DERBI

BALAS ROJAS

WORKSHOP MANUAL
SENDA 125 C.C. 4STROKE

INTRODUCTION

This manual has been created by **Nacional Motor, S.A.U.** for use in **DERBI** dealer workshops and sub-agencies.

It is assumed that those using this publication for entertainment and for repairing **DERBI** machines, have a basic knowledge of mechanics and of the methods inherent in the technique of machine repair. The significant variations in the characteristics of the machines or in the specific repair operations are to be communicated by means of updates to this manual. Completely satisfactory work cannot however be carried out without the availability of suitable facilities and tools, which is why we ask you to consult the pages of this manual referring to special tools and implements.

Particularly important items of information in this manual are distinguished by the following annotations:

N.B.
INDICATES A NOTE GIVING KEY INFORMATION, MAKING THE PROCEDURE EASIER AND CLEARER.

ATTENTION
INDICATES SPECIFIC PROCEDURES THAT MUST BE FOLLOWED TO PREVENT DAMAGE TO THE MACHINE.

WARNING
INDICATES SPECIFIC PROCEDURES THAT MUST BE FOLLOWED TO AVOID POSSIBLE INJURIES TO THE PERSON REPAIRING THE MACHINE.

NACIONAL MOTOR, S.A.U.

CONTENTS

GENERAL INFORMATION

RULES

This section describes the general safety rules and those for the maintenance of the machine.

SAFETY RULES

- If work on the machine requires the engine to be running, ensure that the location is well ventilated, if possible making use of extraction fans; never leave engines running in closed spaces. Exhaust fumes are poisonous.

- Petrol is extremely inflammable, and under certain conditions can explode. Smoking must not be permitted in the work area, nor must there be any naked flames or sparks.

MAINTENANCE RULES

- Use original DERBI spare parts and lubricants recommended by the Manufacturer. Spare parts that are not original or approved may damage the engine.

- Always use new gaskets and oil seals during refitting.

- After dismantling, clean the components with solvents that are non-inflammable or with a high flammability point. Lubricate all working surfaces before assembly, excluding the conical couplings.

- After assembly, check that all the components have been refitted correctly and that they are working perfectly.

- For dismantling, checking and assembly operations, only use tools with metric measurements. Metric screws, nuts and bolts are not interchangeable with imperial connecting devices. Using unsuitable tools and connecting devices may damage the engine.

- In the case of work on the engine involving the electrical wiring, check the correct fitting of the electrical connections.

MAINTENANCE RULES

Use genuine **DERBI** spare parts and lubricants recommended by the Manufacturer. Non-genuine or unauthorised parts may damage the machine.

Only use the specific tools intended for this machine.

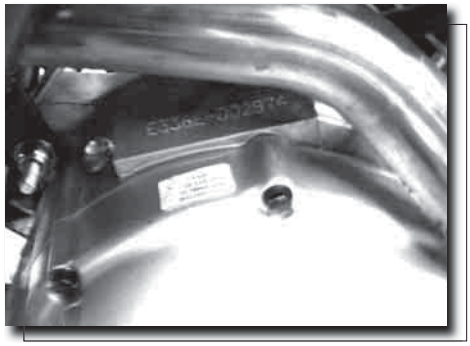
During assembly, always use new seals, gaskets, piston rings and grommets.

After dismantling, clean the components with solvents that are non-inflammable or with a high flammability point. Grease all working surfaces before assembling, excluding tapered joints.

After assembly, check that all components have been correctly fitted and that they are functioning perfectly.

For dismantling, checking and assembly operations, use only tools with metric measurements. Metric screws, nuts and bolts are not interchangeable with imperial measurement joining devices. Using unsuitable tools and joining devices may damage the machine.

In the case of work on the machine's electrical circuitry, check that electrical connections have been correctly fitted, especially the earth connections.



VEHICLE IDENTIFICATION

VEHICLE	CHASSIS CODE	ENGINE CODE
SENDA 125 SM	VTHSC2B1A?Hxxxxxx SM	E336Exxxxxx
SENDA 125 R 4STROKE	VTHSC1B1A?Hxxxxxx R	

GENERAL TECHNICAL DATA

SENDA 125 SM-4 STROKE TECHNICAL DETAILS

Engine	Single cylinder 4-Stroke EURO 2
Diameter x stroke	54x54 mm
Cubic capacity	123.7 cm^3
Carburettor	Mikuni UCAL 5 NH
Cooling	Air
Starter	Electrical
Compression ratio	10.01 / 1
Maximum power	8.4 kw / 8.500 rpm
Fuel	Lead-free petrol
Greasing system	Wet crankcase
Ignition	C.I.U.
Spark plug	NGK CR7HSA / DENSO U22 FSR-U
Primary transmission	U Gear assembly
Clutch	Multi-disk
Gears	5 speed
Front suspension	41mm hydraulic forks 195mm travel
Rear suspension	Single shock absorber 170mm travel
TYRE PRESSURE (cold) **Maximum load:** **0 - 90 Kg.** Front Rear **90 Kg. - Maximum load** Front Rear	177 kg. 100 kPa (1 kg/cm^2) 110 kPa (1,1 kg/cm^2) 120 kPa (1,2 kg/cm^2) 130 kPa (1,3 kg/cm^2)
Tryes	110/80x17 130/70x17"
Front disk brake	300mm hydraulic dick
Rear disk brake	220mm hydraulic dick
Battery	12 V 6 Ah
Distance between axles	1.450 mm
Height	1.180 mm
Length	2.143 mm
Width...	805 mm
Fuel tank	8 L.

GENERAL TECHNICAL DATA

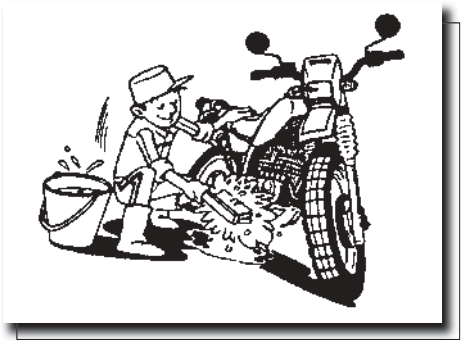
SENDA 125 R-4 STROKE TECHNICAL DETAILS

Engine	Single cylinder 4-Stroke EURO 2
Diameter x stroke	54x54 mm
Cubic capacity	123.7 cm^3
Carburettor	Mikuni UCAL 5 NH
Cooling	Air
Starter	Electrical
Compression ratio	10.01 / 1
Maximum power	8.4 kw / 8.500 rpm
Fuel	Lead-free petrol
Greasing system	Wet crankcase
Ignition	C.I.U.
Spark plug	NGK CR7HSA / DENSO U22 FSR-U
Primary transmission	U Gear assembly
Clutch	Multi-disk
Gears	5 speed
Front suspension	41mm hydraulic forks 195mm travel
Rear suspension	Single shock absorber 170mm travel
TYRE PRESSURE (cold) **Maximum load:** **0 - 90 Kg.** Front Rear **90 Kg. - Maximum load** Front Rear	 177 kg. 140 kPa (1,4 kg/cm^2) 170 kPa (1,7 kg/cm^2) 150 kPa (1,5 kg/cm^2) 180 kPa (1,8 kg/cm^2)
Tryes	3.00x21 51P (front) - 4.10x18 60P (rear)
Front disk brake	260 mm hydraulic dick
Rear disk brake	220 mm hydraulic dick
Battery	12 V 6 Ah
Distance between axles	1.450 mm
Height	1.222 mm
Length	2.179 mm
Width...	805 mm
Fuel tank	8 L.

GENERAL TECHNICAL DATA

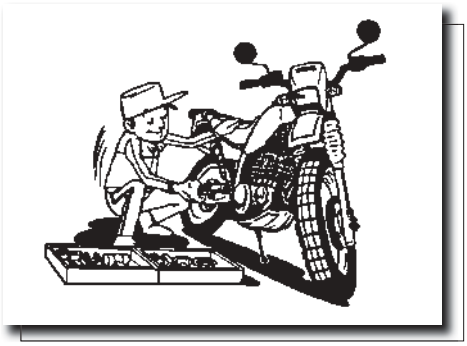
PREPARATION FOR REMOVAL AND DISMANTLING

1. Remove all the dirt, grime, dust and other foreign material before removing and dismantling.



2. Use properly cleaned tools and equipment.

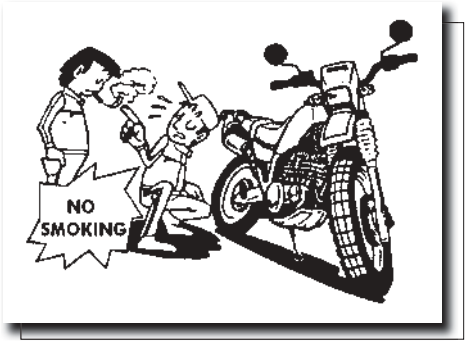
See "**SPECIAL TOOLS**".



3. On dismantling the motorcycle, always keep paired parts together. This includes gears, cylinders, pistons and other parts submitted to natural wear in pairs. Paired parts must always be reassembled or replaced together.

4. While dismantling the motorcycle, clean all the parts and lay them out on trays in the order dismantled. This speeds up reassembly and ensures the correct fitting of all the parts.

5. Keep all parts away from any contact with fire.



GENERAL TECHNICAL DATA

REPLACEMENT PARTS

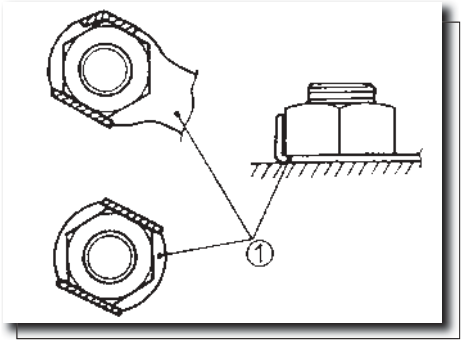
1. Use only genuine DERBI spare parts. For all lubrication tasks use oils and greases recommended by DERBI. Other makes make seem similar in their function and appearance, but are inferior in quality.

SEALS, RETAINING RINGS AND O-RINGS

1. Replace all seals, retaining rings and O-rings when servicing the engine.
All surfaces receiving seals, retaining ring edges and O-rings must be cleaned.

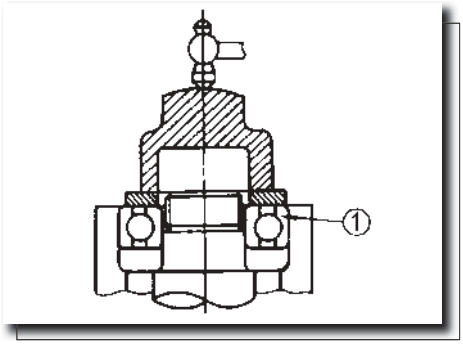
2. Apply oil to all paired parts and bearing during reassembly. Apply grease to the retaining ring edges.

TAB/SPACER WASHERS AND SPLIT PINS



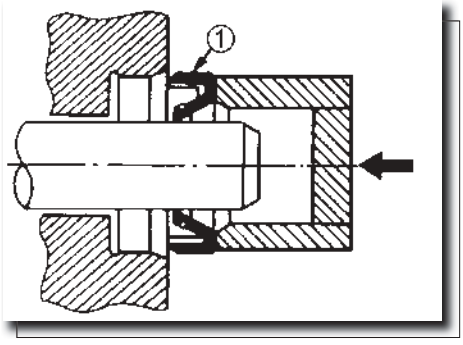
1. After removing them, replace all tab/spacer washers (1) and split pins Bend the tabs to fit the flat surfaces of the bolt or nut once they have been tightened to the specified torque.

BEARINGS AND RETAINING RINGS



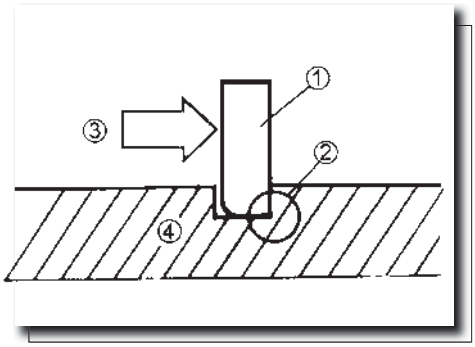
1. Fit bearings and retaining rings in such a way that the manufacturers marks remain visible. On fitting retaining rings, applying a thin film of light lithium soap based grease to their edges. Where required, apply oil generously when fitting bearings.

WARNING
DO NOT USE COMPRESSED AIR TO DRY BEARINGS. THIS DAMAGES THE BEARING SURFACES.



GENERAL TECHNICAL DATA

LOCKING RINGS



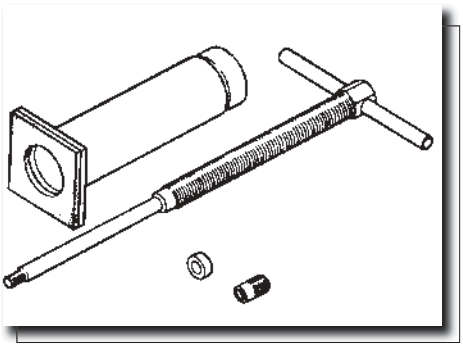
1. Examine all the locking rings carefully before fitting. Always replace the gudgeon pin circlips after every use. Replace distorted locking rings. On fitting a locking ring (1), ensure that the sharp edge (2) is on the opposite side to the force to be applied to it.

See the figure on the side, (4) Axle.

SPECIAL TOOLS

The following special tools are needed for assembly and for complete and exact adjustments. Only use the proper special tools; thereby avoiding damage caused by the use of unsuitable tools or improvised techniques.

1. 00M12501258

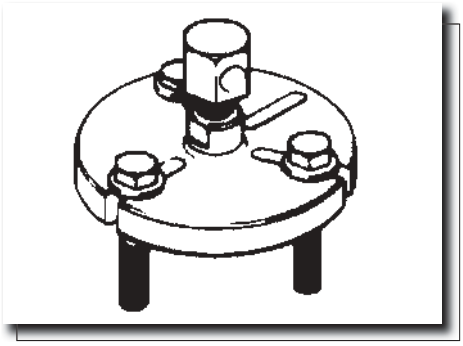


Gudgeon pin extractor.

This tool is used for dismantling the gudgeon pin.

2. 00M12501259

Magneto flywheel extractor.



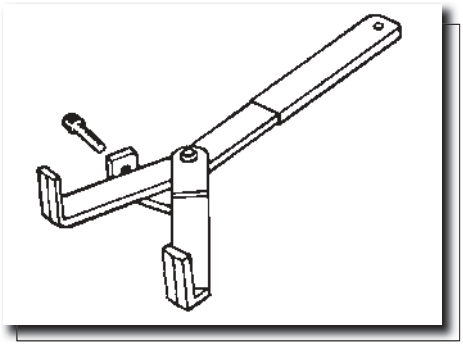
This tool is used for dismantling the magneto flywheel.

GENERAL TECHNICAL DATA

3. 00M12501260

Clutch holder.

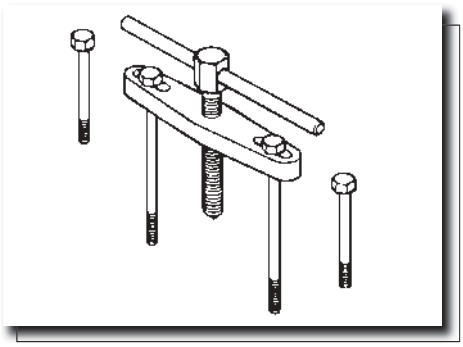
This tool is used to hold the clutch assembly when fitting or dismantling its axle nut.



4. 00M12501261

Crankcase separator.

This tool is used to separate the crankshaft from the case.



MAINTENANCE SPECIFICATIONS

GENERAL SPECIFICACTIONS

MODEL	SENDA 125 4T
BASIC WEIGHT With oil and full fuel tank	 118 kg
TYPE OF OIL Engine oil	Oil AGIP CITY 4-Stroke oil API SJ « DONUT» + JASO MA - PART SYNTHETIC SAE Viscosity: SAE 20W-40 or higher
OIL CAPACITY Engine oil Periodical oil change Total capacity	 1,0 L 1,2 L
FUEL AIR	Wet-type element
FILTER Type Fuel tank capacity Reserve volume	 Lead-free petrol 8 L 1.5 L
CARBURETTOR Type Manufacture	 UCAL 5NH MIKUNI
SPARK PLUG Type / Manufacture Distance between electrodes	 NGK CR7HSA or DENSO U22 FSR-U 0,7 mm.
CLUTCH TYPE	Wet, multiple disks
TRANSMISSION Primary reduction system Primary reduction ratio Secondary reduction system Secondary reduction ratio Type of transmission Operation Gear ratios 1 2 3 4 5	 Straight toothed 63/23 (2.739) Drive chain 52/14 (3.714) Constant gear, 5 speed With the left foot 37/14 (2.642) 32/18 (1.777) 25/19 (1.315) 23/22 (1.045) 21/24 (0.875)
CHASSIS Frame type Caster angle Trail	 Diamond 26° 77 mm.

MAINTENANCE SPECIFICATIONS

MODEL	SENDA 125 4T
SUSPENSION	
Front suspension	Hydraulic fork.
Rear suspension	Hydraulic shock absorber and swinging arm.
SUSPENSION TRAVEL	
Front	195 mm
Rear	200 mm
ELECTRICAL SYSTEM	
Ignition system	CDI
Charging system	Magneto
Battery type	Yuasa MF YTX7L-BS
Battery capacity	12V 6 Ah

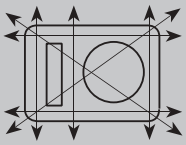
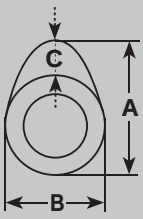
MAINTENANCE SPECIFICATIONS

MODEL	SENDA 125 4T

TYPE OF HEADLIGHTS Headlight bulb type	Twin headlight H8 halogen bulb
BULB VOLTAGE AND WATTAGE PER QUANTITY	
Headlight	12V 35/35 W x 1
Brake light	12V 5W/21W x 1
Turn indicators	12V 10W x 4
Number plate	12V 5W x 1
INDICATOR LIGHTS	
"NEUTRO" indicator light	12V 1,2W
"FULL BEAM" indicator light	12V 1,2W
"TURN" indicator light	12V 1,2W
Instrument panel illuminating light	12V 1,2W

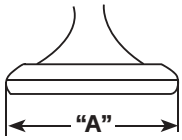
MAINTENANCE SPECIFICATIONS

ENGINE SPECIFICATIONS

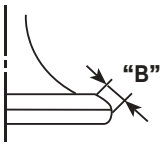
MODEL	SENDA 125 4T
CYLINDER HEAD <Distortion limit> 	<0,03 mm> * The lines indicate measurement at a right angle.
CYLINDER Diameter	54,000 - 54,018 mm.
CAMSHAFT Transmission	Timing chain
CAM SIZE Inlet "A" <Limit> "B" <Limit> "C" Exhaust "A" <Limit> "B" <Limit> Camshaft warp limit 	 25,881 - 25,981 mm <25,851 mm> 21,195 - 21,295 mm <21,165 mm> 4,391 mm 25,841 - 25,941 mm <25,811 mm> 21,05 - 21,15 mm <21,02 mm> 0,03 mm
ROCKERS/ ROCKER SHAFTS Rocker internal diameter <Limit> Rocker external diameter <Limit>	10,000 - 10.015 mm <10,03 mm> 9,981 - 9,991 mm <9,95 mm>
TIMING CHAIN Type / quantity of links Timing chain adjustment method	BUSH CHAIN/P = 6,35/88 links Automatic

MAINTENANCE SPECIFICATIONS

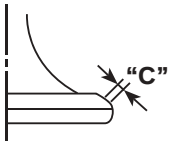
MODEL		SENDA 125 4T
VALVE, VALVE SEAT, VALVE GUIDE: Valve clearance (engine cold)		
Valve dimensions	**INL** **EXH**	0,08 - 0,12 mm 0,10 - 0,14 mm



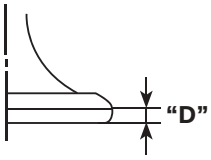
Diameter



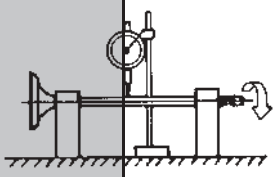
Face width



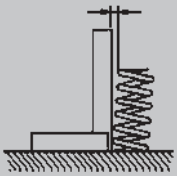
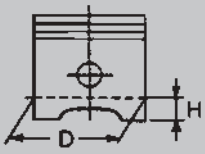
Seat width



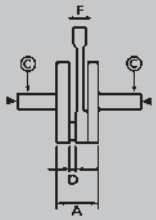
Edge tgickness

Diameter "A"	**INL** **EXH**	25,9 - 26,1 mm 21,9 - 22,1 mm
Width of face "B"	**INL** **EXH**	1,1 - 3,0 mm 1,7 - 2,8 mm
Width of seat "C"	**INL** **EXH**	0,9 - 1,1 mm 0,9 - 1,1 mm
Thickness of edge "D"	**INL** **EXH**	0,4 - 0,8 mm 0,8 - 1,2 mm
Stem diameter	**INL** **EXH**	4,975 - 4,990 mm 4,960 - 4,975 mm
<Limit>	**INL** **EXH**	4,950 mm 4,935 mm
Valve guide internal diameter	**INL** **EXH**	5,000 - 5,012 mm 5,000 - 5,012 mm
<Limit>	**INL** **EXH**	5,042 mm 5,042 mm
Stem-guide clearance	**INL** **EXH**	0,010 - 0,037 mm 0,025 - 0,052 mm
<Limit>	**INL** **EXH**	<0,08 mm> <0,10 mm>
Stem warp limit	**INL** **EXH**	0,010 mm 
Valve seat width	**INL** **EXH**	0,9 - 1,1 mm 0,9 - 1,1 mm
<Limit>	**INL** **EXH**	<1,6 mm> <1,6 mm>

MAINTENANCE SPECIFICATIONS

MODEL		SENDA 125 4T
VALVE SPRINGS		
Free length	**INL** **ESC**	39,62 mm 39,62 mm
<Limit>	**INL** **ESC**	38,0 mm 38,0 mm
Length (valve closed)	**INL** **ESC**	25,6 mm 25,6 mm
<Inclination limit>	**INL** **ESC**	2,5° / 1,7 mm 2,5° / 1,7 mm
Compression pressure (fitted)	**INL** **ESC**	13,2 - 15,5 Kgf (132 - 155 N·m) 13,2 - 15,5 Kgf (132 - 155 N·m)
Spiral direction (upper view) 		Clockwise 
PISTON		
Cylinder-piston clearance		0,020 - 0,028 mm
<Limit>		<0,15 mm>
Diameter of the piston "D" 		53,977 - 53,996 mm
Measurement point "H"		4,5 mm
Piston off-set		0,5 mm
Piston off-set direction		Inlet side
Gudgeon pin hole diameter		15,002 - 15,013 mm
Gudgeon pin outer diameter		14,991 - 15,000 mm
APISTON RINGS 		
Top ring:		
Type		Rounding
Dimensions (BxT)		1,0 x 2,1 mm
Clearance between points (fitted)		0,15 - 0,30 mm
<Limit>		0,4 mm
Side clearance (fitted)		0,03 - 0,07 mm
<Limit>		<0,12 mm>

MAINTENANCE SPECIFICATIONS

MODEL	SENDA 125 4T
SECONDARY RING 	
Type	Cónico
Dimensions (BxT)	1,0 x 2,1 mm
Clearance between points (fitted)	0,30 - 0,45 mm
<Limit>	0,55 mm
Side clearance	0,02 - 0,06 mm
<Limit>	0,12 mm
OIL RING 	
Dimensions (BxT)	2,0 x 2,2 mm
Clearance between points (fitted)	0,2 - 0,7 mm
CRANKSHAFT 	
Width "A"	46,95 - 47,00 mm
<Misalignment limit "C">	<0,03 mm>
Connecting rod "D" botton clearance	0,15 - 0,45 mm
<Connecting rod "F" top clearance limit>	<0,8 mm>
BALANCER	
Operating method	Gearing
CLUTCH	
Thickness of friction disks	2,92 - 3,08 mm
Quantity	5 parts
<Friction disk wear limit>	<2,80 mm>
Thickness of the separators	1,05 - 1,35 mm
Quantity	4 parts
<Distortion limit>	0,05 mm
Free lenght of clutch spring	33 mm
Quantity	4 parts
Minimum length	31 mm
Clutch freeing method	Internal by lever system
<Operating rod warp limit>	<0,5 mm>
GEAR SELECTOR	
Type	Selector and guide bar

MAINTENANCE SPECIFICATIONS

MODEL		SENDA 125 4T
CARBURETTOR		
Identification mark		5HH 00
Up jet	(M.J.)	# 100
Main air jet	(M.A.J.)	1.1
Closing jet needle	(J.N.)	5EJ3-2
Diffuser	(N.J.)	N-8
Closing valve interrupt angle	(C.A.)	2.5
Pilot outlet	(P.O.)	0,75
Down jet	(P.J.)	# 15
Mixture screw	(P.S.)	2 1 /2 turns
Valve seat	(V.S.)	1,8
Start jet	(G.S.)	27,5
Fuel level (with special tool)	(F.L.)	6 - 7 mm Under the bowl contact surface
Float height		18,9 mm
Idle speed		1.300 - 1.400 rpm
Inlet vacuum		29,3 - 34,7 kPa (220 - 260 mm Hg)
LUBRICATION SYSTEM		
Type of oil filter		Centrifugal
Type of oil pump		Trochoidal
Clearance between points “A” or “B”		0,15 mm
<Limit>		<0,2 mm>
Side clearance		0,06 - 0,10 mm
<Limit>		<0,15 mm>
Seat-rotor clearance		0,06 - 0,10 mm
<Limit>		<0,15 mm>

TIGHTENING TORQUES

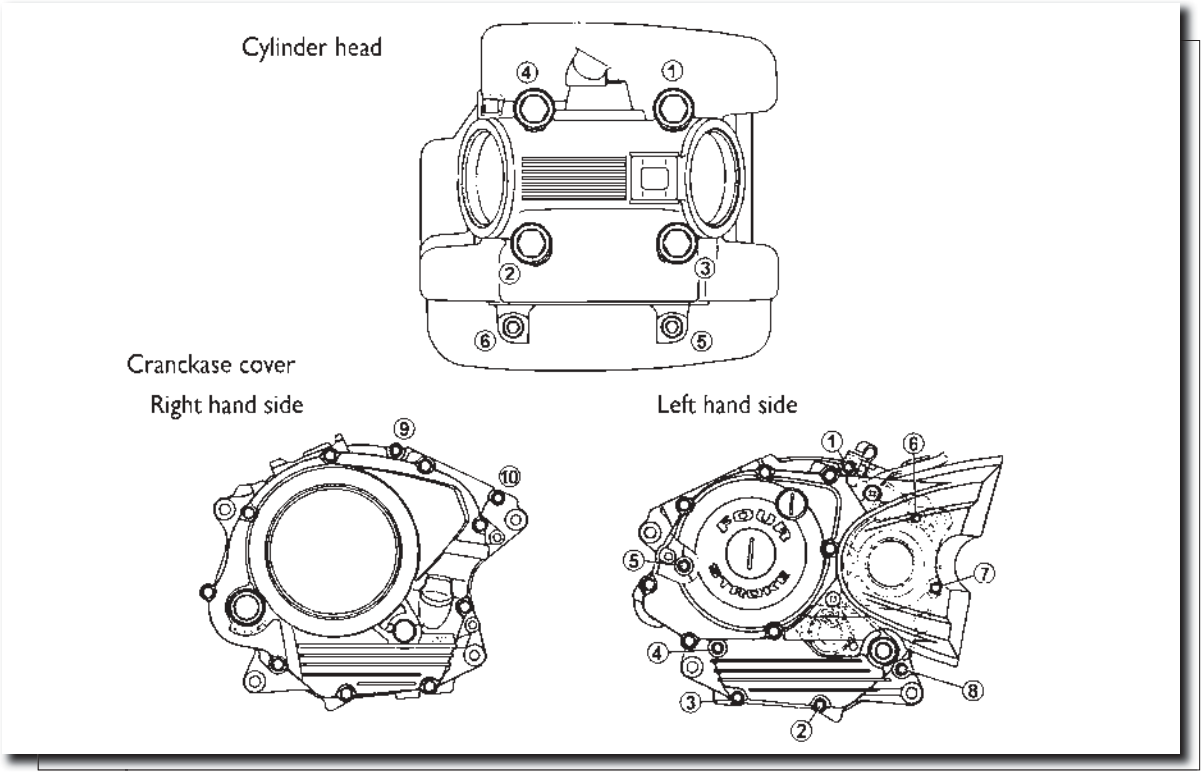
ENGINE TORQUES

PARTS TO BE TIGHTENED	DESCRIPTION	THREAD MEASUREMENT	QUA.	TIGHTENING TORQUE		OBS.
				Kgf.m	N·m	
Cylinder head	Bolt Bolt	M8 M6	4 2	2,2 1,0	22 10	Check oil
Spark plug	------	M10	1	1,25	12,5	
Cylinder head side cover	Bolt	M6	2	1,0	10	
Rocker cover	------	M45	2	1,75	17,5	
Magneto rotor	Bolt	M12	1	7,0	70	
Limiter guide	Bolt	M6	5	1,0	10	
Adjusting screw	Nut	M5	2	0,75	7,5	
Gear (timing chain)	Bolt	M8	1	2,0	20	
Plate	Bolt	M6	1	1,0	10	
Cover (tensioner assy.)	Cover	M8	1	0,75	7,5	
Tensioner assembly	Bolt	M6	2	1,0	10	
Oil pump	Bolt	M6	2	0,7	7	
Drain cover	Bolt	M12	1	2,0	20	
Pump cover	Bolt	M5	1	0,4	4	
Inlet manifold	Bolt	M6	2	1,0	10	
Fuel connection (manifold)	Bolt	M4	1	0,2	2	
Fuel connection (air filter)	Bolt	M4	1	0,2	2	
Air filter box	Bolt	M6	2	0,7	7	
Silencer (cylinder head)	Bolt	M6	2	0,1	10	
Silencer assy.	Bolt	M8	1	2,2	22	
Case 1 and 2	Bolt Bolt Bolt	M6 M6 M6	2 6 2	1,0 1,0 1,0	10 10 10	
Case 1 cover	Bolt Bolt Bolt	M6 M6 M6	5 2 6	1,0 1,0 1,0	10 10 7	
Case 2 cover	Bolt Bolt	M6 M6	7 2	1,0 1,0	10 10	
Plate	Bolt	M6	1	0,7	7	
Point control cover	Bolt	M14	1	0,7	7	

TIGHTENING TORQUES

PARTS TO BE TIGHTENED	DESCRIPTION	THREAD MEASUREMENT	QUA.	TIGHTENING TORQUE		OBS.
				Kgf.m	N·m	
Central cover	Bolt	M32	1	0,7	7	Use tab washer
Primary gear	Nut	M12	1	7,0	70	
Pressure plate	Bolt	M8	4	0,6	6	
Clutch assembly	Nut	M12	1	6,0	60	
Activating rod	Nut	M6	1	0,8	8	
Plate	Nut	M6	2	0,7	7	
Pinion	Nut	M6	1	1,0	10	
Change pedal	Bolt	M6	1	1,0	10	
Follower	Bolt	M6	1	1,2	12	
Limiter rod	Bolt	M6	1	1,0	10	
Impulse coil assy.	Bolt	M6	2	1,0	10	
Neutral switch assy.	------	M10	1	0,13	1,3	
Stator	Bolt	M6	3	1,0	10	

TIGHTENING SEQUENCE



CHASSIS SPECIFICATIONS

CHASSIS SPECIFICATIONS

MODEL	SENDA 125 4-STROKE
STEERING SYSTEM	
Type of steering bearing	Rigid ball bearing
FRONT SUSPENSION	
Front forks travel	195 mm
Free length of forks spring	851 mm
<Limit>	845 mm
Spring force	9,6 N/mm
Travel	200,2 mm
Fluid/bar capacity	435 cm^3
Fluid level	200 mm
Type of fluid	SAE 7.5W hydraulic fork fluid or higher
REAR SUSPENSION	
Shock absorber travel	60 mm
Free length of spring	170 mm
Lengh of fitted spring	164 mm
Spring force	170 N/mm
REAR SWINGING ARM	
<Clearance limit> At the end	<1,0 mm>
Lateral	<1,0 mm>
FRONT WHEEL	
Type	Wheel with spokes
Wheel size	21"
Wheel material	Steel
<Wheel distorsion limit>	<0,5 mm>
Radial Lateral	<0,5 mm>
REAR WHEEL	
Type	Wheel with spokes
Wheel size	18"
Wheel material	Acero
<Wheel distorsion limit>	<0,5 mm>
Radial Lateral	<0,5 mm>
DRIVE CHAIN	
Number of links	134
Slackness	20 ~ 30 mm

CHASSIS SPECIFICATIONS

MODEL	SENDA 125 4T
FRONT DISK BRAKES	
Type	VENTILATED hydraulic disk
Disk width	3,5 mm
<Wear limit>	<3,0 mm>
Brake pad thickness	4,3 mm
<Wear limit>	<1 mm>
REAR DISK BRAKES	
Type	VENTILATED hydraulic disk
Inner diameter of brake drum	3,5 mm
<Wear limit>	<3,0 mm>
Brake shoe thickness	4,0 mm
<Wear limit>	<1 mm>
Free length of shoe spring	36,5 mm
LEVERS AND TWISTGRIP	
Brake lever play (at the end)	10 ~ 15 mm
Clutch lever play (at the end)	10 ~ 15 mm
Throttle twist grip play	2 ÷ 6 mm

ELECTRICAL SYSTEM SPECIFICATIONS

MODEL	SENDA 125 4-STROKE
VOLTAGE	12V
Ignition system:	
Ignition point (B.T.D.C.)	0° a 1.500 rpm
Advance type	Electric
DIU	
Model of magneto/manufacturer	5HH/MORYAMA
Impulse coil resistance	
(colour of the conductors)	310Ω ± 20% a 20° C (Red - White)
Field coil resistance	
(colour of the conductors)	860Ω ± 20% a 20° C (Brown - Green)
Model of DIU/ manufacturer	5HH/MORYAMA
IGNITION COIL	
Model	5HH
Primary winding resistance	0,3Ω ± 10% a 20° C
Secondary winding resistance	3,16Ω ± 10% a 20° C
SPARK PLUG CONNECTOR	
Type	Resin
Resistance	5KΩ ± 20% a 20° C
CHARGINGS SYSTEM	
Type	Magneto
Magneto	
Model/Manufacturer	5HH/MORYAMA
Charging voltage	14 ~ 15V / 500 rpm
Charging current	0,6 ~ 1,0 A
Charging coil resistance	
(colour of the conductors)	0,4Ω ± 20% a 20° C (White - Black)
LIGHTING VOLTAGE (Min)	12V / 3.000 rpm
(Max)	15V / 8.000 rpm
Light coil resitance	
(colour of the conductors)	0,35Ω ± 20% a 20° C (Yellow - Black)
RECTIFIER/REGULATOR	
Type	Short circuit type semiconductor
Model	4CK
Voltage regulated without charge	13 ~ 14V
Capacity	8 A
Resistance limit voltage	400V

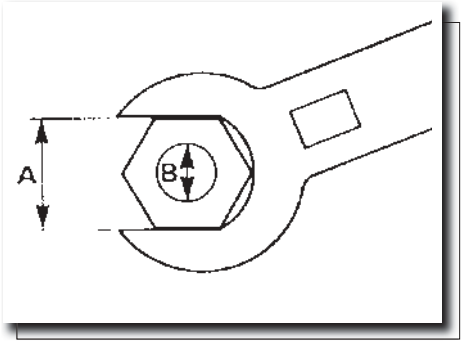
ELECTRICAL SYSTEM SPECIFICATIONS

MODEL	SENDA 125 4T
HORN	
Type	Flat
Quantity	1
Model	SM - 7
Maximum current	1,5 A (12V)
TURN INDICATOR RELAY	
Type	Semitransistor
Model	3XV
Self-cancelling	No
Frequency	60 ~ 120 cycles/minute
Power	10W x 2
SAFETY CIRCUIT	
Type	Fuse
Individual circuit current x quant.	
Main	15A x 1
Reserve	7,5A x 1
STARTER RELAY	
Type	Electromagnetic
Model	12V 80A
Nominal voltage	12
Minimum functioning voltage	8V
Coil resistance	40Ω ± 15%
STARTER MOTOR	
Output voltage	0,4 kw
Length of brushes	10 mm
<Limit>	<3,5 mm>
Spring pressure	0,7 Kgf ± 20% (6,9 N ± 20%)
Commutador diameter	22,0 mm
<Limit>	<21,0 mm>
Depth of the mica	1,5 mm

TIGHTENING TORQUE GENERAL SPECIFICATIONS

The following table specifies torques for standard ISO fixing devices. The torque specifications for special components or assemblies are indicated in the respective chapters of this manual.

To prevent distortions, tighten assemblies with various fixing devices progressively and in a crossed or alternating manner until the specified torque is reached. Unless stated otherwise, the specified torques require threads to be clean and dry. Components should be at room temperature.



A: Distance between flat surfaces.

B: Outer diameter of the thread.

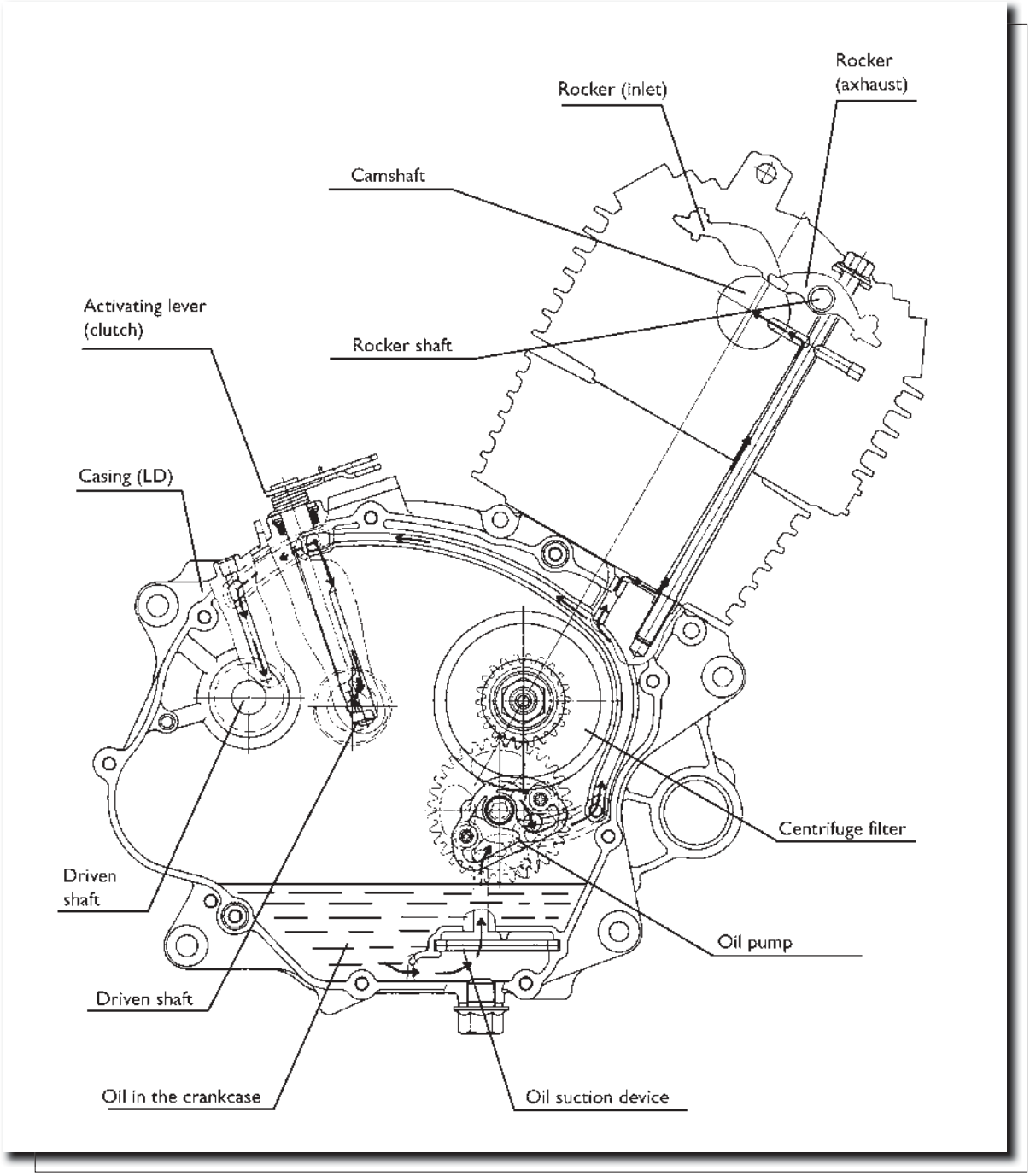
(A) NUT	(B) BOLT	GENERAL TORQUE SPECIFICATIONS		
		N·m	Kgf.m	ft.lb
10 mm	6 mm	6	0,6	4,3
12 mm	8 mm	15	1,5	11
14 mm	10 mm	30	3,0	22
17 mm	12 mm	55	5,5	40
19 mm	14 mm	85	8,5	61
22 mm	26 mm	130	13,0	94

LUBRICATION POINTS AND TYPES OF LUBRICATES

ENGINE

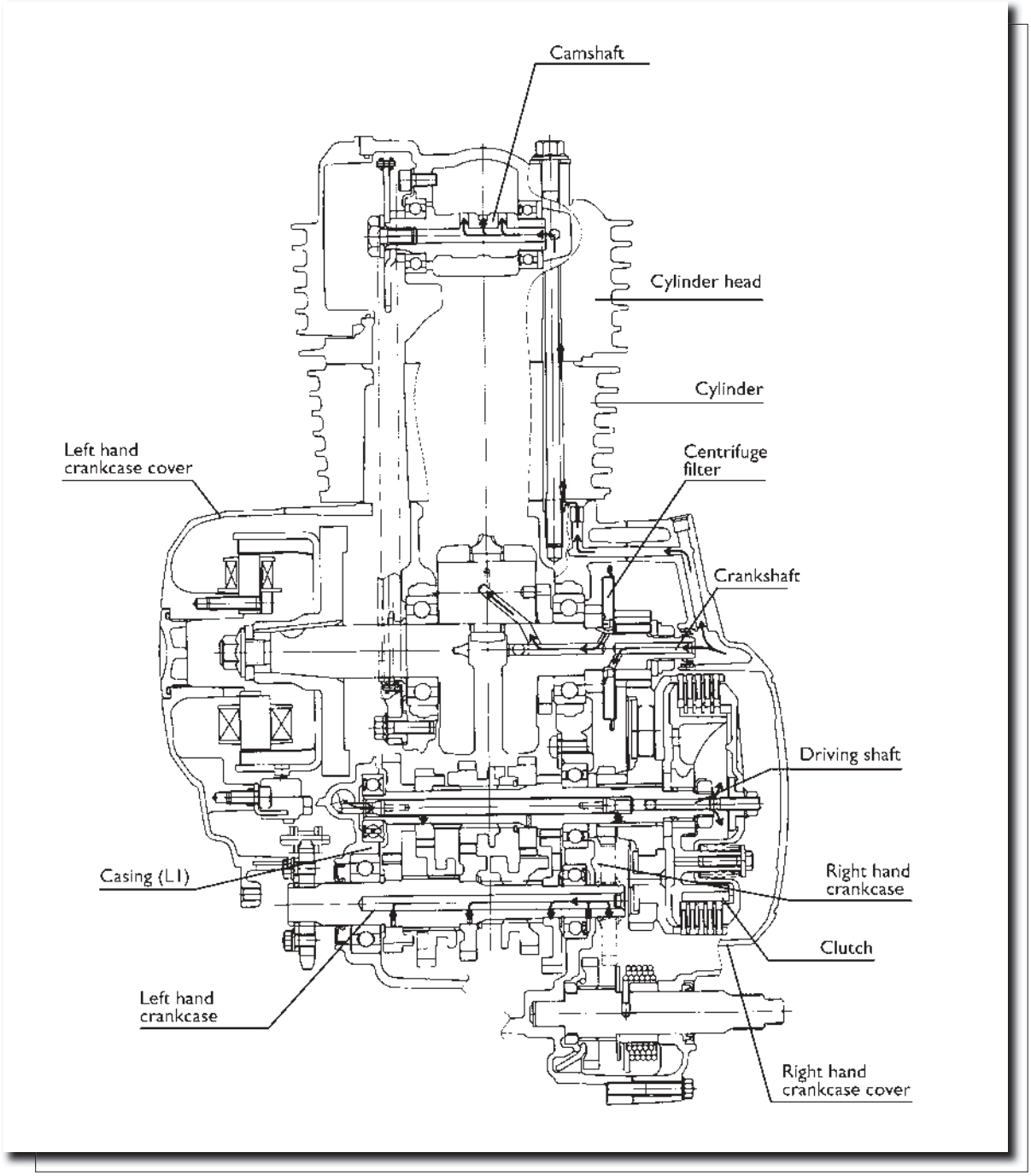
LUBRICATION POINTS	SYMBOL
Retention ring edges (all)	
Bearing locking device (all)	
Bolts (cylinder head)	
O-rings (cylinder head side cover and rocker cover)	
Crankshaft elbow joint	
Connecting rod (bottom)	
Piston and rings	
Pin	
Valve stem and valve guide	
Retaining ring (valve stem)	
Rocker shaft and rockers	
Cams and bearings (camshaft)	
Activating rod	
Clutch assembly and engine driveshaft	
Activating lever shaft	
Rotary filter and oil pump	
Sliding gears (transmission)	
Starter system shaft	
Driven shaft	
Changing fork and guide bar	
Gear selector and bearings (selector)	
Cases contact surfaces	
Case 1 cover and gasket	

LUBRICATION DIAGRAM



ATTENTION
DO NOT DAMAGE THE CRANKCASE COVER SURFACES, AS THIS WILL LEAD TO OIL LEAKAGES

LUBRICATION DIAGRAM



PERIODICAL INSPECTION AND ADJUSTEMTNTS

INTRODUCTION

This chapter contains all the necessary information for carrying out recommended inspections and adjustments. If followed correctly, these preventative maintenance procedures will ensure a reliable operation of the machine and a longer operating life. The need for costly servicing will be significantly reduced. This information applies not only to machines already in service but also new machines in preparation for being sold. All technical assistance staff should familiarise themselves with this chapter.

PERIODICAL MAINTENANCE/LUBRICATION INTERVALS

Nº	ELEMENT	SERVICE	KILOMETERS			
			1.000 km	Every 3.000 km	Every 6.000 km	Every 12.000 km
1	Valves*	Check clearance and adjust if necessary	○	○		
2	Spark plug	Check condition. Clean or replace if necessary.	○	○		Change
3	Carburettor*	Check idle speed, choke operation. Adjust if necessary.	○	○		
4	Air filter	Clean, inspect and lubricate. (replace if necessary).	○	○		Change
5	Fuel line	Inspect the fuel and vacuum hoses for cracks or other damage. Replace if necessary.			○	
6	Engine oil	Change (run engine till hot before draining the oil).	○	○		
7	Brake liquid	Change	Every 2 years			
8	Brake fluid level	Check	○		○	
9	Clutch	Check the alignment of the activating rod and casing marks (L1). Adjust if necessary.		○		
10	Swinging arm joint shaft*	Check if there is play in the swinging arm. Tighten to the specified torque if necessary.	○		○	Grease
11	Wheels*	Check for distortion, spokes tightness, damage. Correct if necessary.	○		○	

PERIODICAL INSPECTION AND ADJUSTEMTNTS

Nº	ELEMENT	SERVICE	KILOMETERS			
			1.000 km	Every 3.000 km	Every 6.000 km	Every 12.000 km
12.	Wheel bearing*	Check for clearance or damage to the bearings. Correct where necessary.			○	Grease
13	Steering bearings*	Check for clearance or damage to the bearings. Correct where necessary.	○		○	Grease
14	Front forks*	Check functioning and for oil leaks. Correct where necessary.			○	Change the oil.
15	Shock absorber*	Check functioning. Replace if necessary.			○	
16	Drive chain	Check slackness and alignment of the chain. Adjust if necessary. Clean and lubricate the chain.	Every 500 km.			
17	Nuts, bolts and fixing devices*	Check if the nuts, bolts and other fixing devices are at the specified tightness.	○			○
18	Prop stand	Check functioning and lubricate if necessary.	○		○	
19	Battery	Charge the battery if necessary.	○		○	
20	Throttle and Clutch control cables Front brakes	Check functioning, clearance or for damage to the cables.	○		○	
21	Front/rear brake pads	Check for wear.			○	
22	Discs and callipers	Adjust and check condition.			○	

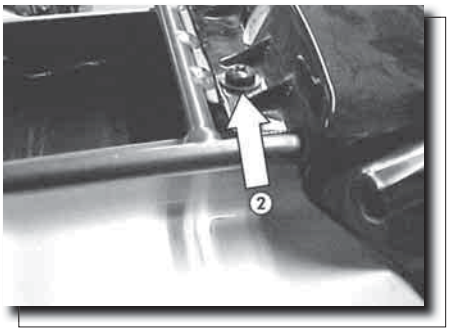
* It is recommended that these elements are checked by an authorised **DERBI** dealer.

SEAT, SIDE COVERS AND FUEL TANK

DISMANTLING

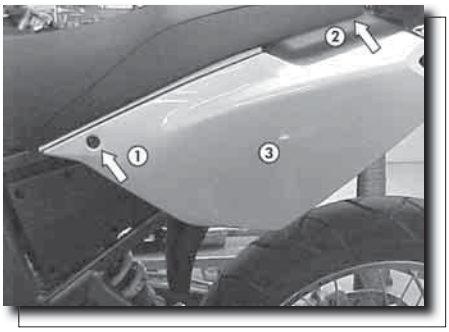
1. Extract:
- Seat.

N.B.
INSERT THE IGNITION KEY AND TURN IT A 1/4 TURN CLOCKWISE TO THE FRONT PART OF THE COVER. THE SEAT CAN NOW BE REMOVED.



2. Extract:
- Rear side cobres.

N.B.
UNSCREW SCREWS (1) AND (2) THEN REMOVE THE COVER, BEARING IN MIND THAT AT THE BACK (AT POINT (3) THERE IS A CLIP THAT SECURES THE COVER TO THE CHASSIS BY PRESSURE.



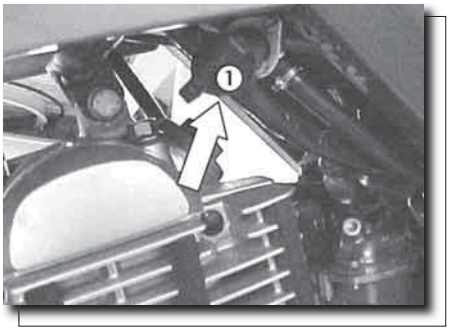
3. Extract:
- Front side covers.

N.B.
REMOVE SCREWS (1), (2), (3) AND (4). (SCREW (1) IS AT THE FRONT.

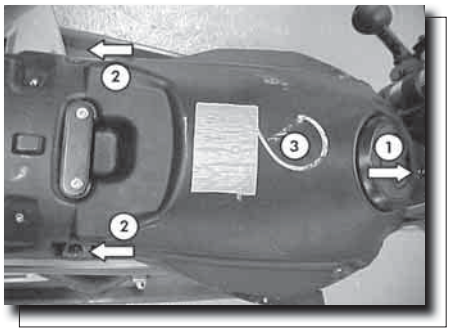
4. Closing:
- The fuel tap **(1)**.

N.B.
TURN THE FUEL TAP TO THE "OFF" POSITION AND DISCONNECT THE FUEL PIPE. PLACE A DRY CLOTH TO ABSORB ANY SPLASHING FUEL.

WARNING
PETROL IS HIGHLY INFLAMMABLE. AVOID SPILLING FUEL ON TO THE HOT ENGINE.



SEAT, SIDE COVERS AND FUEL TANK



OBSERVATION
THE TAP TURNED FULLY CLOCKWISE => **TAP OPEN**.

THE TAP TURNED FULLY ANTICLOCKWISE => **RESERVE**.

IN THE MIDDLE => **TAP CLOSED**.

5. Extract:
- Front bolt **(1)**.
- Side bolts **(2)**.
- Fuel tank **(3)**.

INSTALLATION

- This is a reversal of the "**REMOVAL**" procedure.
- Take note of the following points:

1. Fit:
- Depósito de combustible
- Bolt

2. Fit:
- Side covers (front and rear).

3. Fit:
- Seat

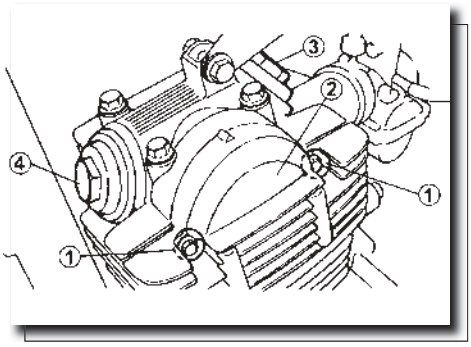
N.B.
INSERT THE PROJECTING PART AT THE BACK OF THE SEAT INTO ITS FITTING POSITION IN THE FRAME, AND THEN PUSH THE FRONT OF THE SEAT DOWNWARDS.

ENGINE

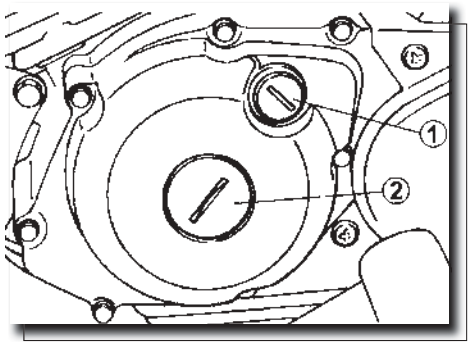
ADJUSTING THE VALVE CLEARANCE

N.B.
VALVE CLEARANCE ADJUSTMENT MUST BE DONE WITH THE ENGINE COLD AT ROOM TEMPERATURE. FOR ADJUSTING OR MEASURING VALVE CLEARANCE, THE PISTON MUST BE AT TOP DEAD CENTRE (TDC) ON THE COMPRESSION STROKE.

1. Extract:
- Spark plug.
- Bolts **(1)**.
- Cylinder head side cover **(2)**.
- Rocker cover (inlet) **(3)**.
- Rocker cover (exhaust) **(4)**.



2. Extract:
- Point control cover (with O-ring) **(1)**.
- Central cover (with O-ring) **(2)**.

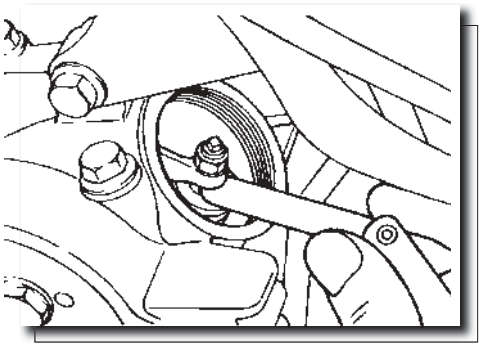


3. Measure:
- Valve clearance.

Outside that specified => **Adjust.**

Valve clearance (cold):
Inlet:
0,08 ~ 0,12 mm

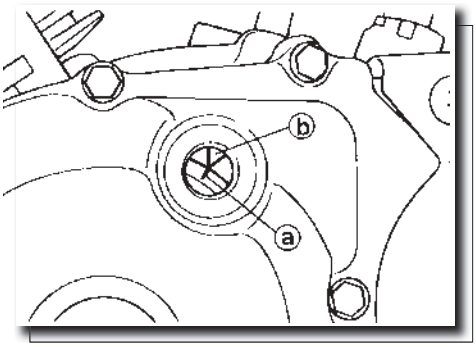
Exhaust:
0,10 ~ 0,14 mm



ENGINE

Steps for taking measurement:

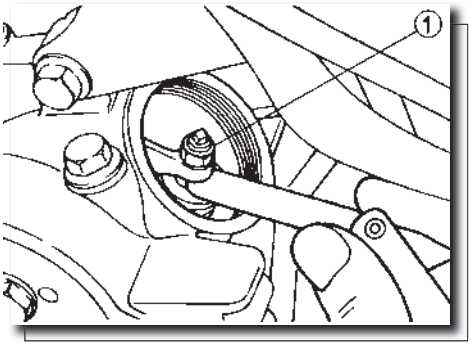
- Turn the crankshaft in an anticlockwise direction to align the mark (a) on the rotor with stationary point (b) on the casing cover (1), with the piston at top dead centre (TDC), and when the control gear mark is aligned with the cylinder head mark.



- Measure the valve clearance with a feeler gauge.

Outside that specified => **Adjust the clearance**.

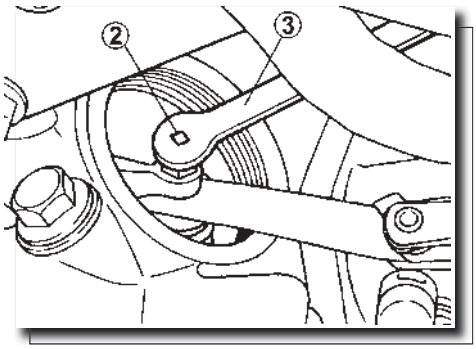
4. Adjust:
- Valve clearance.



Adjustment steps:
- Loosen lock nut **(1)** .

- Turn the adjuster **(2)** inwards or outwards with the valve clearance adjusting spanner **(3)** until the specified clearance is obtained.

Turning inwards = **Reducing the clearance.**
Turning outwards = **Incrasing the clearance.**



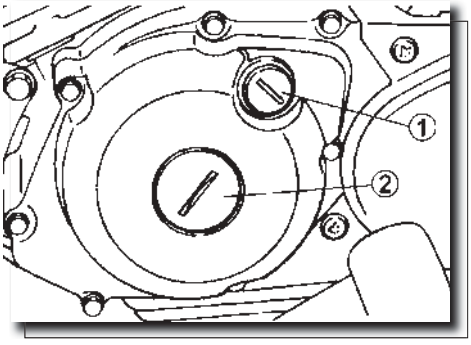
- Fit the adjuster to prevent it from turning and tighten the locknut.

Locknut:
0,8 Kgf.m (0,8 N.m)

- Measure the valve clearance.

- If the clearance is incorrect, repeat the above steps until the correct clearance is achieved.

5. Fit:
- Point control cover (with O-ring) **(1).**
- Central cover (with O-ring) **(2)**.

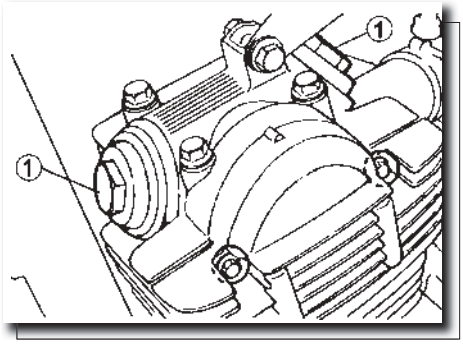


ENGINE

6. Fit:
- Rocker cover (with O-ring) **(1)**.
- Spark plug.
- Cylinder head side cover.

Rocker cover (inlet and exhaust):
1,75 kgf.m (17,5 N.m)

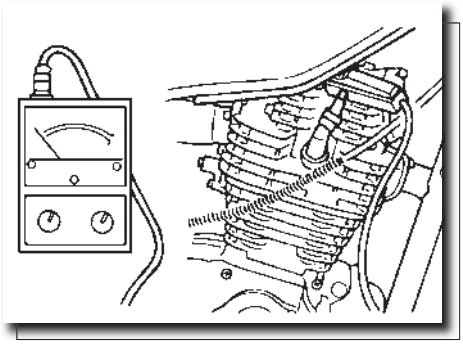
Bolts (Ccylinder head side cover):
1,0 kgf.m (10 N.m)



CO MEASUREMENT AND IDLE SPEED ADJUSTMENT

1. Start the engine and leave to warm up for a few minutes.

2. Connect:
- An inductive tachometer to the spark plug lead.

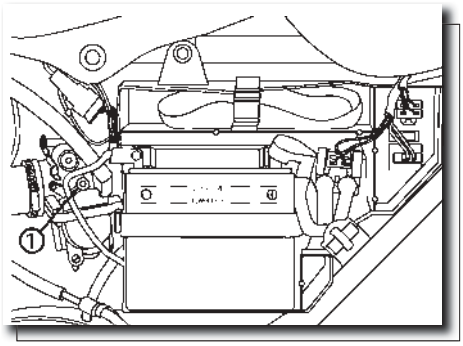


3. Check:
- Idle speed (standard).

Outside that specified => **Adjust.**

Turn the idle speed screw **(1)** inwards or outwards until the specified idle speed is obtained.

Idle speed:
1.300 ~ 1.400 rpm

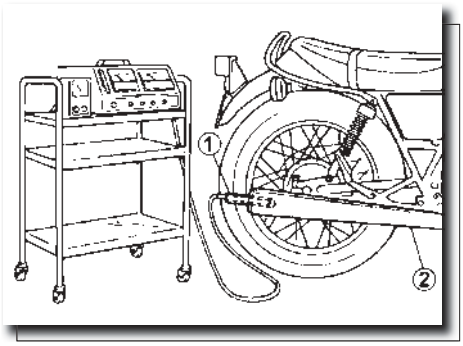


4. Fit:

- CO probe testing point **(1)** into the exhaust pipe **(2)**.

CO concentration:
3,0 ~ 5,0 %

Outside that specified => **Adjust**.

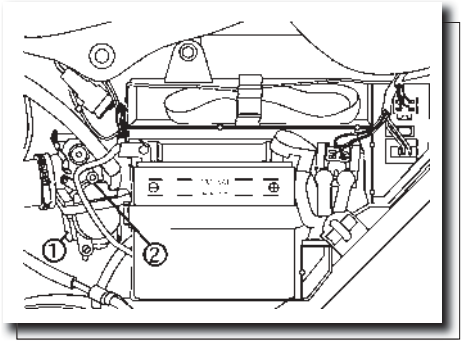


ENGINE

5. Adjust:
- CO concentration.

Adjustment steps:
- Turn the mixture screw **(1)** inwards or outwards until the specified CO concentration is obtained.

Adjustment band:
Rub probe point ~ up to 6 times outwards. .



N.B.
TURN THE IDLE SPEED SCREW (2) TO ADJUST THE ENGINE'S IDLE SPEED, SINCE THE CO CONCENTRATION ADJUSTMENT MAY AFFECT THE IDLE SPEED.

- After adjusting, check the CO concentration and remove the CO probe. Ensure that there are no variations in the idle speed.

ADJUSTING THE THROTTLE CABLE

N.B.
BEFORE ADJUSTING THE THROTTLE CABLE, THE IDLE SPEED MUST BE ADJUSTED.

1. Check:
- Throttle cable play **(a)**.

Outside that specified => **Adjust**.

Clearance:
2÷6 mm.
In the throttle twist grip plate.

2. Adjust:
- Throttle cable play.

Adjustment steps:

N.B.
NEVER OPEN THROTTLE WHILE THE ENGINE IS STOPPING.

ENGINE

- Loosen the throttle cable locknut **(2)**.

- Turn the adjuster **(3)** inwards or outwards until the specified play is obtained **(1)**.

Turning inwards **(a)** = **Increasing the play.**
Turning outwards **(b)** = **Reducing the play.**

- Tighten the lock nut.

N.B.
IF THE PLAY IS STILL INCORRECT, ADJUST IT USING THE ADJUSTER **(3)** BELOW THE TWIST GRIP.

WARNING
AFTER MAKING THE ADJUSTMENT, TURN THE HANDLEBARS BOTH WAYS TO ENSURE THAT THERE IS NO VARIATION IN THE IDLE SPEED.

INSPECTING THE SPARK PLUG

1. Extract:
- Spark plug connector.

- Spark plug.

ATTENTION
BEFORE REMOVING THE SPARK PLUG, BLOW AROUND IT WITH COMPRESSED AIR TO REMOVE ANY DIRT, THEREBY PREVENTING THE LATTER FROM FALLING INTO THE ENGINE.

2. Check:
- Spark plug type

Incorrect => **Replace.**

Standard park plug:
CR7HSA (NGK)/ U22 FSR-U (DENSE)

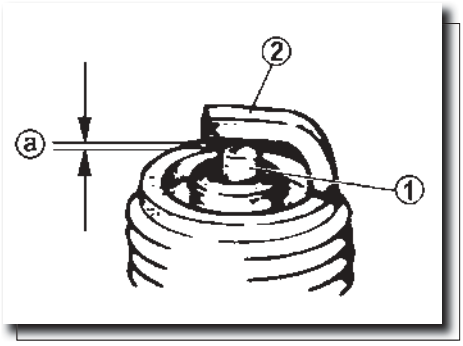
3. Inspect:
- Electrode **(1).**

Damaged/worn => **Replace.**

- Insulator **(2).**

Abnormal colour => **Replace.**

The normal colour is light brown.



ENGINE

4. Clean:
- Spark plug.
(Clean the spark plug with a spark plug cleaner or wire brush)

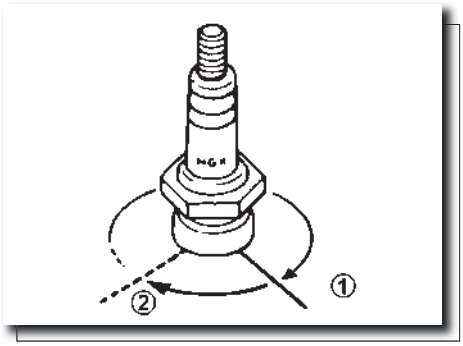
5. Measure:
- Gap between the electrodes **(a)**.
(using a feeler gauge)

Outside that specified => **Adjust the gap**.

Gap between the electrodes:
0,7 mm

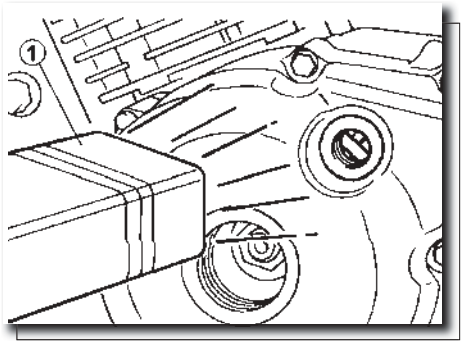
6. Fit:
- Spark plug.

Spark plug
1,25 kgf.m (12,5 N.m)



N.B.
- BEFORE FITTING THE SPARK PLUG, CLEAN ITS SEATING AND GASKET.
- IF NO TORQUE WRENCH IS AVAILABLE, A GOOD WAY OF JUDGING THE CORRECT TORQUE IS TO TIGHTEN **(1)** THE SPARK PLUG BY HAND AND THEN TIGHTEN IT FROM ¼ TO ½ A TURN.
- ALWAYS USE A NEW GASKET.

CHECKING IGNITION TIMING

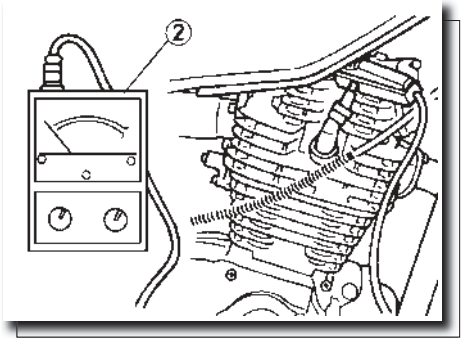


N.B
BEFORE CHECKING THE IGNITION TIMING, CHECK ALL THE ELECTRICAL CONNECTIONS LINKED TO THE IGNITION SYSTEM. ENSURE THAT CONNECTIONS ARE TIGHT AND CORROSION FREE AND THAT ALL EARTH CONNECTIONS ARE FIRMLY TIGHTENED.

1. Extract:
- Ignition control cover.

2. Fit:
- Stroboscopic lamp **(1)**.

- Inductive tachometer **(2)**.
(on the spark plug lead)

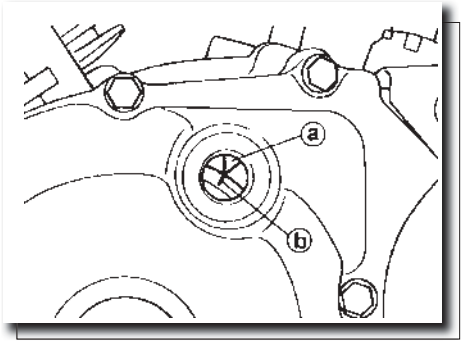


ENGINE

3. Check:
- Ignition timing.

Steps for checking:
- Start the engine and leave to warm up for a few minutes. Leave it running at the specified revs.

Idle speed:
1.300 ~ 1.400 rpm



- Check visually if the stationary point **(a)** is within the band **(b)** on the magneto flywheel.

Outside of the band => **Check the ignition system.**

N.B.
THE IGNITION POINT IS NOT ADJUSTABLE.

4. Fit:
- Point control cover (with O-ring).

ADJUSTING THE COMPRESSION PRESSURE

N.B.
AN INSUFFICIENT COMPRESSION PRESSURE RESULTS IN A LOSS OF POWER.

1. Check:
- Valve clearance.

Outside that specified => **Adjust.**

See **"VALVE CLEARANCE ADJUSTMENT"** section.

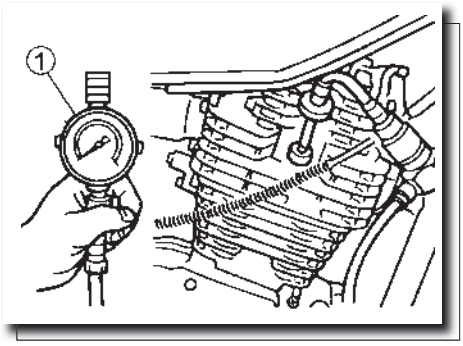
2. Start the engine and leave to warm up for a few minutes.

3. Stop the engine.

4. Extract:
- Spark plug.

ATTENTION
BEFORE REMOVING THE SPARK PLUG BLOW AROUND IT WITH COMPRESSED AIR TO REMOVE ANY DIRT, THEREBY PREVENTING THE LATTER FROM FALLING INTO THE ENGINE.

5. Fit:
- Compression meter **(1)**.



ENGINE

6. Measure:
- Compression pressure.

If the maximum permitted pressure is exceeded => **Inspect the head, valve surfaces and piston head for carbonising**.

If below the minimum pressure=> **Inject a few drops of oil into the cylinder and measure again**.

Follow the table below:

COMPRESSION PRESSURE (WITH OIL INJECTED INTO THE CYLINDER)	
READING	**DIAGNOSTIC**
More than without oil	Piston worn or damaged
The same as without oil	Possibility of defects in the piston rings, valves, head gaskets or piston = **repair**.

Compression pressure (at sea level):
Standard:
1.200 kPa (12 kg/cm^2)

Minimum:
1.040 kPa (10,4 kg/cm^2)

Steps for taking measurement:
- Start the engine with the throttle fully open, until the reading stabilises.

WARNING
BEFORE STARTING THE ENGINE CONNECT THE SPARK PLUG WITH HANDLE TO PREVENT SPARKS.

7. Fit:
- Spark plug.

ENGINE

INSPECT THE ENGINE OIL LEVEL

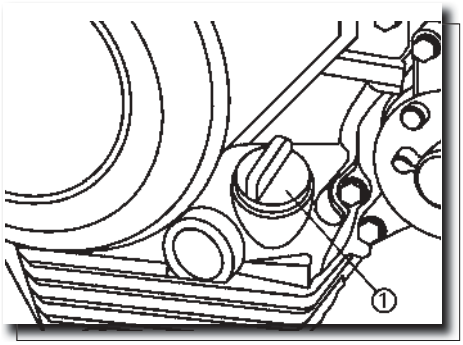
1. Put the motorcycle on a flan surface.

N.B.
MAKE SURE THE MOTORCYCLE IS VERTICAL WHEN CHECKING THE OIL LEVEL.

2. Start the engine and leave to warm up for a few minutes.

3. Stop the engine.

4. Remove the dipstick **(1)**. Clean it with a cloth then replace it in the oil filler hole without screwing in. Immediately remove it again.

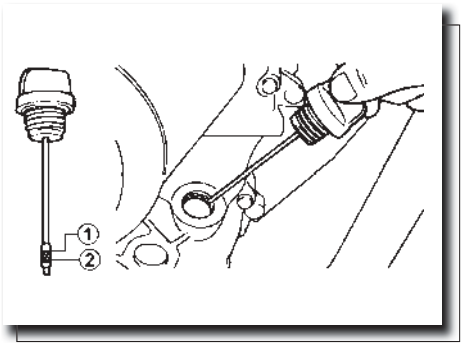


5. Check:
- The engine oil level.
The oil level should be between the maximum and minimum marks **(2)**.

Oil below the minimum level => **Add oil up to the correct level**

RECOMMENDED OIL FOR THE ENGINE

Recommended oil for the engine:
AGIP CITY 4T or equivalent.



6. the engine and leave to warm up for a few minutes.

7. Stop the engine.

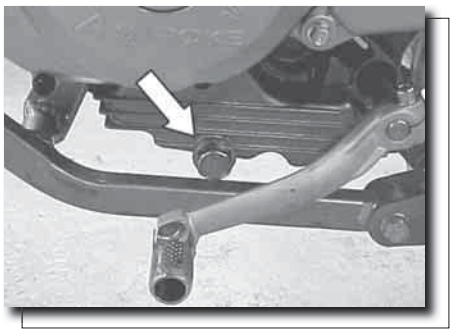
N.B.
WAIT A FEW MINUTES FOR THE OIL TO FLOW BACK DOWN BEFORE CHECKING THE OIL LEVEL.

CHANGING THE ENGINE OIL

1. Start the engine and leave to warm up for a few minutes.

2. Stop the engine and place a container under the engine.

3. Extract:
- Dipstick.
- Drain plug **(1)**.
- Gasket.
Drain the oil from the crankcase.



4. Fit:
- Drain plug **(1)**.
- Dipstick.

Drain plug :
2,0 Kgf.m (20 N.m)

ENGINE

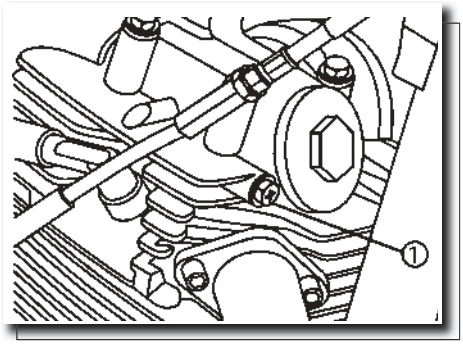
5. Replenish:
- Oil in the crankcase.

Quantity of oil:
1,0 L

6. Check:
- The engine oil level.

See **"INSPECT THE ENGINE OIL LEVEL"** section

OIL FLOW CHECK



1. Extract:
- Oil flow checking bolt **(1)**.

2. Start up the engine and keep it idling until the oil flows out of the bleed hole.

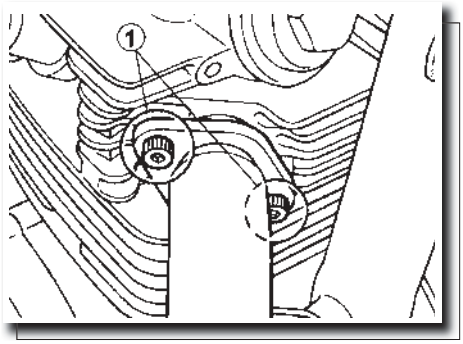
Oil flows => **Correct oil pressure.**
No oil flows => **Incorrect oil pressure.**

ATTENTION
IF NO OIL FLOWS AFTER A FEW SECONDS, STOP THE ENGINE IMMEDIATELY AND CHECK THE OIL PUMP SECTION.

3. Tighten:
- Oil flow checking bolt.

Oil flow checking bolt:
0,7 kgf.m (7N.m)

INSPECTING THE EXHAUST SYSTEM



1. Inspect:
- Bolt **(1)** (exhaust pipe)
Loose/damaged => **Tighten/replace**.

- Gasket (exhaust pipe).
Leaking exhaust fumes => **Tighten/replace**.

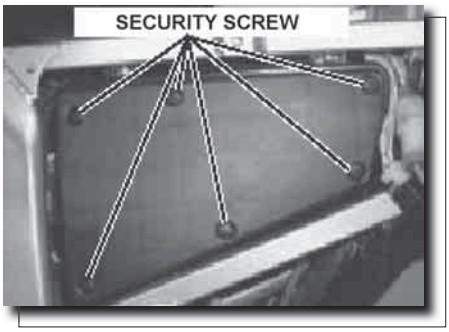
Bolt:
0,7 kgf.m (7N.m)

2. Inspect:
- Bolt 2.
Loose/damaged => **Tighten/replace**.

Bolt:
0,7 kgf.m (7N.m)

ENGINE

AIR FILTER REPLACEMENT



N.B.
IF THE MACHINE IS USED IN RAINY OR DUSTY CONDITIONS, THE FILTER SHOULD BE CHECKED AND REPLACED MORE FREQUENTLY THAN THAT SET OUT IN THE MAINTENANCE TABLE OR PROGRAMMED IN THE USE AND MAINTENANCE MANUAL.

Extract:
Proceed in the following way:

- Put the machine on the prop stand; to remove the left panel, remove the seat and the two panel bolts.

- Loosen the six fixing screws from the filter cover and remove it.

- Extract the foam air filter, wash it in soapy water, then wring it out and dry it completely. Next, soak it in special oil for filters and refit it.

Fitting:
- Fit in reverse order to dismantling.

- Refit the left side panel.

Recommended oil:
AGIP FILTER OIL

WARNING
NEVER USE PETROL TO CLEAN THE AIR FILTER ELEMENT. A SOLVENT OF THIS TYPE MAY CAUSE FIRE OR EXPLOSION.

CHASSIS

ADJUSTING THE CLUTCH

Check:
- Clutch cable play **(a)**.

Outside that specified => **Adjust.**

Clearance (clutch lever):
10 – 15mm at the end of the lever.

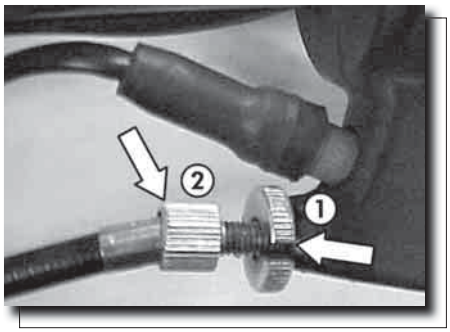
2. Adjust:
- Clutch cable play.

Adjustment steps:
Lever end
- Loosen the lock nut **(1)**.

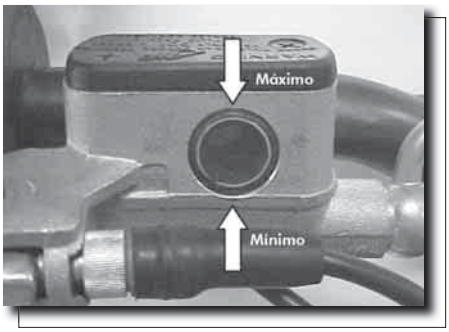
- Turn the adjuster **(2)** inwards or outwards until the specified clearance is obtained **(1)**.

Turning inwards **(a)**= **Increasing the clearance.**
Turning outwards **(b)** = **Reducing the clearance.**

- Tighten the lock nut **(1).**



ADJUSTING THE FRONT BRAKES

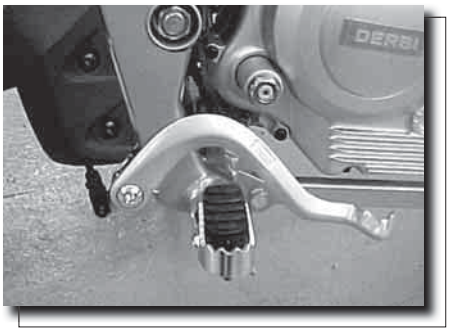


This machine is fitted with hydraulically activated disk brakes.
This type of brakes comes with adjustment factory set.
You must check that the brake fluid level is between the maximum and minimum

N.B.
REMEMBER THAT THE LEVEL WILL BE AFFECTED BY THE DEGREE OF BRAKE PAD WEAR.

CHASSIS

ADJUSTING THE REAR BRAKES



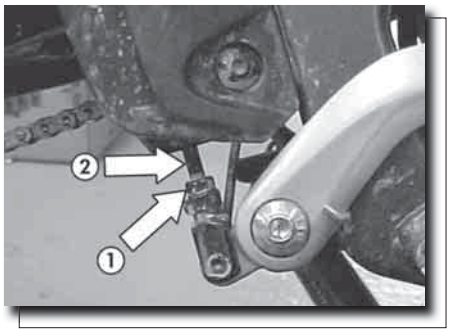
1. Check:
- Brake pedal clearance **(a)**.

Outside that specified => **Adjust.**

Clearance:
5 - 10 mm

2. Adjust:
- Brake pedal clearance.

Adjustment steps:
Unscrew the nut **(1)**:



Raise or lower the activator (2) to decrease or increase the lever free clearance.

ATTENTION
ENSURE THAT THE BRAKES ARE NOT BINDING AFTER ADJUSTING THE CLEARANCE.

3. Adjust:
- Brake light switch.

See "**ADJUSTING BRAKE LIGHT SWITCH**" section.

INSPECTING THE BRAKE PADS

1. Apply the brake pedal or lever.

2. Inspect:
- Pads.

- Measure the brake pad lining thickness. If either of them is below the service limit => **replace both pads**.

Service limit (lining) => **1mm**.

CHASSIS

AJUSTING BRAKE LIGHT SWITCH

N.B.
THE BRAKE LIGHT SWITCH IS ACTIVATED BY MOVING THE BRAKE PEDAL.

ADJUSTMENT IS CORRECT WHEN THE BRAKE LIGHT COMES ON IMMEDIATELY BEFORE THE BRAKING EFFECT.

The brake light switch cannot be adjusted independently.

Therefore the only way of adjusting the moment that the brake light comes on is by adjusting the free clearance of the pedal.

N.B.
THE BRAKE LEVER CLEARANCE SHOULD NEVER BE ADJUSTED BEYOND THAT SPECIFIED TO ADJUST THE BRAKE LIGHT SWITCH.

AJUSTING THE DRIVE CHAIN TENSION

N.B.
BEFORE CHECKING AND/OR ADJUSTING, TURN THE BACK WHEEL VARIOUS TURNS AND CHECK THE TENSION AT VARIOUS POINTS UNTIL YOU FIND THE PLACE WHERE THE CHAIN IS TIGHTEST.

CARRY OUT THE CHECK WITH THE REAR WHEEL AT THIS POINT WHERE THE CHAIN IS TIGHTEST.

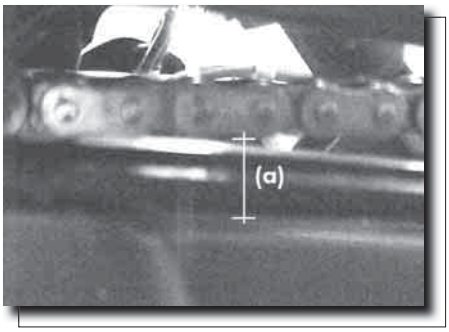
ATTENTION
A CHAIN THAT IS TOO TIGHT PLACES A STRAIN ON THE ENGINE AND OTHER PARTS. KEEP THE TENSION WITHIN THE SPECIFIED LIMITS.

WARNING
ENSURE THAT THE MOTORCYCLE IS SUPPORTED FIRMLY AND THERE IS NO RISK OF IT FALLING.

LEAVE THE MOTORCYCLE ON THE CENTRE STAND.

CHASSIS

1. Put the motorcycle on the centre stand.

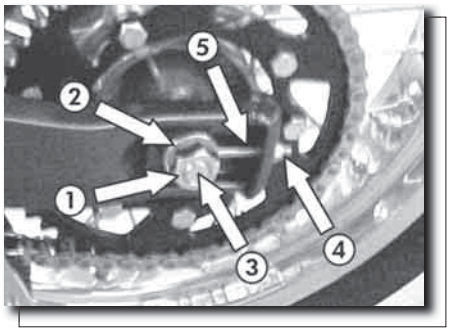


2. Check:
- Drive chaIn tension **(a)**.

Outside that specified => **Adjust**.
(distance between the chain guide and the furthest point vertically)

Drive chain tension:
20 ~ 30 mm

3. Loosen:
- Axle nut **(1)**.
- Washer **(2)**.



4. Loosen:
- Axle **(3)**.

5. Adjust:
- Drive chain tension.

Adjustment steps:
- Loosen both locknuts **(4)**.

- Turn the adjuster **(5)** inwards or outwards until the specified tension is obtained.

N.B.
ALSO TURN EACH CHAIN TENSIONER TO MAINTAIN THE CORRECT ALIGNMENT.
BEFORE TIGHTENING THE AXLE NUT TO THE SPECIFIED TORQUE, ENSURE THAT THERE IS NO CLEARANCE IN THE TENSIONER OR IN THE SWINGING ARM) ON BOTH SIDES, BY PUSHING THE WHEEL FORWARDS.

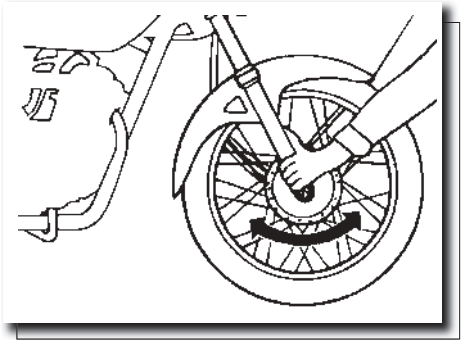
Nut (rear wheel axle):
8 kgf.m (80 N.m)

6. Adjust:
- Brake pedal clearance.

See **"BRAKE PEDAL CLEARANCE"** section.

CHASSIS

INSPECTING THE STEERING BOX



WARNING
SUPPORT THE MOTORCYCLE FIRMLY SO THAT THERE IS NO RISK OF IT FALLING.

1. Lift up the front wheel by putting a suitable support under the engine.

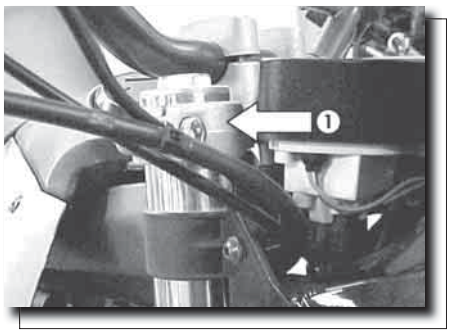
2. Check:
- Handlebars.
Hold the handlebars and turn the steering from end stop to end stop.

Loose => **Adjust the handlebars**.

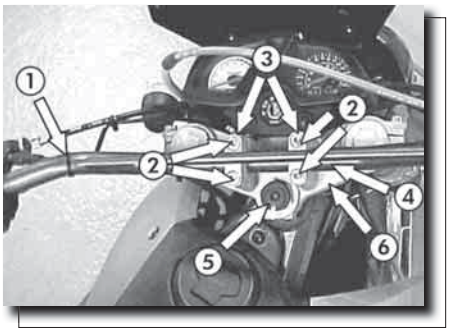
- Steering box bearings.
Hold the end of the front forks and gently swing the forks assembly.

Loose => **Adjust the steering box**.

3. Loosen:
- Bolts (top plate) **(1)**.



4. Loosen:
- Clamps **(1)**.
- Bolts (handlebar top fixing bolts) **(2)**.
- Handlebar top fixing bolts **(3)**.
- Handlebars **(4)**.
- Top plate nut **(5).**
- Top plate **(6).**

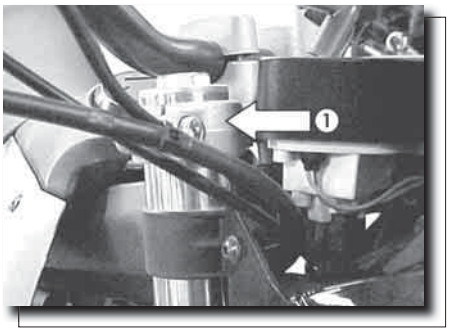


5. Inspect:
- Steering box.

N.B.
THE STEERING BEARINGS ARE BUILT INTO THE CHASSIS.

CHASSIS

6. Fit:
- Top plate.
- Top plate nut.
- Handlebars.
- Handlebar top fixing bolts.
- Bolts (handlebar top fixing bolts).
- Plastic bands.



See the **"STEERING BOX AND HANDLEBARS"** section in **CHAPTER 6**.

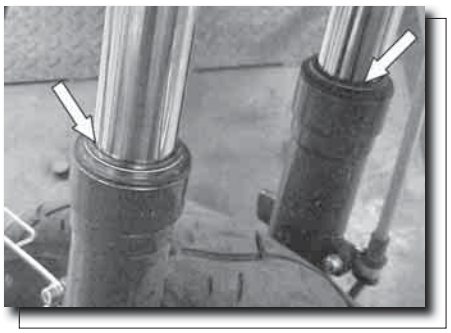
Nut (plate nut):
9 - 13 kgf.m (90 ~ 130 N·m)

Bolts (handlebar top fixing bolts):
2 - 2,4 kgf.m (20 - 24 N·m)

7. Tighten:
- Bolts (top plate) **(1)**.

Bolts (top plate):
2 - 2,4 kgf.m (20 - 24 N·m)

INSPECTING THE FRONT FORKS



WARNING
SUPPORT THE MOTORCYCLE FIRMLY SO THAT THERE IS NO RISK OF IT FALLING.

1. Put the motorcycle on a flat surface.

2. Check:
- Inner tube.

Scratches/damage => **Replace**.

- Retaining ring.

Excessive oil leakage => **Replace**.

Secure the motorcycle in the vertical position and apply the front brakes.

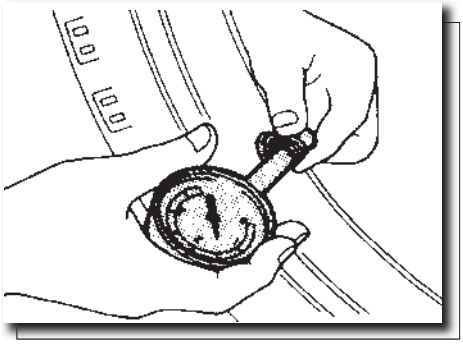
3. Check:
- Functioning.
Push the handlebars down several times.

Irregular functioning => **repair.**

See **"FRONT FORKS"** in **CHAPTER 6**.

CHASSIS

INSPECTING THE TYRES



1. Measure:
- Tyre pressure

Outside that specified => **Adjust.**

WARNING
TYRE PRESSURE SHOULD ONLY BE CHECKED OR ADJUSTED WHEN THEIR TEMPERATURE IS THE SAME AS AMBIENT TEMPERATURE. THE TYRES AND SUSPENSION SHOULD BE ADJUSTED IN ACCORDANCE WITH THE TOTAL LOAD – RIDER, PILLION PASSENGER AND ACCESSORIES (COVERS, SIDEBAGS, ETC. IF THESE ARE APPROVED FOR THIS MODEL) AND IN ACCORDANCE WITH THE RIDING SPEED OF THE MOTORCYCLE.

NEVER OVERLOAD THE MOTORCYCLE.

RIDING AN OVERLOADED MOTORCYCLE MAY CAUSE DAMAGE TO THE TYRES, ACCIDENTS OR INJURY.

BASIC WEIGHT: With oil and full fuel tank	114 Kg

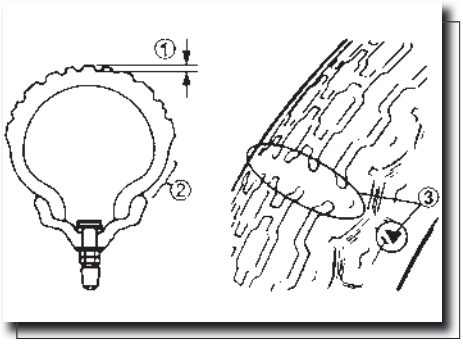
TYRE PRESSURE (COLD)		**FRONT TYRE**	**REAR TYRE**
SENDA R	Rider alone	1,4 kg/cm² 140 kPa	1,7 kg/cm² 170 kPa
	With pillion passenger	1,5 kg/cm² 150 kPa	1,8 kg/cm² 180 kPa
SENDA SM	Rider alone	1,0 kg/cm² 100 kPa	1,1 kg/cm² 110 kPa
	With pillion passenger	1,2 kg/cm² 120 kPa	1,3 kg/cm² 130 kPa

2. Inspect:
- Tyre surfaces.

Damaged/worn => **Replace**.

Minimum tread depth:
0,8 mm

(1) Tread
(2) Side wall.
(3) Wear indicator.



CHASSIS

WARNING
IT IS DANGEROUS TO RIDE WITH WORN TYRES. WHEN THE TYRE TREAD BEGINS TO SHOW SIGNS OF WEAR, THE TYRES SHOULD BE REPLACED IMMEDIATELY.

MENDING A PUNCTURED INNER TUBE IS NOT RECOMMENDED. IF IT IS ABSOLUTELY NECESSARY TO DO SO, TAKE GREAT CARE, AND REPLACE THE INNER TUBE WITH A GOOD QUALITY ONE AS SOON AS POSSIBLE.

DO NOT USE TUBELESS TYRES ON A WHEEL RIM DESIGNED FOR TUBED TYRES. THE TYRE MAY FAIL, AND THE RESULTING BLOW-OUT MAY CAUSE AN ACCIDENT.

Wheel rims for tubed tyres => **use only tubed tyres**.

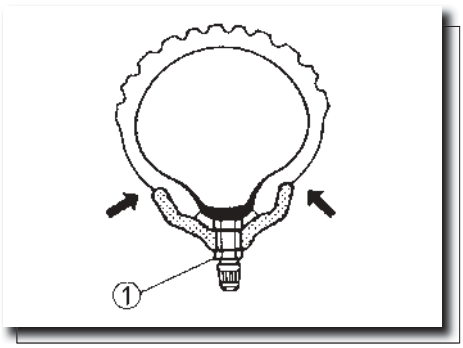
Wheel rims for tubeless tyres => **use only tubeless tyres**.

- Ensure that the tube is correctly fitted when using inner tubes.

WARNING
AFTER FITTING THE TYRE, RIDE MODERATELY FOR A PERIOD OF TIME, SO AS TO ALLOW THE TYRE TO ADJUST ITSELF CORRECTLY TO THE WHEEL RIM. FAILURE TO DO SO MAY RESULT IN ACCIDENTS WITH POSSIBLE INJURY TO THE RIDER OR DAMAGE TO THE MOTORCYCLE.

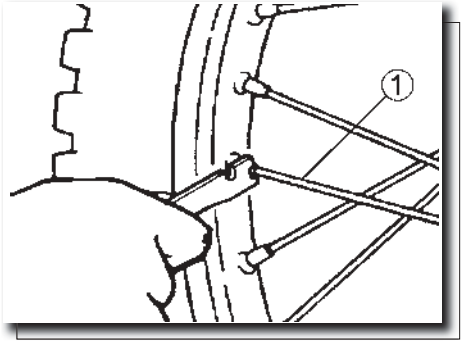
2. After a repair or replacement of a tyre, ensure that the valve stem locknut (1) has been tightened in accordance with the specification.

Locknut:
0,15 kgf.m (1,5 N.m)



CHASSIS

INSPECTING AND TIGHTENING THE SPOKES



1. Inspect:
- Spokes **(1)**.

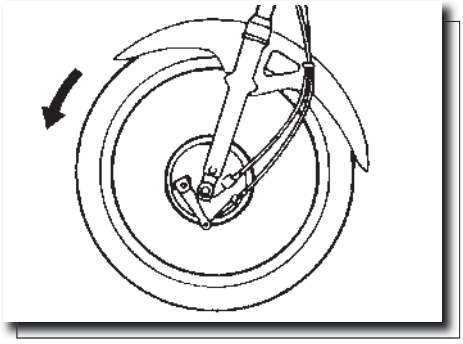
Warping/damage => **replace.**
Loose spokes => **Retighten**.

2. Tighten:
- Spokes.

N.B.
BE SURE TO TIGHTEN THE SPOKES BEFORE AND AFTER INITIAL RUNNING-IN.

Tension:
0,2 kgf.m (2 N.m)

INSPECTING THE WHEELS

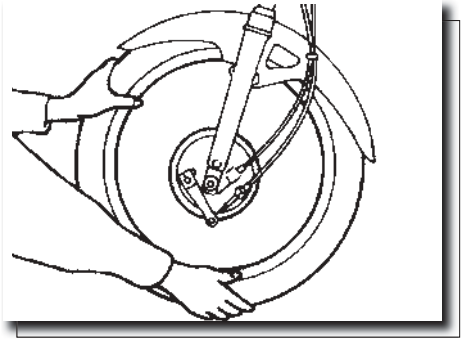


1. Inspect:
- Wheels.

Damaged/distorted => **Replace**

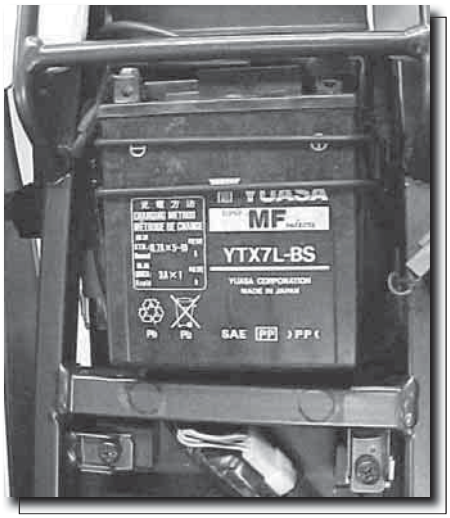
N.B.
ALWAYS CARRY OUT WHEEL BALANCING WHEN A TYRE OR A WHEEL IS FITTED OR REPLACED.

WARNING
NEVER TRY TO MAKE REPAIRS TO A WHEEL.



ELECTRICAL SYSTEM

INSPECTING THE BATTERY



1. Extract:
- Seat.

See **"SEAT, SIDE COVERS AND FUEL TANK"** section.

2. Inspect:
- Battery terminals.

Dirtiness => **Clean with wire brush**.
Poor connection => **Put right**.

N.B.
AFTER CLEANING THE TERMINALS, APPLY A THIN LAYER OF GREASE TO THEM.

Replace the battery if:
- The voltage falls below a specific value.

ATTENTION
BEFORE USING A NEW BATTERY, IT SHOULD ALWAYS BE FULLY CHARGED TO ENSURE BEST PERFORMANCE.

3. Fit:
- Battery.

4. Connect:
- Battery cables.

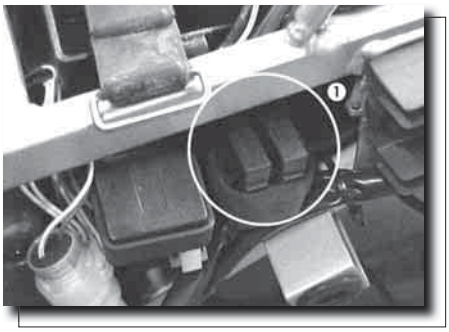
ATTENTION
CONNECT THE POSITIVE CABLE (1)TO THE BATTERY FIRST AND THEN THE NEGATIVE CABLE(2).

5.Fit:
- Cover.
- Seat.

See **"SEAT, SIDE COVERS AND FUEL TANK"** section.

ELECTRICAL SYSTEM

INSPECTING THE FUSES



ATTENTION
ALWAYS DISCONNECT THE MAIN SWITCH WHEN INSPECTING OR REPLACING A FUSE. FAILURE TO DO SO MAY RESULT IN A SHORT CIRCUIT.

1. Extract:
- Rear left side cover.

See **"SEAT, SIDE COVERS AND FUEL TANK"** section.

- Fuse box **(1)**.

2. Inspect:
- Fuse.

Inspection steps:
- Connect the multimeter to the fuse to check if there is a circuit.

N.B.
ADJUST THE MULTIMETER SELECTOR TO Ω X.

If the meter indicates ∞, replace the fuse.

3. Replace:
- Blown fuse.

Replacement steps:
- Disconnect the main switch.

- Fit a new fuse with the correct amperage.

- Turn on the switches to check the functioning of the corresponding electrical devices.

- If the fuse blows again immediately, inspect the electrical circuit.

WARNING
NEVER USE A FUSE WITH AN AMPERAGE OTHER THAN THAT SPECIFIED. NEVER USE OTHER MATERIALS INSTEAD OF A FUSE. AN INCORRECT FUSE MAY CAUSE MAJOR DAMAGE TO THE ELECTRICAL SYSTEM, MALFUNCTIONING OF THE LIGHTS AND IGNITION, AND MAY ALSO CAUSE A FIRE.

ELECTRICAL SYSTEM

4. Fit:
- Fuse box.
- Rear left side cover.

See "**SEAT, SIDE COVERS AND FUEL TANK**" section.

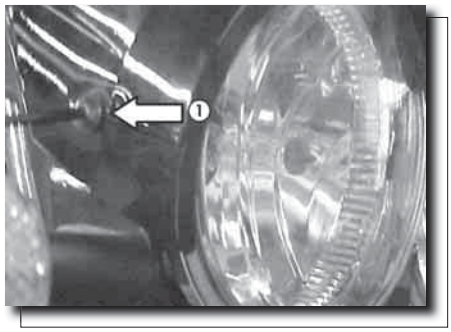
ADJUSTING THE HEADLIGHT BEAM

1. Adjustment:
- Headlight beam.

Adjust the headlight beam using the screw (1) situated at the bottom of the headlight.

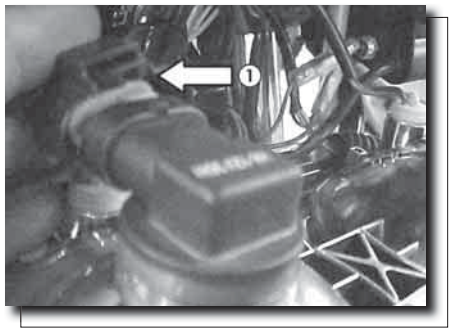
N.B.
TIGHTENING => **LOWERING THE BEAM**
LOOSENING => **RAISING THE BEAM**

REPLACING THE HEADLIGHT BULBS



1. Extract:
- Screws (both sides).

The headlight assembly can now be withdrawn forwards.



2. Disconnect:
- Main beam/dip feed cable **(1)**.
- Sidelight feed cable **(2)**.

Remove the bulb:
Main beam/dip => **Turn a quarter turn anticlockwise and lift out the bulb.**

Sidelight => **Pull out the bulb vertically (the bulb holder is made of rubber).**

ELECTRICAL SYSTEM

WARNING
KEEP INFLAMMABLE PRODUCTS AND HANDS AWAY FROM THE BULB WHILE IT IS LIT, BECAUSE IT IS HOT. DO NOT TOUCH IT UNTIL IT COOLS DOWN.

4. Fit:

- Bulb.

ATTENTION
AVOID TOUCHING THE BULB GLASS. KEEP FREE OF OIL. IF NOT, THE TRANSPARENCY OF THE GLASS, THE LIFETIME OF THE BULB AND THE AMOUNT OF LIGHT EMITTED WILL BE AFFECTED. IF THE BULB BECOMES SOILED WITH OIL, CLEAN IT CAREFULLY WITH A DAMP CLOTH OR WITH ALCOHOL OR THINNER.

ENGINE INSPECTION

DISMANTLING THE ENGINE

N.B.
IT IS NOT NECESSARY TO REMOVE THE ENGINE TO REMOVE THE FOLLOWING COMPONENTS:
- CYLINDER HEAD
- CYLINDER
- PISTON
- CLUTCH
- MAGNETO

DISMANTLING THE SIDE COVERS AND FUEL TANK

1. Extract:
- Front side covers.
- Seat.
- Fuel tank.

See **"SEAT, SIDE COVERS AND FUEL TANK"** section in **CHAPTER 3**.

ENGINE OIL

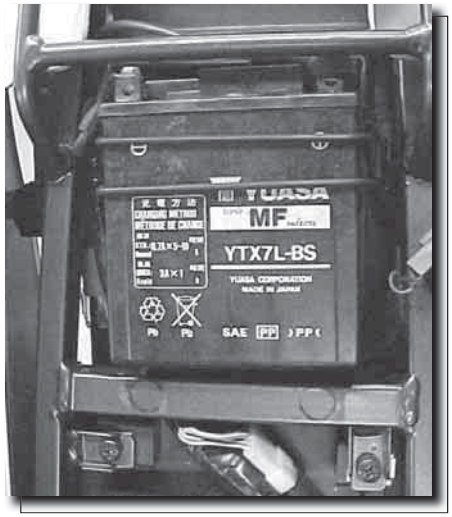
1. Drain:
- Engine oil.

See the **"CHANGING ENGINE OIL"** section in **CHAPTER 3**.

BATERÍA

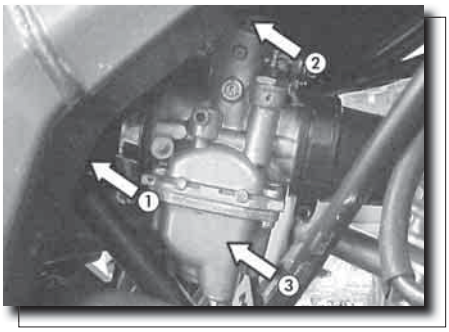
1. Disconnect:
- Battery.

ATTENTION
FIRST DISCONNECT THE NEGATIVE CABLE **(1)** FROM THE BATTERY AND THEN THE POSITIVE CABLE **(2)**.



ENGINE INSPECTION

CARBURETTOR



1. Disconnect:
- Carburettor breather pipe **(1)**.
- Throttle cable **(2)**.

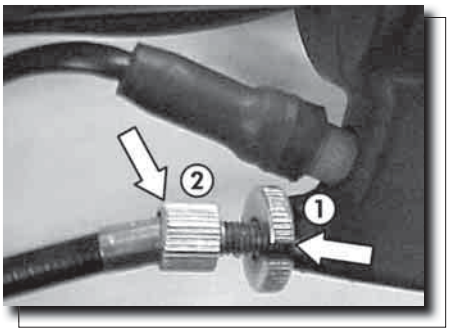
Disconnect from the right hand side of the motorcycle.

2. Remove:
- Carburettor (3).

See the **"CHANGING ENGINE OIL"** section in **CHAPTER 5**.

N.B.
COVER THE CARBURETTOR WITH A CLEAN CLOTH TO PREVENT DIRT FROM FALLING INSIDE.

CLUTCH CABLE



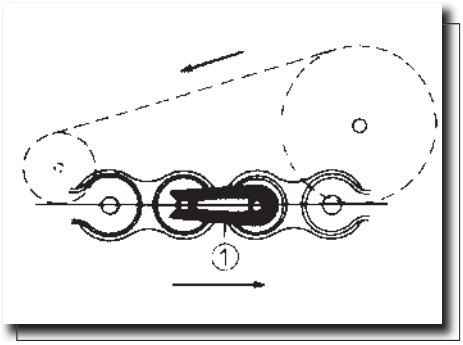
1. Extract:
- Clutch cable.

Steps for removal:
- Loosen the locknut **(1)** on the lever side.

- Turn the adjuster **(2)** enough to free the cable from the clutch.

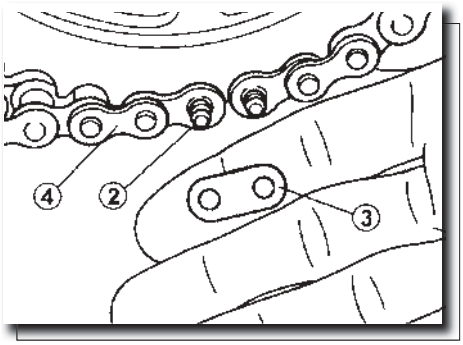
- Disconnect the end of the cable from its fixing point at the casing end.

DRIVE CHAIN



1. Locate:
- The chain connector link.

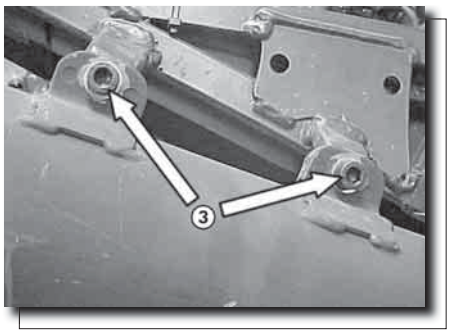
2. Extract:
- The connector link clip **(1)**.
- The connector link plate **(3)**.
- The connector link **(2)**.



3. Extract:
- Drive chain (4).

ENGINE INSPECTION

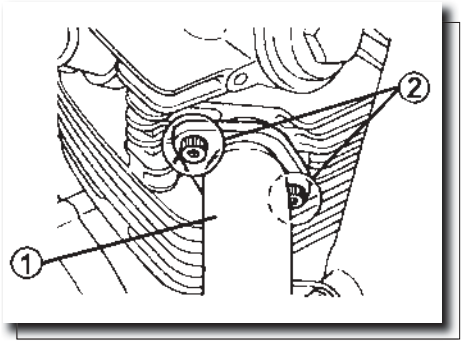
EXHAUST SILENCER



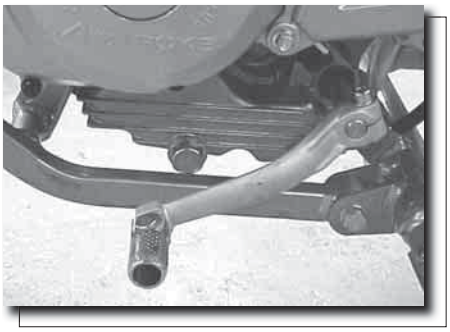
1. Extract:
- Bolt (exhaust pipe) **(2)**.
- Bolt (silencer) **(3)**.

See the **"EXHAUST SYSTEM"** section in **CHAPTER 3**.

2. Extract:
- Rear right side cover.
- Exhaust silencer.



GEAR CHANGE PEDAL



1. Extract:
- Gear change pedal **(1)**.

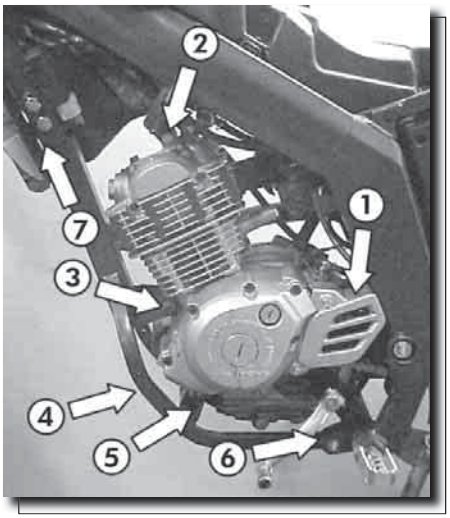
CONDUCTORS

1. Disconnect:
- Stator coil connector.
- Impulse coil connector.
- Neutral switch connector.

2. Extract:
- Spark plug connector.

ENGINE INSPECTION

DISMANTLING THE ENGINE



1. Place a suitable support under the engine frame.

WARNING
SUPPORT THE MOTORCYCLE FIRMLY, SO THAT THERE IS NO RISK OF IT FALLING.

2. Extract:
- Engine securing bolt (centre) **(3)**.
- Engine securing bolt (lower) **(5)**.
- Engine securing bolt (upper) **(7)**.
- Bolt (securing - lower) **(6)**.
- Engine mounting **(4)**.
- Starter motor.
- Starter motor conductor support.

3. Extract:
- Engine securing bolt (rear) **(3)**.
- Bolt (top engine mounting bracket) **(2)**.

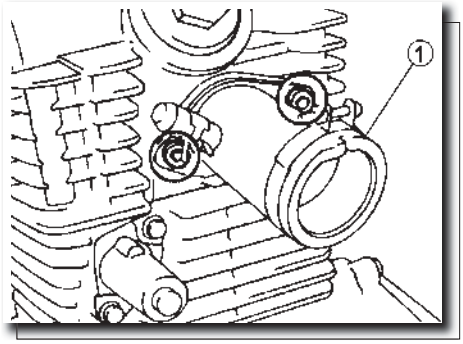
4. Extract:
- Engine assembly (from the right hand side of the motorcycle).

ATTENTION
COVER THE ENGINE ASSEMBLY WITH A CLOTH TO PREVENT IT FROM BEING SCRATCHED.

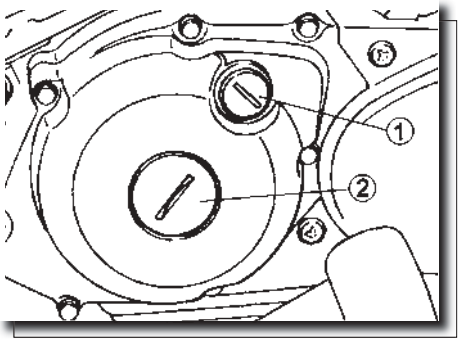
ENGINE DISMANTLING

CYLINDER HEAD, CYLINDER AND PISTON

N.B.
WITH THE ENGINE MOUNTED ON THE FRAME, THE CYLINDER HEAD, CAMSHAFT AND CYLINDER CAN BE CHECKED BY DISMANTLING THE FOLLOWING PARTS:
- SEAT
- SIDE COVERS
- FUEL TANK
- EXHAUST PIPE
- CARBURETTOR
- CLUTCH CABLE.
- SPARK PLUG LEAD
- ENGINE MOUNTING BRACKET

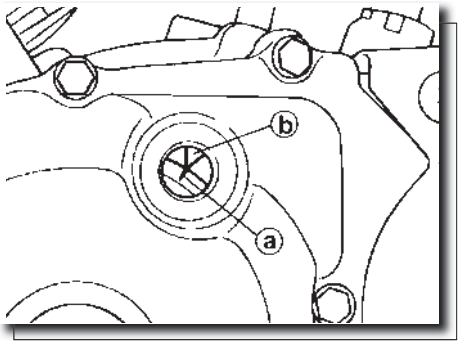


1. Extract:
- Spark plug.
- Inlet manifold **(1)**.



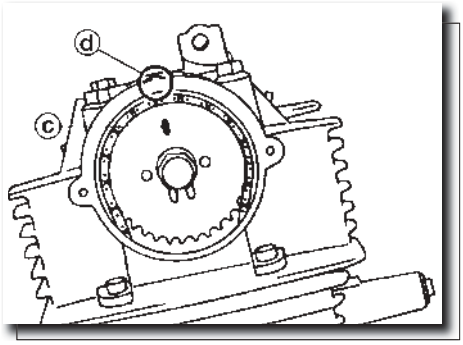
2. Extract:
- Timing checking cover (with O-ring**) (1)**.
- Central cover (with O-ring) **(2)**.

3. Extract:
- Rocker cover (with O-ring).
- Cylinder head side cover (with O-ring).



4. Align:
- The mark (a) on the magneto with the stationary point on the casing cover).

N.B.
TURN THE CRANKSHAFT IN AN ANTICLOCKWISE DIRECTION USING A SPANNER.



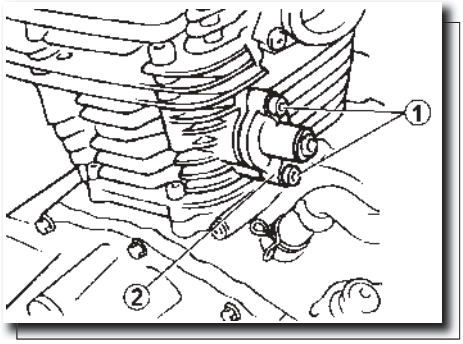
Steps for aligning with T.D.C.:
- Turn the crankshaft anticlockwise until the mark (a) is lined up with the stationary point (b).

- Align the mark "I" (c) on the drive sprocket with the stationary point (d) on the cylinder head. In this way the piston will be at top dead centre (T.D.C.).

ENGINE DISMANTLING

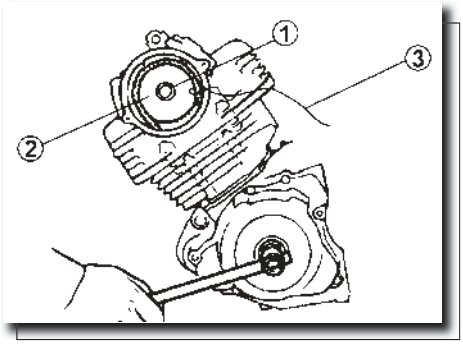
N.B.
CHECK IF THE PISTON IS AT T.D.C. ON THE COMPRESSION STROKE.

IF NOT, TURN THE CRANKSHAFT ANOTHER COMPLETE TURN IN AN ANTICLOCKWISE DIRECTION.



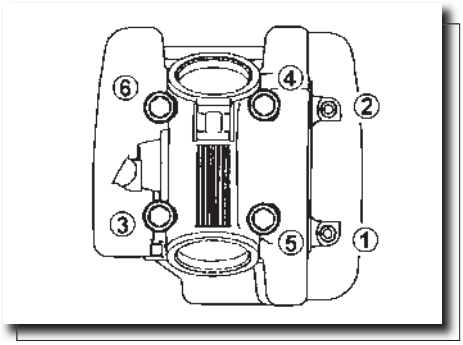
5. Extract:
- Bolt (timing chain tensioner) **(1)**.
- Timing chain tensioner assembly **(2)**.

6. Extract:
- Bolt (drive sprocket) **(1)**.
- Special washer (drive sprocket) **(2)**.



N.B.
SECURE THE TIMING CHAIN WITH A WIRE (3) TO PREVENT IT FROM FALLING INTO THE ENGINE.

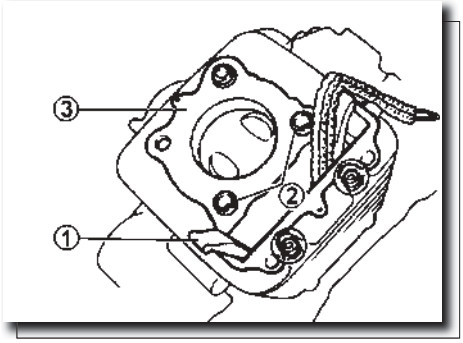
7. Extract:
- Bolts (cylinder head).
- Cylinder head.



N.B.
LOOSEN EACH BOLT IN TURN A QUARTER TURN, AND REMOVE THEM WHEN THEY ARE COMPLETELY LOOSE.

LOOSEN THE BOLTS BEGINNING WITH THE ONE WITH THE LOWEST NUMBER.

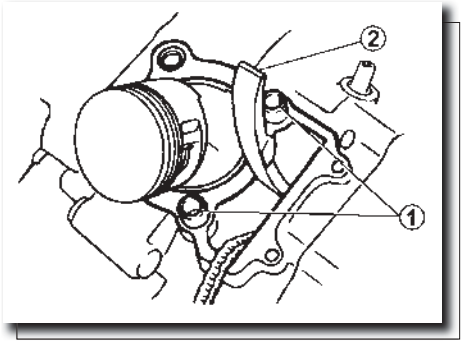
THE NUMBERS STAMPED ONTO THE CYLINDER HEAD INDICATE THE TIGHTENING SEQUENCE.



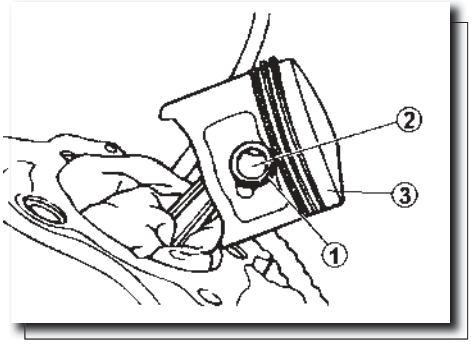
8. Extract:
- Timing chain guide (exhaust) **(1)**.
- Guide pins **(2)**.
- Gasket (cylinder head) **(3)**.
- Bolts (cylinder head).
- Clutch cable securing device.
- Cylinder.

ENGINE DISMANTLING

9. Extract:
- Guide pins **(1)**.
- Gasket (cylinder) **(2)**.



10. Extract:
- Gudgeon pin circlip **(1)**.
- Gudgeon pin **(2)**.
- Piston **(3)**.

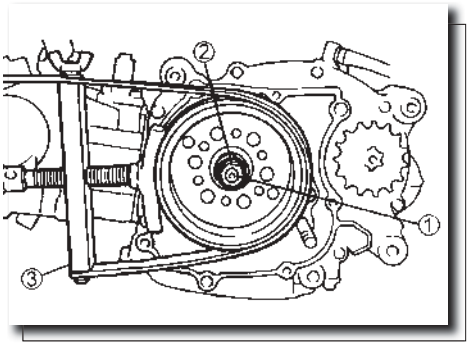


N.B.
BEFORE REMOVING THE CIRCLIP FROM THE GUDGEON PIN, COVER THE BASE OF THE CYLINDER WITH A CLEAN CLOTH TO PREVENT ANYTHING FROM FALLING INTO THE ENGINE.
BEFORE REMOVING THE GUDGEON PIN, ELIMINATE THE ROUGH EDGE OF THE CICLIP GROOVE AND THE HOLE. ONCE THE ROUGH EDGE HAS BEEN ELMINATED, AND IF THERE IS STILL DIFFICULTY IN REMOVING THE GUDGEON PIN, USE THE GUDGEON PIN EXTRACTOR.

Gudgeon pin extractor:
00M12501258

MAGNETO FLYWHEEL

N.B.
THE MAGNETO FLYWHEEL CAN BE EXTRACTED WHILE THE ENGINE S MOUNTED IN THE FRAME, WITH THE GEAR CHANGE PEDAL REMOVED.

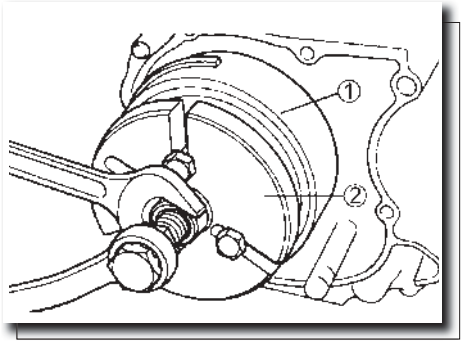


1. Extract:
- Casing cover **(LI)**.
- Neutral switch conductor.
- Nut (magneto) **(1)**.
- Flat washer **(2)**.

ENGINE DISMANTLING

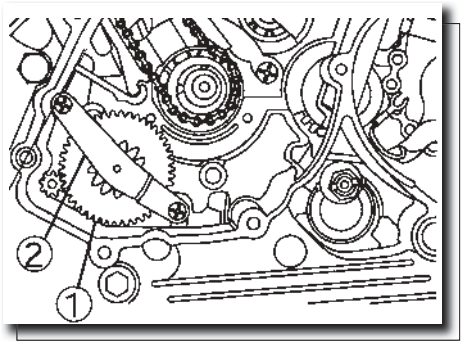
2. Extract:
- Magneto flywheel **(1)**.
- Pin.

N.B.
REMOVE THE MAGNETO FLYWHEEL WITH THE ROTOR EXTRACTOR **(2)**.
CENTRE THE ROTOR EXTRACTOR ON THE MAGNETO FLYWHEEL. ENSURE THAT THE GAP BETWEEN THE EXTRACTOR AND THE FLYWHEEL IS THE SAME AT ALL POINTS AFTER FITTING THE SECURING BOLTS. IF NECESSARY, LOOSEN ONE OF THE BOLTS TO ADJUST THE EXTRACTOR POSITION.



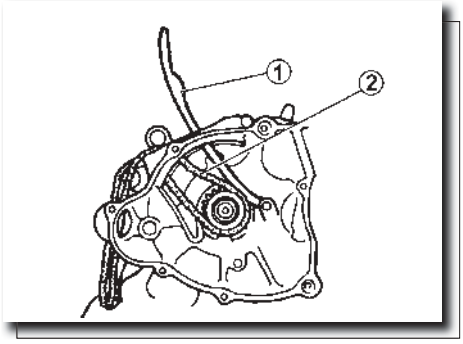
ATTENTION
COVER THE END OF THE CRANKSHAFT WITH THE SPANNER TO PREVENT DAMAGE.

Magneto flywheel extractor:
00M12501259



3. Extract:
- Starter gear.
- Washer.

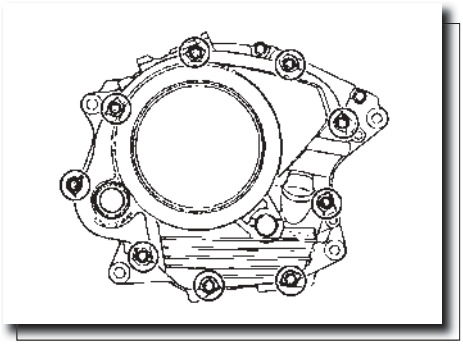
4. Extract:
- Plate **(2)**.
- Starter gear **(1)**.



5. Extract:
- Timing chain guide **(1)**.
- Timing chain **(2)**.

CLUTCH

N.B.
THE CLUTCH ASSEMBLY CAN BE REMOVED WITH THE ENGINE MOINTED IN THE FRAME. TO DO SO, THE FOLLOWING PARTS NEED TO BE REMOVED:
- EXHAUST
- FOOTREST
- BRAKE PEDAL
- KICK START LEVER

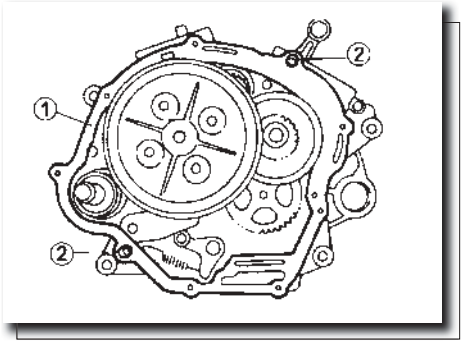


1. Extract:
- Casing cover (LD).

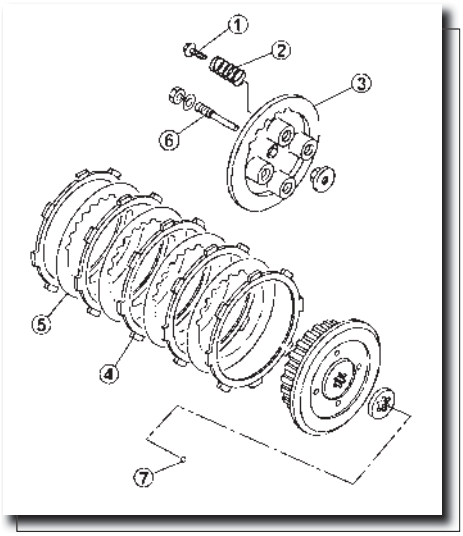
N.B.
UNDO THE BOLTS DIAGONALLY.

ENGINE DISMANTLING

2. Extract:
- Gasket **(1)**.
- Guide pins **(2)**.



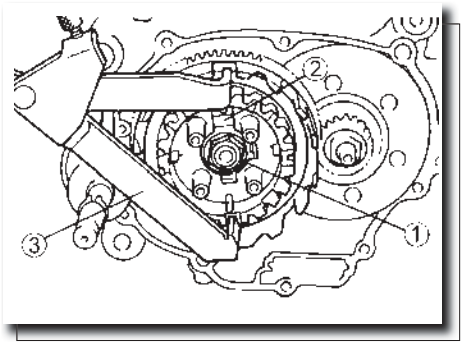
3. Extract:
- Pressure plate bolts **(1).**
- Clutch springs **(2)**.
- Pressure plate **(3)**.
- Friction disks **(4)**.
- Separators **(5)**.



N.B.
LOOSEN THE PRESSURE PLATE BOLTS DIAGONALLY.

4. Extract:
- Activating rod No.1 **(6)**.
- Ball **(7)**.

5. Extract:
- Nut (clutch assembly) **(1)**.



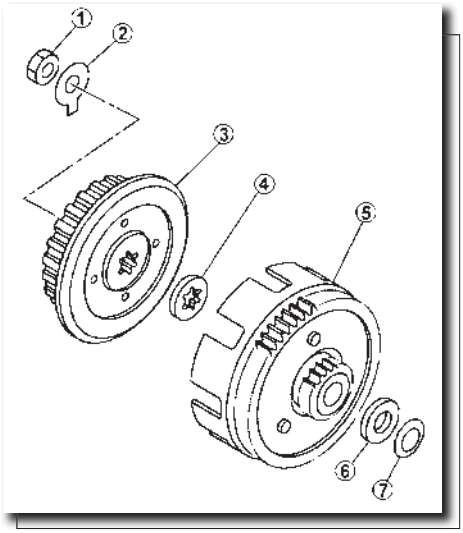
N.B.
FLATTEN OUT THE TAB WASHER TAB **(2)**.

LOOSEN THE CLUTCH ASSEMBLY NUT **(1)** WHILE HOLDING THE HOUSING WITH THE UNIVERSAL CLUTCH HOLDER **(3)**.

Universal clutch holder:
00M12501260

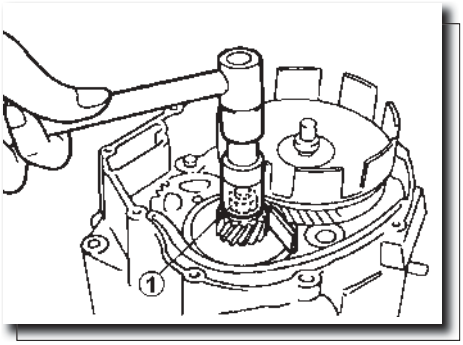
ENGINE DISMANTLING

6. Extract:
- Clutch assembly nut **(1)**.
- Tab washer **(2)**.
- Clutch assembly **(3)**.
- Pressure washer **(4)**.
- Clutch bell housing **(5)**.
- Spacer **(6)**.
- Washer **(7)**.

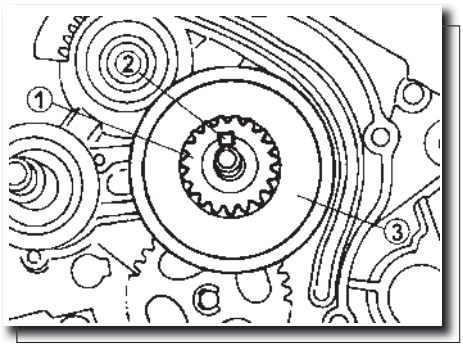


7. Loosen:
- Nut **(1)**.

N.B.
PLACE A FOLDED WEDGE OF ALUMINIUM BETWEEN THE PRIMARY GEAR TEETH AND THE BELL HOUSING TEETH. TAKE CARE NOT TO DAMAGE THE GEARING TEETH.

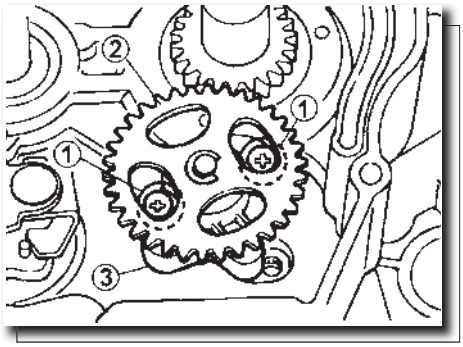


8. Extract:
- Nut.
- Special washer.
- Primary gear **(1)**.
- Pin **(2)**.
- Rotary filter **(3)**.



ENGINE DISMANTLING

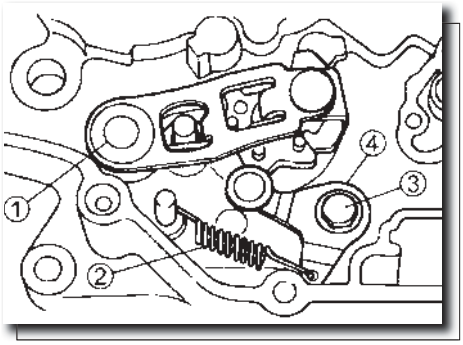
OIL PUMP



N.B.
THE OIL PUMP CAN BE DISMANTLED WITH THE ENGINE IN THE FRAME. TO DO SO, THE FOLLOWING PARTS NEED TO BE REMOVED:
- CLUTCH
- ROTARY FILTER

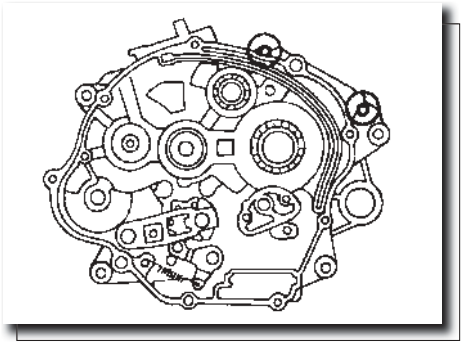
1. Extract:
- Bolt with washer (oil pump) **(1)**.
- Oil pump assembly **(2)**.
- Suction device.

GEAR CHANGE SHAFT



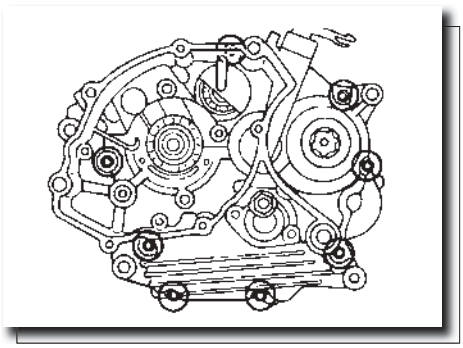
N.B.
THE GEAR CHANGE SHAFT CAN BE DISMANTLED WITH THE ENGINE IN THE FRAME. TO DO SO, THE FOLLOWING PARTS NEED TO BE REMOVED:
- EXHAUST
- FOOTREST
- GEAR CHANGE PEDAL
- CLUTCH
- KICK START PEDAL ASSEMBLY

1. Extract:
- Gear change shaft **(1)**.
- Torsion spring **(2).**
- Bolt (limiting rod) **(3)**.
- Limiting rod **(4)**.



CASING

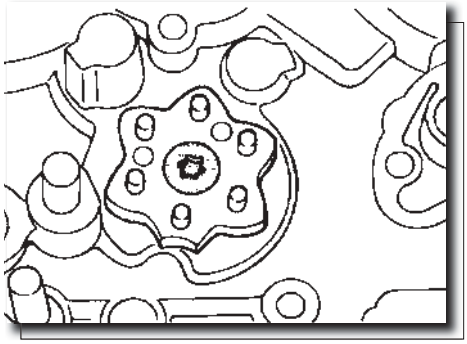
1. Extract:
- Bolts (casing).
- Battery cable bracket.



N.B.
UNDO THE BOLTS DIAGONALLY.
LOOSEN EACH BOLT A QUARTER TURN IN TURN, AND REMOVE THEM WHEN THEY ARE COMPLETELY LOOSE.

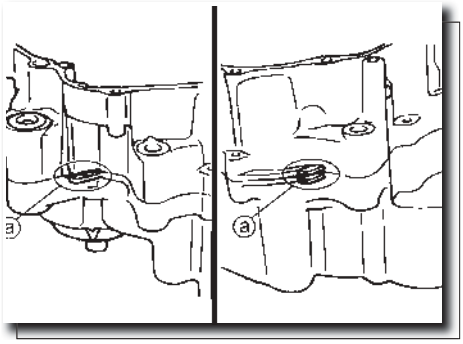
ENGINE DISMANTLING

2. Extract:
- Gear selector segment bolt. Use a 4mm Allen key.



3. Extract:
- Casing (LD).

N.B.
PLACE THE ENGINE WITH THE CASING (LI) DOWNWARDS, THEN INSERT A SCREWDRIVER INTO THE CASING SEPARATION SLOTS (A).

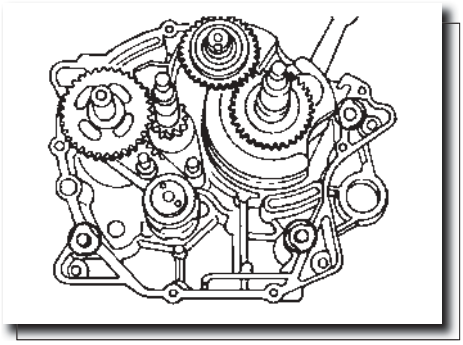


ATTENTION
ONLY USE THE SCREWDRIVER IN THE POINTS INDICATED. THE CASING (LI) SHOULD REMAIN DOWN.

SEPARATE THE CASINGS AFTER CHECKING IF THE GEAR SELECTOR SEGMENT AND THE SHAFT TAB WASHER HAVE BEEN REMOVED.

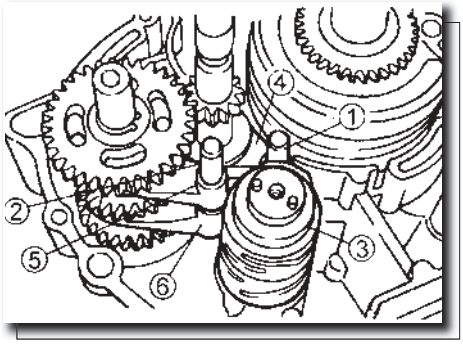
DO NOT DAMAGE THE CASING CONTACT SURFACES.

3. Extract:
- Guide pins.

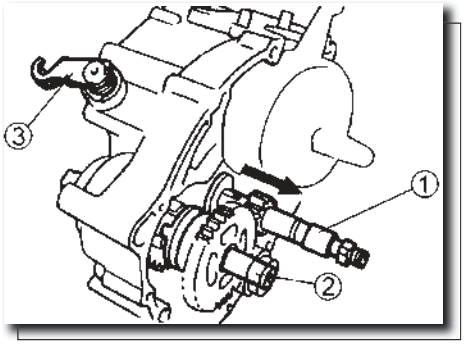


ENGINE DISMANTLING

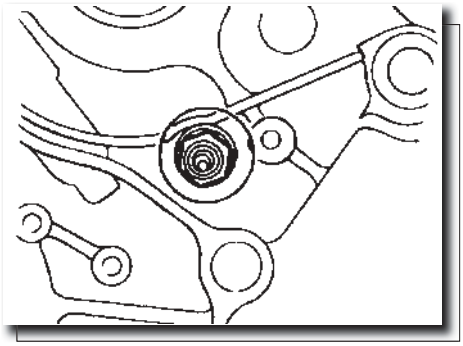
BALANCER, TRANSMISSION AND GEAR SELECTOR



1. Extract:
- Gear fork 1 guide lever (short).
- Gear fork 2 guide lever (long).
- Gear selector **(3)**.
- Gear fork 1 **(4)**.
- Gear fork 2 **(5)**.
- Gear fork 3 **(6)**.

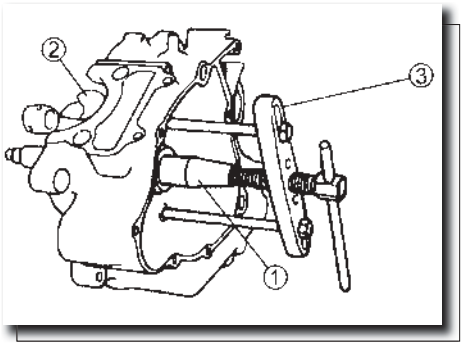


2. Extract:
- Drive shaft assembly **(1)**.
- Activating rod No.2.
- Driven shaft assembly **(2)**.
- Washer.
- Activating lever assembly **(3)**.



3. Extract:
- Neutral switch.

CRANKSHAFT



1. Extract:
- Crankshaft **(1)** with the rocker shaft **(2)**.

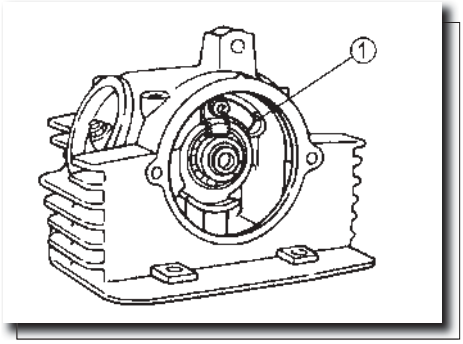
N.B.
DISMANTLE THE CRANKSHAFT USING THE CRANKSHAFT EXTRACTOR **(3)**.

TIGHTEN THE EXTRACTOR BOLTS RIGHT DOWN, BUT ENSURE THAT THE BODY OF THE TOOL IS PARALLEL WITH THE CASING. IF NECESSARY, LOOSEN ONE OF THE BOLTS A LITTLE TO ADJUST THE POSITION OF THE CRANKSHAFT EXTRACTOR.

Crankcase separator:
00M12501261

ENGINE DISMANTLING

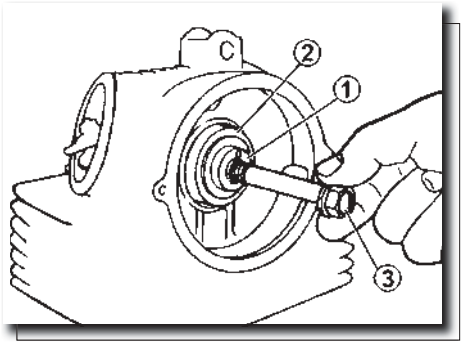
ROCKERS, CAMSHAFT AND VALVES



1. Loosen:
- Valve adjuster locknuts.
- Valve adjusters.

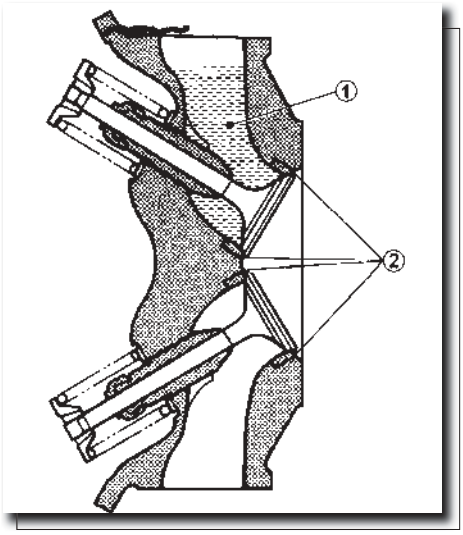
2. Extract:
- Locking plate **(1)**.

3. Extract:
- Camshaft **(1).**
- Spacer **(2)**.



N.B.
SCREW A SUITABLE 8MM LENGTH BOLT (3) INTO THE CAMSHAFT THREAD AND PULL IT OUT.

4. Extract:
- Rocker shafts.
- Rockers (inlet and exhaust).



N.B.
BEFORE REMOVING THE INTERNAL PARTS, (VALVES, SPRINGS, VALVE SEAT ETC.) THE VALVE CLOSING MUST BE CHECKED.

5. Check:
- Valve closing

Leaking valve seats => **Inspect the valve faces, valve seats and the width of the valve seats**.

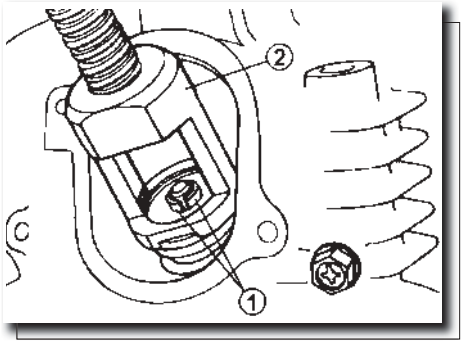
See the **"INSPECTION AND REPAIR – VALVE SEAT"** section.

Checking steps:
- Fill the inlet chamber with petrol **(1)** and then the exhaust chamber.

- Check the closing of both valves. There must not be any leak in the valve seats **(2)**.

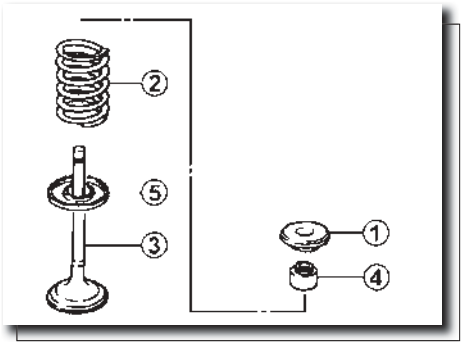
ENGINE DISMANTLING

6. Extract:
- The valve spring retainer **(1)**.



N.B.
FIT THE VALVE SPRING COMPRESSOR (2) BETWEEN THE SEAT OF THE SPRING RETAINER AND THE CYLINDER HEAD TO RELEASE THE COLLET S FROM THE VALVES.

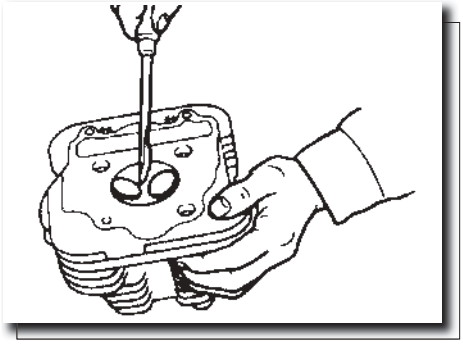
7. Extract:
- Collet seats **(1)**.
- Spring **(2)**.
- Valves **(3)**.
- Retaining ring **(4)**.
- Spring seat **(5)**.



N.B.
IDENTIFY THE POSITION OF EACH PART CAREFULLY, SO THAT THEY CAN BE REFITTED IN THEIR ORIGINAL POSITIONS.

INSPECTION AND REPAIR

CYLINDER HEAD

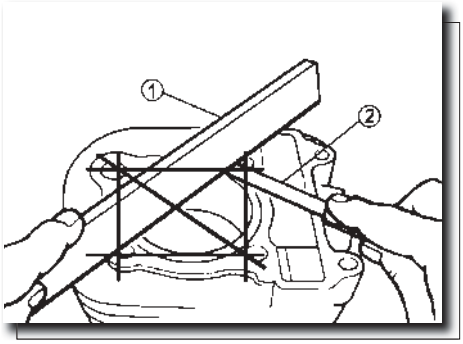


1. Eliminate:
- Carbon sediments (from the combustion chamber). Use a rounded spatula.

N.B.
AVOID USING ANY SHARP EDGED INSTRUMENT THAT CAN CAUSE DAMAGE AND SCRATCHING.
- IN THE SPARK PLUG THREADS
- ON THE VALVE SEATS.

2. Inspect:
- Cylinder head

Scratches/damage => **Replace**.

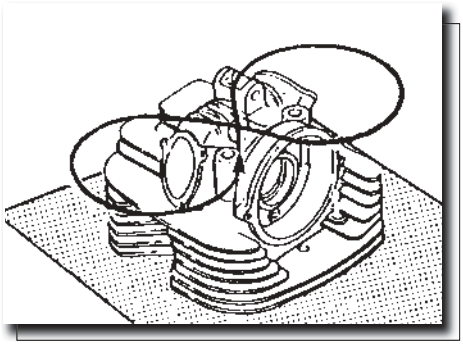


3. Measure:
- Distortion

Outside that specified => **Rectify**.

Cylinder head distortion:
Less than 0.03 mm

Steps for measuring the distortion, and rectification:
- Place a ruler **(1)** and a thickness calliper **(2)** on the head cylinder surface, as in the figure to the side.



- Measure the distortion.

- If the distortion is outside that specified, rectify the cylinder head.

- Lay a 400~ 600 file on a flat surface and rectify the cylinder head surface by filing in a figure eight movement.

N.B.
TURN THE CYLINDER HEAD SEVERAL TIMES TO PREVENT EXCESSIVE MATERIAL FROM BEING REMOVED FROM ONE SIDE ONLY.

INSPECTION AND REPAIR

VALVE SEATS

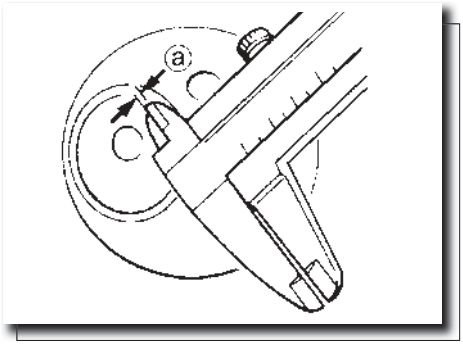
1. Eliminate:
- Carbon sediments.
(from the valve face and seat).

2. Inspect:
- Valve seats.

Grooves/wear => **Grind the valve**.

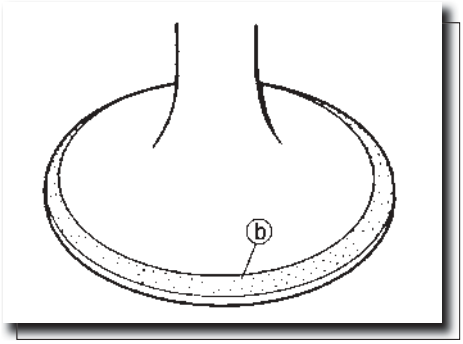
3. Measure:
- Width of valve seat (a).

Outside that specified => **Grind the valve**.



- Width of valve seat:
Inlet:
0,9 ~ 1,1 mm
<Limit: 1,6 mm>

Exhaust:
0,9 ~ 1,1 mm
<Limit: 1,6 mm>



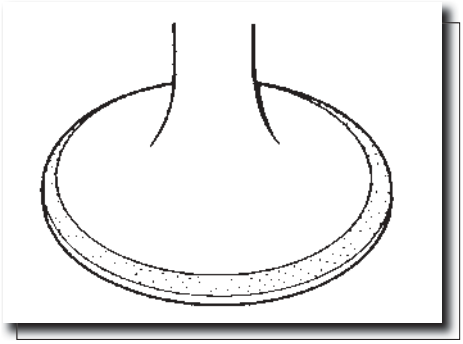
Measurement steps:
- Apply blue mechanical dye (Dykem) to the valve face.

- Fit the valve into the cylinder head.

- Press the valve against the guide and against the seat to make a visible mark.

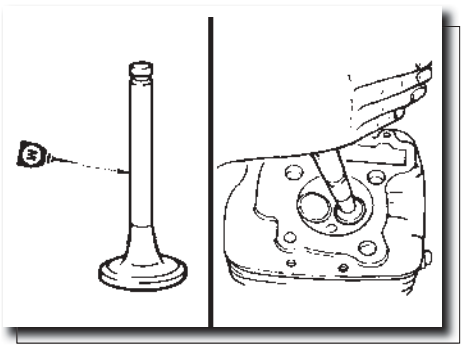
- Measure the width of the valve seat.
Where there was contact between the seat and the valve face, the dye will be removed.

- If the valve seat width is large or small, or if the seat is not centred, it has to be redone



4. Grind:
- Valve face.
- Valve seat.

N.B.
AFTER RECTIFYING THE VALVE SEAT OR REPLACING THE VALVE AND ITS GUIDE, THE SEAT AND FACE MUST BE GROUND.



INSPECTION AND REPAIR

Steps for valve seating:

- Apply a coarse abrasive paste to the valve face.

ATTENTION
DO NOT ALLOW THE PASTE TO PENETRATE IN THE SPACE BETWEEN THE VALVE STEM AND THE VALVE GUIDE.

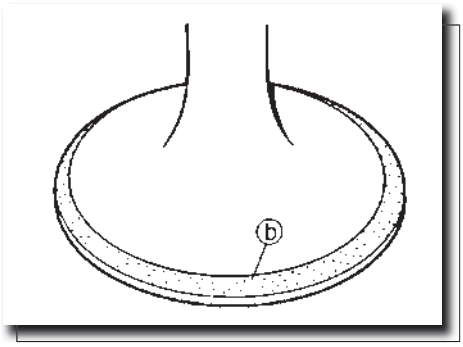
- Apply acid with molybdenum disulphate to the valve stem.
- Fit the valve into the cylinder head.
- Twist the valve until its face and its seat are uniformly ground, then remove the paste immediately.

N.B.
TO OBTAIN THE BEST VALVE SEATING RESULTS, SHAKE SOFTLY IN THE VALVE SEAT WHILE TWISTING BACKWARDS AND FORWARDS BY HAND.

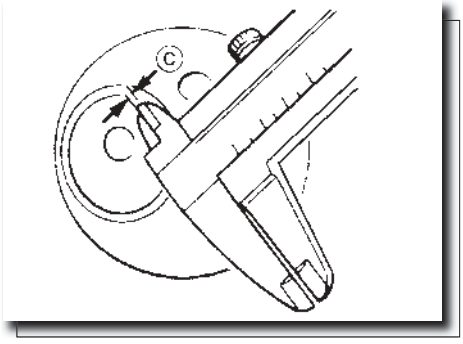
- Apply a fine abrasive paste to the valve face and repeat the steps above.

N.B.
ENSURE THAT THE ABRASIVE PASTE IS COMPLETELY CLEANED FROM THE VALVE FACE AND SEAT AFTER EACH VALVE SEATING OPERATION.

- Apply blue mechanical dye (Dykem) to the valve face (b).

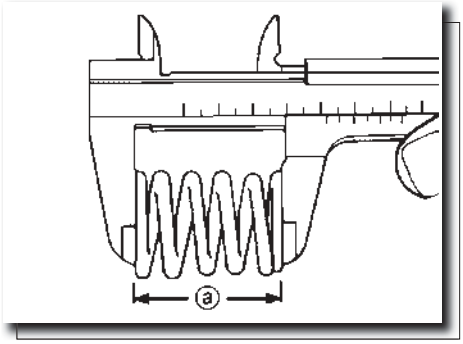


- Fit the valve into the cylinder head.
- Press the valve through the valve guide and against its seat to obtain a good contact.
- Measure the width of the valve seating (c) once again. If it is outside that specified, rectify and grind the valve seat.



INSPECTION AND REPAIR

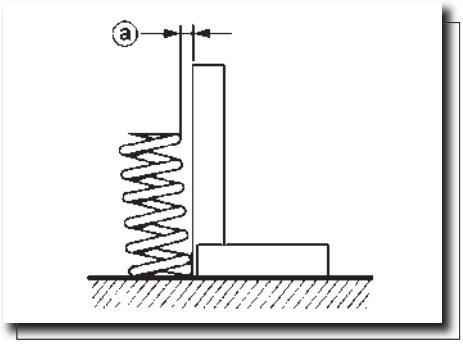
VALVES AND VALVE SPRINGS



1. Measure:
- Free length (a) of spring.

Outside that specified => **Replace**.

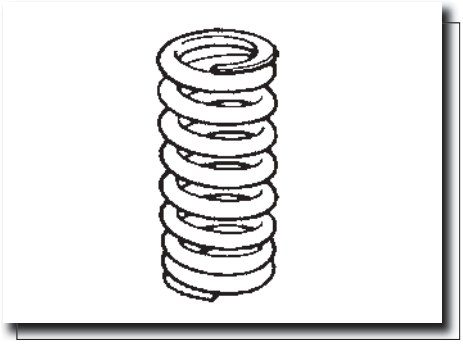
Free length of valve spring:
39,62 mm <Limit: 38,0 mm>



2. Measure:
- Spring inclination (a).

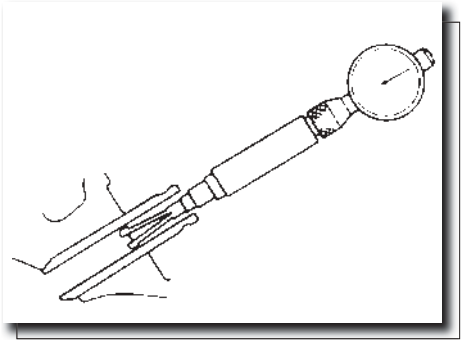
Outside that specified => **Replace**.

Spring inclination limit
1,7 mm



3. Measure:
- Spring contact face.

Wear/damage/scratches => **Replace**.



4. Measure:
- Inner diameter of the valve guide.

Outside that specified => **Replace**.

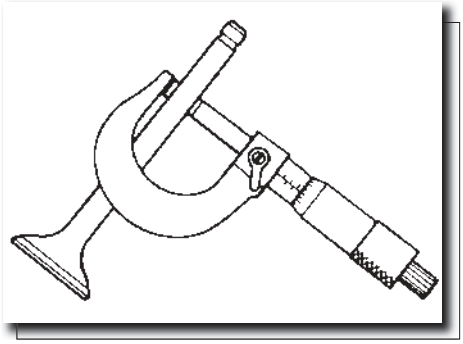
Inner diameter of the valve guide:
Inlet.
5,000 ~ 5,012 mm
<Limit: 5,042 mm>

Exhaust:
5,000 ~ 5,012 mm
<Limit: 5,042 mm>

INSPECTION AND REPAIR

5. Measure:

Stem-guide clearance:
Inner diameter of the guide.
Valve stem diameter.



Stem – guide clearance limit.
Inlet:
0,010 ~ 0,037 mm
<Limit: 0,08 mm>

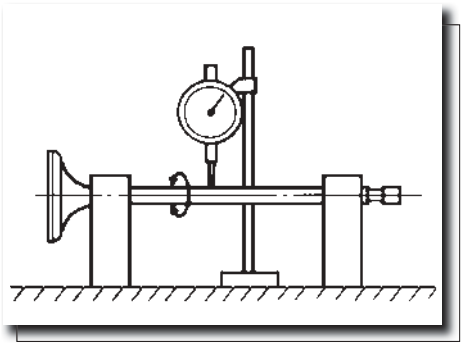
Exhaust:
0,025 ~ 0,052 mm
<Limit: 0,10 mm>

Outside that specified => **Replace the valve guide**.

6. Measure:
- Warping (valve stem).

Outside that specified => **Replace**.

- Warp limit:
0,01 mm



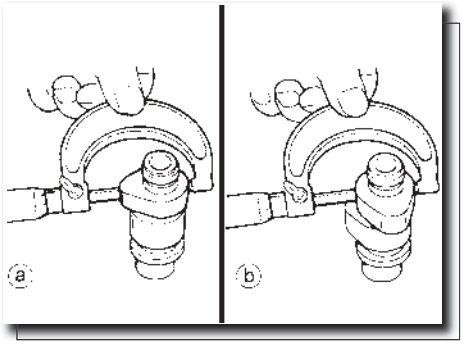
ISNPECTING THE CAMSHAFT

1. Check:
- Cam salients.

Grooves/scratches/blue colouring => **Replace**.

2. Measure:
- Dimensions (a) and (b) of the cams.

Outside that specified => **Replace**.



INSPECTION AND REPAIR

Dimensions of the cams:
Inlet.
(a) 25,881 ~ 25,981 mm
<Limit: 25,851 mm>

(b) 21,195 ~ 21,295 mm
<Limit: 21,165 mm>

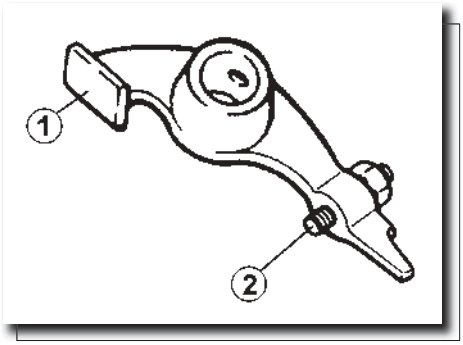
Exhaust:
(a) 25,841 ~ 25,941 mm
<Limit: 25,811 mm>

(b) 21,05 ~ 21,15 mm
<Limit: 21,02 mm>

3. Inspect:
- Oil passage in the camshaft.

Obstructed=> **Blow through with compressed air**

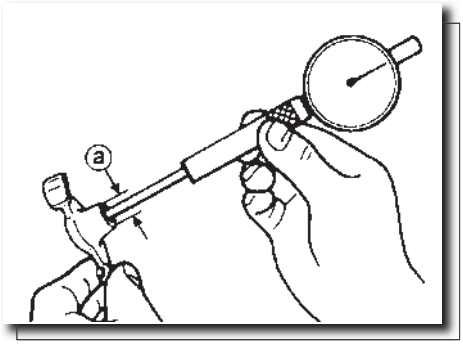
INSPECTING THE ROCKERS AND THEIR SHAFTS



1. Inspect:
- Contact surface of the cams **(1)**.
- Adjuster surface **(2)**.

Wear/grooves/scratches/blue colouring => **Replace**

Steps for the inspection:
- Inspect the two contact areas of the rockers for signs of abnormal wear.



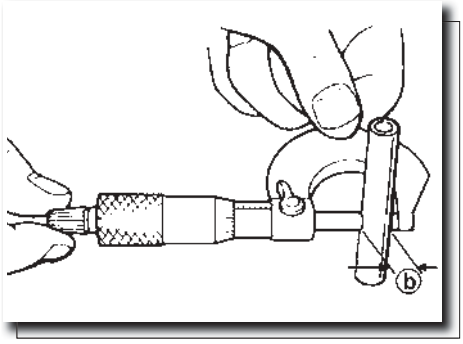
- Rocker shaft hole.

- Contact surface of the cams.

Excessive wear => **Replace.**

- Inspect the condition of the rocker shafts surfaces.

Grooves/scratches/blue colouring => **Replace or check the lubrication system**.



- Measure the inner diameter (a) of the rocker holes.

Outside that specified => **Replace.**

Inner diameter (rocker):
10,000 ~ 10,015 mm
<Limit: 10,03 mm>

INSPECTION AND REPAIR

Measure the outer diameter (b) of the rockers.

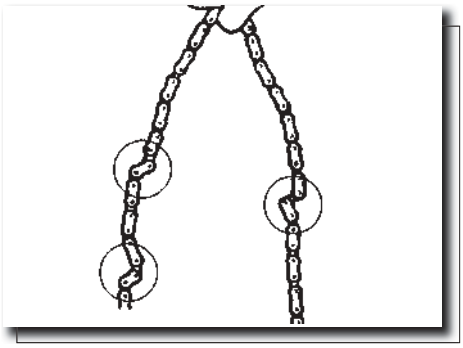
Outside that specified => **Replace**.

Outer diameter (rocker shaft).
9,981 ~ 9,991 mm
<Limit: 9,95 mm>

TIMING CHAIN, SPROCKET AND GUIDES

1. Inspect:
- Timing chain.

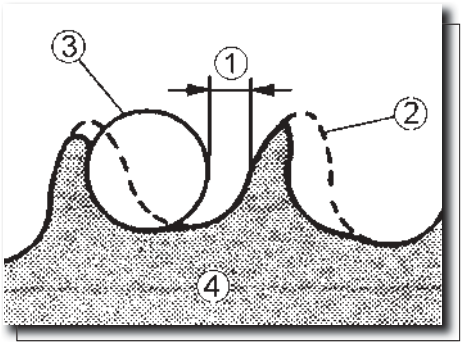
Stiff/damaged => **replace chain and sprocket.**



2. Inspect:
- Drive sprockets

Damage/wear => **Replace the sprockets and the timing chain**.

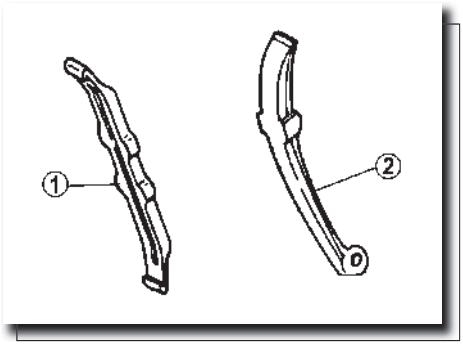
(1) 1/4 of the tooth
(2) Correct
(3) Roller
(4) Sprocket



3. Inspect:
- Timing chain guide (exhaust) **(1)**.

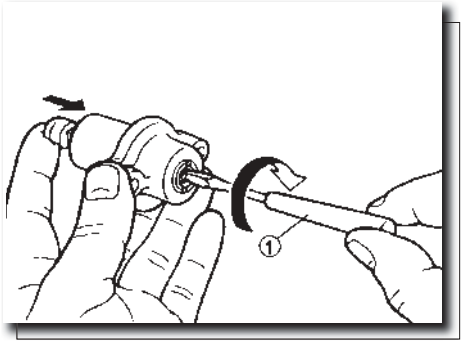
- Timing chain guide (inlet) **(2)**.

Damage/wear => **Replace**.



INSPECTION AND REPAIR

TIMING CHAIN TENSIONER



1. Check:
- Tensioner functioning.

Irregular functioning => **Replace**.

Steps for checking:
- While pressing the tensioner rod lightly with the hand, use a screwdriver **(1)** to turn the tensioner rod completely in a clockwise direction.

- On removing the screwdriver, and pressing lightly with the hand, ensure that the tensioner rod moves forward smoothly.

- If not, replace the chain tensioner assembly.

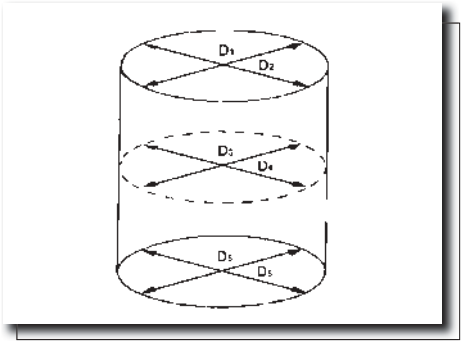
CYLINDER AND PISTON

1. Inspect:

- Cylinder and piston walls.

Vertical scratches=> **Rectify or replace the cylinder and the piston**.

2. Measure:
- Cylinder-Piston clearance.



Steps for measuring:
Step 1:
- Measure cylinder diameter "C" with an internal calliper.

N.B.
MEASURE THE DIAMETER "C" OF THE CYLINDER ACROSS AND AT A RIGHT ANGLE TO THE CRANKSHAFT. THEN CALCULATE THE AVERAGE OF THE MEASUREMENTS.

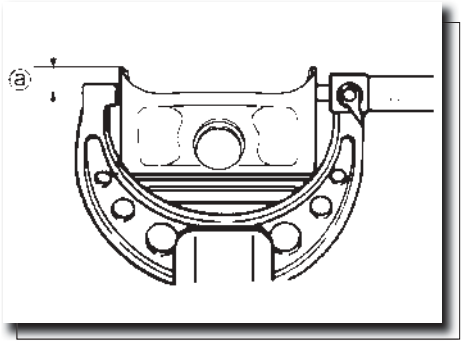
DIAMETER OF THE CYLINDER "C"	54,000 - 54,018 mm
TAPER LIMIT "T"	0,05 mm
OVALITY "R"	0,01 mm

"C" = D maximum
"T" = (D_1 o D_2 maximum) - (D_5 o D_6 maximum)
"R" = (D_1, D_3 o D_5 maximum) - (D_2, D_4 o D_6 minimum)

INSPECTION AND REPAIR

- If it is outside that specified , rectify or replace the cylinder and replace the piston and the rings together.

Step 2:
- Measure the "skirt" or bottom part of the piston "P" with a micrometer.
(a) 4.5 mm of the piston "skirt".



	DIAMETER OF THE PISTON P.
STANDARD	53,977 - 53,996 mm

OVER-MEASUREMENT	I°
	II°

- If it is outside that specified, replace the piston and the rings together.

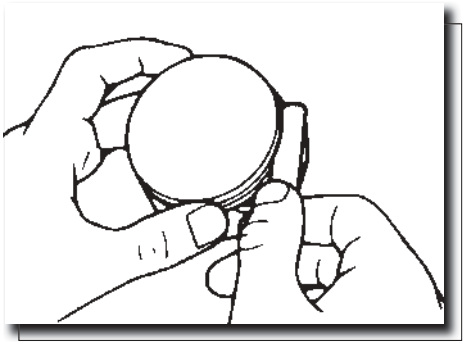
Step 3:
- Calculate the cylinder-piston clearance, using the following formula:

Cylinder-Piston clearance:
Diameter of the cylinder "C"
Diameter of the piston "skirt" "P".

Clearance (Cylinder-Piston):
0,020 ~ 0,028 mm
<Limit>: 0,15 mm

- If it is outside that specified, rectify or replace the cylinder, the piston and its rings all together.

INSPECTING THE RINGS



1. Measure:
- Lateral clearance.

Outside that specified => **Replace the piston and its rings all together.**

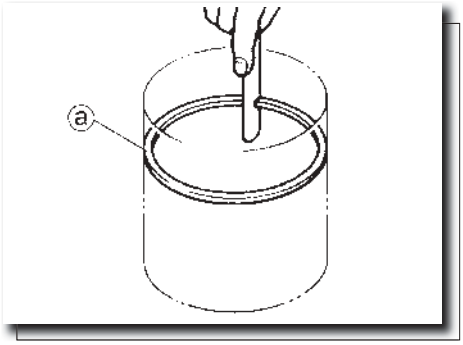
N.B.
ELIMINATE THE CARBON DEPOSITS FROM THE PISTON RING GROOVES, BEFORE MEASURING THE LATERAL CLEARANCE.

INSPECTION AND REPAIR

Lateral clearance (piston rings):

Top ring <Limit>:
0,03 ~ 0,07 <0,12 mm>

Second ring (scraper):
<Limit>:
0,02 ~ 0,06 <0,12 mm>



2. Position:
- Piston rings (in the cylinder)

N.B.
PUSH THE RING WITH THE HEAD OF THE PISTON IN SUCH A WAY THAT IT IS POSITIONED PARALLEL TO THE CYLINDER BASE.

(a) 5mm.

3. Measure:
- Clearance between points

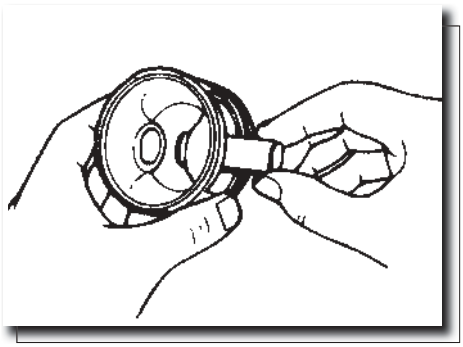
Outside that specified => **Replace**.

N.B.
THE CLEARANCE BETWEEN POINTS CANNOT BE MEASURED IN THE OIL RING EXPANSION RING. IF THE OIL RING SHOWS EXCESSIVE CLEARANCE, REPLACE ALL THREE RINGS.

Clearance between points:
Top ring <Limit>:
0,15 ~ 0,30 mm <0,40 mm>

Second ring (scraper) <Limit>:
0,30 ~ 0,45 mm <0,55 mm>

Oil ring:
0,2 ~ 0,7 mm

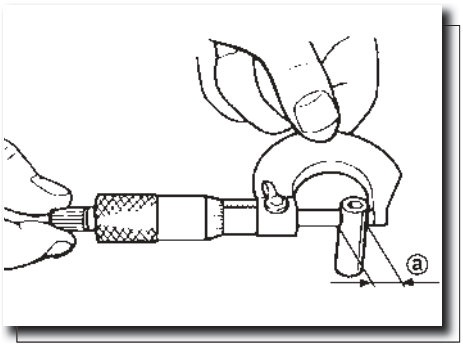


2. Measure:
- Piston-gudgeon pin clearance

Steps for measuring:
- Measure the outer diameter of the gudgeon pin (a).
Outside that specified => **Replace the gudgeon pin**.

INSPECTION AND REPAIR

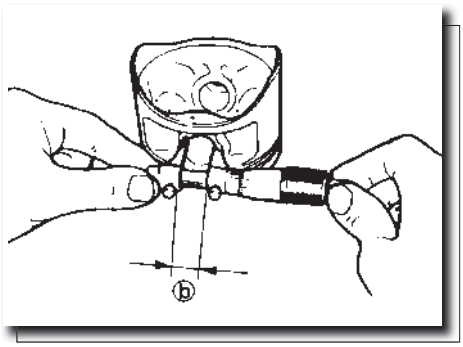
Outer diameter (gudgeon pin):
14,991 ~ 15,000 mm
<Limit: 14,975 mm>



- Measure the diameter of the gudgeon pin housing in the piston (b):

- Calculate the piston-gudgeon pin clearance, using the following formula:

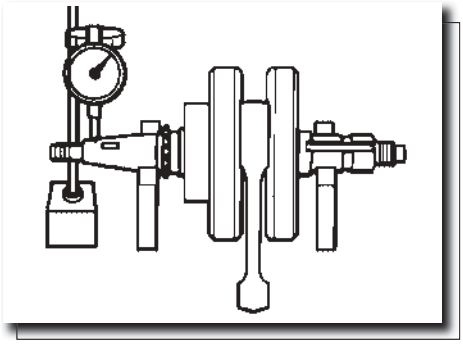
Piston-gudgeon pin clearance:
Inner diameter (gudgeon pin housing) (b)
Outer diameter (gudgeon pin) (a):



- If it is outside that specified, replace the piston.

Clearance (piston- gudgeon pin):
0,009 ~ 0,013 mm

CRANKSHAFT

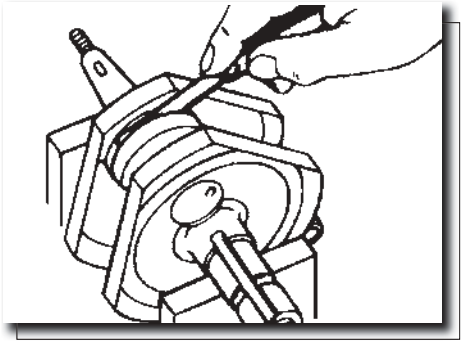


1. Measure
- Crankshaft lack of alignment.

Outside that specified => **replace the crankshaft and/or bearings**:

N.B.
MEASURE CRANKSHAFT POOR ALIGNMENT BY SLOWLY TURNING THE CRANKSHAFT ASSEMBLY.

Poor alignment limit:
0,03 mm



2. Measure:
- Connecting rod side clearance

Outside that specified => **replace the connecting rod big end bearing, crankshaft elbow/or the connecting rod**.

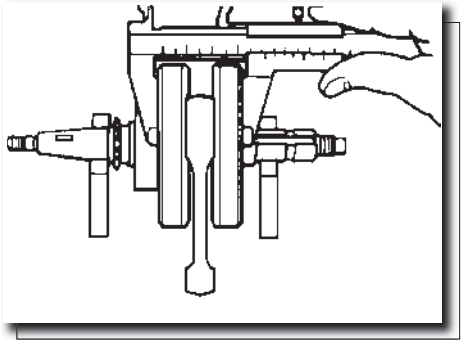
Connecting rod side clearance:
0,15 ~ 0,45 mm

INSPECTION AND REPAIR

3. Measure:
- Crankshaft width

Outside that specified => **Replace the crankshaft**.

Crankshaft width:
46,95 ~ 47,00 mm

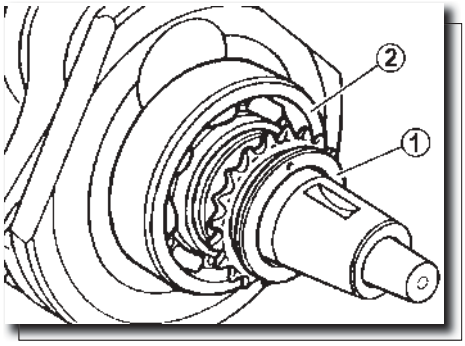


4. Inspect:
- Crankshaft sprocket **(1)**.

Damage/wear => **replace the crankshaft**.

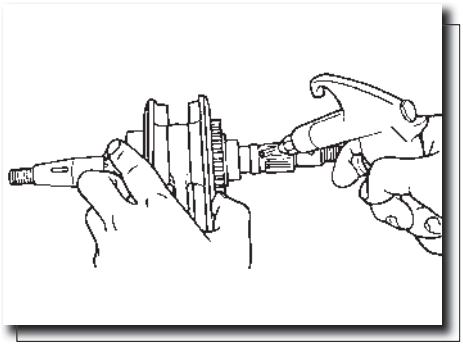
- Bearing **(2).**

Wear/cracks/damage => **Replace the crankshaft**.



5. Inspect:
- Crankshaft oil passage

Obstructed => **Blow through with compressed air.**

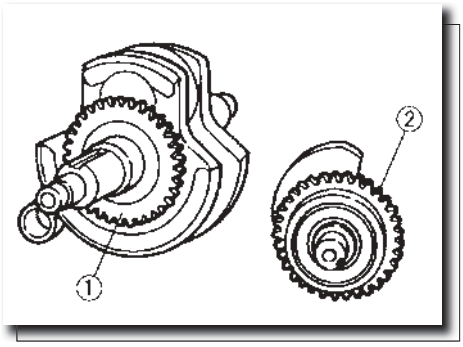


INSPECTING THE BALANCER

1. Inspect:
- Balancer drive sprocket teeth **(1)**.

- Balancer driven sprocket teeth **(2)**.

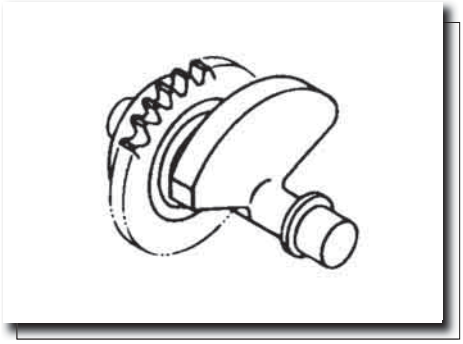
Wear/damage => **Replace the assembly**.



INSPECTION AND REPAIR

2. Inspect:
- Balancer shaft

Wear/warping/damage => **Replace**.



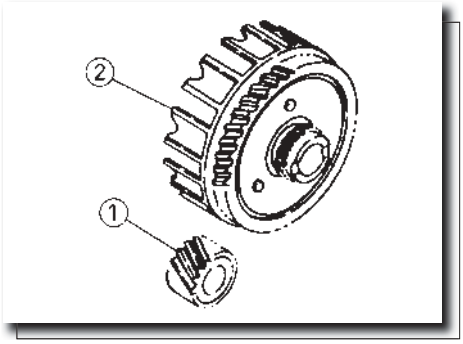
INSPECTING THE CLUTCH BELL HOUSING

1. Inspect:
- Primary sprocket teeth **(1)**.

- Bell housing sprocket teeth **(2)**.

Wear/damage => **Replace both sprockets**.

Excessive noise when running => **Replace both sprockets**.



INSPECTING THE CLUTCH

1. Inspect:
- Friction disks

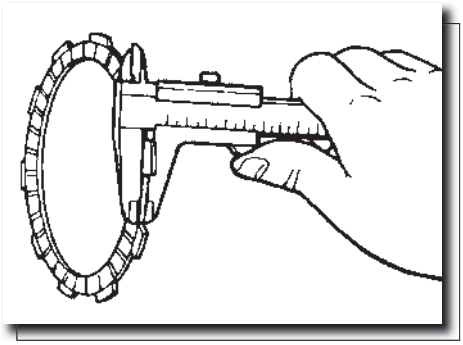
Wear/damage => **Replace the friction disk assembly.**

2. Measure:
- Thickness of the friction disks

Outside that specified => **Replace the friction disk assembly**.

Measure at 4 different positions.

Thickness (friction disks):
3,0 mm
<Limit: 2,8 mm>



3. Inspect:
- Separators

Damage => **Replace the separator assembly**.

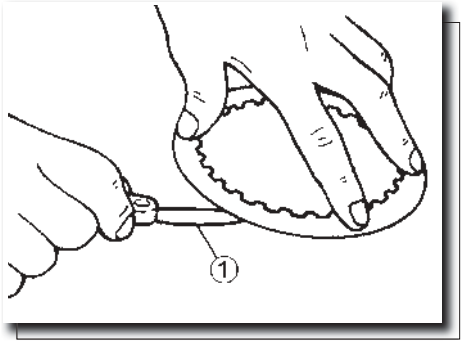
INSPECTION AND REPAIR

4. Measure:
- Separator distortion

Outside that specified => **Replace the separator assembly**.

Take the measurement on a flat table with the aid of a thickness calliper **(1)**.

Distortion limit (separators):
Inferior a 0,05 mm



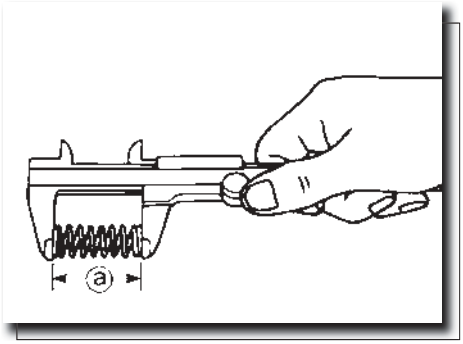
5. Inspections:
- Clutch springs.

Damage => **Replace the spring assembly**.

6. Measure:
- Free length (springs) **(a)**.

Outside that specified => **Replace the spring assembly**.

Free length (springs):
33,0 mm
<Limit: 31,0 mm>

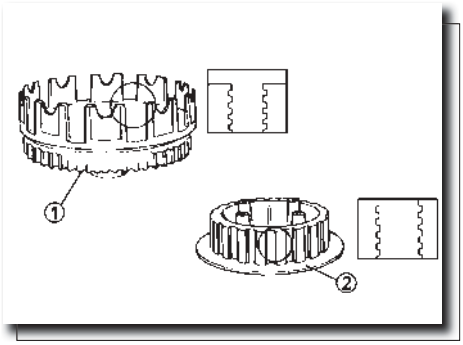


7. Inspect:
- Claws (of the bell housing) **(1)**.

Rough edges/wear/damage => **Eliminate the rough edges or replace the bell housing**.

- Clutch assembly slots **(2)**.

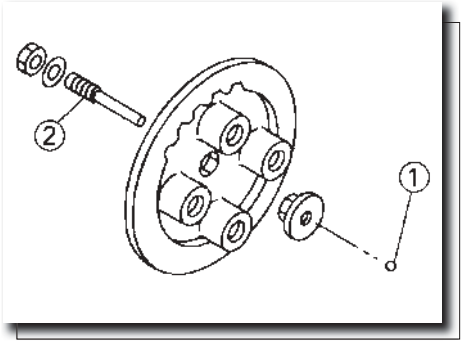
Rough edges/wear/damage => **Replace the clutch assembly**.



N.B.
ROUGH EDGES ON THE BELL HOUSING CLAWS AND CLUTCH HOSING SLOTS RESULT IN IRREGULAR OPERATION.

INSPECTION AND REPAIR

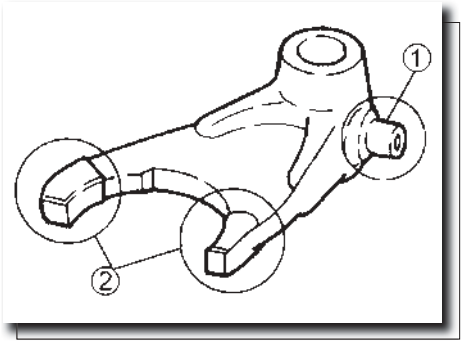
INSPECTING THE ACTIVATING ROD



1. Inspect:
- Ball **(1)**.
- Activating rod **(2)**.

Wear/cracks/damage => **Replace**.

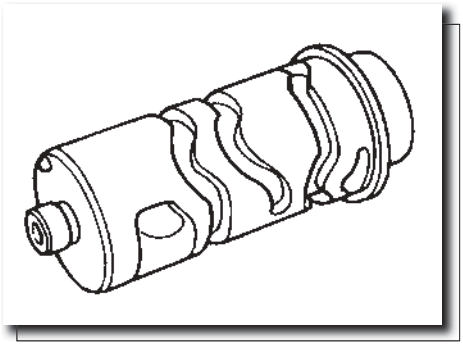
INSPECTION OF THE FORKS AND GEAR SELECTOR



1. Inspect:
- Fork follower **(1)**.
- Ends of the gear change forks **(2)**.

Scratches/warping/wear/damage => **Replace**.

2. Inspect:
- Gear selector slots.

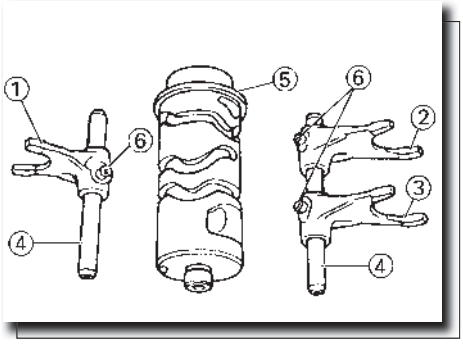


Wear/damage/scratches => **Replace**.

- Gear change selector follower.

Wear/damage => **Replace**.

3. Inspect:
- Gear change fork 1 centre right (**1**).
- Gear change fork 2 top left **(2)**.
- Gear change fork 3 bottom left **(3)**.
- Guide bar **(4)**.
- Gear change selector **(5)**.
- Guide pin **(6)**.



Roll the guide bar on a flat surface.

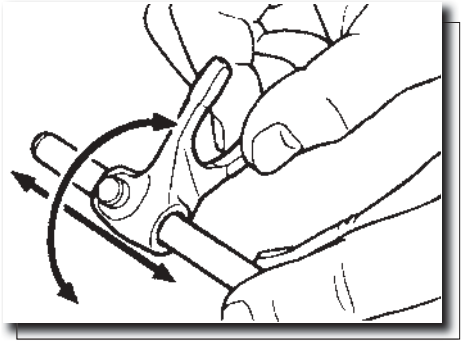
Warping => **Replace.**

WARNING
DO NOT TRY AND STRAIGHTEN A WARPED BAR.

INSPECTION AND REPAIR

4. Check:
- Movement of the gear change forks (in the guide bar).

Irregular movement => **Replace the fork and the bar**.

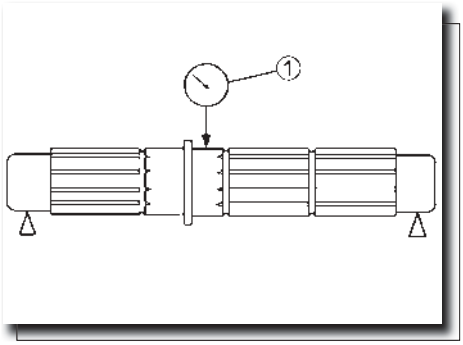


N.B.
IF THE GEAR CHANGE FORK AND THE DRIVE SPROCKETS ARE DAMAGED, REPLACE THE SPROCKETS TO EITHER SIDE ALL TOGETHER.

5. Measure:
- Warping of the shafts (drive and driven).

Use a support between points and a dial gauge for linear measurement **(1)**.

Outside that specified => **Replace the warped shaft**.

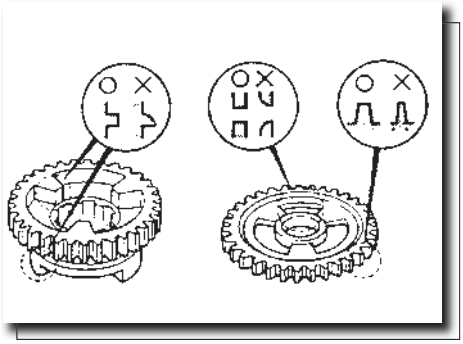


6. Inspect:
- Sprocket teeth.

Blue colouring/grooves/wear => **Replace**.

- Sprocket claws

Rounded edges/cracks/pieces missing =>**Replace**.



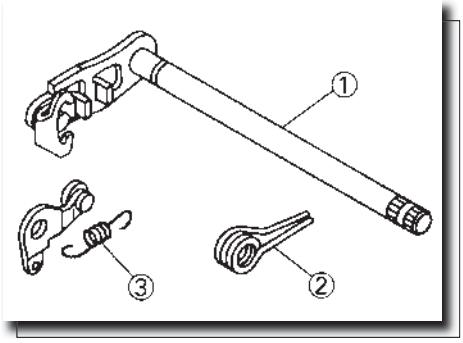
7. Inspect:
- Gear change shaft **(1)**.

Damage/warping/wear => **Replace**.

- Return spring (gear change shaft) **(2)**.

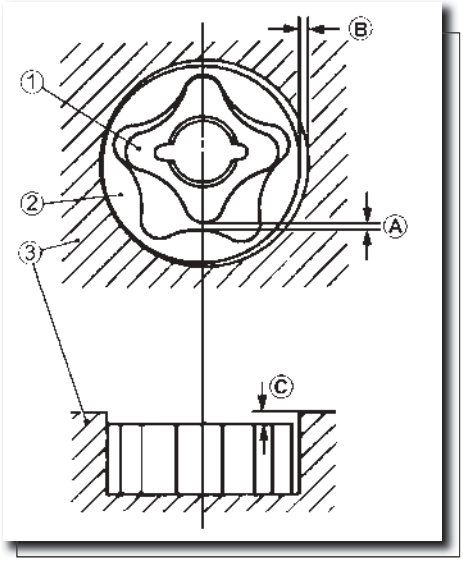
- Return spring (limiter rod) **(3)**.

Wear/damage => **Replace**.



INSPECTION AND REPAIR

INPECTING THE OIL PUMP



1. Measure:
- Clearance between points **(A)**.
(between inner rotor **(1)** and outer rotor **(2)**).

- Lateral clearance **(B)**.
(between the outer rotor **(2)** and the pump casing **(3)**).

Outside that specified => **Replace the oil pump assembly**.

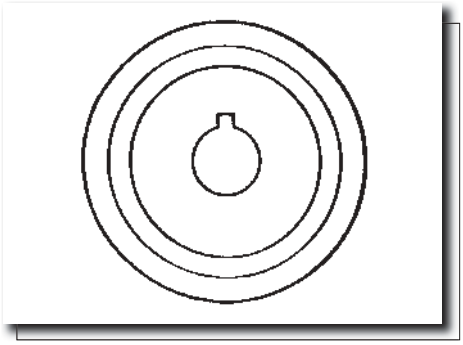
- Clearance between the casing and the rotor **(C)**.
(between the pump casing **(3)** and the rotors **(1)** and **(2)**).

Outside that specified => **Replace the oil pump assembly**.

Clearance between points (A):
0,15 mm <Limit: 0,20 mm>

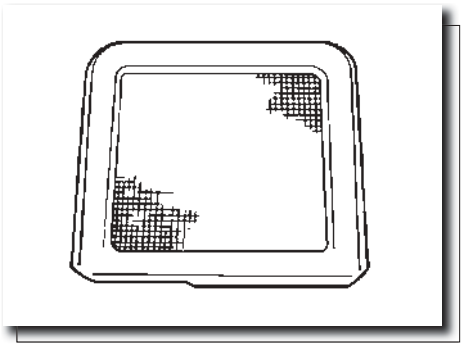
Lateral clearance (B):
0,06~0,10mm<Limit: 0,15mm>

Clearance between the casing and the rotor (C):
0,06~0,10mm<Limit: 0,15mm>



2. Inspect:
- Rotating filter

Cracks/damage => **Replace**.
Contamination => **Clean**.



3. Inspect:
- Oil suction device

Cracks/damage => **Replace**.
Contamination => **Clean**.

INSPECTION AND REPAIR

INSPECTING THE OIL PASSAGES (CASING COVER RIGHT HAND SIDE)

1. Inspect:

- Oil passage

Obstructions => **Blow through with compressed air.**

CASING

1. Wash the casing well with petrol.

2. Clean well the seal-bearing surfaces and the casing contact surfaces.

3. Inspect:
- Casings

Cracks/damage => **Replace**.

- Oil passages

Obstructions => **Blow through the passages with compressed air**.

BEARINGS AND RETAINING RINGS

1. Inspect:
- Bearings

Clean and lubricate, then turn the inner ring by hand.

Roughness => **Replace**

2. Inspect:
- Retention rings

Damage/wear => **Replace**.

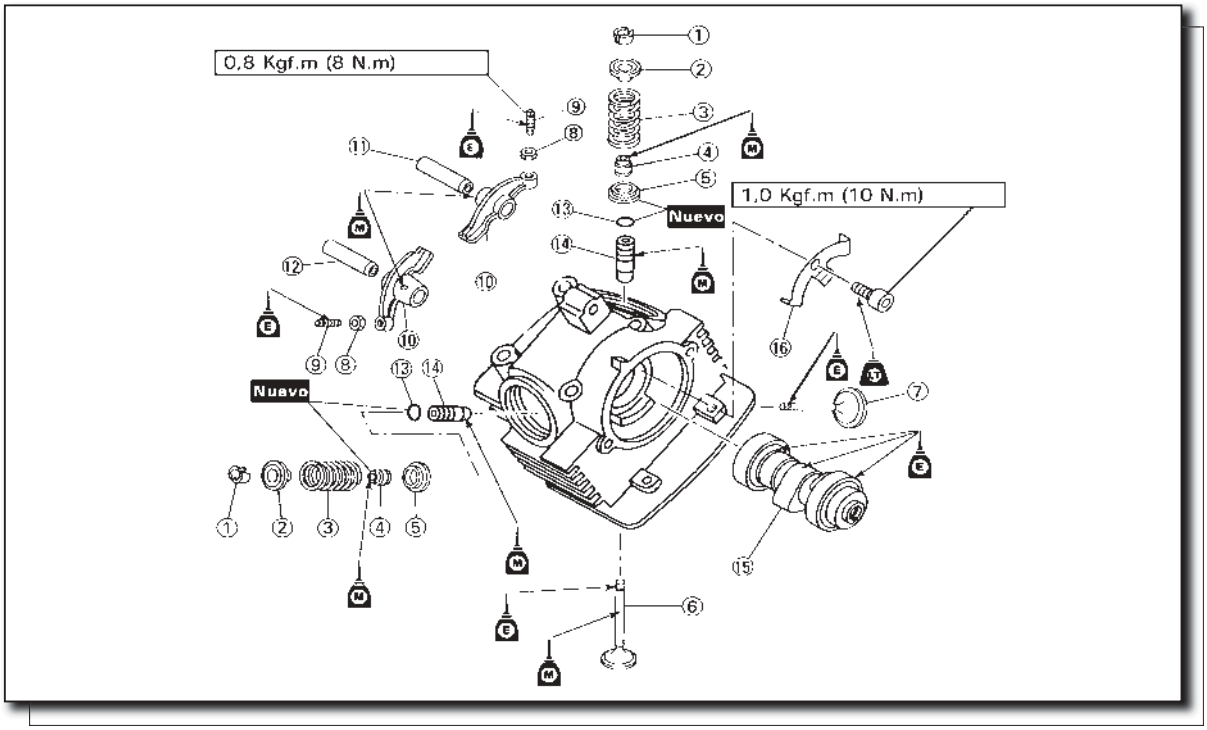
LOCKING RINGS AND WASHERS

1. Inspect:
- Circlips
- Washers

Damaged/loose/distorted => **Replace**.

ENGINE ASSEMBLING AND ADJUSTMENT

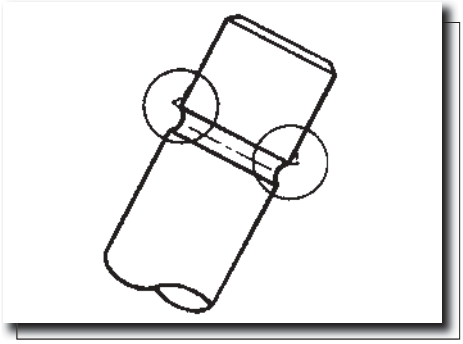
VALVES, ROCKERS AND CAMSHAFT



1	Valve collets
2	Collet seat
3	Spring
4	Retaining riing
5	Spring seat
6	Valve (inlet)
7	Valves (exhaust)
8	Locknut
9	Adjuster
10	Rocker
11	Rocker shaft (inlet)
12	Rocker shaft (iexhaust)
13	Locking ring
14	Valve guide
15	Camshaft
16	Locking plate

ENGINE ASSEMBLING AND ADJUSTMENT

WARNING
TO ASSEMBLE THE ENGINE, REPLACE THE FOLLOWING PARTS WITH NEW ONES:
- O-RINGS
- SEALS
- RETAINING RINGS
- COPPER WASHERS
- TAB WASHERS
- LOCKING RINGS

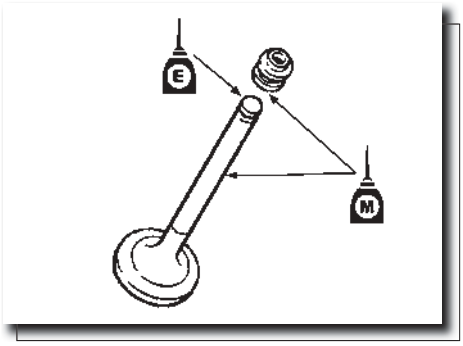


FITTING VALVES AND VALVE SPRING

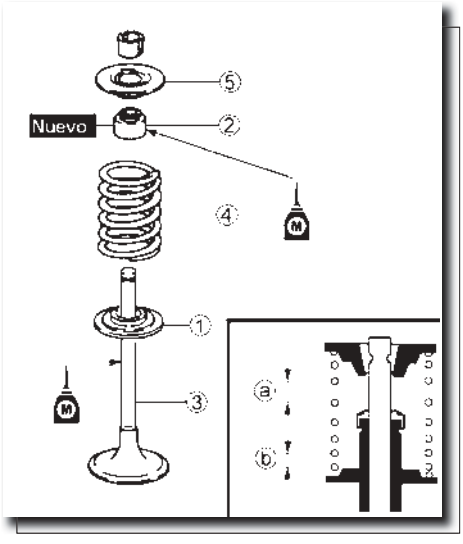
1. Eliminate the rough edges:
- From the end of the valve stem.
Use a grindstone to eliminate rough edges.

2. Apply:
Apply molybdenum disulphate acid (to the valve stem and the retaining ring)

Molybdenum disulphate acid.



3. Fit:
- Spring seat **(1)**.
- Retaining ring **(2)**.
- Valve **(3)** (in the cylinder head)
- Valve spring **(4)**.
- Collet seat **(5)**.



N.B.
INSTALL THE VALVE SPRNGS WITH THE LARGER GAP **(A)** UPWARDS.

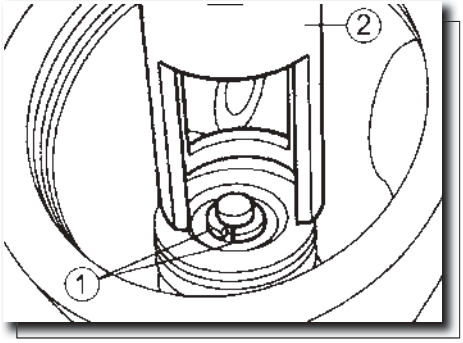
(b) Smaller gap

Inlet:
"IN" mark

Exhaust:
"EX" mark

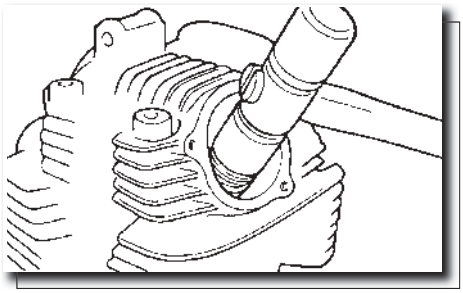
4. Fit:
- Valve collets **(1)**.

N.B.
INSTALL THE VALVE COLLETS WHILE COMPRESSING THE VALVE SPRING WITH THE VALVE SPRING COMPRESSOR **(2)**.



ENGINE ASSEMBLING AND ADJUSTMENT

5. Position the valve collets on the valve stem, tapping them lightly with a rubber hammer.



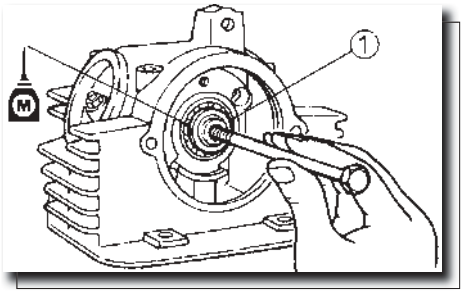
ATTENTION
DO NOT HIT THEM TOO HARD, AS THIS MAY DAMAGE THE VALVE.

INSTALLING THE VALVES, ROCKERS AND CAMSHAFT

1. Lubricate:
- Camshaft **(1)**.

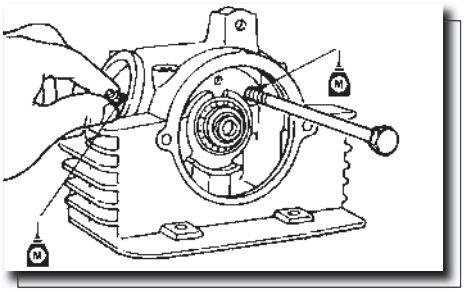
Camshaft:
Molybdenum disulphate acid

Camshaft bearing:
Engine oil

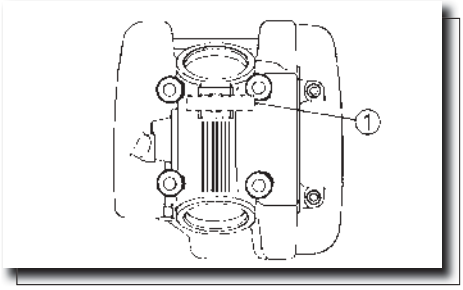


2. Apply:
Molybdenum disulphate acid (to the rocker and its shaft).

Molybdenum disulphate acid.

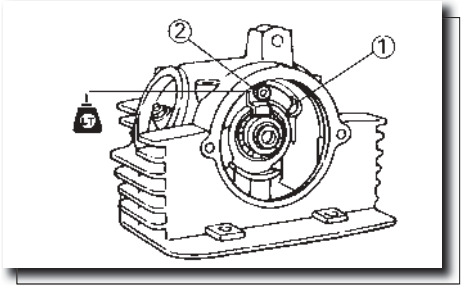


3. Fit:
- Rocker.
- Rocker shaft **(1)**.



N.B.
FIT THE (EXHAUST) ROCKER SHAFT COMPLETELY.

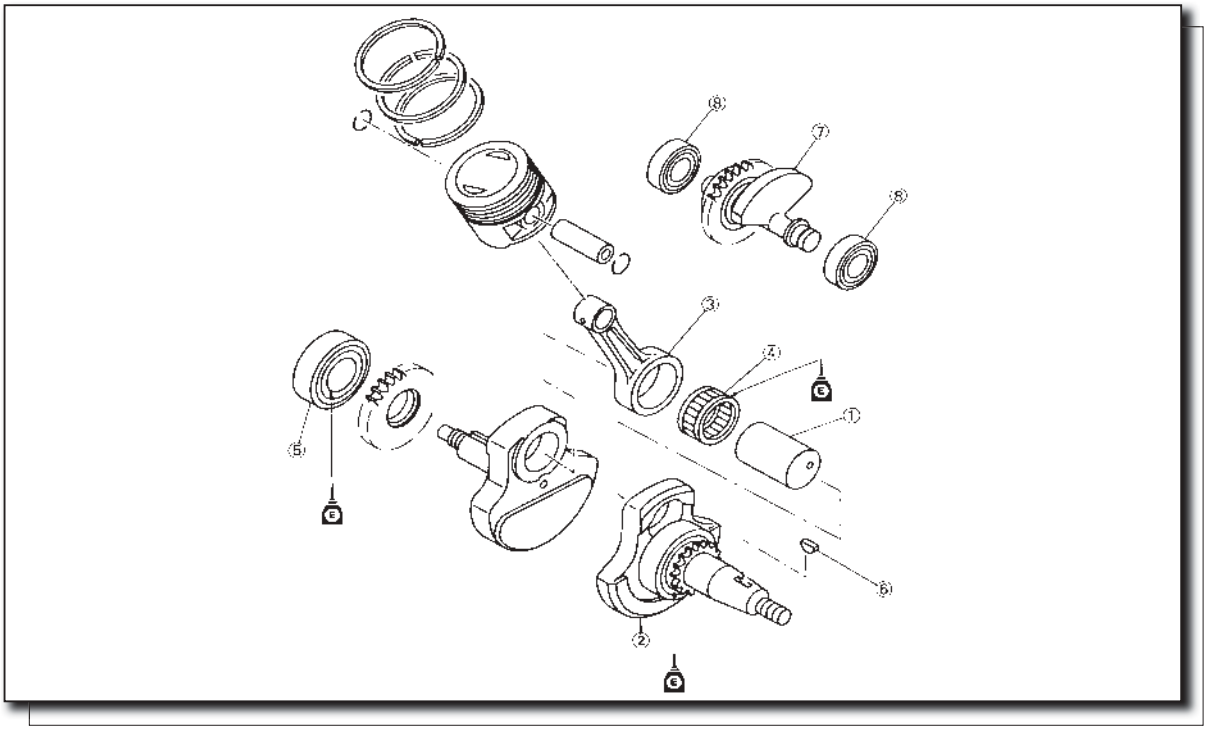
4. Fit:
- Locking plate **(1)**.
- Bolt **(2)**.



Bolt (locking plate):
1,0 Kgf.m (10 N.m)

ENGINE ASSEMBLING AND ADJUSTMENT

CRANKCHAFT AND BALANCER SHAFT



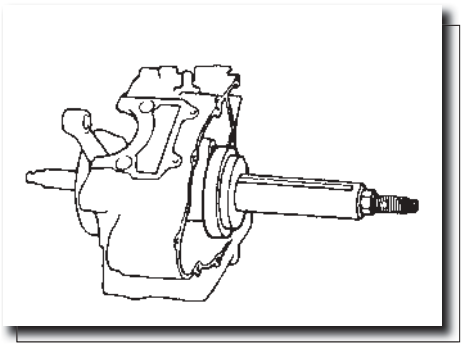
1	Crankshaft journal
2	Crankshaft (L1)
3	Connecting rod
4	Big end bearing
5	Crankshaft bearing
6	Key
7	Balancer
8	Bearing

ENGINE ASSEMBLING AND ADJUSTMENT

CRANKSHAFT AND BALANCER SHAFT

1. Fit:
- Crankshaft extractor

Crankshaft extractor:



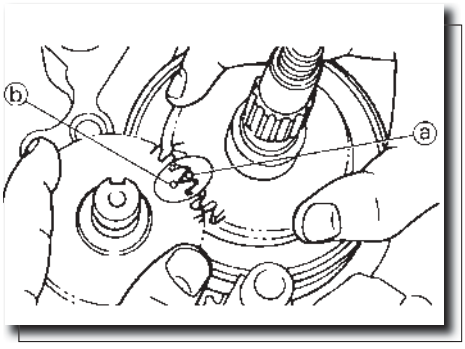
2. Fit:
- Crankshaft

N.B.
HOLD THE CONNECTING ROD WITH ONE HAND WHILE TURNIING THE NUT ON THE SPECIAL TOOL WITH THE OTHER HAND. USE THE TOOL UNTIL YOU FEEL THE CRANKSHAFT FIT INTO THE BEARING.

ATTENTION
TO PREVENT SCRATCHES TO THE CRANKSHAFT AND TO HELP ITS FITTING, APPLY GREASE TO THE RETAINING RING EDGES AND ENGINE OIL TO THE BEARINGS.

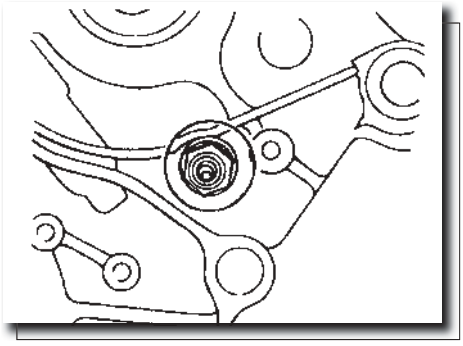
3. Fit:
- Balancer shaft.

Always use new rubber rings.



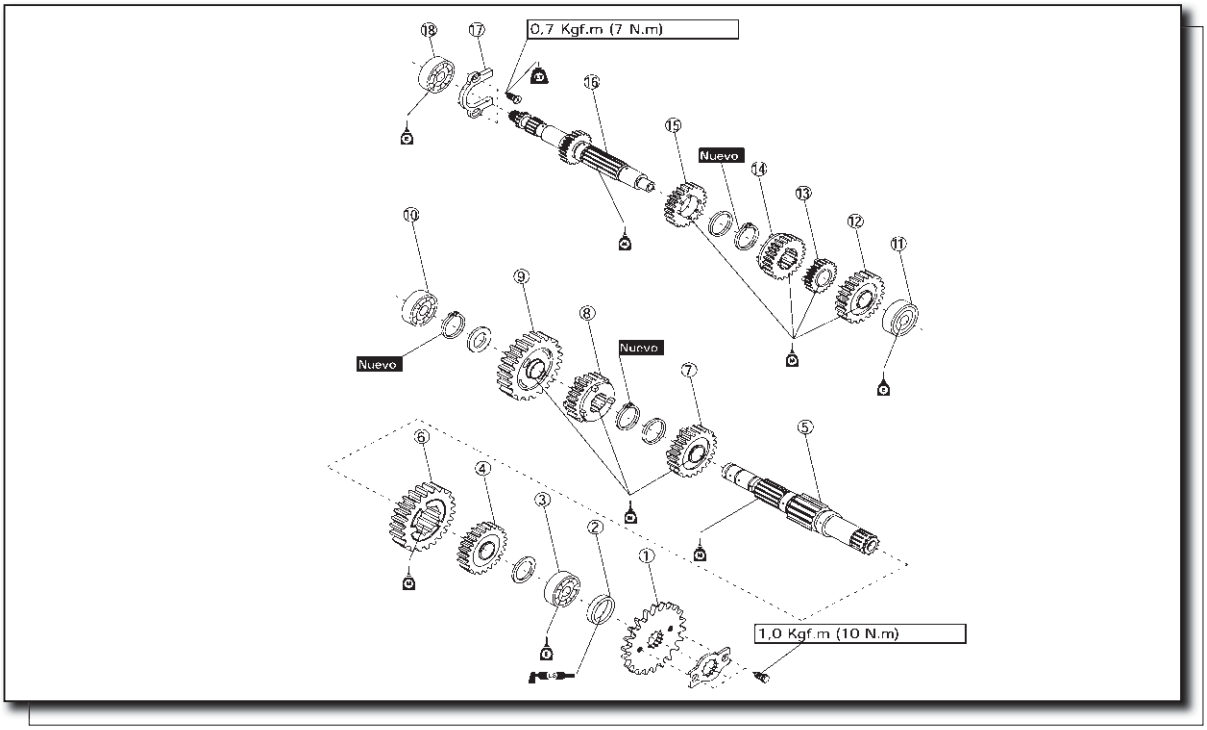
N.B.
ON INSTALLING THE BALANCER SHAFT, ALIGN THE PUNCH MARK (A) ON THE CRANKSHAFT SPROCKET WITH THE PUNCH MARK (B) ON THE BALANCER SPROCKET.

4. Fit:
- Neutral switch



ENGINE ASSEMBLING AND ADJUSTMENT

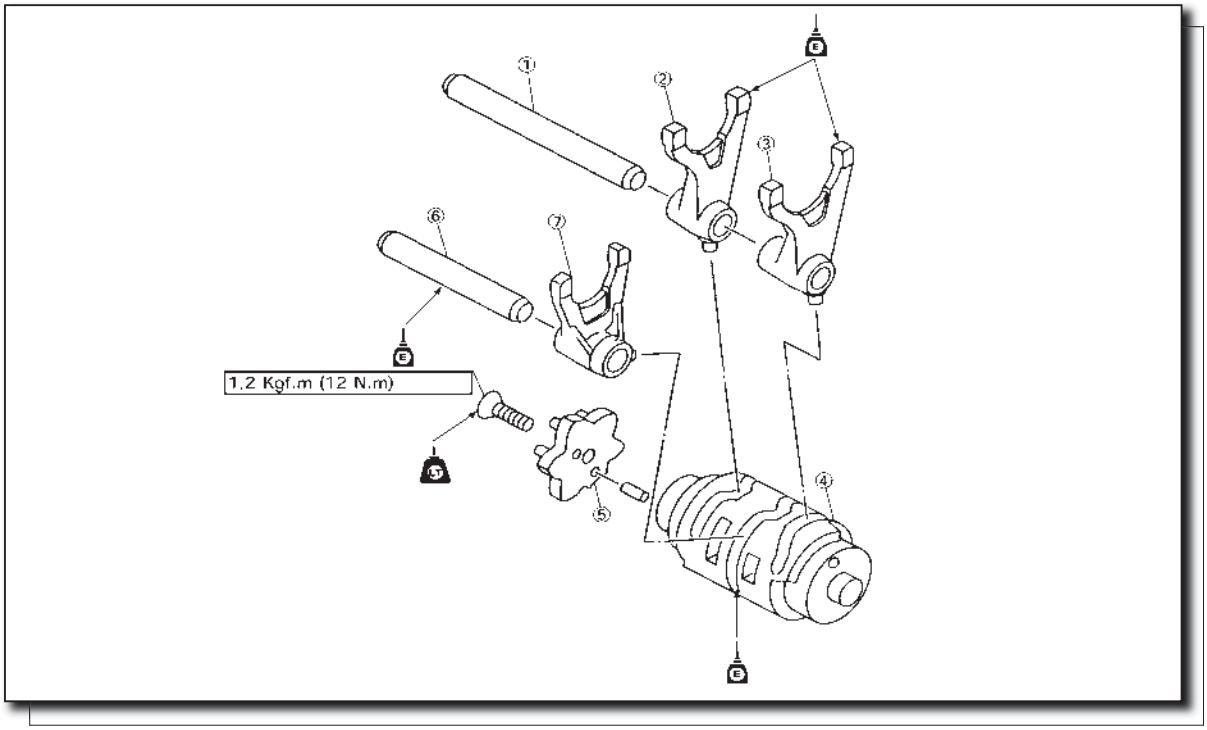
TRANSMISSION



1	Pinion
2	Retaining ring
3	Bearing
4	5th driven gear
5	Drive shaft
6	2nd driven gear
7	3rd driven gear
8	4th driven gear
9	1st driven gear
10	Bearing
11	Bearing
12	5th driving gear
13	2nd driving gear
14	5th driving gear
15	4th driving gear
16	Driving shaft
17	Locking plate
18	Bearing

ENGINE ASSEMBLING AND ADJUSTMENT

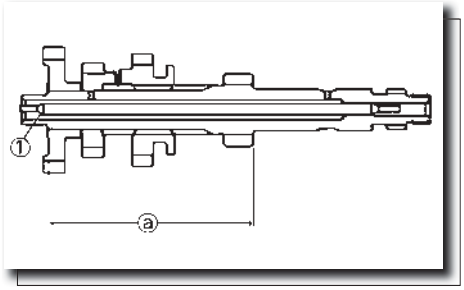
GEAR CHANGE SELECTOR



1	Fork shaft
2	Change fork No.3
3	Change fork No.1
4	Gear selector.
5	Distributor
6	Fork shaft
7	Change fork No.2

ENGINE ASSEMBLING AND ADJUSTMENT

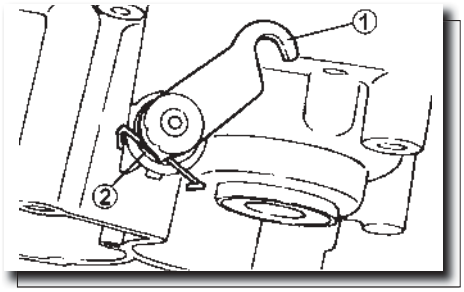
FITTING THE TRANSMISSION, FORKS AND GEAR SELECTORS



1. Measurement:
- Length **(a)** of the drive shaft.

Length of the shaft (driving):
82,25 ~ 83,45 mm

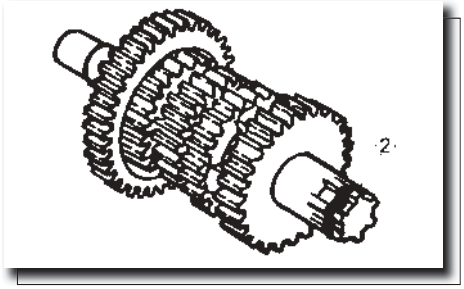
2. Fit:
Activating rod No. 2 **(1)** .
In the drive shaft hole.



3. Fit:
- Activating rod shaft **(1)**.
- Seal **(2)**.

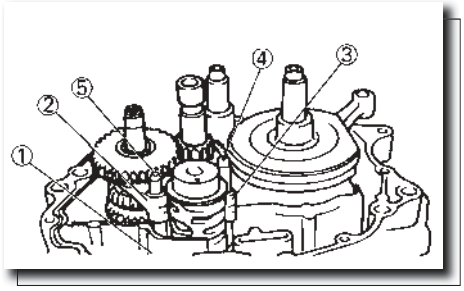
4. Fit:
- O-ring **(2)**.

In the drive shaft slot.



5. Fit:
- Bottom left gear fork (L) **(1)**.
- Top left gear fork (R) **(2)**.
- Centre right gear fork (C) **(3)**.
- Guide bar **(1)** (short) **(4)**.
- Guide bar **(2)** (long) **(5)**.

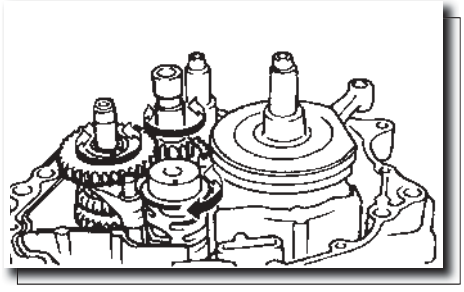
N.B.
FIT THE GEAR FORKS WITH THE STAMPED MARK UPWARDS AND IN THE SEQUENCE (L, R, C), STARTING FROM THE RIGHT.



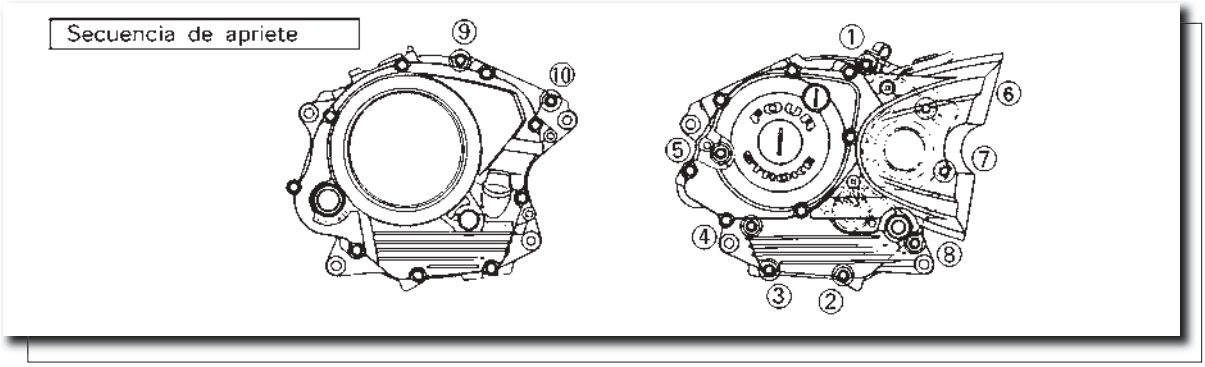
6. Check:
- Gear selector operation.

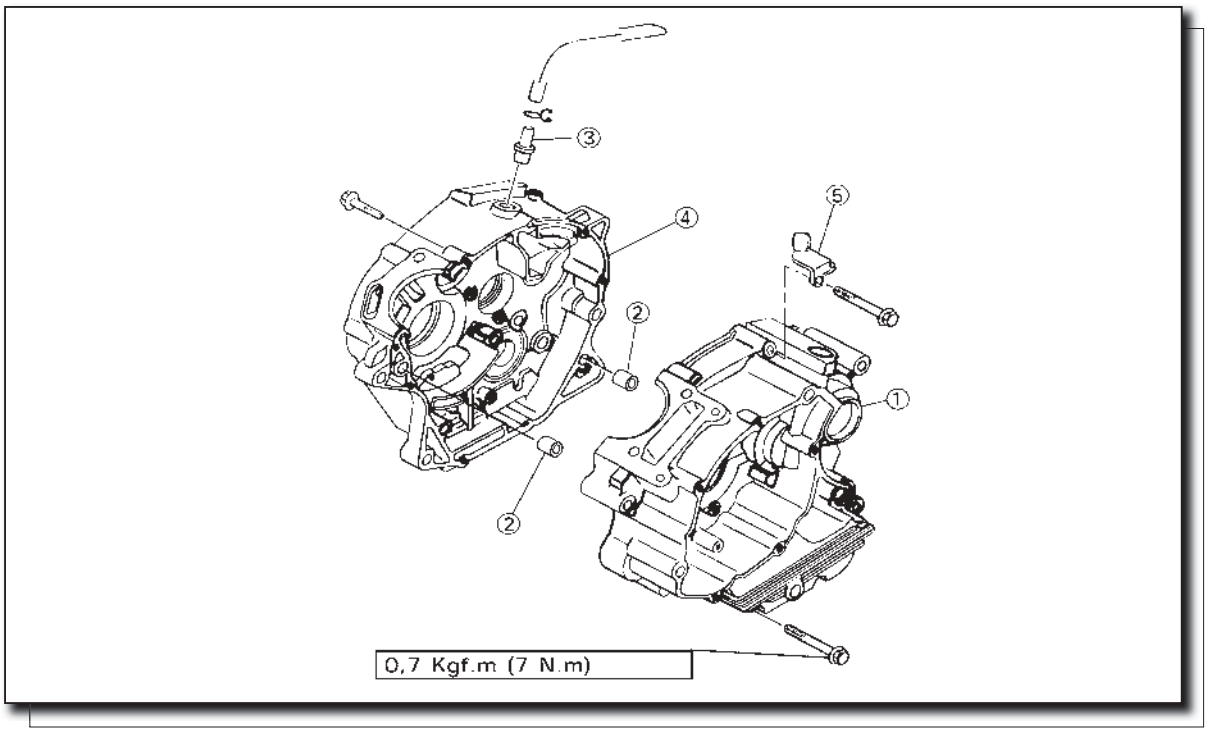
Irregular operation => **Adjust**.

N.B.
CHECK WHETHER THE FUNCTIONING OF THE TRANSMISSION AND FORKS IS NORMAL BY TURNING THE GEAR SELECTOR BY HAND.



ENGINE ASSEMBLING AND ADJUSTMENT

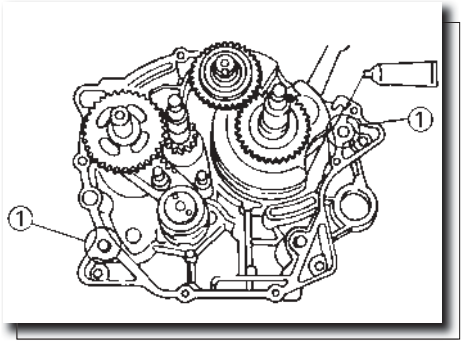




1	Left crankcase
2	Guide pin
3	Crankcase breather pipe
4	Right crankcase
5	Fixing device

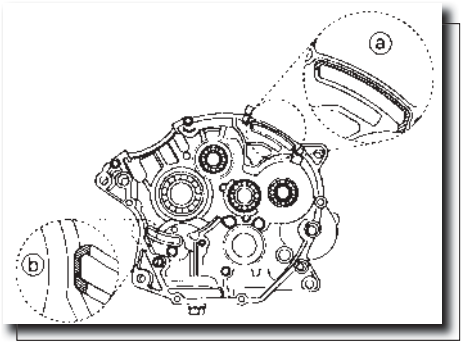
ENGINE ASSEMBLING AND ADJUSTMENT

CRANKCASE (RIGHT HAND SIDE)



1. Apply:
- Adhesive
(to the crankcase contact surfaces).

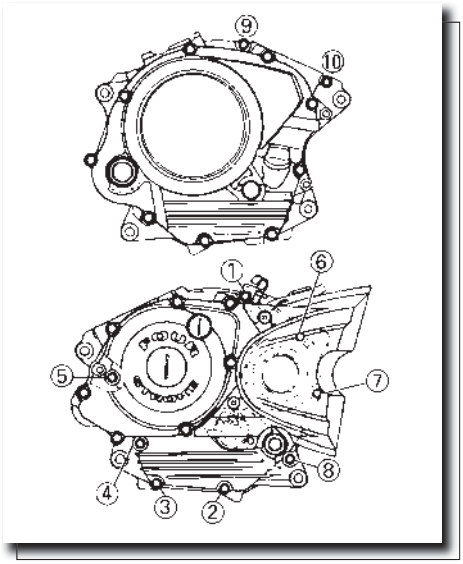
N.B.
ENSURE THAT THE ADHESIVE DOES NOT COME INTO CONTACT WITH THE OIL PASSAGES (A) AND (B) INDICATED IN THE FIGURE TO THE SIDE.



2. Fit:
- Guide pins **(1)**.

3. Fit:
- Left crankcase
(onto right crankcase).

N.B.
TAP THE CRANKCASE LIGHTLY WITH A PLASTIC HAMMER.



4. Tighten:
- Bolts (crankcase cover)

Bolts (casing):
1,0 Kgf.m (10 N.m)

N.B.
TIGHTEN THE BOLTS IN DECREASING NUMERICAL ORDER (SEE THE NUMBERS IN THE FIGURE).

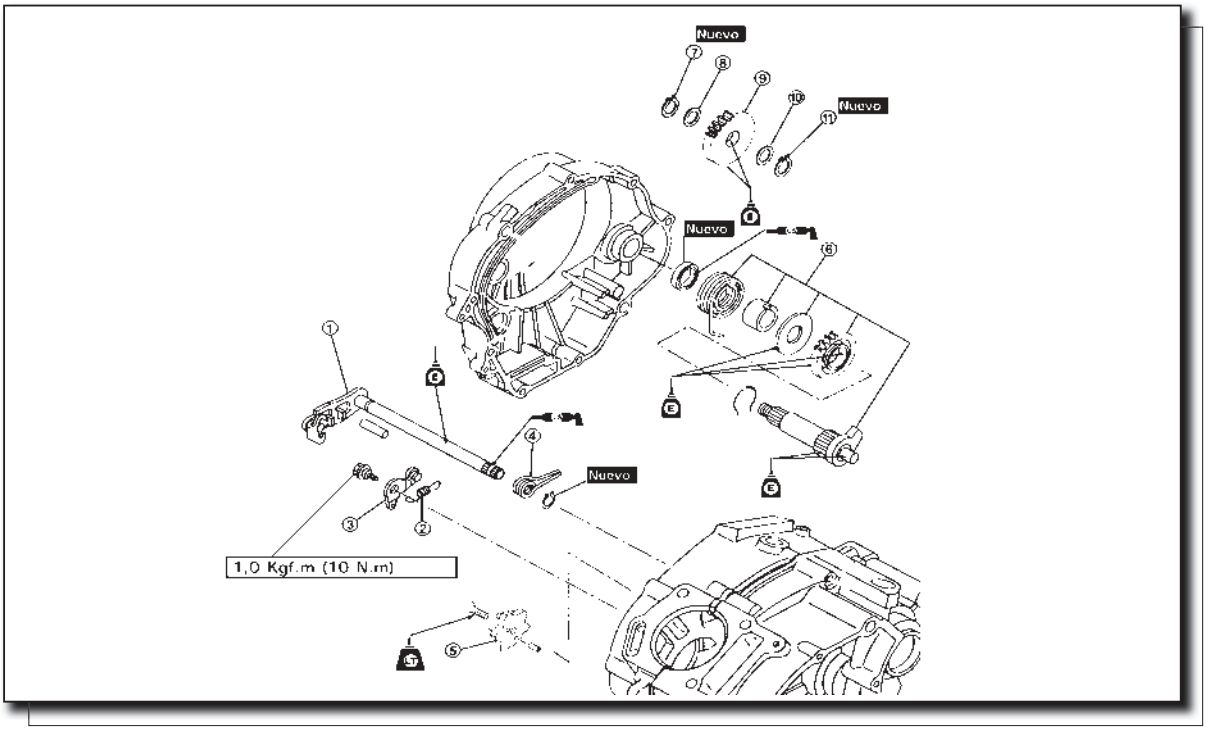
5. Apply:
- 4-stroke engine oil.
(to the crankshaft elbow joints, bearings, oil feed holes).

6. Check:
- Operation of the crankshaft and transmission.

Irregular operation => **Repair**.

ENGINE ASSEMBLING AND ADJUSTMENT

GEAR CHANGE SHAFT AND KICK START PEDAL SYSTEM

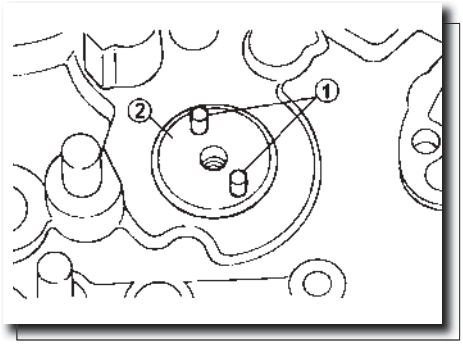


1	Gear change shaft
2	Torsion spring
3	Limiter rod
4	Return spring
5	Distributor
6	Starter system assembly
7	Locking ring
8	Washer
9	Starter gear
10	Washer
11	Locking ring

ENGINE ASSEMBLING AND ADJUSTMENT

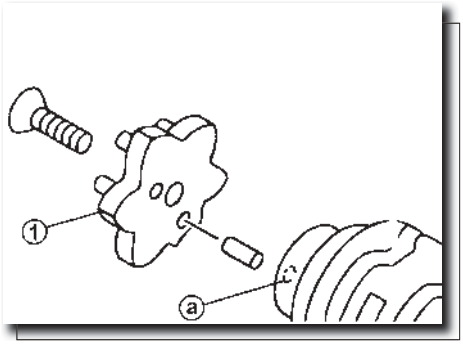
GEAR SELECTOR DISTRIBUTOR AND GEAR CHANGE SHAFT

1. Fit:
- Guide pins **(1)**.
(on the follower **(2)**)



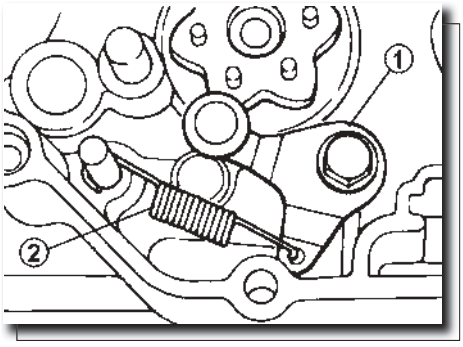
2. Fit:
- Distributor **(1)**.
Using a 4mm Allen key.

N.B.
FIT THE DISTRIBUTORGUIDE PINS IN THE POSITIONING HOLE (A) OF THE GEAR SELECTOR AND FIT THE SEGMENT.



3. Fit:
- Limiter rod **(1)**.
- Spring **(2)**.

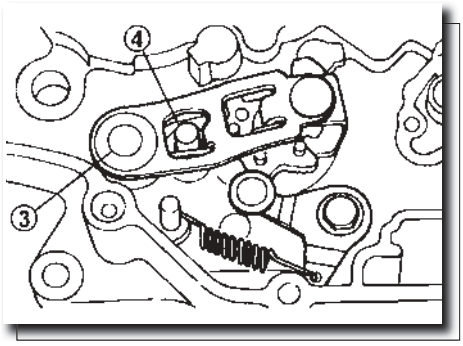
N.B.
HOOK THE SPRING ONTO THE LIMITER ROD (1) AND ONTO THE CRANKSHAFT CASING.
CONNECT THE LIMITER ROD (1) TO THE GEAR SELECTOR LIMITER.



Bolt (limiter rod):
1,0 Kgf.m (10 N.m)

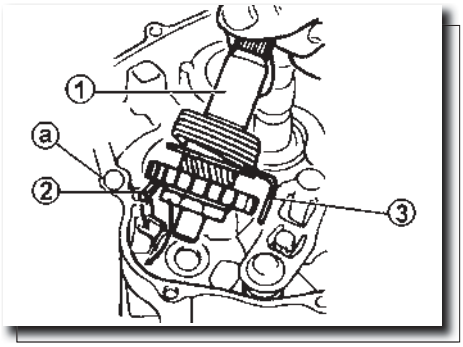
4. Fit:
- Gear change shaft assembly **(3)**.

N.B.
APPLY GREASE TO THE PINS OF THE RETAINING RINGS. FIT THE ENDS OF THE SPRING INTO THE LIMITER **(4)**.



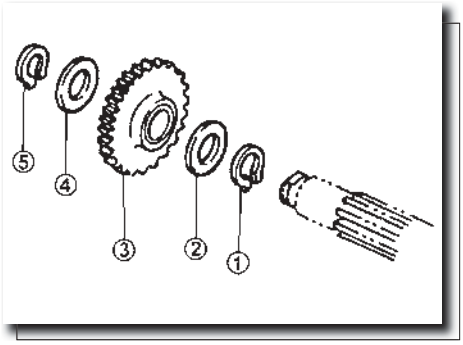
ENGINE ASSEMBLING AND ADJUSTMENT

FITTING THE KICKSTART PEDAL SYSTEM



1. Fit:
- Starter system shaft assembly **(1)**.
- Starter gear locking ring **(2)**.
- Torsion spring

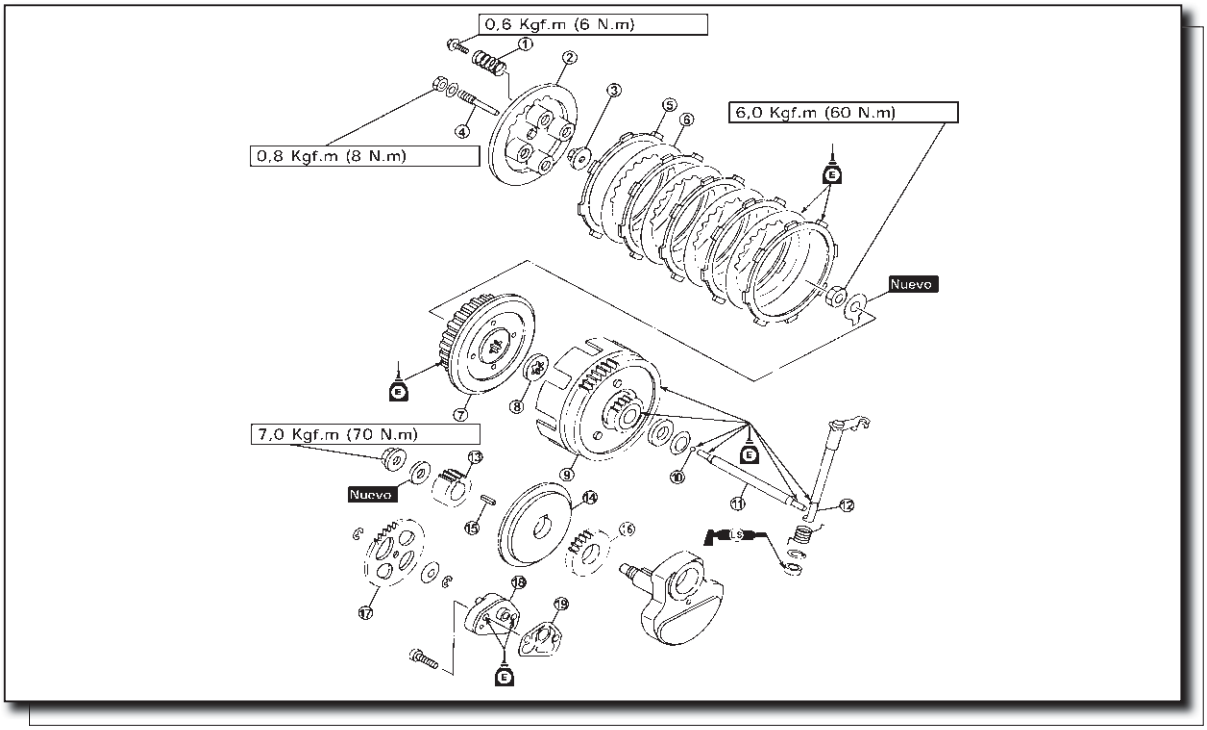
N.B.
TURN THE TORSION SPRING IN A CLOCKWISE DIRECTION AND HOOK IT INTO HOLE (A) IN THE CRANKCASE.



2. Fit:
- Locking ring **(1)**.
- Washer **(2)**.
- Starter gear **(3)**.
- Washer **(4)**.
- Locking ring **(5)**.

ENGINE ASSEMBLING AND ADJUSTMENT

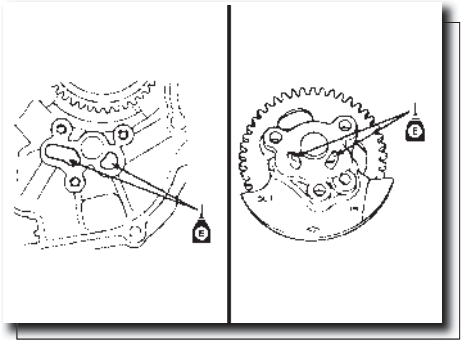
CLUTCH, BELL HOUSING AND OIL PUMP



1	Clutch spring
2	Pressure plate
3	Activating plate
4	Activating rod 1
5	Friction disk
6	Separator
7	Clutch assembly nut
8	Pressure washer
9	Clutch bell housing
10	Ball
11	Activating rod 2
12	Activating lever shaft
13	Primary gear
14	Rotary filter
15	Key
16	Oil pump drive gear
17	Oil pump driven gear
18	Oil pump
19	Seal

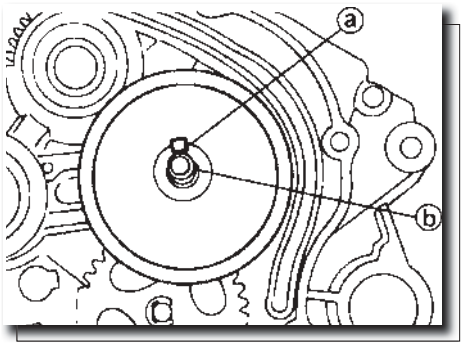
ENGINE ASSEMBLING AND ADJUSTMENT

INSTALLING THE OIL PUMP



1. Lubricate:
- Oil feed passage (right hand crankcase)
- Oil pump assembly

Recommended lubricant:
Engine oil.

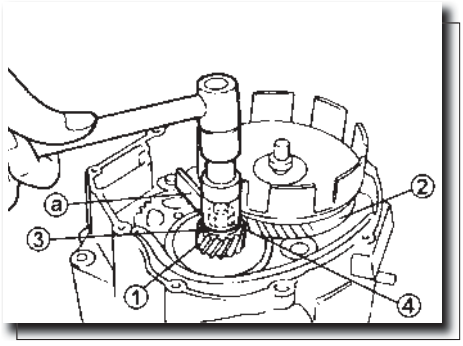


2. Fit:
- Oil pump drive gear
- Key
- Rotary filter

N.B.
1. FIT THE OIL PUMP GEAR WITH THE CHANNEL INWARDS.

2. FIT THE ROTARY FILTER WITH THE SIDE WITH THE GREATER PROTRUSION INWARDS, FITTING INTO THE TONGUE IN THE CRANKSHAFT CHANNEL.

INSTALLING THE CLUTCH BELL HOUSING

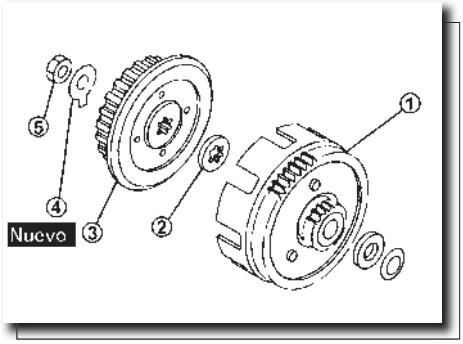


1. Fit:
- Primary gear **(1)**.
- Clutch bell housing **(2)**.
- Washer **(3)**.
- Primary gear nut **(4)**.

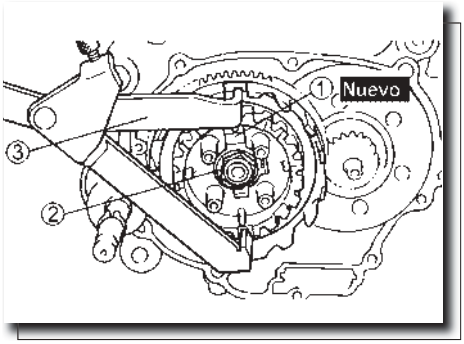
N.B.
FIT THE PRIMARY GEAR WITH THE LETTER OUTWARDS.
PLACE A FOLDED PIECE OF ALUMINIUM OR COPPER **(A)** BETWEEN THE TEETH OF THE PRIMARY GEAR **(1)** AND THE TEETH OF THE BELL HOUSING **(2)**.

ENGINE ASSEMBLING AND ADJUSTMENT

INSTALLING THE CLUTCH



1. Fit:
- Clutch bell housing **(1)**.
- Pressure washer **(2)**.
- Clutch assembly **(3)**.
- Tab washer **(4)**.
- Clutch assembly nut **(5)**.



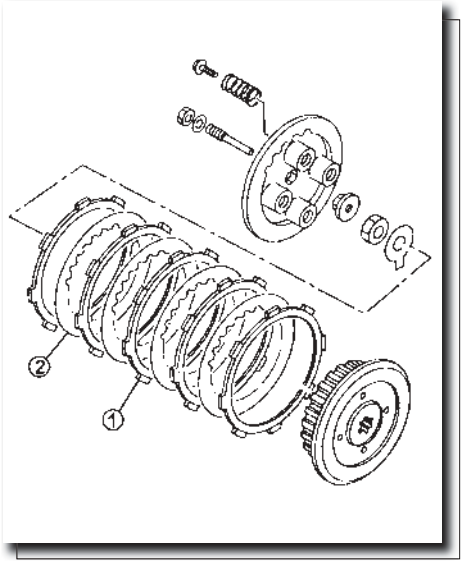
2. Tighten:
- Clutch assembly nut **(2)**.

N.B.
TIGHTEN THE CLUTCH ASSEMBLY NUT (2) WHILE HOLDING THE ASSEMBLY WITH THE UNIVERSAL CLUTCH HOLDER **(3)**.

Universal clutch holder:
90890-04086

Clutch assembly nut
6,0 Kgf.m (60 N.m)

3. Fold over:
- The tab of the tab washer **(1).**
(upwards onto a flat side of the nut).



4. Fit:
- Friction disks **(1)**.
- Separators **(2)**.

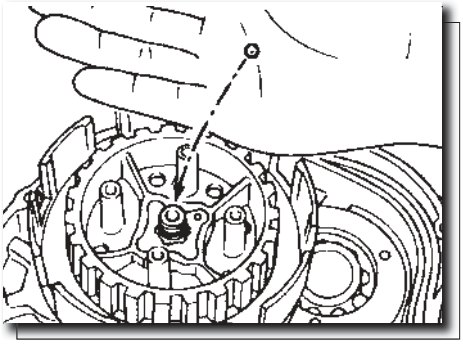
N.B.
- FIT THE DISKS AND SEPARATORS ALTERNATELY INTO THE CLUTCH ASSEMBLY, STARTING WITH A FRICTION DISK AND ALSO ENDING WITH A FRICTION DISK.

- LUBRICATE ALL THE DISKS AND SEPARATORS WITH ENGINE OIL BEFORE FITTING.

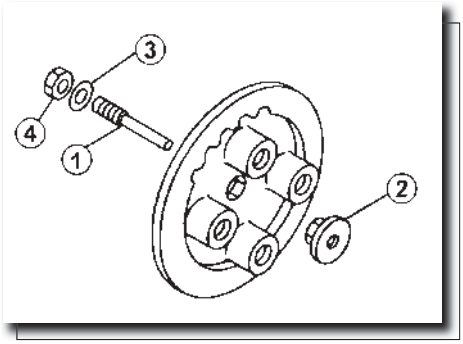
- BE SURE TO FIT EACH SEPARATOR WITH ITS PROJECTIONS TURNED AT 90° TO THE PREVIOUS ONE. CONTINUE WITH THIS PROCEDURE IN A CLOCKWISE DIRECTION UNTIL ALL THE SEPARATORS HAVE BEEN INSTALLED.

ENGINE ASSEMBLING AND ADJUSTMENT

5. Fit:
- Ball.



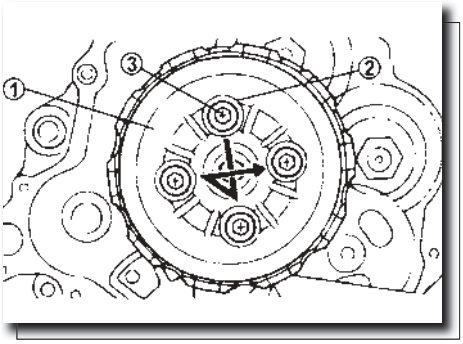
6. Fit:
- Activating rod No.1 **(1)**.
- Activating plate **(2)**.
- Washer **(3)**.
- Activating rod No.1 nut **(4)**.



7. Fit:
- Pressure plate **(1)**.
- Compression springs **(2)**.
- Bolts **(3)**.

Bolts (clutch spring):
0,6 Kgf.m (6 N.m)

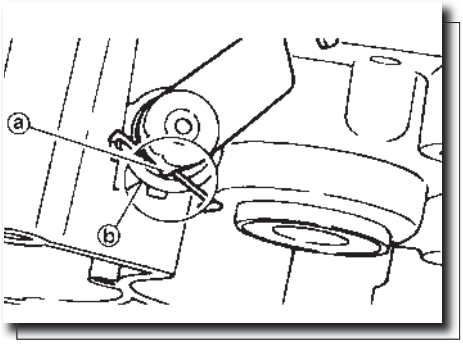
N.B.
TIGHTEN THE SPRING BOLTS GRADUALLY AND IN A DIAGONAL FASHION.



8. Check:
- Position of the activating plate.

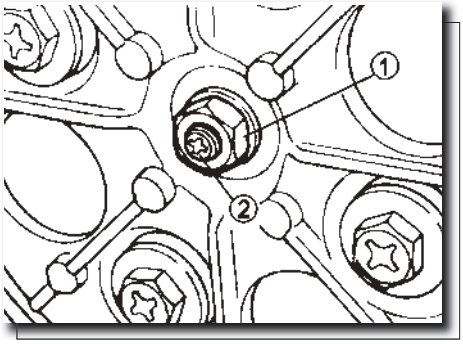
Push the lever assembly in the direction of the arrow and ensure that the alignment marks are lined up.

(a) Lever mark.
(b) Crankshaft mark.



ENGINE ASSEMBLING AND ADJUSTMENT

9. Adjust:
- Position of the activating plate.



Adjustment steps:
- Loosen the lock nut **(1)**.
- Turn the adjuster **(2)** clockwise or anticlockwise to line up the marks.

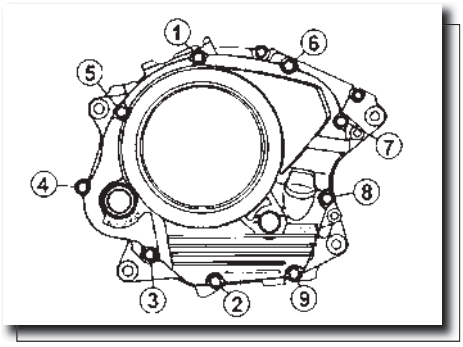
- Hold the adjuster to stop it from moving and tighten the locknut.

ATTENTION
BE CAREFUL NOT TO OVERTIGHTEN THE ADJUSTER **(2)** AND ELIMINATE THE CLEARANCE BETWEEN THE TWO ACTIVATING RODS.

- Tighten the lock nut **(1)**.

Lock nut:
0,8 Kgf.m (8 N.m).

10. Fit:
- Guide pins.
- Crankcase gasket.
- Right hand crankcase cover.

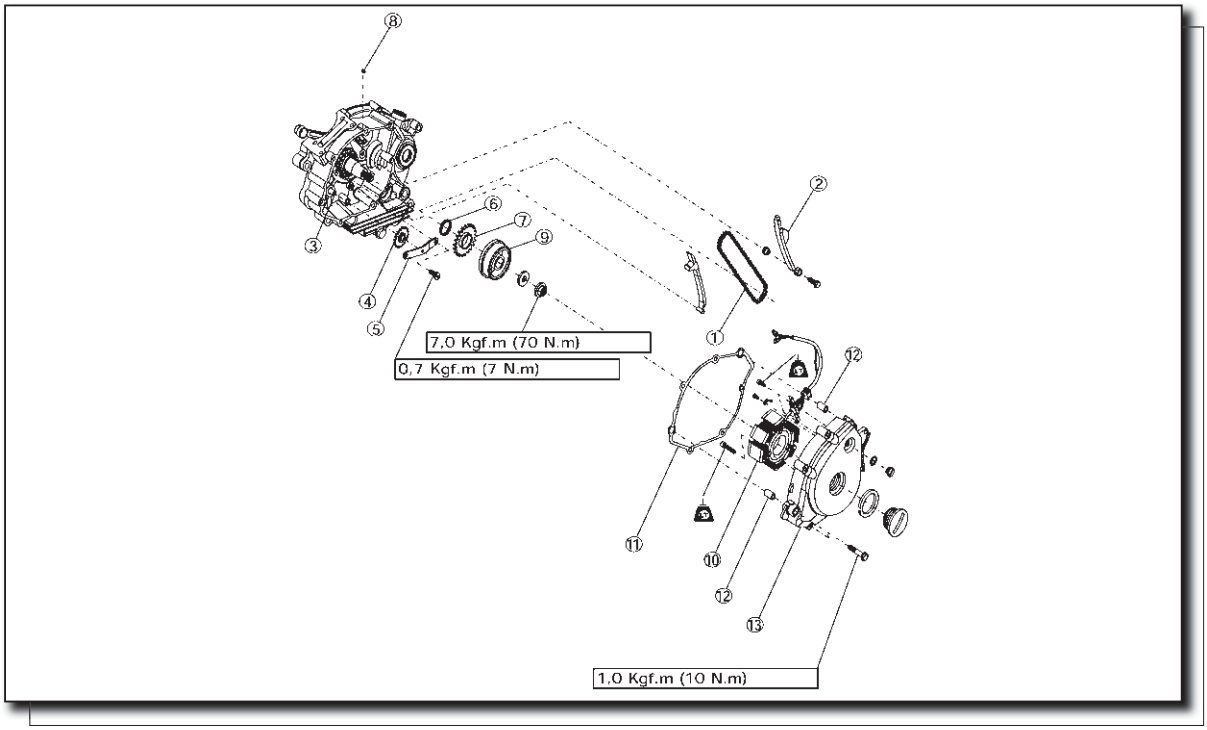


Crankcase cover bolts.
1,0 Kgf.m (10 N.m).

N.B.
TIGHTEN THE BOLTS IN DECREASING NUMERICAL ORDER (SEE THE NUMBERS IN THE FIGURE).

ENGINE ASSEMBLING AND ADJUSTMENT

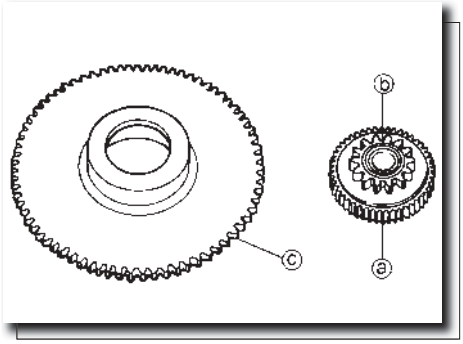
MAGNETO



1	Timing chain
2	Chain guide (inlet).
3	Guide pin
4	Starter gear 1
5	Plate
6	Washer
7	Starter gear 2
8	Key
9	Magneto rotor
10	Stator
11	Seal
12	Guide pins
13	Left hand crankcase cover

ENGINE ASSEMBLING AND ADJUSTMENT

INSPECTING THE STARTER GEAR



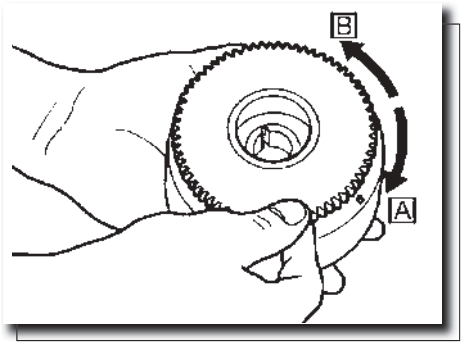
1. Inspect:
- Starter system gear teeth (a) (b) (c).

Rough edges/swarfing/roughness/wear => **Replace**.

2. Check:
- Operation of the starter clutch.

Push the guide pins in the direction of the arrow.

Non-smooth functioning => **Replace**.



Checking steps:
- Hold the starter clutch.

- On turning the (big) starter gear clockwise **(A)**, the starter clutch and the starter gear should be coupled.

- If not, the starter clutch is damaged. Replace.

- On turning the starter gear in an anticlockwise direction **(B)**, it should turn freely.

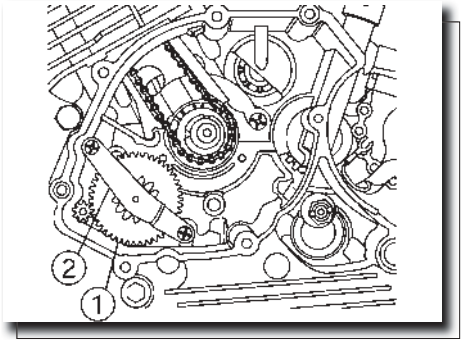
- If not, the starter clutch is damaged. Replace.

MAGNETO ROTOR AND STARTER GEAR

1. Fit:
- Timing chain
- Chain guide.

Bolt (chain guide):
1,0 Kgf.m (10 N.m).

N.B.
TIE A PIECE OF WIRE TO THE TIMING CHAIN TO STOP IT FROM FALLING INTO THE CRANKCASE.



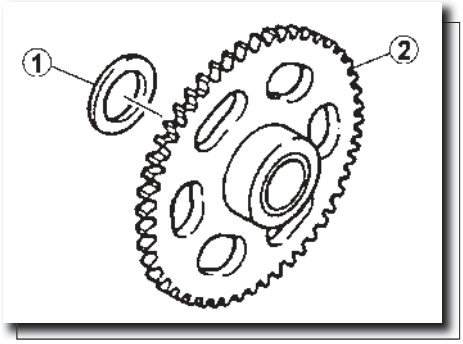
2. Fit:
- Starter gear **(1)**.
- Plate **(2)**.

Plate bolt:
0,7 Kgf.m (7 N.m).

3. Apply:
- 4-stroke engine oil.
(to the starter gears).

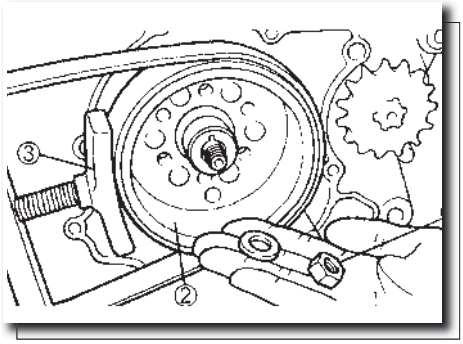
ENGINE ASSEMBLING AND ADJUSTMENT

4. Fit:
- Washer (1).
- Starter gear (2).



5. Fit:
- Key.
- Magneto rotor.

N.B.
FIT THE ROTOR PROVISIONALLY, ALIGNING THE KEYWAY WITH THE KEY. TURN THE STARTER GEAR IN A CLOCKWISE DIRECTION AND FIT THE ROTOR TO THE STARTER GEAR.



6. Tighten:
- Nut (magneto flywheel).

Magneto flywheel nut:
7,0 Kgf.m (70 N.m).

N.B.
TIGHTEN THE NUT (1) WHILE HOLDING THE FLYWHEEL (2) WITH THE ROTOR HOLDER (3).

TAKE CARE NOT TO ALLOW THE ROTOR HOLDER TO TOUCH THE ROTOR PROTRUSIONS.

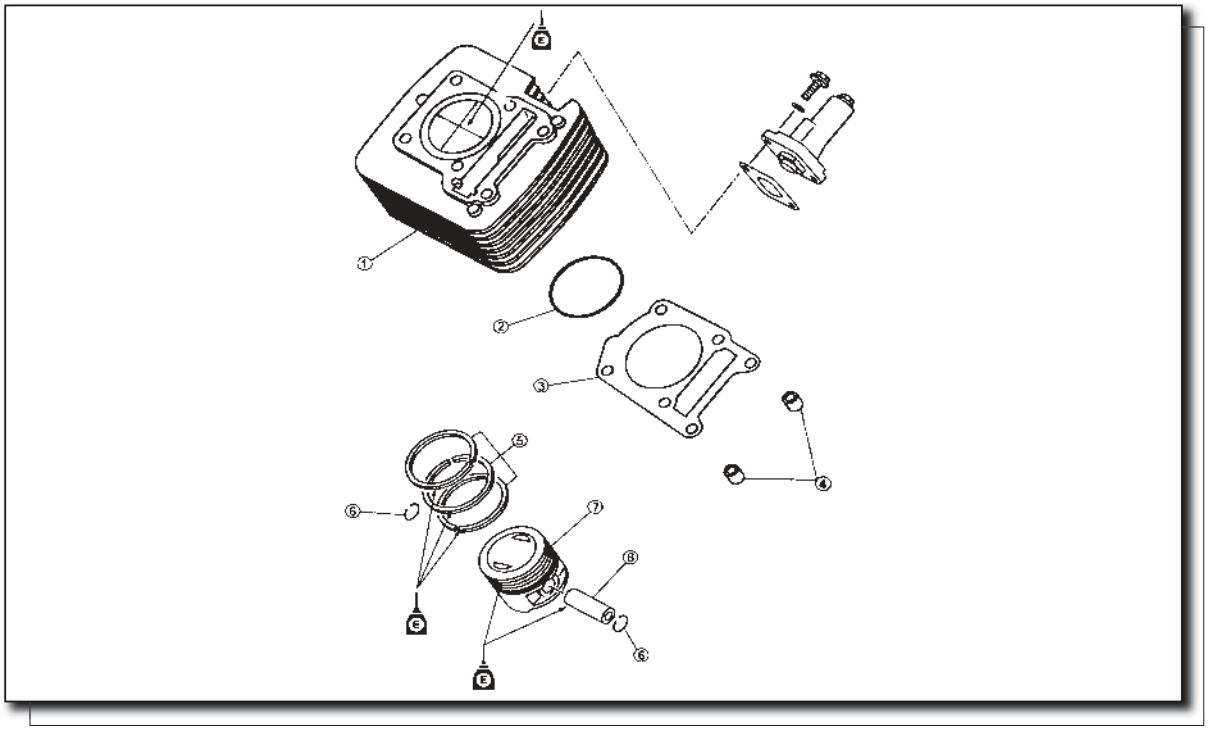
7. Fit:
- Guide pins.
- Crankcase cover gasket.
- Left hand crankcase cover.

Crankcase cover bolts.
1,0 Kgf.m (10 N.m).

8. Connect
- Neutral switch conductor.

ENGINE ASSEMBLING AND ADJUSTMENT

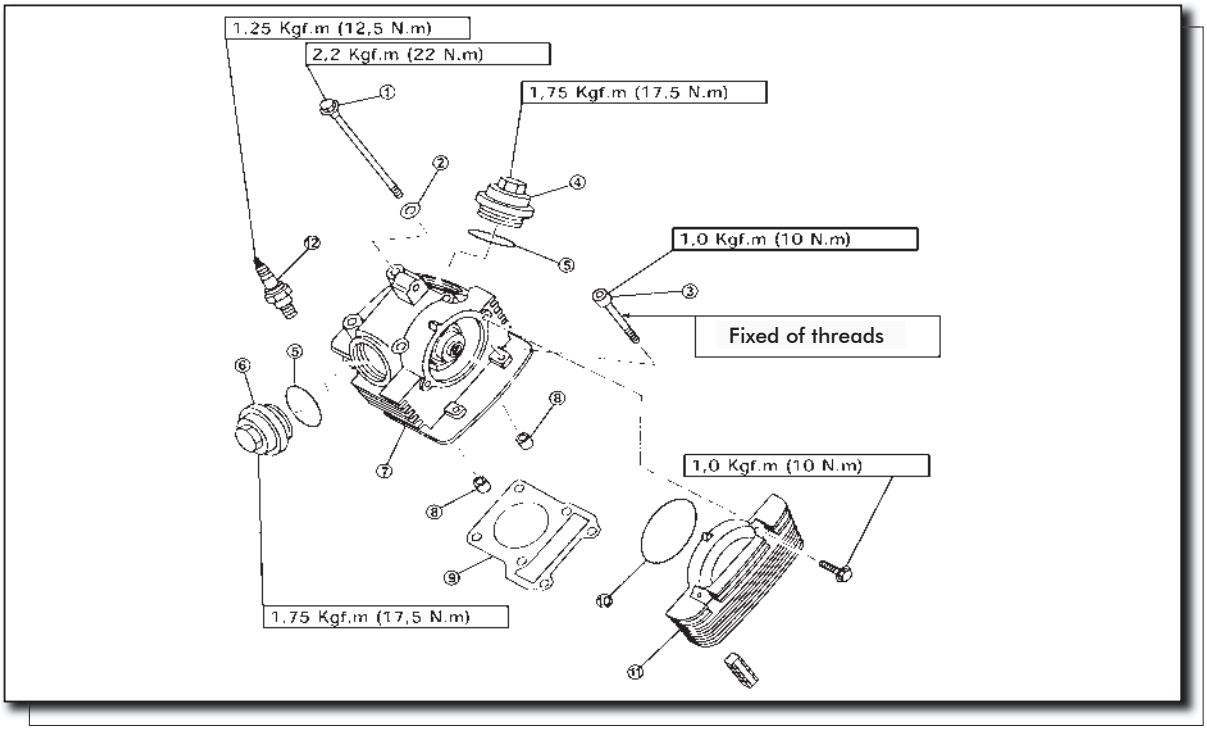
CYLINDER AND PISTON



1	Cylinder
2	O-ring
3	Cylinder gasket.
4	Guide pin
5	Ring assembly
6	Gudgeon pin circlip
7	Piston
8	Gudgeon pin

ENGINE ASSEMBLING AND ADJUSTMENT

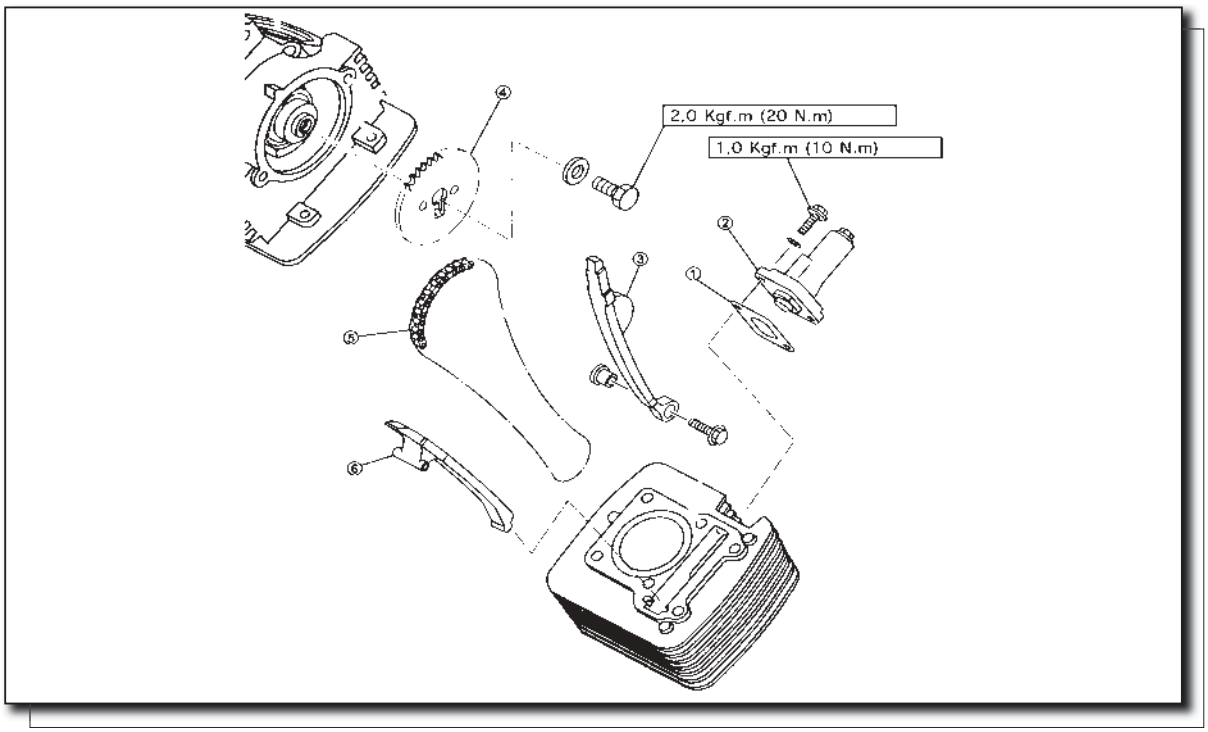
CYLINDER HEAD



1	Bolt
2	Washer
3	Bolt
4	Rocker cover (inlet)
5	O-ring
6	Rocker cover (exhaust)
7	Cylinder head
8	Guide pin
9	Cylinder head gasket
10	O-ring
11	Cylinder head side cover
12	Spark plug

ENGINE ASSEMBLING AND ADJUSTMENT

DRIVE SPROCKET AND TIMING CHAIN

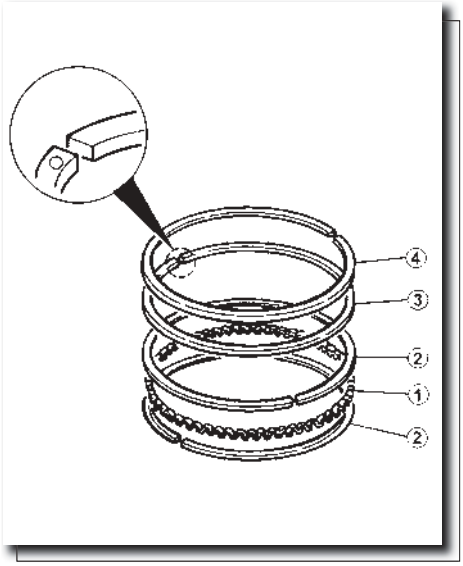


1	Gasket
2	Timing chain tensioner assembly
3	Timing chain guide (inlet)
4	Drive sprocket
5	Timing chain
6	Timing chain guide (exhaust)

ENGINE ASSEMBLING AND ADJUSTMENT

INSTALLING THE RINGS, PISTON AND CYLINDER

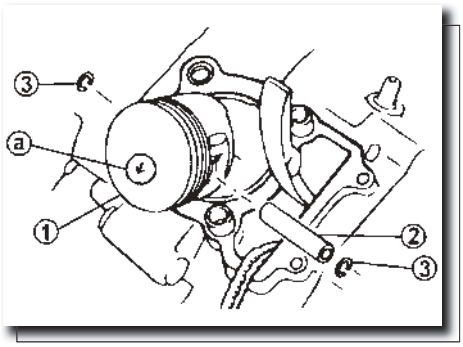
1. Fit according to the following sequence:
- Expansion ring (oil ring) **(1)**.
- Separator rings (oil ring) **(2)**.
- Secondary ring (scraper) **(3)**.
- Top ring (compression) **(4)**.



N.B.
- FIT THE RINGS IN SUCH A WAY THAT THE MANUFACTURER'S MARK IS TOWARDS THE TOP.

- LUBRICATE THE PISTON AND THE RINGS WELL WITH ENGINE OIL.

2. Fit:
- Piston **(1)**.
- Gudgeon pin **(2)**.
- Gudgeon pin circlip **(3)**.

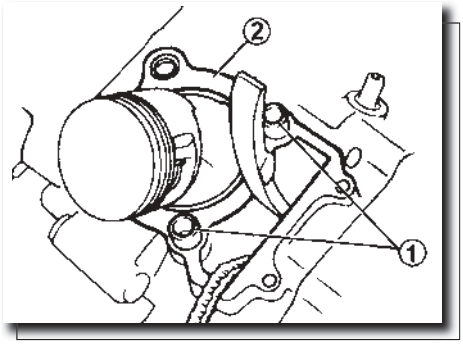


N.B.
- APPLY ENGINE OIL TO THE GUDGEON PIN.

- THE MARK "=>" (A) ON THE PISTON SHOULD BE TOWARDS THE EXHAUST SIDE.

- BEFORE FITTING THE GUDGEON PIN CIRCLIP, COVER THE CRANKCASE OPENING WITH A CLEAN CLOTH.

3. Fit:
- Guide pins **(1)**.
- Cylinder gasket **(2)**.

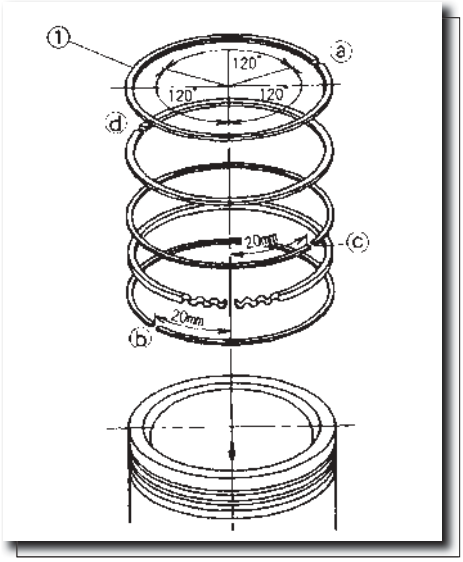


ENGINE ASSEMBLING AND ADJUSTMENT

4. Position:
- Rings (**1**).

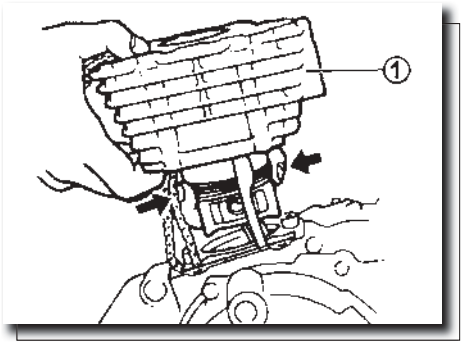
N.B.
POSITION THE ENDS OF THE RINGS AS IN THE FIGURE.

(a) Top ring.
(b) Oil ring (bottom).
(c) Oil ring (top).
(d) Secondary ring.



5. Lubricate
- External surface of the piston
- Rings
- Inner surface of the cylinder

6. Fit:
- O-ring.
- Cylinder (**1**).

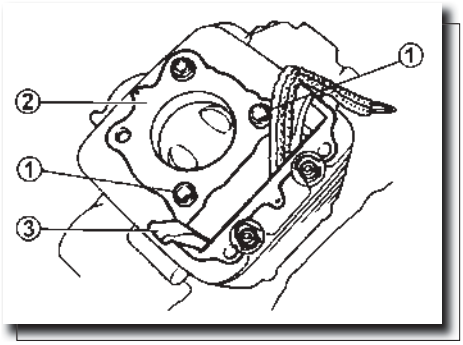


N.B.
- FIT THE CYLINDER WITH ONE HAND WHILE COMPRESSING THE RINGS WITH THE OTHER.

- PASS THE TIMING CHAIN GUIDE (EXHAUST SIDE) THROUGH THE TIMING CHAIN CAVITY.

INSTALLING THE CYLINDER HEAD

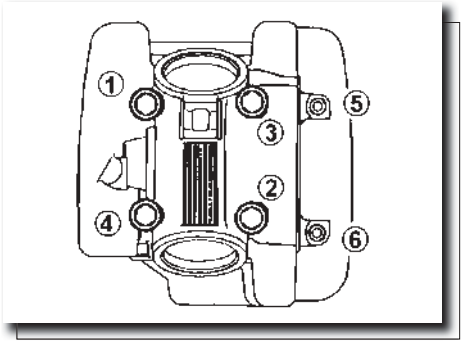
1. Fit:
- Guide pins **(1)**.
- Cylinder head gasket **(2)**.
- Timing chain guide (exhaust) **(3)**.



ENGINE ASSEMBLING AND ADJUSTMENT

2. Fit:

- Cylinder head
- Bolt with washer (cylinder head)



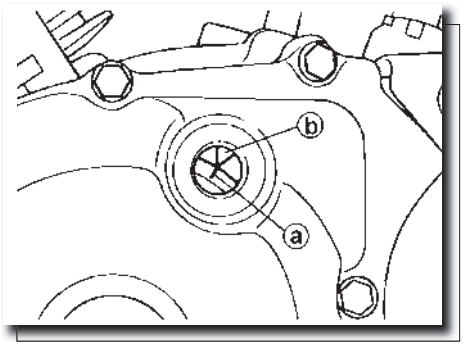
Bolts (cylinder head).
M8 (1-4):
2,2 Kgf.m (22 N.m)
M6 (5-6):
1,0 Kgf.m (10 N.m)

N.B.
- APPLY ENGINE OIL TO THE BOLT THREADS.
- TIGHTEN THE BOLTS IN ASCENDING ORDER.

3. Fit:

- Drive sprocket.
- Timing chain.

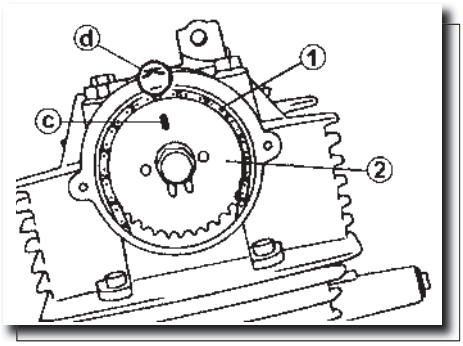
Steps for installing:
- Turn the crankshaft in an anticlockwise direction until the mark **(a)** is lined up with the stationary point **(b)**.



- Line up the mark "I" **(c)** on the drive sprocket with the stationary point **(d)** on the cylinder head.

- Fit the timing chain **(1)** onto the drive sprocket **(2)** and fit the sprocket onto the camshaft.

N.B.
ON FITTING THE DRIVE SPROCKET, KEEP THE TIMING CHAIN AS TENSE AS POSSIBLE ON THE EXHAUST SIDE.

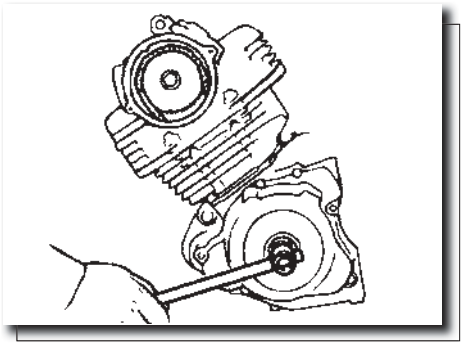


ATTENTION
DO NOT TURN THE CRANKSHAFT DURING THE FITTING OF THE CAMSHAFT. TO DO SO MAY CAUSE DAMAGE OR THE ENGINE TIMING TO BE INCORRECT.

- Remove the wire holding the timing chain.

ENGINE ASSEMBLING AND ADJUSTMENT

4. Fit:
. Locking plate



5. Fit:
- Bolt (sprocket)

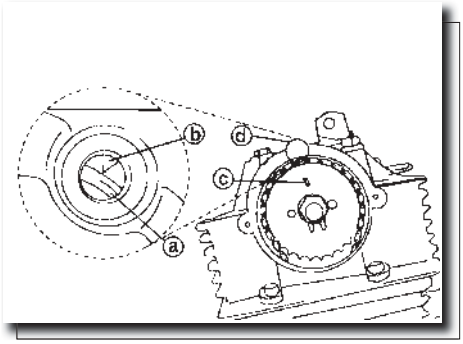
Bolt (timing chain sprocket):
2,0 Kgf.m (20 N.m)

N.B.
FIT THE BOLT WHILE HOLDING THE MAGNETO FLYWHEEL NUT WITH A SPANNER.

6. Check:
- Flywheel mark (a).
Line up the stationary point (b) with the left crankcase cover.

- Drive sprocket mark "I" (d). Line up the stationary point (c) with the cylinder head.

Out of alignment => **Adjust.**



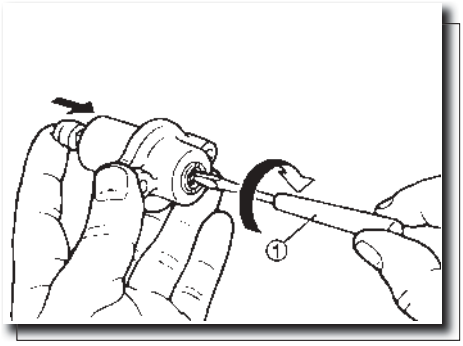
7. Fit:
- Timing chain tensioner.

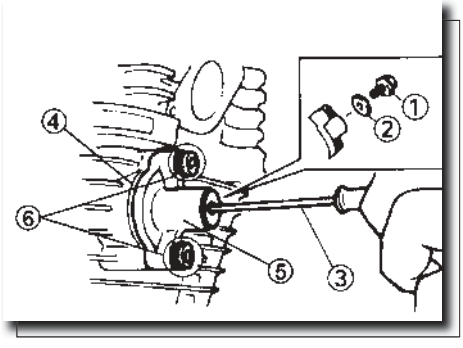
Steps for fitting:
- Remove the tensioner cover bolt.

- While pressing the tensioner rod lightly with the hand, use a screwdriver (1) to turn the tensioner rod completely in a clockwise direction.

- With the rod completely withdrawn, fit the seal (4) and the chain tensioner (6) and tighten to the specified torque.

- Release the screwdriver. If everything is correct with the seal, tighten the cover bolt (1) to the specified torque.





Bolts (timing chain tensioner):
1,0 Kgf.m (10 N.m)

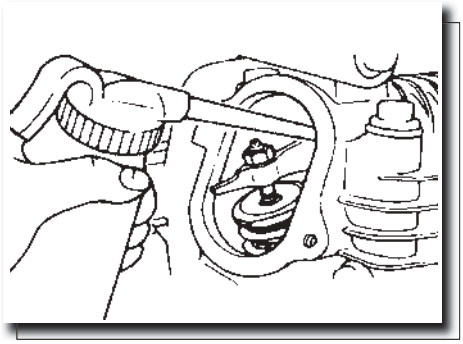
Cover bolt (timing chain tensioner.):
0,75 Kgf.m (7,5 N.m)

ENGINE ASSEMBLING AND ADJUSTMENT

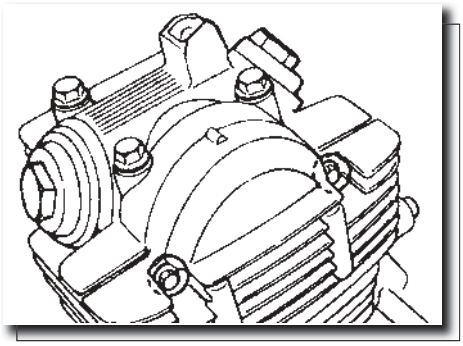
8. Check:
- Valve clearances.

Outside that specified => **Adjust**.

See the **"ADJUST VALVE CLEARANCE"** section in **CHAPTER 3**.



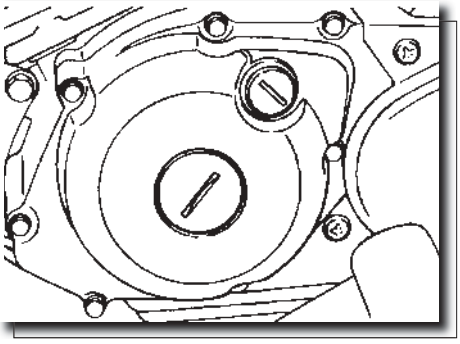
9. Lubricate:
- With engine oil



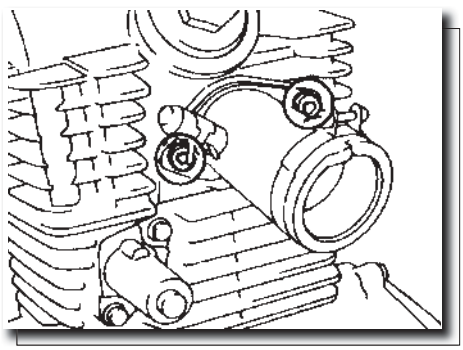
10. Fit:
- Rocker covers (with O-rings).
- Cylinder head side covers (with O-rings).
- Bolts (with washers).

Rocker cover:
1,75 Kgf.m (17,5 N.m)

Bolts (head cylinder side cover):
1,0 Kgf.m (10 N.m)



11. Fit:
- Timing point check cover (with O-rings).
- Centre cover (with O-rings).



12. Fit:
- Gasket (inlet manifold).
- Inlet manifold.

Bolts (inlet manifold):
1,0 Kgf.m (10 N.m)

ENGINE ASSEMBLING AND ADJUSTMENT

13. Fit
- Spark plug

Spark plug:
1,25 Kgf.m (12,5 N.m)

14. Fit:
- Oil drain plug

Oil drain plug:
2,0 Kgf.m (20 N.m)

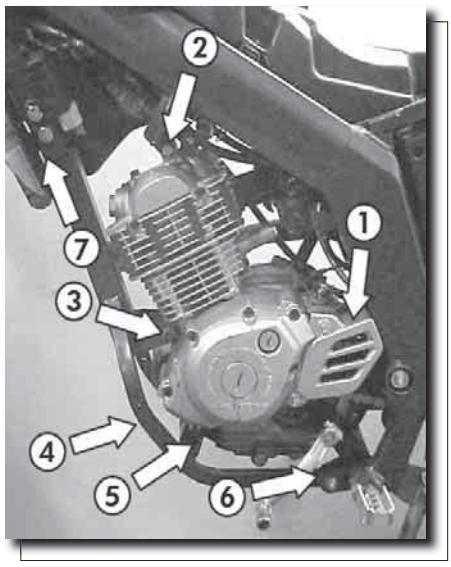
REFITTING THE ENGINE INTO THE FRAME

To refit the engine into the frame, reverse the removal procedure order.

Take note of the following points:

1. Fit:
- Engine assembly
(from the right hand side of the motorcycle)

2. Fit:
- Engine mounting bolt (rear) **(1)**.
- Engine mounting bolt (top) **(2)**.
- Securing the engine in place **(4)**.
- Bolt (bottom mounting) **(6)**.
- Bolt (top mounting) **(7)**.
- Engine mounting bolt (centre) **(3)**.
- Engine mounting bolt (bottom) **(5)**.
- Starter motor cable bracket
- Starter motor



ENGINE ASSEMBLING AND ADJUSTMENT

Bolt (top mounting):
4 Kgf.m (40 N.m)

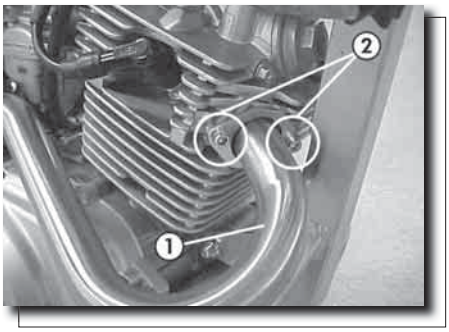
Bolt (bottom mounting):
1,9 Kgf.m (19 N.m)

Engine- support mounting bolt (centre).
5,9 Kgf.m (59 N.m)

Engine-support mounting bolt (bottom):
5,9 Kgf.m (59 N.m)

Engine mounting bolt (top) :
3,5 Kgf.m (35 N.m)

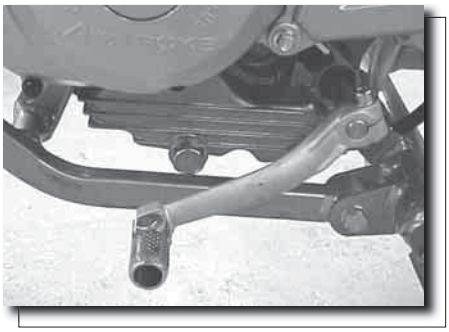
Engine mounting bolt (rear) :
4 Kgf.m (40 N.m)



3. Fit:
- Gaskets
- Exhaust pipe **(1)**.
- Bolt **(2)**.
- Silencer bolt **(3)**.

Bolts (exhaust pipe):
1,2 Kgf.m (12 N.m)

Bolt (silencer):
1,9 Kgf.m (19 N.m)

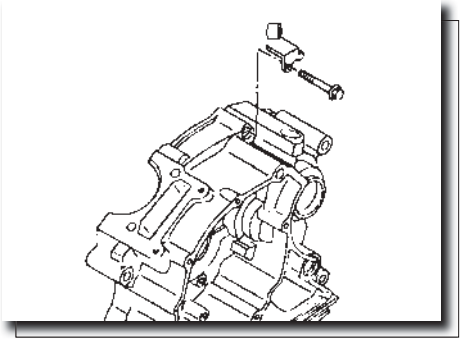


4. Fit:
- Gear change pedal

Gear change pedal bolt:
1,0 Kgf.m (10 N.m)

5. Fit:
- Footrest assembly

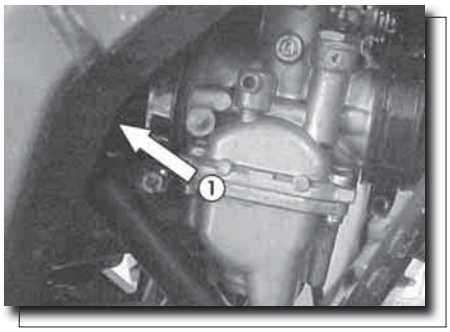
Bolt (cable bracket):
1,9 Kgf.m (19 N.m)



6. Fit:
- Cable bracket
- Clutch cable

Bolt (cable bracket):
0,7 Kgf.m (7 N.m)

ENGINE ASSEMBLING AND ADJUSTMENT



7. Fit:
- Carburettor.

See the "**CARBURETTOR**" section in **CHAPTER 5**.

8. Tighten:
- Air filter box **(1)**.

9. Connect:
- Battery cables.

ATTENTIÓN
FIRST CONNECT THE POSITIVE (RED) TERMINAL AND THEN THE NEGATIVE (BLACK) TERMINAL.

10. Refill with oil:
- In the crankcase.

See the **"CHANGING ENGINE OIL"** section in **CHAPTER 3**.

11. Adjust:
- Idle speed

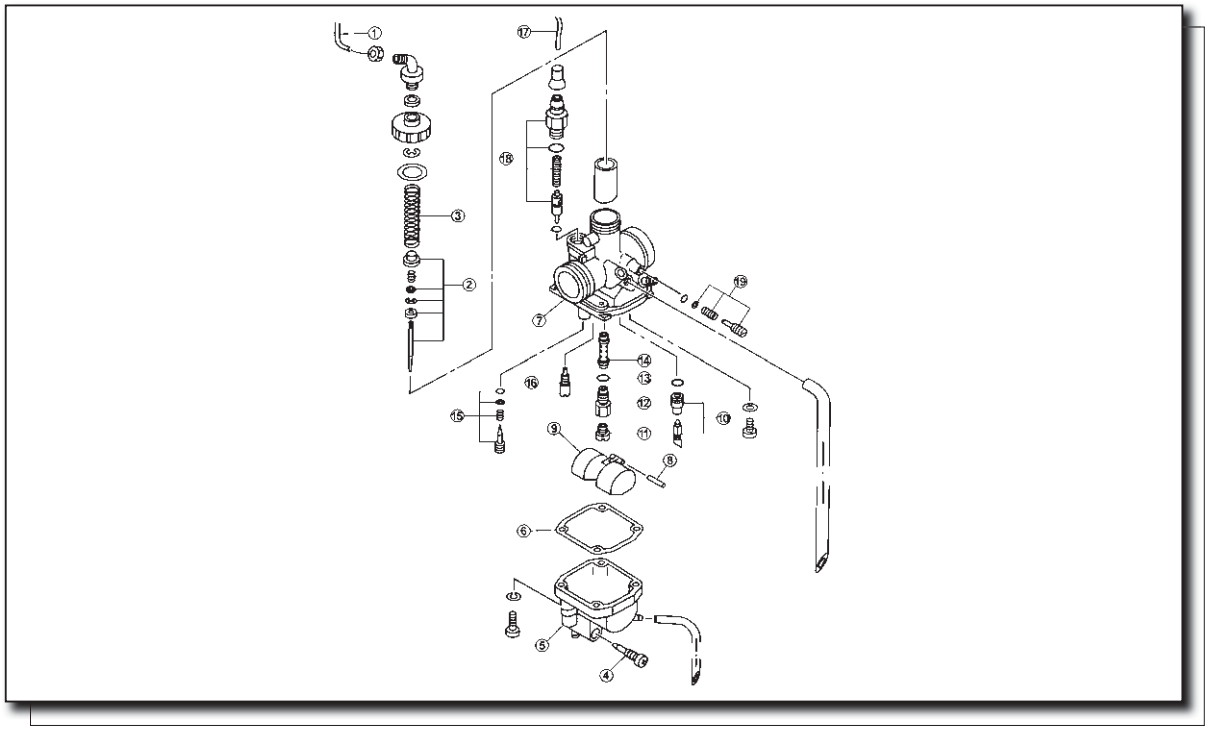
See the "**MEASURING AND ADJUSTING IDLE SPEED"** section in **CHAPTER 3**.

12. Adjust:
- Throttle cable play.

See the **"ADJUSTING THE THROTTLE CABLE"** section in **CHAPTER 3**.

ENGINE ASSEMBLING AND ADJUSTMENT

CARBURETTOR



1	Throttle cable
2	Closing valve assembly
3	Closing valve spring
4	Drain screw
5	Carburettor bowl
6	Bowl gasket
7	Carburettor body
8	Float pin
9	Float
10	Needle valve assembly
11	Main set
12	Diffuser 1
13	O-ring
14	Diffuser 2
15	Pilot screw assembly (air)
16	Idle jet
17	Choke cable
18	Choke assembly
19	Idle speed screw

ENGINE ASSEMBLING AND ADJUSTMENT

DISMANTLING

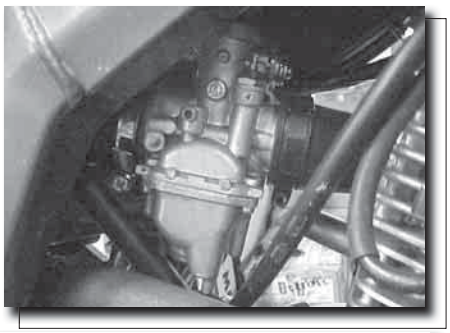
1. Extract:
- Seat.
- Side covers (front).
- Fuel tank.

See the **"SEAT, SIDE COVERS AND FUEL TANK"** section in **CHAPTER 3**.

2. Drain:
- Fuel (carburettor bowl).

N.B.
PLACE A CLOTH UNDER THE FUEL DRAIN PIPE TO ABSORB SPILT FUEL.

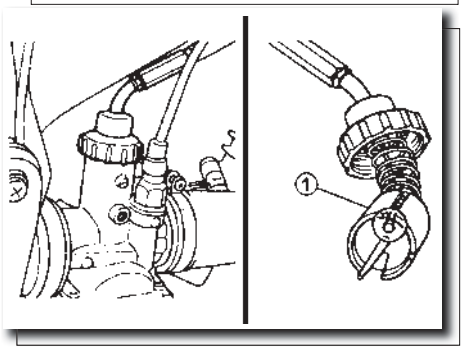
WARNING
PETROL IS HIGHLY INFLAMMABLE. AVOID SPILLING PETROL ON TO A HOT ENGINE.



3. Disconnect:
- Breather pipe.
- Fuel pipe.
- Drain hose.

4. Loosen:
- Clamp screws.
- Bolt (air filter canister).

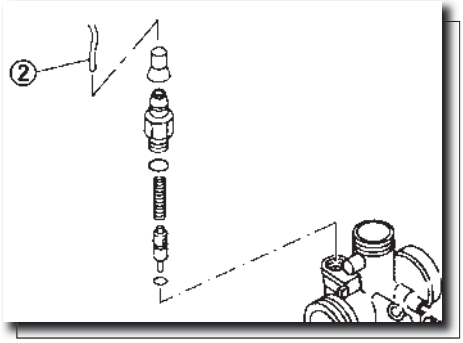
N.B.
PULL THE MANIFOLD CLAMP BACKWARDS.



5. Extract:
- Carburettor assembly.

6. Extract:
- Throttle cable **(1)**.
Remove the carburettor cover together with the closing valve.

- Choke cable **(2)**.
Remove the choke together with the spring.

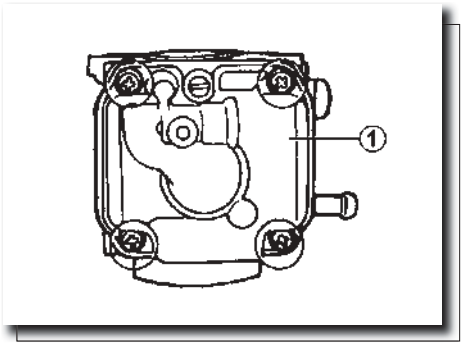


ENGINE ASSEMBLING AND ADJUSTMENT

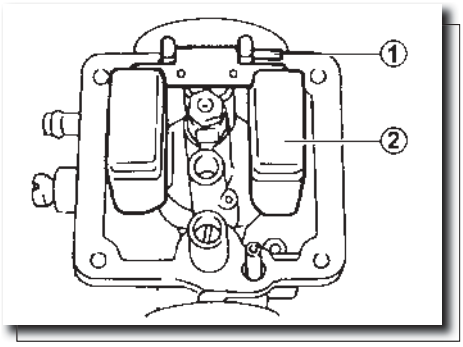
DISMANTLING

N.B.
THE PARTS BENEATH CAN BE CLEANED AND INSPECTED WITHOUT DISMANTLING THE CARBURETTOR. (ALL THE INTERNAL PARTS, EXCEPT THE CHOKE, CAN BE CLEANED AND INSPECTED WITHOUT DISMANTLING THE CARBURETTOR).
- CLOSINGVALVE
- CLOSINGVALVE NEEDLE
- ALL THE JETS
- FLOAT
- NEEDLE VALVE
- NEEDLE VALVE SEAT
- DIFFUSER
- CLOSINGVALVE NEEDLE

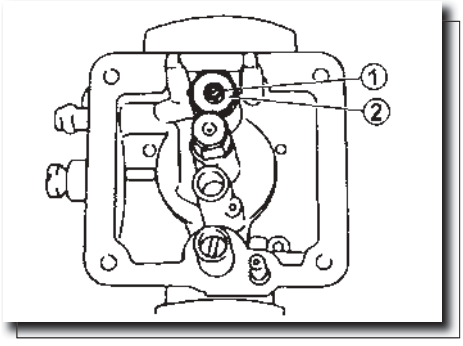
1. Extract:
- Carburettor bowl **(1)**.
- Bowl gasket.



2. Extract:
- Float pin **(1)**.
- Float **(2)**.

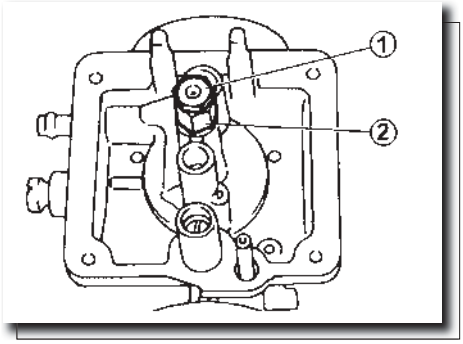


3. Extract:
- Needle valve **(1)**.
- Needle valve seat **(2)**.

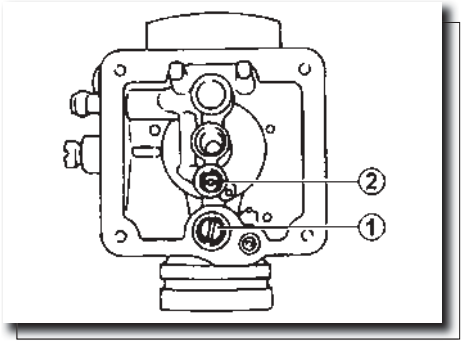


ENGINE ASSEMBLING AND ADJUSTMENT

4. Extract:
- Main jet **(1)**.
- Diffuser **(2)**.
- O-ring.



5. Extract:
- Pilot screw assembly (air) **(1)**.
- Idle jet **(2)**.



INSPECTING

1. Inspect:
- Carburettor body.
- Carburettor bowl.
- Jet housings.

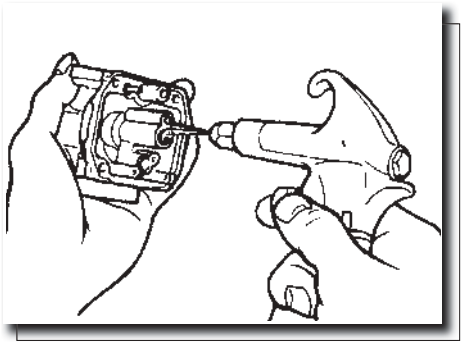
Cracks/damage => **Replace**.

- Fuel passages.

Obstructions => **Clean as indicated**.

- Carburettor bowl body.

Contamination => **Clean**.

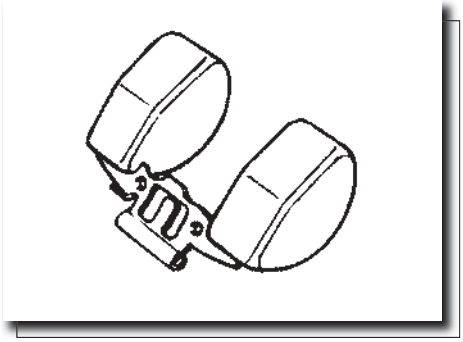


Cleaning steps:
- Wash the whole carburettor in petrol. (Do not use chemical-based carburettor cleaning products).

- Blow through all passages and jects with compressed air.

2. Inspect:
- Float

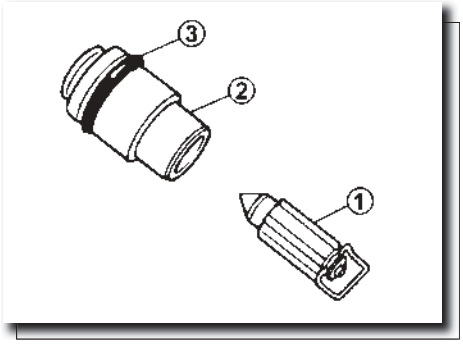
Damage => **Replace**.



ENGINE ASSEMBLING AND ADJUSTMENT

3. Inspect:
- Needle valve **(1).**
- Needle valve seat **(2)**.
- O-ring **(3)**.

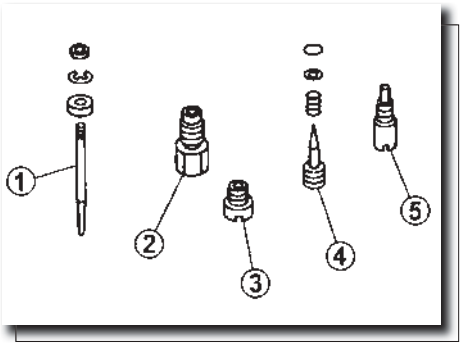
Damage/wear/obstructions => **Replace the assembly**.



4. Inspect:
- Closing valve needle **(1)**.
- Diffuser 1 **(2)**.
- Main jet **(3)**.
- Idle jet **(4)**.
- Pilot screw (air) **(5)**.

Warping/wear/damage => **Replace**.

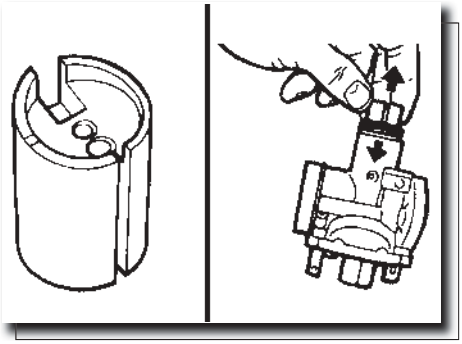
Obstructions => **Blow through the jets with compressed air**.



5. Check:
- Free movement

Place the closing valve in the carburettor body and check that it moves freely.

Obstructions => **Replace**.

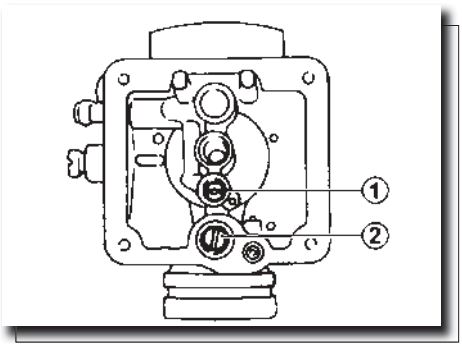


ASSEMBLY

Reverse the **"DISMANTLING"** procedures.

Take note of the following points:

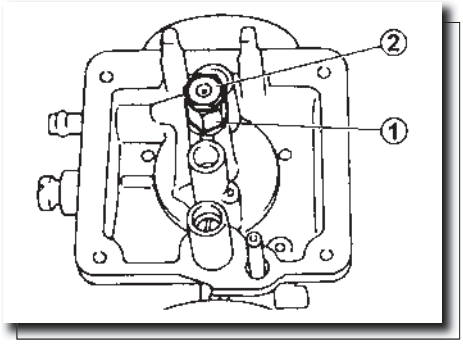
ATTENTIÓN
- BEFORE REASSEMBLY, WASH ALL THE PARTS IN PARAFFIN.
- ALWAYS USE NEW SEALS AND GASKETS.



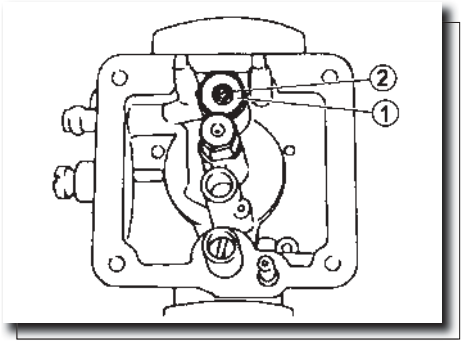
1. Fit:
- Idle jet **(1).**
- Pilot screw assembly (air) **(2)**.

ENGINE ASSEMBLING AND ADJUSTMENT

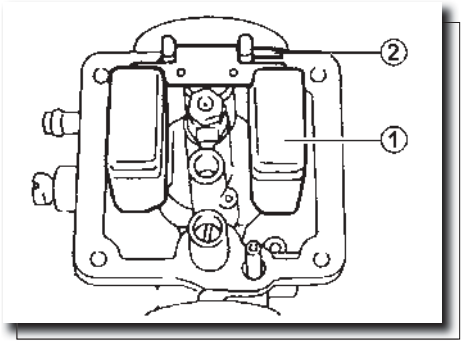
2. Fit:
- O-ring.
- Diffuser **(1).**
- Main jet **(2).**



3. Fit:
- Needle valve seat **(1)**.
- Needle valve **(2)**.



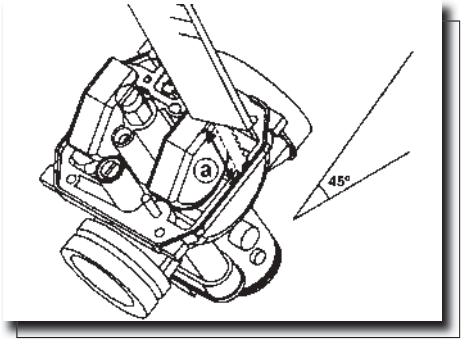
4. Fit:
- Float **(1)**.
- Float pin **(2)**.



5. Measurement:
- Height of the float without the gasket.

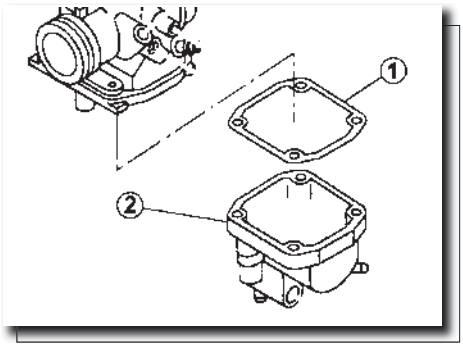
Incorrect => **Adjust**.

Float height:
18,9 mm



ENGINE ASSEMBLING AND ADJUSTMENT

6. Fit:
- Carburettor bowl gasket **(1)**.
- Carburettor bowl **(2)**.



REFITTING

Reverse the **"REMOVAL"** procedures.

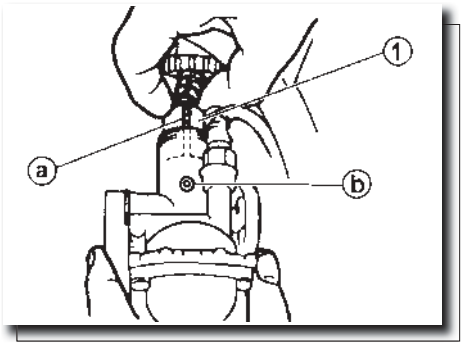
Take note of the following points:

1. Fit:
- Spring (closing valve).
- Closing valve assembly

With the carburettor cover and throttle cable.

- Spring (choke).
- Choke assembly.

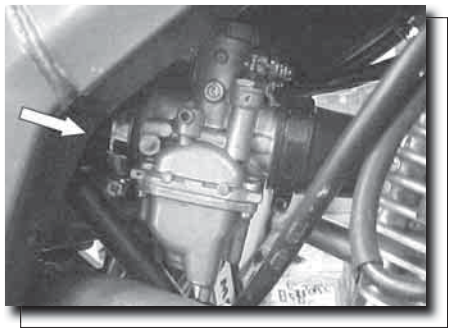
With the choke and choke cable.



N.B.
ALIGN CLOSING VALVE **(1)** SLOT **(A)** WITH THE PROTUBERANCE **(B)** ON THE CARBURETTOR BODY.

2. Fit:
- Carburettor.

3. Tighten
- Screws (air filter canister).
- Pipe clamp screws.



N.B.
PULL THE MANIFOLD CLAMP FOREWARDS

4. Connect:
- Drain pipe.
- Breather pipe.
- Fuel pipe.

5. Adjust:
- Idle speed

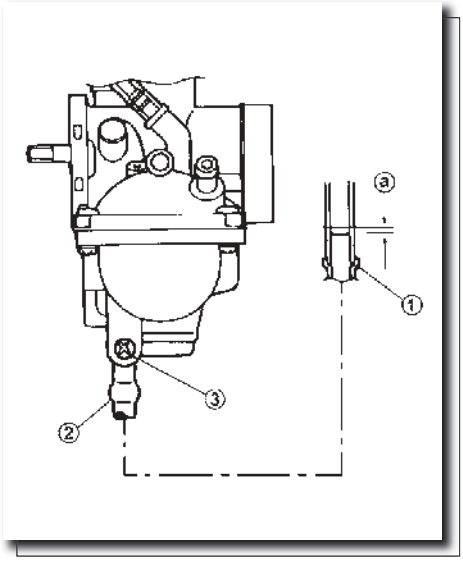
See the "**MEASURING AND ADJUSTING IDLE SPEED**" section in **CHAPTER 3**.

6. Adjust:
- Throttle cable play.

See the **"ADJUSTING THE THROTTLE CABLE"** section.

ENGINE ASSEMBLING AND ADJUSTMENT

ADJUSTING THE FUEL LEVEL



1. Measurement:
- Fuel level (a).

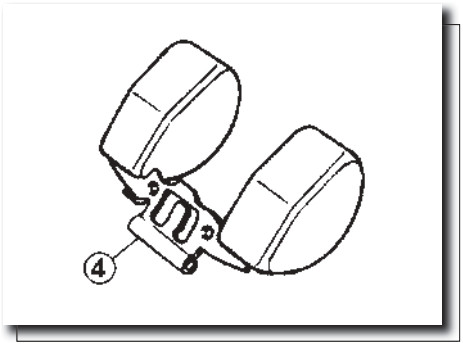
Outside that specified => **Adjust**.

Fuel level:
6 – 7 mm below the bowl line

Adjustment steps:
- Place the motorcycle on a flat surface.

- Place a jack or a support under the engine to ensure that the carburettor is positioned vertically.

- Connect the fuel level meter **(1)** to the drain pipe **(2)**.



- Loosen the drain screw **(3)**.

- Hold the meter vertically and close to the line of the carburettor bowl.

- Measure the fuel level (a) with the meter.

- If the level is incorrect, adjust it.

- Remove the carburettor.

- Inspect the valve seat and needle valve.

- If these parts are worn, replace both.

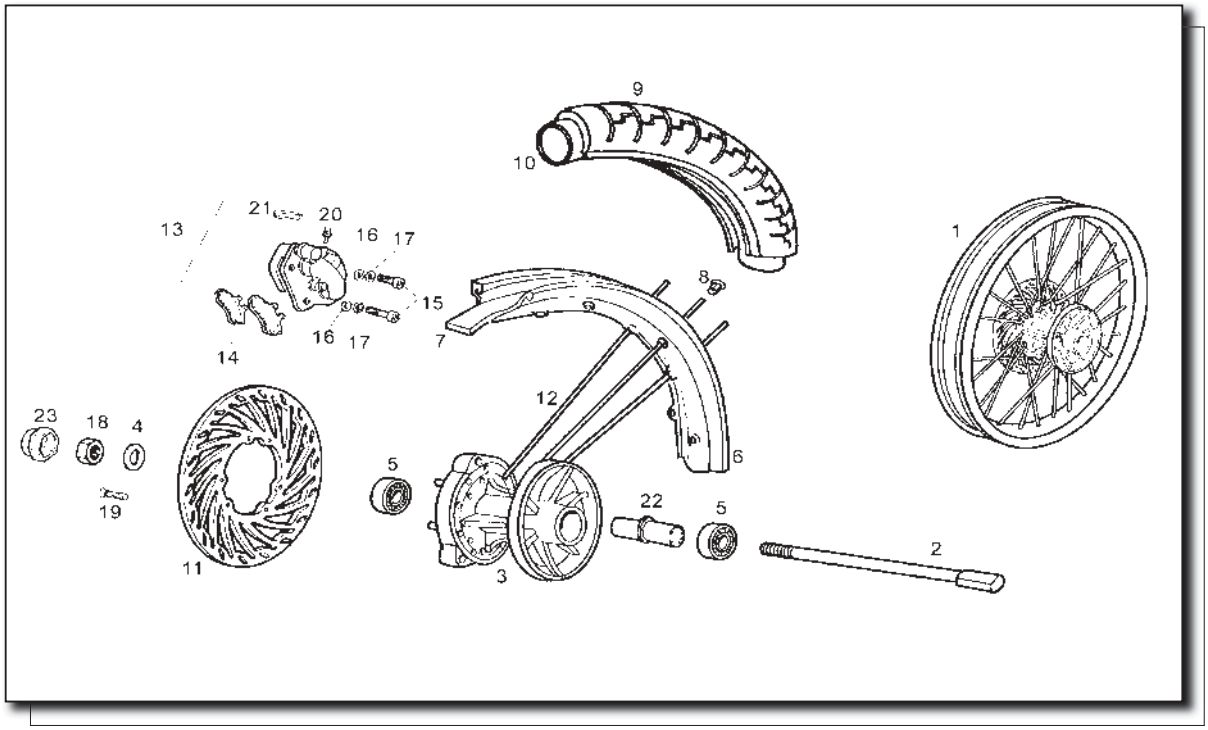
- If they are normal, adjust the float level by bending slightly the edge (4) of the float.

- Fit the carburettor.

- Check the fuel level once again.

CHASSIS, FRONT WHEEL AND BRAKES

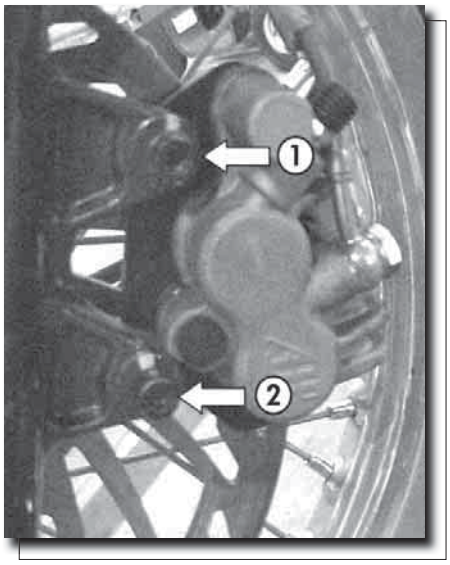
FRONT WHEEL DIAGRAM



1	Front wheel assembly
2	Front wheel axle
3	Front hub assembly
4	Flat washer
5	Bearing 6202
6	Front wheel rim
7	Inner tube protector
8	Spoke nut
9	Front tyre
10	Front wheel inner tube
11	Front disk brake
12	Front wheel spoke
13	Front brake calliper assy.
14	Front brake pad set
15	BM Allen bolt
16	Mechanised flat washer
17	Int. star washer.
18	Front wheel axle nut
19	Front brake disk securing bolt
20	Front brake calliper bleeding assy.
21	Front brake pad securing spring
22	Front bearings separator
23	Nut protector

CHASSIS, FRONT WHEEL AND BRAKES

DISMANTLING

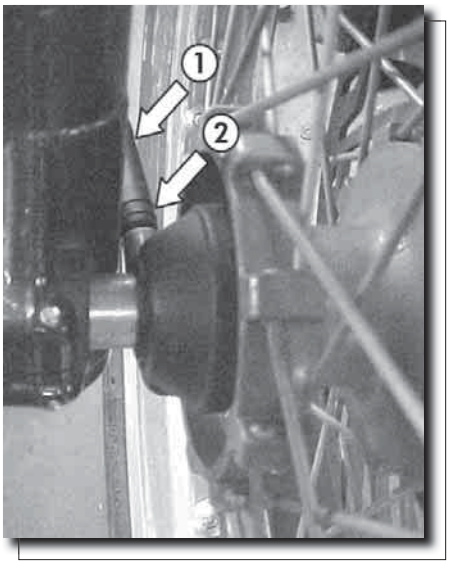


WARNING
- SUPPORT THE MOTORCYCLE FIRMLY SO THAT THERE IS NO RISK OF IT FALLING.

- POSITION THE MOTORCYCLE ON A FLAT SURFACE.

1. Extract:
- Front brake calliper (Bolts 1 and 2).

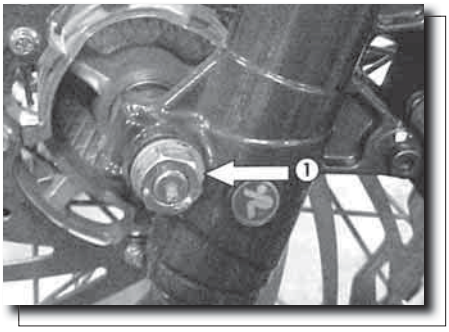
2. Disconnect:
- Speedometer cable **(1)**.



N.B.
UNSCREW THE LOCKING DEVICE **(2)**.

3. Raise:
- Front wheel
(Put a suitable support under the engine).

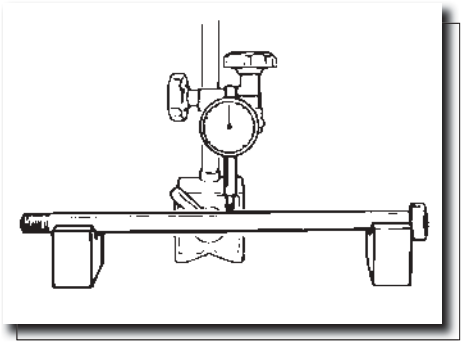
4. Extract:
- Nut **(1)** (Right hand side):



CHASSIS, FRONT WHEEL AND BRAKES

5. Extract:
- Front wheel axle.
- Front brake disk assembly.
- Dustguard/spacer.
- Front wheel.

INSPECTING THE FRONT WHEEL



1. Inspect:
- Front wheel axle.
(By rolling it on a flat surface).

Warping => **Replace**.

WARNING
DO NOT TRY STRAIGHTENING A WARPED AXLE.

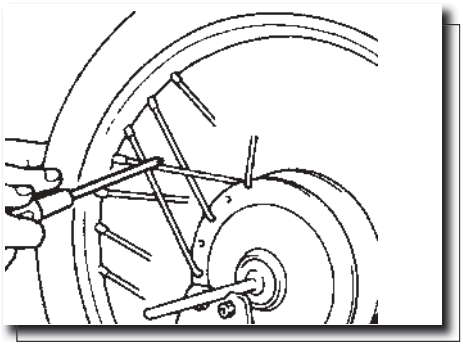
Wheel axle warp limit:
0,25 mm

2. Inspect:
- Front tyre.

Damage/wear => **Replace**.

See the **"INSPECTING THE TYRES"** section in **CHAPTER 3**.

- Front wheel
See the **"INSPECTING THE WHEELS"** section in **CHAPTER 3**.

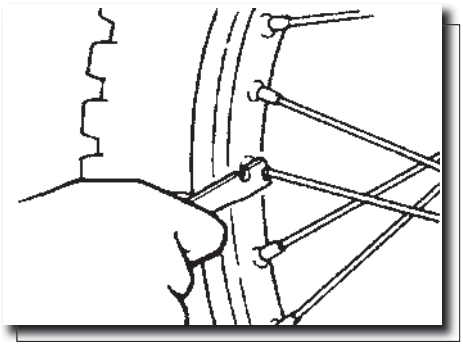


3. Check:
- Spokes.

Warps/damage => **Replace**.

Loose spokes. => **Retighten**.
Turn the wheel and tap the spokes lightly with a screwdriver.

N.B.
A WELL-TIGHTENED SPOKE GIVES OFF A CLEAR SOUND. A LOOSE SPOKE EMITS A MUFFLED SOUND.



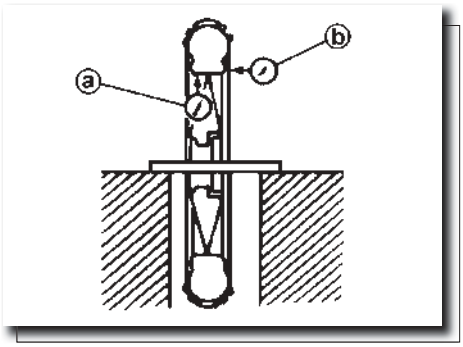
4. Tighten:
- Loose spokes.
- Tensioners.

N.B.
CHECK THE FRONT WHEEL FOR WARPING AFTER TIGHTENING THE SPOKES.

CHASSIS, FRONT WHEEL AND BRAKES

5. Measurement:
- Distortion of the front wheel

Above that specified => **Replace**.



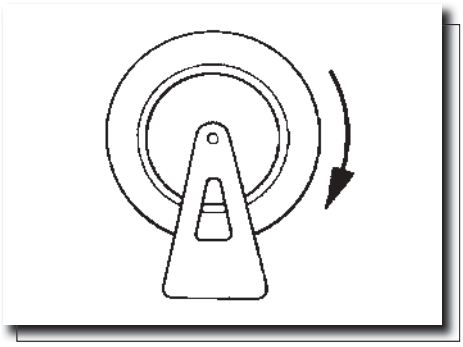
Distortion limits for the front wheel.
Radial (a):
0,5 mm
Lateral (b):
0,8 mm

6. Check:
- Front wheel bearings.

Bearings allow play in the wheel hub or the wheel does not turn freely => **Replace**.

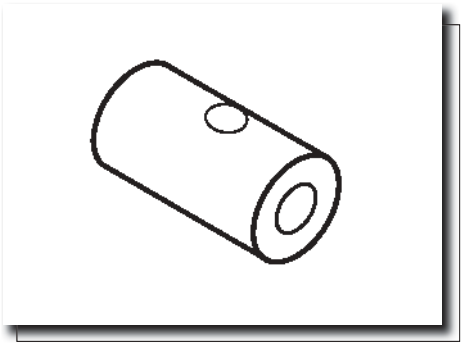
- Retaining rings.

Damage/wear => **Replace**.

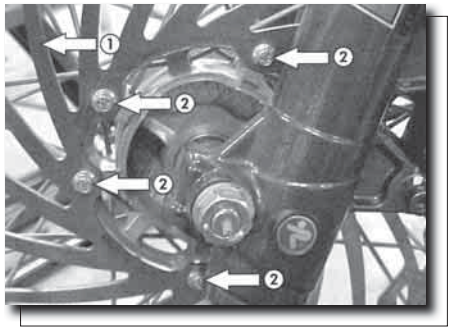


7. Inspect:
- Spacer.

With scratches/worn => **Replace the spacer and the retaining ring**.



8. Extract:
- Brake disk **(1)**.
- Bolt **(2)**.

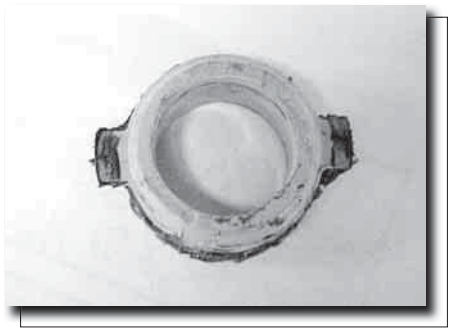


CHASSIS, FRONT WHEEL AND BRAKES

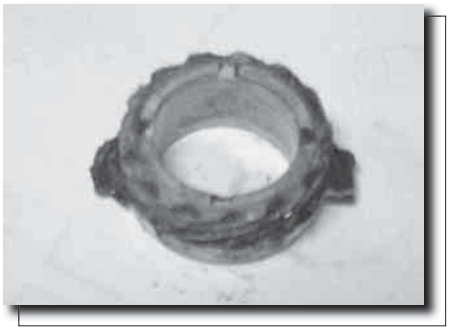
INSPECTING THE SPEEDOMETER GEARING

1. Inspect:
- Speedometer clutch (unthreaded side).

Wear/damage => **Replace**.



2. Inspect:
- Speedometer driving gear (threaded side).
- Speedometer driven gear (speedometer bottom box).

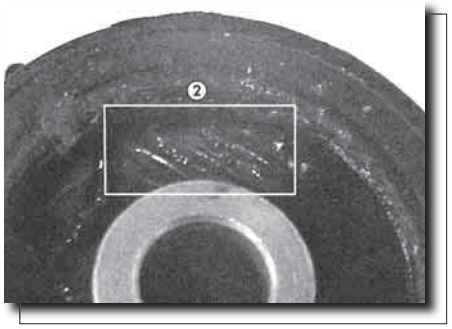


DISMANTLING THE FRONT DISK CALLIPER

- Loosen the banjo bolt **(1)** from the bottom end of the brake pipe and tighten it slightly.

- Unscrew the calliper mounting bolts **(2)** and separate the calliper **(3)** backwards from the disk.

PRECAUTION
CLEAN UP ANY SPILT BRAKE FLUID IMMEDIATELY.



Fitting the front calliper:
- Fit the bottom end of the brake pipe and the calliper.
- Tighten to nominal torque.

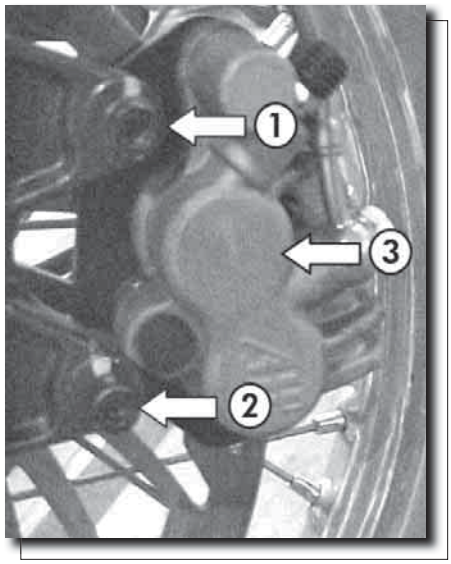
Calliper mounting bolts:
1, 7~1,9 kgf.m (17 ~ 19 N.m)

- Tighten the brake banjo bolt.

- Check brake fluid level.

- Bleed the brake system pipe (consult Bleeding the brake system pipe in this chapter).

- Check the condition of the braking force to see if any resistance is noted or any loss of fluid.

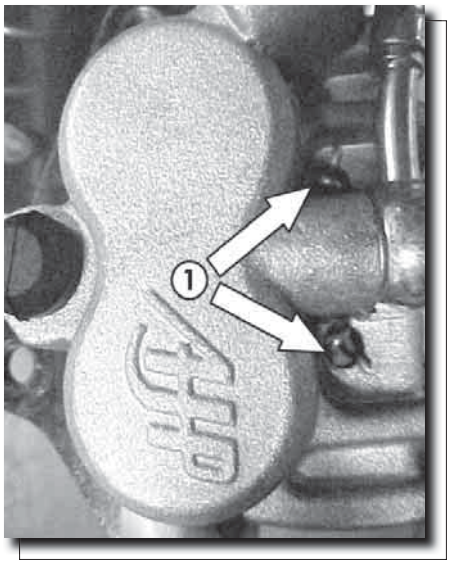


WARNING
DO NOT ATTEMPT TO RIDE THE MOTORCYCLE UNTIL THE BRAKE LEVER IS OPERATING PROPERLY. PUMP THE LEVER UNTIL THE PADS ARE AGAINST THE DISK. IF NOT, THE BRAKES WILL NOT WORK THE FIRST TIME THE LEVER IS USED.

CHASSIS, FRONT WHEEL AND BRAKES

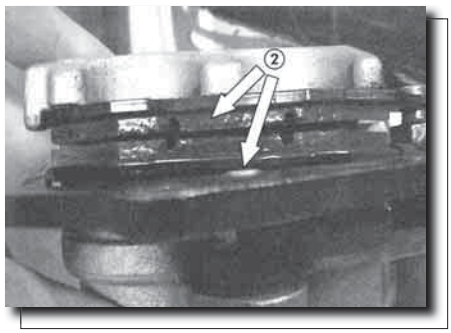
Extracting the front brake pads.
- Remove the front brake calliper (see Dismantling the front brake calliper, in this chapter).

Extract:
- Pad springs **(1)**.
- Brake pads **(2)**.



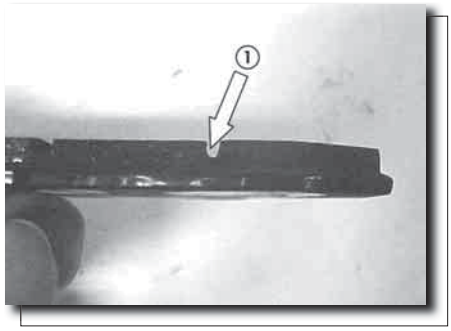
Fitting the front brake pads
- Press the calliper pistons in manually.
- Fit the pads inside the calliper.
- Adjust the pad springs.

WARNING
DO NOT ATTEMPT TO RIDE THE MOTORCYCLE UNTIL THE BRAKE LEVER IS OPERATING FULLY. THIS IS ACHIEVED BY PUMPING THE LEVER UNTIL THE PADS ARE AGAINST THE DISK. IF NOT, THE BRAKES WILL NOT WORK THE FIRST TIME THE LEVER IS USED.

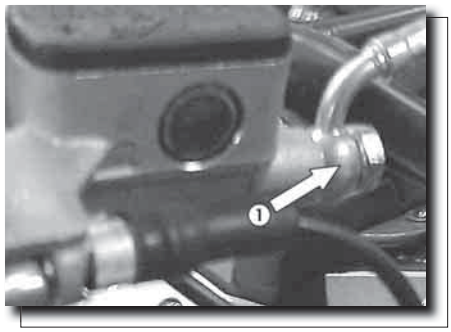


Inspect pad wear
- Removing the front brake pads.
- Examine both brake pads.

If the wear has caused the wear indicating groove to disappear, the pads must be renewed.



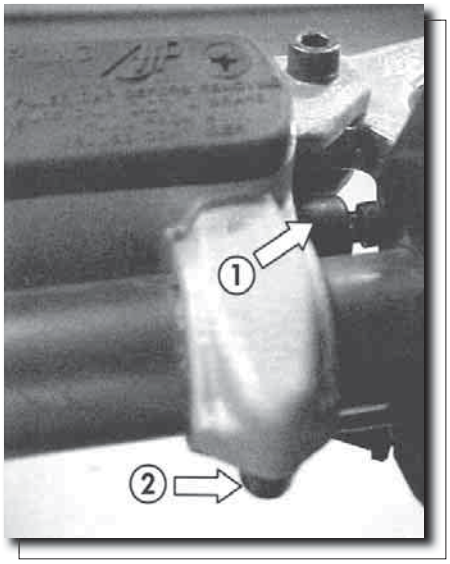
Extracting the front brake cylinder.
- Extract the bolt **(1)** and remove the hose from the brake cylinder reservoir.



CHASSIS, FRONT WHEEL AND BRAKES

N.B.
THE MAIN CYLINDER **(1)** IS INCORPORATED INTO THE FRONT BRAKE LEVER ASSEMBLY.

- EXTRACT THE SCREW **(2)** AND THE FRONT BRAKE LEVER ASSEMBLY.



PRECAUTION
CLEAN UP ANY SPILT BRAKE FLUID IMMEDIATELY.

Extract:
- Brake lever mounting bolt and nut.
- Brake lever.

Fitting the front main cylinder:
- Fit the brake lever assembly and tighten the mounting bolt.

- Tighten the brake hose bolt.

- Bleed the brake system pipe (consult Bleeding the brake system pipe in this chapter).

- Check the condition of the braking force to see if any resistance is noted or any loss of fluid.

Checking the brake lever main cylinder (visual check):
- Extract the main cylinder (consult Extracting the front main cylinder, in this section).

- Dismantling the front main cylinder:

- Check that there are no scratches, corrosion or holes on the inner walls of the main cylinders and on the outer plate of each piston.

- If any damage is discovered on the main cylinder or on the pistons, change them.

- Examine the primary and secondary bush.

- If the bush is worn, soft (perished) or swollen, change the piston assembly to renew the bushes.

- If fluid loss is noticed on the brake lever, change the bushes.

CHASSIS, FRONT WHEEL AND BRAKES

Checking the brake calliper main cylinder:
- Check that the antidust covers are not damaged. If they are, renew them.

- Check that the piston return is not damaged. If it is, renew it.

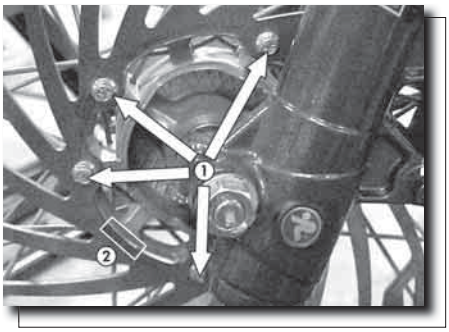
- Check that the relief port and feed port are not blocked.
If the relief port is blocked, the brake pads will bind on the disk. Inject compressed air to clean the ports.

Extracting the brake disk:
- Remove the front wheel.
- Unscrew the mounting bolts and extract the disk.

Fitting the brake disk
- Fit the brake disk onto the front wheel so that side **(2)** faces outwards.

- Apply a temporary blocking device to the threads of the brake disk mounting bolts **(1)**.

- Tighten the front brake disk mounting bolts **(1)**.

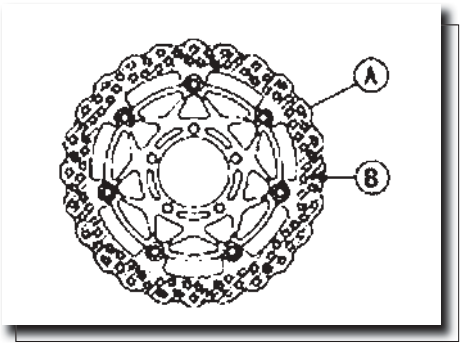


Nominal tightening torque:
1,0 ~ 1,2 Kgf.m (10 ~ 12 N.m)

Wear to the brake disk:
- Measure the thickness of the disks **(A)** at the point where they are most worn.

- If the disk is more worn than specified in the service limit, renew it.

Measurement area **(B)**.



Standard hickness of the front brake disk.
3,35 – 3,65 mm

Service limit:
3,00 mm

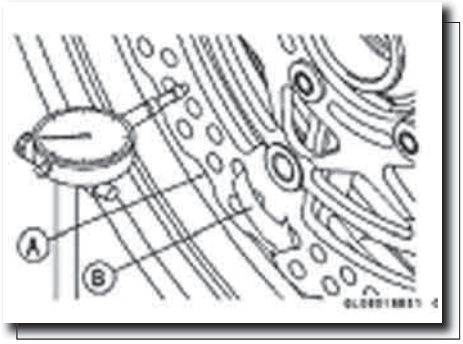
CHASSIS, FRONT WHEEL AND BRAKES

Brake disk distortion:
- Raise the motorcycle on the jack so that the tyre is clear of the ground.

- To check the front disk, turn the handlebars completely to one side.

- Place a dial gauge against the disk (A) as shown, and measure the disk's deviation from centre as the tyre is tuned by hand.

- If the deviation from centre exceeds the service limit, renew the disk.



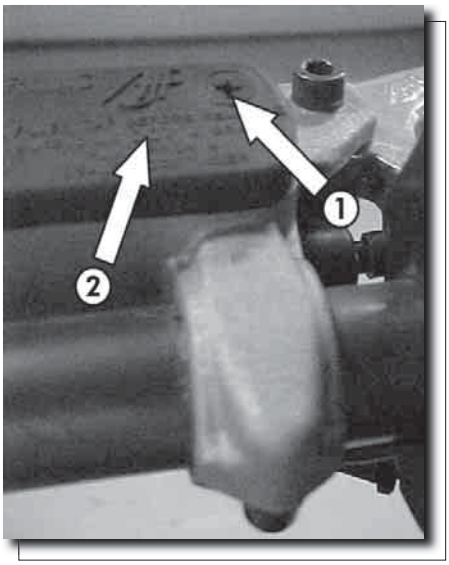
Disk deviation from centre:
Standard:
inferior a 0,15 mm

Service limit:
0,3 mm

Bleeding the brake system pipe
The brake fluid has a very low compression coefficient, with the result that almost all the movements of the brake lever are transmitted directly to the calliper for braking. Air however compresses easily. When air enters the brake system pipes, the movement of the brake lever is partially used up in compressing the air. This causes the lever to feel spongy and leads to a loss of braking power.

WARNING
BE SURE TO BLEED AIR OUT OF THE BRAKE SYSTEM WHEN THE BRAKE LEVER FEELS SPONGY AFTER CHANGING THE BRAKE FLUID OR WHEN THE BRAKE SYSTEM PIPE HAS BEEN LOOSENED FOR ANY REASON.

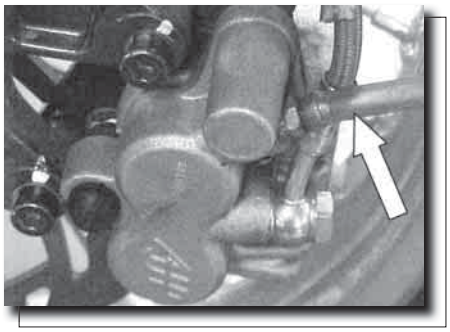
Extract:
- Bolts **(1)**.
- Reservoir cover **(2)**.



- Fill the reservoir with brake fluid up to the top reservoir line.

- With the cover removed, pump the brake lever slowly several times until no bubbles can be seen rising through the liquid.

CHASSIS, FRONT WHEEL AND BRAKES



Purge the air completely from the main cylinder using this procedure.

- Remove the transparent plastic cap from the bleed valve and place the other end of the pipe in a container.

- Repeat this procedure until there is no air left emerging from the plastic pipe.

- Pump the brake lever until it becomes hard and holds the brakes down.

- Open and close the bleed valve quickly while keeping the brake on.

- Release the brake.

N.B.
CHECK THE FLUID LEVEL FREQUENTLY DURING THE BLEEDING OPERATION AND REPLENISH THE RESERVOIR WITH BRAKE FLUID WHEN NECESSARY. IF THE RESERVOIR EMPTIES COMPLETELY OF BRAKE FLUID AT ANY TIME THE DURING BLEEDING PROCEDURE, PERFORM THE BLEEDING PROCEDURE ALL OVER AGAIN FROM THE BEGINNING, SINCE AIR WILL HAVE ENTERED THE PIPE.
TAP THE BRAKE PIPE LIGHTLY FROM THE CALLIPER TO THE RESERVOIR TO ACHIEVE A MORE COMPLETE BLEEDING.

- Extract the transparent plastic pipe.

Fit:
- Reservoir cover.

- Cover securing screws.

- Tighten the bleed valve and fit the rubber hood.

- Check brake fluid level.

- Once the bleeding process has been carried out, check the efficiency of the brake to see if there is any resistance or any fluid loss.

WARNING
WHEN WORKING WITH THE DISK BRAKE, TAKE THE FOLLOWING PRECAUTIONS:

1) NEVER RE-USE BRAKE FLUID.

2) DO NOT USE FLUID FROM A CONTAINER THAT HAS BEEN LEFT OPEN OR HAS BEEN LEFT UNUSED FOR A PROLONGED PERIOD OF TIME.

CHASSIS, FRONT WHEEL AND BRAKES

3) DO NOT MIX TWO TYPES OR BRANDS OF FLUID FOR USE IN THE BRAKE. THIS REDUCES THE BRAKE FLUID BOILING POINT AND MAY RESULT IN THE BRAKES NOT WORKING EFFICIENTLY. IN ADDITION, IT MAY CAUSE DETERIORATION OF THE BRAKE PARTS.

4) DO NOT LEAVE THE RESERVOIR CAP OFF AT ANY TIME, TO PREVENT CONTAMINATION OF THE FLUID.

5) DO NOT CHANGE THE FLUID IN RAINY OR VERY WINDY CONDITIONS.

6) EXCEPT ON THE BRAKE LININGS AND THE DISK, USE ONLY BRAKE FLUID, ISOPROPILIC ALCOHOL OR ETHYL ALCOHOL FOR CLEANING BRAKE PARTS. DO NOT USE ANY OTHER TYPE OF LIQUID FOR CLEANING THESE PARTS. PETROL, ENGINE OIL OR ANY OTHER PETROLEUM DISTILLATE WILL CAUSE RUBBER PARTS TO DETERIORATE. IF OIL IS SPILT ON ANY PART, IT WILL BE DIFFICULT TO CLEAN COMPLETELY AND MAY DETERIORATE THE RUBBER USED IN THE DISK BRAKE.

7) ON HANDLING THE DISK BRAKE LININGS OR THE DISK, TAKE CARE TO ENSURE THAT NO BRAKE FLUID COMES INTO CONTACT WITH THEM. CLEAN ANY REMAINS OF BRAKE FLUID THAT ACCIDENTALLY COMES INTO CONTACT WITH THE LININGS OR WITH THE DISK WITH A SOLVENT WITH A HIGH INFLAMMATION POINT. DO NOT USE ONE THAT LEAVES GREASY RESIDUES. IF LININGS CANNOT BE CLEANED SATISFACTORILY, CHANGE THEM FOR NEW ONES.

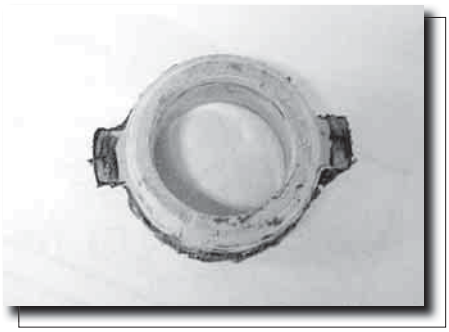
8) BRAKE FLUID DESTROYS PAINTED SURFACES RAPIDLY. CLEAN OFF ANY SPILT REMAINS IMMEDIATELY.

9) IF ANY OF THE BRAKE SYSTEM PIPE SECURING SYSTEMS OR THE BLEED VALVE OPENS AT ANY TIME, THE AIR MUST BE BLED FROM THE BRAKE SYSTEM.

ASSEMBLING FRONT WHEEL

1. Fit:

- Driven speedometer gear **(1).**
- Cap **(2).**



2. Fit:

- Hub dustguard.
- Spacer.

CHASSIS, FRONT WHEEL AND BRAKES

ASSEMBLING FRONT WHEEL

Reverse the **"DISMANTLING"** procedures.

Take care with the following points:

1. Lubricate:
- Front wheel axle.
- Bearing.
- Retaining rings.
- Spedometer gears (driving/driven).

Recommended lubricant:
Lithium soap based grease

2. Fit:
- Front wheel

N.B.
ENSURE THAT THE BAND PLATE SLOT FITS INTO THE LIMITER OF THE OUTER FRONT FORKS PIPE.

3. Tighten:
- Front wheel axle.
- Axle nut (front wheel).

ATTENTIÓN
BEFORE TIGHTENING THE WHEEL AXLE, PUSH THE FRONT FORKS DOWN SEVERAL TIMES, HOLDING THE HANDLE-BARS, TO CHECK THEIR OPERATION.

Axle nut:
8 Kgf.m (80 N.m)

4. Fit:
- Speedometer cable **(1).**

WARNING
ENSURE THAT THE SPEEDOMETER CABLE GUIDING IS CO-RRECT.

5. Check:
Front brake functioning.

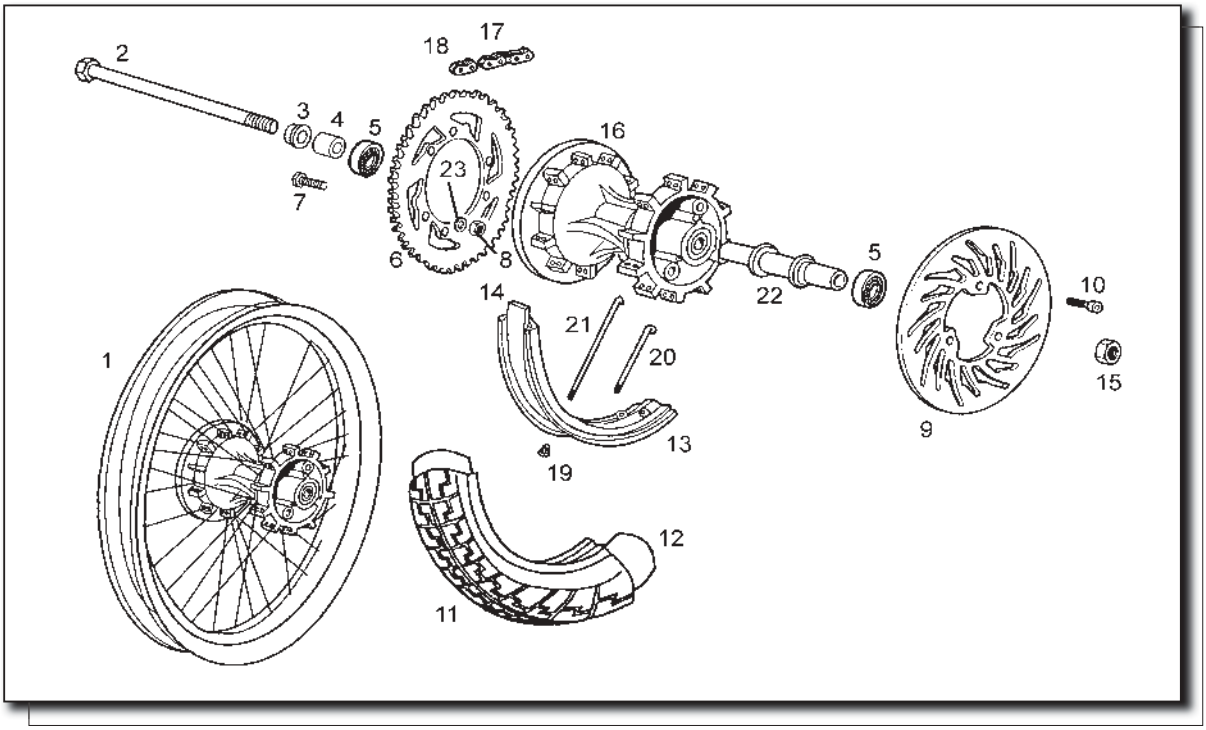
Irregular functioning => **Dismantle or check again.**

- Brake lever play.

See the **"ADJUSTING THE FRONT BRAKES"** section in **CHAPTER 3**.

REAR WHEEL AND BRAKES

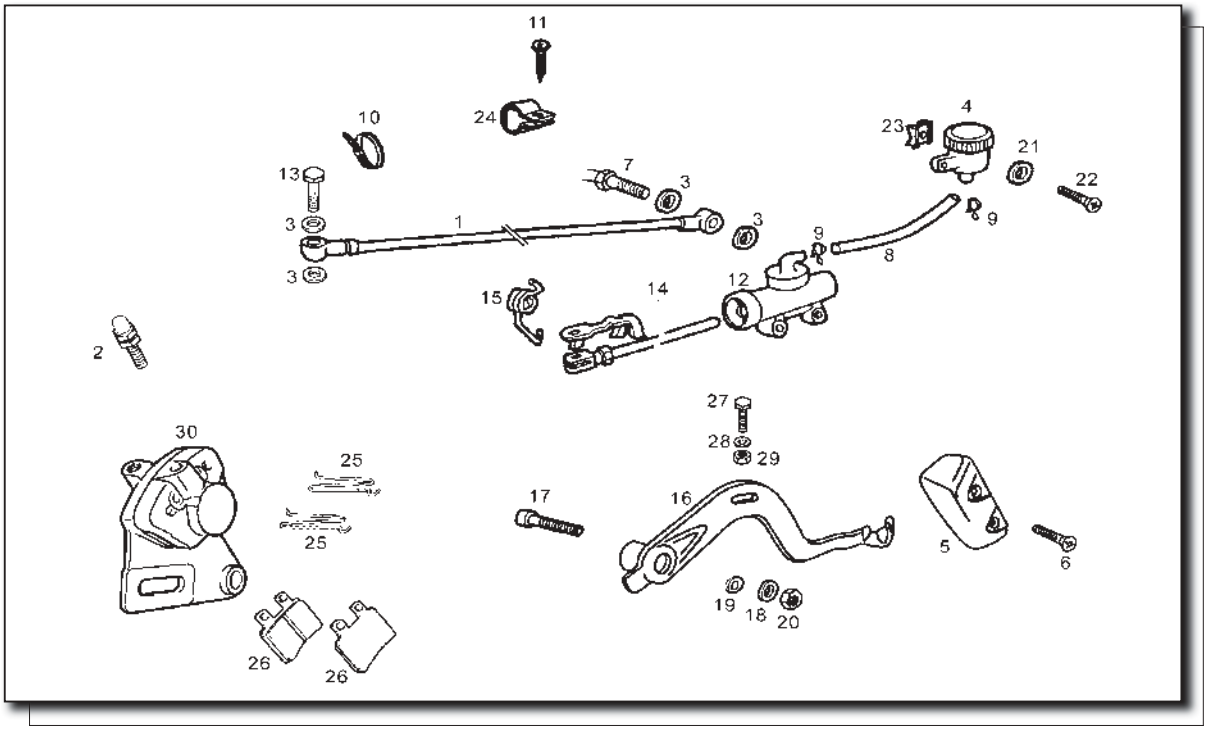
WHEEL DIAGRAM



1	Rear assembly with hub
2	Scto. Rear wheel axle
3	Flat D.15 washer
4	Plate side bush
5	Rear hub bearings 15.35.11/6202 SKF
6	Drag plate Z-48
7	8M125x20 hexagonal head bolt
8	Drag plate securing nut
9	D.200 rear brake disk.
10	Rear brake disk securing bolt
11	130/70x17" rear tyre
12	17" rear wheel inner tube
13	3.50x17" rear wheel rim
14	Rear inner tube protector
15	Rear wheel axle nut
16	Rear hub assembly
17	134P secondary chain
18	Secondary chain coupling
19	Spoke nut
20	Disk side rear wheel spoke
21	Plate side rear wheel spoke
22	Scto. Bearing separator
23	Flat D8 drag plate washer
24	Drag plate seal

REAR WHEEL AND BRAKES

BRAKE DIAGRAM



1	Rear brake fluid pipe
2	Calliper bleeding assy.
3	Outlet seal washer
4	Rear brake fluid reservoir assy.
5	Rear brake fluid cylinder protector
6	Front shield securing bolt
7	Brake light switch assy.
8	Rear brake cylinder reservoir pipe.
9	818-913 elastic clamp
10	Black cable joining flange
11	NG 4..8x13 selflocking bolt
12	Rear brake cylinder assy
13	Outlet
14	Rear brake cylinder bar assy.
15	Rear brake pedal spring
16	Rear brake lever assy.
17	Rear brake lever securing bolt
18	Flat D8 mechanised washer
19	Sec. lever bolt reg. washer
20	8M125 selflocking nut
21	Clutch spring stop washer
22	Round-headed Allen bolt
23	Chain cover securing nut
24	Rear brake cable securing flange

25	Rear brake pad securing spring
26	Rear brake pad
27	M4 70x16 hexagonal bolt
28	Flat D4 mechanised washer
29	M4 D70 hexagonal nut
30	Rear brake calliper assy.

REAR WHEEL AND BRAKES

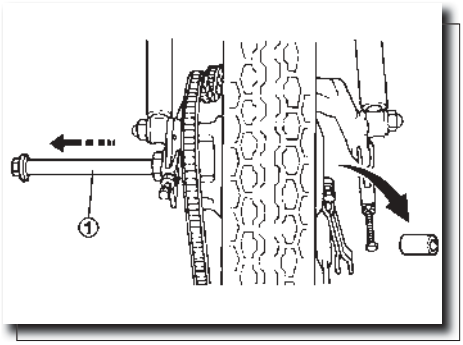
DISMANTLING

WARNING
- SUPPORT THE MOTORCYCLE FIRMLY SO THAT IT CANNOT FALL.

- PLACE THE MOTORCYCLE ON A FLAT SURFACE.

1. Extract:
- Chain tensioner

2. Extract:
- Wheel axle **(1)**.
- Spacer



N.B.
ON REMOVING THE WHEEL AXLE, THE SPACER WILL FALL. TAKE CARE NOT TO LOSE IT.

3. Extract:
- Rear wheel.

N.B.
ON REMOVING THE REAR WHEEL, PUSH THE WHEEL FORWARDS AND REMOVE THE DRIVE CHAIN.

DISMANTLING THE REAR DISK CALLIPER

- Loosen the bolt at the bottom end of the brake hose and tighten it slightly.

- Unscrew the bolts securing it to the bracket.

- Extract the wheel axle.

- Remove the brake calliper.

PRECAUTION
CLEAN OFF ANY SPILT BRAKE FLUID REMAINS IMMEDIATELY.

REAR WHEEL AND BRAKES

Fitting the rear calliper
- Fit the bottom end of the brake hose and the calliper.

- Fit the wheel axle.

Nominal torque:
8 Kgf.m (80 N.m)

- Tighten to nominal torque:
1, 7~1,9 Kgf.m (17 ~ 19 N.m)

- Tighten the brake hose bolt.

- Check brake fluid level.

- Bleed the braking system pipe (consult Bleeding the brake system pipe, in the chapter corresponding to the front brakes).

- Check the efficiency of the brake to see if there is any resistance or any fluid loss.

WARNING
DO NOT ATTEMPT TO RIDE THE MOTORCYCLE UNTIL A GOOD BRAKE PEDAL OPERATION IS OBTAINED. THIS SHOULD BE DONE BY PUMPING THE PEDAL UNTIL THE PADS ARE AGAINST THE DISK. IF NOT, THE BRAKES WILL NOT WORK THE FIRST TIME THAT THE PEDAL IS APPLIED.

Extracting the rear brake pads.
- Remove the rear brake calliper (see Dismantling the rear brake calliper, in this chapter).

Extract:
- Brake pad springs.
- Brake pads.

Fitting the rear brake pads.
- Push the calliper pistons in manually.

- Fit the pads inside the calliper.

- Adjust the pad springs.

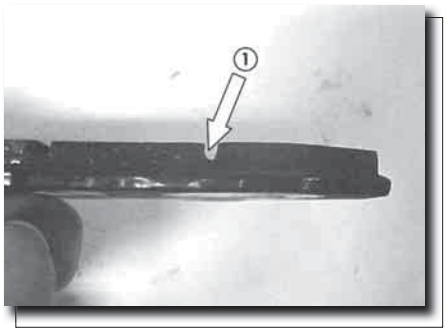
REAR WHEEL AND BRAKES

WARNING
DO NOT ATTEMPT TO RIDE THE MOTORCYCLE UNTIL A GOOD BRAKE PEDAL OPERATION IS OBTAINED. THIS SHOULD BE DONE BY PUMPING THE PEDAL UNTIL THE PADS ARE AGAINST THE DISK. IF NOT, THE BRAKES WILL NOT WORK THE FIRST TIME THAT THE PEDAL IS APPLIED.

Inspecting the pads for wear
- Removing the rear brake pads.

- Examine both brake pads.

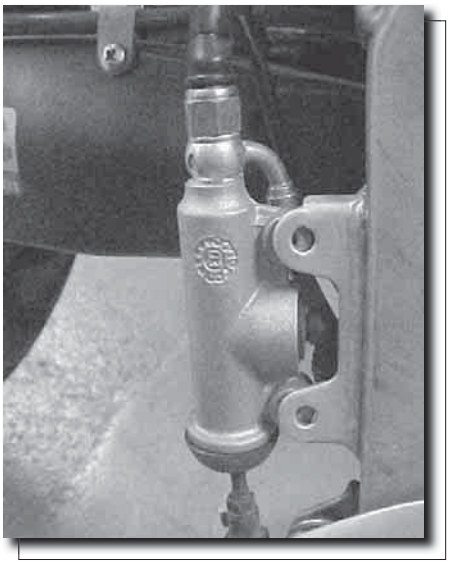
If the wear has caused the wear indication groove **(1)** to disappear, both pads must be renewed.



Extracting the rear main cylinder
- Remove the cover protecting the main cylinder. (The bolts securing the cover also support the cylinder).

- Extract the bolt and remove the brake hose from the reservoir.

PRECAUTION
CLEAN OFF ANY SPILT BRAKE FLUID REMAINS IMMEDIATELY.



Fitting the rear main cylinder.
- Fit the rear main cylinder and its protective cover.

- Tighten the brake hose bolt.

- Bleed the braking system pipe (consult Bleeding the brake system pipe, in the chapter).

- Check the efficiency of the brake to see if there is any resistance or any fluid loss.

REAR WHEEL AND BRAKES

Checking the rear main cylinder (visual check)

- Extract the main cylinder (consult Extracting the rear main cylinder in this section).

- Dismantle the rear main cylinder.

- Check that there are no scratches, corrosion or holes in the inner walls of the main cylinder and on the outer part of each piston.

- If you observe any damage to the main cylinder or the piston, renew them.

- Examine the primary and secondary bushes.

- If the bush is worn, soft (perished) or swollen, change the piston assembly to renew the bushes.

- If you notice loss of fluid in the brake cylinder, change the bushes.

Checking the rear calliper main cylinder

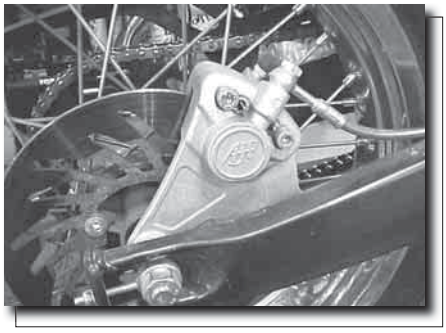
- Check that the antidust boots are not damaged. If they are, change them.

- Check that the piston return is not damaged. If it is, change it.

- Check that the relief port and the feed port are not blocked.
if the relief port is blocked, the brake pads will bind on the disk. Inject compressed air to clean the ports.

Extracting the brake disk
- Extract the rear wheel.

- Unscrew the securing bolts and extract the disk.



Fitting the brake disk
- Fit the brake disk to the rear wheel in such a way that the engraved side faces outwards.

- Apply a temporary blocking agent to the brake disk securing bolt threads.

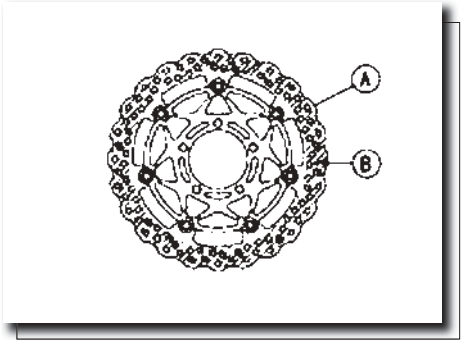
- Tighten the rear brake disk securing bolts.

Nominal tightening torque:
1,7 ~ 1,9 Kgf.m (17 ~ 19 N.m)

REAR WHEEL AND BRAKES

Brake disk wear
- Measure the thickness of the disks **(A)** at the point where they are most worn.

- If the disk is more worn than that specified in the service limit, renew it.
Measurement area **(B)**.



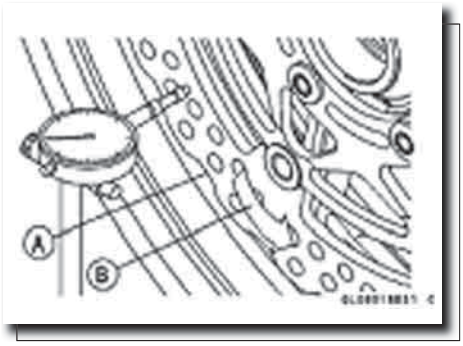
Standard brake disk thickness:
3,30 – 3,60 mm

Service limit:
3,00 mm

Brake disk distortion
- Raise the motorcycle on a jack, so that the tyre is clear of the ground.

- Place a dial gauge against the disk (A) as shown, and measure the disk's deviation from centre as the tyre is tuned (B) by hand.

- If the deviation from centre exceeds the service limit, renew the disk.



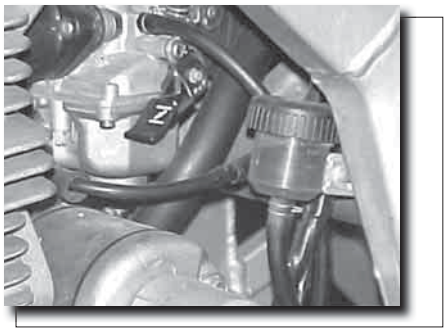
Disk deviation from centre:
Standard:
Less than 0,15 mm

Service limit:
0,3 mm

Bleeding the brake system pipe
The brake fluid has a very low compression coefficient, with the result that almost all the movements of the brake lever are transmitted directly to the calliper for braking. Air however compresses easily. When air enters the brake system pipes, the movement of the brake pedal is partially used up in compressing the air. This causes the lpedal to feel spongy and leads to a loss of braking power.

WARNING
BE SURE TO BLEED AIR OUT OF THE BRAKE SYSTEM WHEN THE BRAKE PEDAL FEELS SPONGY AFTER CHANGING THE BRAKE FLUID OR WHEN THE BRAKE SYSTEM PIPE HAS BEEN LOOSENED FOR ANY REASON.

REAR WHEEL AND BRAKES



Extract:
Reservoir cover (threaded)

- Fill the reservoir with brake fluid up to the top reservoir line.

- With the cover removed, pump the brake pedal slowly several times until no bubbles can be seen rising through the liquid.

Purge the air completely from the main cylinder using this procedure.

- Remove the transparent plastic cap from the bleed valve and place the other end of the pipe in a container.

- Repeat this procedure until there is no air left emerging from the plastic pipe.

- Pump the brake pedal until it becomes hard and holds the brakes down.

- Open and close the bleed valve quickly while keeping the brake on.

- Release the brake.

N.B.
CHECK THE FLUID LEVEL FREQUENTLY DURING THE BLEEDING OPERATION AND REPLENISH THE RESERVOIR WITH BRAKE FLUID WHEN NECESSARY. IF THE RESERVOIR EMPTIES COMPLETELY OF BRAKE FLUID AT ANY TIME THE DURING BLEEDING PROCEDURE, PERFORM THE BLEEDING PROCEDURE ALL OVER AGAIN FROM THE BEGINNING, SINCE AIR WILL HAVE ENTERED THE PIPE. TAP THE BRAKE PIPE LIGHTLY FROM THE CALLIPER TO THE RESERVOIR TO ACHIEVE A MORE COMPLETE BLEEDING.

- Extract the transparent plastic pipe.

Fit:
- Reservoir cover.

- Tighten the bleed valve and fit the rubber hood.

- Check brake fluid level.

- Once the bleeding process has been carried out, check the efficiency of the brake to see if there is any resistance or any fluid loss.

REAR WHEEL AND BRAKES

WARNING
WHEN WORKING WITH THE DISK BRAKE, TAKE THE FOLLOWING PRECAUTIONS:

1) NEVER RE-USE BRAKE FLUID.

2) DO NOT USE FLUID FROM A CONTAINER THAT HAS BEEN LEFT OPEN OR HAS BEEN LEFT UNUSED FOR A PROLONGED PERIOD OF TIME.

3) DO NOT MIX TWO TYPES OR BRANDS OF FLUID FOR USE IN THE BRAKE. THIS REDUCES THE BRAKE FLUID BOILING POINT AND MAY RESULT IN THE BRAKES NOT WORKING EFFICIENTLY. IN ADDITION, IT MAY CAUSE DETERIORATION OF THE BRAKE PARTS.

4) DO NOT LEAVE THE RESERVOIR CAP OFF AT ANY TIME, TO PREVENT CONTAMINATION OF THE FLUID.

5) DO NOT CHANGE THE FLUID IN RAINY OR VERY WINDY CONDITIONS.

6) EXCEPT ON THE BRAKE LININGS AND THE DISK, USE ONLY BRAKE FLUID, ISOPROPILIC ALCOHOL OR ETHYL ALCOHOL FOR CLEANING BRAKE PARTS. DO NOT USE ANY OTHER TYPE OF LIQUID FOR CLEANING THESE PARTS. PETROL, ENGINE OIL OR ANY OTHER PETROLEUM DISTILLATE WILL CAUSE RUBBER PARTS TO DETERIORATE. IF OIL IS SPILT ON ANY PART, IT WILL BE DIFFICULT TO CLEAN COMPLETELY AND MAY DETERIORATE THE RUBBER USED IN THE DISK BRAKE.

7) ON HANDLING THE DISK BRAKE LININGS OR THE DISK, TAKE CARE TO ENSURE THAT NO BRAKE FLUID COMES INTO CONTACT WITH THEM. CLEAN ANY REMAINS OF BRAKE FLUID THAT ACCIDENTALLY COMES INTO CONTACT WITH THE LININGS OR WITH THE DISK WITH A SOLVENT WITH A HIGH INFLAMMATION POINT. DO NOT USE ONE THAT LEAVES GREASY RESIDUES. CHANGE THE PADS FOR NEW ONES IF THEY CANNOT BE CLEANED SATISFACTORILY.

8) BRAKE FLUID DESTROYS PAINTED SURFACES RAPIDLY. CLEAN OFF ANY SPILT REMAINS IMMEDIATELY.

9) IF ANY OF THE BRAKE SYSTEM PIPE SECURING SYSTEMS OR THE BLEED VALVE OPENS AT ANY TIME, THE AIR MUST BE BLED FROM THE BRAKE SYSTEM.

REAR WHEEL AND BRAKES

INSPECTING THE REAR WHEEL

1. Inspect:
- Rear wheel axle
- Rear wheel
- Rear wheel bearings
- Retaining rings

See the **"REAR WHEEL"** section

2. Measurement:
- Distortion of the rear wheel

See the **"REAR WHEEL"** section

FITTING THE REAR WHEEL

Reverse the **"DISMANTLING"** procedures.

Take care with the following points:

1. Fit:
- Rear wheel.

2. Adjust:
- Drive CHAIN tension

See the **"ADJUSTING THE DRIVE CHAIN "** section in "**CHAPTER 3"**.

3. Tighten:
- Rear wheel axle.
- Axle nut (rear wheel) **(1)**.

Nut (rear wheel axle):
8 Kgf.m (80 N.m)

4. Check:
- Brake pedal play

See the **"ADJUSTING THE REAR BRAKES "** section in **"CHAPTER 3"**.

TRANSMISSION

DISMANTLING

1. - Place the motorcycle on a flat surface.

WARNING
SUPPORT THE MOTORCYCLE FIRMLY, SO THAT IT CANNOT FALL.

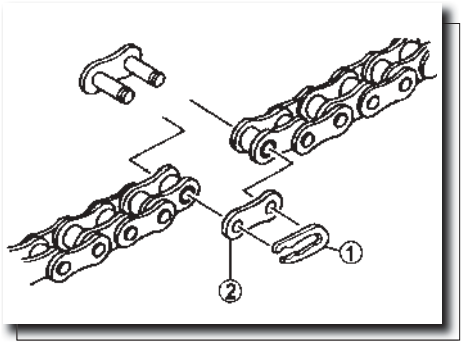
2. Extract:
- Gear change pedal
- Left hand crankcase cover
- Pinion

See the **"DISMANTLING THE ENGINE"** section in **CHAPTER 4**.

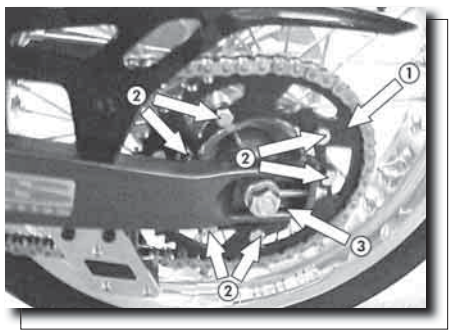
3. Extract:
- Rear wheel

See the **"REAR WHEEL"** section.

4. Extract:
- Coupling circlip **(1)**.
- Coupling plate **(2)**.
- Coupling link.
- Drive chain.

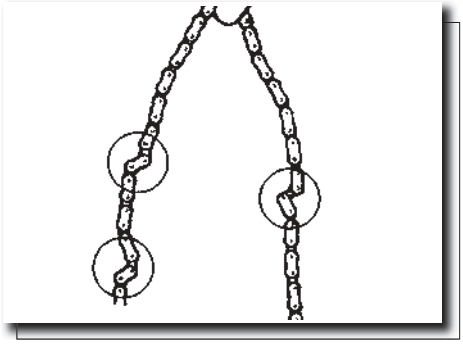


5. Extract:
- Wheel sprocket **(1)**, by removing the bolts **(2)**.
- Chain tensioner **(3)**.



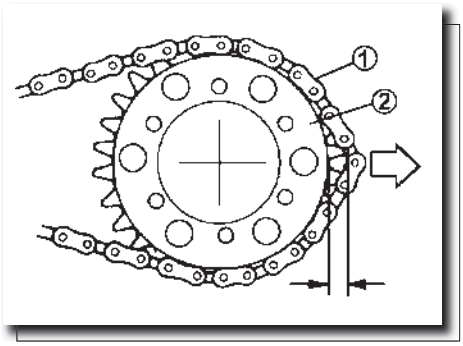
TRANSMISSION

INSPECTING THE DRIVE CHAIN



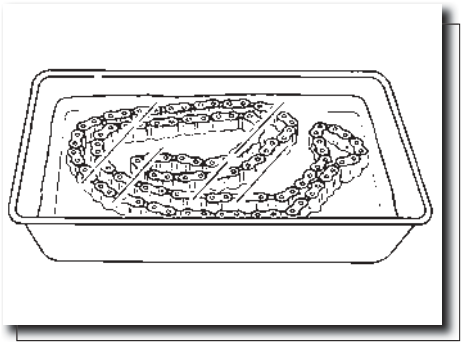
1. Inspect:
- Chain stiffness

Stiffness => **Clean and lubricate, or replace.**



2. Inspect:
- Drive chain **(1)**.
- Wheel sprocket **(2)**.

More than ½ tooth of wear => **Replace the whole chain**.

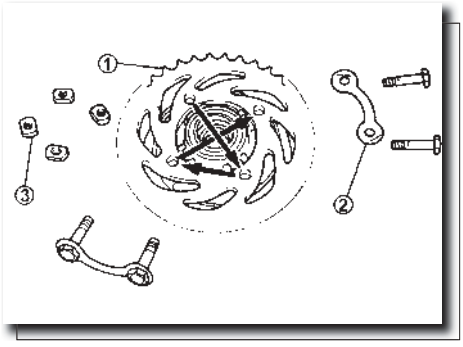


3. Clean:
- Drive chain

Place the chain in a container with petrol and brush it to remove as much of the dirt as possible. Then remove the chain from the petrol, dry and lubricate it.

Lubricant for the drive chain:
Engine oil

WHEEL SPROCKET

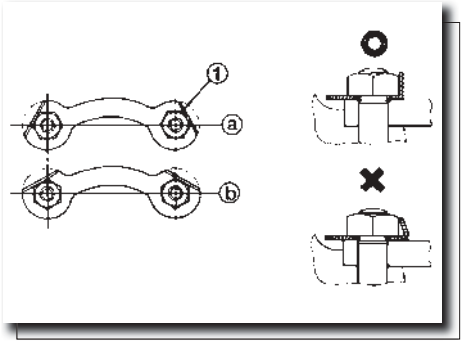


1. Fit:
- Wheel sprocket **(1)**.
- Tab washer **(2).**
- Nut **(3)**.

Wheel sprocket nuts:
2,9 Kgf.m (29 N.m)

TRANSMISSION

N.B.
TIGHTEN THE NUTS DIAGONALLY.

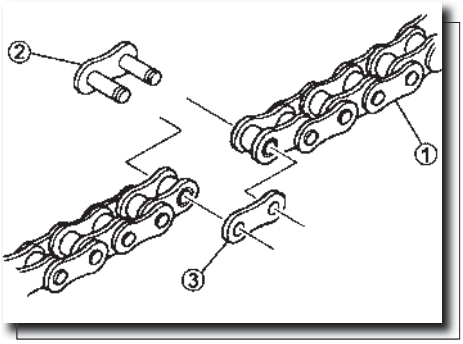


2. Fold:
- Edge of tab washer **(1)**.
(on to a flat side of the nut).

FITTING THE WHEEL SPROCKET AND THE DRIVE CHAIN

1. Fit:
- Chain tensioner
- Wheel sprocket assembly

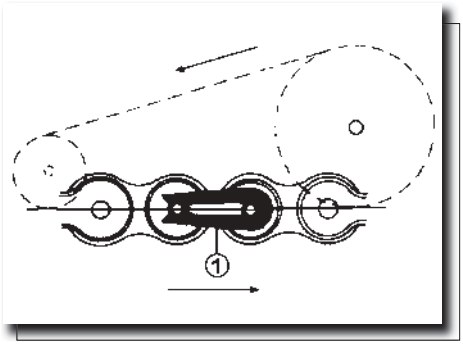
N.B.
LINE UP THE SLOT ON THE SWINGING ARM WITH THE FLAT FACE OF THE WHEEL SPROCKET SHAFT.



2. Fit:
- Drive chain **(1)**.
- Coupling link **(2)**.
- Plate **(3)**.

3. Fit:
- Circip **(1)**.

ATTENTIÓN
FIT THE CHAIN COUPLING CIRCLIP IN THE DIRECTION INDICATED IN THE FIGURE.



4. Fit:
- Pinion.
- Gear change pedal.

See the **"DISMANTLING THE ENGINE"** section in **CHAPTER 4**.

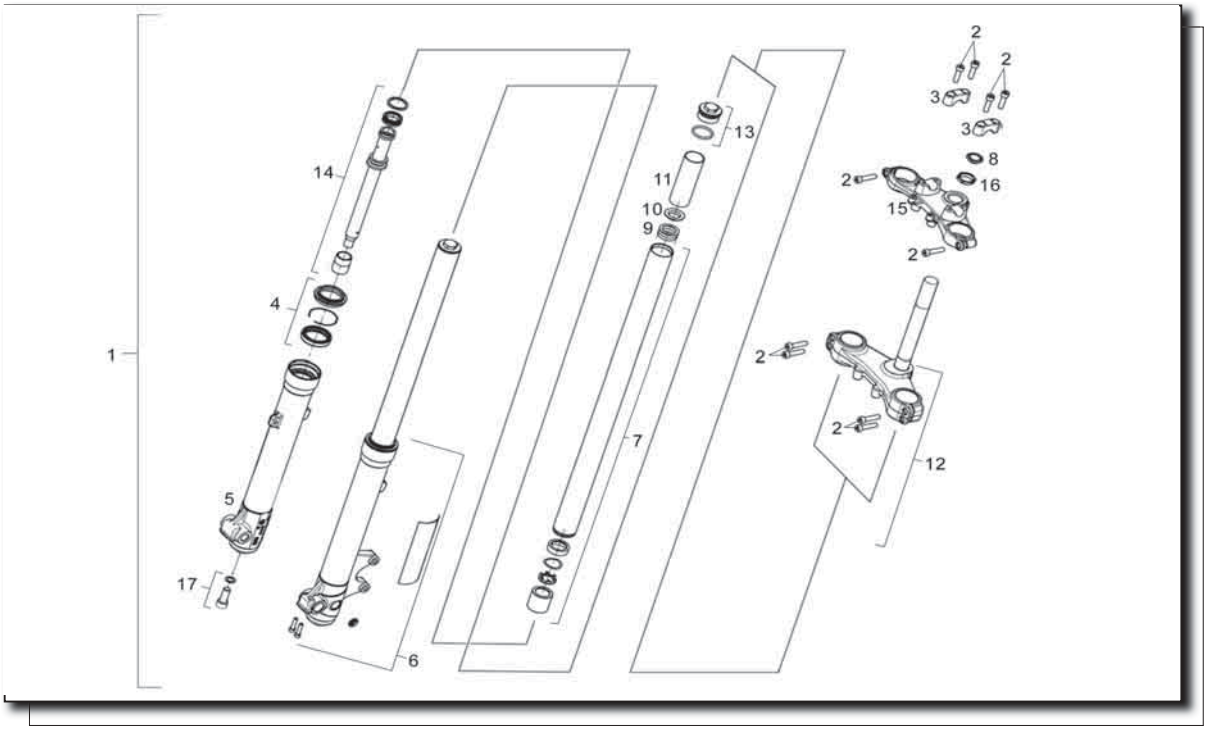
5. Adjust:
- Drive chain tension.

See the **"ADJUSTING THE DRIVE CHAIN TENSION"** section in **CHAPTER 3**.

6. Tighten:
- Wheel axle.

FORKS

FORKS



1	Steering forks assy.
2	C/Red. 8M125x35 Allen screw
3	Handlebar securing bridge
4	Steering dustguard
5	Right fork stem
6	Left fork stem
7	Fork bar assy.
8	Plug
9	Fork spring
10	Spring stop washer
11	Fork spring pipe
12	Handlebar stem plate assy.
13	Fork stem pipe plug cover
14	Hydraulic pipe assy.
15	Top plate
16	Handlebar stem nut

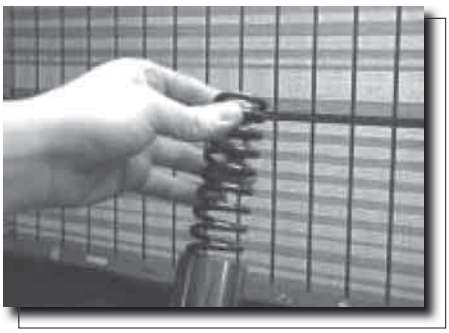
FORKS

DISMANTLING FRONT SUSPENSION

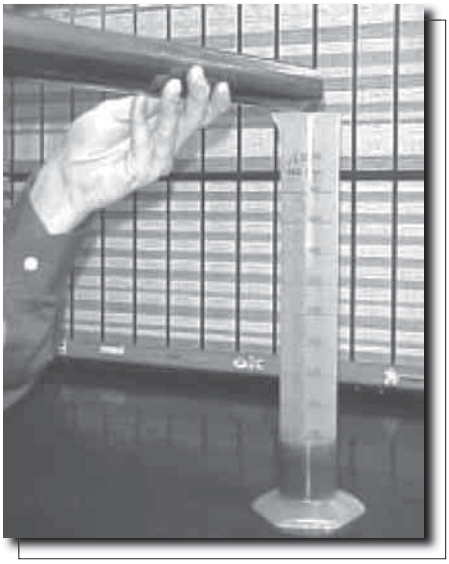
- Dismantle the suspension bars from the steering plates by loosening the bolts on their securing flange.

Hold the suspension bar in a vice, protecting its jaws with soft metal pads to avoid scratching or damaging the bars, and proceed to loosen the top closing plug.

- Extract the top closing plug together with the distancial of precharge and the suspension spring.



Have ready a measuring container in which to drain off the hydraulic fluid from the bar, (pump the fork stem assembly in order to ensure it is completely drained).

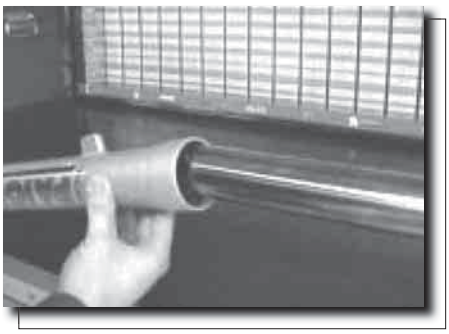


FORKS

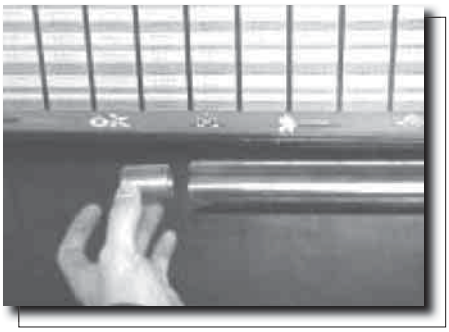
- Ectract the retain dustguard together with its safety circlip.

- Access the Allen bolt located at the base of the fork stem and loosen it in order to free the hydraulic assembly and the bar.

- Firmly separate the bar from the fork stem.



- Extract the aluminium hydraulic support stop on the inside of the fork ítem.



FORKS

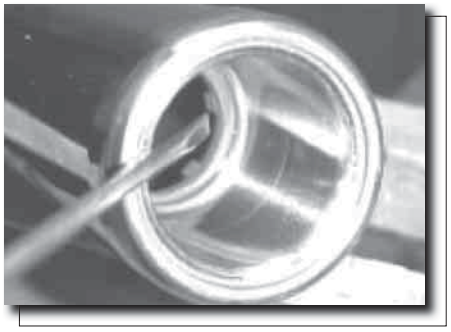
- Next, extract the hydraulic assembly through the top of the suspension bar.

- Hold the fork stem in a vice with pads of soft metal on its jaws, and place a cloth over the mouth of the forks to avoid damaging it, then proceed to extract the retain with the aid of a lever. Renew it whenever the assembly is dismantled.

- Proceed with cleaning and degreasing all the front suspension components, so that they can be subsequently checked.

INSPECTING THE FRONT FORKS

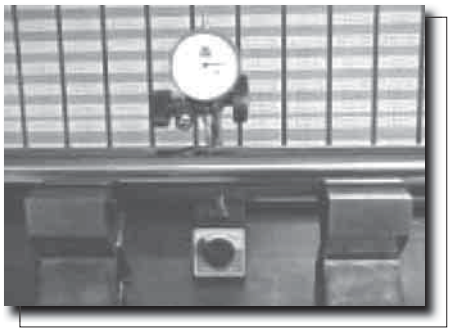
- Check the degree of wear on the suspension bar guide bush. Replace it in the event of it being damaged on over 30% of its total surface.



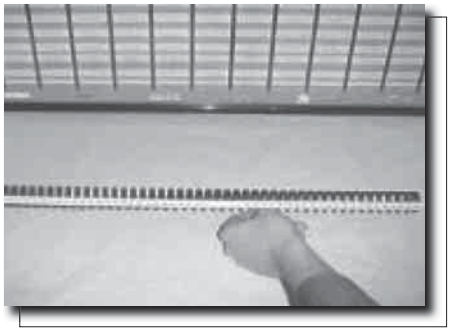
FORKS

- With the aid of some X-shaped chocks and a comparison meter fitted on a fixed support, determine the degree of wear on the bar.

Service limit:
0,4 mm.



- Check the length of the suspension spring, as well as its distortion and/or lack of parallelism.

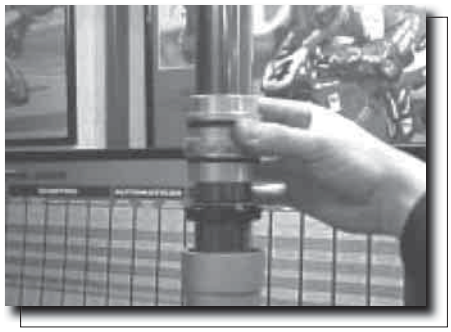


- Check the state of the rebound spring and the hydraulic assembly nylon guide bush, together with the airtight O-ring. Replace them in the event of evident distortion or damage.

Clean and degrease all the elements making up the assembly, ready for reassembly.

FORKS

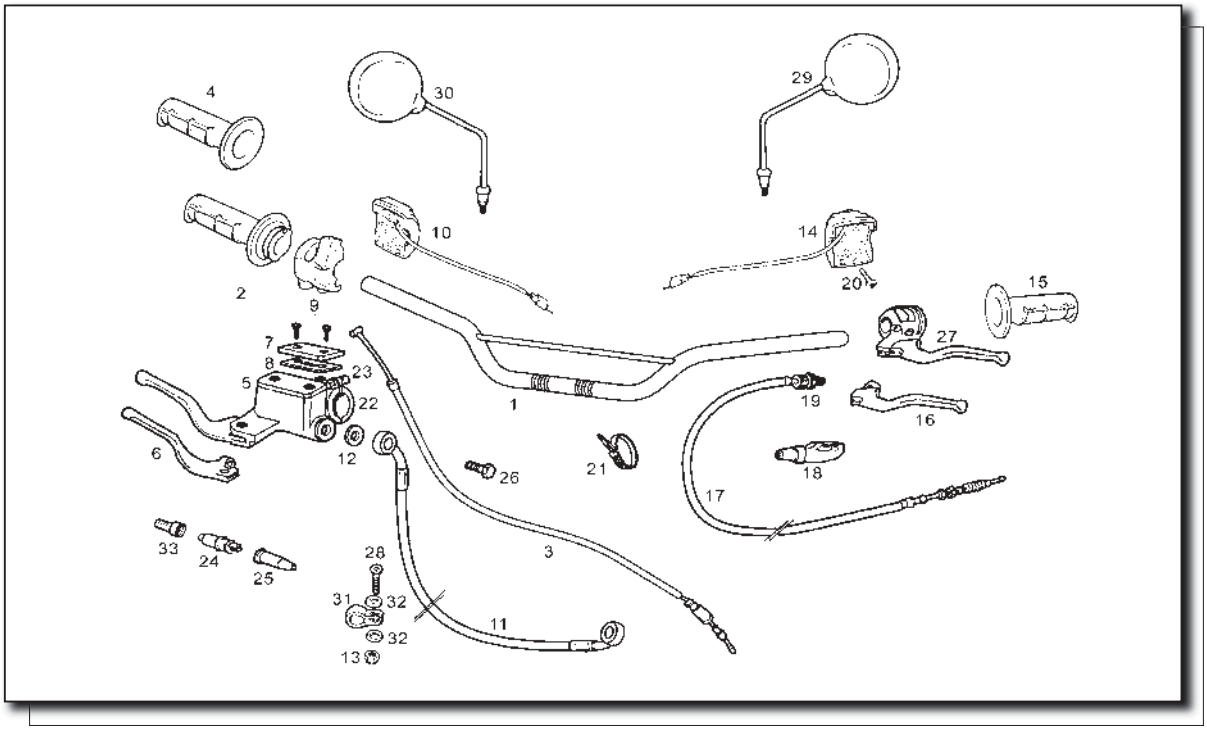
Reassemble the assembly, paying special attention to the tightening of the fork stem, as well as the fitting of the retain, putting a little oil on its edges and inserting it with the aid of the special tool. Refill the hydraulic fluid and do not forget to insert the preload bush between the spring and the closing plug.



SUSPENSION	FREE LENGTH OF SPRING (MM)	cm^3 OIL / BAR	TYPE OF OIL
PAIOLI	848 ± 3	435 C.C.	SAE 7,5 W

HANDLEBAR

HANDLEBAR

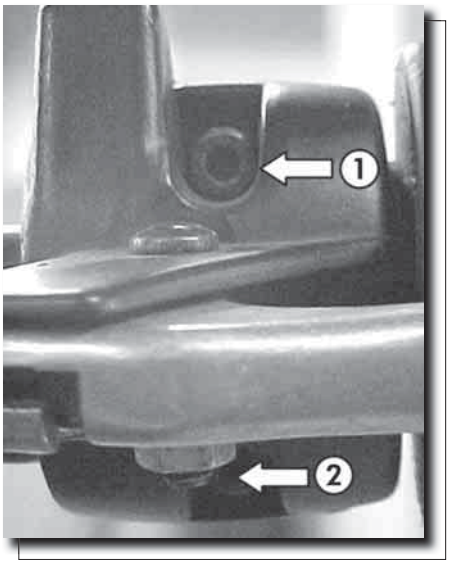


1	Handlebar sub-assembly
2	Throttle twist grip assembly
3	Throttle cable sub-assembly
4	Throttle twist grip
5	Front brake control assembly
6	Front brake lever assembly
7	Front brake fluid reservoir cover
8	Front brake fluid reservoir cover gasket
9	Star screw
10	Switch assembly
11	Scto. Front brake fluid pipe
12	Seal washer
13	Self locking nut
14	Light switch assembly
15	Clutch grip
16	Clutch lever
17	Scto. Clutch cable
18	Clutch lever protector
19	Clutch cable tensioner assy.
20	Star screw
21	Cable joining flange
22	Front brake control securing flange
23	Allen screw
24	Stop control switch

25	Stop switch hood
26	Hydraulic pipe outlet
27	Left grip housing assembly
28	Star screw
29	Left rear view mirror assembly
30	Right rear view mirror assembly
31	Scto. Front brake pipe securing bracket
32	Mechanised flat washer
33	Stop switch securing bush

HANDLEBAR

DISMANTLING

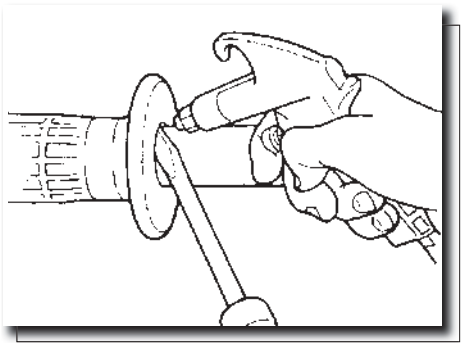


WARNING
- SUPPORT THE MOTORCYCLE FIRMLY TO PREVENT ANY RISK OF IT FALLING.
- PLACE THE MOTORCYCLE ON A FLAT SURFACE

1. Extract:
- Headlight housing.
- Clutch cable
- Front brake control assembly

2. Extract:
- Light switch assembly (Left and right hand). (screws)1) and (2)).

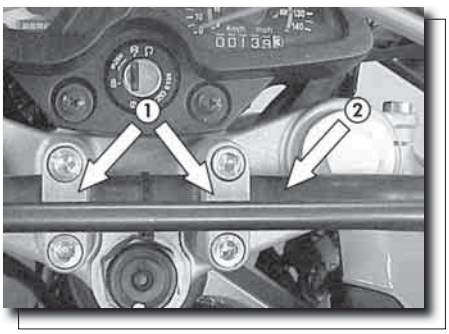
DISMANTLING THE HANDLEBARS



1. Dismantle:
- Throttle twist grip (LI).

Steps for dismantling:
- On dismantling, blow compressed air between the twist grip and the handlebars.

2. Extract:
- Handlebar securing plate bolts **(1)**.
- Handlebars **(2)**.
- Throttle control.
- Front brake cylinder assembly.



3. Extract:
- Front wheel.

See the **"FRONT WHEEL"** section.

- Front mudguard.
- Front fork.

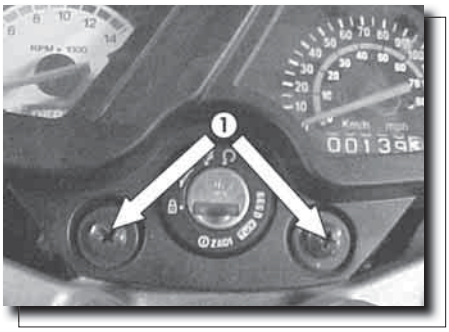
See the **"FRONT FORKS"** section.

HANDLEBAR

4. Extract:
- Fuel tank.

See the **"SEAT, SIDE COVERS AND FUEL TANK"** section in **CHAPTER 3**.

5. Extract:
- Support (speedometer).
- Speedometer (remove bolts (1).



6. Remove:
- Plug.
- Plate locking nut.

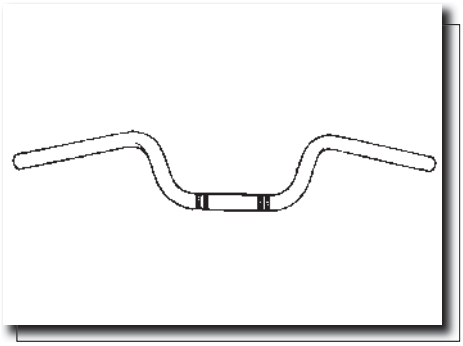
WARNING
- SUPPORT THE STEERING AXLE FIRMLY TO PREVENT ANY RISK OF IT FALLING.

N.B.
THE STEERING BEARINGS ON THIS MACHINE ARE BUILT DIRECTLY INTO THE CHASSIS.

INSPECTING THE HANDLEBARS

1. Inspect:
- Handlebars

Warping/cracks/damage => .



WARNING
DO NOT ATTEMPT TO STRAIGHTEN WARPED HANDLEBARS. THIS MAY SERIOUSLY WEAKEN THE HANDLEBARS.

HANDLEBAR

INSPECTING THE STEERING COLUMN

- Extract the steering bearings. If they are in poor condition, change them.

ASSEMBLING THE STEERING COLUMN

Reverse the **"DISMANTLING"** procedures. Take note of the following points:

1. Fit:
- Steering column.
- Top plate.
- Top plate nut.

Top plate nut:
9 ~ 13 Kgf.m (90 ~ 130 N.m)

- Tighten the plate locking bolts.
- Plug.
- Instrument panel.

2. Fit:
- Handlebars.
- Handlebar securing flanges **(2).**

Bolt (handlebar top securing):
1,9 Kgf.m (19 N.m)

3. Fit:
- Front forks

See the **"FRONT FORKS"** section.

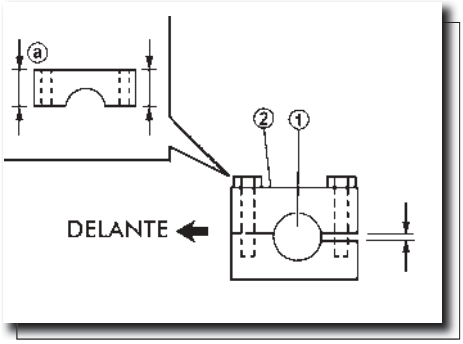
- Front mudguard
- Front wheel

See the **"FRONT WHEEL"** section.

HANDLEBAR

N.B.
- APPLY A THIN LAYER OF LITHIUM SOAP BASED GREASE TO THE RIGHT HAND END OF THE HANDLEBARS.

- THE HANDLEBARS TOP SECURING BOLTS MUST BE FITTED WITH THE LARGEST PART (A) FORWARD. FIRST TIGHTEN THE BOLTS ON THE FRONT PART, AS INDICATED IN THE FIGURE



4. Fit:
- Light switch assembly (LD and LI).
(screws)**(1)** and **(2)**).

- Front brake control assembly

- Throttle control.

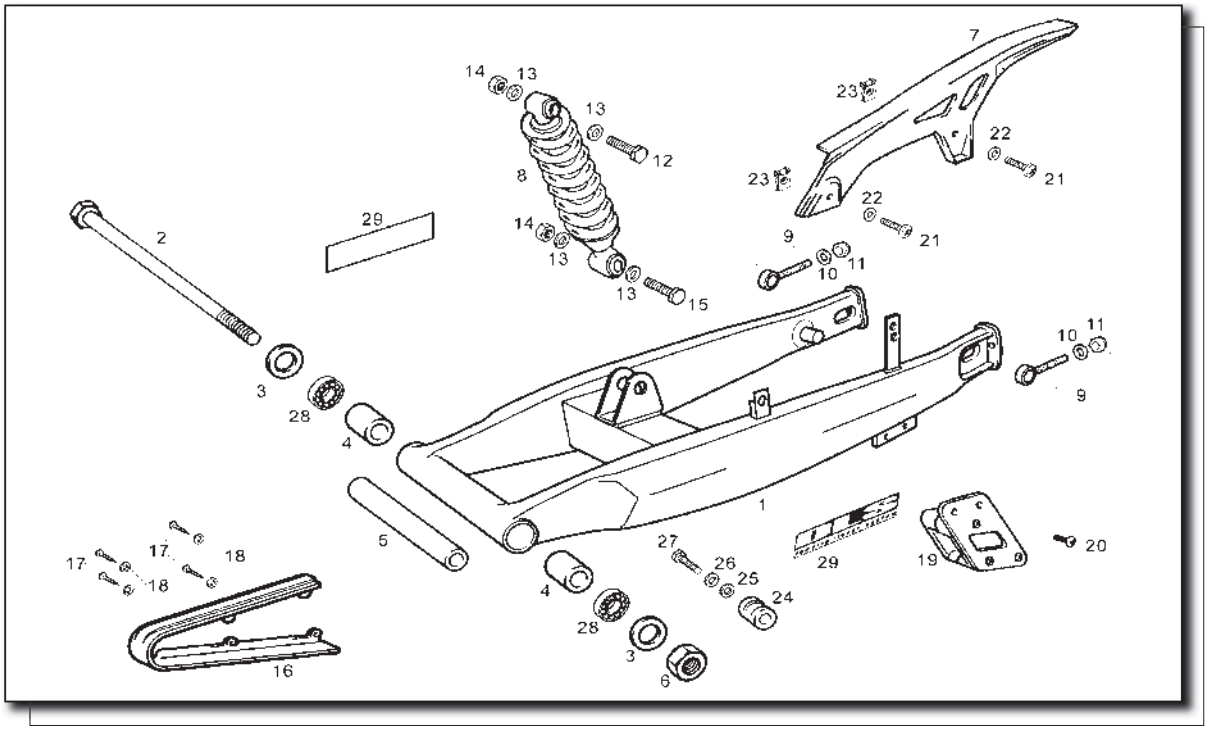
- Headlight housing.

WARNING
CHECK THE OPERATION OF THE THROTTLE TWIST GRIP.

5. Adjustment
- Throttle cable play.
- Functioning of the brakes.

See the **"ADJUSTING THE BRAKE CABLES/ADJUSTING THE BRAKE LEVER"** section in **CHAPTER 3**.

SHOCK ABSORBER AND SWINGING ARM



1	Swinging arm assy
2	Swinging arm axle sub-assembly
3	Wheel axle washer
4	Swinging arm separator bush
5	Separator-bearings sub-assembly
6	12M150 DIN-985 Self locking nut
7	Chain cover
8	Shock absorber assembly
9	Rear wheel tensioner assy.
10	D.6.DIN125 Mechanised flat washer
11	6M100 Self locking nut
12	M12 175x58 hexagonal/tapered bolt
13	Flat washer
14	12M175 Self locking nut
15	M12 175x50 hexagonal/tapered bolt
16	Chain rubbing plate
17	4.8x13 selflocking bolt
18	D.5.DIN125-B Mechanised flat washer
19	Chain guide
20	M6 100x10 bolt
21	NG. 6M 100x16 Crosshead screw
22	Chain cover securing-cam shaft washer
23	212827 Chain cover securing nut
24	Chain support guide

25	Spring ring
26	Washer
27	8M 125x45 DIN 931 8.8 ZnB bolt
28	6003 2RS 17x35x10 bearing
29	Swinging arm adhesive

SHOCK ABSORBER AND SWINGING ARM

DISMANTLING

1. Place the motorcycle on a flat surface.

WARNING
- SUPPORT THE MOTORCYCLE FIRMLY TO PREVENT ANY RISK OF IT FALLING.

2. Extract:
- Side covers (LD and LI).

See the **"SEAT, SIDE COVERS AND FUEL TANK"** section in **CHAPTER 3**.

3. Extract:
- Rear wheel.
- Wheel sprocket.
- Brake disk.
- Rear calliper.

See the **"TRANSMISSION LIST"** section.

4. Extract:
- Nut (top and bottom).
- Shock absorber.

5. Extract:
- Swinging arm shaft nut.
- Wheel axle nut.
- Washers (swinging arm).
- Shafts.
- Swnging arm.

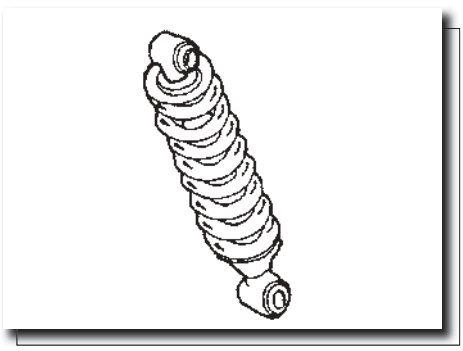
INSPECTING

1. Inspect:
- Swinging arm play
Play => **Tughten the joint shaft nut or replace the bushes**.

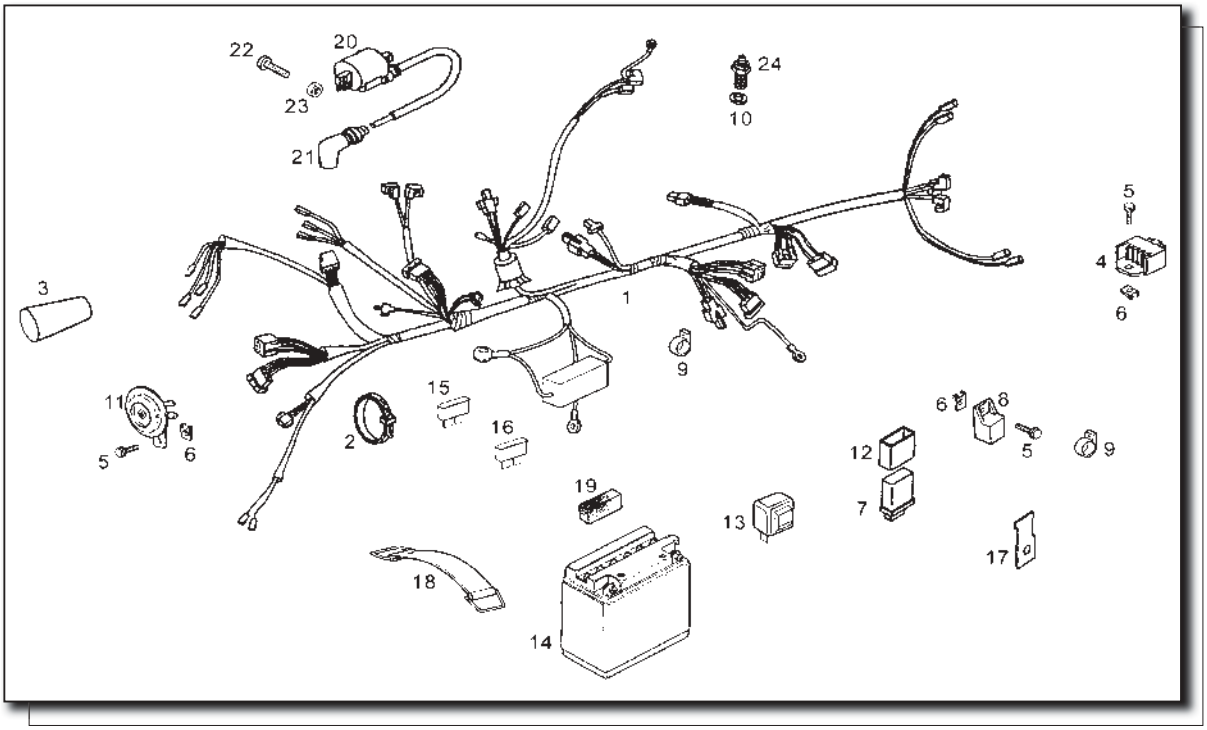
- Swinging arm vertical movement
Irregular movement/warping/stains => **Replace the bushes**.

- Swinging arm vertical (horizontal) movement
Irregular movement/warping/stains => **Replace the bushes**.

2. Inspect:
- Shock absorber
Fluid leaks/damage => **Replace the shock absorber**.

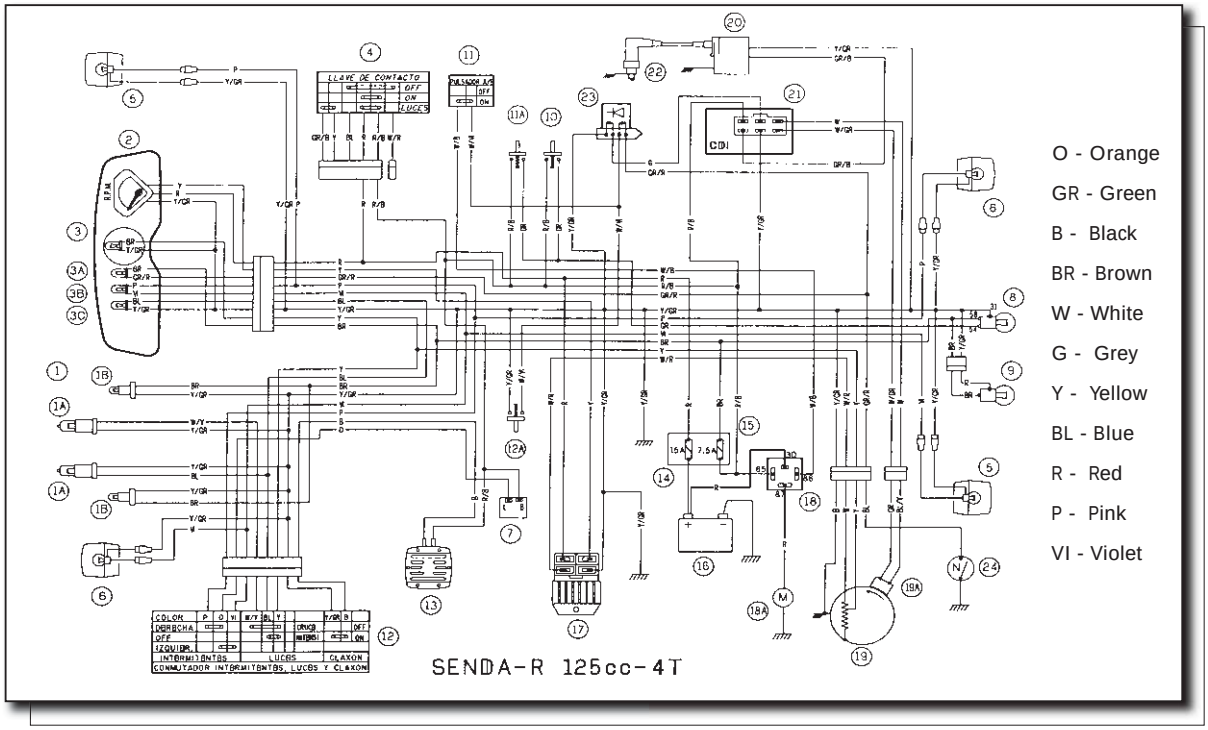


ELECTRICAL SYSTEM



1	Electrical wiring system
2	Black cable-joining flange
3	Electrical wiring connections protector
4	Regulator
5	Bolt
6	Chain cover securing bolt
7	Digital ignition unit (DIU)
8	Relay
9	Starter relay elastic support
10	Seal
11	Horn assembly
12	Rubber
13	Turn indicators unit assembly
14	Battery
15	7.5 Amp fuse
16	15 Amp fuse
17	Bracket
18	Battery securing flange sub-assembly
19	Filler cover
20	Ignition coil assembly
21	Spark plug cap
22	Allen screw
23	Nut for securing fairing to bracket
24	Neutral switch assembly

ELECTRICAL SYSTEM



1	Front headlight
1A	12V 35W H8 lamp
1B	12V 5W lamp
2	Instrument panel with revcounter
3	Km counter illuminating light 12V 1.2W
3A	12V 1.2W neutral light
3B	12V 1.2W turn indicators indicator light
3C	12V 1.2W main beam indicator light
4	Ignition switch
5	12v 10W front right and rear left turn
	Indicator light
6	12v 10W front left and rear right turn
	Indicator light
7	12V 10/10W+1.2W turn indicators control unit
8	Pilot light
	12 V 21/5W DIN Stop/tail light
9	Number plate light assembly
	12V 5W bulb
10	Stop switch
11	Electric start switch
11A	Stop switch
12	Horn-indicators-lights switch
12A	Stop switch
13	Horn

14	15 Amp fuse
15	7.5 Amp fuse
16	12V 6 Amp Battery
17	Regulator
18	Electric start relay
18A	Starter motor
19	Magneto
19A	Sensor
20	Coil assembly with
21	connector cap
22	Sparg plug
23	DIU Protective diode
24	Neutral switches

ELECTRICAL SYSTEM

CORRESPONDENCE OF COLOURS TO CONDUCTORS AND ELEMENT THEY FEED

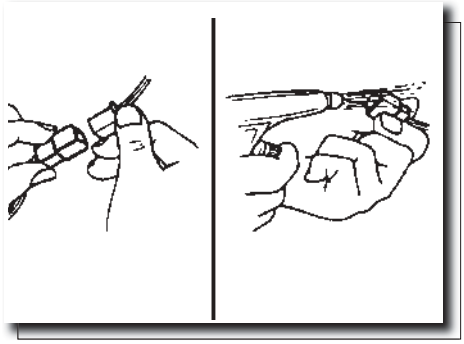
OPERATION	FREQUENCY
Yellow/green	Earth
White/yellow	Dip positive
Blue	Main beam positive
Black	Horn negative
Brown	Sidelights positive
Red	Battery positive
Yellow	Regulated alternating current and regulating signal
Pink	Right hand indicator positive
Violet	Left hand indicator positive
Orange	General indicators positive
Red/black	Low contact positive
Black/white	Start negative signal
White	Pick-up (Signal coil)
Grey	Negative to DIU
White/red	Negative to DIU (from clutch)
White/violet	Pick-up (Signal coil)
White/green	Pick-up (Bobina señal)
Green/red	Negative neutral signal
Green/black	High coil signal
Green	Brake light signal

ELECTRICAL SYSTEM

CHECKING CONNECTORS

Check for corrosion, damp etc. in the connectors.

1. Disconnect:
- Connectors

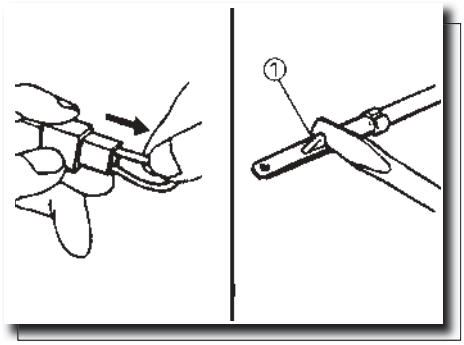


2. Dry each of the terminals with compressed air.

3. Connect and disconnect two or three times.

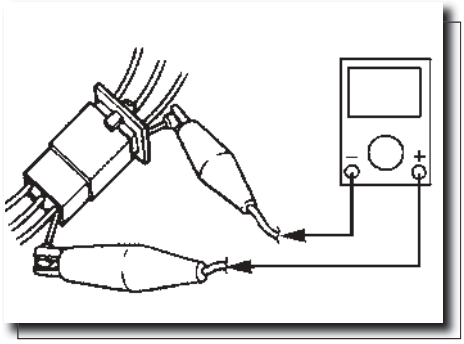
4. Pull the conductor to check if it is loose.

5. If the terminal comes loose, bend the pin (1) and refit the terminal in the connector.



6. Connect:
- Connector

N.B.
THE TWO PARTS OF THE CONNECTOR MAKE A SOUND WHEN THEY FIT TOGETHER.



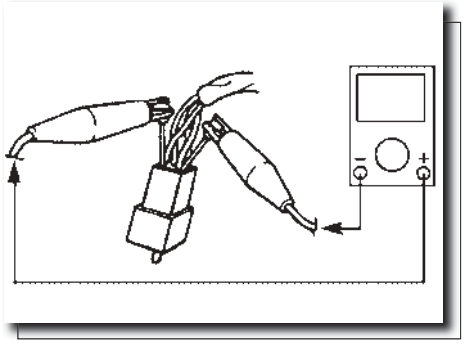
7. Check the circuit with a Multimeter.

N.B.
- IF THERE S NO CIRCUIT, CLEAN THE TERMINALS.

- FOLLOW THE STEPS FROM (1) TO (7) ABOVE ON INSPECTING THE ELECTRICAL SYSTEM.

- AS A PROVISIONAL SOLUTION, USE A CONTACT CLEANER.

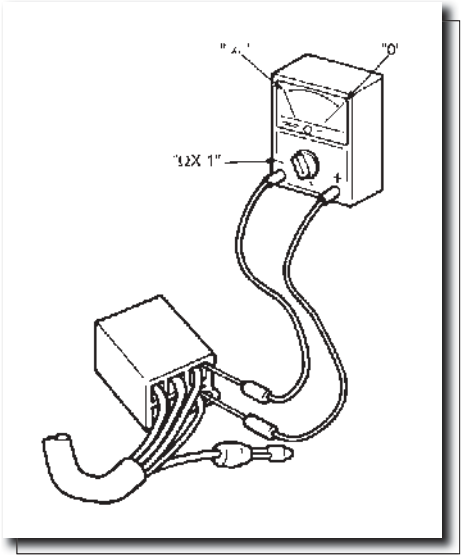
- USE THE MULTIMETER IN ACCORDANCE WITH THAT INDICATED IN THE FIGURE.



SWITCH INSPECTION

INSPECTION STEPS

Using a multimeter, check the circuit between the terminals to make sure that they are correctly connected. Replace the component if any of the combinations gives an incorrect reading.



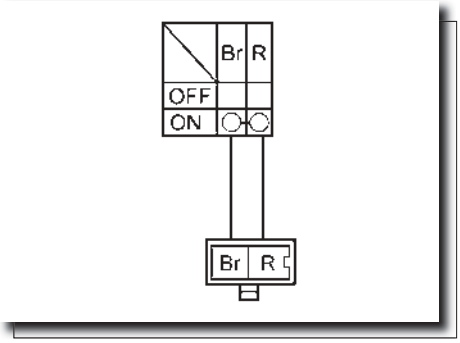
N.B.
- SWITCH THE "ON" AND "OFF" SWITCH ON AND OFF SEVERAL TIMES.

- ADJUST THE METER SELECTOR TO THE "X1" POSITION.

- ADJUST THE GAUGE TO "ZERO".

SWITCH CONNECTIONS SHOWN IN THIS MANUAL

This manual contains connection tables like this one in the figure on the left, showing the switch terminal connections (min switch, brake switch, light switch, etc.).



The column on the far left indicates the different switch positions, the top line indicates the colours of the conductors connected to the switch terminals.

" O-O " indicates the terminals between which there is closed circuit at a determined switch position.

In this table:
"**BR** and "**R**" have a closed circuit with the switch in the "**ON**"
position.

PROBLEM LOCATING

IF THE IGNITION SYSTEM FAILS (NO SPARK OR IMTERMITTENT SPARK)

PROCEDURES
Check:

1. Spark plug.
2. Distance between electrodes
3. Resistance of the connector
4. Ignition coil.
5. Main switch.
6. Resistance of the impulse coil.
7. Resistance of the field coil.
8. Ignition system connections.

N.B.
- REMOVE THE FOLLOWING PARTS BEFORE DIAGNOSIS:
1) REAR LEFT SIDE COVERS AND SEAT.

1. Spark plug

- Check the spark plug condition.
- Check the type of spark plug.
- Check the gap between the electrodes.

See **"SPARK PLUG INSPECTION"** in **CHAPTER 3**.

Gap between electrodes:
0,7 mm

Standard spark plug:
NGK CR7HSA o DENSO U22FSR-U

OUTSIDE THAT SPECIFIED

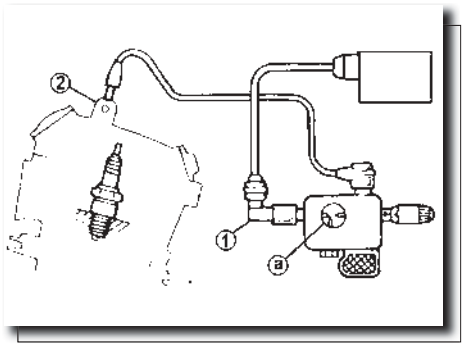
Renew the spark plug.

CHECK SPECIFICATIONS

2. Gap between electrodes

- Disconnect the spark plug connectro.
- Connect the spark tester (1) as in the figure (2) Spark plug.
- Turn the main switch to "ON".
- Check the gap between the electrodes (a).
- Start the engine and increase the gap until the spar begins to fail.

Minimum electrode gap:
6 mm



CHECK SPECIFICATIONS

OUTSIDE THAT SPECIFIED

The ignition system is normal.

PROBLEM LOCATING

3. Resistance of the spark plug connector

- Remove the connector.

- Connect the Multimeter (O x 1) to the spark plug connector.

N.B.
- ON REMOVING THE SPARK PLUG CONNECTOR, DO NOT PULL IT WITH THE SPARK PLUG LEAD.

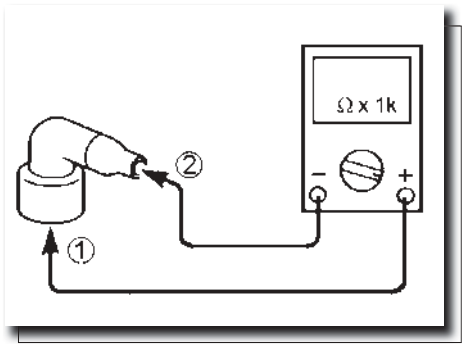
REMOVAL =>**TURN IN AN ANTI-CLOCKWISE DIRECTION.**
FITTING => **TURN IN A CLOCKWISE DIRECTION.**

- CHECK THE SPARK PLUG LEAD WHEN CONNECTING THE CONNECTOR.

- ON CONNECTING THE CONNECTOR, CUT THE SPARK PLUG LEAD BACK APPROXIMATELY 5MM.

Resistance of the connector.
5K□ ± 20% a 20°C

Terminal (+) ⟶ Spark plug side(1).
Terminal (-) ⟶ Spark plug lead side (2).



OUTSIDE THAT SPECIFIED

CHECK SPECIFICATIONS

Renew the spark plug connector

3. Ignition coil resistance

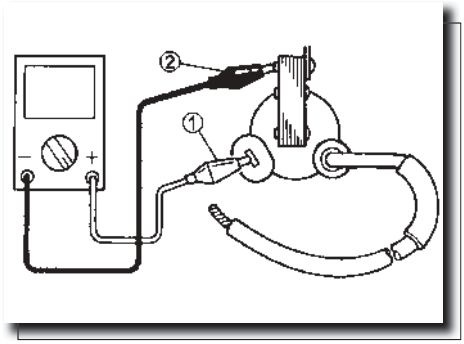
- Disconnect the ignition coil connector from the electrical system.

- Connect the Multimeter (□ x 1) to the ignition coil.

- Check the resistance of the coil primary winding.

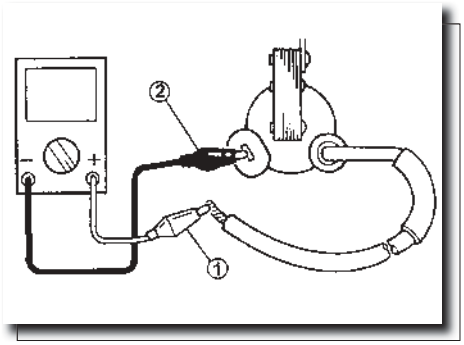
Resistance of the primary winding:
0,3□ ± 10% a 20°C

Terminal (+) ⟶ TGreen/Black Terminal (1).
Terminal (-) ⟶ Yellow/Green Terminal (2).



PROBLEM LOCATING

Terminal **(+)** ⟶ Spark plug lead **(1)**.
Terminal **(-)** ⟶ Green/Black **(2)**.



- Connect the Multimeter (x 1k) to the ignition coil.
- Check the resistance of the coil secondary winding.

Secondary winding resistance:
3,16 K ± 10% a 20°C

OUTSIDE THAT SPECIFIED

CHECK BOTH SPECIFICATIONS

Replace the ignition coil.

5. Main switch (ignition key)

See the **"INSPECTING THE SWITCHES"** section.

NO CIRCUIT

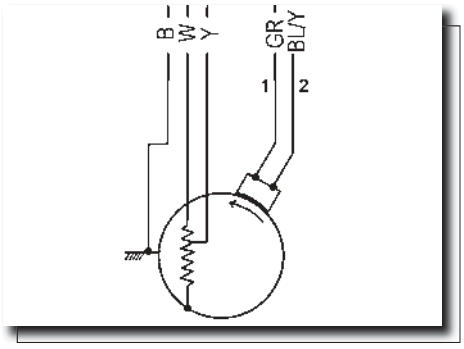
CIRCUIT

Replace the main switch.
(ignition key).

6. Impulse coil resistance

- Disconnect the impulse coil connector from the electrical system.
- Connect the Multimeter (x 100) to the impulse coil connector.

Terminal (+) ⟶ Terminal **(1)**.
Terminal (-) ⟶ Terminal **(2)**.



- Check the resistance of the impulse coil.

Resistance of the impulse coil:
250Ω ± 20% a 20°C

OUTSIDE THAT SPECIFIED

CHECK SPECIFICATIONS

Replace the impulse coil.

PROBLEM LOCATING

7. Ignition system connections

- Check all the ignition system connections.

See the "**WIRING DIAGRAM**".

POOR CONNECTION → Put right.

CORRECT ↓

Replace the DIC unit.

PROBLEM LOCATING

STARTER MOTOR NOT WORKING

PROCEDURES
Check:

1. Main fuse.
2. Battery.
3. Starter motor.
4. Starter relay.
5. Starter switch relay.
6. Ignition key.
7. Neutral switch.
8. Clutch switch.
9. Starter switch.
10. Connections.

1. Main fuse

- Remove the fuse.
- Connect the Multimeter (x 1) to the fuse.
- Check that there is a circuit in the fuse.

NO CIRCUIT → Fuse defective, replace.

CIRCUIT ↓

2. Battery

- Check the condition of the battery.

See the "**INSPECTING THE BATTERY**" section in **CHAPTER 3**.

Minimum voltage:
12,5V

INCORRECT → Recharge or replace the battery.

CORRECT ↓

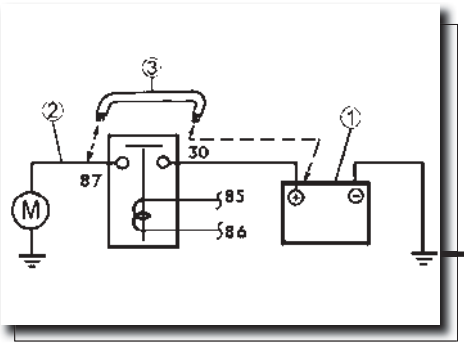
PROBLEM LOCATING

3. Starter motor

- Connect the positive terminal of the battery (1) and the starter motor cable (2), using a bridging wire (3).

* as shown in the figure:

WARNING
THE WIRE USED FOR BRIDGING MUST HAVE A CAPACITY COMPATIBLE WITH THAT OF THE STARTER MOTOR. IF NOT, THE MOTOR MAY BURN OUT.



DOES NOT TURN

- Check starter motor functioning.

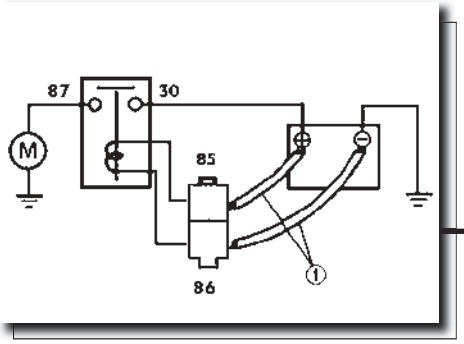
Defective starter motor – repair or replace.

TURNS

4. Starter relay

- Disconnect the starter relay connection from the electrical system.

- Connect the battery to the starter relay, using bridging connectors (1).



DOES NOT TURN

- Check starter motor functioning.

Defective starter relay – replace.

TURNS

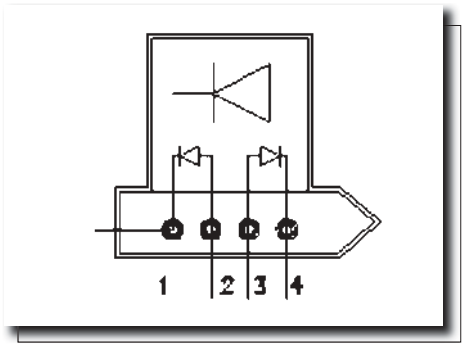
PROBLEM LOCATING

5. Starter switch relay.

- Disconnect the starter switch relay from the electrical system.
- Connect a Multimeter (x 1) and the battery to the starter switch relay*.

ATTENTIÓN
- TAKE CARE NOT TO REVERSE THE BATTERY CONNECTIONS, OR DAMAGE MAY BE CAUSED TO THE DIODE

- TAKE CARE NOT TO CAUSE ANY SHORT CIRCUIT BETWEEN THE POSITIVE AND NEGATIVE TERMINALS ON CONNECTING THE BATTERY AND THE RELAY.



NO CIRCUIT

Defective relay – replace.

- Check starter switch relay functioning.

CIRCUIT

6. Main switch

- Disconnect the main switch connection from the electrical system.
- Check the circuit between the Red and Red/black.

See the "**INSPECTING THE SWITCHES**" section.

	BL/R	R	R/B	W/R
OFF	○			○
ON		○	○	

INCORRECT

Defective main switch - replace.

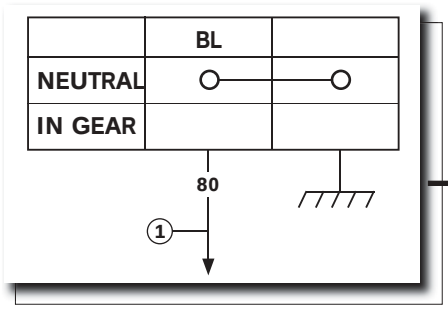
TURNS

7. Neutral switch.

- Disconnect the neutral switch wire from the electrical system.
- Check the circuit between the "Blue" (1) and the "Earth".

See the "**INSPECTING THE SWITCHES**" section.

PROBLEM LOCATING



INCORRECT

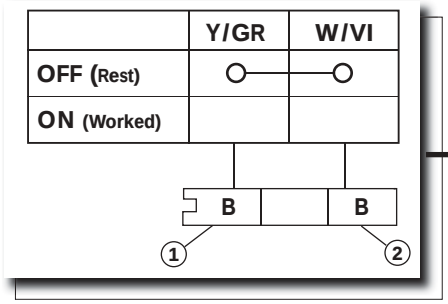
Defective neutral switch – replace.

CORRECT

8. Clutch switch

- Disconnect the clutch switch connection from the electrical system.
- Check the circuit between the "Red/Black" (1) and "Black" (2).

See the "**INSPECTING THE SWITCHES**" section.



INCORRECT

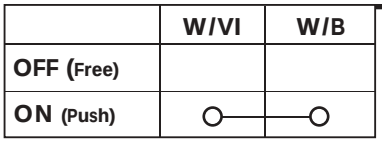
Defective clutch switch – replace.

CORRECT

9. Starter switch

- Disconnect the handlebar switch connection (LD) from the electrical system.
- Check the starter switch circuit between the "Red/Black" (1) and "Black" (2) wires.

See the "**INSPECTING THE SWITCHES**" section.



INCORRECT

Defective starter switch – replace.

CORRECT

10. Connections

- Check the ignition system connections.

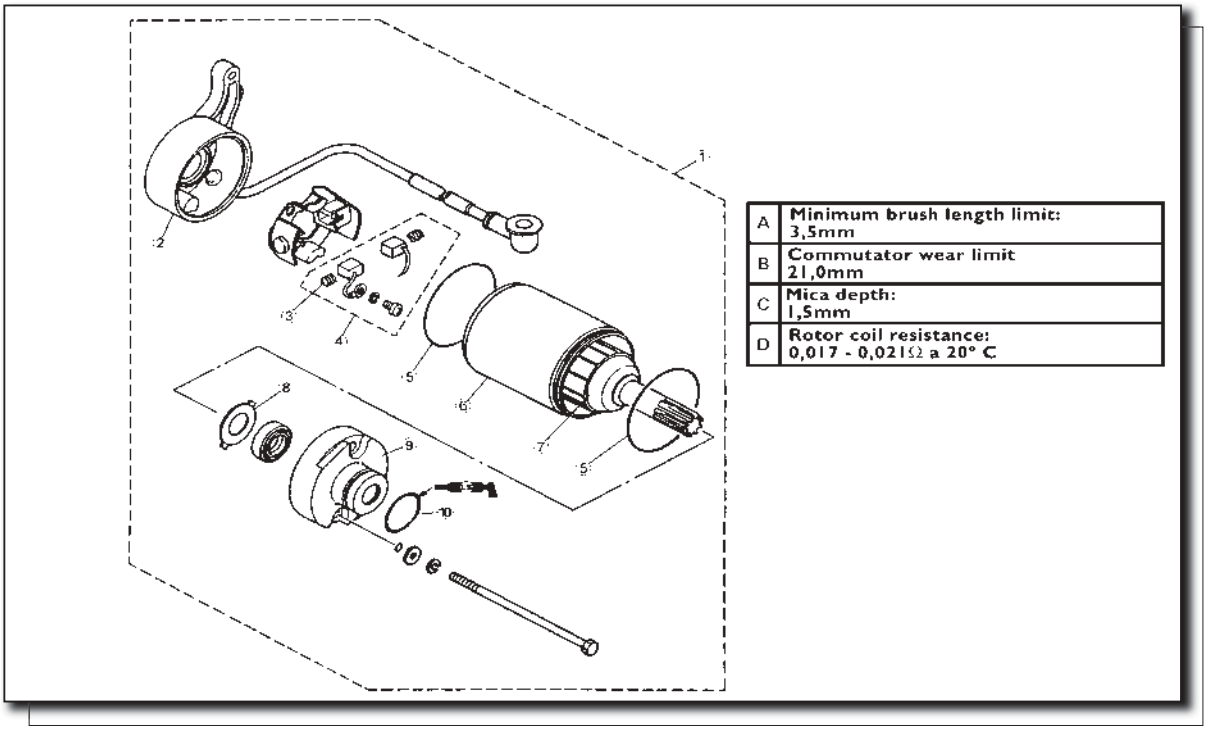
See the "**INSPECTING THE SWITCHES**" section.

INCORRECT CONNECTION

Put right.

PROBLEM LOCATING

STARTER MOTOR

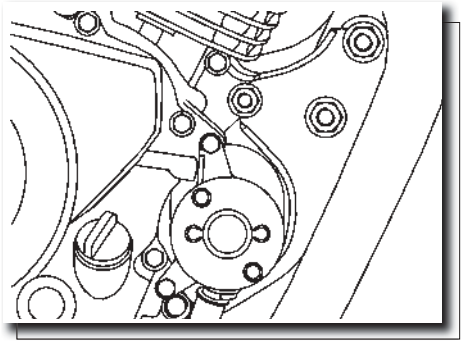


A	Minimum brush length limit: 3,5mm
B	Commutator wear limit 21,0mm
C	Mica depth: 1,5mm
D	Rotor coil resistance: 0,017 - 0,021Ω a 20° C

1	Starter motor
2	Rear support
3	Spring
4	Brush assembly
5	O-ring
6	Stator assembly
7	Rotor assembly
8	Tab washer
9	Front support
10	O-ring

PROBLEM LOCATING

DISMANTLING



1. Extract:
- Starter motor cable **(1)**.
- Starter motor **(2)**.

DISMANTLING

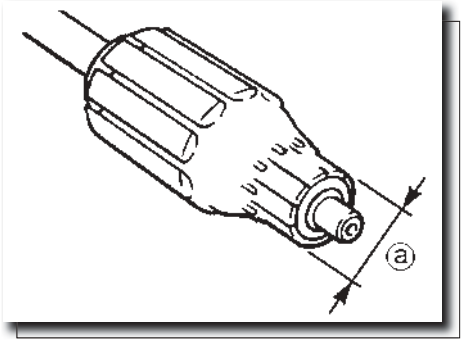
1. Make identifying marks on the supports to aid reassembly.

2. Extract:
- Front support.
- Tab washer.
- Rear support.

3. Extract:
- Rotor assembly.
- Stator assembly.

4. Extract:
- Springs.

INSPECTIONS AND AIRS



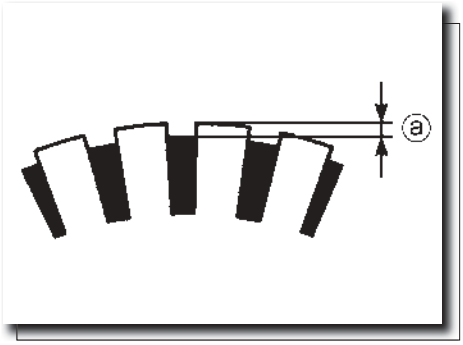
1. Check:
- Commutator

Dirty => **Clean with No. 600 emery paper.**

2. Measure:
- Commutator diameter (a).

Outside that specified => **Replace starter motor**.

Commutator wear limit:
21 mm



3. Measure:
- Depth of the teeth (a).

Outside that specified => **Scrape the teeth using a hacksaw blade.**

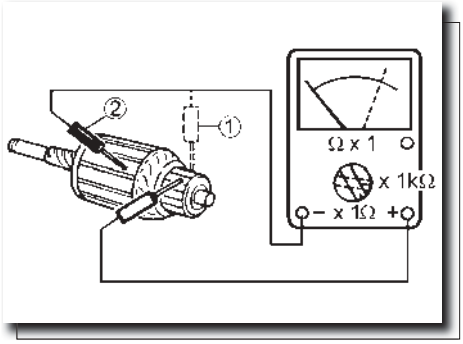
Depth of the teeth:
1,5 mm

N.B.
THE COMMUTATOR TEETH INSULATION NEEDS TO HAVE THE CORRECT DEPTH TO ALLOW THE COMMUTATOR TO WORK PROPERLY.

PROBLEM LOCATING

4. Check:
- Rotor coil (insulation/circuit)

Defects => **Replace starter motor.**



Checking steps:
- Connect the Multimeter as shown in the figure to test circuit **(1)** and insulation **(2)**.
- Measure the resistance of the rotor.

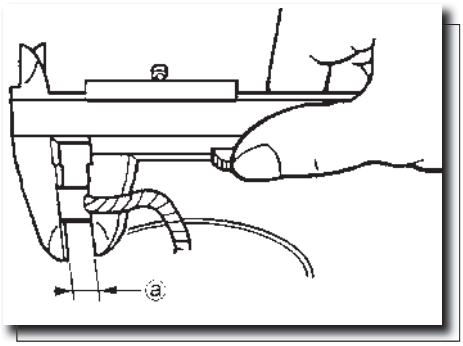
Resistance of the rotor coil:
Circuit test (1):
0,017~0,02Ω a 20°C

Insulation test (2):
Arriba de 1MΩ a 20°C

If the resistance is incorrect, replace the starter motor.

5. Measure:
- Length of the brushes (a).

Outside that specified => **Replace the assembly.**



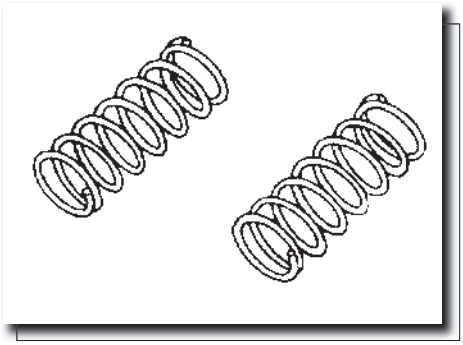
Minimum brush length limit:
3,5 mm

N.B.
TAKE CARE WHEN REPLACING THE BRUSHES, BECAUSE ONE SIDE IS SOLDERED.

6. Measure:
- Brush spring load

Tired/outside that specified => Replace the assembly.

Spring load:
560 ~ 840g



PROBLEM LOCATING

7. Check:
- Bearing
- Retaining ring.
- Bush

Damage => **Replace the support.**

- O-ring

Damage/wear => **Replace**.

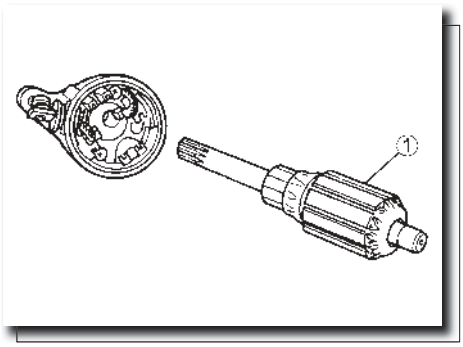
ASSEMBLY

Reverse the "**DISMANTLING**" procedures.

1. Fit:
- Spring
- Brushes

N.B.
ON FITTING THE BRUSH (2), PASS THE BRUSH CABLE OUTSIDE THE PROTRUBERANCE (4) ON THE BRUSH SPRING SECURING DEVICE.
ON FITTING THE BRUSH (3), REST THE BRUSH CABLE TERMINAL (5) LIGHTLY AGAINST THE PROTRUBERANCE (6) ON THE SIDE OF THE BRUSH SPRING SECURING DEVICE.

2. Fit:
- Rotor **(1)**.



N.B.
ON INSTALLING THE ROTOR, PRESS THE BRUSHES WITH A THIN SCREWDRIVER TO PREVENT THEM FROM BEING DAMAGED.

3. Fit:
- O-ring

ATTENTIÓN
ALWAYS USE NEW SEALS AND GASKETS.

4. Fit:
- Stator assembly

N.B.
ALIGN THE STATOR MARKS WITH THE REAR SUPPORT MARKS.

PROBLEM LOCATING

5. Fit:
- Tab washer
- Front support

N.B.
- ALIGN THE TAB WASHER TAB WITH THE SLOT IN THE FRONT SUPPORT AND FIT IT.

- ALIGN THE STATOR MARKS WITH THE SUPPORT MARKS.

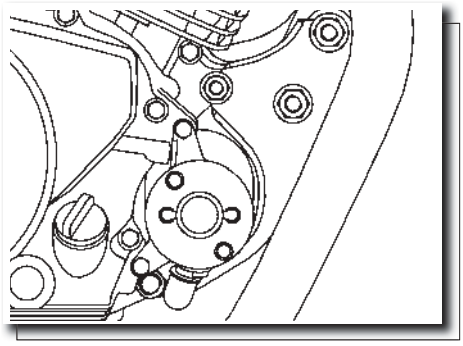
Bolt:
0,5 Kgf.m (5 N.m)

INSTALLATION

1. Apply:
- Starter motor

N.B.
APPLY A THIN LAYER OF GREASE TO THE O-RING.

2. Fit:
- Starter motor **(1)**.
- Starter motor cable **(2)**.



Bolt (starter motor):
0,7 Kgf.m (7 N.m)

PROBLEM LOCATING

IF THE BATTERY IS RUN DOWN

PROCEDURES
Check:

1. Fuse.
2. Battery.
3. Battery voltage.
4. Resistance of the charging coil.
5. Charging system connections.

N.B.
REMOVE THE FOLLOWING PARTS BEFORE DIAGNOSIS:
1. SIDE COVERS.
2. SEAT.

1. Fuse

- See the "**INSPECTING THE FUSE**" section in **CHAPTER 3**.

NO CIRCUIT → Replace the fuse.

CIRCUIT ↓

2. Battery

- Check the condition of the battery.

See the "**INSPECTING THE BATTERY**" section in **CHAPTER 3.**

Minimum voltage (resting):
12,5V

INCORRECT → Clean the battery terminals. Charge or replace the battery.

CORRECT ↓

PROBLEM LOCATING

3. Charging voltage

- Connect the Multimeter (DC 30V) to the battery.

Terminal (+) ⟶ Red Terminal **(1)**.
Terminal (-) ⟶ Black Terminal **(2)**.

- Measure the battery voltage.
- Start up the engine and rev up to 5,000 rpm.
- Check the + battery voltage

Voltage with engine running:
13,8 V minimum

Voltage with engine off:
12,5 V minimum

N.B.
USE A COMPLETELY CHARGED BATTERY.

CHECK SPECIFICATIONS

The charging circuit is in a good state.

OUTSIDE THAT SPECIFIED

3.1. Charging current

- Remove the fuse.
- Connect the Multimeter (5DCA) instead of the fuse.

Terminal (+) ⟶ On the top end of the fuse.
Terminal (-) ⟶ On the bottom end of the fuse.

- With the main switch "OFF"
The charging current should be equal to zero "0". If not, there is current leakage in the system.

- With the main switch "ON", start up the engine.

- Connect the tachometer and establish the revs at 3,500 rpm.
A charging current greater than zero "0" will indicate that the system is functioning without problems.
If this is not the case, check the charging coil.

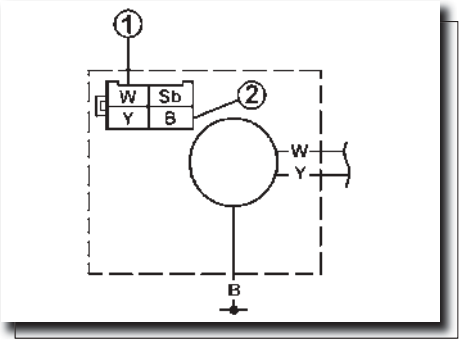
OUTSIDE THAT SPECIFIED

PROBLEM LOCATING

4. Charging coil resistance

- Disconnect the DIU from the electrical system.
- Connect the Multimeter (x 1) to the charging coil.

Terminal (+) ⟶ White Terminal **(1)**.
Terminal (-) ⟶ Black Terminal **(2)**.



- Check the resistance of the charging coil.

Resistance of the charging coil:
0,4 Ω ± 20% a 20°C

OUTSIDE THAT SPECIFIED ⟶ Replace charging coil

CHECK SPECIFICATIONS ⟶

5. Charging system connections

- Check all the charging system connections.

See the "**WIRING DIAGRAM**" section.

POOR CONNECTION ⟶ Put right.

CORRECT ⟶

Replace the rectifier/regulator.

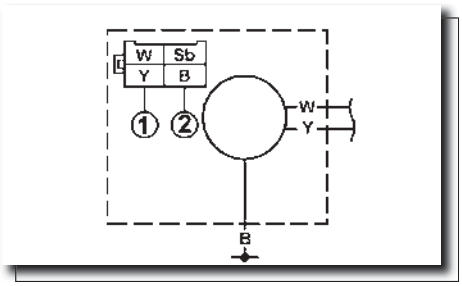
PROBLEM LOCATING

IF THE SIPPED BEAM, MAIN BEAM, TURN INDICATOR LIGHTS, BRAKE LIGHT AND/OR INSTRUMENT PANEL LIGHTS NOT COME ON

PROCEDURES
Check:
1. Light coil resistance.
2. Light switch.
3. Main beam switch.
4. Lighting system connections.

N.B.
REMOVE THE FOLLOWING PARTS BEFORE DIAGNOSIS:
1) SIDE COVERS
2) SEAT

1. Light coil resistance
- Disconnect the DIU connector from the electrical system. - Connect the Multimeter (x 1) to the light coil.
Terminal (+) ⟶ Yellow Terminal **(1)**. Terminal (-) ⟶ Black Terminal **(2)**.



- Measure the resistance of the light coil.
Light coil resistance: 0,35Ω ± 20% a 20°C

OUTSIDE THAT SPECIFIED ⟶ Replace the ight coil

CHECK SPECIFICATIONS ↓

2. Light switch
- Disconnect the main switch connector (cláustro). - Connect the Multimeter (x 1) to the switch terminal. - Check the switch component circuits in the following pairs of wires: "green/black and yellow".

POOR CONNECTION ⟶ Replace the switch.

CIRCUIT ↓

PROBLEM LOCATING

3. Main beam and dip switch.

- Disconnect the handlebar switch connector from the electrical system.
- Connect the Multimeter (x 1) to the handlebar switch terminal.
- Check the switch component circuits in the following pairs of wires:

Main beam: "Blue" on the switch and "Green" on the headlight connector- with switch turned on.

Dipped beam: "White/Yellow" on the switch and "Green" on the headlight connector- with switch turned on.

NOT CIRCUIT →

Replace the left hand handlebar switch.

CIRCUIT ↓

4. Lighting system connections

- Check all the lighting system connections.

See the "**WIRING DIAGRAM**" section.

POOR CONNECTION →

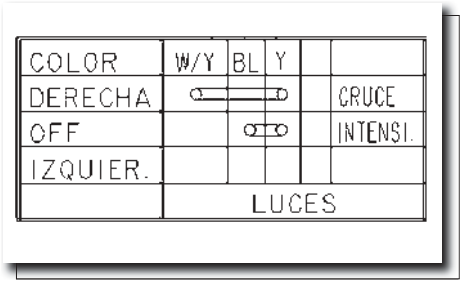
Put right.

CIRCUIT ↓

- Check the condition of each lighting system circuit.

See the "**CHECKING LIGHTING SYSTEM**" section.

See the "**WIRING DIAGRAM**" section.



CHECKING THE LIGHTING SYSTEM

1. If the headlight and main beam indicator do not light up:

1. Bulb and lamp holder

- Check the bulb and lamp holder circuits.

NO CIRCUIT →

Replace the bulb or lamp holder.

CIRCUIT ↓

PROBLEM LOCATING

2. Voltage

- Connect the Multimeter (AC 20V) to the headlight connector and to the main beam indicator connector.

A When the main beam switch is in position

B When the main beam switch is in position

Headlight:
Terminal (+) ⟶ Blue wire
Terminal (-) ⟶ Yellow/Green wire

Main beam indicator light:
Terminal (+) ⟶ Blue wire
Terminal (-) ⟶ Yellow/Green wire

- Start the engine.
- Turn the light switch to the "ON" position.
- Turn the main beam switch to the o
- Check the voltage (12.5V) at the lamp holder connector.

FUERA DE ESPECIFICACIÓN ⟶ There is a problem in the circuit wires between the main switch and the lamp holder connector. Put right.

CHECK SPECIFICATIONS ⟶ The circuit is correct.

2. If the instrument panel light does not light up.

1. Bulb and lamp holder

- Check the bulb and lamp holder circuits.

NO CIRCUIT ⟶ Replace the bulb or lamp holder.

CIRCUIT ⟶

2. Voltage

- Connect the Multimeter (DC 20V) to the lamp holder connectors.

Terminal (+) ⟶ Brown terminal
Terminal (-) ⟶ Yellow/Green Terminal

PROBLEM LOCATING

- Start the engine.

- Check the voltage (12.5 V) of the bulb connector wires without disconnecting the terminal.

OUTSIDE THAT SPECIFIED → There is a problem in the circuit wires between the main switch and the bulb connector. Put right.

CHECK SPECIFICATIONS ↓

The circuit is normal.

3. Pilot light does not come on.

1. Bulb or lamp holder

- Check the bulb and lamp holder circuits.

NO CIRCUIT → Replace the bulb and/or the lamp holder.

CIRCUIT ↓

2. Voltage

- Connect the Multimeter (DC 20V) to the lamp holder connectors.

Terminal (+) ⟶ Brown
Terminal (-) ⟶ Yellow/Green

- Start the engine.
- Turn the light switch to the "ON" position.
- Check the voltage (12.5 V) of the lamp holder without disconnecting the terminal.

OUTSIDE THAT SPECIFIED → There is a problem in the circuit wires between the main switch and the bulb connector. Put right.

CHECK SPECIFICATIONS ↓

The circuit is correct.

PROBLEM LOCATING

CHECKING TURN INDICATORS, BRAKE LIGHT AND HORN

PROCEDURES
Check:

1. Fuse.

2. Battery.

3. Main switch (ignition key).

4. The signaling system connections.

N.B.
REMOVE THE FOLLOWING PARTS BEFORE DIAGNOSIS:
1) REAR LEFT SIDE COVERS.
2) SEAT

1. Fuse

See the "**INSPECTING THE FUSES**" section in **CHAPTER 3**.

NO CIRCUIT → Replace the fuse.

CIRCUIT ↓

2. Battery

- Check the condition of the battery:

See the **"INSPECTING THE BATTERY"** section in **CHAPTER 3.**

Minimum voltage:
12,5 V

INCORRECT → - Clean the battery terminals.
- Charge or replace the battery.

CORRECT ↓

3. Main switch (ignition key)

- Disconnect the main switch connector from the electrical system.

- Check the circuit between the Red and Red/Black connectors.

NO CIRCUIT → Replace the main switch.

CIRCUIT ↓

4. Electrical system

- Check all the signaling system connections.

See the "**WIRING DIAGRAM**" section.

POOR CONNECTION → Put right.

CIRCUIT ↓

PROBLEM LOCATING

- Check the condition of each signaling system circuit.

See the "**CHECKING THE SIGNALING SYSTEM**" section.

CHECKING THE SIGNALING SYSTEM

1. If the horn does not sound.

1. Horn switch

- Disconnect the handlebar switch connector from the electrical system.
- Check the circuit between the "Black" and "Yellow/Green" wires.
- Turn the main switch to the "ON" position.

NO CIRCUIT → Replace the handlebar switch.

CIRCUIT ↓

2. Voltage

- Connect the Multimeter (DC 20 V) to the horn wire.

Terminal (+) ⟶ Red/Black Terminal.
Terminal (-) ⟶ Frame earth.

- Turn the main switch to the "ON" position.
- Check the voltage (12.5V) at the "Red/Black" horn wire.

NO CIRCUIT → There is a problem in the circuit between the main switch and the horn. Put right.

OUTSIDE THAT SPECIFIED ↓

3. Horn

- Connect the Multimeter (DC 20 V) to the horn's "Pink" terminal.

Terminal (+) ⟶ Red/Black Terminal.
Terminal (-) ⟶ Black Terminal .

- Turn the main switch to the "ON" position.
- **Check the voltage:**
12.5 with HORN button ON.

CHECK SPECIFICATIONS → Replace the horn.

PROBLEM LOCATING

2. If the brake light does not come on.

1. Bulb and lamp holder

- Check the bulb and lamp holder circuits.

NO CIRCUIT → Replace the bulb and/or the lamp holder.

CIRCUIT ↓

2. Brake switch (front/rear)

- Disconnect the brake switch connector from the electrical system.
- Check the circuit between the Brown wires

NO CIRCUIT → Replace the brake switch.

CIRCUIT ↓

3. Voltage

- Connect the Multimeter (DC 20V) to the lamp holder connector.

Terminal (+) ⟶ Brown terminal
Terminal (-) ⟶ Yellow/Green Terminal.

- Turn the switch to the "ON" position.
- The brake lever (or brake pedal) must be activated.
- Check the voltage (12.5V) of the "Brown" wire on the lamp holder.

NO CIRCUIT → **4. System connections.**

There is a problem between the main switch and the socket connector. Put right.

See the "**SIGNALING SYSTEM DIAGRAM**".

CHECK SPECIFICATIONS ↓

The circuit is normal.

3. If the turn indicator or the indicator indicating light do not light up:

1. Bulb and lamp holder

- Check the bulb and lamp holder circuits.

NO CIRCUIT → Replace the bulb and/or the lamp holder

CIRCUIT ↓

PROBLEM LOCATING

2. Turn indicator switch

- Disconnect the handlebar switch connector from the electrical system.

- Check the circuit between the Pink and Orange wires, and also the Violet and Orange wires.

NO CIRCUIT → Replace the left hand handlebar switch.

CIRCUIT ↓

3. Voltage

- Connect the Multimeter (DC 20V) to the indicator relay connector.

Terminal (+) ⟶ Orange terminal.
Terminal (-) ⟶ Frame earth.

- Turn the main switch to the "ON" position.

- Check the voltage (12.5 V) of the indicator relay terminal's "Orange" wire.

NO CIRCUIT → There is a problem between the main switch and the indicator relay connector. Put right.

CHECK SPECIFICATIONS ↓

5. Voltage

- Connect the Multimeter (DC 20V) to the lamp holder connector.

Turn indicator (LH)
Terminal (+) ⟶ Violet wire.
Terminal (-) ⟶ Orange terminal.

Turn indicator (RH)
Terminal (+) ⟶ Pink wire Rosa.
Terminal (-) ⟶ Orange terminal.

- Turn the main switch to the "ON" position.

- Push the indicator switch to the right or to the left.

- Check the voltage (12.5V) of the "Brown and Pink" wire. at the indicator relay terminal.

OUTSIDE THAT SPECIFIED → **System connections.**

There is a problem between the main switch and the bulb socket connector. Put right.

See the "**WIRING DIAGRAM**"

CHECK SPECIFICATIONS ↓

The circuit is normal.

PROBLEM LOCATING

4. If the neutral indicator light does not come on.

1. Bulb and lamp holder

- Check the bulb and lamp holder circuits.

NO CIRCUIT → Replace the bulb and/or the lamp holder.

CIRCUIT ↓

2. Voltage

- Connect the Multimeter (DC 20V) to the neutral switch connector.

Terminal (+) ⟶ Dark brown terminal **(1)**.
Terminal (-) ⟶ Pale blue terminal **(2)**.

- Turn the main switch to the "ON" position.
- Put the engine in neutral.
- Check the voltage (12.5V) of the "Pale blue" wire on the neutral switch terminal.

NO CIRCUIT → - Check all the signaling system connections.
See the "**WIRING DIAGRAM**"

CHECK SPECIFICATIONS ↓

The circuit is normal.

PROBLEM LOCATING

ELECTRICAL SYSTEM

* CHECK ALL THE CONNECTIONS.

IGNITION COIL
- One of the windings (primary or secondary) is broken or damaged. - The spark plug lead is damaged. - The spark plug connector is damaged.

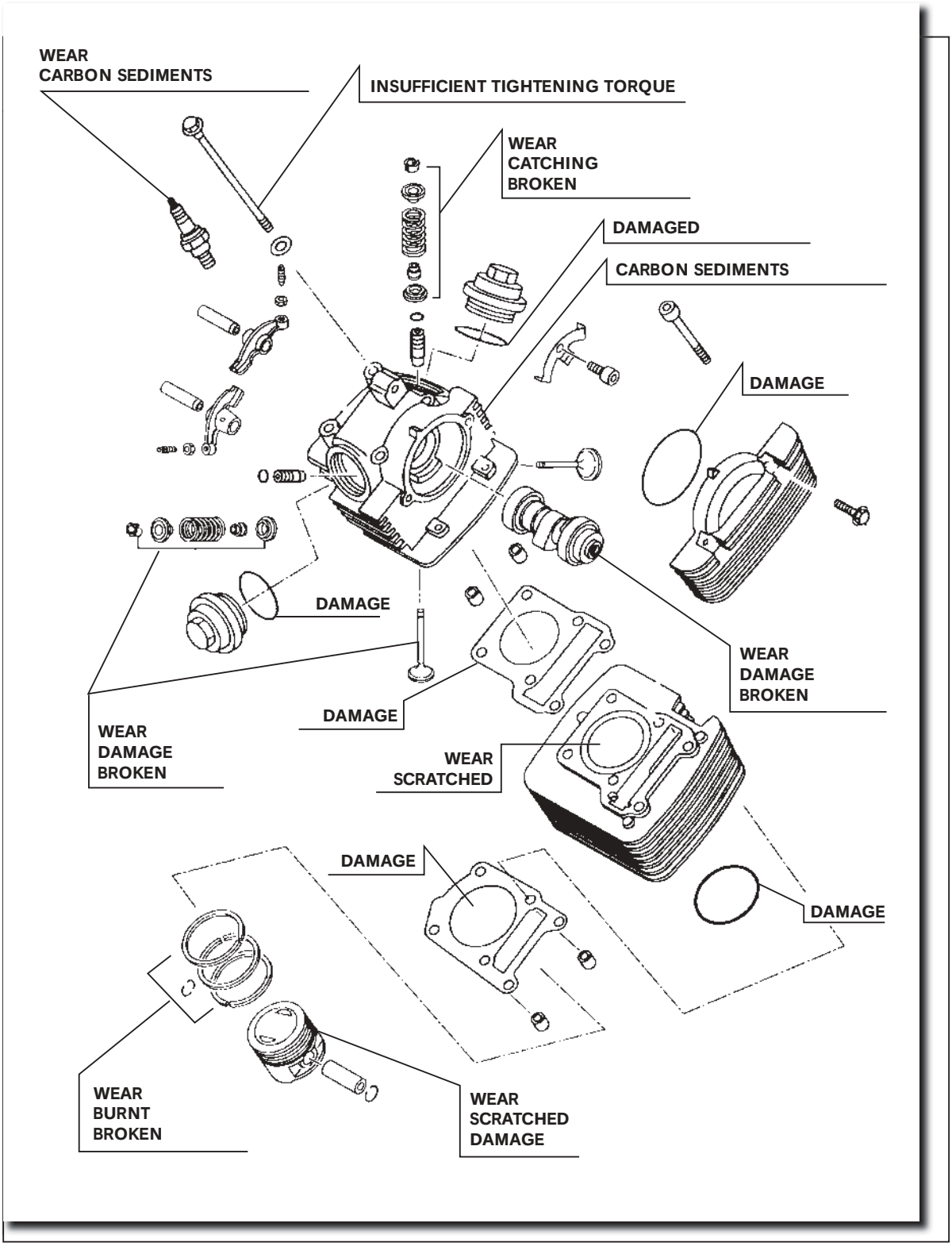
MAIN SWITCH
- Main switch short-circuiting.

SPARK PLUG
- Heavy carbon deposits. - Electrodes flooded. - Inadequate electrode gap. - Broken.

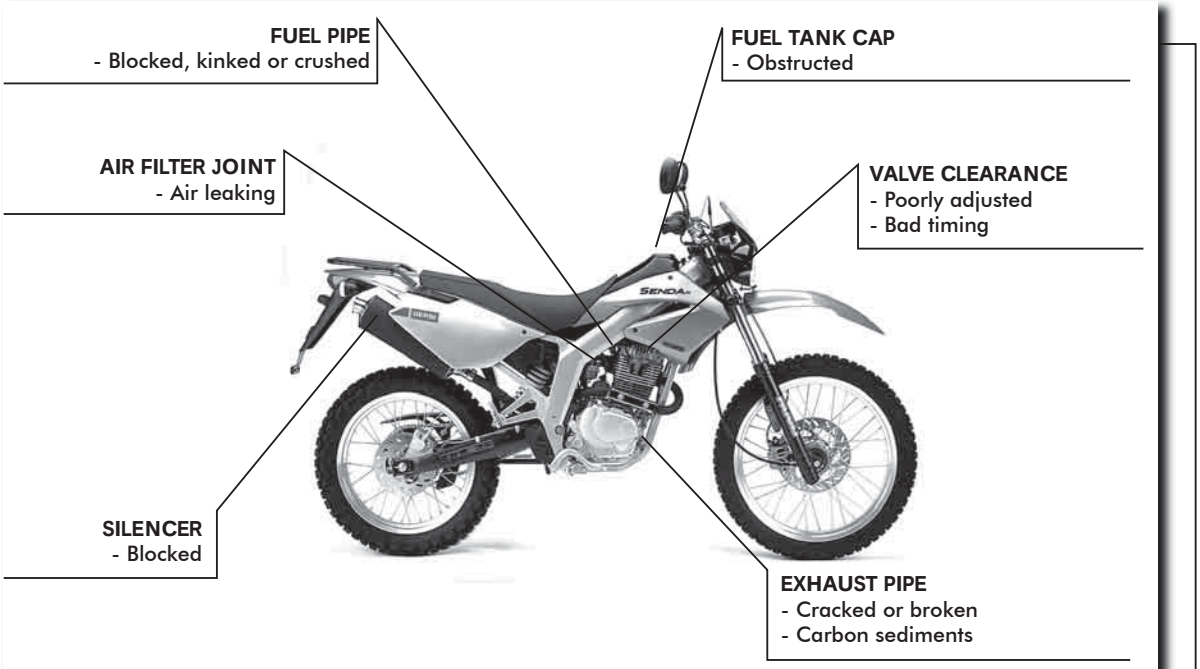
DIU UNIT
- The unit lead is damaged.

CHARGING COIL IMPULSE COIL
- Windings in poor condition.

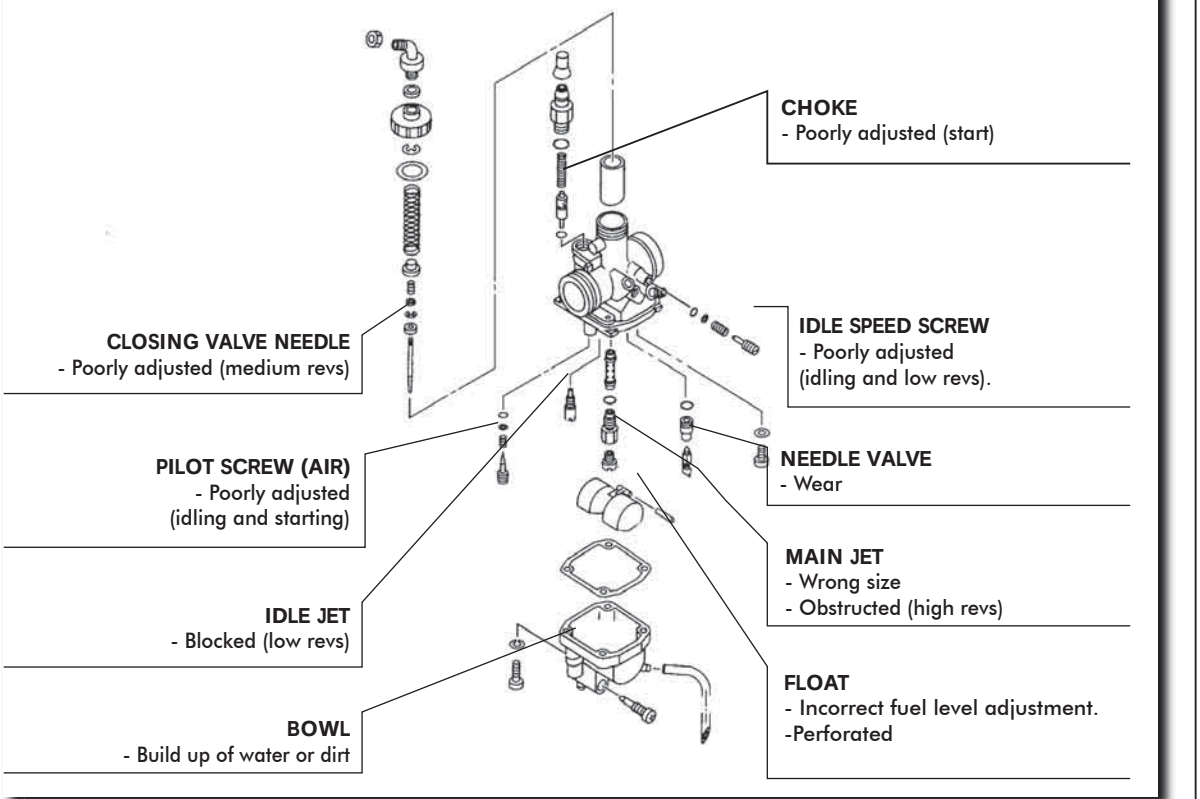
COMPRESSION SYSTEM



SYSTEM OF ADMISSION AND ESCAPE



(CARBURETTOR)



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