



LIBERO

**WORKSHOP
MANUAL**

FOREWORD

This Workshop Manual has been prepared for use by the Yamaha Motor India Private Ltd. Authorised Dealerships and their service personnel to attend to servicing of Crux Motorcycles. It is not possible to include entire service education into this Manual. It is assumed that persons using this book to perform maintenance and repairs on Crux Motorcycles have a basic understanding of mechanical concepts and procedures inherent to Motorcycle repair technology. Without such knowledge, attempted repairs or service of this model may render it unfit for use and / or unsafe.

Yamaha Motor India Private Ltd. continually strives to improve all its models. Modifications and significant changes in specifications or procedures will be informed to all Yamaha Motor India Private Ltd. Authorised Dealerships through Service Actions and will wherever considered necessary, appear in future editions of this Workshop Manual.

Service Department
Yamaha Motor India Private Ltd.

HOW TO USE THIS MANUAL

MANUAL ORGANISATION

This manual consists of chapters for the main categories of subjects. (See “Illustrated symbols”)

1st title [1] : This is the Title of the Chapter with its symbol on the upper right corner of each page.

2nd title [2] : This title indicates the Section of the chapter and only appears on the first page of each section. It is located in the centre of the page.

3rd title [3] : This title indicates a Subsection that is followed by step-by-step procedures accompanied by corresponding illustrations.

EXPLODED DIAGRAMS


To help identify parts and clarify procedure steps, there are Exploded Diagrams at start of each Removal and Disassembly section.

1. An easy-to-see Exploded Diagram [4] is provided for Disassembly and Assembly jobs.
2. Numbers [5] are given in the order of jobs in the exploded diagram. A number that is enclosed by a circle indicates a part.
3. An explanation of jobs and notes are presented in an easy-to-read way by the use of Symbol Marks [6]. The meaning of the Symbol Marks are given on the next page.
4. For jobs requiring more information, the step-by-step format supplements [7] are given in addition to the exploded diagram.

[4]

ENGINE ASSEMBLY AND ADJUSTMENTS

ENG

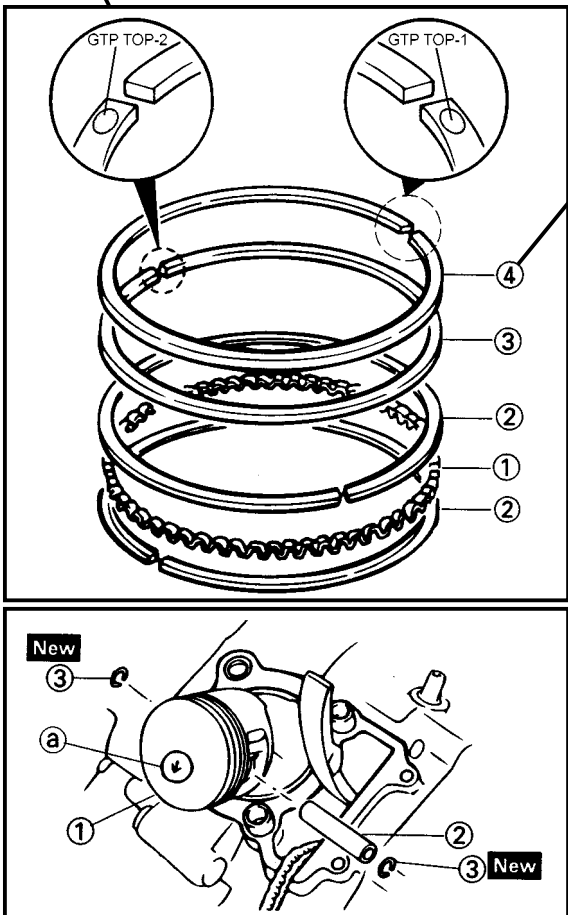


[2]

ENGINE ASSEMBLY

[3]

PISTON RING, PISTON AND CYLINDER INSTALLATION



1. Install in following sequence

- Expander Spacer (Oil Ring) ①
- Side Rails (Oil Ring) ②
- 2nd Ring ③
- Top Ring ④

NOTE :

- Make sure to install the Piston Rings so that the GTP TOP1/GTP-TOP 2 marks are located on the upper side of the 2nd Ring/Top Ring
- Lubricate the Piston and Piston Rings with Engine Oil.

2. Install :

- Piston ①
- Piston Pin ② using piston pin tool









Piston Pin replacer tool

YSST - 207








• Piston Pin Circlip ③ **New**

ILLUSTRATED SYMBOLS







Illustrated symbols 1 to 8 are designed as thumb tabs to indicate the chapter's number and content.

1. General Information	GEN INFO 	2. Specifications	SPEC 
3. Periodic inspection and adjustment	INSP ADJ 	4. Engine	ENG 
5. Carburetion	CARB 	6. Chassis	CHAS 
7. Electrical	ELEC 	8. Troubleshooting	TRBL SHTG 

Illustrated symbols 9 to 15 are used to identify the specifications appearing in the text.

9. Filling fluid		10. Lubricant		11. Special Tool	
12. Torque		13. Wear Limit, Clearance		14. Engine speed	
15. Resistance, Voltage, Current					








Illustrated symbols 16 to 21 in the exploded diagrams indicate the types of lubricants and lubrication points.

16. Apply engine oil		17. Apply gear oil		18. Apply molybdenum disulfide oil	
19. Apply wheel bearing grease		20. Apply lightweight lithium-soap base grease		21. Apply molybdenum disulfide grease	

Illustrated symbols 22 and 23 in the exploded diagrams indicate where to apply locking agent and when to install new parts

22. Apply locking agent (LOCKTITE*)		23. Use New One	New
-------------------------------------	---	-----------------	------------

INDEX

GENERAL INFORMATION	 GEN INFO 1
SPECIFICATIONS	 SPEC 2
PERIODIC INSPECTION AND ADJUSTMENTS	 INSP ADJ 3
ENGINE	 ENG 4
CARBURETION	 CARB 5
CHASSIS	 CHAS 6
ELECTRICAL	 ELEC 7
TROUBLE SHOOTING	? TRBL SHTG 8

CHAPTER 1

GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION

FRAME SERIAL NUMBER 1-1

ENGINE SERIAL NUMBER 1-1

IMPORTANT INFORMATION

PREPARATION FOR DISASSEMBLY 1-2

ALL REPLACEMENT PARTS 1-3

GASKETS, OIL SEALS, AND O-RINGS 1-3

LOCK WASHERS/PLATES AND COTTER PINS 1-3

BEARINGS AND OIL SEALS 1-3

CIRCLIPS 1-3

SPECIAL TOOLS

SPECIAL SERVICE TOOLS 1-4

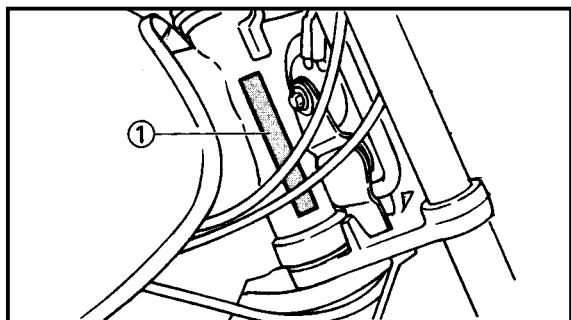
SERVICE INSTRUMENTS 1-7

SPECIAL SERVICE MATERIALS 1-8

MOTORCYCLE IDENTIFICATION

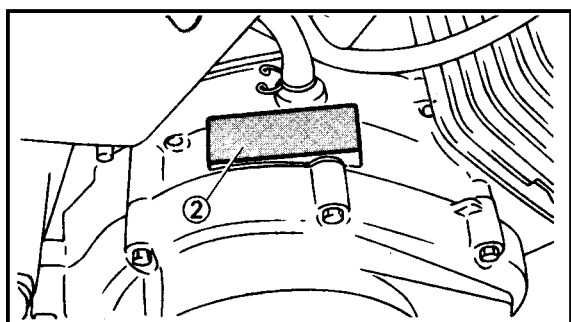
**GEN
INFO**


MOTORCYCLE IDENTIFICATION



FRAME SERIAL NUMBER

The Frame Serial Number ① is stamped into the right side of the Steering Head Pipe.



ENGINE SERIAL NUMBER

The Engine Serial Number ② is stamped on the top portion of RH Crankcase. (Engine Serial Number does not contain Year and Month of production)

XX	X	5KA	XXXXXX
YEAR OF PRODUCTION	MONTH CODE	MODEL CODE	UNIT PRODUCTION NUMBER

Year of Production : 2 Digits standing for last two digits of year
Eg. **00** - 2000, **01** - 2001

Month Code : One alphabet standing for Month
Eg. **A** - January, **B** - February.....
M - December (**I** - Not Used for Month)

Starting Serial Number : **5KA 000101**

⚠ WARNING

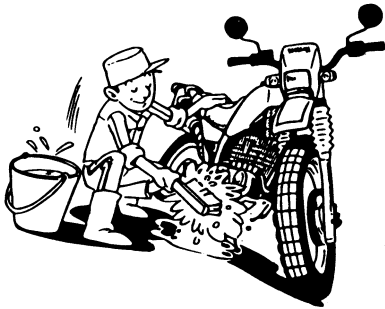
Do not tamper with any of these numbers. It may lead to legal action.

NOTE :

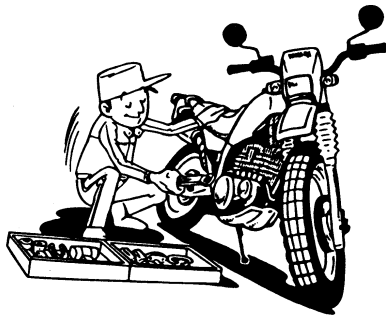
Designs and sepecifications are subject to change without notice.

IMPORTANT INFORMATION**GEN
INFO****IMPORTANT INFORMATION****PREPARATION FOR DISASSEMBLY**

1. Remove all dirt, mud, dust and foreign material before disassembly.



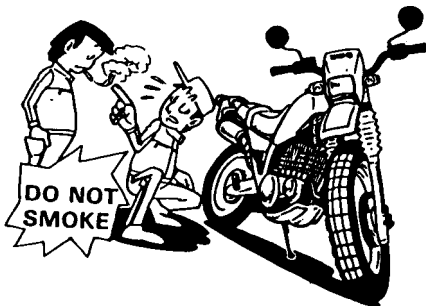
2. Use proper Tools and Cleaning Equipment. Refer to "SPECIAL SERVICE TOOLS".



3. When disassembling the Motorcycle, keep mated parts together. This includes gears, Cylinder, Piston and other mated parts that have been "mated" through normal wear. Mated parts must be reused as an assembly or replaced.

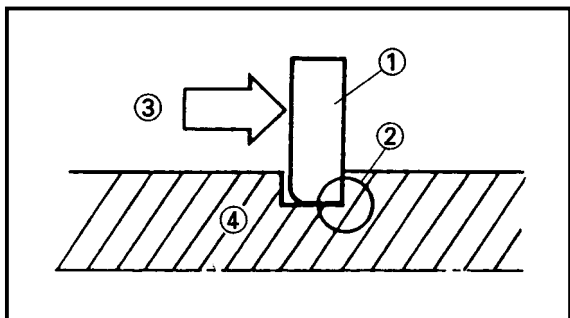
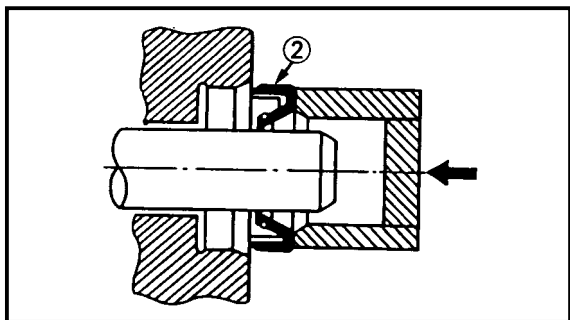
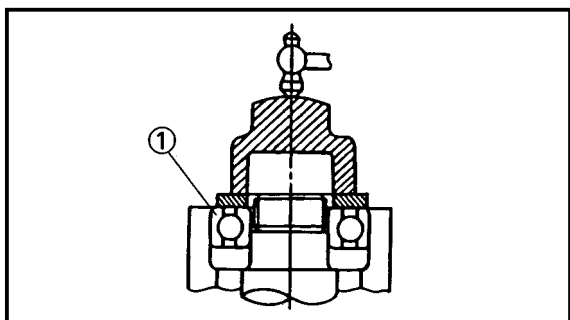
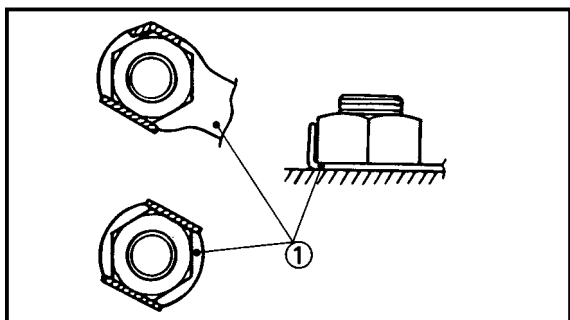
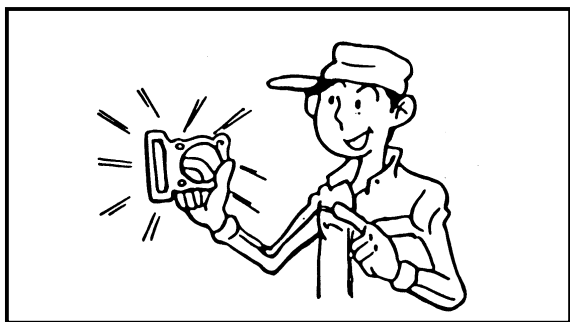


4. During the Motorcycle disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help assure that all parts are correctly reinstalled.



5. Keep Motorcycle and its parts away from any source of fire.

IMPORTANT INFORMATION

**GEN
INFO**


ALL REPLACEMENT PARTS

1. Use only genuine Yamaha parts for all replacements. Use Yamalube Oil and Grease recommended by Yamaha for assembly and adjustment. Other brands may be similar in function and appearance, but inferior in quality.

GASKETS, OIL SEALS, AND O-RINGS

1. All Gaskets, Seals and O-rings should be replaced when the Engine is overhauled.
2. All surfaces where Gasket, Oil Seal lips and O-rings contact must be cleaned and Lubricated.

LOCK WASHERS/PLATES AND COTTER PINS

1. All Lock Washers/plates ① and Cotter Pins must be replaced when they are removed. Lock tab (s) should be bent along the Bolt

BEARINGS AND OIL SEALS

1. Install the bearing (s) ① and Oil Seal (s) ② with their manufacturer's marks or numbers facing outward. (In other words, the stamped letters must be on the side exposed to view.) When installing Oil Seal (s), lubricate a light coating of lightweight lithium base grease to the seal lip(s). Oil the Bearings liberally when installing.

CAUTION:

Do not use compressed air to spin the Bearings dry. This causes damage to the Bearing surfaces.

CIRCLIPS

1. All Circlips should be inspected carefully before reassembly. Always replace Piston Pin Clips after one use. Replace distorted Circlips. When installing a circlip ①, make sure that the sharp-edged corner ② is positioned opposite to the thrust ③ it receives. See the sectional view of shaft ④.

⚠ WARNING

If the Circlip is fitted the wrong way it would cause it to jump off its groove and damage related components.

SPECIAL SERVICE TOOLS



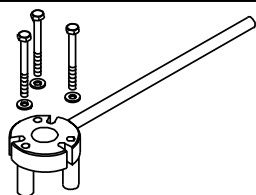
SPECIAL TOOLS

SPECIAL SERVICE TOOLS

The appropriate Special Service Tools are necessary for proper maintenance of the Motorcycle. Using the correct Special Service Tool will help to prevent damage caused by the use of improper tools or improvised techniques. The following is the detailed list of all Special Service Tools with their application.

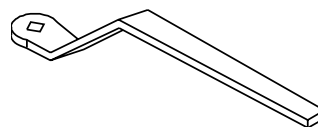
Refer to the list provided to avoid errors when placing an order for Special service tools.

1. Magneto Holder



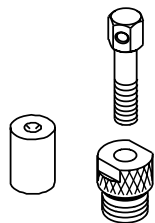
This tool is used to hold the Magneto when removing or installing the Magneto Securing Nut

5. Valve Clearance Adjusting Tool. YSST - 606



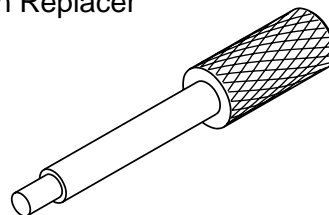
This tool is used to adjust Valve clearance.

2. Magneto Puller with Spacer YSST - 602



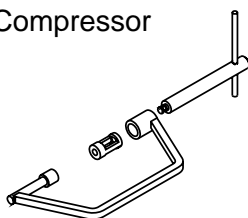
This tool is used to remove the Magneto

6. Piston Pin Replacer



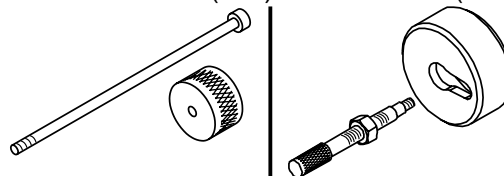
This tool is used to replace Piston Pin.

3. Valve Spring Compressor YSST - 603



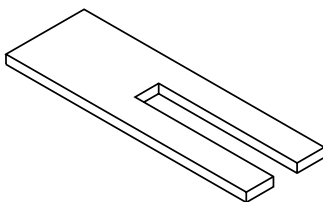
This tool is used to remove and install Valve Spring Assemblies.

7. Rocker Arm Shaft Puller YSST - 608 (Old) YSST - 608A (New)



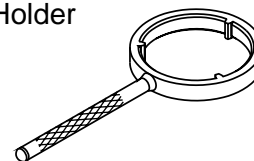
This tool is used to remove Rocker Arm Shaft.

4. Piston Base YSST - 604



This tool is needed to support the Piston while installing Cylinder.

8. Clutch Hub Holder YSST - 233

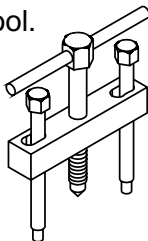


This tool is used to hold the Clutch Hub when removing or installing Clutch Main Shaft Nut.

SPECIAL SERVICE TOOLS

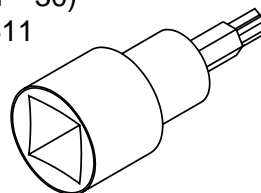
GEN
INFO

- 9. Crank Shaft Removal Tool.**
YSST - 265



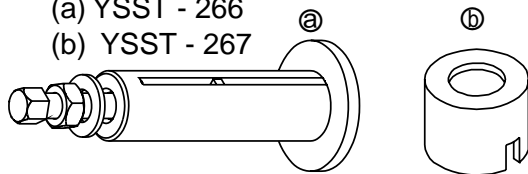
This tool is used to remove the Crank Shaft from the Crank Case.

- 13. Torx Bit (T - 30)**
YSST - 611



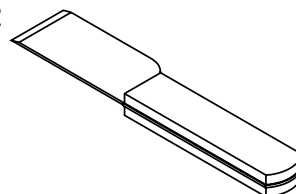
This tool is used to loosen or tighten the Cam Shifter Segment Screw.

- 10. Crank Shaft Installing Tool with spacer**
(a) YSST - 266
(b) YSST - 267



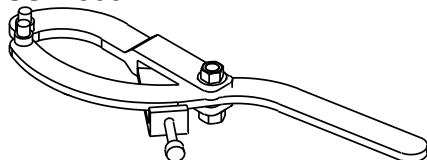
These tools are used for installation of Crank Shaft.

- 14. Scraper**
YSST - 612



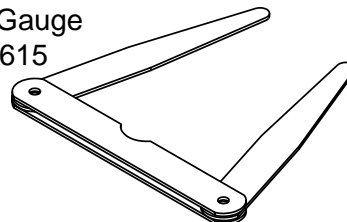
This tool is used for scraping the sealant from Crankcase surface.

- 11. Driving Sprocket Holder**
YSST- 605



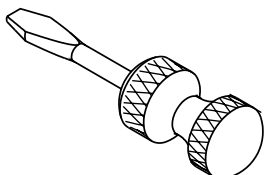
This tool is used to hold the Driving Sprocket when removing or installing Driving Sprocket Nut

- 15. Feeler Gauge**
YSST - 615



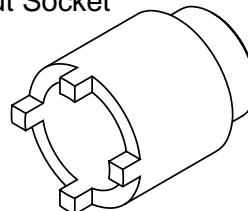
This tool is used to check Valve Clearance.

- 12. Screw Driver (small).**
YSST - 609



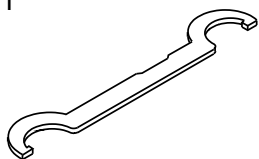
To adjust Carburettor Pilot Screw.

- 16. Steering Nut Socket**
YSST - 621

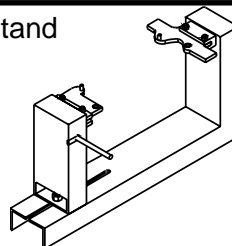


This tool is used to loosen or tighten the Steering Ring Nut.

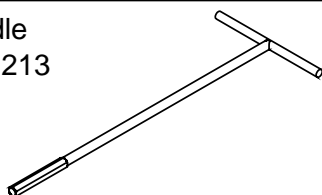
SPECIAL SERVICE TOOLS

GEN
INFO
**17. Rear Shock Absorber Adjuster
YSST 221**


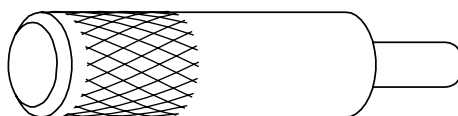
This tool is used to adjust spring preload of Rear Shock Absorbers.

22. Engine Stand


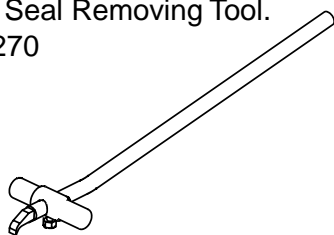
This fixture is used to hold the Engine for its disassembly and assembly.

**18. T -Handle
YSST - 213**


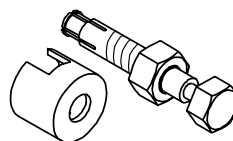
This tool is used to hold the TFF plunger for loosening and tightening of Hex Socket Head Bolt

**23. Oil Seal Installing Tool.
YSST - 622**


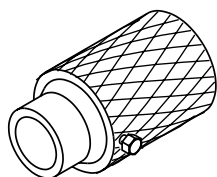
This tool is used to install Oil Seal in Crank Case Cover#2.

**19. T.F.F. Oil Seal Removing Tool.
YSST - 270**


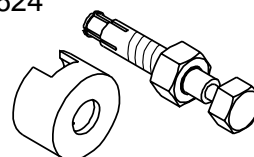
This tool is used to remove T.F.F. oil seal.

**24. Bearing Puller
YSST - 623**


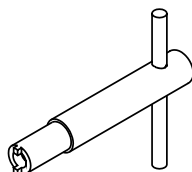
This tool is used to remove the Bearing 6201 of the Axle Main.

**20. T.F.F. Oil Seal Installation Tool
YSST-275**


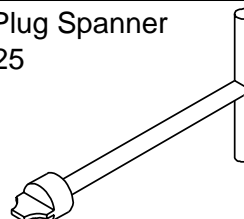
This tool is used when installing the TFF Oil Seal.

**25. Bearing Puller
YSST - 624**


This tool is used to remove the Bearing 6202 of the Axle Drive

**21. Spanner - Speedometer Gear Nut.
YSST - 237**


This tool is used to loosen or tighten the Speedometer Gear Nut.

**26. Center Plug Spanner
YSST-625**


This tool is used to remove/install the Center Plug from Crank case Cover#1 (L.H.)

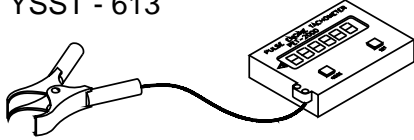
SERVICE INSTRUMENTS

**GEN
INFO**


SERVICE INSTRUMENTS

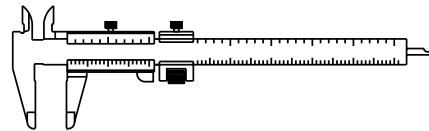
The following Service Instruments are necessary for complete and accurate tune up of Motorcycle

1. Tachometer
YSST - 613



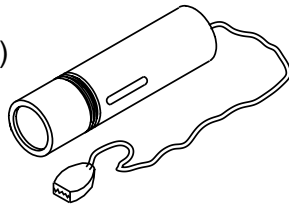
This Instrument is used for checking the Engine RPM

5. Vernier Calliper
(150 mm)



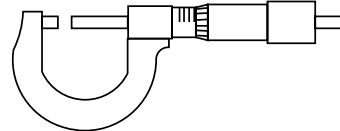
This instrument is used for measuring length, width & thickness of components

2. Timing light
(SKC S14-121)



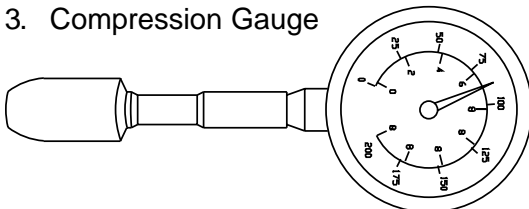
This instrument is used for checking ignition timing

6. Micrometer
(0-25 mm) & (50-75 mm)



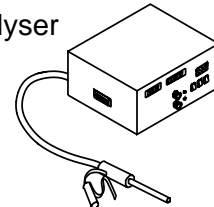
This instrument is used for measuring Piston size, Valve stem size etc.

3. Compression Gauge



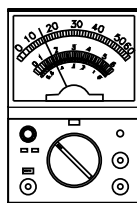
This instrument is used for checking the engine compression

7. 'CO' Gas Analyser



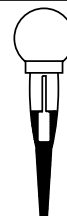
This instrument is used for measuring 'CO' concentration in exhaust of motorcycle

4. Mutimeter



This instrument is used for checking the electrical system.

8. Hydrometer

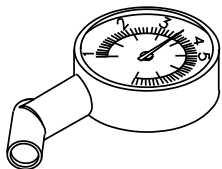


This instrument is used for measuring specific gravity of Battery Electrolyte

SERVICE INSTRUMENTS

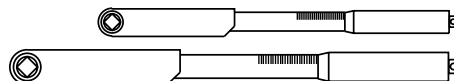
**GEN
INFO**


9. Tyre pressure gauge



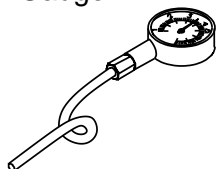
This instrument is used for checking the Tyre Pressure

11. Torque Wrench (10-50 Ft-Lb) (20-100 Ft-Lb)



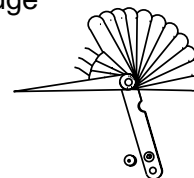
This tool is used to tighten the Nuts/Bolts at a specified torque.

10. Vacuum Gauge



This instrument is used for checking intake vacuum.

12. Feeler gauge



This instrument is used to check clearance/ gaps between parts.

SPECIAL SERVICE MATERIAL

The following Service material are necessary to use at the time of assembly of various parts.

1. YAMAHA Bond TG-1215



This adhesive is used on mating surfaces while assembling Crankcase#1 and #2.

2. LOCTITE Three Bond 1322



This adhesive is used for Torx Screw tightening.

CHAPTER 2.

SPECIFICATIONS

GENERAL SPECIFICATIONS	2-1
MAINTENANCE SPECIFICATIONS	
ENGINE	2-4
CHASSIS	2-10
ELECTRICAL	2-13
GENERAL TORQUE SPECIFICATIONS	2-15
LUBRICATION POINTS AND LUBRICANT TYPE	
ENGINE	2-16
CHASSIS	2-17
ENGINE LUBRICATION ROUTE	2-18
ENGINE BEARINGS	2-20
CABLE ROUTING	2-21

GENERAL SPECIFICATIONS

SPEC



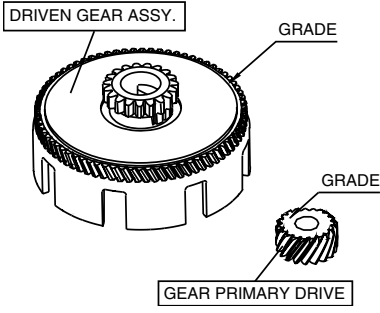
GENERAL SPECIFICATIONS

DESCRIPTION	SPECIFICATION
Model :	CRUX
Model Code :	5KA1
Engine model code:	5KA
DIMENSIONS:	
Overall length	1997 mm
Overall width	735 mm
Overall height	1055 mm
Seat height	780 mm
Wheelbase	1247 mm
Minimum ground clearance	150 mm
Minimum turning radius	2000 mm
Dry weight :	105.5 kg
Basic weight : (With Oil and full Fuel Tank)	113 kg
ENGINE :	
Engine type	Air-cooled 4-stroke, SOHC
Cylinder arrangement	Forward-inclined, single cylinder
Displacement	105.6 cm ³
Bore X Stroke	49 X 56 mm
Compression ratio	9:1
Starting system	Kick starter
Lubrication system	Wet sump
Max power	7.6 BHP @ 7500 RPM
Torque	8 Nm @ 6000 rpm
Oil type or grade :	
Engine oil	Yamalube 4-stroke Oil (20W50 Type SF)
Oil capacity :	
Engine oil	
Periodic oil replacement	1.0 L
Total amount	1.2 L
Air filter :	Washable, dual Foam, Wet type (Oil soaked)
FUEL :	
Fuel Tank capacity	11 L
Fuel reserve amount	1.4 L
Carburetor :	
Type/ quantity	VM17SH/1
Manufacturer	(UCAL)
Spark plug :	
Type/manufacturer	DPR7EA/NGK
Spark Plug gap	0.7 mm

GENERAL SPECIFICATIONS

SPEC



DESCRIPTION	SPECIFICATION														
Clutch type :	Wet, Multiple disc														
Transmission : Primary reduction system Primary reduction ratio Secondary reduction system Secondary reduction ratio Transmission type Operation Gear ratio Primary Drive Grading 	Helical gear 68/18 (3.778 : 1) Chain drive 42/14 (3.00 : 1) Constant mesh 4-speed Left foot operation 33/11 (3.000) 27/16 (1.688) 24/20 (1.200) 21/23 (0.913) <table><tr><th colspan="2">Matching of Grades</th></tr><tr><th>Gear Primary Drive</th><th>Primary Driven Gear Assy.</th></tr><tr><td>A</td><td>←→ A</td></tr><tr><td>B</td><td>←→ B</td></tr><tr><td>C</td><td>←→ C</td></tr><tr><td>D</td><td>←→ D</td></tr><tr><td>E</td><td>←→ E</td></tr></table>	Matching of Grades		Gear Primary Drive	Primary Driven Gear Assy.	A	←→ A	B	←→ B	C	←→ C	D	←→ D	E	←→ E
Matching of Grades															
Gear Primary Drive	Primary Driven Gear Assy.														
A	←→ A														
B	←→ B														
C	←→ C														
D	←→ D														
E	←→ E														
Chassis :															
Frame type	Double cradle														
Caster angle	26.4°														
Trail	83 mm														
Tyre :															
Type	With tube														
Size	Front 2.50 - 18, 4 PR Rear 2.75 - 18, 6 PR														
Manufacturer	Front LOCAL MADE Rear LOCAL MADE														
Type	Front RIB TYPE Rear RIB LUG TYPE														
Tyre pressure (cold tyre) :															
Loading condition A*	0 ~ 90 kg (0 ~ 198 lbs)														
	Front 24 PSI (1.70 kgf/cm²) Rear 28 PSI (2.00 kgf/cm²)														
Loading condition B*	90 ~ 162 kg (198~408 lbs)														
	Front 24 PSI (1.70 kgf/cm²) Rear 32 PSI (2.30 kgf/cm²)														
*Load is total weight of cargo, rider, passenger and accessories.															

GENERAL SPECIFICATIONS

SPEC



DESCRIPTION	SPECIFICATION
Brake : Front brake Type Operation Rear brake Type Operation	Drum Brake (Dia 130 mm) Right hand operation Drum brake (Dia 130 mm) Right foot operation
Suspension : Front suspension Rear suspension	Telescopic fork Swingarm
Shock absorber : Front shock absorber Rear shock absorber	Coil spring/Oil damper Coil spring/Oil damper
Wheel travel : Front wheel travel Rear wheel travel	110 mm 70 mm
Electrical : Ignition system Generator system Battery type Battery capacity	CDI (Digital) Flywheel magneto LOCAL MADE 12V - 2.5 AH
Headlight type : Headlight bulb type	Bulb type Krypton bulb
Bulb (voltage - wattage x quantity) : Headlight Tail/Brake light Flasher light Meter light "NEUTRAL" indicator light "HIGH BEAM" indicator light "TURN" indicator light	12V - 35W/35W x 1 12V - 5W/21W x 1 12V - 10W x 4 12V - 2W x 1 12V - 3.4W x 1 12V - 3.4W x 1 12V - 3.4W x 1

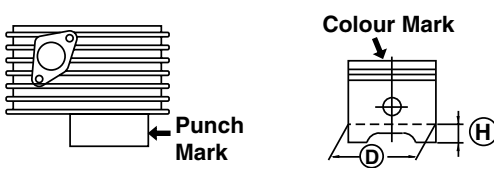
MAINTENANCE SPECIFICATIONS

SPEC



MAINTENANCE SPECIFICATIONS

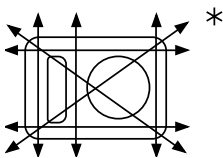
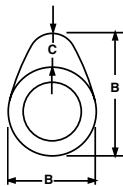

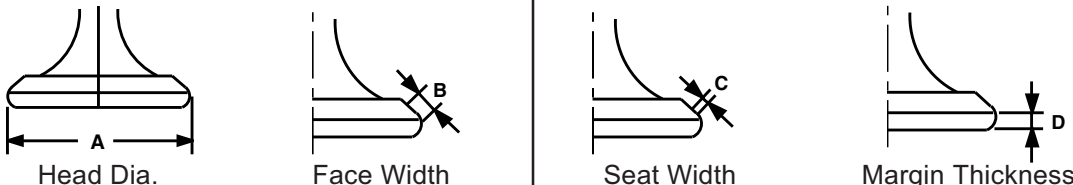
ENGINE

DESCRIPTION	SPECIFICATION																
Cylinder : Bore size	49.000 ~ 49.020 mm (in five grades)																
Piston : Piston to Cylinder Clearance <Limit> Piston size "D" Cylinder Piston Grading  Measuring point "H" Piston offset Piston offset direction Piston pin bore inside diameter Piston pin outside diameter	0.017 ~ 0.021 mm <0.12mm> 48.962 ~ 48.981 mm (in five grades) <table border="1"> <thead> <tr> <th colspan="2">Matching of Grades</th></tr> <tr> <th>Piston</th><th>Cylinder</th></tr> <tr> <th>Colour Mark</th><th>Letter Punch Mark</th></tr> </thead> <tbody> <tr> <td>Red</td><td>A</td></tr> <tr> <td>Orange</td><td>B</td></tr> <tr> <td>Green</td><td>C</td></tr> <tr> <td>Violet</td><td>D</td></tr> <tr> <td>Blue</td><td>E</td></tr> </tbody> </table> 4.5 mm 0.5 mm Intake side 13.002 ~ 13.013 mm 12.996 ~ 13.000 mm	Matching of Grades		Piston	Cylinder	Colour Mark	Letter Punch Mark	Red	A	Orange	B	Green	C	Violet	D	Blue	E
Matching of Grades																	
Piston	Cylinder																
Colour Mark	Letter Punch Mark																
Red	A																
Orange	B																
Green	C																
Violet	D																
Blue	E																
Piston rings : Top ring : Type Dimensions (B x T) End gap (installed) <Limit> Side clearance (installed) <Limit> 2nd ring : Type Dimensions (B x T) End gap (installed) <Limit> Side clearance <Limit> Oil ring : Dimensions (B x T) End gap (installed) Side Clearance (For Rail Upper and Rail Lower)	Barrel 1.0 x 1.95 mm 0.10 ~ 0.25 mm <0.35mm> 0.030 ~ 0.065 mm <0.115m> Taper 1.0 x 1.9 mm 0.25 ~ 0.40 mm <0.50mm> 0.020 ~ 0.065 mm <0.115mm> 2.0 x 2.15 mm 0.2 ~ 0.7 mm 0.040																

MAINTENANCE SPECIFICATIONS

SPEC

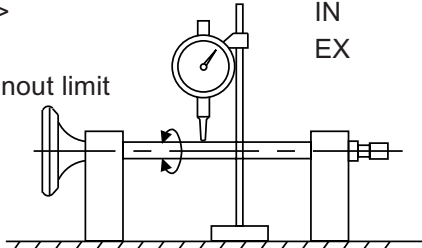
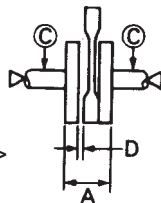


DESCRIPTION	SPECIFICATION
Cylinder head : <Warp limit> 	<0.03 mm (0.0012 in)> * Lines indicate straightedge measurement.
Camshaft : Drive method Cam dimensions Intake  Exhaust 	Chain Drive “ A ” 25.356 ~ 25.456 mm <Limit> <25.326 mm> “ B ” 20.989 ~ 21.089 mm <Limit> <20.959 mm> “ C ” 4.4055 mm “ A ” 21.360 ~ 21.460 mm <Limit> <21.330 mm> “ B ” 21.001 ~ 21.101 mm <Limit> <20.971 mm> “ C ” 4.4114 mm
Rocker Arm/ Rocker Arm Shaft : Inside diameter (Rocker Arm) <Limit> Outside diameter (Rocker Armshaft) <Limit>	10.000 ~ 10.015 mm <10.03 mm> 9.981 ~ 9.991 mm <9.95 mm>
Cam chain : Cam chain type/No. of links Cam chain adjustment method	BUSH CHAIN / 90 Automatic
Valve, Valve Seat, Valve Guide : Valve clearance (cold) IN EX Valve dimensions : 	0.08 ~ 0.12 mm 0.10 ~ 0.14 mm Head Dia. Face Width Seat Width Margin Thickness “A” head diameter IN 22.90 ~ 23.10 mm EX 19.90 ~ 19.10 mm “B” face width IN 1.98 mm EX 2.26 mm “C” seat width IN 0.9 ~ 1.1 mm EX 0.9 ~ 1.1 mm “D” margin thickness IN 0.60 mm EX 1.00 mm

MAINTENANCE SPECIFICATIONS

SPEC



DESCRIPTION		SPECIFICATION
Stem outside diameter	IN	4.975 ~ 4.990 mm
	EX	4.960 ~ 4.975 mm
<Limit>	IN	<4.950 mm>
	EX	<4.935 mm>
Guide inside diameter	IN	5.000 ~ 5.012 mm
	EX	5.000 ~ 5.012 mm
<Limit>	IN	<5.035 mm>
	EX	<5.035 mm>
Stem to guide clearance	IN	0.005 ~ 0.0325 mm
	EX	0.0125 ~ 0.026 mm
<Limit>	IN	<0.075 mm>
	EX	<0.075 mm>
Stem runout limit		0.010 mm
		
Valve seat width	IN	0.9 ~ 1.1 mm
	EX	0.9 ~ 1.1 mm
<Limit>	IN	<1.6 mm>
	EX	<1.6 mm>
Valve spring :		
Free length	IN	39.62 mm
	EX	39.62 mm
<Limit>	IN	38.17 mm
	EX	38.17 mm
Set length (valve closed)	IN	25.6 mm
	EX	25.6 mm
<Tilt limit>	IN	2.5°/1.7 mm
	EX	2.5°/1.7 mm
Compression pressure (installed)	IN	142-221 Nm (14.5-22.5 kgf)
	EX	142-221 Nm (14.5-22.5 kgf)
Direction of winding (top view)		Clockwise
Crankshaft :		
Crank width "A"		46.95 ~ 47.00 mm
<Runout limit "C">		<0.03 mm>
Big end side clearance "D"		0.15 ~ 0.45 mm
<Small end free play limit "F">		<0.8 mm>
		
Shifter :		
Shifter type		Cam Drum and Guide bar
Kick starter :		
Kick starter type		Kick and mesh type
Kick clip friction force		7.8 ~ 11.8 Nm (0.8 ~ 1.2 kgf)

MAINTENANCE SPECIFICATIONS

SPEC


DESCRIPTION	SPECIFICATION
Clutch : Friction plate thickness Quantity <Friction plate wear limit> Clutch Plate thickness Quantity <Wrap limit> Clutch Spring free length Quantity Minimum length Clutch release method <Push rod bending limit>	2.90 ~ 3.10 mm 5 pcs. <2.80 mm> 1.05 ~ 1.35 mm 4 pcs. 0.05 mm 33 mm 4 pcs. 31.0 mm Inner push, cam push <0.5 mm>
Carburetor : I. D. Mark Main Jet (M.J.) Main Air Jet size (M.A.J.) Jet needle (J.N.) Needle jet (N.J.) Cut away (C.A.) Pilot outlet (P.O.) Pilot jet (P. J.) Valve seat size (V.S.) Starter jet (G.S.1) Fuel level (with special tool) (F.L.) Float height Engine idle speed Intake vacuum New Vehicle Market Run Vehicle	5KA100 #102.5 1.4 4DP19-2 E-OM (860) 3.0 1.1 # 12.5 1.5 #30 2.5 ± 0.5 mm Above the Joint Line of MCB (Main Chamber Body) and FCB (Float Chamber Body) 9.3±1 mm 1,300 ~1,500 r/min. 24.0 ~ 29.4 kPa 29.3 ~ 34.7 kPa
Lubrication system : Oil filter type Oil filter type Tip Clearance "A" or "B" <Limit> Side clearance <Limit> Housing and rotor clearance <Limit>	Wire mesh type Trochoid type 0.15 mm <0.2 mm> 0.06 ~ 0.10 mm <0.15 mm> 0.06 ~ 0.10 mm <0.15 mm>

MAINTENANCE SPECIFICATIONS

SPEC


TIGHTENING TORQUE (ENGINE)

Part to be tightened	Parts name	Thread size	Q'ty	Tightening torque			Remark
				Nm	m.kg	ft.lb	
Cylinder Head	Bolt	M8	4	22	2.2	17	
	Bolt	M6	2	10	1.0	7.2	
Spark Plug	-	M12	1	17.5	1.75	12.6	
Cylinder Head Side Cover	Bolt	M6	2	10	1.0	7.2	
Valve Cover	-	M45	2	17.5	1.75	13	
CDI Magneto Rotor	Bolt	M6	1	70	7.0	51	
Stopper Guide	Bolt	M6	1	10	1.0	7.2	
Adjust Screw	Nut	M5	2	8	0.8	5.8	
Sprocket (Timing Chain)	Bolt	M8	1	20	2.0	14.5	
Plate To Head Cylinder	Bolt	M6	1	10	1.0	7.2	
Plug (Tensioner Assembly)	Plug	M8	1	8	0.8	5.8	
Tensioner Assembly	Bolt	M6	2	10	1.0	7.2	
Oil Pump Assembly	Screw	M6	2	7	0.7	5.1	
Drain Plug	Screw	M12	1	20	2.0	14.5	
Pump Cover	Screw	M5	1	4	0.4	3.6	
Intake Manifold	Bolt	M6	2	10	1.0	7.2	
Carburetor Joint (Manifold)	Bolt	M6	2	10	7.2	7.2	
Carburetor Joint (Air filter)	Screw	M4	1	2	0.2	1.5	
Air filter Case	Bolt	M6	2	7	0.7	5.1	
Muffler (Cylinder Head)	Bolt	M6	1	7	0.7	5.1	
Muffler Assembly	Bolt	M8	1	15	1.5	11	
Crankcase 1 and 2	Bolt	M6	2	10	1.0	7.2	
	Bolt	M6	6	10	1.0	7.2	
	Bolt	M6	2	10	1.0	7.2	
Crankcase Cover 1	Bolt	M6	5	10	1.0	7.2	
	Bolt	M6	2	10	1.0	7.2	
Cover Chain Case 1	Screw	M6	2	7	0.7	5.1	
Crankcase Cover 2	Bolt	M6	7	10	1.0	7.2	
	Bolt	M6	2	10	1.0	7.2	
Plate	Screw	M6	1	7	0.7	5.1	
Timing Mark Check Plug	Screw	M14	1	7	0.7	5.1	
Center Plug	Screw	M32	1	7	0.7	5.1	
Kick Crank Assembly	Nut	M12	1	50	5.0	36	
Primary Drive Gear	Nut	M12	1	70	7.0	51	
Pressure Plate	Bolt	M8	4	6	0.6	4.3	
Clutch Boss	Nut	M12	1	60	6.0	43.5	Use Lock W.
Push Rod	Nut	M6	1	8	0.8	5.8	
Plate	Nut	M6	2	7	0.7	5.1	
Drive Sprocket	Nut	M6	1	10	1.0	7.2	

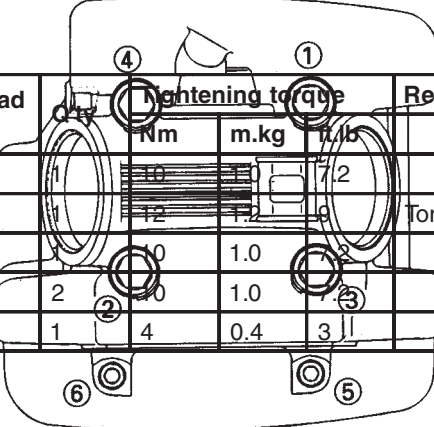
MAINTENANCE SPECIFICATIONS



TIGHTENING TORQUE (ENGINE)

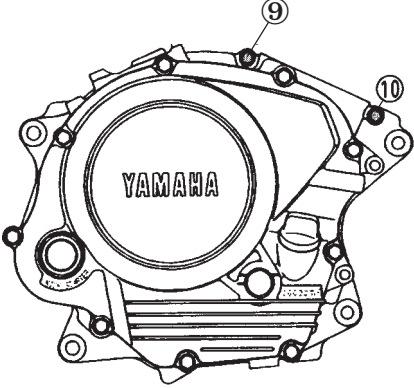
Tightening sequence

Cylinder Head

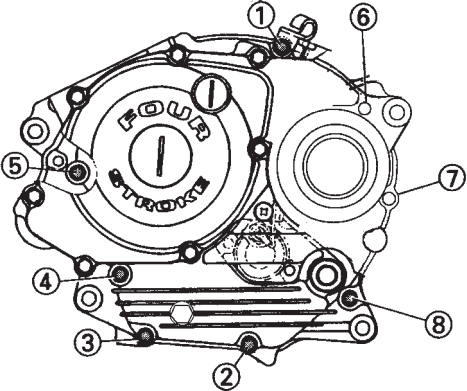


Part to be tightened	Parts name	Thread size	Tightening torque			Remark
			Nm	m.kg	ft.lb	
Shift Pedal	Bolt	M6	10	1.0	7.2	
Segment	Screw	M6	12	1.2	8	Torx Bolt
Stopper lever	Bolt	M6	10	1.0	7.2	
Sensor Assembly	Bolt	M6	20	2.0	14.7	
Neutral Switch Assembly	-	M10	4	0.4	3	

Crankcase



Right - hand



Left - hand

MAINTENANCE SPECIFICATIONS

SPEC


CHASSIS

DESCRIPTION	SPECIFICATION	
Steering system : (as applicable)	OLD	NEW
Steering Bearing type	Ball and Race Bearing	Retainer Ball cage
No./size of steel balls (upper)	22 pcs. / 3/16 in	19 pcs. / 1/4 in
(lower)	19 pcs. / 1/4 in	16 pcs. / 1/4 in
Front suspension :		
Front Fork travel	110 mm	
Fork Spring free length	320.9 mm	
<Limit>	315.9 mm	
Spring rate (K1)	7.4 N/mm	
(K2)	13.2 N/mm	
Stroke (K1)	0 ~ 28 mm	
(K2)	28 ~ 110mm	
Oil grade	Special YAMAHA oil.	
Rear suspension :		
Shock Absorber travel	70 mm	
Spring free length	205.4 mm	
Fitting length	197.4 mm	
Spring rate (K1)	18.6 N/mm	
(K2)	27.8 N/mm	
Stroke (K1)	0 ~ 40 mm	
(K2)	40 ~ 70 mm	
Swingarm :		
<Free play limit> End	<1.0 mm>	
Side	<1.0 mm>	
Front wheel :		
Type	Spoke wheel	
Rim size	1.6 x 18"	
Rim material	Steel	
<Rim run out limit> Radial	<0.5 mm>	
Lateral	<0.8 mm>	
Rear wheel :		
Type	Spoke wheel	
Rim size	1.6 x 18"	
Rim material	Steel	
<Rim rounout limit> Radial	<0.5 mm>	
Lateral	<0.8 mm>	
Drive chain :		
Type/manufacturer	428V2 / Local MADE	
Number of links	112	
Chain slack	20~30 mm	

MAINTENANCE SPECIFICATIONS

SPEC


DESCRIPTION	SPECIFICATION
Front Drum Brake : Type Brake Drum inside diameter <Wear limit> Lining Thickness <Wear limit> Shoe Spring free length	Leading, Trailing 130mm <131> 4.0 mm <2 mm> 36.5mm
Rear drum brake : Type Brake Drum inside diameter <Wear limit> Lining Thickness <Wear limit> Shoe spring free length	Leading, Trailing 130mm <131> 4.0 mm <2 mm> 36.5 mm
Free Plays : Brake Lever free play (At lever end) Brake Pedal free play Clutch Lever free play (at lever end) Throttle Grip free play	10 ~ 15 mm 20 ~ 30 mm 10 ~ 15 mm 3 ~ 7mm

MAINTENANCE SPECIFICATIONS**SPEC****TIGHTENING TORQUE (CHASSIS)***** Note :**

1. First tighten the Ring Nut approximately 45.5 Nm (4.55 m.kg 32.3 ft.lb) by using the torque wrench then loosen the Ring Nut one turn.
2. Retighten the Ring Nut to specifications

MAINTENANCE SPECIFICATIONS

SPEC


ELECTRICAL

DESCRIPTION	SPECIFICATION
Voltage :	12V
Ignition system : Ignition timing (B.T. D. C) Advancer Type	7° at 1400 r/min Electrical type
CDI : Magneto model/manufacturer Sensor Coil (Color) CDI Unit Model/manufacturer	Digitally Controlled 5KA/DENSO 240 Ω ± 20% 5KA/ Denso (Japan)
IgnitionCoil : Model/Manufacturer Primary Coil Resistance Secondary Coil Resistance	5KA/DENSO 0.16 Ω ± 15% 4.2 KΩ ± 20%
Spark Plug Cap : Type Resistance	Resin type 5 kΩ at 20 °C (68°F)
Charging System : Type Flywheel Magneto : Model/Manufacturer Charging Voltage Charging Coil Resistance	Flywheel Magneto 5KA/DENSO 14 ~ 15V @ 5000 RPM 0.82 Ω ± 20% (68°F)
Lighting : Lighting Voltage (Min) (Max) Lighting Coil Resistance	12V/3,000 r/min 15V/8,000 r/min 0.62Ω ± 20 % (68°F)
Rectifier/Regulator : Type Model/Manufacturer No load regulated voltage Capacity Withstand voltage	Semi conductor-Short Circuit Type 36L/Local Made/CKD 13 ~ 14V 8A 400 V
Battery : Specific Gravity	1.230
Horn: Type Quantity Model/Manufacturer Maximum Amperage	Plane type 1 pc. 36L/Local Made 1.5 A
Flasher relay: Type Model/Manufacturer Self cancelling device Flasher frequency Wattage	Semi transistor type 4LS/Local Made No 60 ~ 120 cycles/min 10W X 2

MAINTENANCE SPECIFICATIONS



Circuit Breaker : Type Amperage for individual circuit X quantity : Main Reserve	Fuse 10A X 1pc. 10A X 1pc.
---	--------------------------------------

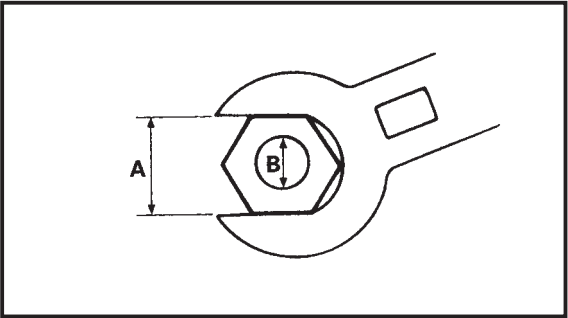
GENERAL TORQUE SPECIFICATION



GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specification for special components or assemblies are included in applicable section of this book. To avoid warpage, tighten multi-fastener assembled in a criss-cross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.

A (Nut)	B (Bolt)	General Torque specifications		
		Nm	m•kg	ft•lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94























A : Distance across flats
B : Outside thread diameter

LUBRICATION POINTS AND LUBRICANT TYPE

SPEC














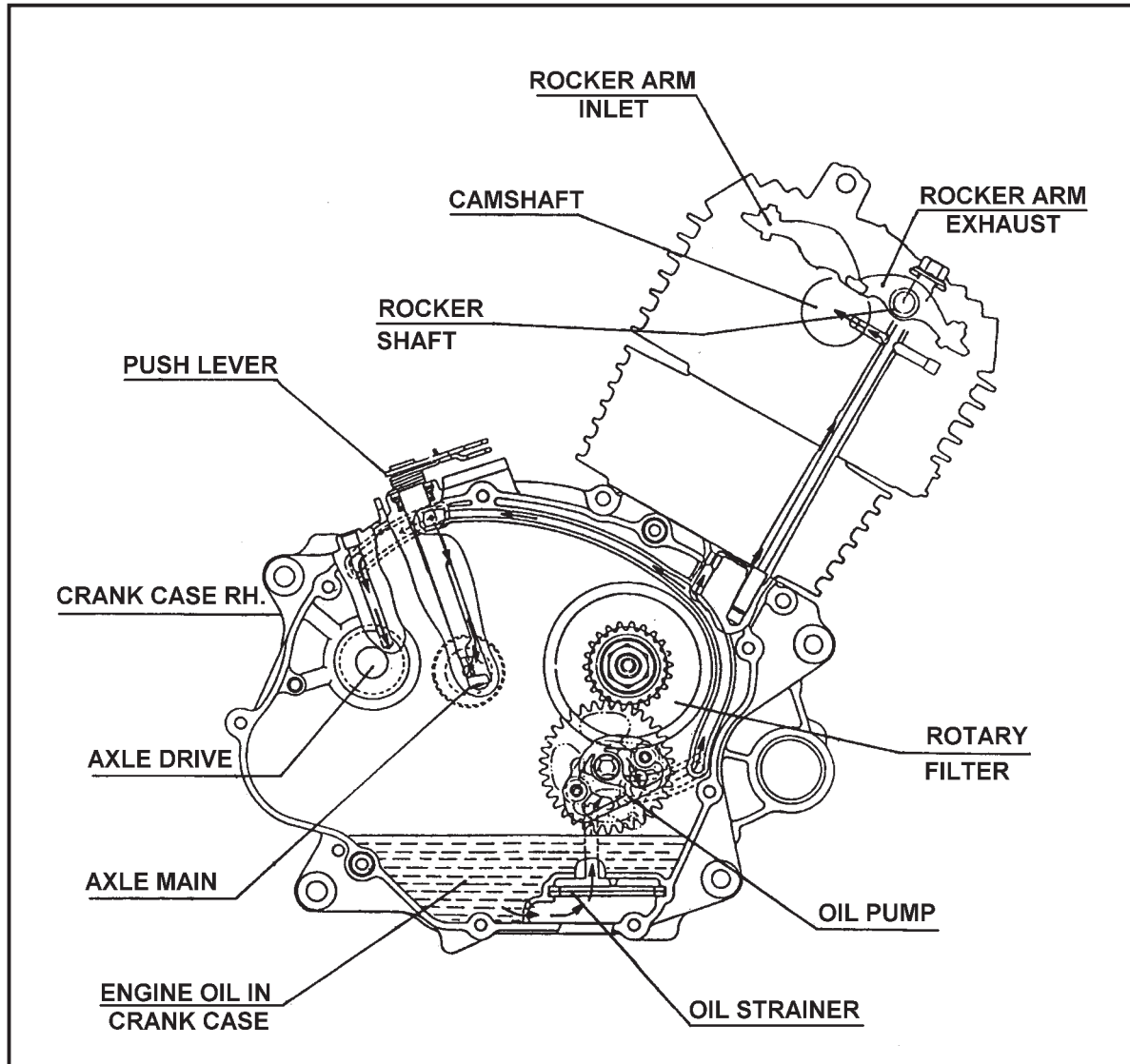
LUBRICATION POINTS AND LUBRICANT TYPE

ENGINE	
Lubrication points (part name)	Lubricant type
Oil Seal lips (all)	
Bearing Retainer (all)	
Bolt (Cylinder Head)	
O-ring (Cylinder Head Side Cover and Valve Cover)	
Crank Pin	
Connecting Rod (big end)	
Piston Pin	
Valve Stem and Valve Guide	
Oil Seal (Valve Stem End)	
Rocker Arm Shaft and Rocker Arm	
Cam and Bearing (Camshaft)	
Push Rod	
Primary Driven Gear and Main Axle	
Push Lever Axle	
Rotary Filter and Oil Pump	
Sliding Gear (Transmission)	
Kick Axle Shaft	
Axle Drive	
Shift Fork and Guide Bar	
Shift Cam and Bearing (shift cam)	
Crankcase Mating Surfaces	Yamaha bond No. 1215
Crankcase Cover 1 and Grommet	Yamaha bond No. 1215

LUBRICATION POINTS AND LUBRICANT TYPE



CHASSIS	
Lubrication points (part name)	Lubricant type
Gear Unit (Gear Meter and Drive)	
Oil Seal Lips (all)	
Pivot Shaft (Swingarm)	
Pivoting Points (Brake Pedal Shaft and Frame)	
Ball and Ball Race (Steering Head)	
Tube Guide (Right Grip)	
Pivoting points (Brake Lever and Clutch Lever)	
Pivoting Point (Brake Shoe Plate)	
Cable End (Front Brake and Clutch)	
Pivoting Points (Sidestand Mainstand and Rear Footrest)	
Brake Camshaft (Cam and Shaft)	

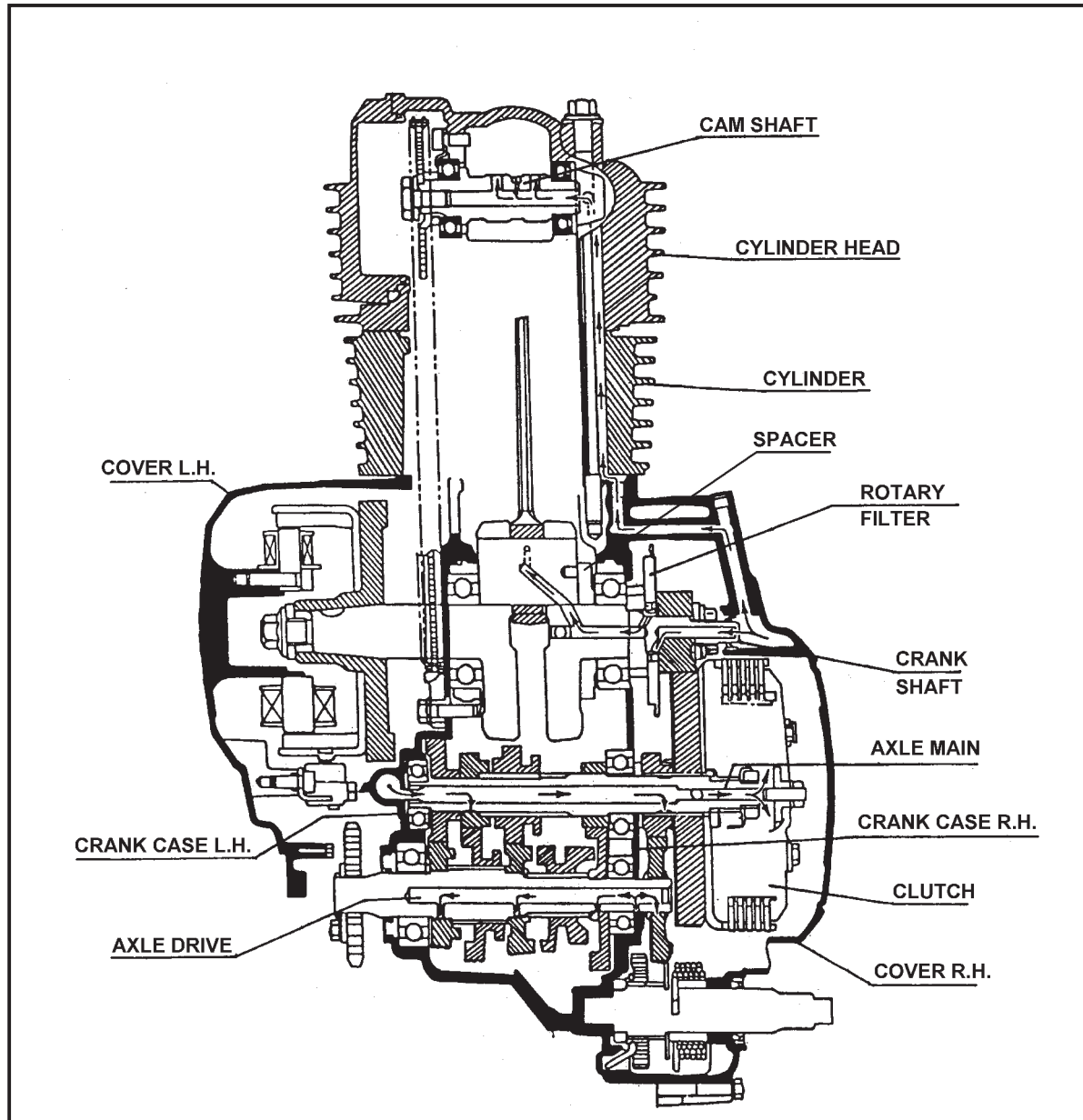
ENGINE LUBRICATION ROUTE**SPEC****Engine Lubrication route****CAUTION:****DO NOT DAMAGE CRANK CASE SURFACES, OTHERWISE OIL LEAKAGE WILL START**

ENGINE LUBRICATION ROUTE

SPEC

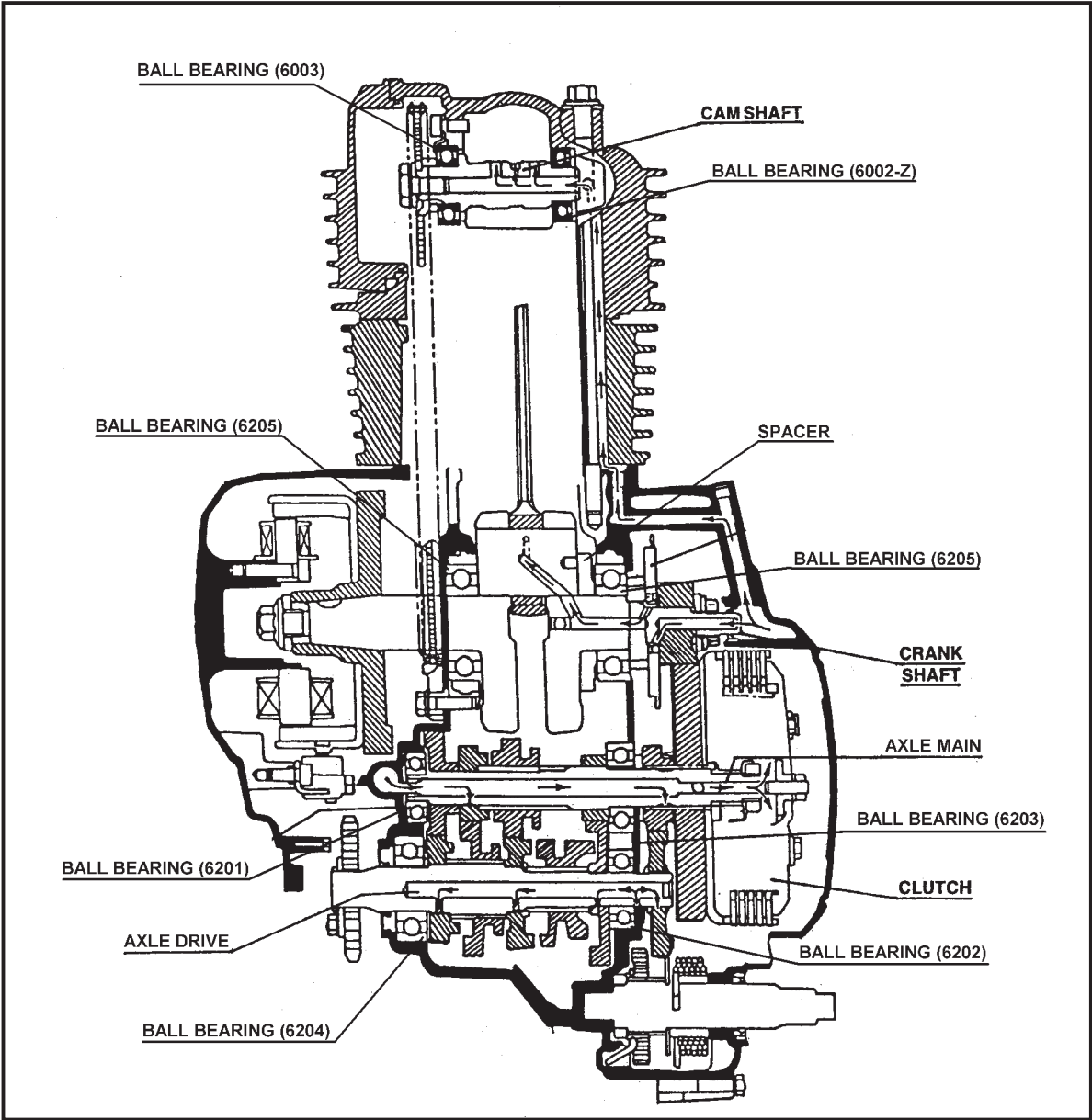


Engine Lubrication route

**CAUTION:**

FOR IMPROVED PERFORMANCE, ALWAYS USE YAMALUBE OIL

ENGINE BEARINGS



CABLE ROUTING

SPEC



CABLE ROUTING

- ① Handlebar switch (left)
- ② Clutch cable
- ③ Handlebar switch lead
- ④ Speedometer
- ⑤ Indicator panel
- ⑥ Brake Cable front
- ⑦ Throttle cable
- ⑧ Brake switch lead
- ⑨ Speedometer cable
- ⑩ Wireharness

- ⑪ Flasher light lead (left)

- ⑫ Horn

- ⑬ Flasher light lead (right)

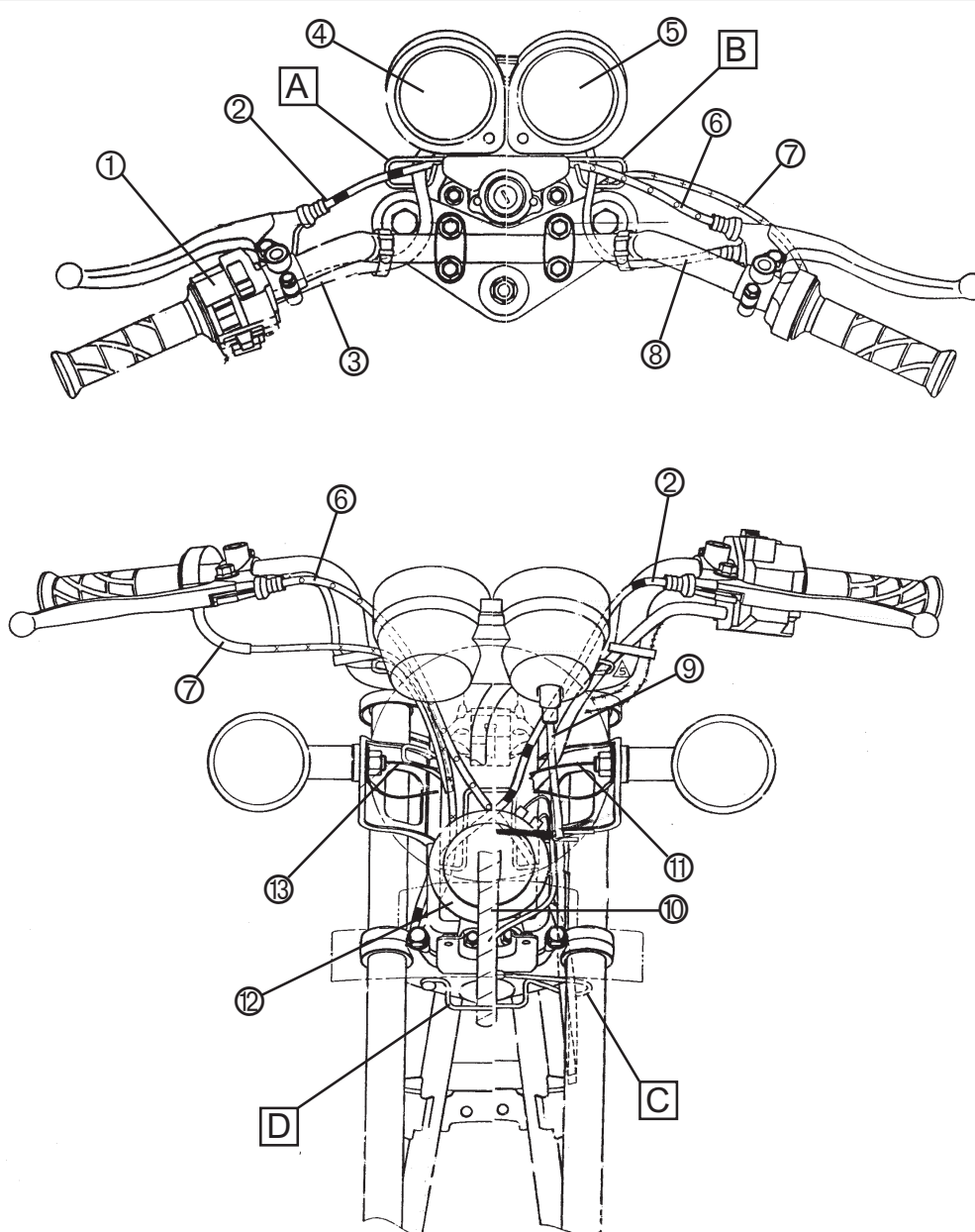
A Pass the Clutch Cable ②, and the Handle-bar Switch Lead ③ through the cable guide of the left side.

B Pass the Throttle Cable ⑦, and the Brake Cable ⑥ and the Front Brake switch lead ⑧ through the Cable Guide

of the right side.

C Pass the Meter Cable ⑨ and the Brake Cable through the cable guide.

D Pass the Main Harness ⑩ through the wire Guide.



CABLE ROUTING

SPEC

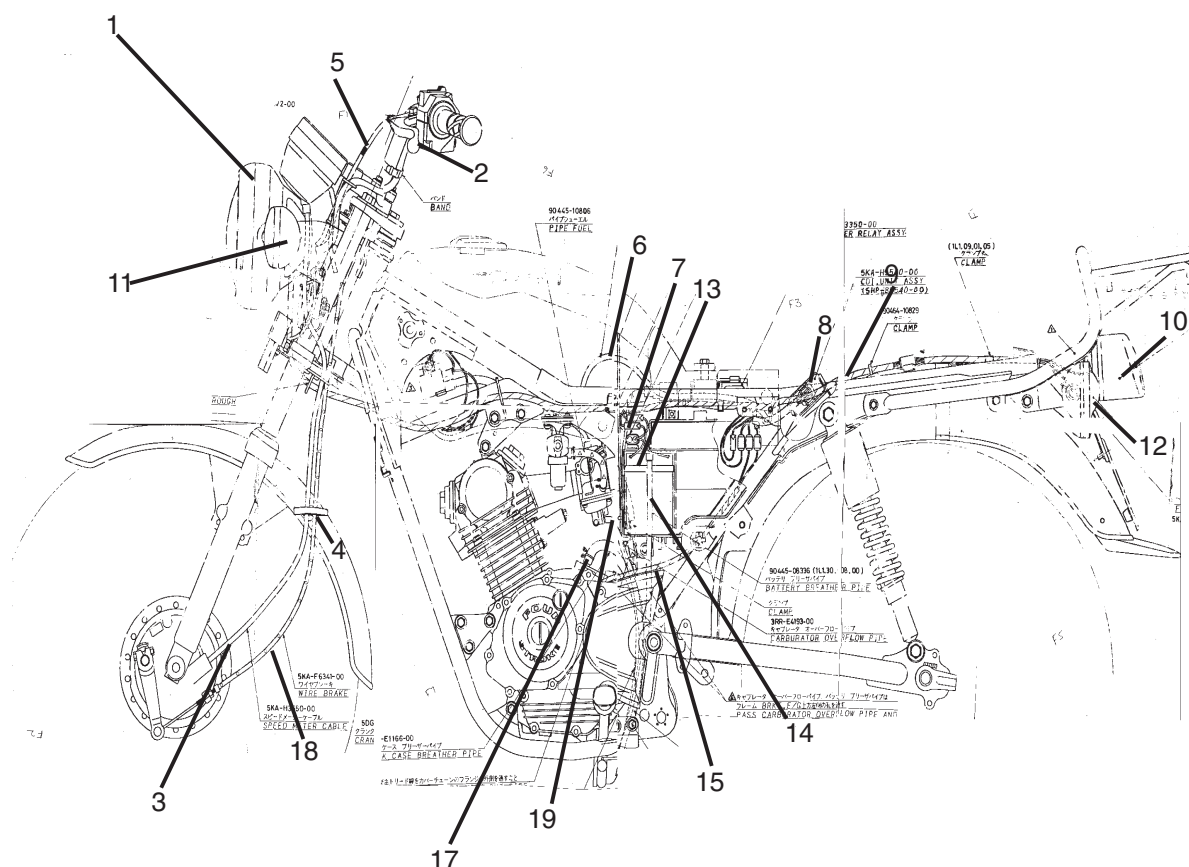


- ① Headlight assembly
- ② Handlebar switch lead
- ③ Speedometer cable
- ④ Cable guide
- ⑤ Clutch cable
- ⑥ Air vent hose
- ⑦ Fuse
- ⑧ CDI unit
- ⑨ Clamp
- ⑩ Stop/tail light
- ⑪ Flasher light lead (right)
- ⑫ Flasher light
- ⑬ Battery
- ⑭ Battery breather hose
- ⑮ Neutral switch lead

- ⑯ Over flow hose
- ⑰ Crankcase breather hose
- ⑱ Brake cable
- [A] Pass the wireharness through the cable guide.
- [B] Insert the air vent hose to the hole of the flap.
- [C] Align the white marking of wireharness with the frame clamp.
- [D] Tighten the battery negative (-) lead and the ground lead of the wireharness together.
- [E] Pass the battery breather hose through the hole of the

upper left side of the engine bracket.

- [F] Pass the battery breather hose, the crankcase breather hose and the carburetor overflow pipe through footrest clamps
- [G] Pass the battery breather hose, these crankcase breather hose and the carburetor overflow pipe to the left side of crankcase.
- [H] Pass the magneto lead to the outside of the flange of the chain cover.



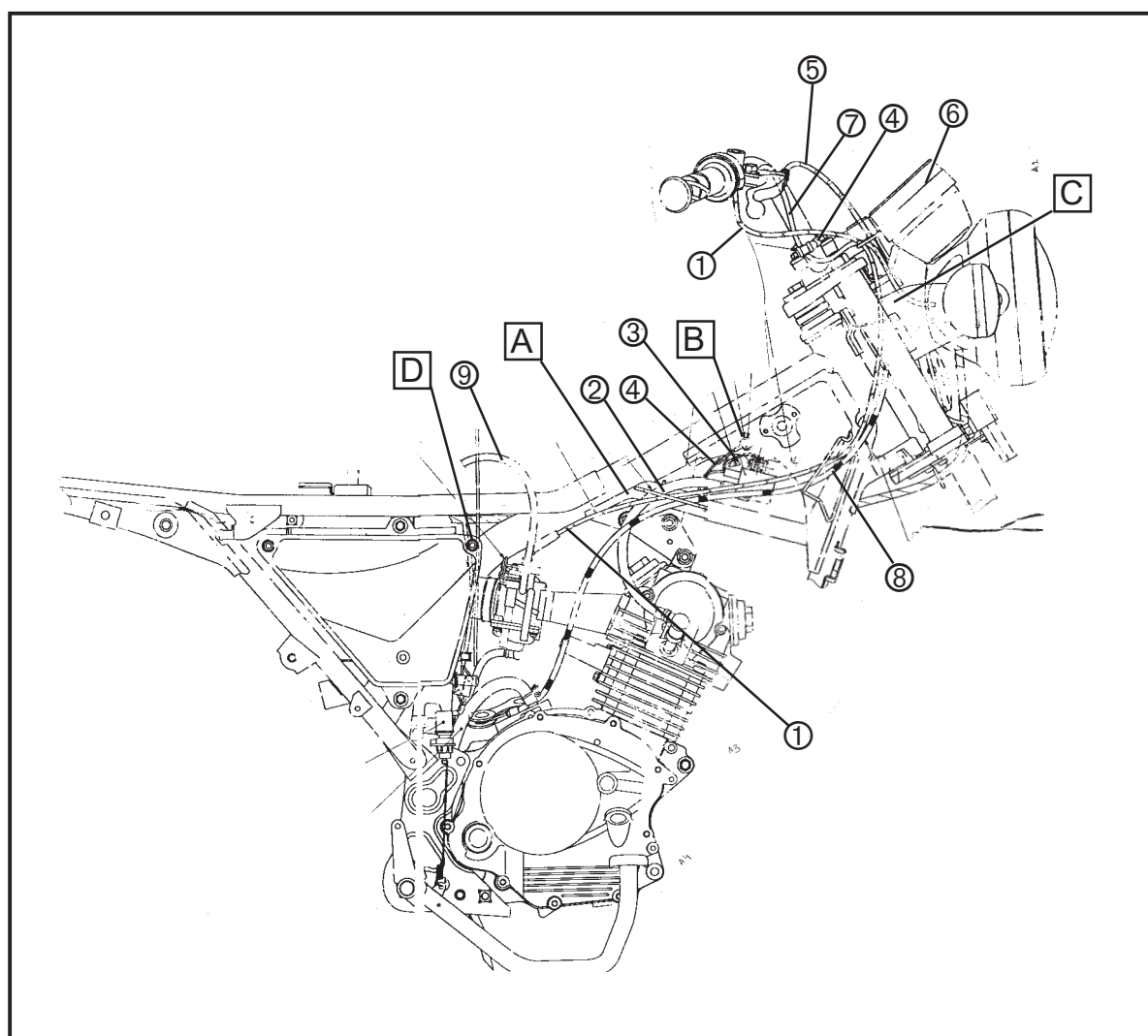
CABLE ROUTING

SPEC



- ① Throttle cable
- ② High tension cord
- ③ Ignition Coil
- ④ Band
- ⑤ Brake cable front
- ⑥ Speedometer
- ⑦ Brake switch lead
- ⑧ Clutch cable
- ⑨ Breather hose

- [A] Pass the high tension cord ② through the cable guide to the inside of throttle cable ① and the clutch cable ⑧.
- [B] Tighten the ground lead and ignition coil together
- [C] Pass the throttle cable ① through the headlight stay.
- [D] Pass breather hose through upper right side hole of frame bracket engine.



CABLE ROUTING

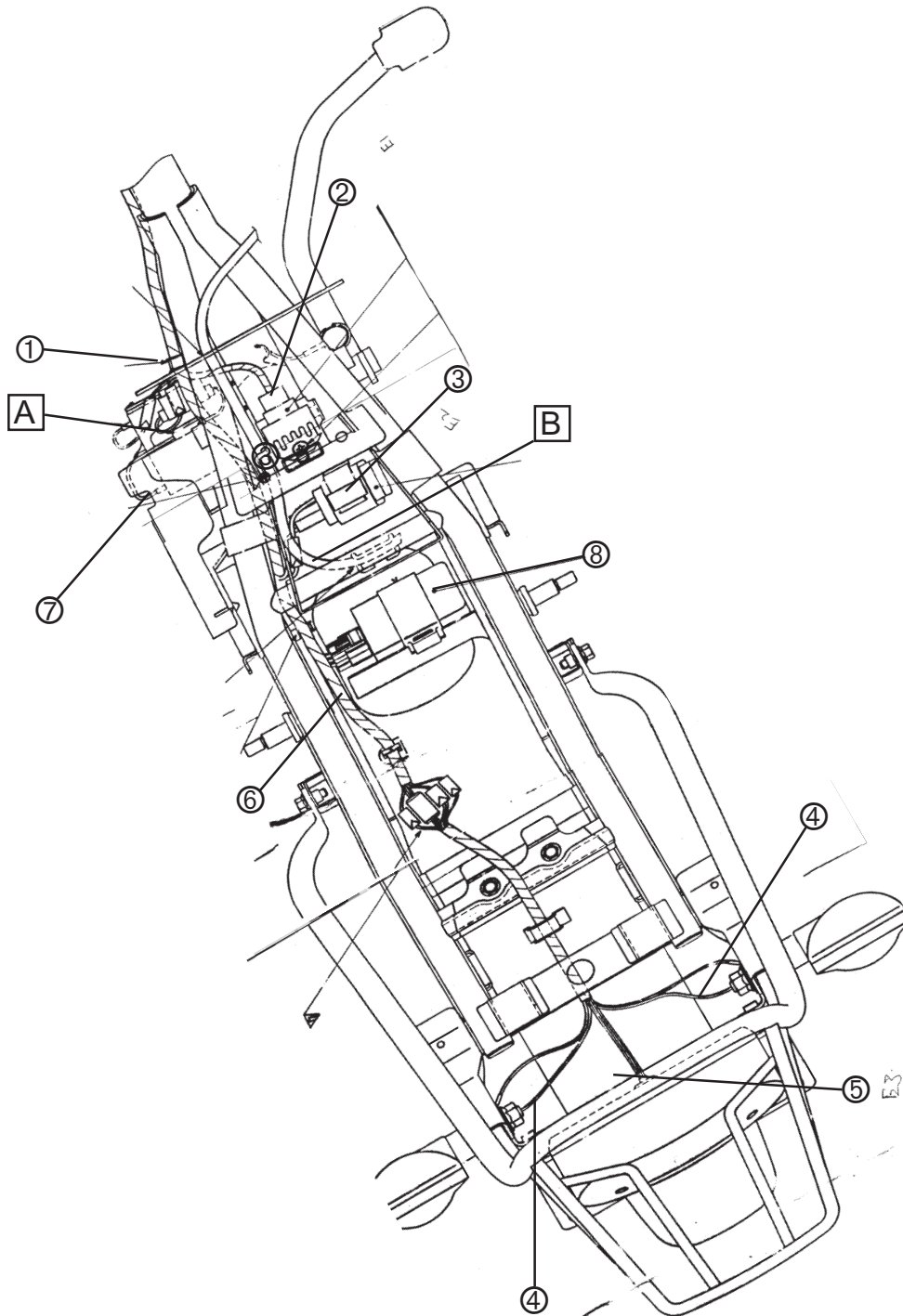
SPEC



- ① Clamp
- ② Rectifier regulator
- ③ Flasher relay
- ④ Flasher light lead
- ⑤ Stop/tail light lead
- ⑥ Wireharness
- ⑦ Battery
- ⑧ CDI unit assy.

[A] Clamp the battery positive (+) lead to the batterybox.

[B] Insert hose Air Bent to holder of frame.



CHAPTER 3

PERIODIC INSPECTION AND ADJUSTMENTS

PERIODIC MAINTENANCE / LUBRICATION INTERVALS	3-1
SIDE COVER, SEAT AND FUEL TANK	
REMOVAL	3-3
INSTALLATION	3-5
ENGINE	
VALVE CLEARANCE CHECKING ADJUSTMENT	3-6
IDLING CO MEASUREMENT, AND ADJUSTMENT	3-8
THROTTLE CABLE ADJUSTMENT	
SPARK PLUG INSPECTION AND ADJUSTMENT	3-10
IGNITION TIMING CHECK	3-11
COMPRESSION PRESSURE MEASUREMENT	3-13
ENGINE OIL LEVEL INSPECTION	3-14
ENGINE OIL REPLACEMENT	3-14
AIR FILTER CLEANING	3-16
CLUTCH CABLE ADJUSTMENT	3-17
CHASSIS	
FRONT BRAKE ADJUSTMENT	3-18
REAR BRAKE ADJUSTMENT	3-18
BRAKE SHOE INSPECTION	3-19
BRAKE LIGHT SWITCH ADJUSTMENT	3-19
DRIVE CHAIN SLACK ADJUSTMENT	3-20
STEERING HEAD INSPECTION	3-22
FRONT FORK INSPECTION	3-24
REAR SHOCK ABSORBER ADJUSTMENT	3-24
TYRE INSPECTION	3-25
SPOKE INSPECTION AND TIGHTENING	3-27
WHEEL INSPECTION	3-27
ELECTRICAL	
BATTERY INSPECTION	3-28
FUSE INSPECTION	3-30
HEADLIGHT BEAM ADJUSTMENT	3-31
HEADLIGHT BULB REPLACEMENT	3-31

INTRODUCTION/ PERIODIC MAINTENANCE/LUBRICATION INTERVALS

**INSP
ADJ**


INTRODUCTION

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will ensure more reliable Motorcycle operation and a longer service life. The need for costly overhaul work will be greatly reduced. This information applies to Motorcycles already in service as well as to new Motorcycles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

PERIODIC MAINTENANCE/LUBRICATION INTERVALS

SNO	ITEM	OPERATION	SERVICES						
			FREE			PAID			EVERY 2000km
			I	II	III	IV	V	VI	
1	VALVES	Check Valve clearances, adjust if necessary	•	•	•	•	•	•	•
2	SPARK PLUG	Check condition, gap Clean and reset if necessary Replace	•	•	•	•	•	•	•
			EVERY 10,000 km						
3	CARBURETOR	Check idle speed, Choke Lever operation. Tune if necessary.	•	•	•	•	•	•	•
4	*AIR FILTER	Clean, inspect & lubricate. (replace if necessary)	•	•	•	•	•	•	•
5	FUEL LINE	Check Fuel Hose, for cracks or damage. Replace if necessary.	•	•	•	•	•	•	•
6	FUEL FILTER	Check for free flow of petrol, cleanliness of Bowl/filter. Replace if necessary	•	•	•	•	•	•	•
7	ENGINE OIL	Replace with recommended oil (Warm engine before draining)	•	•	•	•	•	•	•
8	OIL STRAINER	Wash with petrol.	•	•	•	•	•	•	•
9	BRAKE-FRONT & REAR	Check operation/ Adjust if necessary. Grease the brake cam.	•	•	•	•	•	•	•
10	BRAKE SHOES FRONT & REAR	Check for wear, replace if necessary.	•	•	•	•	•	•	•
11	CLUTCH	Check alignment marks on Push Lever and Crankcase L.H. Adjust if necessary	•	•	•	•	•	•	•
12	REAR ARM PIVOT	Check Rear Arm assembly for looseness. Tighten with specified torque if necessary. Repack grease	•	•	•	•	•	•	•
			EVERY 10,000 km						
13	WHEELS	Check runout, Spoke tightness, damage; Correct it if necessary.	•	•	•	•	•	•	•
14	WHEEL BEARING	Check Bearing assembly for looseness, damage; Replace if necessary. Repack grease	•	•	•	•	•	•	•
			EVERY 10,000 km						
15	STEERING RACE BALL	Check Race Ball Assy. for looseness, Tighten/ Replace if necessary. Repack grease	•	•	•	•	•	•	•
			EVERY 10,000 km						
16	FRONT FORKS	Check operation/oil leakage, Repair if necessary. Replace Oil	•	•	•	•	•	•	•
			EVERY 10,000 km						

PERIODIC MAINTENANCE/LUBRICATION INTERVALS



SNO	ITEM	OPERATION	S E R V I C E S						
			FREE			PAID			EVERY 2000km
			I	II	III	IV	V	VI	
17	REAR SHOCK ABSORBER	Check operation/oil leakage, Replace if necessary.	●	●	●	●	●	●	●
18	DRIVE CHAIN	Check Chain slack, alignment. Adjust if necessary. Clean and lubricate.	●	●	●	●	●	●	●
19	NUTS, BOLTS AND FASTENERS	Check all Chassis fittings and fasteners for looseness. Tighten as per specification.	●	●	●	●	●	●	●
20	CENTERSTAND AND SIDE STAND	Check operation and lubricate if necessary	●	●	●	●	●	●	●
21	BATTERY	Check electrolyte level and top it up with distilled water if necessary. Check specific gravity. Check Breather Pipe for blockage and routing.	●	●	●	●	●	●	●
22	CONTROL CABLES, - THROTTLE - CLUTCH - FRONT BRAKE	Check operation, free play, Cable damage Readjust or replace as required	E V E R Y M O N T H						
			●	●	●	●	●	●	●

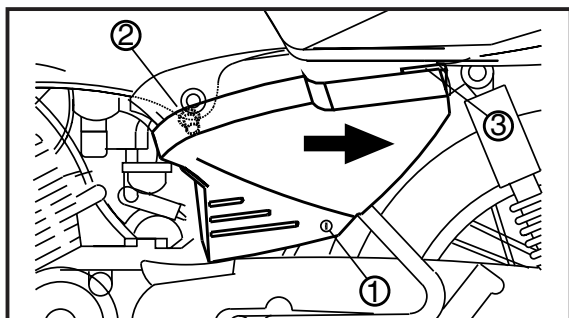
It is recommended that above be authorised YAMAHA MOTOR INDIA PRIVATE LIMITED dealer.

* Service more frequently when the vehicle is driven in dusty areas.

SIDE COVERS, SEAT AND FUEL TANK

INSP
ADJ

SIDE COVERS, SEAT AND FUEL TANK

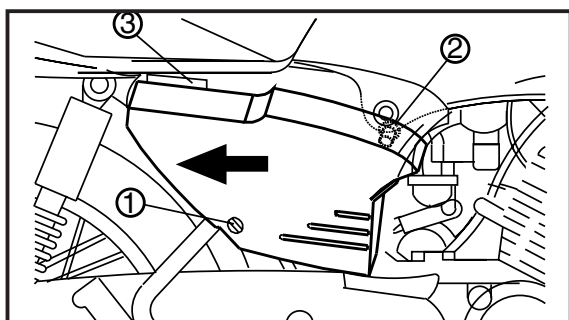
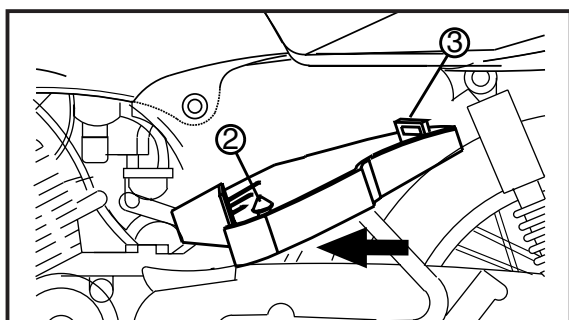


REMOVAL SIDE COVER (LH)

1. Remove
 - Side Cover (LH)

Removal steps :

- Open the Lock ① using Main Switch Key.
- Pull the Lug ② towards you to remove it from the Fuel Tank.
- Slide the Side Cover towards the rear end of the Motorcycle for removing the Lug ③ from the Chassis.

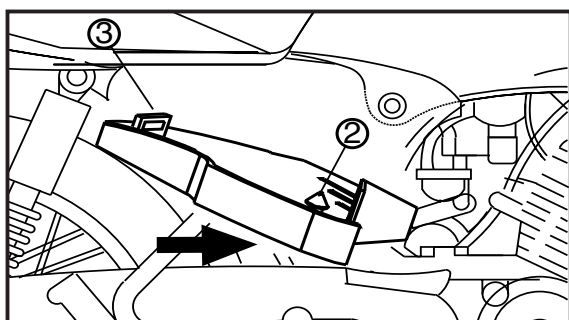


REMOVAL SIDE COVER (RH)

1. Remove
 - Side Cover (RH)

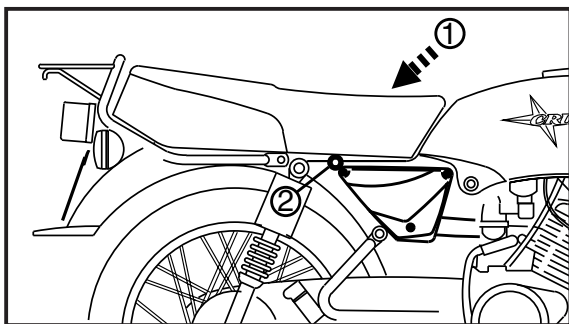
Removal steps :

- Remove the Screw ①
- Pull the lug ② towards you to remove it from the Fuel Tank.
- Slide the Side Cover towards the rear end of the Motorcycle for removing the lug ③





SIDE COVERS, SEAT AND FUEL TANK

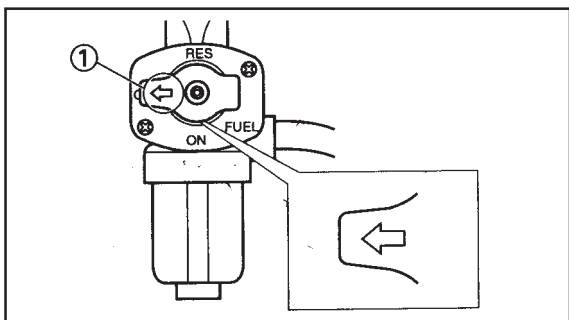


REMOVAL SEAT

1. Remove
 - Side Cover LH and RH
 - Bolts 2 Nos
 - Seat

Removal steps :

- Open bolts ① and ② inside the side covers.
- Lift the front of the Seat and slide it forward.



REMOVAL FUEL TANK

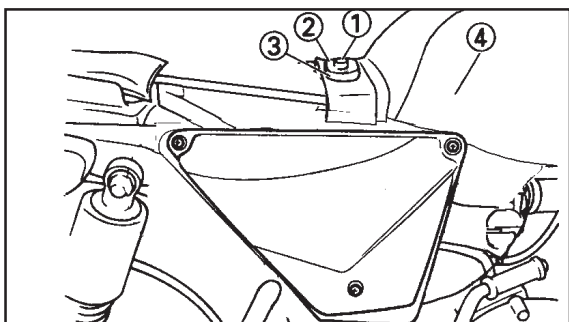
1. Disconnect
 - Fuel Hose

NOTE :

- Position the Fuel Cock ① to the 'OFF', disconnect the Fuel Hose.
- Place a rag under the Fuel Line to absorb any spilt fuel.

⚠ WARNING

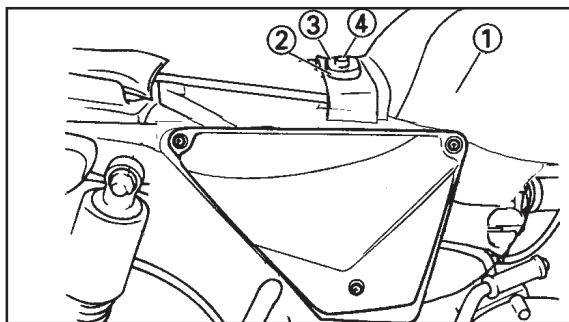
- Gasoline is highly flammable.
- Avoid spilling of fuel on the hot Engine.



2. Remove
 - Bolt (Fuel Tank) ①
 - Plate ②
 - Damper Rubber ③
 - Fuel Tank ④

SIDE COVERS, SEAT AND FUEL TANK

INSP
ADJ



INSTALLATION

Reverse the REMOVAL procedure.

Note the following points.

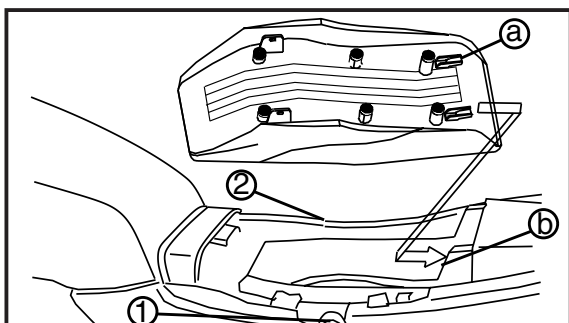
1. Install
 - Fuel Tank ①
 - Damper Rubber ②
 - Plate ③
 - Bolt ④
 - Fuel Hose ⑤



Bolt (fuel tank)
20 Nm (2.0 mkg; 14.4 ft.lb)

NOTE :

- Keep the projection on plate ③ downward.



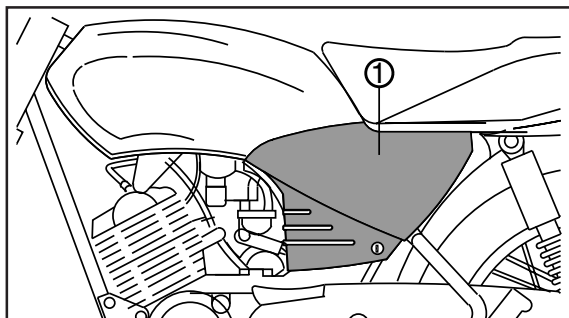
2. Install
 - Seat
 - Bolts ① and ②

NOTE :

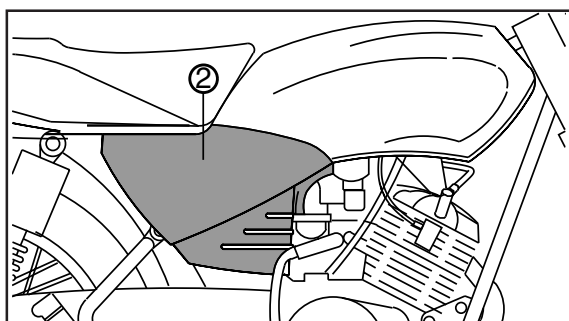
- Insert the projection (a) on the rear of the seat into the receptacles (b) on the Chassis, then push down front of the seat and tighten the bolts.



Bolt (Seat)
3.8 Nm (0.38 mkg, 3.0 ft.lb)



3. Install
 - Side Cover (LH) ① and lock with Key



4. Install
 - Side Cover (RH) ②
5. Tighten
 - Screw ③

VALVE CLEARANCE CHECKING AND ADJUSTMENT

**INSP
ADJ**


ENGINE

VALVE CLEARANCE CHECKING AND ADJUSTMENT

NOTE :

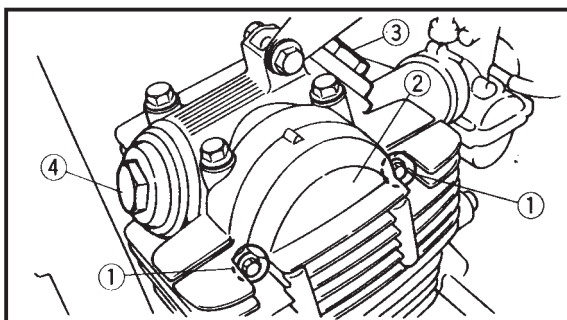
Valve clearance checking and adjustment should be made with the Engine in cold condition, at room temperature.

When the Valve clearance is to be measured or adjusted, the Piston must be at Top Dead Center (T.D.C.) on the compression stroke and marking on Cam Sprocket should be aligned with the marking on Cylinder Head.

1. Remove :

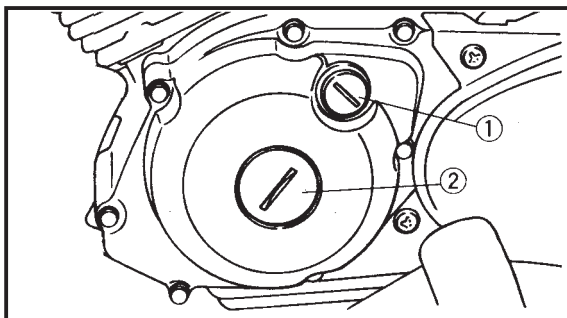
- Side Covers
- Seat
- Fuel Tank

Refer to "SIDE COVERS, SEAT AND FUEL TANK" section Page no 3-3



2. Remove :

- Spark Plug
- Bolts (Cylinder Head Side Cover) ① 2 Nos
- Cylinder Head Side Cover ②
- Valve Cover (intake side) ③
- Valve Cover (exhaust side) ④

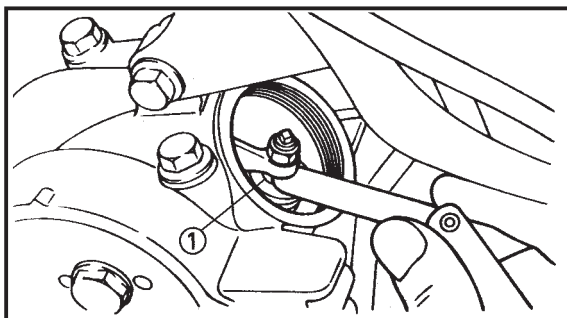


3. Remove :

- Timing Check Plug (with O-ring) ①
- Center Plug (with O-ring) ②

4. Measure :

- Valve clearance (Intake and Exhaust) ① using Feeler Gauge
- Out of specification → Adjust.

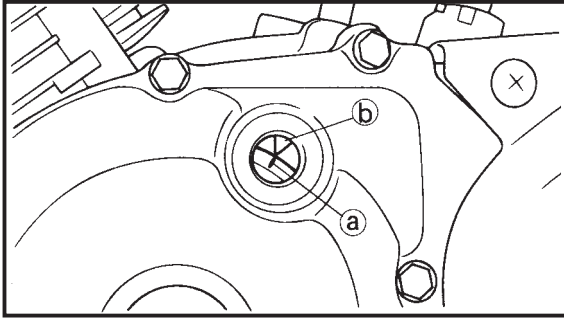


Feeler Gauge :
YSST - 615



Valve clearance (cold)
Intake : 0.08 ~ 0.12 mm
Exhaust : 0.10 ~ 0.14 mm

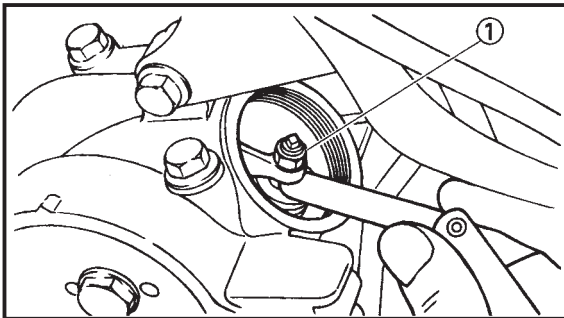
VALVE CLEARANCE CHECKING AND ADJUSTMENT

**INSP
ADJ**


Checking steps :

Measurement steps :

- Rotate the Crankshaft anticlockwise to align the slit @ third mark on the rotor with the stationary pointer ① on the Crankcase Cover LH when the Piston is at Top Dead Center (T.D.C.) and in compression stroke.
- Measure the Valve clearance by using a feeler gauge.


**Feeler Gauge
YSST 615**

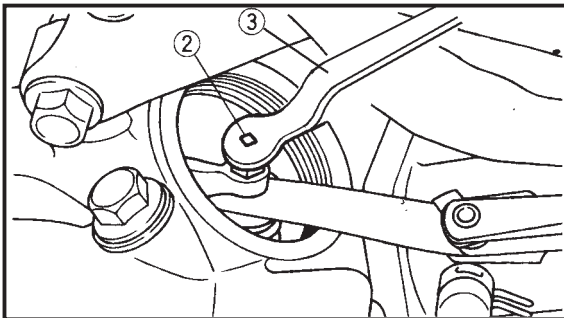
Out of specification → Adjust clearance.

5. Adjust :

- Valve clearance

Adjustment steps :

- Loosen the Locknut ①
- Turn the Adjuster ② in or out with the Valve adjusting tool ③ until specified clearance is obtained.


**Valve adjusting tool :
YSST - 606**

Turning in → Valve clearance is decreased.

Turning out → Valve clearance is increased.

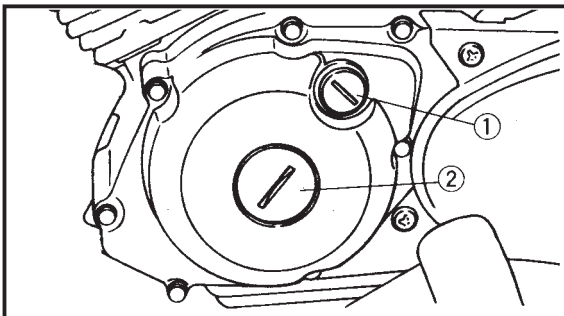
- Hold the Adjuster to prevent it from moving and tighten the Locknut.


**Locknut :
8 Nm (0.8 m • kg, 5.8 ft • lb)**

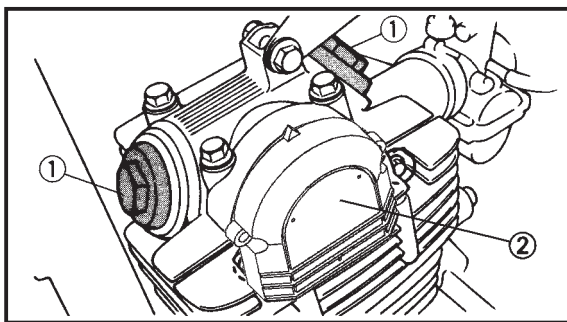
- Measure the Valve clearance.
- If the clearance is incorrect, repeat above steps until specified clearance is obtained.

6. Install

- Timing Check Plug (with O-ring) ①
- Center Plug (with O-ring) ②



IDLING CO. MEASUREMENT AND ADJUSTMENT

**INSP
ADJ**


7. Install
 - Valve Covers (with O-ring) ①
 - Spark Plug
 - Cylinder Head Side Cover ②



Valve cover (intake and exhaust) :
17.5 Nm (1.75 m kg, 13 ft-lb)
Bolts (cylinder head side cover) :
10 Nm (1.0 m kg, 7.2 ft-lb)

8. Install
 - Seat
 - Side Covers
 - Fuel Tank

Refer to the "SIDE COVERS, SEAT AND FUEL TANK" section Page no 3-3

IDLING CO. MEASUREMENT AND ADJUSTMENT

1. Start the Engine and let it warm up by running the Motorcycle approx. 4 kms.
2. Attach :
 - Inductive Tachometer to the Spark Plug Lead.



Tachometer :
YSST - 613

3. Check :
 - Engine idling speed (standard)
 Out of specification → Adjust.
 Turn the Throttle Stop Screw ① in or out until specified idling speed is obtained.

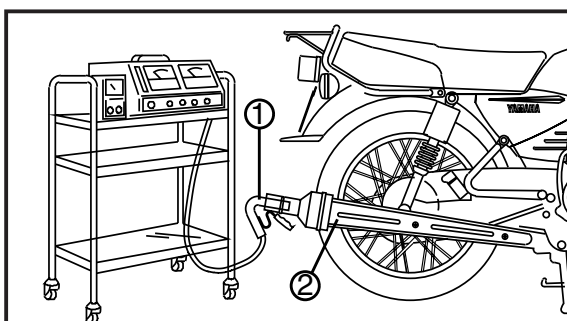
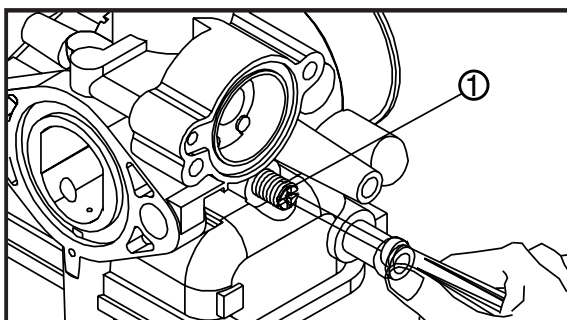
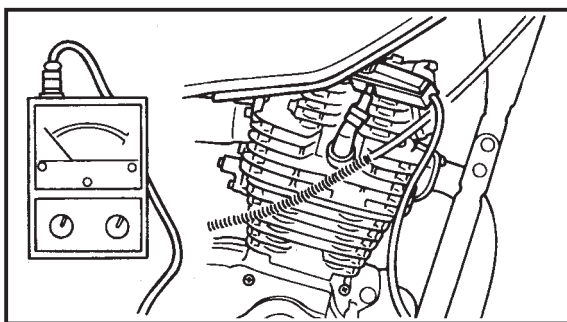
Turning IN → Increasing in rpm
Turning OUT → Decrease in rpm



Engine idling speed :
1,300 ~ 1,500 r/min

NOTE :

Before checking Engine idle RPM always check throttle cable free movement and free play.



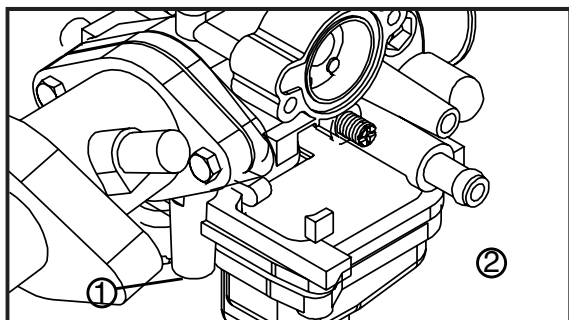
4. Insert :
 - Sampling probe ① (CO. tester) to the exhaust pipe ②



CO.concentration :
2.5% ± 1.5 V/V

Out of specification → Adjust.

IDLING 'CO' MEASUREMENT AND ADJUSTMENT/ THROTTLE CABLE ADJUSTMENT

**INSP
ADJ**


5. Adjust :
 - 'CO' concentration

Adjustment steps :

- Turn the pilot screw ① in or out until the specified 'CO' concentration is obtained.

Turning in → 'CO' concentration decreases
Turning out → 'CO' concentration increases

NOTE : _____

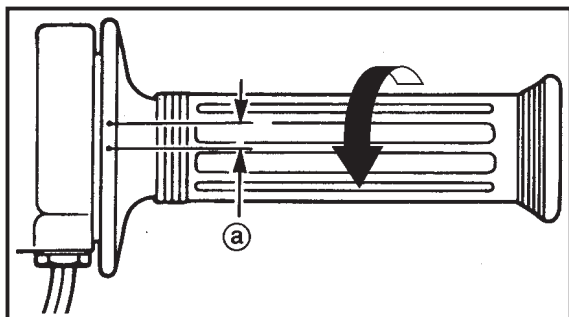
For adjusting the Engine idling speed use the throttle stop screw ② . Do not adjust Engine idle RPM by using the pilot screw ①

- After adjusting, 'CO' concentration as specified, remove the 'CO' tester, make sure that the Engine idling speed has not changed.

THROTTLE CABLE ADJUSTMENT

NOTE : _____

Prior to adjusting the Throttle Cable free play, the Engine idling speed should be adjusted.



1. Check :
 - Throttle cable free play @
 Out of specification → Adjust.



Free play : 3 ~ 7 mm
At Throttle Grip flange

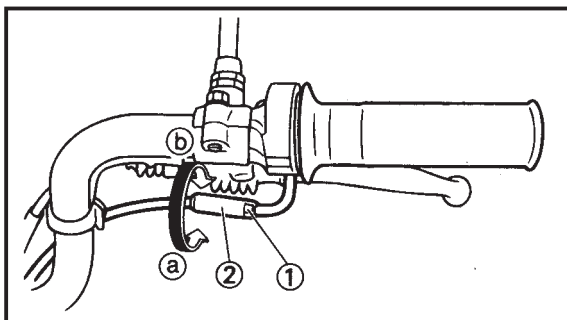
2. Adjust :
 - Throttle Cable free play

Adjustment steps :

NOTE : _____

Never accelerate the Throttle when stopping the Engine.

THROTTLE CABLE ADJUSTMENT/ SPARK PLUG INSPECTION

**INSP
ADJ**


- Loosen the Locknut ① on the Throttle Cable.
- Turn the Adjuster ② in or out until the specified free play is obtained.

**Turning IN (a) → Free play is increased.
Turning OUT (b) → Free play is decreased.**

- Tighten the locknut ①.

⚠ WARNING

After adjusting, turn the Handlebar to the right and to the left to ensure that this does not cause the Engine idling speed to change.

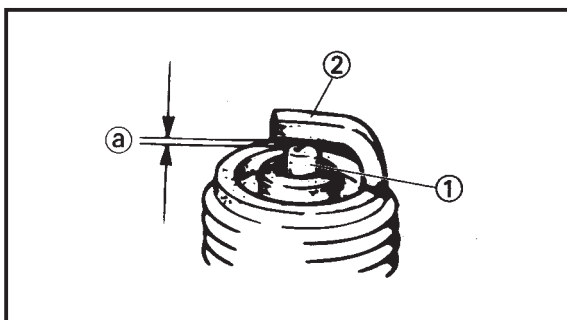
SPARK PLUG INSPECTION

1. Remove :

- Spark Plug Cap
- Spark Plug

CAUTION:

Before removing the Spark Plug, use compressed air to blow away any dirt accumulated in the Spark Plug wells to prevent it from falling into the Cylinder.



2. Check :

- Spark Plug Type / Number
- Incorrect → Replace



**Standard Spark Plug :
DPR7EA (NGK)**

3. Inspect :

- Center Electrode ①
Wear/damage → Replace Spark Plug.
- Ground Electrode ②
Abnormal color → Replace Spark Plug.
Normal color is medium-to-light tan color

4. Clean :

- Spark Plug
(with Spark Plug cleaner or wire brush)

5. Measure :

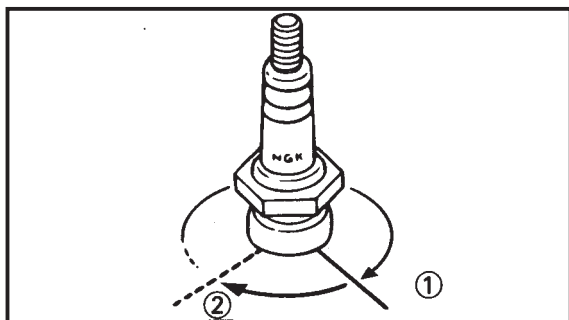
- Spark Plug gap
(with a wire gauge)
Out of specification → Adjust gap.



**Spark Plug Gap:
0.7 mm**

SPARK PLUG INSPECTION/ IGNITION TIMING CHECKING PROCEDURE

INSP
ADJ



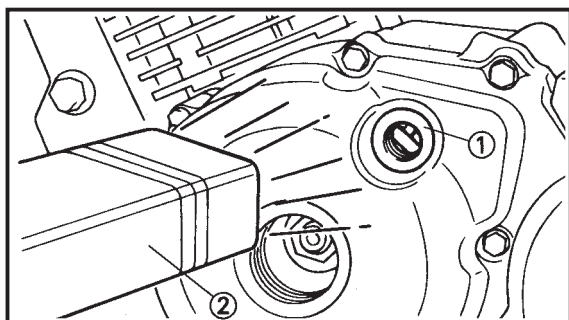
6. Install :
- Spark Plug



Spark Plug :
17.5 Nm (1.75 mkg, 12.6 ftlb)

NOTE :

- Before installing a Spark Plug, clean the Gas-ket surface and Plug surface.
- If a Torque Wrench is not available, a good estimate of the correct tightening torque is to finger tighten ① the Spark Plug and then tighten it another 1/4 to 1/2 turn to ② using Box Spanner

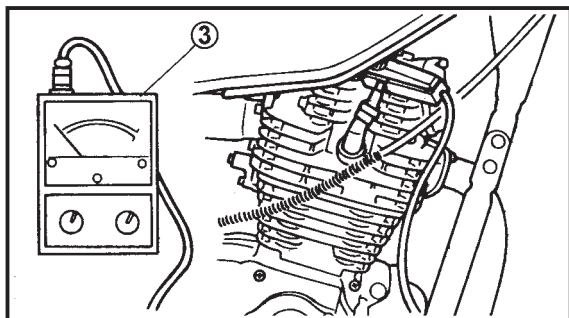


IGNITION TIMING CHECKING PROCEDURE :

NOTE :

Prior to checking the ignition timing, check all electrical connections related to the starting system. Make sure that all connections are intact.

1. Remove :
- Plug Straight Screw ①
2. Attach :
- Timing light ②



Timing light
SKC (S14-121) or any standard brand
Engine tachometer
YSST - 613

IGNITION TIMING CHECKING PROCEDURE

**INSP
ADJ**


3. Check :

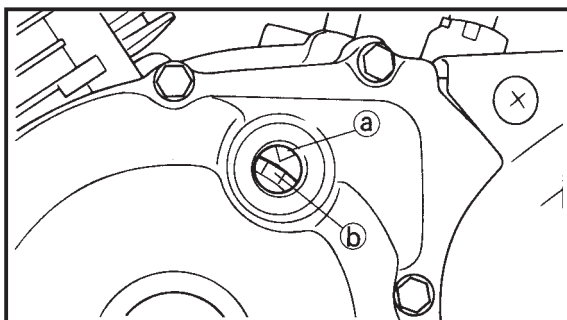
- Ignition timing

Checking steps :

- Start the Engine and let it warm up for several minutes or run the Motorcycle for approx. 4 kms.
- Maintain the Engine idling speed



Engine idling speed :
1,300 ~ 1,500 r/min



- Confirm that the stationary pointer on LH Crankcase Cover (a) falls within the ignition timing range (b) marked on Rotor Assembly.

NOTE :

Ignition timing is not adjustable.

4. Check

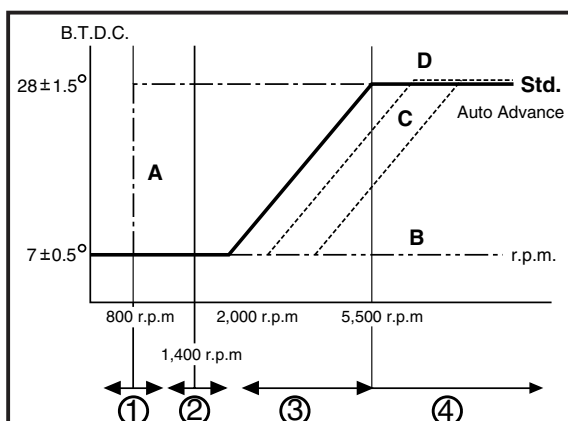
- Auto advance mechanism

Checking steps

- Increase the Engine speed from 1400 r/min to 2250 r/min
- Check the stationary pointer (a) should be within the ignition timing range (b) marked on the Rotor Assembly
- Further increase the Engine speed from 2250 r/min onwards.
- Observe that Rotor ignition timing mark moves in clockwise direction gradually and later not visible.
- If above phenomenon is not observed it confirms that the CDI unit is defective (Auto Advance mechanism not working)

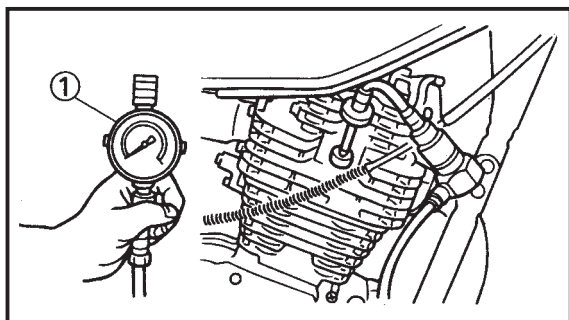
5. Install :

- Plug straight screw (with O-ring)



A :Auto Advance reverse circuit not working
B :Auto Advance not working
C :Delay Auto Advance
D :STD Auto Advance working

COMPRESSION PRESSURE MEASUREMENT

**INSP
ADJ**


COMPRESSION PRESSURE MEASUREMENT NOTE :

Insufficient compression pressure will result in performance loss.

1. Check :
 - Valve clearance
 Out of specification → Adjust.
 Refer to "VALVE CLEARANCE ADJUSTMENT" section. Page no 3-6
2. Start the Engine and let it warm up for several minutes.
3. Turn off the engine.
4. Remove :
 - Spark Plug
5. Attach:
 - Compression gauge ①



Compression Gauge :

6. Measure :
 - Compression pressure
 If it exceeds the maximum pressure allowed
 → Inspect the Cylinder Head, Valve surfaces and Piston Crown for carbon deposits.
 If it is below the minimum pressure →
 Squirt a few drops of oil into the affected cylinder and measure again.

Follow the table

COMPRESSION PRESSURE (With oil applied into cylinder)	
Reading	Diagnosis
Higher than without oil	Worn or damaged piston
Same as without oil	Possible defective ring(s), Valves, Cylinder head Gasket or Piston → Repair.



Compression pressure : (at sea level)

Standard : 1200 kPa (12 Kg/cm²)

Minimum : 1040 kPa (10.4 Kg/cm²)

Measurement steps:

- Crank the Engine with the Throttle wide open until the reading on the compression gauge stabilizes.

⚠ WARNING

Before cranking the engine, ground Spark Plug leads to prevent sparking

7. Install :
 - Spark plug

ENGINE OIL LEVEL INSPECTION/ ENGINE OIL REPLACEMENT

**INSP
ADJ**


8. Install :

- Fuel tank
- Seat
- Side covers

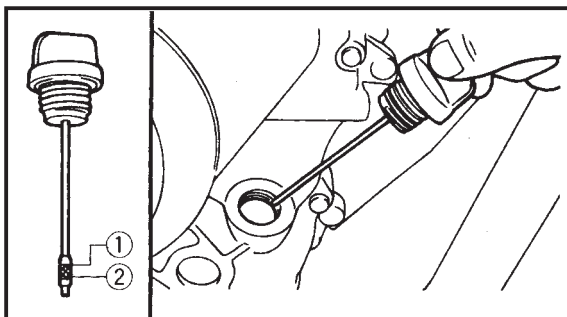
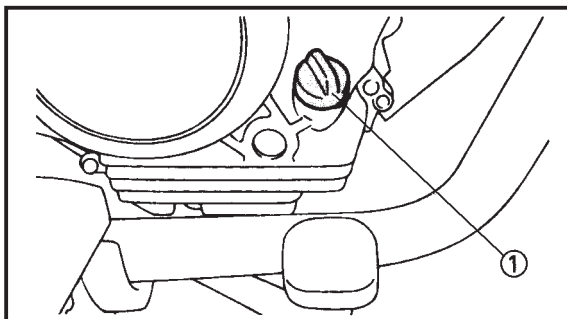
Refer to "SIDE COVERS, SEAT AND FUEL TANK" section Page no 3-3

ENGINE OIL LEVEL INSPECTION

1. Stand the Motorcycle on a level surface using the Center Stand.

NOTE:

Make sure the Motorcycle is upright when inspecting the oil level.



2. Start the Engine and let it warm up for a few minutes.
3. Turn off the Engine.
4. Remove the Dip Stick ① (oil level gauge). Wipe off the Dip Stick (oil level gauge) using a clean cloth and rest it on the threads of oil filler hole. Then remove the Dip Stick (Oil Level Gauge)
5. Inspect:
 - Engine oil level

Oil level should be between maximum ① and minimum ② marks.

Oil level is below the minimum mark → Add oil up to the proper level.

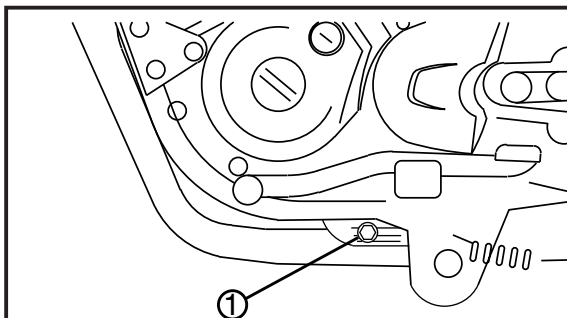
RECOMMENDED ENGINE OIL



**YAMALUBE (20W50) Or equivalent
SF grade.**

NOTE :

Wait a few minutes until the oil settles before inspecting the oil level.

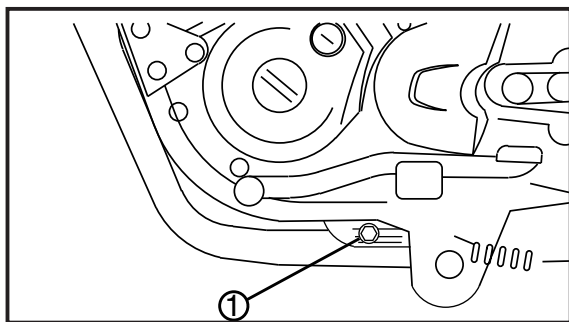


ENGINE OIL REPLACEMENT

1. Start the Engine and let it warm up for several minutes or drive approx 4 Kms.
2. Turn off the Engine and place an oil pan under the Engine.
3. Remove :
 - Dip stick (oil level gauge)
 - Drain plug ①
 - Gasket

Drain the oil from the Crankcase.

ENGINE OIL REPLACEMENT/ EXHAUST SYSTEM INSPECTION

**INSP
ADJ**


4. Install :
- Drain plug ① with Washer

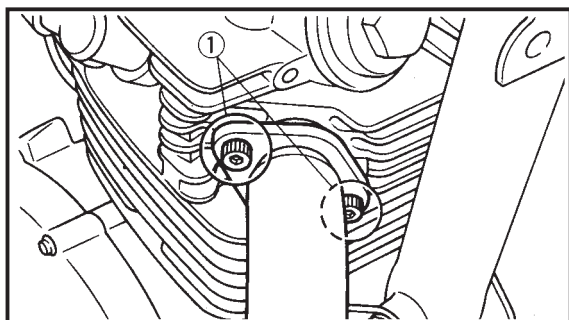


Drain plug :
20 Nm (2.0 m.Kg, 14.5 ft. lb)

5. Fill :
- Oil in Crankcase



Oil quantity :
1.0 L



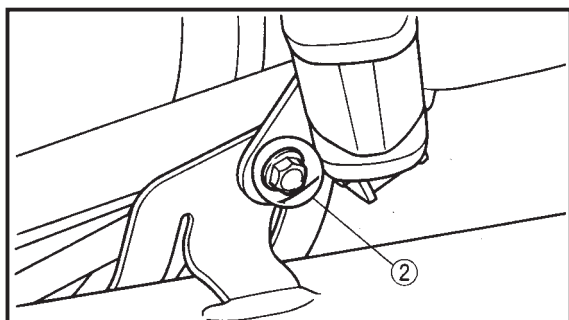
6. Check :
- Engine oil level
- Refer to "ENGINE OIL LEVEL INSPECTION"
section Page no 3-14
7. Install
- Dip Stick (Oil Level Gauge)

EXHAUST SYSTEM INSPECTION

1. Inspect :
- Bolt ① (Exhaust Pipe)
Loose/ Damage → Tighten / replace.
 - Gasket (Exhaust Pipe)
Exhaust gas leaks → Tighten /replace.



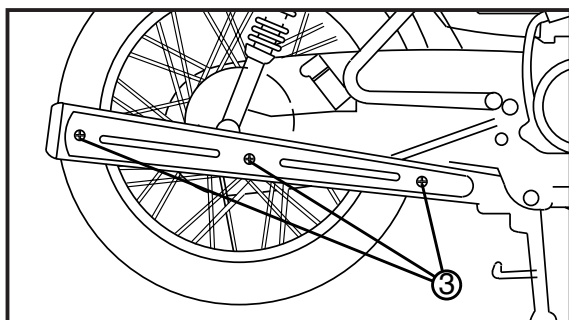
Bolt :
10 Nm, 1.0 m.kg, 7.2 ft. lb.)



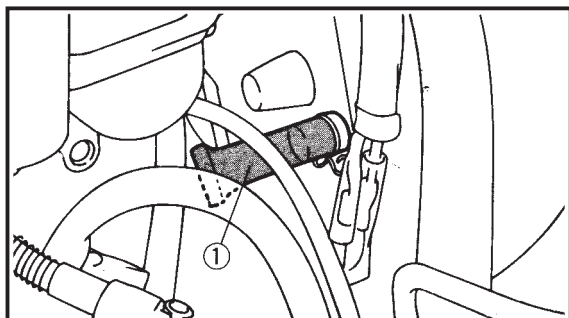
2. Inspect :
- Bolt ② (Muffler)
Loose/Damage → Tighten /replace.



Bolt :
15 Nm (1.5 m.kg, 7.2 ft. lb)



3. Inspect :
- Screw ③ (Muffler Protector)
Loose/ damage → Tighten/replace

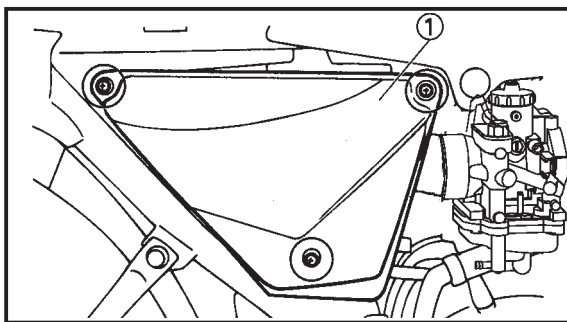


AIR FILTER CLEANING

NOTE : _____
On the bottom of the Air Filter Case, there is a Check Hose ①. If dust and/or water collects in this hose, clean the Air Filter Element and Air Filter Case.



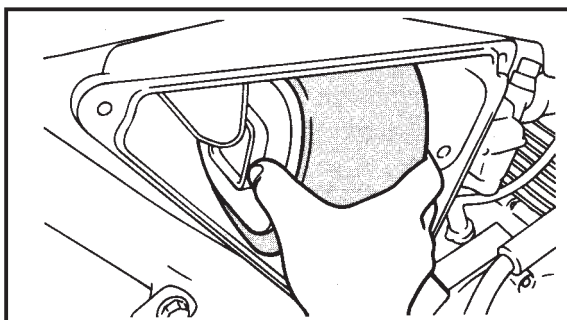
AIR FILTER CLEANING



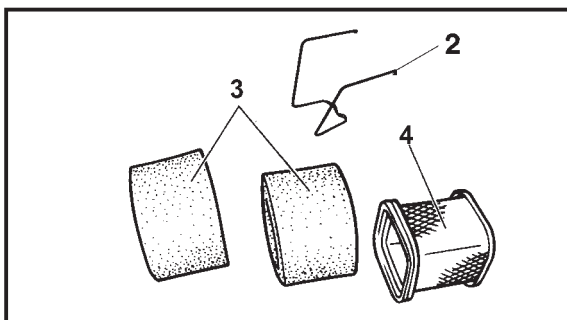
1. Remove:
 - Side Cover (R.H.)
 - Air Filter Case Cap ①
 - Spring Wire ②
 - Air Filter Element ③
 - Element guide ④

CAUTION:

Never operate the Engine without the Air Filter element installed. Unfiltered air will cause rapid wear of Engine parts and may damage the Engine. Operating the Engine without the Air Filter Element will also affect the Carburetor tuning, leading to poor Engine performance and possible overheating.



2. Inspect:
 - Air Filter Element ③
 - Damaged → Replace.



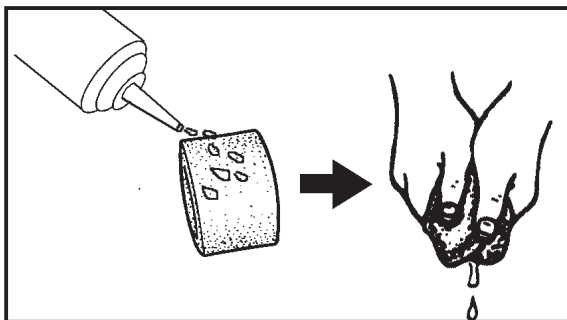
3. Clean:
 - Air Filter Element ③
 - Use kerosene to clean the Element.

NOTE :

After cleaning, remove the remaining kerosene by squeezing the element.

CAUTION:

Do not twist the Air Filter Element when squeezing it.



4. Apply the recommended oil to the entire surface of the Air Filter Element uniformly and squeeze out the excess oil.



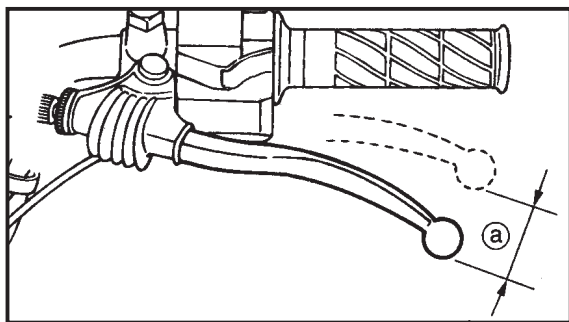
Recommended oil :
YAMALUBE (20W50) or equivalent

⚠ WARNING

Never use low flash point solvents such as gasoline to clean the Air Filter Element. Such solvents may cause a fire or an explosion

5. Assemble
 - Air Filter Element on Element Guide
6. Install :
 - Air Filter Element Assy.
 - Spring Wire
 - Air Filter Case Cap
 - Side Cover (R.H.)

CLUTCH CABLE ADJUSTMENT

**INSP
ADJ**


CLUTCH CABLE ADJUSTMENT

1. Check :

- Clutch Cable free play ③
- Out of specification → Adjust,



Free play (clutch lever) :
10 ~ 15 mm at lever end

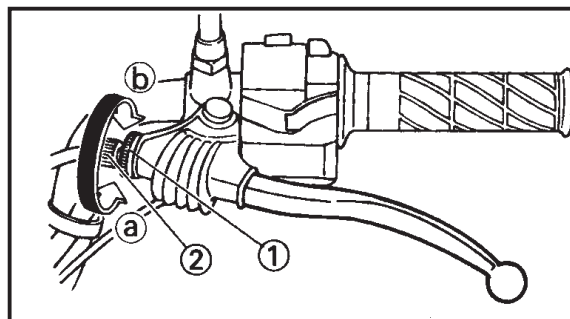
2. Adjust:

- Clutch Cable free play

Adjustment steps:

Lever side

- Loosen the Locknut ①
- Turn the Adjuster ② in or out until the specified free play is obtained.



Turning in ③ → Free play is increased.
Turning out ④ → Free play is decreased.

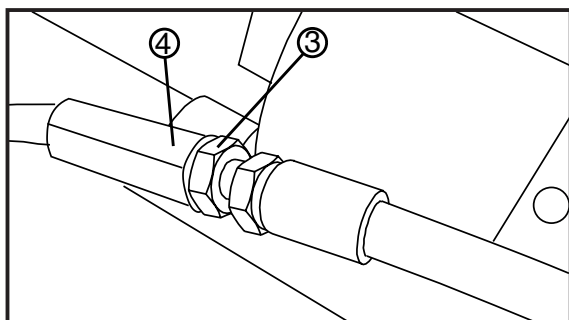
- Tighten the locknut ①

NOTE :

If not possible to achieve the specified free play at the Clutch Lever end then adjust it by using Adjuster below the Fuel Tank.

Below the Fuel Tank

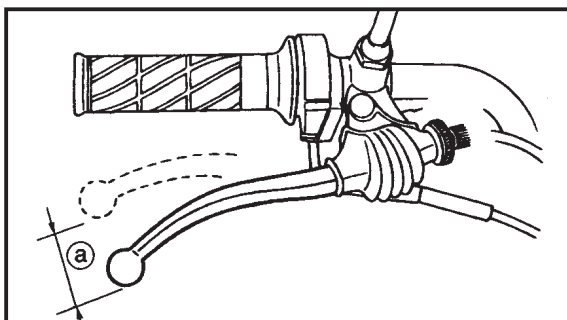
- Remove Side Covers, Seat and Fuel Tank
- Detach Clutch Cable from Push Lever
- Loosen the Locknut ③
- Turn the adjuster ④ in or out to increase or decrease the length of the Clutch Cable outer.
- Tighten the locknut ③
- Attach the Clutch Cable end to the Push Lever.
- Adjust the Clutch Cable free play at Lever end as before.
- Install Fuel Tank, Seat and Side Covers



FRONT BRAKE ADJUSTMENT/ REAR BRAKE ADJUSTMENT

**INSP
ADJ**


CHASSIS



FRONT BRAKE ADJUSTMENT

1. Check :

- Brake Lever free play a
Out of specification → Adjust.



Free play (Brake Lever):
10 ~ 15 mm at Brake Lever end

2. Adjust :

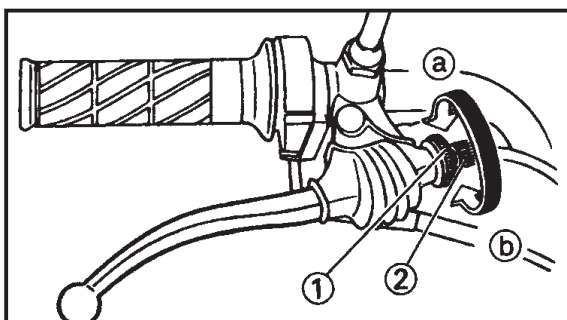
- Brake Lever free play

Adjustment steps :

Lever Side

- Loosen the Locknut ①.
- Turn the Adjuster ② in or out until the specified free play is obtained.

Turning in ② → Free play is increased.
Turning out ② → Free play is decreased.

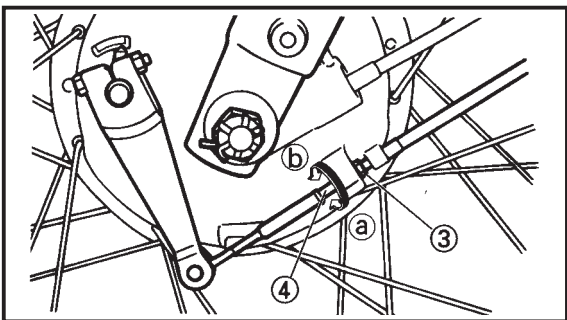


CAUTION:

Make sure that there is no Brake drag after adjusting the Front Brake Lever free play.

NOTE :

If not possible to achieve the specified free play in Brake Lever then adjust it with Adjuster on the Wheel end of the Front Brake Cable.



Wheel side

- Loosen the Locknut ③
- Turn the Adjuster ④ in or out until the specified free play is obtained.

Turning in ④ → Free play is increased.
Turning out ④ → Free play is decreased.

- Tighten the Locknut.

REAR BRAKE ADJUSTMENT

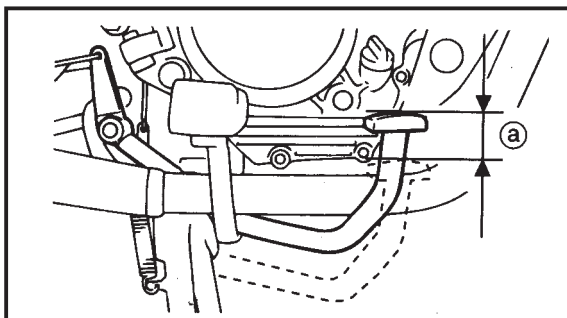
1. Check :

- Brake Pedal free play ②

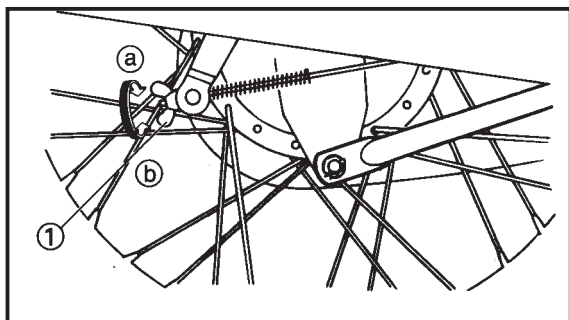


Free Play :
20 ~ 30 mm

Out of specification → Adjust



REAR BRAKE ADJUSTMENT/ BRAKE SHOE INSPECTION

**INSP
ADJ**


Adjustment steps :

- Turn the Adjuster ① in or until the specified free play is obtained.

Turning out ② → Free play is increased.

Turning in ③ → Free play is decreased.

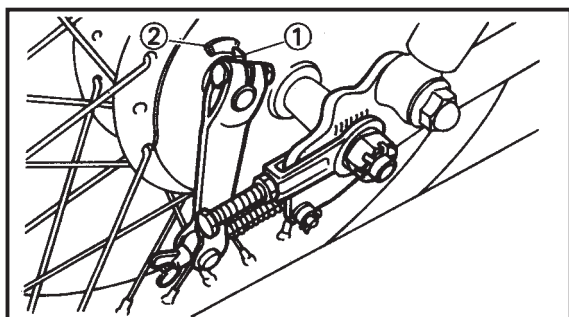
CAUTION:

Make sure that the Brake does not drag after adjusting it.

3. Adjust :

- Brake light switch

Refer to "BRAKE LIGHT SWITCH ADJUSTMENT". as given below



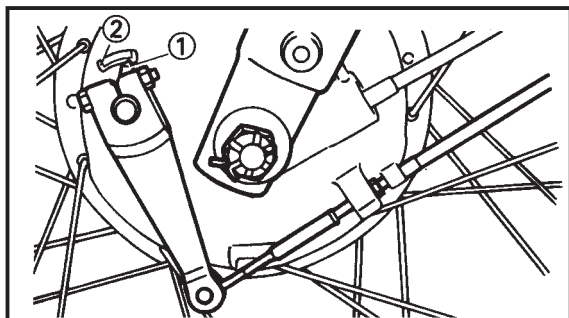
BRAKE SHOE INSPECTION

1. Operate the brake lever or pedal.
2. Inspect :

- Brake shoes

Wear indicator ① reaches the wear limit line ② → Replace the brake shoes as a set.

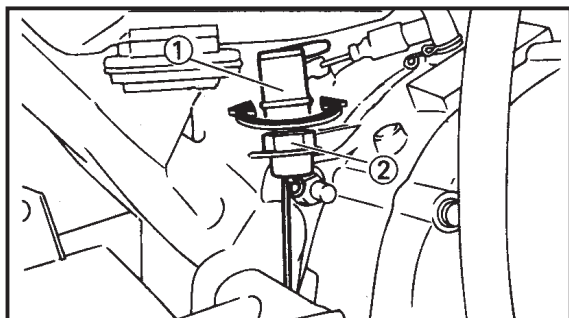
Refer to "FRONT WHEEL" and "REAR WHEEL" in CHAPTER 6 page no 6-6



BRAKE LIGHT SWITCH ADJUSTMENT

NOTE :

- The Brake Light Switch is operated by movement of the Brake Pedal.
- Adjustment is correct when the Brake Light comes on just before the braking effect actually starts.



1. Check :

- Brake light operation timing
- Incorrect → Adjust.

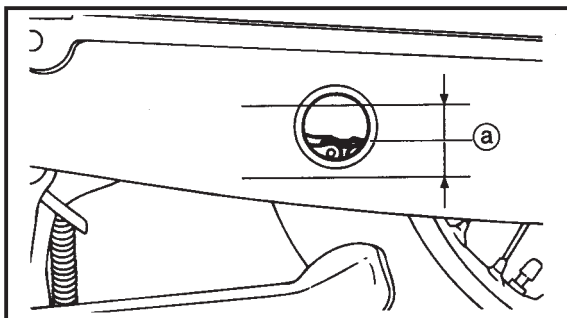
2. Adjust:

- Brake light operating timing.

Adjustment steps:

- Hold the main body ① of the switch with your hand so that it does not rotate, and turn the adjuster ② in or out until the proper operation timing is obtained.

DRIVE CHAIN SLACK ADJUSTMENT

**INSP
ADJ**


DRIVE CHAIN SLACK ADJUSTMENT

NOTE:

- Before checking and adjusting, rotate the Rear Wheel several revolutions and check the slack at several points to find the tightest point.
- Check and if necessary adjust the Drive Chain slack with the Rear Wheel in this "tightest" position.

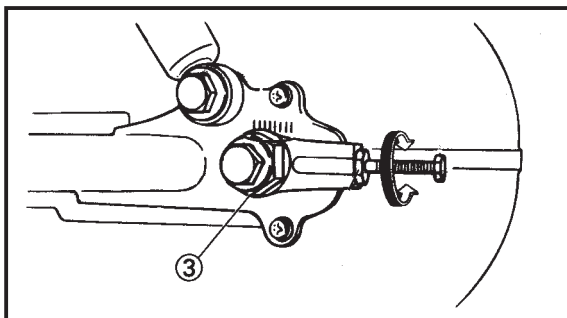
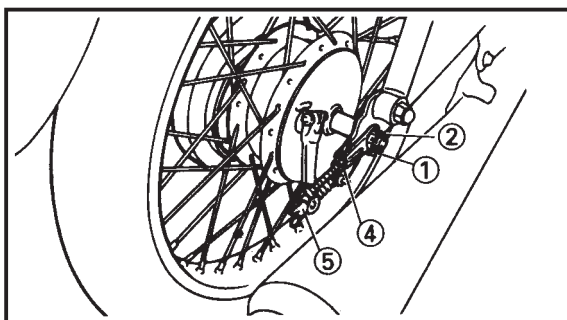
CAUTION:

Too little chain slack will overload the engine and other vital parts; keep the slack within the specified limits.

- Excessive Chain slack will cause abnormal noise and will affect the life of chain, sprockets and low fuel efficiency.

WARNING

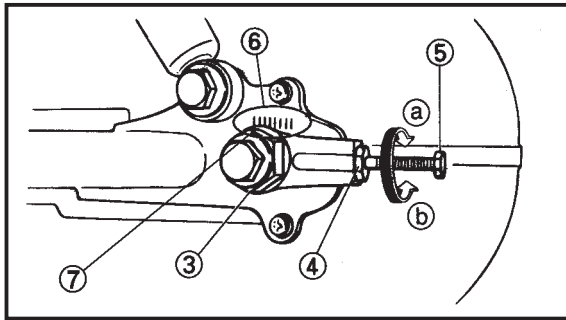
- **Securely support the Motorcycle so that there is no danger of it falling over.**
- **Stand the Motorcycle on its centerstand.**



Drive chain slack:
20 ~ 30 mm

1. Stand the Motorcycle on its center stand.
2. Check :
 - Drive chain slack a
 Out of specification → Adjust.
3. Remove :
 - Cotter pin ①
4. Loosen :
 - Axle Nut ②
 - Sprocket Axle Nut ③
5. Adjust :
 - Drive Chain slack

DRIVE CHAIN SLACK ADJUSTMENT

**INSP
ADJ**


Adjustment steps :

- Loosen both the Locknuts ④.
- Turn the Adjuster ⑤ in or out until the specified Drive Chain slack is obtained.

Turning in ① → Drive Chain slack is decreased.

Turning out ② → Drive Chain slack is increased.

NOTE :

- Turn each Chain Adjuster exactly the same amount to maintain correct Axle alignment. To check the alignment there are marks on swing arm ⑥ and mark on chain adjuster ⑦. Ensure that left hand and right hand chain alignment marks are equally matched. Use them when adjusting the slack for proper alignment.
- Before tightening the Axle Nut and Driven Sprocket Locknut to specifications, make sure that there is no clearance at the Adjuster (or the Swing Arm end) on both sides by pushing the Wheel forward.

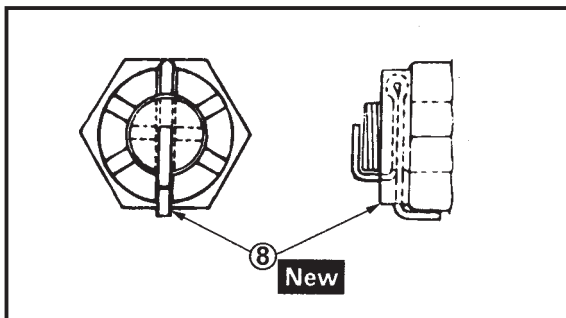


Nut (driven sprocket axle) :

91 Nm (9.1m. kg., 66 ft-lb)

Nut (rear wheel axle):

91 Nm (9.1 m.kg, 66 ft.lb)



6. Install :

- Cotter pin ⑧ **New**
Into the Axle Nut and bend the end of the Cotter Pin.

CAUTION:

Do not loosen the Axle Nut after tightening the torque. If the axle nut grooves is not aligned with the Cotter Pin hole, align the groove with the hole by tightening up the Axle Nut.

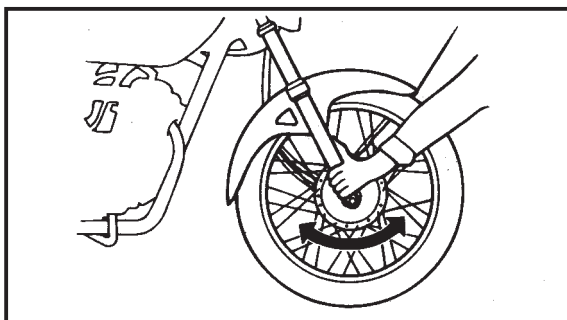
⚠ WARNING

Always use a new cotter pin.

7. Adjust :

- Brake Pedal free play
Refer to "BRAKE FREE PLAY " section.
page no 3-18

STEERING HEAD INSPECTION

**INSP
ADJ**


STEERING HEAD INSPECTION

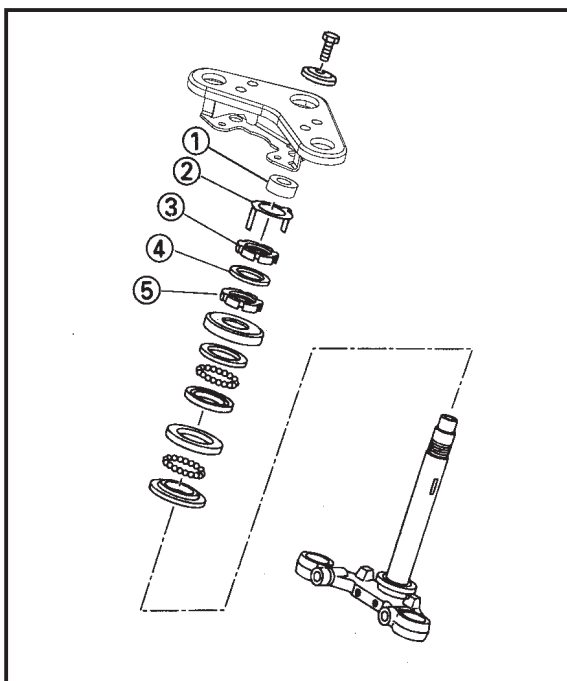
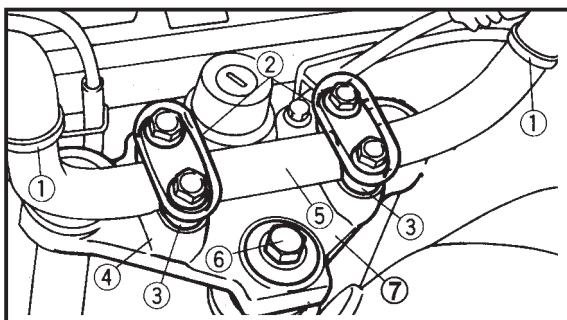
⚠ WARNING

Securely support the Motorcycle so that there is no danger of it falling over.

1. Stand the Motorcycle on a level surface.

NOTE :

Stand the Motorcycle on its Center Stand.



2. Elevate the Front wheel by placing a suitable stand under the Engine.
3. Check:
 - Handlebar assembly
Grasp the Handle Bar and gently rock the Steering.
Looseness → Adjust the Handlebar.
 - Steering assembly bearings
Grasp the bottom of the lower Front Fork tubes and gently rock the Fork Assembly.
Looseness → Adjust the Steering Head.
4. Remove :
 - Bands ①
 - Bolts (Handlebar Upper holders) ②
 - Handlebar upper holders ③
 - Handlebar lower holders ④
 - Handlebar ⑤
 - Handle crown bolts ⑥
 - Handle crown ⑦
5. Adjust :
 - Steering head

Adjustment steps:

- Remove Spacer ①
- Remove the lock washer ②
- Remove the Ring Nut ③ (upper) and Dumper Rubber ④, then loosen the Ring Nut ⑤ (lower) using the Ring Nut wrench.
- Tighten the ring nut (lower) at initial tightening torque



Ring nut wrench :
YSST 621



Ring nut-lower (initial tightening) :
45.5 Nm (4.55m.kg, 32.3 ft.lb)

- Loosen the ring nut ⑤ (lower) one turn.
- Tighten the Ring Nut (lower) using the Ring Nut Wrench up to final tightening torque.

STEERING HEAD INSPECTION

INSP
ADJ

NOTE : _____
Set the Torque Wrench to the Ring Nut Wrench so that they form a right angle.



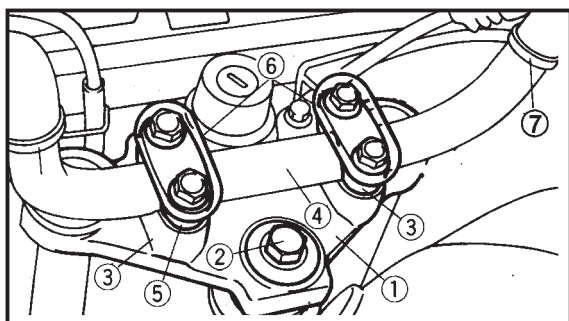
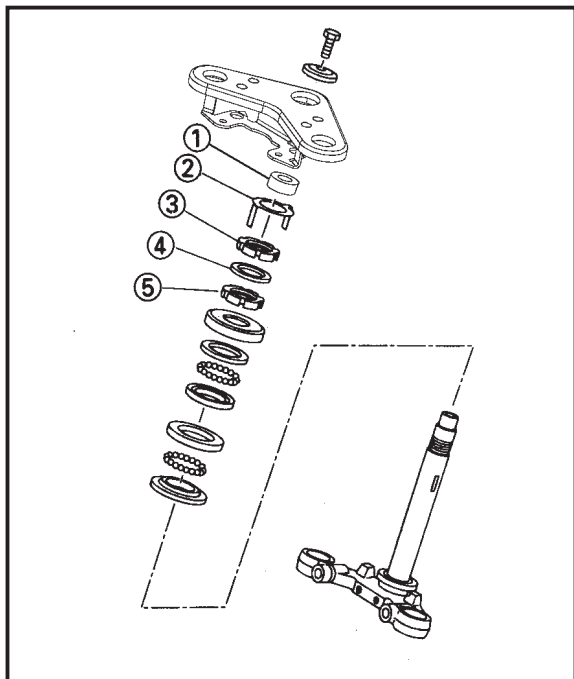
Ring nut-lower (final tightening) :
15.5 Nm (1.55 m.kg, 11.2 ft. lb)

⚠ WARNING

Avoid over torquing.

- Check the Steering Stem by Turning it Lock to Lock. If there is any binding, remove the Steering Stem Assembly and inspect the Steering Bearings.
Refer to "STEERING HEAD AND HANDLE-BAR" section in Chapter 6 Page no 6-29
- Install the Damper Rubber ④ and Ring Nut ③ (upper), then align the slots of both Ring Nut ⑤ (lower) and tighten the other until they are aligned.
- Install the Lock Washer ②

NOTE : _____
Make sure the lock washer tab is placed in the slots.



6. Install :
- Handle crown ① with Spacer
 - Handle Crown bolt ②
 - Handlebar Lower Holder ③
 - Handlebar ④
 - Handlebar upper holder ⑤
 - Bolts (handlebar upper holders) ⑥
 - Bands ⑦



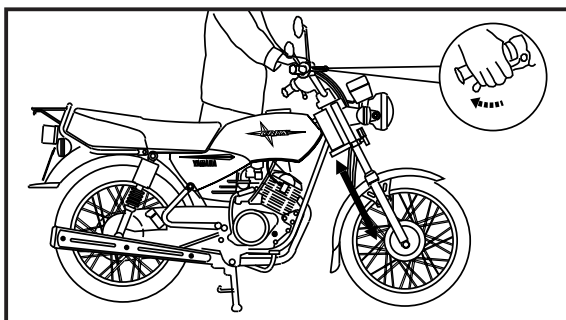
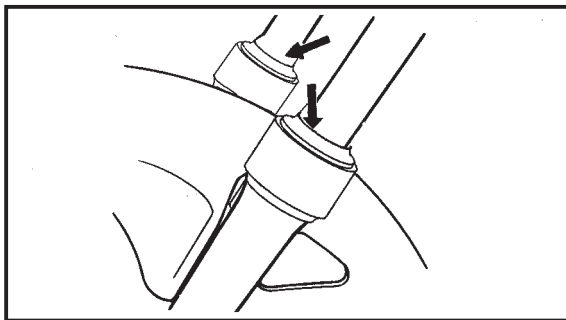
Bolts (handle crown and inner tube)
23 Nm (2.3 m.kg, 25 ft.lb)
Bolt (handle crown and steering shaft)
35 Nm (3.5 m. kg, 25 ft.lb)



Bolts (handlebar upper holder)
23 Nm (2.3 m. kg, 17 ft. lb)

FRONT FORK INSPECTION

INSP
ADJ



FRONT FORK INSPECTION

⚠ WARNING

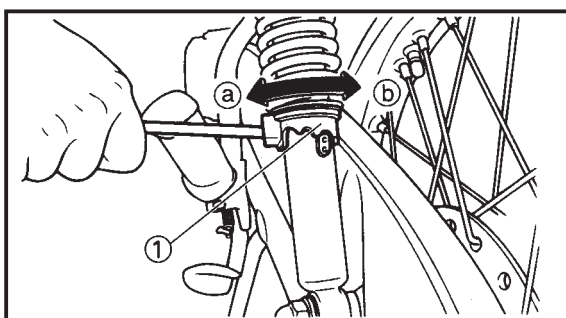
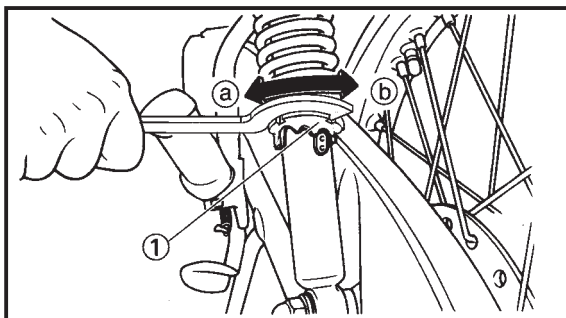
Securely support the motorcycle so that there is no danger of it falling over.

1. Stand the Motorcycle on a level surface.
2. Check:
 - Inner tube
Scratches/damage → Replace.
 - Oil seal
Excessive oil leakage → Replace
1. Hold the Motorcycle upright on level surface and apply the Front Brake
2. Check:
 - Operation
Push down hard on the Handlebar several times.
Unsmooth operation → Repair.
Refer to "FRONT FORK" in Chapter 6, Page no 6-21

REAR SHOCK ABSORBER ADJUSTMENT

⚠ WARNING

- Always adjust each Rear Shock Absorber preload to the same setting. Uneven adjustment can cause poor handling and loss of stability.
- Securely support the Motorcycle so that there is no danger of it falling over.

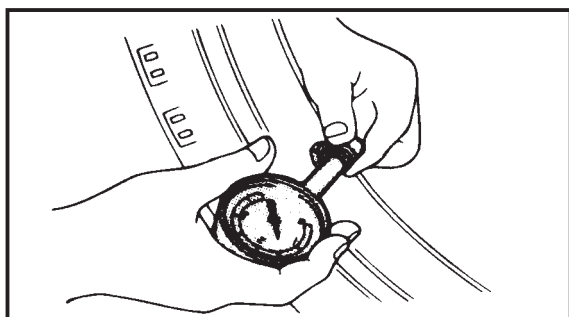
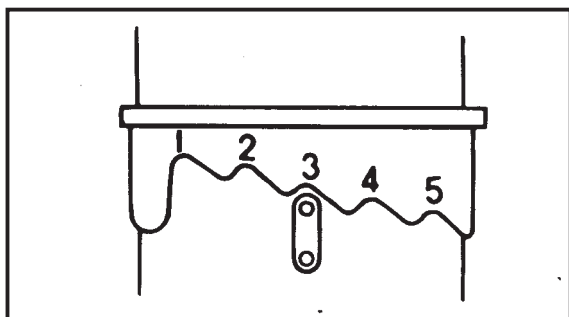
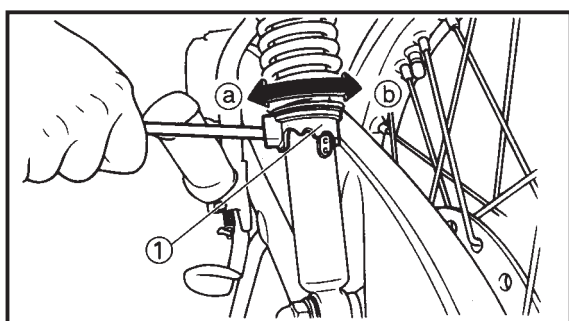
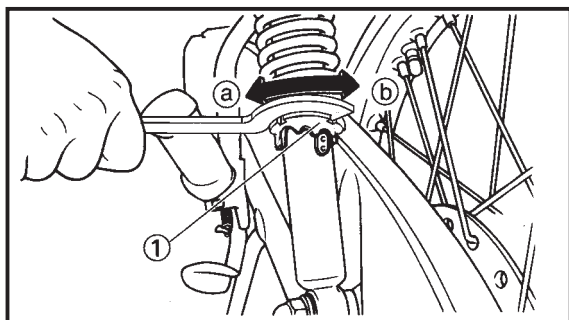


1. Adjust :
 - Spring preload
Turn the adjuster ring ① to direction @ or ⓐ using Shocker Adjuster or a plain rod as applicable.



Shocker adjuster
YSST - 221

REAR SHOCK ABSORBER ADJUSTMENT

**INSP
ADJ**


Adjustment steps:

- Turn the Adjuster Ring in or out.

Turning toward a →	Spring preload is increased.
Turning toward b →	Spring preload is decreased.

Adjustment numbers:

Standard	3
Minimum	1
Maximum	5

CAUTION:

- Never turn the Adjuster beyond the maximum or minimum setting.
- Always adjust each Shock Absorber to the same setting.

TYRE INSPECTION

1. Measure :

- Tyre inflation pressure
- Out of specification → Adjust.

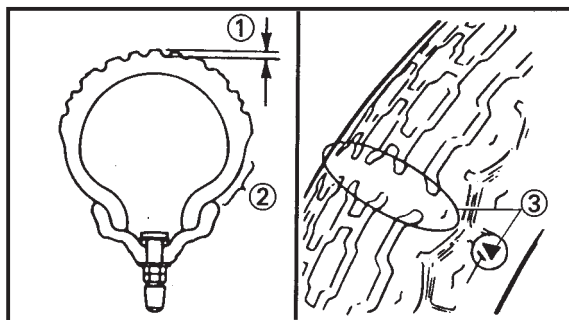
⚠ WARNING

- Tyre inflation pressure should only be checked and adjusted when the Tyre temperature equals the ambient air temperature. Tyre inflation pressure and suspension must be adjusted according to the cargo, rider, passenger and accessories (fairing, saddlebags, etc. if approved for this model), and according to whether the Motorcycle will be operated at high speed or not.

NEVER OVERLOAD THE MOTORCYCLE.

- Operation of an overloaded Motorcycle could cause tyre damage, accident or injury.

TYRE INSPECTION

INSP
ADJ

2. Inspect :

- Tyre surfaces

Wear/damage → Replace



Minimum Tyre tread Depth :
(Front and rear)
1.6 mm

- ① Tread Depth
- ② Side wall
- ③ Wear indicator

⚠ WARNING

- It is dangerous to ride with a worn out tyre. When the tyre tread begins to show signs of wear, replace the tyre immediately.
- Patching a punctured tube is not recommended. If it is absolutely necessary to do so, use great care and replace the tube as soon as possible with a good quality replacement tube.
- Do not use tubeless tyres on a wheel designed for tube type tyres only. Tyre failure and personal injury may result from sudden deflation.

- Be sure to install the correct Tube when using Tube Type Tyres.
- While installing Tyre on Wheel always check that the Tyre lining is seated uniformly with respect to wheel rim.

⚠ WARNING

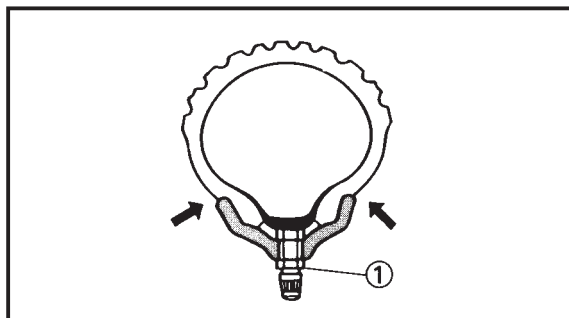
After mounting a Tyre, ride conservatively for a while to give the Tyre time to seat itself properly in the Rim, Failure to do so could lead to an accident with possible injury to the rider or damage to the Motorcycle.

- 2. After a Tyre repair or replacement, be sure to tighten the Valve Stem Locknut ① to specification.



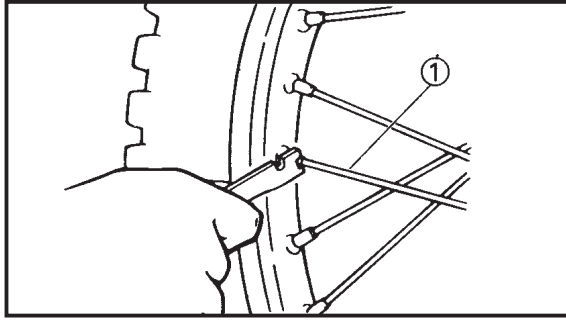
Locknut:
1.5 Nm (0.15 m.kg, 0.2 ft.lb)

Basic weight :		
With oil and full fuel tank 113 kg		
Maximum load* 172 kg		
Cold tyre pressure	Front	Rear
Up to 90 kg load*	24 psi	28psi
90 kg ~ maximum load*	24psi	32psi
*Load is the total weight of the cargo, rider, passenger and accessories.		



SPOKE INSPECTION AND TIGHTENING

INSP
ADJ



SPOKES INSPECTION AND TIGHTENING

1. Inspect :

- Spokes ①

Bending/damage → Replace.

Loose spoke → Retighten

2. Tighten :

- Spokes

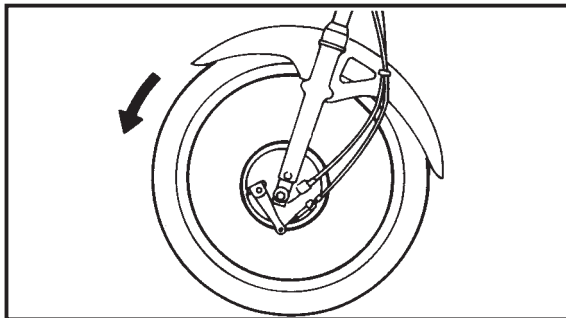
NOTE : _____

Be sure to tighten the Spokes before and after break-in.



Nipple :

2 Nm (0.2 m.kg, 0.3 ft.lb)



WHEEL INSPECTION

1. Inspect :

- Wheels

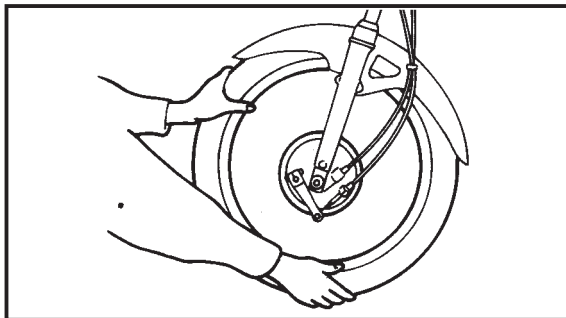
Damage/Bends → Replace.

NOTE : _____

Always balance the wheel when a tyre or wheel has been changed or replaced.

⚠ WARNING _____

Never attempt to make any repairs to the wheel rim.

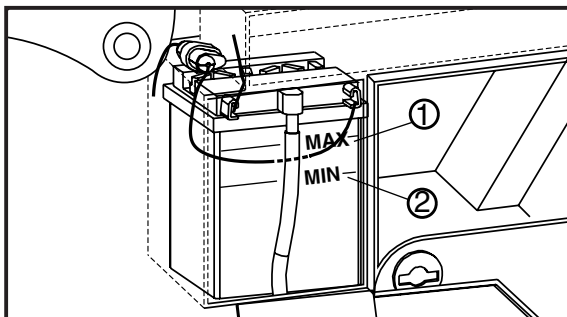


BATTERY INSPECTION

INSP
ADJ



ELECTRICAL

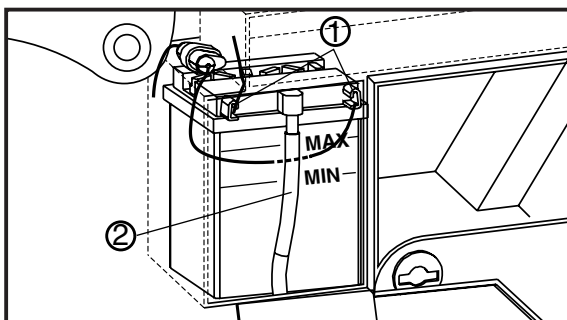


BATTERY INSPECTION

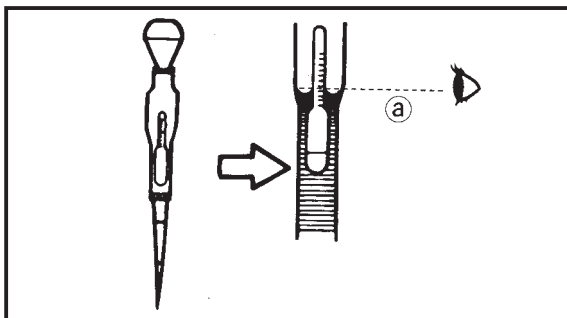
1. Remove:
 - Side Cover (L.H.)
Refer to "SEAT, SIDE COVERS AND FUEL TANK" section. Page no 3-3
 - Battery
2. Inspect :
 - Electrolyte level
Electrolyte level should be between the Upper ① and Lower ② level marks.
Electrolyte level is too low → add distilled water to proper level.

CAUTION:

Use distilled water only for top up. Tap water contains minerals which are harmful to a Battery.



3. Inspect :
 - Battery terminals
Poor connections → Correct
4. Inspect :
 - Breather hose ①
Obstruction → Remove
Damage → Replace



5. Check :
 - Specific gravity @
Less than 1.230 → Recharge the Battery

Charging Current :

0.25 amp

Specific Gravity :

1.230±0.005

CAUTION:

When inspecting the Battery, make sure that the Breather Hose is routed correctly. If the Breather Hose is positioned in such a way as to allow Battery Electrolyte gas to come into contact with the Frame, this could damage the Motorcycle and ruin its finish. Check the proper seating of Battery top plugs.

BATTERY INSTALLATION

INSP
ADJ



Replace the battery if:

- Battery voltage does not rise to a specific value or bubbles fail to rise during charging.
- Sulphation of one or more cells occurs, (as indicated by the plates turning white, or material accumulating in the bottom of the cell).
- Specific gravity readings after a long, slow charge indicate that one cell is charged lower than the rest.
- Warpage or buckling of plates or insulators is evident.

CAUTION:

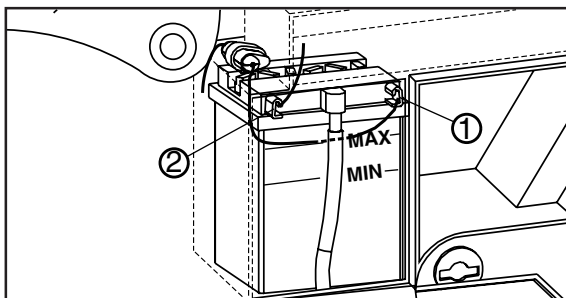
Always charge a new Battery completely before installing it to ensure maximum performance.

⚠ WARNING

Battery electrolyte is dangerous. It contains sulfuric acid which is poisonous and highly caustic.

Always follow these preventive measures:

- Avoid body contact with electrolyte as it can cause severe burns and permanent eye injury.
- Wear protective eye gear when handling or working near batteries.
- Antidote (EXTERNAL):
- SKIN- Flush with water for 15 minutes and get immediate medical attention.
- Antidote (INTERNAL)
- Drink large quantities of water or milk followed with milk of magnesia, beaten egg or vegetable oil. Get immediate medical attention.
- Batteries generate explosive hydrogen gas.
- Always follow these preventive measures:
- Charge batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes, etc.)
- DO NOT SMOKE when charging or handling batteries.
- KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.



CAUTION:

Connect the positive lead ① first and then connect the negative lead ②

6. Install :

- Battery

7. Connect:

- Battery leads

8. Connect :

- Breather hose

Be sure the Hose is properly attached and routed.

Refer to "CABLE ROUTING" section in Chapter 2, Page no 2-21

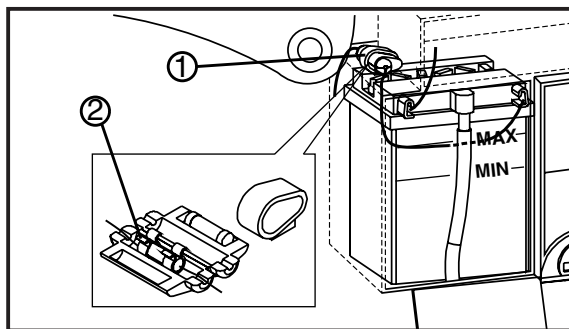
9. Install :

- Side cover (left)

Refer to "SEAT, SIDE COVERS AND FUEL TANK" section on Page no 3-3



FUSE INSPECTION



⚠ WARNING

Never use a Fuse with a rating other than that specified. Never use other materials in place of a Fuse. An improper Fuse may cause extensive damage to the electrical system, malfunction of lighting and ignition and could possibly cause a fire.

FUSE INSPECTION

CAUTION:

Always turn off the Main Switch when checking or replacing the Fuse. Otherwise, a short circuit may occur.

1. Remove:

- Side cover (left)

Refer to "SEAT, SIDE COVERS AND FUEL TANK" section Page no 3-3

- Fuse holder ①

2. Inspect :

- Fuse

Inspection steps :

- Connect the Multimeter to the fuse and check it for continuity.

NOTE :

Set the multimeter selector to "Ohm x 1 resistance" position.



Multimeter

- If the Multimeter indicates non continuity
→ Replace the fuse.

3. Replace :

- Blown Fuse

Replacement steps:

- Turn off the Main Switch.
- Install a new fuse with the proper current rating.
- Turn on switches to verify operation of related electrical devices.
- If the fuse blows again immediately, check the electrical circuit.

Fuse Ampereage :

10A

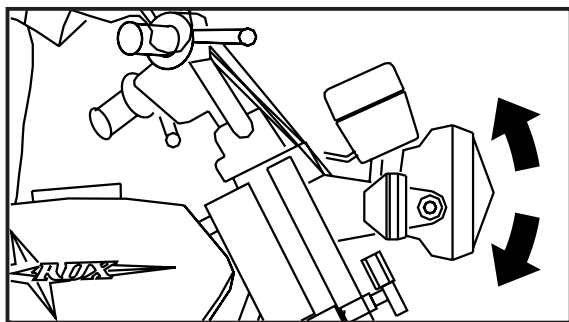
4. Install :

- Fuse holder
- Side cover (left)

Refer to "SEAT, SIDE COVERS AND FUEL TANK" section Page no 3-3

HEADLIGHT BEAM ADJUSTMENT/ HEADLIGHT BULB REPLACEMENT

INSP
ADJ

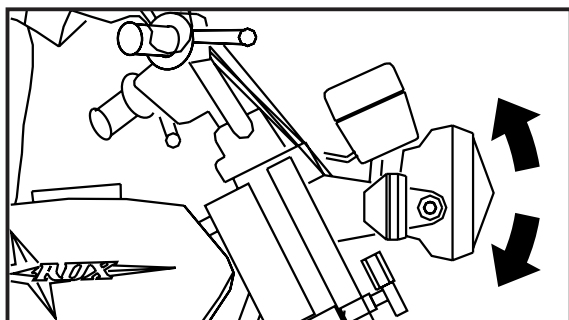


HEADLIGHT BEAM ADJUSTMENT

1. Adjust :
 - Headlight beam (vertical)

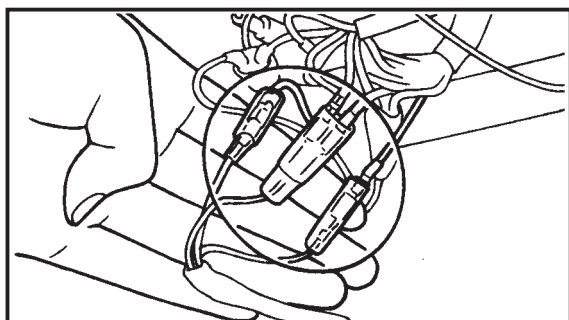
Push down → Headlight beam moves lower.

Pull up → Headlight beam moves higher.



HEADLIGHT BULB REPLACEMENT

1. Remove:
 - Cowling (as applicable)
 - Headlight Assy.

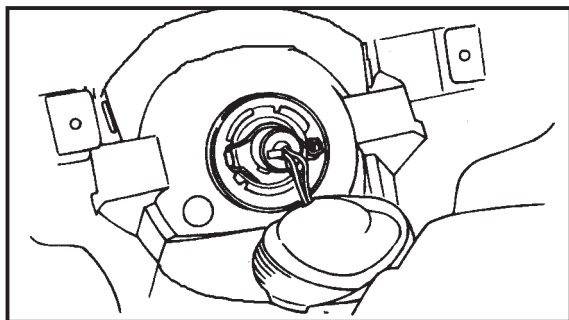


2. Disconnect :
 - Headlight beam leads
 - Bulb cover

3. Remove :
 - Bulb

NOTE : _____

Unhook the Bulb spring.



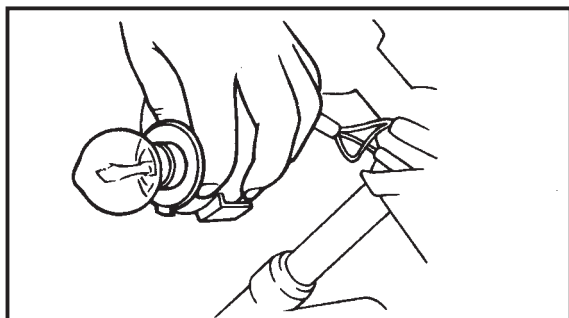
⚠ WARNING _____

Keep flammable products and your hands away from the Bulb while it is on, it will be hot. Do not touch the bulb unit it cools down.

4. Install:
 - Bulb (new)
 Secure the new Bulb with the Bulb spring.

CAUTION: _____

Avoid touching glass part of bulb. Also keep it away from oil otherwise, transparency of glass, bulb life and brightness will be adversely affected. If oil gets on bulb, clean it with a cloth moistened thoroughly with alcohol or lacquer thinner.



CHAPTER 4

ENGINE OVERHAUL

ENGINE REMOVAL

SIDE COVERS, SEAT AND FUEL TANK REMOVAL	4-1
ENGINE OIL DRAIN	4-1
BATTERY	4-1
CARBURETOR	4-1
CLUTCH CABLE	4-1
DRIVE CHAIN	4-2
EXHAUST MUFFLER	4-2
FOOTREST ASSEMBLY	4-2
SHIFT PEDAL	4-3
BATTERY BOX REMOVAL	4-3
LEADS	4-3
ENGINE REMOVAL	4-3
MOUNTING ON ENGINE STAND	4-3

ENGINE DISASSEMBLY

CYLINDER HEAD, CYLINDER AND PISTON	4-4
CLUTCH	4-7
OIL PUMP	4-8
KICK STARTER	4-9
SHIFT SHAFT	4-9
C.D.I. MAGNETO	4-10
GUIDE STOPPER AND TIMING CHAIN	4-10
CRANKCASE	4-11
TRANSMISSION AND SHIFTER	4-12
CRANKSHAFT	4-12
CYLINDER HEAD ROCKER ARMS, CAMSHAFT & VALVES ..	4-13

INSPECTION AND REPAIRS

CYLINDER HEAD	4-15
VALVE SEATS	4-16
VALVE SPRINGS AND VALVES	4-18
CAMSHAFT	4-19
ROCKER ARMS AND ROCKER ARM SHAFTS	4-20
TIMING CHAIN, SPROCKETS AND CHAIN GUIDES	4-21
TIMING CHAIN TENSIONER	4-21
CYLINDER AND PISTONS	4-22
PISTON RINGS	4-23
PISTON PIN	4-24
CRANKSHAFT	4-25
PRIMARY DRIVE GEAR	4-26
CLUTCH	4-26
PUSH ROD	4-27
SHIFT FORK SHIFT CAM	4-28
KICK STARTER	4-29
OIL PUMP	4-30
OIL DELIVERY PASSAGE(CC COVER RH)	4-31
CRANKCASE	4-31

BEARINGS AND OIL SEALS	4-31
CIRCLIPS AND WASHERS	4-31
ENGINE ASSEMBLY AND ADJUSTMENT	4-32
CRANKSHAFT	4-35
TRANSMISSION	4-37
SHIFTER.....	4-38
CRANKCASE	4-40
CDI MAGNETO.....	4-42
SHIFT SHAFT AND KICK STARTER.....	4-44
CLUTCH, PRIMARY DRIVE GEAR AND OIL PUMP	4-47
CYLINDER AND PISTON.....	4-52
CYLINDER HEAD.....	4-53
CAM SPROCKET AND TIMING CHAIN	4-54
ENGINE MOUNTING	4-60

ENGINE REMOVAL

ENG



ENGINE REMOVAL

It is not necessary to remove the Engine in order to remove the following parts.

- Cylinder Head
- Cylinder
- Piston
- Clutch
- CDI Magneto

SIDE COVERS, SEAT AND FUEL TANK REMOVAL

1. Remove :
 - Side covers (LH and RH)
 - Seat
 - Fuel tank

Refer to the "SIDE COVERS, SEAT AND FUEL TANK" section in Chapter 3, Page no 3-3

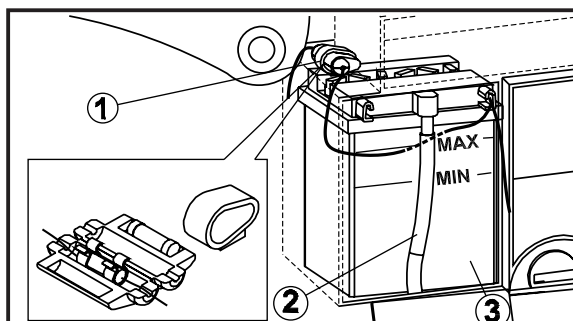
ENGINE OIL

1. Drain :
 - Engine oil

Refer to the "ENGINE OIL REPLACEMENT" section in Chapter 3, Page no 3-14

BATTERY

1. Remove :
 - Fuse ①
 - Negative terminal (Black) ②
 - Battery Breather Hose ③
 - Battery ④

**CAUTION:**

Disconnect the Battery Negative Terminal (Black) first and then disconnect the Positive Terminal (Red)

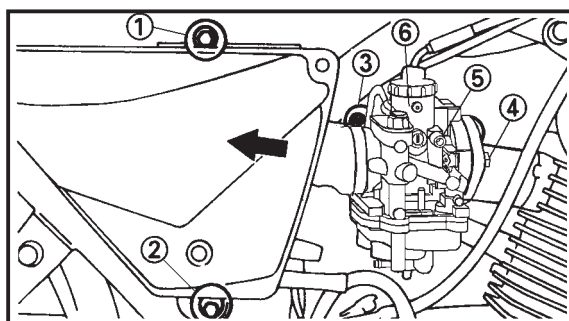
CARBURETOR

1. Loosen
 - Air cleaner case mounting bolts ① & ②
 - Hose Clamp assy ③
2. Remove
 - Carburetor Mounting Bolts ④ (2 nos)
 - Air vent hose ⑤
 - Carburetor ⑥

Refer to the "CARBURETOR" section in Chapter 5, Page no 5-2

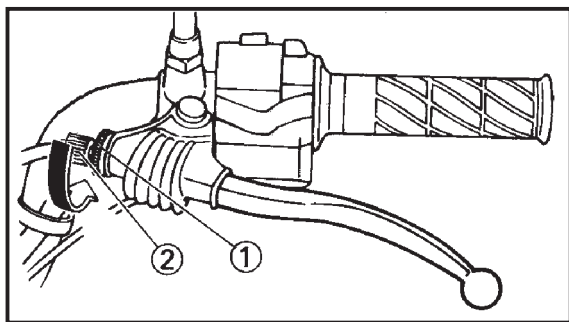
NOTE :

Cover the Carburetor with a clean cloth to prevent dirt or foreign material from entering the Carburetor.



ENGINE REMOVAL

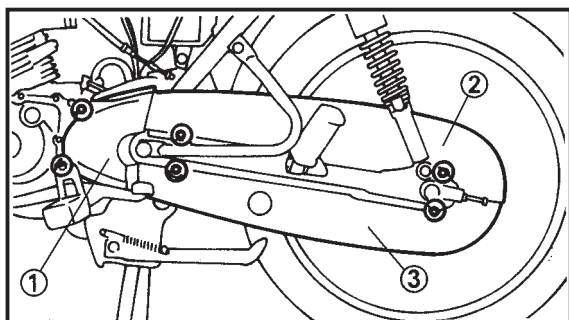
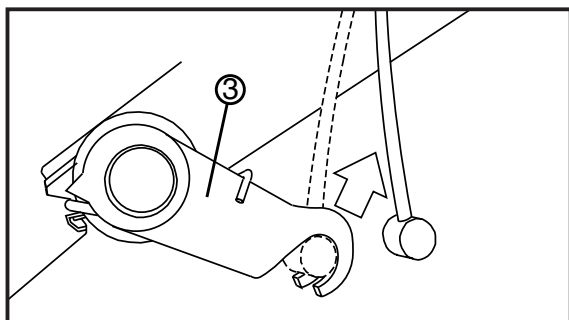
ENG

**CLUTCH CABLE**

1. Remove :
 - Clutch cable

Removal steps :

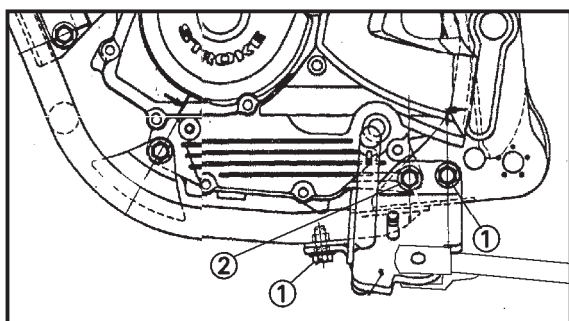
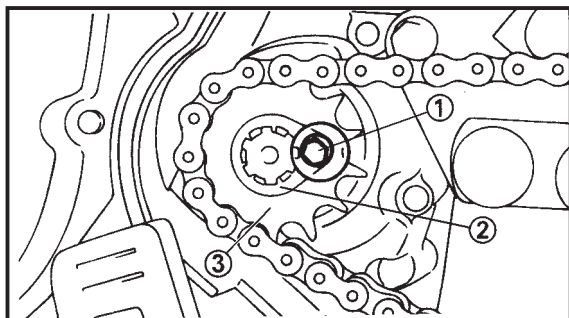
- Loosen the locknut ① of the Clutch Lever.
- Turn in the Adjuster ② to enough to free the inner Clutch Cable
- Unhook the Cable End from Push Lever ③ on the Crankcase L.H.

**DRIVE CHAIN**

1. Remove :
 - Crankcase Cover#1 (L.H.) ①
 - Drive Chain Case upper ② and lower ③
2. Slack off the Drive Chain
Refer to "DRIVE CHAIN SLACK ADJUSTMENT" section in Chapter 3, Page no 3-20
3. Remove :
 - Bolt ① (Holder Sprocket)
 - Holder Sprocket ②
 - Sprocket Drive ③
 Remove with the Drive Chain

EXHAUST MUFFLER

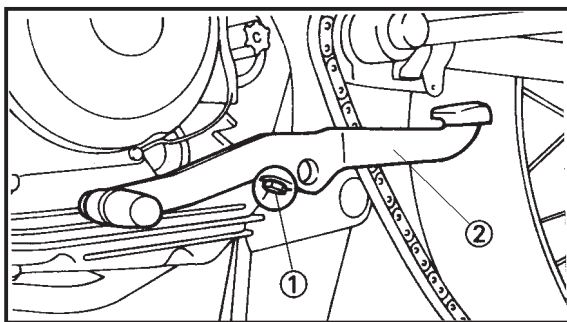
1. Remove :
 - Bolt (exhaust pipe)
 - Bolt (muffler)
 Refer to "EXHAUST SYSTEM" section in Chapter 3, Page no 3-15
2. Remove :
 - Exhaust muffler

**FOOTREST ASSEMBLY**

1. Remove:
 - Bolt (footrest) 4 nos ①
 - Bolt Axle - Lower rear mounting ②
 - Footrest Assembly

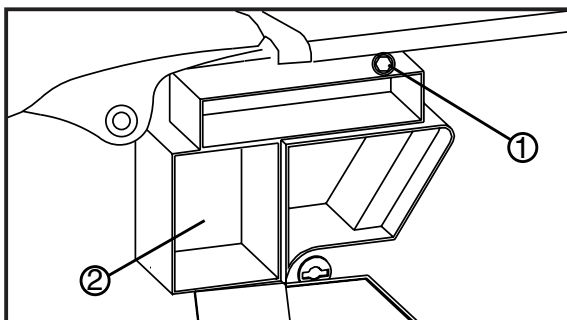
ENGINE REMOVAL

ENG



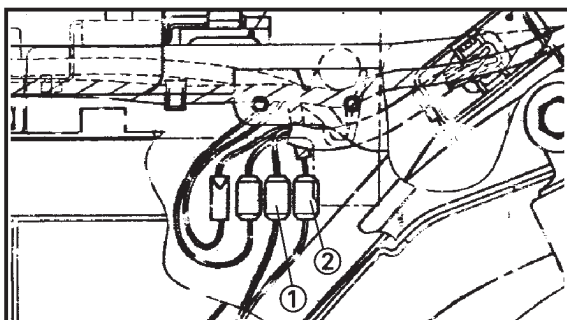
SHIFT PEDAL

1. Remove
 - Bolt (Shift Pedal) ①
 - Shift Pedal ②



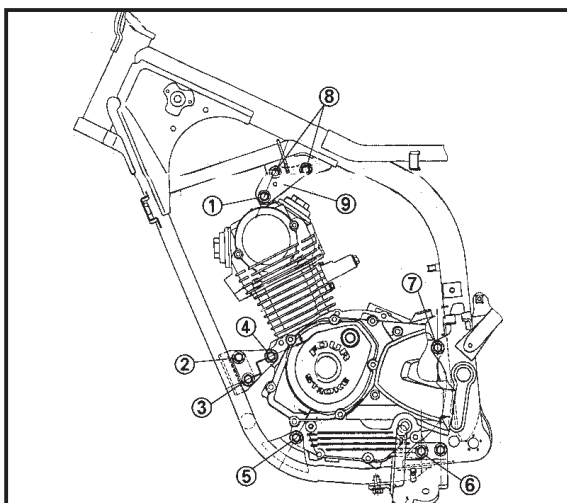
BATTERY BOX

1. Remove
 - Bolt (Battery Box) ① 2 nos
 - Battery Box ②



LEADS

1. Disconnect:
 - Stator Coil Lead Coupler ①
 - Sensor Coil Lead Coupler ②
2. Remove :
 - Spark Plug Cap



ENGINE REMOVAL

1. Remove :
 - Engine Mount Bolt (front upper) ①
 - Bolt (Engine Mount stay front upper) ②
 - Bolt (Engine Mount stay front lower) ③
 - Engine Mount Bolt front upper ④
 - Engine Mount Bolt (front -lower) ⑤
 - Engine Mount Bolt (rear) ⑥
 - Engine Mount Bolt (upper) ⑦
 - Bolts (Engine mount stay upper) ⑧
 - Engine Mount Stay (upper) ⑨
3. Remove :
 - Engine Assembly
(From the left side of the Motorcycle)
4. Mount
 - Engine on Engine Stand

ENGINE DISASSEMBLY

ENG



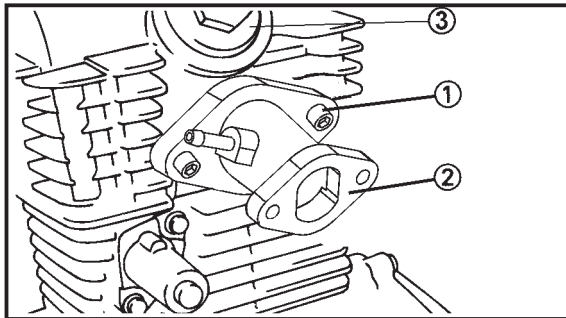
ENGINE DISASSEMBLY

CYLINDER HEAD, CYLINDER AND PISTON

NOTE:

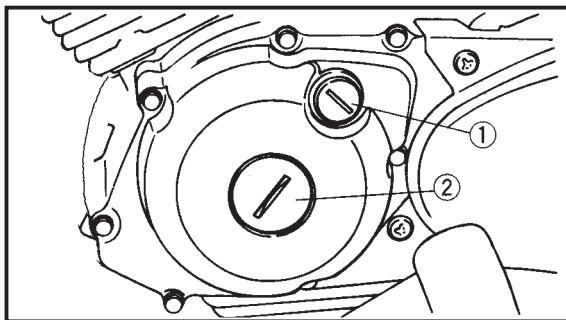
With Engine mounted on Motorcycle, the Cylinder Head, Camshaft and Cylinder can be maintained by removing the following parts.

- Side Covers
- Spark Plug Lead
- Seat
- Engine Mount Stay
- Chain Tensioner (Retract)
- Timing Check Plug
- Exhaust Pipe
- Center Plug
- Carburetor



CAUTION:

Before Engine disassembly clean the outer body of Engine properly



1. Remove :
 - Spark Plug
 - Bolts (Intake Manifold) ① 2 nos
 - Intake Manifold ②
 - Valve Cover with 'O' ring ③
2. Remove
 - Timing Check Plug (with 'O' ring) ①
 - Centre Plug (with 'o' ring) ②
3. Align :
 - Piston to TDC position

NOTE:

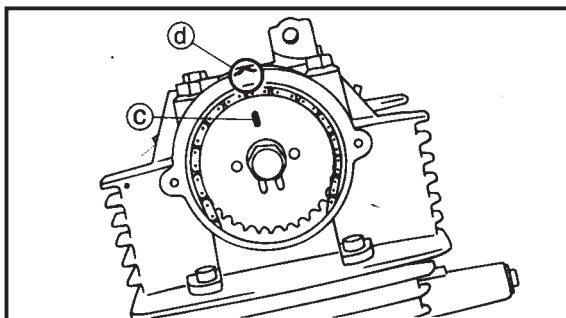
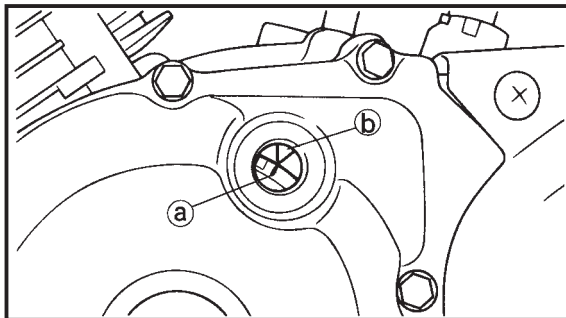
Turn the Crankshaft anticlockwise with a Socket Spanner 17 mm

TDC alignment steps:

- Turn the Crankshaft anticlockwise until the slit (cut mark on magneto) @ matches the stationary pointer ⑥
- Align the "I" mark ③ on the Cam Sprocket with the stationary pointer ④ on the Cylinder Head, the Piston is at the Top Dead Center (TDC) of compression stroke.

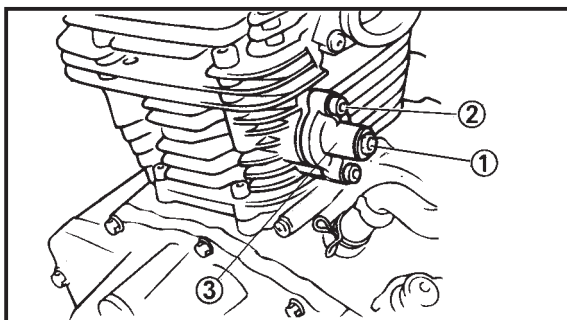
NOTE :

To confirm that the Piston is at TDC of compression stroke, check Rocker Arms for free movement.



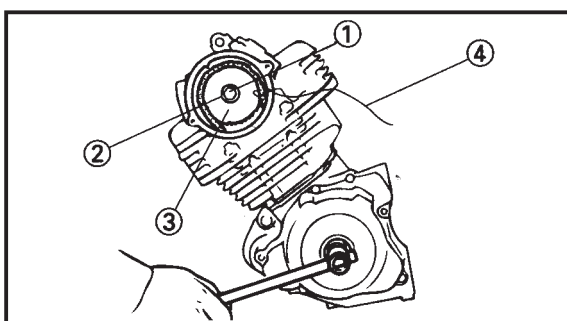
ENGINE DISASSEMBLY

ENG



5. Remove :

- Tensioner Cap Bolt ①
- Retract completely the Tensioner Rod by Screw in (clockwise) direction.
- Bolts (timing chain tensioner) ② 2 Nos
- Timing Chain Tensioner Assembly ③
- Gasket

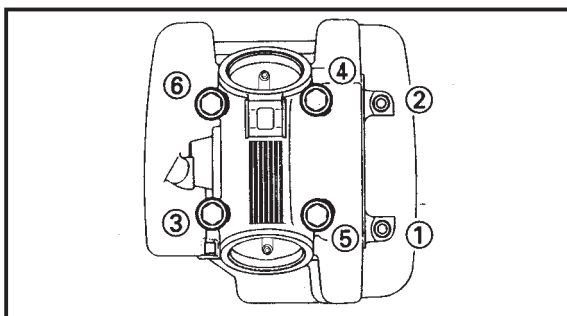


6. Remove :

- Bolt (cam sprocket) ①
- Plate washer (cam sprocket) ②
- Cam sprocket ③

NOTE :

Hold the Nut Rotor with socket spanner for opening Cam Sprocket Bolt. Fasten a safety wire ④ to the Timing Chain to prevent it from falling in the Crankcase.

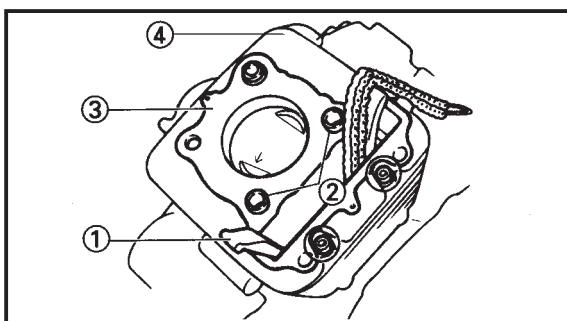


7. Remove :

- Bolts (Cylinder Head) as per sequence. (6 nos)
- Cylinder Head

NOTE :

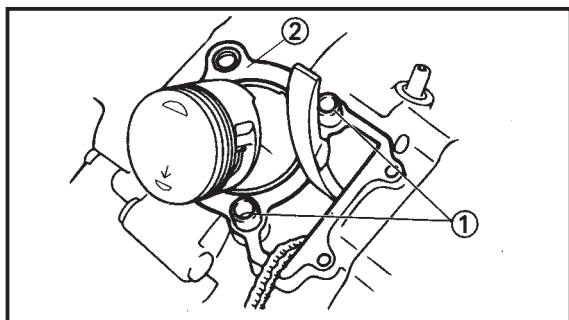
- Loosen the Bolts 1/4 turn each and remove then after all are loosened.
- Remove the Bolts starting with the lowest number one.



8. Remove :

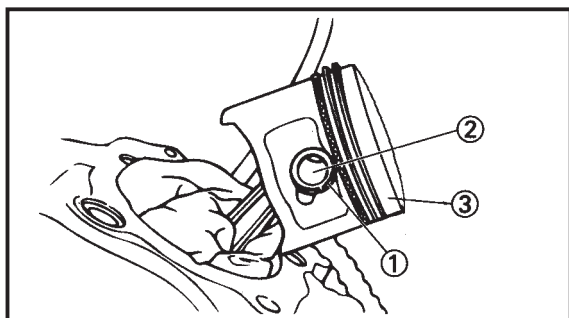
- Guide Stopper #1 ①
- Dowel Pins ②
- Gasket (Cylinder Head) ③
- Cylinder ④

MAINTENANCE SPECIFICATIONS

ENG


9. Remove :

- Dowel Pins ①
- Gasket (Cylinder) ②



10. Remove :

- Piston Pin Circlip ① 2 nos
- Piston Pin ② , using Piston Pin Replacer
- Piston ③

NOTE :

Before removing the Piston Pin Circlip, cover the Crankcase with a clean cloth to prevent the Circlip from falling into the Crankcase cavity.



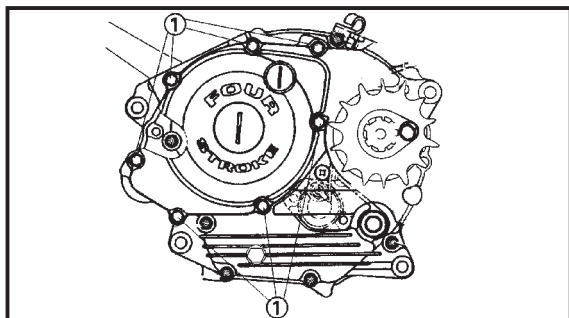
Piston Pin Replacer :
YSST - 207

C. D. I. MAGNETO

NOTE :

The CDI Magneto can be removed while the Engine is mounted on the Motorcycle by removing the following parts :

- Shift Pedal
- Cover Chain Case (L. H.)

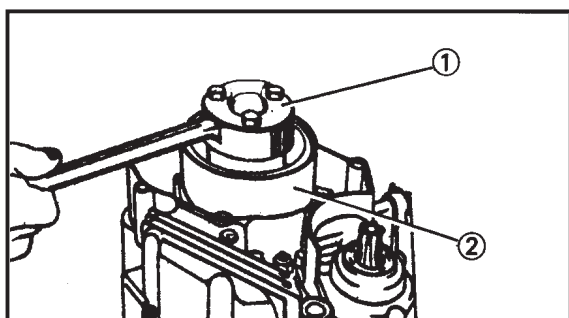


1. Remove :

- Bolts (Crankcase Cover-1 L.H.) ① 7 nos
- Crankcase Cover 1 (L.H.)
- Neutral Light wire from Neutral Switch

NOTE :

Loosen the Bolts in criss cross pattern.



2. Attach

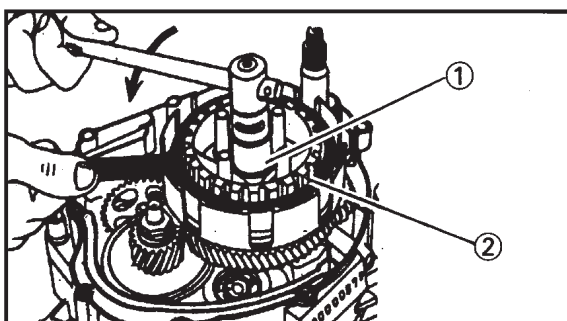
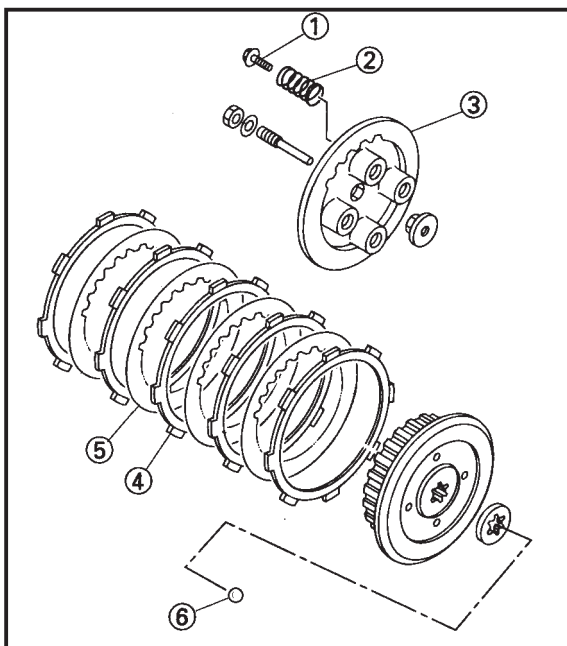
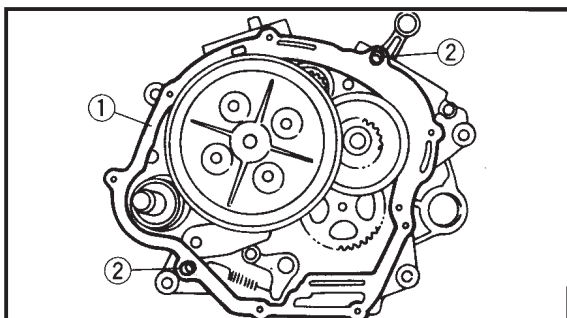
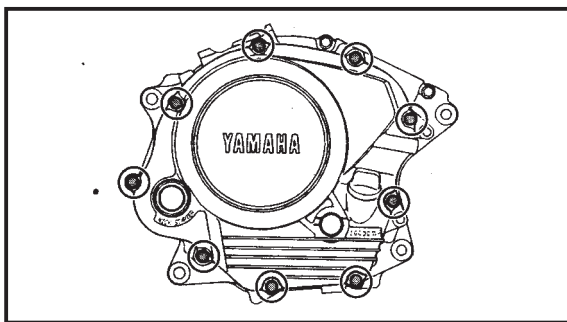
- Magneto holder



Magneto Holder :
YSST - 601A

ENGINE DISASSEMBLY

ENG

**CLUTCH****NOTE :**

The Clutch Assembly can be removed while the Engine is mounted on the Motorcycle by removing the following parts and draining the Engine oil:

- Kick Crank Assy.

1. Remove :

- Nut kick Crank assy.
- Kick Crank Assy.
- Bolts Crankcase Cover-2 (R.H.) ① 9 nos
- Crankcase Cover (RH)

NOTE :

- Hold Kick Crank Assy. at extreme down position for opening the Nut Kick Crank Assy.
- Loosen the Bolts of Crankcase Cover #2 (RH) in a crisscross pattern.

2. Remove :

- Gasket ①

3. Remove:

- Pressure Plate Bolts ① (4 No's)
- Clutch Springs ② (4 NO'S)
- Pressure Plate ③ with Push rod 1
- Friction Plates ⑤ (4 NO'S)
- Clutch Plates ④ (3 NO'S)

NOTE :

Loosen the Pressure Plate Bolts in a crisscross pattern.

4. Remove :

- Ball ⑥

5. Loosen :

- Straighten the Lock Washer tab.
- Nut (clutch boss) ①

NOTE :

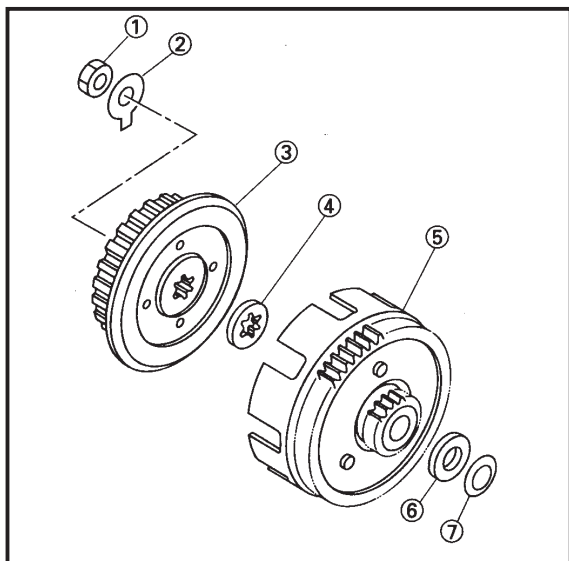
Loosen the Clutch Boss Nut ① while holding the Clutch Boss ② with the Clutch Holder.



Clutch Hub Holder
YSST - 233

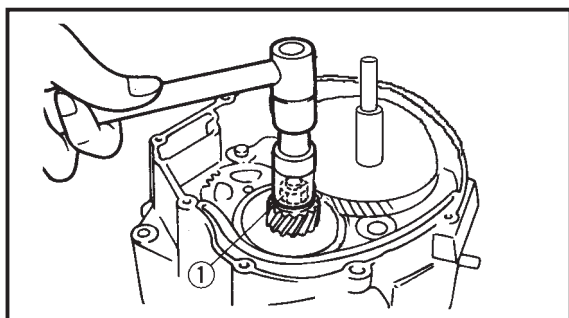
ENGINE DISASSEMBLY

ENG



6. Remove :

- Clutch Boss Nut ①
- Lock Washer ②
- Clutch Boss ③
- Thrust Washer ④
- Clutch Housing ⑤
- Spacer ⑥
- Washer ⑦



7. Loosen :

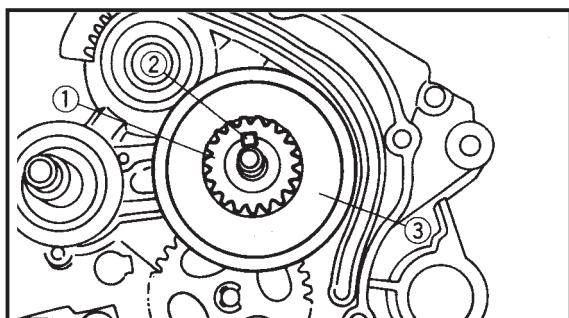
- Nut ① (Primary Drive Gear)

NOTE :

- Open the Nut (Primary Drive Gear) by holding the Magneto with Magneto Holder.



Magneto Holder
YSST - 601 A



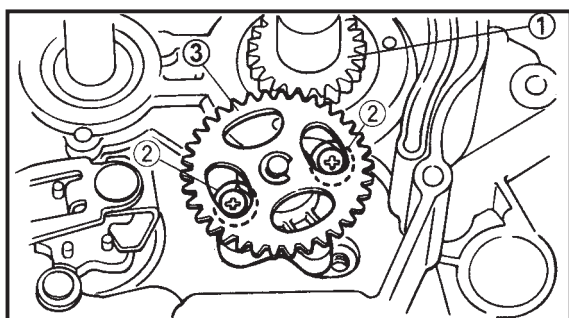
8. Remove

- Nut
- Plate Washer
- Primary Drive Gear ①
- Key ②
- Rotary Filter ③

OIL PUMP**NOTE :**

The oil pump can be removed while the engine is mounted by removing the following parts

- Clutch
- Primary drive gear
- Rotary filter



1. Remove :

- Gear pump drive ①
- Screw (oil pump-2 nos) ②
- Oil pump assembly ③
- Gasket (oil pump)
- Oil strainer

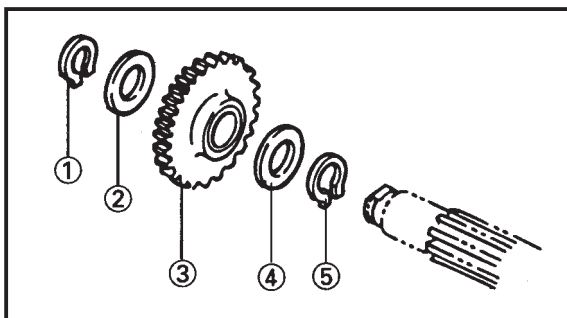
ENGINE DISASSEMBLY

ENG

**KICK STARTER****NOTE :**

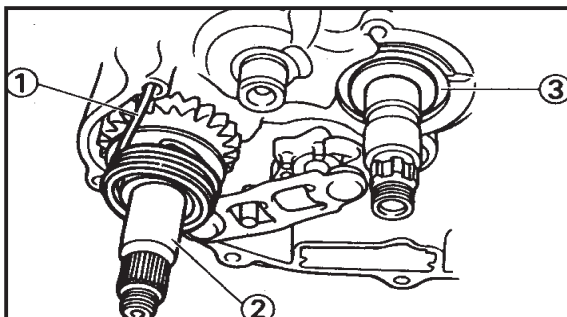
The kick starter can be removed while the engine is mounted by removing the following part.

- Kick Crank Assy
- Crankcase Cover 2 (RH)
- Clutch Drum Assy



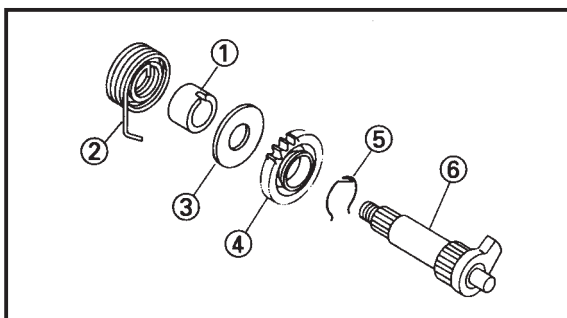
1. Remove :

- Circlip ①
- Plate washer ②
- Gear Kick idle ③
- Plate washer ④
- Circlip ⑤



2. Remove :

- Torsion spring ①
- Kick axle assembly ②

**Kick Starter disassembly**

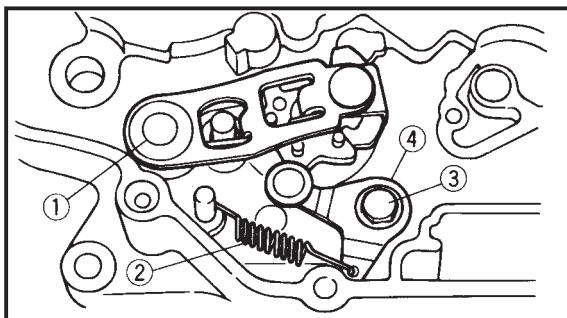
1. Remove :

- Spacer ①
- Torsion spring ②
- Washer ③
- Kick gear ④
- Clip ⑤
- Kick axle ⑥

SHIFT SHAFT**NOTE :**

The Shift Shaft can be removed while the Engine is mounted by removing the following parts.

- Shift Pedal
- Kick Crank Assy.
- Crankcase Cover#2(RH)
- Clutch

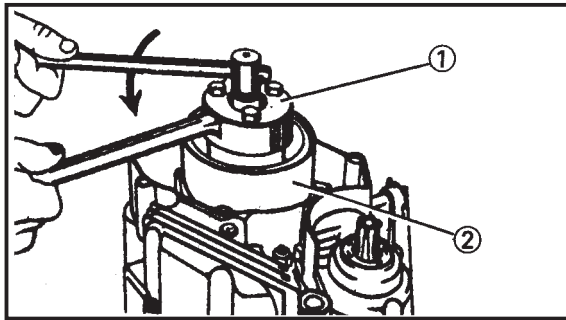


1. Remove :

- Shift Shaft ①
- Torsion Spring ②
- Bolt (stopper lever) ③
- Stopper Lever ④

ENGINE DISASSEMBLY

ENG



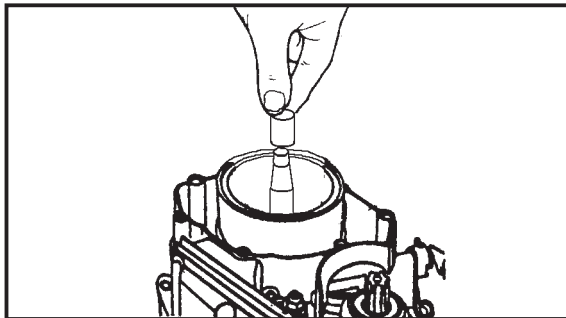
CDI MAGNETO REMOVAL

1. Remove :
 - Nut (magneto)
 - Plain washer

NOTE : _____
 • Loosen the Nut Magneto while holding the Magneto ② with Magneto Holder ①

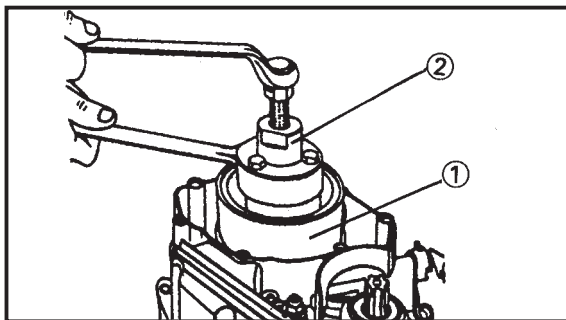


Magneto Holder :
YSST - 601 A



2. Attach
 - Bush ①

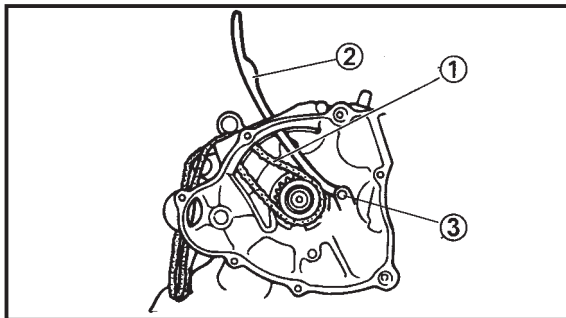
NOTE : _____
 • Place the Bush on the Crankshaft threaded end before using the Magneto Puller to avoid thread damage.



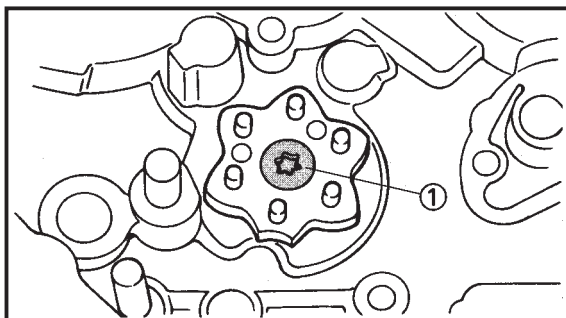
3. Remove :
 - CDI magneto ① using magneto puller ②
 - Key wood-ruff



Magneto Puller :
YSST - 602



4. Remove
 - Bolt ①
 - Guide Stopper# 2 ②
 - Bush
 - Timing chain ③



5. Remove :
 - Torx Screw ① (Segment) using Torx Bit.



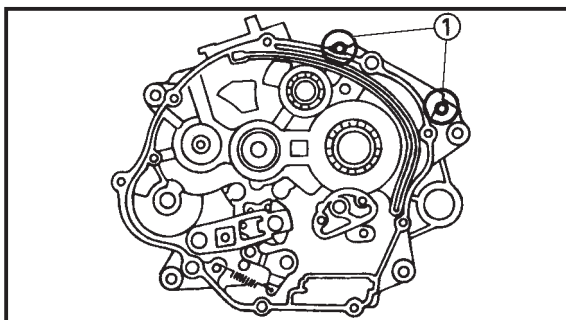
Torx Bit :
YSST - 611

⚠ WARNING _____

Never use Phillips screw driver

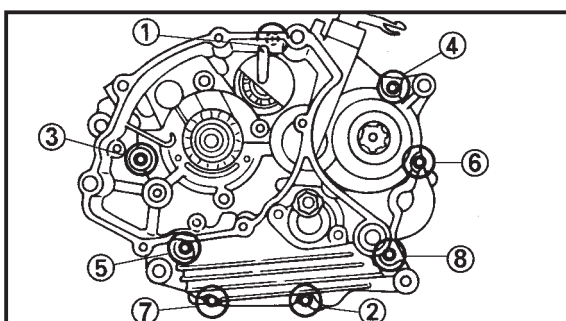
ENGINE DISASSEMBLY

ENG

**CRANKCASE**

1. Remove :

- Bolts (Crankcase RH-2 nos) ①

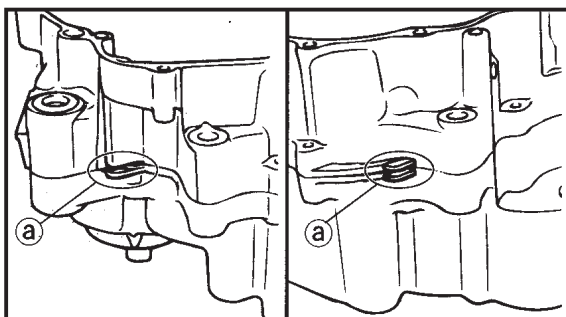


2. Remove :

- Bolts (Crankcase LH-8 nos)

NOTE :

- Loosen the Bolts in a crisscross pattern.
- Loosen each Bolts 1/4 turn at a time and remove them after all are loose.



1. Remove :

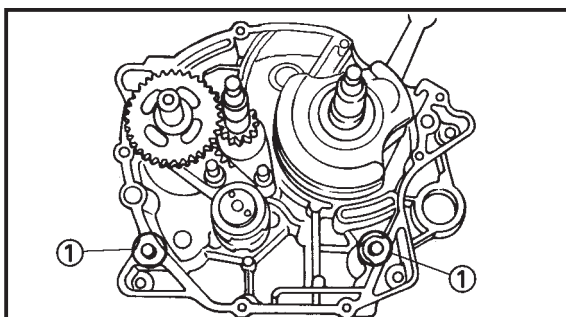
- Right crankcase half

NOTE :

Open the Engine stand mounting Nuts 2 nos .
Then separate the Crankcase by using the flat head screw driver in the separating slit @.

CAUTION:

- Do not use the flat head screw driver except at the separating slot.
- Separate the Crankcase after first checking that the shift cam segments and the Drive Axle Circlip can be removed.
- Do not damage the Crankcase mating surfaces.

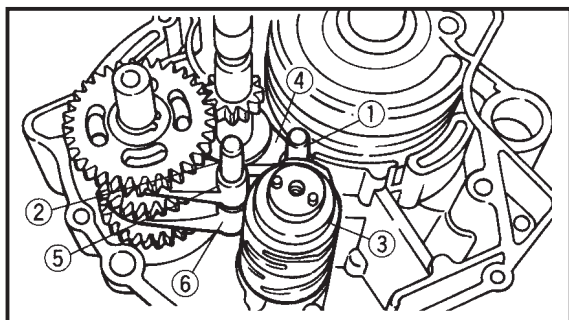


2. Remove :

- Dowel pins ①

ENGINE DISASSEMBLY: TRANSMISSION AND SHIFTER

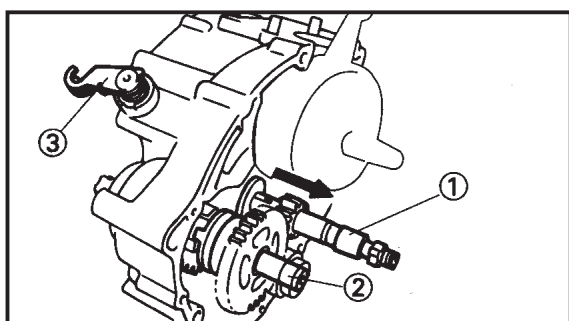
ENG



TRANSMISSION AND SHIFTER

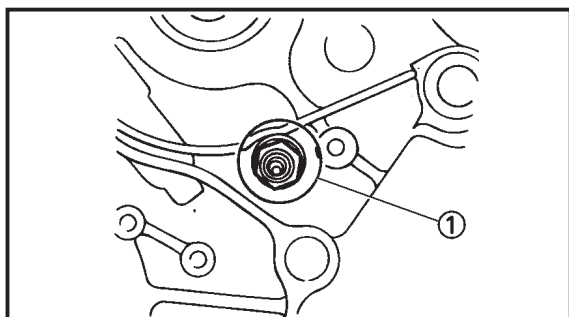
1. Remove :

- Shift Fork Guide Bar ① (short)
- Shift Fork Guide Bar ② (long)
- Shift Cam ③
- Shift Fork -C ④
- Shift Fork -R ⑤
- Shift Fork - L ⑥



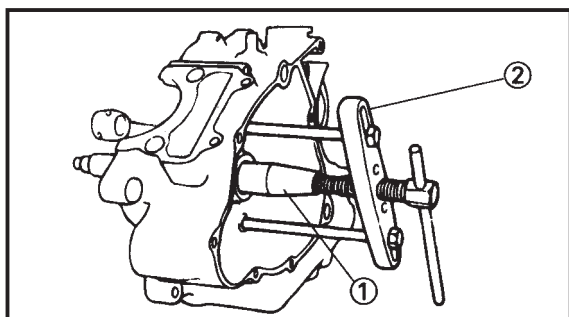
2. Remove :

- Axle Drive assembly ②
- Axle Main assembly ①
- Push Rod # 2
- Washer
- Push Lever Assembly ③
- Lock
- Oil Seal



3. Remove :

- Neutral switch ①
- Gasket



CRANKSHAFT

1. Attach

- Crankshaft Removal Tool ②



Crankshaft Removal Tool :
YSST - 265

2. Remove :

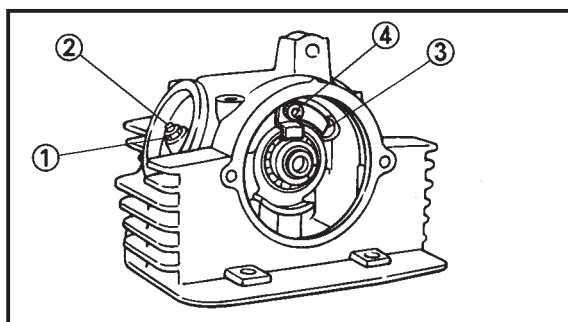
- Crankshaft ① using Crankshaft removal tool ②

NOTE :

Fully tighten the Crankshaft removal tool holding Bolts, but make sure that the tool body is parallel with the Crankcase. If necessary, one holding bolt may be turned out slightly to adjust the Crankshaft Removal Tool's position.

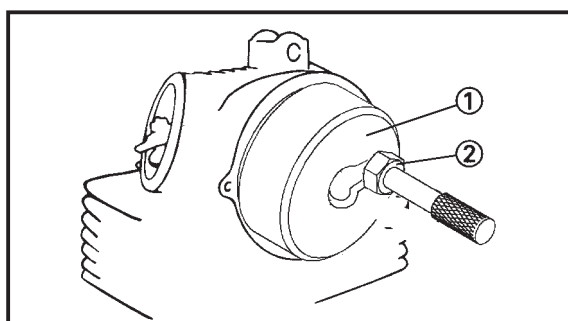
ENGINE DISASSEMBLY

ENG



DISASSEMBLY OF CYLINDER HEAD, ROCKER ARMS, CAMSHAFT AND VALVES

1. Loosen :
 - Valve Adjuster Locknuts ①
 - Valve Adjusters ②
2. Remove :
 - Stopper Plate ③ by opening allen bolt ④

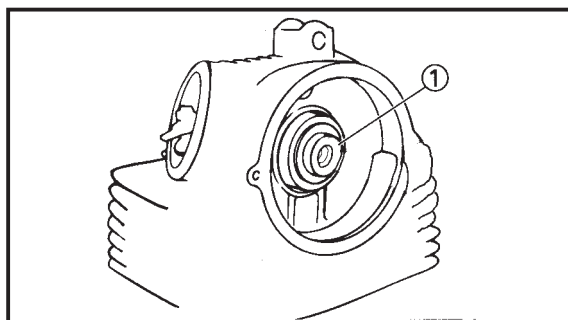


3. Attach
 - Rocker arm shaft puller ①



Rocker Arm Shaft Puller
YSST - 608A

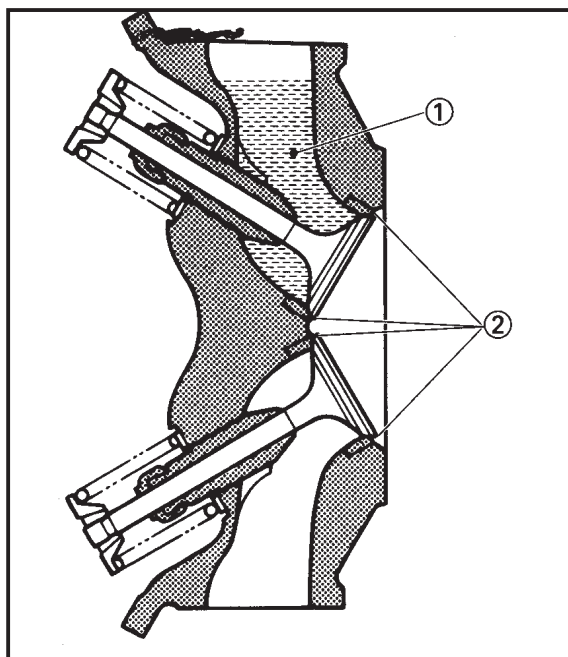
4. Remove :
 - Rocker Arm Shafts by tightening the Puller nut ②
 - Rocker Arms (intake/exhaust)



5. Remove :
 - Camshaft Assy ① with spacer ②

NOTE :

Before the Valves, Valve Springs, Valve Stem Seals, etc. are removed from the Cylinder Head, the Valve sealing should be checked.



6. Check
 - Valve sealing

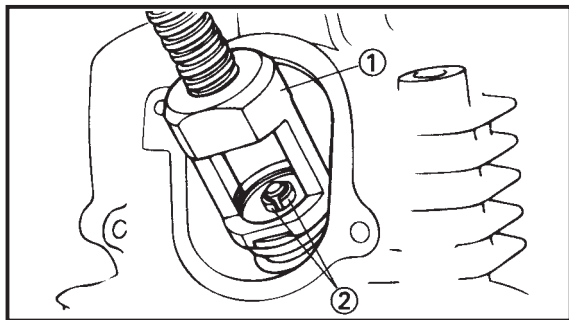
Leakage at the valve seat → Inspect the valve face, valve seat and seat width.
Refer to "INSPECTION AND REPAIR VALVE SEAT". on Chapter 4 Page no 4-16

Checking Steps :

- Pour clean petrol ① into the intake and exhaust ports.
- Check the valve sealing. There should be no leakage at the valve seat ②

ENGINE DISASSEMBLY

ENG



7. Attach

Valve Spring compression Tool ①

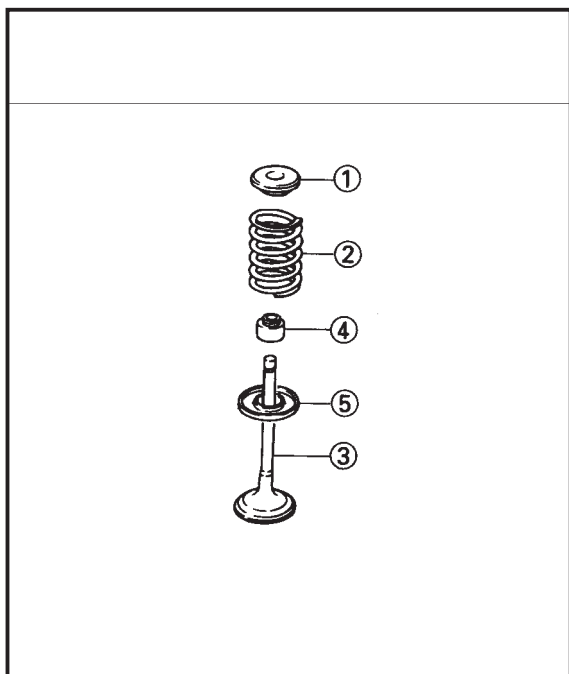
**Valve Spring Compressor :****YSST - 603**

8. Remove :

- Valve Cotters ②

NOTE :

Valve Spring compressor tool is to be attached between the Valve Spring retainer and the Valve face (Inlet and Exhaust) one at a time.



9. Remove :

- Valve Spring Retainer ①
- Valve Spring ②
- Valve ③
- Valve Stem Seal ④
- Valve Spring Seat ⑤

NOTE :

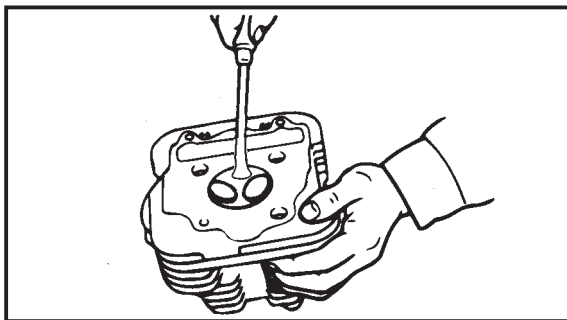
Identify the position of each part very carefully so that it can be reinstalled in its original place.

INSPECTION AND REPAIR: CYLINDER HEAD

ENG



INSPECTION AND REPAIR



CYLINDER HEAD

1. Remove :

- Carbon deposits from combustion chambers using a rounded scraper.

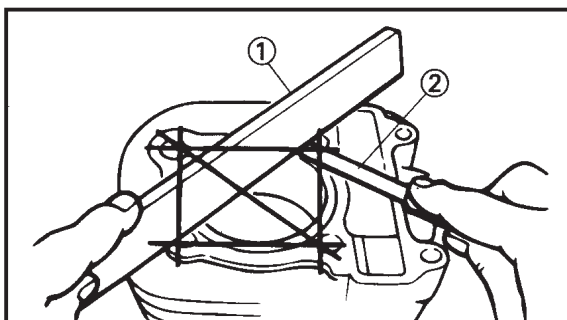
NOTE :

Do not use a sharp instrument to avoid damaging or scratching :

- Spark Plug threads
- Valve seats

2. Inspect :

- Cylinder Head
- Scratches/damage → Replace

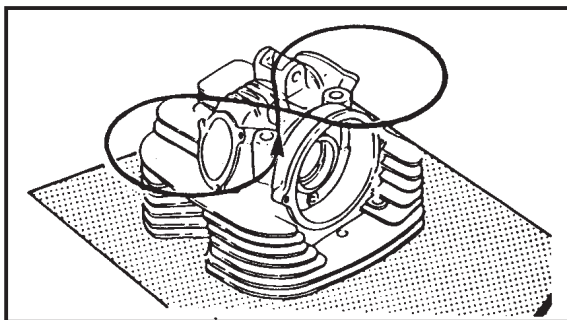


3. Measure :

- Cylinder Head warpage
- Out of specification → resurface/ replace.



Cylinder Head warpage :
Less than 0.03 mm



Warpage measurement and resurfacement steps:

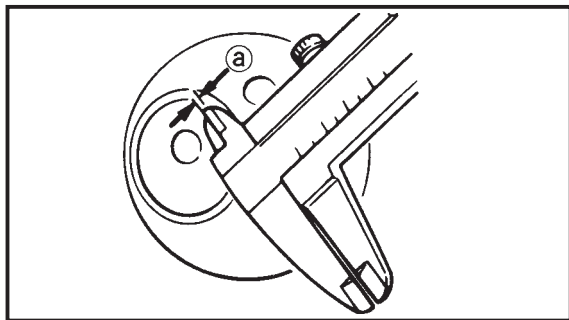
- Place a straightedge ① and a feeler gauge ② across the Cylinder Head.
- Measure the warpage.
- If the warpage is out of specification, resurface the Cylinder Head/replace if necessary.
- Place a 400 ~ 600 grit wet abrasive paper on the surface plate, and resurface the Head using a figure-eight sanding pattern.

NOTE :

Rotate the Cylinder Head several times for an even resurfacement.

INSPECTION AND REPAIR: VALVE SEATS

ENG



VALVE SEATS

1. Remove :
 - Carbon deposits from the Valve Face and Valve Seat.
2. Inspect :
 - Valve Seats
Pitting/wear → reface the valve seat.
3. Measure :
 - Valve Seat width ②
Out of specification → Reface the Valve Seat.



Valve seat width :

Intake :

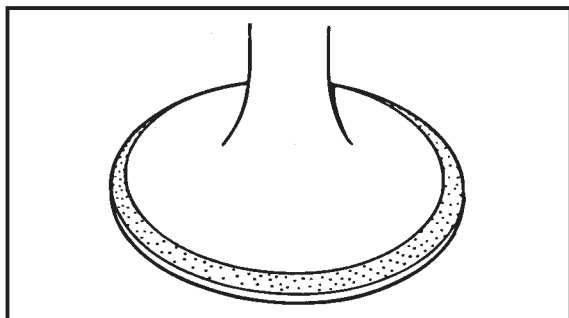
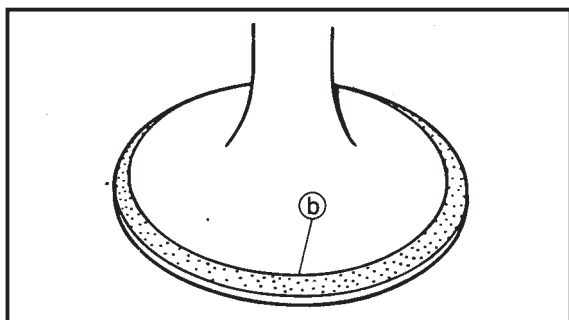
0.9 ~ 1.1 mm

<Limit : 1.6 mm>

Exhaust :

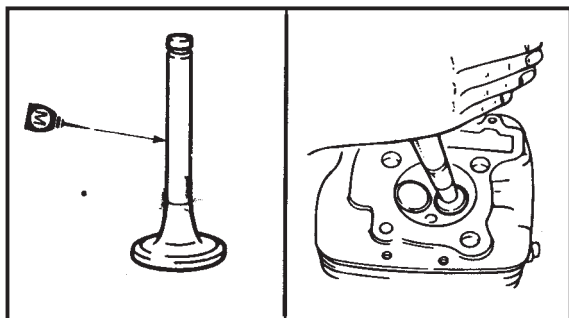
0.9 ~ 1.1 mm

<Limit : 1.6 mm>



Measurement steps :

- Apply Mechanic's blueing dye (Dykem) ① to the valve face.
- Install the Valve in the Cylinder Head
- Press the Valve through the Valve Guide and onto the valve seat to make a clear pattern.
- Measure the Valve Seat width. Where the Valve Seat and Valve Face made contact, blueing will have been removed.
- If the Valve Seat is too wide, too narrow, or the seat is not centered, the valve seat must be refaced.



4. Lap :

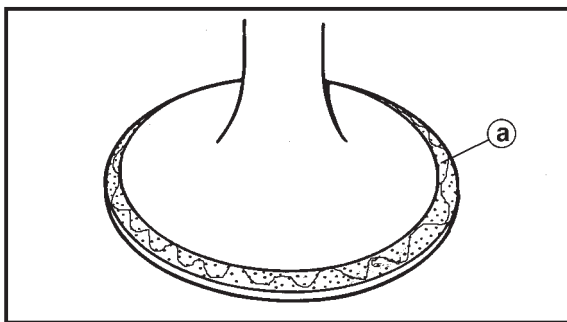
- Valve face
- Valve seat

NOTE :

After refacing the Valve Seat or replacing the Valve, the Valve Seat and Valve Face should be lapped.

INSPECTION AND REPAIRS

ENG



Lapping steps :

- Apply coarse lapping compound @ to the Valve Face

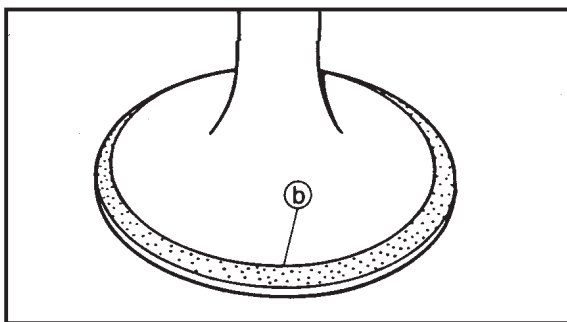
CAUTION:

Do not let compound enter the gap between the Valve Stem and the Guide.

- Apply molybdenum disulfide oil to the Valve Stem.
- Install the Valve into the Cylinder Head.
- Turn the Valve in one Direction using the Valve lapping tool until the Valve Face and Valve Seat are evenly polished, then clean off all compound.

NOTE :

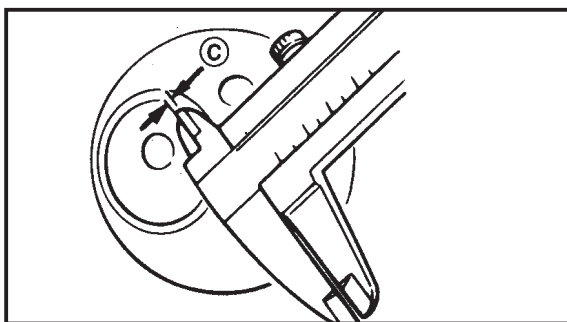
For best lapping results, lightly tap the Valve seat while rotating the Valve.



- Apply a fine lapping compound ① to the Valve face and repeat the above steps.

NOTE :

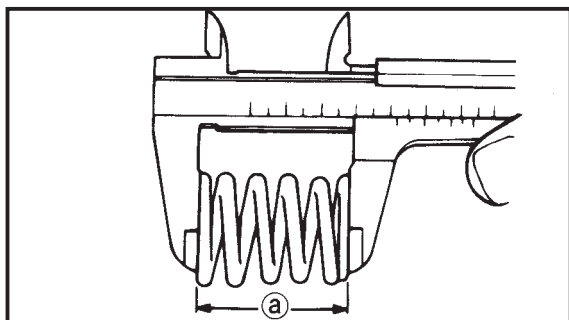
Make sure to clean off all compound from the Valve face and Valve seat after every lapping operation.



- Apply Mechanic's blueing dye (Dykem) ② to the Valve face.
- Install the Valve in the Cylinder Head.
- Press the Valve through the Valve Guide and onto the Valves Seat to make a clear pattern.
- Measure the Valve Seat width © again. If the Valve Seat width is out of specification, lap the Valve and Valve Seat.

INSPECTION AND REPAIR : VALVE SPRINGS AND VALVES

ENG



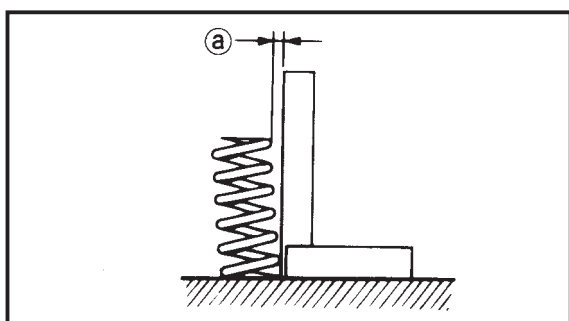
VALVE SPRINGS AND VALVES

1. Measure :

- Valve Spring free length @
Out of specification → Replace.



Valve spring free length :
39.62 mm
<Limit 38.17 mm>

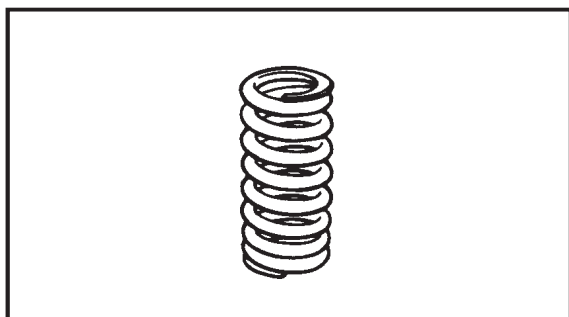


2. Measure :

- Spring tilt @
Out of specification → Replace

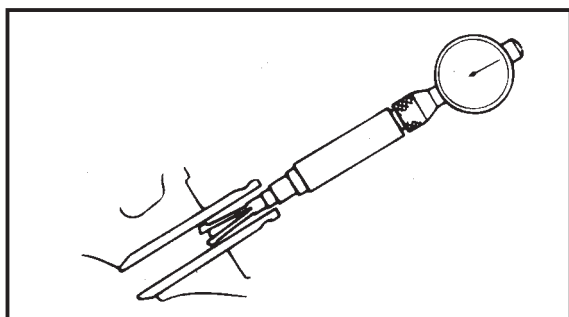


Spring Tilt Limit :
1.7 mm



3. Check

- Spring contact face
Wear/pitting/scratches → Replace

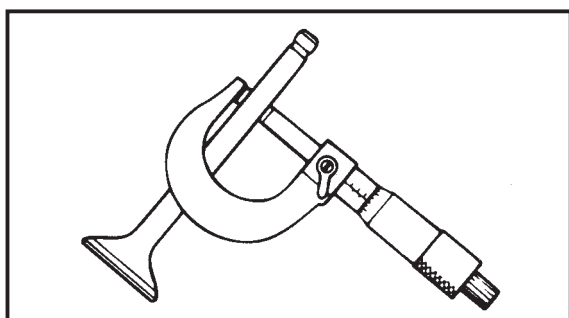


4. Measure :

- Valve guide inside diameter



Valve guide inside diameter :
Intake :
5.000 ~ 5.012 mm
<Limit : 5.042mm>
Exhaust :
5.000 ~ 5.012 mm
<Limit : 5.042mm>



5. Measure :

- Valve stem diameter

ENGINE INSPECTION AND REPAIR

ENG



6. Calculate :

Stem Guide Clearance

$$\text{Stem-to-guide clearance} = \text{Valve guide inside diameter} - \text{Valve stem diameter}$$

Stem-to-guide clearance limit :**Intake :**

0.005 ~ 0.0325 mm

<limit : 0.075 mm>

Exhaust :

0.0125 ~ 0.026 mm

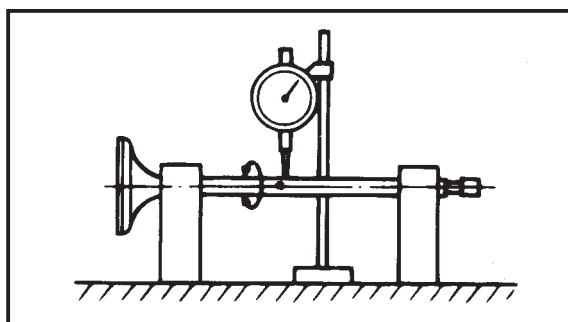
<limit : 0.075 mm>

Out of specification → Replace the Cylinder Head

7. Measure :

- Runout (valve stem)

Out of specification → Replace



Runout Limit :
0.01 mm

CAMSHAFT INSPECTION

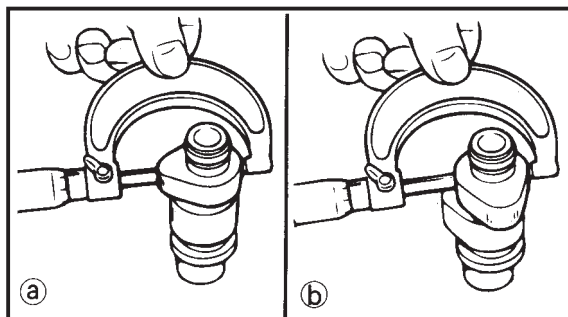
1. Inspect :

- Cam lobes
- Pitting/scratches/blue discoloration → Replace

2. Measure :

- Cam lobes dimension ① and ②

Out of specification → Replace.



Cam lobes dimension :
Intake :

① 25.356 ~ 25.456 mm

<limit 25.326 mm>

② 20.989 ~ 21.089 mm

<limit 20.959 mm>

Exhaust :

① 21.360 ~ 21.460 mm

<limit 21.330 mm>

② 21.001 ~ 21.101 mm

<limit 20.971 mm>

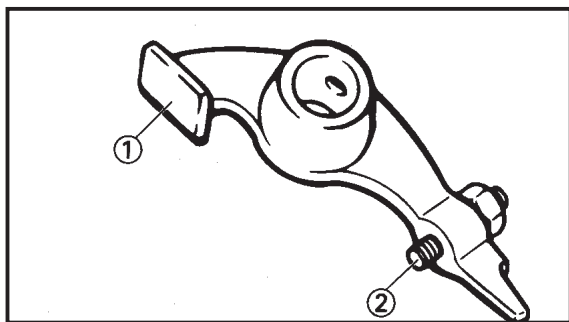
3. Inspect :

- Camshaft oil passage

Chocked → Blow out oil passage with compressed air.

ENGINE INSPECTION AND REPAIR

ENG



ROCKER ARMS AND ROCKER ARM SHAFTS INSPECTION

1. Inspect :

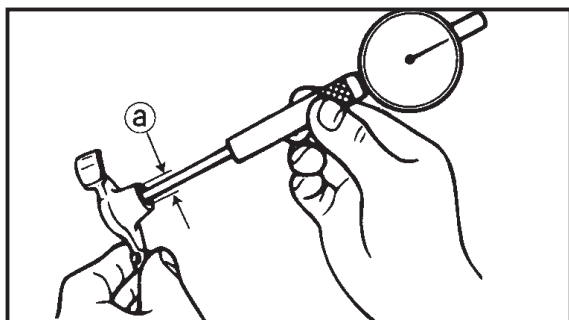
- Cam lobe contact surface ①
- Adjuster surface ②

Wear/pitting/scratches/blue discoloration → Replace

Inspection steps :

- Inspect the two contact areas on the Rocker Arms for signs of unusual wear.
- Rocker Arm Shaft hole
- Cam-lobe contact surface
Excessive wear → Replace
- Inspect the surface condition of the Rocker Arm Shafts
Pitting/scratches/blue discoloration → Replace and check lubrication route
- Measure the inside diameter ㉑ of the Rocker Arm holes

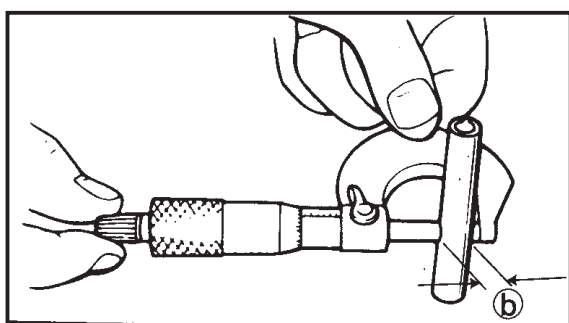
Out of specification → Replace



Inside diameter (Rocker Arm) :
10.000 ~ 10.015 mm
<Limit>: 10.03 mm

- Measure the outside diameter ㉒ of the Rocker Arm Shafts.

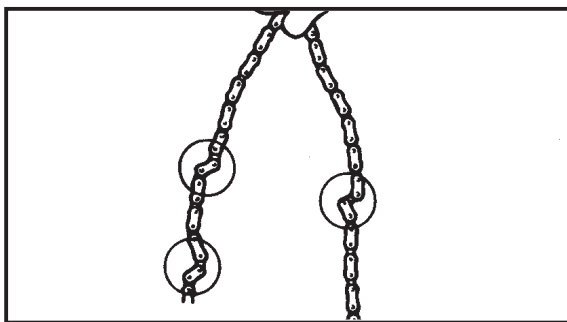
Out of specification → Replace



Outside diameter(Rocker Arm Shaft):
9.981 ~ 9.991 mm
<Limit> : 9.95 mm

ENGINE INSPECTION AND REPAIR

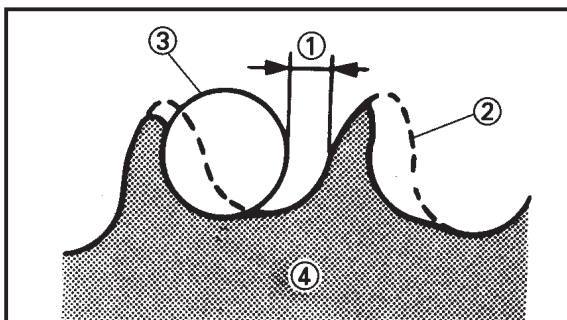
ENG

**TIMING CHAIN, SPROCKETS AND CHAIN GUIDES**

1. Inspect :

- Timing Chain

Wear out/Stiffness/damage → Replace the Chain and the Sprockets as a set.

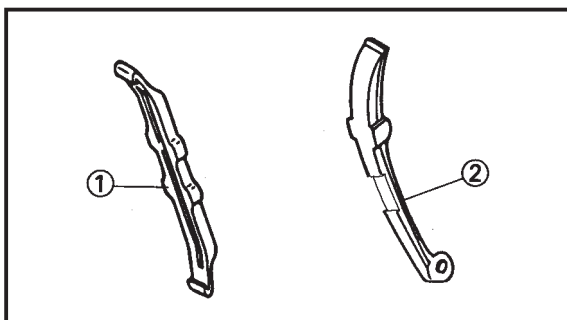


2. Inspect :

- Cam Sprocket

Wear/damage → Replace the Cam Sprocket and the timing chain as a set.

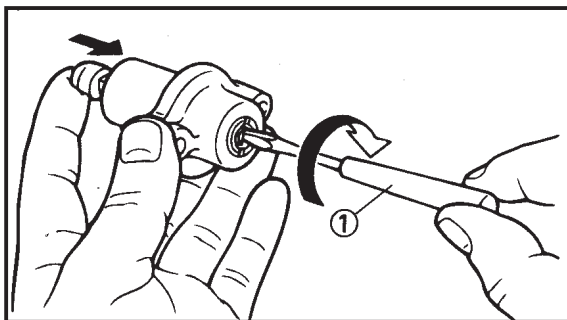
- ① 1/4 tooth gap
- ② Correct Tooth Profile
- ③ Roller
- ④ Sprocket



3. Inspect :

- Guide Stopper #1 ①
- Guide Stopper # 2 ② and Bush

Wear/damage → Replace

**TIMING CHAIN TENSIONER**

1. Check :

- One-way Cam operation

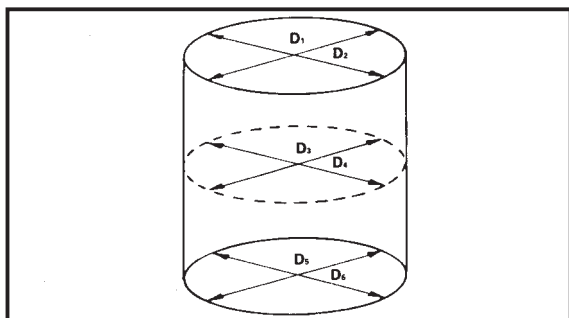
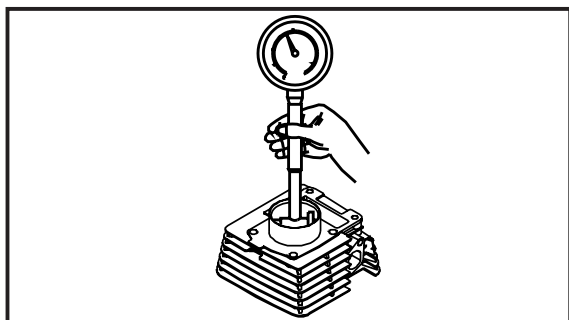
If Unsmooth operation → Replace

Checking steps :

- While pressing the Tensioner Rod lightly with fingers, use a flat screwdriver ① and retract the Tensioner Rod up fully clockwise.
- When releasing the screwdriver by pressing lightly with fingers, make sure that the Tensioner Rod will come out smoothly.
- If not, replace the Tensioner Assembly

ENGINE INSPECTION AND REPAIR

ENG

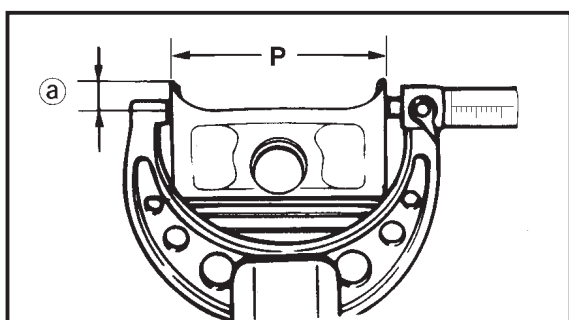


Cylinder Bore "C"	49.000 ~ 49.020 mm
Taper limit "T"	0.005 mm
Out of round "R"	0.01 mm

"C"=Maximum Diameter D

"T"=(Maximum D1 or D2) - (Maximum D5 or D6)

"R"=(Maximum D1, D3 or D5)
- (Maximum D2, D4 or D6)



CYLINDER AND PISTONS

1. Inspect :

- Cylinder and Piston walls
Vertical scratches → Rebore or replace the Cylinder and the Piston

2. Measure :

- Piston-to-Cylinder clearance

Measurement steps :

1st step :

- Measure the Cylinder Bore "C" with a Cylinder Bore Gauge.

NOTE :

Measure the Cylinder Bore "C" in parallel to and at right angles to the Crankshaft. Then, find the average of the measurements.

- If out of specification, rebore or replace the Cylinder- Piston Kit

2nd step :

- Measure the Piston Skirt diameter "P" with a Micrometer.
@ 4.5 mm from the Piston bottom edge

Piston size p	
Standard	48.962 ~ 48.981 mm
Oversize	Ist
	II nd

- If out of specification, replace the Piston and the Piston Rings as a set.

3rd step:

- Calculate the Piston-to-Cylinder clearance using the following formula :

Piston-to-Cylinder clearance = Cylinder Bore "C" – Piston Skirt diameter "P"

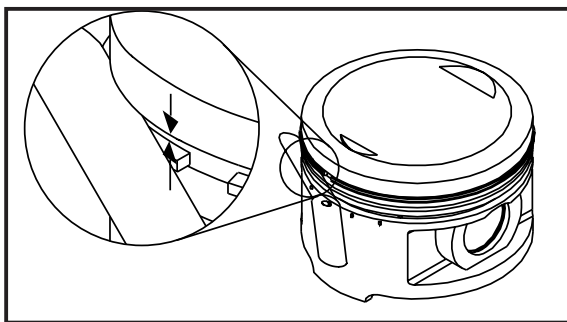


**Piston-to-Cylinder clearance :
0.0175 ~ 0.0210 mm**

- If out of specification, rebore or replace the Cylinder, and replace the Piston and Piston Rings as a set

ENGINE INSPECTION AND REPAIR

ENG



PISTON RING INSPECTION

1. Measure :

- Side clearance

Out of specification → Replace the Piston and the Piston Rings as a set

NOTE :

Remove the carbon deposits from the Piston Ring Grooves and Rings before measuring the side clearance.



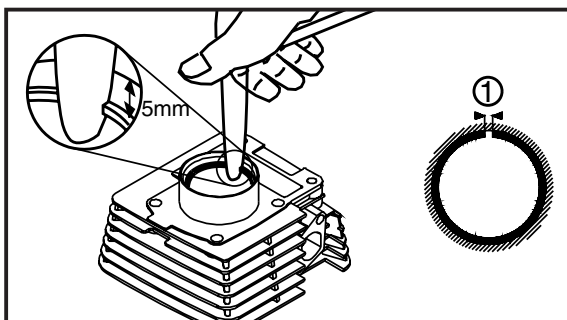
Side clearance :

Top Ring : <Limit>

0.030 ~ 0.065 mm

2nd Ring : <Limit>

0.020 ~ 0.065 mm



2. Position :

- Piston Ring
(in the Cylinder bore)

NOTE :

Push the Ring with the Piston Crown so that the Ring will be at right angles to the Cylinder Bore 5 mm from the bottom side.

3. Measure :

- End gap ① using a feeler gauge
- Out of specification → Replace

NOTE :

You cannot measure the end gap on the expander spacer of the Oil Ring. If the Oil Ring Rails show excessive gap, replace all three Rings.



Eng gap :

Top Ring : 0.10 ~ 0.25 mm

<limit> : <0.35mm>

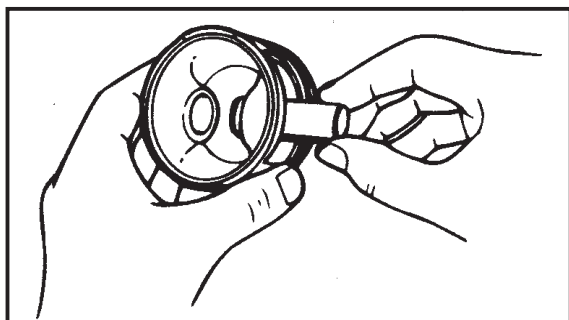
2nd Ring : 0.25 ~ 0.40 mm

<Limit> : <0.50 mm>

Oil Ring : 0.2 ~ 0.7 mm

ENGINE INSPECTION AND REPAIR

ENG



PISTON PIN INSPECTION

1. Inspect :

- Piston Pin

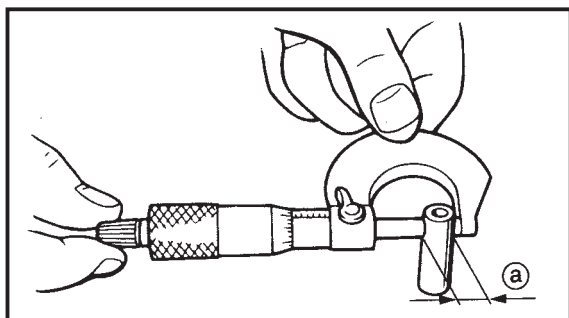
Blue discoloration/grooves → Replace and inspect the lubrication system

2. Measure :

- Piston Pin-to-Piston clearance

Measurement steps.

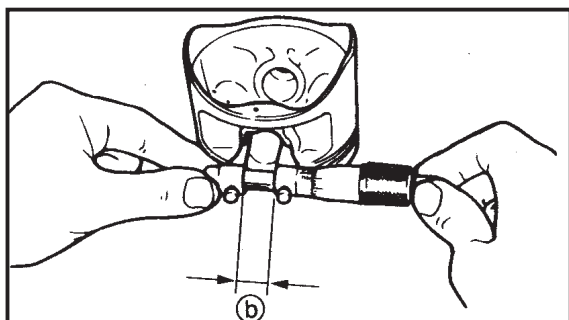
- Measure the Piston Pin outside diameter ② using a micrometer. If out of specification, replace the Piston Pin.



Outside diameter (Piston Pin):

12.996 ~ 13.000 mm

<Limit:> : 12.975 mm



- Measure the Piston Pin hole inside diameter ① using a Internal Micrometer
- Calculate the Piston Pin -to-Piston clearance using the following formula :

**Piston Pin-to-Piston clearance =
Bore size (Piston Pin) ① – Outside diameter (Piston Pin) ②**

- Out of specification → replace the Piston

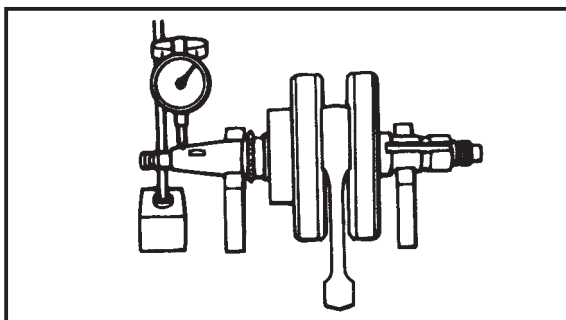


Clearance (Piston Pin to Piston) :

0.009 ~ 0.013 mm

ENGINE INSPECTION AND REPAIR

ENG



CRANKSHAFT

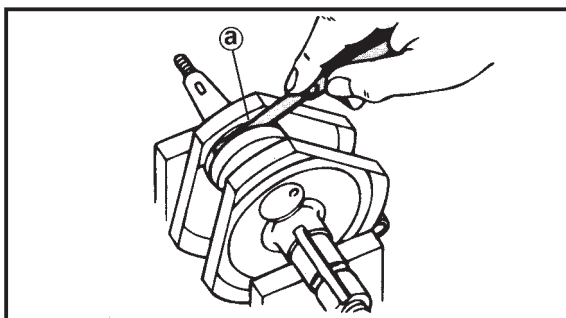
1. Measure :

- Crankshaft runout, using a Surface plate and Dial gauge. Keep the Crankshaft on V blocks and rotate slowly while measuring.

Out of specification → Replace



Runout : 0.01 mm
<limit> : <0.03 mm>



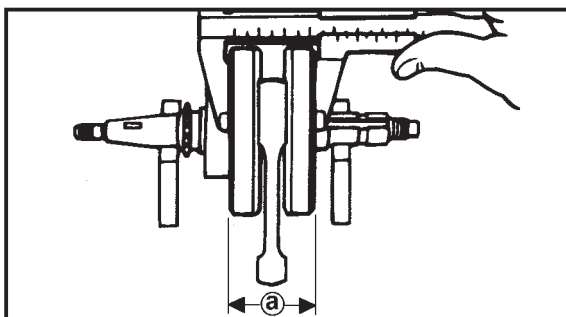
2. Measure :

- Big end side clearance @ using a Feeler Gauge

Out of specification → Replace big end Bearing , Crank Pin and Connecting Rod



Big end side clearance :
0.15 ~ 0.45 mm



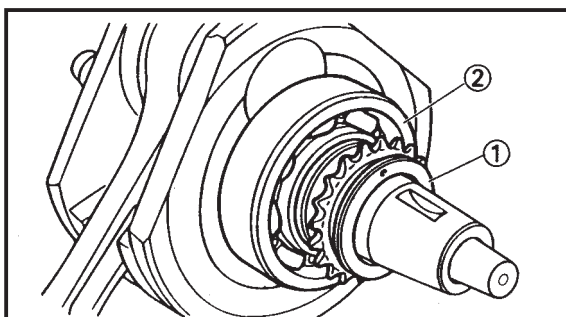
3. Measure :

- Crank width @

Out of specification → Replace Crankshaft.

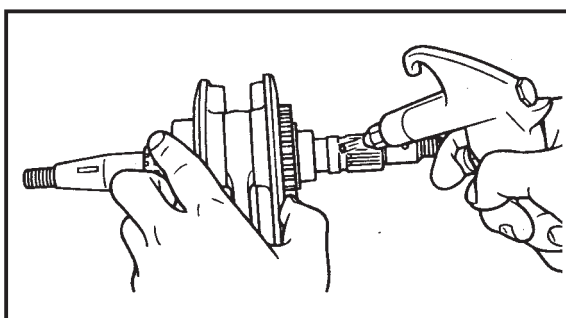


Crank width :
46.95 ~ 47.00 mm



4. Inspect :

- Crankshaft Sprocket ①
Wear/damage → Replace Crankshaft
- Bearing ②
Wear/crack/damage → Replace Crankshaft

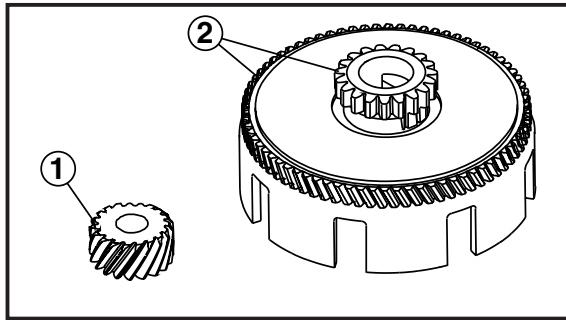


5. Inspect :

- Crankshaft journal oil passage
Clogged → Blow the oil passage with compressed air

ENGINE INSPECTION AND REPAIR

ENG



PRIMARY DRIVE GEAR INSPECTION

1. Inspect :

- Primary Drive Gear teeth ①
- Primary Driven Gear teeth ②

Wear/damage → Replace both Gears as a set.

NOTE :

Refer the general specification for grading.

Excessive noise during operation → Replace both Gears as a set.

CLUTCH INSPECTION

1. Inspect :

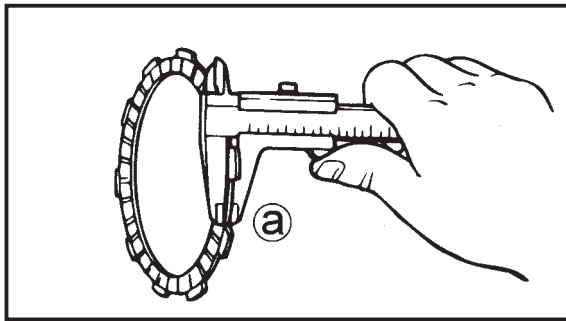
- Friction Plates

Wear/damage → Replace the Friction Plates as a set

2. Measure :

- Friction Plate thickness @ using a Vernier Calliper at four points.

Out of specification → Replace the Friction Plates as a set



Thickness (Friction Plate) :

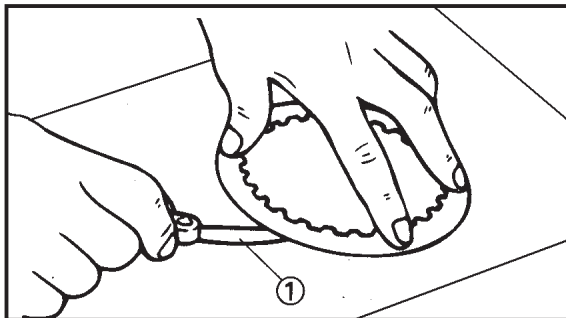
3.0 mm

<Limit>: <2.8 mm>

3. Inspect :

- Clutch Plates for damage
- Clutch Plate Warpage Using a Surface Plate and a Feeler Gauge ①

Out of specification → Replace the Clutch Plates as a set



Warp limit (Clutch Plate) :

Less than 0.05 mm

4. Inspect :

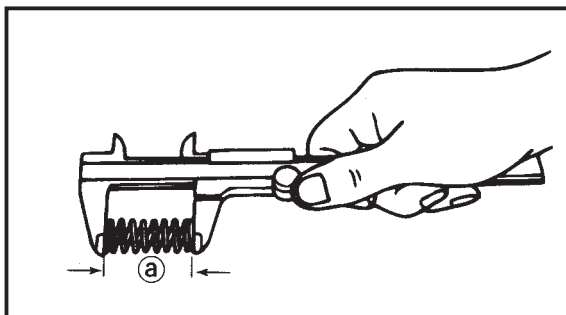
- Clutch Springs

Damage → Replace the Clutch springs as a set.

5. Measure

- Free length (Clutch Spring) @

Out of specification → Replace the Clutch springs as a set.



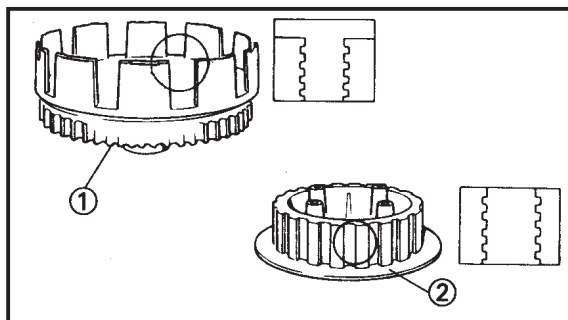
Free length (Clutch Spring) :

33 mm

<Limit> : 31.0 mm

ENGINE INSPECTION AND REPAIR

ENG

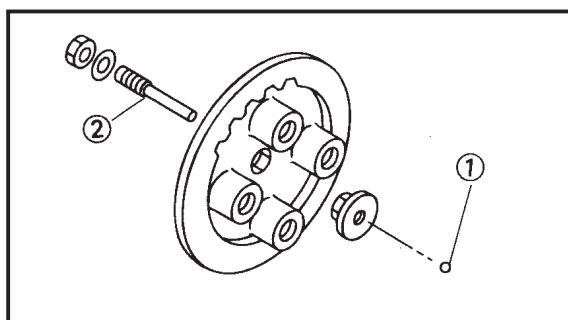


6. Inspect :

- Dogs on the Primary Driven Gear ①
Scoring/wear/damage → Deburr or replace
- Clutch Boss Splines ②
Scoring/wear/damage → Replace

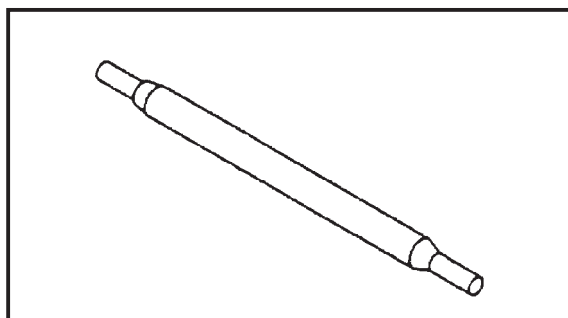
NOTE :

Scoring on the Clutch Housing Dogs and the Clutch Boss Splines will cause erratic operation of the clutch.

**PUSH ROD INSPECTION**

1. Inspect :

- Ball ①
- Push Rod #1 ②
Wear/damage/Bend → Replace

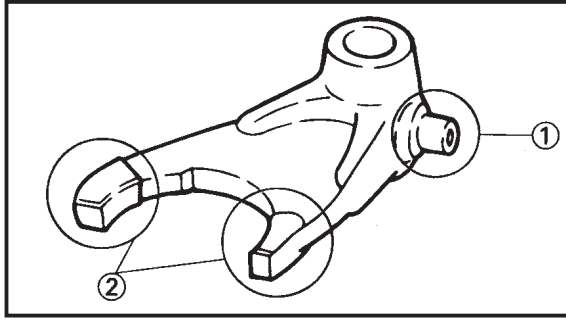


2. Inspect :

- Push Rod # 2 ①
Wear/damage/Bend → Replace

ENGINE INSPECTION AND REPAIR

ENG

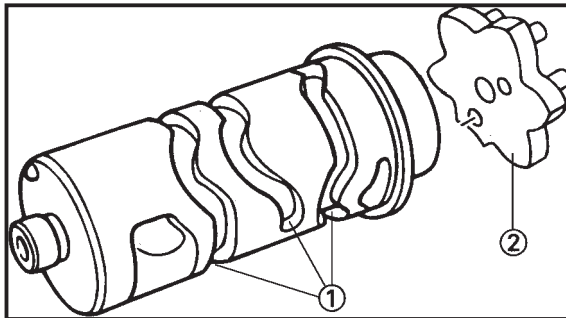


SHIFT FORK SHIFT CAM INSPECTION

1. Inspect :

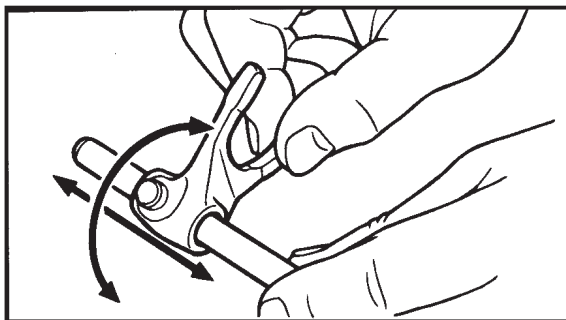
- Shift Fork follower ①
- Shift Fork Pawl ②

Scoring/bends/wear/damage → Replace



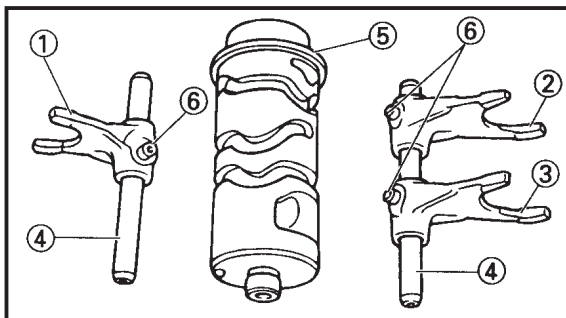
2. Inspect :

- Shift Cam grooves ①
Wear/damage/scratches → Replace
- Shift Cam Segment ②
Wear/damage → Replace



3. Check :

- Shift Fork movement
(on the Guide Bar)
Unsmooth operation → Replace the Shift Fork and the Guide Bar



4. Inspect :

The assembly for proper working

- Shift Fork "C" (center) ①
- Shift Fork "R" (right) ②
- Shift Fork "L" (left) ③
- Guide bars (small and big) ④
- Shift Cam ⑤
- Shift fork cam follower ⑥

Roll the Guide Bar on a flat surface

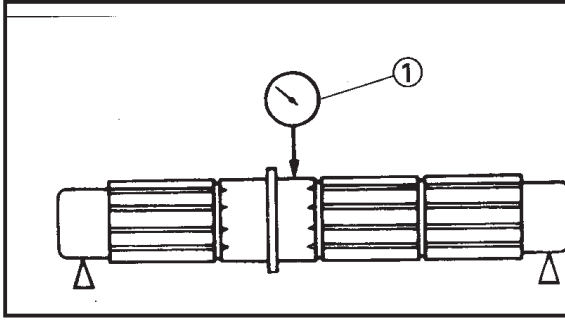
Bent → Replace

⚠ WARNING

Do not attempt to straighten a bent Guide Bar.

ENGINE INSPECTION AND REPAIR

ENG



5. Measure :

- Axle runout (Main and Drive)

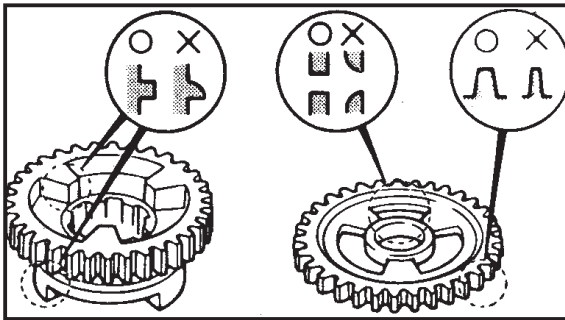
Use a centering device and a dial gauge ①

Out of specifications → Replace the bent Axle



Runout : 0.01 mm

<limit> : 0.03 mm



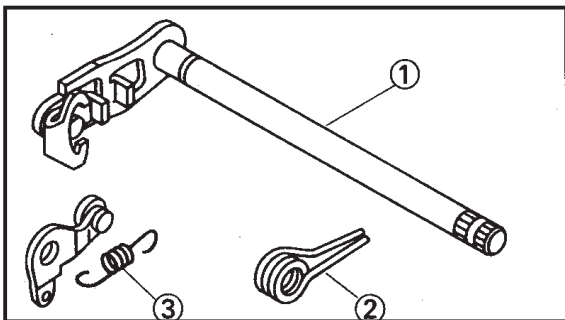
6. Inspect :

- Gear teeth

Blue discoloration/pitting/wear → Replace

- Mated Dogs

Rounded edges/cracks/missing portions → Replace



7. Inspect :

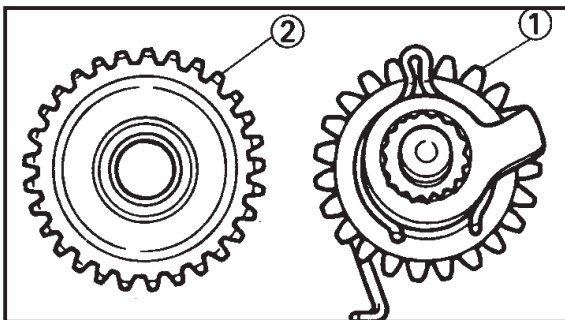
- Shift Shaft ①

Damage/bent/wear → Replace

- Return spring (shift shaft) ②

- Return Spring (stopper lever) ③

Wear/damage → Replace



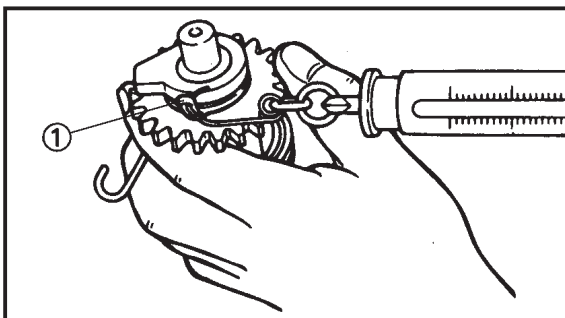
KICK STARTER INSPECTION

1. Inspect :

- Gear teeth (kick Gear) ①

- Gear teeth (Idle Gear) ②

Wear/damage → Replace



2. Measure :

- Torsion spring ① force Using a Spring Gauge

Out of specification → Replace

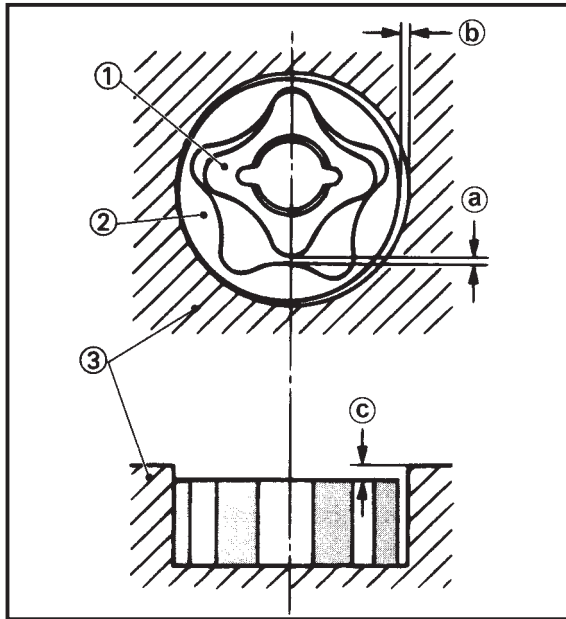


Kick Clip friction force :

0.8 ~ 1.2 kg

ENGINE INSPECTION AND REPAIR

ENG



OIL PUMP INSPECTION

1. Measure :

- Tip clearance ②
(between the inner rotor ① and the outer rotor ②) using feeler gauge.
- Side clearance ①
(between the outer rotor ② and the Pump Housing ③) using feeler gauge
Out of specification → Replace the Oil Pump Assembly
- Housing and Rotor clearance ③
(between the Pump Housing ③ and the Rotors ① and ②)
Out of specification → Replace the Oil Pump Assembly
- Pump Assembly
Damage → Replace
Contamination → Clean with flushing oil.



Tip clearance ②

0.15 mm <Limit: 0.20 mm>

Side clearance ①:

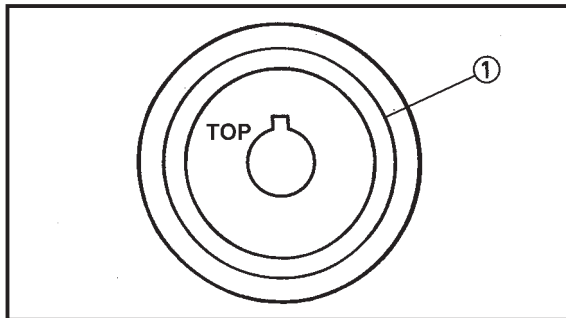
0.06 ~ 0.10 mm

<Limit: 0.15 mm>

Housing and Rotor clearance ③:

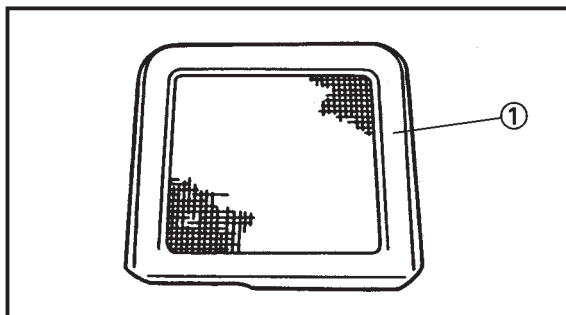
0.06 ~ 0.10 mm

<Limit: 0.15 mm>



2. Inspect :

- Rotary Filter ①
Cracks/damage/choked → Replace
Contamination → Clean with flushing oil

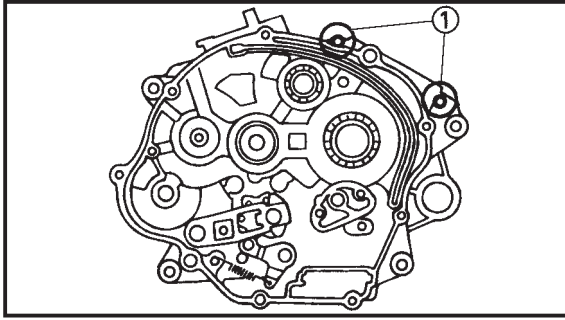


3. Inspect :

- Oil strainer ①
Damage → Replace
Contamination → Clean with flushing oil.

ENGINE INSPECTION AND REPAIR

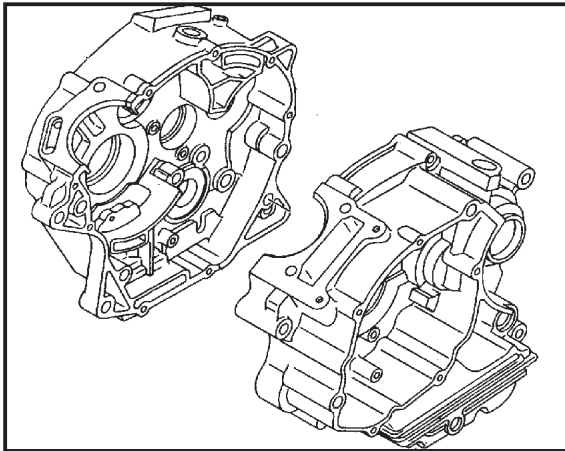
ENG


**DELIVERY PASSAGE INSPECTION
CRANK CASE RH**

1. Check :

- Oil delivery passage

Blockage → Blow the passage with compressed air.

**CRANKCASE**

1. Thoroughly wash the crankcase L.H. & R.H. in mild solvent.

2. Thoroughly clean all the Gasket Mating surfaces and Crankcase Mating surfaces using solvent.

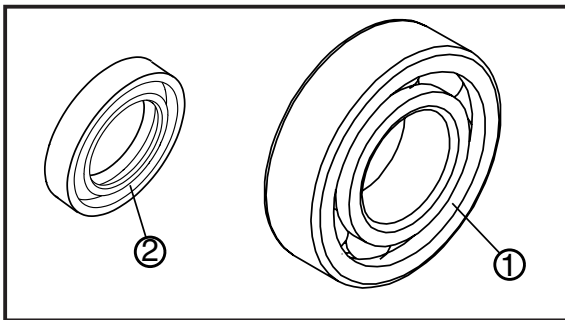
3. Inspect :

- Crankcase

Cracks/damage → Replace

- Oil delivery passages

Blockage → Blow the passages with compressed air

**BEARINGS AND OIL SEALS**

1. Inspect :

- Bearings ①

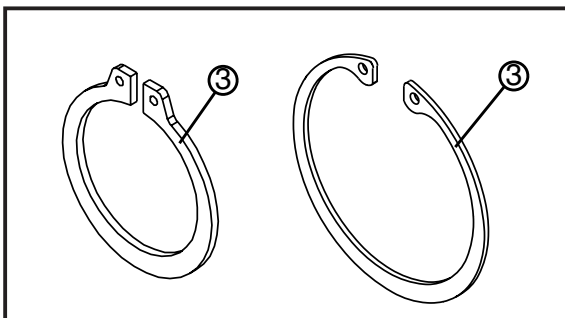
Clean with solvent and lubricate with multigrade oil, then rotate the bearing using finger

Roughness/noise → Replace

2. Inspect :

- Oil Seals ②

Damage/ wear → Replace

**CIRCLIPS AND WASHERS**

1. Inspect :

- Circlips ①

- Washers

Damage/looseness/bends → Replace

ENGINE ASSEMBLY AND ADJUSTMENTS

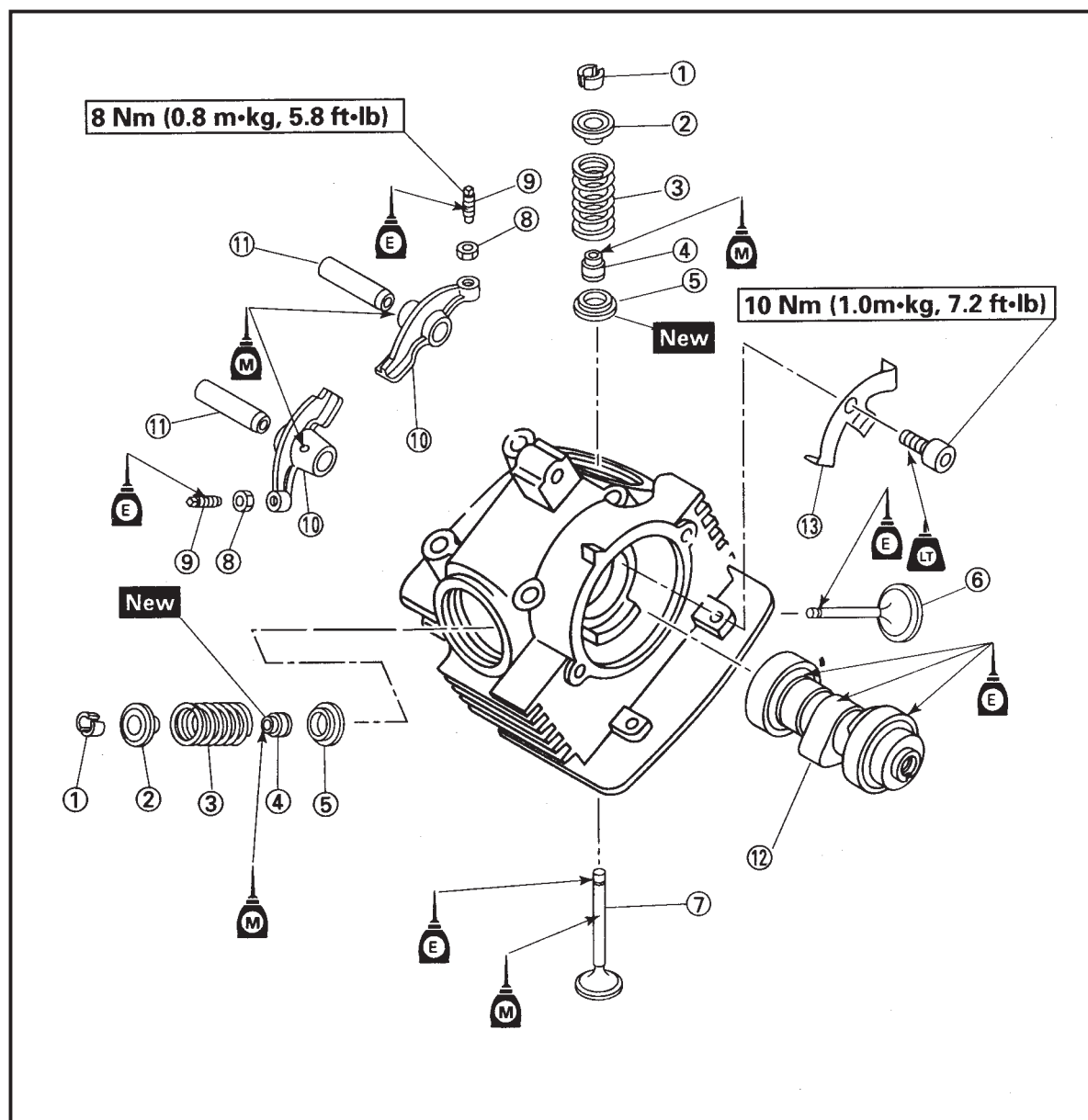
ENG



ENGINE ASSEMBLY AND ADJUSTMENTS

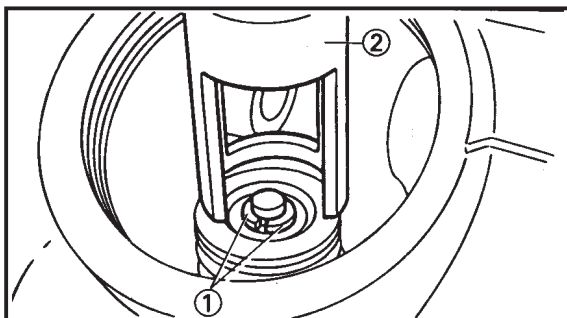
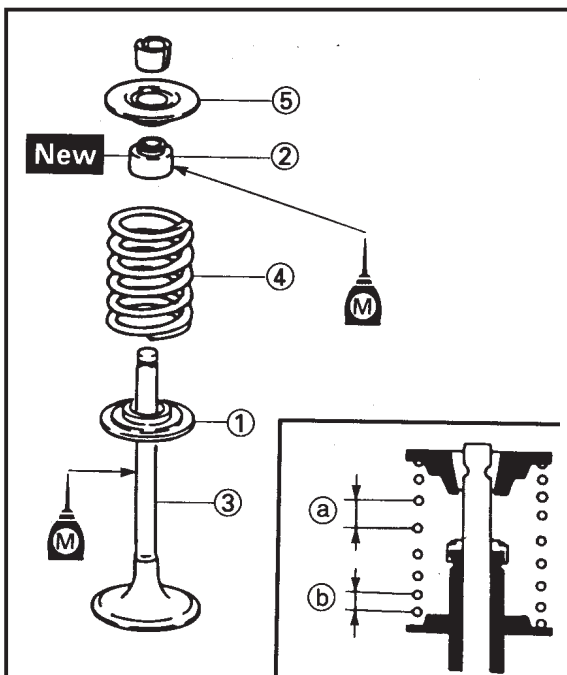
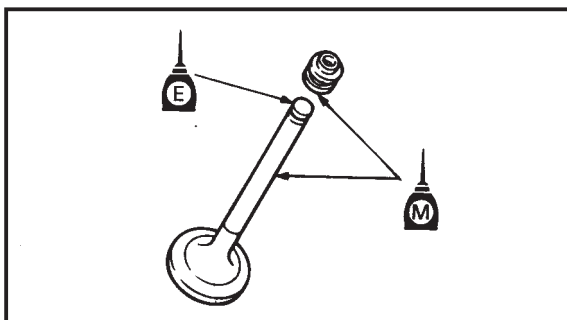
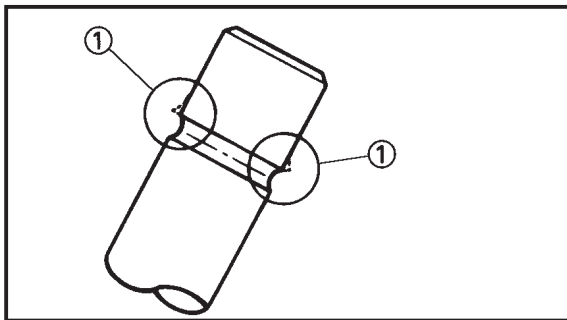
VALVES, ROCKER ARM AND CAMSHAFT

- | | |
|-------------------------|--------------------|
| ① Valve Cotteners | ⑧ Lock Nut |
| ② Valve Spring Retainer | ⑨ Adjuster |
| ③ Valve Springs | ⑩ Valve Rocker Arm |
| ④ Valve Stem Seal | ⑪ Rocker Arm Shaft |
| ⑤ Valve Spring seat | ⑫ Camshaft |
| ⑥ Valve (intake) | ⑬ Plate |
| ⑦ Valve (exhaust) | |



ENGINE ASSEMBLY AND ADJUSTMENTS

ENG

**⚠ WARNING**

For Engine Assembly, replace the following parts with new ones :

- O-Rings
- Gaskets
- Oil Seals
- Copper Washers
- Lock Washers
- Circlips

VALVES AND VALVE SPRINGS INSTALLATION

1. Deburr :
 - Valve Stem end ① Using an Oil Stone for smoothing.
2. Apply :
 - Molybdenum disulfide oil on the Valve Stem and Oil Seal

**Molybdenum Disulfide Oil**

3. Install :
 - Valve Spring Seat ①
 - Valve Stem Seal ② **New**
 - Valve ③ in the valve guide(Cylinder Head)
 - Valve Spring ④
 - Spring retainer ⑤

NOTE :

Install the Valve Spring with the small pitch ⑥ facing downward

② facing upwards

① facing downward

4. Install :
 - Valve Cotteners ①

NOTE :

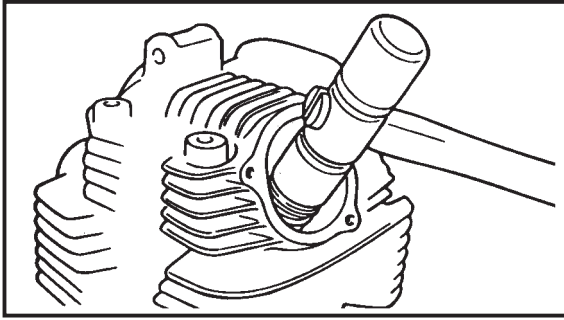
Install the Valve Cotteners while compressing the valve spring with Valve Spring compressor ②



Valve Spring Compressor :
YSST - 603

ENGINE ASSEMBLY AND ADJUSTMENTS

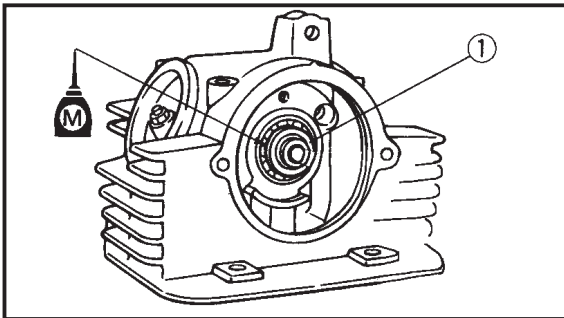
ENG



5. Secure the Valve Cotteners onto the Valve Stem by tapping lightly with a mallet

CAUTION:

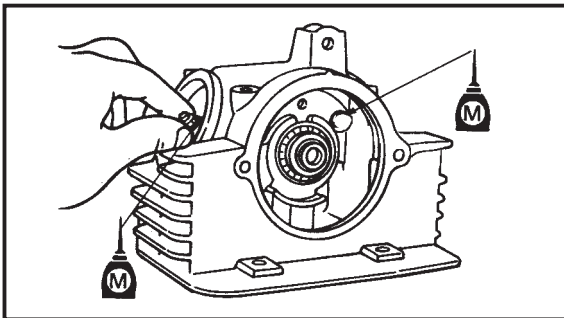
Do not hit so much as to damage the Valve

**CAMSHAFT AND ROCKER ARM INSTALLATION**

1. Lubricate :
 - Camshaft ①



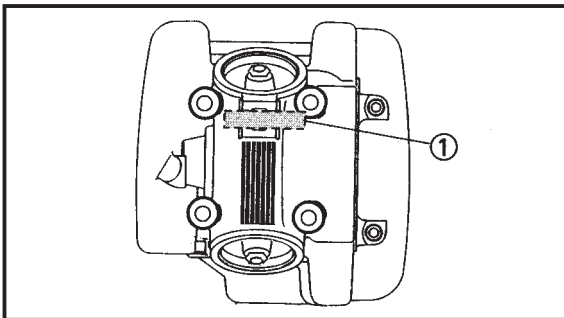
**Camshaft and Camshaft bearing :
Multigrade engine oil.**



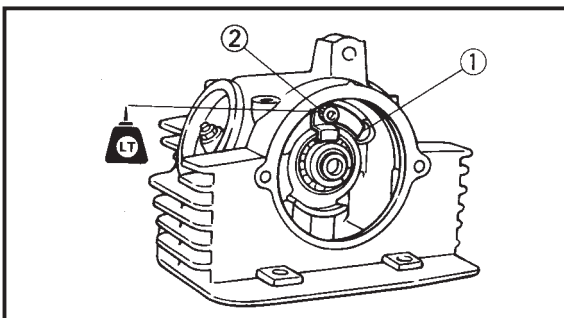
2. Apply :
 - Molybdenum disulfide oil on the rocker arm and Rocker Arm Shaft



Molybdenum disulfide oil



3. Install :
 - Rocker Arm
 - Rocker Arm Shaft ① by pushing it in completely



4. Install :
 - Plate ①
 - Bolt ②



**Bolt (Plate) :
7 Nm (0.7 m.kg, 5.1 ft.lb)**

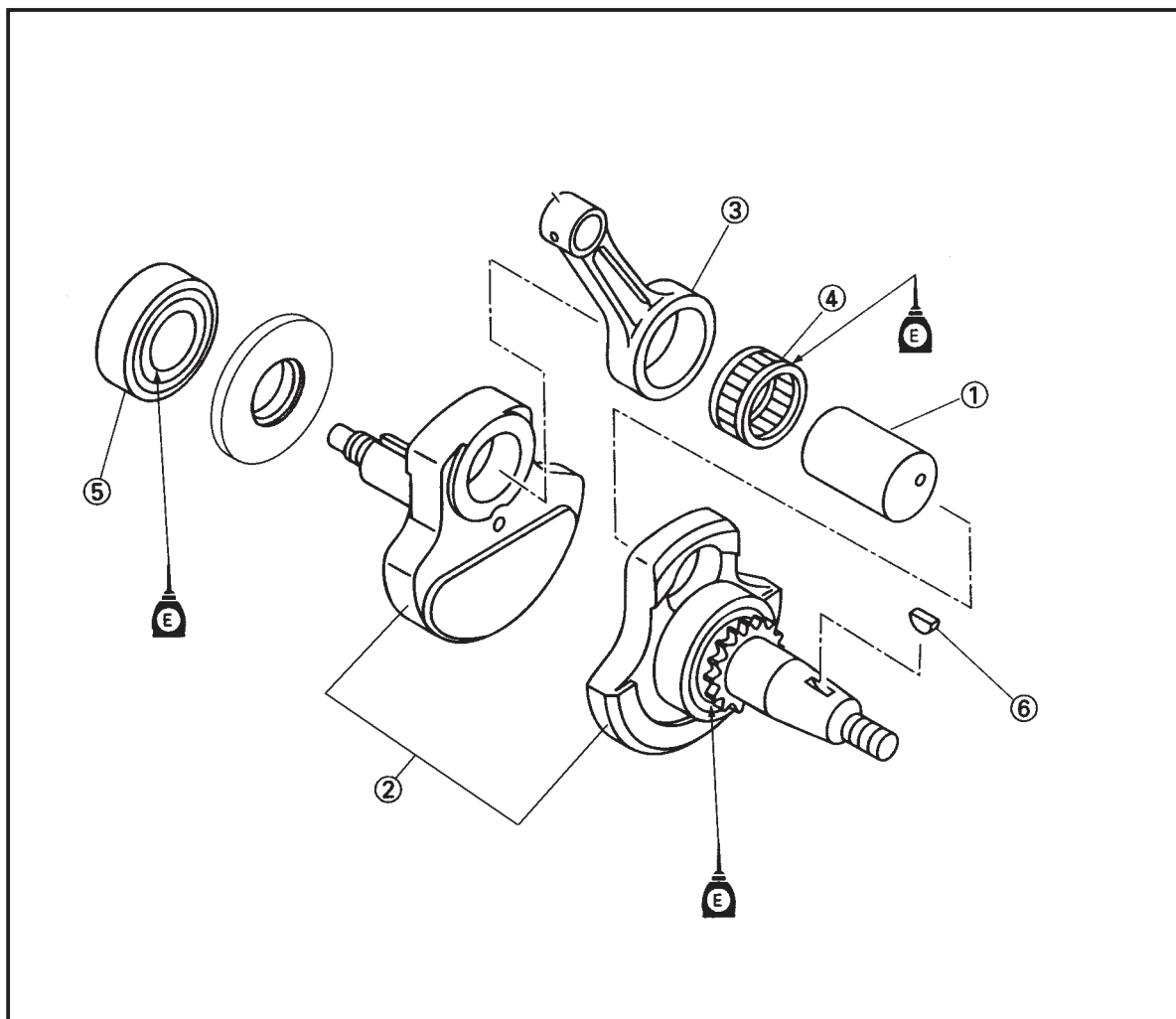
ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



CRANKSHAFT

- | | |
|-------------------|----------------------|
| ① Crank Pin | ⑤ Crankshaft Bearing |
| ② Crank Shaft | ⑥ Wood-ruff Key |
| ③ Connecting Rod | ⑦ Bearing |
| ④ Big end Bearing | ⑧ Spacer |



ENGINE ASSEMBLY AND ADJUSTMENTS

ENG

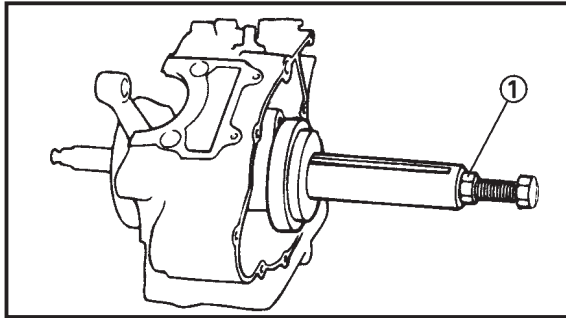


CRANKSHAFT

1. Insert :
 - CrankShaft in the Crankcase (L.H.)
2. Attach :
 - Crankshaft Installing Tool on Crankshaft



Crankshaft Installing Tool
YSST - 266
Spacer
YSST - 267



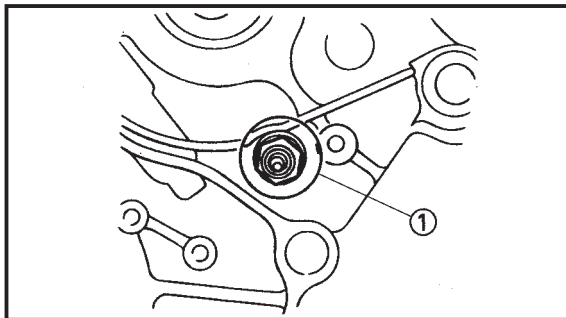
3. Install :
 - Crankshaft by tightening the Nut ①

NOTE :

Hold the Connecting Rod at Top End with one hand while turning the Nut of the Installing Tool with the other. Operate the Installing Tool until the Crankshaft is seated against the Bearing.

CAUTION:

To avoid scratching the Crankshaft and to ease the Installation procedure, apply Engine Oil onto each Bearing and crankcase LH.



4. Install :
 - Neutral Switch ①

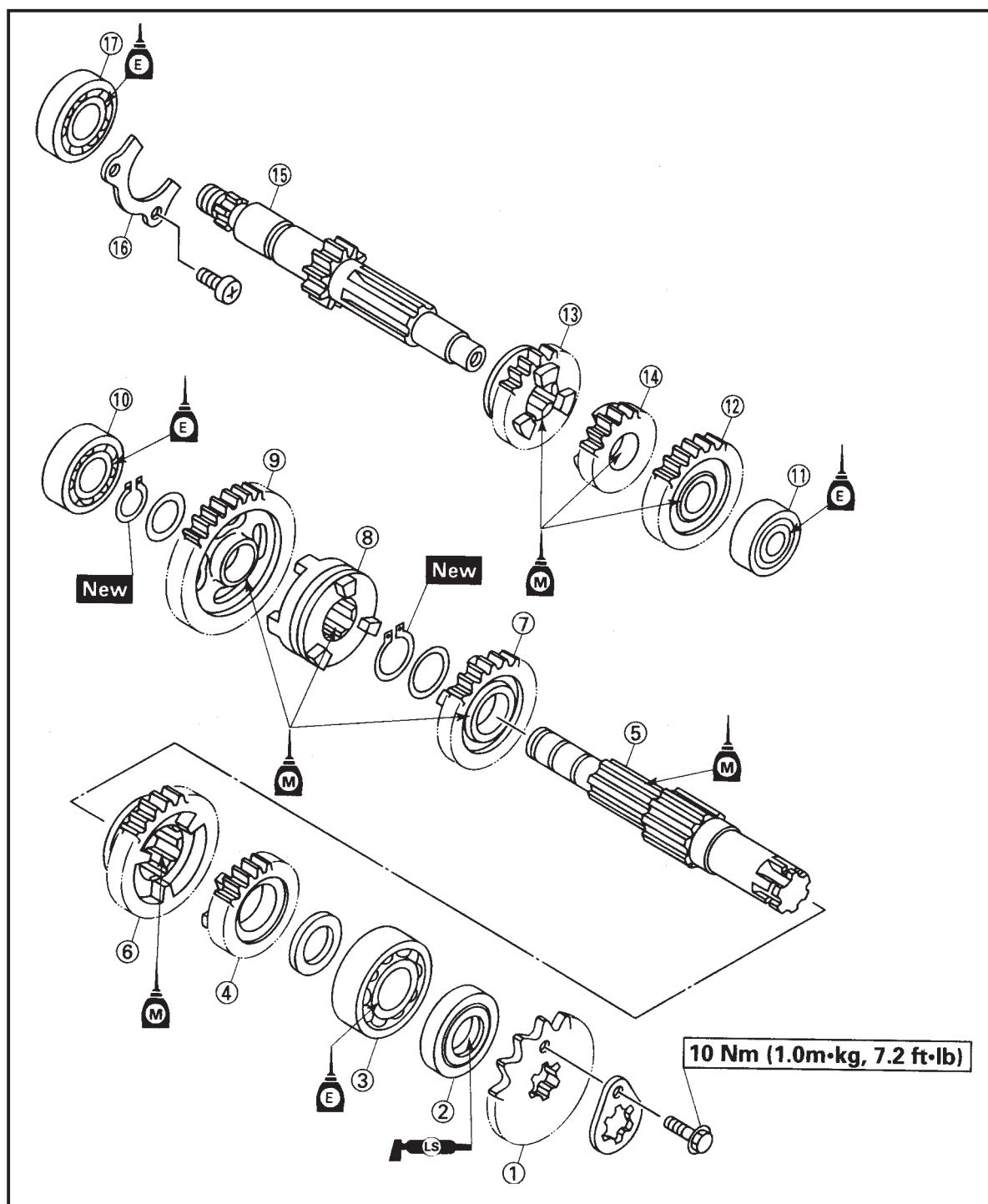
ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



TRANSMISSION

- | | |
|------------------|-------------------|
| ① Drive Sprocket | ⑩ Bearing |
| ② Oil Seal | ⑪ Bearing |
| ③ Bearing | ⑫ 4th Pinion Gear |
| ④ 4th Wheel Gear | ⑬ 3rd Pinion Gear |
| ⑤ Drive Axle | ⑭ 2nd Pinion Gear |
| ⑥ 2nd Wheel gear | ⑮ Main axle |
| ⑦ 3rd Wheel Gear | ⑯ Plate |
| ⑧ Clutch Dog | ⑰ Bearing |



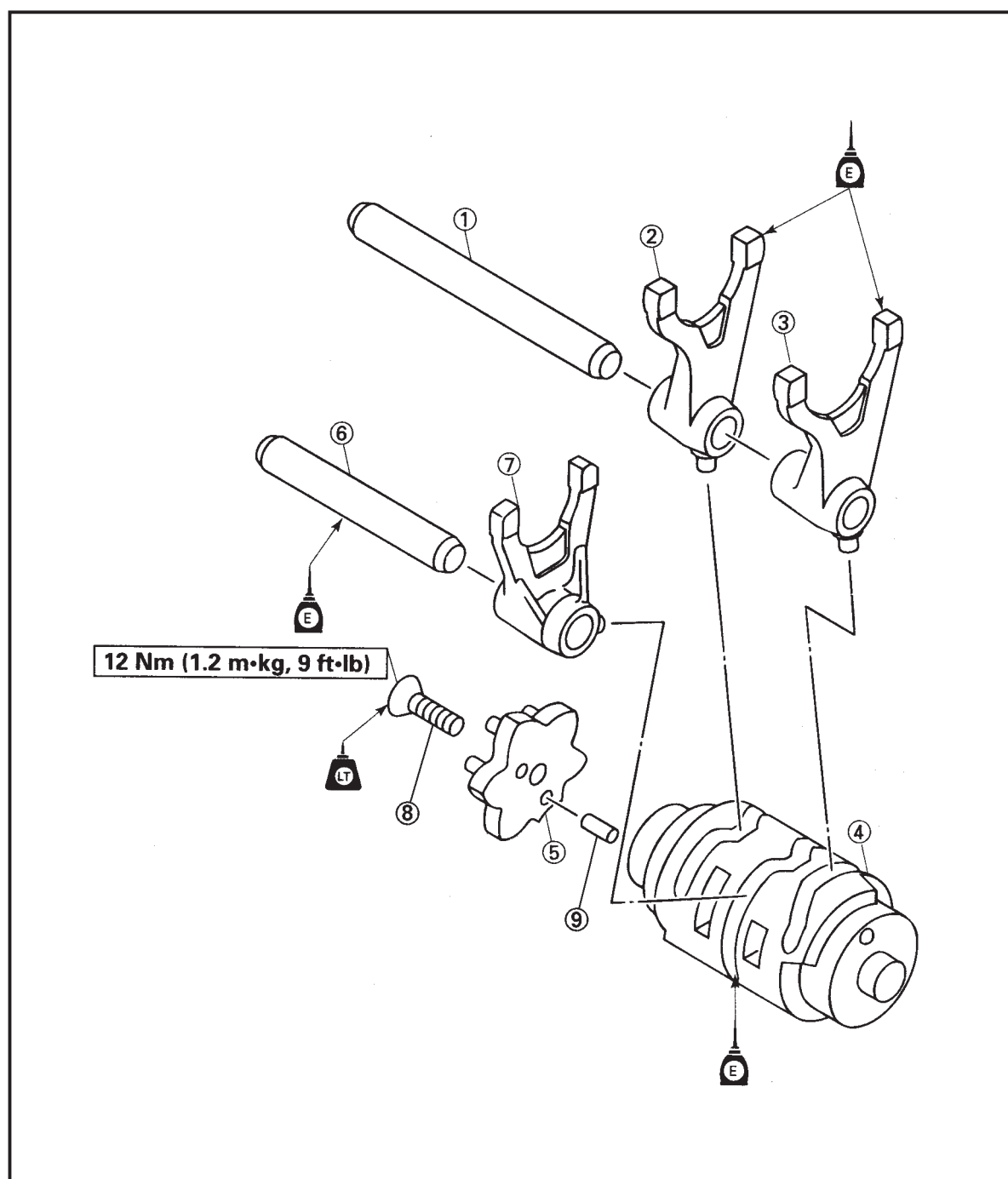
ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



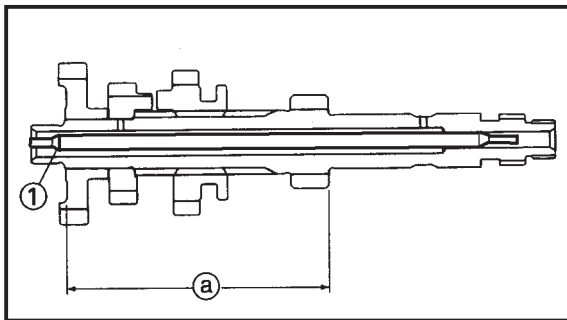
SHIFTER

- | | |
|-------------------------------|--------------------------------|
| ① Shift Fork Guide Bar (long) | ⑥ Shift Fork Guide Bar (short) |
| ② Shift Fork # R | ⑦ Shift fork # C |
| ③ Shift Fork # L | ⑧ Torx Screw |
| ④ Shift Cam | ⑨ Pin Shaft Cam |
| ⑤ Segment | |



ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



TRANSMISSION, SHIFT CAM AND SHIFT FORK INSTALLATION

1. Measure :

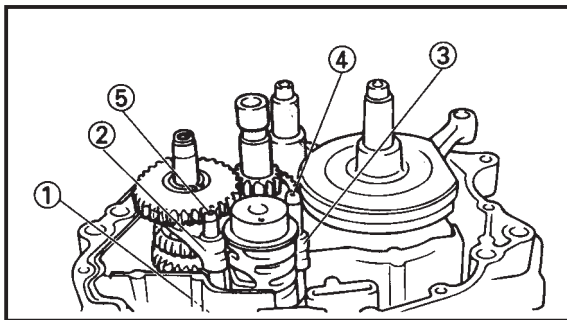
- Axle Main Assembled length @



Assembled length (Axle Main):
82.25 ~ 83.45 mm

2. Install :

- Push rod # 2 ① in the Axle Main.



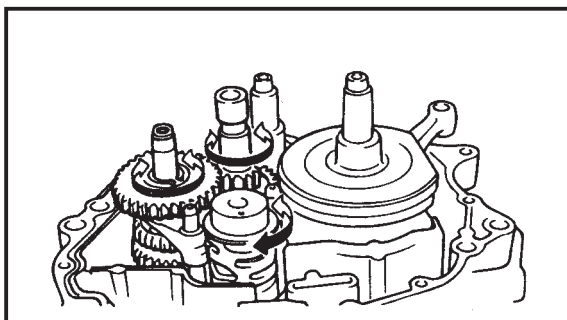
3. Install :

The following parts in Crankcase LH in following sequence.

- Shift Fork "L" (left) ①
(face the "L" side for the Clutch side.)
- Shift Fork "R" (right) ②
(face the "R" side for the Clutch side)
- Shift Fork "C" (center) ③
(face the "C" side for the Clutch side)
- Shift Fork Guide Bar #1 ④ (Short)
- Shift Fork Guide Bar #2 ⑤ (Long)

NOTE :

Install the Shift Forks with the embossed mark facing upward.



4. Check :

- Shift Cam operation
Improper operation → Reassemble/Repair

NOTE :

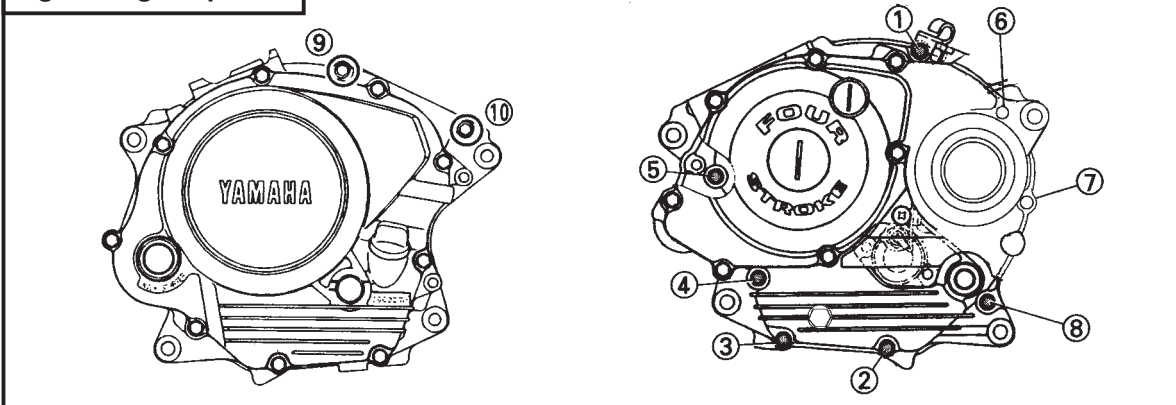
Check the transmission and Shift Forks for smooth operation by turning the Shift cam with your hand.

ENGINE ASSEMBLY AND ADJUSTMENTS

ENG

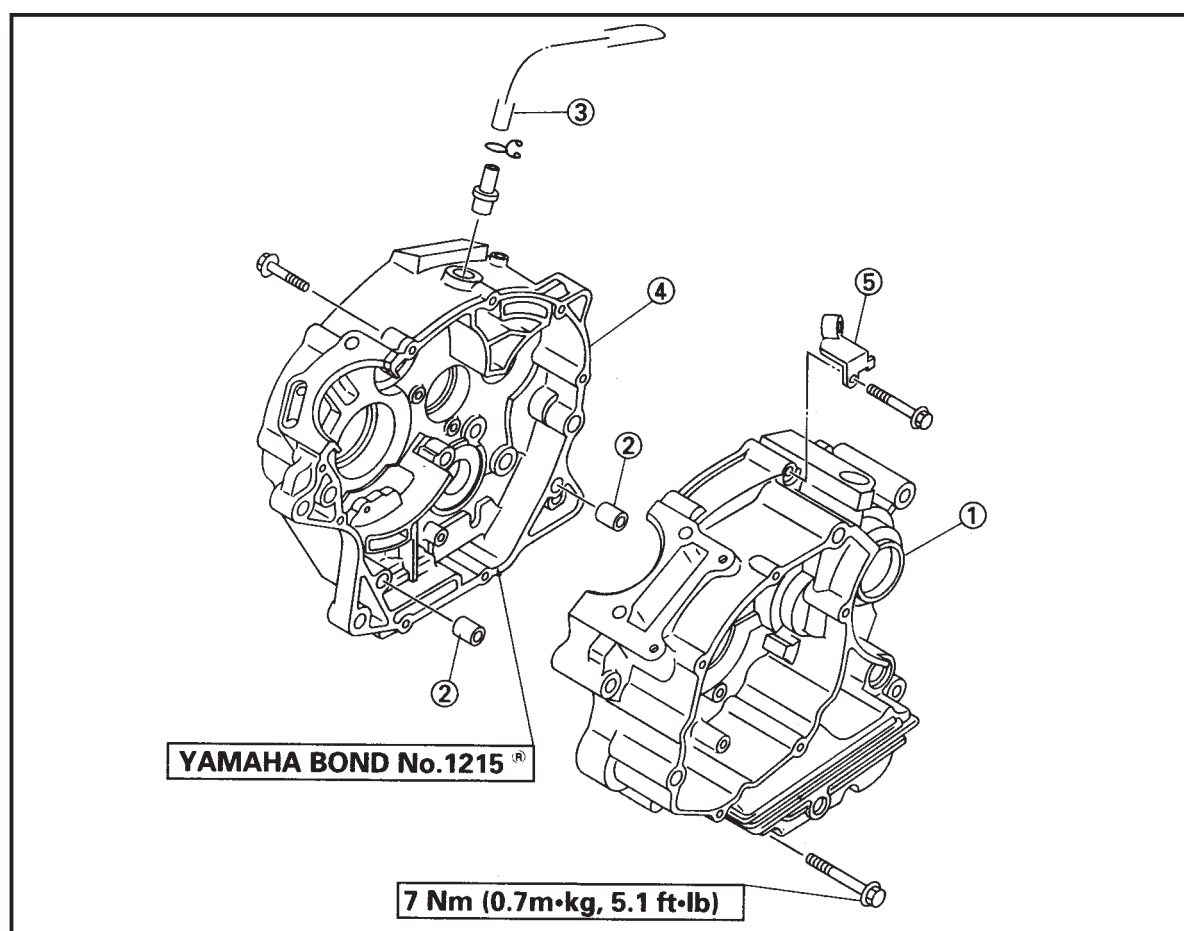


Tightening Sequence



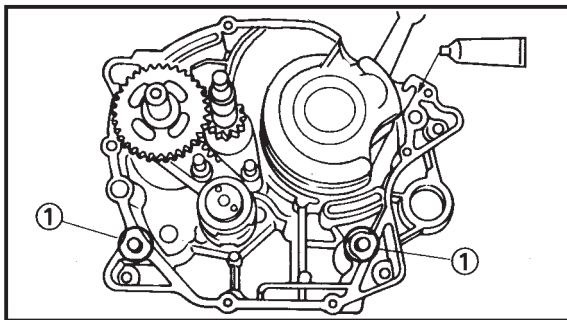
CRANKCASE

- ① Crankcase #1 (LH)
- ② Dowel Pins
- ③ Crankcase Breather Hose
- ④ Crankcase #2 (RH)
- ⑤ Holder Clutch Cable



ENGINE ASSEMBLY AND ADJUSTMENTS

ENG

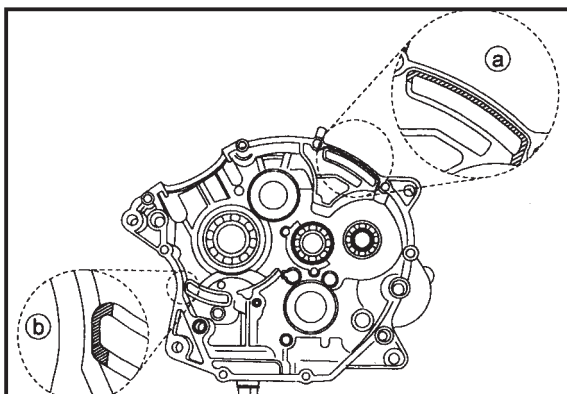
**CRANKCASE LH**

1. Apply :
 - Sealant on the Crankcase Mating surfaces

Sealant

Yamaha bond No. 1215:
90890-85505

2. Install :
 - Dowel Pins ①

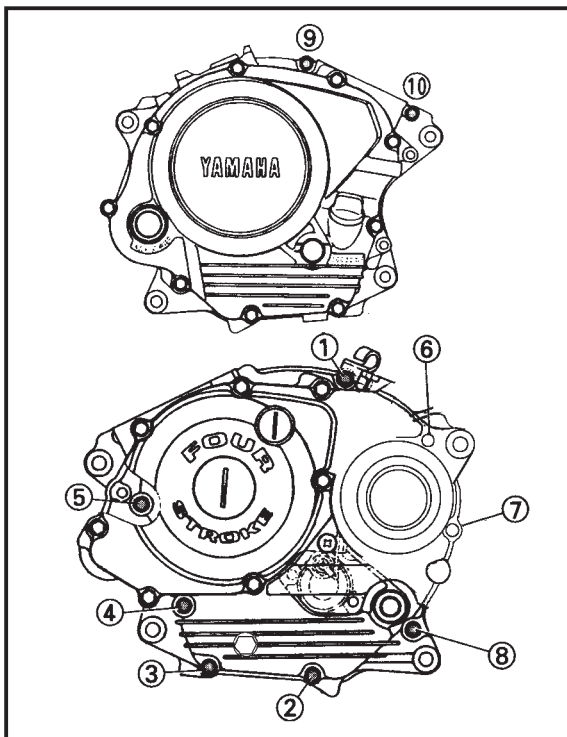
**NOTE :**

Do not allow any sealant to come in contact with the Oil Galleries ③ and ④ as shown in the figure.

3. Install:
 - Crankcase RH with the Crankcase LH.
 - Tap lightly on the Case with mallet.

NOTE :

Tighten the Engine Mounting Nuts-2 nos for holding the Engine on the engine stand.



4. Tighten :
 - Bolts 2 nos Crankcase RH
 - Bolts 8 nos Crankcase LH as per sequence



Bolts (Crankcase) :
10 Nm (1.0 m.kg, 7.2 ft.lb)

5. Apply :
 - 4-Stroke Engine Oil on the Crank Pin, Bearings and Oil Delivery Hole
 6. Check :
 - Crankshaft and transmission operation for smooth rotation/ shifting by hand
- Unsmooth operation → Reassemble/Repair

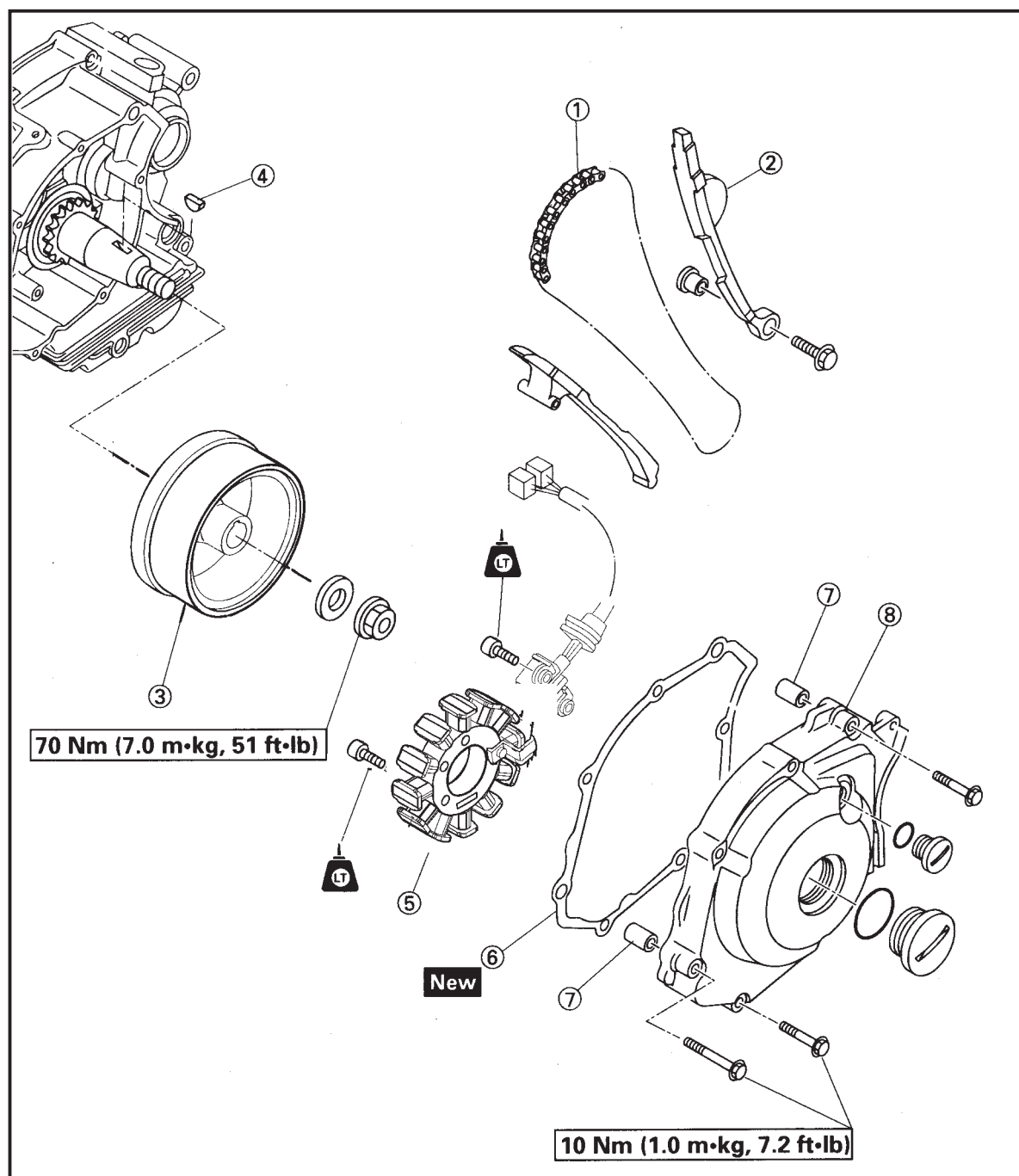
ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



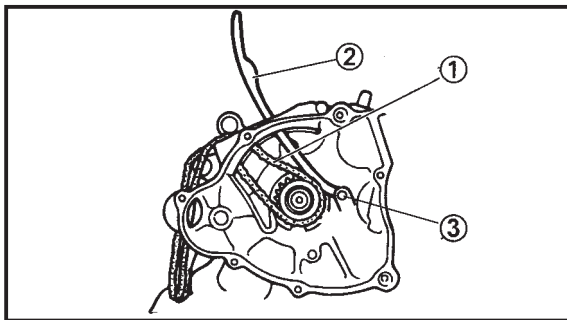
CDI MAGNETO

- | | |
|-----------------------------|----------------------|
| ① Timing Chain | ⑤ Stator Assy. |
| ② Guide Stopper # 1 and # 2 | ⑥ Gasket |
| ③ CDI Rotor Assy | ⑦ Dowel Pin |
| ④ Wood-Ruff Key | ⑧ Cover Crankcase #1 |



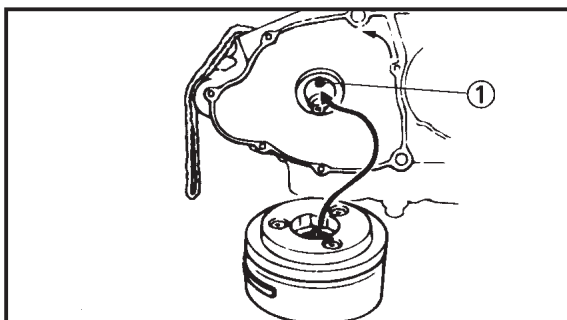
ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



TIMING CHAIN AND GUIDE STOPPER#2

1. Install
 - Timing Chain ①
2. Install
 - Guide stopper#2 ② with spacer
 - Tighten the bolt ③

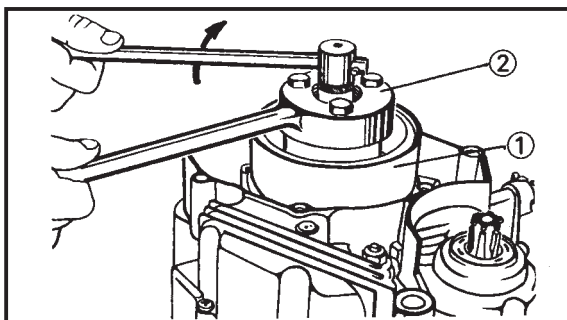


C.D.I. MAGNETO INSTALLATION

1. Install :
 - Woodruff Key ①
2. Install :
 - C.D.I. Magneto ②
 - Washer
 - Nut

NOTE :

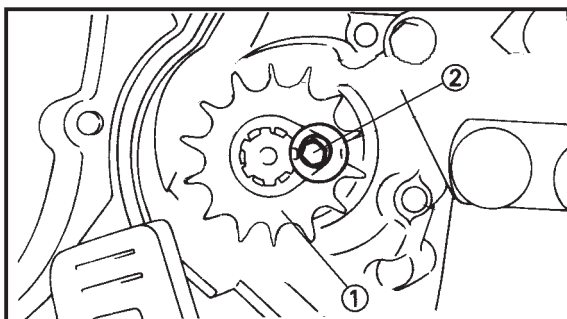
When installing the Magneto Rotor, make sure that the Woodruff Key is properly seated in the Keyway of the Crankshaft.



3. Tighten :
 - Nut (CDI Magneto) using the Magneto Holder ②



Nut (CDI Magneto):
70 Nm (7.0 m.kg, 51 ft.lb)



SPROCKET DRIVE

1. Install
 - Sprocket Drive ①
 - Drive Sprocket Washer ②
2. Tighten
 - Bolt ③ (Drive Sprocket) using the sprocket Holder.



Drive sprocket Holder
YSST-605



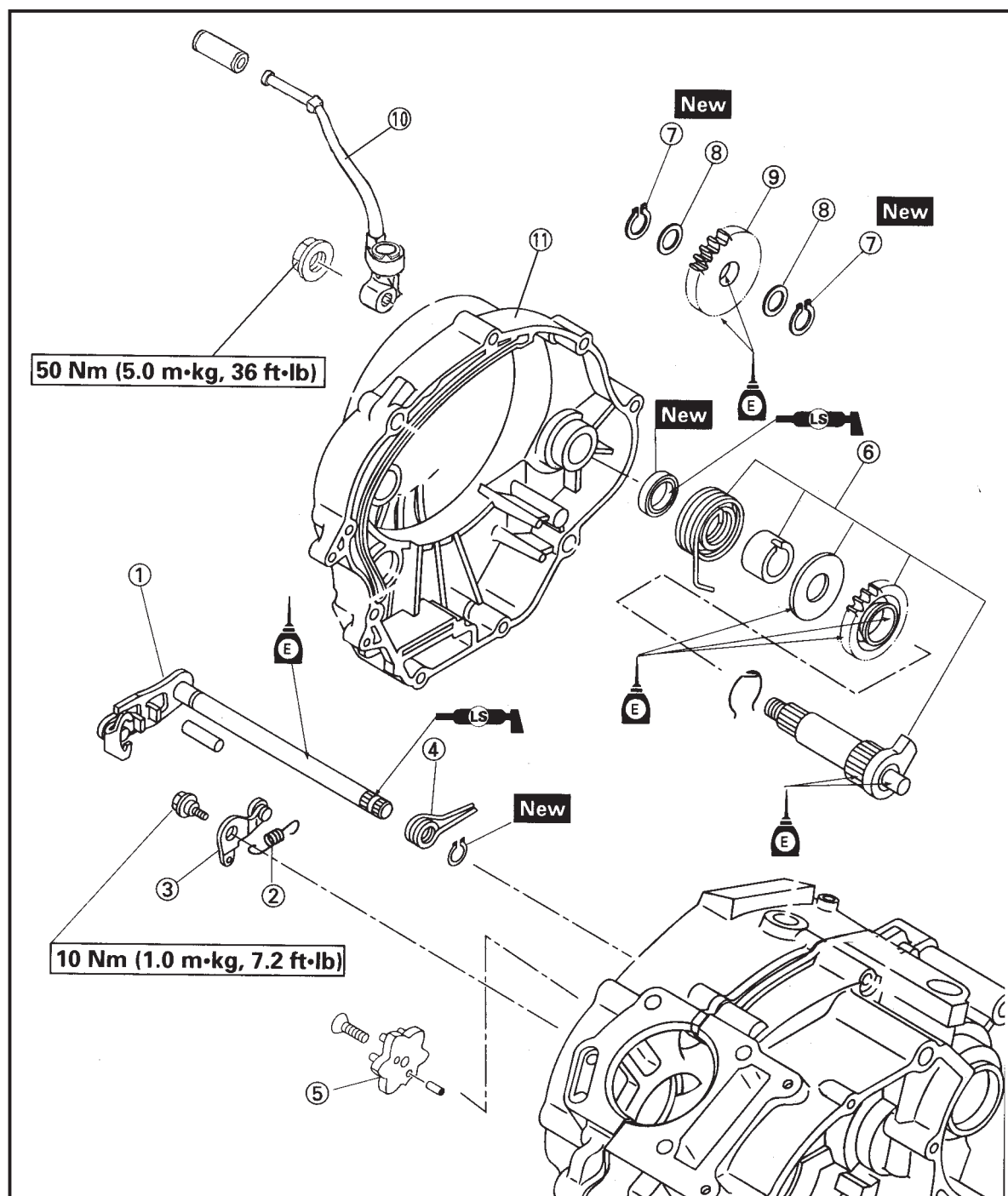
Bolt Sprocket Drive
10 Nm (1.0 m.kg, 7.2 ft.lb)



SHIFT SHAFT AND KICK STARTER

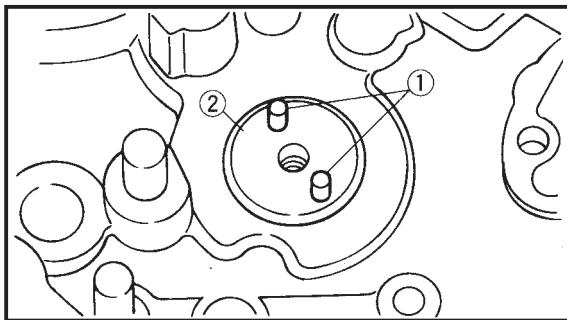
- ① Shift Shaft
- ② Torsion Spring
- ③ Stopper Lever
- ④ Return Spring
- ⑤ Segment
- ⑥ Kick Starter Assembly

- ⑦ Circlip
- ⑧ Washer
- ⑨ Kick Idle Gear
- ⑩ Kick Shaft Assy.
- ⑪ Cover Crankcase # 2



ENGINE ASSEMBLY AND ADJUSTMENTS

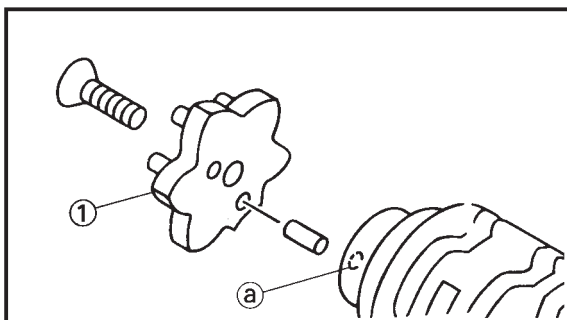
ENG



SEGMENT AND SHIFT SHAFT

1. Install

- Dowel Pins ① on the Cam Shifter ②



2. Install :

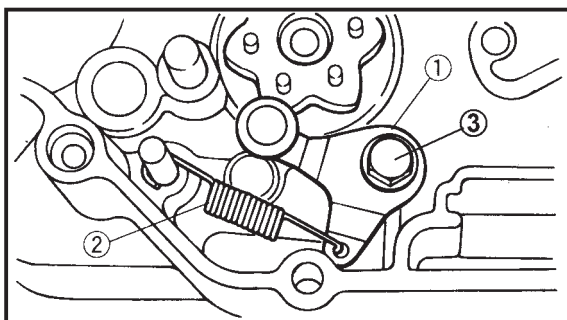
- Segment ① using Torx Bit Tool



Torx Bit Tool
YSST - 611

NOTE :

Fit the Dowel Pins on the Cam Shifter to the locating hole ② on the Cam Shifter and install the Segment ①



3. Install :

- Stopper Lever ①
- Spring ②

4. Tighten

- Bolt stopper lever ③

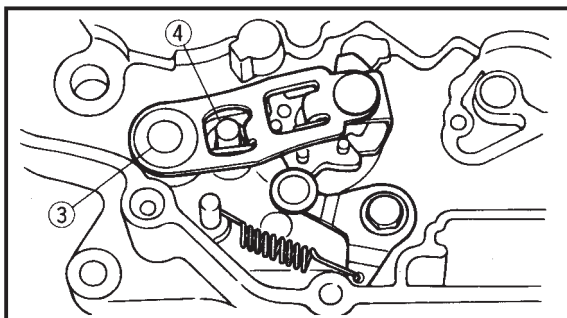


Bolt (Stopper Lever) :
10 Nm (1.0 m.kg, 7.2 ft.lb)

NOTE :

Hook the Spring ends on the Stopper Lever ① and the Crankcase Pin

Mesh the Stopper Lever ① with the Cam Shifter Stopper.



5. Install :

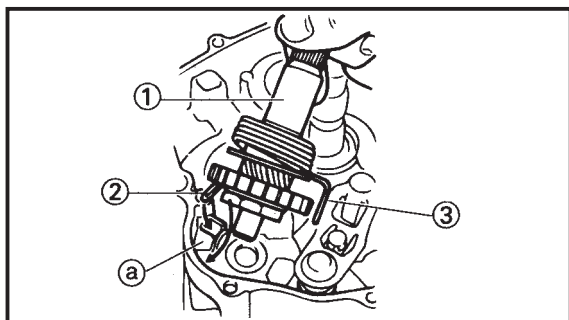
- Shift Shaft Assembly ③

NOTE :

Apply Oil to the Stopper Pin and hook the Spring ends on the Stopper pin ④

ENGINE ASSEMBLY AND ADJUSTMENTS

ENG

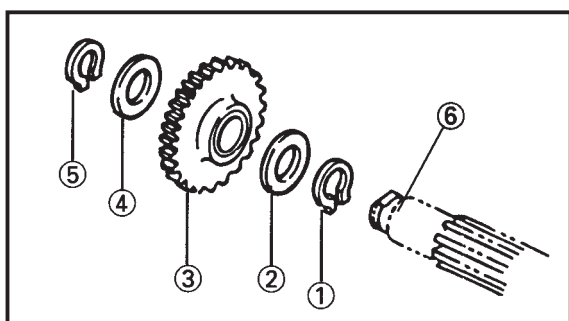
**KICK STARTER INSTALLATION**

1. Install :

- Kick Axle Assembly ①
- Kick Gear Clip ②
- Torsion Spring ③

NOTE :

Turn the Torsion Spring clockwise and hook into the proper hole @ in the Crankcase.



2. Install :

Following parts on the Axle Drive ⑥

- Circlip ①
- Washer ②
- Kick Idle gear ③
- Washer ④
- Circlip ⑤

NOTE :

Install Circlips radius side towards the component refer Chapter 1, Page no 1-3

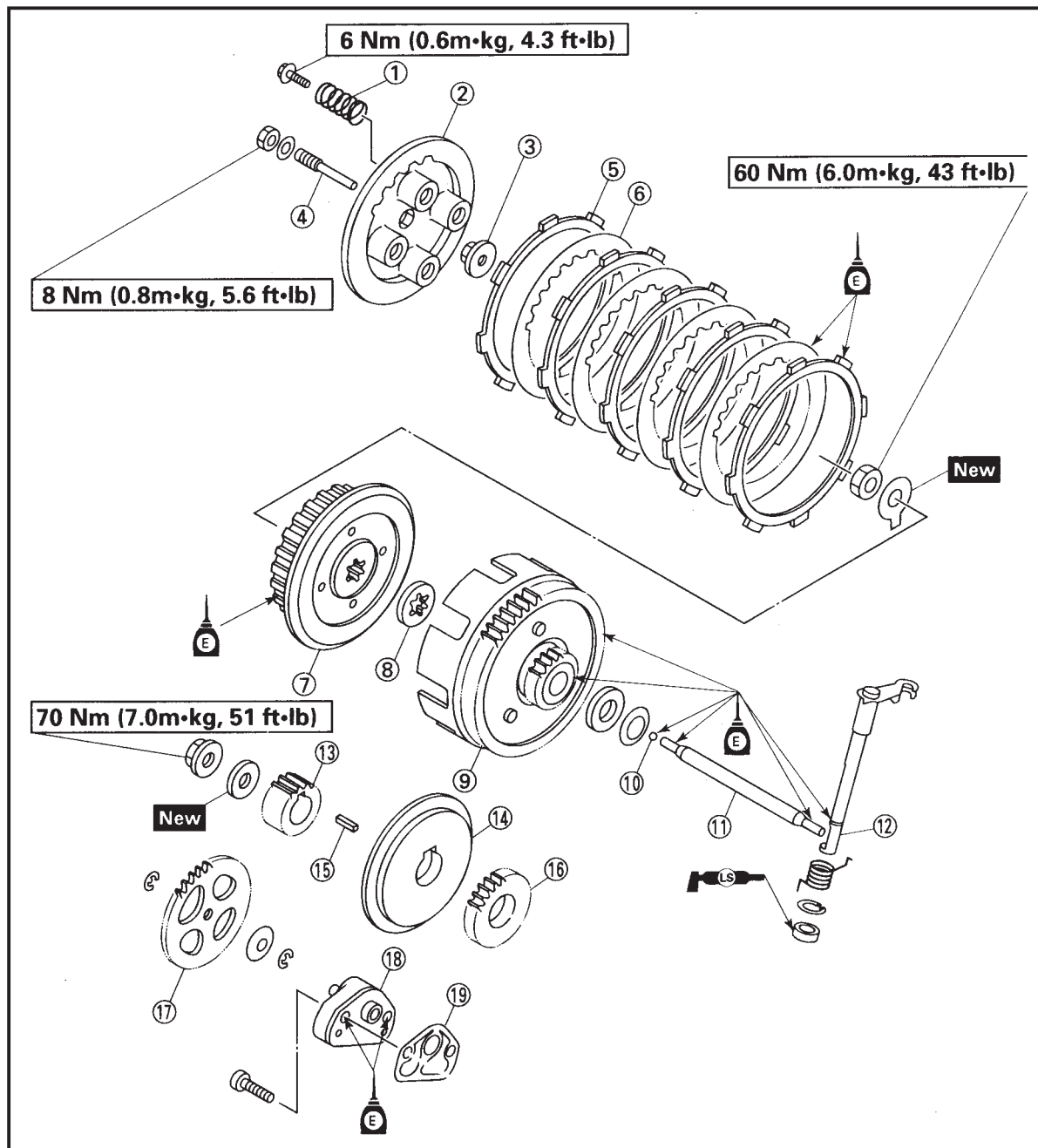
ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



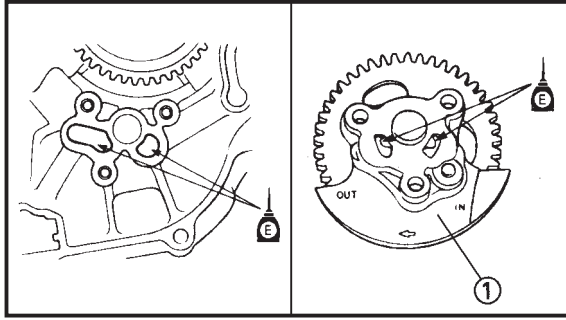
CLUTCH, PRIMARY DRIVE GEAR AND OIL PUMP

- | | | |
|------------------|-----------------------|------------------------|
| ① Clutch Spring | ⑧ Thrust Washer | ⑮ Key |
| ② Pressure Plate | ⑨ Primary Driven Gear | ⑯ Oil Pump Drive Gear |
| ③ Push Plate | ⑩ Ball | ⑰ Oil Pump Driven Gear |
| ④ Push Rod #1 | ⑪ Push Rod # 2 | ⑱ Oil Pump |
| ⑤ Friction Plate | ⑫ Push lever Axle | ⑲ Gasket |
| ⑥ Clutch Plate | ⑬ Primary Drive Gear | |
| ⑦ Clutch Boss | ⑭ Rotary Filter | |



ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



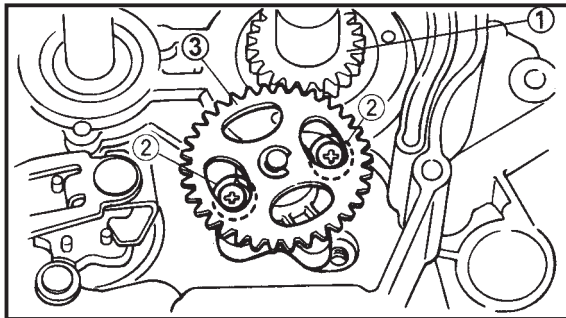
OIL PUMP INSTALLATION

1. Lubricate :

- Oil delivery passage (Crankcase RH)
- Oil Pump Assembly ①



Recommended Lubricant:
4- Stroke Engine Oil

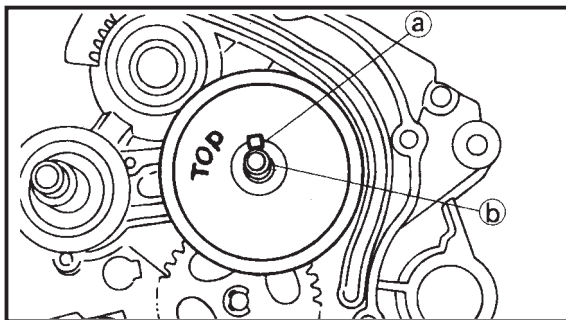


2. Install :

- Drive gear (Oil Pump) ①
- Gasket
- Oil Pump Assy ③

3. Tighten

- Screw (2 nos) ②

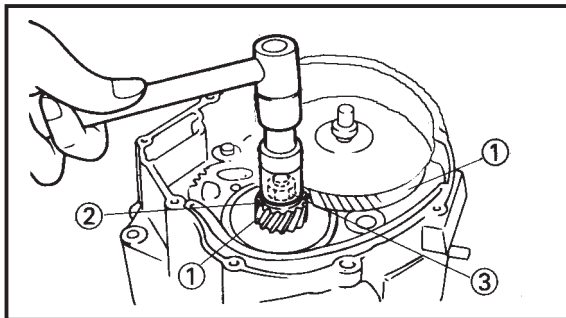


4. Install

- Rotary Filter

NOTE :

Align the Rotary Filter Dog @ with groove of the Crankshaft ① and make sure to keep 'TOP' marking facing upside.



PRIMARY DRIVE GEAR INSTALLATION

1. Install :

- Primary Drive Gear ①
- Key
- Washer ②

2. Tighten :

- Nut ③



Nut (Primary Drive Gear)
70 Nm (7.0 m.kg, 51 ft.lb)

NOTE :

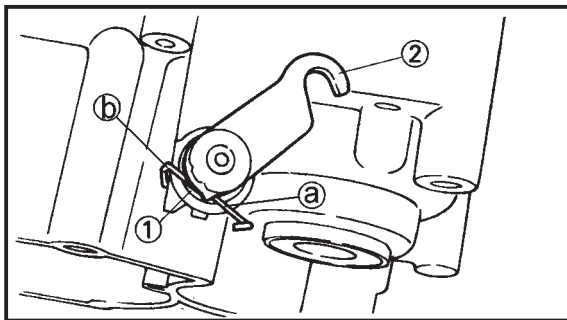
Hold the Rotor with Magneto Holder then tighten the Primary Drive Gear Nut.



Magneto Holder
YSST - 601 - A

ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



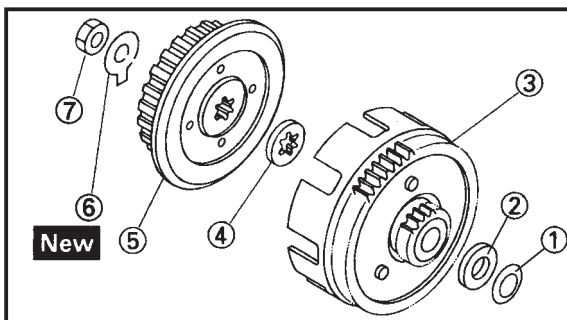
CLUTCH INSTALLATION

1. Install :

- Oil Seal ① **New**
- Circlip **New**
- Push Lever Axle ②

NOTE :

Install longer side ③ of the Spring on Push Lever and smaller side ④ on the Crankcase Notch.

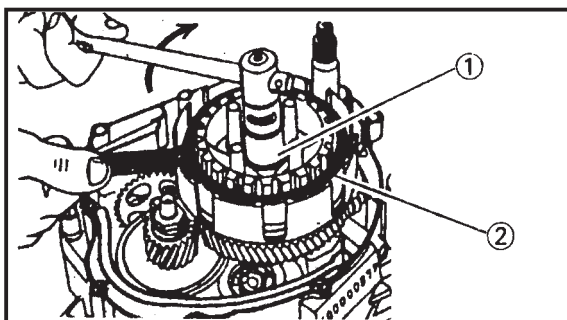


2. Install :

- Washer ①
- Spacer ②
- Primary Driven Gear ③
- Thrust Washer ④
- Clutch Boss ⑤
- Lock Washer ⑥ **New**
- Clutch Boss Nut ⑦

3. Tighten :

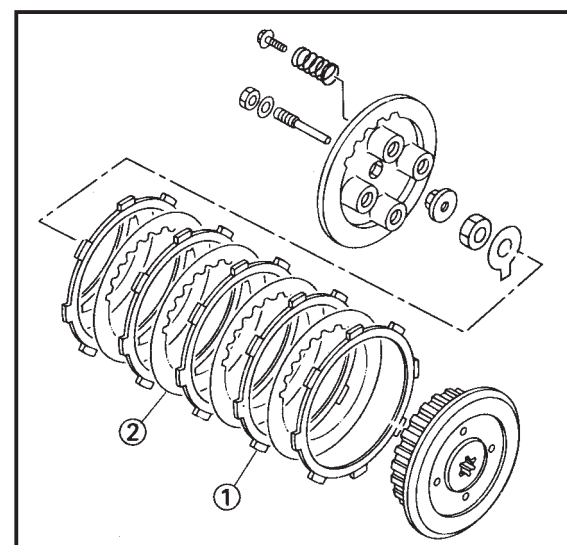
- Nut Clutch Boss ① while holding the Clutch Boss with Clutch Hub Holder ②



Clutch Hub Holder
YSST - 233



Nut (Clutch Boss) :
60 Nm (6.0 m. kg, 43.5 ft. lb)



4. Bend :

- Lock Washer tab
(along a flat side of the end)

5. Install :

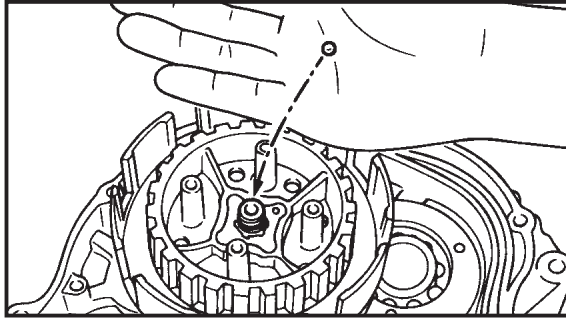
- Friction Plate ① 5 Nos
- Clutch Plate ② 4 nos

NOTE :

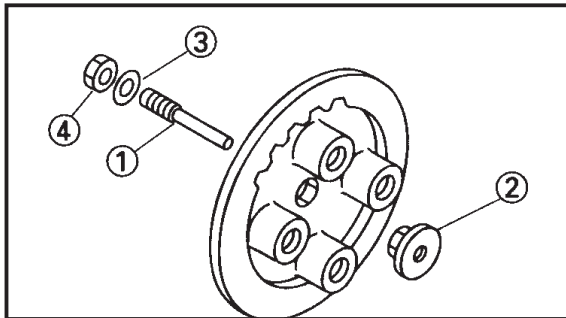
- Install the Clutch Plates and Friction Plates alternately on the Clutch Boss, starting with a Friction Plate and ending with a Friction Plate.
- Lubricate all Clutch and Friction Plates with Engine Oil before installation
- Be sure to install a Clutch Plate with "Projection Mark" offset approximately 90 ° from previous plates projection continue this procedure in clockwise direction until all Clutch Plates are installed

ENGINE ASSEMBLY AND ADJUSTMENTS

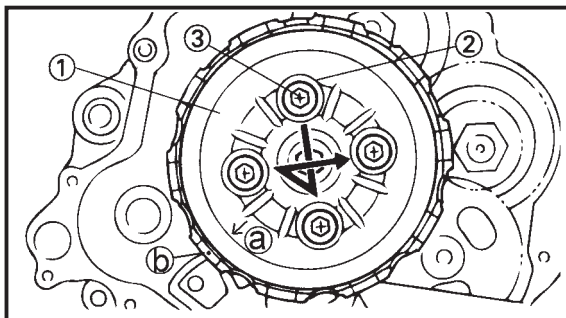
ENG



6. Install :
- Ball



7. Install :
- Push Rod # 1 ①
 - Push Plate ②
 - Plate Washer ③
 - Nut ④ (Push Rod # 1)

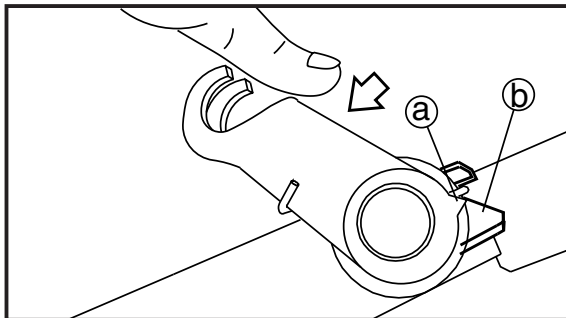


8. Install :
- Pressure Plate ①
 - Compression Springs ②
 - Bolts ③ (Clutch Spring)



Bolts (Clutch Spring) :
6 Nm (0.6 m.kg, 4.3 ft. lb)

NOTE : Match arrow mark @ on the Pressure Plate with the Punch mark on Clutch Boss ⑥ while installing the Pressure Plate.
 Tighten the Clutch Spring Bolts in stage, using a crisscross pattern.

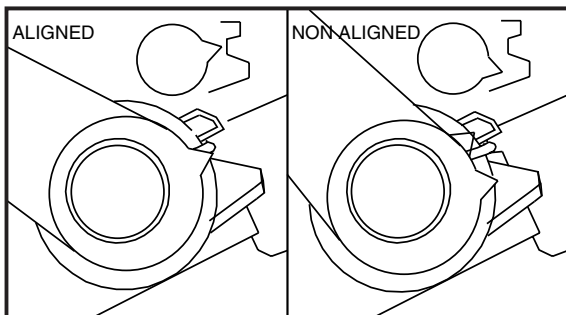


9. Check :
- Push Lever position
 - Push the Push Lever Assembly in the arrow direction and make sure that the mach mark are aligned adjust;
 - ⑥ Match mark on the Push Lever Assembly
 - ⑦ Match mark on the Crankcase

10. Adjust :
- Push Lever position

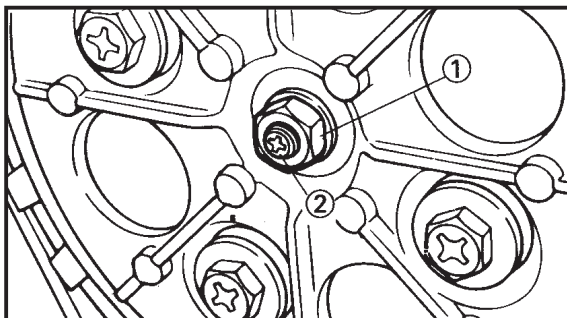
Adjustment steps :

- Loosen the Lock Nut ①
- Turn the Adjuster ② clockwise or anticlockwise to match alignment marks.



ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



- Hold the Adjuster to prevent it from moving and tighten the Locknut to specification

CAUTION:

Take care not to overtighten the Adjuster ② and remove the freeplay between both Push Rods.

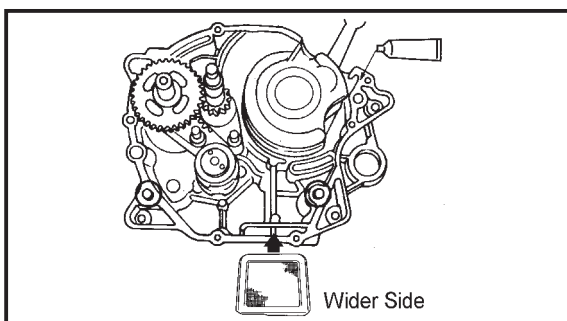
- Tighten the Locknut ①

11. Install

- Strainer

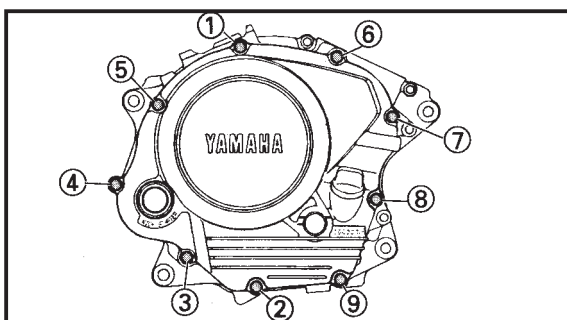
NOTE :

Always keep its wider side, outside of Crankcase



12. Install :

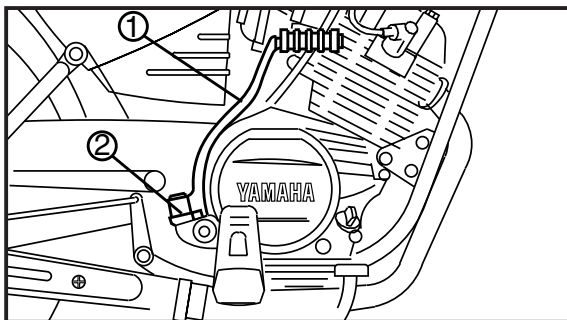
- Dowel Pins
- Gasket (Crankcase #2) **New**
- Crankcase Cover #2 (RH)



Bolts (Crankcase Cover):
10 Nm (1.0 m.kg, 7.2 ft.lb)

NOTE :

Tighten the Bolts in decreasing numerical order (see number on the illustration)



13. Install :

- Kick Crank ①
- Nut Kick Crank ②



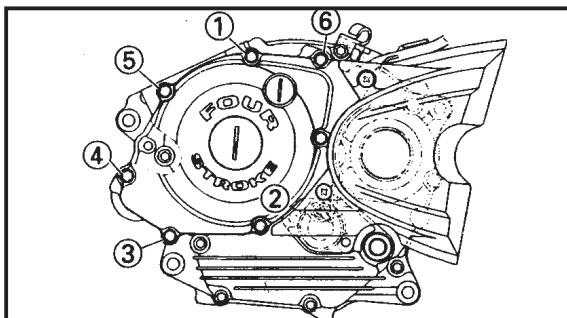
Nut (Kick Arm):
50 Nm (5.0 m.kg, 36 ft. lb)

14. Install :

- Dowel Pins
- Gasket (Crankcase Cover #1) **New**
- Crankcase Cover #1(L.H.)

NOTE:

Tighten the Bolts in decreasing numerical order.



Bolts (Crankcase Cover):
10 Nm (1.0 m.kg, 7.2 ft.lb)

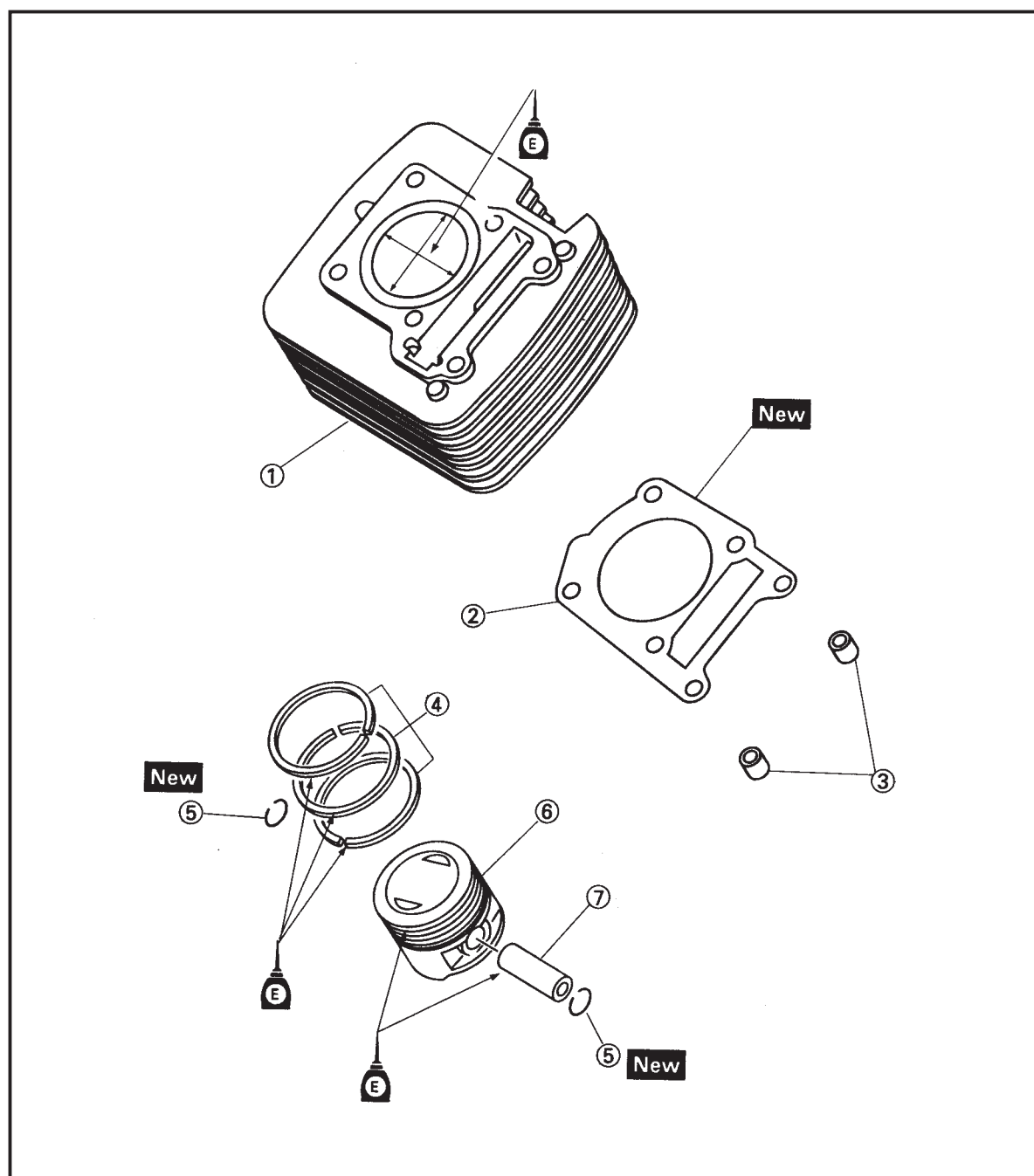
ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



CYLINDER AND PISTON

- ① Cylinder
- ② Gasket Cylinder
- ③ Dowel Pins
- ④ Piston Rings
- ⑤ Piston Pin Circlips
- ⑥ Piston
- ⑦ Pin Piston



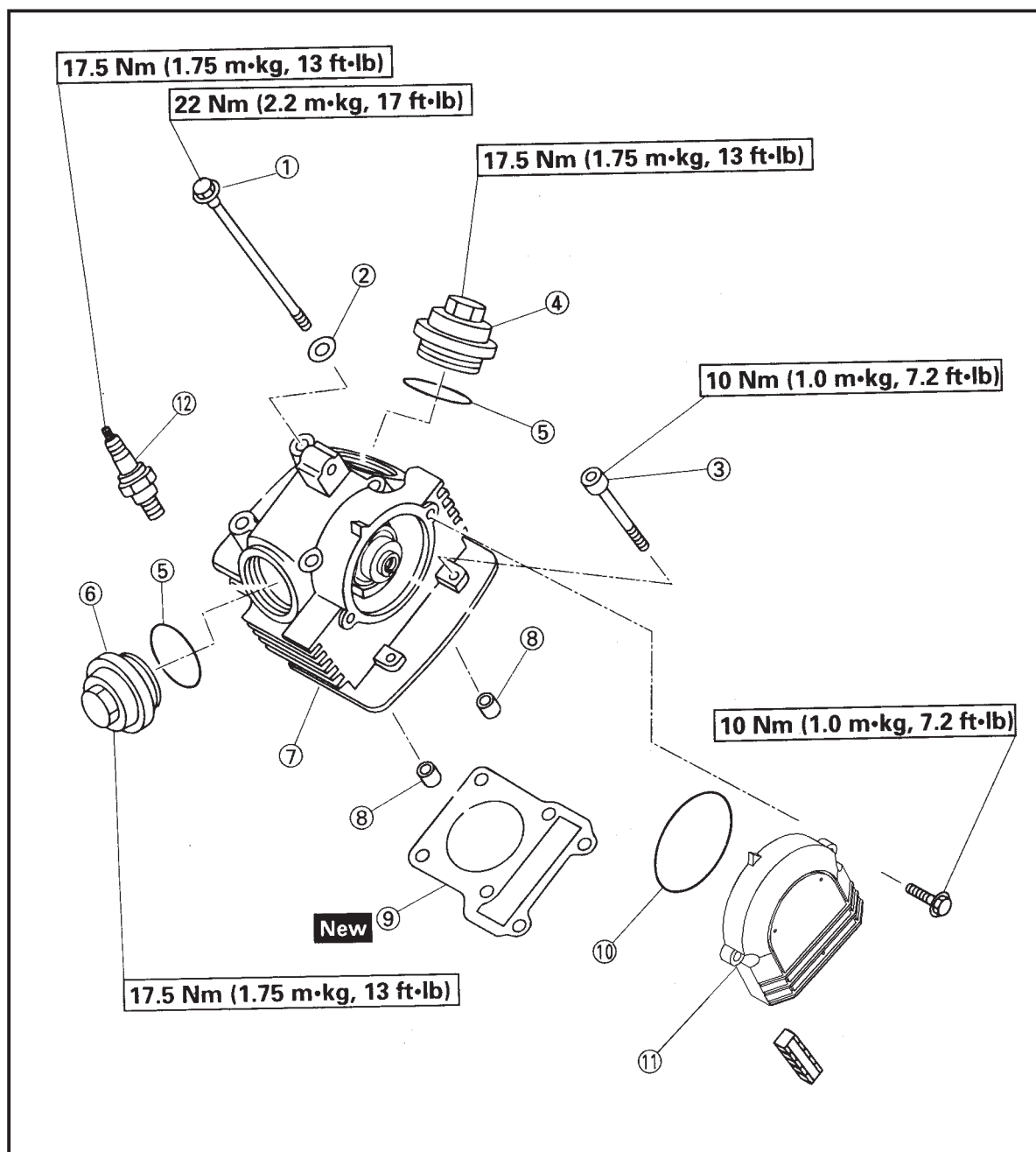
ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



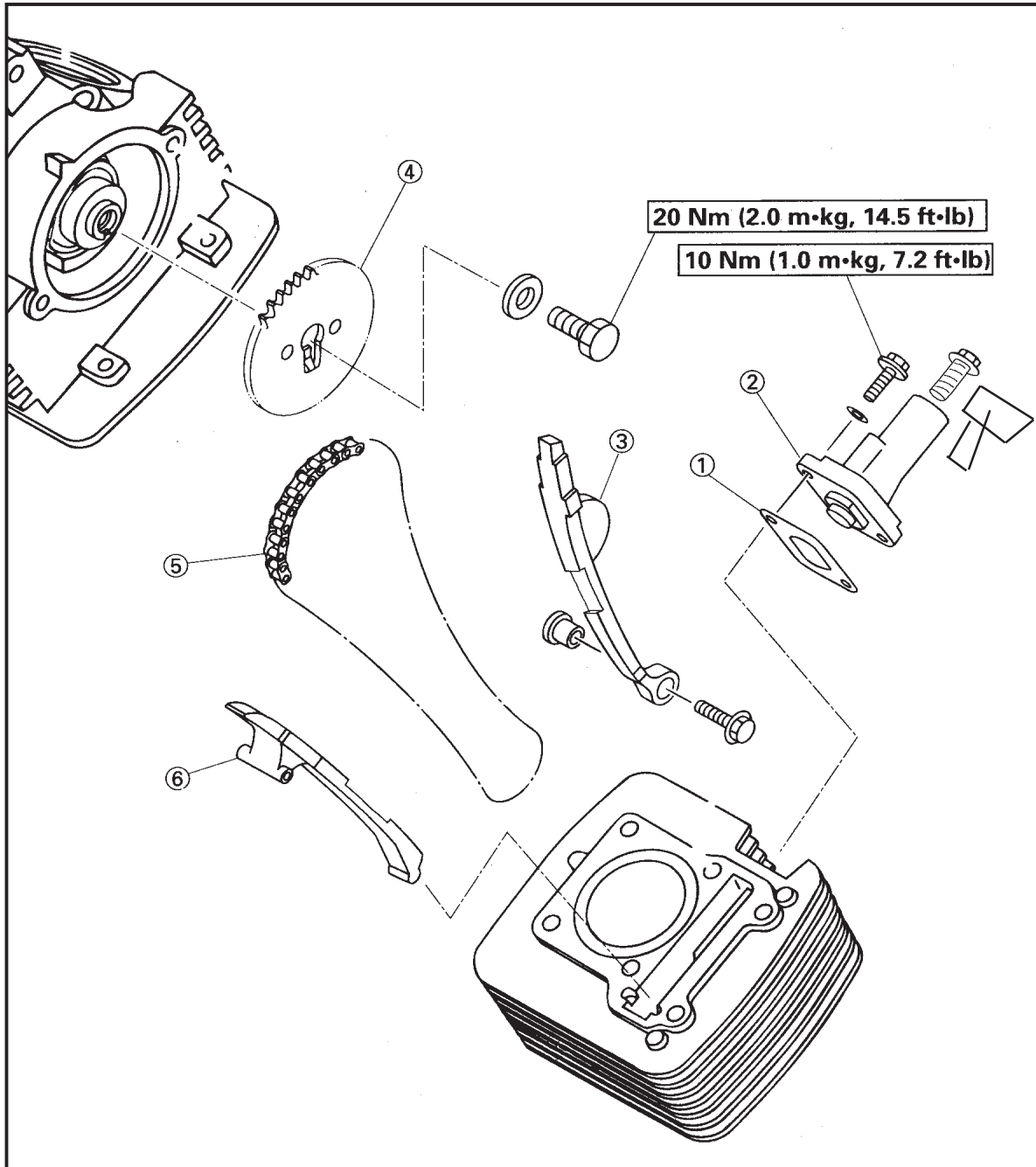
CYLINDER HEAD

- | | |
|-------------------------|--------------------------------|
| ① Bolt Flange | ⑦ Cylinder Head |
| ② Washer | ⑧ Dowel Pin |
| ③ Bolt | ⑨ Gasket Cylinder Head |
| ④ Valve Cover (intake) | ⑩ O-Ring |
| ⑤ O-Ring | ⑪ Cover Cylinder Head Side # 3 |
| ⑥ Valve Cover (exhaust) | ⑫ Spark Plug |



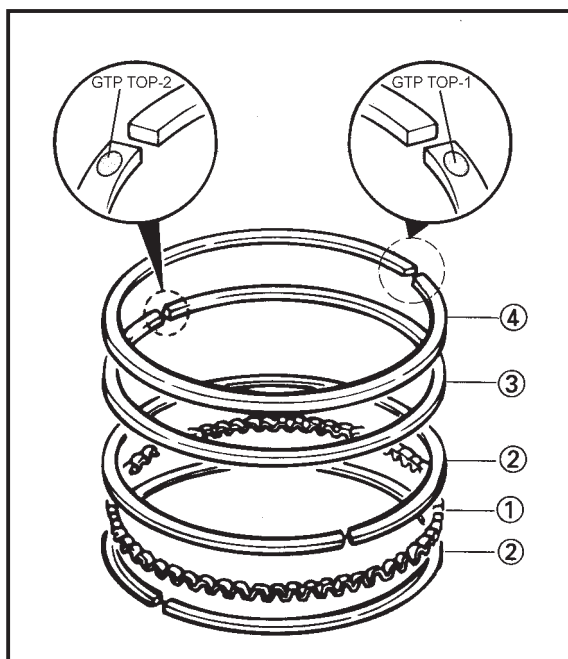
ENGINE ASSEMBLY AND ADJUSTMENTS**ENG****CAM SPROCKET AND TIMING CHAIN**

- | | |
|-----------------------------------|---------------------|
| ① Gasket | ④ Cam Sprocket |
| ② Timing Chain Tensioner Assembly | ⑤ Timing Chain |
| ③ Guide Stopper # 2 | ⑥ Guide Stopper # 1 |



ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



PISTON RING, PISTON AND CYLINDER INSTALLATION

1. Install in following sequence

- Expander Spacer (Oil Ring) ①
- Side Rails (Oil Ring) ②
- 2nd Ring ③
- Top Ring ④

NOTE :

- Make sure to install the Piston Rings so that the "GTP TOP1" / "GTP-TOP 2" marks are located on the upper side of the 2nd Ring/Top Ring
- Lubricate the Piston and Piston Rings with Engine Oil.

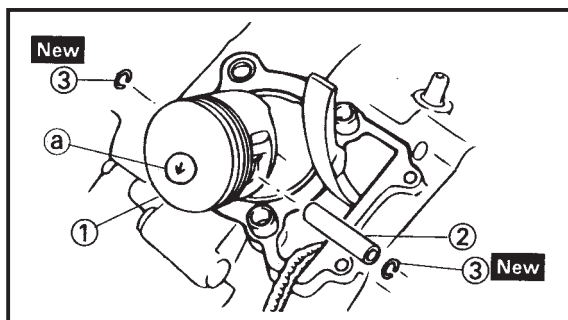
2. Install :

- Piston ①
- Piston Pin ② using Piston Pin Replacer Tool



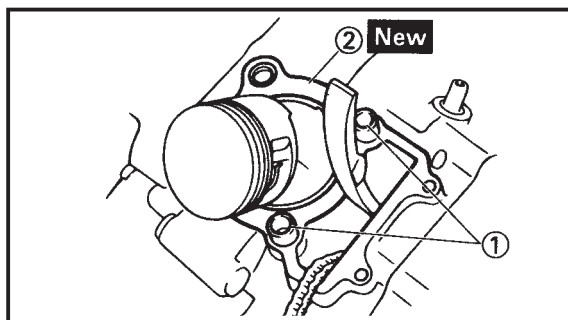
Piston Pin replacer tool
YSST - 207

- Piston Pin Circlip ③ **New**



NOTE :

- Apply Engine Oil on the Piston Pin
- The "→"mark @ on the Piston must be kept towards the exhaust side of the Cylinder
- Before installing the Piston Pin Circlip, Cover the Crankcase opening with a clean cloth.

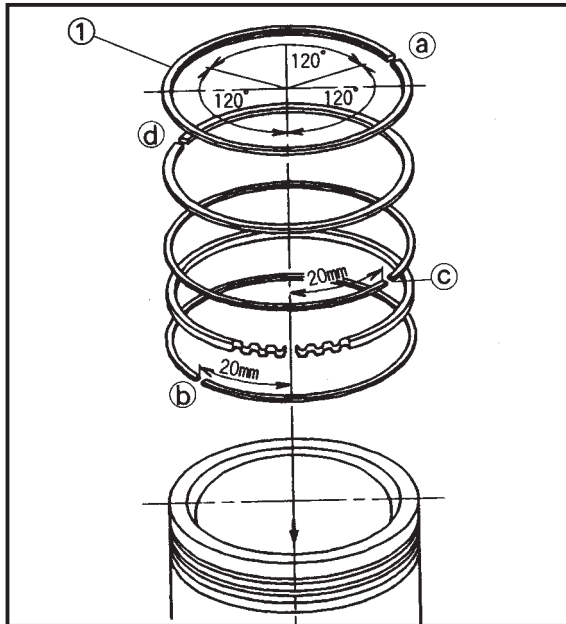


3. Install :

- Dowel Pins ①
- Gasket (Cylinder) ② **New**

ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



4. Install :

- Piston Rings ①

NOTE :

Offset the Piston Rings end gaps as shown.

② Top Ring End

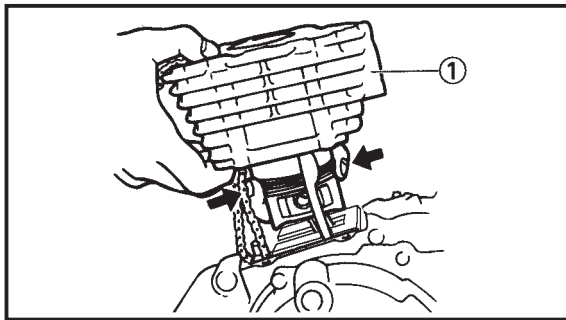
③ Oil Ring end (lower)

④ Oil Ring End (upper)

⑤ 2nd Ring End

5. Lubricate :

- Piston outer surface
- Piston Rings
- Cylinder Inner Surface



6. Install :

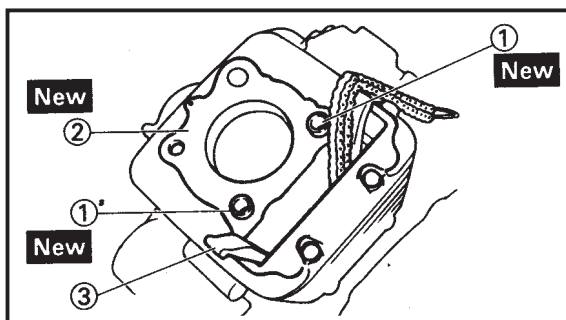
- Cylinder ①

NOTE :

- Install the Cylinder with one hand while compressing the Piston Rings with the other hand
- Pass the Timing Chain and Guide stopper # 2 through the Timing Chain Cavity.
- Press the Piston down to rest on Piston Base YSST - 604



Piston Base
YSST - 604

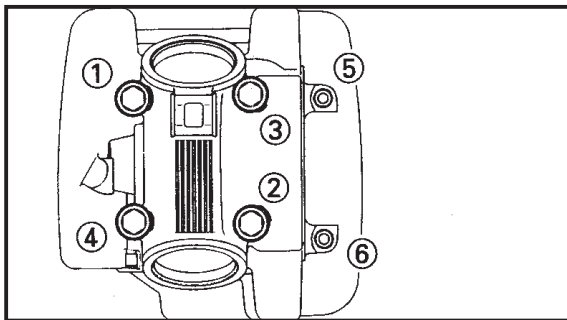
**Cylinder head Installation**

1. Install

- Dowel Pins ① **New**
- Gasket (Cylinder Head) ② **New**
- Guide Stopper#1 ③

ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



2. Install :

- Cylinder Head
- Bolt with Washer (Cylinder Head)



Bolts (Cylinder Head):

M8 (1-4) :

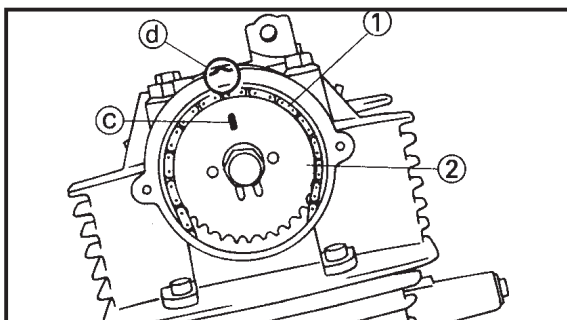
22 Nm (2.2 m.kg, 17 ft.lb)

M6(5-6) :

10 Nm (1.0 m.kg., 7.2 ft. lb)

NOTE :

- Apply Engine Oil onto the Bolt thread
- Tighten the Bolts starting with the lowest numbered one.

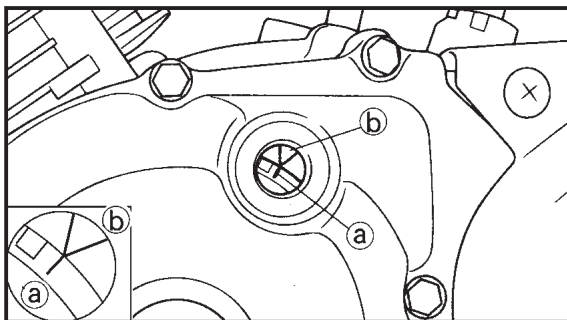


3. Install :

- Cam Sprocket ②
- Timing Chain ①

Installing steps :

- Turn the Crank Shaft anticlockwise until the slit @ (3rd Mark) matches the stationary pointer ①
- Align the "I" mark ③ on the Cam Sprocket with the stationary pointer ① on the Cylinder Head.
- Fit the Timing Chain ① on Cam Sprocket ② and install the Cam Sprocket on the Camshaft.

**NOTE :**

When installing the Cam Sprocket , keep installation of the Camshaft. Damage or improper Valve timing will result.

CAUTION:

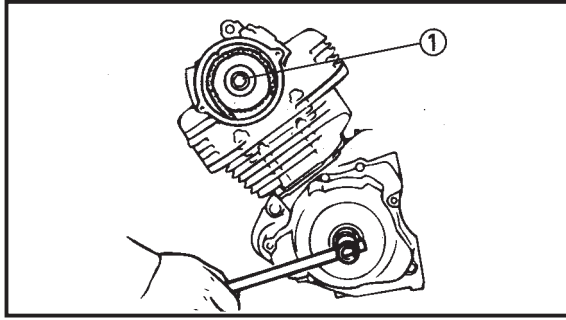
Do not turn the Crankshaft during installation of the Camshaft. Improper Valve Timing will result.

NOTE :

Remove the safety wire from the Timing Chain before installation of Sprocket Cam.

ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



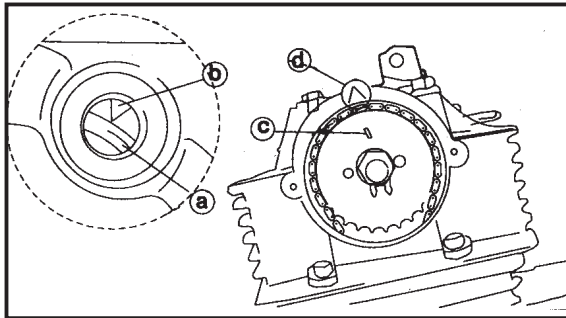
4. Install :
 - Plate Washer
5. Tighten
 - Bolt Sprocket ①



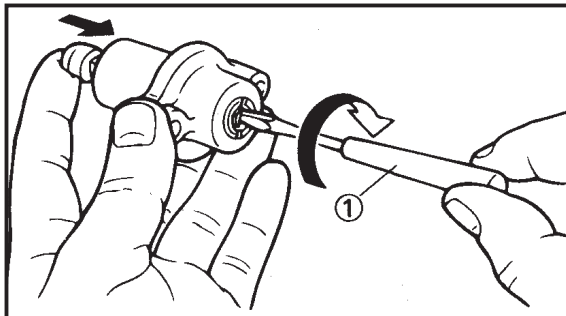
Bolt (Timing Chain Sprocket) :
20 Nm (2.0 m.kg, 14.5 ft. lb)

NOTE :

Install the Bolt while holding the Magneto Mounting nut with a Wrench.



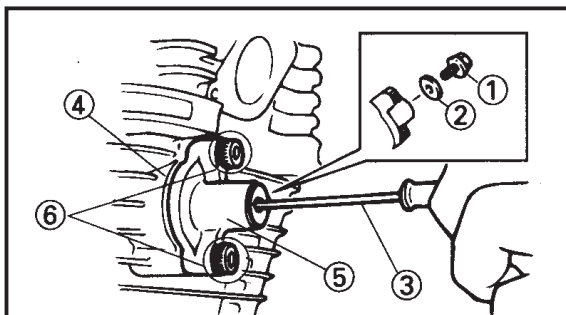
6. Check :
 - Magneto Rotor Slit @ Third mark in Anticlockwise direction.
Align with stationary pointer ⑥ in the Crankcase Cover #1 (LH)
 - Cam Sprocket "I" mark ③
Align with stationary pointer ④ on the Cylinder head
Out of alignment → Adjust



7. Install :
 - Gasket (Timing Chain Tensioner)
 - Timing Chain Tensioner

Installation steps :

- Remove the Tensioner Cap Bolt
- While Pressing the Tensioner Rod lightly with fingers, use a Flat Head Screwdriver ① and retract the Tensioner Rod up fully clockwise
- With the Rod fully retracted, install the Gasket ④ and the Chain Tensioner ⑤ and tighten the Bolt ⑥ with Copper Washer to the specified torque
- Release the Chain Tensioner Rod by Screwdriver, Then install the Gasket ② and the Cap Bolt ① to the specified torque.



Bolts (Timing Chain Tensioner):
10 Nm (1.0 m.kg, 7.2 ft. lb)
Cap Bolt (Timing Chain Tensioner):
8 Nm (0.8 m.kg, 5.8 ft. lb)

ENGINE ASSEMBLY AND ADJUSTMENTS

ENG

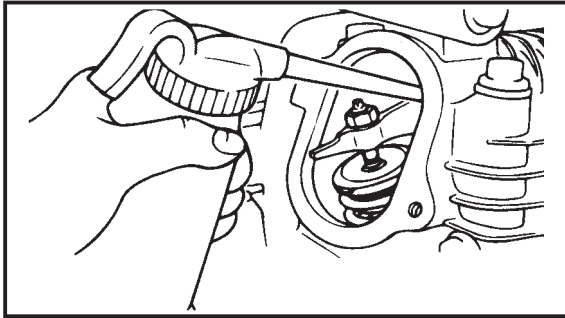


8. Check :

- Valve clearance specifications

Out of specification → Adjust.

Refer to the "VALVE CLEARANCE ADJUSTMENT" section in Chapter 3, Page no 3-8

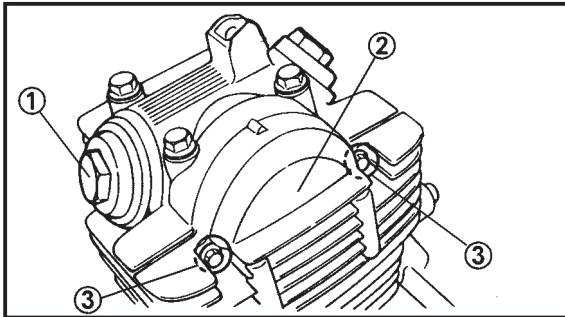


9. Lubricate :

- 4 Stroke Engine Oil



Recommended Lubricant :
Engine Oil - YAMALUBE



10. Install :

- Valve Covers (with O-Ring) ①
- Cylinder Head Side Cover (with O-Ring) ②
- Bolts ③

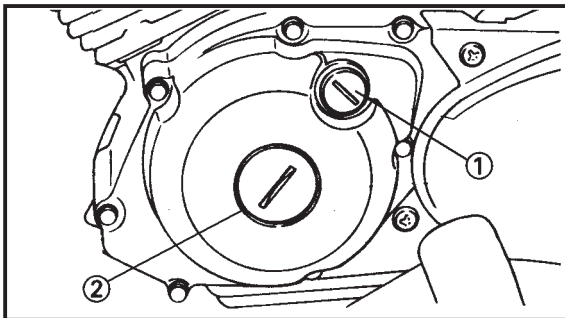


Valve Cover :

17.5 Nm (1.75 m.kg, 13 ft.lb)

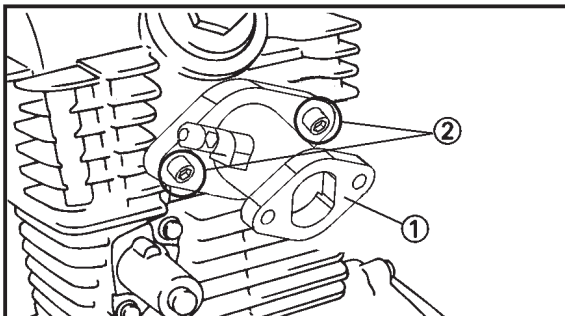
Bolts (Cylinder Head Side Cover)

10 Nm (1.0 m.kg, 7.2 ft.lb)



11. Install :

- Timing Check Plug (with O-Ring) ①
- Center Plug (with O-Ring) ②



12. Install

- O-Ring (intake manifold)
- Intake Manifold ①

13. Tighten

- Bolts (intake manifold) ②



Bolts (intake Manifold) :

10 Nm (1.0 m.kg, 7.2 ft. lb)

ENGINE ASSEMBLY AND ADJUSTMENTS

ENG



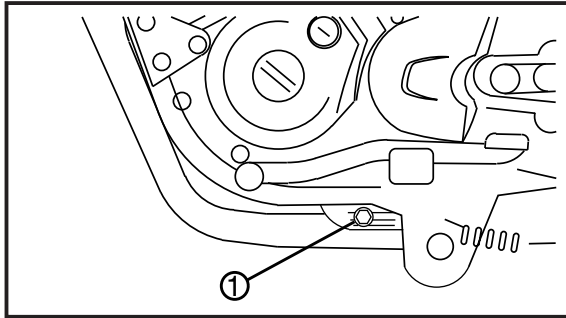
14. Install :

- Spark Plug



Spark Plug :

17.5 Nm (1.75 m.kg, 12.6 ft. lb)



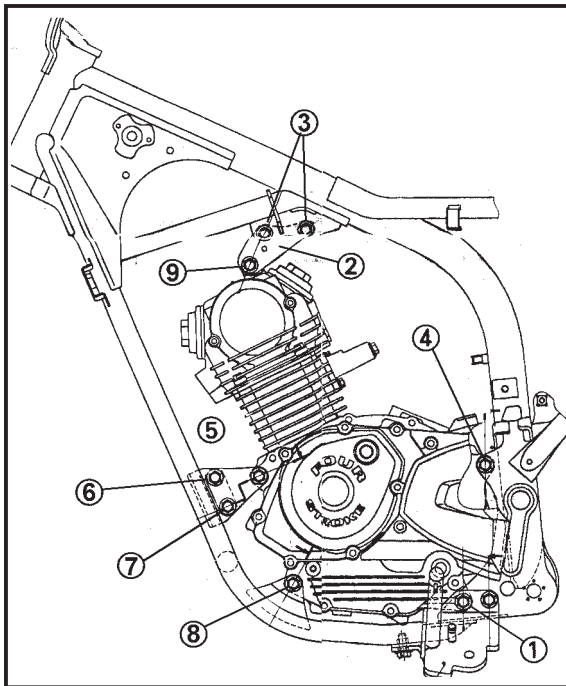
15. Install :

- Plug Drain



Plug Drain :

20 Nm (2.0 m.kg, 2.0 ft.lb)



ENGINE MOUNTING

When remounting the Engine, reverse the removal procedure. Note the following points :

1. Install :

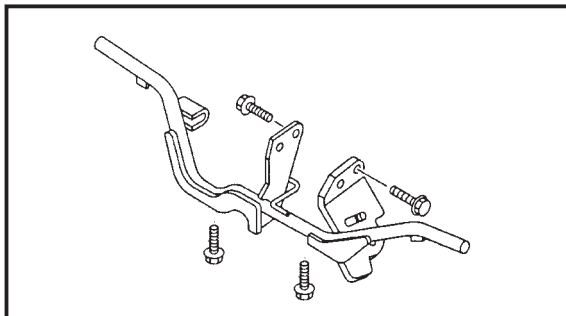
- Engine Assembly (from the Left side of the Motorcycle)

2. Install

- Footrest Assy

3. Install :

- Engine Mount Bolt (Rear) ① Lower
- Engine Mount stay upper ②
- Engine Mount bolt (Front upper) ③
- Mounting Bolt (Engine mount stay upper) ③
- Mounting Bolt (upper) ④
- Engine Mount Stay front ⑤
- Bolt (Engine Mount Stay Front upper) ⑥
- Bolt (Engine Mount stay Front lower) ⑦
- Engine Mount Bolt (Front lower) ⑧
- Engine Mount Bolt (Front upper) ⑨



4. Tighten :

- Bolts Foot Rest Assembly



Bolts (foot rest) :

17.5 Nm (1.6 m.kg, 7.2 ft lb)

ENGINE ASSEMBLY AND ADJUSTMENTS

ENG

**Engine Mount Bolt (Rear) :**

38 Nm (3.8 m.Kg, 27.5 ft. lb)

Bolt (Engine mount Stay) :

38 Nm (3.8 m..kg, 27. 5 ft.lt)

Engine mount bolt (upper)

38 Nm (3.8 m..kg, 27. 5 ft.lt)

Bolt (Engine Mount Stay front upper)

38 Nm (3.8 m.kg., 27.5 ft.lb)

Bolt (Engine Mount stay front lower)

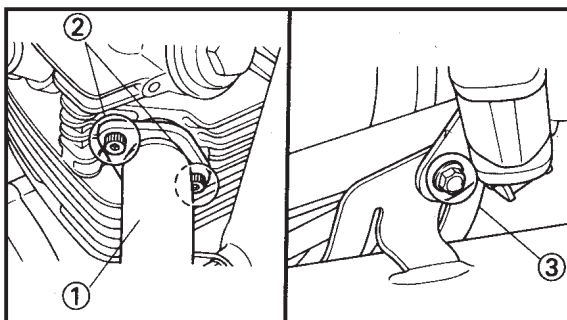
38 Nm (3.8 m.kg., 27.5 ft.lb)

Engine Mount Bolt (Front lower)

38 Nm (3.8 m.kg., 27.5 ft.lb)

Engine Mount bolt (from upper))

38 Nm (3.8 m.kg., 27.5 ft.lb)



5. Install :

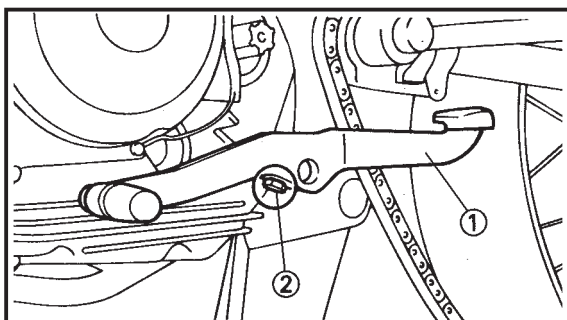
- Gasket
- Exhaust pipe ①
- Bolts Exhaust Pipe ② - 2 nos
- Bolt (Muffler) ③

**Bolts (Exhaust Pipe) :**

10 Nm (1.0m. kg, 7.2 ft. lb)

Bolt (Muffler) :

15 Nm (1.5 m.kg, 11 ft lb)



6. Install :

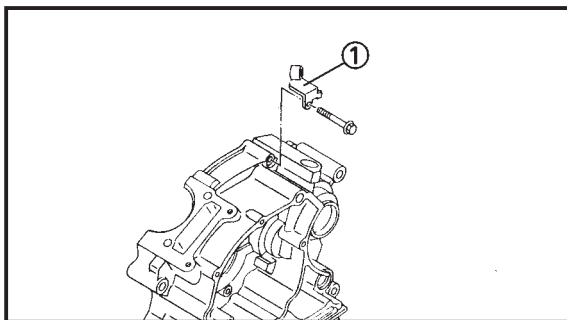
- Shift Pedal ①

7. Tighten :

- Bolt Shift Pedal ②

**Bolt (Shift Pedal):**

10 Nm (1.0m. kg, 7.2 ft. lb)



8. Install :

- Stay Clutch Cable

**Bolt (cable stay) :**

7 Nm (0.7 m.kg, 5.1 ft. lb)

9. Install

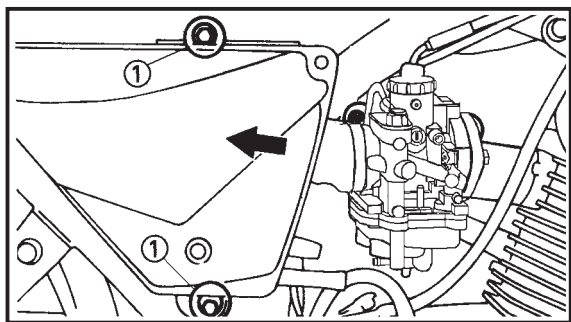
- Clutch cable
- Adjust Clutch Cable free play at Lever end
Refer "CLUTCH ADJUSTMENT" in Chapter 3,
Page no 3-17

10. Adjust

Drive Chain Slackness

Refer to "DRIVE CHAIN SLACK
ADJUSTMENT" section in Chapter 3, Page
no 3-20

ENGINE ASSEMBLY AND ADJUSTMENTS

ENG


11. Install:

- Carburetor

Refer to "CARBURETOR " section in Chapter 5 page no 5-7

12. Tighten:

- Air Filter Case Screws ①



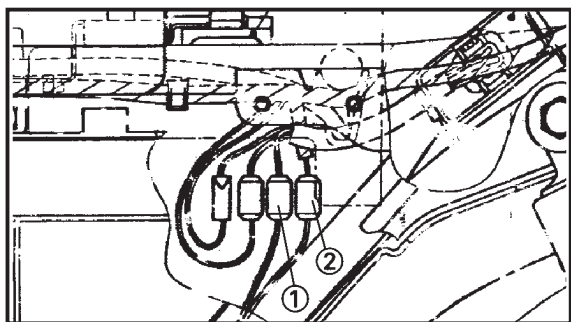
Bolts (Air Filter Case):
7 Nm (0.7 m.kg, 5.1 ft.lb)

13. Install

- Battery Box
- Battery
- Battery Flap



Bolts (Battery Box)
3.8 Nm (0.38 mkg), 3 ft lb

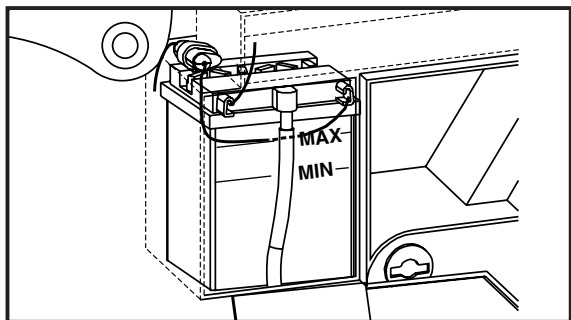


14. Connect

- Battery Leads
- Sensor Coil Lead Coupler

CAUTION:

Connect the positive lead ① First and then the negative lead ②



15. Install

Spark Plug Cap

16. Fill

- Crankcase

Refer to "ENGINE OIL REPLACEMENT" section in Chapter 3, Page no 3-14

17. Adjust :

- Idle Speed

Refer to "IDLING CO. MEASUREMENT AND ADJUSTMENT" in Chapter 3, Page no 3-8

18. Adjust :

- Throttle cable Free play

Refer to "THROTTLE CABLE ADJUSTMENT" in Chapter 3, Page no 3-9



CHAPTER 5
CARBURETION

CARBURETOR VIEW 5-1
REMOVAL 5-2
DISASSEMBLY 5-3
INSPECTION 5-4
ASSEMBLY 5-6
INSTALLATION 5-7
TUNING 5-8

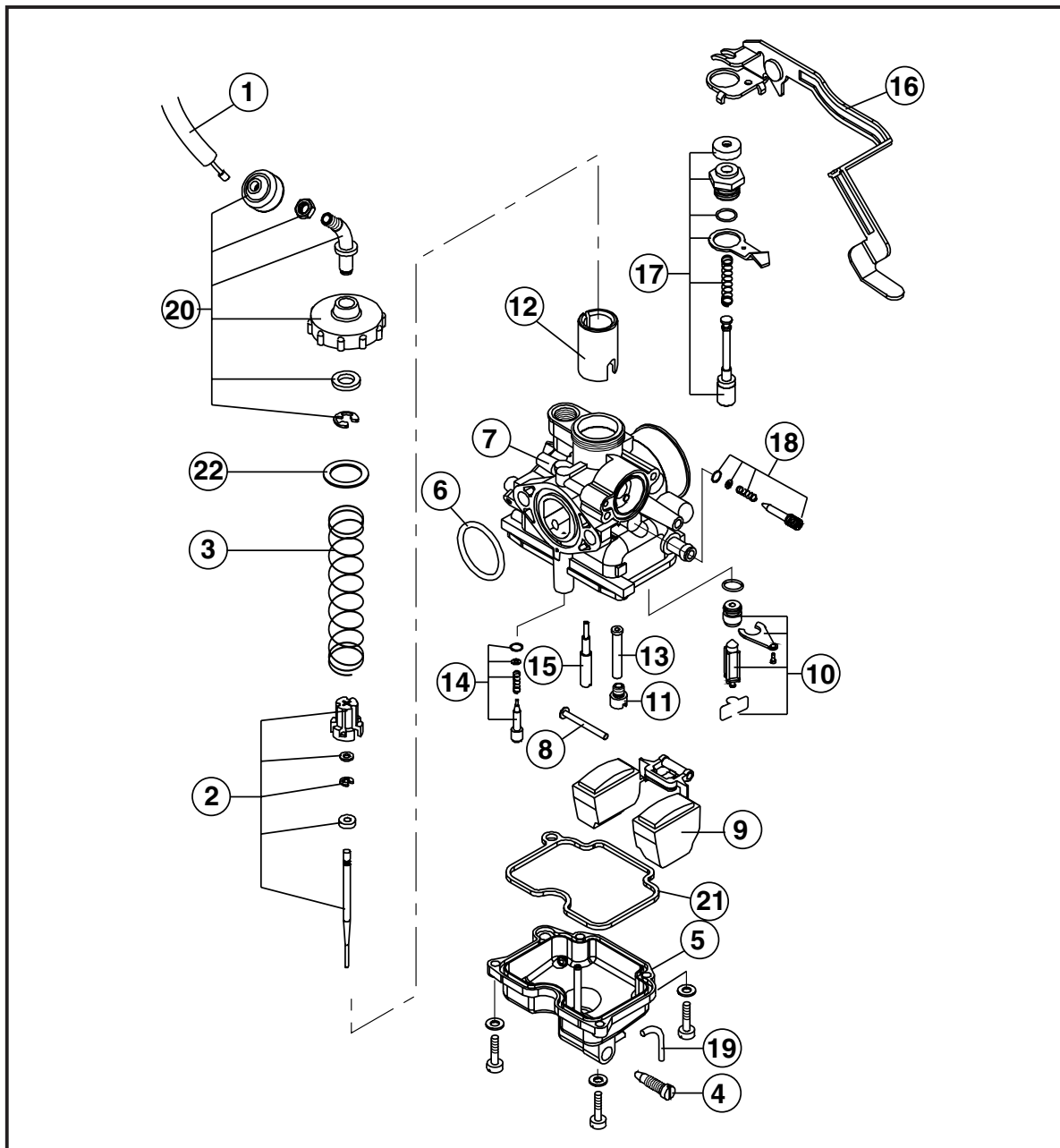
CARBURETOR

CARB



CARBURETOR

- | | |
|-------------------------|--------------------------|
| ① Throttle Cable | ⑫ Throttle valve |
| ② Jet Needle Assembly | ⑬ Nozzle Main |
| ③ Spring Throttle Valve | ⑭ Screw Pilot Assembly |
| ④ Plug Drain | ⑮ Jet Pilot |
| ⑤ Float Chamber Body | ⑯ Starter Lever |
| ⑥ O-Ring | ⑰ Plunger Starter Assy |
| ⑦ Main Chamber Body | ⑱ Throttle stop Screw |
| ⑧ Float Pin | ⑲ Pipe Drain |
| ⑨ Float | ⑳ Cable Adjust Screw Set |
| ⑩ Needle Valve Assembly | ㉑ Seal (F.C.B.) |
| ⑪ Jet Main | ㉒ Gasket |



CARBURETOR

CARB



REMOVAL

1. Remove :

- Side Covers (LH & RH)

Refer to the "SIDE COVER, SEAT AND FUEL TANK" section in Chapter 3, Page no 3-3

2. Drain :

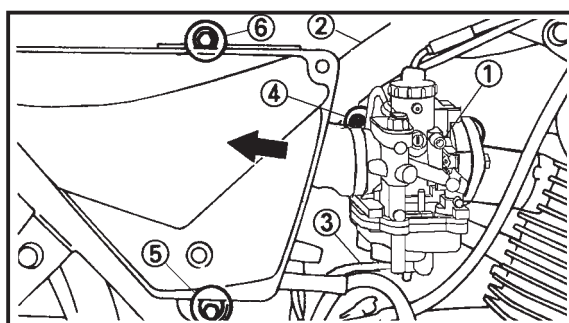
- Fuel (Float Chamber)

NOTE :

Place a rag under the over flow hose to absorb the spilt fuel.

⚠ WARNING

Petrol is highly flammable. Avoid spilling fuel on the hot Engine.

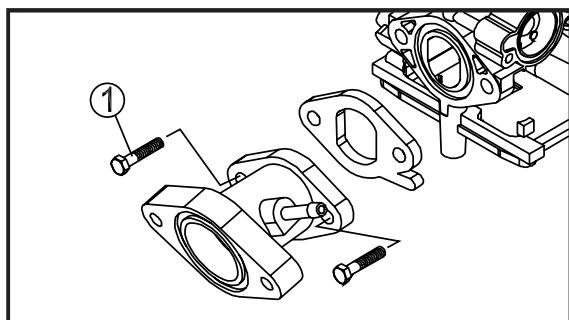


3. Disconnect :

- Air Vent Hose ①
- Fuel Hose ②
- Over Flow Hose ③

4. Loosen :

- Screw Clamp (Air Filter Hose) ④
- Bolts (Air Filter Case) ⑤ (2 nos)
- Open Bolt (Air filter case) ⑥

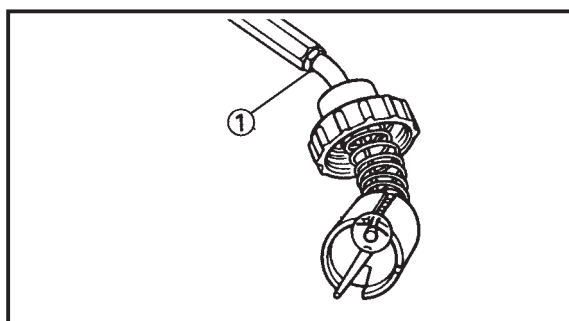


5. Remove

- Bolts (Intake Manifold) ① (2 nos)
- Joint ② with 'O' ring

6. Remove :

- Carburetor Assembly with 'O' ring



7. Remove

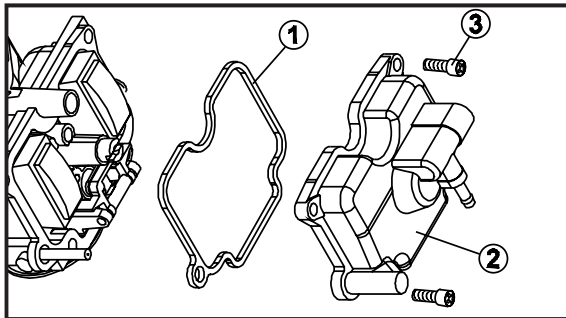
- Throttle Cable ①

Remove with Carburetor Chamber Top and Throttle Valve

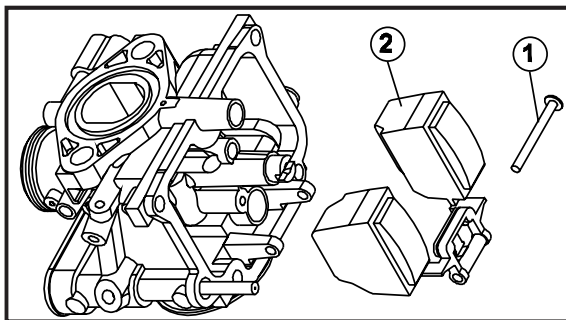
DISASSEMBLY**CARB****DISASSEMBLY****NOTE:**

The following parts can be cleaned and inspected without Carburetor Disassembly.

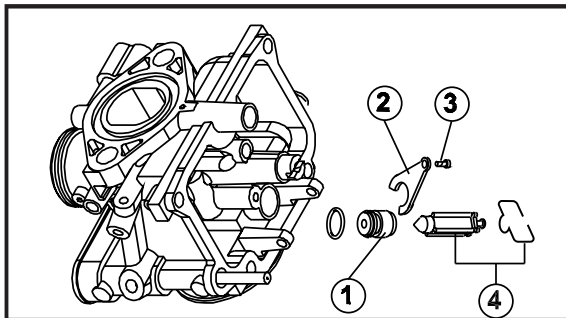
- Throttle Valve Assembly
- Starter lever
- Starter Plunger Assembly
- Before disassembly of Carburetor clean the outer surface of Carburetor and Check the Starter Lever Operation.



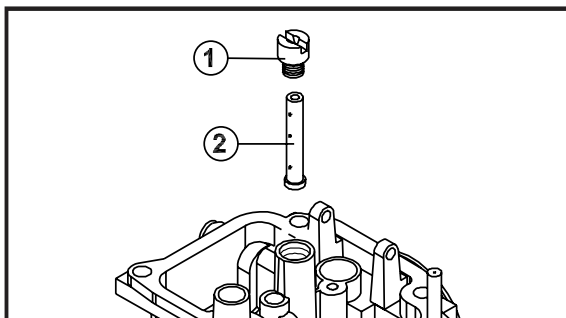
1. Open
 - Screws (Float chamber) ① 4 Nos
2. Remove :
 - Float Chamber ②
 - Seal Float Chamber ③



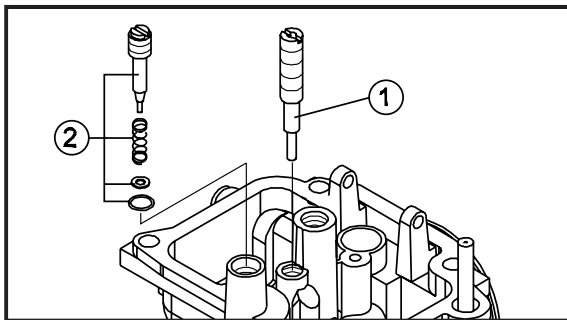
3. Remove :
 - Float Pin ①
 - Float ②



4. Remove :
 - Needle Valve ①
5. Remove
 - Screw (stopper plate) ②
 - Stopper Plate ③
 - Valve Seat ④

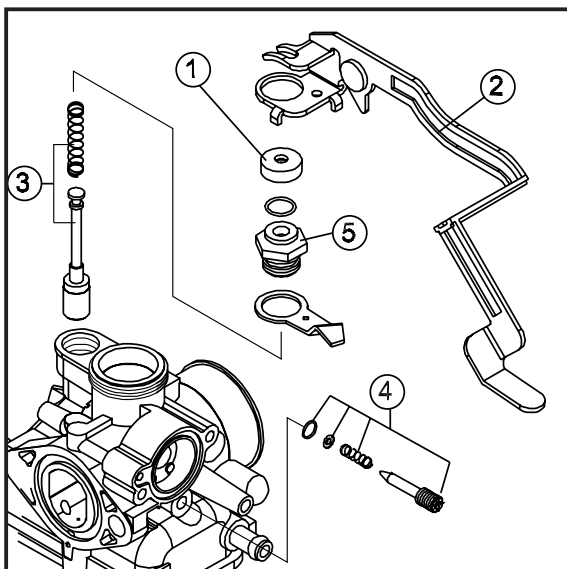


6. Remove :
 - Main Jet ①
 - Main Nozzle ②

DISASSEMBLY/INSPECTION**CARB**

7. Remove :

- Pilot Screw Assembly ① (Spring, Washer and 'O' ring)
- Pilot Jet ②

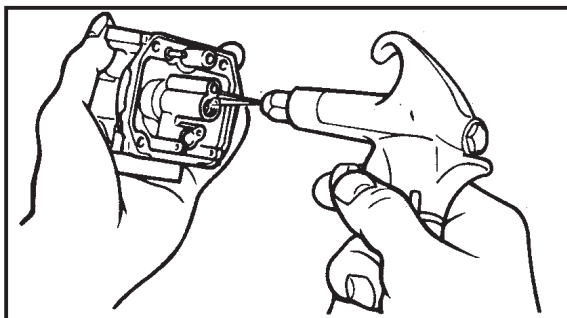


8. Remove :

- Cap plunger ①
- Starter Lever Assembly ② by opening Cap Plunger ⑤
- Starter Plunger Assembly ③

9. Remove

- Throttle Stop Screw Set ④ (Spring, Washer and 'O' ring)

INSPECTION**Carburetor Body**

1. Inspect :

- Cracks/damage → Replace
- Fuel Passages Blockage → Clean with petrol and Compressed air.
- Contamination in jet housings → Clean

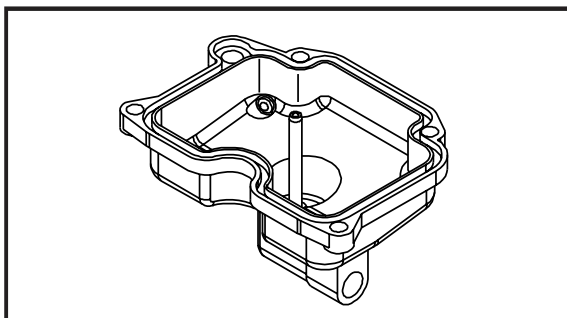
Carburetor Float Chamber Body

1. Inspect

- Cracks/damage → Replace
- Fuel Starter Passage Blockage → Clean with petrol and compressed air
- Contamination → Clean

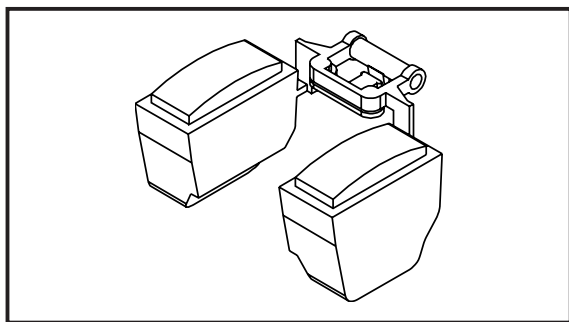
Cleaning Steps :

- Wash the Carburetor in petroleum based solvent. (Do not use any caustic cleaning solution)
- Blow all passages and Jets with compressed air.

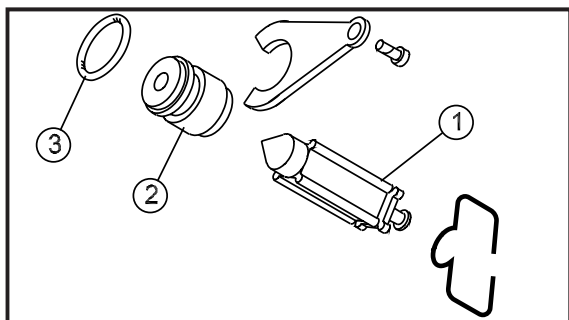


INSPECTION

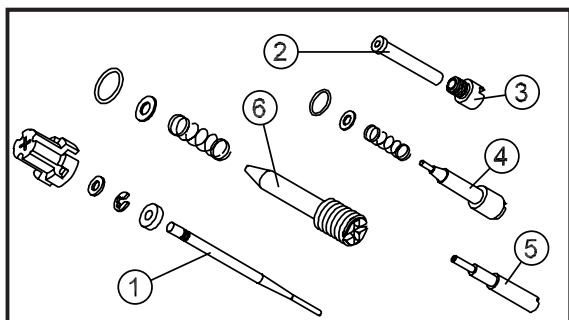
CARB

**Float**

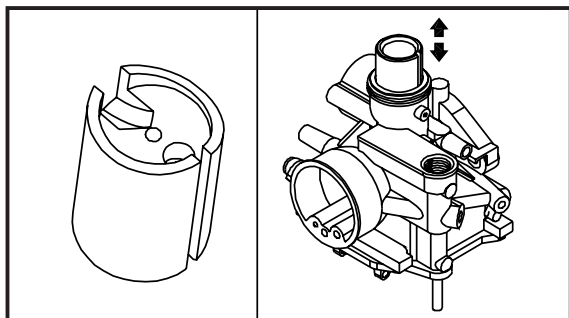
1. Inspect :
 - Damage → Replace

**Needle Valve and Valve Seat**

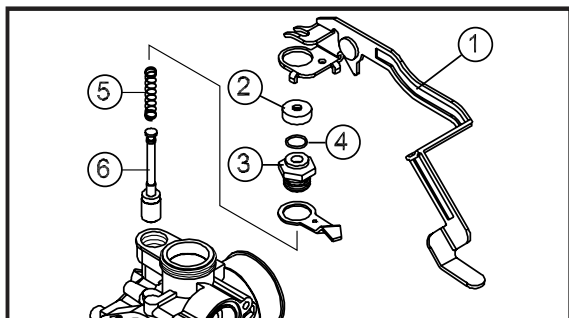
1. Inspect
 - Needle Valve ①
 - valve seat ②
 - O-Ring ③
 Damage/wear /blockage → Clean/Replace as a set

**Jets and Screws**

1. Inspect :
 - Jet Needle ①
 - Needle Jet ② (Main Nozzle)
 - Main Jet ③
 - Pilot screw ④
 - Pilot jet ⑤
 - Throttle Stop Screw ⑥
 - Bends/wear/damage Replace
 Blockage → Blow the Jets with compressed air

**Throttle Valve**

1. Check :
 - Free movement
 Insert the Throttle Valve in the Carburetor body, and check for free movement
 Hinderance → Clean/Replace

**Starter Assembly**

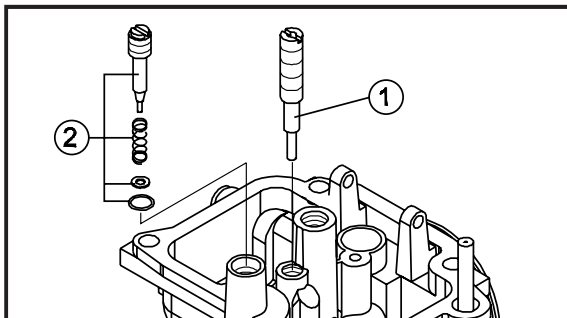
1. Inspect :
 - Starter Lever ①
 - Cover Plug Cap ②
 - Cap Plug ③
 - O-Ring ④
 - Spring Plunger ⑤
 - Starter Plunger ⑥ for seat and free movement

ASSEMBLY

CARB

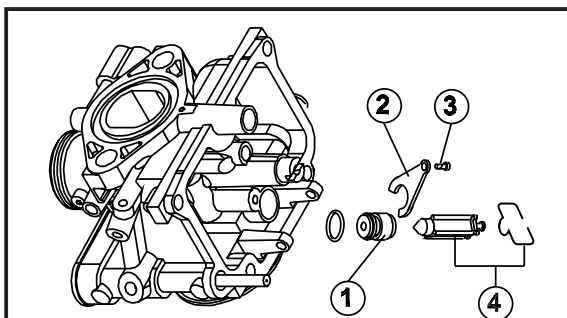


ASSEMBLY

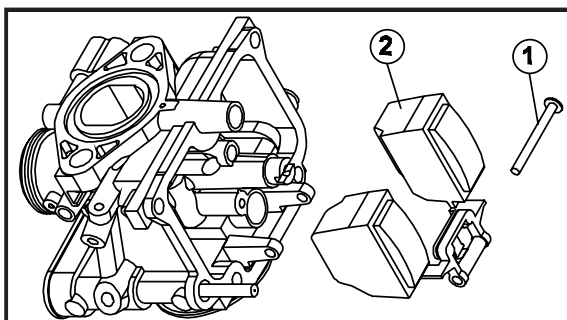


Reverse the disassembly procedure.

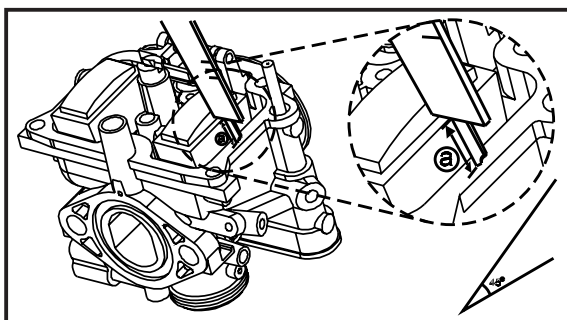
1. Wash
 - All the parts in clean petroleum based solvent
 - Always use new 'o' rings
2. Install :
 - Pilot jet ①
 - Pilot screw assembly ②



3. Install :
 - Needle Jet ① (Main Nozzle)
 - Main Jet ②
4. Install :
 - Valve Seat ①
 - Valve seat stopper ②
 - Valve seat Stopper screw ③
 - Needle Valve ④



5. Install :
 - Float ①
 - Float Pin ②

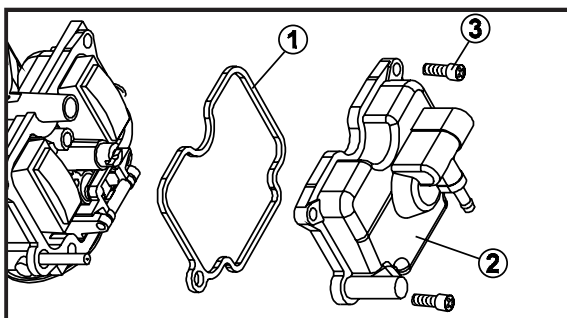


6. Measure
 - Float Height @

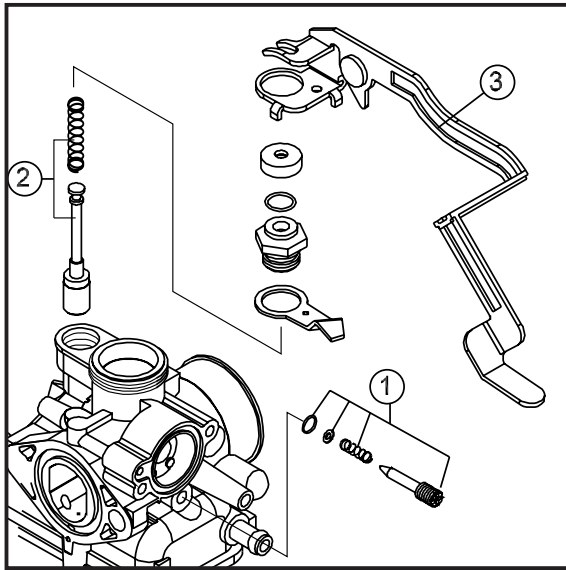
Incorrect → Adjust



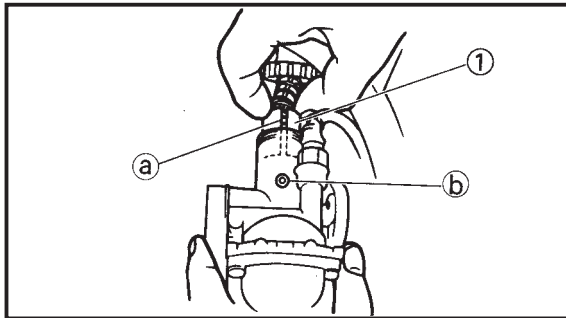
Float Height : $9.3 \pm 1\text{mm}$



7. Install
 - Seal Float Chamber ① **New**
 - Float Chamber ②
 - Screw ③ with Spring Washer (4 nos)

INSTALLATION**CARB**

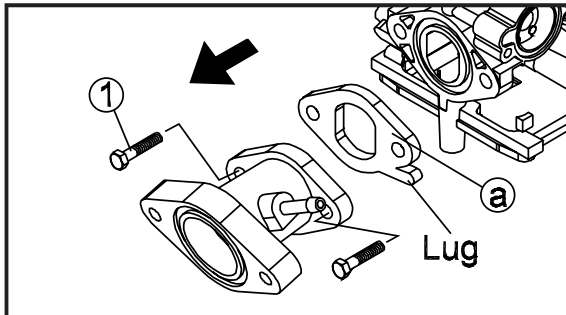
8. Install
 - Throttle Stop Screw set ①
9. Install
 - Starter Plunger Assembly ② with Starter Lever ③

**INSTALLATION**

Reverse the "REMOVAL" procedure

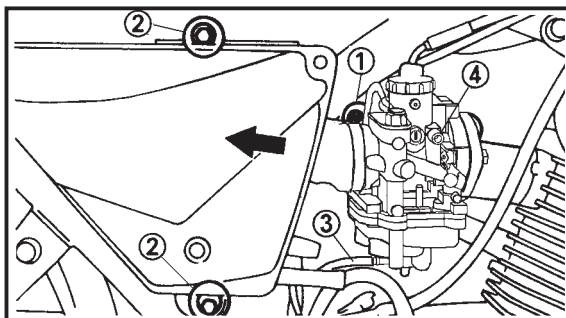
1. Install :
 - Spring, Throttle Valve with the Throttle Cable
2. Install :
 - Throttle Valve Assembly With Carburetor Chamber Top

NOTE : _____
Align the slot ② on the Throttle Valve ① with the projection ⑥ on the Carburetor Body.



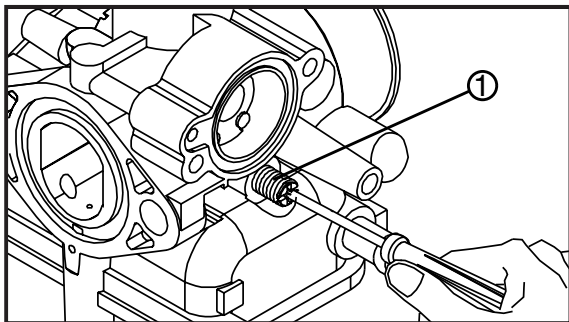
3. Install :
 - Carburetor Assembly and Joint together on the intake manifold.

NOTE : _____
While installing Joint A keep its lug side downward and L.H.S. of Engine.



4. Tighten
 - Bolts (Intake manifold 2 nos) ①
5. Install
 - Air Filter hose on the Carburetor
6. Tighten :
 - Clamp Screw ①
 - Bolts ② (Air Filter Case - 2 nos)
7. Connect :
 - Over Flow Hose ③
 - Air Vent Hose ④
 - Fuel Hose

CARBURETOR TUNING

CARB


8. Adjust :

- Idling speed by Throttle Stop Screw ①



Engine Idling Speed :
1300 - 1500 R.P.M.

9. Adjust :

- Throttle Cable free play

Refer to "THROTTLE CABLE
ADJUSTMENT" in Chapter 3, Page no 3-9

Carburetor Tuning

'CO MEASUREMENT AND ADJUSTMENT'

1. Start the Engine and let it warm up by running approximately 4 kms.
2. Attach :
 - Tachometer to the Spark Plug lead
3. Check :
 - Engine idling speed
 If out of specification → adjust



Engine Idling Speed :
1300 - 1500 R.P.M.

Adjustment Steps

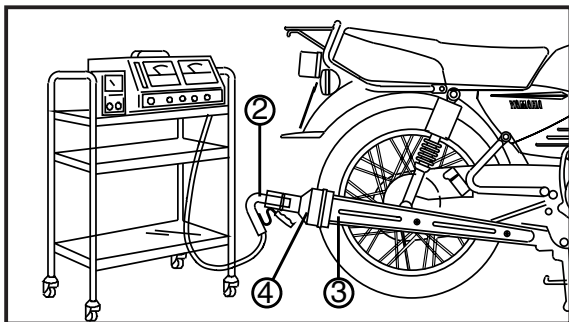
Turn the Throttle Stop Screw ① in or out until specified idling speed is obtained.

Turning in → RPM Increases

Turning Out → RPM Decreases

4. Insert :

- Sampling probe ② of 'CO' tester (calibrated) to the exhaust pipe ③ using suitable adapter ④



'CO' density :
2.5% ± 1.5% v/v

If out of specification → adjust

5. Adjust :

- 'CO' density through pilot screw

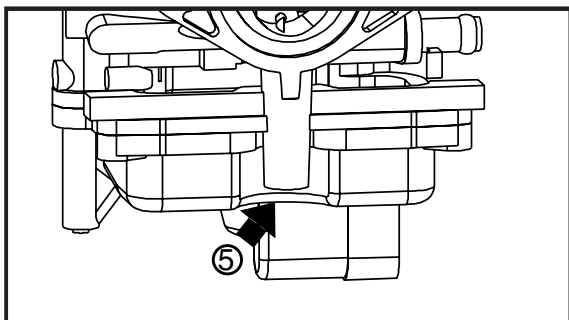
Adjustment Steps

Turn the Pilot Screw ⑤ in or out until the specified 'CO' density is achieved.

Turning In → 'CO' density Increases

Turning Out → 'CO' density Decreases

- Reset idling speed as per specifications



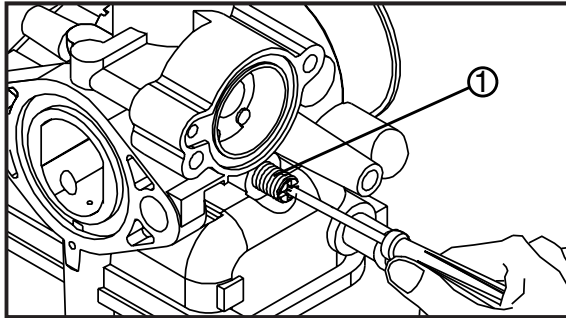
CARBURETOR TUNING

CARB

**CAUTION:**

Do not disturb settings of the Carburetor if the Engine performance is O.K.

- If required, must record the existing setting (No. of turns) of the Pilot Screw.
- To counter check the setting of the Pilot Screw, follow the 'CO' adjustment procedure.
- Ensure proper clamping of the blind plug



6. Adjust :

- Idling speed by Throttle Stop Screw ①

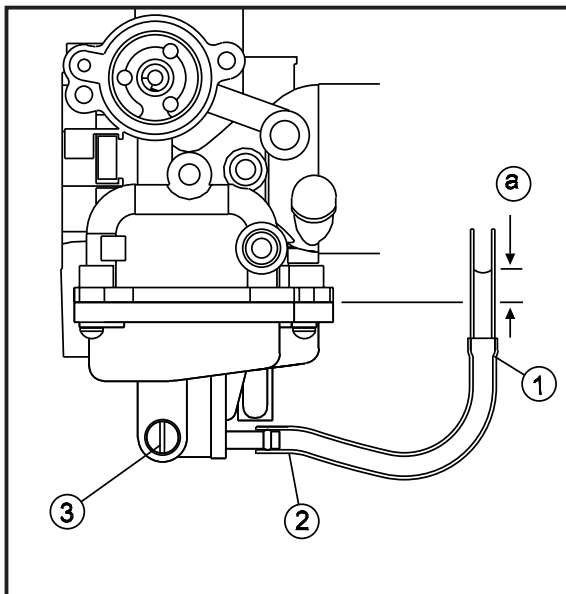


Engine Idling R.P.M.
1300 to 1500 RPM

FUEL LEVEL ADJUSTMENT

1. Measure :

- Fuel Level @
- Out of specification → Adjust



Fuel level :
2.5PL/minus 0.5 mm Above the
Joint of Main Chamber Body
and Float Chamber Body

Measurement and adjustment steps :

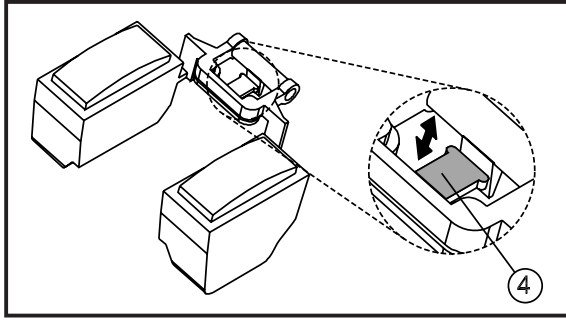
- Place the motorcycle on a level surface on centre stand
- Connect the Fuel Level Gauge ① to the Drain Pipe ②



Fuel Level Gauge

- Loosen the Drain Screw ③
- Hold the Gauge vertically next to the Float Chamber Line
- Measure the Fuel level @ with the Gauge
- If the fuel level is incorrect, adjust the fuel level, using the following steps
- Remove the Carburetor
- Inspect the Valve Seat and Needle Valve
- If either is worn, replace as a set

CARBURETOR TUNING

CARB


- Otherwise adjust Float level by bending the Float Tang ④ on the Float slightly up or down as required.
- Install the Carburetor
- Recheck the fuel level
- Adjust Float height through Float Tang ④

By Bending Down → Float Height increase
By Lifting Up → Float Height Decrease

FRONT WHEEL AND FRONT BRAKES

CHAS



CHAPTER 6

CHASSIS

FRONT WHEEL AND FRONT BRAKE	6-1
FRONT WHEEL	6-1
FRONT BRAKE	6-2
REMOVAL	6-3
FRONT WHEEL INSPECTION	6-4
BRAKE SHOE PLATE DISASSEMBLY	6-5
SPEEDOMETER GEAR INSPECTION	6-5
FRONT BRAKE INSPECTION	6-6
BRAKE SHOE PLATE ASSEMBLY	6-7
FRONT WHEEL INSTALLATION	6-9
REAR WHEEL AND REAR BRAKE	6-11
REAR BRAKE	6-12
REMOVAL	6-13
REAR WHEEL INSPECTION	6-14
REAR BRAKE INSPECTION	6-14
REAR WHEEL INSTALLATION	6-15
DRIVE CHAIN AND SPROCKETS	6-16
REMOVAL	6-17
DRIVE CHAIN INSPECTION	6-18
CLUTCH HUB INSPECTION	6-19
DRIVEN SPROCKET ASSEMBLY	6-19
DRIVEN SPROCKET AND DRIVE CHAIN INSTALLATION	6-19
FRONT FORK	6-20
FRONT FORK REMOVAL	6-21
FRONT FORK DISASSEMBLY	6-21
FRONT FORK INSPECTION	6-23
FRONT FORK ASSEMBLY	6-24
FRONT FORK INSTALLATION	6-26
STEERING HEAD AND HANDLEBAR	6-27
REMOVAL	6-28
HANDLEBAR REMOVAL	6-29
HANDLEBAR INSPECTION	6-29
STEERING INSPECTION	6-30
STEERING INSTALLATION	6-30
HANDLEBAR INSTALLATION	6-31
REAR SHOCK ABSORBER AND SWING ARM VIEW	6-32
REMOVAL	6-33
INSPECTION	6-33

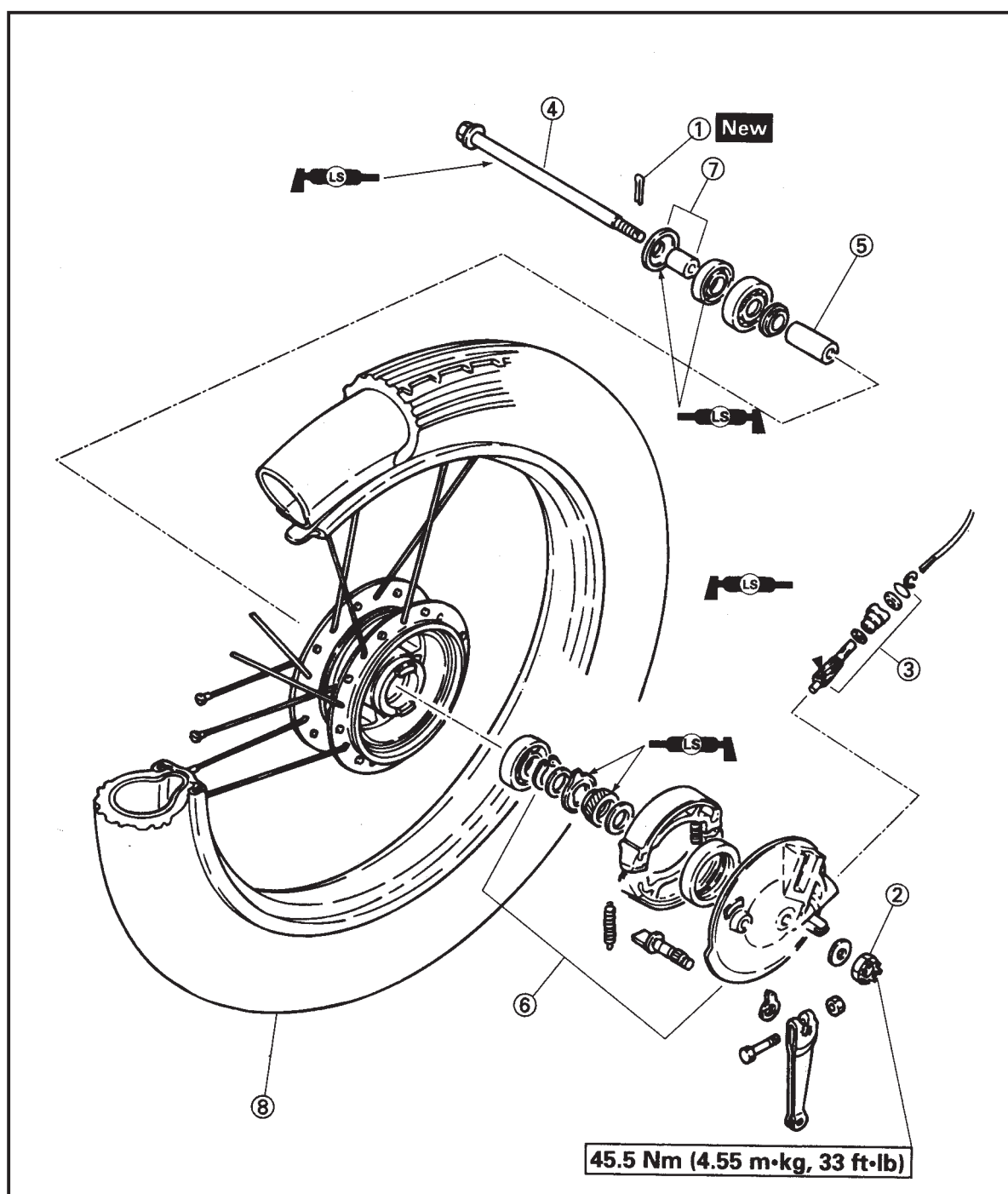
FRONT WHEEL AND FRONT BRAKES

CHAS



FRONT WHEEL

- ① Cotter Pin
- ② Axle Nut
- ③ Speedometer Cable Assy.
- ④ Wheel Axle
- ⑤ Spacer
- ⑥ Brake Shoe Plate Assy.
- ⑦ Dust Seal/Collar
- ⑧ Front Wheel



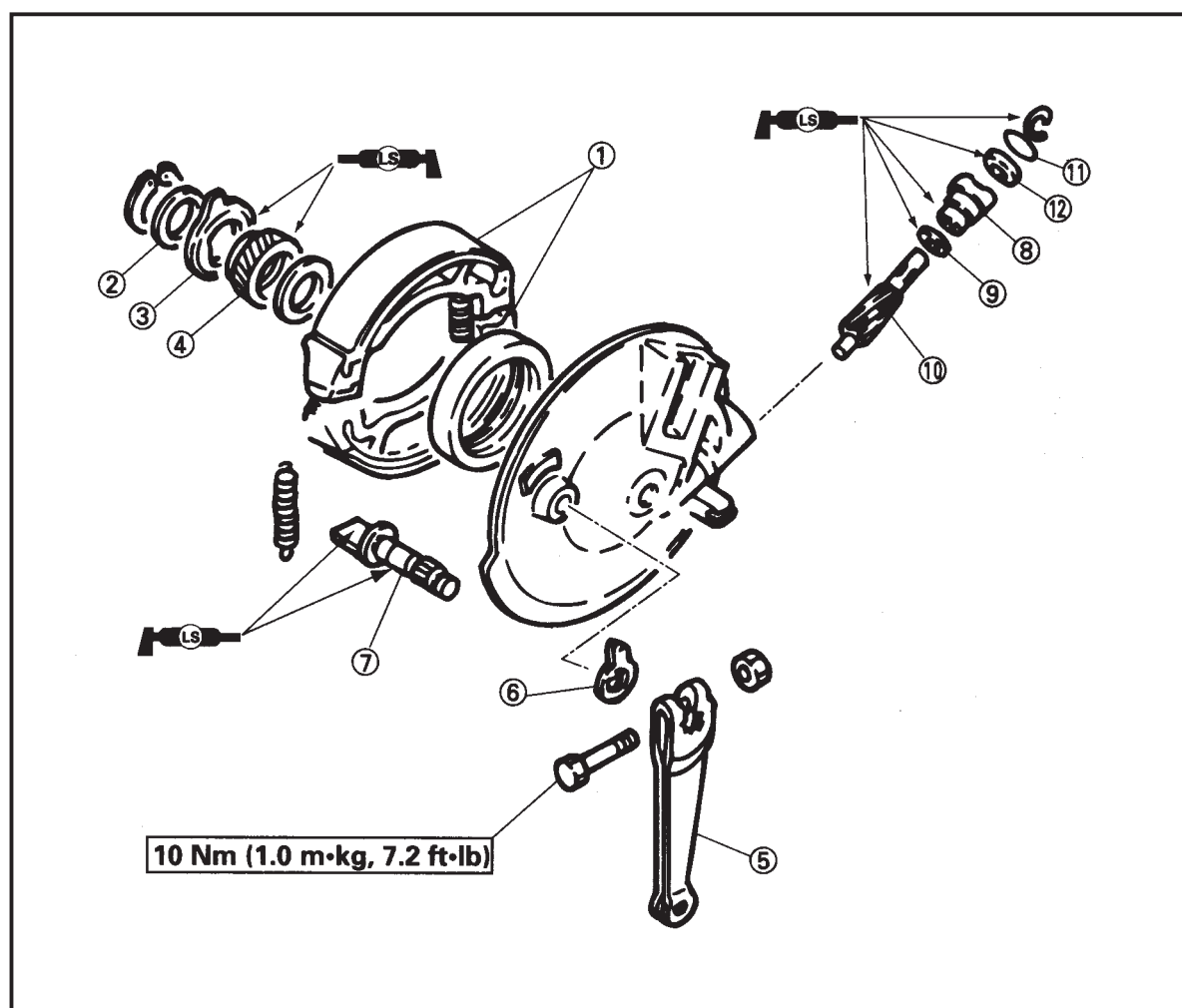
FRONT WHEEL AND FRONT BRAKES

CHAS



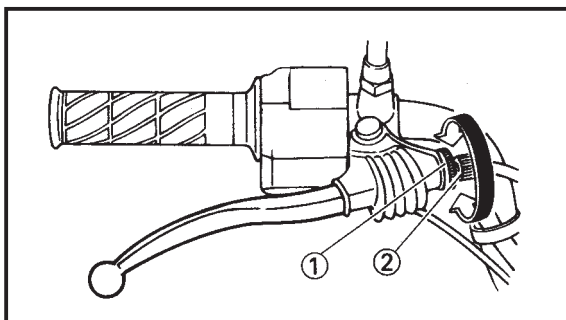
FRONT BRAKE

- | | |
|--------------------|----------------|
| ① Brake Shoe Assy. | ⑦ Camshaft |
| ② Oil Seal | ⑧ Bush |
| ③ Clutch Meter | ⑨ Plate Washer |
| ④ Gear Drive | ⑩ Gear Meter |
| ⑤ Lever Camshaft | ⑪ O-Ring |
| ⑥ Indicator Plate | ⑫ Oil Seal |



FRONT WHEEL AND FRONT BRAKES

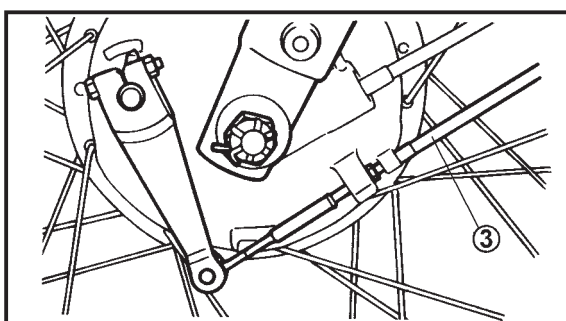
CHAS



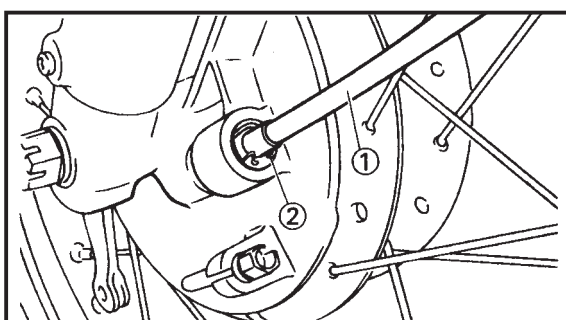
REMOVAL

⚠ WARNING

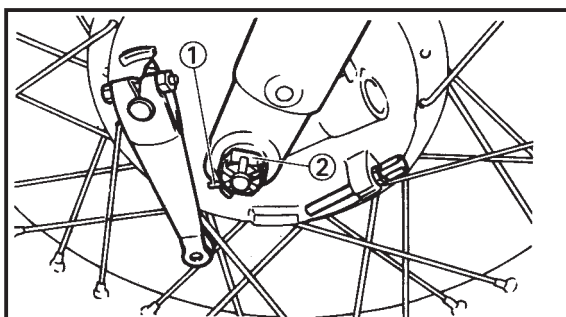
- Securely support the Motorcycle on the centre stand so that there is no danger of it falling over.
- Park the Motorcycle on a level surface



1. Loosen :
 - Lock nut ① and screw in the adjuster ② fully to loosen the Brake Cable
2. Remove :
 - Front Brake Cable ③ by slacking and removing it first from the Handlebar end and then from the Front Wheel end.



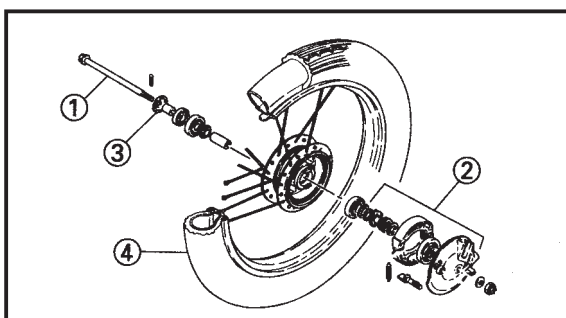
3. Disconnect
 - Speedometer Cable ① by removing the clip ②



4. Remove
 - Cotter Pin ①
 - Nut ②
5. Lift
 - Front Wheel

NOTE :

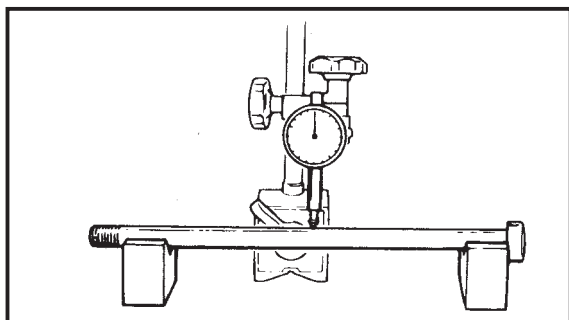
Place a suitable stand under the Engine.



5. Remove
 - Front Wheel Axle ①
 - Brake Shoe Plate Assembly ②
 - Dust Seal/Collar ③
 - Front Wheel ④

FRONT WHEEL AND FRONT BRAKES

CHAS



Front Wheel Inspection :

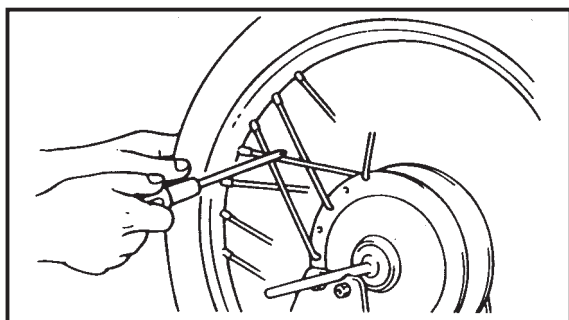
1. Inspect
 - Front Wheel Axle
(by rolling it on a flat surface)
 - Bends → Replace



Wheel Axle Bending Limit :
0.25 mm

⚠ WARNING

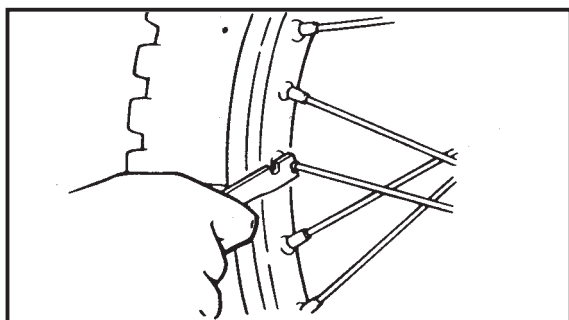
Do not attempt to straighten a bent Axle



2. Inspect :
 - Front Tyre
Wear/damage → Replace
Refer to "TYRE INSPECTION" in Chapter 3, Page no 3-26
 - Front Wheel
Refer to "WHEEL INSPECTION" in Chapter 3, Page no 3-27
3. Check :
 - Spokes
Bends/damage → Replace
Loose Spokes → Tighten

Turn the Wheel and tap the Spokes with a Screwdriver

NOTE : _____
A tight Spoke will emit a clear, ringing tone; a loose Spoke will sound flat.

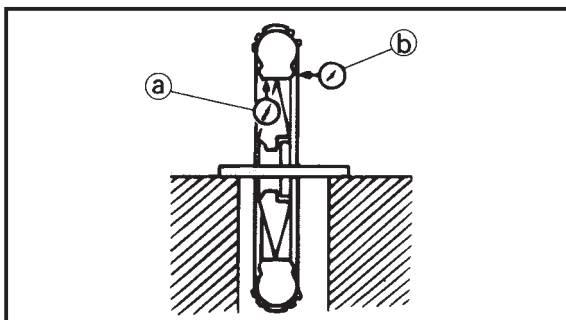


4. Tighten :
 - Loose Spokes
 - Nipple

NOTE : _____
Check the Front Wheel runout after tighteneing the Spokes.

FRONT WHEEL AND FRONT BRAKES

CHAS



5. Measure :

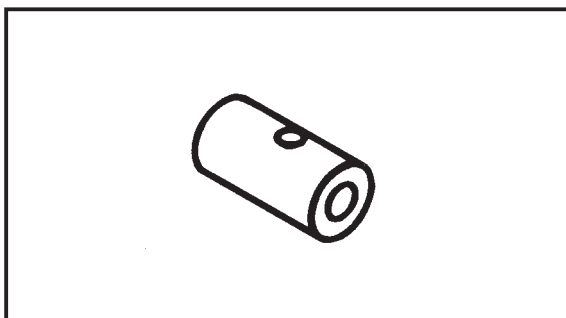
- Front Wheel runout using a height gauge
Over the specified limits → Correct/Replace



Front Wheel runout limits :

Radial @ : 0.5 mm

Lateral @ : 0.8 mm

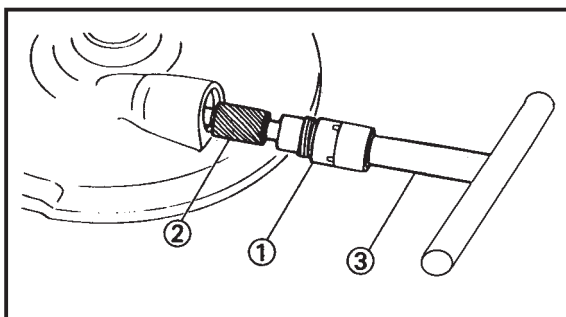


6. Inspect :

- Front Wheel Bearings
Bearings allow free play in the Wheel Hub or the Wheel does not turn smoothly → Replace
- Oil Seals
Wear/damage → Replace

7. Inspect :

- Collar
Grooved Wear → Replace the Collar and the Oil Seal as a set



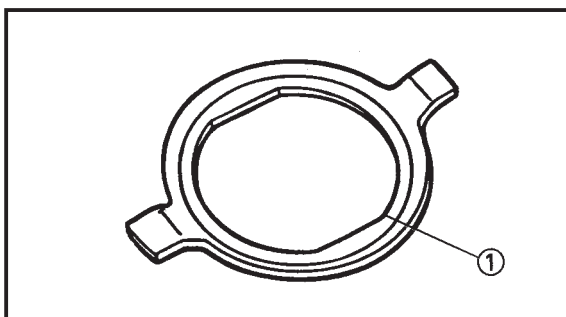
BRAKE SHOE PLATE DIASSEMBLY

1. Remove :

- Bush ①
 - Meter Gear ②
- Remove the bush using a Meter Gear Bush Tool ③



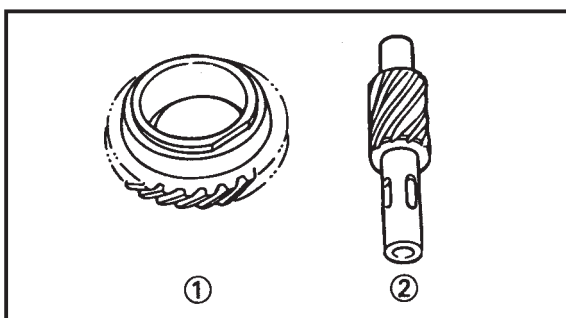
**Spanner - Speedometer Gear Nut
YSST - 237**



SPEEDOMETER GEAR INSPECTION

1. Inspect :

- Meter Clutch ①

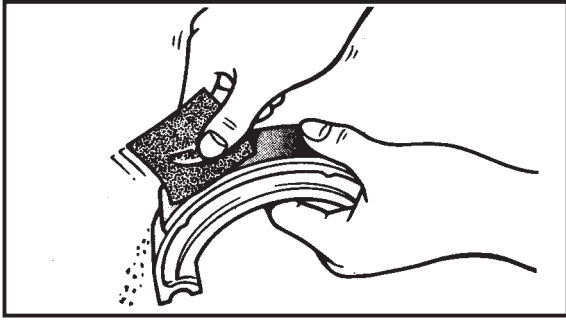


2. Inspect :

- Meter Drive Gear ①
- Meter Gear ②

FRONT WHEEL AND FRONT BRAKES

CHAS



FRONT BRAKE INSPECTION

1. Inspect :

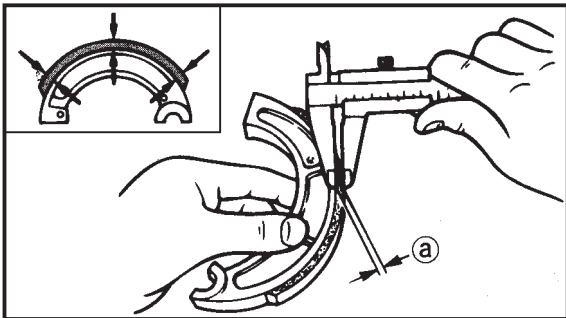
- Brake Lining surface

Glazed areas → Replace

Use Coarse Sand Paper for polishing of Brake Lining

NOTE:

After polishing , wipe the polished particles with a cloth.



2. Measure :

- Brake Lining thickness @

Out of specification → Replace



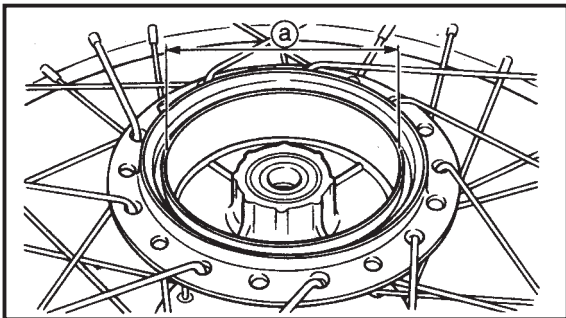
Brake Lining thickness:

Standard : 4 mm

Limit : 2 mm

NOTE :

Replace the Brake Shoes as a set if either is worn to the limit.



3. Measure :

- Brake Drum inside diameter @

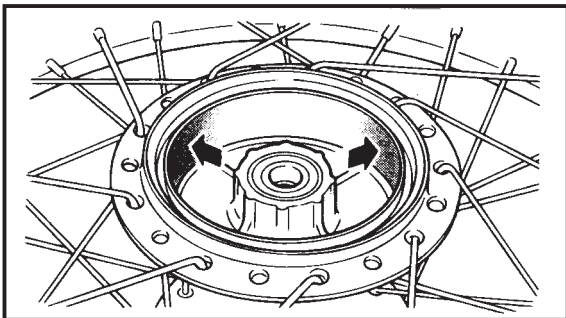
Out of specification → Replace the Wheel Drum



Brake Drum inside diameter:

Standard : 130 mm

Limit : 131 mm



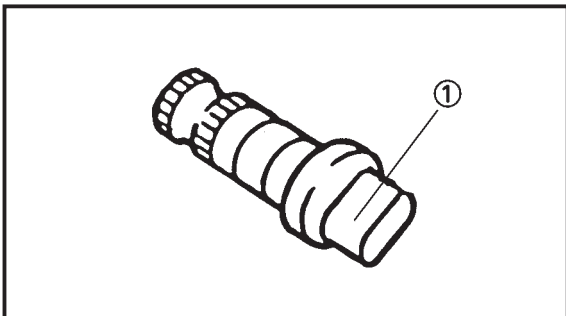
4. Inspect :

- Brake Drum inner surface

Oil/Scratches → Repair

- Oil : Use a Rag soaked in solvent

- Scratches : Use an emery cloth and polish lightly and evenly.



5. Inspect :

- Camshaft Face ①

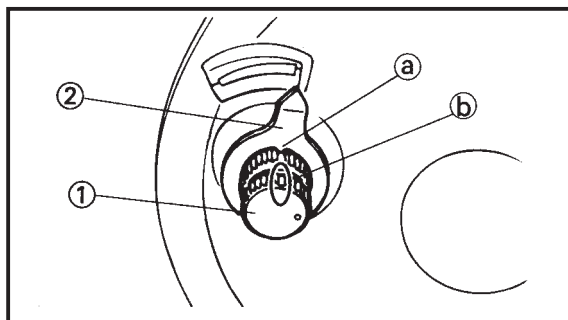
Wear → Replace

⚠ WARNING

When inspecting the Brake Lining, do not spill oil or grease on the Brake Lining.

FRONT WHEEL AND FRONT BRAKES

CHAS



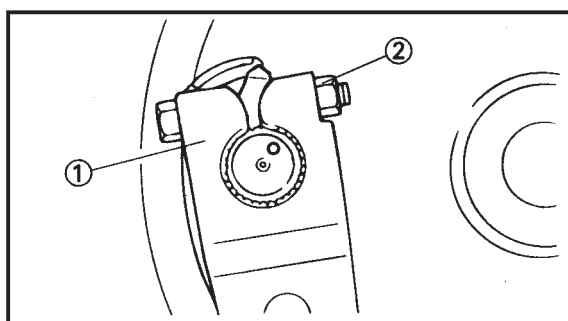
BRAKE SHOE PLATE ASSEMBLY

1. Install :

- Camshaft ①
- Indicator Plate ②

Installation steps :

- Align the projection ③ on the Indicator Plate ② with the Camshaft notch ④



2. Install :

- Cam Lever ①
- Bolt Cam Lever ②



Cam Lever Nut :

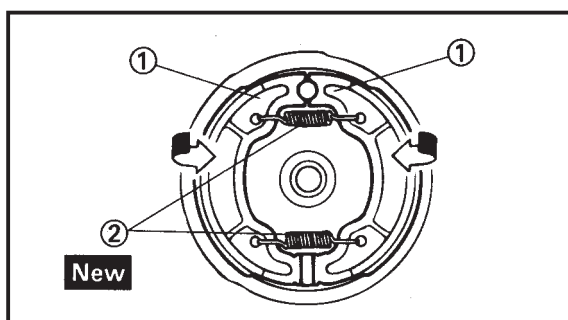
10 Nm (1.0m.kg, 7.2 ft.lb)

3. Install

- Brake Shoes ①
- Tension Springs ② **New**

NOTE :

- When installing the Springs and Brake Shoes, take care not to damage the Springs
- Replace the Tension Spring as a set when replacing the Brake Shoes.



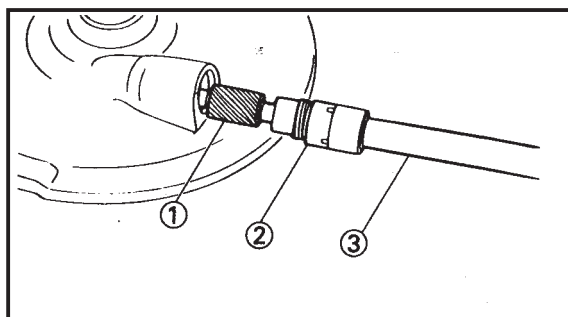
⚠ WARNING

After installing the Brake Camshaft, remove the excess grease

4. Install :

- Meter Gear ①
- Bush ②

Install the Bush using the Spanner -Speedometer Gear Nut



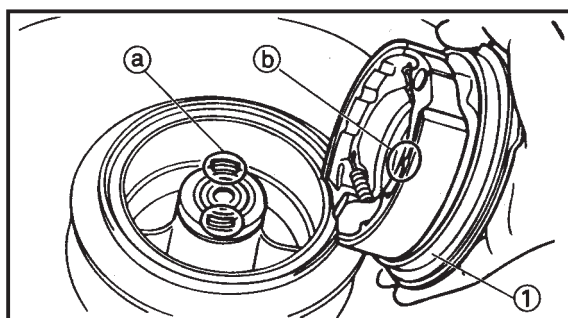
**Spanner - Speedometer Gear Nut
YSST - 237**

5. Install :

- Brake Shoe Plate Assembly ①

NOTE :

Make sure that the Wheel Hub and the Speedometer Gear Unit are installed with the two projections ③ meshed into the two solts ④



6. Install :

- Hub Dust Cover
- Collar

FRONT WHEEL AND FRONT BRAKES

CHAS



FRONT WHEEL INSTALLATION

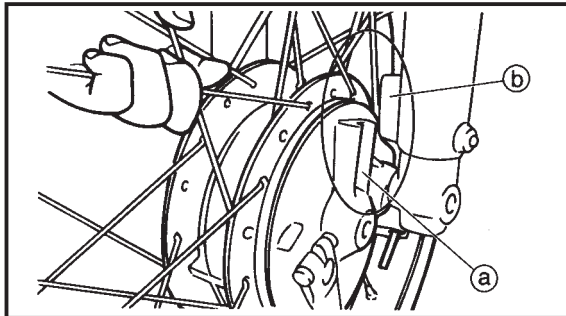
Reverse the "REMOVAL" procedure

Note the following points

1. Lubricate :
 - Axle Front Wheel
 - Bearings
 - Oil Seal (lips)
 - Drive/Driven Gear (Speedometer)

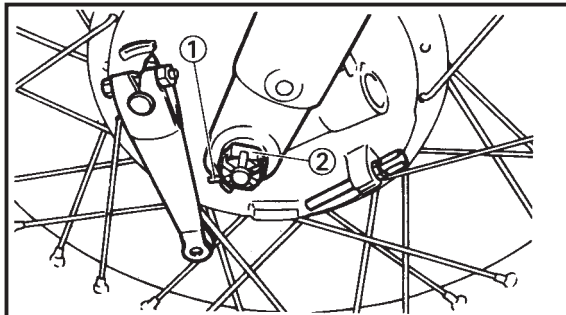


Recommended lubricant :
Lithium Soap base grease



2. Install :
 - Front Wheel

NOTE: _____
Make sure that the slot @ in the Shoe Plate fits over the Stopper ① on the Front Fork Outer Tube LH



3. Tighten :
 - Front Wheel Axle
 - Axle Nut (Front Wheel)

NOTE : _____
Do not loosen the Axle Nut after Torque tightening. If Axle Nut groove is not aligned with the Wheel axle Cotter Pin hole, align groove to hole by tightening up on the Axle Nut.

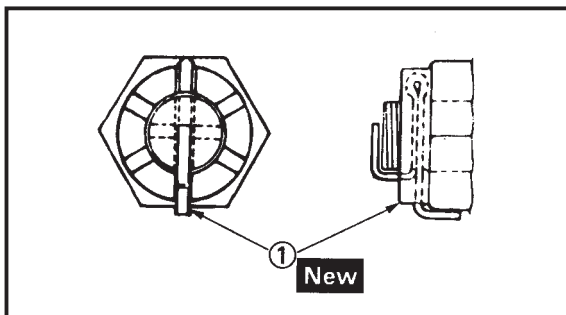
CAUTION:

Before tightening the Wheel Axle, Stroke the Front Fork several times to check for proper fork operation



Axle Nut :
45.5 Nm(4.55 m.kg. 33 ft.lb)

4. Install :
 - Cotter Pin **New** and bend its ends.

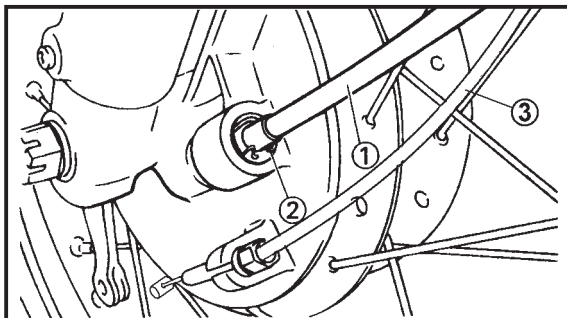


⚠ WARNING

Always use a new Cotter Pin

FRONT WHEEL AND FRONT BRAKES

CHAS

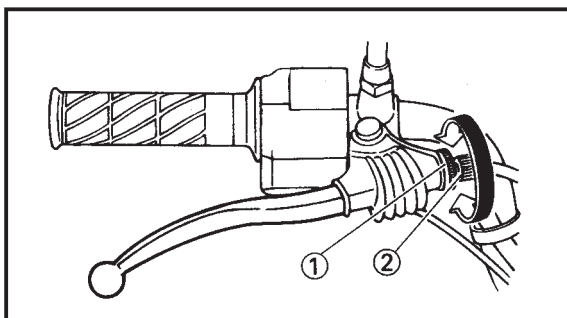


5. Install :

- Meter Cable ①
- Clip ②
- Brake Cable ③

⚠ WARNING

Make sure that the Brake Cable and Meter Cable is routed properly.



6. Check :

- Front Brake for proper operation
Improper operation → Recheck or disassemble.

7. Adjust

- Brake Lever free play
Refer to "FRONT BRAKE ADJUSTMENT"
section in Chapter 3, Page no 3-18

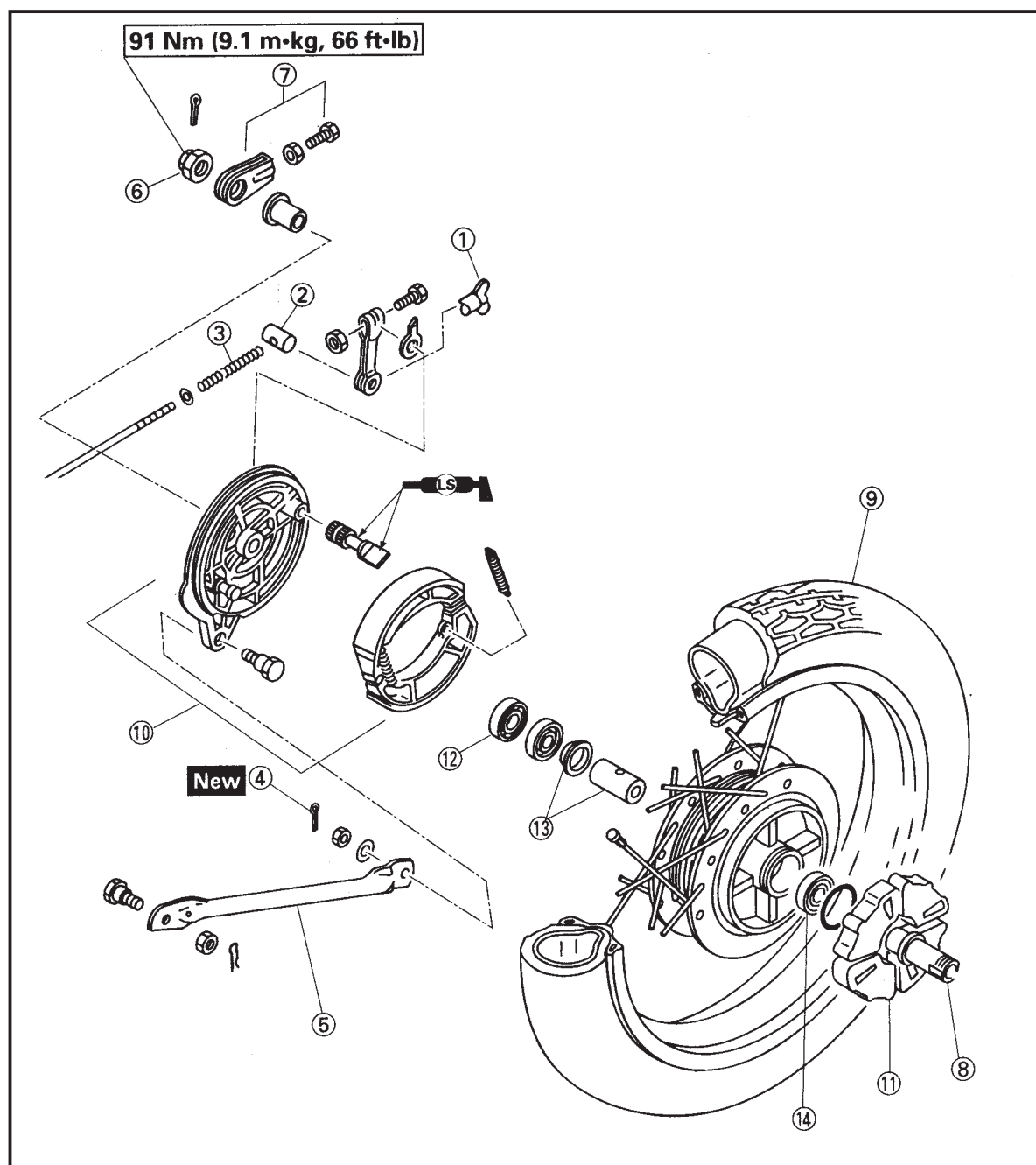
REAR WHEEL AND REAR BRAKE

CHAS



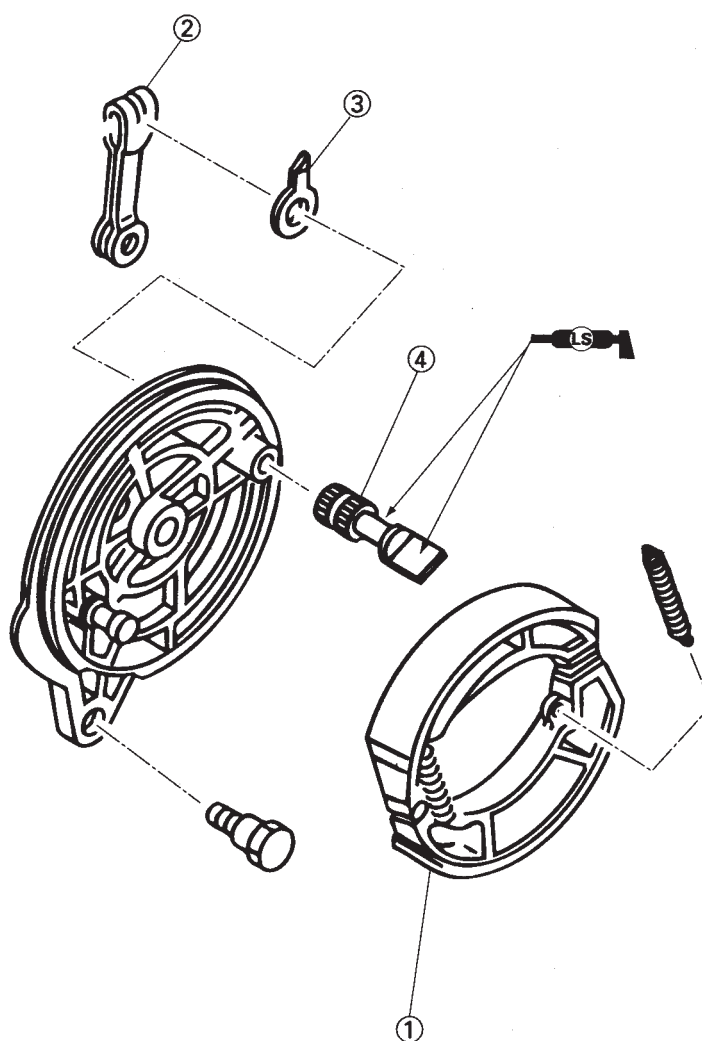
REAR WHEEL

- | | |
|----------------------|-----------------------------|
| ① Adjuster | ⑧ Driven Sprocket Axle |
| ② Pin | ⑨ Rear Wheel Assembly |
| ③ Compression Spring | ⑩ Brake Shoe Plate Assembly |
| ④ Cotter Pin | ⑪ Damper |
| ⑤ Tension Bar | ⑫ Bearing |
| ⑥ Axle Nut | ⑬ Spacer/Collar |
| ⑦ Chain Puller | ⑭ Bearing |



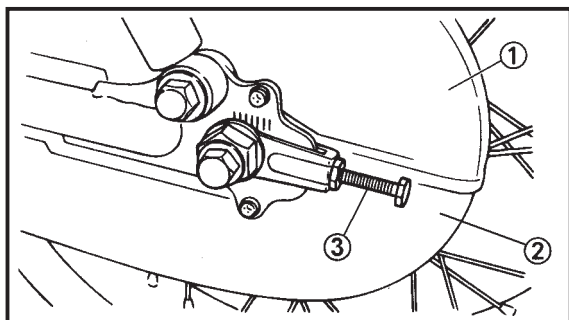
REAR WHEEL AND REAR BRAKE**CHAS****REAR BRAKE**

- ① Brake Shoe Kit
- ② Cam Lever
- ③ Indicator Plate
- ④ Camshaft



REAR WHEEL AND REAR BRAKE

CHAS

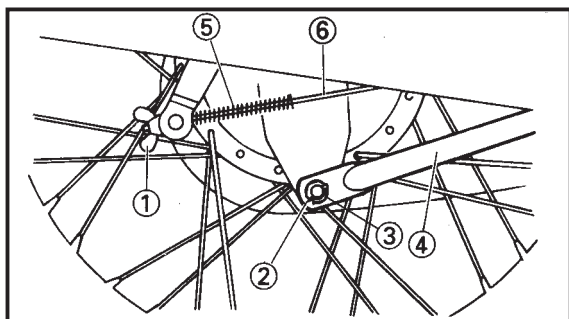


REMOVAL

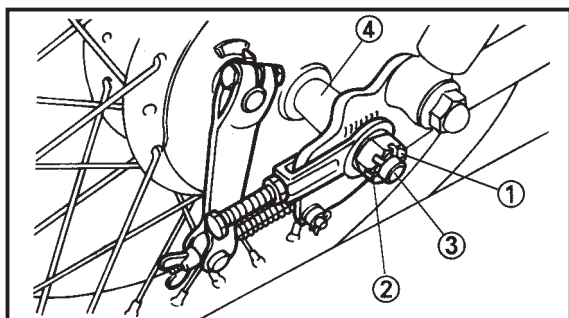
⚠ WARNING

- Securely support the Motorcycle on centre stand so that there is no danger of it falling over
- Stand the Motorcycle on a level surface

1. Remove :
 - Chain Cover (upper ① and lower ②)
2. Loosen
 - Chain Adjuster ③

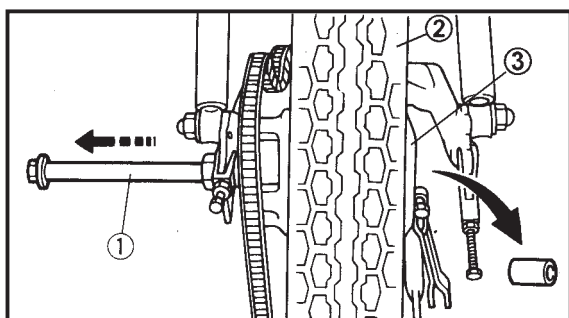


3. Remove :
 - Adjuster (Rear Brake) ①
 - Pin ②
 - Nut ③ with Bolt
 - Tension Rod ④
 - Compression Spring ⑤
 - Brake Rod ⑥



4. Remove :
 - Cotter Pin ①
 - Nut (Wheel Axle) ②
 - Wheel Axle ③
 - Collar ④

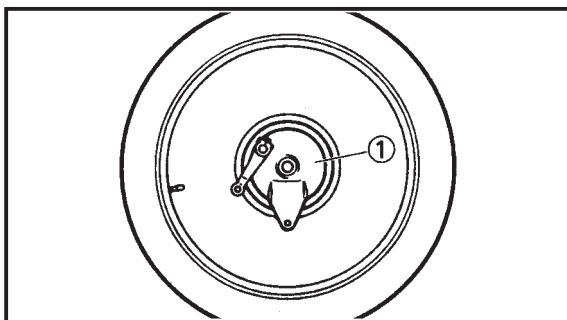
NOTE : When removing the Wheel Axle, the Collar will fall off. Take care not to lose it.



5. Remove :
 - Axle Wheel ①
 - Rear Wheel ②
 - Rear Brake Shoe Plate ③
 Remove from the Rear Wheel Hub.

REAR WHEEL AND REAR BRAKE

CHAS



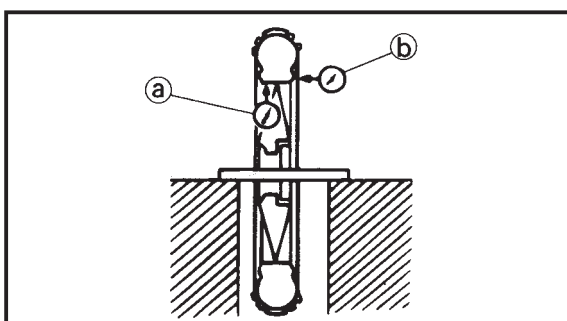
REAR WHEEL INSPECTION

1. Inspect :

- Axle Rear Wheel
- Rear Wheel
- Bearings Rear Wheel
- Oil Seals

Refer to "FRONT WHEEL INSPECTION"

Page no 6-4

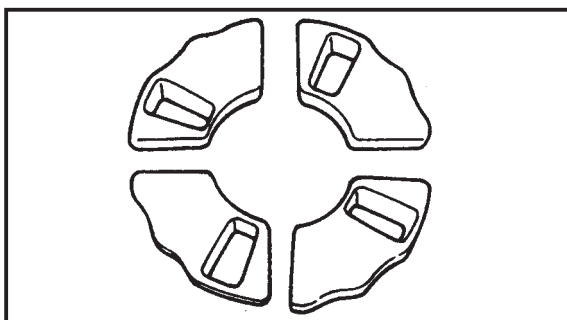


2. Measure :

- Rear Wheel runout

Refer to "FRONT WHEEL INSPECTION "

Page no 6-4



3. Inspect :

- Clutch Hub Damper

Wear/damage → Replace

REAR BRAKE INSPECTION

1. Inspect :

- Brake Lining surface

2. Measure :

- Brake Lining thickness

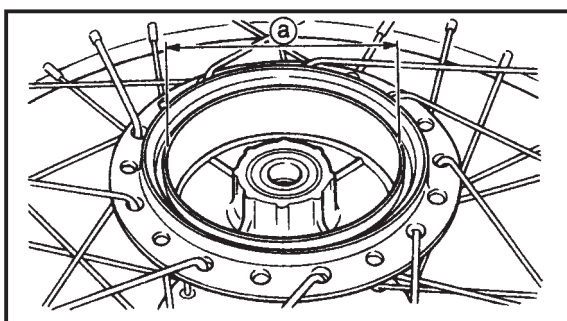
3. Inspect :

- Brake Drum inner surface for Oiliness and Scratches

Refer to "FRONT WHEEL BRAKE INSPECTION" page no 6-6

4. Measure :

- Brake Drum inside diameter @
Out of specification → Replace



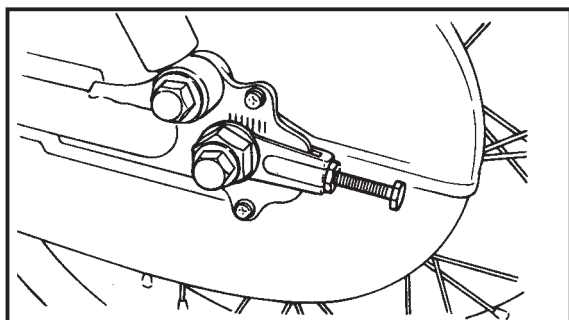
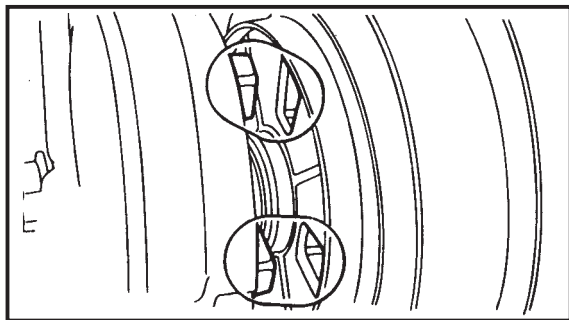
Brake Drum inside diameter :

Standard : 130 mm

Limit : 131 mm

REAR WHEEL AND REAR BRAKE

CHAS



REAR WHEEL INSTALLATION

Reverse the "REMOVAL" procedure

1. Install :
 - Rear Wheel Assembly
 - Brake Shoe Plate Assembly
 - Spacer with Chain Adjuster
 - Axle Rear Wheel

NOTE :

Make sure that the slots in the Rear Wheel Hub Damper fits over the tabs on the Clutch Hub assembly

2. Adjust :
 - Drive Chain Slack

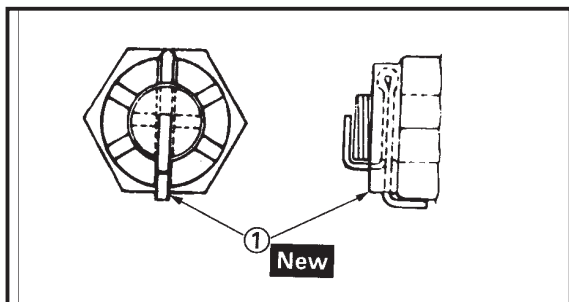
Refer to "DRIVE CHAIN ADJUSTMENT" section in Chapter 3, Page no 3-20
3. Tighten :
 - Nut Rear Wheel Axle

NOTE :

Do not loosen the Axle Nut after torque tightening. If Axle Nut Groove is not aligned with the Wheel Axle Cotter Pin Hole, align Groove to hole by tightening up on the Axle Nut.



Nut (Rear Wheel Axle) :
91 Nm (9.1 m.kg., 66 ft.lb)



4. Install :
 - Cotter Pin ① **New**

NOTE :

Bend the ends of the Cotter Pin

⚠ WARNING

Always use a new Cotter Pin

5. Check :
 - Rear Brake Pedal free play

Refer to "REAR BRAKE ADJUSTMENT" section in Chapter 3, Page no 3-18

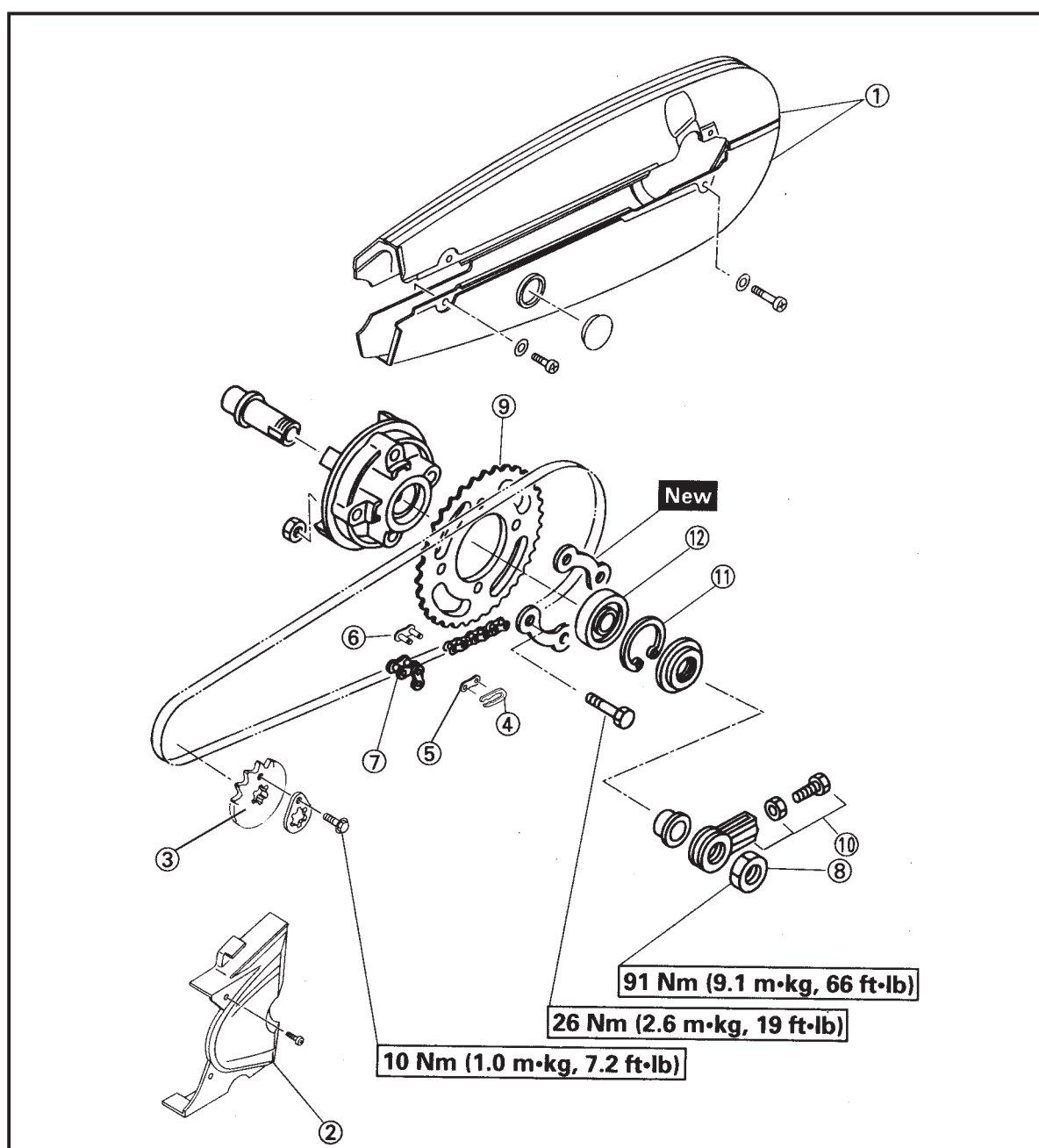
DRIVE CHAIN AND SPROCKETS

CHAS



DRIVE CHAIN AND SPROCKETS

- | | |
|---------------------|----------------------------|
| ① Chain Case | ⑦ Drive Chain |
| ② Crankcase Cover 3 | ⑧ Nut Driven Sprocket Axle |
| ③ Drive Sprocket | ⑨ Driven Sprocket Assembly |
| ④ Clip Chain Joint | ⑩ Chain Tensioner |
| ⑤ Link Plate | ⑪ Circlip |
| ⑥ Chain Joint | ⑫ Oil Seal |



DRIVE CHAIN AND SPROCKETS

CHAS

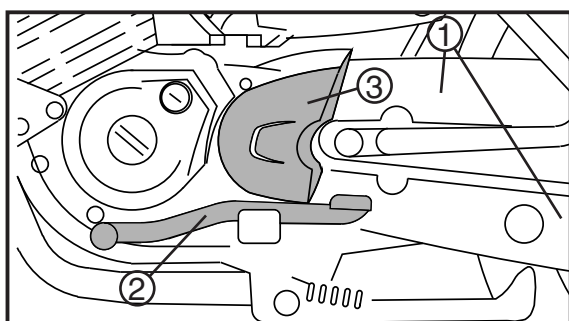


REMOVAL

1. Stand the Motorcycle on a level surface.

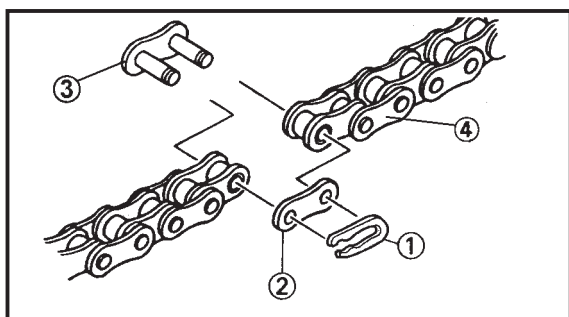
⚠ WARNING

Securely support the Motorcycle on Centre stand so that there is no danger of it falling over.

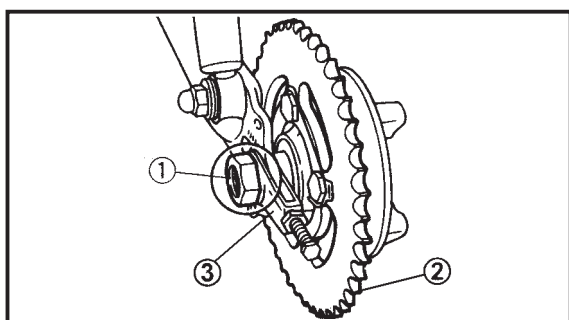


2. Remove :
 - Chain Case (upper and lower) ①
 - Shift pedal ②
 - Crankcase Cover 3 ③
 - Drive Sprocket
 Refer to "ENGINE REMOVAL" Section in Chapter 4, Page No 4-1

3. Remove
 - Rear Wheel
 Refer to "REAR WHEEL" Section Page no 6-12



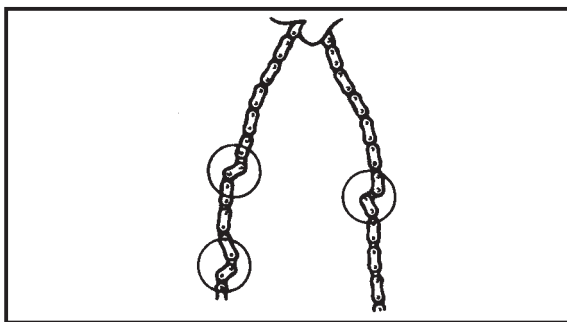
4. Remove :
 - Chain Joint Clip ①
 - Link Plate ②
 - Chain Joint ③
 - Drive Chain ④



5. Remove :
 - Nut (Driven Sprocket Shaft Nut) ①
 - Driven Sprocket ②
(with Sprocket Hub)
 - Chain Tensioner ③

DRIVE CHAIN AND SPROCKETS

CHAS

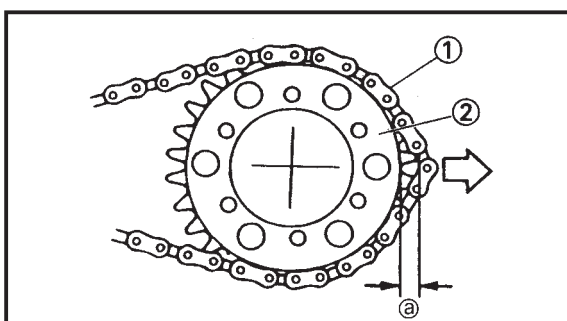


DRIVE CHAIN INSPECTION

1. Inspect :

- Drive Chain stiffness

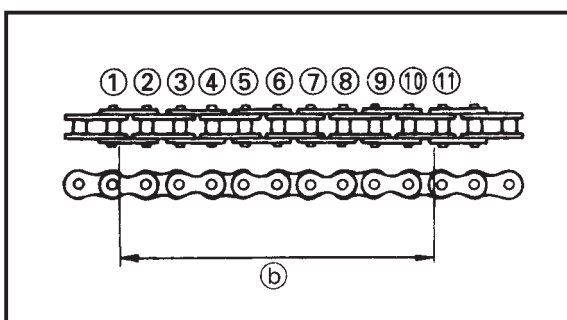
Stiffness → Clean and Lubricate or replace



2. Inspect :

- Drive Chain ①
- Driven Sprocket ②

More than 1/2 tooth wear @ → Replace the Drive Chain and both the Sprockets as a set.



3. Measure :

- 10 link length ⑤ (Drive Chain)

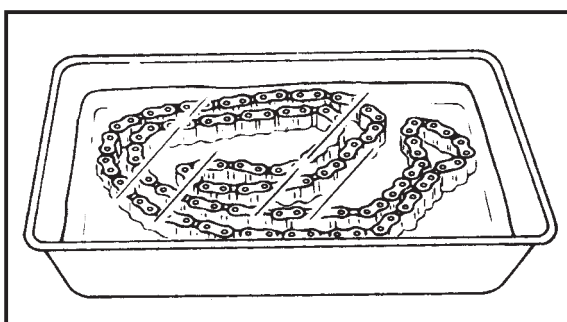
Out of specification → Replace the Drive Chain



**10 link length limit :
119.5 mm**

NOTE :

- Tighten the Drive Chain with a fingers before measuring
- 10 link length is the distance ⑤ between the inside edge of Roller ① and ⑩ as shown.
- 10 link length measurement should be done at two or three different places.



4. Clean :

- Drive Chain

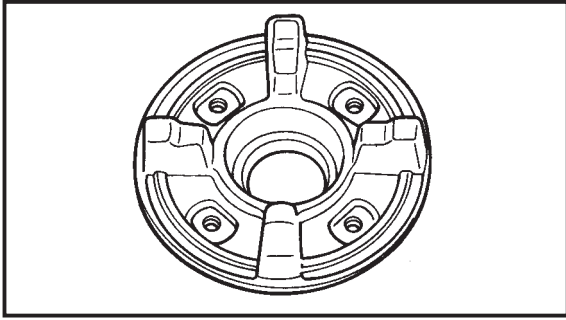
Put it in Kerosene and brush off as much dirt as possible. Then remove the Drive Chain from the kerosene and dry it.



**Drive Chain Lubricant :
Engine Oil**

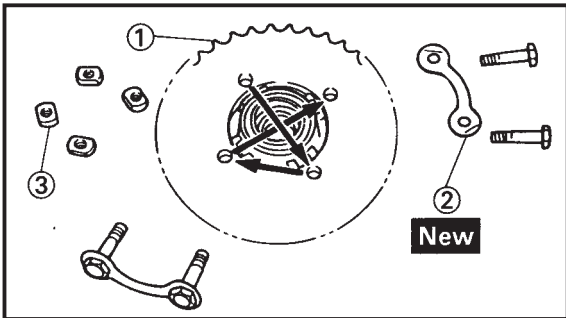
DRIVE CHAIN AND SPROCKETS

CHAS



CLUTCH HUB INSPECTION

- Inspect :
Clutch Hub
Wear/damage/cracks → Replace

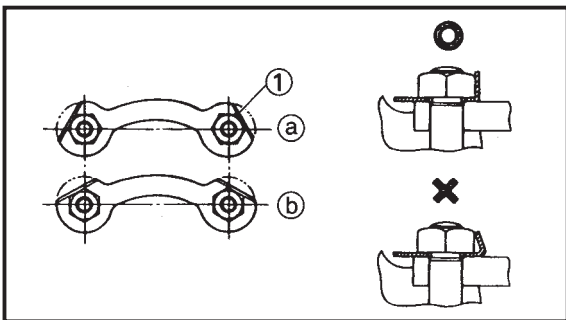


DRIVEN SPROCKET ASSEMBLY

- Install
 - Driven Sprocket ① on Clutch Hub
 - Lock Washer ② **New**
 - Nut ③



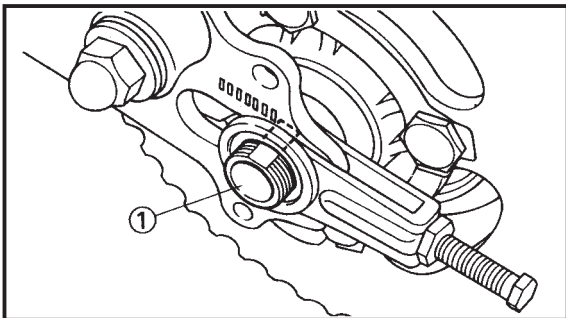
Nut (Driven Sprocket) :
26 Nm (2.6 m.kg, 19 ft.lb)



NOTE :

Tighten the Nuts in a crisscross pattern

- Bend :
Lock Washer Tab ①
(along a flat side of the end)

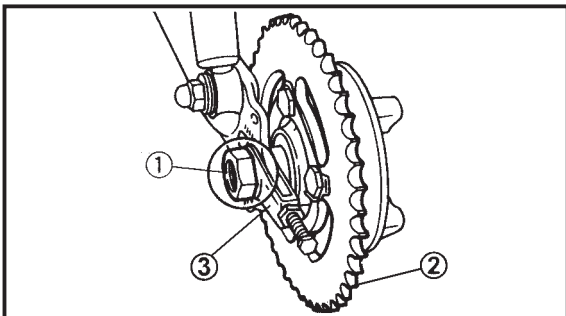


DRIVEN SPROCKET AND DRIVE CHAIN INSTALLATION

- Install :
 - Chain Tensioner
 - Driven Sprocket Axle ① with Drive Sprocket Assembly

NOTE :

Align the slot on the Swingarm with the flat face of the Driven Sprocket Axle.



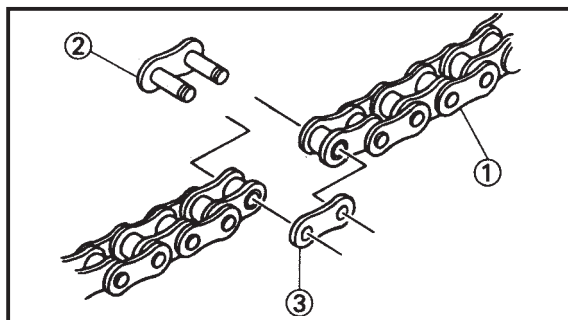
- Tighten :
Nut (Driven Sprocket Axle) ①



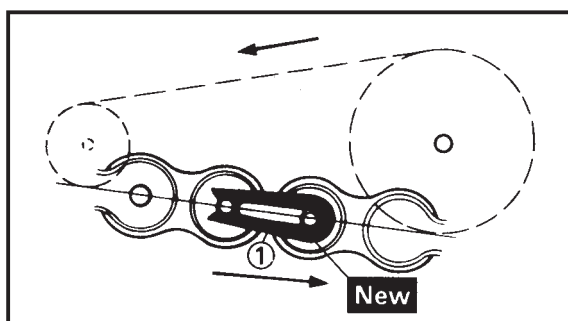
Nut (Driven Sprocket Axle) :
91 Nm (9.1 m.kg, 66 ft.lb)

DRIVE CHAIN AND SPROCKETS

CHAS



3. Install :
- Drive Sprocket
 - Drive Chain ①
 - Chain Joint ②
 - Plate ③



4. Install :
- Clip ① **New**

CAUTION:

Be sure to install the Chain Joint Clip to the direction as shown

5. Install :
- Chain Case (upper)
 - Chain Case (lower)
 - Shift Pedal
- Refer to "ENGINE REMOVAL" section in Chapter 4 Page no 4-1
6. Adjust :
- Drive Chain Slack
- Refer to "DRIVE CHAIN SLACK ADJUSTMENT" section in Chapter 3, Page no 3-20
7. Tighten :
- Driven Sprocket Axle

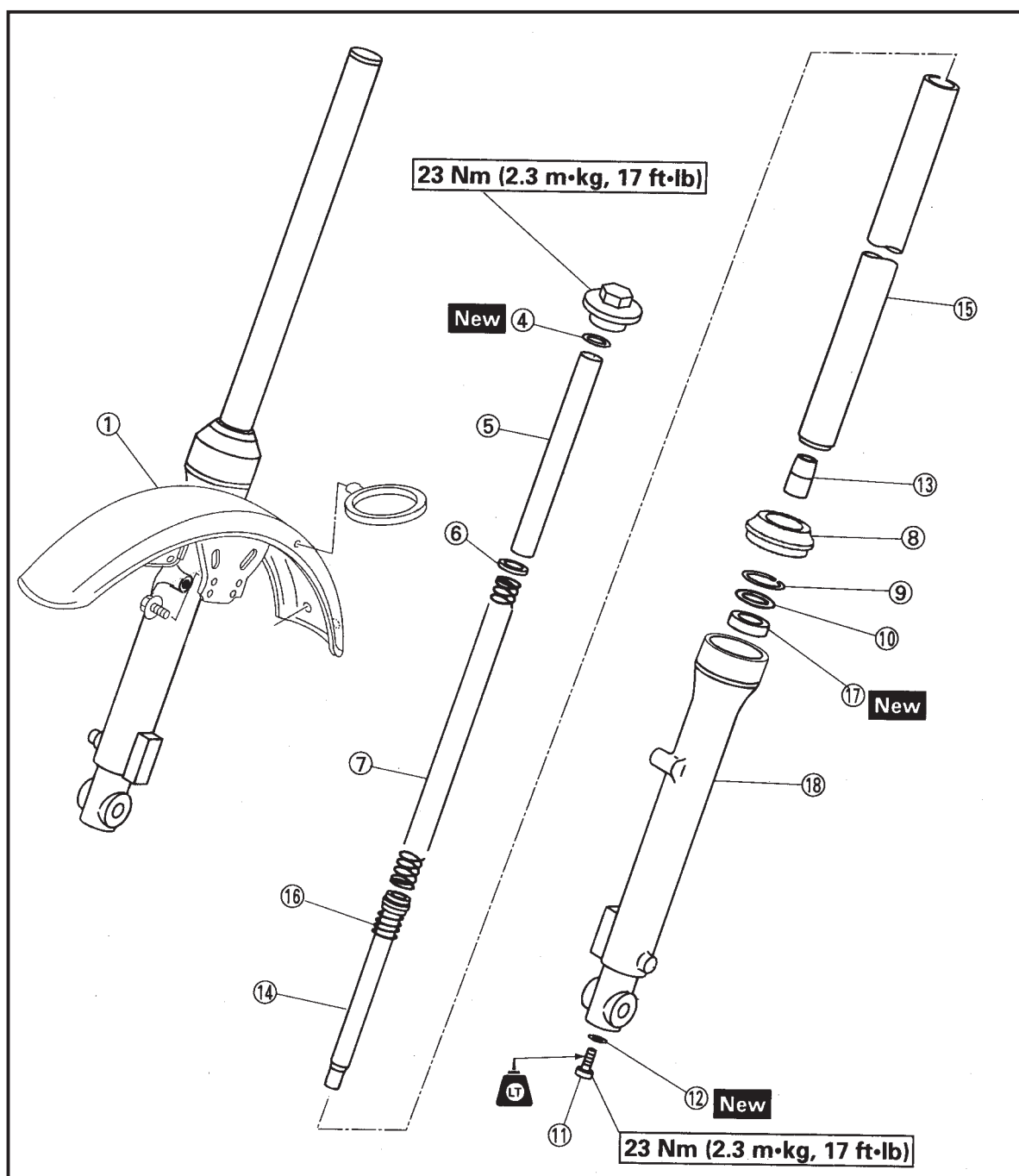


FRONT FORK

- ① Front Fender
- ② Cap Bolt
- ③ Holder Cable
- ④ O Ring
- ⑤ Collar
- ⑥ Spring Seat

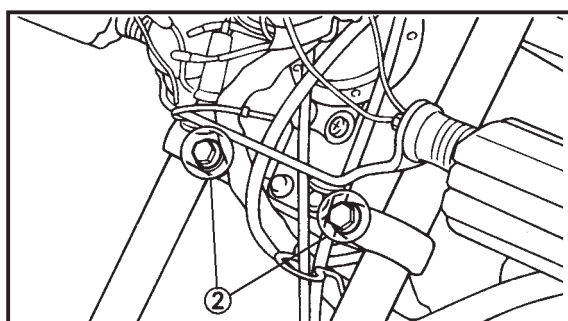
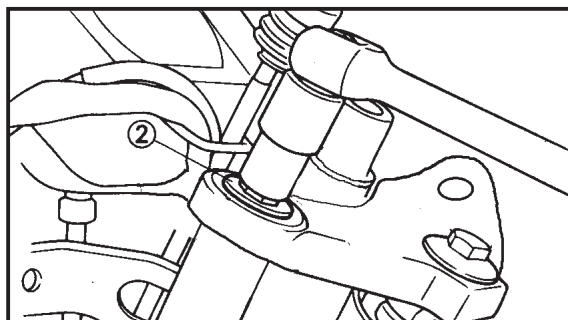
- ⑦ Fork Spring
- ⑧ Seal Dust
- ⑨ Ring Snap
- ⑩ Washer
- ⑪ Bolt
- ⑫ Gasket

- ⑬ Spindle Taper
- ⑭ Cylinder Comp Front Fork
- ⑮ Inner Tube
- ⑯ Sub Spring
- ⑰ Oil seal
- ⑱ Outer Tube



FRONT FORK

CHAS

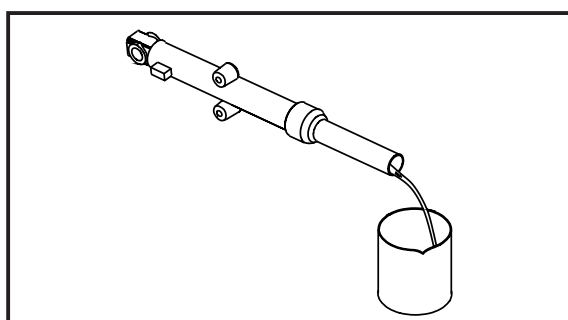


FRONT FORK REMOVAL

⚠ WARNING

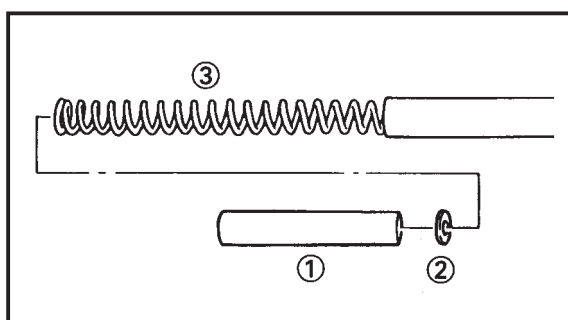
Securely support the Motorcycle so there is no danger of it falling over

1. Stand the Motorcycle on a level surface
2. Elevate the Front Wheel by placing a suitable stand under the Engine
3. Remove :
 - Front Wheel
 - Front Fender
 Refer to "FRONT WHEEL REMOVAL"
Section Page no 6-3
- Handlebar
- Refer to "HANDLEBAR REMOVAL"
Section Page no 6-30
4. Remove
 - Cap Bolts (Inner Tube) 2 Nos ①
 - Cap Bolt Under Bracket (1No) ②



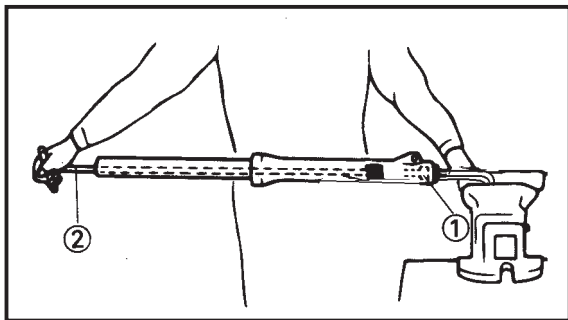
FRONT FORK DISASSEMBLY

1. Drain :
 - Fork Oil
2. Remove :
 - Spacer ①
 - Seat Upper ②
 - Spring Front Fork ③



FRONT FORK

CHAS



3. Loosen :

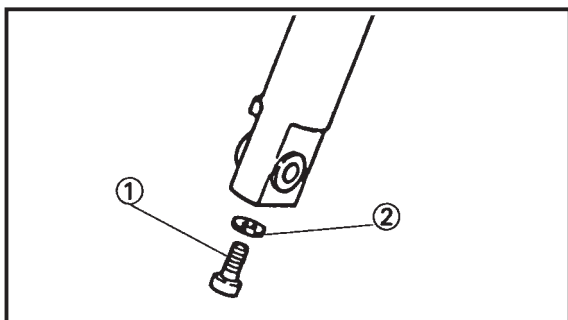
- Bolt Allen (Damper Rod) ①

Loosen the Bolt (Damper Rod) ① while holding the Damper Rod with T-Handle ②



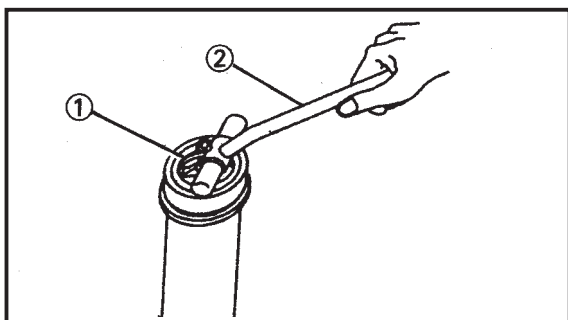
T-Handle

YSST - 213



4. Remove :

- Bolt (Damper Rod) ①
- Washer ②
- Cylinder complete Fornt Fork
- Spindle Taper
- Spring Sub



5. Remove :

- Ring snap
- Washer
- Oil Seal ① using Oil Seal Remover ②



Oil Seal Remover

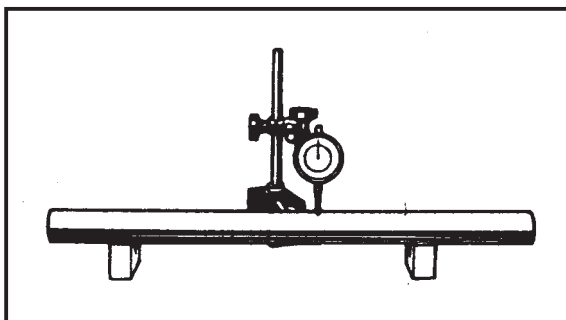
YSST - 275

CAUTION:

Never reuse the Oil Seal

FRONT FORK

CHAS



FRONT FORK INSPECTION

1. Inspect :

- Inner Tube bending



Inner Tube bending limit :
0.2 mm

Scratches/bends/damage → Replace

WARNING

Do not attempt to straighten a bent Inner Tube as this may dangerously weaken the Tube

2. Measure :

- Fork Spring length ㊸



Front Fork Spring free length :
320.9 mm
<Wear limit>
315.9

Over the specified limit → Replace

3. Inspect :

- Cylinder Complete Front Fork ①

- Piston Ring ②

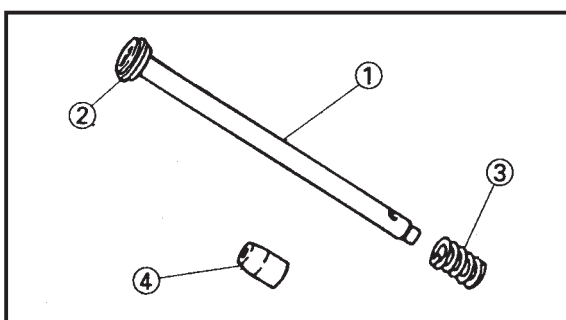
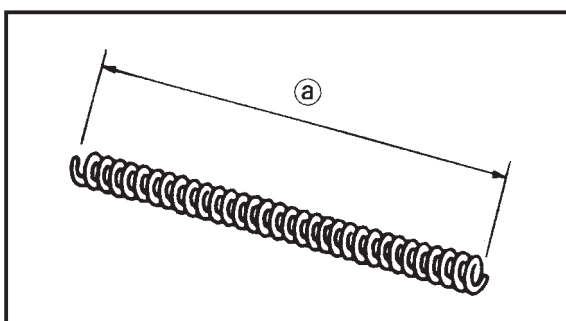
Wear/cracks/damage → Replace

- Spring Sub ③

- Spindle Taper ④

Bends/damage → Replace

Contamination → Blow out all Oil Passages with Compressed Air



CAUTION:

- When disassembling and assembling the Front Fork do not allow any foreign material to enter the Oil

FRONT FORK

CHAS



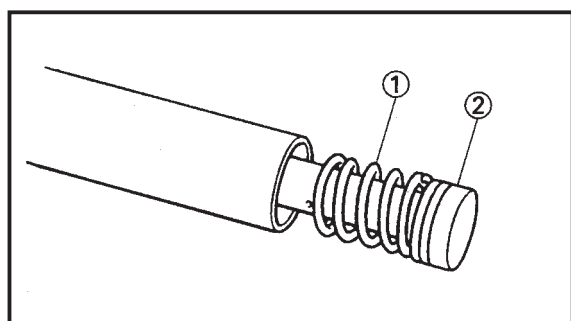
FRONT FORK ASSEMBLY

Reverse the "DISASSEMBLY" procedure

Note the following points

NOTE :

- When assembling the Front Fork be sure to replace the following parts
- Oil Seal
- Seal Dust
- Snap Ring
- Before assembling the Fork, make sure that all the components are clean.



1. Install :

- Spring Sub ①
- Cylinder Complete ②

⚠ WARNING

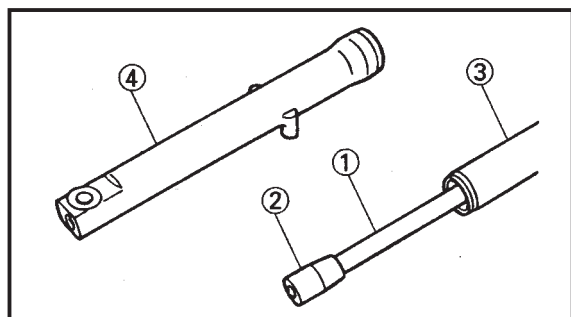
Allow the Cylinder Complete to slide slowly down the Inner Fork Tube until it protrudes from the bottom, being careful not to damage the Inner Fork Tube

2. Lubricate :

- Inner Tube (outer surface)

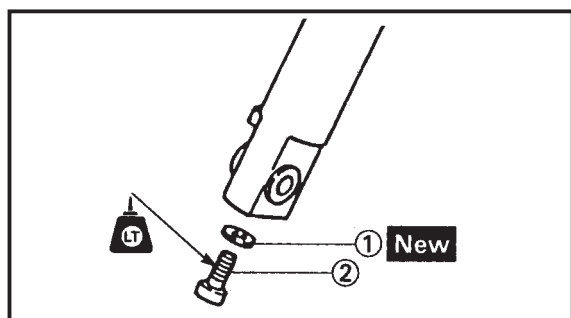


Recommended lubricant :
Fork Oil 10 W or equivalent



3. Install :

- Cylinder Complete ①
- Spindle Taper ②
- Inner Tube ③
- Outer Tube ④

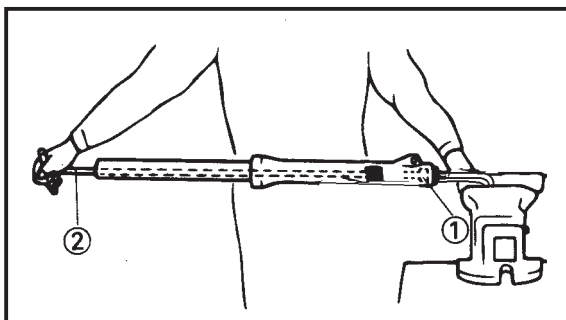


4. Install :

- Washer ① **New**
- Bolt (Damper Rod) ②

FRONT FORK

CHAS



5. Tighten :

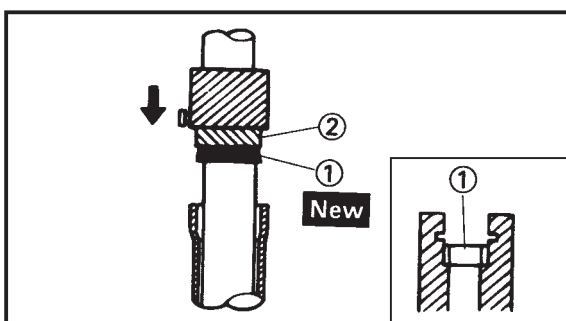
- Bolt (Cylinder Complete) ① holding the Cylinder Complete with a T-Handle ②



Bolt (Cylinder Complete) :
23 Nm (2.3 m.kg, 17 ft.lb)



T-Handle
YSST - 213



6. Install :

- Oil Seal ① **New** Using TFF Oil Seal Installation Tool



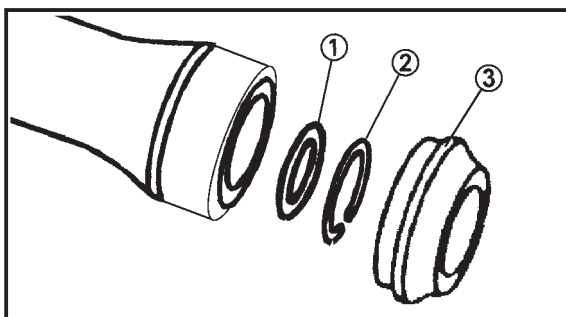
TFF Oil Seal Installation Tool
YSST - 275

NOTE :

- Before installing the Oil Seal ① apply lithium soap base grease onto the Oil Seal lips.
- Adjust the Ring Snap so that it fits into the Outer Tube Groove

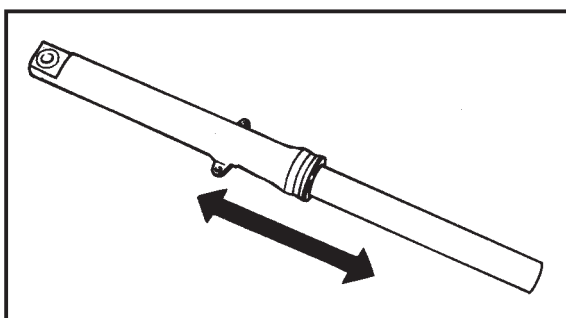
CAUTION:

Make sure that the Oil Seal numbered side faces upward



7. Install :

- Washer ①
- Ring Snap ②
- Dust Seal ③

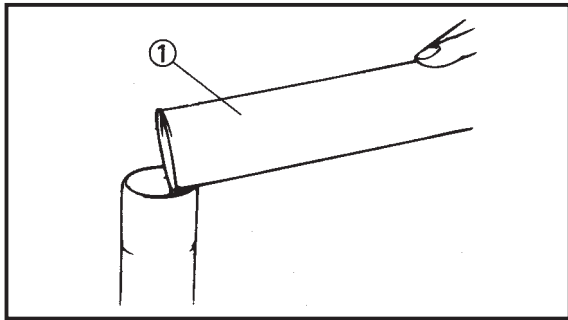


8. Inspect :

- Inner Tube operation
Unsmooth operation → Disassembly and recheck

FRONT FORK

CHAS



9. Fill :

- Fork Oil ①



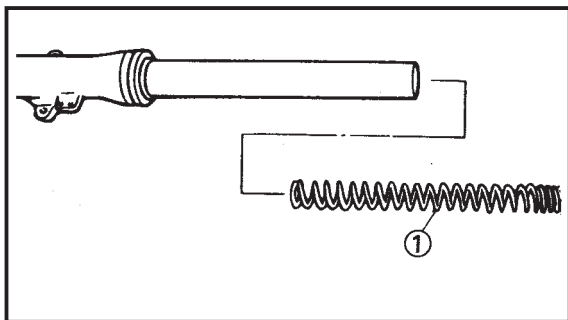
Oil Quantity :

Overhauling - 165 ± 3 mlRefilling - 153 ± 4 ml

Recommended Oil :

Teleshocab Oil

10. After filling up, slowly Pump the Fork up and down to distribute the Fork Oil



11. Install :

- Front Fork Spring ①
- Seat Upper
- Spacer

12. Install :

- Cap Bolt Temporarily to avoid oil drain.

NOTE :

- Install the Fork Spring with its smaller Pitch upward.
- Before installing the Cap Bolt, apply grease to the O-Ring.

FRONT FORK INSTALLATION

Reverse the "REMOVAL PROCEDURE"

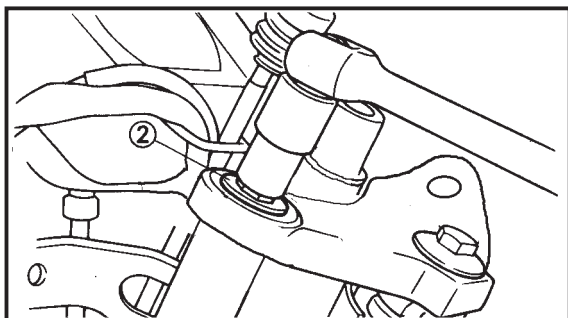
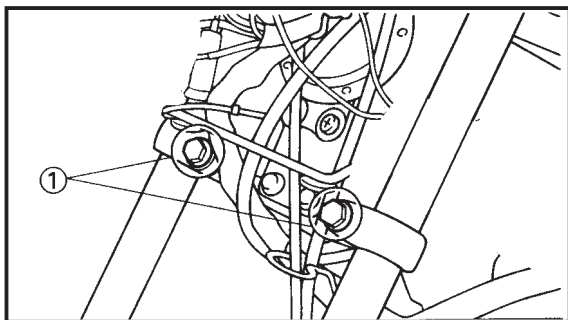
Note the following points

1. Install

- Front Fork
- Temporarily tighten Pinch Bolt (Underbracket) ①

NOTE:

Pull up the inner to until its end flushes with the top of the Handle Crown then temporarily tighten the bolts (underbracket)



2. Tighten

- Pinch Bolts (underbracket) ①
- Cap Bolts ②



Pinch Bolt (Underbracket) :

28Nm (2.8 m.kg, 20 ft.lb)

Bolt (Cap Bolt) :

23Nm (2.3 m.kg, 17 ft.lb)

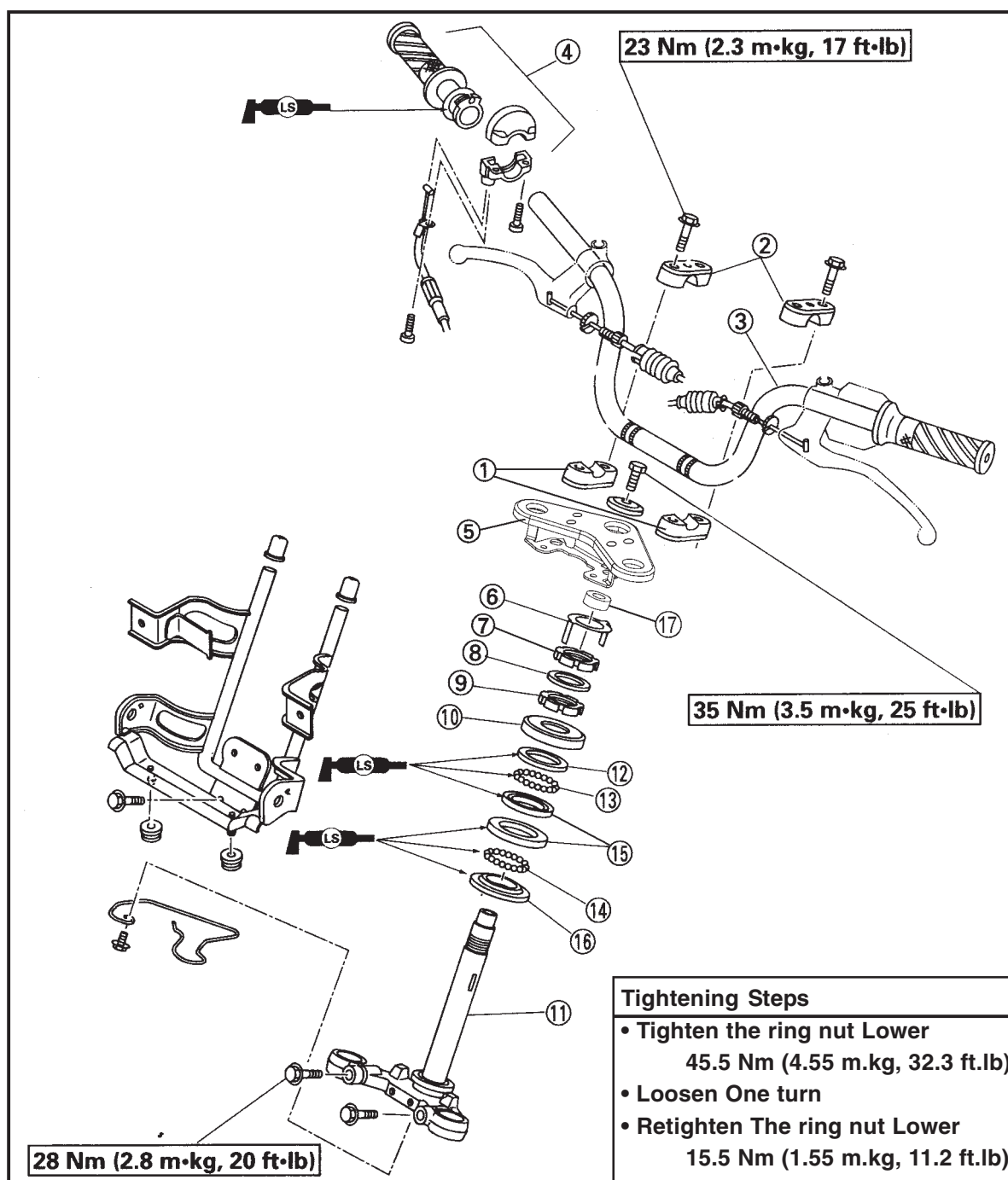
STEERING HEAD AND HANDLEBAR

CHAS



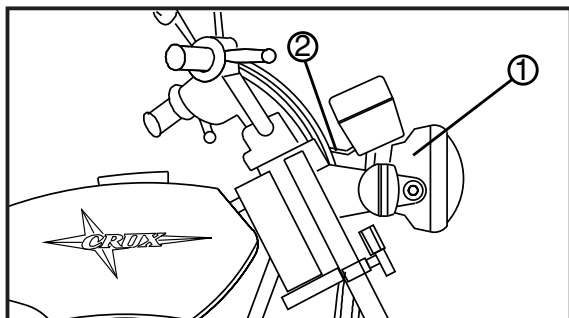
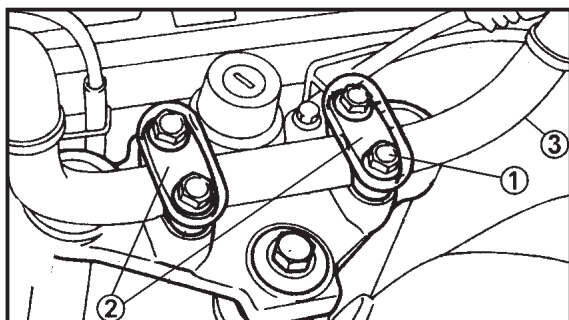
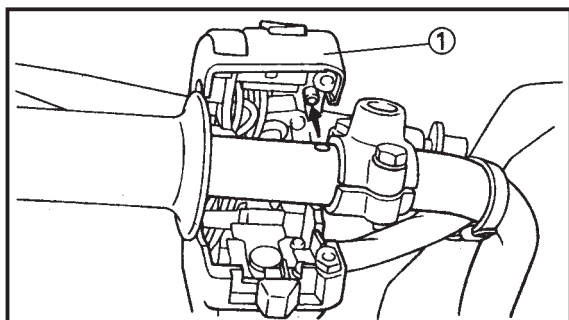
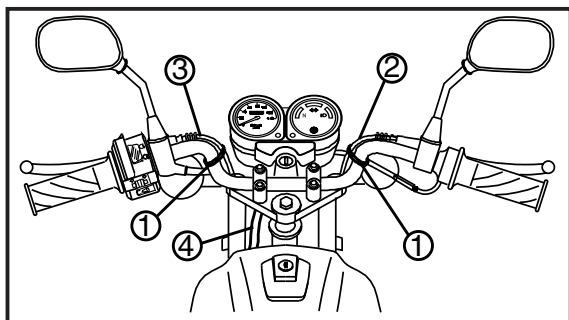
STEERING HEAD AND HANDLEBAR

- | | |
|---------------------------|----------------------|
| ① Holder Handle Bar Lower | ⑩ Ball Race Cover |
| ② Holder Handlebar Upper | ⑪ Under Bracket |
| ③ Handlebar | ⑫ Ball Race (upper) |
| ④ Grip Assembly (right) | ⑬ Ball (upper) |
| ⑤ Handle Crown | ⑭ Ball (lower) |
| ⑥ Lock Washer | ⑮ Ball Race (center) |
| ⑦ Ring Nut (upper) | ⑯ Ball Race (lower) |
| ⑧ Damper Rubber | ⑰ Bush |
| ⑨ Ring Nut (lower) | |



STEERING HEAD AND HANDLEBAR

CHAS



REMOVAL

⚠ WARNING

Securely support the motorcycle so that there is no danger of it falling over
Stand the motorcycle on a level surface

1. Remove :

- Band ①
- Brake Cable (front) ②
- Clutch Cable ③
- Speedometer Cable ④

2. Remove :

- Switch Handle ①

3. Remove :

- Bolts (4 Nos) ①
- Handlebar Upper Holder ②
- Handlebar ③
- Throttle Grip
- Lever Holder (Front Brake)

4. Remove :

- Front Wheel
Refer to "FRONT WHEEL" Section, Page No 6-4
- Front Fender
- Front Fork
Refer to "FRONT FORK" Section, Page no 6-21

5. Remove :

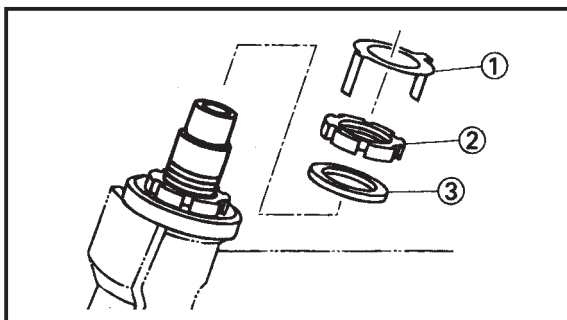
- Fuel Tank
Refer to "SIDE COVERS, SEAT, FUEL TANK" section in Chapter 3, page no 3-3

6. Remove :

- Headlight Assembly ①
- Stay (Speedometer assembly) ②

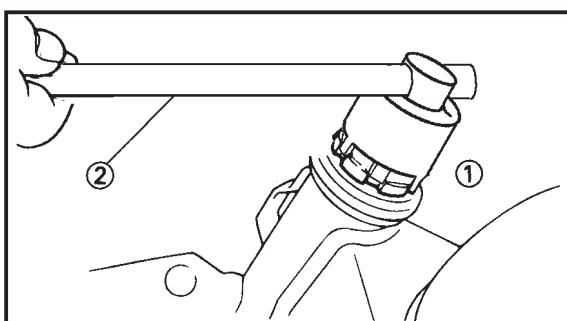
STEERING HEAD AND HANDLEBAR

CHAS



7. Remove :

- Lock Washer ①
- Ring Nut (upper) ②
- Damper Rubber ③



8. Remove :

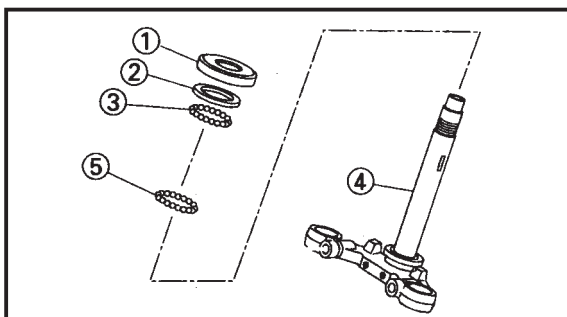
- Ring Nut (lower) ①
- Use a Ring Nut Wrench ②



Ring Nut Wrench :
YSST - 621

⚠ WARNING

Securely support the Steering Shaft so that there is no danger of it falling down



9. Remove :

- Bearing Cover ①
- Bearing Race ②
- Balls (upper) ③
- Lower Bracket ④
- Balls (lower) ⑤

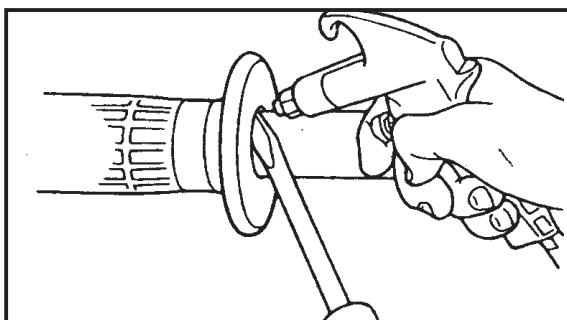
HANDLEBAR REMOVAL

1. Remove :

- Grip (left)

Removal Steps :

- Blow with compressed air between the Handlebar and Adhesive side of the Grip to remove



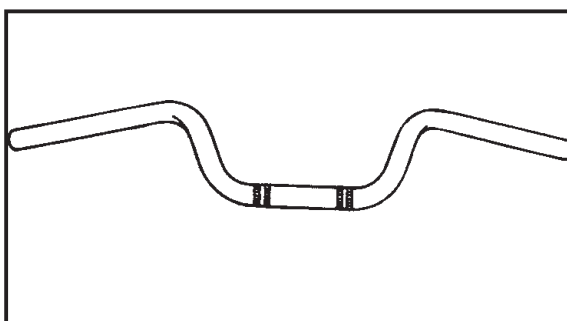
HANDLEBAR INSPECTION

1. Inspect :

- Handlebar
- Bends/Cracks/damage → Replace

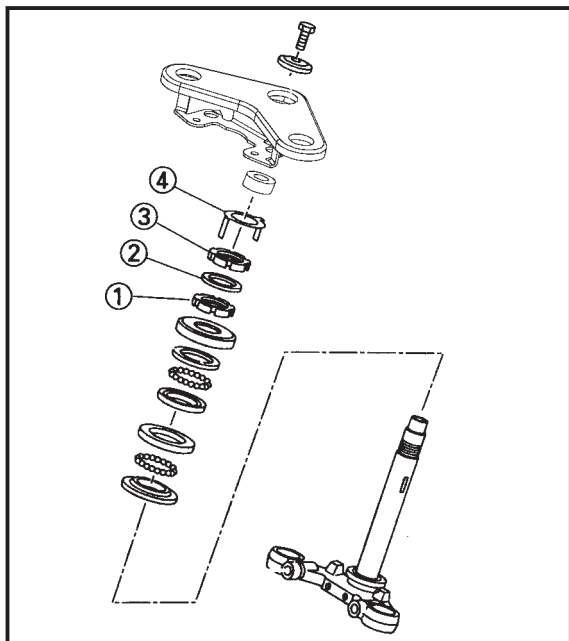
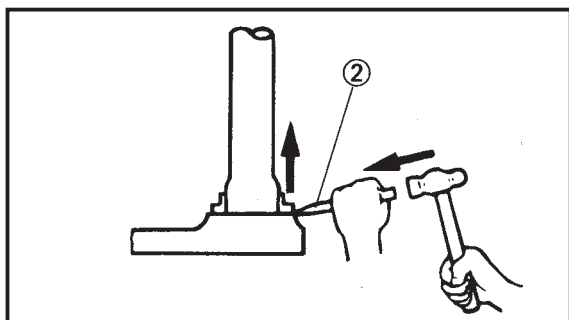
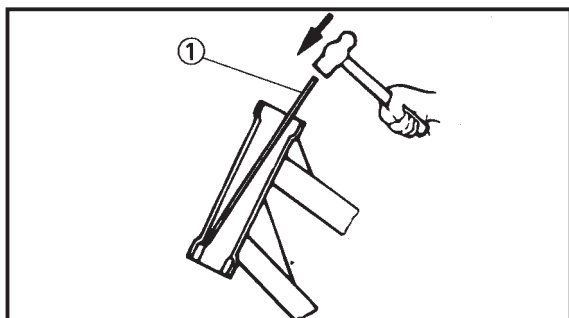
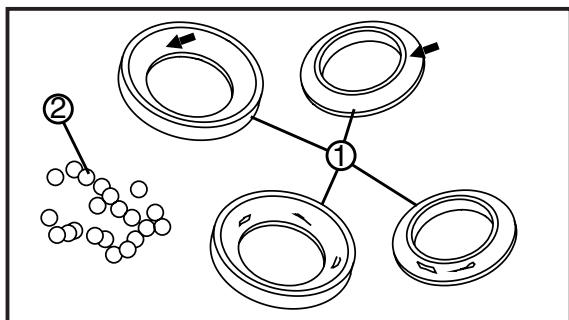
⚠ WARNING

Do not attempt to straighten a bent Handlebar as this may dangerously weaken the Handlebar



STEERING HEAD AND HANDLEBAR

CHAS



STEERING INSPECTION

1. Wash the Bearing and Ball Races with a solvent
2. Inspect :
 - Bearing Races ①
 - Ball races ②
 Pitting/Damage → Replace

Bearing Race replacement steps :

- Remove the Ball Races on the Head Pipe using Long Rod ① and the hammer as shown
- Remove the Ball Race on the Under Bracket using the floor chisel ② and the hammer as shown
- Install the new Dust Seal and Races

NOTE :

Always replace Bearing races as a set.

CAUTION:

If Bearing Race is not fitted squarely, the Head Pipe could be damaged.

STEERING INSTALLATION

Reverse the "REMOVAL" procedure

Note the following points

1. Lubricate
 - Balls (upper and lower)
 - Ball Races



Recommended lubricant
Lithium - soap base grease

2. Install :
 - Ring Nut (lower) ①
 - Damper Rubber ②
 - Ring Nut (upper) ③
 - Lock Washer ④

Refer to "STEERING HEAD INSPECTION" section in Chapter 3, Page no 3-22

3. Install :
 - Bush
 - Meter Assembly with Handle Crown



Ring Nut:
15.5 Nm (1.55 m.kg, 11.2 ft.lb)

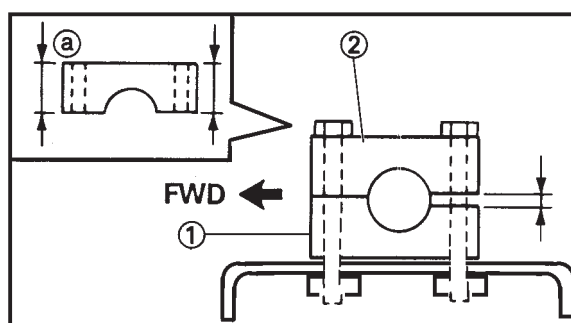
STEERING HEAD AND HANDLEBAR

CHAS



4. Install :

- Front Fork
Refer to "FRONT FORK" Section, Page no 6-27
- Front Fender
- Front Wheel
Refer to "FRONT WHEEL" Section, Page no 6-8



HANDLEBAR INSTALLATION

1. Install :

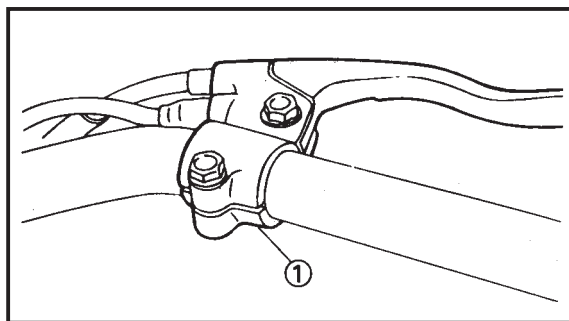
- Holder Handlebar Lower ①
- Handlebar ①
- Upper Handlebar Holder ②



Bolt (Handlebar Upper Holder):
7.5 ~ 12 Nm (2.3 m.kg, 17 ft.lb)

NOTE :

- Apply a light coat of lithium soap base grease onto the Handlebar right end
- The Upper Handlebar Holders should be installed with the longer side \varnothing to the forward, then tighten the Front Bolt as shown



2. Install :

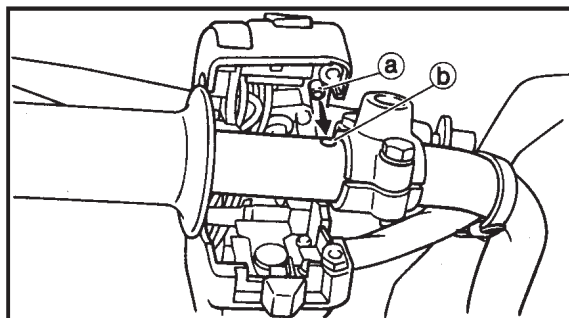
- Front Brake Lever Assembly ①
- Handlebar Switch (left)
- Grip Assembly
- Throttle Cable
- Housing (Throttle Grip)

NOTE :

Align the projection @ on the Handlebar Switch with the Hole ① in the Handlebar.

⚠ WARNING

Check the throttle grip for smooth operation



3. Adjust :

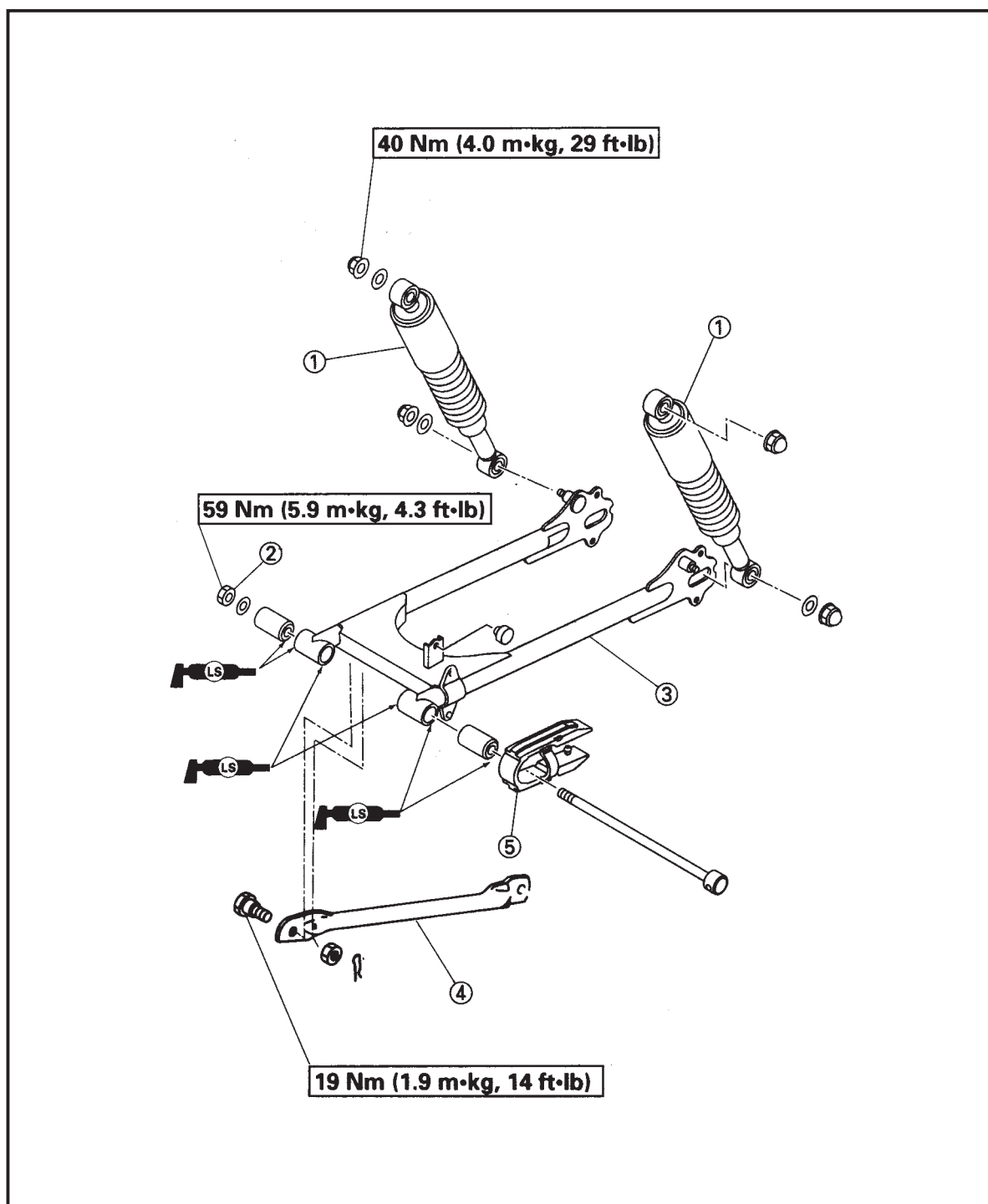
- Throttle Cable free play
- Brake operation
Refer to "THROTTLE CABLE ADJUSTMENT / BRAKE LEVER ADJUSTMENT" section in Chapter 3, Page no 3-9 and 3-18

REAR SHOCK ABSORBER AND SWING ARM

CHAS

**REAR SHOCK ABSORBER AND SWINGARM**

- ① Rear Shock Absorber
- ② Axle Nut
- ③ Swing arm
- ④ Tension Bar
- ⑤ Seal Guard



REAR SHOCK ABSORBER AND SWING ARM

CHAS



REMOVAL

1. Stand the Motorcycle on a level surface.

⚠ WARNING

Securely support the Motorcycle on a level surface

2. Remove :

- Side Covers (left and right)
- Seat
- Cover Chaincase
- Chain Case (upper and lower)

Refer to "SIDE COVERS, SEAT, AND FUEL TANK " section in Chapter 3, Page no 3-3

3. Remove :

- Rear Wheel
- Driven Sprocket Assembly

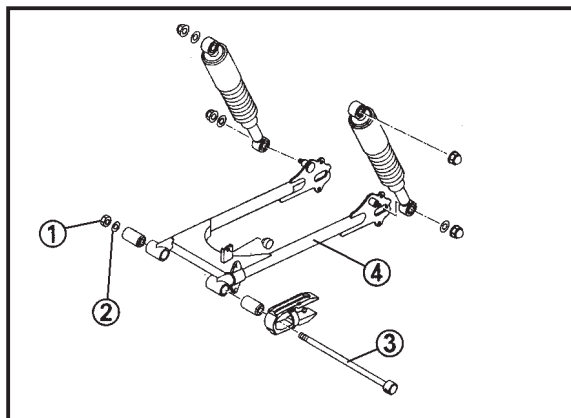
Refer to "DRIVE CHAIN AND SPROCKETS" section, Page no 6-16

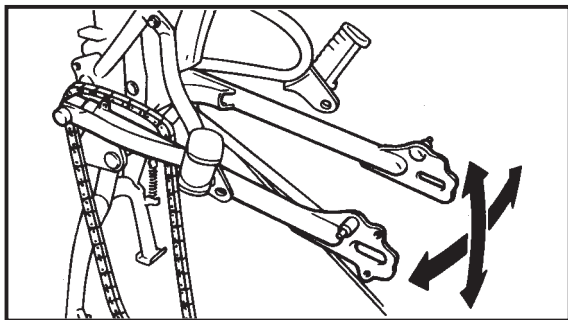
4. Remove :

- Nut Rear Shocker (upper and lower)
- Rear Shock Absorber (left and right)

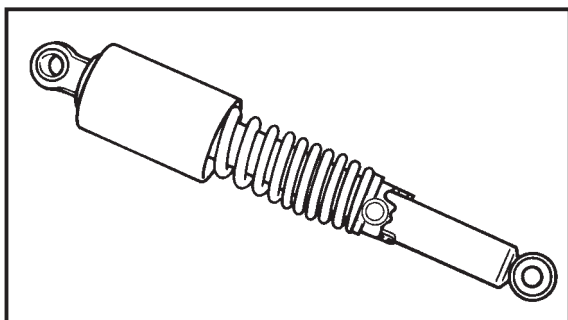
5. Remove :

- Nut Footrest L.H./R.H.
- Axle Nut (Swing Arm ①)
- Washer ②
- Axle Shaft ③
- Foot Rest LH/RH
- Swing Arm ④

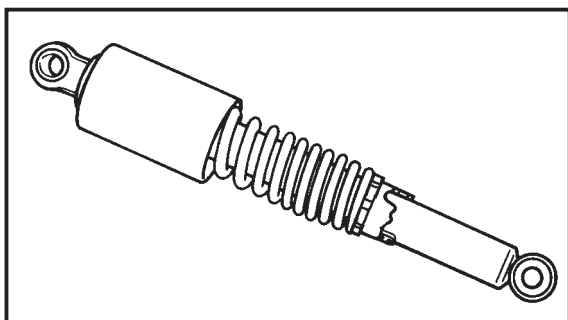


REAR SHOCK ABSORBER AND SWING ARM**CHAS****INSPECTION****1. Inspect :**

- Swingarm looseness
Looseness exists → Tighten the Pivot Shaft nut or replace Bushes
- Swingarm up and down movement
Unsmooth movement/bending/rough spots
→ Replace Bushes

**2. Inspect :**

- Rear Shock Absorber
Oil leaks/damage → Replace the Rear Shock Absorber Element



CHAPTER 7

ELECTRICAL

CIRCUIT DIAGRAM 7-1

LOCATION OF ELECTRICAL COMPONENTS 7-2

CHECKING OF CONNECTIONS 7-3

IGNITION SYSTEM/CHARGING SYSTEM

 CIRCUIT DIAGRAM 7-4

 TROUBLESHOOTING 7-4

CHARGING SYSTEM

 TROUBLESHOOTING 7-9

LIGHTING SYSTEM

 CIRCUIT DIAGRAM 7-10

 TROUBLESHOOTING 7-10

 LIGHTING SYSTEM CHECK 7-12

SIGNAL SYSTEM

 CIRCUIT DIAGRAM 7-14

 TROUBLESHOOTING 7-14

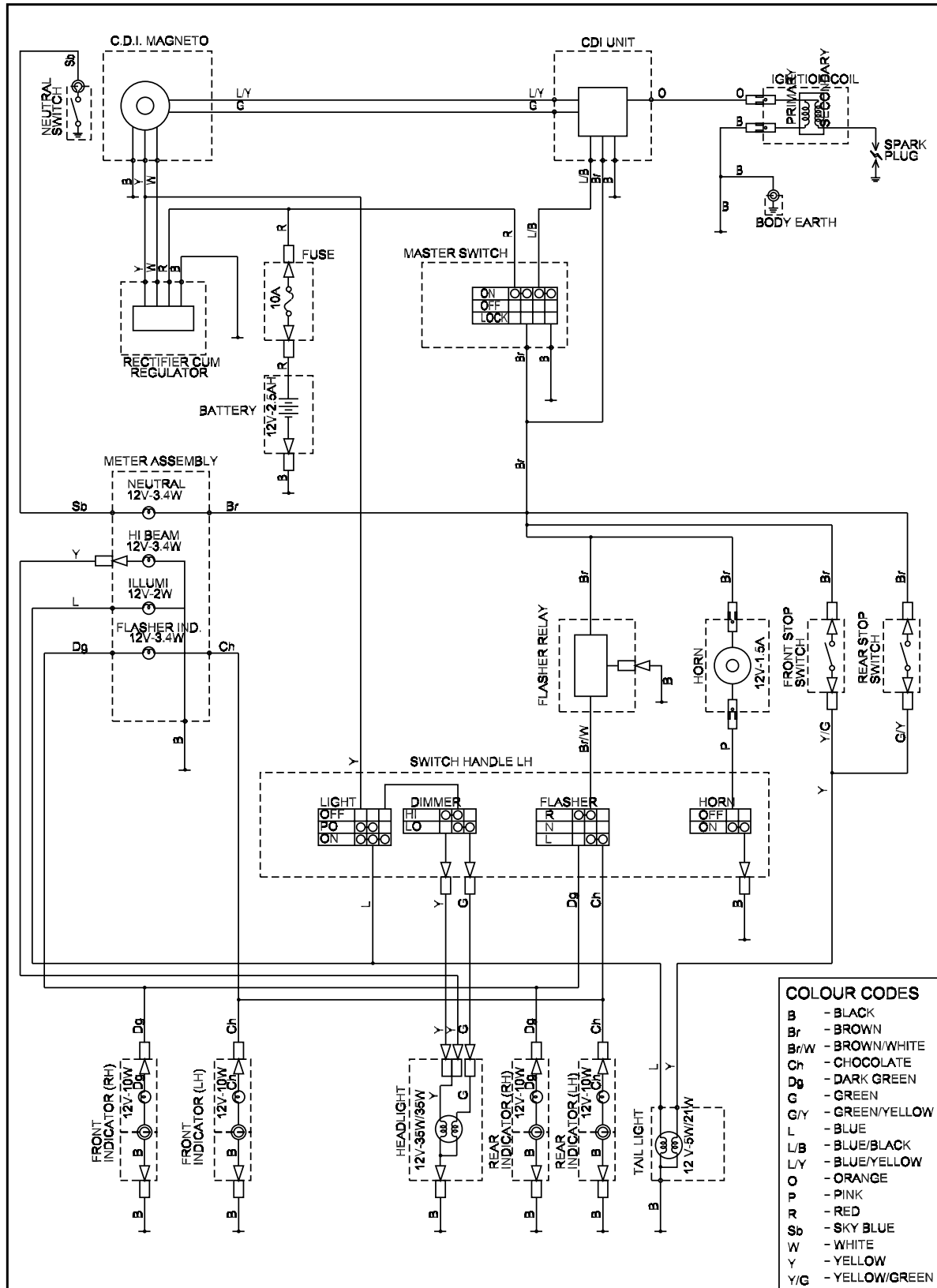
 SIGNAL SYSTEM CHECK 7-16

CIRCUIT DIAGRAM

ELEC



CIRCUIT DIAGRAM



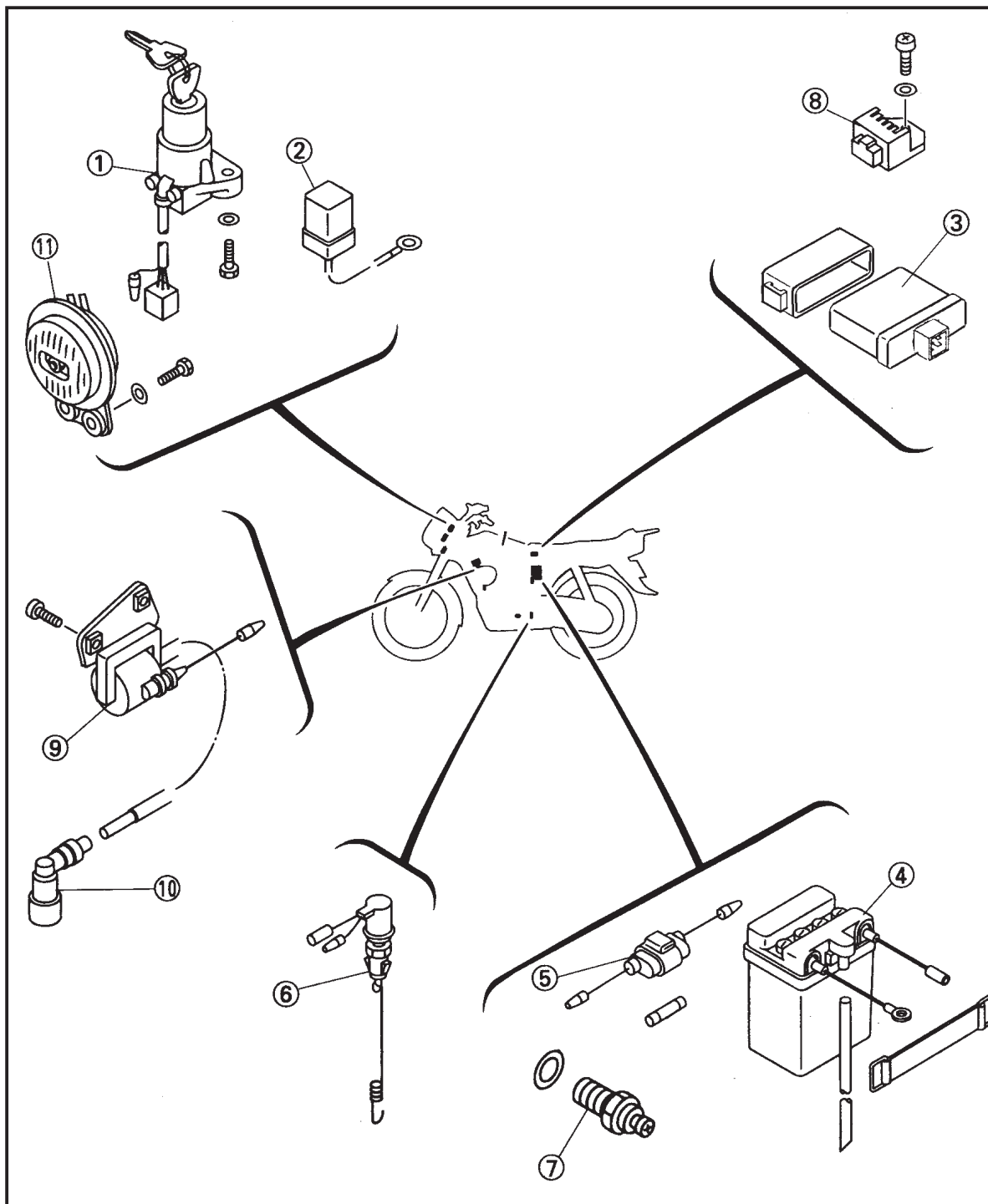
ELECTRICAL COMPONENTS

ELEC



LOCATION OF ELECTRICAL COMPONENTS

- | | |
|----------------------|------------------------------|
| ① Main Switch | ⑦ Neutral Switch Assy |
| ② Flasher Relay Assy | ⑧ Rectifier / Regulator Assy |
| ③ C.D.I. Unit Assy | ⑨ Ignition Coil Assy |
| ④ Battery | ⑩ Spark Plug Cap |
| ⑤ Fuse | ⑪ Horn |
| ⑥ Stop Switch Rear | ⑫ Spark Plug |

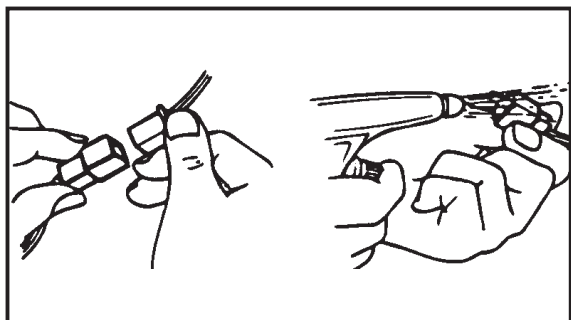


CHECKING OF CONNECTIONS

ELEC

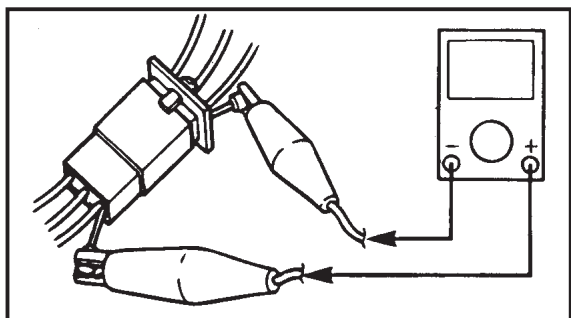
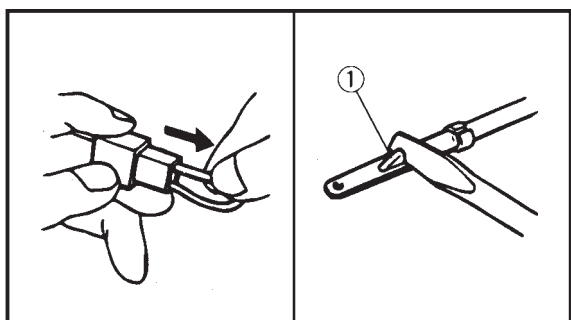


CHECKING OF CONNECTIONS



Dealing with wire pressed stains, rust, moisture etc. on the connector.

1. Disconnect
 - Connector ①
2. Dry each terminal with an air blower
3. Connect and disconnect the Connector two or three times.
4. Pull the lead to check that it will not come off.
5. If the terminal comes off, bend up the pin ① and reinsert the terminal in to the connector.



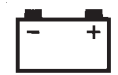
6. Check for continuity with a tester.

NOTE:

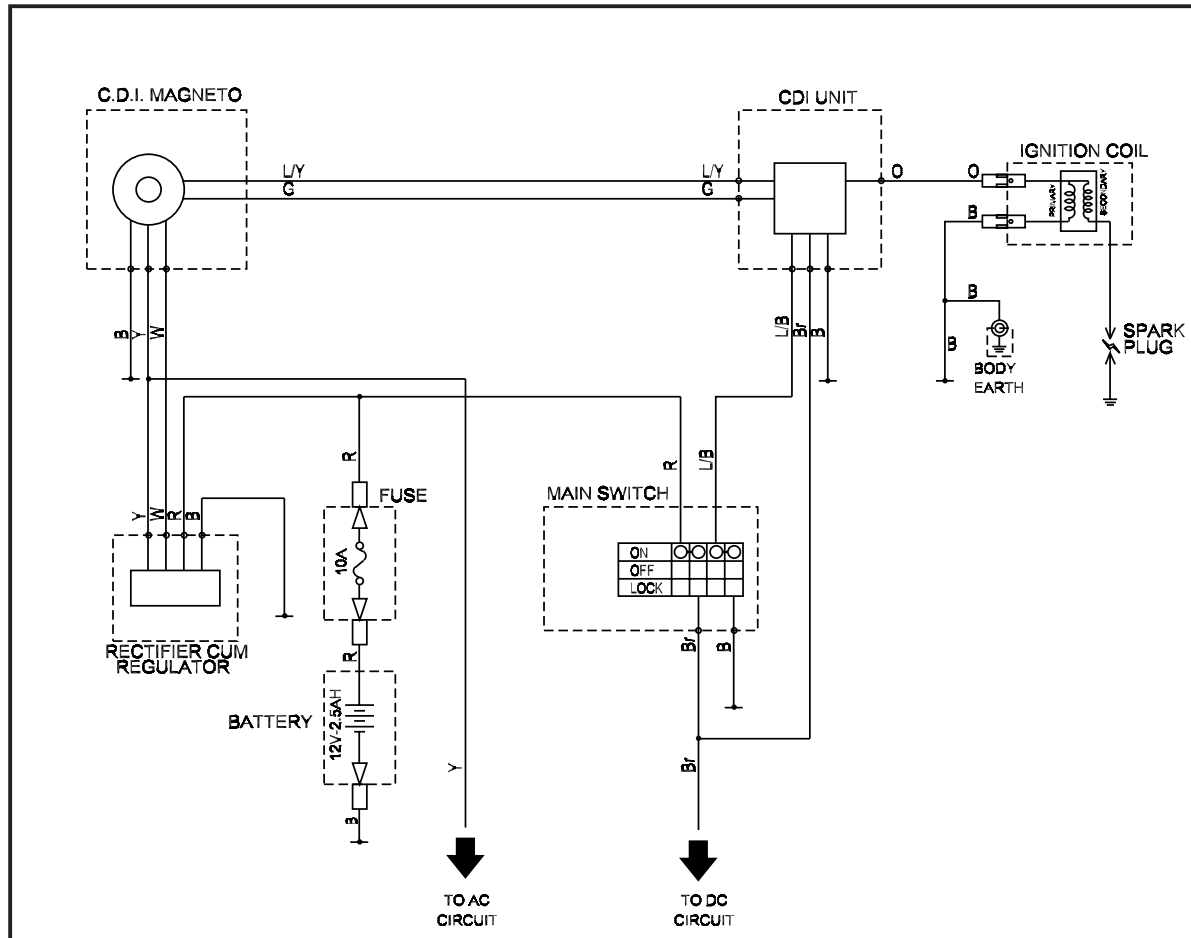
- If there is no Continuity, Check/Clean the terminals
- Be sure to check the steps 1 to 6 listed above when checking the wire harness.
- Use the tester on the connector as shown.

IGNITION SYSTEM/ CHARGING SYSTEM

ELEC



IGNITION SYSTEM AND CHARGING SYSTEM CIRCUIT DIAGRAM



TROUBLE SHOOTING

IF THE IGNITION SYSTEM FAILS TO OPERATE. (NO SPARK OR INTERMITTENT SPARK)

PROCEDURE

CHECK

1. Spark Plug
2. Spark Plug Cap resistance
3. Ignition coil
4. Main switch
5. Sensor coil resistance
6. Charging Coil resistance
7. Rectifier cum Regulator Unit
8. Wiring connections (entire ignition system)
9. CDI

Note : _____
Remove the required parts before trouble shooting.

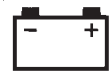
- 1) Side covers (LH and RH)
 - 2) Seat
 - 3) Fuel Tank
- Use Service Instrument as specified.


Digital Multimeter

NOTE : _____
For Checking Coil resistance, set Multimeter a step higher than specified range.

IGNITION SYSTEM / CHARGING SYSTEM

ELEC



PROCEDURE STEPS

1. SPARK PLUG

- Check the spark plug condition
- Check the Spark Plug type
- Check the Spark Plug gap
- Refer to "SPARK PLUG INSPECTION" section in Chapter 3, Page 3-10

Standard Spark Plug
DPR7EA (NGK)



Spark Plug Gap : 0.7 mm

OUT OF SPECIFICATION



2. SPARK PLUG CAP RESISTANCE

- Remove the Spark Plug Cap
- Connect the Multimeter ($\Omega \times 1k$) to the Spark Plug Cap.

NOTE:

- When removing the Spark Plug Cap, turn out the Spark Plug Cap from high tension Cord.

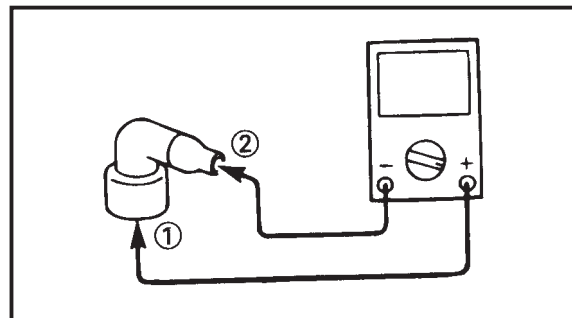
Remove → Turn anticlockwise

Connect → Turn clockwise

- When connecting the Spark Plug Cap, cut the High Tension Cord about 5 mm.

Adjust or replace the Spark Plug

Multimeter (+) lead → Spark Plug side ①
Multimeter (-) lead → High tension Cord side ②

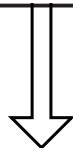


Spark Plug Cap resistance :
5 K Ω (at 20°C)

OUT OF SPECIFICATION

*

MEETS
SPECIFICATION



Replace the Spark Plug Cap

IGNITION SYSTEM / CHARGING SYSTEM

ELEC

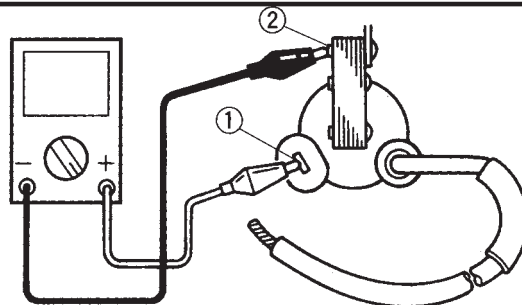
**3A. IGNITION COIL RESISTANCE (Primary)**

- Disconnect the Ignition Coil Connector From the Wire harness
- Connect the Multimeter to the Ignition Coil.
- Check the primary Coil resistance



Primary coil resistance :
 $0.16 \Omega \pm 15 \% \text{ (at } 20^{\circ} \text{ C)}$

Multimeter (+) lead → Orange Terminal ①
Multimeter (-) lead → Earth ②

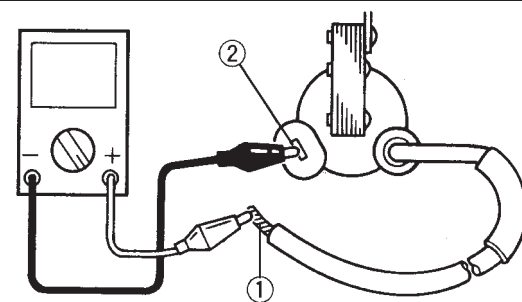
**3B. IGNITION COIL RESISTANCE (Secondary)**

- Connect the Multimeter to the Ignition Coil
- Check the secondary coil resistance



Secondary coil resistance :
 $4.2 \text{ k}\Omega \pm 20 \% \text{ (at } 20^{\circ} \text{ C)}$

Multimeter (+) lead → High Tension lead ①
Multimeter (-) lead → Orange Terminal ②



OUT OF SPECIFICATION

**BOTH MEET
SPECIFICATIONS**

Ignition Coil OK

Replace the Ignition Coil

**4. MAIN SWITCH**

- Check for Continuity of Switch ON position

Multimeter (+)	R	BL/Y
Multimeter (-)	BR	B

- Check for ignition "ON" "OFF" position

NO CONTINUITY

Replace the Main Switch

CONTINUITY

Main Switch OK

IGNITION SYSTEM/ CHARGING SYSTEM

ELEC



5. SENSOR COIL RESISTANCE

- Disconnect the sensor Coil Coupler from the Wiring Harness
- Connect the Multimeter ($\Omega \times 100$) to the sensor coil coupler
- Check the sensor coil resistance

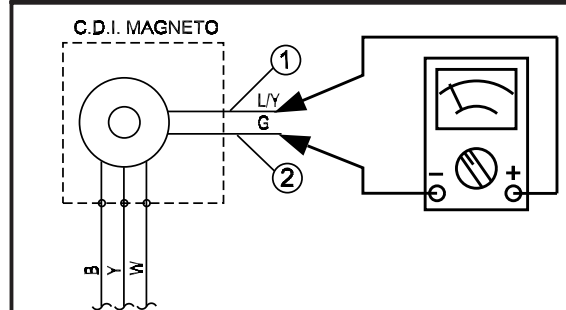


Sensor coil resistance :
 $240 \Omega \pm 20 \% \text{ (at } 20^{\circ}\text{C)}$

MEETS
SPECIFICATION

Sensor coil is OK

Multimeter (+) lead → Blue/Yellow terminal ①
 Multimeter (-) lead → Green terminal ②



OUT OF SPECIFICATION

Replace the Sensor Coil Assembly

6. CHARGING COIL RESISTANCE

- Remove the Charging Coil coupler from the Wire Harness
- Connect the Multimeter to the charging coil
- Measure the charging coil resistance

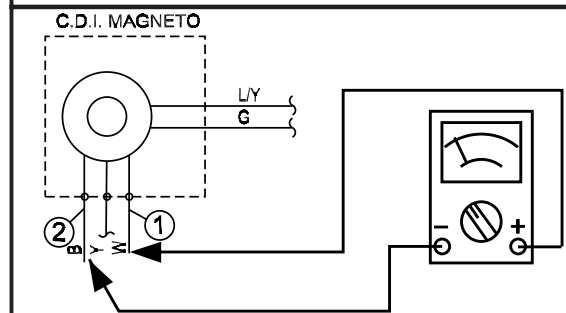


Charging coil resistance
 $0.82 \Omega \pm 20 \% \text{ (at } 20^{\circ}\text{C)}$

MEETS
SPECIFICATIONS

Charging coil is OK

Multimeter (+) lead → White Terminal ①
 Multimeter (-) lead → Black Terminal ②



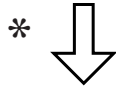
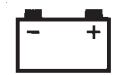
OUT OF SPECIFICATION

Replace the Charging Coil

*

IGNITION SYSTEM / CHARGING SYSTEM

ELEC



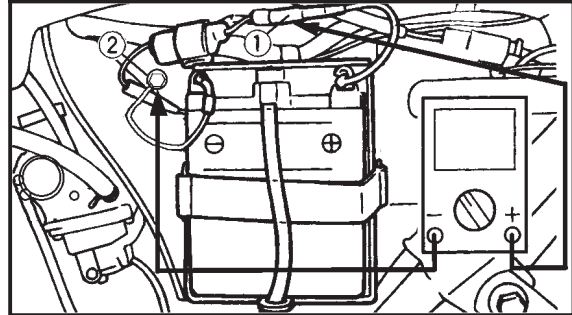
7. RECTIFIER CUM REGULATOR UNIT

- Check the Charging Voltage
Procedure Steps
- Connect the Tachometer to Spark plug lead
- Connect the Multimeter (DC 20V) to Battery Red Wire.
Measure the Battery Voltage : 12V
If less than specifications, charge the Battery
- Start the engine and accelerate the Engine up to 5000 RPM .
- Check the Charging voltage :



Charging voltage :
14 ~ 15 V at 5000RPM

Multimeter (+) lead → Battery (+) terminal ①
Multimeter (-) lead → Battery (-) terminal ②



MEETS SPECIFICATIONS

OUT OF
SPECIFICATION

Rectifier cum Regulator unit is faulty.
• Replace RR unit

Charging Circuit and Rectifier cum Regulator are OK

8. WIRING CONNECTIONS

- Check the connection for entire Ignition and Charging System "REFER TO CIRCUIT DIAGRAM" Page 7-4

POOR CONNECTIONS

IF CORRECT

9. CDI Unit

- Check CDI unit "REFER IGNITION TIMING PROCEDURE Chapter 3, Page 3-11

Repair/ Replace the Harness

CHARGING SYSTEM

ELEC



TROUBLE SHOOTING

IF THE BATTERY IS NOT CHARGED

PROCEDURE

CHECK

1. Fuse
2. Battery
3. Charging voltage
4. Charging coil resistance
5. Wiring system (entire charging system)

Note :

Remove the following parts before trouble shooting.

- 1) Side covers (LH)

- Use Service Instruments as specified.



Engine Tachometer.
Digital Multimeter

1. FUSE

Refer to "FUSE INSPECTION SECTION" in Chapter 3, Page no 3-30

NO CONTINUITY

Replace the Fuse

CONTINUITY

2. BATTERY

- Check the Battery condition.
Refer to "BATTERY INSPECTION" section in Chapter 3, Page no 3-28

Specific Gravity : 1.230 ± 0.005 at 20°C

INCORRECT

- Top up with distilled water
- Clean the Battery terminals
- Recharge or Replace the Battery

CORRECT

3. CHARGING VOLTAGE

- Refer to Rectifier cum Regulator unit inspection method in the Ignition System section in this Chapter, Page no 7-8

MEETS SPECIFICATIONS

The Charging circuit is OK

OUT OF SPECIFICATION

4. CHARGING COIL RESISTANCE.

- Refer to Charging coil resistance checking method in the Ignition System section in this Chapter, Page no 7-7

OUT OF SPECIFICATION

Replace the Charging Coil

MEETS SPECIFICATION

5. WIRING CONNECTION

- Check entire Charging system for poor connections.
Refer to circuit diagram Section Page no 7-4

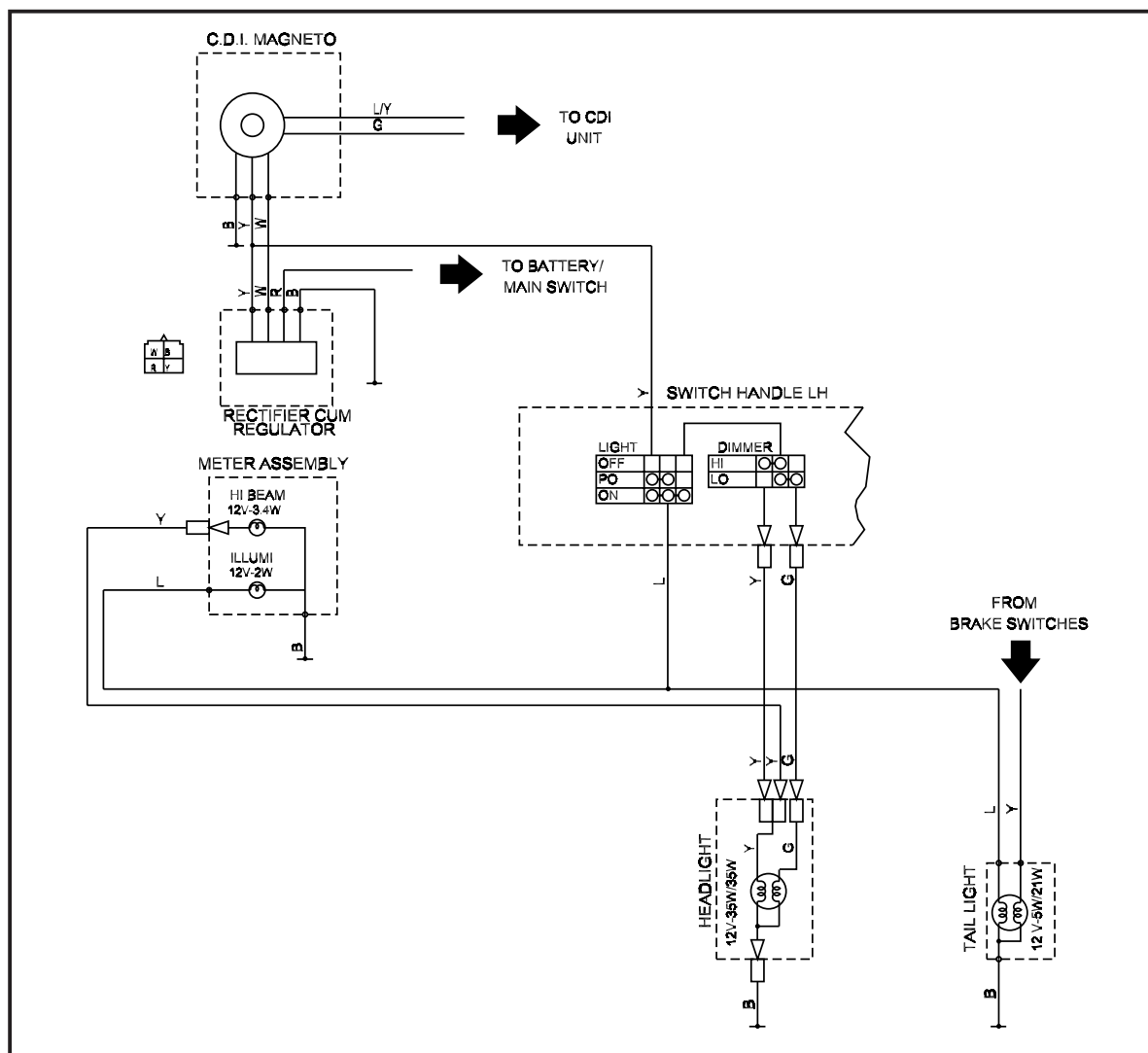
POOR CONNECTIONS

Repair or Replace the Wiring Harness



LIGHTING SYSTEM

CIRCUIT DIAGRAM : AC



TROUBLE SHOOTING

IF THE HEAD LIGHT, HI BEAM INDICATOR LIGHT, TAILLIGHT AND METER LIGHT DO NOT WORK

PROCEDURE

CHECK

1. Lighting Coil resistance
2. Light Switch
3. Dimmer Switch
4. Lighting Voltage
5. Wiring connections (entire lighting system)
6. Check individual lighting circuits

Note : _____

Remove the following parts before trouble shooting.

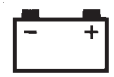
- 1) Side covers (LH and RH)
- 2) Seat
- 3) Headlight Assembly
- 4) Battery
- 5) Battery Box



Engine Tachometer.
Digital Multimeter

LIGHTING SYSTEM

ELEC



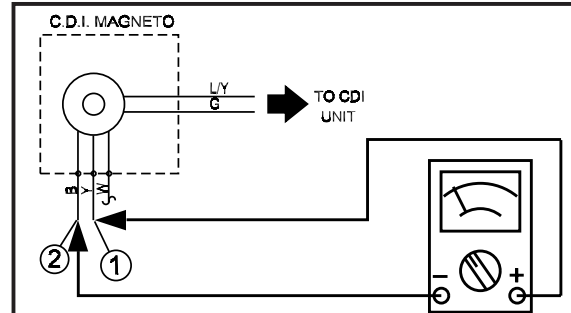
1. LIGHTING COIL RESISTANCE

- Remove the C.D.I. Magento Coupler from the wiring Harness
- Connect the Multimeter ($\Omega \times 1$) to the Lighting Coil
- Measure the Lighting Coil resistance



Lighting Coil resistance
 $0.62 \Omega \pm 20 \% \text{ at } 20^{\circ}\text{C}$

- Multimeter (+) lead \rightarrow Yellow terminal ①
 Multimeter (-) lead \rightarrow Black terminal ②



OUT OF SPECIFICATION

MEETS
SPECIFICATIONS

2. LIGHT SWITCH

- Disconnect the Handlebar Switch (LH) Coupler from Wireharness
- Connect the Multimeter ($\Omega \times 1$) to Handlebar Switch (LH) Terminals
- Check the switch connections for continuity between "Blue" and "Yellow/Red"

Replace the Lighting Coil

NO CONTINUITY

CONTINUITY

Repair or Replace the Handlebar Switch LH

3. DIMMER SWITCH

- Disconnect the Handlebar Switch (LH) Coupler from wireharness.
- Connect the Multimeter ($\Omega \times 1$) to Handlebar Switch (LH) Terminals
- Check the Switch connections for continuity between "Yellow/Red and Green", "Yellow/Red and Yellow"

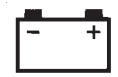
NO CONTINUITY

* CONTINUITY

Repair or Replace the Handlebar Switch LH

LIGHTING SYSTEM

ELEC

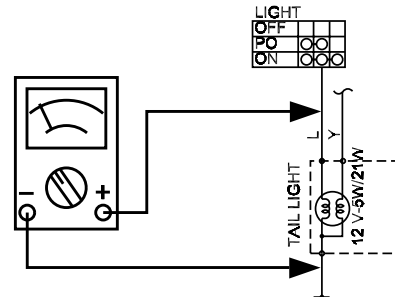
**4. LIGHTING VOLTAGE**

- Connect the Tachometer to Spark Plug lead.
- Disconnect the Taillight coupler from wire harness
- Connect the Multimeter (AC 20 V) to tail-light wire
- Start the Engine and accelerate the engine up to 3000 RPM and then to 8000 RPM
- Measure the lighting Voltage with (full load by switching on the Headlight)



Lighting Voltage (min) :
12 V @ 3000 RPM
(With Full Load) (max) :
15V @ 8000 RPM

Multimeter (+) lead → Blue terminal ①
Multimeter (-) lead → Black terminal ②



OUT OF SPECIFICATION

MEETS
SPECIFICATION

5. WIRING CONNECTIONS

- Check entire lighting system for poor Connections refer to "WIRING DIAGRAM" Page

Check the Lighting Coil resistance

POOR CONNECTIONS

CONTINUITY

- Check the condition of individual Lighting System Circuits

- Repair or Replace wireharness

*

LIGHTING SYSTEM**ELEC****6. INDIVIDUAL LIGHTING CIRCUITS****A. If the Headlight and Highbeam Indicator Light do not work****1. BULB AND BULB SOCKET**

- Check the Bulb and Bulb socket for continuity.

NO CONTINUITY

CONTINUITY

2. LIGHTING VOLTAGE

- Refer the lighting Voltage section Page no 7-12

Replace Bulb and/or Bulb Socket.

B. If the meter light does not work**1. BULB AND BULB SOCKET**

- Check the Bulb and Bulb Socket for continuity.

NO CONTINUITY

Continuity

2. LIGHTING VOLTAGE

- Refer the lighting Voltage section Page no 7-12

Replace Bulb and/or Bulb socket.

C. If the Tail Light does not work**1. BULB AND BULB SOCKET**

- Check the Bulb and Bulb Socket for continuity.

NO CONTINUITY

CONTINUITY

2. LIGHTING VOLTAGE

- Refer the lighting Voltage section Page no 7-12

Replace Bulb and/or Bulb socket.

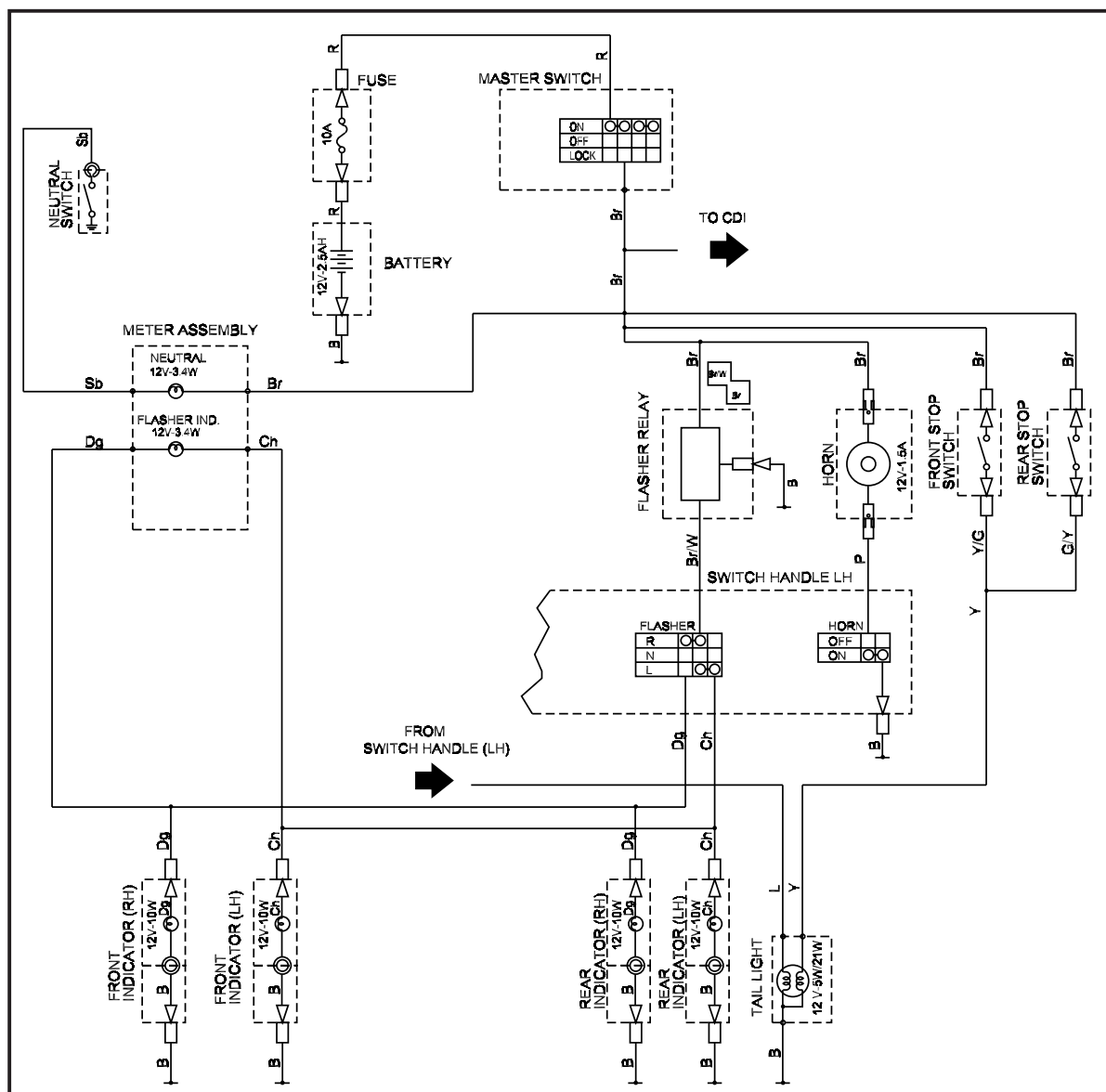
SIGNAL SYSTEM

ELEC



SIGNAL SYSTEM

CIRCUIT DIAGRAM : DC



TROUBLE SHOOTING

**IF THE FLASHER LIGHT, BRAKE LIGHT AND INDICATOR LIGHTS DO NOT WORK
IF THE HORN DOES NOT WORK**

PROCEDURE

CHECK

1. Fuse
2. Battery
3. Main Switch
4. Wiring connections (entire lighting system)
5. Check individual lighting circuits

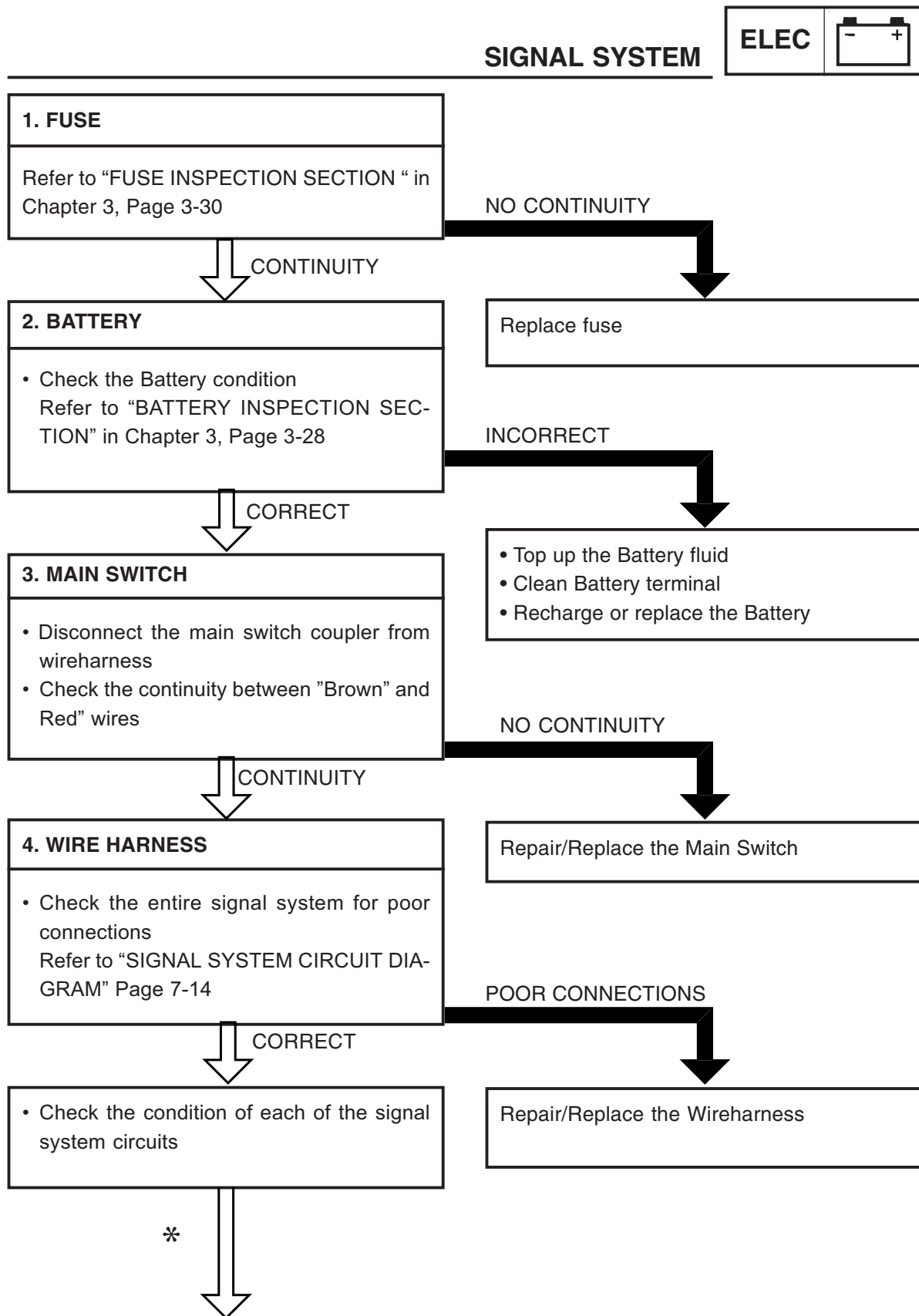
Note :

Remove the following parts before trouble shooting.

- 1) Side covers (LH/RH)
- 2) Seat
- 3) Fuel Tank
- 4) Headlight

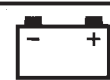


Digital Multimeter



SIGNAL SYSTEM

ELEC



5. INDIVIDUAL SIGNAL SYSTEMS

A. If the Horn does not work.

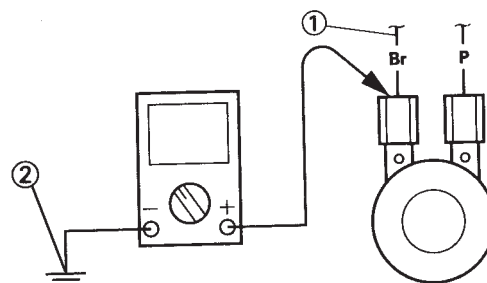
1. HORN SWITCH

- Disconnect the Handlebar Switch Coupler from Wireharness.
- Check the continuity between the "Pink" and "Black" with switch in Pressed Position.

NO CONTINUITY

Replace the Switch Handle (LH)

Multimeter (+) lead → Brown ① Terminal
Multimeter (-) lead → Body earth ②



CONTINUITY

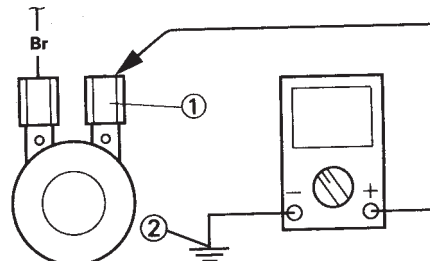
2. VOLTAGE

- Connect the Multimeter (DC20 V) to the Horn lead
- Turn the Main Switch to "ON"
- Check the Voltage (12V) between the "Brown" wire and Body Earth.

OUT OF SPECIFICATION

The wiring circuit from the Main Switch to the Horn is faulty. Repair/Replace wireharness.

Multimeter (+) lead → Horn Terminal ①
Multimeter (-) lead → Body earth ②



MEETS SPECIFICATION

3. HORN

- Disconnect the "Pink" terminal from the horn.
- Connect the multimeter (5 A) to the open terminal ① at "Horn"
- Turn the main switch "ON"
- Check current (Amperage) drawn by Horn by connecting to body earth.

Specified current 1.5 A

OUT OF SPECIFICATION / NO SOUND

Adjust / Replace the Horn

MEETS SPECIFICATION

Horn is OK

SIGNAL SYSTEM

ELEC



B. If the Brake Light does not work.

1. BULB AND BULB SOCKETS

- Check the Bulb and Bulb sockets for continuity.

NO CONTINUITY

Replace Bulb and/or Bulb socket.

CONTINUITY

2. BRAKE SWITCH FRONT / REAR

- Disconnect the Brake switch Coupler from wire Harness.
- Check the switch front and rear for continuity between "Brown and Yellow/Green" for front and "Brown and Green/Yellow" for Rear

NO CONTINUITY

Replace the Brake Switch

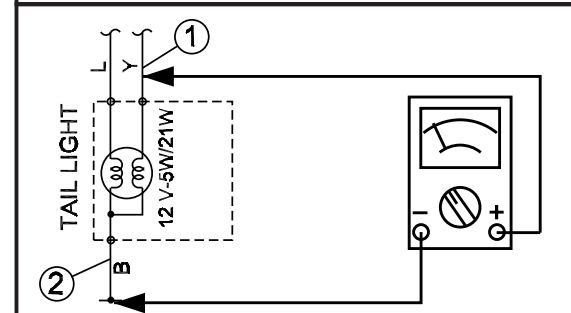
CONTINUITY

3. VOLTAGE

- Connect the Multimeter "DC20V" to bulb socket connector
- Turn the Main Switch to "ON"
- Apply the Front/Rear Brake
- Check The voltage (12V) between the "Yellow and Black terminal"

Multimeter (+) lead → Yellow terminal ①

Multimeter (-) lead → Black terminal ②



MEETS SPECIFICATIONS

OUT OF SPECIFICATION

4. WIRING CONNECTION

Wiring circuit from Main Switch to the Bulb Sockets connector is faulty. Repair
Refer to "SIGNAL SYSTEM" wiring diagram
Page no 7-14

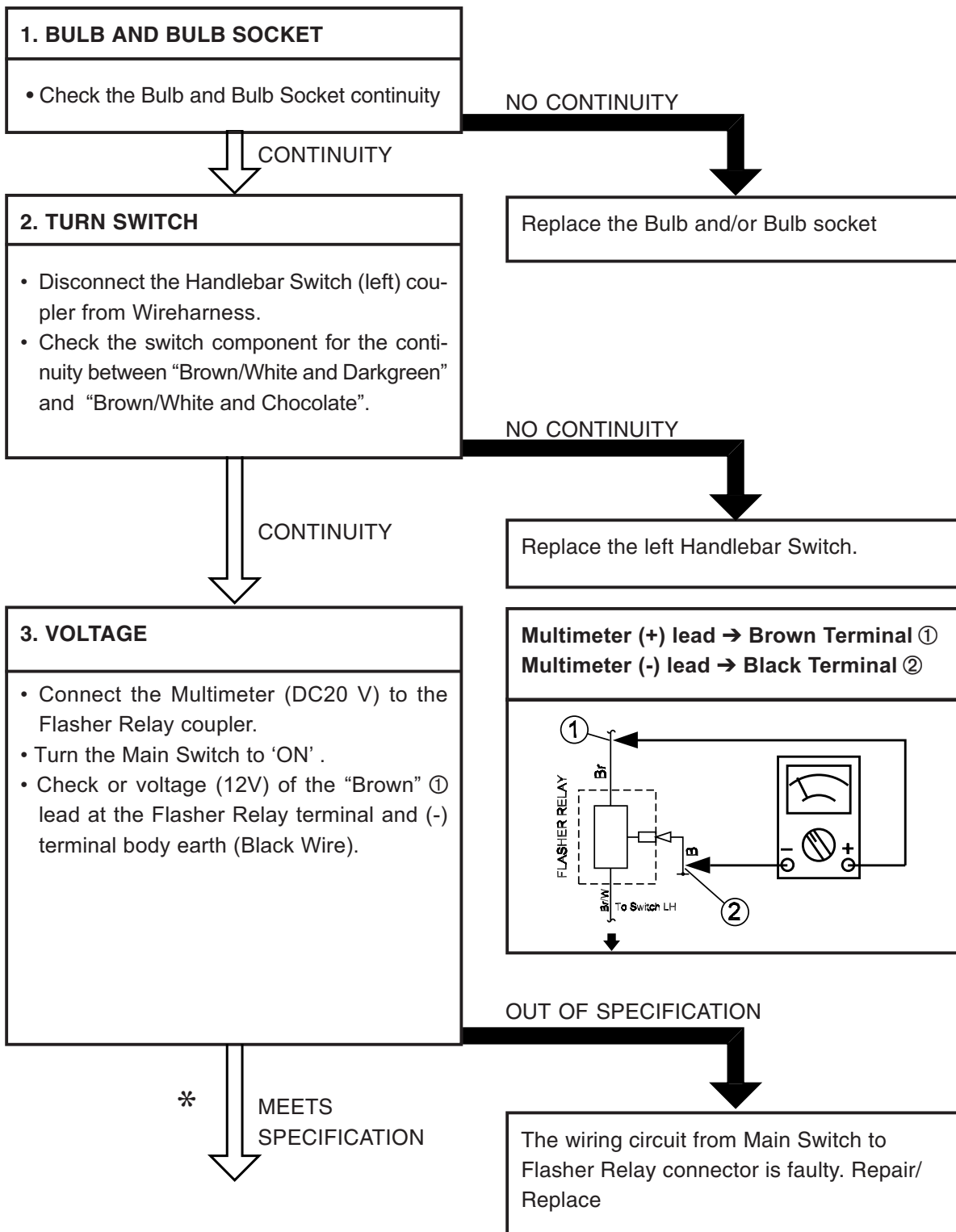
Brake Light circuit is OK

SIGNAL SYSTEM

ELEC

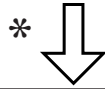


C. If the flasher light and/or turn indicator light fails to blink.



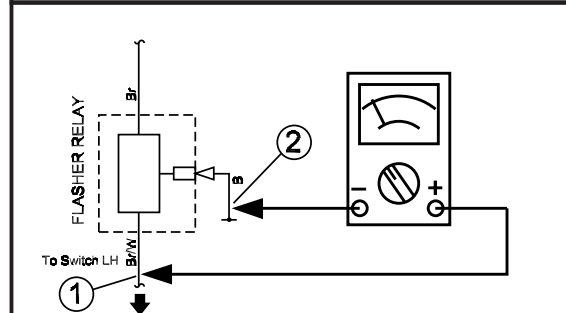
SIGNAL SYSTEM

ELEC

**4. FLASHER RELAY**

- Connect the Multimeter (DC20V) to the flasher relay coupler
- Turn Main switch to 'ON'
- Check for voltage (12V) on "Brown/White" lead at Flasher Relay and (-) terminal body earth

Multimeter (+) lead → Brown/White Terminal ①
Multimeter (-) lead → Black Terminal ②



OUT OF SPECIFICATION

MEETS
SPECIFICATION

The Flasher Relay is faulty. Replace.

5. VOLTAGE

- Connect the Multimeter (DC20V) to the Bulb Socket connector
- Turn the Main Switch to 'ON'
- Turn the Turn Switch to left or right
- Check for voltage (12V) on the "Chocolate" lead and "Dark green" at the Flasher Light terminal.

At flasher light (LH)

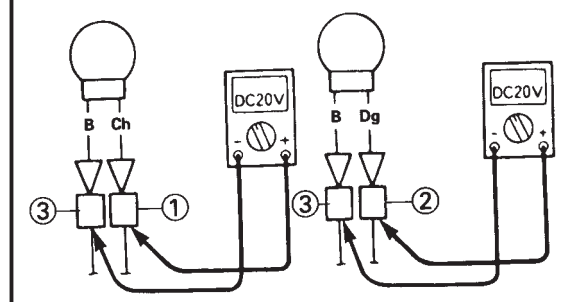
Multimeter (+) lead → Chocolate Terminal ①

Multimeter (-) lead → Body earth ③

At flasher light (RH)

Multimeter (+) lead → Dark Green Terminal ②

Multimeter (-) lead → Body earth ③



OUT OF SPECIFICATION

MEETS
SPECIFICATIONS

This circuit is O.K.

Wiring connection

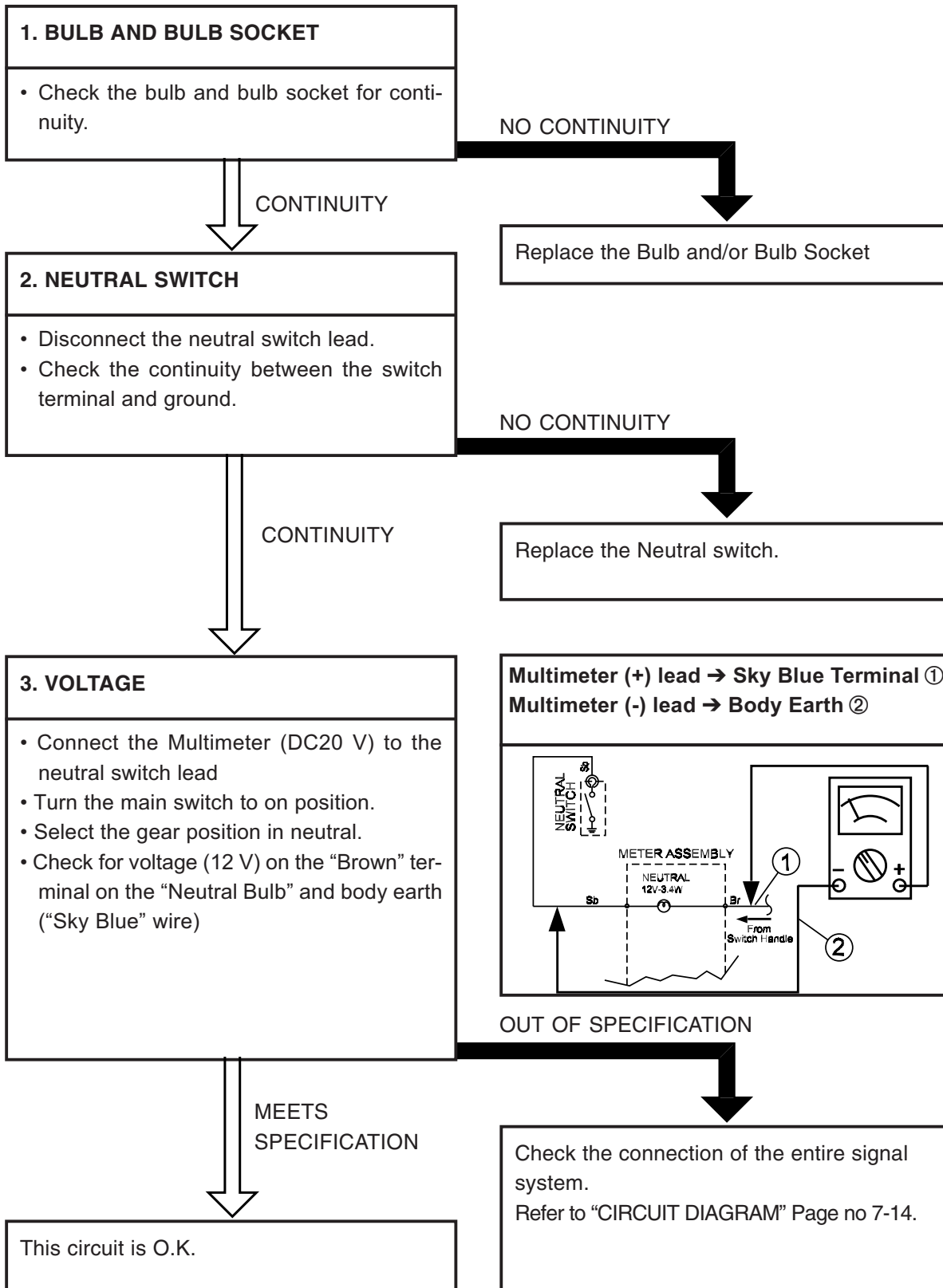
Wiring circuit from the Turn Switch to Bulb Socket connector is faulty. Repair/Replace Refer to "CIRCUIT DIAGRAM".

SIGNAL SYSTEM

ELEC



D. If the neutral indicator lights fails to operate.



CHAPTER 8

TROUBLE SHOOTING

STARTING FAILURE/ HARD STARTING	8-1
POOR IDLE SPEED PERFORMANCE	8-2
POOR MEDIUM AND HIGH SPEED PERFORMANCE	8-2
POOR SPEED PERFORMANCE	8-3
CLUTCH SLIPPING / DRAGGING	8-3
FAULTY GEAR SHIFTING	8-4
OVER HEATING	8-4
FAULTY BRAKE	8-4
FRONT FORK MALFUNCTION	8-5
UNSTABLE HANDLING	8-5
FAULTY SIGNAL AND LIGHTING SYSTEM	8-6

STARTING FAILURE / HARD STARTING

TRBL SHTG	?
--------------	---

NOTE:

The following troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to troubleshooting. Refer to the related procedure in this manual for inspection, adjustment and replacement of parts.

STARTING FAILURE / HARD STARTING

FUEL SYSTEM

Fuel Tank

- Empty
- Clogged Fuel Tank Cap Breather Hole
- Deteriorated fuel or fuel containing water or foreign material

Fuel Cock

- Clogged Fuel Hose
- Clogged Fuel Cock

Carburetor

- Deteriorated fuel or fuel containing water or foreign material
- Clogged Pilot Jet
- Clogged air passage
- Improperly set Pilot Screw
- Clogged Pilot air passage
- Improperly sealed Valve Seat
- Improperly adjusted Fuel level
- Clogged Starter Jet
- Damaged Carburetor Joint
- Improperly tightened Carburetor Joint Clamp Hose
- Starter Plunger malfunction
- Sucked -in air

Air Filter

- Clogged Air Filter element
- Improper Air Filter setting

COMPRESSION SYSTEM

Cylinder and Cylinder Head

- Loose Spark Plug
- Loose Cylinder Head
- Broken Cylinder Head Gasket
- Broken Cylinder Gasket
- Worn, damaged or seized Cylinder

Piston and Piston ring

- Worn Piston
- Worn, Fatigued or broken Piston Rings
- Seized Piston Rings
- Seized or damaged Piston

Valve System

- Improperly adjusted Valve clearance
- Improperly sealed Valve
- Improperly contacted Valve and Valve seat
- Improper Valve timing
- Broken Valve Spring
- Seized Valve

POOR IDLE SPEED PERFORMANCE

**TRBL
SHTG**


IGNITION SYSTEM

Spark Plug

- Improper Plug gap
- Worn Electrodes
- Wire between Terminals broken
- Improper heat range
- Faulty Spark Plug Cap

Ignition Coil

- Broken or shorted Primary /Secondary Coil
- Faulty High Tension Cord
- Broken Ignition Coil body

Ignition system

- Faulty C.D.I Unit
- Faulty Sensor Coil
- Broken Magneto Woodruff Key

Switch

- Faulty Main Switch

Wiring

- Loose Coupler connection
- Improperly grounded
- Broken Wireharness

R. R. Unit

- Faulty R. R. Unit

POOR IDLE SPEED PERFORMANCE

Carburetor

- Improperly returned Starter Plunger
- Loose or clogged Pilot jet
- Damaged Carburetor Joint
- Improperly tightened Carburetor Joint Clamp hose
- Improperly adjusted idle speed (Pilot Screw) , (Throttle stop Screw)
- Improperly adjusted Throttle Cable
- Flooded Carburetor

Air Filter

- Clogged air filter element

Ignition system

- Faulty Spark Plug
- Faulty High tension Cord
- Faulty C. D. I. Unit
- Faulty Sensor up Coil
- Faulty Ignition Coil

Valve system

- Improperly adjusted Valve clearance

POOR MEDIUM AND HIGH SPEED PERFORMANCE

Refer to "STARTING FAILURE/HARD STARTING" section. (Fuel system, electrical system, compression system and valve system Page no 8-1)

Carburetor

- Improperly adjusted Fuel Level
- Clogged main Nozzle
- Clogged or loose Pilot jet

Air Filter

- Clogged Air Filter Element

POOR SPEED PERFORMANCE

**TRBL
SHTG**
?

POOR SPEED PERFORMANCE

Ignition System

- Dirty Spark Plug
- Improper heat range
- Faulty C.D.I. Unit
- Faulty Sensor Coil

Fuel System

- Clogged Fuel Tank Cap Breather Hole
- Clogged Air Cleaner element
- Clogged Jet
- Improperly adjusted Fuel Level

Compression System

- Worn Cylinder
- Worn or Seized Piston Rings
- Cylinder Head Gasket Broken
- Cylinder Gasket Broken
- Carbon deposit build-up
- Improperly adjusted Valve clearance
- Improperly contacted Valve and Valve seat
- Faulty Valve timing

Clutch

- Refer to "CLUTCH SLIPPING/Dragging" section Page no 8-3

Engine Oil

- Improper oil level (low or over oil level)
- Improper quality (low oil viscosity)
- Deterioration
- Clogged oil passage

Brakes

- Dragging brake

CLUTCH SLIPPING/Dragging

CLUTCH SLIPPING

Clutch

- Improperly adjusted clutch cable
- Loose clutch spring
- Fatigued clutch spring
- Worn friction plate/clutch plate
- Incorrectly assembled clutch

Engine oil

- Improper oil level
- Improper quality (low viscosity)
- Deterioration

CLUTCH Dragging

Clutch

- Warped pressure plate
- Unevenly tensioned clutch spring
- Bent push rod
- Broken clutch boss
- Burnt primary driven gear bushing
- Bent clutch plate
- Swollen friction plate

Engine oil

- Improper oil level
- Improper quality/(high viscosity)
- Deterioration

FAULTY GEAR SHIFTING / OVERHEATING

TRBL SHTG	?
--------------	---

FAULTY GEAR SHIFTING

HARD SHIFTING

Refer to "CLUTCH DRAGGING" Page no 8-3

SHIFT PEDAL DOES NOT MOVE

Shift Shaft

- Bent Shift Shaft

Shift Cam Shift Fork

- Groove jammed with impurities
- Seized Shift Fork
- Bent Shift Fork Guide Bar

Transmission

- Seized Transmission Gear
- Clogged impurities
- Incorrectly assembled transmission

JUMPING -OUT OF GEAR

Shift Shaft

- Improperly returned Stopper Lever

Shift Fork

- Improper thrust play
- Worn Shift Cam groove

Transmission

- Worn gear dog

OVER HEATING

Ignition system

- Improper Spark Plug gap
- Improper Spark Plug heat range
- Faulty C.D.I. unit

Fuel system

- Improper Carburetor setting
- Improper fuel level adjustment
- Clogged air Filter element

Compression System

- Heavy carbon deposit built-up
- Improperly adjusted Valve timing
- Improperly adjusted Valve clearance

Engine oil

- Incorrect Engine oil level
- Improper Engine oil quality (high viscosity)
- Low Engine oil quality

Brakes

- Dragging brake

FAULTY BRAKE

FRONT / REAR BRAKE

- Improper Brake adjustment
- Worn Brake Shoe
- Worn Cam Shaft
- Worn Brake drum
- Oily and greasy Brake lining

- Faulty Brake cable
- Mud or water in to the Brake Drum Inside
- Broken or fatigued Tension Spring
- Faulty Camshaft/ Cam lever

FRONT FORK MALFUNCTION / UNSTABLE HANDLING

**TRBL
SHTG**


FRONT FORK MALFUNCTION

OIL LEAKAGE

- Bent damaged or rusty Inner Tube
- Damaged or cracked Outer Tube
- Damaged oil seal lip.
- Loose hexagon Bolt
- Damaged Cap Bolt O-ring
- Improperly installed Oil seal

MALFUNCTION

- Bent Inner Tube
- Deformed Outer Tube
- Damaged Fork Spring
- Bent Cylinder Complete
- Improper oil viscosity / Level

UNSTABLE HANDLING

Handlebars

- Improperly installed or bent
- Loose Handlebar Tightening Bolt

Steering

- Improperly installed Handlebar Crown
- Loose or overtightened Steering Nut
- Loose or overtightened Steering Nut
- Bent Under Bracket
- Improperly installed Steering Shaft (improperly tightened Ring Nut)
- Damaged Bearing or Ball Race

Front forks

- Uneven oil levels on both sides
- Uneven spring tension
- Broken Front Fork Spring
- Fatigued Front Fork Spring
- Twisted Front Forks

Wheels

- Incorrect Wheel balance
- Loose Spokes
- Deformed Wheel Rim
- Unevenly worn Tyres
- Incorrect Tyre pressure
- Loose Bearing
- Bent or loose Wheel Axle
- Excessive Wheel Runout

Frame

- Twisted
- Improperly installed Bearing Race
- Faulty Bushing
- Bent Rear Arm

Rear arm

- Worn or damaged Bush
- Bent rear arm

Rear shock absorber

- Fatigued spring
- Improperly adjusted Spring preload
- Oil leakage

Drive chain

- Improperly adjusted Chain line

FAULTY SIGNAL AND LIGHTING SYSTEM

TRBL SHTG	?
--------------	---

FAULTY SIGNAL AND LIGHTING SYSTEM

HEADLIGHT DIM

- Improper Bulb
- Too many electric accessories
- Hard charging
- Faulty rectifier/regulator
- Faulty Battery
- Improperly connected coupler, connector wire harness
- Improperly grounded
- Faulty main switch or lights (dimmer) switch

BULB BURNT OUT

- Improper Bulb
- Faulty Battery
- Faulty R. R. Unit
- Improperly grounded
- Improperly mounted Light Unit

FLASHER DOES NOT BLINK

- Improperly grounded
- Insufficient battery capacity
- Faulty Fuse
- Faulty Turn Switch
- Faulty Flasher Relay
- Broken wireharness, incorrect coupler connection
- Bulb burnt out

FLASHER KEEPS ON

- Faulty Flasher Relay
- Insufficient Battery capacity (nearly discharged)
- Bulb burnt out (front or rear)

FLASHER BLINKS SLOWER

- Faulty Flasher Relay
- Insufficient Battery capacity (nearly discharged)
- Improper Bulb
- Faulty Main and/or Turn Switch

FLASHER BLINKS QUICKER

- Improper Bulb
- Faulty Flasher Relay

HORN DOES NOT SOUND

- Faulty Battery
- Faulty Fuse
- Faulty Main and/or Horn Switch
- Improper Horn adjustment
- Faulty Horn (burnt Coil, Connector)
- Broken Wireharness