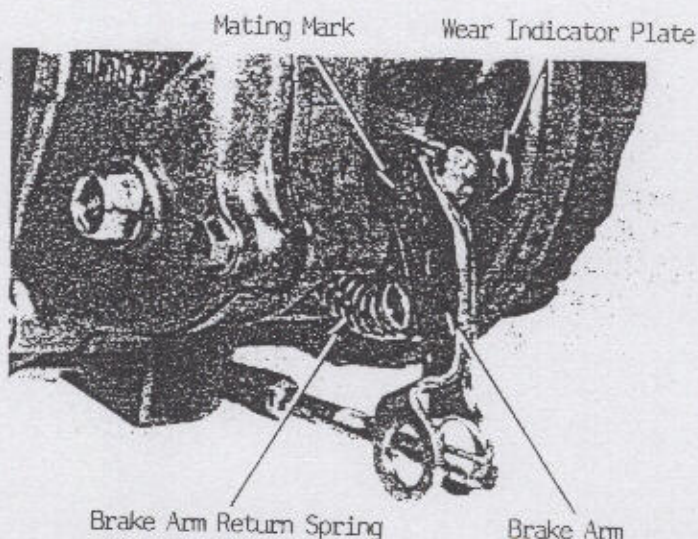


Add a small quantity of engine oil into the felt seal and install it on the brake camshaft.  
Install the wear indicator plate and brake arm.

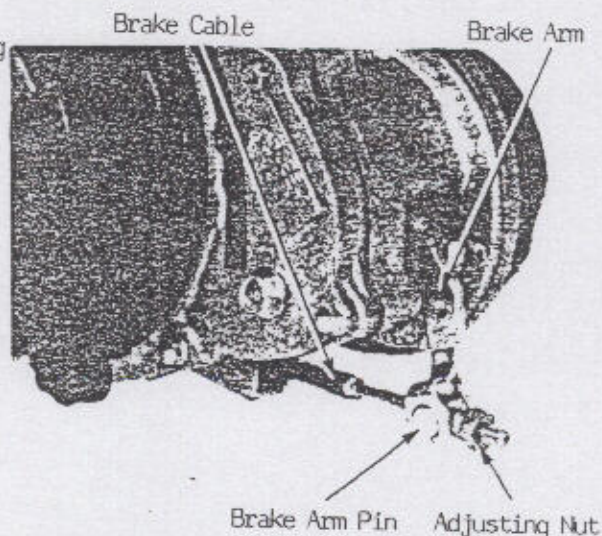
Align the wide groove on the cam with the wide tooth on the indicator plate.

Install the brake arm and brake camshaft.

Align the mark on the brake arm with the punch mark on the brake camshaft.



Install and tighten the brake arm bolt.  
Install the brake arm return spring.  
Install the brake arm pin.  
Install the brake cable adjusting nut.  
Install the rear wheel. ( 14-5)  
Adjust the brake lever free play. ( 3-5)



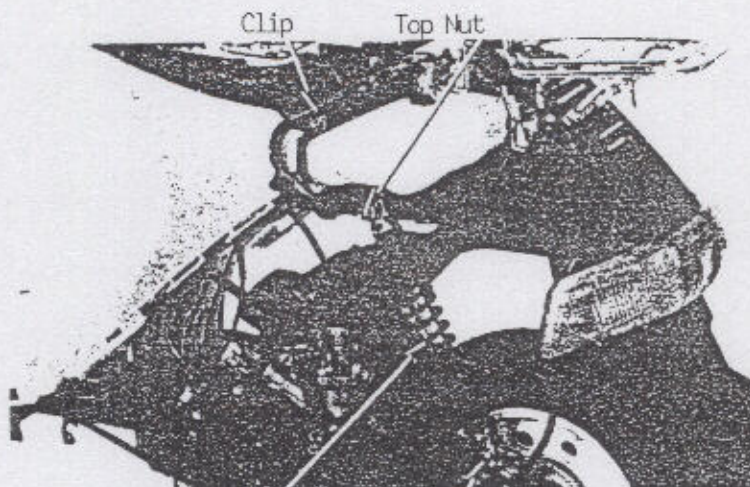


## REAR WHEEL/REAR BRAKE/REAR SHOCK ABSORBER

### REAR SHOCK ABSORBER

#### Removal

Remove the left side cover.  
( 12-6)  
Remove the air cleaner case.  
( 11-6)  
Remove the clip.  
Remove the rear shock absorber  
top nut and remove the shock  
absorber.  
Remove the rear shock absorber  
bottom bolt and take out the  
shock absorber.



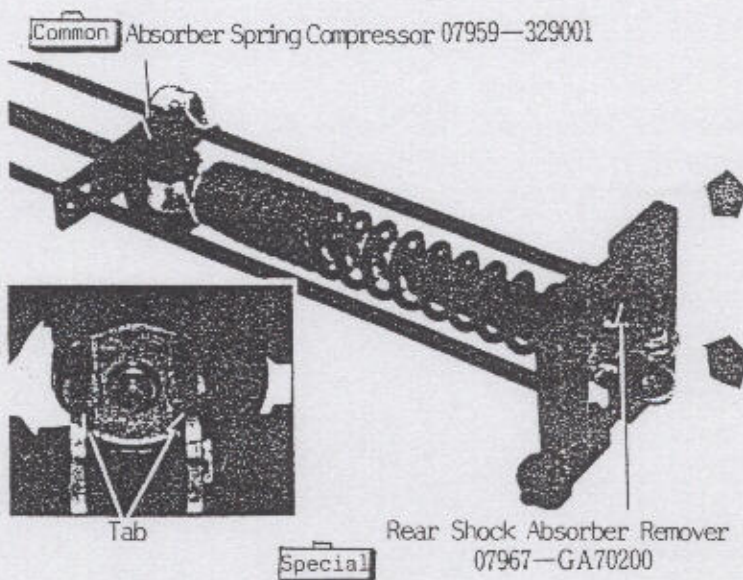
Rear Shock Absorber Bottom Bolt

#### Disassembly

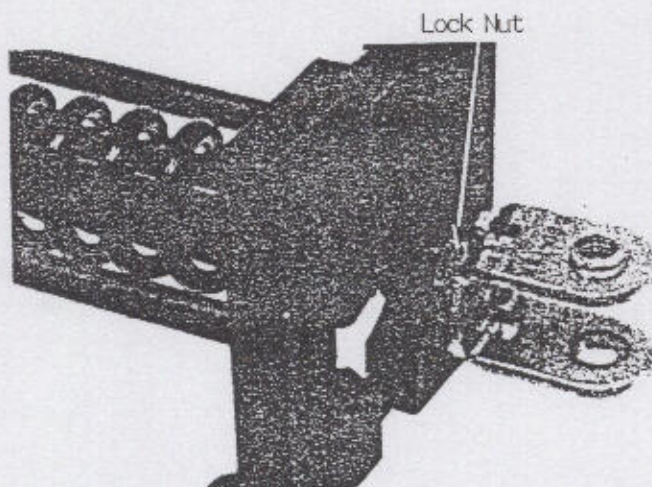
Install the rear shock absorber  
remover as the figure shown.

Install the shock absorber  
bottom joint on the rear  
shock absorber remover.

Install the absorber spring com-  
pressor on the rear shock absorb-  
er and then compress the spring.



Loosen the bottom joint lock nut.  
Remove the bottom joint.  
Remove the lock nut, rubber and  
damper.





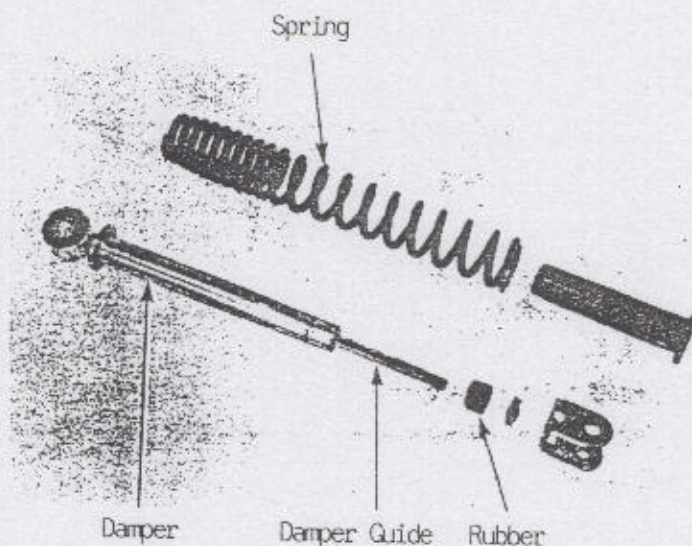
## REAR WHEEL/REAR BRAKE/REAR SHOCK ABSORBER

### Inspection

Inspect the damper guide for bending or damage.

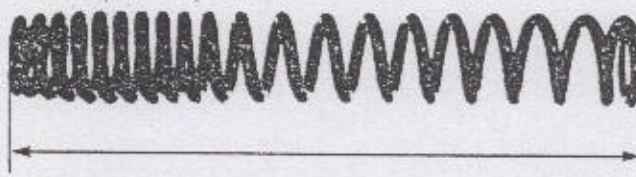
Inspect the damper for oil leaks.

Inspect the damper rubber for wear or damage.



Measure the rear shock absorber spring free length.

**Service Limit:** 222mm replace if below



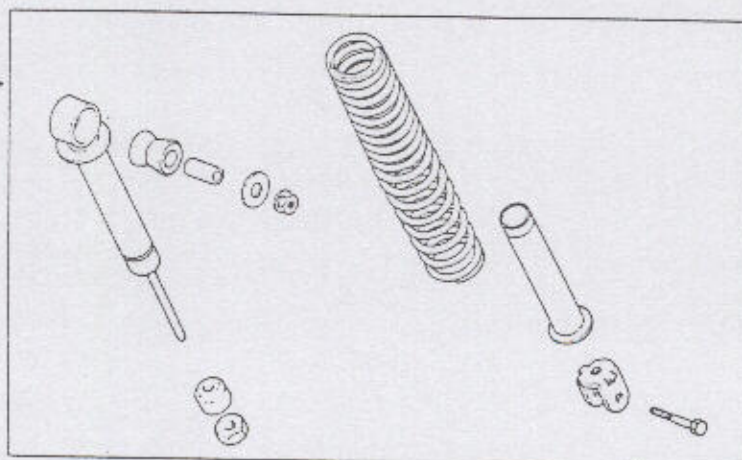
### Assembly

Assemble the rear shock absorber in the reverse order of disassembly.

- Install the spring with tightly wound coils facing up.
- Apply locking agent to the lock nut threads and install the lock nut.

Tighten the lock nut.

**Torque:** 1.5-2.5kg-m





## REAR WHEEL/REAR BRAKE/REAR SHOCK ABSORBER

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### Installation

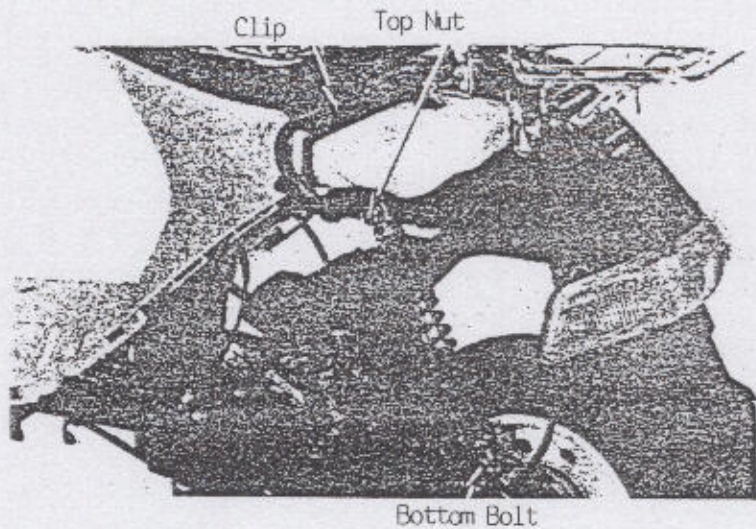
Install the rear shock absorber.  
Install the clip and rear shock absorber top nut.  
Install the rear shock absorber bottom bolt.  
Tighten the nut and bolt.

### Torque:

**Top Nut** : 3.0-4.5kg-m

**Bottom Bolt**: 2.0-3.0kg-m

Install the left side cover.  
( 12-9)





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## ELECTRICAL EQUIPMENT

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●TROUBLESHOOTING	15— 2
●SERVICE INFORMATION	15— 3
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●IGNITION SYSTEM	15— 7
●STARTING SYSTEM	15—12
●FUEL UNIT	15—13
●ENGINE OIL INDICATOR	15—15
●SWITCHES/HORN	15—15
●INSTRUMENT	15—17
●HEADLIGHT	15—20
●BULB REPLACEMENT	15—21





### ● TROUBLESHOOTING

#### ● Charging System

##### ● No Power

- Overcharged battery
- Disconnected battery cable
- Fuse burned out
- Faulty ignition switch

##### ● Low Voltage

- Weak battery
- Loose battery connection
- Charging system failure
- Faulty regulator/rectifier

#### ● Ignition System

- Weak spark
- Poorly connected, broken or shorted wire
  - Between A.C. generator and CDI unit
  - Between CDI unit and high tension coil
  - Between CDI unit and ignition switch
  - Between high tension coil and spark plug
- Faulty ignition switch
- Faulty high tension coil
- Faulty CDI unit
- Faulty A.C. generator

#### ● Starting System

##### ● Starter Motor Won't Run

- Faulty starter relay
- Weak battery
- Faulty ignition switch
- Faulty starter button
- Faulty front or rear stop switch
- Poorly connected, broken or shorted wire
- Faulty starter motor

##### ● Intermittent Power

- Loose battery cable
- Loose charging system connection
- Loose connection or short circuit in ignition system
- Loose connection or short circuit in lighting system

##### ● Charging System Failure

- Loose, broken or shorted wire or connection
- Faulty rectifier
- Faulty A.C. generator

##### ● Engine starts but runs poorly

- Ignition primary circuit
  - Faulty high tension coil
  - Loose wire or connector
- Ignition secondary coil
  - Faulty high tension coil
  - Faulty spark plug
  - Poorly insulated plug cap
- Improper ignition timing
  - Faulty A.C. generator
  - Stator not installed properly
  - Faulty CDI unit

##### ● Starter Motor Lacks Power

- Loose connector
- Foreign matter stuck in starter motor or gear

##### ● Starter Motor Runs but Engine Won't Run.

- Faulty starter pinion
- Reverse rotation of starter motor
- Faulty battery



## ELECTRICAL EQUIPMENT

### SERVICE INFORMATION

#### GENERAL INSTRUCTIONS

##### <MF Battery>

- It is unnecessary to check the battery electrolyte or refill distilled water.
- Remove the battery from the motorcycle for charging. Do not remove the electrolyte refilling cap.
- Do not quick charge the battery. Quick charging should only be done in an emergency.
- Charge the battery according to the charging rate and time specified on the battery.
- When charging (open circuit voltage), check the voltage with an electric tester.
- When replacing the battery, do not use a traditional battery.

#### SPECIFICATIONS

##### • Charging System

Item		
Battery	Capacity	12V3AH
	Voltage	130~132V
	Charging rate	Standard : 0.4A Quick : 4A

##### • Ignition System

Item		
Spark plug		NGK : BR4HSA、BR6HSA、BR8HSA ND : W14FP-L W20FP-L W24FP-L
Spark plug gap		0.6~0.7mm
High tension coil	Primary coil	0.2~0.3 $\Omega$
	Secondary coil (with spark plug cap)	8.2~9.3k $\Omega$
	Secondary coil (without spark plug cap)	3.4~4.2k $\Omega$
Ignition timing		17° BTDC/1,800rpm



## ELECTRICAL EQUIPMENT

### BATTERY

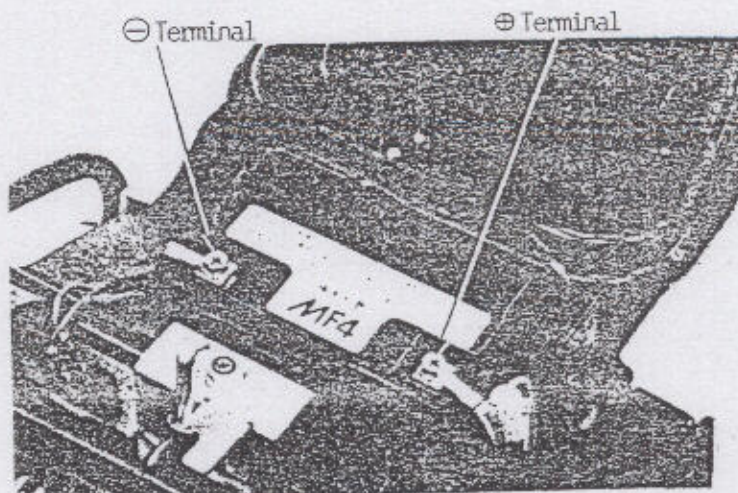
#### Battery Removal

Lift the seat and open the battery cover.  
Disconnect the battery terminal Cables.



First disconnect the negative (-) cable and then the positive (+) cable.

Remove the battery  
Installation of the battery is the reverse of removal.



#### Charging (Open Circuit Voltage) Inspection

Measure the battery voltage.  
Fully Charged: 13.0-13.2V  
Undercharged : 12.3V or below



Battery charging inspection should be performed with a voltmeter.  
Voltmeter: 07411-0020000

#### Charging (Connecting Method):

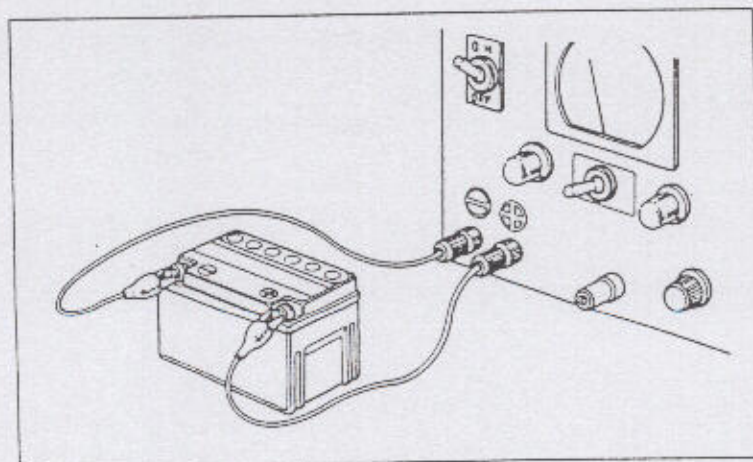
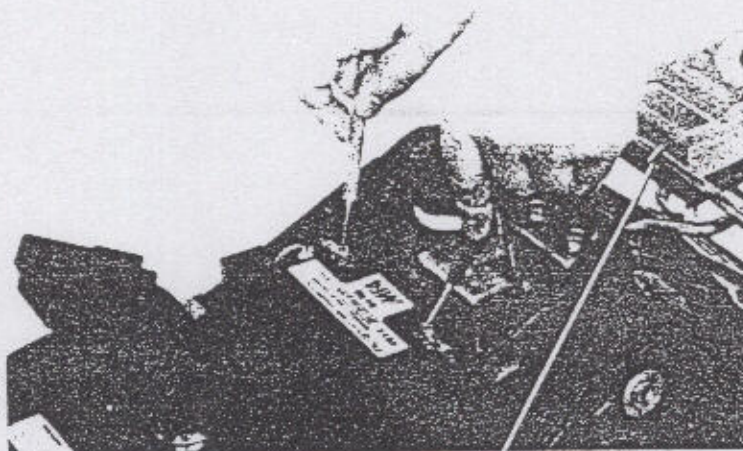
Connect the charger positive (+) cable to the battery positive (+) terminal and the charger negative (-) cable to the battery negative (-) terminal.



- Keep flames and sparks away from a charging battery.
- Turn power ON/OFF at the charger not at the battery terminals to prevent sparks near the battery to cause explosion.
- Charge the battery according to the charging rate specified on the battery.



- Quick charging should only be done in an emergency.
- Measure the voltage 30 minutes after the battery is charged.



Charging Rate: Standard : 0.4A

Quick : 4A

Charging Time: Standard : 5 hours

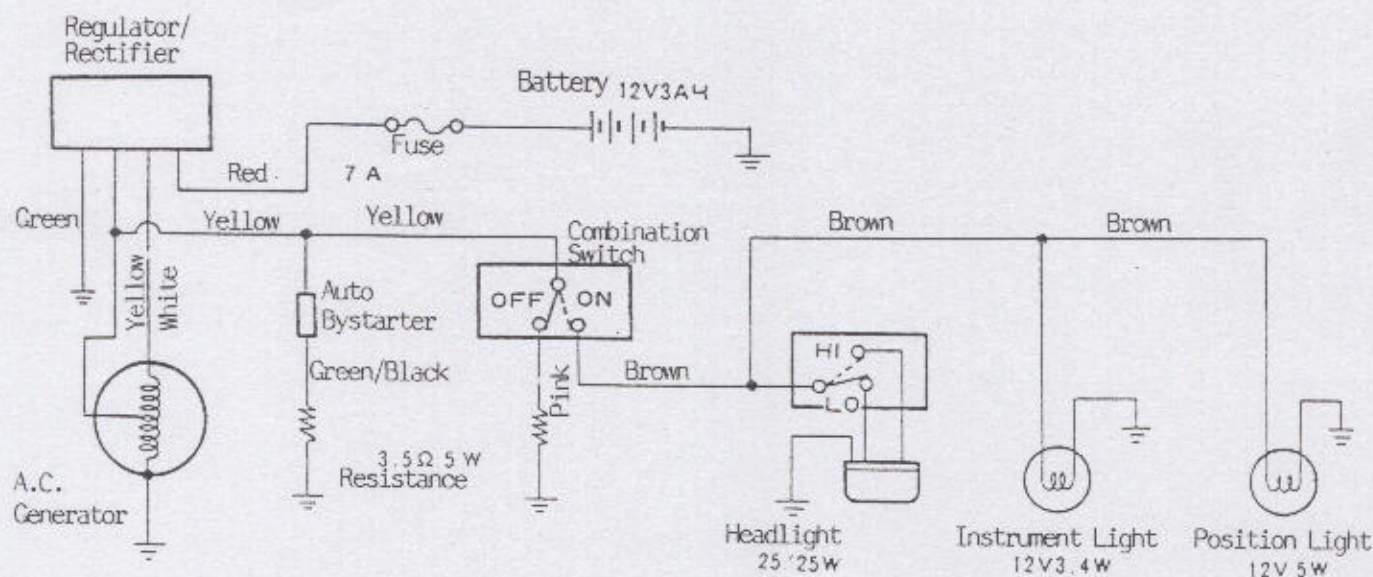
Quick : 30 minutes

After Charging: Open Circuit Voltage:  
over 12.8V



## ELECTRICAL EQUIPMENT

### CHARGING SYSTEM

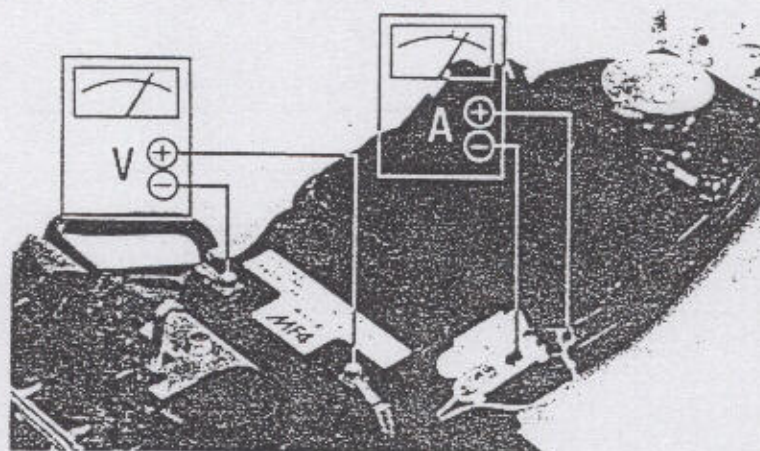


#### ● Performance Test

Warm up the engine before taking readings.  
Lift the seat and open the battery cover.



Use a fully charged battery to check the charging system.



Stop the engine and open the fuse box. Disconnect the two ends of fuse and connect the ammeter negative (-) terminal to the fuse end at the battery side and the ammeter positive (+) terminal to the fuse end at the main harness side.

Connect the battery positive (+) terminal to the voltmeter positive (+) terminal and the battery negative (-) terminal to the voltmeter negative (-) terminal.

Start the engine to slowly increase engine rpm and check the charging system output. The ampere should be over 0.4A and the voltage should be within 14V to 15V.

If the ampere and voltage are abnormal, check the wire connection for looseness. If the wire connection is good, replace the regulator/rectifier with a new one and check again.

If the ampere and voltage are still abnormal, check the A.C. generator.



## ELECTRICAL EQUIPMENT

### A.C. Generator (Charging Coil) Inspection

\* Inspect with the engine installed.

Remove the left side cover.  
( 12-6 & 7)

Disconnect the A.C. generator white and yellow wires from the main harness connector.  
Measure the resistances between the wires and engine ground.

#### Resistance

White wire-engine ground	0.2~1.0 $\Omega$
Yellow wire-engine ground	0.1~0.8 $\Omega$

Refer to Chapter 7 for A.C. generator removal.

#### Resistor Inspection

Remove the front cover. ( 12-9)  
Measure the resistance between the resistor pink wire and ground.

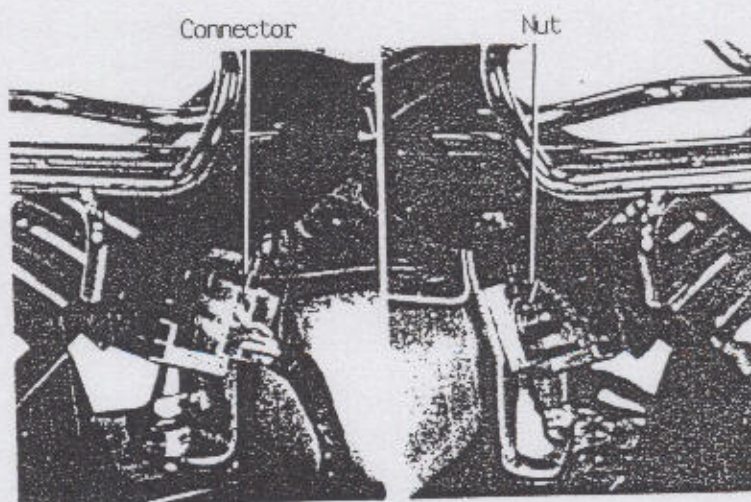
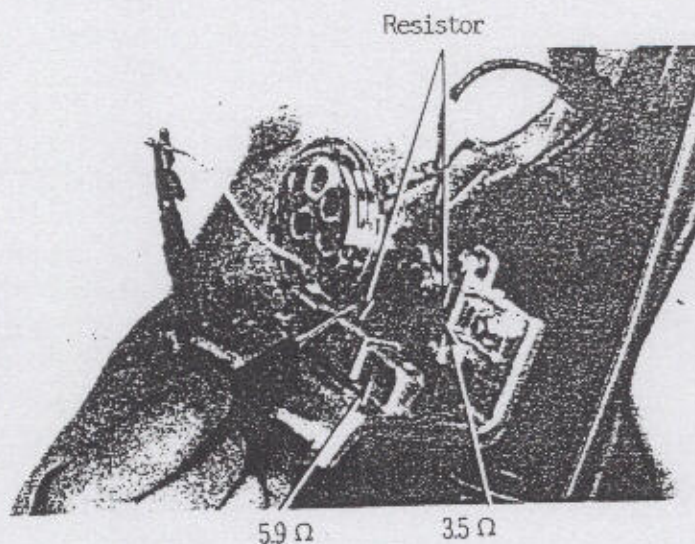
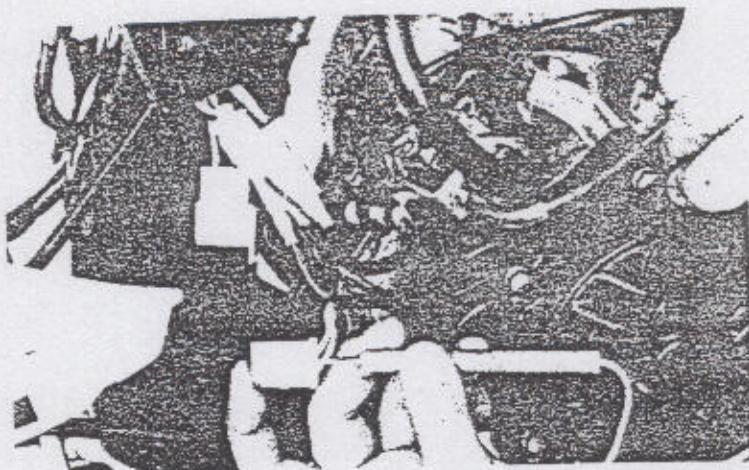
Resistance: 3.5  $\Omega$  - 5.9  $\Omega$

\* Faulty resistor will affect the operation of the auto bystarter.

#### Regulator/Rectifier Inspection

Remove the left side cover.  
( 12-6)

Disconnect the connector and remove the lock nut.  
Remove the regulator/rectifier.





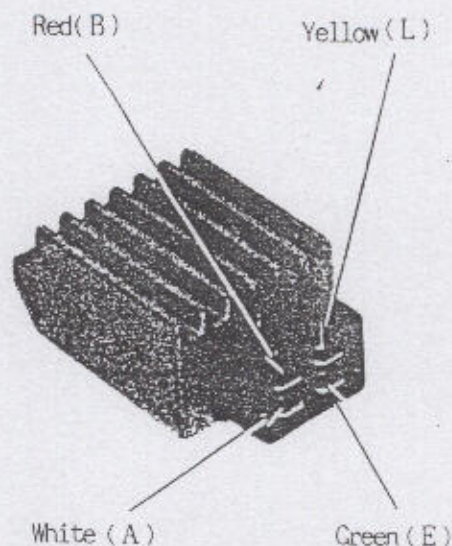
## ELECTRICAL EQUIPMENT

Measure the resistances between the terminals.

If the resistances exceed the range specified in the list, replace the regulator/rectifier.

\*Due to the semiconductor in circuit, different electric testers will have different testing results. Use Sanwa electric tester (07308-0020000) or Kowa (TH-5H) electric tester to obtain correct testing results.

Model	Brand	Position
SP-10D	Sanwa	K $\Omega$
TH-5H	Kowa	100 $\Omega$



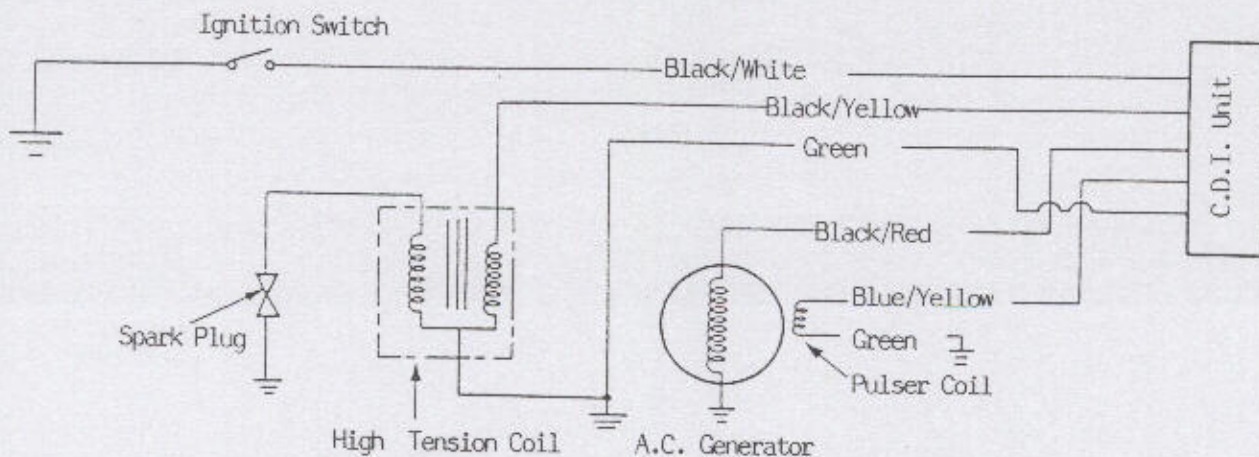
### Resistances

Probe	White (A)	Yellow (L)	Red (B)	Green (E)
White (A)		$\infty$	0.5~10	$\infty$
Yellow (L)	$\infty$		$\infty$	5~100
Red (B)	$\infty$	$\infty$		$\infty$
Green (E)	$\infty$	5~100	$\infty$	

Ignition switch/spark plug/high tension coil/A.C. generator/pulser coil

## IGNITION SYSTEM

### Ignition Circuit





## ELECTRICAL EQUIPMENT

### High Tension Coil Inspection Continuity Test



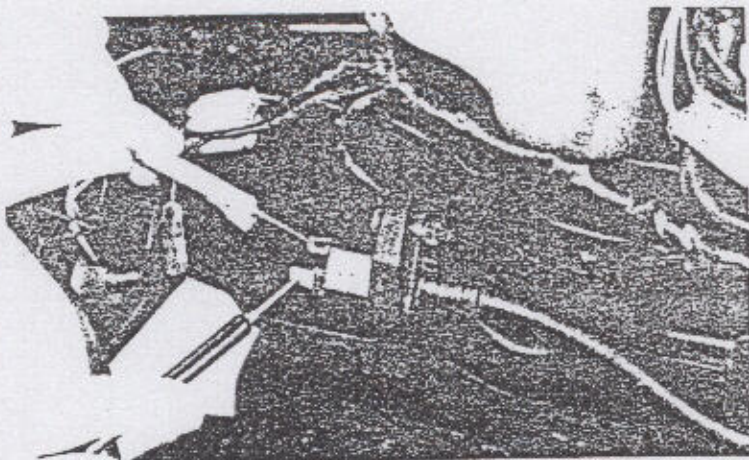
This is to test the continuity. Performance test of high tension coil is stated in the following page.

Remove the right side cover.

( 12-6)

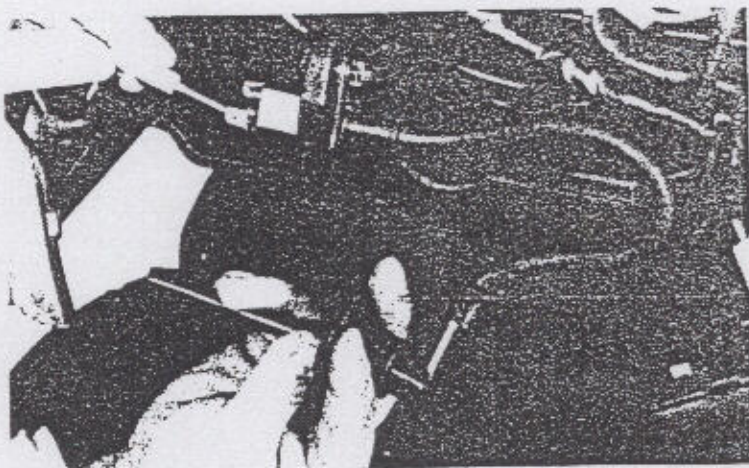
Measure the primary coil resistance between the high tension coil terminals.

**Primary Coil Resistance:** 0.2-0.3 $\Omega$



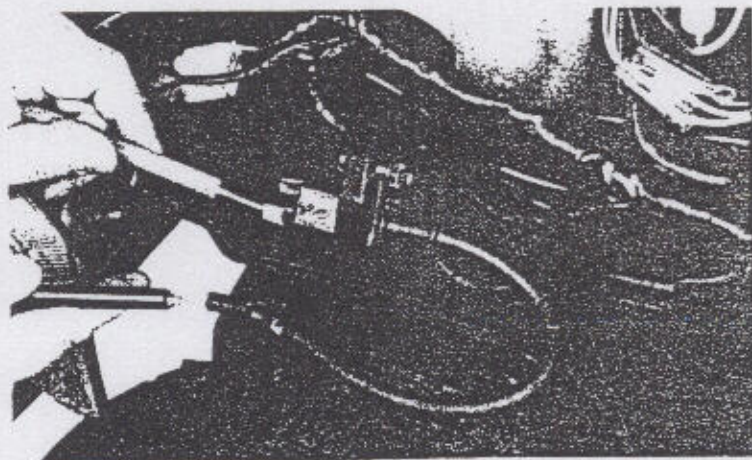
Measure the secondary coil resistance between the spark plug and positive (+) terminal.

**Secondary Coil Resistance:**  
8.2-9.3K $\Omega$  (with spark plug cap)



Remove the spark plug cap and measure the resistance between the high tension cable and the secondary coil.

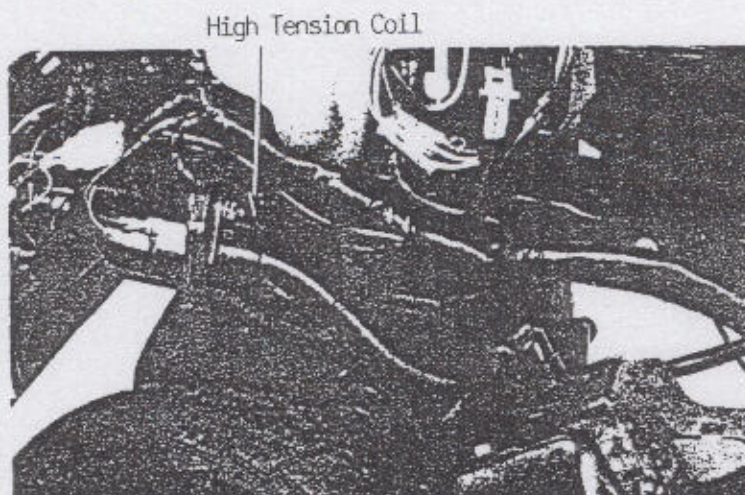
**Secondary Coil Resistance:** 3.4-4.2K $\Omega$  (without spark plug cap)





### Performance Test

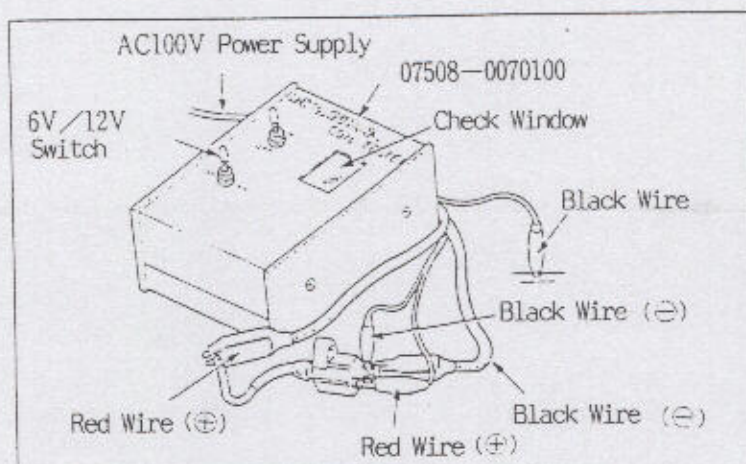
Remove the high tension coil.



Check the high tension coil for condition with a high tension coil tester (07508-0070100).

\* Follow the tester manufacturer's instructions.

1. Turn the tester switch to 12V and connect the high tension coil.
2. Turn the power switch to "ON" and check the spark from the check window.
  - .Good: Normal and continuous spark
  - .Faulty: weak or intermittent spark



### A.C. Generator (Exciting Coil/Pulser Coil) Inspection

\* Inspect with the engine installed.

Remove the left side cover and central cover. ( 12-6 & 7 ) Measure the exciting coil resistance between the A.C. generator black/red terminal and engine ground.

Exciting Coil Resistance: 500-900 $\Omega$

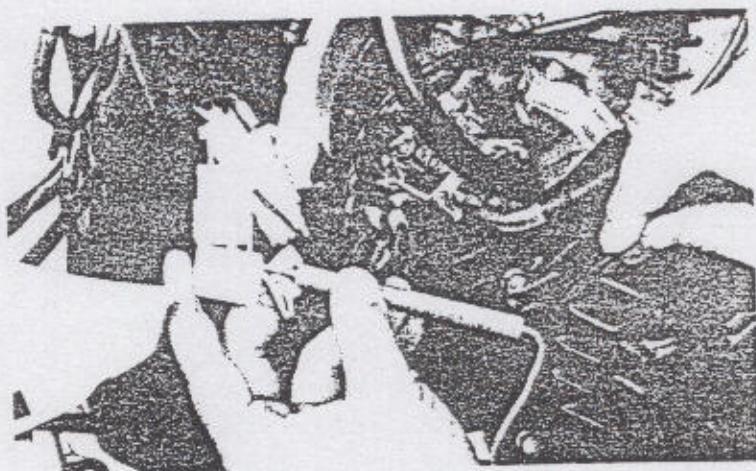




## ELECTRICAL EQUIPMENT

Measure the pulser coil resistance between the A.C. generator blue/yellow terminal and the engine ground.

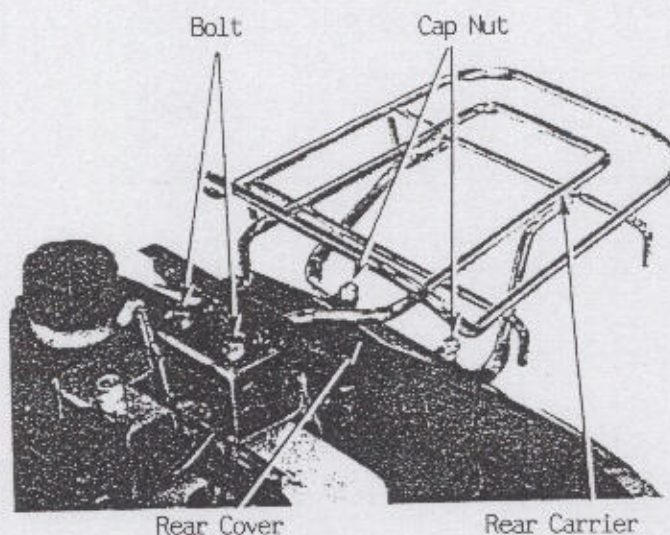
**Pulser Coil Resistance:** 50-200 $\Omega$   
Refer to Chapter 7 for the A.C. generator removal.



### C.D.I. Unit Inspection

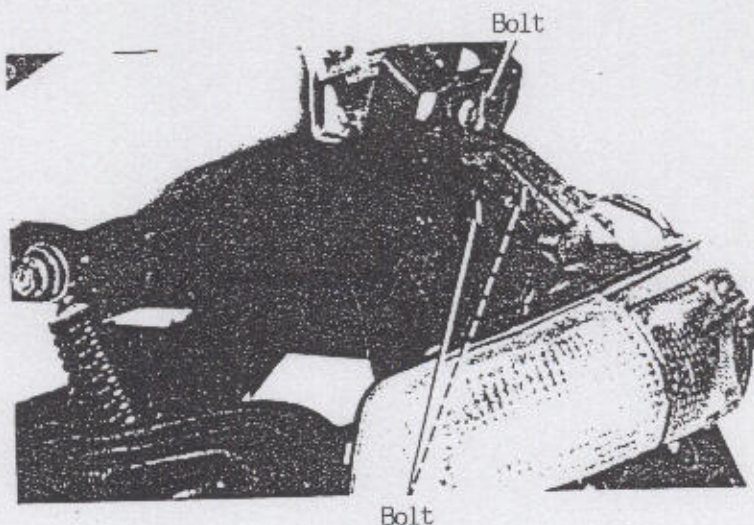
Remove the right and left side covers. ( 12-6)

Remove the 2 cap nuts, 2 bolts, rear carrier and rear cover.



Remove the rear lights attaching bolt and 2 rear fender attaching bolts.

Pull the rear fender forward to remove the rear fender.





## ELECTRICAL EQUIPMENT

Disconnect the connector and remove the C.D.I. unit from the rear fender.

### .Resistance Test

Measure the resistances between the terminals.

Replace the C.D.I. unit with a new one if the readings do not fall within the specified limits shown in the following.

\* Due to the semiconductor in circuit, different electric testers will have different testing results. Use Sanwa electric tester (07308-0020000) or Kowa (TH-5H) electric tester to obtain correct testing results.

Sanwa readings (Testing Position  $\times K\Omega$ )

Kowa readings (Testing Position  $\times 100\Omega$ )

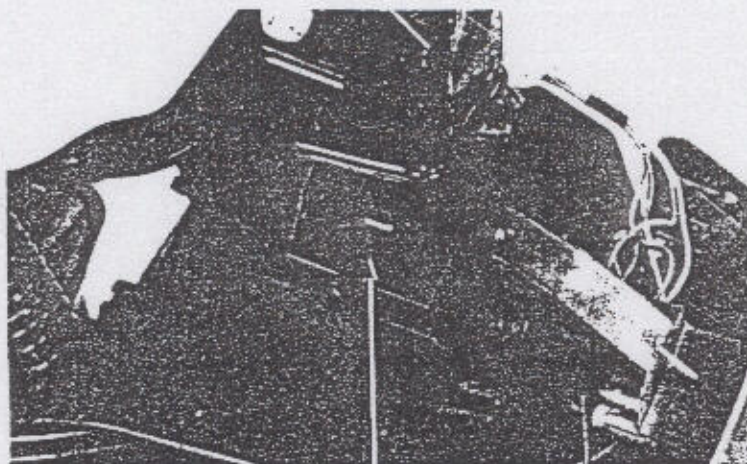
Probe	SW	EXT	PC	E	IGN
SW		$\infty$	$\infty$	$\infty$	$\infty$
EXT	0.1~50		$\infty$	$\infty$	$\infty$
PC	10~400	5~200		2~100	$\infty$
E	1~100	0.1~50	$\infty$		$\infty$
IGN	$\infty$	$\infty$	$\infty$	$\infty$	

### .CDI Unit Inspection

\* Follow the tester manufacturer's instructions.

Connect the CDI unit to the CDI tester special connector (07508-0010100).

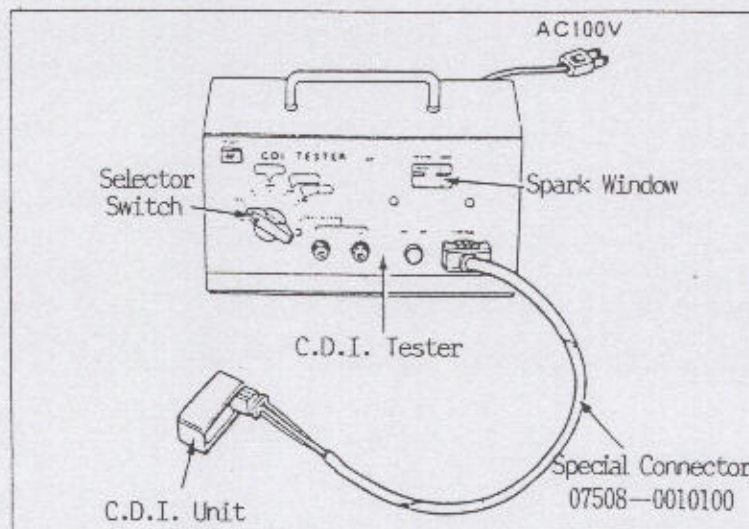
Switch	Good CDI	Faulty CDI
1 OFF	No Spark	
2 P	↑	
3 EXT	↑	Good Spark
4 ON1	Good Spark	No Spark
5 ON2	↑	↑



C.D.I. Unit

IGN(Black/Yellow) EXT(Black/Red) SW(Black/White)

PC(Blue/Yellow) E(Green)

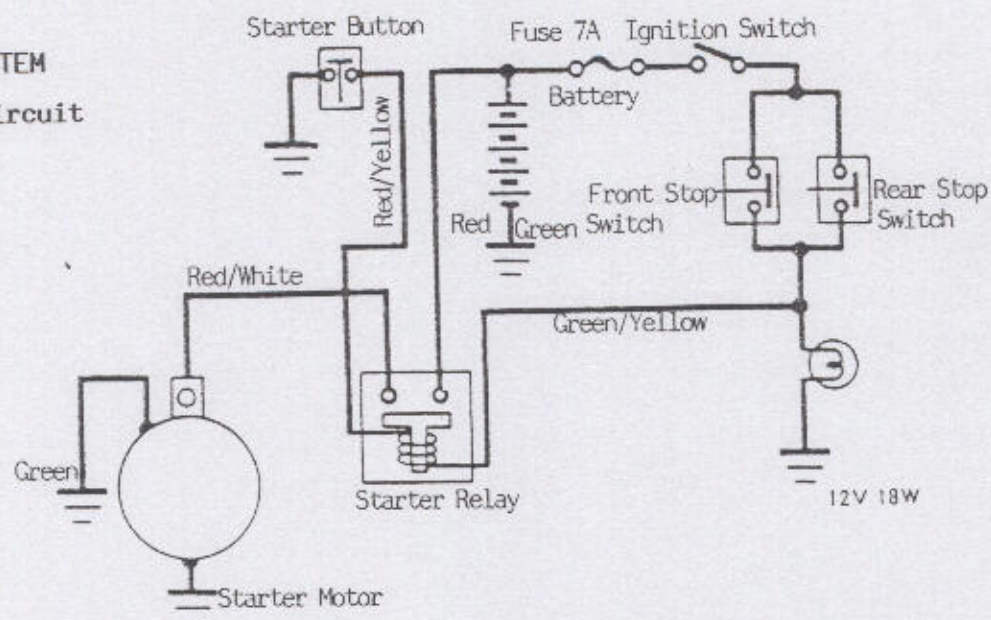




## ELECTRICAL EQUIPMENT

### STARTING SYSTEM

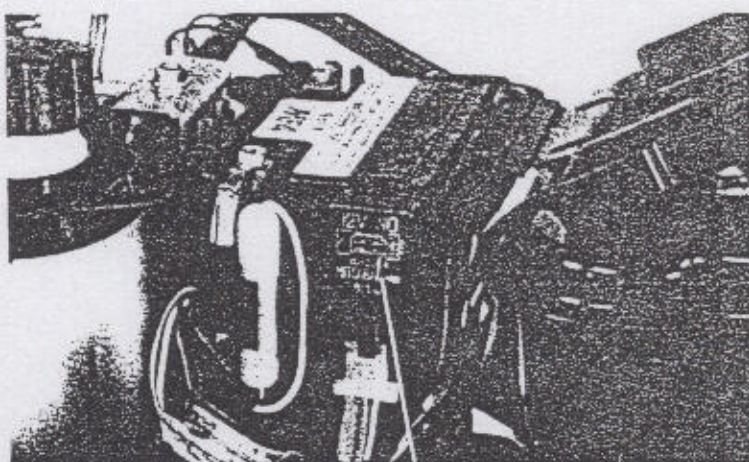
#### Starting Circuit



#### Starter Relay Inspection

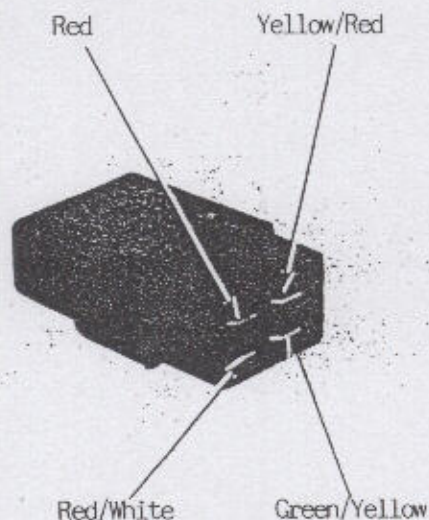
Remove the left side cover.  
( 12-6)

Open the battery cover and  
disconnect the connector to  
remove the starter relay.



Starter Relay

Connect a 12V battery positive (+) terminal to the starter relay green/yellow terminal and battery negative (-) terminal to the starter relay yellow/red terminal. Check for continuity between the starter relay red and red/white terminals with an electric tester.





## ELECTRICAL EQUIPMENT

### Starter Motor Removal

Remove the left side cover.

( 12-6)

Remove the central cover.

( 12-7)

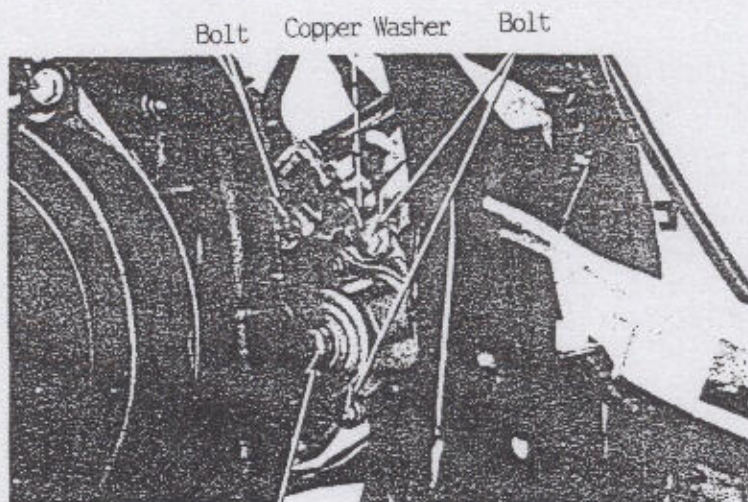
Disconnect the starter motor cable.

Remove the starter motor attaching bolts and copper washer.

Remove the oil pump cable holder bolt.

Remove the starter motor.

The installation sequence is the reverse of removal.



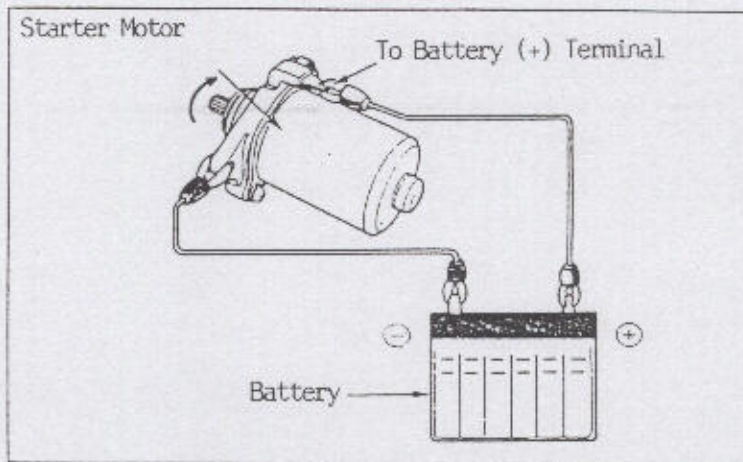
Starter Motor

### Starter Motor Inspection

Connect the starter motor to the battery and check the motor operation.



Do not run the starter motor for a long time.



## FUEL UNIT



NO SMOKING!

### Removal

Remove the right side cover.

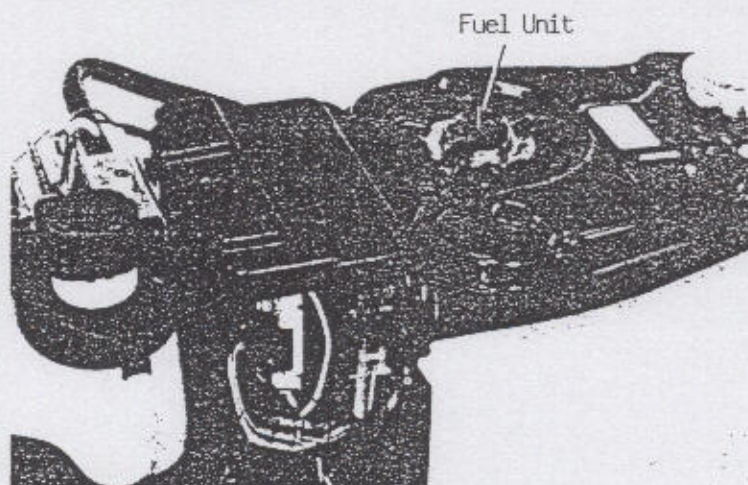
( 12-6)

Disconnect the fuel unit cable.

Turn the fuel unit left to take out it.



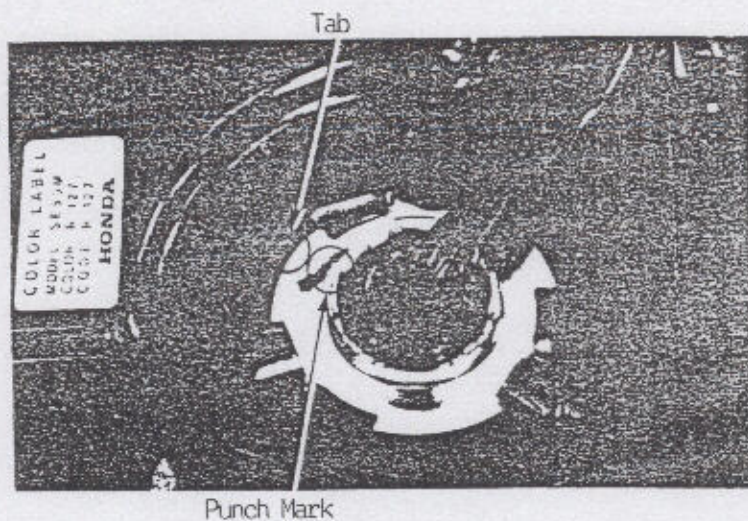
Be careful not to bend the float of fuel unit.





## ELECTRICAL EQUIPMENT

Install the fuel unit in the reverse order of removal.  
Install the fuel unit by aligning the punch mark on the fuel unit with the tab of fuel tank.



### Inspection

Remove the fuel unit.  
Move the fuel unit float up and down to measure the resistances between the terminals.

Terminals	Upper Position	Lower Position
Green - Yellow/White	33 $\Omega$	566 $\Omega$
Green - Blue/White	566 $\Omega$	33 $\Omega$
Yellow/White - Blue/White	600 $\Omega$	600 $\Omega$

### Fuel-Level Indicator Inspection

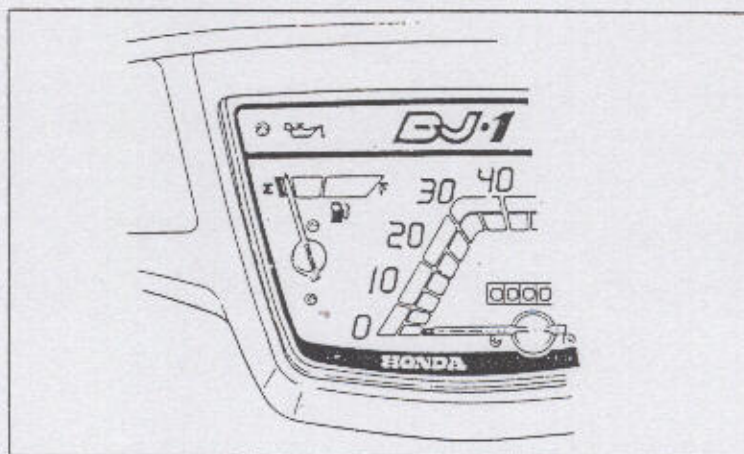
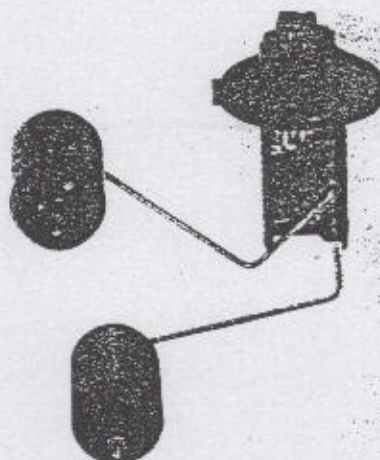
Connect the fuel unit cable and turn the ignition switch to "ON".



Turn on the turn signal lights to make sure the circuit is normal.

Move the fuel unit float up and down to check the operation of fuel-level indicator pointer.

Float	Indicator Pointer
Upper Position	"F" Position
Lower Position	"E" Position





## ELECTRICAL EQUIPMENT

### ENGINE OIL INDICATOR

#### Engine Oil Indicator Inspection

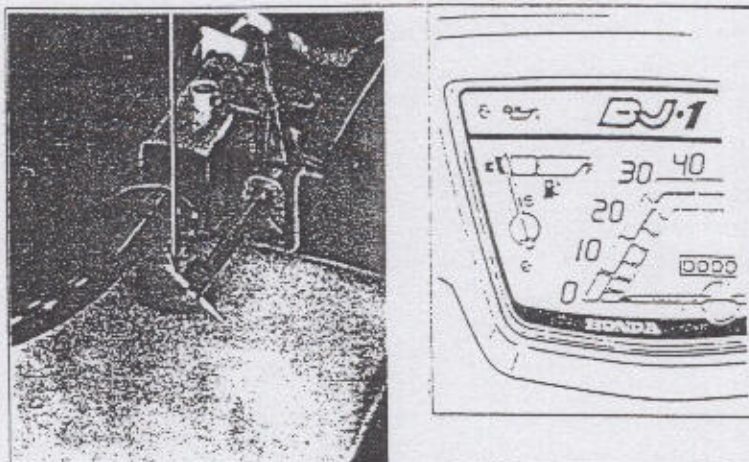
Remove the left side cover.

( 12-6)

Turn the ignition switch to "ON". Disconnect the oil meter cable and short the cable. If the oil indicator light displays, the indicator is normal.

If the indicator light does not display, check the power supply between the oil meter and the indicator light.

If the power supply is normal, the oil meter is faulty.



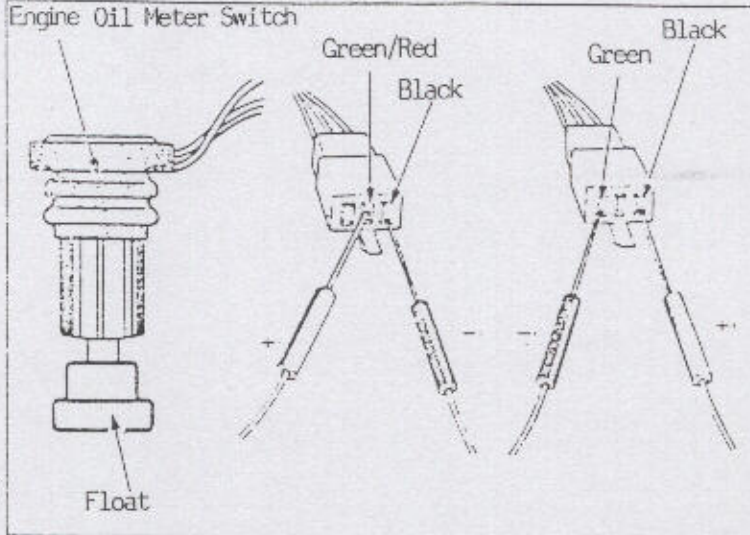
#### Engine Oil Meter Switch Inspection

Disconnect the engine oil meter cable and remove the engine oil meter.

Check for continuity between the oil meter switch and the cable wires.

Float Position	Wire Color	Resistance
Upper(Full)	Green/Red-Black	$\infty$
Lower(Empty)	Green/Red-Black	200~230 $\Omega$
	Green-Black	800~820 $\Omega$

Engine Oil Meter Switch



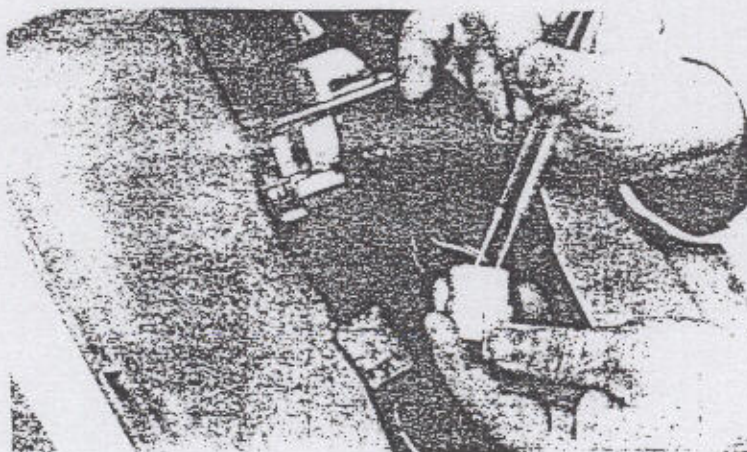
### SWITCHES/HORN

#### Combination Switch Inspection

Remove the front cover. ( 12-9)

Remove the combination switch cable and check for continuity between the terminals.

Color	Red	Black	Black/White	Green
Mark	BAT1	BAT2	IG	E
ON	○	○		
OFF			○	○

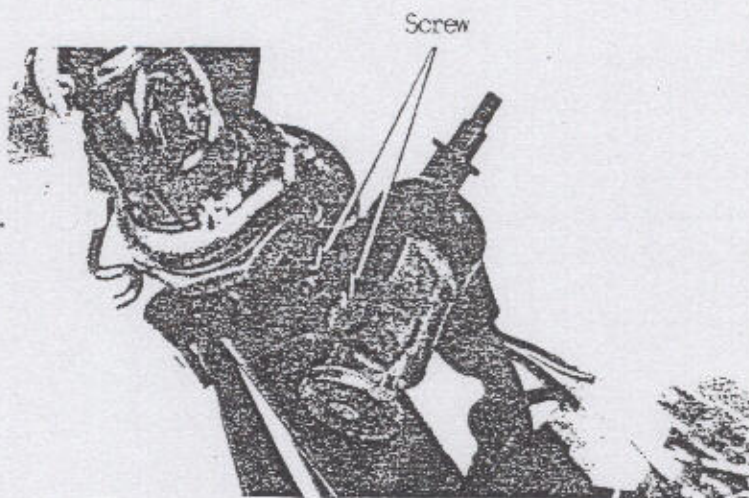




## ELECTRICAL EQUIPMENT

### ● Combination Switch Replacement

Remove the front inner cover. ( 12-8 & 9)  
Disconnect the cable connector and remove the screws.  
Remove the combination switch.  
Disconnect the handlebar switch cable connector and check for continuity.



### ● Headlight Switch

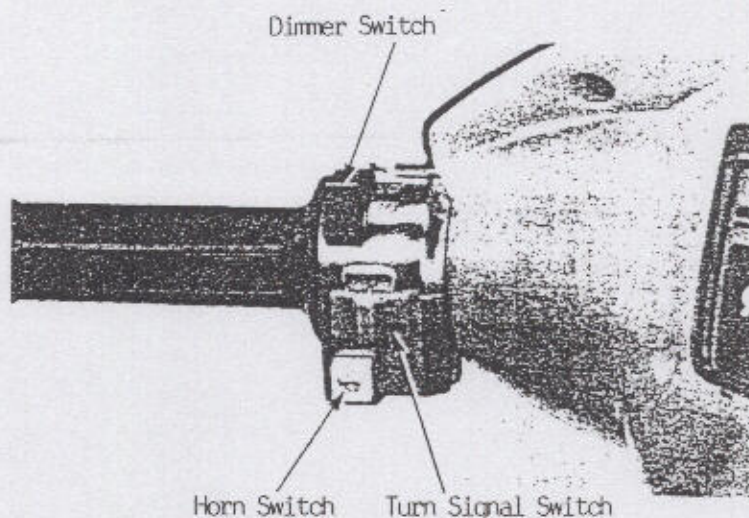
Color	Brown	Yellow	Pink
Mark	HL	CI	RE
OFF		○ — ○	
ON	○ — ○		

### ● Starter Switch

Color	Yellow/Red	Green
Mark	ST	E
Free		
Push	○ — ○	○ — ○

### ● Headlight Dimmer Switch

Color	Brown	Blue	White
Mark	HL	HI	LO
≡ ○	○ — ○		
N	○ — ○	○ — ○	○ — ○
≡ ○	○ — ○		○ — ○

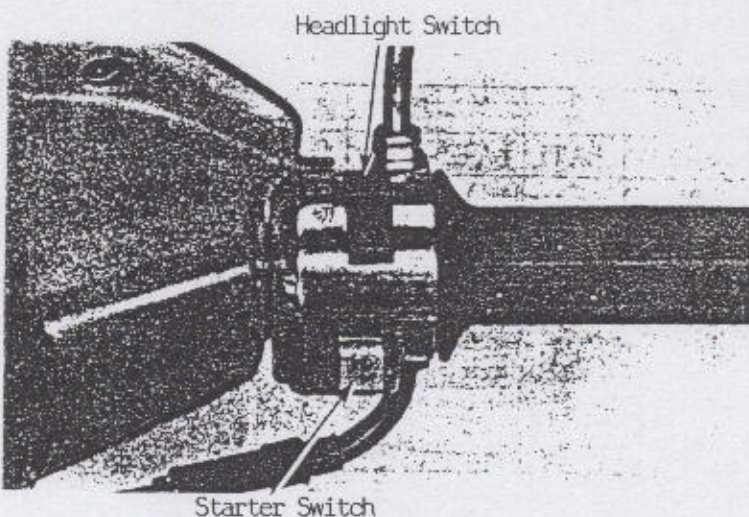


### ● Turn Signal Switch

Color	Grey	Light Blue	Orange
	W	R	L
R	○ — ○		
N			
L		○ — ○	

### ● Horn Switch

Color	Light Green	Black
Mark	HO	BAT2
Free		
Push	○ — ○	○ — ○





## ELECTRICAL EQUIPMENT

### Stoplight Switch Inspection

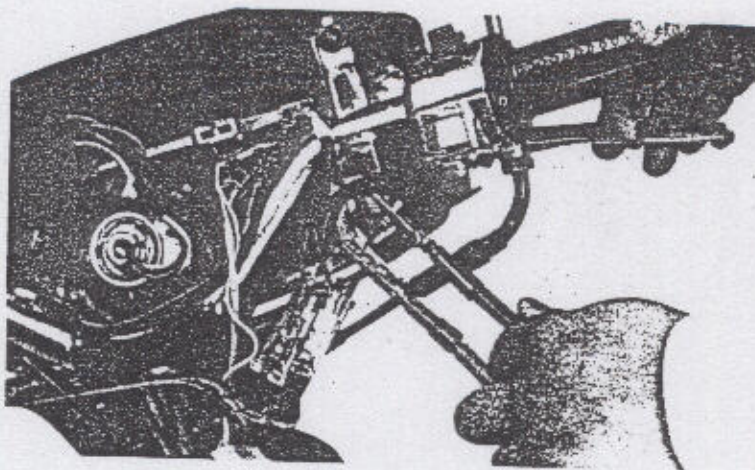
Remove the handlebar lower cover. ( 12-4)

Disconnect the front stoplight switch cable.

Operate the front brake lever and check for continuity between the cable terminals.

Disconnect the rear stoplight switch cable connector.

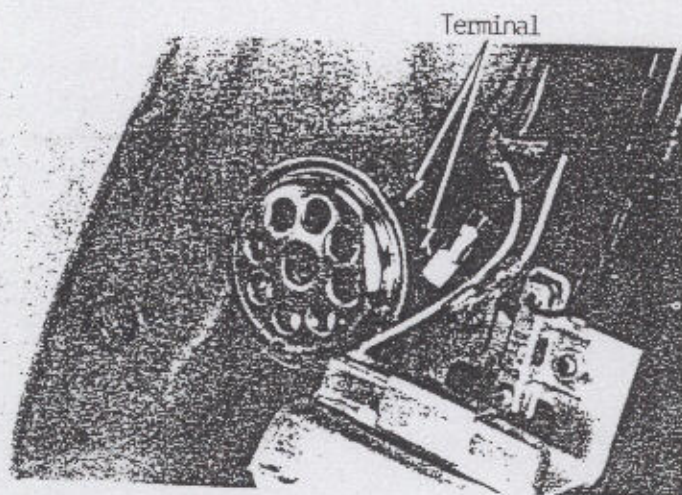
Operate the rear brake lever and check for continuity between the cable terminals.



### Horn Inspection

Remove the front cover. ( 12-9)

Disconnect the horn cable and connect the horn to a fully charged 12V battery and check if the horn sounds properly.



### INSTRUMENT

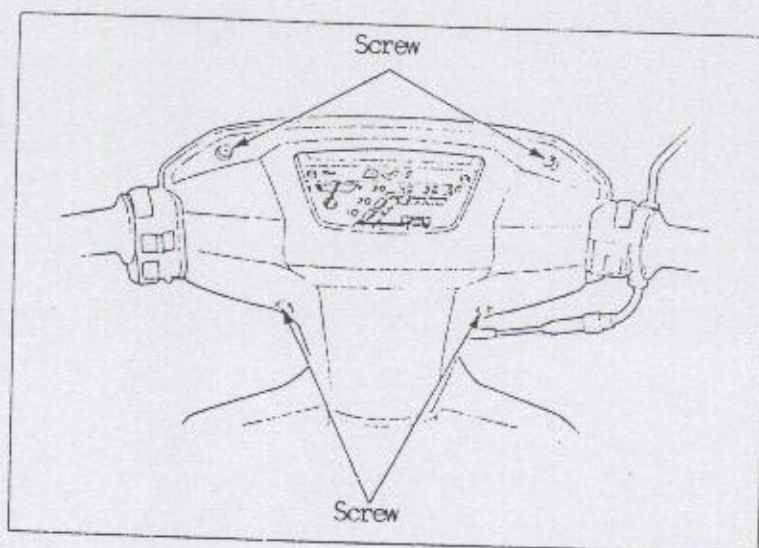
.Instrument light replacement

Remove the 4 handlebar lower cover attaching screws.

Remove the lower cover.



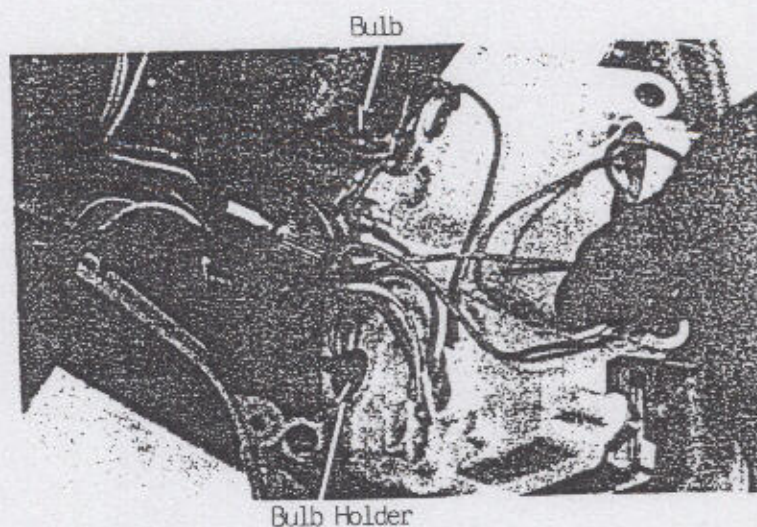
Be careful not to damage the claws and grooves on mating surfaces of covers.





## ELECTRICAL EQUIPMENT

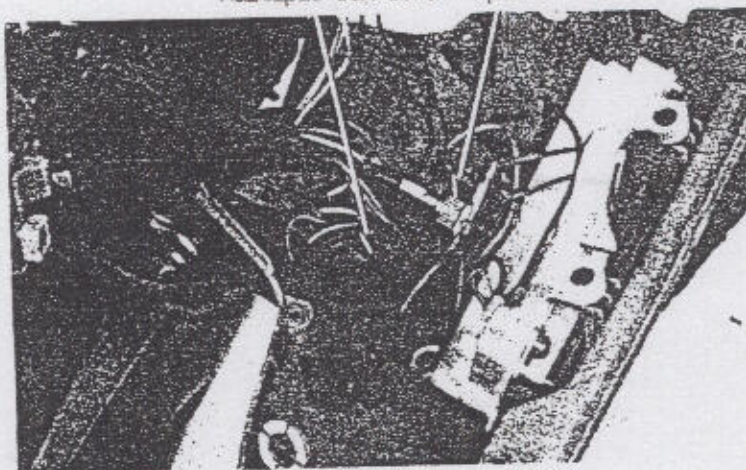
Remove the bulb for replacement.



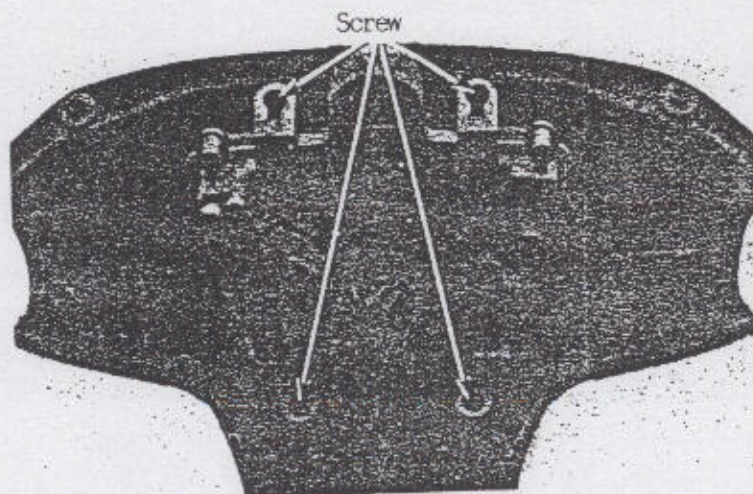
### Removal

Disconnect the speedometer cable.  
Disconnect the multiple connector  
and remove the lower cover.

Multiple Connector Speedometer Cable



Remove the 4 screws and take out  
the instrument from the lower  
cover.

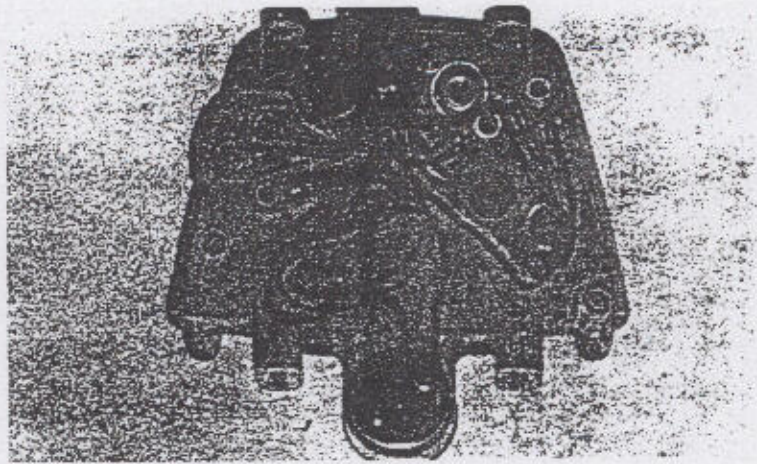




## ELECTRICAL EQUIPMENT

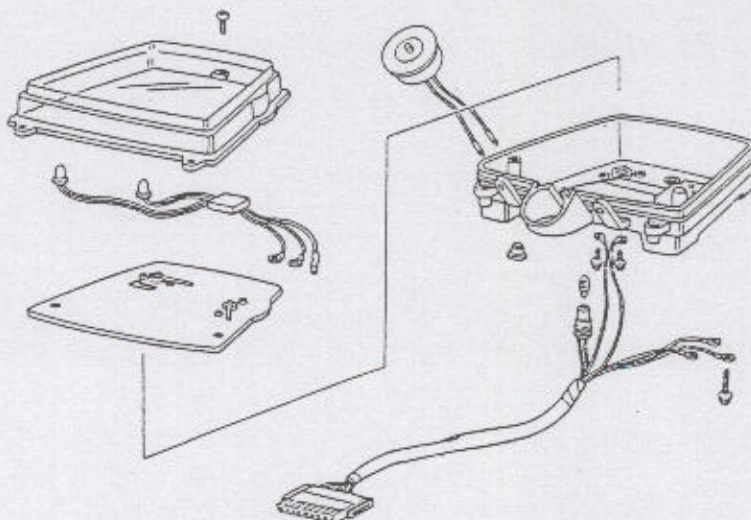
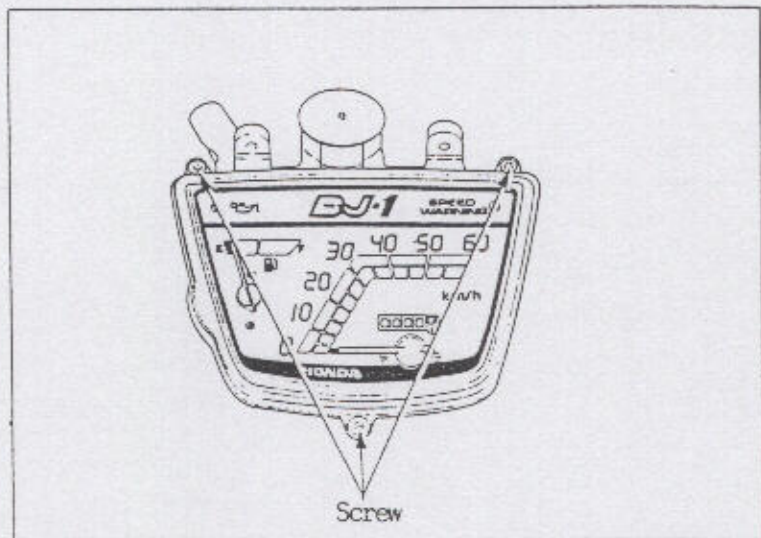
### Disassembly

Remove the cable connector and take out the bulb holder. Disconnect the buzzer connector and instrument cable.



Remove the attaching screws and then remove the instrument.

.Assembly/Installation  
Install the instrument in the reverse order of removal.



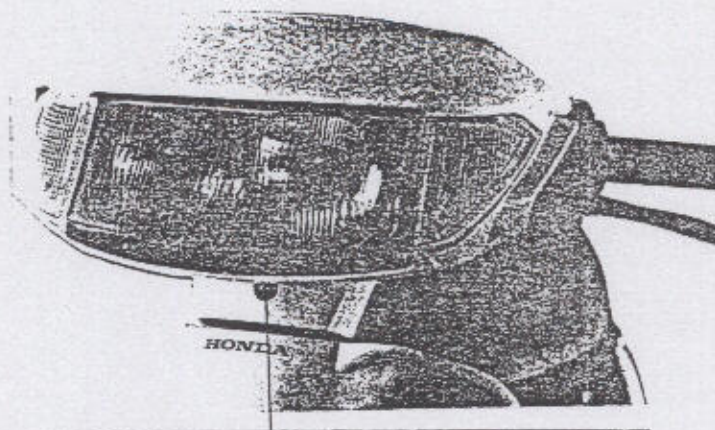


## ELECTRICAL EQUIPMENT

### HEADLIGHT

#### Removal/Bulb Replacement

Remove the headlight mounting bolt and then remove the headlight from the handlebar upper cover.

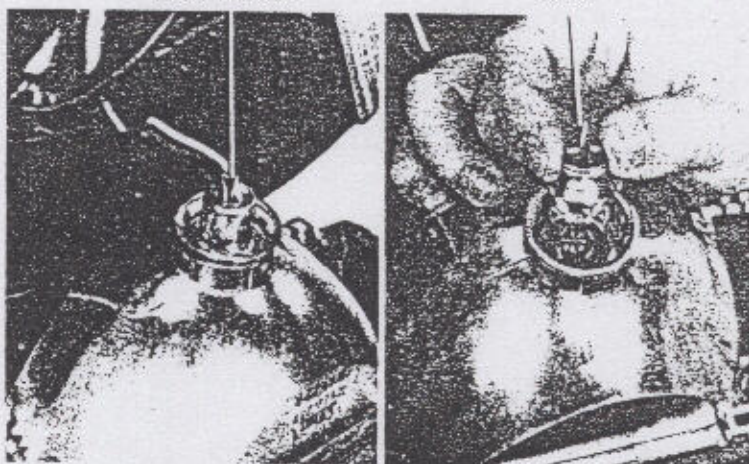


Mounting Bolt

Remove the bulb and install a new bulb.

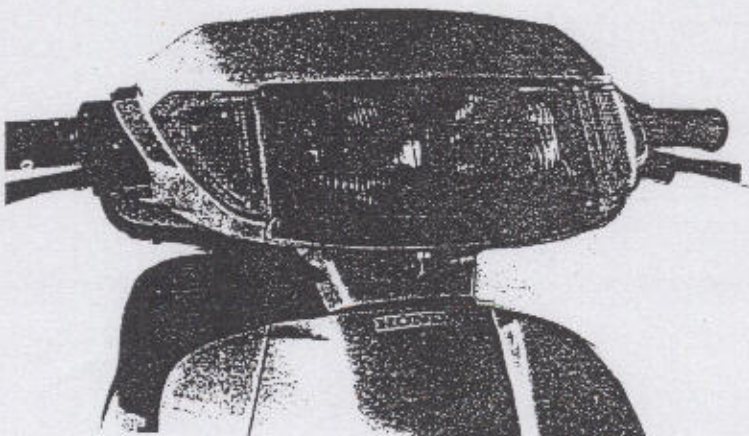
Bulb Holder

Bulb



#### Installation

Align the headlight upper claw with the groove of upper cover. Align the lower cavity with the tab of upper cover. Install the headlight and adjust the headlight beam with the mounting bolt.



Mating Part

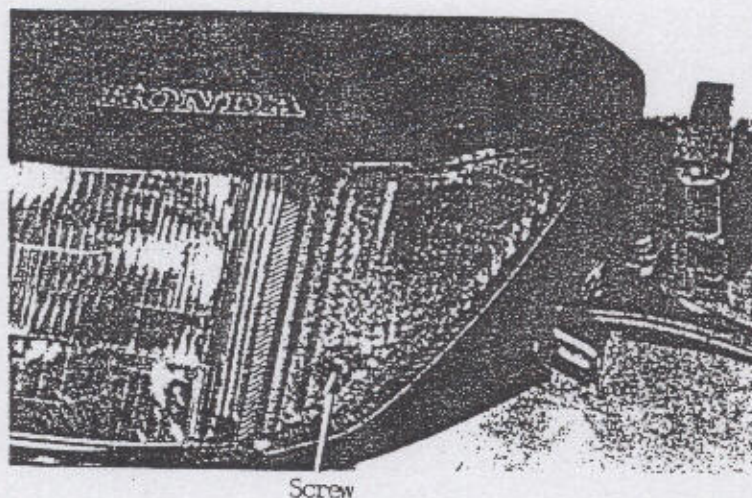


## ELECTRICAL EQUIPMENT

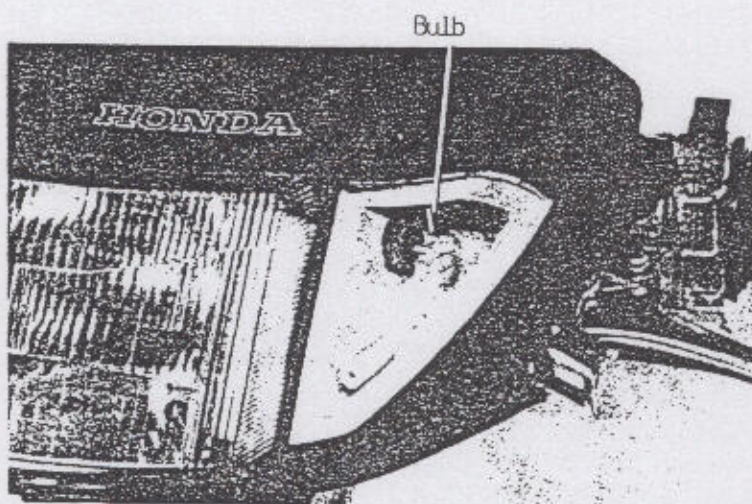
### BULB REPLACEMENT

#### Front Turn Signal Light

Remove the screw and the front turn signal light.

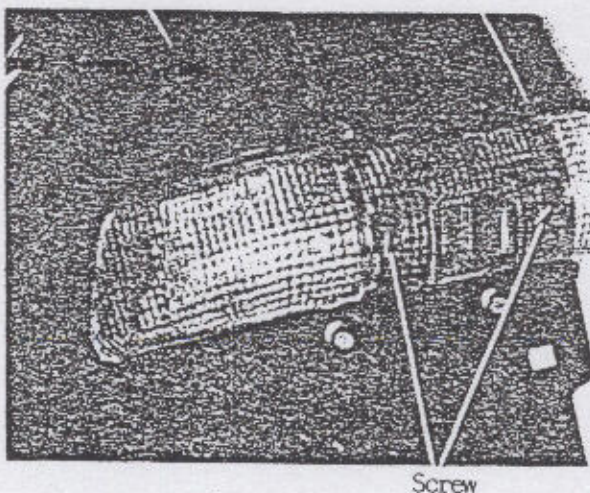


Remove the bulb and install a new bulb.



#### Tail Light/Stoplight Rear Turn Signal Light

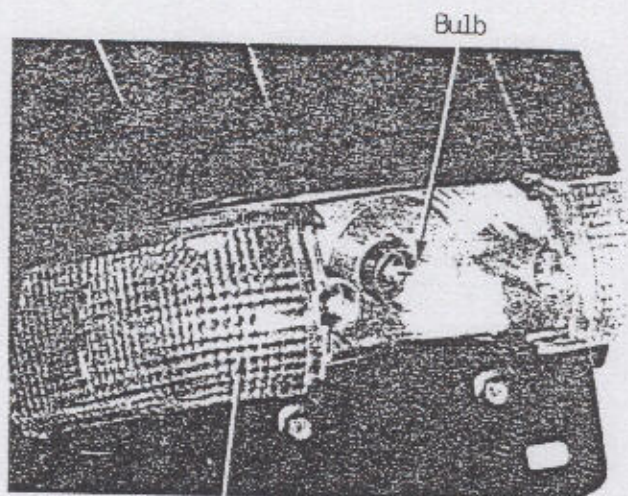
Remove the 2 screws, tail light/stoplight case.





## ELECTRICAL EQUIPMENT

Remove the bulb and install a new bulb.  
Remove the rear turn signal light case.



Turn Signal Light Shell

Remove the bulb and install a new bulb.

