YAMAHA

YFM35FXG

Service Manual



LIT-11616-FX-36

YAMAHA

YFM35FXH

SUPPLEMENTARY SERVICE MANUAL

LIT-11616-09-95

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and data for the YFM35FXH . For complete service information procedures, it is necessary to use this Supplementary Service Manual together with the following manual.

YFM35FXG SERVICE MANUAL: 4KB-28197-20

YFM35FXH
SUPPLEMENTARY
SERVICE MANUAL

©1995 by Yamaha Motor Co., Ltd.
1st Edition, September 1995
All rights reserved. Any reprinting or unauthorized use without the written permission of Yamaha Motor Co., Ltd. is expressly prohibited.

NOTICE

This manual was written by the Yamaha Motor Company, Ltd. primarily for use by Yamaha dealers and qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so persons using this book to perform maintenance and repairs on Yamaha machines should have a basic understanding of the mechanical concepts and procedures inherent in machine repair technology. Without such knowledge, attempted repairs or service to the machine may render it unfit to use and/or unsafe.

Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

⚠	The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!
⚠ WARNING	Failure to follow WARNING instructions could result in severe injury or death to the machine operator, a bystander, or a person inspecting or repairing the machine.
CAUTION:	A CAUTION indicates special precautions that must be taken to avoid damage to the machine.
NOTE:	A NOTE provides key information to make procedures easier or clearer.

HOW TO USE THIS MANUAL

CONSTRUCTION OF THIS MANUAL

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

1st title ①: This is a chapter with its symbol on the upper right of each page.

2nd title ②: This title appears on the upper of each page, on the left of the chapter symbol. (For the chapter "Periodic inspection and adjustment" the 3rd title appears.)

3rd title ③: This is a final title.

MANUAL FORMAT

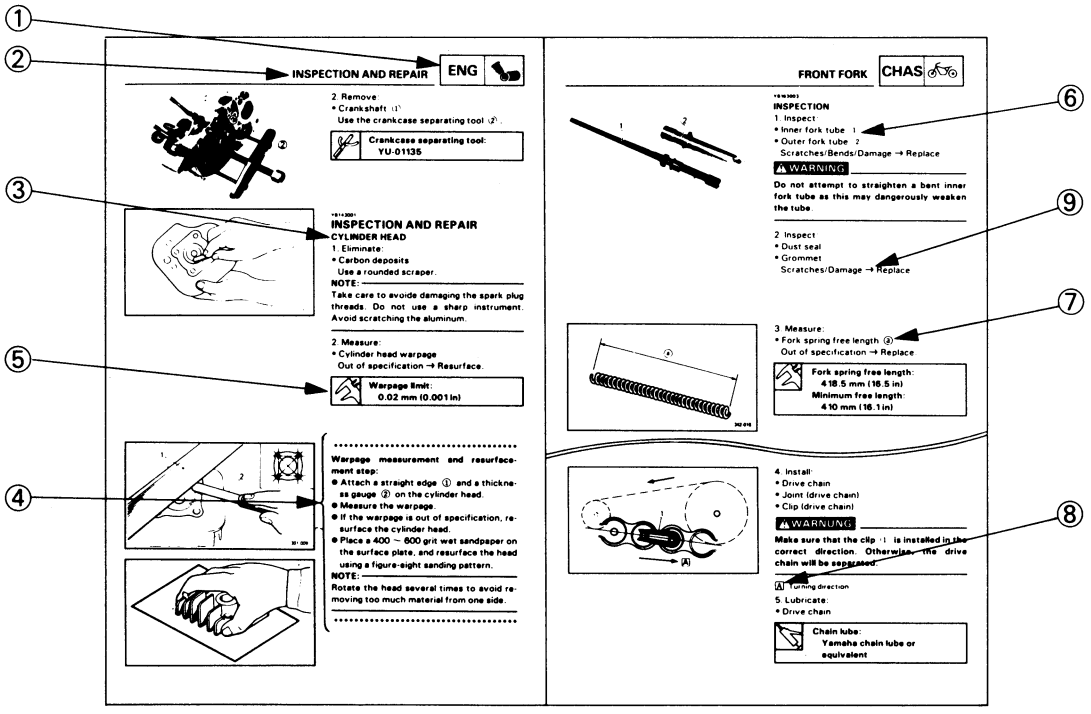
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspections. A set of particularly important procedure ④ is placed between a line of asterisks "*" with each procedure preceded by "●".

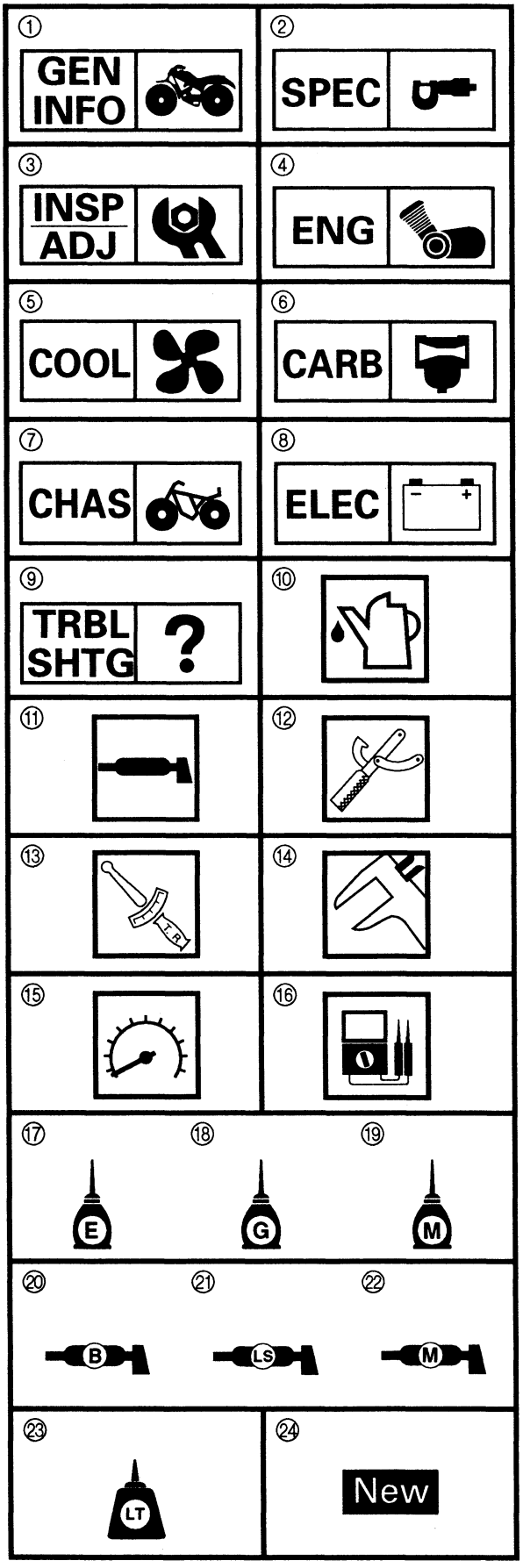
IMPORTANT FEATURES

- Data and a special tool are framed in a box preceded by a relevant symbol ⑤.
- An encircled numeral ⑥ indicates a part name, and an encircled alphabetical letter data or an alignment mark ⑦, the others being indicated by an alphabetical letter in a box ⑧.
- A condition of a faulty component will precede an arrow symbol and the course of action required ⑨.

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.





ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and content.

① General information
② Specifications
③ Periodic inspection and adjustment
④ Engine
⑤ Cooling system
⑥ Carburetion
⑦ Chassis
⑧ Electrical
⑨ Troubleshooting

Illustrated symbols ⑩ to ⑯ are used to identify the specifications appearing in the text.

⑩ Filling fluid
⑪ Lubricant
⑫ Special tool
⑬ Tightening
⑭ Wear limit, clearance
⑮ Engine speed
⑯ Ω, V, A

Illustrated symbols ⑰ to ㉔ in the exploded diagram indicate grade of lubricant and location of lubrication point.

⑰ Apply engine oil
⑱ Apply gear oil
⑲ Apply molybdenum disulfide oil
⑳ Apply wheel bearing grease
㉑ Apply lightweight lithium-soap base grease
㉒ Apply molybdenum disulfide grease
㉓ Apply locking agent (LOCTITE®)
㉔ Use new one

CONTENTS

GENERAL INFORMATION 1
MACHINE IDENTIFICATION 1
VEHICLE IDENTIFICATION NUMBER 1
FRAME SERIAL NUMBER 1
ENGINE SERIAL NUMBER 1

SPECIFICATIONS 2
GENERAL SPECIFICATIONS 2
MAINTENANCE SPECIFICATIONS 2
ENGINE 2
ELECTRICAL 3
TIGHTENING TORQUE 4
CABLE ROUTING 6

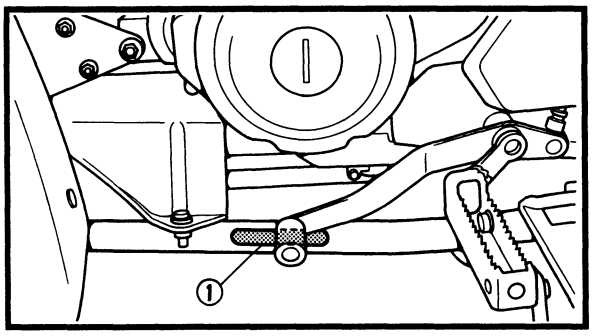
CARBURETION 11
CARBURETOR 11

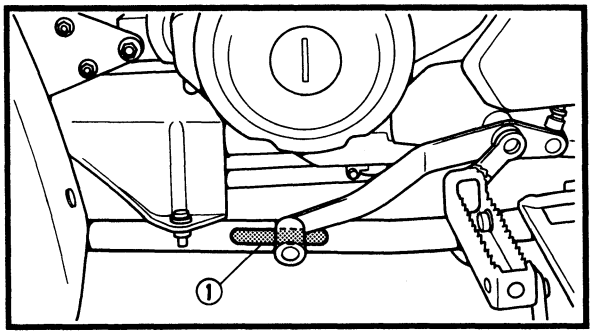
ELECTRICAL 12
IGNITION SYSTEM 12
CIRCUIT DIAGRAM 12
ENGINE REVOLUTION LIMITER SYSTEM 13

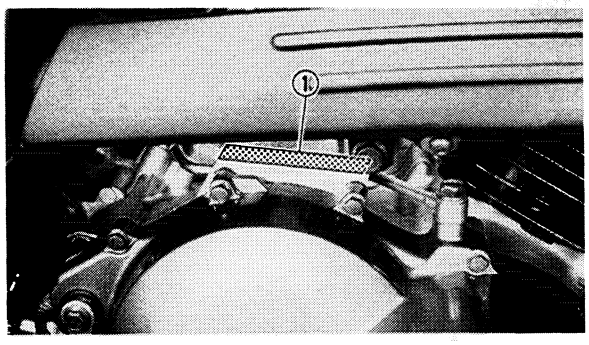
YFM35FXH WIRING DIAGRAM

GENERAL INFORMATION

MACHINE IDENTIFICATION







VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the left side of the frame.

NOTE:

The vehicle identification number is used to identify your machine and may be used to register your machine with the licensing authority in your state.

Starting serial number:
For USA
JY44KBA0*TA026101
For CDN
JY44KBN0*TA048101

FRAME SERIAL NUMBER

The frame serial number ① is stamped into the left side of the frame.

Starting serial number:
For Europe
4KB-052101

ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the right side of the engine.

Starting serial number:
For USA
4KB-026101
For CDN
4KB-048101
For Europe
4KB-052101

NOTE:

Designs and specifications are subject to change without notice.

SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	YFM35FXH
Model code:	For USA: 4KB3 For CDN: 4KB4 For Europe: 4KB5
Engine starting number:	For USA: 4KB-026101 For CDN: 4KB-048101 For Europe: 4KB-052101
Vehicle identification number:	For USA: JY44KBA0*TA026101 For CDN: JY44KBN0*TA048101
Frame starting number:	For Europe: 4KB-052101
Carburetor: Type/ quantity Manufacturer	 BST34 × 1 MIKUNI

MAINTENANCE SPECIFICATIONS

ENGINE

Model		YFM35FXH
Carburetor:		
I. D. mark		4KB 10
Main jet	(M.J)	#135
Main air jet	(M.A.J)	0.8
Jet needle	(J.N)	5H45-3
Needle jet	(N.J)	P-0 (#781)
Pilot air jet	(P.A.J.1)	#80
Pilot air jet	(P.A.J.2)	1.3
Pilot outlet	(P.O)	0.85
Pilot jet	(P.J)	#42.5
Bypass 1	(B.P.1)	0.8
Bypass 2	(B.P.2)	0.8
Bypass 3	(B.P.3)	0.8
Pilot screw	(P.S)	2 turns out
Valve seat size	(V.S)	2.0
Starter jet	(G.S.1)	#45
	(G.S.2)	0.7
Throttle valve size	(Th.V)	#130
Float height	(F.H)	12 ~ 14 mm (0.47 ~ 0.55 in)
Fuel level	(F.L)	2.0 ~ 3.0 mm (0.08 ~ 0.12 in) Above the float chamber mating surface
Engine idle speed		1,450 ~ 1,550 r/min
Intake vacuum		36.0 kPa (270 mmHg, 10.6 inHg)

ELECTRICAL

Model	YFM35FXH
C.D.I.:	
Magneto model/manufacturer	For USA: F004T20471/MITSUBISHI For CDN, Europe: F004T42371/MITSUBISHI
Pickup coil resistance/color	For USA: 459 ~ 561 Ω at 20°C (68°F)/ (White/Green-White/Red) 459 ~ 561 Ω at 20°C (68°F)/ (Blue-White/Red) For CDN, Europe: 459 ~ 561 Ω at 20°C (68°F)/(White/Red-White/ Green)
Source coil resistance/color	270 ~ 330 Ω at 20°C (68°F)/(Brown-Green)
C.D.I. unit model/manufacturer	For USA: F008T17571/MITSUBISHI For CDN, Europe: F008T32374/MITSUBISHI
Charging system:	
Type	A.C. magneto
Model/manufacturer	For USA: F004T20471/MITSUBISHI For CDN, Euorpe: F004T42371/MISTSUBISHI
Nominal output	For USA: 14V 12.5A at 3,000 r/min For CDN, Europe: 14V 12A at 3,000 r/min
Stator coil resistance/color	For USA: 0.45 ~ 0.55 Ω at 20°C (68°F)/(White-White) For CDN, Europe: 0.70 ~ 0.86 Ω at 20°C (68°F)/(White-White)
Rectifier:	
Model/manufacturer	SH640-12/SHINDENGEN
Capacity	14A
Withstand voltage	200V
Starter relay:	
Model/manufacturer	MS5E-541/JIDOSHADENKI
Amperage rating	100 A
Coil winding resistance/color	4.18 ~ 4.62 Ω at 20°C (68°F)/ (Blue/White-Red/White)

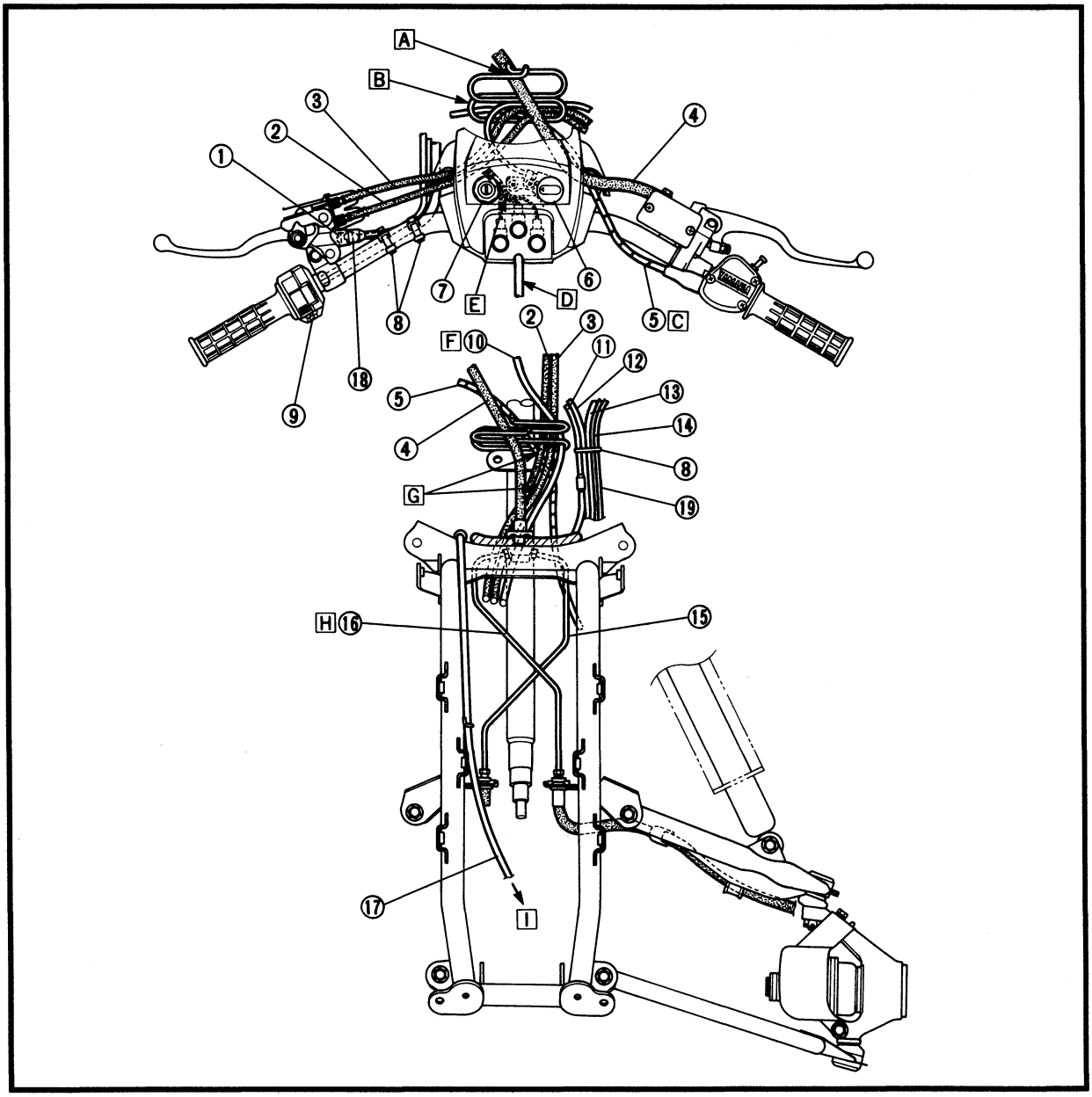
TIGHTENING TORQUE

Parts to be tightened	Parts name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Cylinder head oil passage	Union bolt	M6	1	7	0.7	5.1	
Cylinder head (exhaust pipe)	Stud bolt	M6	2	7	0.7	5.1	
Cylinder head	Bolt	M10	4	40	4.0	29	
	Bolt	M8	2	20	2.0	14	
Breather plate	Bolt	M6	2	10	1.0	7.2	L
Bearing retainer (camshaft)	Bolt	M6	2	8	0.8	5.8	Use lock washer
Spark plug	—	M12	1	18	1.8	13	
Cylinder	Bolt	M6	1	10	1.0	7.2	
CDI magneto	Bolt	M10	1	50	5.0	36	
Balancer driven gear	Nut	M16	1	60	6.0	43	Use lock washer
Valve adjusting screw	Nut	M7	2	20	2.0	14	
Cam sprocket	Bolt	M10	1	60	6.0	43	
Cam chain tensioner cap	Plug	M11	1	23	2.3	17	
Cam chain tensioner	Bolt	M6	2	10	1.0	7.2	
Cam chain guide	Bolt	M6	2	10	1.0	7.2	
Oil pump assembly	Screw	M6	1	7	0.7	5.1	
Oil pump	Screw	M6	3	7.5	0.75	5.4	
Oil drain plug	Plug	M35	1	32	3.2	23	
Oil filter cover joint pipe	Joint	M14	2	50	5.0	36	
Oil delivery pipe (crankcase cover)	Union bolt	M8	2	18	1.8	13	
Oil cooler hose	Nut	—	4	35	3.5	25	
Oil cooler	Bolt	M6	2	7	0.7	5.1	
Oil delivery pipe (crankcase)	Union bolt	M8	2	16	1.6	11	
Carburetor joint	Bolt	M8	2	20	2.0	14	
Carburetor	Screw	M4	2	2	0.2	1.4	
Air filter	Bolt	M6	3	7	0.7	5.1	
Muffler and exhaust pipe	Bolt	M8	1	20	2.0	14	
Muffler and pipe	Bolt	M6	1	8	0.8	5.8	
Exhaust pipe protector	Bolt	M6	3	11	1.1	8.0	L
Exhaust pipe	Nut	M6	2	12	1.2	8.7	
Muffler	Bolt	M8	2	27	2.7	19	L
Bearing retainer (crankcase)	Screw	M6	4	8	0.8	5.8	L
Crankcase cover (left)	Bolt	M5	3	7	0.7	5.1	
Bearing retainer (crankcase cover)	Torx screw	M6	3	10	1.0	7.2	L
Crankcase	Bolt	M8	3	26	2.6	19	L
Starter one way clutch							
(for USA)	Bolt	M8	3	30	3.0	22	L
(except for USA)	Bolt	M8	6	30	3.0	22	L
Clutch carrier	Nut	M22	1	140	14	100	Stake
Pressure plate	Screw	M6	5	8	0.8	5.8	
Clutch boss	Nut	M16	1	90	9.0	65	Use lock washer
Bearing retainer							
(middle drive axle)	Torx screw	M8	4	25	2.5	18	L
Middle drive axle	Nut	M22	1	130	13	94	Stake
Bearing housing	Bolt	M8	6	32	3.2	23	
Bearing housing	Nut	M65	1	110	11	80	L
Driven pinion	Nut	M14	1	97	9.7	70	L
Driven pinion	Bolt	M8	4	25	2.5	18	
Universal joint	Nut	M14	1	97	9.7	70	L
Crankcase (left)	Nut	M55	1	80	8.0	58	L
Shift cam side plate	Torx screw	M6	1	12	1.2	8.7	L
Shift cam segment	Torx screw	M6	1	12	1.2	8.7	L
Stopper lever	Bolt	M6	1	10	1.0	7.2	L

Parts to be tightened	Parts name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Stopper screw (crankcase)	Screw	M8	1	22	2.2	16	Use lockwasher
Clutch adjuster locknut	Nut	M8	1	20	2.0	14	
Shifter bracket	Bolt	M6	1	13	1.3	9.4	
Shift arm	Bolt	M6	1	10	1.0	7.2	
Shift rod	Nut	M6	2	10	1.0	7.2	
Stator coil							
(for USA)	Bolt	M5	3	7	0.7	5.1	
(except for USA)	Screw	M6	3	7	0.7	5.1	
Crankcase cover left-thrust washer (except for USA)	Screw	M5	3	7	0.7	5.1	
Pickup coil							
(for USA)	Bolt	M5	4	7	0.7	5.1	
(except for USA)	Bolt	M5	2	7	0.7	5.1	
Lead holder (except for USA)	Bolt	M5	2	7	0.7	5.1	
Ignition coil	Bolt	M6	2	7	0.7	5.1	
Thermo swich	—	M12	1	20	2.0	14	
Gear position switch	Bolt	M6	1	6	0.6	4.3	

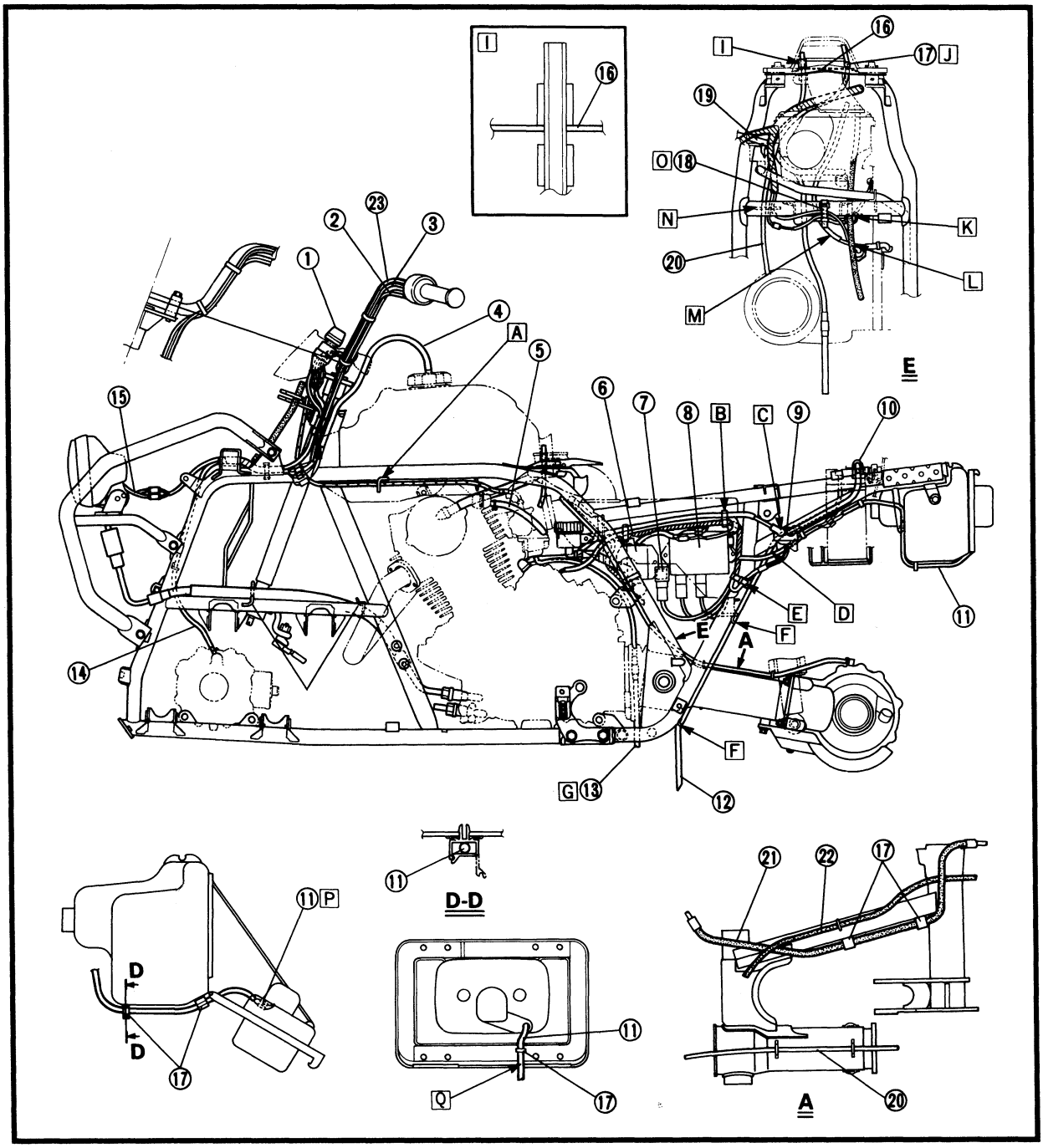
CABLE ROUTING

① Rear brake switch
② Rear brake cable
③ Parking brake cable
④ Front brake hose
⑤ Throttle cable
⑥ Reverse control knob
⑦ Main switch
⑧ Band
⑨ Handlebar switch
⑩ Reverse control cable
⑪ Main switch lead
⑫ Indicator light lead
⑬ Handlebar switch lead
⑭ Rear brake switch lead
⑮ Brake pipe 1
⑯ Brake pipe 2
⑰ Breather hose
⑱ Parking brake switch
⑲ Parking brake switch lead
[A] Pass the brake hose through the wire guide located at the front.
[B] Pass the throttle cable, the rear brake cable, the parking brake cable and the reverse control cable through the wire guide located at the rear.
[C] Pass the throttle cable inside the handlebar protector rib.
[D] Insert the breather hose into the hole of the handlebar protector.
[E] Connect the indicator light leads inside the handlebar protector, then pass it between the reverse control lever bracket and the main switch.
[F] Pass the reverse control cable in front of the rear brake cable and the parking brake cable.
[G] Pass the rear brake cable and the parking brake cable in front of the throttle cable.
[H] Pass brake pipe 2 in front of brake pipe1.
[I] To front axle gear case.

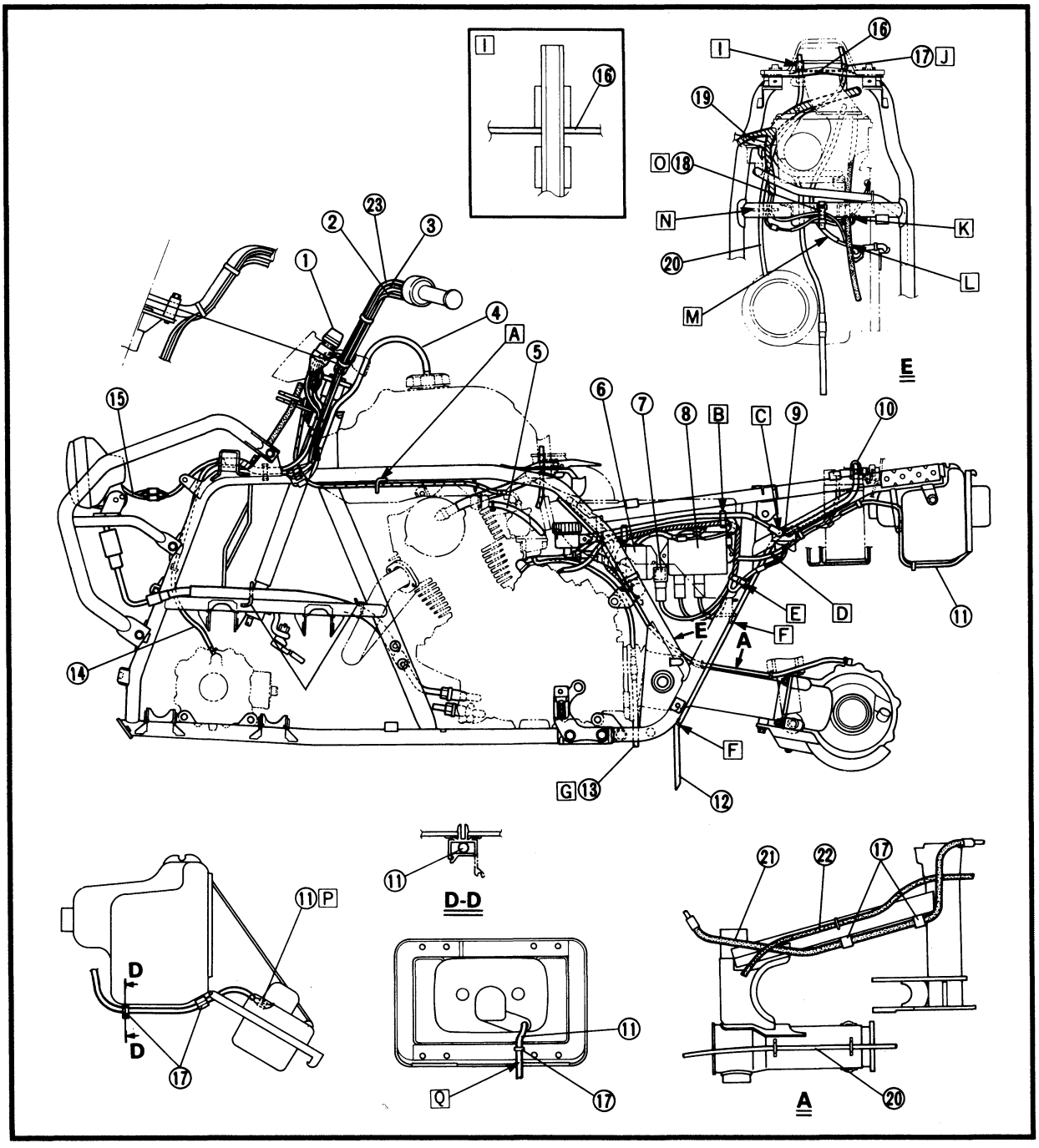


① Main switch
② Handlebar switch lead
③ Rear brake switch lead
④ Breather hose
⑤ Fuel hose
⑥ Rectifier/regulator
⑦ Starting circuit cut-off relay
⑧ CDI unit
⑨ Starter relay
⑩ Battery positive lead
⑪ Tail light lead
⑫ Battery breather hose
⑬ Carburetor overflow hose
⑭ Breather hose
⑮ Headlight lead
⑯ Damper plate
⑰ Clamp
⑱ Band
⑲ Starter motor lead
⑳ Breather hose (rear gear housing)
㉑ Rear brake hose
㉒ Parking brake cable
㉓ Parking brake switch lead

[A] Pass the throttle cable through the wire guide.
[B] Clamp the starter motor lead, making sure that it is not slack.
[C] Connect the starter motor lead at an angle of between 0° and 30°.
[D] Pass the battery breather hose through the wire guide inside the frame.
[E] Clamp the wireharness.

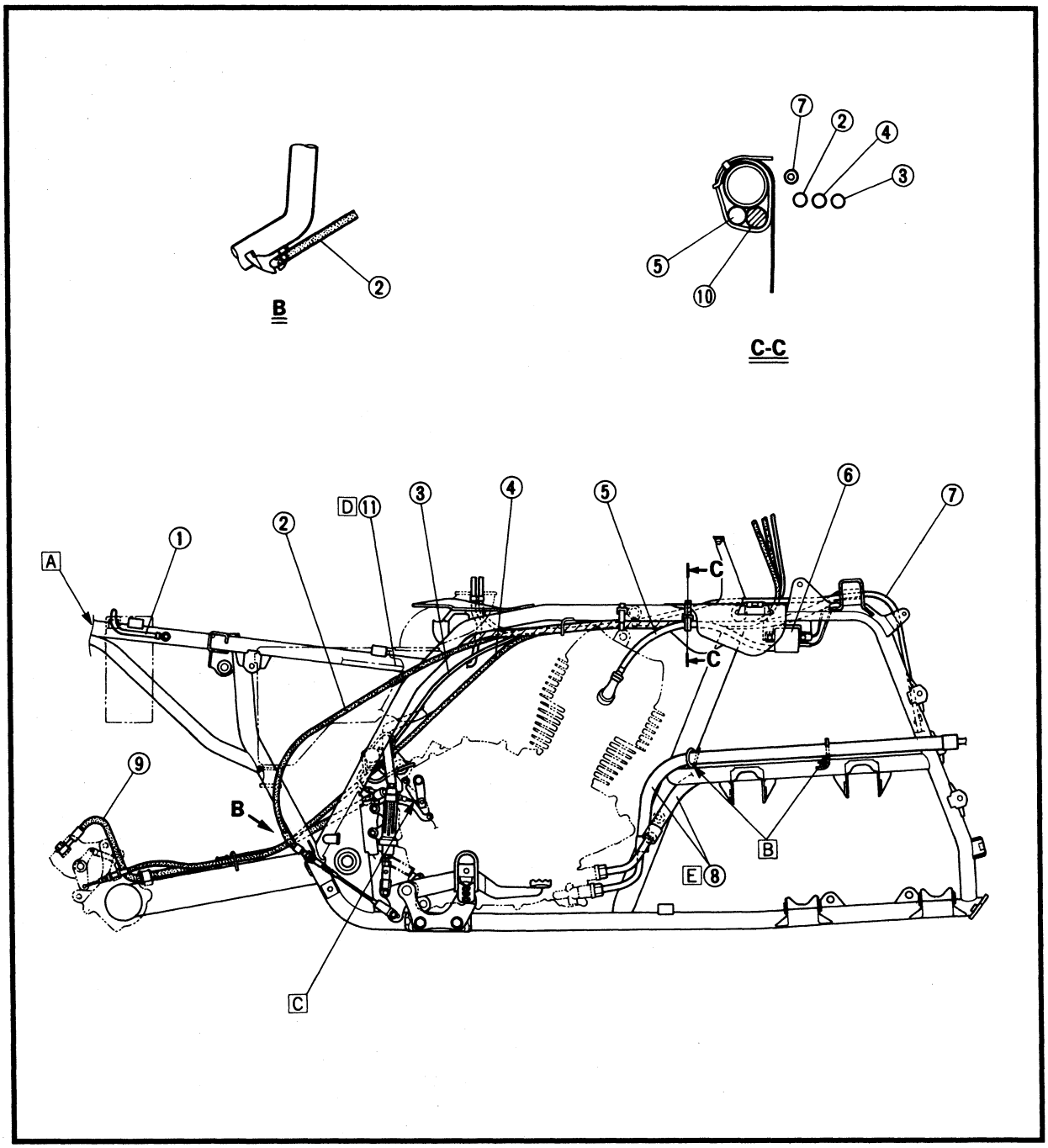


[F] Pass the battery breather hose through the wire guide.
[G] Pass the carburetor overflow hose through the cross pipe frame.
[H] Pass the oil cooler hose through the wire guide.
[I] Pass the carburetor air vent hose through the guide hole in the damper plate. Make sure that the spacers on the hose engage with the damper plate.
[J] Pass the front axle gear case breather hose and the rear gear housing breather hose through the guide hole in the damper plate.
[K] Pass the parking brake cable through the wire guide.
[L] Make sure that the reverse control cable and the parking brake cable do not touch each other.
[M] Pass the reverse control cable between the frame bracket and the engine.
[N] Pass the wireharness and the breather hose through the wire guide.
[O] Bind the thermo switch lead and the neutral switch lead together with a band.
[P] Connect the tail light leads inside the box lid.
[Q] Pass the tail light lead through the slit in the seal.



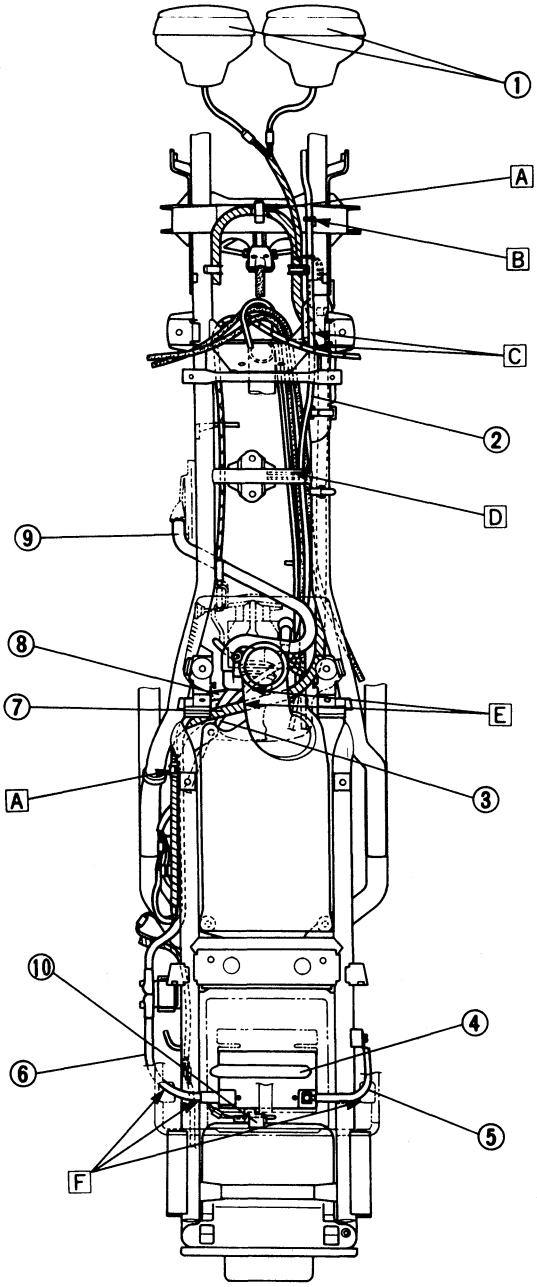
① Battery negative lead
② Rear brake cable
③ Reverse control cable
④ Parking brake cable
⑤ Spark plug lead
⑥ Ignision coil
⑦ Breather hose (front axle gear case)
⑧ Oil cooler hose
⑨ Rear brake hose
⑩ Wireharness
⑪ Rear fender

[A] Connect the battery negative lead at an angle of between 0° and 5°.
[B] Pass the oil cooler hose through the wire guide.
[C] Adjust the length of the protruding edge of the reverse control cable to the specified length. Make sure that it is not slack.
[D] Align the edge of the rear brake cable protector spring with the tip of the rear fender.
[E] Pass the oil cooler hoses outside the frame. Make sure that the hoses do not touch the frame.



① Headlights
② Breather hose (front axle gear case)
③ Breather hose (rear gear housing)
④ Battery
⑤ Battery negative lead
⑥ Battery positive lead
⑦ Wireharness
⑧ Starter motor lead
⑨ Crankcase breather hose
⑩ Fuse (main)

[A] Clamp the wireharness at the point where the white tape is affixed to it.
[B] Pass the breather hose through the wire guide.
[C] Pass the breather hose through the guide hole in the frame bracket and pass it above the damper plate.
[D] Pass the reverse control cable, the parking brace cable, the breather hose and the rear brake cable through the wire guide. Position these cables in the above order from inside to outside.
[E] Pass the wireharness and the breather hose above the carburetor joint.
[F] Pass the battery leads in front of the rear fender's rim and then pass them through the guide hole in the rear fender.

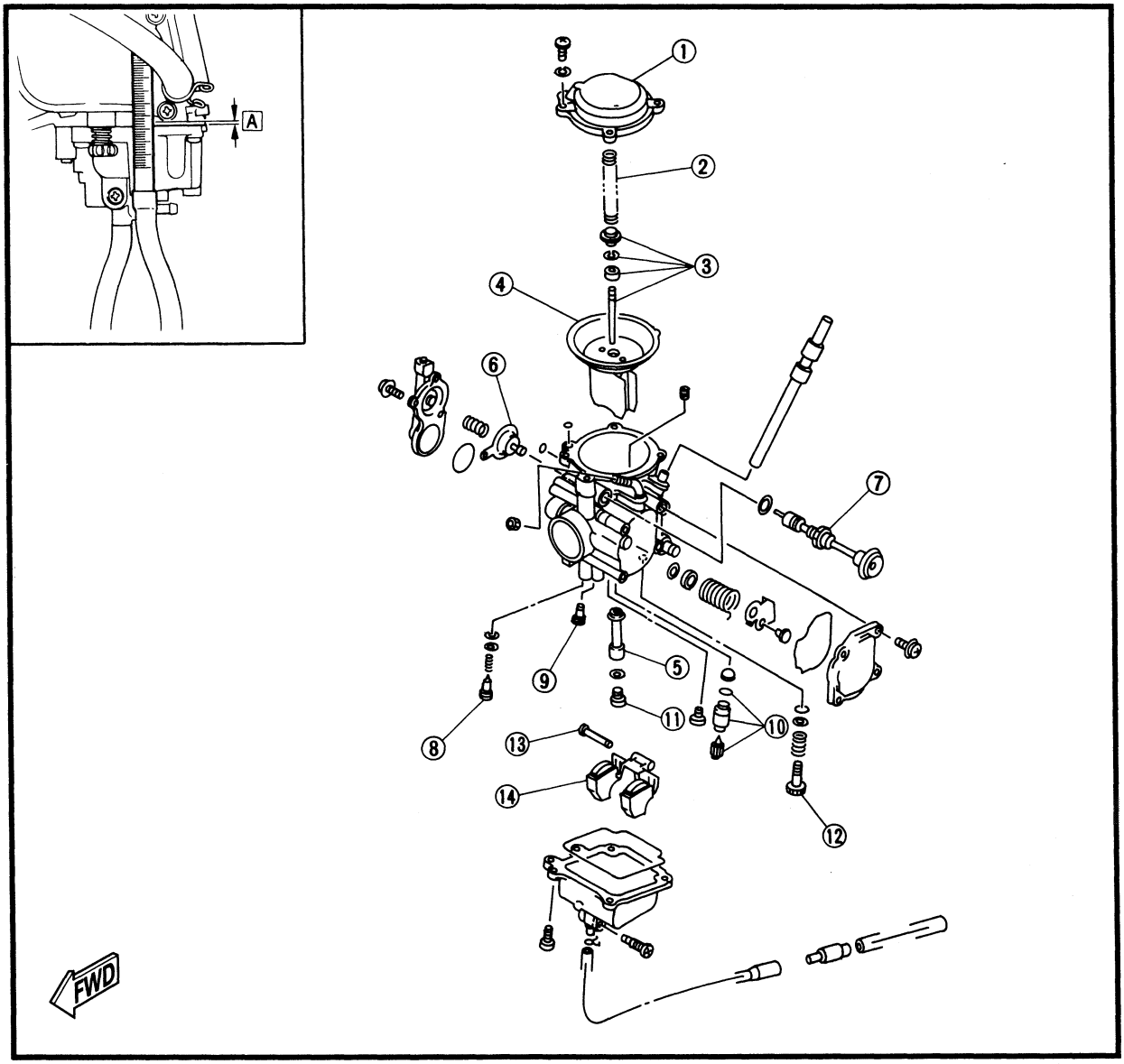


CARBURETION

CARBURETOR

① Carburetor top cap
② Spring
③ Jet needle set
④ Piston valve
⑤ Main nozzle
⑥ Coasting enricher diaphragm
⑦ Starter plunger assembly
⑧ Pilot screw
⑨ Pilot jet
⑩ Needle valve set
⑪ Main jet
⑫ Throttle stop screw
⑬ Float pin
⑭ Float

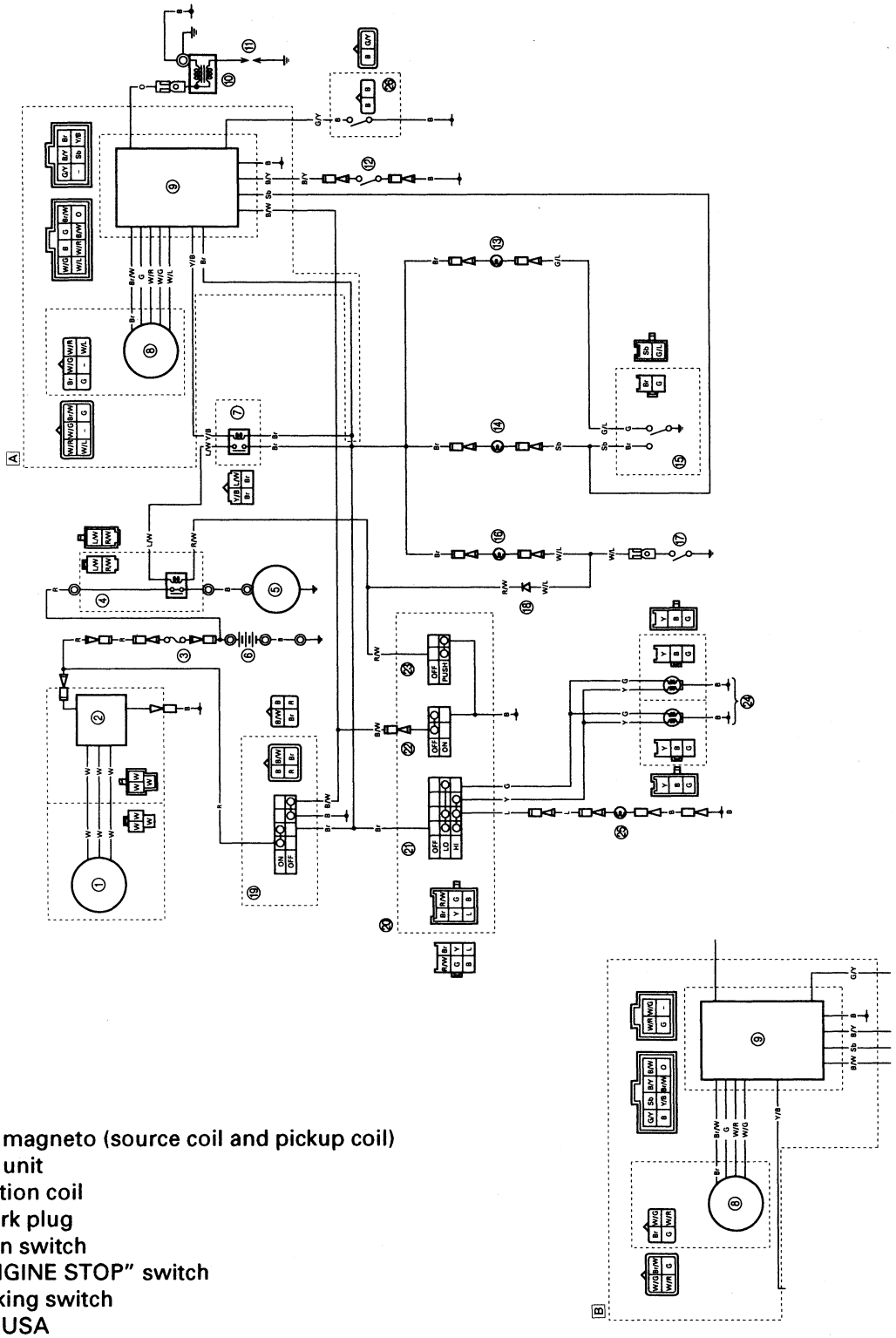
SPECIFICATIONS	
ID MARK	4KB10
MAIN JET (M.J.)	#135
PILOT JET (P.J.)	#42.5
JET NEEDLE (J.N.)	5H45-3
NEEDLE JET (N.J.)	P-0 (#781)
PILOT SCREW (P.S.)	2 turns out
FLOAT HEIGHT (F.H.)	12 ~ 14 mm (0.47 ~ 0.55 in)
FUEL LEVEL [A] (F.L.)	2.0 ~ 3.0 mm (0.08 ~ 0.012 in) Above the float chamber mating surface
ENGINE IDLING SPEED	1,450 ~ 1,550 r/min



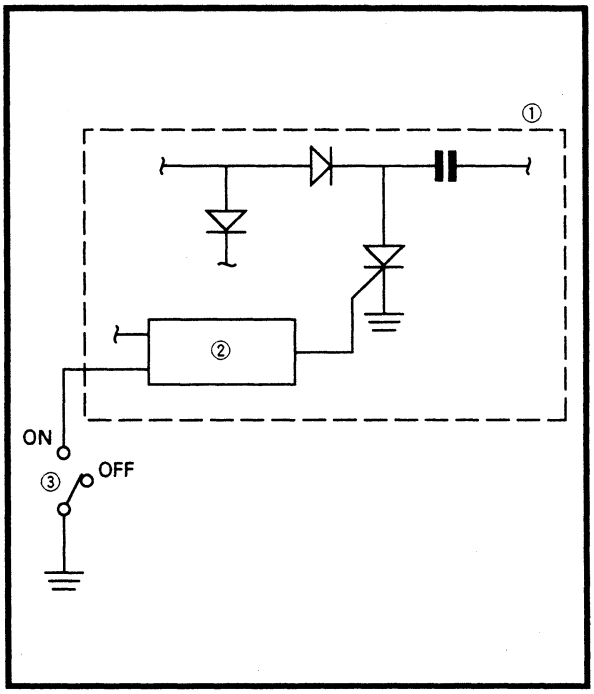
ELECTRICAL

IGNITION SYSTEM

CIRCUIT DIAGRAM



⑧ CDI magneto (source coil and pickup coil)
⑨ CDI unit
⑩ Ignition coil
⑪ Spark plug
⑲ Main switch
㉒ "ENGINE STOP" switch
㉖ Parking switch
[A] For USA
[B] Except for USA



ENGINE REVOLUTION LIMITER SYSTEM

When the parking brake is applied, the engine revolution limiter system becomes activated, thereby letting the rider know that the parking brake is on.

System

A switch is newly provided on the parking brake lever on the left of the handlebar to sense the parking brake condition.
The iginition unit which receives a sensed signal becomes activated as follows according to the parking brake condition.

- Parking brake is released.
  (switch OFF) → Ignition occurs normally.
- Parking brake is applied.
  (switch ON) → Misfire occurs at 2300 r/min.
  (engine will not rev up beyond 2300 r/min.)

① Igniter unit
② Ignition timing control circuit
③ Parking switch

YAMAHA MOTOR CO.,LTD.

PRINTED IN U.

YAMAHA

YFM35FXG

SERVICE MANUAL

LIT-11616-09-58

YFM35FXG
SERVICE MANUAL
© 1994 by Yamaha Motor Co., Ltd.
1st Edition, June 1994
All rights reserved. Any reprinting or
unauthorized use without the written
permission of Yamaha Motor Co., Ltd.
is expressly prohibited.

NOTICE

This manual was written by the Yamaha Motor Company, Ltd. primarily for use by Yamaha dealers and qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so persons using this book to perform maintenance and repairs on Yamaha machines should have a basic understanding of the machanical concepts and procedures inherent in machine repair technology. Without such knowledge, attempted repairs or service to the machine may render it unfit to use and/or unsafe.

Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

⚠	The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!
⚠ WARNING	Failure to follow WARNING instructions could result in severe injury or death to the machine operator, a bystander, or a person inspecting or repairing the machine.
CAUTION:	A CAUTION indecates special precautions that must be taken to avoid damage to the machine.
NOTE:	A NOTE provides key information to make procedures easier or clearer.

HOW TO USE THIS MANUAL

CONSTRUCTION OF THIS MANUAL

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

1st title ①: This is a chapter with its symbol on the upper right of each page.

2nd title ②: This title appears on the upper of each page on the left of the chapter symbol. (For the chapter "Periodic inspection and adjustment" the 3rd title appears.)

3rd title ③: This is a final title.

MANUAL FORMAT

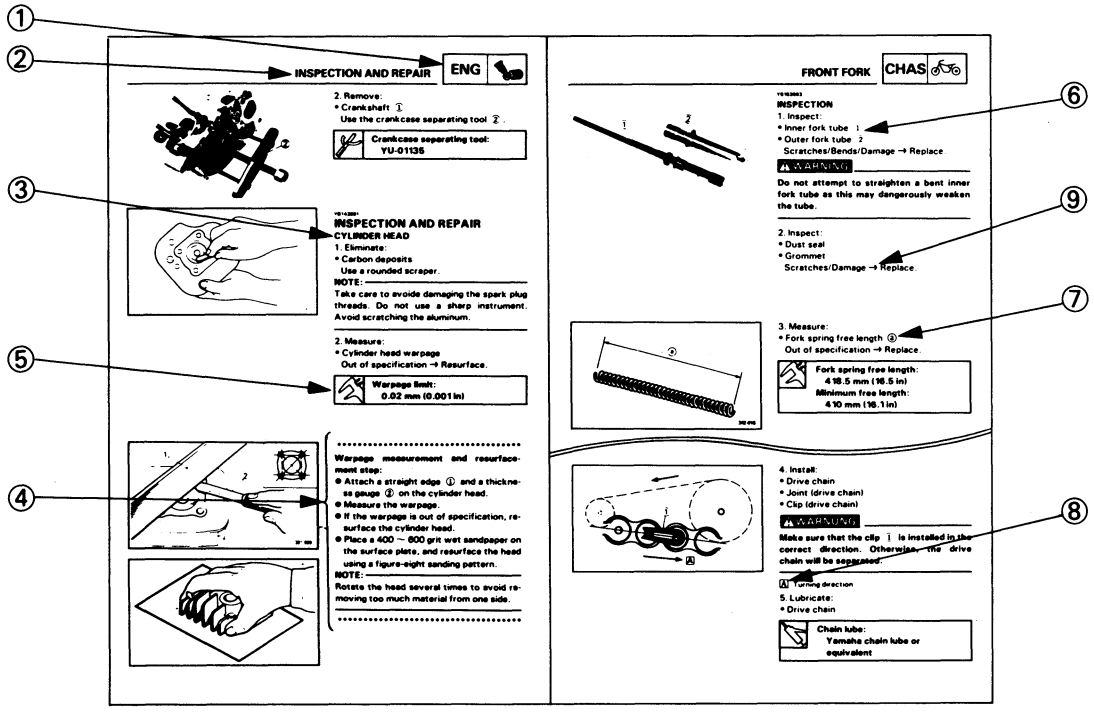
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspections. A set of particularly important procedure ④ is placed between a line of asterisks " * " with each procedure preceded by "●".

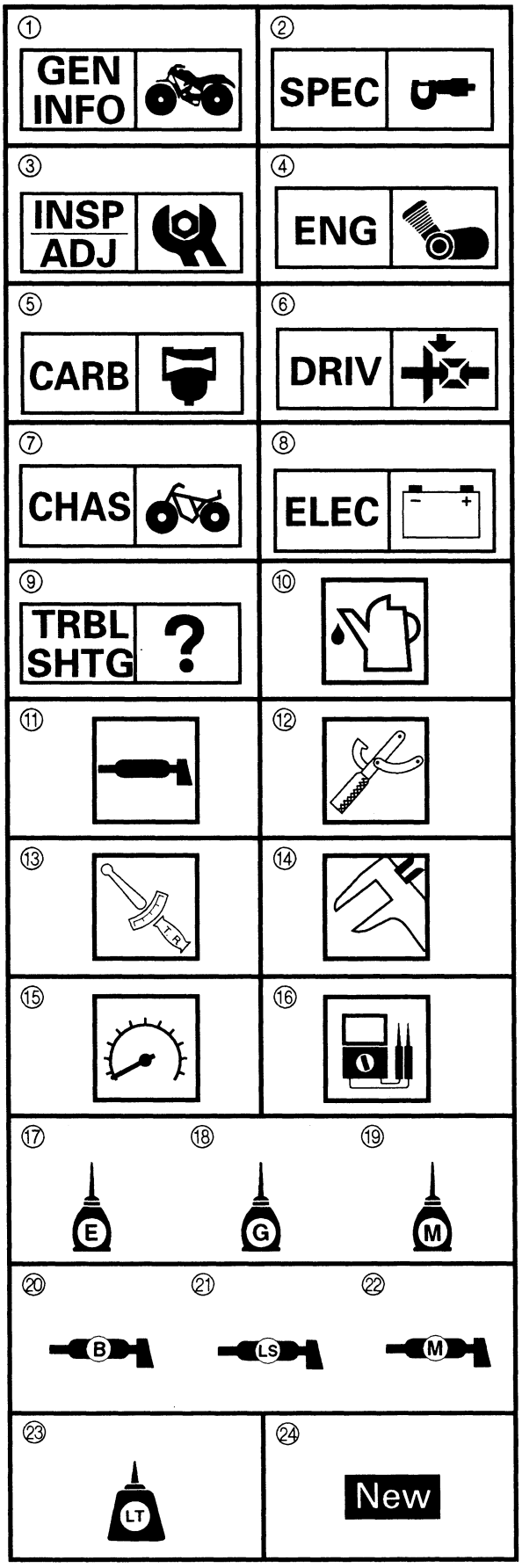
IMPORTANT FEATURES

- Data and a special tool are framed in a box preceded by a relevant symbol ⑤.
- An encircled numeral ⑥ indicates a part name, and an encircled alphabetical letter data or an alignment mark ⑦, the others being indicated by an alphabetical letter in a box ⑧.
- A condition of a faulty component will precede an arrow symbol and the course of action required the symbol ⑨.

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.





ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and content.

① General information
② Specifications
③ Periodic inspection and adjustment
④ Engine overhaul
⑤ Carburetion
⑥ Drive train
⑦ Chassis
⑧ Electrical
⑨ Troubleshooting

Illustrated symbols ⑩ to ⑯ are used to identify the specifications appearing in the text.

⑩ Filling fluid
⑪ Lubricant
⑫ Special tool
⑬ Tightening
⑭ Wear limit, clearance
⑮ Engine speed
⑯ Ω, V, A

Illustrated symbols ⑰ to ㉔ in the exploded diagram indicate grade of lubricant and location of lubrication point.

⑰ Apply engine oil
⑱ Apply gear oil
⑲ Apply molybdenum disulfide oil
⑳ Apply wheel bearing grease
㉑ Apply lightweight lithium-soap base grease
㉒ Apply molybdenum disulfide grease
㉓ Apply locking agent (LOCTITE®)
㉔ Use new one

INDEX

GENERAL INFORMATION	GEN INFO 1
SPECIFICATIONS	SPEC 2
PERIODIC INSPECTION AND ADJUSTMENT	INSP ADJ 3
ENGINE OVERHAUL	ENG 4
CARBURETION	CARB 5
DRIVE TRAIN	DRIVE 6
CHASSIS	CHAS 7
ELECTRICAL	ELEC 8
TROUBLESHOOTING	TRBL SHTG 9

CONTENTS

CHAPTER 1.
GENERAL INFORMATION

MACHINE IDENTIFICATION 1-1
- VEHICLE IDENTIFICATION NUMBER 1-1
- ENGINE SERIAL NUMBER 1-1

IMPORTANT INFORMATION 1-2
- PREPARATION FOR REMOVAL 1-2
- ALL REPLACEMENT PARTS 1-2
- GASKETS, OIL SEALS, AND O-RINGS 1-2
- LOCK WASHERS/PLATES AND COTTER PINS 1-2
- BEARINGS AND OIL SEALS 1-3
- CIRCLIPS 1-3

SPECIAL TOOLS 1-3
- FOR TUNE UP 1-3
- FOR ENGINE SERVICE 1-4
- FOR DRIVE TRAIN SERVICE 1-8
- FOR CHASSIS SERVICE 1-8
- FOR ELECTRICAL COMPONENTS 1-8

CHAPTER 2.
SPECIFICATIONS

GENERAL SPECIFICATIONS 2-1

MAINTENANCE SPECIFICATIONS 2-4
- ENGINE 2-4
- CHASSIS 2-13
- ELECTRICAL 2-17

EXCLUSIVE SPECIFICATIONS 2-19

GENERAL TORQUE SPECIFICATIONS 2-20

LUBRICATION POINTS AND LUBRICANT TYPE 2-21
- ENGINE 2-21
- CHASSIS 2-22

LUBRICATION DIAGRAMS 2-23

CABLE ROUTING 2-25

CHAPTER 3.
PERIODIC INSPECTIONS AND ADJUSTMENT

INTRODUCTION 3-1

PERIODIC MAINTENANCE/LUBRICATION 3-1

SEAT, CARRIERS, FENDERS AND FUEL TANK 3-3
- REMOVAL 3-3
- INSTALLATION 3-5

ENGINE 3-7
- VALVE CLEARANCE ADJUSTMENT 3-7
- TIMING CHAIN ADJUSTMENT 3-9
- IDLING SPEED ADJUSTMENT 3-10
- THROTTLE CABLE FREE PLAY ADJUSTMENT 3-11
- SPEED LIMITER ADJUSTMENT 3-12
- SPARK PLUG INSPECTION 3-13
- IGNITION TIMING CHECK 3-14
- COMPRESSION PRESSURE MEASUREMENT 3-15
- ENGINE OIL LEVEL INSPECTION 3-17
- "OIL TEMP" INDICATOR LIGHT CHECK 3-19
- ENGINE OIL REPLACEMENT 3-19
- CLUTCH ADJUSTMENT 3-21
- AIR FILTER CLEANING 3-22

CHASSIS 3-24
- FRONT BRAKE ADJUSTMENT 3-24
- PARKING BRAKE ADJUSTMENT 3-24
- REAR BRAKE CABLE ADJUSTMENT 3-25
- BRAKE FLUID LEVEL INSPECTION 3-27
- BRAKE PAD INSPECTION 3-28
- BRAKE HOSE INSPECTION 3-28
- AIR BLEEDING (HYDRAULIC BRAKE SYSTEM) 3-29
- REVERSE CONTROL CABLE ADJUSTMENT 3-31
- CHANGE PEDAL ADJUSTMENT 3-31
- FINAL GEAR OIL LEVEL INSPECTION 3-32
- FINAL GEAR OIL REPLACEMENT 3-33
- DIFFERENTIAL GEAR OIL LEVEL INSPECTION 3-34
- DIFFERENTIAL GEAR OIL REPLACEMENT 3-34
- CONSTANT VELOCITY JOINT DUST BOOT INSPECTION 3-36
- STEERING SYSTEM INSPECTION 3-36
- TOE-IN ADJUSTMENT 3-37
- FRONT SHOCK ABSORBER ADJUSTMENT 3-38
- REAR SHOCK ABSORBER ADJUSTMENT 3-38
- TIRE INSPECTION 3-39
- WHEEL INSPECTION 3-41
- CABLE INSPECTION AND LUBRICATION 3-41
- LEVERS, PEDAL, ETC. LUBRICATION 3-42

ELECTRICAL 3-43
BATTERY INSPECTION 3-43
FUSE INSPECTION 3-46
HEADLIGHT BEAM ADJUSTMENT 3-47
HEADLIGHT BULB REPLACEMENT 3-47

CHAPTER 4.
ENGINE OVERHAUL

ENGINE REMOVAL 4-1
SEAT, FENDER AND FUEL TANK 4-1
ENGINE OIL 4-1
CARBURETOR 4-1
EXHAUST PIPE AND MUFFLER 4-2
HOSE AND LEAD 4-2
OIL FILTER 4-3
REVERSE CONTROL CABLE 4-3
FRONT DRIVE SHAFT PROTECTOR 4-3
SHIFT PEDAL 4-4
REAR DRIVE ASSEMBLY AND SWINGARM 4-4
ENGINE REMOVAL 4-5

ENGINE DISASSEMBLY 4-7
RECOIL STARTER (EXCEPT FOR USA) 4-7
STARTER MOTOR 4-8
CYLINDER HEAD AND CYLINDER 4-8
PISTON 4-10
CRANKCASE COVER (LEFT) 4-11
SHIFT SHAFT AND STARTER IDLE GEAR 4-12
CDI ROTOR AND CAM CHAIN 4-13
CLUTCH 4-15
REVERSE SHIFT BRACKET 4-17
OIL PUMP AND BALANCER DRIVE GEARS 4-18
CRANKCASE DISASSEMBLY 4-19
TRANSMISSION 4-20
CRANKSHAFT 4-20
CAMSHAFT, ROCKER ARM AND VALVE 4-21
OIL PUMP 4-22

INSPECTION AND REPAIR 4-23
CYLINDER HEAD 4-23
VALVE SEAT 4-24
VALVE AND VALVE GUIDE 4-27
VALVE SPRING 4-28
CAMSHAFT 4-29
ROCKER ARM AND ROCKER ARM SHAFT 4-30
CAM CHAIN TENSIONER 4-30
TAPPET COVER AND SIDE COVER 4-31
CYLINDER AND PISTON 4-31

PISTON RING 4-33
PISTON PIN 4-34
CRANKSHAFT 4-35
BALANCER DRIVE GEAR AND DRIVEN GEAR 4-36
PRIMARY GEARS 4-36
PRIMARY CLUTCH 4-36
SECONDARY CLUTCH 4-37
OIL PUMP 4-39
SHIFTER AND TRANSMISSION 4-40
STARTER DRIVES 4-42
STARTER PULLEY AND RECOIL STARTER (EXCEPT FOR USA) 4-43
OIL STRAINER, OIL FILTER AND OIL PIPES 4-43
CRANKCASE 4-44
BEARINGS AND OIL SEALS 4-44
CIRCLIPS AND WASHERS 4-44

MIDDLE GEAR SERVICE 4-45
REMOVAL 4-46
DISASSEMBLY 4-46
INSPECTION 4-49
MIDDLE DRIVE AND DRIVEN GEAR SHIM SELECTION 4-50
ASSEMBLY 4-53
INSTALLATION 4-57
GEAR LASH MEASUREMENT 4-58

ENGINE ASSEMBLY AND ADJUSTMENT 4-59
OIL PUMP 4-59
VALVE, CAM SHAFT AND ROCKER ARM 4-61
CRANKSHAFT 4-64
TRANSMISSION 4-64
CRANKCASE ASSEMBLY 4-65
OIL PUMP AND BALANCER DRIVE GEARS 4-66
REVERSE SHIFT BRACKET 4-69
CLUTCH 4-71
CDI ROTOR AND CAM CHAIN 4-73
SHIFT SHAFT AND STARTER IDLE GEAR 4-75
CRANKCASE COVER (LEFT) 4-77
PISTON 4-79
CYLINDER HEAD AND CYLINDER 4-81
STARTER MOTOR 4-86
RECOIL STARTER (EXCEPT FOR USA) 4-87
REMOUNTING ENGINE 4-89

CHAPTER 5.
CARBURETION

CARBURETOR 5-1
- REMOVAL 5-2
- DISASSEMBLY 5-2
- INSPECTION 5-4
- ASSEMBLY 5-6
- INSTALLATION 5-8
- FUEL LEVEL ADJUSTMENT 5-9

CHAPTER 6.
DRIVE TRAIN

TROUBLESHOOTING 6-1
- INSPECTION NOTES 6-1
- TROUBLESHOOTING CHART 6-3

DIFFERENTIAL GEAR AND CONSTANT VELOCITY JOINTS 6-4
- REMOVAL 6-6
- DISASSEMBLY 6-7
- INSPECTION 6-11
- ASSEMBLY 6-12
- MEASUREMENT AND ADJUSTMENT 6-17
- INSTALLATION 6-19
- DIFFERENTIAL GEAR OPERATION CHECK 6-21

REAR AXLE/REAR FINAL GEAR AND REAR DRIVE SHAFT 6-22
- REMOVAL 6-24
- DISASSEMBLY 6-25
- INSPECTION 6-27
- FINAL DRIVE PINION GEAR AND RING GEAR SHIM SELECTION 6-29
- ASSEMBLY 6-32
- FINAL GEAR GEAR LASH MEASUREMENT AND ADJUSTMENT 6-35
- INSTALLATION 6-38

CHAPTER 7.
CHASSIS

FRONT WHEEL 7-1
- REMOVAL 7-2
- INSPECTION 7-3
- INSTALLATION 7-4

REAR WHEEL 7-6
- REMOVAL 7-7
- INSPECTION 7-7
- INSTALLATION 7-7

FRONT AND REAR BRAKE 7-8
BRAKE PAD REPLACEMENT 7-10
CALIPER DISASSEMBLY 7-15
MASTER CYLINDER DISASSEMBLY 7-18
INSPECTION AND REPAIR 7-20
CALIPER ASSEMBLY 7-23
MASTER CYLINDER ASSEMBLY 7-29

STEERING SYSTEM 7-35
REMOVAL 7-36
INSPECTION 7-39
INSTALLATION 7-41

FRONT SHOCK ABSORBER AND FRONT ARM 7-46
REMOVAL 7-47
INSPECTION 7-49
INSTALLATION 7-49

REAR SHOCK ABSORBER AND SWINGARM 7-51
REMOVAL 7-52
INSPECTION 7-54
INSTALLATION 7-55

CHAPTER 8.
ELECTRICAL

ELECTRICAL 8-1
ELECTRICAL COMPONENTS 8-1

CHECKING OF CONNECTIONS 8-2

IGNITION SYSTEM 8-3
CIRCUIT DIAGRAM 8-3
TROUBLESHOOTING 8-4

ELECTRICAL STARTING SYSTEM 8-9
CIRCUIT DIAGRAM 8-9
STARTING CIRCUIT OPERATION 8-10
TROUBLESHOOTING 8-11
STARTER MOTOR 8-16

CHARGING SYSTEM 8-21
CIRCUIT DIAGRAM 8-21
TROUBLESHOOTING 8-22

LIGHTING SYSTEM 8-24
CIRCUIT DIAGRAM 8-24
TROUBLESHOOTING 8-25
LIGHTING SYSTEM CHECK 8-27

SIGNAL SYSTEM 8-29
CIRCUIT DIAGRAM 8-29
TROUBLESHOOTING 8-30
SIGNAL SYSTEM CHECK 8-32

CHAPTER 9.
TROUBLESHOOTING

STARTING FAILURE/HARD STARTING 9-1
FUEL SYSTEM 9-1
ELECTRICAL SYSTEM 9-1
COMPRESSION SYSTEM 9-2

POOR IDLE SPEED PERFORMANCE 9-2
POOR IDLE SPEED PERFORMANCE 9-2

POOR MEDIUM AND HIGH SPEED PERFORMANCE 9-2
POOR MEDIUM AND HIGH SPEED PERFORMANCE 9-2

FAULTY DRIVE TRAIN 9-3

FAULTY GEAR SHIFTING 9-4
HARD SHIFTING 9-4
SHIFT PEDAL DOES NOT MOVE 9-4
JUMP-OUT GEAR 9-4

CLUTCH SLIPPING/DRAGGING 9-4
CLUTCH SLIPPING 9-4
CLUTCH DRAGGING 9-4

OVERHEATING 9-5
OVERHEATING 9-5

FAULTY BRAKE 9-5
POOR BRAKING EFFECT 9-5

SHOCK ABSORBER MALFUNCTION 9-5
MALFUNCTION 9-5

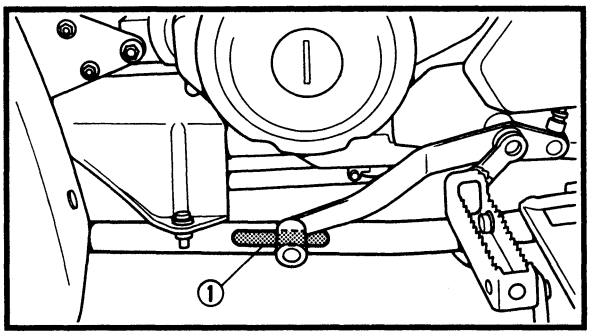
INSTABLE HANDLING 9-6
INSTABLE HANDLING 9-6

LIGHTING SYSTEM 9-6
HEADLIGHT DARK 9-6
BULB BURNT OUT 9-6

YFM35FXG WIRING DIAGRAM

GENERAL INFORMATION

MACHINE IDENTIFICATION



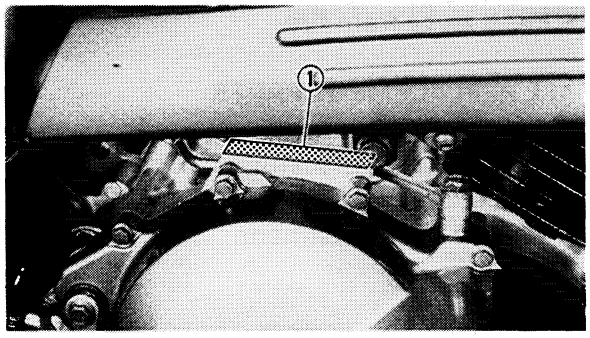
VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the left side of the frame.

NOTE:

The vehicle identification number is used to identify your machine and may be used to register your machine with the licensing authority in your state.

Starting Serial Number:
For USA
JY44KBA0*SA000101
For CDN
JY44KBN0*SA022101



ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the right side of the engine.

NOTE:

The first three digits of these numbers are for model identifications; the remaining digits are the unit production number.

Starting Serial Number:
For USA
4KB-000101
For CDN
4KB-022101

NOTE:

Designs and specifications are subject to change without notice.

IMPORTANT INFORMATION

PREPARATION FOR REMOVAL

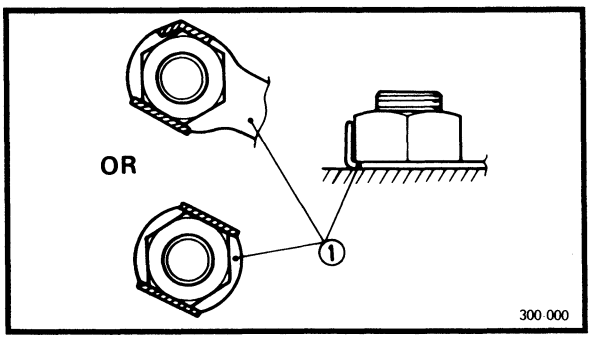
1. Remove all dirt, mud, dust and foreign material before removal and disassembly.
2. Use proper tools and cleaning equipment. Refer to "CHAPTER 1. GENERAL INFORMATION-SPECIAL TOOLS" section.
3. When disassembling the machine, keep mated parts together. This includes gears, cylinder, piston and other parts that have been "mated" through normal wear. Mated parts must be reused as an assembly or replaced.
4. During the machine disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help assure that all parts are correctly reinstalled.
5. Keep away from fire.

ALL REPLACEMENT PARTS

1. We recommend to use Yamaha genuine parts for all replacements. Use oil and/or grease recommended by Yamaha for assembly and adjustment.

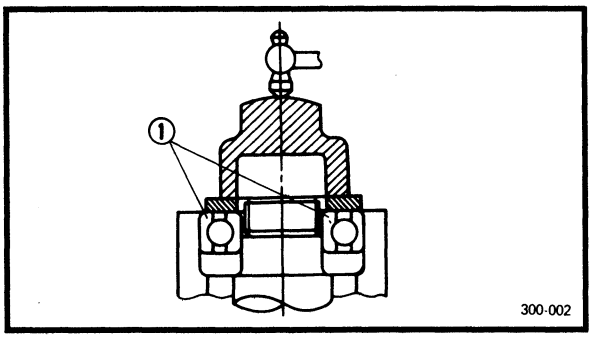
GASKETS, OIL SEALS, AND O-RINGS

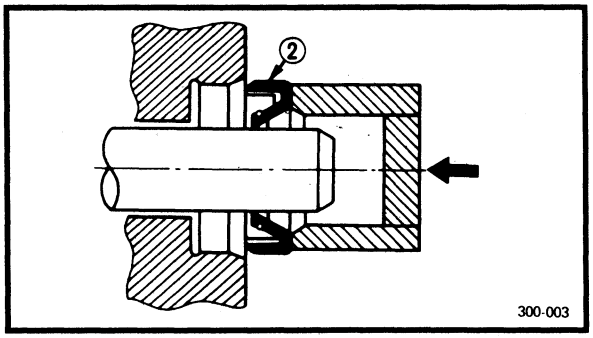
1. All gaskets, seals, and O-rings should be replaced when an engine is overhauled. All gasket surfaces, oil seal lips, and O-rings must be cleaned.
2. Properly oil all mating parts and bearings during reassembly. Apply grease to the oil seal lips.

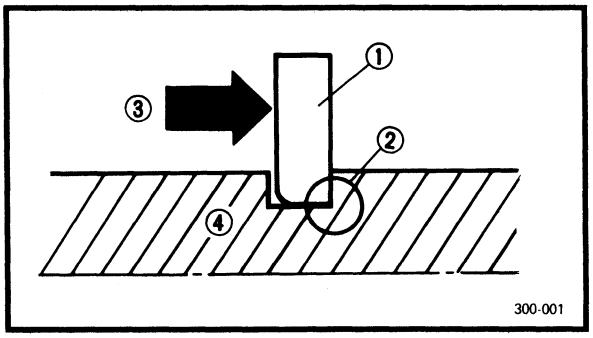


LOCK WASHERS/PLATES AND COTTER PINS

1. All lock washers/plates ① and cotter pins must be replaced when they are removed. Lock tab(s) should be bent along the bolt or nut flat(s) after the bolt or nut has been properly tightened.







SPECIAL TOOLS

The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.
The shape and part number used for the special tool differ by country, so two types are provided.

BEARINGS AND OIL SEALS

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

CAUTION:

Do not use compressed air to spin the bearings dry. This causes damage to the bearings surface.

CIRCLIPS

1. All circlips should be inspected carefully before reassembly. Always replace piston pin clips after one use. Replace distorted circlips. When installing a circlip ①, make sure that the sharp-edged corner ② is positioned opposite to the thrust ③ it receives. See the sectional view.

④ Shaft

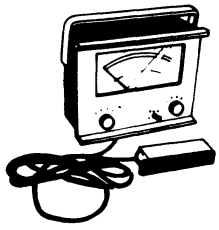
Refer to the list provided to avoid errors when placing an order.

P/N. YM- □□□□□ , YU-□□□□□
YS- □□□□□ , YK-□□□□□
ACC-□□□□□ } For USA, CDN

P/N. 90890- □□□□□ } Except for USA, CDN

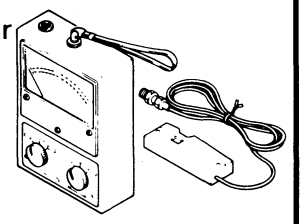
FOR TUNE UP

1-A
Inductive tachometer
P/N. YU-08036-A



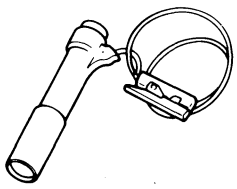
This tool is needed to measure engine rpm.

1-B
Inductive tachometer
P/N. 90890-03113



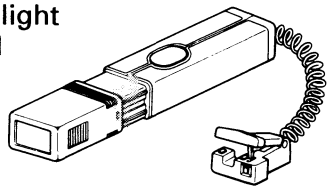
This tool is needed to measure engine rpm.

2-A
Inductive timing light
P/N. YM-33277-A



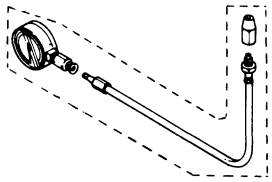
This tool is necessary for checking ignition timing.

2-B
Inductive timing light
P/N. 90890-03141



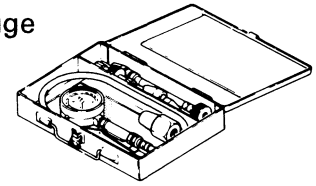
This tool is necessary for checking ignition timing.

3-A
Compression gauge
P/N. YU-33223
Adapter (M12)
P/N. YU-33223-3



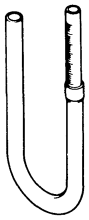
These gauge are used to measure the engine compression.

3-B
Compression gauge
P/N. 90890-03081
Extension
P/N. 90890-04082



This gauge is used to measure the engine compression.

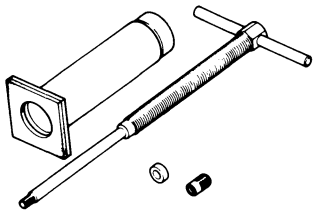
4
Fuel level gauge
P/N. YM-01312-A
P/N. 90890-01312



This gauge is used to measure the fuel level in the float chamber.

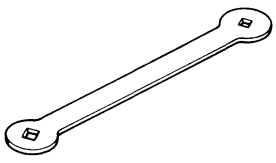
FOR ENGINE SERVICE

1
Piston pin puller
P/N. YU-01304
P/N. 90890-01304



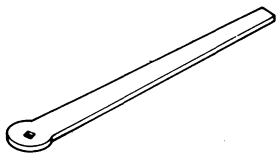
This tool is used to remove the piston pin.

2-A
Valve adjusting tool 4 mm (0.16 in)
P/N. YM-08035



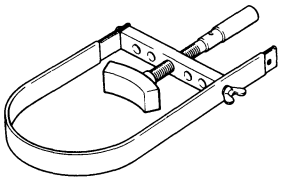
This tool is necessary for adjusting the valve clearance.

2-B
Valve adjusting tool 4 mm (0.16 in)
P/N. 90890-05260



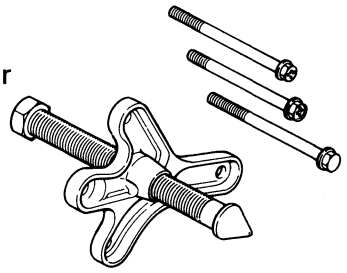
This tool is necessary for adjusting the valve clearance.

3
Sheave holder
P/N. YU-01880
P/N. 90890-01701



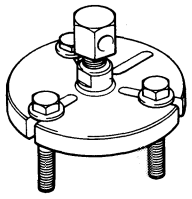
This tool is used to hold the CDI rotor when removing or installing the CDI rotor.

4-A
(For USA)
Flywheel puller
P/N. YU-33270



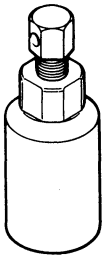
This tool is used to remove the CDI rotor.

4-B
(For USA)
Flywheel puller
P/N. 90890-01362



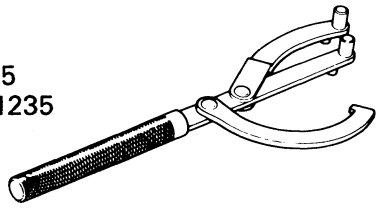
This tool is used to remove the CDI rotor.

5
(Except for USA)
Flywheel puller
P/N. YM-1404
P/N. 90890-01404



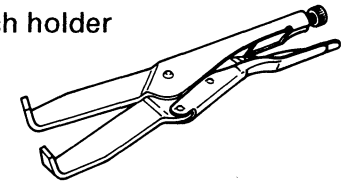
This tool is used to remove the CDI rotor.

6
Rotor holder
P/N. YU-01235
P/N. 90890-01235



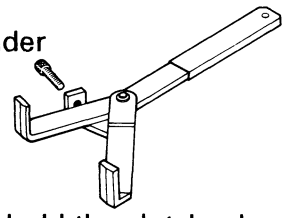
This tool is used to hold the clutch when removing or installing the clutch carrier securing nut.

7-A
Universal clutch holder
P/N. YM-91042



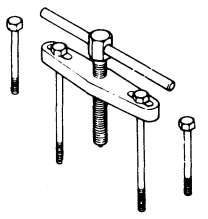
This tool is used to hold the clutch when removing or installing the clutch boss securing nut.

7-A
Universal clutch holder
P/N. 90890-04086



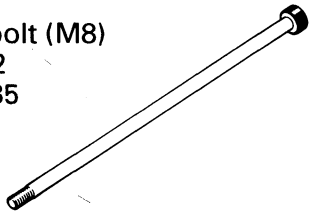
This tool is used to hold the clutch when removing or installing the clutch boss securing nut.

8
Crankcase separating tool
P/N. YU-01135-A
P/N. 90890-01135



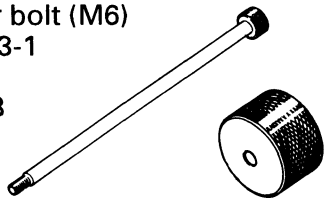
This tool is used when removing the crankshaft.

8-A
Slide hammer bolt (M8)
P/N. YU-01083-2
P/N. 90890-01085



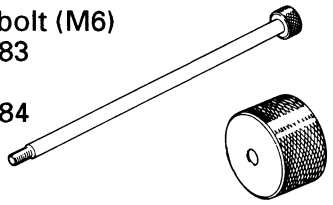
This tool is used when removing the crankshaft.

9-A
Slide hammer bolt (M6)
P/N. YU-01083-1
Weight
P/N. YU-01083



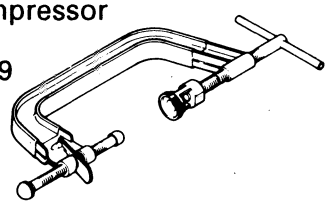
These tools are used when removing the rocker arm shaft.

9-B
Slide hammer bolt (M6)
P/N. 90890-01083
Weight
P/N. 90890-01084



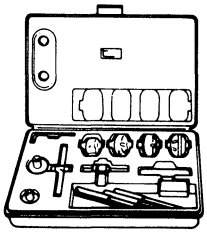
These tools are used when removing the rocker arm shaft.

10
Valve spring compressor
P/N. YM-04019
P/N. 90890-04019



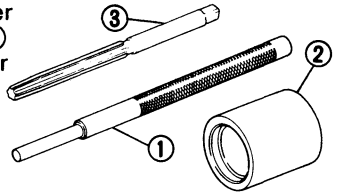
This tool is needed to remove and install the valve assemblies.

11
Valve seat cutter
P/N. YM-91043-C



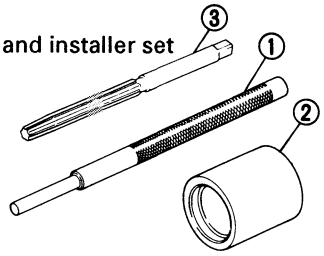
This tool is used to adjust the valve clearance.

12-A
Valve guide remover and installer 7 mm (0.28 in)
Valve guide remover
P/N. YM-01225-A-①
Valve guide installer
P/N. YM-04017-②
Valve guide reamer
P/N. YM-01227-③



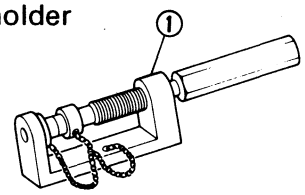
These tools are used to remove, install and rebore the valve guide.

12-B
Valve guide remover and installer set
7 mm (0.28 in)
Valve guide remover
P/N. 90890-01225-①
Valve guide installer
P/N. 90890-04017-②
Valve guide reamer
P/N. 90890-01227-③



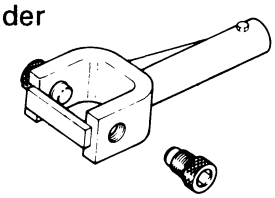
These tools are used to remove, install and rebore the valve guide.

13-A
Universal joint holder
P/N. YM-04062



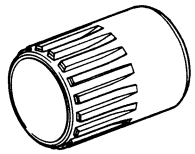
This too is used to remove and install the universal joint.

13-B
Universal joint holder
P/N. 90890-04062



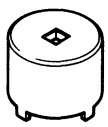
This tool is used to remove and install the universal joint.

14
Bearing retainer wrench
P/N. YM-04128
P/N. 90890-04128



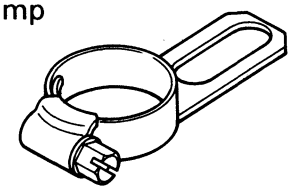
This tool is used to remove and install the bearing retainer.

15
Ring nut wrench
P/N. YM-38404
P/N. 90890-01430



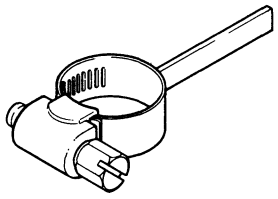
This tool is used to remove and install the bearing retainer.

16
Pinion gear fix clamp
P/N. YM-04129
P/N. 90890-04129



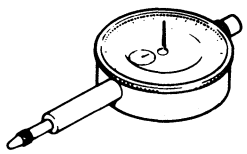
This tool is used to hold the middle drive gear shaft.

17
Gear lash measurement tool
P/N. YM-01231
P/N. 90890-01231



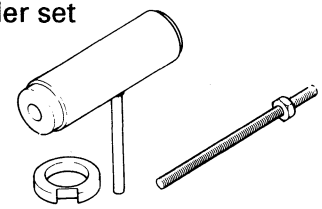
This tool is used to measure the gear lash.

18
Dial gauge
P/N. YM-03097
P/N.90890-03097



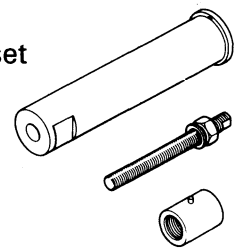
This tool is used to measure the gear lash for the middle gear and final gear.

19-A
Crankshaft installer set
P/N. YU-90050



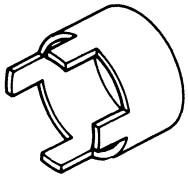
These tools are used to install the crankshaft, buffer boss and oil pump drive gear.

19-B
Buffer boss installer set
P/N. 90890-04088



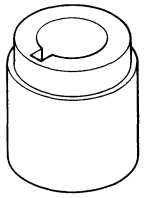
These tools are used to install the crankshaft, buffer boss and oil pump drive gear.

20
Crank pot spacer
P/N. YM-91044
P/N. 90890-04081



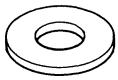
This tool is used to install the crankshaft.

21-A
Pot extension
P/N. YM-33280



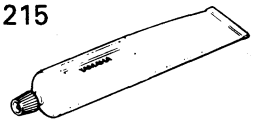
This tool is used to install the crankshaft.

21-B
Spacer
P/N. 90890-01016



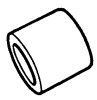
This tool is used to install the crankshaft.

22
Sealant (Quick Gasket®)
P/N. ACC-11001-15-01
YAMAHA bond No. 1215
P/N. 90890-85505



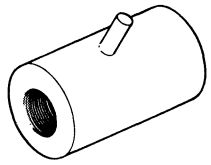
This sealant (bond) is used for crankcase mating surface, etc.

23
Pot spacer
P/N. YM-90070-A



This tool is used to install the oil pump drive gear, and install the buffer boss.

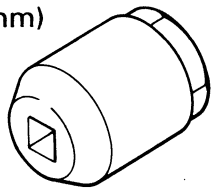
24
Adapter #11
P/N. YM-33279



This tool is used to install the buffer boss.

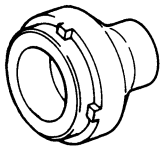
FOR DRIVE TRAIN SERVICE

1
Hexagon wrench (44 mm)
P/N. YM-01462
P/N. 90890-01462



This tool is used to remove and install the bearing retainer.

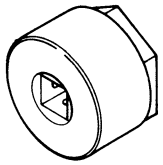
2
Bearing retainer wrench
P/N. YM-04050
P/N. 90890-04050



This tool is used to remove and install the final gear bearing retainer.

FOR CHASSIS SERVICE

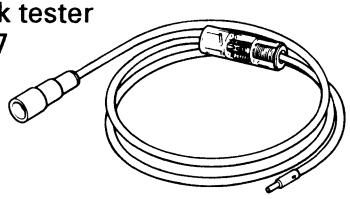
1
Damper rod holder
P/N. YM-01327
P/N. 90890-01327



This tool is used to remove and install the bearing retainer for the steering shaft holder bearing.

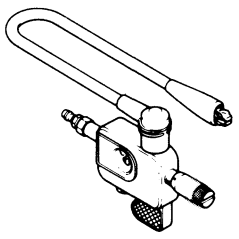
FOR ELECTRICAL COMPONENTS

1-A
Dynamic spark tester
P/N. YM-34487



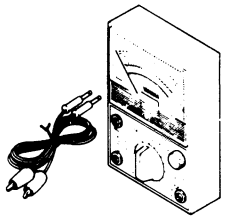
This instrument is necessary for checking the ignition system components.

1-B
Ignition checker
P/N. 90890-06754



This instrument is necessary for checking the ignition system components.

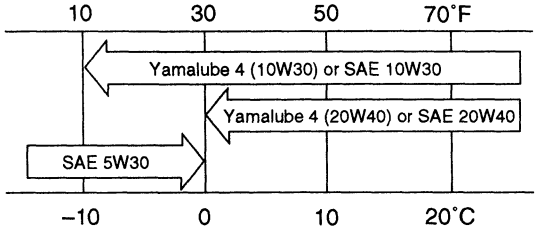
2
Pocket tester
P/N. YU-03112
P/N. 90890-03112



This instrument is invaluable for checking the electrical system.

SPECIFICATIONS

GENERAL SPECIFICATIONS

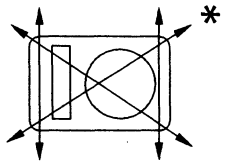
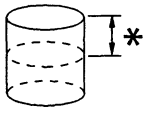
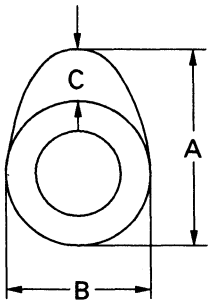
Model	YFM35FXG
Model code:	4KB1
Engine starting number:	4KB-000101
Vehicle identification number:	JY44KBA0*SA000101
Dimensions:	
Overall length	1,870 mm (73.6 in)
Overall width	1,075 mm (42.3 in)
Overall height	1,150 mm (45.3 in)
Seat height	790 mm (31.1 in)
Wheelbase	1,230 mm (48.4 in)
Minimum ground clearance	220 mm (8.66 in)
Minimum turning radius	3,900 mm (153.5 in)
Basic weight:	
With oil and full fuel tank	233.5 kg (515 lb)
Maximum load-except motorcycle	180 kg (397 lb)
Engine:	
Engine type	Air-cooled 4-stroke, SOHC
Cylinder arrangement	Forward-inclined single cylinder
Displacement	348 cm^3
Bore x stroke	83.0 × 64.5 mm (3.27 × 2.54 in)
Compression ratio	9.2 : 1
Compression pressure (STD)	850 kPa (8.5 kg/cm^2, 121 psi) at 350 r/min
Starting system	Electric starter
Lubrication system:	Wet sump
Oil type or grade:	
Engine oil	
Final gear oil Differential gear oil	SAE80API "GL-4" Hypoid Gear Oil SAE80 or SAE80W-90 API "GL-5" Hypoid Gear Oil for L.S.D. (Limited Slip Differential)
Oil capacity:	
Engine oil:	
Periodic oil change	2.9 L (2.6 Imp qt, 3.1 US qt)
With oil filter replacement	3.0 L (2.6 Imp qt, 3.2 US qt)
Total amount	3.5 L (3.1 Imp qt, 3.7 US qt)
Final gear case oil:	
Periodic oil change	0.19 L (0.17 Imp qt, 0.20 US qt)
Total amount	0.25 L (0.22 Imp qt, 0.26 US qt)
Differential gear case oil:	
Periodic oil change	0.18 L (0.16 Imp qt, 0.19 US qt)
Total amount	0.2 L (0.18 Imp qt, 0.21 US qt)

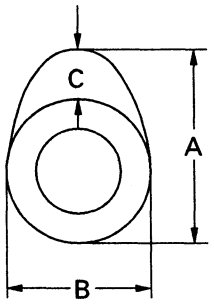
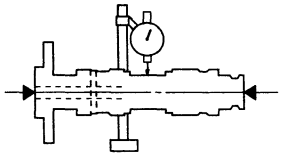
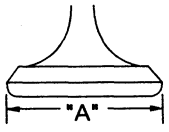
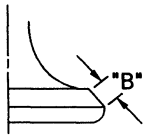
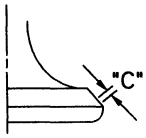
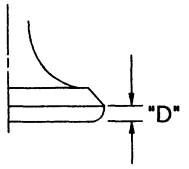
Model		YFM35FXG
Air filter:		Wet type element
Fuel:		
Type		Unleaded fuel recommended
Fuel tank capacity		13 L (2.86 Imp gal, 3.43 US gal)
Fuel reserve amount		1.7 L (0.37 Imp gal, 0.45 US gal)
Carburetor:		
Type/ quantity		BTM36SH × 1
Manufacturer		MIKUNI
Spark plug:		
Type		D8EA/X24ES-U
Manufacturer		NGK/NIPPONDENSO
Spark plug gap		0.6 ~ 0.7 mm (0.024 ~ 0.028 in)
Clutch type:		Wet, centrifugal automatic
Transmission:		
Primary reduction system		Spur gear
Primary reduction ratio		76/24 (3.167)
Secondary reduction system		Shaft drive
Secondary reduction ratio		24/28 × 24/18 × 33/09 (4.190)
Transmission type		Constant mesh 5-speed
Operation		Left foot operation
	1st	38/13 (2.923)
	2nd	34/18 (1.889)
	3rd	30/22 (1.364)
	4th	26/25 (1.040)
	5th	24/29 (0.828)
Reverse gear		22/17 × 35/15 (3.020)
Chassis:		
Frame type		Steel tube frame
Caster angle		4°
Trail		19 mm (0.75 in)
Tread (STD)	Front	830 mm (32.68 in)
Tread (STD)	Rear	820 mm (32.28 in)
Toe-in		0 ~ 5 mm (0 ~ 0.20 in)
Tire:		
Type		Tubeless
Size	(front)	AT23 × 8-12
	(rear)	AT23 × 10-12
Manufacturer	(front)	DUNLOP
	(rear)	DUNLOP
Type	(front)	KT403
	(rear)	KT407
Tire pressure (cold tire):		
Off-road riding		
	Front	22 ~ 28 kPa (0.22 ~ 0.28 kg/cm², 3.2 ~ 4.0 psi)
	Rear	22 ~ 28 kPa (0.22 ~ 0.28 kg/cm², 3.2 ~ 4.0 psi)
Brake:		
Front brake	Type	Dual disc brake
	Operation	Right hand operation
Rear brake	Type	Single disc brake
	Operation	Left hand and right foot operation

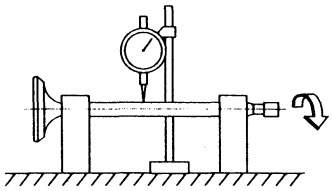
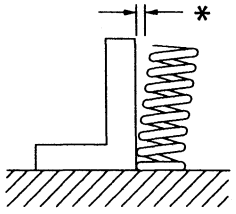
Model	YFM35FXG
Suspension:	
Front suspension	Double wishbone
Rear suspension	Swingarm (monocross)
Shock absorber:	
Front shock absorber	Coil spring/Oil damper
Rear shock absorber	Coil spring/Oil damper
Wheel travel:	
Front wheel travel	180 mm (7.09 in)
Rear wheel travel	180 mm (7.09 in)
Electrical:	
Ignition system	C.D.I.
Generator system	A.C. magneto generator
Battery capacity	12V 12AH
Battery type	GM12CZ-4A-2
Headlight type:	Bulb type (krypton bulb)
Bulb wattage × quantity:	
Headlight	12V 30W/30W × 2
Tail/brake light	12V 7.5W × 1
Indicator light	
NEUTRAL	12V 3.4W × 1
REVERSE	12V 3.4W × 1
OIL TEMPERATURE	12V 3.4W × 1

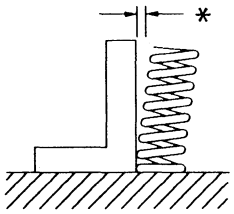
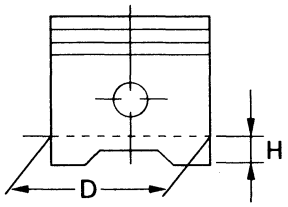
MAINTENANCE SPECIFICATIONS

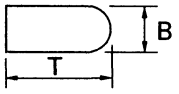
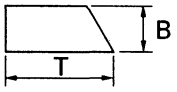
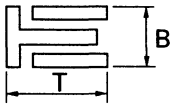
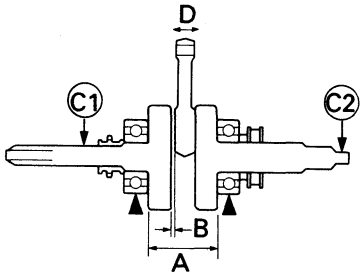
ENGINE

Model	YFM35FXG
Cylinder head: Warp limit  	0.03 mm (0.0012 in) * Lines indicate straightedge measurement.
Cylinder:  Bore size Out of round limit *Measuring point <Wear Limit>	 82.97 ~ 83.02 mm (3.267 ~ 3.269 in) 0.01 mm (0.0004 in) 40 mm (1.57 in) <83.15 mm (3.2736 in)>
Camshaft: Drive method Cam dimensions  Intake "A" <Limit> "B" <Limit> "C"	Chain drive (left) 40.62 ~ 40.72 mm (1.599 ~ 1.603 in) <40.59 mm (1.598 in)> 32.18 ~ 32.28 mm (1.267 ~ 1.271 in) <32.15 mm (1.266 in)> 8.67 mm (0.341 in)

Model		YFM35FXG
Exhaust		
		
	"A" <Limit> "B" <Limit> "C"	40.62 ~ 40.72 mm (1.599 ~ 1.603 in) <40.59 mm (1.598 in)> 32.18 ~ 32.28 mm (1.267 ~ 1.271 in) <32.15 mm (1.266 in)> 8.67 mm (0.341 in)
Camshaft runout limit		0.03 mm (0.0012 in)
		
Cam chain: Cam chain type/No. of links Cam chain adjustment method		 BF05M/90 Automatic
Rocker arm/rocker arm shaft: Bearing inside diameter <Limit> Shaft outside diameter <Limit> Arm-to-shaft clearance <Limit>		 12.000 ~ 12.018 mm (0.4724 ~ 0.4731 in) <12.078 mm (0.4755 in)> 11.981 ~ 11.991 mm (0.4717 ~ 0.4721 in) <11.951 mm (0.4705 in)> 0.009 ~ 0.037 mm (0.0004 ~ 0.0015 in) <0.08 mm (0.0031 in)>
Valve, valve seat, valve guide: Valve clearance (cold)	 IN EX	 0.06 ~ 0.10 mm (0.0024 ~ 0.0039 in) 0.16 ~ 0.20 mm (0.0063 ~ 0.0079 in)
Valve dimensions:		
		
Head Dia		
		
Face Width		
		
Seat Width		
		
Margin Thickness		
"A" head diameter	IN EX	39.9 ~ 40.1 mm (1.571 ~ 1.579 in) 33.9 ~ 34.1 mm (1.335 ~ 1.343 in)
"B" face width	IN EX	2.26 mm (0.089 in) 2.26 mm (0.089 in)

Model		YFM35FXG
"C" seat width	IN	1.2 ~ 1.4 mm (0.047 ~ 0.055 in)
	EX	1.2 ~ 1.4 mm (0.047 ~ 0.055 in)
<Limit>	IN	<1.8 mm (0.071 in)>
	EX	<1.8 mm (0.071 in)>
"D" margin thickness	IN	1.0 ~ 1.4 mm (0.039 ~ 0.055 in)
	EX	0.8 ~ 1.2 mm (0.031 ~ 0.047 in)
Stem outside diameter	IN	6.975 ~ 6.990 mm (0.2746 ~ 0.2752 in)
	EX	6.955 ~ 6.970 mm (0.2738 ~ 0.2744 in)
<Limit>	IN	<6.95 mm (0.274 in)>
	EX	<6.915 mm (0.272 in)>
Guide inside diameter	IN	7.000 ~ 7.012 mm (0.2756 ~ 0.2761 in)
	EX	7.000 ~ 7.012 mm (0.2756 ~ 0.2761 in)
<Limit>	IN	<7.03 mm (0.277 in)>
	EX	<7.03 mm (0.277 in)>
Stem-to-guide clearance	IN	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)
	EX	0.030 ~ 0.057 mm (0.0012 ~ 0.0022 in)
<Limit>	IN	<0.08 mm (0.0031 in)>
	EX	<0.10 mm (0.0039 in)>
Stem runout limit		0.02 mm (0.0008 in)
		
Valve seat width	IN	1.2 ~ 1.4 mm (0.047 ~ 0.055 in)
	EX	1.2 ~ 1.4 mm (0.047 ~ 0.055 in)
<Limit>	IN	<1.8 mm (0.071 in)>
	EX	<1.8 mm (0.071 in)>
Valve spring:		
Inner spring:		
Free length	IN	39.9 mm (1.57 in)
	EX	39.9 mm (1.57 in)
<Limit>	IN	<37.9 mm (1.49 in)>
	EX	<37.9 mm (1.49 in)>
Set length (valve closed)	IN	34.1 mm (1.34 in)
	EX	34.1 mm (1.34 in)
Compressed pressure	IN	9.5 ~ 11.1 kg (20.9 ~ 24.5 lb)
(installed)	EX	9.5 ~ 11.1 kg (20.9 ~ 24.5 lb)
Tilt limit	IN	2.5°/1.6 mm (2.5°/0.06 in)
	EX	2.5°/1.6 mm (2.5°/0.06 in)
		
Direction of winding	IN	Counterclockwise
(top view)	EX	Counterclockwise
		

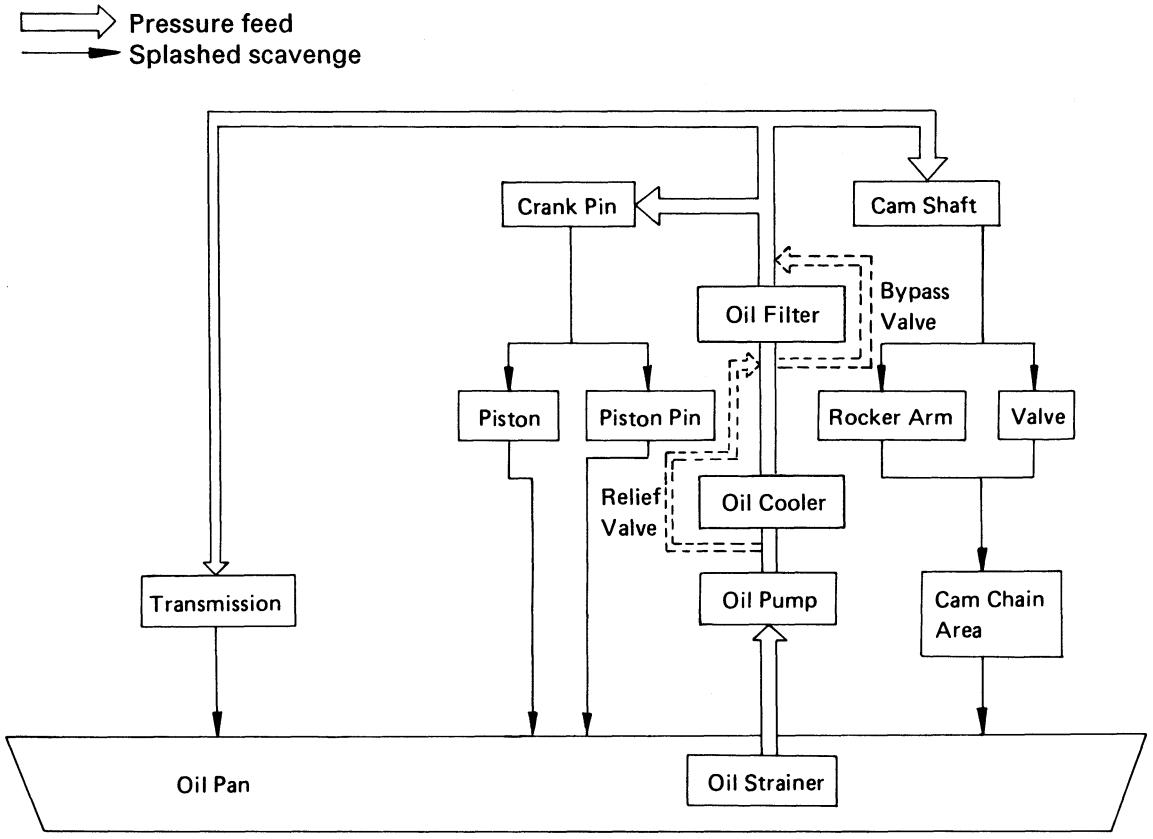
Model		YFM35FXG
Outer spring:		
Free length	IN	43.27 mm (1.70 in)
	EX	43.27 mm (1.70 in)
<Limit>	IN	<41.27 mm (1.62 in)>
	EX	<41.27 mm (1.62 in)>
Set length (valve closed)	IN	37.1 mm (1.46 in)
	EX	37.1 mm (1.46 in)
Compressed pressure (installed)	IN	20.6 ~ 24.2 kg (45.4 ~ 53.4 lb)
	EX	20.6 ~ 24.2 kg (45.4 ~ 53.4 lb)
Tilt limit	IN	2.5°/1.6 mm (2.5°/0.06 in)
	EX	2.5°/1.6 mm (2.5°/0.06 in)
		
Direction of winding (top view)	IN	Clockwise
	EX	Clockwise
		
Piston:		
Piston to cylinder clearance		0.04 ~ 0.06 mm (0.0016 ~ 0.0024 in)
<Limit>		<0.15 mm (0.0059 in)>
Piston size "D"		82.92 ~ 82.97 mm (3.265 ~ 3.267 in)
		
Measuring point "H"		5.5 mm (0.22 in)
Piston off-set		0.5 mm (0.02 in)
Piston off-set direction		IN side
Piston pin bore inside diameter		19.004 ~ 19.015 mm (0.7482 ~ 0.7486 in)
Piston pin outside diameter		18.990 ~ 18.995 mm (0.7476 ~ 0.7478 in)

Model	YFM35FXG
Piston rings:	
Top ring:	
	
Type	Barrel
Dimensions (B × T)	1.2 × 3.3 mm (0.047 × 0.130 in)
End gap (installed)	0.2 ~ 0.4 mm (0.008 ~ 0.016 in)
<Limit>	<0.5 mm (0.020 in)>
Side clearance (installed)	0.045 ~ 0.080 mm (0.0018 ~ 0.0031 in)
<Limit>	<0.12 mm (0.0047 in)>
2nd ring:	
	
Type	Taper
Dimensions (B × T)	1.5 × 3.4 mm (0.059 × 0.134 in)
End gap (installed)	0.2 ~ 0.4 mm (0.008 ~ 0.016 in)
<Limit>	<0.5 mm (0.020 in)>
Side clearance	0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)
<Limit>	<0.12 mm (0.0047 in)>
Oil ring:	
	
Dimensions (B × T)	2.8 × 2.8 mm (0.110 × 0.110 in)
End gap (installed)	0.3 ~ 0.9 mm (0.012 ~ 0.035 in)
Crankshaft:	
	
Crank width "A"	58.95 ~ 59.00 mm (2.321 ~ 2.323 in)
Runout limit "C1"	0.03 mm (0.0012 in)
"C2"	0.06 mm (0.0024 in)
Big end side clearance "B"	0.35 ~ 0.85 mm (0.014 ~ 0.033 in)
<Limit>	<1.0 mm (0.04 in)>
Big end radial clearance	0.010 ~ 0.025 mm (0.0004 ~ 0.0010 in)
Small end free play "D"	0.8 ~ 1.0 mm (0.03 ~ 0.04 in)
<Limit>	<2 mm (0.08 in)>
Balancer:	
Balancer drive method	Gear

Model		YFM35FXG
Clutch:		
Friction plate thickness		2.94 ~ 3.06 mm (0.116 ~ 0.120 in)
Quantity		7
Friction plate wear limit		2.8 mm (0.11 in)
Clutch plate thickness		1.5 ~ 1.7 mm (0.059 ~ 0.067 in)
Quantity		4
Warp limit		0.2 mm (0.008 in)
Clutch plate thickness		1.9 ~ 2.1 mm (0.075 ~ 0.083 in)
Quantity		2
Clutch spring free length		40.1 mm (1.58 in)
Quantity		5
Minimum length		39 mm (1.54 in)
Clutch release method		Inner push, cam push
Automatic centrifugal clutch		
Clutch shoe thickness		2 mm (0.08 in)
<Wear limit>		<1.5 mm (0.06 in)>
Clutch shoe spring free length		42.5 mm (1.67 in)
Clutch-in revolution		1,800 ~ 2,000 r/min
Clutch-stall revolution		2,950 ~ 3,300 r/min
Transmission:		
Main axle deflection limit		0.08 mm (0.003 in)
Drive axle deflection limit		0.08 mm (0.003 in)
Shifter:		
Shifter type		Cam drum and guide bar
Air filter oil grade:		Foam-air-filter oil or SAE10W30 type SE motor oil
Carburetor:		
I. D. mark		4KB 01
Main jet	(M.J)	#135
Main air jet	(M.A.J)	0.6
Jet needle	(J.N)	5HL43-3
Needle jet	(N.J)	O-6 (#765)
Pilot air jet	(P.A.J.1)	0.9
Pilot air jet	(P.A.J.2)	1.0
Pilot outlet	(P.O)	0.8
Pilot jet	(P.J)	#40
Bypass 1	(B.P.1)	0.8
Bypass 2	(B.P.2)	0.8
Bypass 3	(B.P.3)	0.8
Pilot screw	(P.S)	2 turns out
Valve seat size	(V.S)	2.5
Starter jet	(G.S.1)	#62.5
Throttle valve size	(Th.V)	#125
Float height	(F.H)	11.4 ~ 13.4 mm (0.45 ~ 0.53. in)
Fuel level	(F.L)	2.0 ~ 3.0 mm (0.08 ~ 0.12 in)
		Above the float chamber mating surface
Engine idle speed		1,450 ~ 1,550 r/min
Intake vacuum		36.0 kPa (270 mmHg, 10.6 inHg)

Model	YFM35FXG
Lubrication system:	
Oil filter type	Wire mesh type
Oil pump type	Trochoid type
Tip clearance	0.15 mm (0.006 in)
<Limit>	<0.2 mm (0.008 in)>
Side clearance	0.04 ~ 0.09 mm (0.002 ~ 0.004 in)
Bypass valve setting pressure	80 ~ 120 kPa (0.8 ~ 1.2 kg/cm², 11.38 ~ 17.07 psi)
Relief valve operating pressure	60 kPa (0.6 kg/cm², 8.53 psi)
Oil pressure (hot)	8 kPa (0.08 kg/cm², 1.14 psi) at 1,400 r/min
Pressure check location	HEAD CYLINDER

Lubrication chart:



Shaft drive:	
Middle backlash	0.1 ~ 0.3 mm (0.004 ~ 0.012 in)
Final gear backlash	0.1 ~ 0.2 mm (0.004 ~ 0.008 in)
Differential gear backlash	0.08 ~ 0.24 mm (0.003 ~ 0.009 in)

TIGHTENING TORQUE

Parts to be tightened	Parts name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Cylinder head oil passage	Union bolt	M6	1	7	0.7	5.1	
Cylinder head (exhaust pipe)	Stud bolt	M6	2	7	0.7	5.1	
Cylinder head	Bolt	M10	4	40	4.0	29	
	Bolt	M8	2	20	2.0	14	
Breather plate	Bolt	M6	2	10	1.0	7.2	◀5
Bearing retainer (camshaft)	Bolt	M6	2	8	0.8	5.8	Use lock washer
Spark plug	—	M12	1	18	1.8	13	
Cylinder	Bolt	M6	1	10	1.0	7.2	
CDI magneto	Bolt	M10	1	50	5.0	36	
Balancer driven gear	Nut	M16	1	60	6.0	43	Use lock washer
Valve adjusting screw	Nut	M7	2	20	2.0	14	
Cam sprocket	Bolt	M10	1	60	6.0	43	
Cam chain tensioner cap	Plug	M11	1	23	2.3	17	
Cam chain tensioner	Bolt	M6	2	10	1.0	7.2	
Cam chain guide	Bolt	M6	2	10	1.0	7.2	
Oil pump assembly	Screw	M6	1	7	0.7	5.1	
Oil pump	Screw	M6	3	7.5	0.75	5.4	
Oil drain plug	Plug	M35	1	32	3.2	23	
Oil filter cover joint pipe	Joint	M14	2	50	5.0	36	
Oil delivery pipe (crankcase cover)	Union bolt	M8	2	18	1.8	13	
Oil cooler hose	Nut	—	4	35	3.5	25	
Oil cooler	Bolt	M6	2	7	0.7	5.1	
Oil delivery pipe (crankcase)	Union bolt	M8	2	16	1.6	11	
Carburetor joint	Bolt	M8	2	20	2.0	14	
Carburetor	Nut	M8	2	16	1.6	11	
Air filter	Bolt	M6	3	7	0.7	5.1	
Muffler and exhaust pipe	Bolt	M8	1	20	2.0	14	
Muffler and pipe	Bolt	M6	1	8	0.8	5.8	
Exhaust pipe protector	Bolt	M6	3	11	1.1	8.0	◀5
Exhaust pipe	Nut	M6	2	12	1.2	8.7	
Muffler	Bolt	M8	2	27	2.7	19	◀5
Bearing retainer (crankcase)	Screw	M6	4	8	0.8	5.8	◀5
Crankcase cover (left)	Bolt	M5	3	7	0.7	5.1	
Bearing retainer (crankcase cover)	Torx screw	M6	3	10	1.0	7.2	◀5
Crankcase	Bolt	M8	3	26	2.6	19	◀5
Starter one way clutch							
(for USA)	Bolt	M8	3	30	3.0	22	◀5
(except for USA)	Bolt	M8	6	30	3.0	22	◀5
Clutch carrier	Nut	M22	1	140	14	100	Stake
Pressure plate	Screw	M6	5	8	0.8	5.8	
Clutch boss	Nut	M16	1	90	9.0	65	Use lock washer
Bearing retainer							
(middle drive axle)	Torx screw	M8	4	25	2.5	18	◀5
Middle drive axle	Nut	M22	1	130	13	94	Stake
Bearing housing	Bolt	M8	6	32	3.2	23	
Bearing housing	Nut	M65	1	110	11	80	◀5
Driven pinion	Nut	M14	1	97	9.7	70	◀5
Driven pinion	Bolt	M8	4	25	2.5	18	
Universal joint	Nut	M14	1	97	9.7	70	◀5
Crankcase (left)	Nut	M55	1	80	8.0	58	◀5
Shift cam side plate	Torx screw	M6	1	12	1.2	8.7	◀5
Shift cam segment	Torx screw	M5	1	9	0.9	6.5	◀5
Stopper lever	Bolt	M6	1	10	1.0	7.2	◀5

Parts to be tightened	Parts name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Stopper screw (crankcase)	Screw	M8	1	22	2.2	16	Use lock washer
Clutch adjuster locknut	Nut	M8	1	20	2.0	14	
Shifter bracket	Bolt	M6	1	13	1.3	9.4	
Shift arm	Bolt	M6	1	10	1.0	7.2	
Shift rod	Nut	M6	2	10	1.0	7.2	
Stator coil							
(for USA)	Bolt	M5	3	7	0.7	5.1	LT
(except for USA)	Screw	M6	3	7	0.7	5.1	LT
Crankcase cover left-thrust washer (except for USA)	Screw	M5	3	7	0.7	5.1	LT
Pickup coil							
(for USA)	Bolt	M5	4	7	0.7	5.1	LT
(except for USA)	Bolt	M5	2	7	0.7	5.1	LT
Lead holder (except for USA)	Bolt	M5	2	7	0.7	5.1	
Ignition coil	Bolt	M6	2	7	0.7	5.1	
Thermo swich	—	M12	1	20	2.0	14	
Gear position switch	Bolt	M6	1	6	0.6	4.3	LT

CHASSIS

Model		YFM35FXG
Steering system:		
Steering bearing type		Ball bearing
Front suspension:		
Shock absorber travel		112.5 mm (4.23 in)
Fork spring free length		319.7 mm (12.6 in)
Spring rate	(K1)	19.0 N/mm (1.9 kg/mm 56.0 lb/in)
Stroke	(K1)	0 ~ 112.5 mm (0.00 ~ 4.43 in)
Optional spring		No
Rear suspension:		
Shock absorber travel		120 mm (4.72 in)
Spring free length		285.5 mm (11.2 in)
Fitting length		243.5 mm (9.59 in)
Spring rate	(K1)	27.0 N/mm (2.7 kg/mm 151.2 lb/in)
Stroke	(K1)	0 ~ 120 mm (0.00 ~ 4.72 in)
Optional spring		No
Swingarm:		
Free play limit	End	1 mm (0.04 in)
	Side	1 mm (0.04 in)
Front wheel:		
Type		Disc wheel
Rim size		12 × 6.0AT
Rim material		Steel
Rim runout limit	Radial	2 mm (0.08 in)
	Lateral	2 mm (0.08 in)
Rear wheel:		
Type		Disc wheel
Rim size		12 × 8.0AT
Rim material		Steel
Rim runout limit	Radial	2 mm (0.08 in)
	Lateral	2 mm (0.08 in)
Front disc brake:		
Type		Dual
Disc outside diameter × thickness		180 × 3.5 mm (7.09 × 0.14 in)
Pad thickness	Inner	4.5 mm (0.18 in)
	<Limit>	<1.0 mm (0.04 in)>
Pad thickness	Outer	4.5 mm (0.18 in)
	<Limit>	<1.0 mm (0.04 in)>
Master cylinder inside diameter		14 mm (0.55 in)
Caliper cylinder inside diameter		32 mm (1.26 in)
Brake fluid type		DOT #4
Rear disc brake:		
Type		Single
Disc outside diameter × thickness		220 × 4 mm (8.66 × 0.16 in)
Pad thickness	Inner	4.5 mm (0.18 in)
	<Limit>	<1.0 mm (0.04 in)>
Pad thickness	Outer	4.5 mm (0.18 in)
	<Limit>	<1.0 mm (0.04 in)>
Master cylinder inside diameter		12.7 mm (0.50 in)
Caliper cylinder inside diameter		33.96 mm (1.34 in)
Brake fluid type		DOT #4

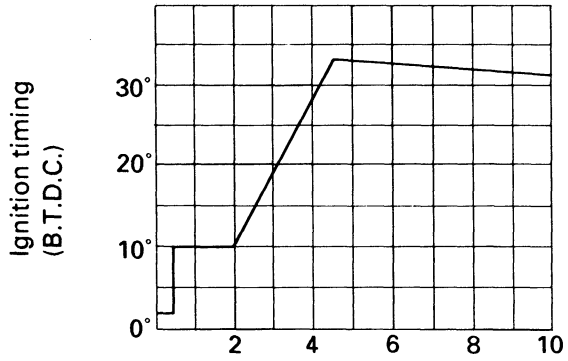
Model	YFM35FXG
Front brake lever: Brake lever free play (at lever end)	 2 ~ 5 mm (0.08 ~ 0.20 in)
Rear brake lever & brake pedal: Brake lever free play Brake pedal position	 0 mm (0 in) 10 mm (0.39 in)

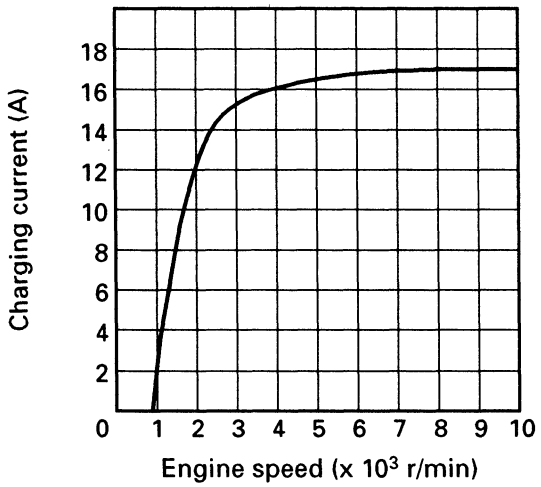
TIGHTENING TORQUE

Parts to be tightened	Parts name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Engine stay (front-upper) and frame	Bolt	M8 × 1.25	2	30	3.0	22	
Engine stay (front-lower) and frame	Nut	M8 × 1.25	2	30	3.0	22	
Engine stay (front-upper) and engine	Nut	M8 × 1.25	1	30	3.0	22	
Engine stay (front-lower) and engine	Nut	M10 × 1.25	1	55	5.5	40	
Engine and frame (rear-upper)	Nut	M10 × 1.25	1	55	5.5	40	
Engine and frame (rear-under)	Nut	M10 × 1.25	1	55	5.5	40	
Frame and bearing retainer (steering shaft holder bearing)	Nut	M42 × 1.0	1	40	4.0	29	
Pivot shaft and frame	Bolt	M22 × 1.5	2	6	0.6	4.3	
Pivot shaft and nut	Nut	M22 × 1.5	2	130	13.0	94	
Rear shock absorber and frame	Nut	M12 × 1.25	1	59	5.9	43	
Rear gear housing and swingarm	Nut	M10 × 1.25	4	57	5.7	41	①
Bearing housing and swingarm	Bolt	M10 × 1.25	4	63	6.3	45	
Front gear case and frame	Nut	M10 × 1.25	2	64	6.4	46	
Upper arm and frame	Nut	M10 × 1.25	4	45	4.5	32	
Lower arm and frame	Nut	M10 × 1.25	4	45	4.5	32	
Front shock absorber and frame	Nut	M10 × 1.25	2	45	4.5	32	
Front shock absorber and upper arm	Nut	M10 × 1.25	2	45	4.5	32	
Steering shaft and frame	Nut	M10 × 1.25	1	35	3.5	25	
Steering shaft holder and frame	Bolt	M8 × 1.25	2	23	2.3	17	Use lock washer
Steering shaft and handlebar holder	Bolt	M8 × 1.25	4	23	2.3	17	
Steering shaft and tie rod end	Nut	M10 × 1.25	2	25	2.5	18	
Tie rod and locknut	Nut	M10 × 1.25	4	35	3.5	25	
Steering knuckle and upper arm	Nut	M10 × 1.25	2	25	2.5	18	
Steering knuckle and lower arm	Nut	M10 × 1.25	2	48	4.8	35	
Steering knuckle and tie rod	Nut	M10 × 1.25	2	25	2.5	18	
Fuel tank and fuel cock	Screw	M6 × 1.0	2	4	0.4	2.9	
Front wheel and wheel hub	Nut	M10 × 1.25	8	64	6.4	46	
Front axle and wheel hub	Nut	M16 × 1.5	2	150	15.0	110	
Steering knuckle and front brake caliper	Bolt	M8 × 1.25	4	30	3.0	22	
Front brake disc and wheel hub	Bolt	M8 × 1.25	8	30	3.0	22	
Rear wheel and wheel hub	Nut	M10 × 1.25	8	64	6.4	46	
Rear axle and nut	Nut	M16 × 1.5	2	150	15.0	110	
Swingarm and caliper bracket	Bolt	M8 × 1.25	4	28	2.8	20	
Rear brake caliper and caliper bracket	Bolt	M8 × 1.25	2	26	2.6	19	
Rear brake disc and bracket	Bolt	M10 × 1.25	4	28	2.8	20	
Parking brake adjuster locknut	Nut	M8 × 1.25	1	16	1.6	11	
Front brake pipe nut	Nut	M10 × 1.0	4	19	1.9	13	
Front brake hose union bolt	Bolt	M10 × 1.25	3	27	2.7	19	
Rear brake hose union bolt	Bolt	M10 × 1.25	2	30	3.0	22	

Parts to be tightened	Parts name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kg	ft•lb	
Master cylinder and handle-bar	Bolt	M6 × 1.0	2	9	0.9	6.5	
Footrest and frame	Bolt	M10 × 1.25	4	64	6.4	46	
Rear master cylinder and frame	Bolt	M8 × 1.25	2	23	2.3	17	
Front carrier bar and frame	Bolt	M8 × 1.25	6	31	3.1	22	
Rear carrier bar and frame	Bolt	M8 × 1.25	3	31	3.1	22	
Final gear case oil filler bolt	Bolt	M14 × 1.5	1	25	2.5	18	
Final gear case oil drain bolt	Bolt	M14 × 1.5	1	25	2.5	18	
Front differential gear case filler bolt	Bolt	—	1	12	1.2	8.7	
Front differential gear case drain bolt	Bolt	M8	1	12	1.2	8.7	

ELECTRICAL

Model	YFM35FXG
Voltage:	12V
Ignition system: Ignition timing (B.T.D.C.) Advanced timing (B.T.D.C) Advancer type	 10° at 1,000 r/min 33° at 5,000 r/min Electrical type
	
C.D.I.: Magneto model/manufacturer Pickup coil resistance/color Source coil resistance/color C.D.I. unit model/manufacturer	 F004T20471/MITSUBISHI 459 ~ 561 Ω at 20°C (68°F)/(White/Green-White/Red) 459 ~ 561 Ω at 20°C (68°F)/(Blue-White/Red) 270 ~ 330 Ω at 20°C (68°F)/(Brown-Green) F008T17071/MITSUBISHI
Ignition coil: Model/Manufacturer Minimum spark gap Primary winding resistance Secondary winding resistance	 F006T53581/MITSUBISHI 6 mm (0.24 in) 0.36 ~ 0.48 Ω at 20°C (68°F) 5.44 ~ 7.36 kΩ at 20°C (68°F)
Spark plug cap: Type Resistance	 Resin type 10 kΩ
Charging system: Type Model/manufacturer Nominal output	 A.C. magneto generator F004T20471/MITSUBISHI 14V 12.5A at 3,000 r/min

Model	YFM35FXG
	
Stator coil resistance/color	0.45 ~ 0.55 Ω at 20°C (68°F)/(White-White)
Rectifier: Model/manufacturer Capacity Withstand voltage	 SH640A-12/SHINDENGEN 20A 200V
Battery: Specific gravity	 1.280
Electric starter system: Type Starter motor: Model/manufacturer I.D. number Output Armature coil resistance Brush overall length <Limit> Spring force Commutator diameter <Wear limit> Mica undercut Starter relay: Model/manufacturer Amperage rating Coil winding resistance/color	 Constant mesh type DB4DS/NIPPONDENSO DB4DS 0.7 kW 0.011 ~ 0.013 Ω at 20°C (68°F) 12 mm (0.47 in) <8.5 mm (0.33 in)> 650 ~ 950 g (22.9 ~ 33.5 oz) 28 mm (1.10 in) <27 mm (1.06 in)> 0.6 mm (0.02 in) MS5F-441/JIDOSHADENKI 100 A 4.18 ~ 4.62 Ω at 20°C (68°F)/ (Blue/White-Red/White)
Circuit breaker: Type: Amperage for individual circuit MAIN	 Fuse 30A × 1

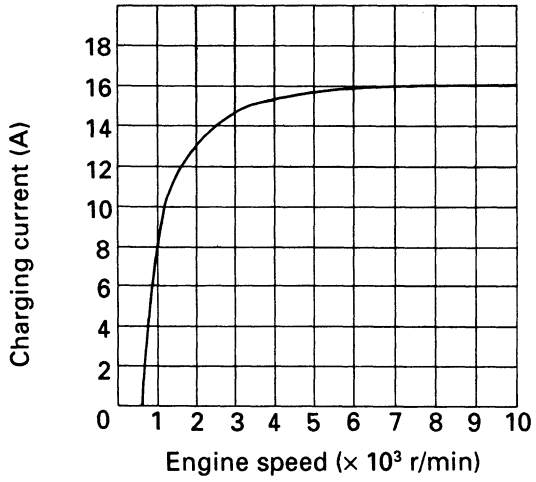
EXCLUSIVE SPECIFICATIONS

The following specifications are exclusive for the below listed countries.

For specifications other than below, please refer to the General and maintenance specifications.

For Canada

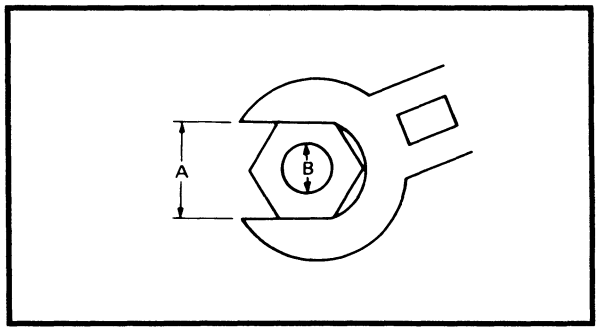
Model code	4KB2
Engine start number	4KB-022101
Vehicle identification number	JY44KBN0*SA022101
Starting system	Electric and recoil starter
Fuel: Type	 Regular unleaded gasoline
Spark plug: Type Manufacturer	 DR8EA NGK
C.D.I.: Magneto model/manufacturer Pickup coil resistance/color C.D.I. unit model/manufacturer	 F004T42371/MITSUBISHI 459 ~ 561 Ω at 20°C (68°F)/(White/Red-White/Green) F008T32371/MITSUBISHI
Charging system: Model/manufacturer Standard output	 F004T42371/MITSUBISHI 14V 12A at 3,000 r/min
Stator coil resistance/color	0.70 ~ 0.86 Ω at 20°C (68°F)/(White-White)



GENERAL TORQUE SPECIFICATIONS

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

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



A: Distance across flats
B: Outside thread diameter

LUBRICATION POINTS AND LUBRICANT TYPE

ENGINE

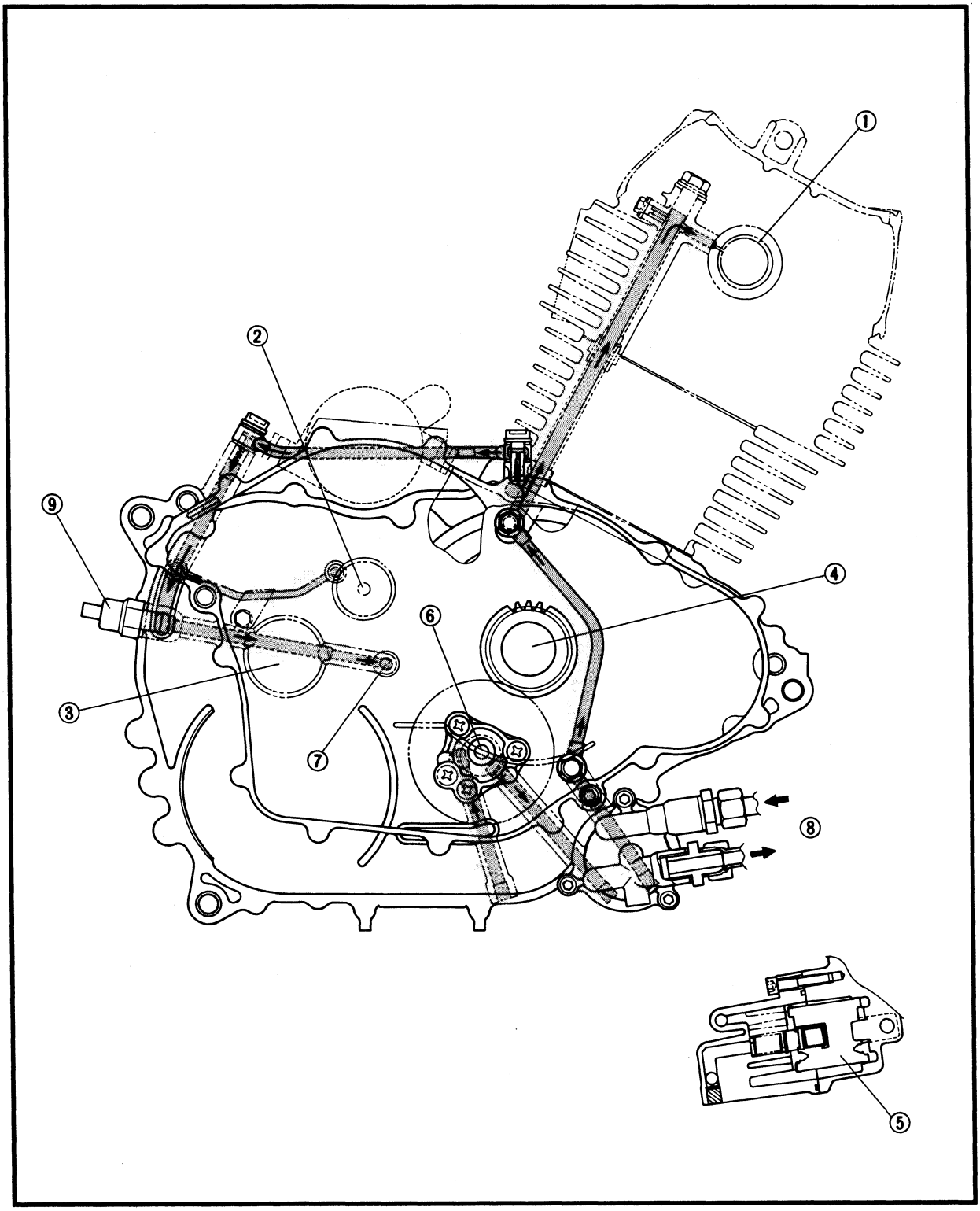
Lubrication points	Lubricant type
Oil seal lips (all)	LS
O-rings (all)	LS
Bearings (all)	E
Valve stem/valve stem end	M
Camshaft (cam lobe)	M
Cylinder head bolt/washer	E
Crank pin	E
Connecting rod (bearing)	E
Balancer drive gear	E
Piston surface/piston rings	E
Piston pin	E
Baffer boss	E
Oil pump shaft, rotor, housing	E
Starter idle gear 1,2	E
Starter wheel gear	E
Primary driven gear	E
Push rod	LS
Ball (push rod)	LS
Transmission gear (wheel/pinion)	M
Axle (main/drive)	M
Shift fork/guide bar	E
Shift cam/shift shaft	E
Reverse shift lever	E
Shift ball holder/guide plate	M
Clutch housing	E
Gear coupling	E
Driven cam	M
Crankcase mating surfaces	Sealant (Quick Gasket®) Yamaha Bond No.1215
Middle drive axle cover	Sealant (Quick Gasket®) Yamaha Bond No.1215
Stator lead grommet (left side crankcase)	Sealant (Quick Gasket®) Yamaha Bond No.1215
Neutral lead grommet (left side crankcase)	Sealant (Quick Gasket®) Yamaha Bond No.1215

CHASSIS

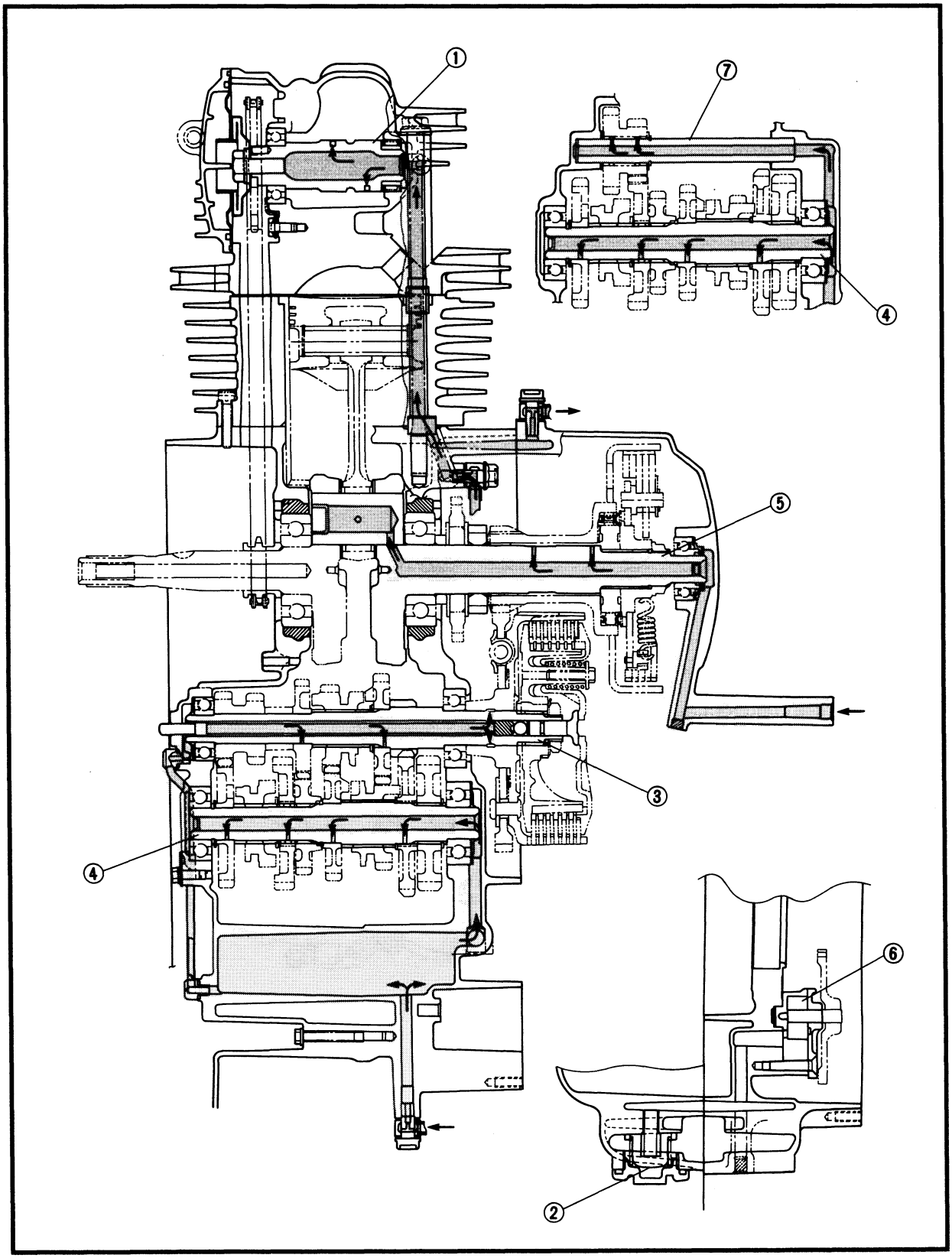
Lubrication points	Lubricant type
Oil seal lips (all)	LS
O-rings (all)	LS
Steering shaft (bushes)	LS
Wheel bearings	LS
Throttle cable end (at throttle lever)	LS
Brake cable ends	LS
Front arms (bushes)	LS
Pivot shafts	LS
Swingarm (bearings)	LS
Brake lever (pivoting point)	LS
Throttle lever (pivoting point)	LS
Brake pedal (pivoting point)	LS
Rear shock absorber (lower pivoting point)	LS
Drive shaft spline	LS
Rear gear housing and swingarm	Sealant (Quick Gasket®) Yamaha Bond No.1215
Rear caliper bracket and swingarm	Sealant (Quick Gasket®) Yamaha Bond No.1215

LUBRICATION DIAGRAMS

① Camshaft
② Main axle
③ Drive axle
④ Crankshaft
⑤ Oil filter
⑥ Oil pump
⑦ Idle axle
⑧ Oil cooler
⑨ Thermo switch

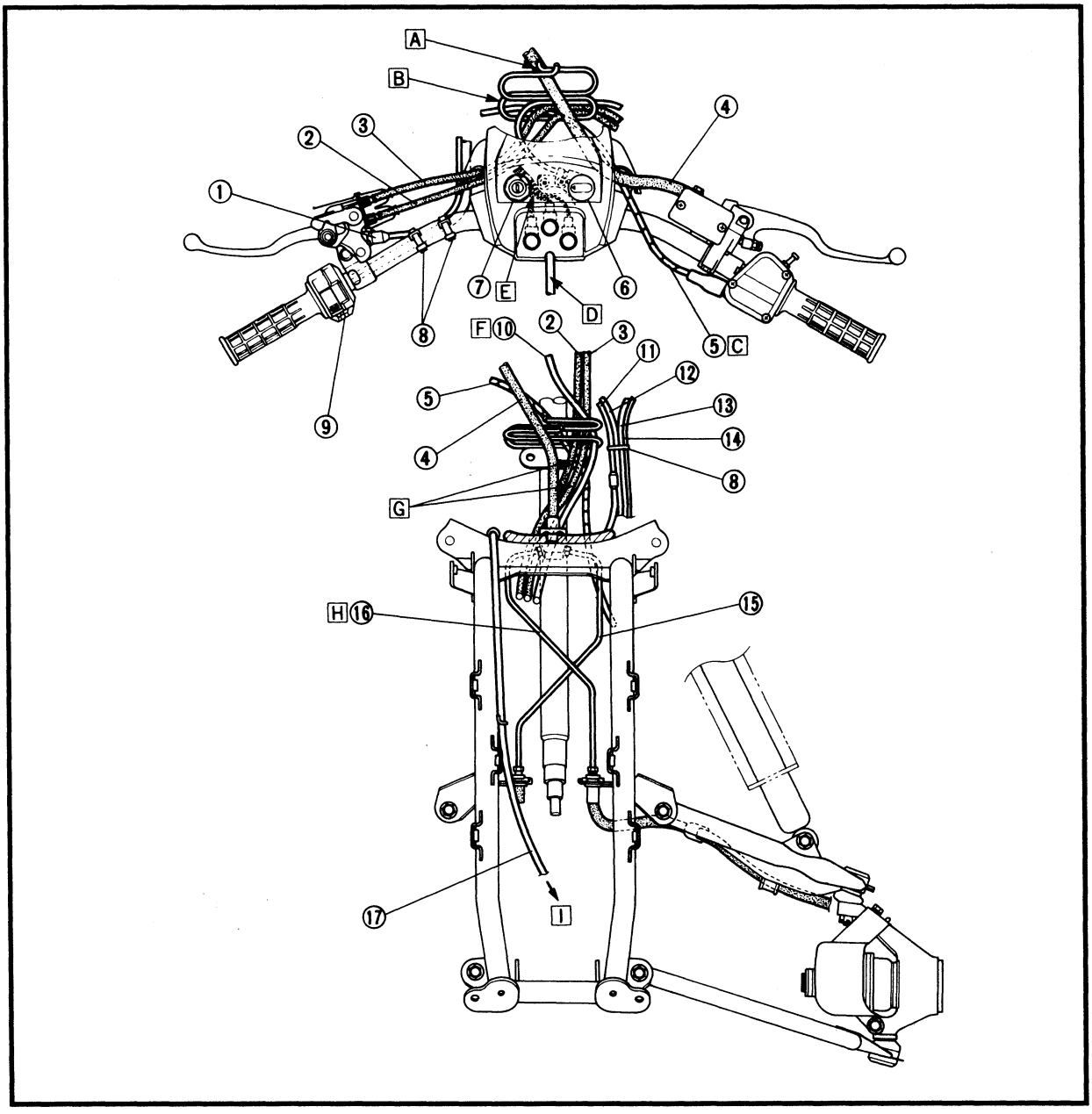


① Camshaft
② Oil stariner
③ Main axle
④ Drive axle
⑤ Crankshaft
⑥ Oil pump
⑦ Idle axle



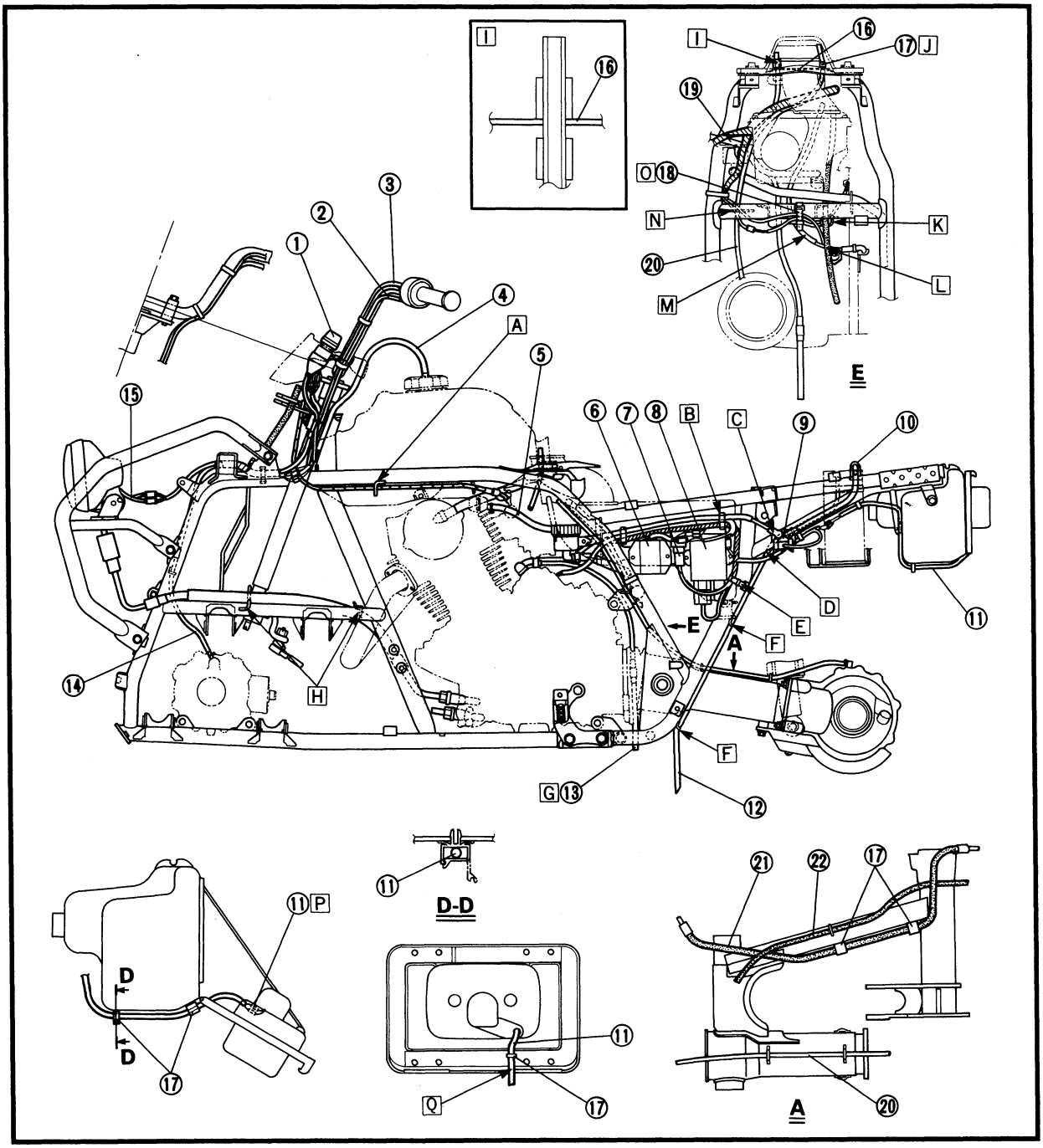
CABLE ROUTING

① Rear brake switch
② Rear brake cable
③ Parking brake cable
④ Front brake hose
⑤ Throttle cable
⑥ Reverse control knob
⑦ Main switch
⑧ Band
⑨ Handlebar switch
⑩ Reverse control cable
⑪ Main switch lead
⑫ Indicator light lead
⑬ Handlebar switch lead
⑭ Rear brake switch lead
⑮ Brake pipe 1
⑯ Brake pipe 2
⑰ Breather hose
[A] Pass the brake hose through the wire guide located at the front.
[B] Pass the throttle cable, the rear brake cable, the parking brake cable and the reverse control cable through the wire guide located at the rear.
[C] Pass the throttle cable inside the handlebar protector rib.
[D] Insert the breather hose into the hole of the handlebar protector.
[E] Connect the indicator light leads inside the handlebar protector, then pass it between the reverse control lever bracket and the main switch.
[F] Pass the reverse control cable in front of the rear brake cable and the parking brake cable.
[G] Pass the rear brake cable and the parking brake cable in front of the throttle cable.
[H] Pass brake pipe 2 in front of brake pipe1.
[I] To front axle gear case.

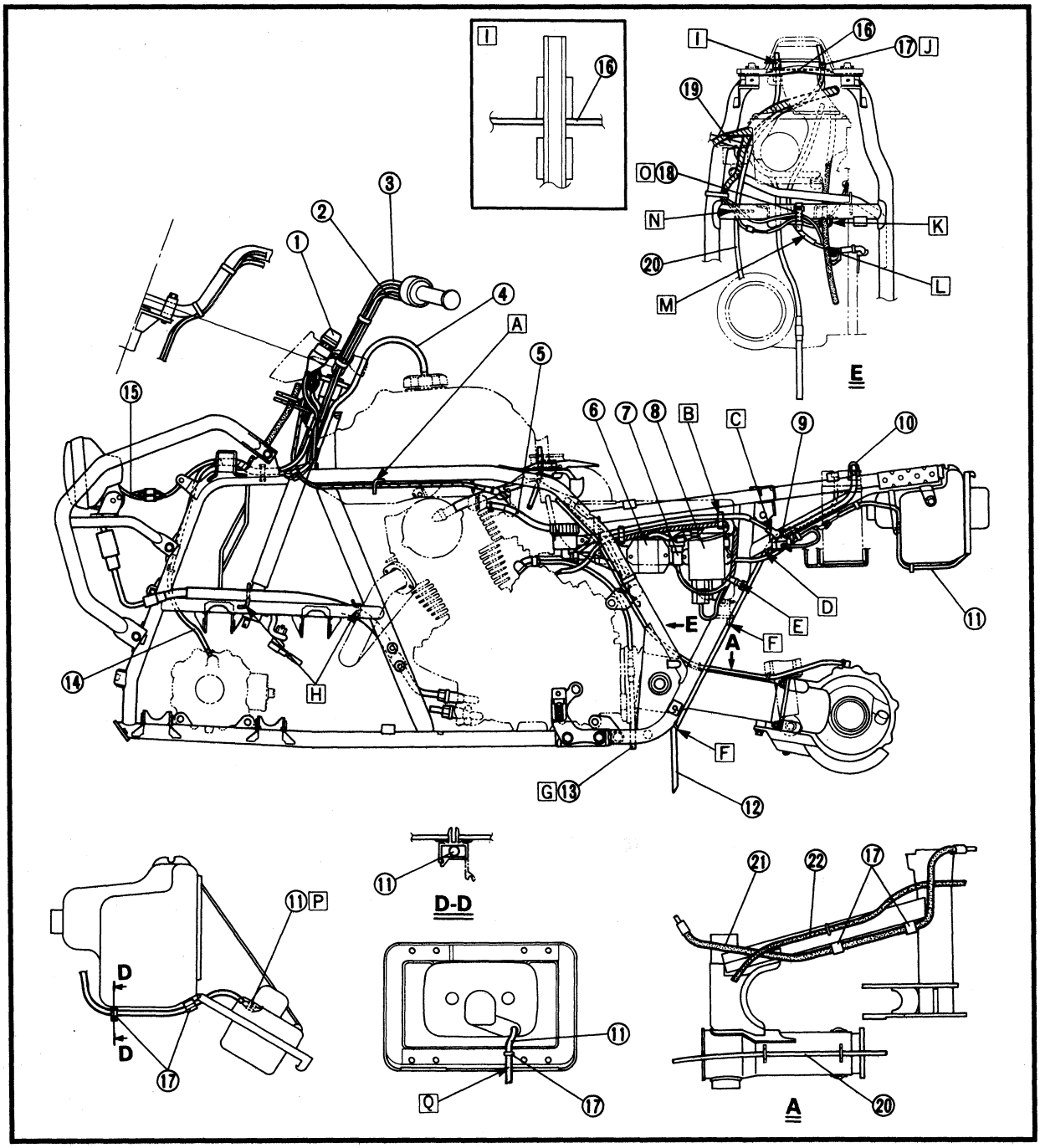


① Main switch
② Handlebar switch lead
③ Rear brake switch lead
④ Breather hose
⑤ Fuel hose
⑥ Rectifier/regulator
⑦ Starting circuit cut-off relay
⑧ CDI unit
⑨ Starter relay
⑩ Battery positive lead
⑪ Tail light lead
⑫ Battery breather hose
⑬ Carburetor overflow hose
⑭ Breather hose
⑮ Headlight lead
⑯ Damper plate
⑰ Clamp
⑱ Band
⑲ Starter motor lead
⑳ Breather hose (rear gear housing)
㉑ Rear brake hose
㉒ Parking brake cable

[A] Pass the throttle cable through the wire guide.
[B] Clamp the starter motor lead, making sure that it is not slack.
[C] Connect the starter motor lead at an angle of between 0° and 30°.
[D] Pass the battery breather hose through the wire guide inside the frame.
[E] Clamp the wireharness.

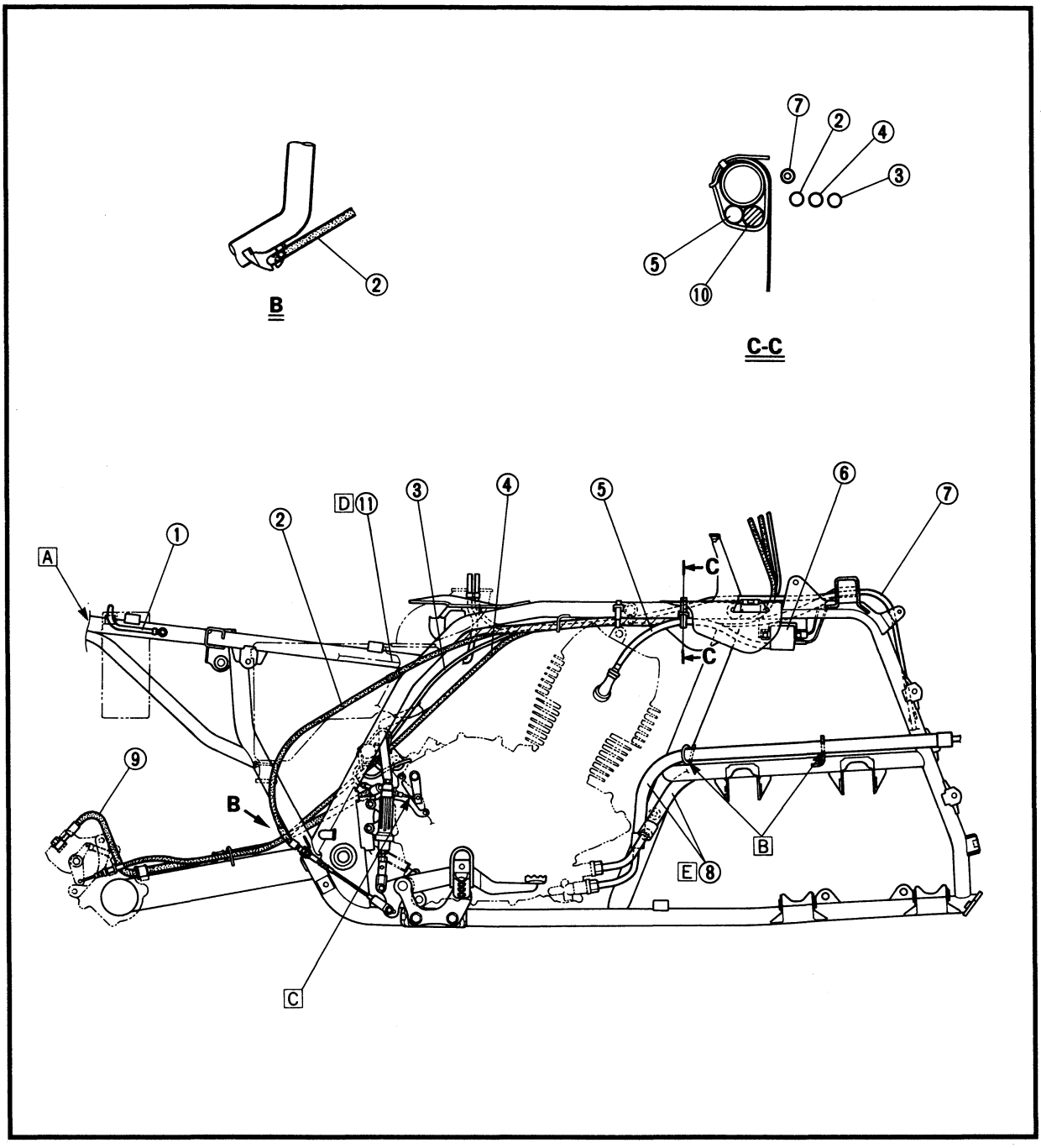


[F] Pass the battery breather hose through the wire guide.
[G] Pass the carburetor overflow hose through the cross pipe frame.
[H] Pass the oil cooler hose through the wire guide.
[I] Pass the carburetor air vent hose through the guide hole in the damper plate. Make sure that the spacers on the hose engage with the damper plate.
[J] Pass the front axle gear case breather hose and the rear gear housing breather hose through the guide hole in the damper plate.
[K] Pass the parking brake cable through the wire guide.
[L] Make sure that the reverse control cable and the parking brake cable do not touch each other.
[M] Pass the reverse control cable between the frame bracket and the engine.
[N] Pass the wireharness and the breather hose through the wire guide.
[O] Bind the thermo switch lead and the neutral switch lead together with a band.
[P] Connect the tail light leads inside the box lid.
[Q] Pass the tail light lead through the slit in the seal.



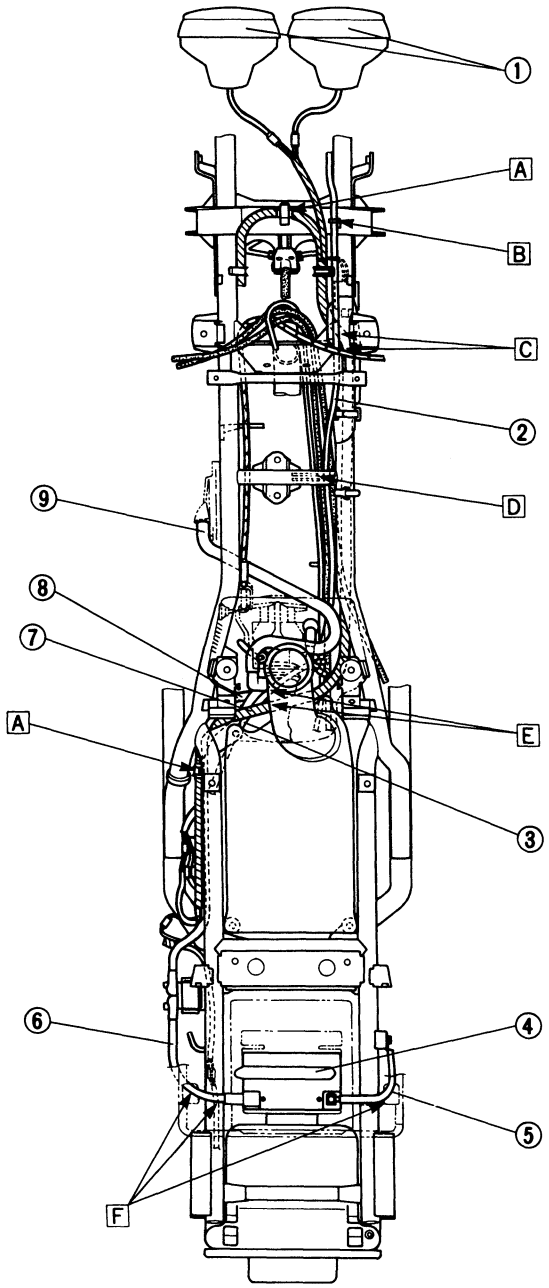
① Battery negative lead
② Rear brake cable
③ Reverse control cable
④ Parking brake cable
⑤ Spark plug lead
⑥ Ignision coil
⑦ Breather hose (front axle gear case)
⑧ Oil cooler hose
⑨ Rear brake hose
⑩ Wireharness
⑪ Rear fender

[A] Connect the battery negative lead at an angle of between 0° and 5°.
[B] Pass the oil cooler hose through the wire guide.
[C] Adjust the length of the protruding edge of the reverse control cable to the specified length. Make sure that it is not slack.
[D] Align the edge of the rear brake cable protector spring with the tip of the rear fender.
[E] Pass the oil cooler hoses outside the frame. Make sure that the hoses do not touch the frame.



① Headlights
② Breather hose (front axle gear case)
③ Breather hose (rear gear housing)
④ Battery
⑤ Battery negative lead
⑥ Battery positive lead
⑦ Wireharness
⑧ Starter motor lead
⑨ Crankcase breather hose

[A] Clamp the wireharness at the point where the white tape is affixed to it.
[B] Pass the breather hose through the wire guide.
[C] Pass the breather hose through the guide hole in the frame bracket and pass it above the damper plate.
[D] Pass the reverse control cable, the parking brace cable, the breather hose and the rear brake cable through the wire guide. Position these cables in the above order from inside to outside.
[E] Pass the wireharness and the breather hose above the carburetor joint.
[F] Pass the battery leads in front of the rear fender's rim and then pass them through the guide hole in the rear fender.



PERIODIC INSPECTION AND ADJUSTMENT

INTRODUCTION

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

PERIODIC MAINTENANCE/LUBRICATION

Item	Remarks	Initial			Every	
		1 months	3 months	6 months	6 months	1 year
Valve(s)*	Check valve clearance. Adjust if necessary.	○		○	○	○
Spark plug	Check condition. Clean or replace if necessary.	○	○	○	○	○
Air filter	Clean. Replace if necessary.	Every 20~40 hours (More often in wet or dusty areas.)				
Carburetor*	Check idle speed/starter operation. Adjust if necessary.		○	○	○	○
Fuel line*	Check fuel hose for cracks or damage. Replace if necessary.			○	○	○
Engine oil	Replace (Warm engine before draining).	○		○	○	○
Engine oil filter	Replace.	○		○		○
Engine oil strainer	Clean.	○		○		○
Final gear oil Differential gear oil	Check oil level/oil leakage. Replace every 12 months.	○				○
Brakes*	Check operation/fluid leakage/see NOTE. Correct if necessary.	○	○	○	○	○
Clutch*	Check operation. Adjust if necessary.	○		○	○	○
Reverse release cable*	Check operation. Adjust if necessary.			○	○	○
Wheels*	Check balance/damage/runout. Replace if necessary.	○		○	○	○
Wheel bearings*	Check bearing assembly for looseness/damage. Replace if damaged.	○		○	○	○

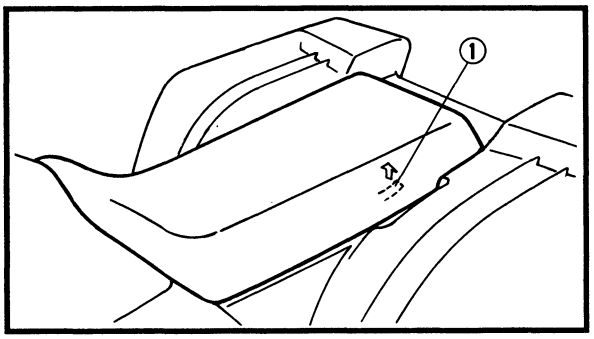


Item	Remarks	Initial			Every	
		1 months	3 months	6 months	6 months	1 year
Steering system*	Check operation/Replace if damaged. Check toe-in/Adjust if necessary.	○	○	○	○	○
Rubber boots*	Replace if damged.	○				○
Fittings/Fasteners*	Check all chassis fittings and fasteners. Correct if necessary.	○	○	○	○	○
Battery*	Check specific gravity. Check that the breather pipe is positioned properly. Correct if necessary.	○	○	○	○	○

*It is recommended that these items be serviced by a Yamaha dealer.

NOTE:

Recommended brake fluid : DOT #4 (If DOT #4 is not available, #3 can be used.)



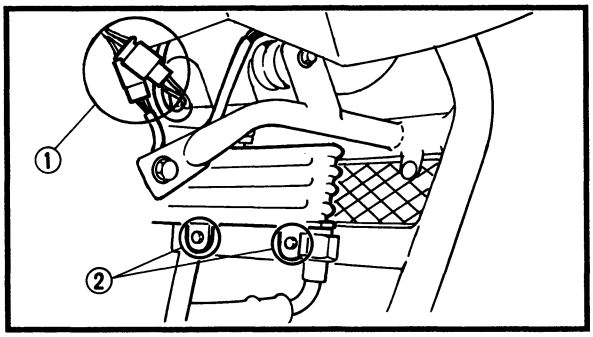
SEAT, CARRIERS, FENDERS AND FUEL TANK

REMOVAL

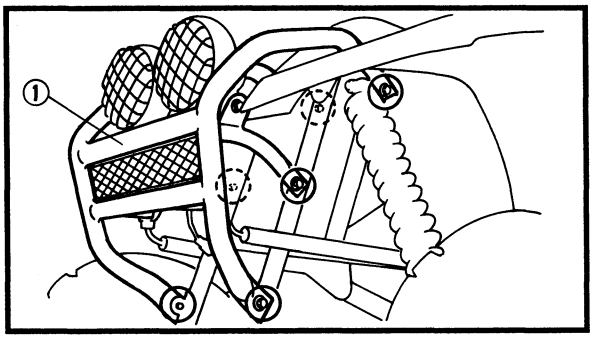
1. Place the machine on a level place.
2. Remove:
   - Seat

NOTE:

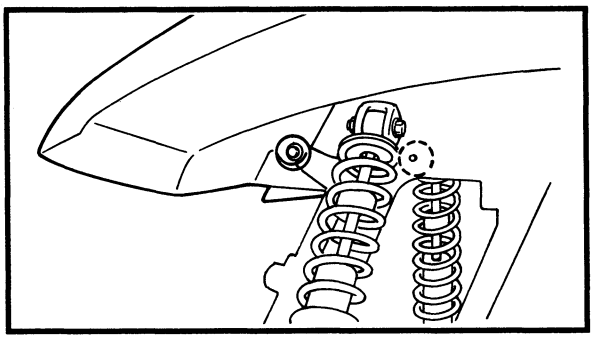
Pull up the seat lock lever ①, then remove by pulling up on the rear of the seat.



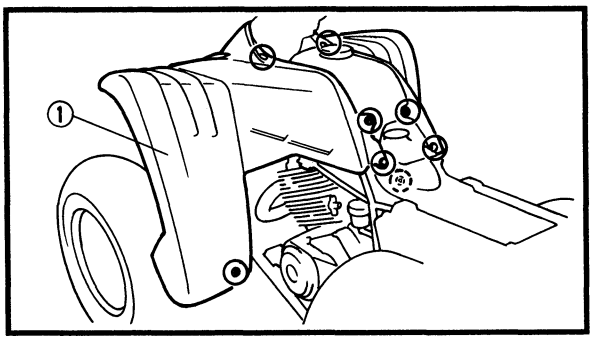
3. Disconnect:
   - Headlight leads ①
4. Remove:
   - Oil cooler bolts ②

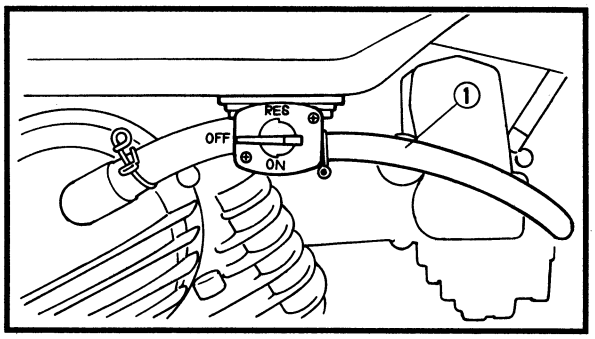


5. Remove:
   - Front carrier bar ①



6. Remove:
   - Front fender ①

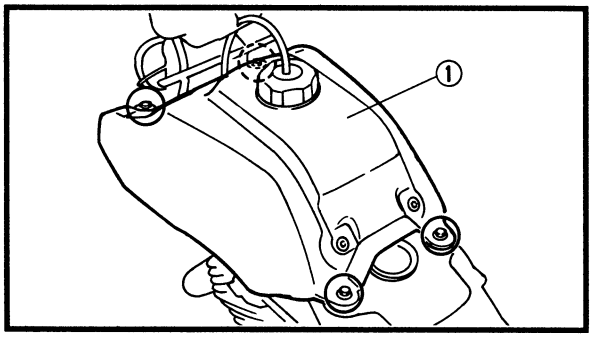




7. Turn the fuel cock lever to "OFF".

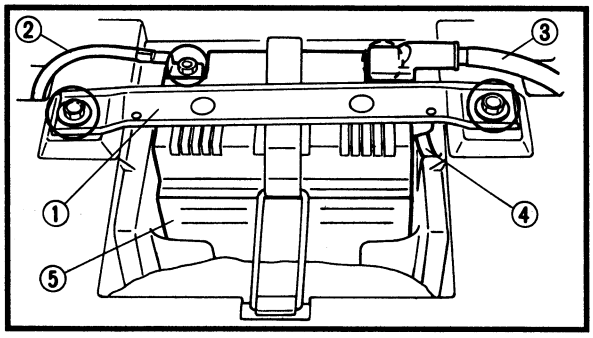
8. Disconnect:
- Fuel hose ①

NOTE:
Place a rug on the engine to absorb a split fuel.



⚠ WARNING
Gasoline is highly flammable.
Avoid spilling fuel on the hot engine.

9. Remove:
- Fuel tank ①

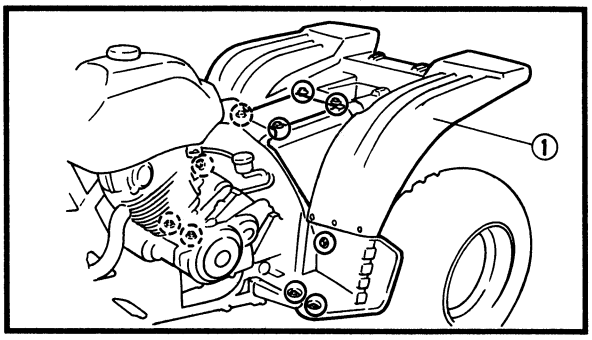


10. Remove:
- Battery holder ①

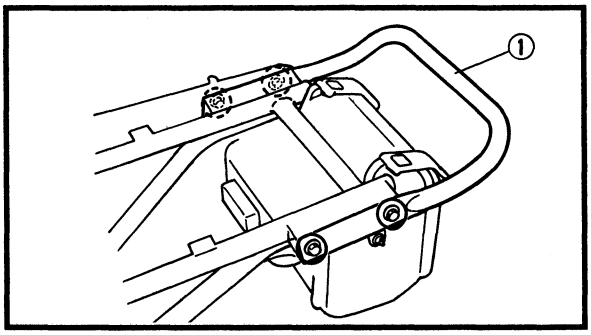
11. Disconnect:
- Battery leads ②③
- Battery breather hose ④

CAUTION:
Disconnect the negative lead ② first and then disconnect the positive lead ③.

12. Remove:
- Battery ⑤



13. Remove:
- Rear fender ①



14. Remove:
- Rear carrier bar ①

INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

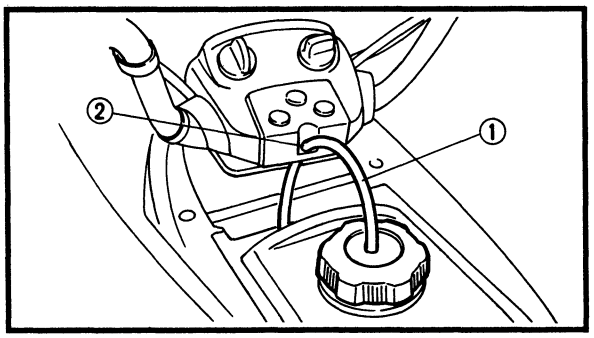
1. Install:
- Rear carrier bar

	Bolt (rear carrier bar): 31 Nm (3.1 m • kg, 22 ft • lb)

2. Install:
- Battery
- Battery holder

3. Connect:
- Battery leads
- Battery breather hose

CAUTION:
- **Connect the positive lead first and then connect the negative lead.**
- **Be sure the breather hose is properly attached and routed.**

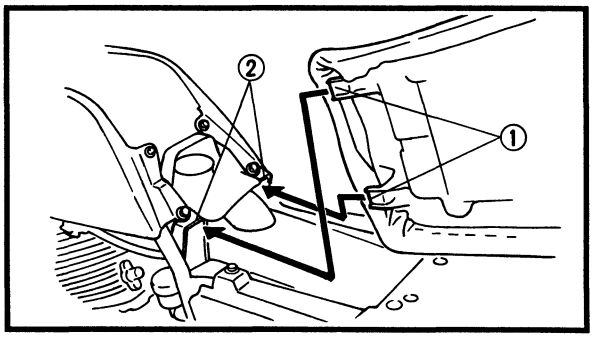


4. Install:
- Fuel tank

NOTE:
Insert the fuel tank breather hose ① into the handlebar protector hole ②.

5. Install:
- Front carrier bar

	Bolt (front carrier bar): **31 Nm (3.1 m • kg, 22 ft • lb)**



6. Install:
- Seat

NOTE:

Insert the lobe ① on the seat front into the receptacle ② on the frame, then push down the seat at the rear.

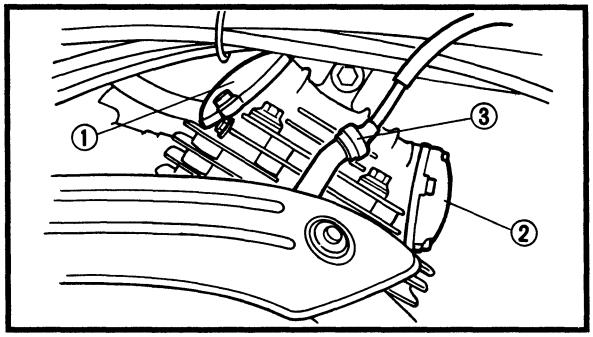
ENGINE

VALVE CLEARANCE ADJUSTMENT

NOTE:
- The valve clearance must be adjusted when the engine is cool to the touch.
- Adjust the valve clearance when the piston is at the Top Dead Center (T.D.C.) on compression stroke.

1. Remove:
- Seat
- Front carrier bar
- Front fender
- Fuel tank

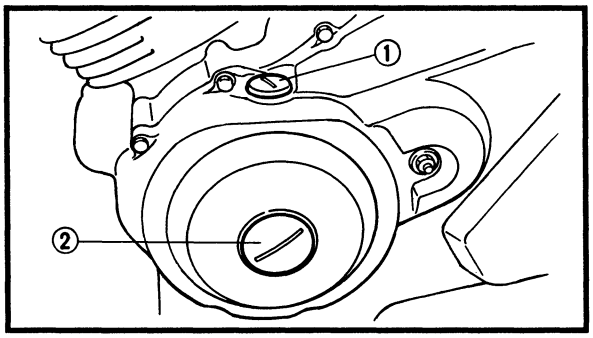
Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section.



2. Remove:
- Tappet cover (intake) ①
- Tappet cover (exhaust) ②

3. Disconnect:
- Spark plug cap ③

4. Loosen:
- Spark plug

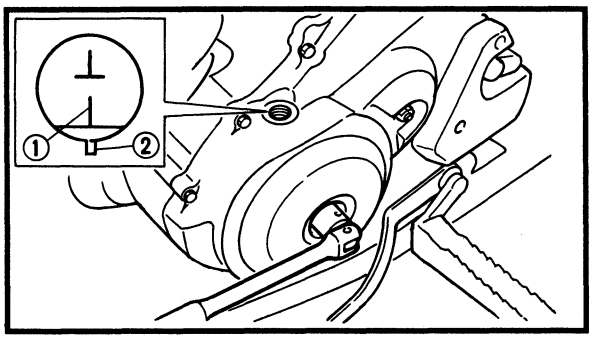


5. Remove:
- Timing plug ①
- Straight plug ② (for USA)
- Recoil starter (except for USA)

6. Check:
- Valve clearance

Out of specification → Adjust.

Valve clearance (cold):
Intake:
0.06 ~ 0.10 mm (0.0024 ~ 0.0039 in)
Exhaust:
0.16 ~ 0.20 mm (0.0063 ~ 0.0079 in)



****

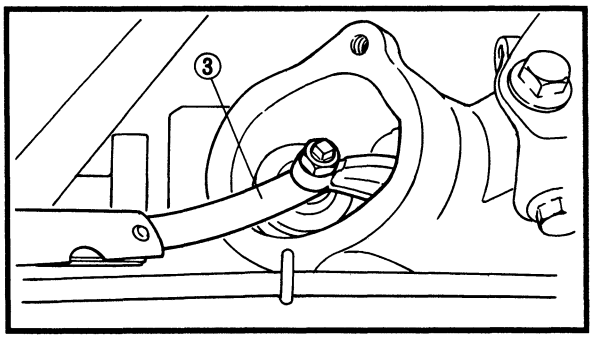
Checking steps:

- Turn the crankshaft counterclockwise with a wrench.
- Align the "T" mark ① on the rotor with stationary pointer ② on the crankcase cover. When the "T" mark is aligned with the stationary pointer, the piston is at Top Dead Center (T.D.C.).

NOTE:

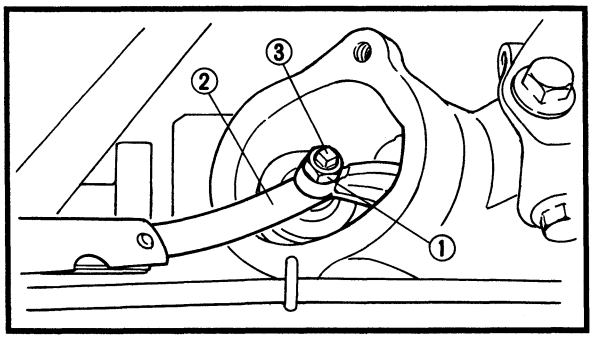
T.D.C. on compression stroke check:

- Both rocker arms must have a valve clearance when the rotor match mark ① is aligned with the stationary pointer match mark ②.
- If not, give the crankshaft one counterclockwise turn to meet above condition.



- Measure the valve clearance using a feeler gauge ③.

****



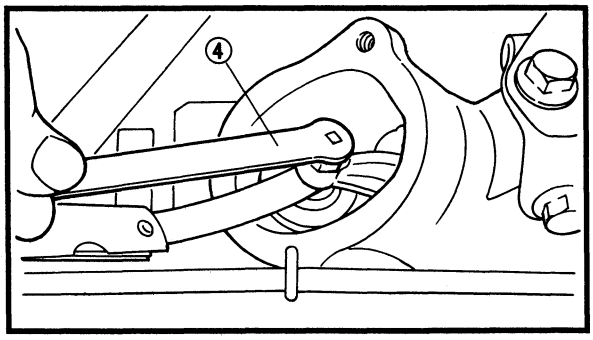
7. Adjust:

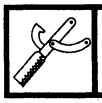
- Valve clearance

****

Adjustment steps:

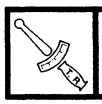
- Loosen the locknut ①.
- Insert a feeler gauge ② between the adjuster end and the valve end.
- Turn the adjuster ③ clockwise or counterclockwise with the valve adjusting tool ④ until proper clearance is obtained.





Valve adjusting tool:
P/N. YM-08035, 90890-05260

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



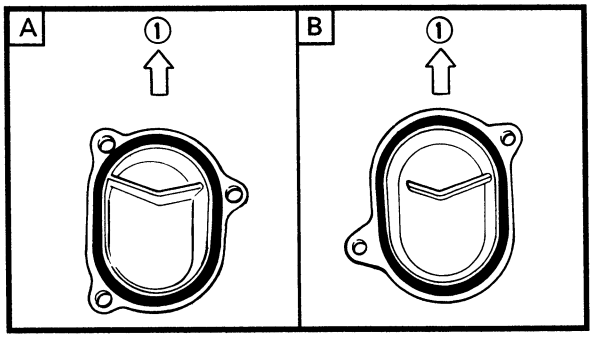
Locknut:
20 Nm (2.0 m • kg, 14 ft • lb)

- Measure the valve clearance.
- If the clearance is incorrect, repeat above steps until the proper clearance is obtained.

****

8. Install:
- Straight plug
- Timing plug
- Spark plug
- Tappet cover (exhaust)
- Tappet cover (intake)

	Spark plug: **18 Nm (1.8 m • kg, 13 ft • lb)**



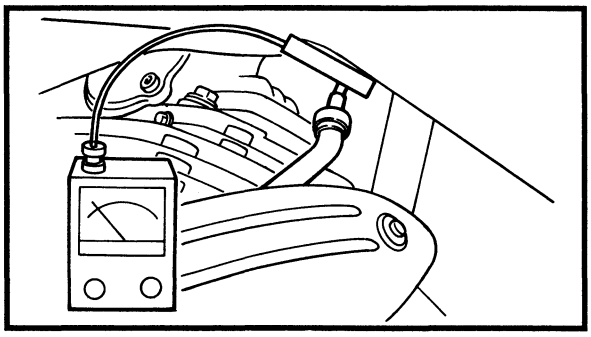
NOTE:
Install the tappet covers with its ridge facing up ward ①.

A Exhaust
B Intake

9. Install:
- Fuel tank
- Front fender
- Front carrier bar
- Seat

  Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section.

TIMING CHAIN ADJUSTMENT
Adjustment free.



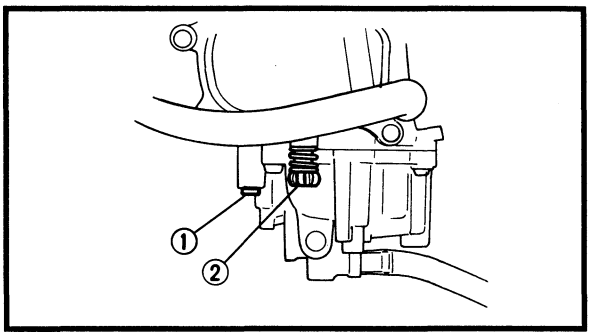
IDLING SPEED ADJUSTMENT

1. Start the engine and let it warm up for several minutes.
2. Attach:
   • Inductive tachometer
   (to the spark plug lead)

	Inductive tachometer: **P/N. YU-08036-A, 90890-03113**

3. Check:
   • Engine idling speed
   Out of specification → Adjust.

	Engine idling speed: **1,450 ~ 1,550 r/min**



4. Adjust:
   • Engine idling speed

****

Adjustment steps:

- Turn in the pilot screw ① until it is lightly seated.
- Turn out the pilot screw for the specified number of turns.

Pilot screw: **2 turns out**

- Turn the throttle stop screw ② in or out until specified idling speed is obtained.

Turn in → Idling speed becomes higher.
Turn out → Idling speed becomes lower.

****

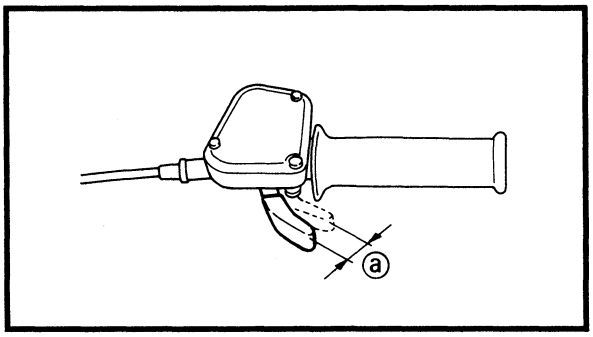
5. Detach
   • Inductive tachometer

6. Adjust:
   • Throttle cable free play
   Refer to the "THROTTLE CABLE FREE PLAY ADJUSTMENT" section.

	Free play: **3 ~ 5 mm (0.12 ~ 0.20 in)**

THROTTLE CABLE FREE PLAY ADJUSTMENT

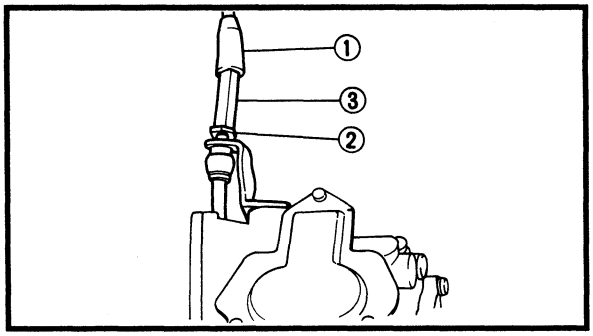
NOTE:
Engine idling speed should be adjusted properly before adjusting the throttle cable free play.



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

Throttle cable free play ⓐ:
3 ~ 5 mm (0.12 ~ 0.20 in)

2. Remove:
- Seat
- Front carrier bar
- Front fender
- Fuel tank
  Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section.



3. Adjust:
- Throttle cable free play

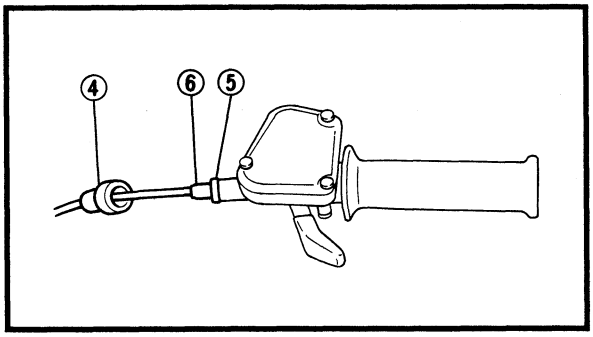
****

Adjustment steps:
First step:
- Pull back the adjuster cover ①.
- Loosen the locknut ② on the carburetor side.
- Turn the adjuster ③ in or out until the correct free play is obtained.

Turning in	**Free play is increased.**
Turning out	**Free play is decreased.**

- Tighten the locknut ②.
- Push in the adjuster cover ①.

NOTE:
If the free play can not be adjusted here, adjust it at the throttle lever side of the cable.



Second step:
- Pull back the adjuster cover ④.
- Loosen the locknut ⑤.
- Turn the adjuster ⑥ in or out until the correct free play is obtained.

Turning in	**Free play is increased.**
Turning out	**Free play is decreased.**

- Tighten the locknut ⑤.
- Push in the adjuster cover ④.

⚠ WARNING

After adjusting the free play, turn the handlebar to right and left, and make sure that the engine idling does not run faster.

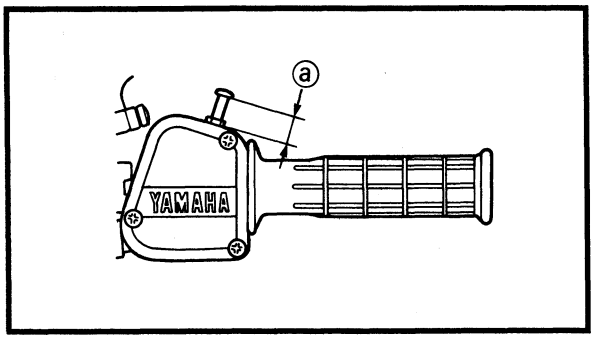
****

4. Install:
- Fuel tank
- Front fender
- Front carrier bar
- Seat

  Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section.

SPEED LIMITER ADJUSTMENT

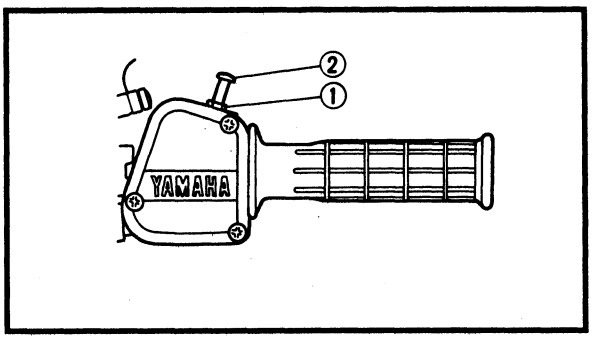
The speed limiter keeps the carburetor throttle from becoming full-open even when the throttle grip is turned to a maximum. Screwing in the adjuster stops the engine speed from increasing.



1. Check:
- Speed limiter length ⓐ

  Out of specification → Adjust.

Speed limiter length ⓐ:
12 mm (0.47 in)



3. Adjust:
• Speed limiter length

****

Speed limiter length adjustment steps:
- Loosen the locknut ①.
- Turn the adjuster ② in or out until the specified speed limiter length is obtained.

Turning in	→	**Speed limiter length is decreased.**
Turning out	→	**Speed limiter length is increased.**

- Tighten the locknut.

⚠ WARNING

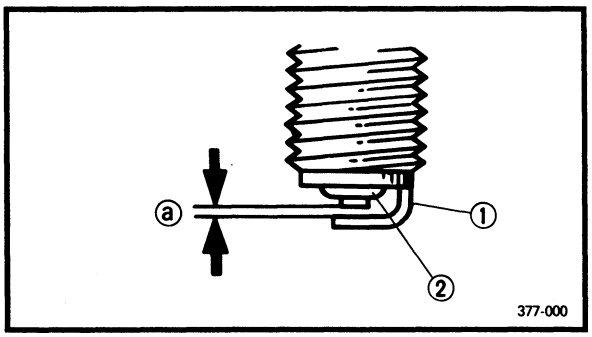
- **Particularly for a beginner rider, the speed limiter should be screwed in completely. Screw it out little by little as his riding technique improves. Never remove the speed limiter from the outset.**
- **For proper throttle lever operation do not turn out the adjuster more than 12 mm (0.47 in). Also adjust the throttle lever free play always to 3 ~ 5 mm (0.12 ~ 0.20 in).**

****

SPARK PLUG INSPECTION

1. Remove:
• Spark plug
2. Inspect:
• Spark plug type
Incorrect → Replace.

Standard spark plug:
For USA
D8EA (NGK)
X24ES-U(NIPPONDENSO)
Except for USA
DR8EA (NGK)



3. Inspect:
- Electrode ①
  Wear/Damage → Replace.
- Insulator ②
  Abnormal color → Replace.
  Normal color is a medium-to-light tan color.

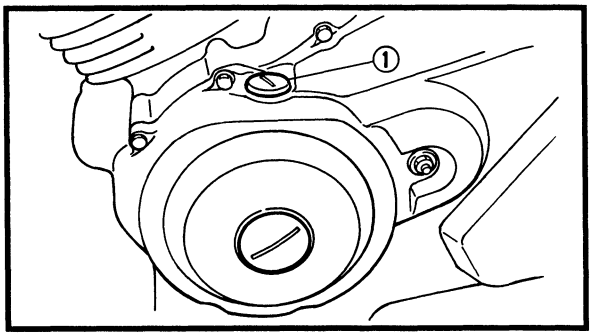
4. Clean the spark plug with a spark plug cleaner or wire brush.
5. Measure:
- Plug gap ⓐ
  Use a wire gauge or feeler gauge.
  Out of specification → Regap.

Spark plug gap:
0.6 ~ 0.7 mm (0.024 ~ 0.028 in)

6. Tighten:
- Spark plug

Spark plug:
18 Nm (1.8 m • kg, 13 ft • lb)

NOTE:
Before installing a spark plug, clean the gasket surface and plug surface.



IGNITION TIMING CHECK

NOTE:
Engine idling speed and throttle cable free play should be adjusted properly before checking the ignition timing.

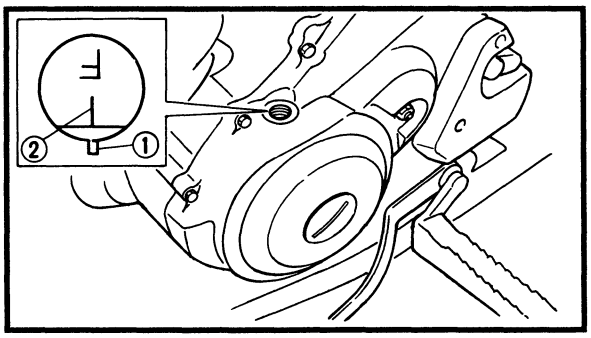
1. Remove:
- Timing plug ①

2. Attach:
- Inductive tachometer
- Timing light.
  (to spark plug lead)

Inductive tachometer:
P/N. YU-08036-A, 90890-03113
Timing light:
P/N. YM-33277-A, 90890-03141

3. Check:
• Ignition timing
****
Checking steps:
● Warm up the engine and keep it at the specified speed.

	Engine speed: **1,450 ~ 1,550 r/min**



● Visually check the stationary pointer ① to verify it is within the required firing range ② indicated on the flywheel.
Incorrect firing range → Check pulser coil assembly.
****

4. Install:
• Timing plug

COMPRESSION PRESSURE MEASUREMENT

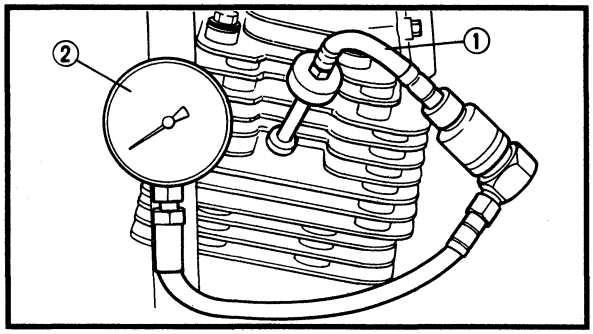
NOTE:
Insufficient compression pressure will result in performance loss.

1. Check:
• Valve clearance
Out of specification → Adjust.
Refer to the "VALVE CLEARANCE ADJUSTMENT" section.

2. Start the engine and let it warm up for several minutes.

3. Stop the engine.

4. Remove:
- Spark plug



5. Attach:
- Adapter ①
- Compression gauge ②

Compression gauge:
P/N. YU-33223, 90890-03081
Adapter:
P/N. YU-33223-3, 90890-04082

6. Measure:
- Compression pressure

Above the maximum pressure:
Inspect cylinder head, valve surfaces, and piston crown for carbon deposits.
Below the minimum pressure:
Squirt a few drops of oil into affected cylinder and measure again.
- Follow the table below.

Compression pressure (with oil introduced into cylinder)	
Reading	**Diagnosis**
Higher than without oil	**Worn or damaged pistons**
Same as without oil	**Defective ring(s), valves, cylinder head gasket or piston is possible.**

Compression pressure (at sea level):
Standard:
850 kPa (8.5 kg/cm², 121 psi)
Minimum:
800 kPa (8.0 kg/cm², 114 psi)
Maximum:
900 kPa (9.0 kg/cm², 128 psi)

****

Measurement steps:

- Crank over the engine with the electric starter (be sure the battery is fully charged) with the throttle wide-open until the compression reading on the gauge stabilizes.

⚠ WARNING

When cranking the engine, ground the spark plug lead to prevent sparking.

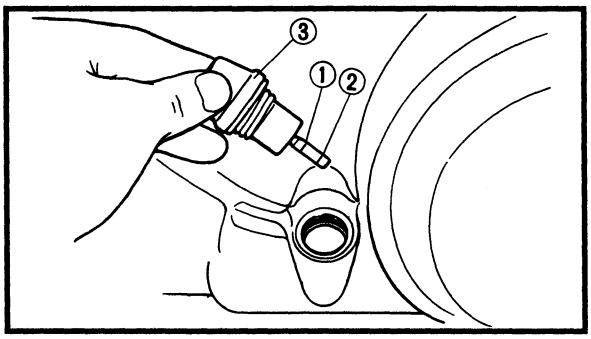
****

7. Install:
- Spark plug

	Spark plug: **18 Nm (1.8 m • kg, 13 ft • lb)**

ENGINE OIL LEVEL INSPECTION

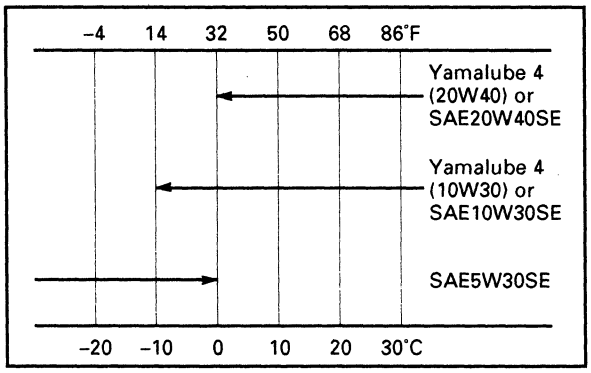
1. Place the machine on a level place.



2. Inspect:
- Engine oil level
  Oil level should be between maximum ① and minimum ② marks.
  Oil level low → Add oil to proper level.

NOTE:

Do not screw the dipstick ③ in when inspecting the oil level.



	Recommended engine oil: **At 0°C (32°F) or higher:** **Yamalube 4 (20W40) or SAE20W40 type SE motor oil** **At -10°C (14°F) or higher:** **Yamalube 4 (10W30) or SAE10W30 type SE motor oil** **At 0°C (32°F) or lower:** **SAE5W30 type SE motor oil**



CAUTION:

- **Do not add any chemical additives. Engine oil also lubricates the clutch and additives could cause clutch slippage.**
- **Do not allow foreign material to enter the crankcase.**

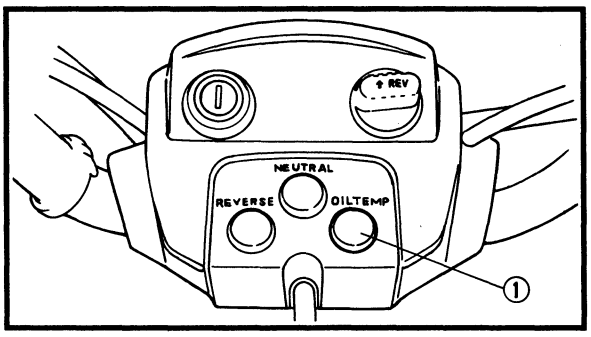
3. Start the engine and let it warm up for several minutes.
4. Stop the engine and inspect the oil level once again.

NOTE:

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

⚠ WARNING

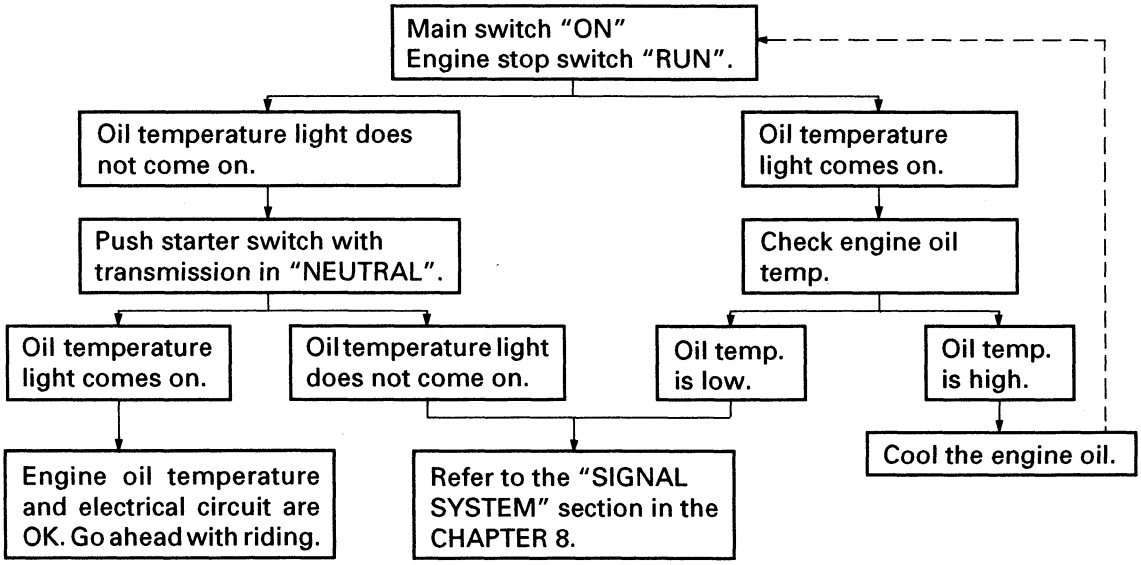
Never remove the dipstick just after high speed operation. The heated oil could spout out, causing danger. Wait until the oil cools down.



"OIL TEMP" INDICATOR LIGHT CHECK

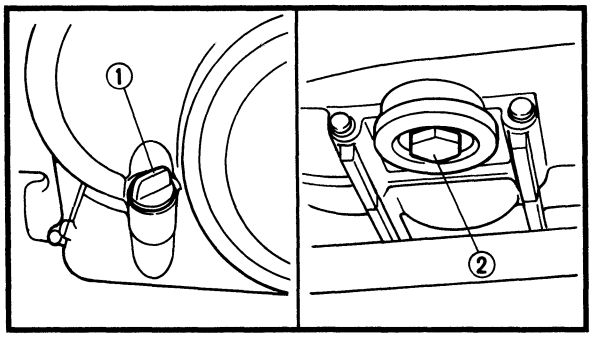
① "OIL TEMP" indicator light

"OIL TEMP" indicator light checking method

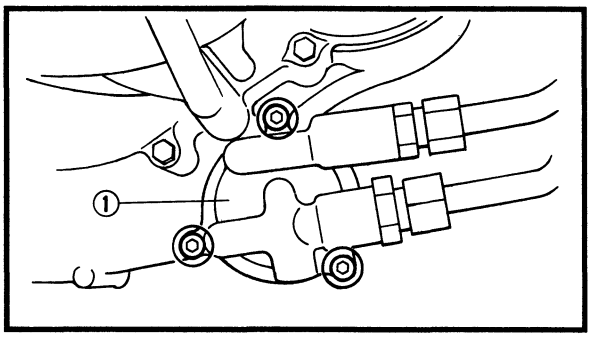


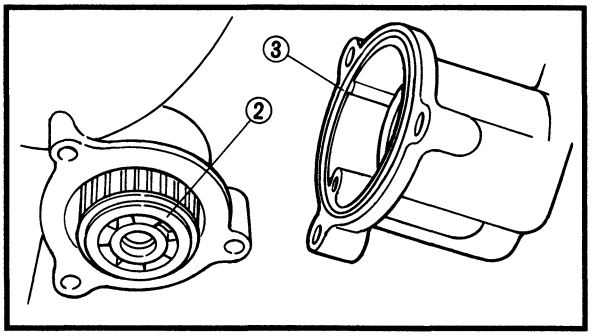
ENGINE OIL REPLACEMENT

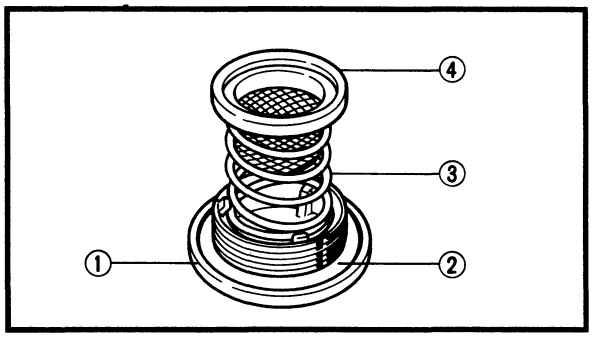
1. Start the engine and let it warm up for several minutes.
2. Stop the engine and place an oil pan under the engine.



3. Remove:
- Dipstick ①
- Drain plug ②
  (with O-ring, spring and strainer)
  Drain the crankcase of its oil.







4. If the oil filter is to be replaced during this oil change, remove the following parts and reinstall them.

****

Replacement steps:

- Remove the oil filter cover ① and oil filter element ②.
- Check the O-ring ③, if cracked or damaged, replace them with a new one.
- Install the oil filter element and oil filter cover.

	Bolt (oil filter cover): **8 Nm (0.8 m • kg, 5.8 ft • lb)**

****

5. Install:
- Drain plug

CAUTION:

Before reinstalling the drain plug ①, do not forget to fit the O-ring ②, compression spring ③ and oil strainer ④.

	Drain plug: **32 Nm (3.2 m • kg, 23 ft • lb)**

6. Fill:
- Crankcase

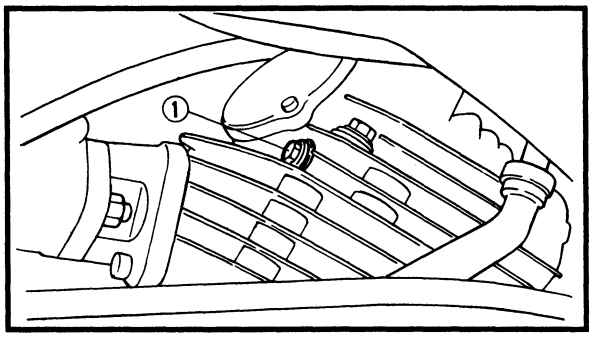
  Refer to the "ENGINE OIL LEVEL INSPECTION" section.

	Oil quantity: **Total amount:** **3.5 L (3.1 Imp qt, 3.7 US qt)** **Periodic oil change:** **2.9 L (2.6 Imp qt, 3.1 US qt)** **With oil filter replacement:** **3.0 L (2.6 Imp qt, 3.2 US qt)**

7. Install:
- Dipstick

8. Warm up the engine for a few minutes, then stop the engine.

9. Inspect:
- Engine
  (for oil leaks)
- Oil level



10. Inspect:
- Oil flow

****

Inspection steps:
- Slightly loosen the oil gallery bolt ① in the cylinder head.
- Start the engine and keep it idling until oil begins to seep from the oil gallery hole. If no oil comes out after one minute, stop the engine immediately so the it will not seize.
- Check oil passages, oil filter, and oil pump for damage or leakage. Refer to "INSPECTION AND REPAIR" in CHAPTER 4.
- Restart the engine after solving the problem(s), and recheck the oil pressure.
- Stop the engine and tighten the oil gallery bolt (with gasket) to specification.

	Bolt (oil gallery): **7 Nm (0.7 m • kg, 5.1 ft • lb)**

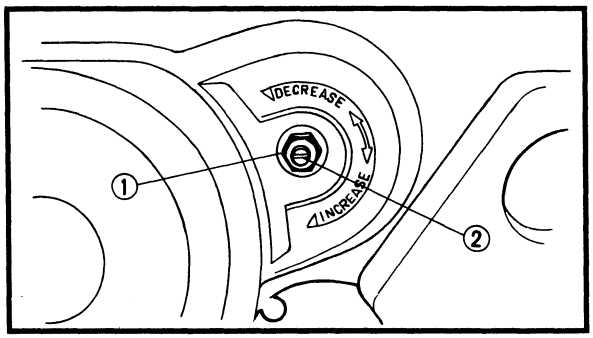
****

CLUTCH ADJUSTMENT

1. Adjust:
- Free play

****

Clutch free play adjustment steps:
- Loosen the locknut ①.
- Slowly turn the adjuster ② counterclockwise until resistance is felt.
- Turn it 1/8 clockwise.



NOTE:

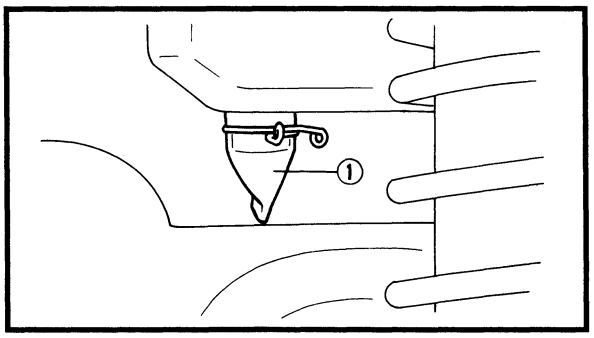
Turn the adjuster counterclockwise to decrease the clutch free play and turn it clockwise to increase the free play.

CAUTION:

Do not start the engine while increasing the clutch free play by turning the adjuster clockwise.

- Tighten the locknut.

	Clutch locknut: 20 Nm (2.0 m • kg, 14 ft • lb)

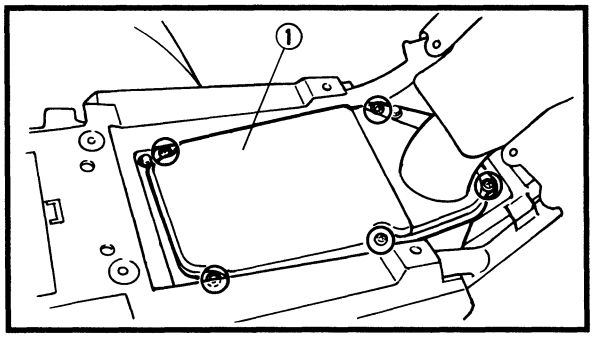


****

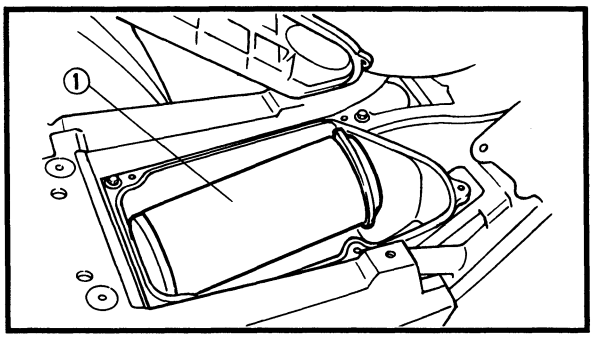
AIR FILTER CLEANING

NOTE:

There is a check hose ① at the bottom of the air filter case. If dust and/or water collects in this hose, clean the air filter element and air filter case.



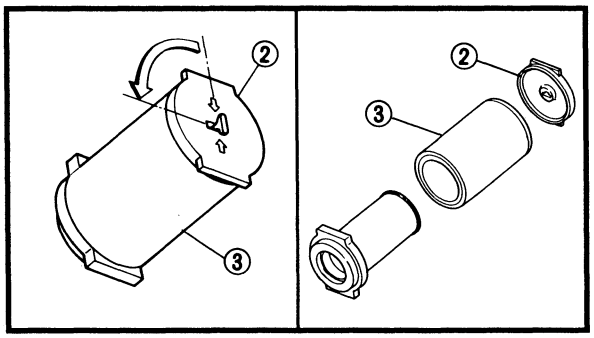
1. Remove:
- Seat
  Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section.
- Air filter case cover ①



2. Remove:
- Air filter element assembly ①
- Air filter element cap ②
- Air filter element ③

NOTE:

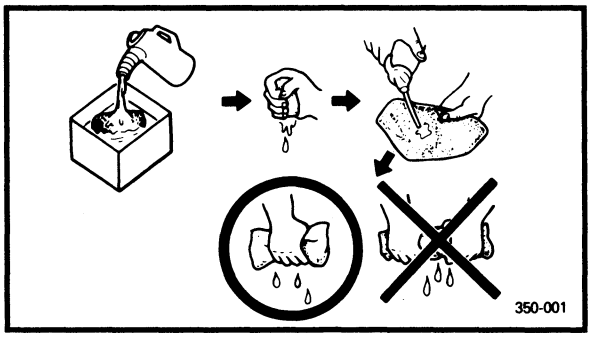
When removing the air filter element, rotate the air filter element cap 1/4 turn, and remove the element.



CAUTION:

Never operate the engine with the air filter element removed. This will allow unfiltered air to enter, causing rapid wear and possible engine damage. Additionally, operation without the filter element will affect carburetor tuning with subsequent poor performance and possible engine overheating.

3. Inspect:
- Air filter element
  Damaged → Replace.



4. Clean:
- Air filter element

****

Cleaning steps:
- Wash the element gently, but thoroughly in solvent.

⚠ WARNING

Use parts cleaning solvent only. Never use gasoline or low flash point solvents as they may cause a fire or explosion.

- Squeeze the excess solvent out of the element and let it dry.

CAUTION:

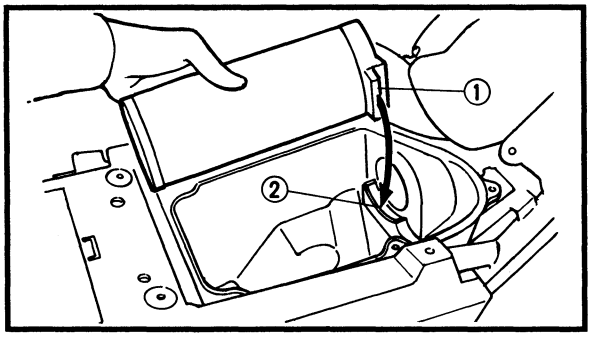
Do not twist or wring out the element. This could damage the foam material.

- Apply foam filter oil or engine oil to the element.
- Squeeze out the excess oil.

NOTE:

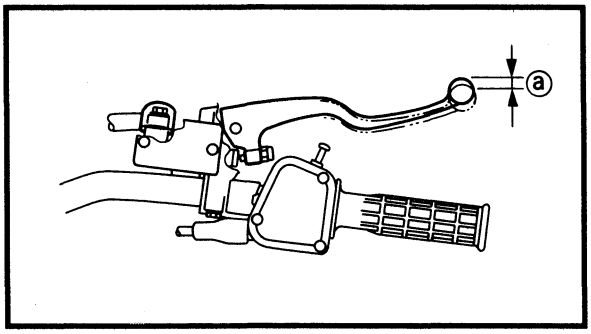
The element should be wet but not dripping.

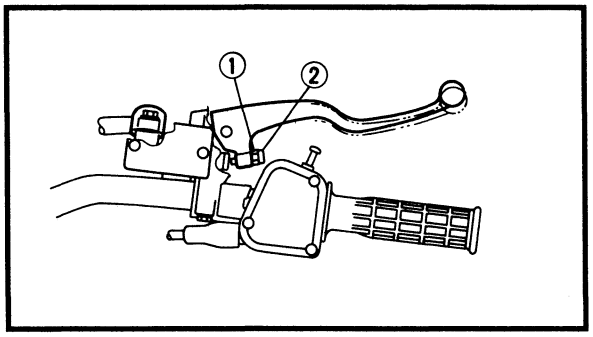
****



5. Install:
- Air filter element
- Air filter case cover
- Seat

NOTE:
- Insert the lobes ① on the filter element into the receptacles ② on the filter case.
- Make sure its sealing surface matches the sealing surface of the case so there is no air leak.





CHASSIS

FRONT BRAKE ADJUSTMENT

1. Check:
- Brake lever free play ⓐ
  Out of specification → Adjust.

Free play:
2 ~ 5 mm(0.08 ~ 0.20 in)
at brake lever end

2. Adjust:
- Brake lever free play

****

Adjustment steps:
- Loosen the locknut ①.
- Turn the adjuster ② in or out until the specified free play is obtained.

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

- Tighten the locknut.

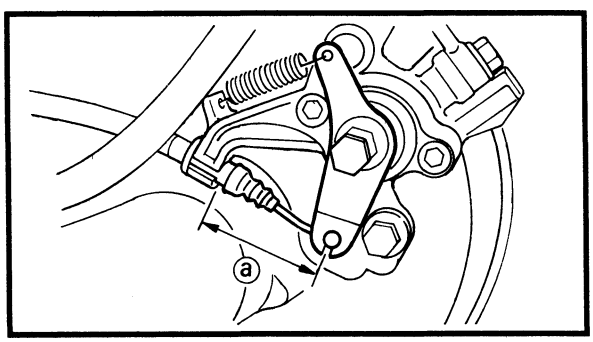
CAUTION:

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

⚠ WARNING

A soft or spongy feeling in the brake lever can indicate the presence of air in the brake system. This air must be removed by bleeding the brake system before the machine is operated. Air in the system will cause greatly diminished braking capability and can result in loss of control and an accident. Inspect and bleed the system if necessary.

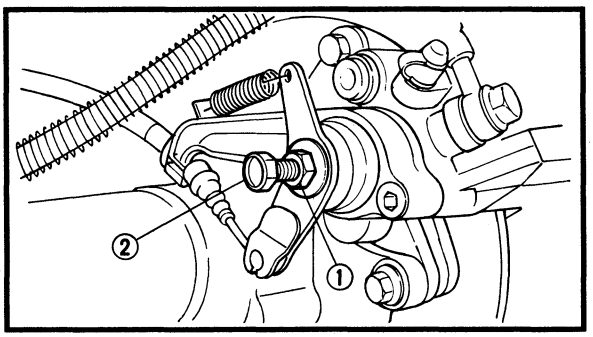
****

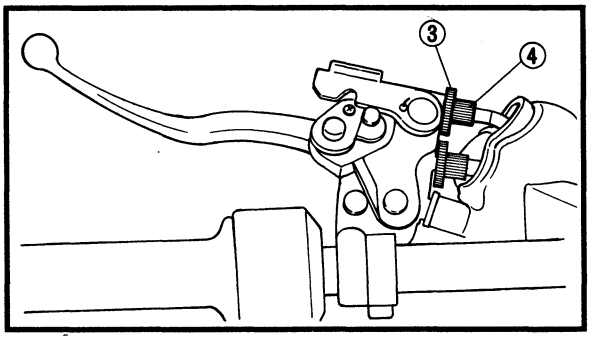


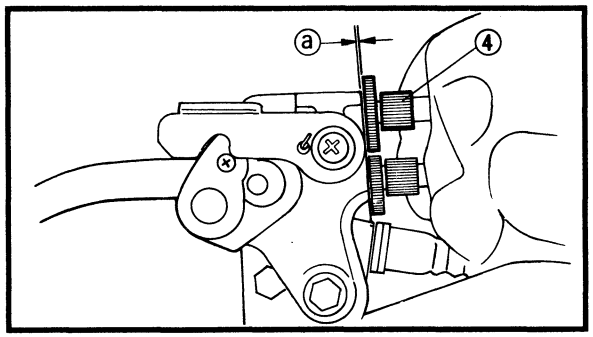
PARKING BRAKE ADJUSTMENT

1. Check:
- Parking brake cable end length ⓐ
  Out of specification → Adjust.

Parking brake cable end length:
48 mm (1.9 in)







2. Adjust:
• Parking brake cable end length

****

Adjustment steps:

- Loosen the locknut ① and adjuster ②.
- Loosen the locknut ③.
- Trun the adjuster ④ in or out until the specified brake cable end length is obtained.

Turning in	**→ Cable end length is increased**
Turning out	**→ Cable end length is decreased.**

- Tighten the locknut ③.
- Slowly turn the adjuster ② clockwise until resistance is felt.
- Trun it 1/8 counterclockwise.
- Tighten the locknut ①.

Locknut:
16 Nm (1.6 m • kg, 11 ft • lb)

- Check the parking brake cable free play ⓐ.

Free play (parking brake cable):
0 mm (0 in)
at parking brake lever pivot

- If the free play is incorrect, adjust the free play by adjuster ④.

CAUTION:

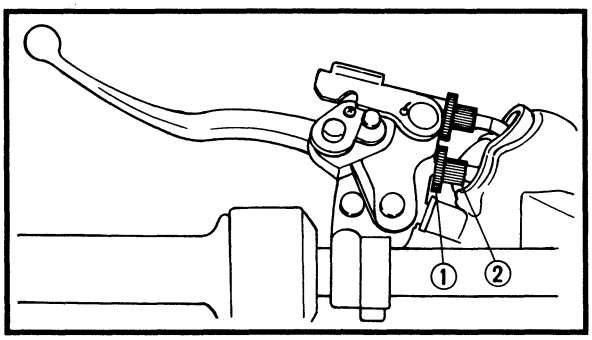
Make sure that the brake does not drag after adjusting it.

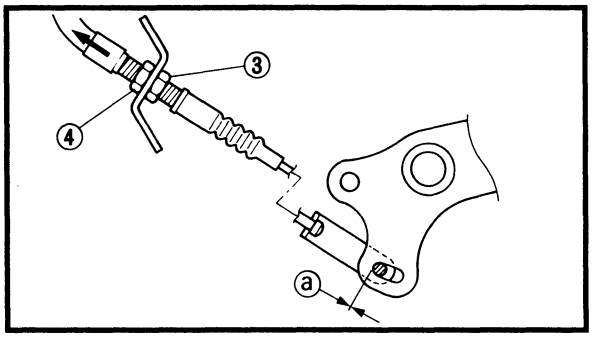
****

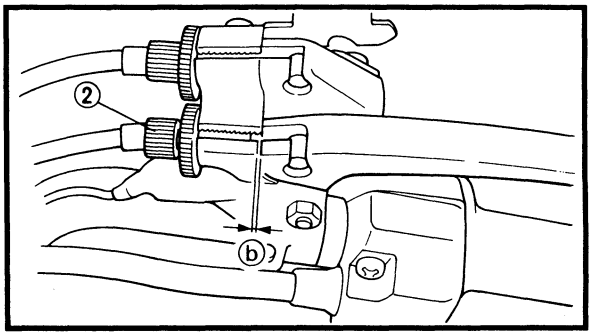
REAR BRAKE CABLE ADJUSTMENT

NOTE:

Parking brake should be adjusted properly before adjusting the rear brake cable free play.







1. Adjust:
• Rear brake cable

****

Adjustment steps:

- Loosen the locknut ① and fully tighten the adjuster ②.
- Loosen the nut ③ and ④.
- Check that there is a clearance at ⓐ.
- Pull the brake cable guide in the direction of the arrow until the specified clearance is obtained.

Clearance:
0 ~ 0.5 mm (0 ~ 0.02 in)

- Tighten the nut ④ and ③.
- Check the brake cable free play ⓑ.

NOTE:

Operate the brake lever and check that there is no clearance at ⓑ.

Free play:
0 mm (0 in)
at brake lever pivot

- If the free play is incorrect, adjust the free play with adjuster ②. Do not operate the brake pedal while adjusting the free play.

CAUTION:

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

⚠ WARNING

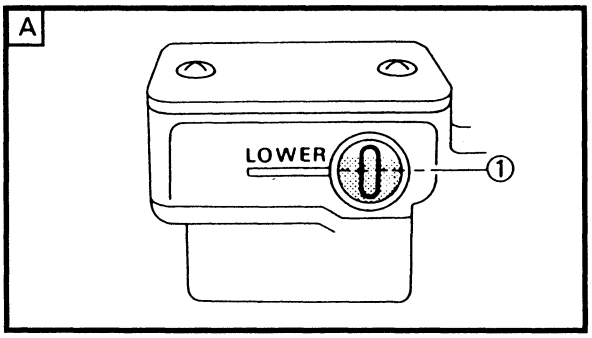
A soft or spongy feeling in the brake lever can indicate the presence of air in the brake system. This air must be removed by bleeding the brake system before the machine is operated. Air in the system will cause greatly diminished braking capability and can result in loss of control and an accident. Inspect and bleed the system if necessary.

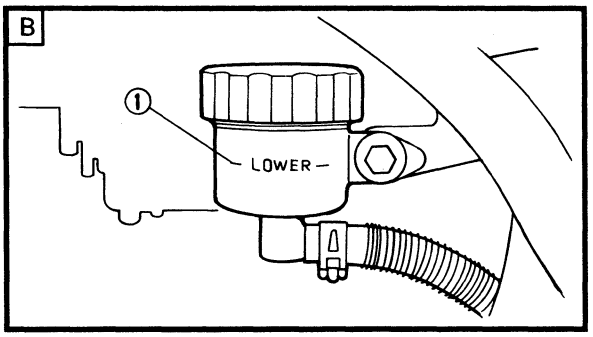
****

BRAKE FLUID LEVEL INSPECTION

1. Place the machine on a level place.

NOTE:
When inspecting the front brake fluid level, make sure the master cylinder top is horizontal by turning the handlebars.





2. Inspect:
- Brake fluid level
  Fluid level is under "LOWER" level line ①
  → Fill up.

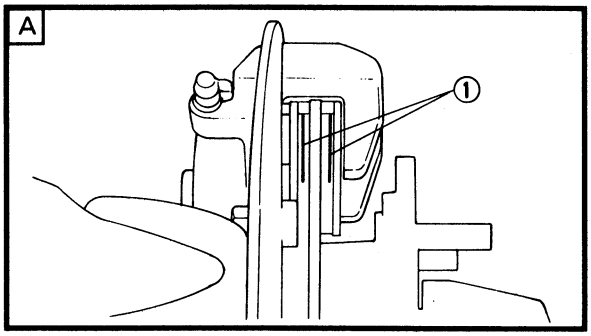
Recommended brake fluid:
DOT No. 4

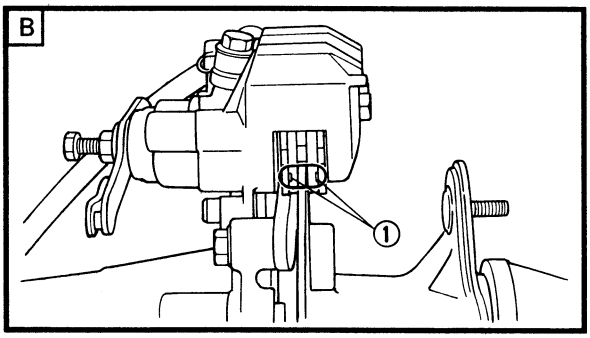
NOTE:
If DOT No. 4 is not available, No. 3 can be used.

A Front brake
B Rear brake

CAUTION:
Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

⚠ WARNING
- **Use only the designed quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.**
- **Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.**





BRAKE PAD INSPECTION

1. Remove:
- Front wheels
- Rear wheel (right)

Refer to the "FRONT WHEEL" and "REAR WHEEL" section in CHAPTER 7.

2. Activate the brake lever or brake pedal.
3. Inspect:
- Brake pad

Wear indicator ① nearly contacting brake disc → Replace brake pads as a set.
Refer to the "BRAKE PAD REPLACEMENT" section in CHAPTER 7.

A Front brake
B Rear brake

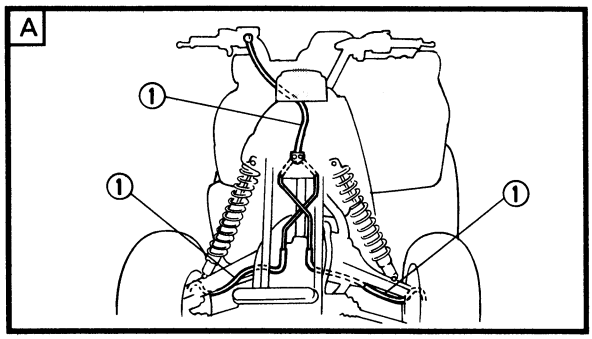
4. Install:
- Front wheels
- Rear wheel (right)

Refer to the "FRONT WHEEL" and "REAR WHEEL" section in CHAPTER 7.

BRAKE HOSE INSPECTION

1. Remove:
- Seat
- Front carrier bar
- Front fender
- Rear fender

Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section.

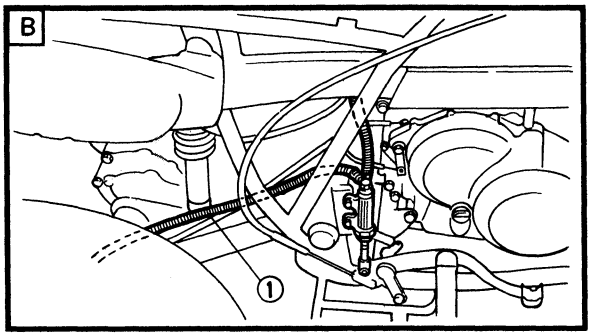


2. Inspect:
- Brake hoses ①

Cracks/Wear/Damage → Replace.

3. Check:
- Brake hose clamp

Loosen → Tighten.



A Front brake
B Rear brake

4. Hold the machine on upright position and apply the front or rear brake.
5. Check:
- Brake hoses
  Active the brake lever or pedal several times.
  Fluid leakage → Replace the hose.
  Refer to the "FRONT AND REAR BRAKE" section in CHAPTER 7.

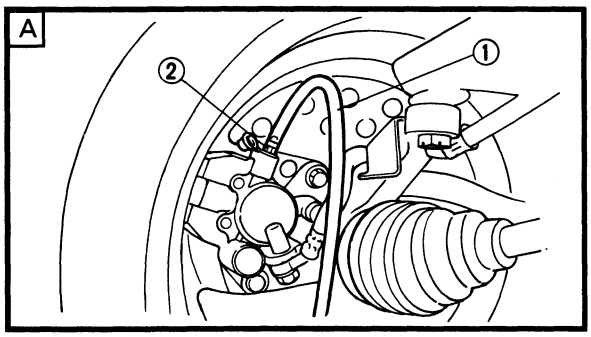
6. Install:
- Rear fender
- Front fender
- Front carrier bar
- Seat
  Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section.

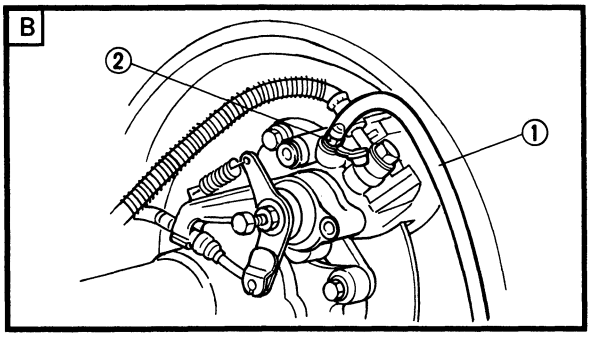
AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

⚠ WARNING

Bleed the brake system if:
- **The system has been disassembled.**
- **A brake hose or brake pipe have been loosened or removed.**
- **The brake fluid has been very low.**
- **The brake operation has been faulty.**

A loss of braking performance may occur if the brake system is not properly bled.





1. Bleed:
• Brake system

****

Air bleeding steps:

a. Add proper brake fluid to the reservoir.
b. Install the diaphragm. Be careful not to spill any fluid or allow the reservoir to overflow.
c. Connect the clear plastic hose ① tightly to the caliper bleed screw ②.

Ⓐ Front Ⓑ Rear

d. Place the other end of the hose into a container.
e. Slowly apply the brake lever or pedal several times.
f. Pull the lever in or push down on the pedal. Hold the lever or pedal in position.
g. Loosen the bleed screw and allow the lever or pedal to travel towards its limit.
h. Tighten the bleed screw when the lever or pedal limit has been reached, then release the lever or pedal.
i. Repeat steps (e) to (h) until all air bubbles have disappeared from the fluid.
j. Tighten the bleed screw.

	Bleed screw: **6 Nm (0.6 m • kg, 4.3 ft • lb)**

NOTE:

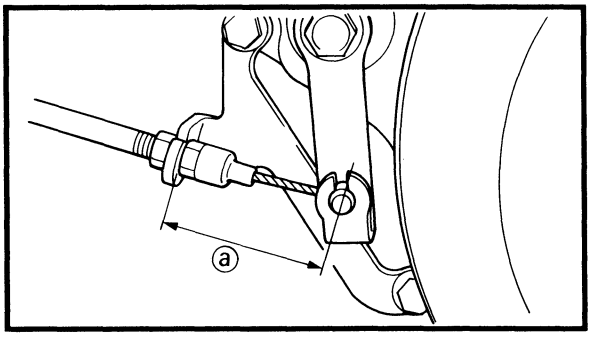
If bleeding is difficult, it may be necessary to let the brake fluid settle for a few hours. Repeat the bleeding procedure when the tiny bubbles in the system have disappeared.

k. Add brake fluid to proper level.
Refer to the "REAKE FLUID INSPECTION" section.

⚠ WARNING

Check the operation of the brake after bleeding the brake system.

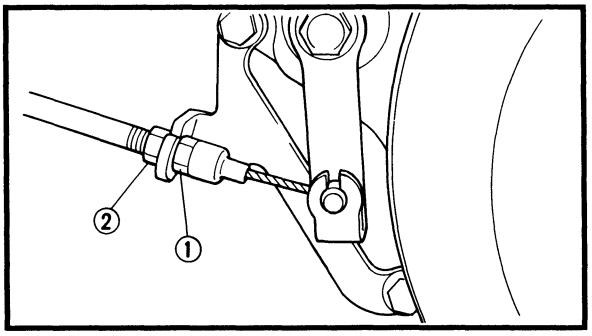
****



REVERSE CONTROL CABLE ADJUSTMENT

1. Check:
- Reverse control cable end length ⓐ
  Out of specification → Adjust.

Cable end length:
38 mm (1.5 in)



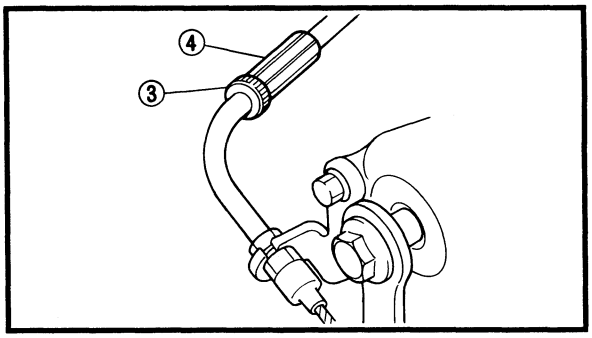
2. Adjust:
- Reverse control cable end length

****

Adjustment steps:
- Loosen the locknut ①.
- Turn the adjuster ② in or out until the specified cable end length is obtained.

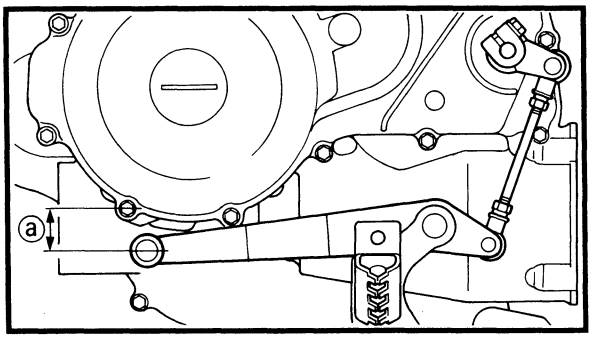
Turning in	**→ Cable end length is decreased.**
Turning out	**→ Cable end length is increased.**

- Tighten the locknut.



- Check the reverse control cable slack.
  If the reverse control cable is slack, adjust it using the locknut ③ and the adjuster ④.

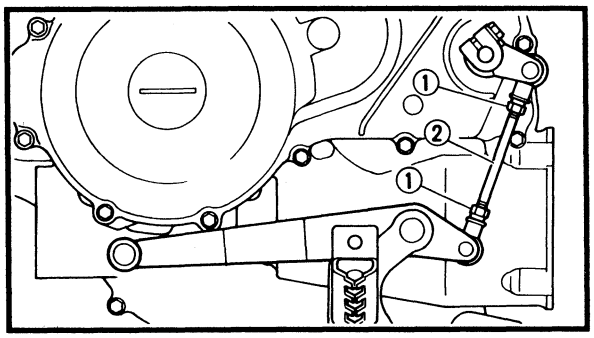
****



CHANGE PEDAL ADJUSTMENT

1. Check:
- Change pedal height ⓐ
  Out of specification → Adjust.

Change pedal height:
26 mm(1.02 in)



2. Adjust:
- Change pedal position

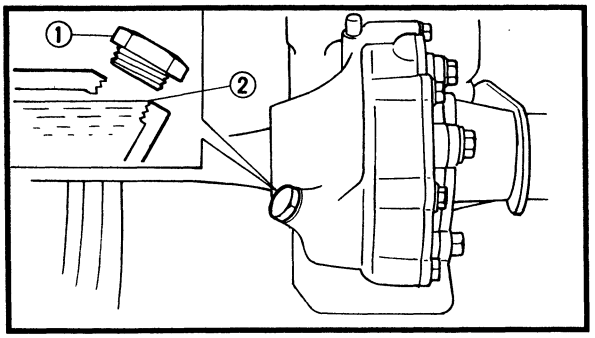
****

Adjustment steps:
- Loosen the locknut ①.
- Turn the change pedal rod ② in or out to set the correct pedal height.

Turning in → Pedal is lowered.
Turning out → Pedal is raised.

- Tighten both locknuts.

****



FINAL GEAR OIL LEVEL INSPECTION

1. Place the machine on a level place.

2. Remove:
- Oil filler bolt ①

3. Inspect:
- Oil level

  Oil level should be up to bottom brim ② of hole

  Oil level low → Add oil to proper level.

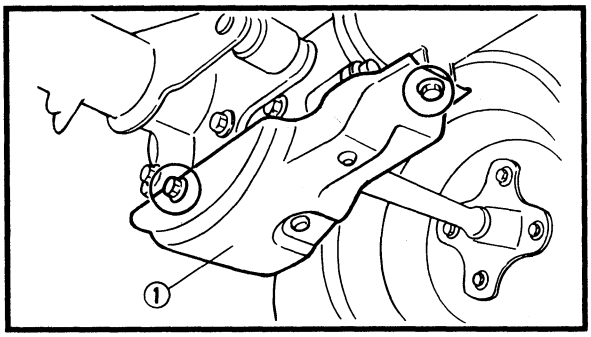
Recommended oil: **SAE 80 API "GL-4" Hypoid gear oil**

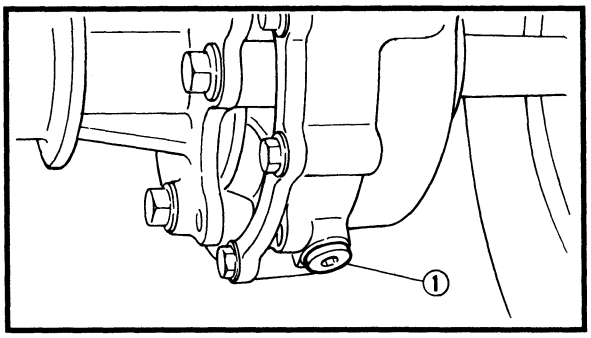
CAUTION:

Take care not allow foreign material to enter the final gear case.

4. Install:
- Oil filler bolt

Oil filler bolt **25 Nm (2.5 m • kg, 18 ft • lb)**





FINAL GEAR OIL REPLACEMENT

1. Place the machine on a level place.

2. Remove:
   - Final gear case protector ①

3. Place the receptacle under the final gear case.

4. Remove:
   - Oil filler bolt
   - Drain plug ①

5. Drain:
   - Final gear oil

6. Install:
   - Drain plug

	Drain plug: **25 Nm (2.5 m • kg, 18 ft • lb)**

NOTE:

Check the gasket (drain plug). If damaged, replace it with a new one.

7. Fill:
   - Final gear case

	Periodic oil change: **0.19 L (0.17 Imp qt, 0.20 US qt)** **Total amount:** **0.25 L (0.22 Imp qt, 0.26 US qt)** **Recommended oil:** **SAE80 API "GL-4" Hypoid gear oil**

CAUTION:

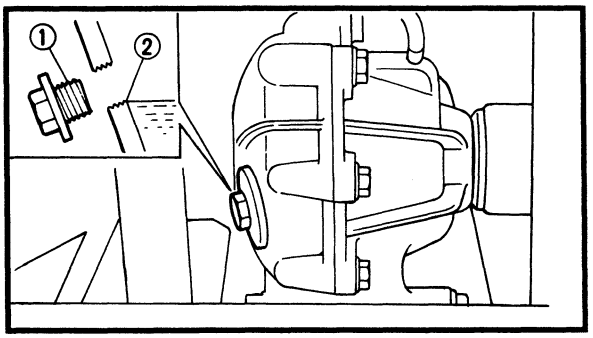
Take care not allow foreign material to enter the final gear case.

8. Inspect:
   - Oil level

   Refer to the "FINAL GEAR OIL LEVEL INSPECTION" section.

9. Install:
- Oil filler bolt
- Final gear case protector

Oil filler bolt:
25 Nm (2.5 m • kg, 18 ft • lb)



DIFFERENTIAL GEAR OIL LEVEL INSPECTION

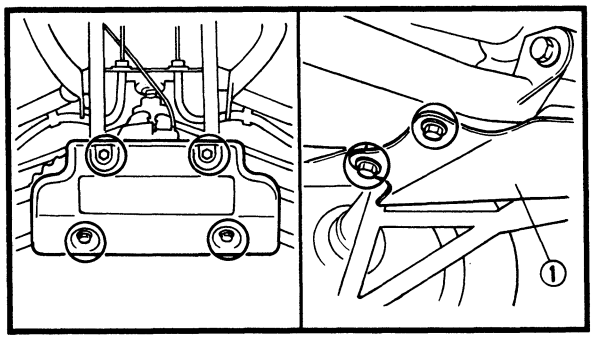
1. Place the machine on a level place.
2. Remove:
- Oil filler bolt ①
3. Inspect:
- Oil level
  Oil level should be up to bottom brim ② of hole
  Oil level low → Add oil to proper level.

Recommended oil:
SAE80 or SAE 80W-90 API "GL-5" Hypoid gear oil for L.S.D. (Limited Slip Differential)

CAUTION:
Take care not allow foreign material to enter the final gear case.

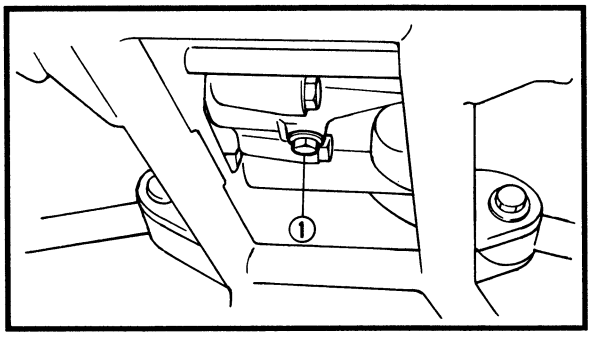
4. Install:
- Oil filler bolt

Oil filler bolt:
12 Nm (1.2 m • kg, 8.7 ft • lb)



DIFFERENTIAL GEAR OIL REPLACEMENT

1. Place the machine on a level place.
2. Remove:
- Engine guard ①
3. Place the receptacle under the differential gear case.



4. Remove:
- Oil filler bolt
- Drain plug ①

5. Drain
- Differential gear oil

6. Install
- Drain plug

Drain plug:
12 Nm (1.2 m • kg, 8.7 ft • lb)

NOTE:
Check the gasket (drain plug). If damaged, replace it with a new one.

7. Fill:
- Differential gear case

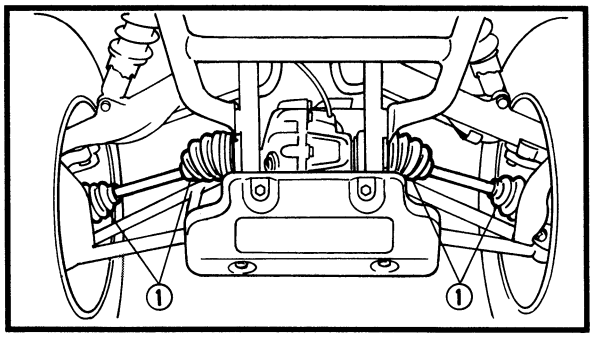
Periodic oil change:
0.18 L (0.16 Imp qt, 0.19 US qt)
Total amount:
0.2 L (0.18 Imp qt, 0.21 US qt)
Recommended oil:
SAE80 or SAE80W-90 API "GL-5" Hypoid gear oil for L.S.D.(Limite Slip Differential)

CAUTION:
Take care not allow foreign material to enter the differential gear case.

8. Inspect:
- Oil level
  Refer to the "DIFFERENTIAL GEAR OIL LEVEL INSPECTION" section.

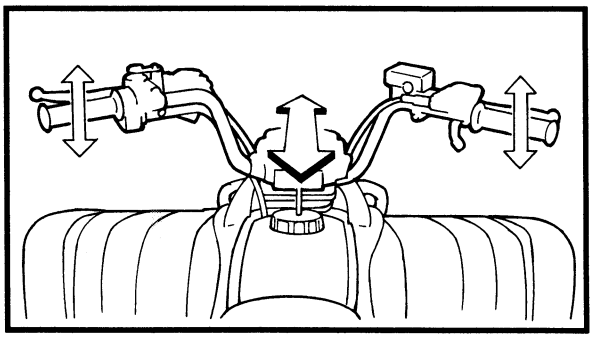
9. Install:
- Oil filler bolt

Oil filler bolt:
12 Nm (1.2 m • kg, 8.7 ft • lb)



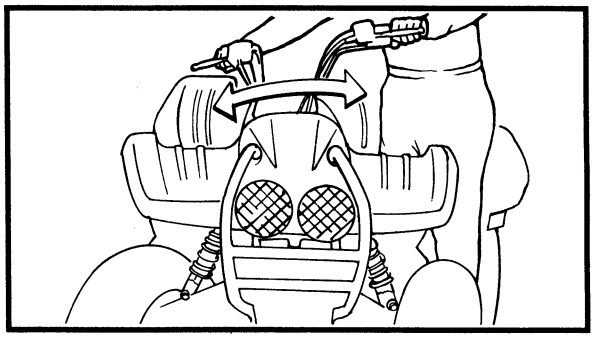
CONSTANT VELOCITY JOINT DUST BOOT INSPECTION

1. Inspect
- Dust boots ①
  Damage → Replace.
  Refer to the "DIFFERENTIAL GEAR AND CONSTANT VELOCITY JOINT" section in CHAPTER 6.

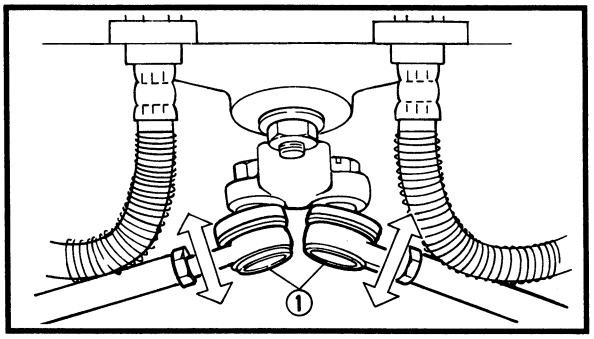


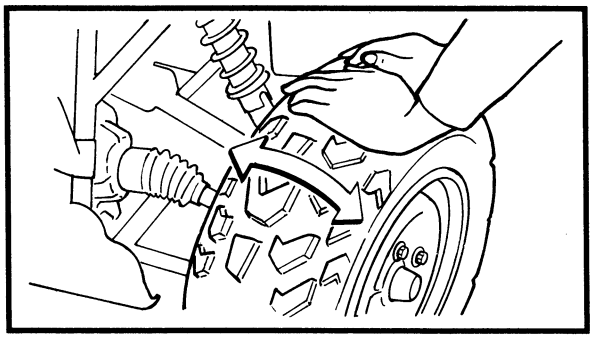
STEERING SYSTEM INSPECTION

1. Place the machine on a level surface.
2. Check:
- Steering assembly bushings
  Move the handlebar up and down, and/or back and forth.
  Excessive play → Replace the steering shaft bushings.



3. Check:
- Tie-rod ends
  Turn the handlebar to the left and/or right until it stops completely, then slightly move the handlebar from left to right. Tie-rod end ① has any vertical play → Replace the tie-rod end(s).





4. Raise the front end of the machine so that there is no weight on the front wheels.
5. Check:
- Ball joints and/or wheel bearings
  Move the wheels laterally back and forth.
  Excessive free play → Replace the front arms (upper and lower) and/or wheel bearings.

TOE-IN ADJUSTMENT

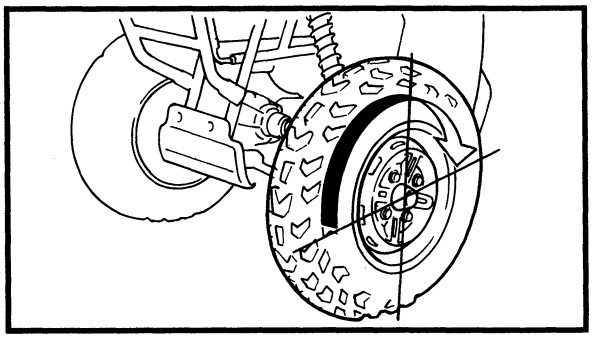
1. Place the machine on a level place.
2. Measure:
- Toe-in
  Out of specification → Adjust.

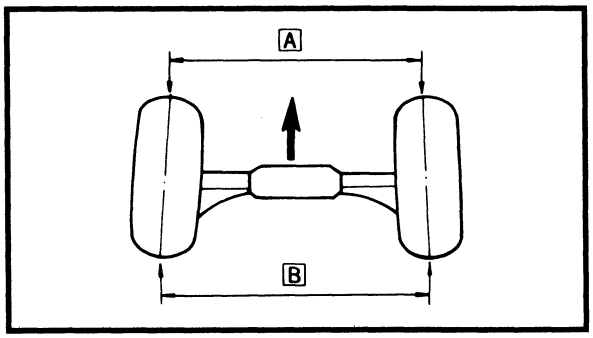
Toe-in:
0 ~ 5 mm (0 ~ 0.20 in)

****

Toe-in measurement steps:

NOTE:
Before measuring the toe-in, make sure that tire pressure is correct.





- Mark both front tire tread centers.
- Raise the front end of the machine so that there is no weight on the front tires.
- Fix the handlebar straight ahead.
- Measure the width [A] between the marks.
- Rotate the front tires 180 degrees until the marks come exactly opposite.
- Measure the width [B] between the marks.
- Calculate the toe-in using the formula given below.

Toe-in = [B] – [A]

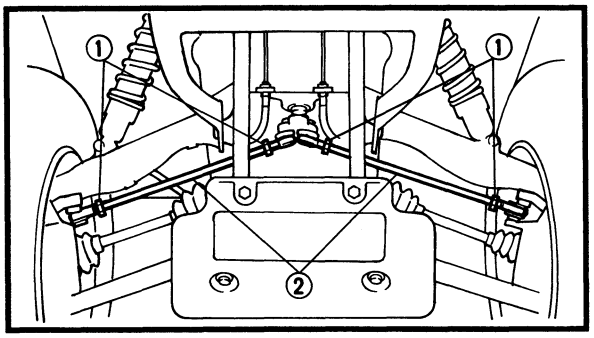
- If the toe-in is incorrect, adjust the toe-in.

****

3. Adjust:
- Toe-in

⚠ WARNING

- **Be sure that both tie-rods are turned the same amount. If not, the machine will drift right or left even though the handlebar is positioned straight which may lead to mishandling and accident.**
- **After setting the toe-in to specification, run the machine slowly for some distance with hands placed lightly on the handlebar and check that the handlebar responds correctly. If not, turn either the right or left tie-rod within the toe-in specification.**



****

Adjustment steps:

- Mark both tie-rods ends.
  This reference point will be needed during adjustment.
- Loosen the locknuts (tie-rod end) ① of both tie-rods.
- The same number of turns should be given to both tie-rods ② right and left until the specified toe-in is obtained, so that the lengths of the rods will be kept the same.
- Tighten the rod end locknuts of both tie rods.

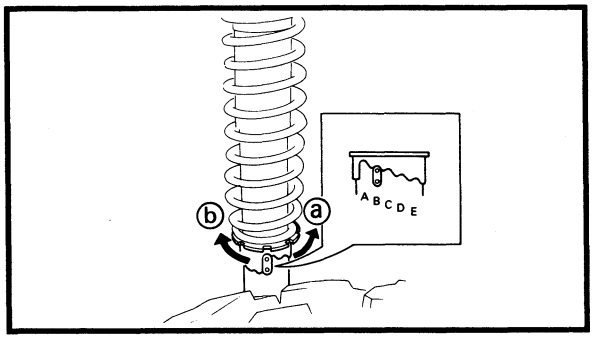
	Locknut (rod end): **35 Nm (3.5 m • kg, 25 ft • lb)**

****

FRONT SHOCK ABSORBER ADJUSTMENT

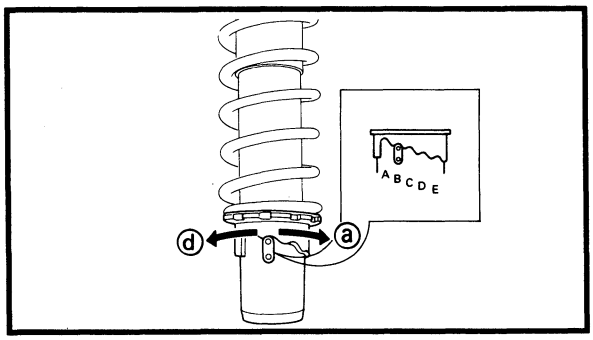
⚠ WARNING

Always adjust both front shock absorber spring preload to the same setting. Uneven adjustment can cause poor handling and loss of stability.



1. Adjust:
- Spring preload
  Turn the adjuster ① to increase or decrease the spring preload.

Front shock absorber preload			
Preload	Softer ⓐ ←	Standard	Stiffer ⓑ →
Position	A	B	C, D, E



REAR SHOCK ABSORBER ADJUSTMENT

1. Adjust:
- Spring preload
  Turn the adjuster ① to increase or decrease the spring preload.

NOTE:
The spring preload of the rear shock absorber can be adjusted to suit rider's preference, weight, and the course conditions.

Rear shock absorber preload			
Preload	Softer ⓐ ←	Standard	Stiffer ⓑ →
Position	A	B	C, D, E

TIRE INSPECTION

⚠ WARNING

This model is equipped with low pressure tires. It is important that they be inflated correctly and maintained at the proper pressures.

• TIRE CHARACTERISTICS

1)Tire characteristics influence the handling of ATV's. The tires listed below have been approved by Yamaha Motor Co., Ltd. for this model. If other tire combinations are used, they can adversely affect your machine's handling characteristics and are therefore not recommended.

	Manufacturer	Size	Type
Front	DUNLOP	AT23 × 8-12	KT403
Rear	DUNLOP	AT23 × 10-12	KT407

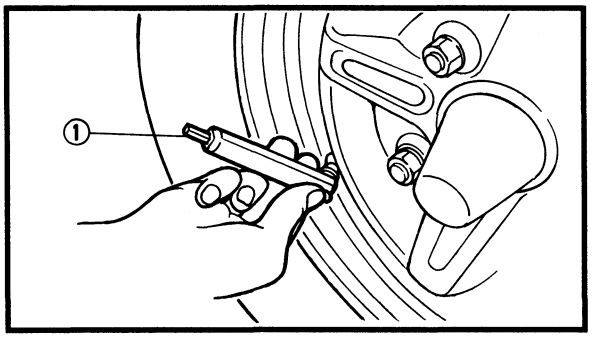
• TIRE PRESSURE

1)Recommended tire pressure
Front 25 kPa (0.25 kg/cm², 3.6 psi)
Rear 25 kPa (0.25 kg/cm², 3.6 psi)

2)Tire pressure below the minimum specified could cause the tire to dislodge from the rim under severe riding conditions.
The following are minimums:
Front 22 kPa (0.22 kg/cm², 3.2 psi)
Rear 22 kPa (0.22 kg/cm², 3.2 psi)

3)Use no more than
Front 250 kPa (2.5 kg/cm², 36 psi)
Rear 250 kPa (2.5 kg/cm², 36 psi)
when seating the tire beads. Higher pressures may cause the tire to burst.
Inflate the tires very slowly and carefully. Fast inflation could cause the tire to burst.

• MAXIMUM LOADING LIMIT
1)Vehicle load limits: 180 kg (397 lb)*
*** Total weight of cargo, trailer hitch vertical load, rider, and accessories.**
2)Storage box: 2 kg (4.4 lb)
3)Trailer hitch:
Horizontal load: 330 kg (728 lb)
Total weight of trailer and cargo.
Vertical load: 15 kg (33 lb)
Vertical weight on trailer hitch joint.
Be extra careful of the machine balance and stability when towing a trailer.

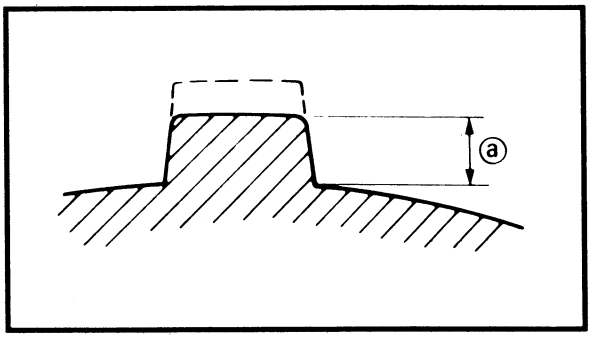


1.Measure:
• Tire pressure (cold tire pressure)
Out of specification → Adjust.

NOTE:
• The low-pressure tire gauge ① is included in the standard equipment.
• If dust or the like is stuck to this gauge, it does not provide correct readings. Therefore, make two measurements on the tire pressure and get the second reading.

Cold tire pressure	Front	Rear
Standard	25 kPa (0.25 kg/cm², 3.6 psi)	25 kPa (0.25 kg/cm², 3.6 psi)
Minimum	22 kPa (0.22 kg/cm², 3.2 psi)	22 kPa (0.22 kg/cm², 3.2 psi)
Maximum	28 kPa (0.28 kg/cm², 4.0 psi)	28 kPa (0.28 kg/cm², 4.0 psi)

⚠ WARNING
Uneven or improper tire pressure may adversely affect the handling of this machine and may cause loss of control.
• Maintain proper tire pressures.
• Set tire pressures when the tires are cold.
• Tire pressures must be equal in both front tires and equal in both rear tires.

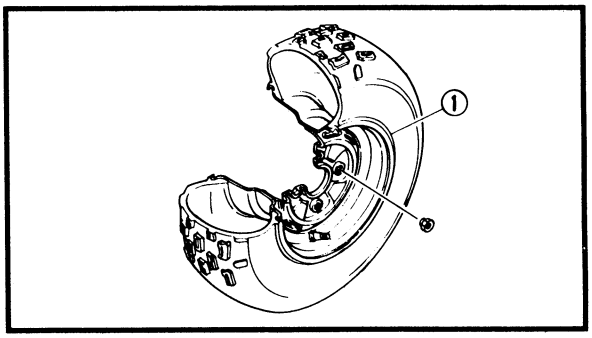


2. Inspect:
- Tire surfaces
  Wear/Damage → Replace.

Tire wear limit ⓐ:
Front and rear: 3.0 mm (0.12 in)

⚠ WARNING

It is dangerous to ride with a wornout tire. When tire wear is out of specification, replace the tire immediately.



WHEEL INSPECTION

1. Inspect:
- Wheels ①
  Damage/Bends → Replace.

NOTE:

Always balance the wheel when a tire or wheel has been changed or replace.

⚠ WARNING

- **Never attempt even small repairs to the wheel.**
- **Ride conservatively after installing a tire to allow it to seat itself properly on the rim.**

CABLE INSPECTION AND LUBRICATION

⚠ WARNING

Damaged cable sheath may cause corrosion and interfere with the cable movement. An unsafe condition may result to replace such cable as soon as possible.

1. Inspect:
- Cable sheath
  Damage → Replace.

2. Check:
- Cable operation
  Unsmooth operation → Lubricate or replace.

Recommended lubricant:
Yamaha chain and cable lube or SAE 10W30 motor oil

NOTE:
Hold cable end high and apply several drops of lubricant to cable.

3. Apply:
- Lithium soap base grease
  (onto end of the cable)

LEVERS, PEDAL, ETC. LUBRICATION

1. Lubrication the pivoting parts.

Recommended lubricant:
Yamaha chain and cable lube or SAE 10W30 motor oil

ELECTRICAL

BATTERY INSPECTION



⚠ WARNING

Battery electrolyte is dangerous; it contains sulfuric acid and therefore is poisonous and highly caustic.

Always follow these preventive measures:

- **Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.**
- **Wear protective eye gear when handling or working near batteries.**

Antidote (EXTERNAL):

- **SKIN-Flush with water.**
- **EYE-Flush with water for 15 minutes and get immediate medical attention.**

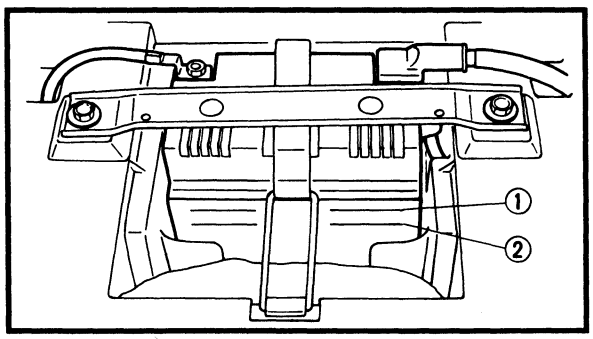
Antidote (INTERNAL):

- **Drink large quantities of water or milk follow with milk of magnesia, beaten egg, or vegetable oil. Get immediate medical attention.**

Batteries also generate explosive hydrogen gas. You should always follow these preventive measures:

- **Charge batteries in a well-ventilated area.**
- **Keep batteries away from fire, sparks, or open flames (e.g., welding equipment, lighted cigarettes, etc.)**
- **DO NOT SMOKE when charging or handling batteries.**

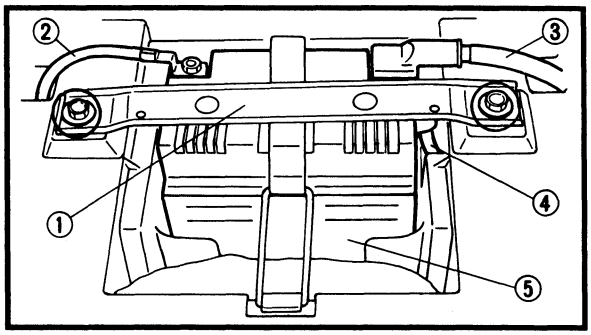
KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.



1. Inspect:
- Fluid level
  Fluid level should be between upper ① and lower ② level marks.
  Incorrect → Refill.

CAUTION:

Refill with distilled water only; tap water contains minerals harmful to a battery.

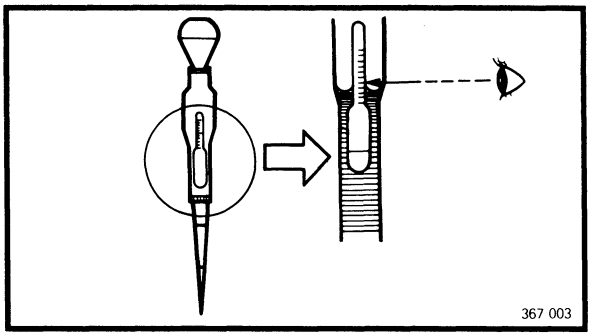


2. Remove:
- Battery holder ①

3. Disconnect:
- Battery leads ② ③
- Battery breather hose ④

CAUTION:

Disconnect the negative lead ② first and then disconnect the positive lead ③.



4. Remove:
- Battery ⑤

5. Check:
- Specific gravity

Less than 1.280 → Recharge battery.

Charging current:	**1.2 amps/10 hrs**
Specific gravity:	**1.280 at 20°C (68°F)**

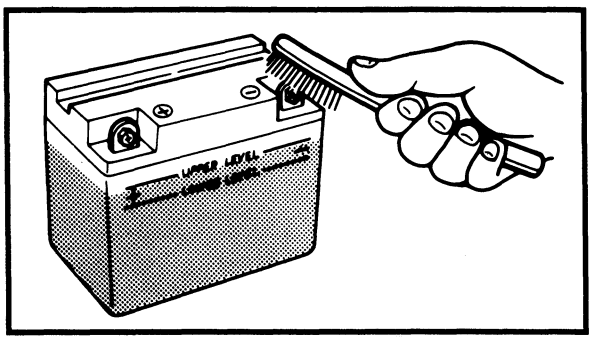
****

Replace the battery it:
- Battery voltage will not rise to a specific value or bubbles fail to rise even after many hours of charging.
- Sulfation of one or more cells occurs, as indicated by the plates turning white, or an accumulation of material exists in the bottom of the cell.
- Specific gravity readings after a long, slow charge indicate one cell to be lower than the rest.
- Warpage or buckling of plates or insulators is evident.

CAUTION:

Always charge a new battery before using it to ensure maximum performance.

****



6. Inspect:
- Battery terminal

Dirty terminal → Clean with wire brush.
Poor connection → Correct.

NOTE:

After cleaning the terminals, apply grease lightly to the terminals.

7. Inspect:
- Breather hose
  Obstruction → Remove.
  Damage → Replace.

CAUTION:

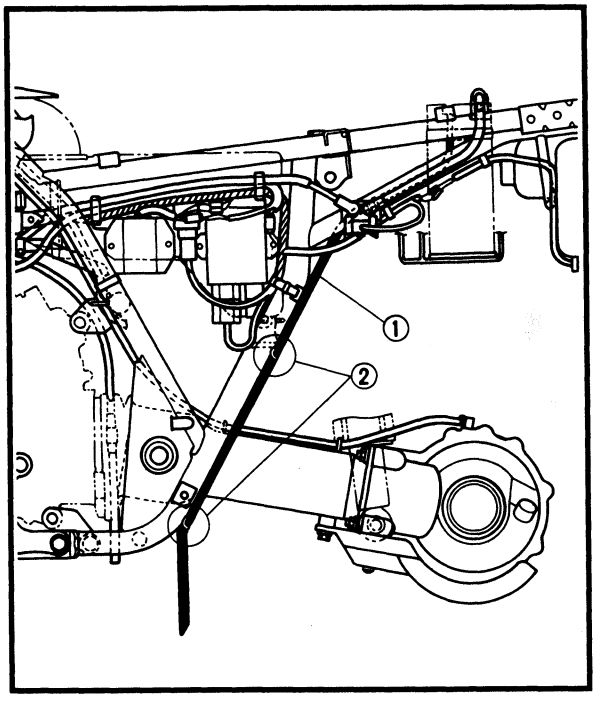
When inspecting the battery, be sure the breather hose is routed correctly. If the breather hose touches the frame or exits in such a way as to cause battery electrolyte or gas to exit onto the frame, structural and cosmetic damage to the machine can occur.

8. Install:
- Battery
- Battery holder

9. Connect:
- Battery leads

CAUTION:

Connect the positive lead first and then connect the negative lead.



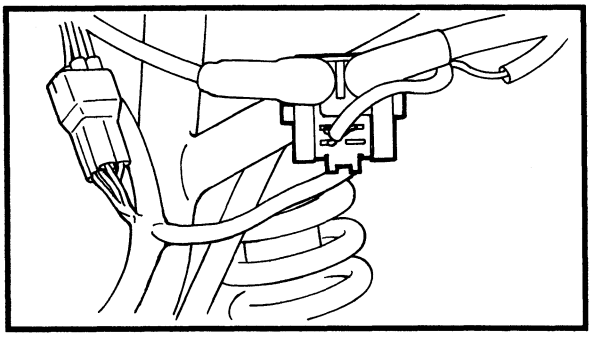
10. Connect:
- Battery breather hose ①
  Be sure the hose is properly attached and routed.

② Pass the battery breather hose through the wire guide.

FUSE INSPECTION

CAUTION:

Always turn off the main switch when checking or replacing a fuse. Otherwise, a short circuit may occur.



1. Inspect:
- Fuse

****

Inspection steps:
- Connect the pocket tester to the fuse and check it for continuity.

NOTE:
Set the tester selector to "Ω x 1" position.

	Pocket tester: **P/N. YU-03112, 90890-03112**

- If the tester is indicated at ∞, replace the fuse.

****

2. Replace:
- Blown fuse

****

Replacement steps:
- Turn off the ignition.
- Install a new fuse of proper amperage.

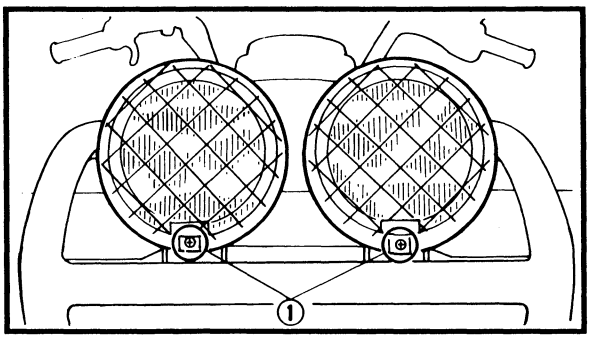
	Fuse: **30 amps x 1pc.**

- Turn on switches to verify operation of related electrical devices.
- If the fuse immediately blows again, check the electrical circuit.

****

⚠ WARNING

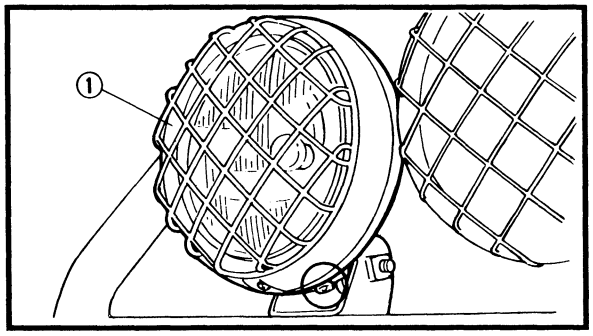
Never use a fuse with a rating other then specified. Never use other materials in place of a fuse. An improper fuse may cause extensive damage to the electrical system, malfunction of lighting and ignition and possibly cause a fire.



HEADLIGHT BEAM ADJUSTMENT

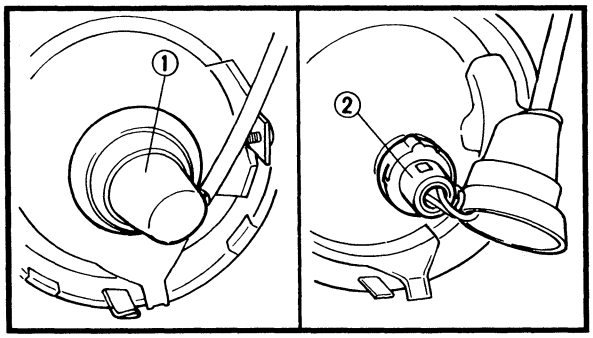
1. Adjust:
- Headlight beam (vertically)
  Turn the adjuster ① in or out.

Turning in → Headlight beam higher.
Turning out → Headlight beam lower.



HEADLIGHT BULB REPLACEMENT

1. Remove:
- Headlight unit ①



2. Remove:
- Cover ①
- Bulb holder ②
- Bulb

NOTE:

Turn the bulb holder counterclockwise and the defective bulb.

⚠ WARNING

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

3. Install:
- Bulb (new)
  Secure the new bulb with the headlight unit.

CAUTION:

Avoid touching the glass part of the bulb. Keep it free from oil; otherwise, the transparency of the glass, life of the bulb, and luminous flux will be adversely affected. If oil gets on the bulb, throughly clean it with a cloth moistened with alcohol or lacquer thinner.

4. Install:
- Bulb holder
- Cover
- Headlight unit

ENGINE OVERHAUL

ENGINE REMOVAL

NOTE:
It is not necessary to remove the engine in order to remove the following components.
- Cylinder head
- Cylinder
- Piston
- Clutch
- CDI magneto

SEAT, FENDER AND FUEL TANK
1. Remove:
- Seat
- Front carrier bar
- Front fender
- Fuel tank
- Rear fender

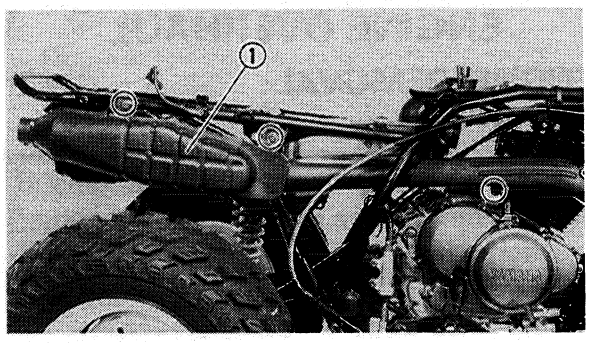
Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section in CHAPTER 3.

ENGINE OIL
1. Drain:
- Engine oil

Refer to the "ENGINE OIL REPLACEMENT" section in CHAPTER 3.

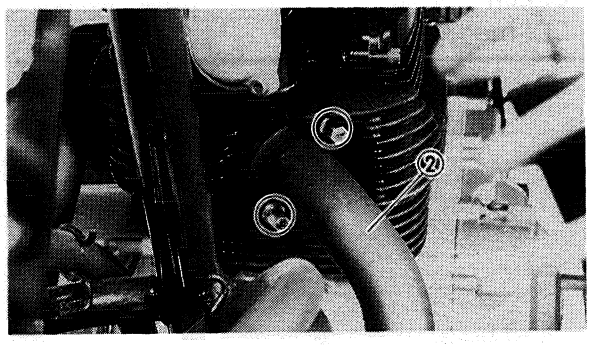
CARBURETOR
1. Remove:
- Carburetor assembly

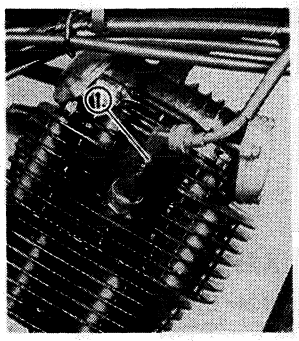
Refer to the "CARBURETOR - REMOVAL" section in CHAPTER 5.

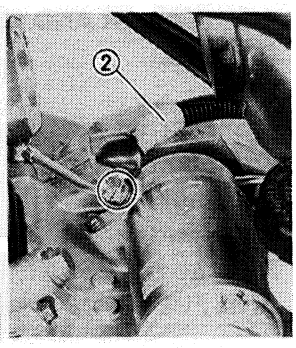


EXHAUST PIPE AND MUFFLER

1. Remove:
- Muffler ①
- Exhaust pipe ②

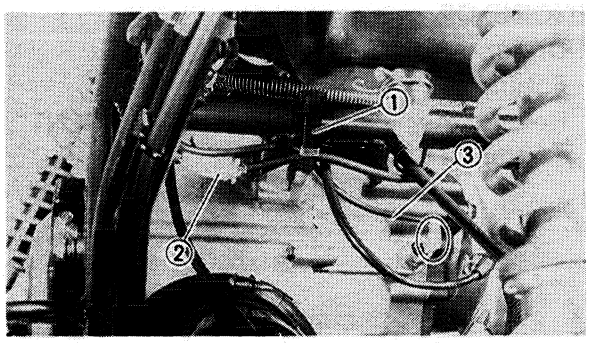






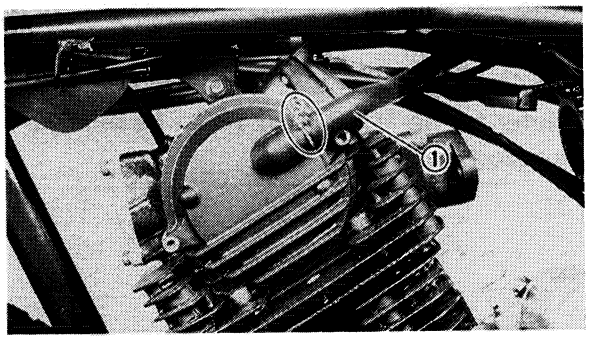
HOSE AND LEAD

1. Disconnect:
- Spark plug lead ①
- Starter motor lead ②

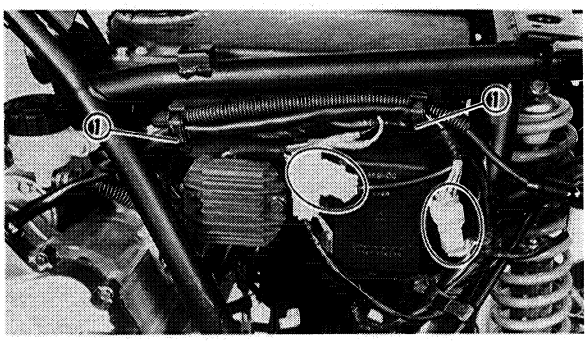


2. Remove:
- Band ①

3. Disconnect:
- Gear position switch coupler ②
- Thermo switch lead ③

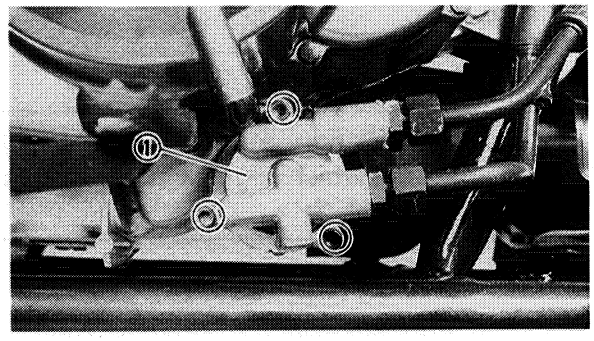


4. Disconnect:
- Breather hose (cylinder head) ①

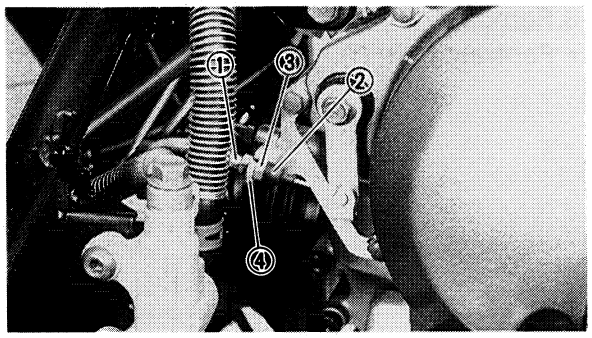


5. Disconnect:
- CDI magneto coupler

NOTE:
Unhook the CDI magneto leads from the clamps ①.



OIL FILTER
1. Remove:
- Oil filter cover ①
- Oil filter element

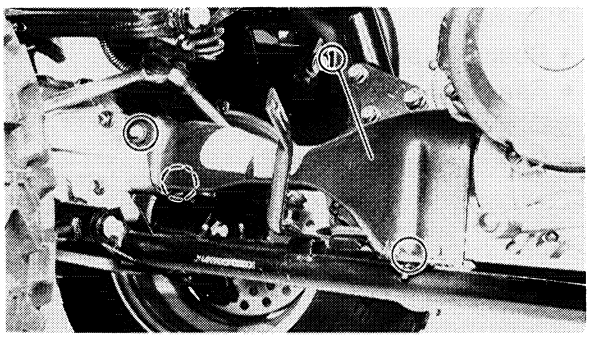


REVERSE CONTROL CABLE
1. Remove:
- Reverse control cable ①

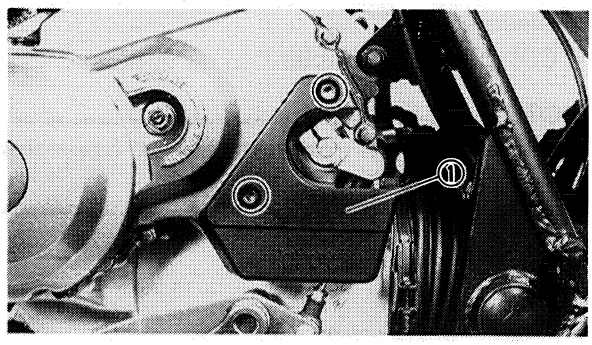
****

Removal steps:
- Pull back the boot ②.
- Remove the adjuster ③.
- Disconnect the reverse control cable from the cable holder ④.
- Unhook the cable end.

****

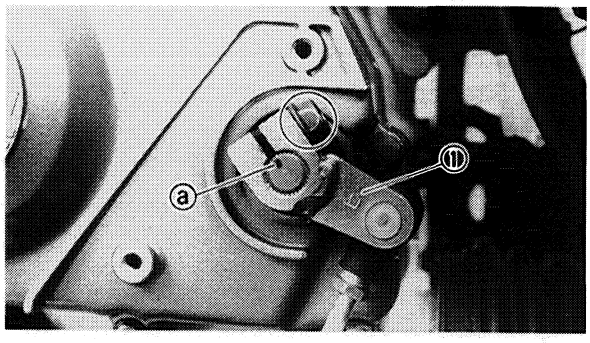


FRONT DRIVE SHAFT PROTECTOR
1. Remove:
- Front drive shaft protector ①



SHIFT PEDAL

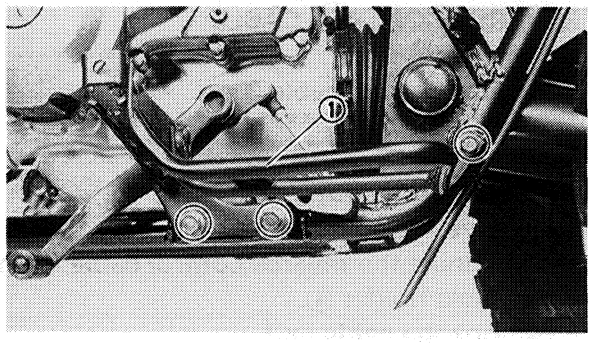
1. Remove:
   - Shift rod cover ①



2. Remove:
   - Shift pedal link ①

NOTE:

For easier installation, mark the position ⓐ on the shift shaft which aligns with the slot on the shift pedal link ① .



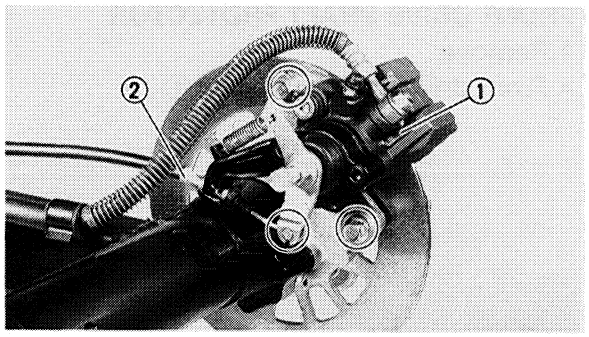
3. Remove:
   - Footrest (left) ①

REAR DRIVE ASSEMBLY AND SWINGARM

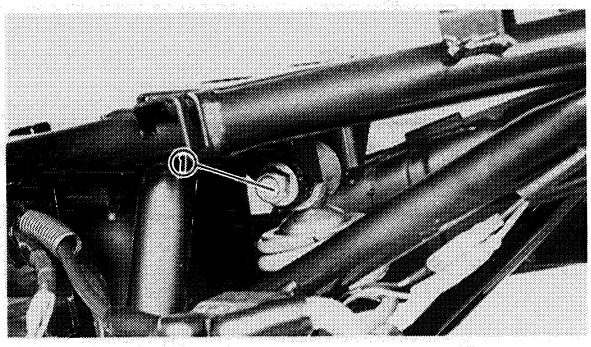
⚠ WARNING

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

1. Block the front wheels, and elevate the rear wheels by placing the suitable stand under the frame.

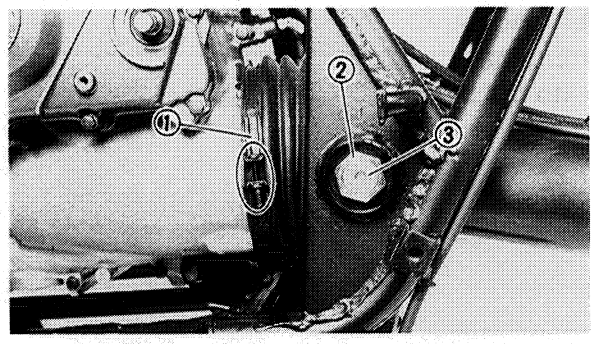


2. Remove:
   - Rear wheels
   - Rear brake caliper ①
3. Disconnect
   - Parking brake cable ②

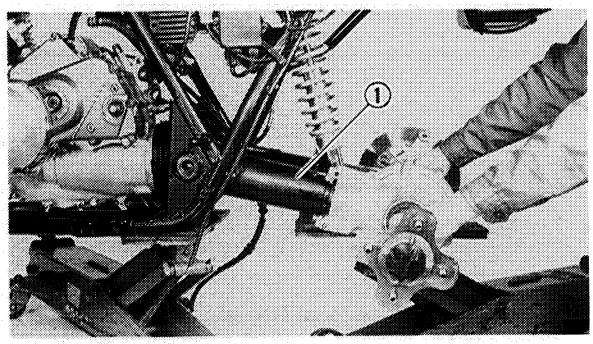


4. Disconnect:
- Breather hose

5. Remove:
- Bolt (shock absorber - upper) ①



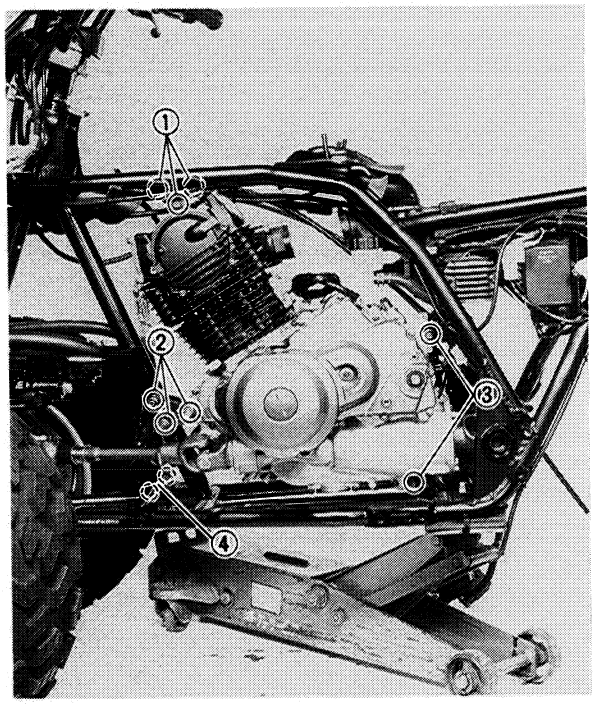
6. Remove:
- Clamp (rubber boot) ①
- Cap (pivot shaft)
- Locknut (pivot shaft) ②
- Pivot shaft ③



7. Remove:
- Breather hose
- Rear drive assembly and swingarm ①

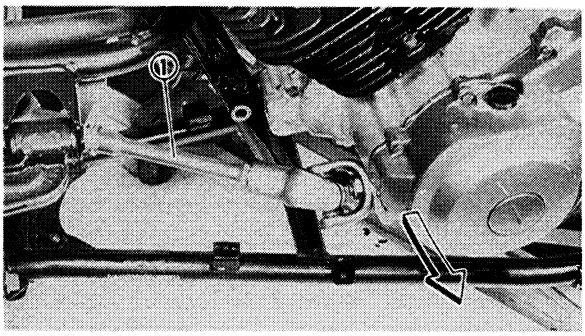
NOTE:

When removing the swingarm;
1) Tilt it to the left side.
2) The drive shaft and coupling gear will fall off. Take care not to loose these parts.



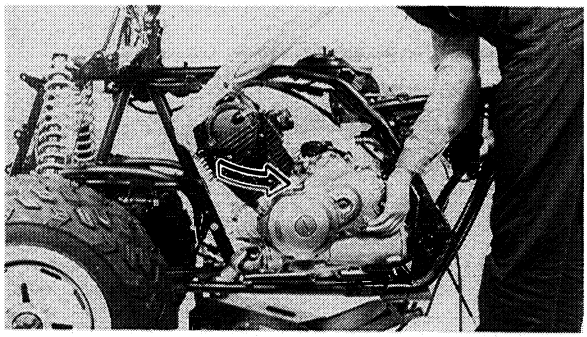
ENGINE REMOVAL

1. Remove:
- Bolts (engine mounting-top) ①
- Bolts (engine mounting-front) ②
- Bolts (engine mounting-rear) ③
- Front fender stay ④



2. Remove:
- Front drive shaft ①

NOTE:
When removing the drive shaft, turn the engine counterclockwise.

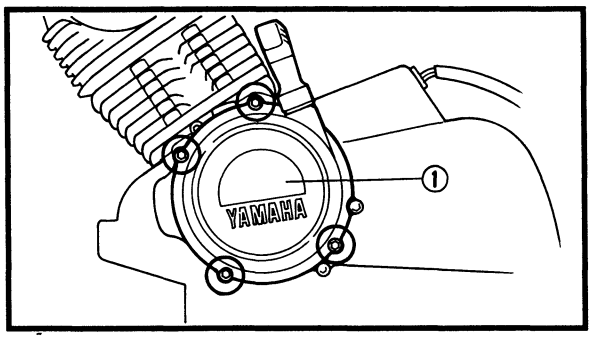


3. Remove:
- Engine
  (to the left)

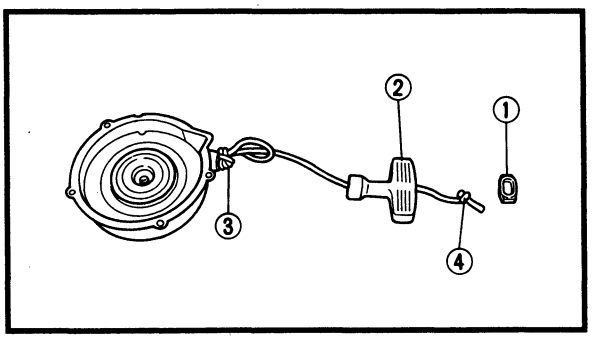
ENGINE DISASSEMBLY

RECOIL STARTER (EXCEPT FOR USA)

NOTE:
With the engine mounted, the recoil starter can be maintained.

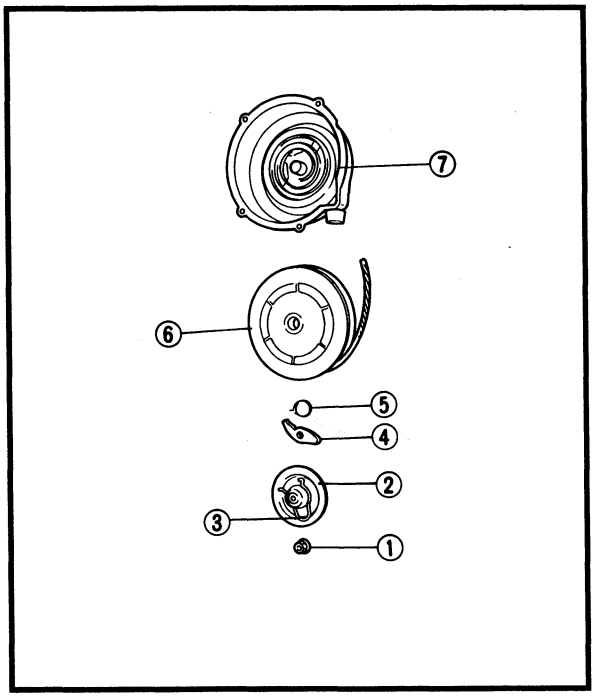


1. Remove:
- Recoil starter assembly ①
- Gasket



2. Remove:
- Cap ①
- Starter handle ②

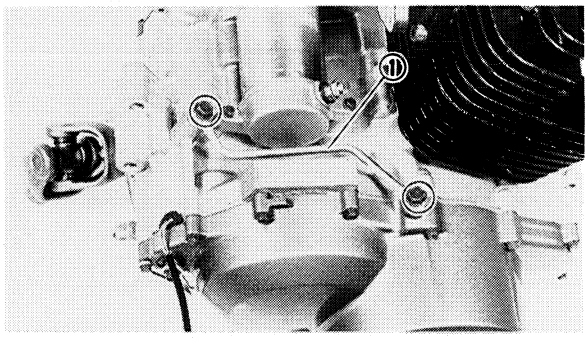
NOTE:
Before untying knot ③, pull out the rope long enough to make knot ④ on the rope so that the rope is not pulled into the case.



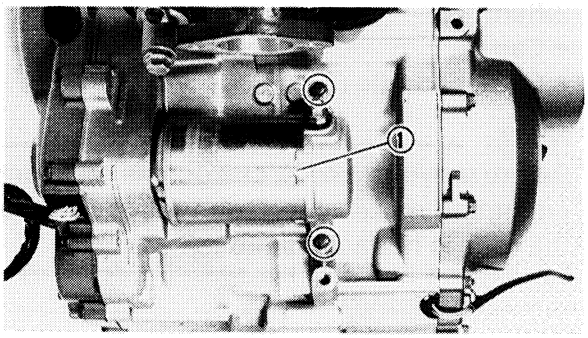
3. Remove:
- Nut ①
- Plate ②
- Spring ③
- Drive pawl ④
- Pawl spring ⑤
- Sheave drum ⑥
- Coil spring ⑦

STARTER MOTOR

NOTE:
With the engine mounted, the starter motor can be maintained by removing the following part.
- Reservoir tank (rear brake)



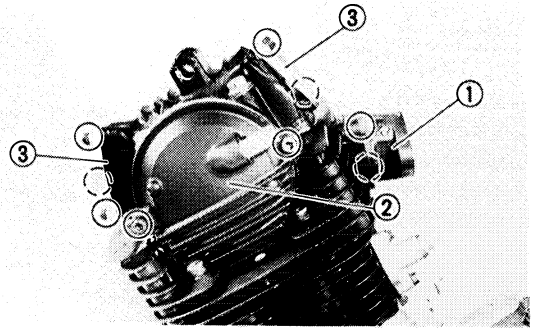
1. Remove:
- Oil delivery pipe ①
- Copper washers



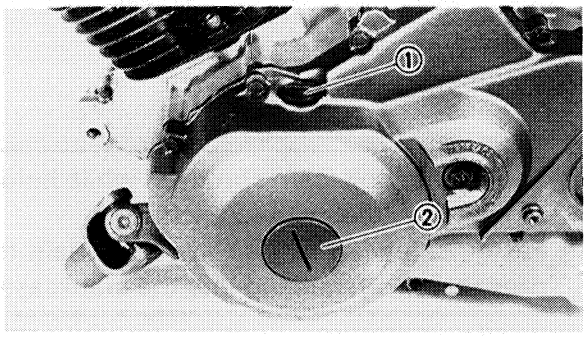
2. Remove:
- Starter motor ①

CYLINDER HEAD AND CYLINDER

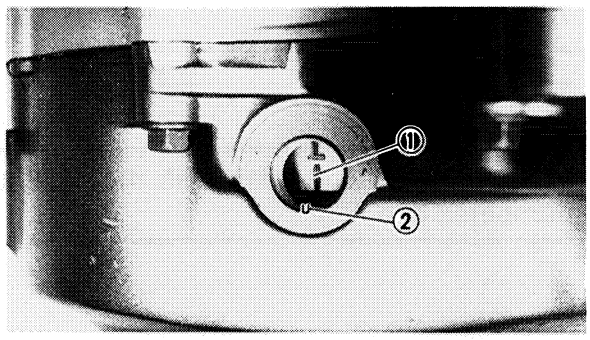
NOTE:
With the engine mounted, the cylinder head and cylinder can be maintained by removing the following parts.
- Front fender
- Fuel tank
- Carburetor
- Exhaust pipe
- Engine bracket (top)



1. Remove:
- Intake manifold ①
- Side cover (cylinder head) ②
- Tappet covers (intake and exhaust) ③
- O-rings
- Spark plug



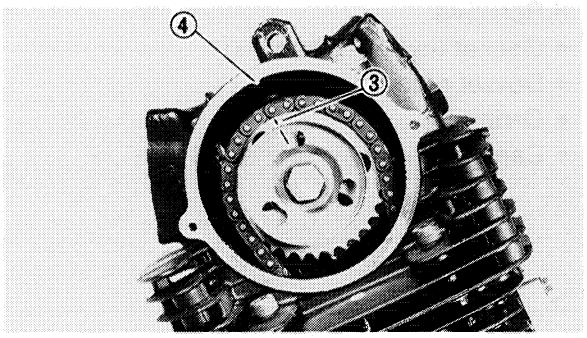
2. Remove:
- Timing plug ①
- Straight plug ② (for USA)



3. Align:
- "T" mark on the flywheel
  With the stationary pointer on the crankcase cover.

****

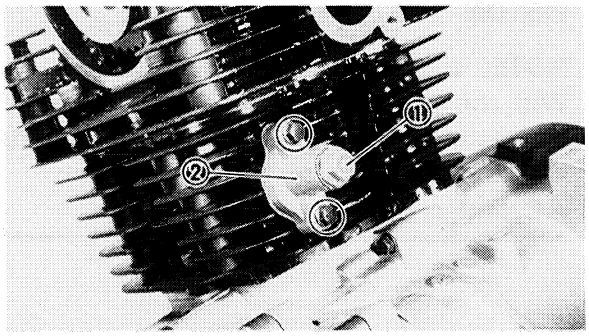
TDC alignment steps:
- Turn the flywheel counterclockwise with wrench.
- Align the "T" mark ① on the flywheel with the stationary pointer ② on the crankcase cover. When the "T" mark is aligned with the stationary pointer, the piston is at Top Dead Center (TDC).



NOTE:

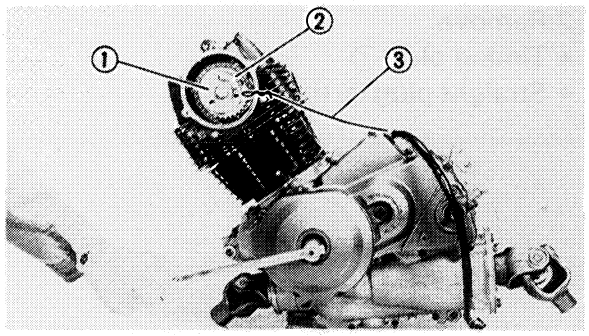
TDC on compression stroke check:
- Both rocker arms must have a valve clearance when the cam sprocket match mark ③ is aligned with the cylinder head match mark ④.
- If not, give the crankshaft one counterclockwise turn to meet the above condition.

****



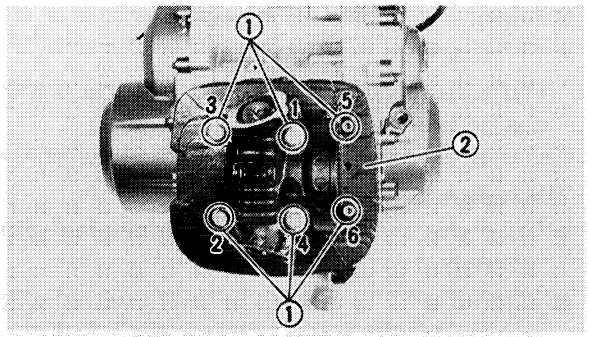
4. Loosen:
- End plug (cam chain tensioner) ①

5. Remove:
- Cam chain tensioner body ②
- Gasket



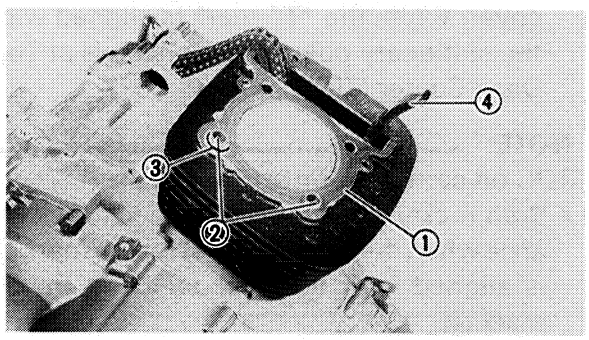
6. Remove:
- Sprocket cover ①
- Cam sprocket ②

NOTE:
- Loosen the bolt (cam sprocket) while holding the flywheel with wrench.
- Fasten safety wire ③ to the cam chain to prevent it from faillling into the crankcase.

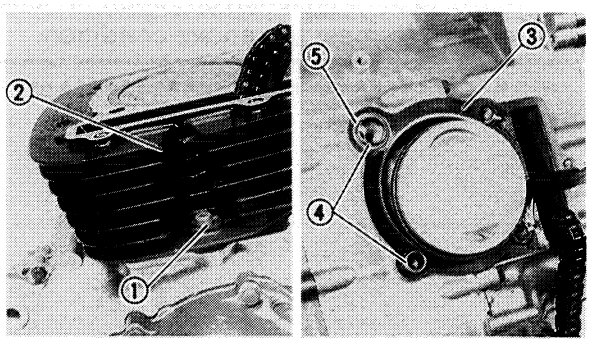


7. Remove:
- Bolts (cylinder head) ①
- Cylinder head ②

NOTE:
Loosen the bolts starting with the highest numbered one.



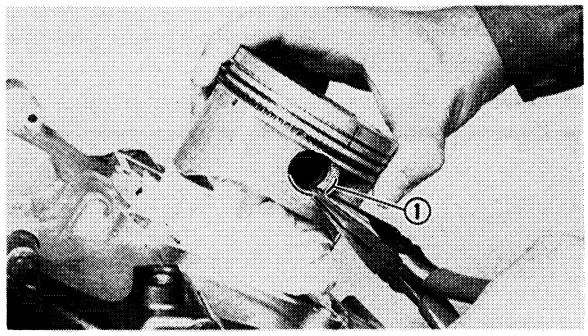
8. Remove:
- Gasket (cylinder head) ①
- Dowel pins ②
- O-ring ③
- Cam chain guide (exhaust) ④



9. Remove:
- Bolt (cylinder) ①
- Cylinder ②
- Gasket (cylinder) ③
- Dowel pins ④
- O-ring ⑤

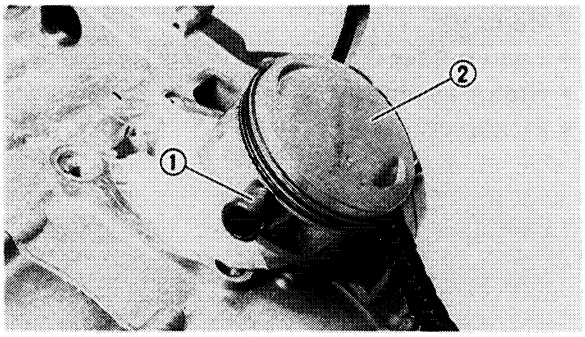
PISTON

NOTE:
With the engine mounted, the piston can be maintained by removing the following parts.
- Cylinder head
- Cylinder



1. Remove:
- Piston pin clip ①

NOTE:
Before removing the piston pin clip, cover the crankcase with a clean rag so you will not accidentally drop the clip into the crankcase.



2. Remove:
- Piston pin ①
- Piston ②

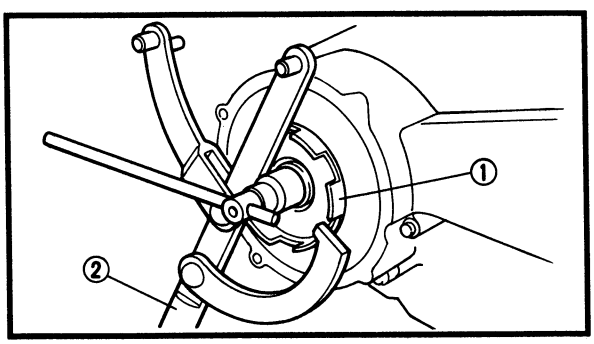
NOTE:
Before removing the piston pin, deburr the clip groove and pin hole area. If the piston pin groove is deburred and piston pin is still difficult to remove, use piston pin puller.

	Piston pin puller: **P/N. YU-01304, 90890-01304**

CAUTION:
Do not use a hammer to drive the piston pin out.

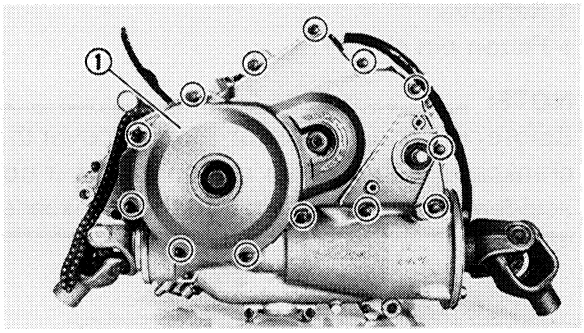
CRANKCASE COVER (LEFT)

NOTE:
With the engine mounted, the crankcase cover (left) can be maintained by removing the following parts.
- Shift pedal
- Footrest (left)
- Recoil starter (except for USA)

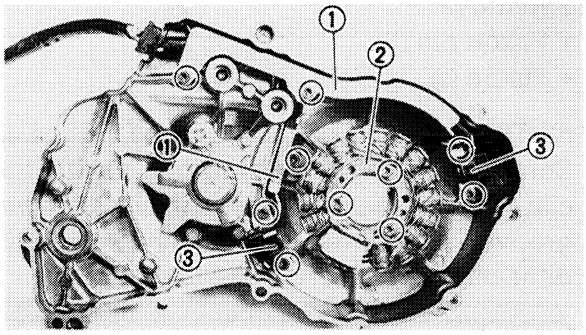


1. Remove:
- Starter pulley ① (except for USA)
  Use the rotor holder ② to hold the starter pulley.

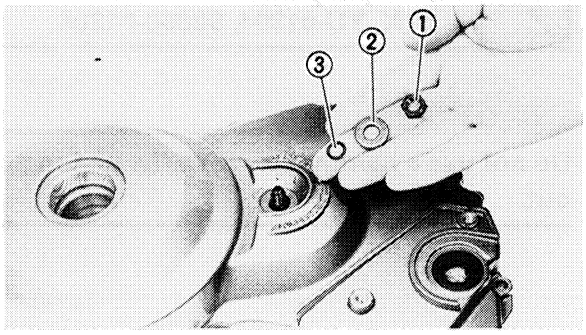
	Rotor holder **P/N. YU-01235, 90890-01235**



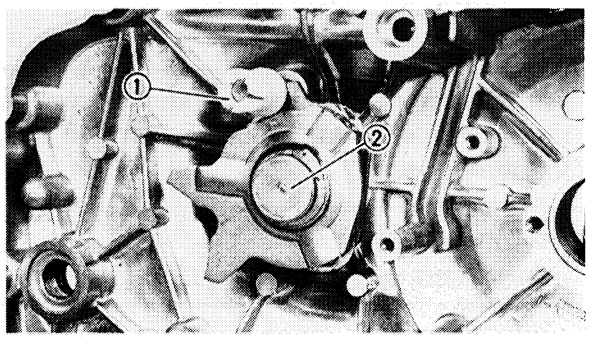
2. Remove:
- Crankcase cover (left) ①
- Gasket
- Dowel pins



3. Remove:
- Lead holder ①
- Stator assembly ②
- Pickup coil assembly ③



4. Remove:
- Locknut ①
- Washer ②
- O-ring ③

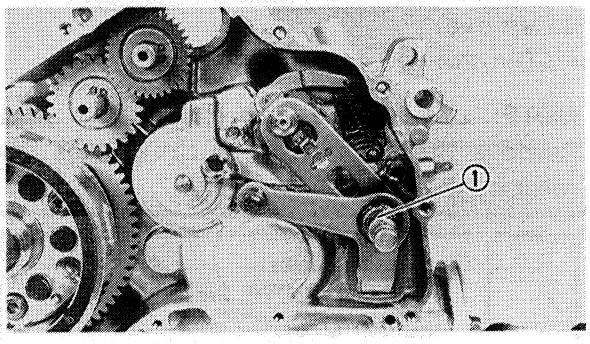


5. Remove:
- Stopper collar ①
- Shift guide assembly ②

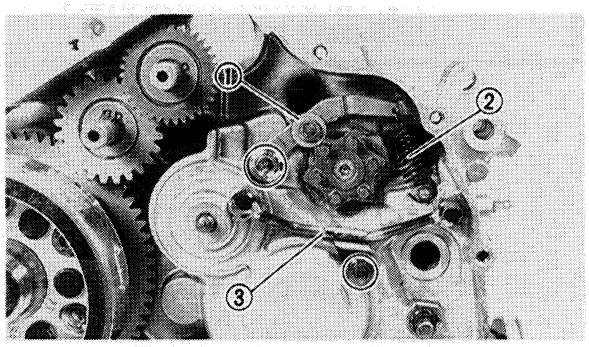
NOTE:
When removing the left crankcase cover, the stopper collar ① can easily fall off. Make sure that you do not lose this part.

SHIFT SHAFT AND STARTER IDLE GEAR

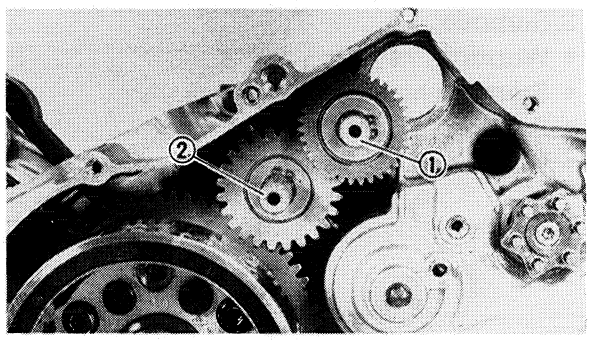
NOTE:
With the engine mounted, the shift shaft and starter idle gear can be maintained by removing the following parts.
- Shift pedal
- Footrest (left)
- Crankcase cover (left)



1. Remove:
- Shift shaft assembly ①
- Washer



2. Remove:
- Stopper lever ①
- Spring ②
- Oil pipe ③
- O-rings

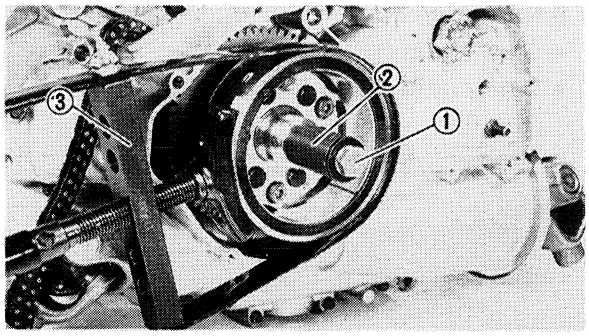


3. Remove:
- Starter idle gear #1 ①
- Starter idle gear #2 ②

CDI ROTOR AND CAM CHAIN

NOTE:

With the engine mounted, the CDI rotor can be maintained by removing the following parts.
- Shift pedal
- Footrest (left)
- Crankcase cover (left)

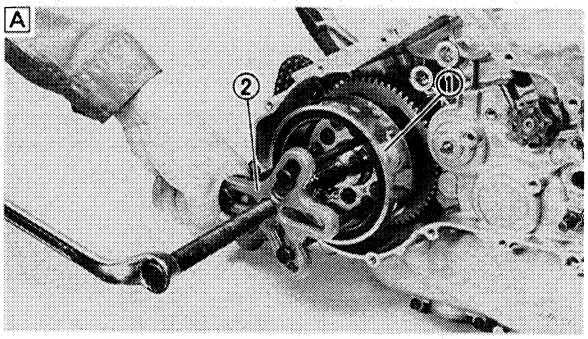


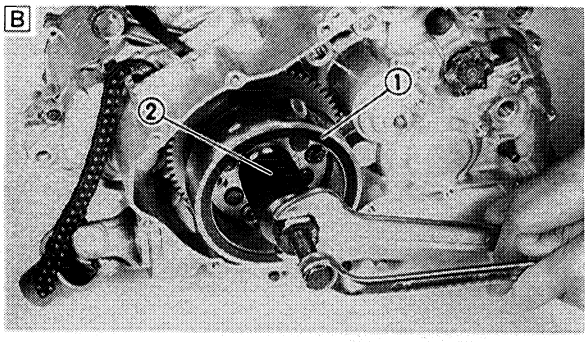
1. Remove:
- Bolt (CDI rotor) ① (for USA)
- Collar ② (for USA)

NOTE:

Loosen the bolt (CDI rotor) while holding the rotor by the sheave holder ③.

	Sheave holder: **P/N. YS-01880, 90890-01701**

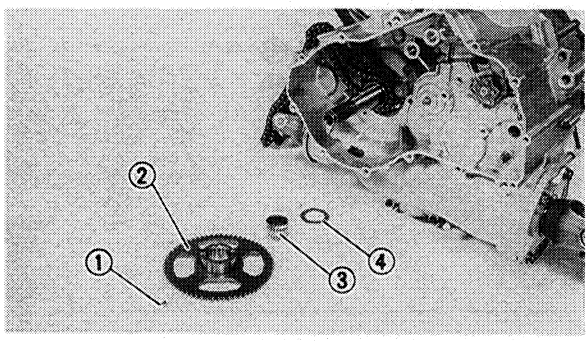




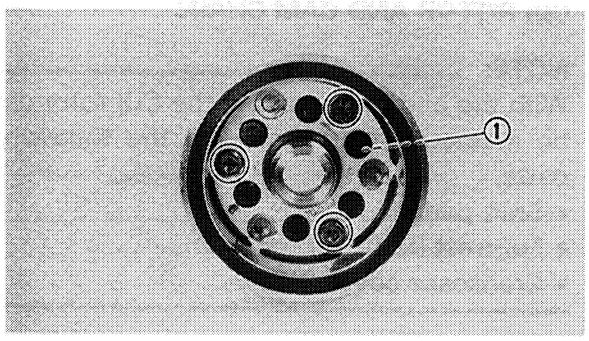
2. Remove:
- CDI rotor ①

NOTE:
Remove the rotor while pushing back the rotor by the flywheel puller ②.

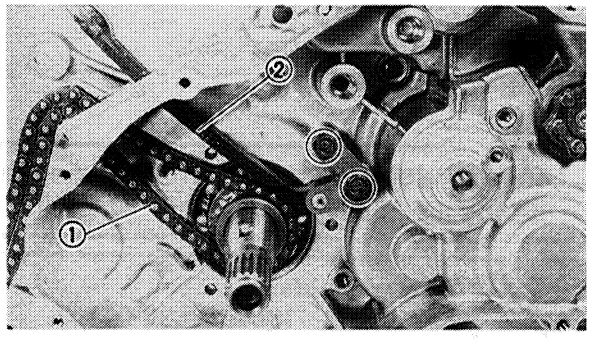
Flywheel puller:
P/N. YU-33270, 90890-01362
(A: for USA)
P/N. YM-01404, 90890-01404
(B: Except for USA)



3. Remove:
- Woodruff key ①
- Starter wheel gear ②
- Bearing ③
- Washer ④



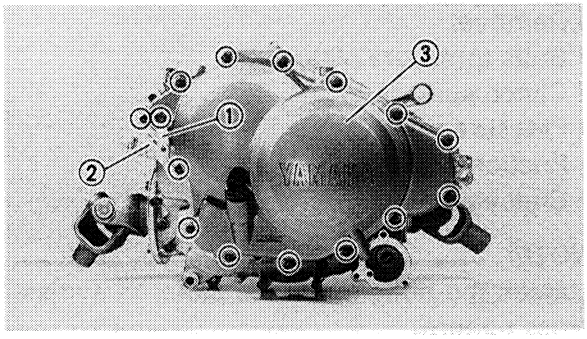
4. Remove:
- Starter clutch ①



5. Remove:
- Cam chain ①
- Cam chain guide (intake) ②

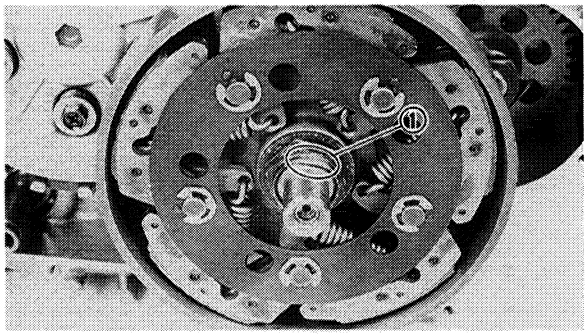
CLUTCH

NOTE:
With the engine mounted, the clutch can be maintained by removing the following parts.
- Reverse control cable
- Footrest (right)

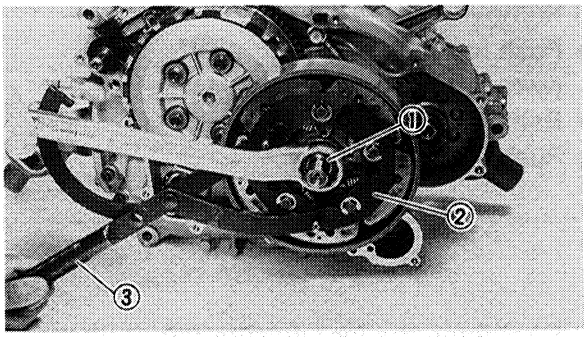


1. Remove:
- Reverse control lever ①
- Reverse control cable holder ②
- Crankcase cover (right) ③
- Dowel pins
- Gasket

NOTE:
Working in a crisscross pattern, loosen bolt 1/4 turn each. Remove them after all are loosened.



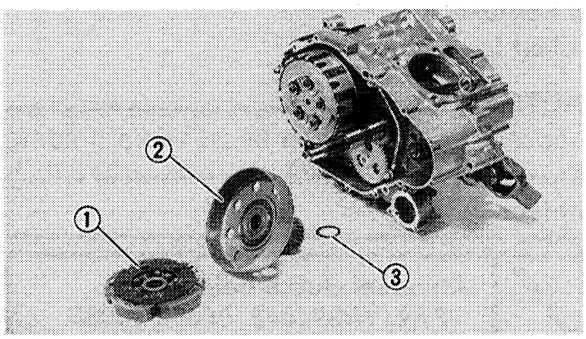
2. Straighten the punched portion ① of the nut (primary clutch).



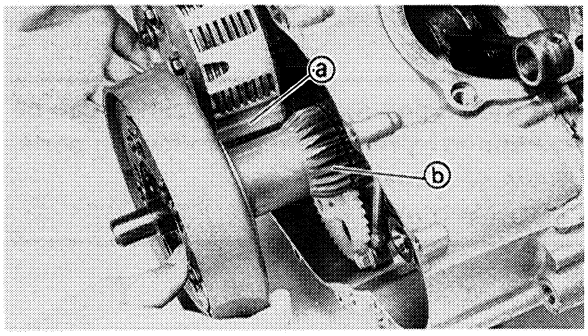
3. Remove:
- Nut (primary clutch) ①

NOTE:
Loosen the nut (primary clutch) while holding the clutch carrier assembly ② with the rotor holder ③.

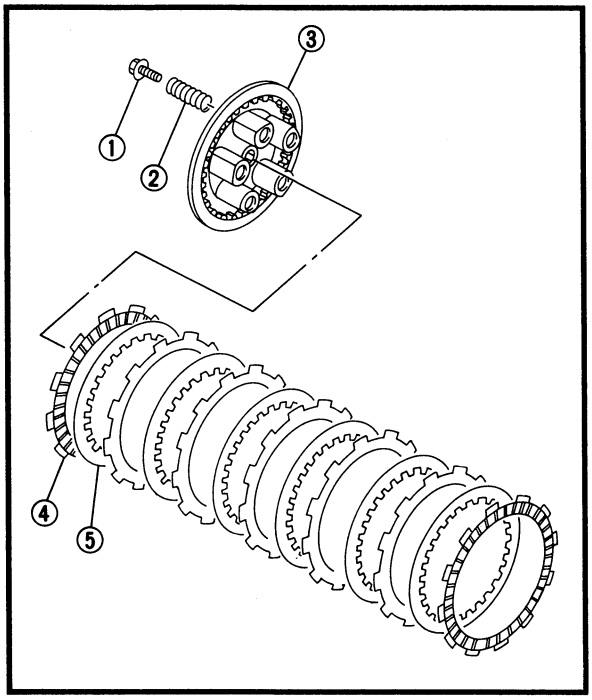
	Rotor holder: **P/N. YU-01235, 90890-01235**



4. Remove:
- Clutch carrier assembly ①
- Clutch housing ②
- Plain washer ③

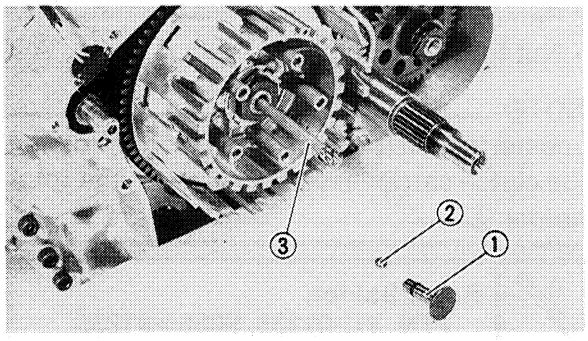


NOTE:
When removing the primary clutch housing, align the indentations in the secondary clutch housing ⓐ and the primary gear ⓑ with each other.



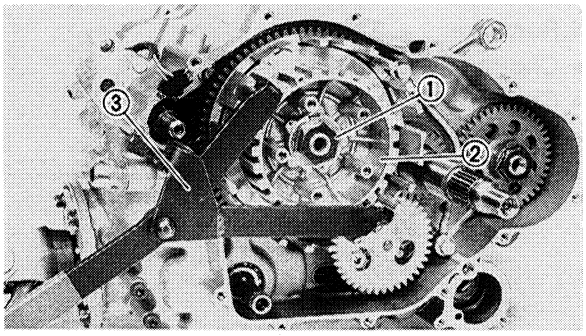
5. Remove:
- Bolts (pressure plate) ①
- Clutch springs ②
- Pressure plate ③
- Friction plate ④
- Clutch plate ⑤

NOTE:
Loosen the bolts (pressure plate) in a criss-cross pattern.



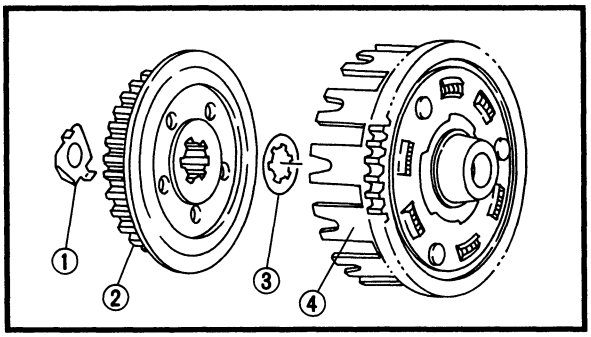
6. Remove:
- Push rod #1 ① (with O-ring)
- Ball ②
- Push rod #2 ③

7. Straighten the lock washer tab.
8. Remove:
- Nut (clutch boss) ①



NOTE:
Loosen the nut (clutch boss) while holding the clutch boss ② with the universal clutch holder ③.

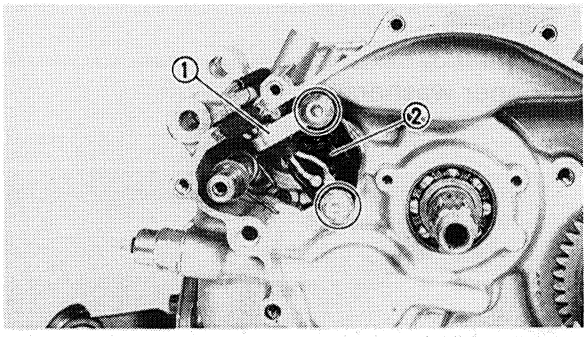
	Universal clutch holder: P/N. YM-91042, 90890-04086



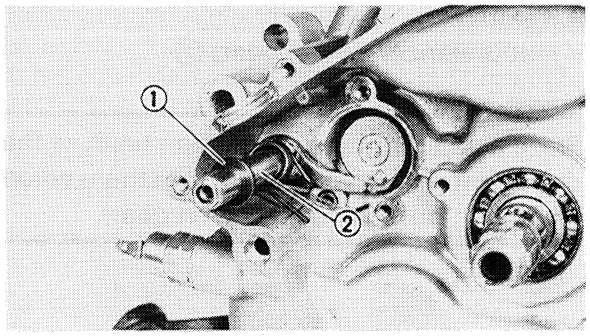
9. Remove:
- Lock washer ①
- Clutch boss ②
- Thrust washer ③
- Clutch housing ④

REVERSE SHIFT BRACKET

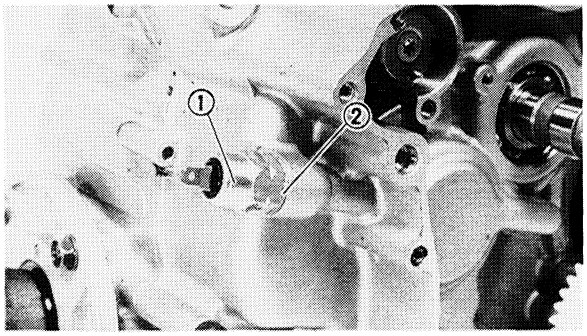
NOTE:
With the engine mounted, the reverse shift bracket can be maintained by removing the following parts.
- Reverse control cable
- Footrest (right)
- Clutch



1. Remove:
- Lead holder ①
- Gear position switch ②



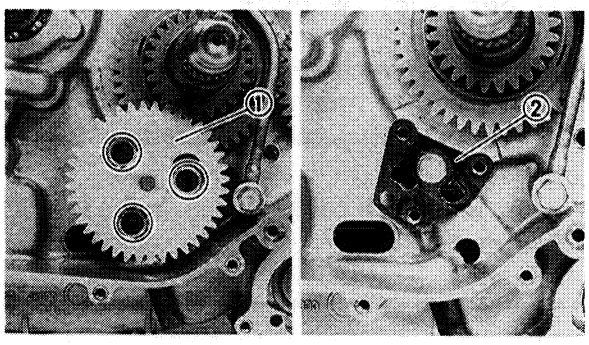
2. Remove:
- Washer ①
- Reverse shift bracket assembly ②



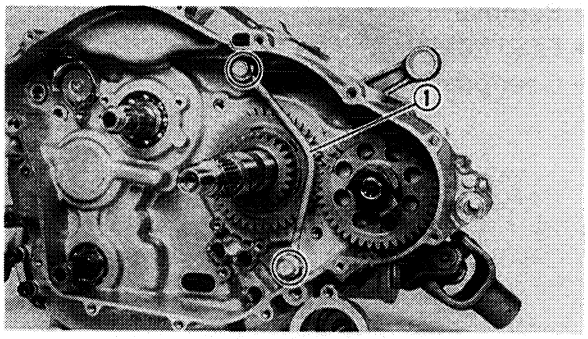
3. Remove:
- Thermo switch ①
- Copper washer ②

OIL PUMP AND BALANCER DRIVE GEARS

NOTE:
With the engine mounted, the oil pump and balancer drive gears can be maintained by removing the following parts.
- Reverse control cable
- Footrest (right)
- Clutch

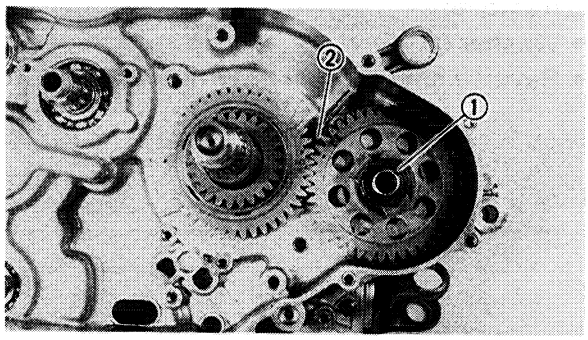


1. Remove:
- Oil pump assembly ①
- Gasket ②

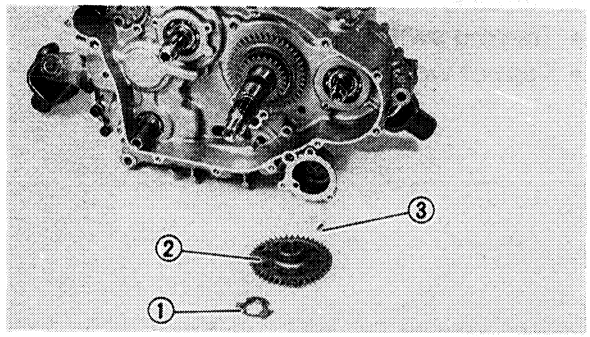


2. Remove:
- Oil pipe ①
- Copper washers

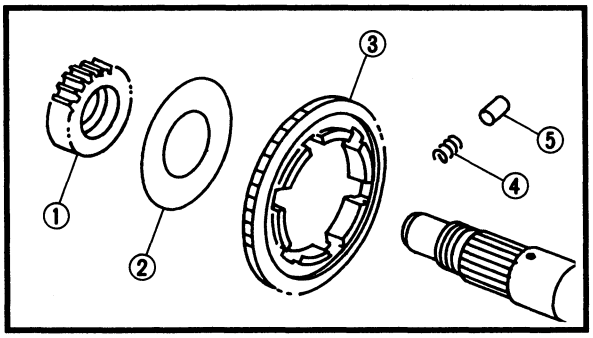
3. Straighten the lock washer tab.
4. Remove:
- Nut (balancer driven gear) ①



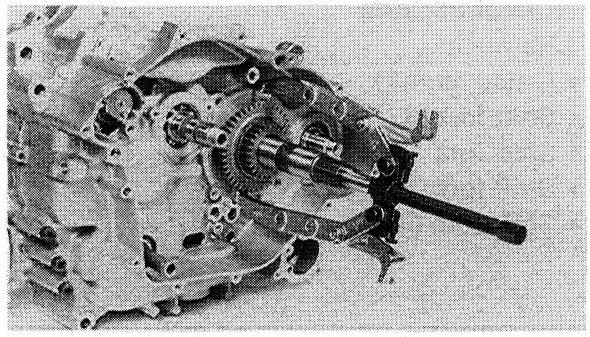
NOTE:
Place a copper plate ② between teeth of the drive gear and driven gear to lock them when loosening nut (balancer driven gear).



5. Remove:
- Lock washer ①
- Balancer driven gear ②
- Straight key ③



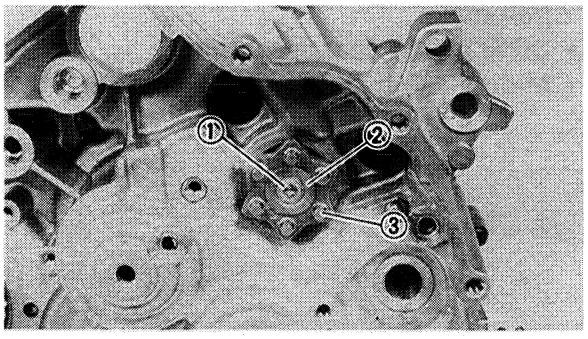
6. Remove:
- Oil pump drive gear ①
- Washer ②
- Balancer drive gear ③
- Springs ④
- Dowel pins ⑤



NOTE:
When removing the oil pump drive gear and the balancer drive gear, use a general-purpose puller.

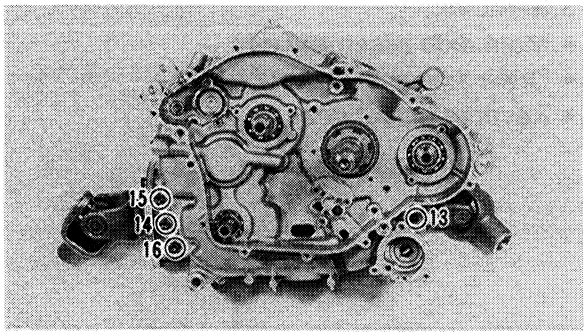
CRANKCASE DISASSEMBLY

1. Remove:
- Screw ①
- Washer ②
- Shift cam segment ③
- Straight key
- Collar

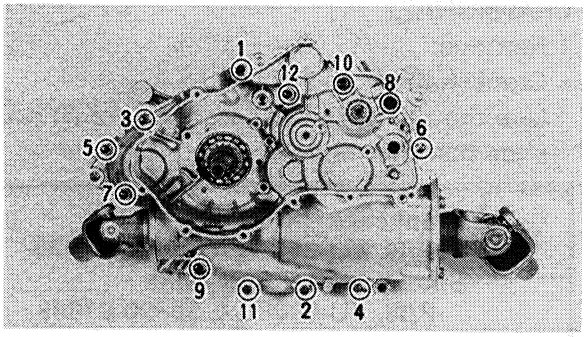


CAUTION:
When removing the segment, do not apply excessive force as this may damage the collar where the segment is attached.

2. Remove:
- Bolts (crankcase)

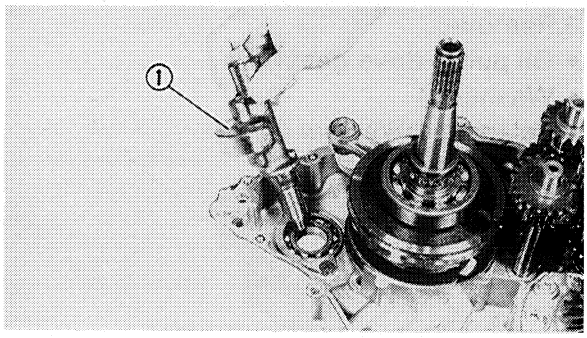


NOTE:
- Loosen the bolts 1/4 turn each and remove them after all are loosened.
- Remove the bolts starting with the highest numbered one.

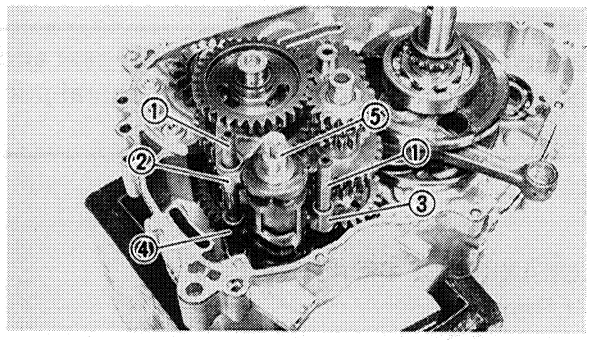


3. Remove:
- Crankcase (left)
- Dowel pins

CAUTION:
Use a soft hammer to tap on the case half. Tap only on reinforced portions of the case. Do not tap on the gasket mating surface. Work slowly and carefully. Maker sure that the case halves separate evenly.

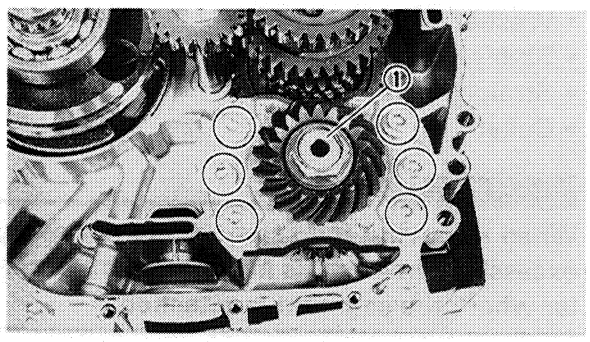


4. Remove:
- Balancer weight ①

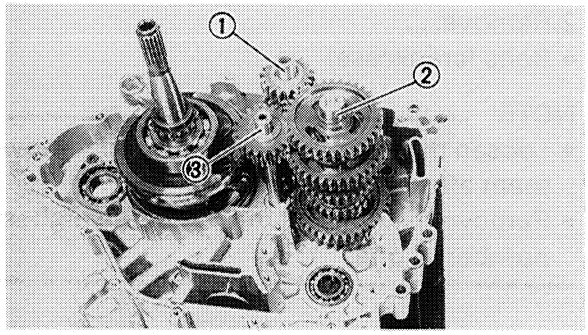


TRANSMISSION

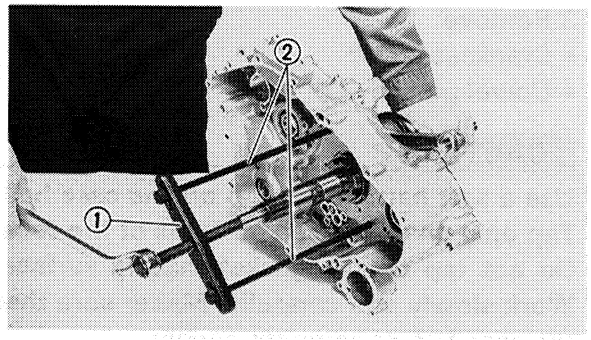
1. Remove:
- Guide bars ①
- Shift fork "L" ②
- Shift fork "C" ③
- Shift fork "R" ④
- Shift cam ⑤



2. Remove:
- Drive pinion gear assembly ①
- Middle driven gear



3. Remove:
- Main axle assembly ①
- Drive axle assembly ②
- Reverse wheel gear ③



CRANKSHAFT

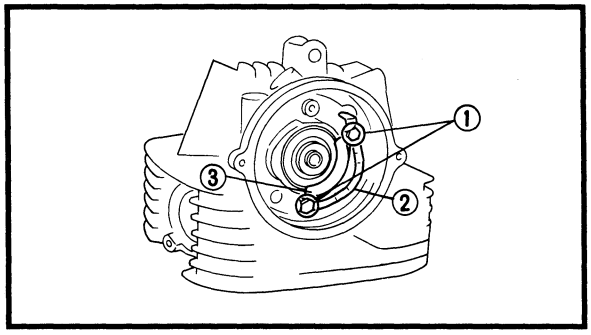
1. Remove:
- Crankshaft

  Use the crankcase separating tool ① and slide hammer bolt ②.

Crankcase separating tool:
P/N. YU-01135-A, 90890-01135
Slide hammer bolt (M8):
P/N. YU-01083-2, 90890-01085

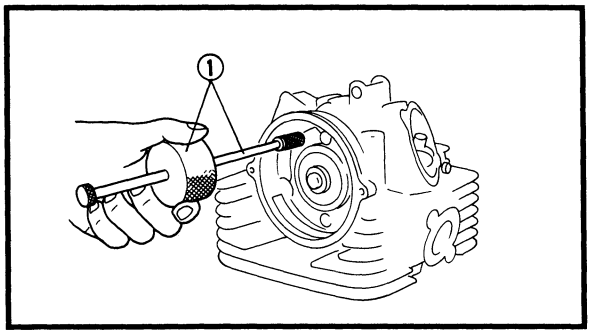
CAMSHAFT, ROCKER ARM AND VALVE

NOTE:
With the engine mounted, the camshaft, rocker arm and valve can be maintained by removing the following parts.
- Seat
- Front fender
- Fuel tank
- Exhaust pipe
- Carburetor



1. Straighten:
- Lock washer tabs

2. Remove:
- Bolts (camshaft) ①
- Lock washer ②
- Retainer ③

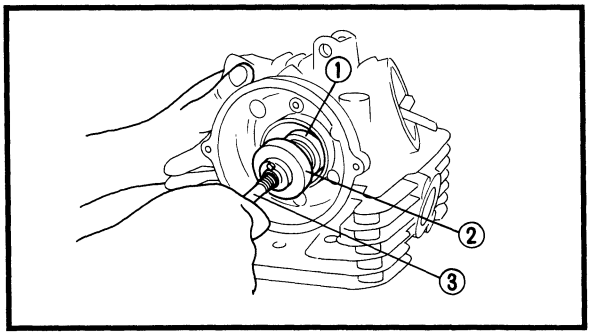


3. Remove:
- Rocker arm shafts
- Rocker arms

NOTE:
Attach the slide hummer set ① to the rocker arm shaft, and then slide out the them.

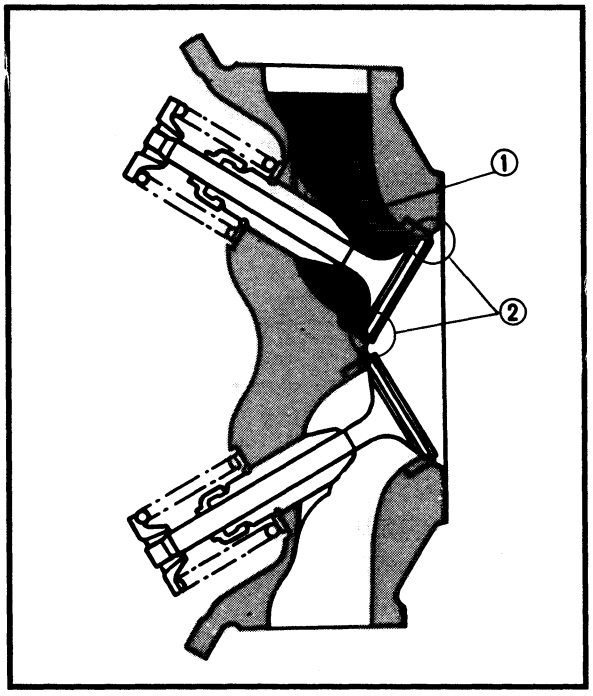


Slide hammer bolt (M6):
P/N. YU-01083-1, 90890-01083
Weight:
P/N. YU-01083, 90890-01084



4. Remove:
- Camshaft ①
- Camshaft bearing ②

NOTE:
Screw in a suitable of 10 mm bolt ③ into the thread hole on the camshaft, and pull out the camshaft.



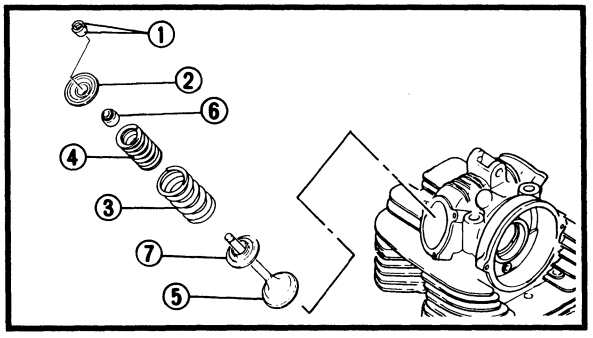
5. Check:
- Valve sealing
  Leakage at valve seat → Inspect the valve face, valve seat and valve seat width.
  Refer to the "INSPECTION AND REPAIR – VALVE SEAT" section.

NOTE:
Before removing the internal parts (valve, valve spring, spring seat, etc.) of the cylinder head, the valve sealing should be checked.

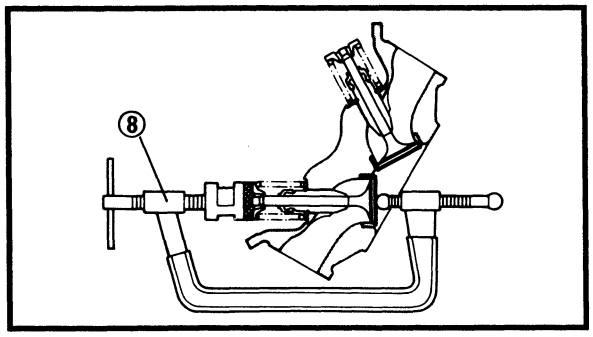
****

Checking steps:
- Supply a clean solvent ① into the intake and exhaust ports.
- Check the valve sealing. There should be no leakage at the valve seats ②.

****

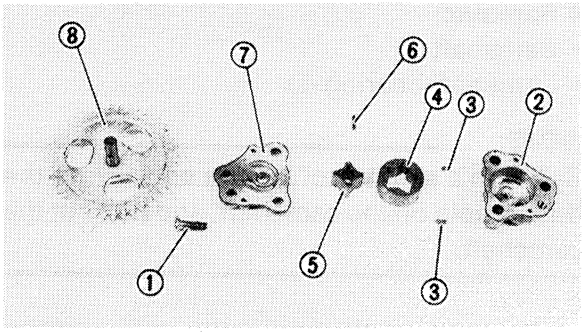


6. Remove:
- Valve cotter ①
- Spring retainer ②
- Valve spring (outer) ③
- Valve spring (inner) ④
- Valve ⑤
- Oil seal ⑥
- Spring seat ⑦



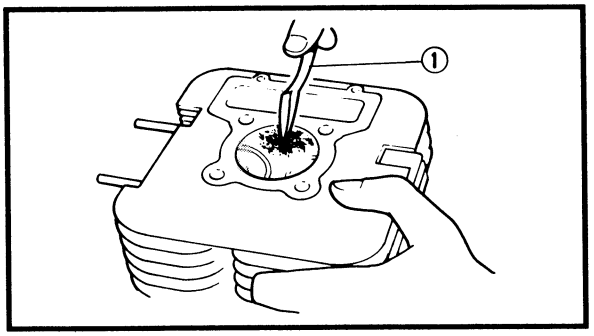
NOTE:
Compress the valve spring to remove the valve cotters by the valve spring compressor ⑧.

	Valve spring compressor: P/N. YM-04019, 90890-04019



OIL PUMP

1. Remove:
- Screw ①
- Pump housing ②
- Dowel pins ③
- Outer rotor ④
- Inner rotor ⑤
- Pin ⑥
- Pump cover ⑦
- Pump shaft ⑧



INSPECTION AND REPAIR

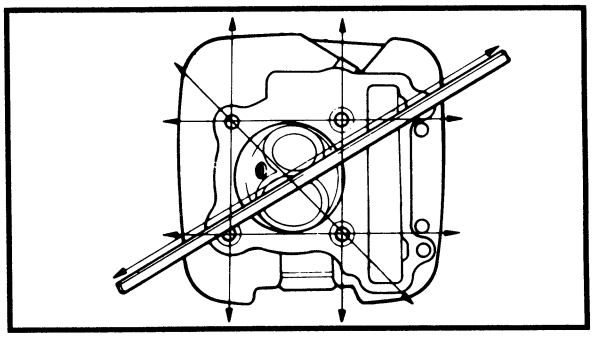
CYLINDER HEAD

1. Eliminate:
- Carbon deposit
  (from combustion chamber)
  Use rounded scraper ①.

NOTE:

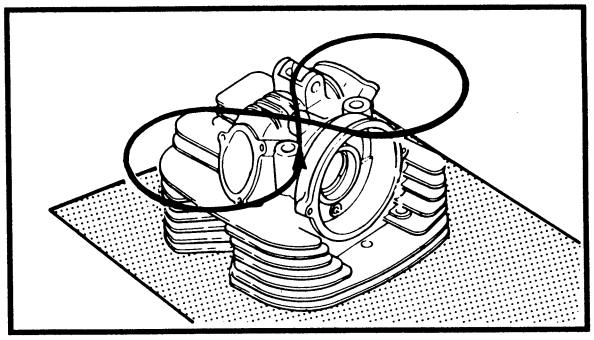
Do not use a sharp instrument and avoid damaging or scratching:
- Spark plug threads
- Valve seat

2. Inspect:
- Cylinder head
  Scratches/Damage → Replace.



3. Measure:
- Warpage
  Out of specification → Resurface.

Cylinder head warpage:
Less than 0.03 mm (0.0012 in)



4. Resurface:
- Cylinder head

****

Resurfacement steps:

- Place a 400 ~ 600 grit wet sandpaper on the surface plate, and resurface the head using a figure-eight sanding pattern.

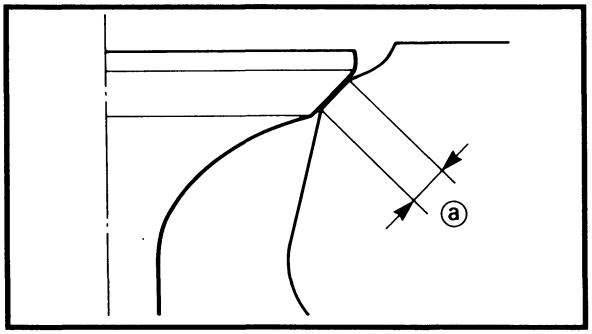
NOTE:

Rotate the head several times to avoid removing too much material from one side.

****

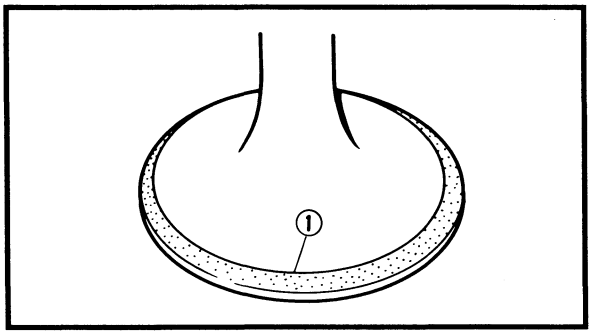
VALVE SEAT

1. Eliminate:
- Carbon deposit
  (from valve face and valve seat)
2. Inspect:
- Valve seat
  Pitting/Wear → Reface the valve seat.



3. Measure:
- Valve seat width ⓐ
  Out of specification → Reface valve seat.

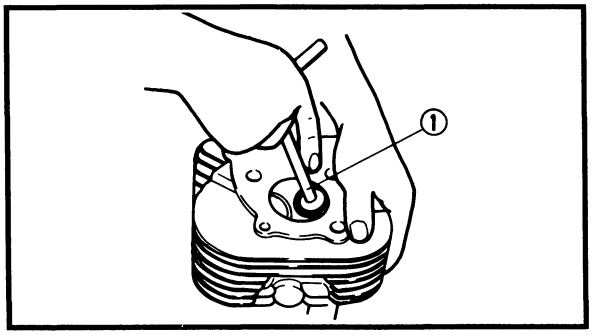
Valve seat width:		Limit:
Intake	1.2 ~ 1.4 mm (0.047 ~ 0.055 in)	1.8 mm (0.071 in)
Exhaust	1.2 ~ 1.4 mm (0.047 ~ 0.055 in)	1.8 mm (0.071 in)



****

Measurement steps:
- Apply the mechanic's bluing dye ① (dykem) to the valve face.
- Install the valve into the cylinder head.
- Press the valve through the valve guide and onto the valve seat to make a clear pattern.
- Measure the valve seat width. Wherever the valve seat and valve face made contact, bluing will have been removed.
- If the valve seat width is too wide, too narrow, or seat has not centered, the valve seat must be refaced.

****

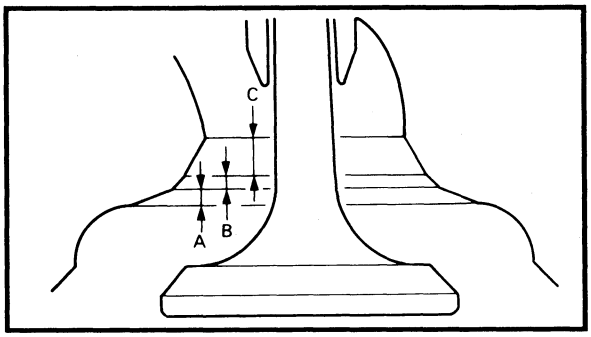


4. Reface:
- Valve seat
  Use a 20°, 45° and 60° valve seat cutter ①.

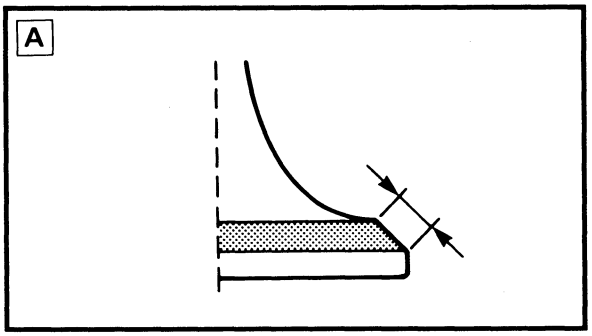
	Valve seat cutter: P/N. YM-91043-C

CAUTION:

When twisting cutter, keep an even downward pressure (4 ~ 5 kg) to prevent chatter marks.



Cut sections as follows	
Section	Cutter
A	20°
B	45°
C	60°

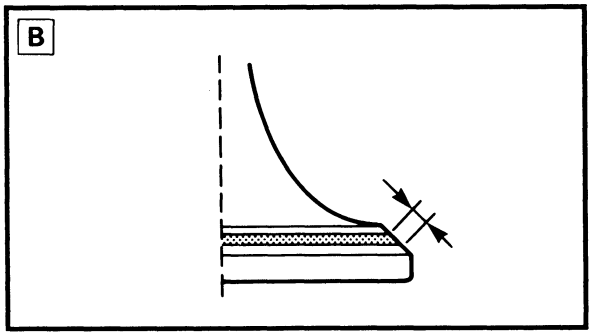


****

Valve seat refacing steps:

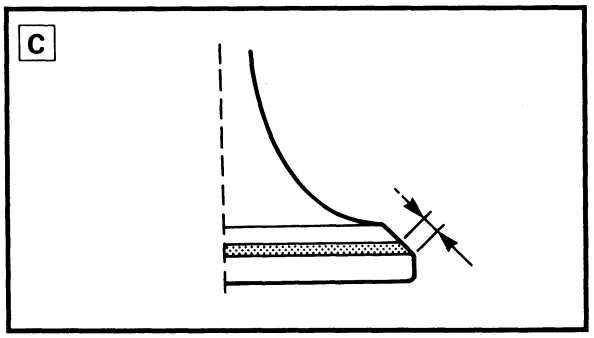
[A] Valve face indicates that valve seat is centered on valve face but is too wide.

Valve seat cutter set		Desired result
Use lightly	20° cutter	To reduce valve seat width to 1.3 mm (0.051 in).
	60° cutter	



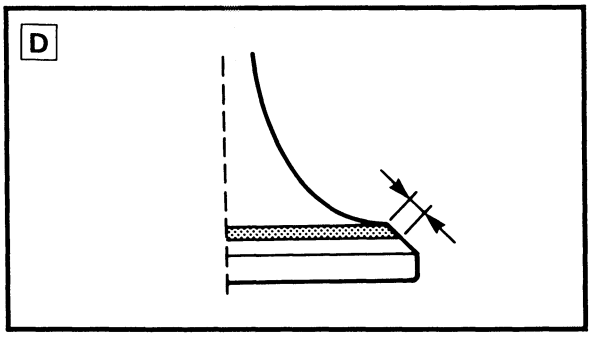
[B] Valve seat is in the middle of the valve face but too narrow.

Valve seat cutter set		Desired result
Use	45° cutter	To achieve a uniform valve seat width of 1.3 mm (0.051 in).



[C] Valve seat is too narrow and right up near valve margin.

Valve seat cutter set		Desired result
Use	20° cutter, first	To center the seat and to achieve its width of 1.3 mm (0.051 in).
	45° cutter	



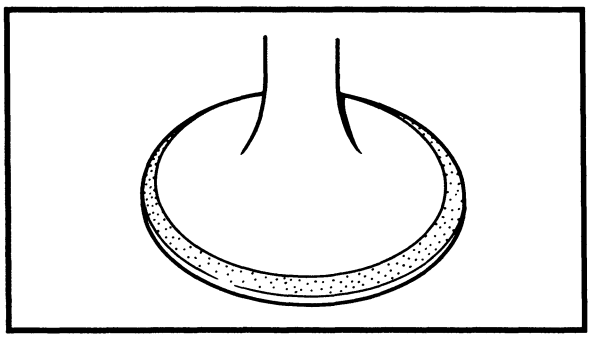
[D] Valve seat is too narrow and is located down near the bottom edge of the valve face.

Valve seat cutter set		Desired result
Use	60° cutter, first	To center the seat and increase its width.
	45° cutter	

****

5. Lap:
- Valve face
- Valve seat

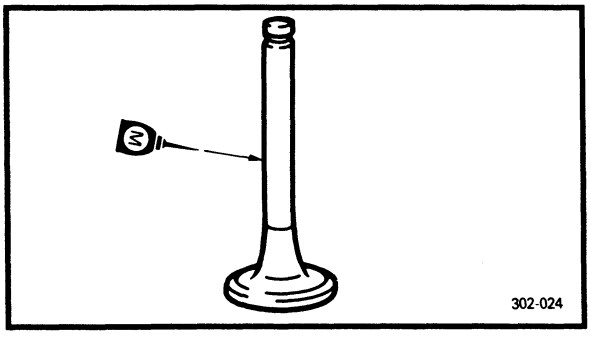
NOTE:
When refacing the valve seat or replacing the valve and valve guide, the valve seat and valve face should be lapped.



****

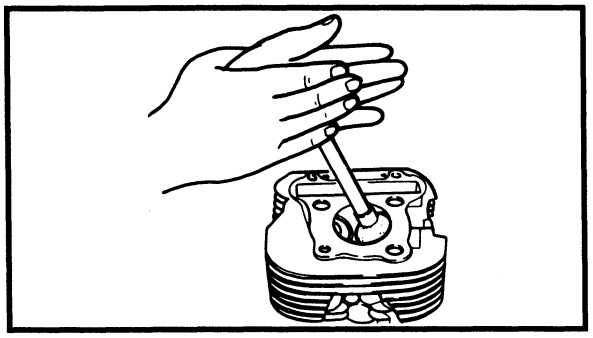
Lapping steps:
- Apply a coarse lapping compound to the valve face.

CAUTION:
Be sure no compound enters the gap between the valve stem and guide.



- Apply a molybdenum disulfide oil to the valve stem.
- Install the valve into the cylinder head.
- Turn the valve until the valve face and valve seat are evenly polished, then clean off all compound.

NOTE:
To obtain the best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hands.

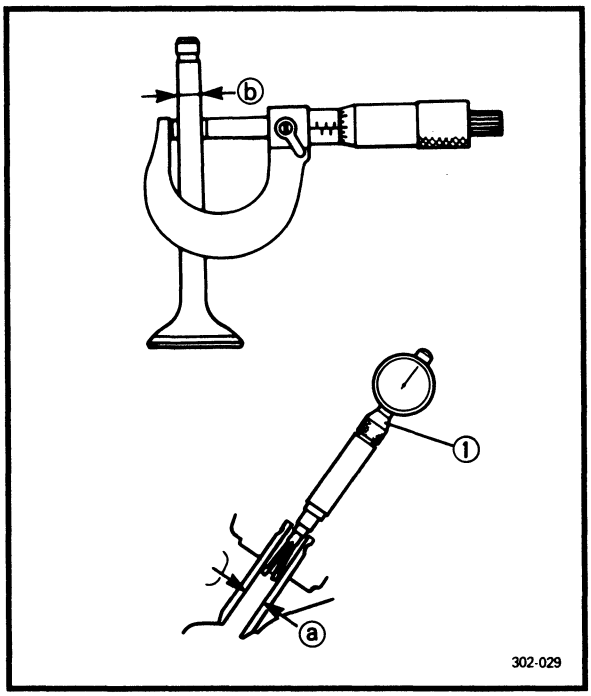


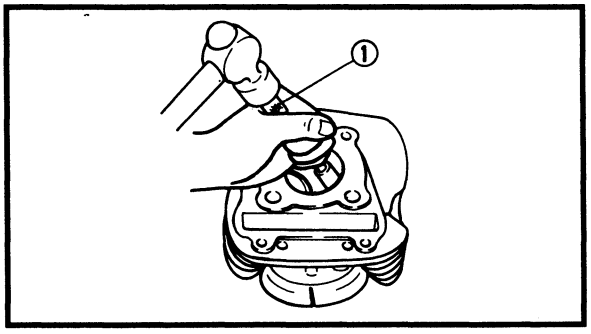
- Apply a fine lapping compound to the valve face and repeat the above steps.

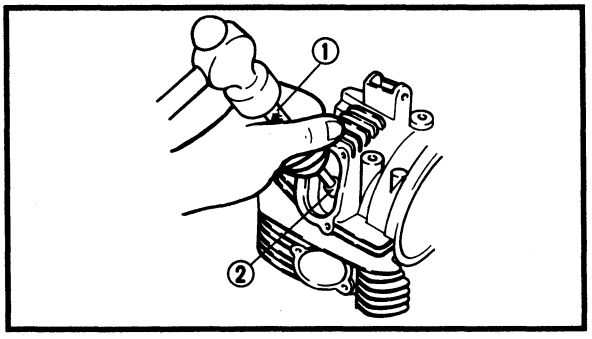
NOTE:
Be sure to clean off all compound from the valve face and valve seat after every lapping operation.

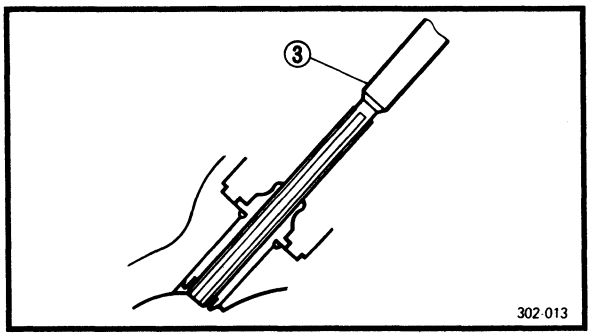
- Apply the mechanic's bluing dye (dykem) to the valve face.
- Install the valve into the cylinder head.
- Press the valve through the valve guide and onto the valve seat to make a clear pattern.
- Measure the valve seat width again. If the valve seat width is out of specification, reface and lap the valve seat.

****









VALVE AND VALVE GUIDE

1. Measure:
- Stem-to-guide clearance

Stem-to-guide clearance=
Valve guide inside diameter ⓐ — Valve stem diameter ⓑ

Out of specification → Replace valve guide.

Stem-to-guide clearance:		Limit:
Intake	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)	0.08 mm (0.0031 in)
Exhaust	0.030 ~ 0.057 mm (0.0012 ~ 0.0022 in)	0.10 mm (0.0039 in)

① Bore gauge

2. Replace:
- Valve guide

****

Replacement steps:

NOTE:
Heat the cylinder head in an oven to 100°C (212°F) to ease guide removal and installation and to maintain correct interference fit.

- Remove the valve guide using the valve guide remover ①.
- Install the valve guide (new) using the valve guide installer ② and valve guide remover ①.
- After installing the valve guide, bore the valve guide using the valve guide reamer ③ to obtain proper stem-to-guide clearance.

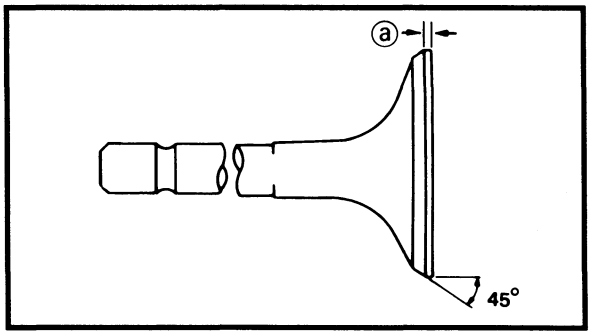
Valve guide remover
7 mm (0.28 in):
P/N. YM-01225-A, 90890-01225
Valve guide installer:
P/N. YM-04017, 90890-04017
Valve guide reamer 7 mm (0.28 in):
P/N. YM-01227, 90890-01227

NOTE:
Reface the valve seat after replacing the valve guide.

****

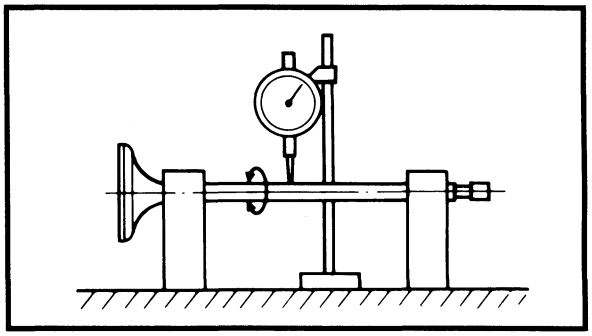
3. Eliminate:
- Carbon deposit (from valve face)

4. Inspect:
- Valve stem
  Damage/Broken → Replace
- Valve face
  Pitting/Wear → Grind the face.
- Valve stem end
  Mushroom shape or diameter larger than rest of stem → Replace.



5. Measure:
- Margin thickness ⓐ
  Out of specification → Replace.

Margin thickness:
Intake
1.0 ~ 1.4 mm (0.039 ~ 0.055 in)
Exhaust
0.8 ~ 1.2 mm (0.031 ~ 0.047 in)



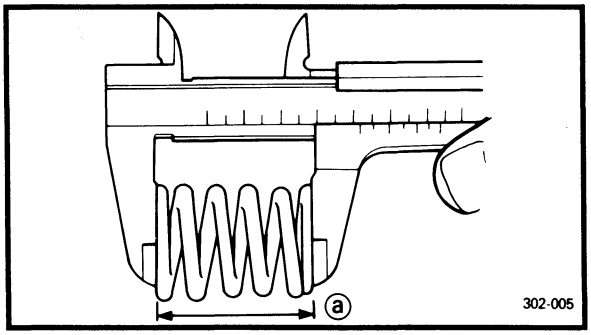
6. Measure:
- Runout (valve stem)
  Out of specification → Replace.

Stem runout limit:
0.02 mm (0.0008 in)

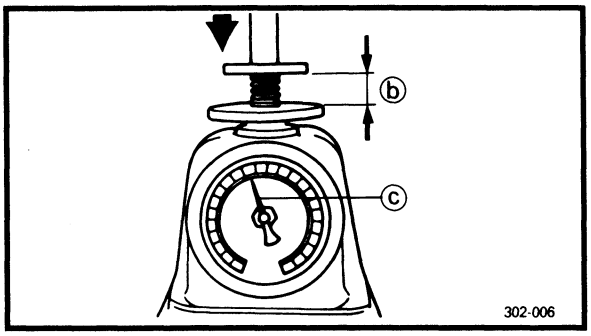
NOTE:
- Always replace the guide if the valve is replaced.
- Always replace the oil seal if the valve is removed.

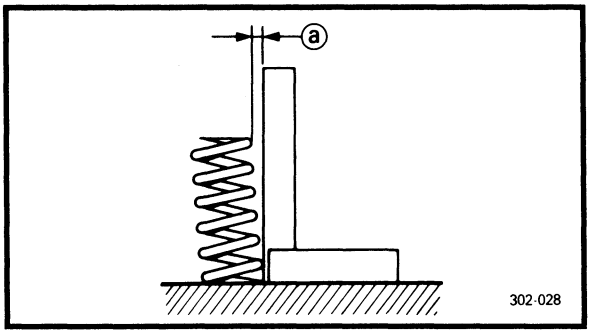
VALVE SPRING

1. Measure:
- Valve spring free length ⓐ
  Out of specification → Replace.



Valve spring free length:		Limit:
Inner spring	39.9 mm (1.57 in)	37.9 mm (1.49 in)
Outer spring	43.27 mm (1.70 in)	41.27 mm (1.62 in)





2. Measure:
- Valve spring installed force ⓐ
  Out of specification → Replace.

ⓑ Installed length

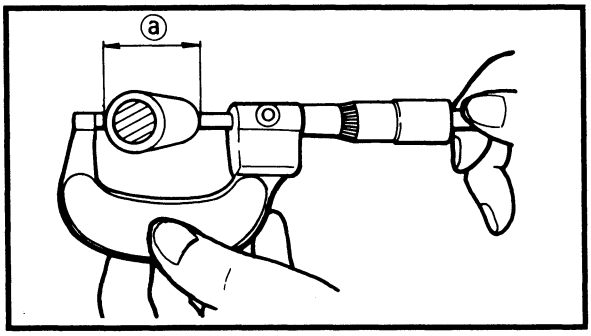
Valve spring installed force:			
Inner spring		Outer spring	
ⓑ	ⓐ	ⓑ	ⓐ
34.1 mm (1.34 in)	9.5 ~ 11.1 kg (20.9 ~ 24.5 lb)	37.1 mm (1.46 in)	20.6 ~ 24.2 kg (45.4 ~ 53.4 lb)

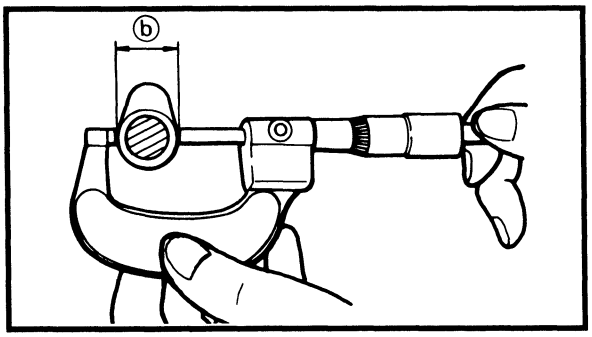
3. Measure:
- Spring tilt ⓐ
  Out of specification → Replace.

Spring tilt limit:	
Inner spring	Outer spring
Less than 1.6 mm (0.06 in)	Less than 1.6 mm (0.06 in)

CAMSHAFT

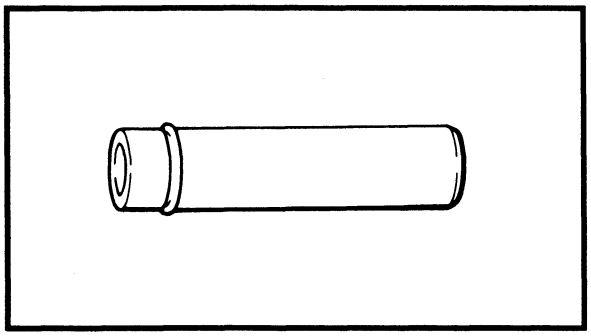
1. Inspect:
- Camshaft bushing
  Wear/Damage → Replace
- Camshaft needle bearing (in head)
  Wear/Damage → Replace
- Cam lobes
  Pitting/Scratches/Blue discoloration → Replace.





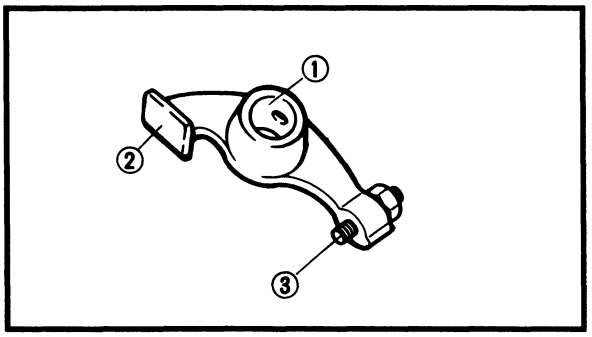
2. Measure:
- Cam lobes length ⓐ and ⓑ.
  Out of specification → Replace.

	Cam lobe limit "A"	Cam lobe limit "B"
Intake	40.59 mm (1.598 in)	32.15 mm (1.266 in)
Exhaust	40.59 mm (1.598 in)	32.15 mm (1.266 in)

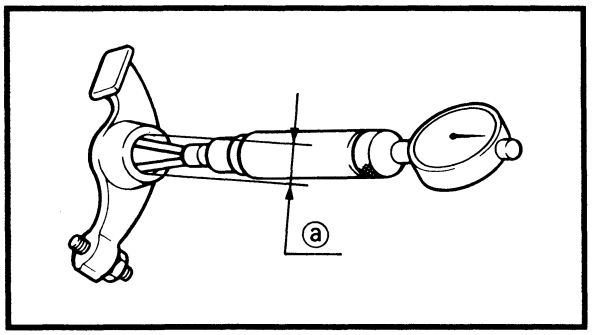


ROCKER ARM AND ROCKER ARM SHAFT

1. Inspect:
- Rocker arm shaft
  Blue discoloration/Grooves → Replace, then inspect lubrication system.



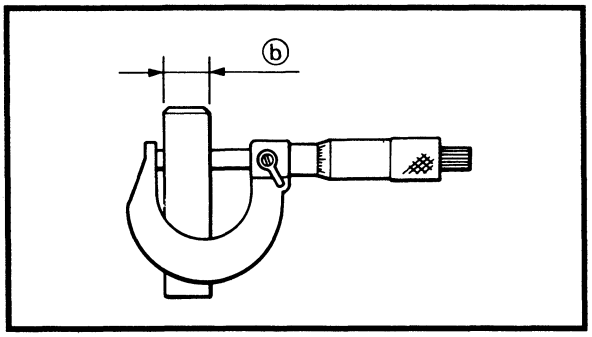
2. Inspect:
- Bore (rocker arm shaft) ①
- Cam lobe contact surface ②
- Adjuster surface ③
  Wear/Pitting/Scratches/Blue discoloration → Replace, then inspect lubrication system.

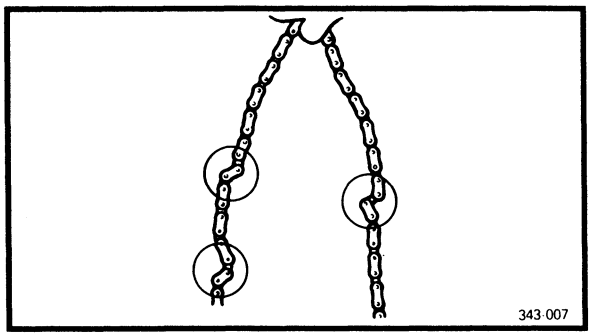


3. Measure:
- Arm-to-shaft clearance
  Out of specification → Replace as a set.

Arm-to-shaft clearance =
Bore size (rocker arm shaft) ⓐ —
Outside diameter (rocker arm shaft) ⓑ

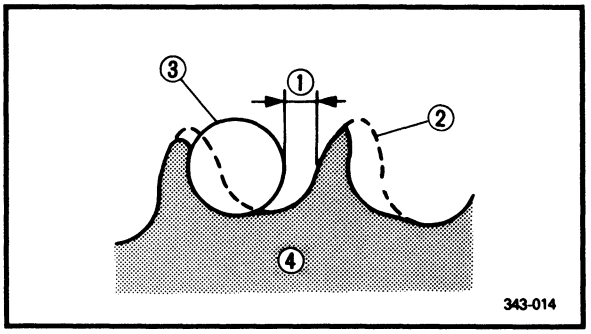
Arm-to-shaft clearance:
0.009 ~ 0.037 mm
(0.0004 ~ 0.0015 in)
<Limit: 0.08 mm (0.0031 in)>





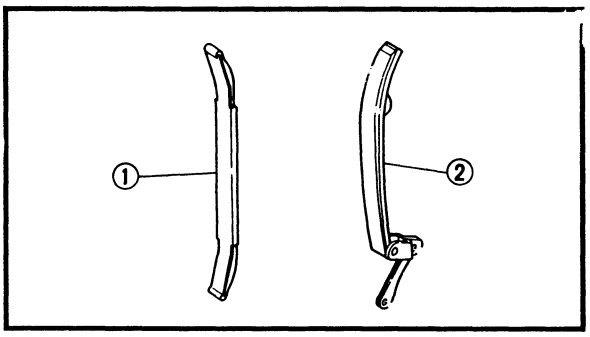
CAM CHAIN TENSIONER

1. Inspect:
- Cam chain
  Stiff/Cracks → Replace cam chain and cam sprocket as a set.

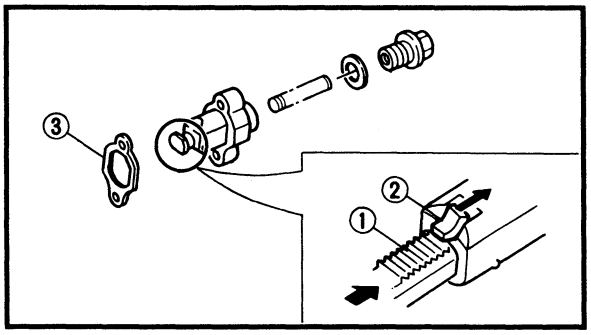


2. Inspect:
- Cam sprocket
  Wear/Damage → Replace cam sprocket and cam chain as a set.

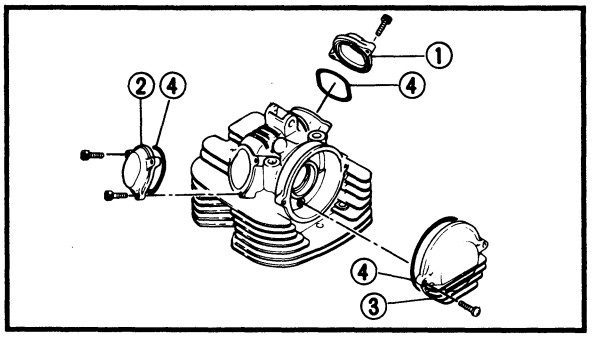
① 1/4 tooth
② Correct
③ Roller
④ Sprocket



3. Inspect:
- Exhaust side chain guide ①
- Intake side chain guide ②
  Wear/Damage → Replace.



4. Inspect:
- Tensioner rod ①
- One-way cam ②
- Gasket ③
  Damage → Replace.

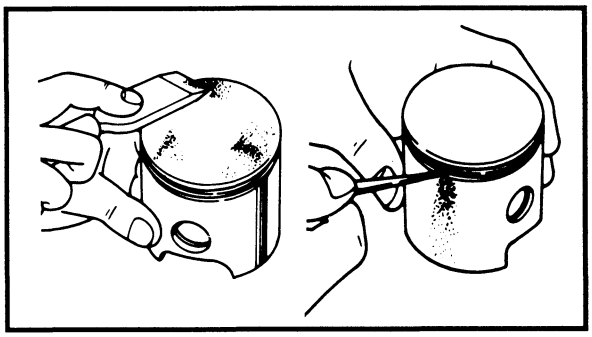


TAPPET COVER AND SIDE COVER

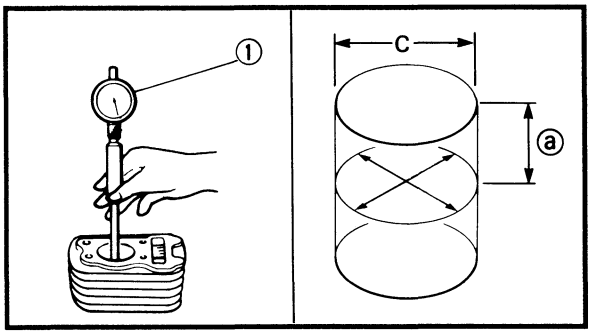
1. Inspect:
- Tappet cover (intake) ①
- Tappet cover (exhaust) ②
- Side cover ③
- O-ring ④
  Cracks/Damage → Replace.

CYLINDER AND PISTON

1. Inspect:
- Cylinder and piston walls
  Vertical scratches → Rebore or replace cylinder and piston.



2. Eliminate:
- Carbon deposits
  (from the piston crown and ring grooves)



3. Measure:
- Piston-to-cylinder clearance

****

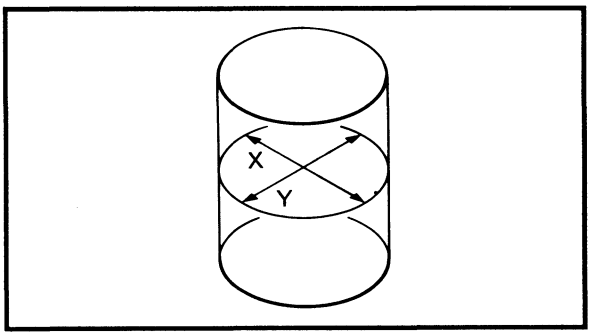
Measurement steps:

First steps

- Measure the cylinder bore "C" with a cylinder bore gauge ①.
  ⓐ 40 mm (1.57 in) from the cylinder top

NOTE:

Measure the cylinder bore "C" in parallel to and at right angles to the cylinder matching surface.
Then, find the average of the measurements.

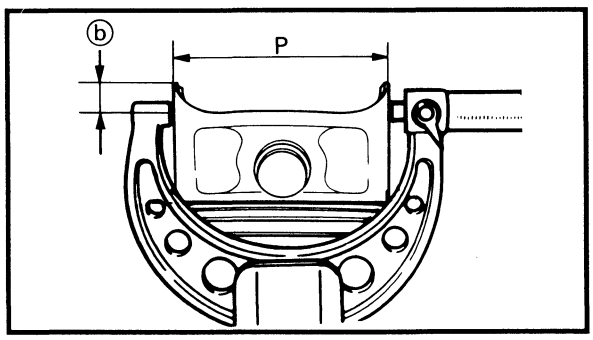


	Standard	Wear limit
Cylinder bore "C"	82.97 ~ 83.02 mm (3.267 ~ 3.269 in)	83.15 mm (3.2736 in)
$C = \frac{X+Y}{2}$		

- If out of specification, rebore or replace the cylinder, and the piston and piston rings as a set.

2nd steps

- Measure the piston skirt diameter "P" with a micrometer.
  ⓑ 5.5 mm (0.22 in) from the piston bottom edge



Piston skirt diameter "P"	
Standard	82.92 ~ 92.97 mm (3.265 ~ 3.267 in)

- If out of specification, replace the piston and piston rings as a set.

3rd steps

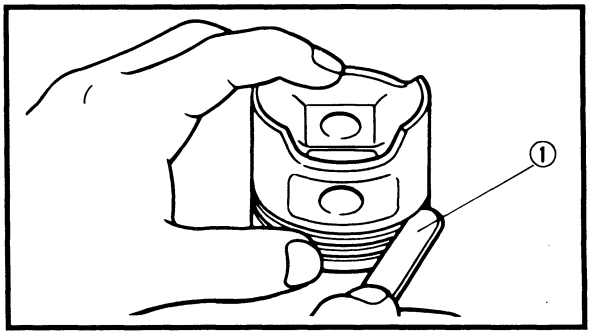
- Find the piston-to-cylinder clearance with following formula.

Piston-to-cylinder clearance=
Cylinder bore "C" — Piston skirt diameter "P"

Piston-to-cylinder clearance:
0.04 ~ 0.06 mm
(0.0016 ~ 0.0024 in)
<Limit: 0.15 mm (0.0059 in)

- If out of specification, rebore or replace the cylinder, and replace the piston and piston rings as a set.

****

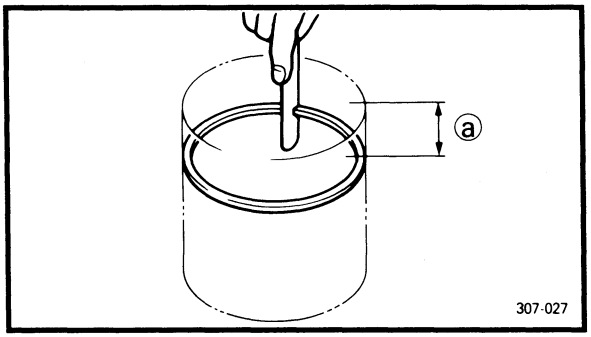


PISTON RING

1. Measure:
- Ring side clearance
  Use a feeler gauge ①.
  Out of specification → Replace piston, and rings as a set.

NOTE:
Clean carbon from piston ring grooves and rings before measuring side clearance.

	Side clearance	
	Standard	**Limit**
Top ring	**0.045 ~ 0.080 mm (0.0018 ~ 0.0031 in)**	**0.12 mm (0.0047 in)**
2nd ring	**0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)**	**0.12 mm (0.0047 in)**



2. Position:
- Piston ring
  (in cylinder)

NOTE:
Insert a ring into cylinder, and push it approximately 20 mm (0.8 in) into the cylinder. Push ring with piston crown so that ring will be at right angle to cylinder bore.

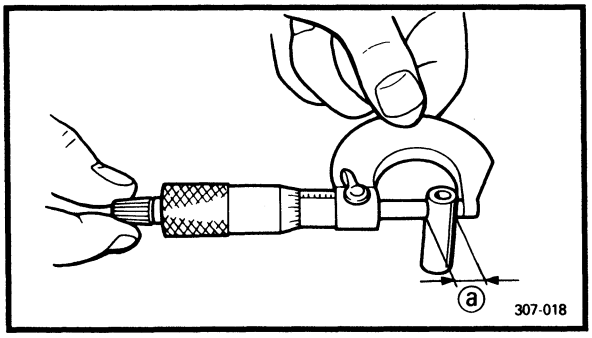
ⓐ 20 mm (0.8 in)

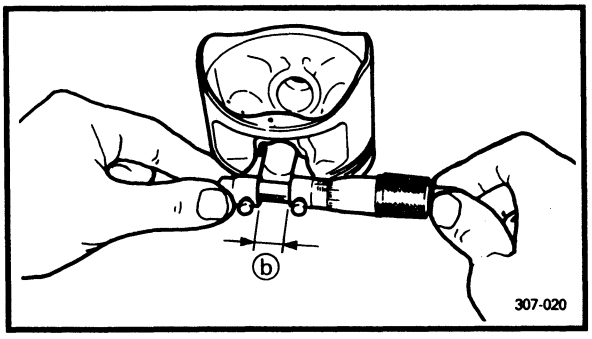
3. Measure:
- Ring end gap
  Out of specification → Replace.

NOTE:
You cannot measure end gap on expander spacer of oil control ring. If oil control ring rails show excessive gap, replace all there rings.

	End gap	
	Standard	Limit
Top ring	0.2 ~ 0.4 mm (0.008 ~ 0.016 in)	0.5 mm (0.020 in)
2nd ring	0.2 ~ 0.4 mm (0.008 ~ 0.016 in)	0.5 mm (0.020 in)
Oil ring	0.3 ~ 0.9 mm (0.012 ~ 0.035 in)	—

PISTON PIN
1. Inspect:
- Piston pin
  Blue discoloration/Grooves → Replace then inspect lubrication system.
2. Measure:
- Piston pin-to-piston clearance





****

Measurement steps:
- Measure the piston pin outside diameter ⓐ.
  If out of specification, replace the piston pin.

Outside diameter (piston pin):
18.990 ~ 18.995 mm
(0.7476 ~ 0.7478 in)

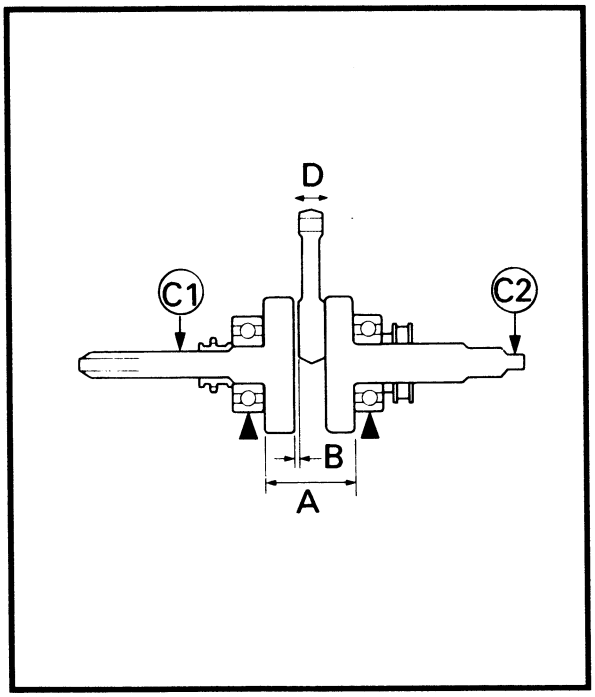
- Measure the piston inside diameter ⓑ.
- Calculate the piston pin-to-piston clearance with following formula.

Piston pin-to-piston clearance =
Bore size (piston pin) ⓑ –
Outside diameter (piston pin) ⓐ

● If out of specification, replace the piston.

Piston pin-to-piston clearance:
0.009 ~ 0.025 mm
(0.0004 ~ 0.0010 in)
<Limit: 0.07 mm (0.003 in)>

****



CRANKSHAFT

1. Measure:

• Crank width Ⓐ
Out of specification → Replace crankshaft.

Crank width:
58.95 ~ 59.00 mm
(2.321 ~ 2.323 in)

• Side clearance Ⓑ
Out of specification → Replace crankshaft.

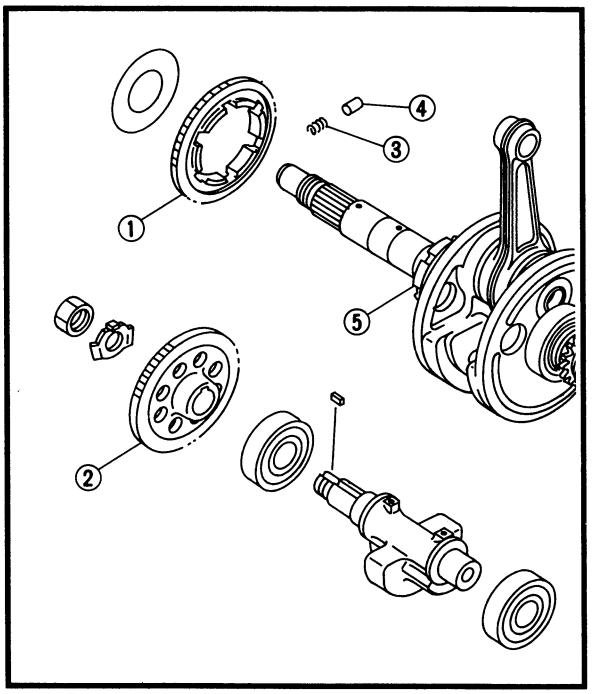
Big end side clearance:
0.35 ~ 0.85 mm (0.014 ~ 0.033 in)

• Runout Ⓒ
Out of specification → Replace crankshaft.

Runout limit:
C1: 0.03 mm (0.0012 in)
C2: 0.06 mm (0.0024 in)

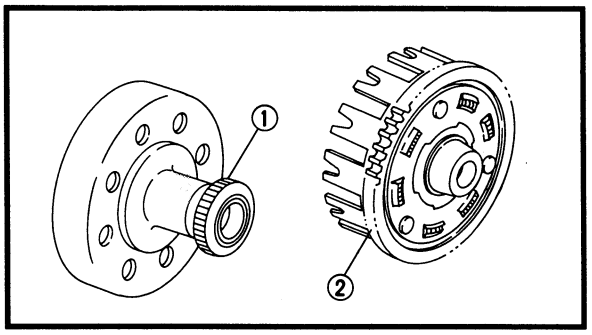
• Small end free play Ⓓ
Out of specification → Replace crankshaft.

Small end free play:
Standard: 0.8 ~ 1.0 mm
(0.03 ~ 0.04 in)
<Limit: 2.0 mm (0.08 in)>



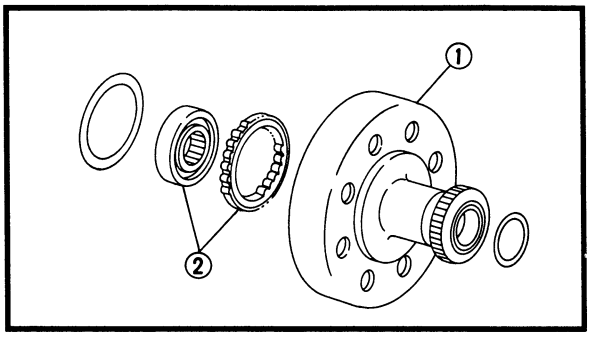
BALANCER DRIVE GEAR AND DRIVEN GEAR

1. Inspect:
- Balancer drive gear teeth ①
- Balancer driven gear teeth ②
- Springs ③
- Dowel pins ④
  Wear/Damage/Fatique → Replace.
- Buffer boss ⑤
  Wear/Damage/Fatique → Replace crankshaft



PRIMARY GEARS

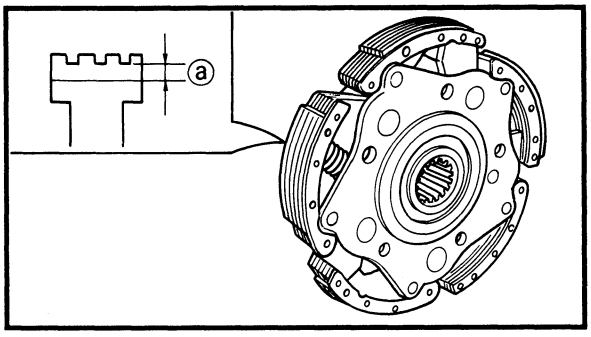
1. Inspect:
- Primary drive gear teeth ①
- Primary driven gear teeth ②
  Wear/Damage → Replace both gears.
  Excessive noises during operation → Replace both gears.



PRIMARY CLUTCH

1. Inspect:
- Clutch housing ①
  Heat damage/Wear/Damage → Replace.
- One way clutch assembly ②
  Chafing/Wear/Damage → Replace.

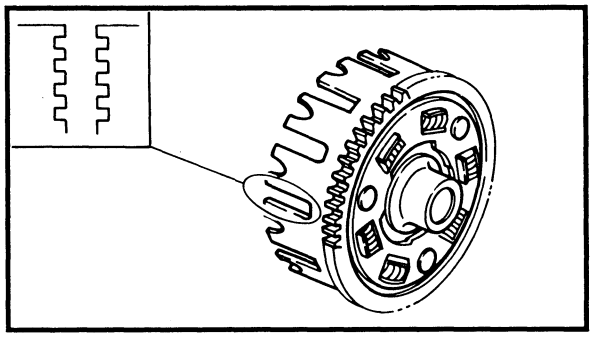
NOTE:
- Replace the one way clutch assembly and clutch housing as a set.
- One way bearing must be installed with flange side facing inward.



2. Inspect:
- Clutch shoe
  Heat damage → Replace.

3. Measure:
- Clutch shoe thickness
  Out of specification → Replace.

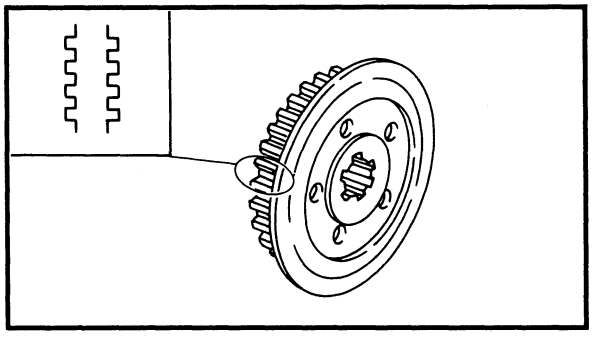
Clutch shoe thickness:
2.0 mm (0.08 in)
Clutch shoe wear limit ⓐ:
1.5 mm (0.06 in)



SECONDARY CLUTCH

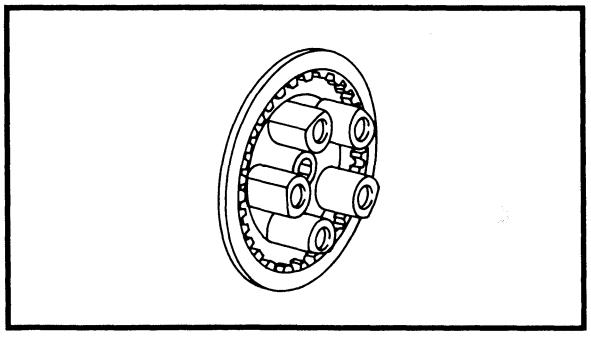
1. Inspect:
- Clutch housing dogs
  Cracks/Pitting (edges):
  Moderate → Deburr.
  Severe → Replace clutch housing.

NOTE:
Pitting on friction plate dogs of clutch housing will cause erratic operation.

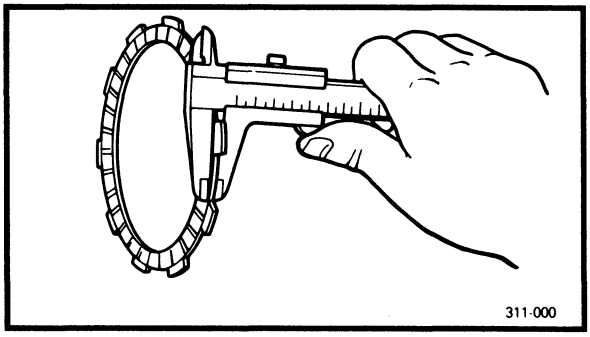


2. Inspect:
- Clutch boss splines
  Scoring/Wear/Damage → Replace clutch boss.

NOTE:
Scoring on the clutch plate splines will cause erratic operation.



3. Inspect:
- Pressure plate
  Cracks/Damage → Replace.

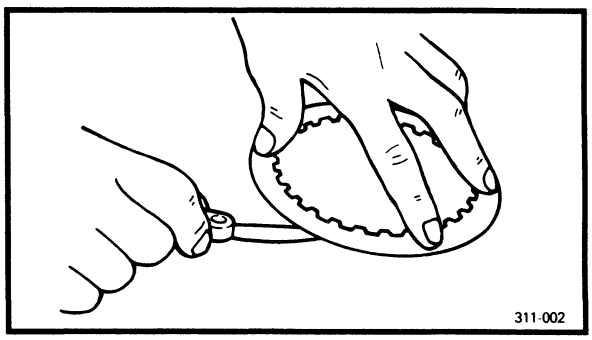


4. Inspect:
- Friction plate
  Damage/Wear → Replace friction plates as a set.

5. Measure:
- Friction plate thickness
  Measure at all four points.
  Out of specification → Replace friction plates as a set.

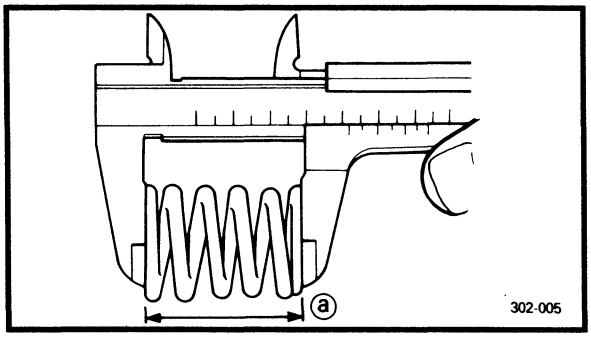
Thickness:
2.94 ~ 3.06 mm (0.116 ~ 0.120 in)
<Limit: 2.8 mm (0.11 in)>

6. Inspect:
- Clutch plate
  Damage → Replace clutch plates as a set.



7. Measure:
- Clutch plate warpage
  Use surface plate and feeler gauge.
  Out of specification → Replace.

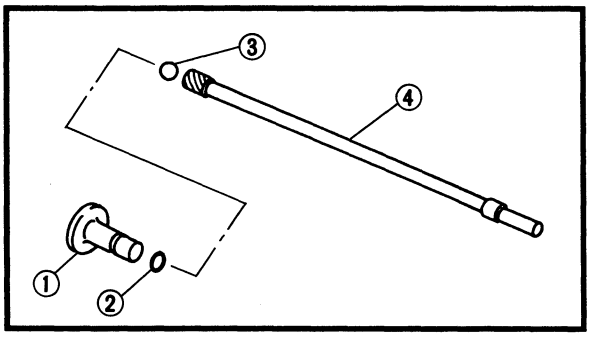
	Thickness	Warp limit
Type "A" (4 pcs.)	1.5 ~ 1.7 mm (0.059 ~ 0.067 in)	0.2 mm (0.008 in)
Type "B" (2 pcs.)	1.9 ~ 2.1 mm (0.075 ~ 0.083 in)	0.2 mm (0.008 in)



8. Inspect:
- Clutch spring
  Damage → Replace springs as a set.

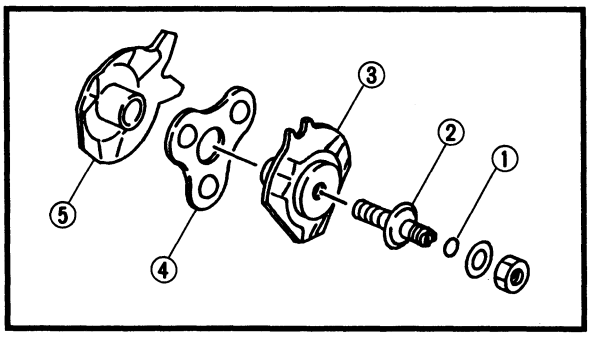
9. Measure:
- Clutch spring free length ⓐ
  Out of specification → Replace spring as a set.

Free length ⓐ:
40.1 mm (1.58 in)
<Limit: 39 mm (1.54 in)>



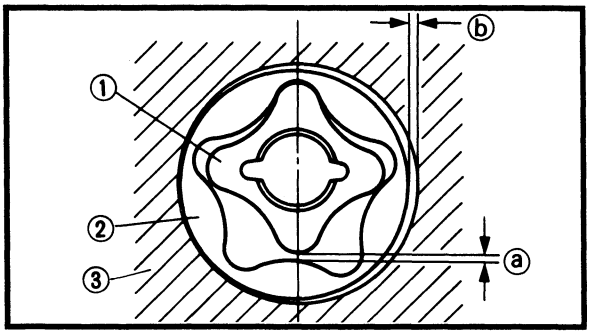
10. Inspect:
- Push rod #1 ①
- O-ring ②
- Ball ③
- Push rod #2 ④

  Wear/Crack/Damage → Replace.



11. Inspect:
- O-ring ①
- Adjuster ②
- Shift guide #2 ③
- Pawl holder ④
- Shift guide #1 ⑤

  Bends/Crack/Damage → Replace.

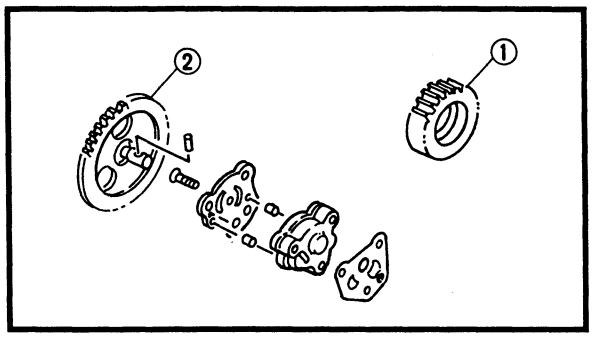


OIL PUMP

1. Measure:
- Tip clearance ⓐ
  (between inner rotor ① and outer rotor ②)
- Side clearance ⓑ
  (between outer rotor ② and pump housing ③)

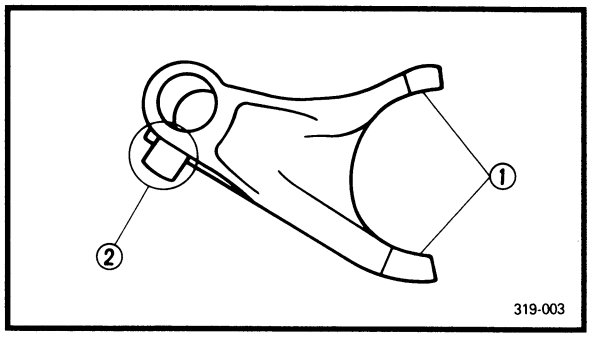
  Out of specifications → Replace oil pump.

Tip clearance:
0.15 mm (0.006 in)
<Limit: 0.2 mm (0.008 in)>
Side clearance:
0.04 ~ 0.09 mm (0.002 ~ 0.004 in)



2. Inspect:
- Oil pump drive gear ①
- Oil pump driven gear ②

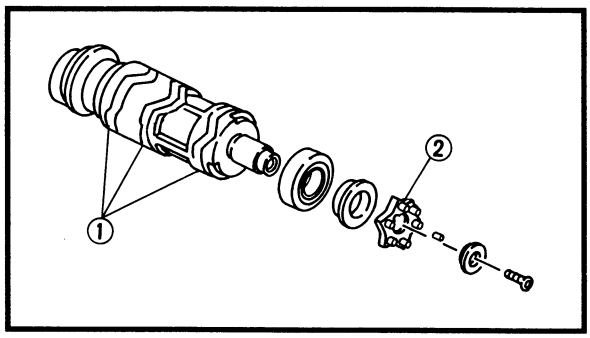
  Wear/Cracks/Damage → Replace.



SHIFTER AND TRANSMISSION

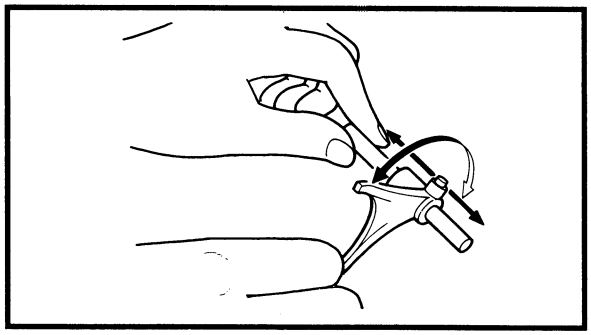
1. Inspect:
- Shift fork cam follower ①
- Shift fork pawl ②

Scoring/Bends/Wear → Replace.



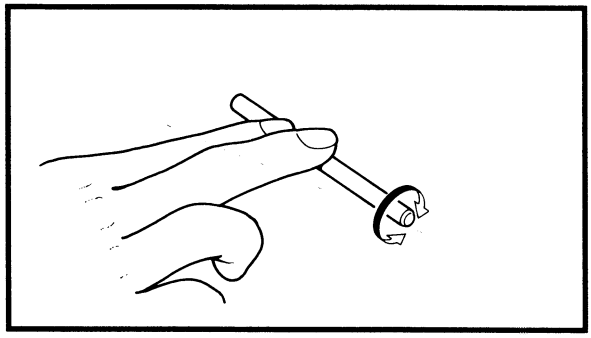
2. Inspect:
- Shift cam groove ①
- Shift cam segment ②

Wear/Damage → Replace.



3. Check:
- Shift fork movement

Unsmooth operation → Replace shift fork and/or guide bar.

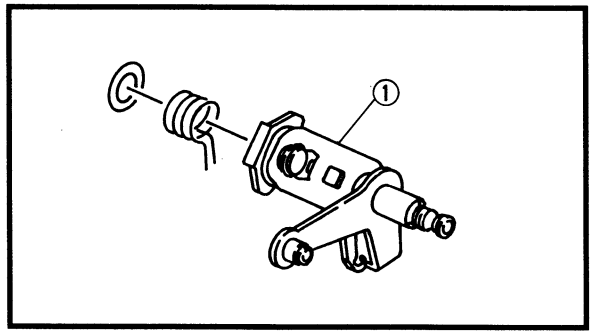


4. Inspect:
- Guide bar

Roll the guide bar on a flat surface.
Bends → Replace.

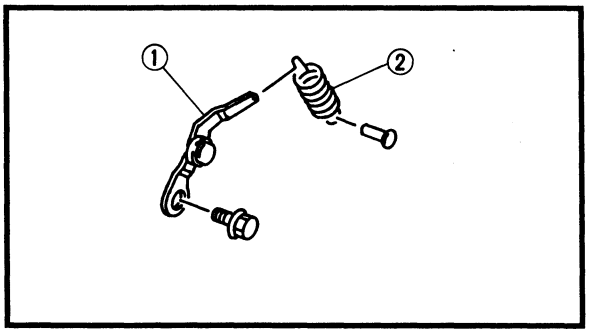
⚠ WARNING

Do not attempt to straighten a bent guide bar.



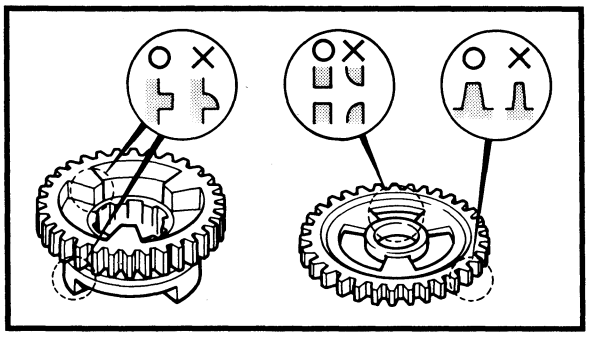
5. Inspect:
- Shift shaft ①

Bends/Wear/Damage → Replace.



6. Inspect:
- Stopper lever ①
  Roller turns roughly → Replace.
  Bends/Damage → Replace.

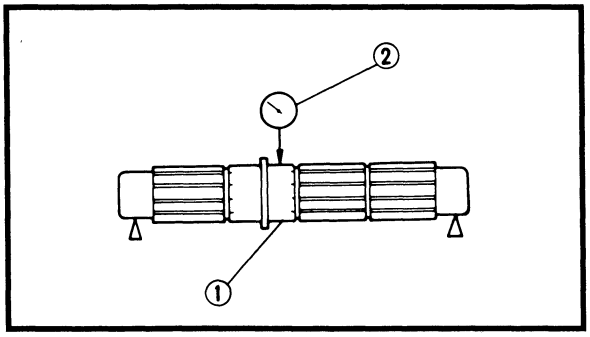
7. Inspect:
- Return spring ②
  Damage/Cracks → Replace.



8. Inspect:
- Gear teeth
  Blue discoloration/Pitting/Wear → Replace.
- Mated dogs
  Rounded edges/Cracks/Missing portions → Replace.

9. Check:
- Gear movement
  Unsmooth operation → Replace.

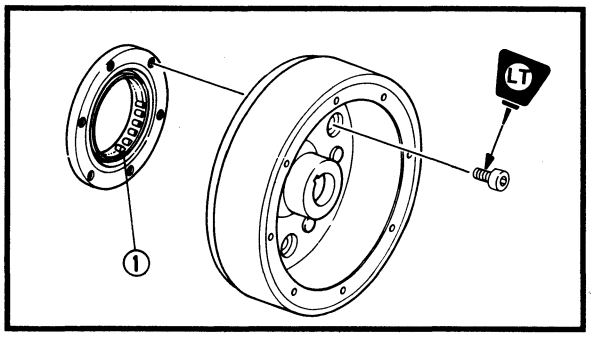
10. Check:
- Proper gear engagement (each gear) (to its counter part)
  Incorrect → Reassemble.
- Gear movement
  Roughness → Replace.



11. Measure:
- Axle ① runout
  Use centering device and dial gauge ②
  Out of specification → Replace.

Runout limit:
Less than 0.08 mm (0.003 in)

12. Inspect:
- Circlips
  Damage/Looseness/Bends → Replace.



STARTER DRIVES

1. Inspect:
- Starter one-way ①
  Cracks/Damage → Replace.

NOTE:

The arrow mark on the starter clutch must face inward, away from the CDI rotor.

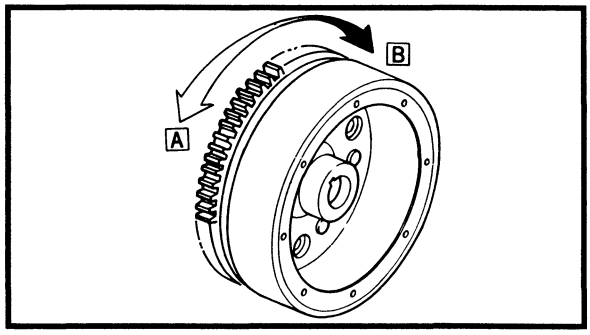
Bolts (starter clutch):
30 Nm (3.0 m • kg, 22 ft • lb)
LOCTITE®

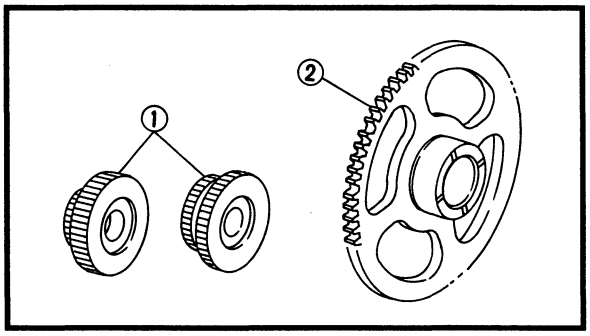
****

Starter clutch operation

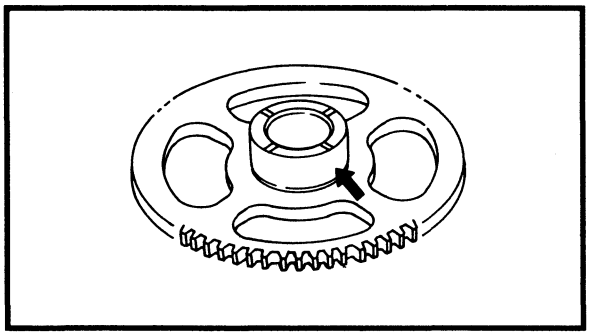
- Install the starter wheel gear to the starter clutch, and hold the starter clutch.
- When turning the starter wheel gear counter clockwise [A], the starter clutch and the wheel gear should be engaged.
  If not, the starter clutch is faulty. Replace it.
- When turning the starter wheel gear clockwise [B], the starter wheel gear should turn freely.
  If not, the starter clutch is faulty. Replace it.

****

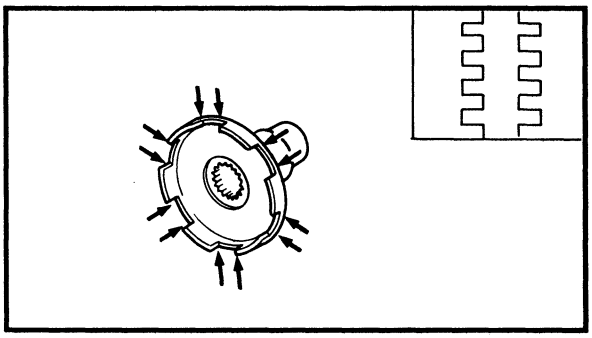




2. Inspect:
- Starter idle gear teeth ①
- Starter wheel gear teeth ②
  Burrs/Clips/Roughness/Wear → Replace.

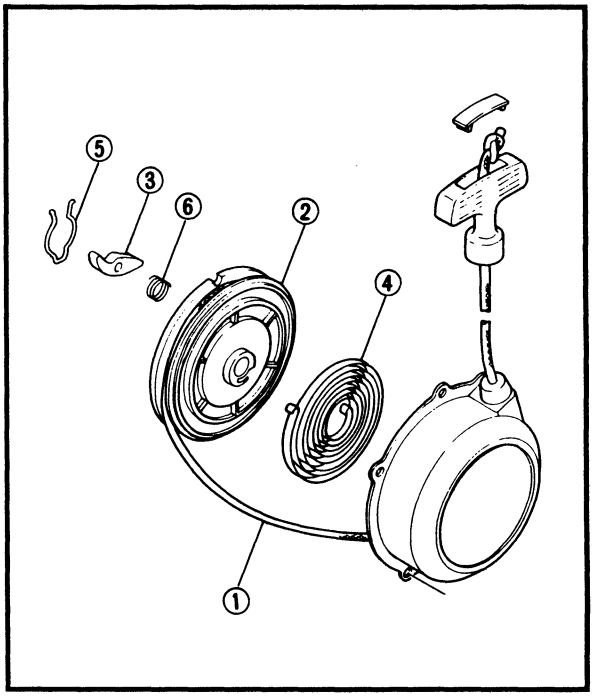


3. Inspect:
- Starter wheel gear
  (contacting surface)
  Pitting/Wear/Damage → Replace.

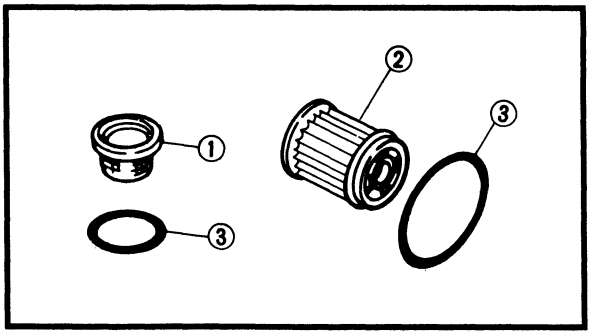


STARTER PULLEY AND RECOIL STARTER (EXCEPT FOR USA)

1. Inspect:
- Starter pulley
  Cracks/Pitting → Deburr or replace.

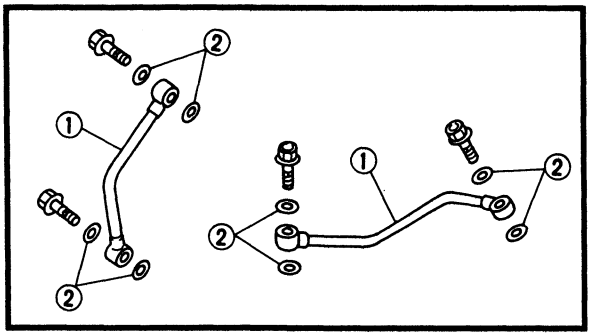


2. Inspect:
- Rope ①
- Sheave drum ②
- Drive pawl ③
  Wear/Damage → Replace.
- Coil spring ④
- Pawl spring ⑤
- Spring ⑥
  Fatigue → Replace.

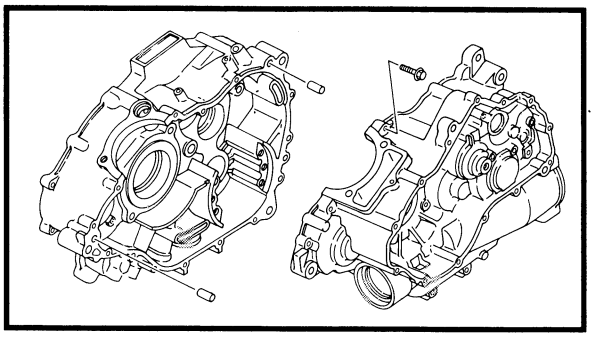


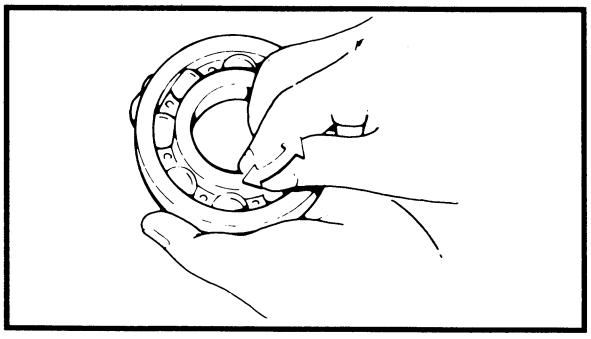
OIL STRAINER, OIL FILTER AND OIL PIPES

1. Inspect:
- Oil strainer ①
- Oil filter ②
- O-rings ③
  Damage → Replace.



2. Inspect:
- Oil delivery pipes ①
  Cracks/Damage → Replace.
  Clog → Blow out with compressed air.
- Copper washers ②
  Damage → Replace.





CRANKCASE

1. Thoroughly wash the case halves in mild solvent.
2. Clean all the gasket mating surfaces and crankcase mating surfaces thoroughly.
3. Inspect:

- Crankcase
  Cranks/Damage → Replace.
- Oil delivery passages
  Clog → Blow out with compressed air.

BEARINGS AND OIL SEALS

1. Inspect:

- Bearing
  Clean and lubricate, then rotate inner race with finger.
  Roughness → Replace.

2. Inspect:

- Oil seals
  Damage/Wear → Replace.

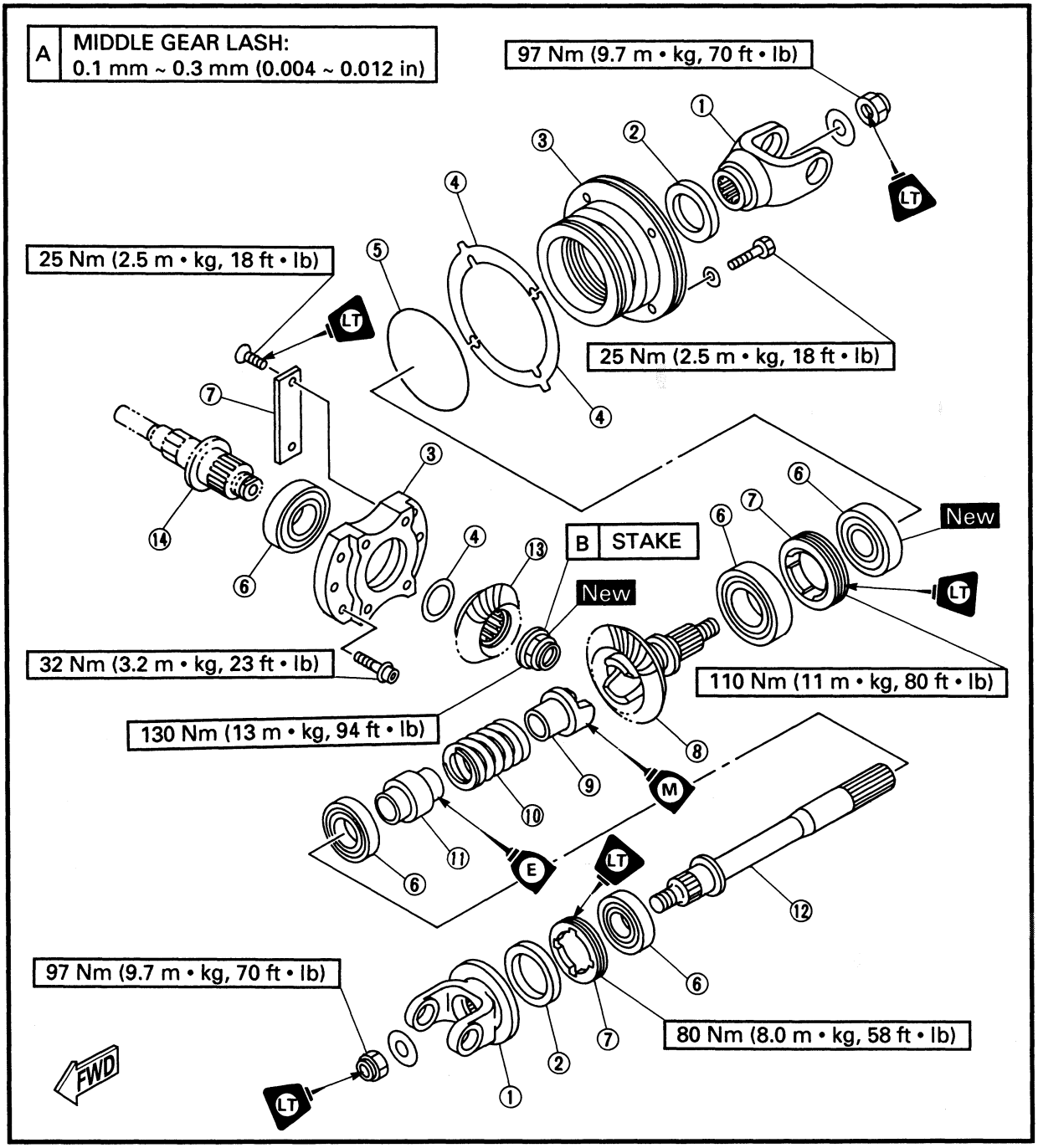
CIRCLIPS AND WASHERS

1. Inspect:

- Circlips
- Washers
  Damage/Looseness/Bends → Replace.

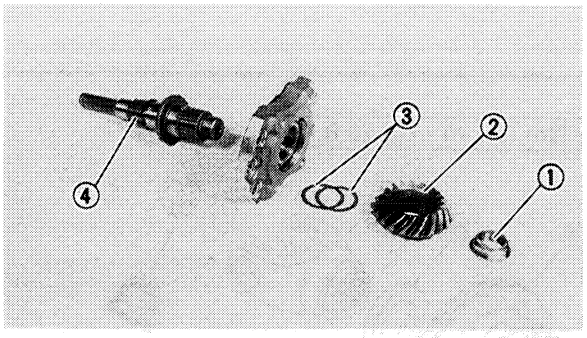
MIDDLE GEAR SERVICE

① Universal joint
② Oil seal
③ Bearing housing
④ Shim(s)
⑤ O-ring
⑥ Bearing
⑦ Bearing retainer
⑧ Driven pinion gear
⑨ Damper cam
⑩ Spring
⑪ Gear coupling
⑫ Middle drive shaft
⑬ Drive pinion gear
⑭ Middle drive shaft



REMOVAL

1. Remove:
- Drive pinion gear assembly
- Crankcase (left)
  Refer to the "ENGINE DISASSEMBLY" section.



DISASSEMBLY

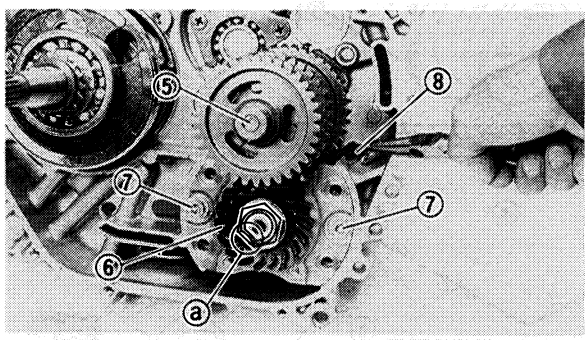
1. Remove:
- Nut (drive pinion gear) ①
- Drive pinion gear ②
- Shim (s) ③
- Middle drive shaft ④

****

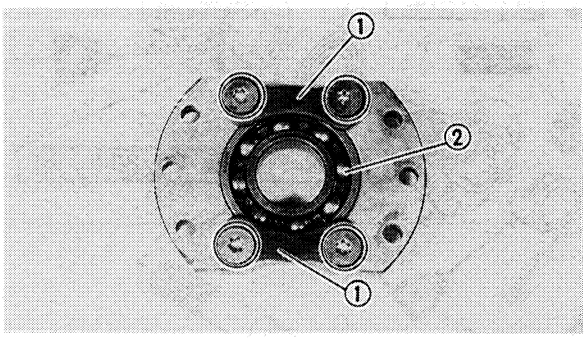
Removal steps:

- Install the drive axle ⑤ and the drive pinion gear assembly ⑥ in the right crankcase.
- Temporaly tighten the bolts (drive pinion gear assembly) ⑦.
- Straighten the punched portion ⓐ of the nut (drive pinion gear).
- Place a copper plate ⑧ between the teeth of the drive gear and the driven gear to lock them.
- Loosen the nut (drive pinion gear).
- Remove the drive axle and the drive pinion gear assembly.

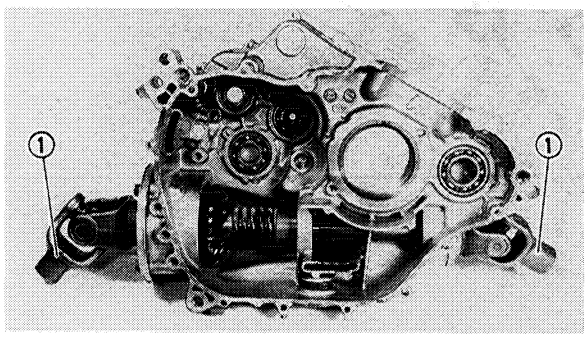
****

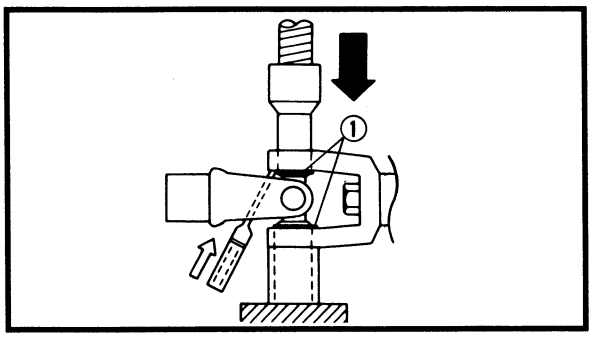


2. Remove:
- Bearing retainer ①
- Bearing ②



3. Remove:
- Universal joints ①





****

Removal steps:

- Remove the circlips ①.
- Place the U-joint in a press.
- With a suitable diameter pipe beneath the yoke, press the bearing into the pipe as shown.

NOTE:

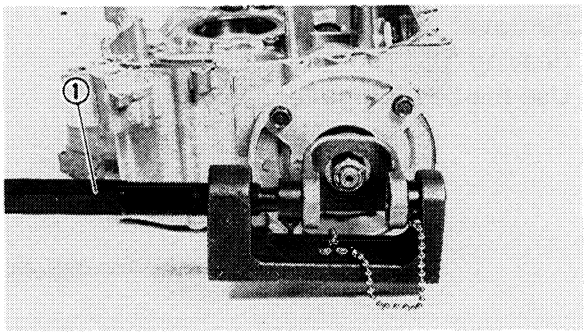
It may be necessary to lightly tap the yoke with a punch.

- Repeat the steps for the opposite bearing.
- Remove the yoke.

NOTE:

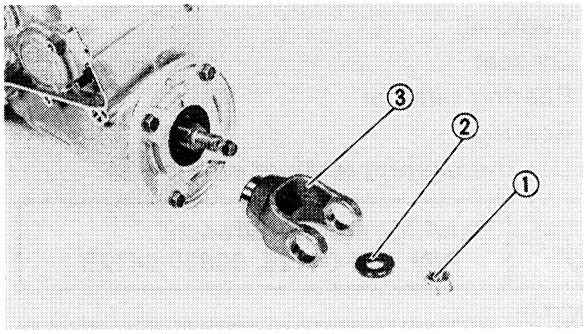
It may be necessary to light tap the yoke with a punch.

****

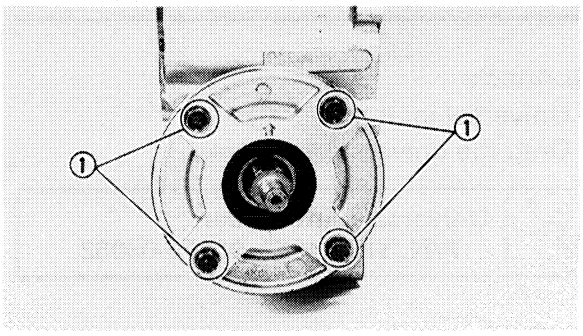


4. Attach:
- Universal joint holder ①
  Onto the universal joint yoke (driven pinion gear).

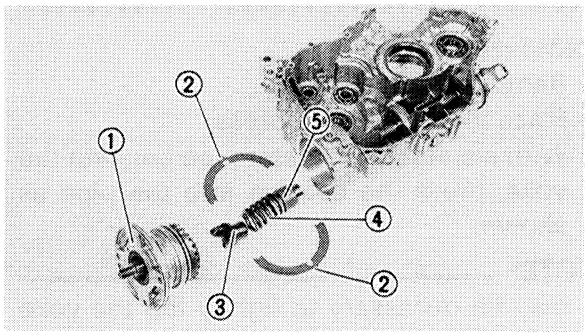
	Universal joint holder: P/N. YM-04062



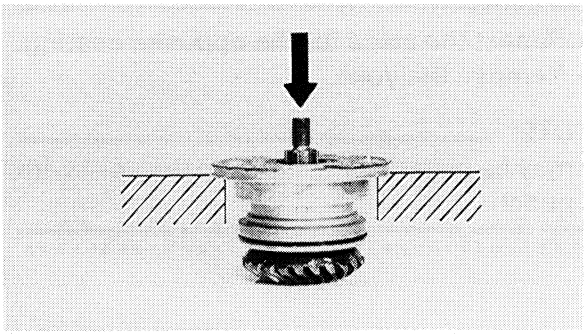
5. Remove:
- Nut (driven pinion gear) ①
- Washer ②
- Universal joint yoke ③



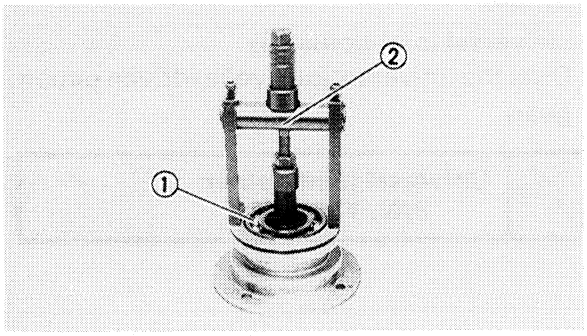
6. Remove:
- Bolts (bearing housing) ①



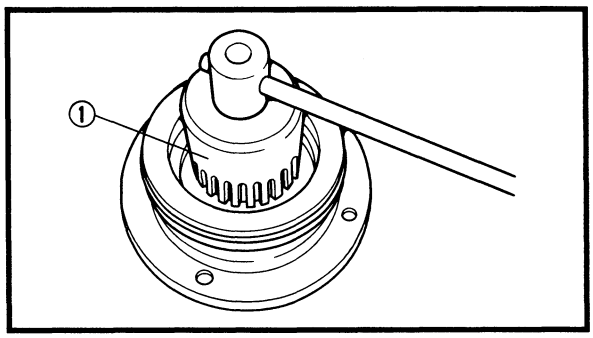
7. Remove:
- Driven pinion gear ①
  (with bearing housing)
- Shims ②
- Damper cam ③
- Spring ④
- Gear coupling ⑤



NOTE:
When pulling out the driven pinion gear, use a press.



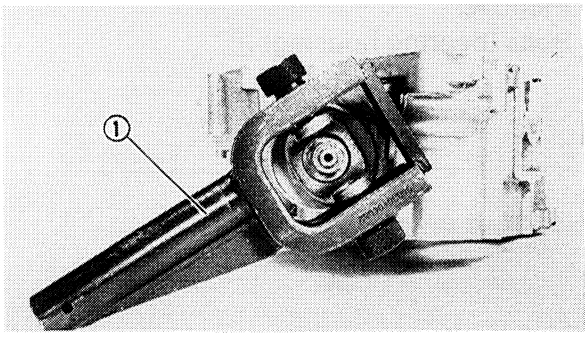
8. Remove:
- Bearing ①
  Use the bearing puller ②.



9. Remove:
- Oil seal
- Bearing retainer
- Bearing
  Use the bearing retainer wrench ①.

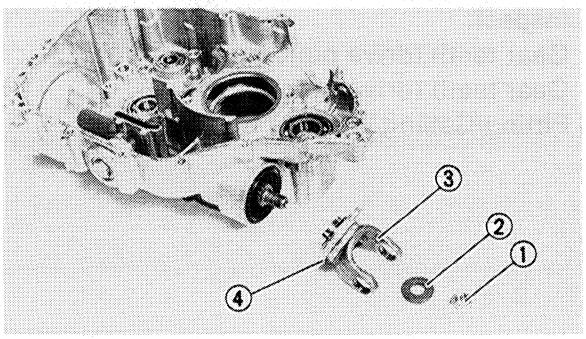
	Bearing retainer wrench: P/N. YM-04128, 90890-04128

NOTE:
Bearing retainer has left-hand threads.

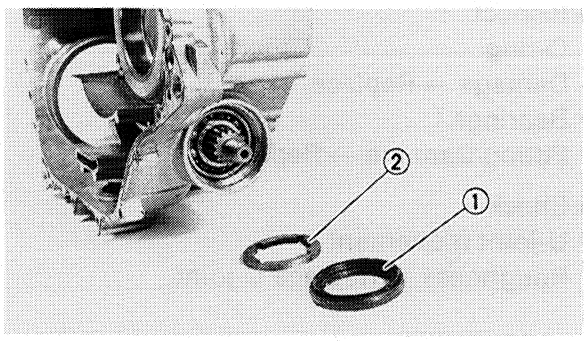


10. Attach:
- Universal joint holder ①
  Onto the universal joint yoke.

	Universal joint holder: P/N. YM-04062, 90890-04062



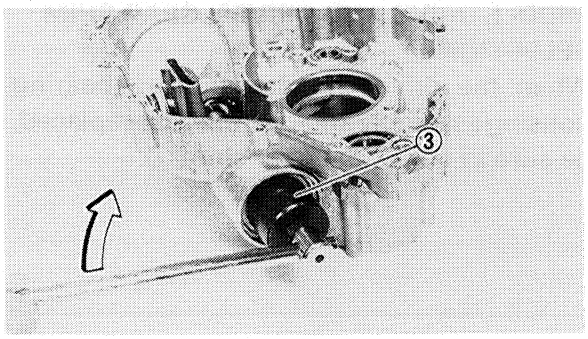
11. Remove:
- Nut ①
- Washer ②
- Universal joint yoke ③
- Dust cover ④

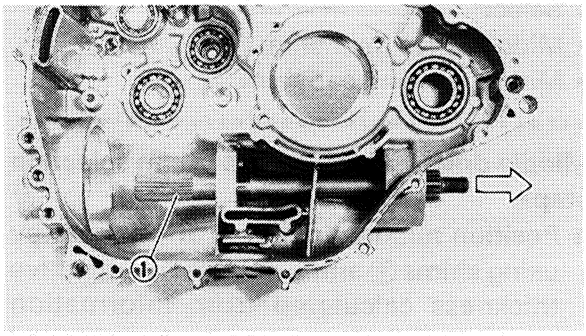


12. Remove:
- Oil seal ①
- Bearing retainer ②
  Use the ring nut wrench ③.

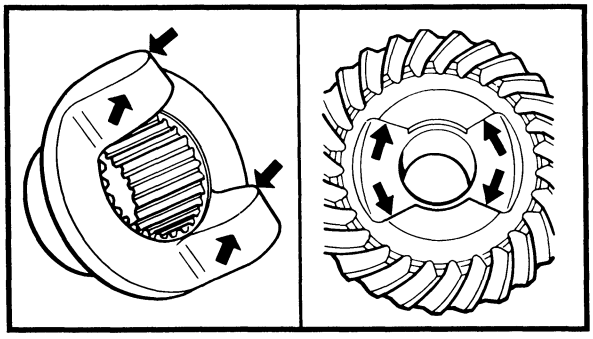
	Ring nut wrench: **P/N. YM-38404, 90890-01430**

NOTE:
Bearing retainer has left-hand thread.

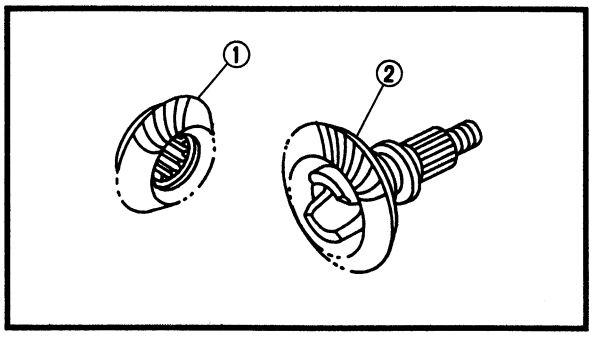




13. Remove:
- Middle drive shaft ①
  (with bearing)



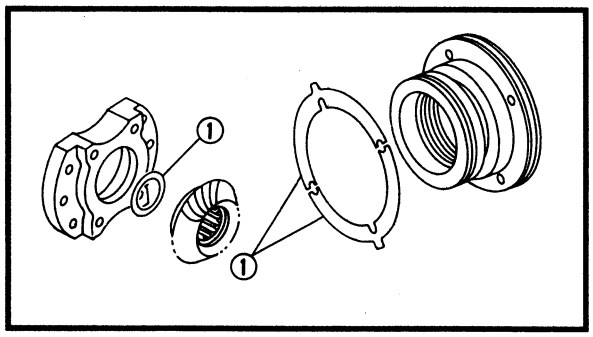
INSPECTION
1. Inspect:
- Damper cam surfaces
  Wear/Scratches → Replace damper and driven pinion gear as a set.
2. Inspect:
- Damper spring
  Damage/Cracks → Replace.



3. Inspect:
- Gear teeth (drive pinion gear) ①
- Gear teeth (driven pinion gear) ②
  Pitting/Galling/Wear → Replace.

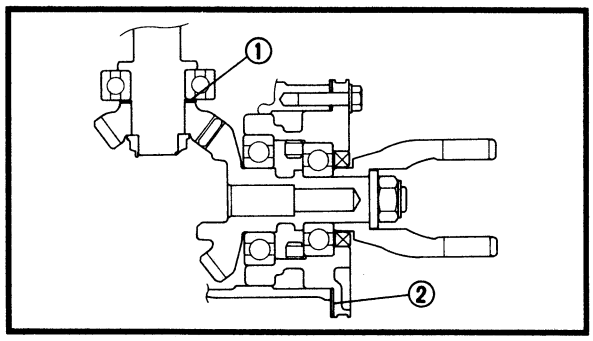
4. Inspect:
- O-ring
  Damage → Replace.
- Bearings
  Pitting/Damage → Replace.

5. Check:
- U-joint movement
  Roughness → Replace U-joint.



MIDDLE DRIVE AND DRIVEN GEAR SHIM SELECTION

When the drive and driven gear, bearing housing assembly and/or crankcase replaced, be sure to adjust the gear shim ①.



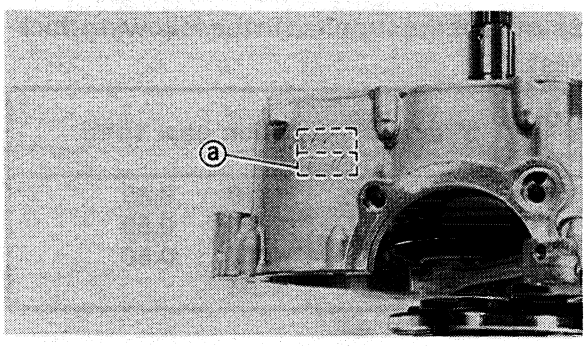
1. Select:
- Middle drive gear shim ①
- Middle driven gear shim ②

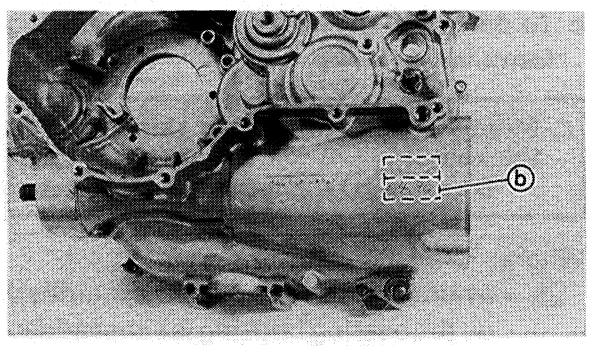
****

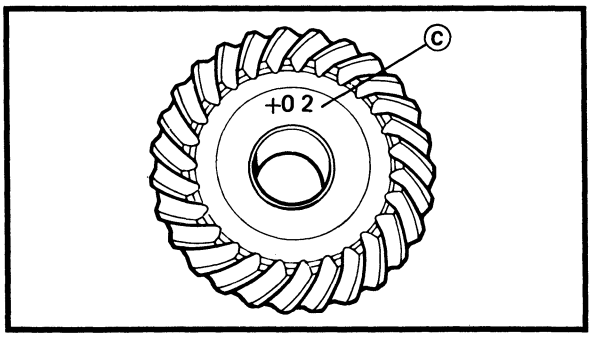
Middle drive and driven gear shim selection steps:

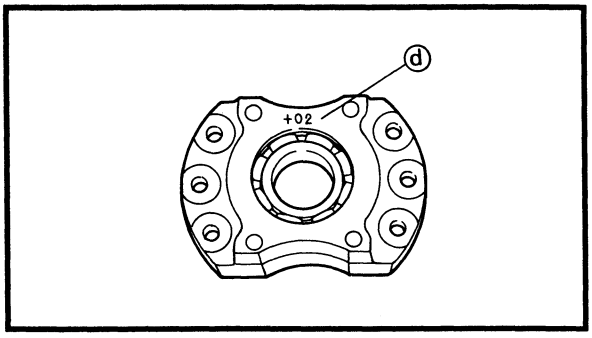
- Position middle drive and driven gear by using shims ① and ② with their respective thickness calculated from information marked on crankcase, bearing housing and drive gear end.

① Shim thickness "A"
② Shim thickness "B"









- To find shim thickness "A" use following formula:

Middle drive pinion gear shim thickness:
"A" = ⓐ + ⓑ − ⓒ − ⓓ

Where:

ⓐ = a numeral (usually a decimal number) on the right crankcase specifies a thickness of "6.4".

ⓑ = a numeral (usually a decimal number) on the left crankcase specifies a thickness of "65".

ⓒ = a numeral (usually a decimal number) on the drive pinion gear is either added to or substracted from "55".

ⓓ = a numeral (usually a decimal number) on the bearing housing is either added to or substracted from "15.7".

Example:

1) If the crankcase (right) is marked "6.30" .....ⓐ is 6.30
2) If the crankcase (left) is marked "65.01" .....ⓑ is 65.01
3) If the drive pinion gear is marked "+02" .....ⓒ is 55.02
4) If the bearing housing is marked "+02" .....ⓓ is 15.72

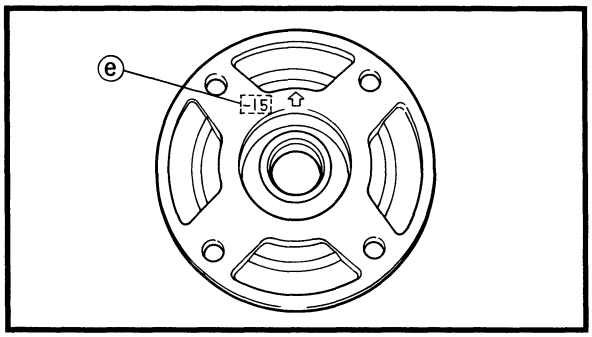
A = 6.30+65.01-55.02-15.72
= 0.57

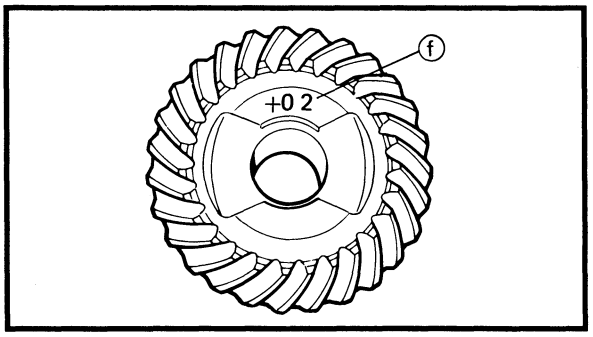
5) Round off hundredths digit and select appropriate shim(s).
In the example above, the calculated number is 0.57. The chart instructs you to round off 7 to 5 at the hundredth place. Thus, the shim thickness is 0.55mm.

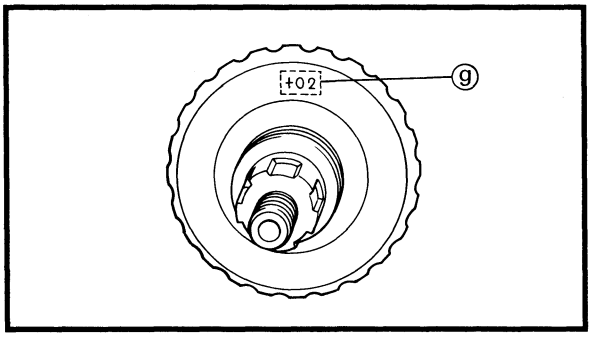
Hundredths	Round value
0, 1, 2	0
3, 4, 5, 6, 7	5
8, 9	10

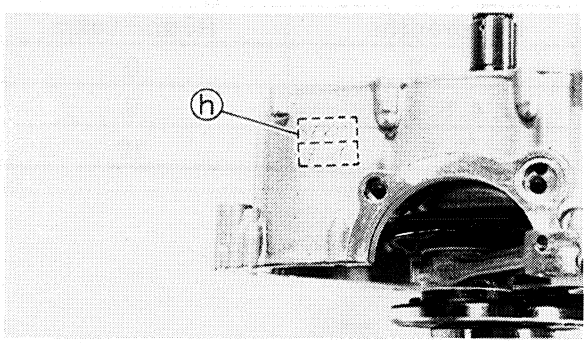
Shim sizes are supplied in the following thickness.

Middle drive pinion gear shim		
Thickness (mm)	0.10 0.15 0.20 0.30	0.40 0.50 0.60









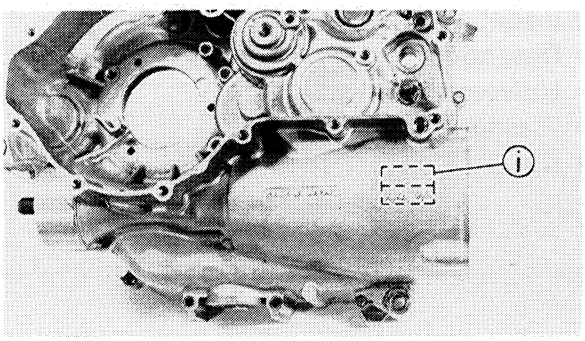
- To find shim thickness "B" use following formula:

Middle driven pinion gear shim thickness:
"B" = ⓔ – ⓕ + ⓖ – ⓗ – ⓘ – 0.05

Where:
- ⓔ = a numeral (usually a decimal number) on the bearing housing is either added to or substracted from "76".
- ⓕ = a numeral (usually a decimal number) on the driven pinion gear is either added to or substracted from "59".
- ⓖ = a numeral (usually a decimal number) on the driven pinion gear is either added to or substracted from "79.5".
- ⓗ = a numeral (usually a decimal number) on the right crankcase specifies a thickness of "56.5".
- ⓘ = a numeral (usually a decimal number) on the left crankcase specifies a thickness of "39.5".

Example:
1) If the bearing housing is marked "-15" .....ⓔ is 75.85
2) If the driven pinion gear is marked "+02" .....ⓕ is 59.02
3) If the driven pinion gear is marked "+02" .....ⓖ is 79.52
4) If the crankcase (right) is marked "56.49" .....ⓗ is 56.49
5) If the crankcase (left) is marked "39.49" .....ⓘ is 39.49

B = 75.85-59.02+79.52–56.49–39.49–0.05 = 0.32



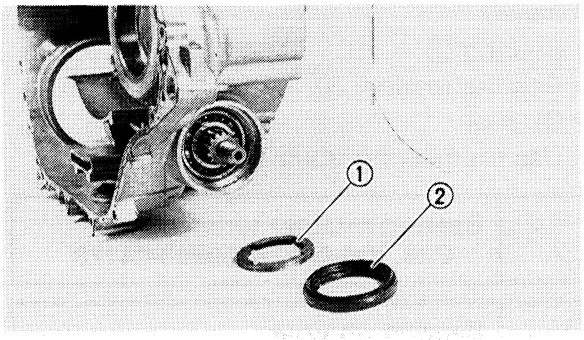
6) Round off hundredths digit and select appropriate shim(s).
In the example above, the calculated number is 0.32. The chart instructs you to round off 2 to 0 at the hundredth place. Thus, the shim thickness is 0.30mm.

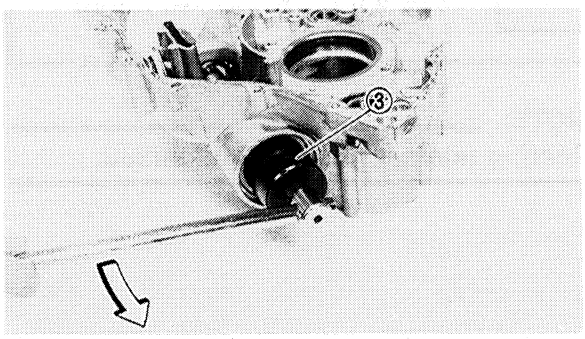
Hundredths	Round value
0, 1, 2	0
3, 4, 5, 6, 7	5
8, 9	10

Shim sizes are supplied in the following thickness.

Middle driven pinion gear shim		
Thickness (mm)	0.10 0.15 0.30	0.40 0.50 0.60

****





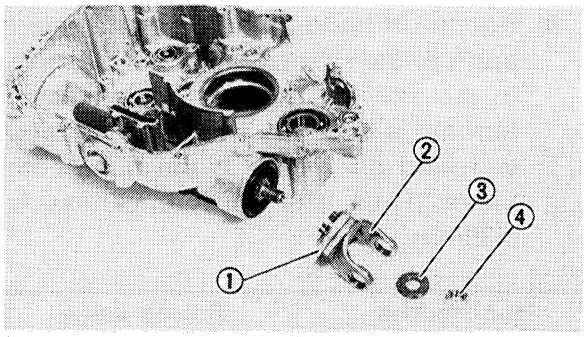
ASSEMBLY
Reverse the "DISASSEMBLY" procedures.
Note the following points.
1. Install:
- Bearing retainer ①
- Oil seal ②
  Use the ring nut wrench ③.

Ring nut rwench:
P/M. YM-38404, 90890-01430

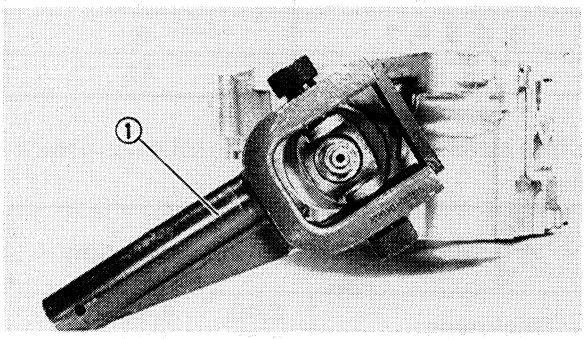
Bearing retainer:
80 Nm (8.0 m • kg, 58 ft • lb)
LOCTITE®

NOTE:
Bearing retainer has left-hand thread.

CAUTION:
Always use a new oil seal.



2. Install:
- Dust cover ①
- Universal joint yoke ②
- Washer ③
- Nut ④

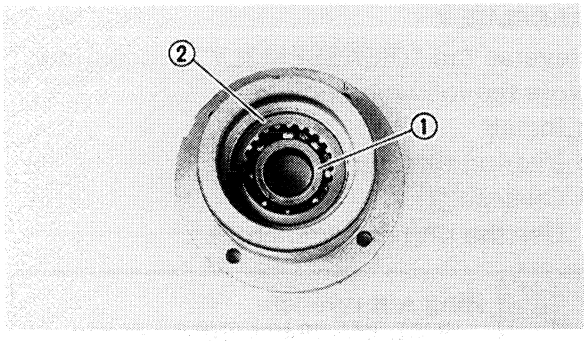


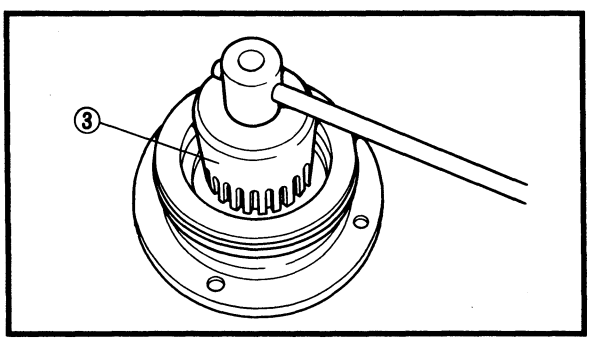
3. Attach:
- Universal joint holder ①
  Onto the universal joint yoke.

Universal joint holder:
P/N. YM-04062, 90890-04062

4. Tighten:
- Nut (universal joint yoke)

Nut (universal joint yoke):
97 Nm (9.7 m • kg, 70 ft • lb)
LOCTITE®



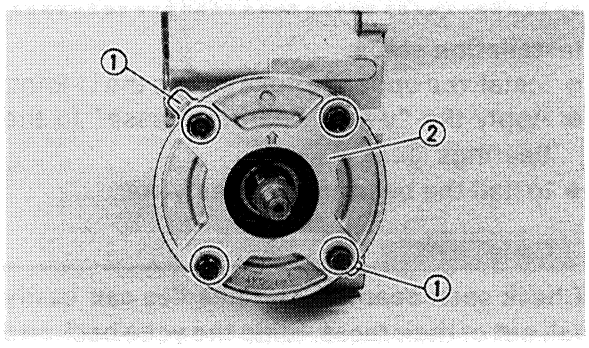


5. Install:
- Bearing ①
- Bearing retainer ②
- Oil seal
  Use the bearing retainer wrench ③.

Bearing retainer wrench:
P/N. YM-04128, 90890-04128

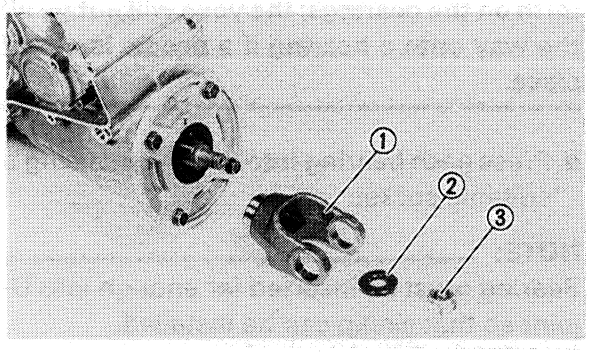
Bearing retainer:
110 Nm (11 m • kg, 80 ft • lb)
LOCTITE®

NOTE:
Bearing retainer has left-hand thread.

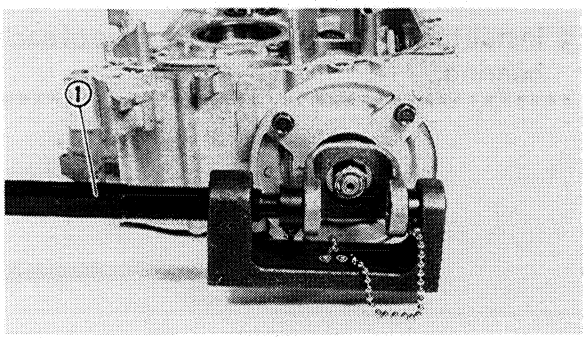


6. Install:
- Shims ①
- Bearing housing ②

	Bolt (bearing housing): **25 Nm (2.5 m • kg, 18 ft • lb)**



7. Install:
- Universal joint yoke ①
- Washer ②
- Nut (driven pinion gear) ③

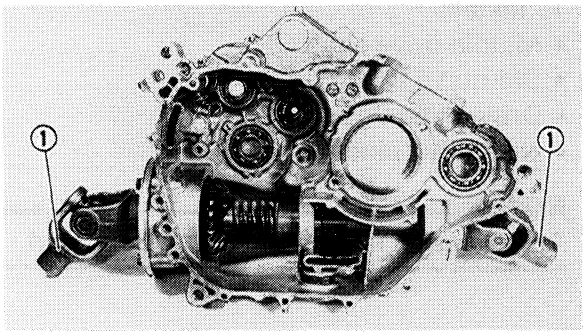


8. Attach:
- Universal joint holder ①
  Onto the universal joint yoke.

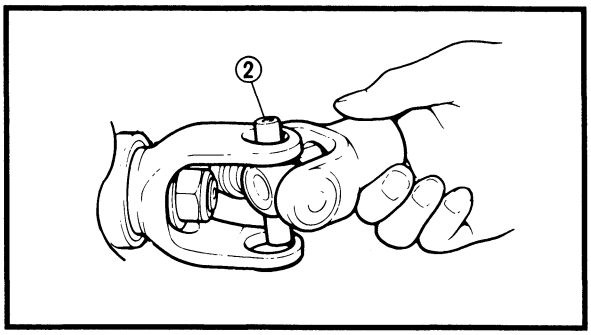
	Universal joint holder: **P/N. YM-04062**

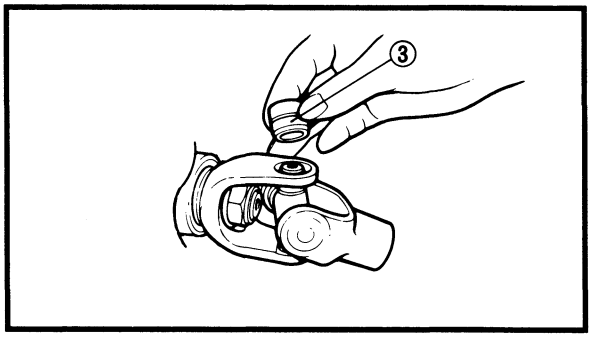
9. Tighten:
- Nut (driven pinion gear)

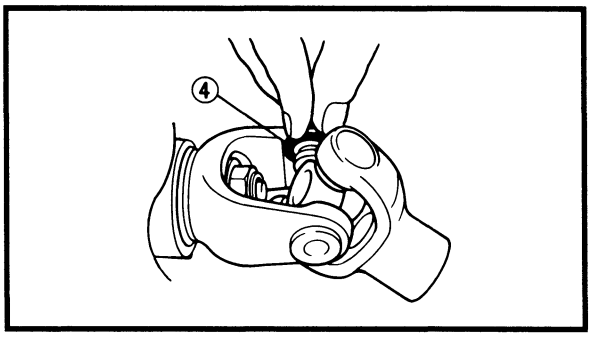
	Nut (driven pinion gear): **97 Nm (9.7 m • kg, 70 ft • lb)** **LOCTITE®**



10. Install:
- Universal joints ①







****

Installation steps:

- Install the opposite yoke ② into the U-joint.
- Apply the "wheel bearing grease" to the bearings ③.
- Install the bearing onto the yoke.

CAUTION:

Check each bearing. The needles can easily fall out of their races. Slide the yoke back and forth on the bearings; the yoke will not go all the way onto a bearing if a needle is out of place.

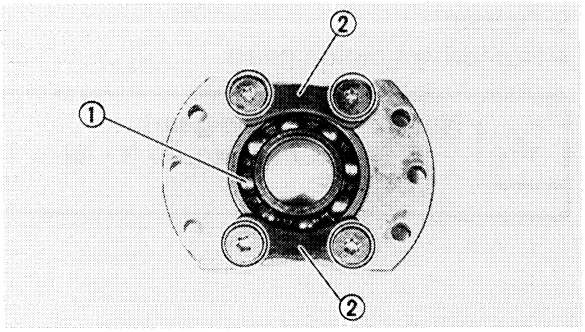
- Press each bearing into the U-joint using a suitable socket.

NOTE:

Bearing must be inserted far enough into U-joint so that circlip can be installed.

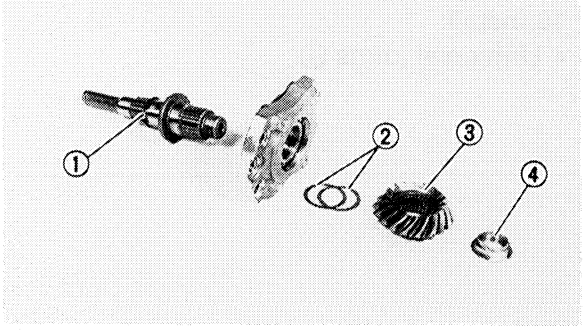
- Install the circlips ④ into the groove of each bearing.

****



11. Install:
- Bearing ①
- Bearing retainer ②

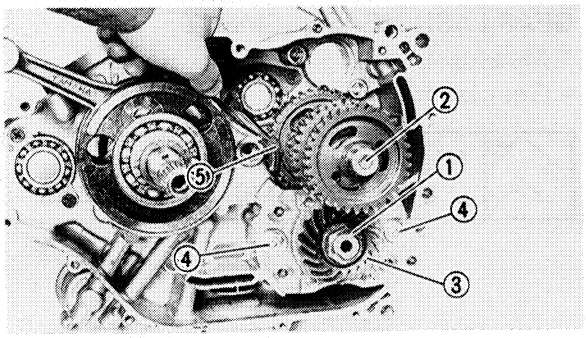
Screw (bearing retainer):
25 Nm (2.5 m • kg, 18 ft • lb)
LOCTITE®

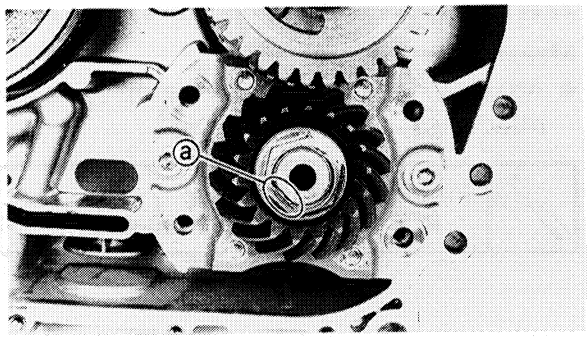


12. Install:
- Middle drive shaft ①
- Shim(s) ②
- Drive pinion gear ③
- Nut (drive pinion gear) ④

NOTE:

Always use a new nut (drive pinion gear).





13. Tighten:
- Nut (drive pinion gear) ①

****

Tightening steps:
- Install the drive axle ② and drive pinion gear assembly ③ into the crankcase (right).
- Temporaly tighten the bolts (drive pinion gear assembly) ④.
- Place a copper washer ⑤ between teeth of the drive gear and driven gear to lock them.
- Tighten the nut (drive pinion gear).

	Nut (drive pinion gear): 130 Nm (13 m • kg, 94 ft • lb)

- Lock the thread ⓐ with center punch.
- Remove the drive axle and drive pinion gear assembly.

****

INSTALLATION

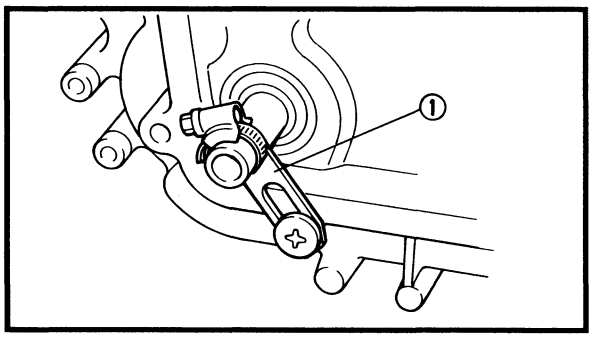
1. Install:
- Drive pinion gear assembly
- Crankcase (left)

Refer to the "ENGINE ASSEMBLY AND ADJUSTMENT" section.

GEAR LASH MEASUREMENT

1. Measure:
- Gear lash

Middle gear lash:
0.1 ~ 0.3 mm (0.004 ~ 0.012 in)

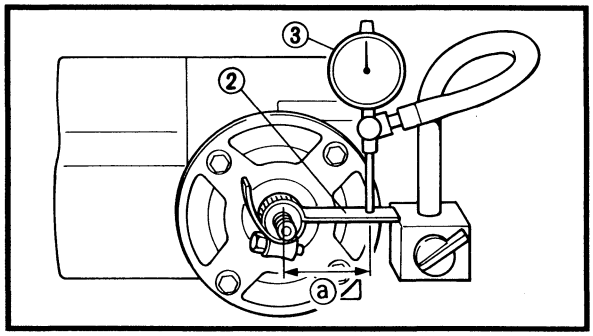


****

Measurement steps:

- Attach the pinion gear fix clamp ① to the middle drive shaft.

Pinion gear fix clamp:
P/N. YM-04129, 90890-04129



- Attach the gear lash measurement tool ② and dial gauge ③.

Gear lash measurement tool:
P/N. YM-01231, 90890-01231
Dial gauge:
P/N. YU-03097, 90890-03097

ⓐ 46 mm (1.8 in)

- Measure the gear lash while rotating the middle driven gear shaft back and forth.

NOTE:

Measure the gear lash at 4 positions. Rotate the middle driven gear 90° each time.

- If the gear lash is incorrect. Adjust the gear lash by driven pinion gear shims and/or drive pinion gear shim(s).

****

ENGINE ASSEMBLY AND ADJUSTMENT

⚠ WARNING

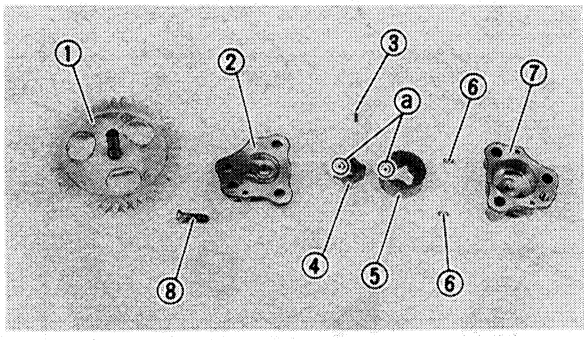
For engine reassembly, replace the following parts with new ones.

- **O-ring**
- **Gasket**
- **Oil seal**
- **Copper washer**
- **Lock washer**
- **Circlip**

OIL PUMP

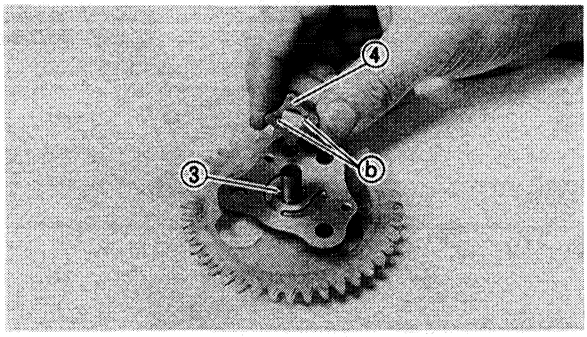
1. Lubricate:
- Inner rotor
- Outer rotor
- Pump shaft

	Recommended lubricant: SAE 10W30 motor oil

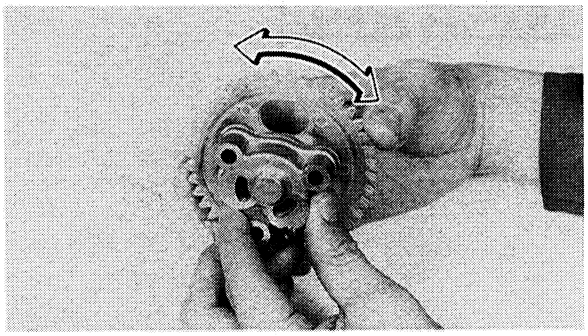


2. Install:
- Pump shaft ①
  (to pump cover ②)
- Pin ③
- Inner rotor ④
- Outer rotor ⑤
- Dowel pins ⑥
- Pump housing ⑦
- Screw ⑧

	Screw (pump housing): 7 Nm (0.7 m • kg, 5.1 ft • lb)



NOTE:
- When installing the inner and outer rotors, make sure that the punch mark ⓐ on these parts faces towards the driven gear.
- When installing the inner rotor, align the pin ③ in the pump shaft with the groove ⓑ on the inner rotor ④.

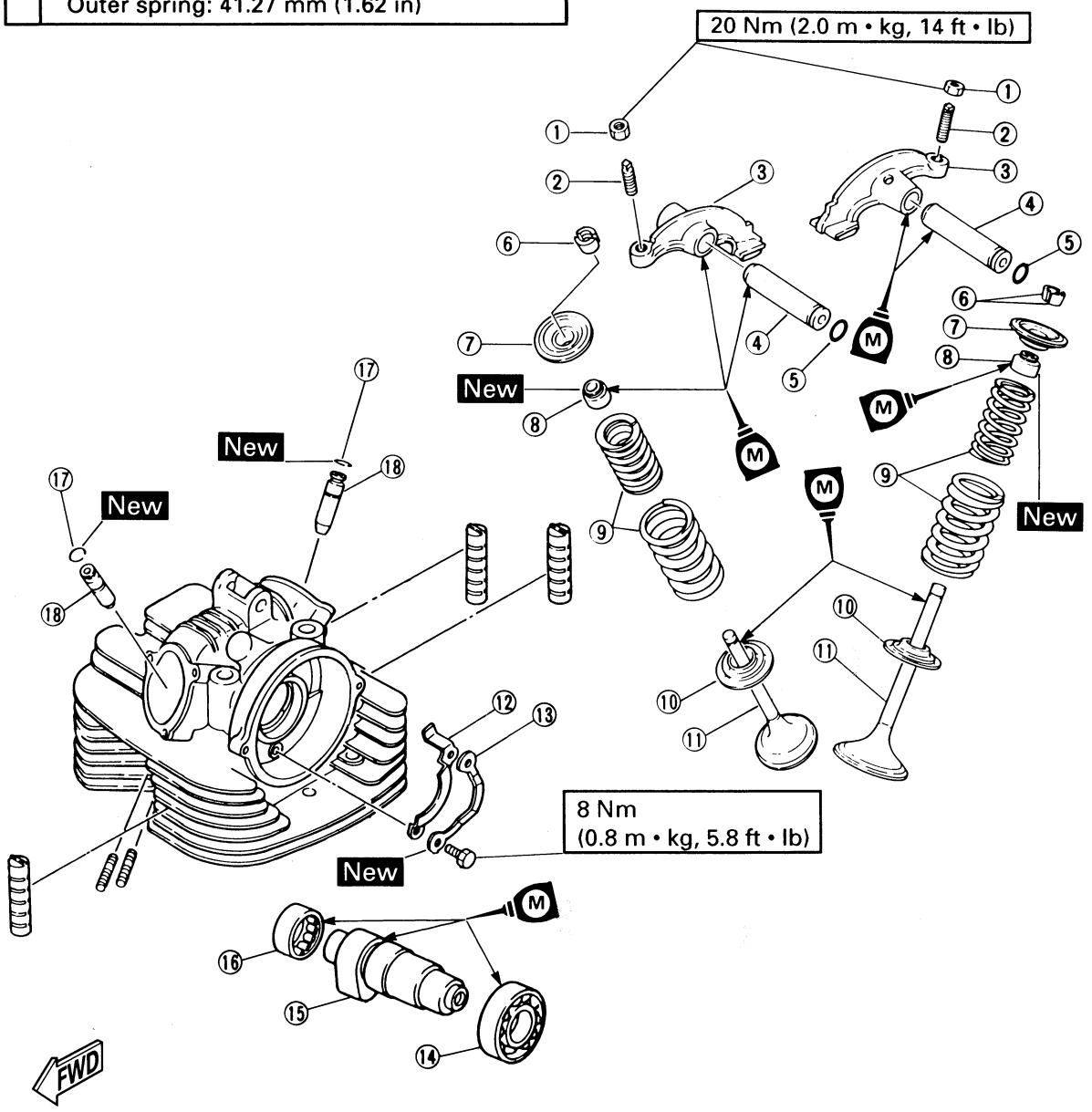


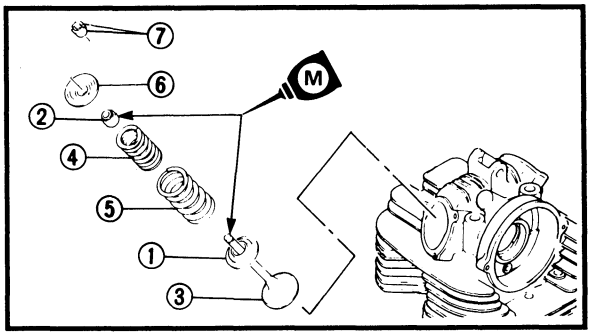
3. Check:
- Oil pump operation
  Unsmooth → Inspect and replace defective parts.
  Refer to the "INSPECTION AND REPAIR" section.

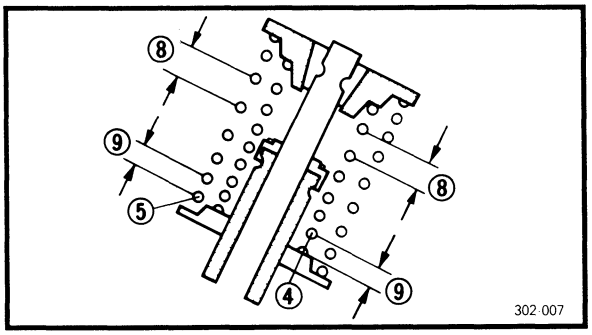
VALVE, CAM SHAFT AND ROCKER ARM

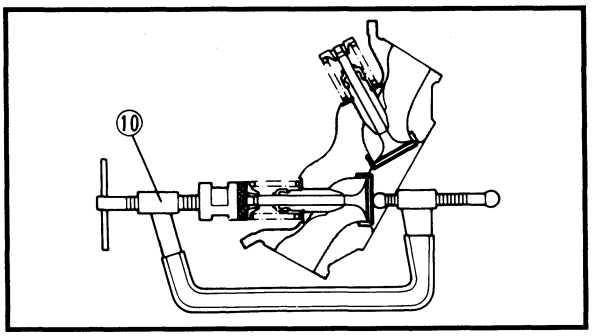
① Locknuts (valve adjusting)
② Adjuster (valve adjusting)
③ Rocker arm
④ Rocker arm shaft
⑤ O-ring
⑥ Valve cotter
⑦ Valve spring retainer
⑧ Oil seal
⑨ Valve springs
⑩ Valve spring seat
⑪ Valve
⑫ Bearing retainer
⑬ Lock washer
⑭ Bearing
⑮ Camshaft
⑯ Bearing
⑰ Circlip
⑱ Valve guide

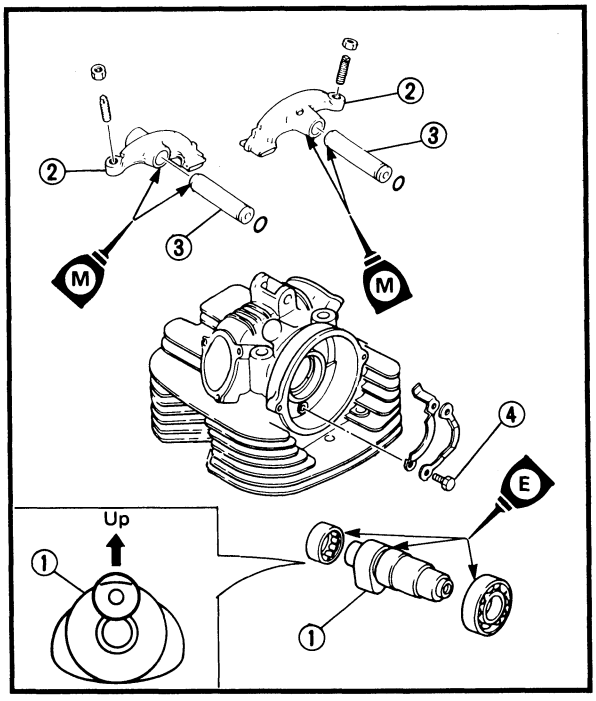
A	VALVE CLEARANCE (COLD): Intake: 0.06 ~ 0.10 mm (0.0024 ~ 0.0039 in) Exhaust: 0.16 ~ 0.20 mm (0.0063 ~ 0.0079 in)
B	VALVE SPRING LENGTH LIMIT (FREE): Inner spring: 37.9 mm (1.49 in) Outer spring: 41.27 mm (1.62 in)











VALVE, CAM SHAFT AND ROCKER ARM

1. Apply:
- Molybdenum disulfide oil (to the valve stem and oil seal)

2. Install:
- Valve spring seat ①
- Oil seal ②
- Valve ③
- Valve spring (inner) ④
- Valve spring (outer) ⑤
- Spring retainer ⑥
- Valve cotters ⑦

NOTE:

Install the valve spring with the wider gapped coils facing upwards as shown.

⑧ Lager pitch
⑨ Smaller pitch

NOTE:

Compress the valve spring with the valve, spring compressor ⑩ and then, install the valve cotters.

	Valve spring compressor: P/N. YM-04019, 90890-04019

3. Apply:
- Engine oil (to the bearing of the camshaft)
- Molybdenum disulfide oil (to the rocker arm and shaft)

4. Install:
- Camshaft ① (compression stroke as shown)
- Rocker arm ②
- Rocker arm shaft ③

	Bolt ④ (cam shaft bearing retainer): 8 Nm (0.8 m • kg, 5.8 ft • lb)

NOTE:

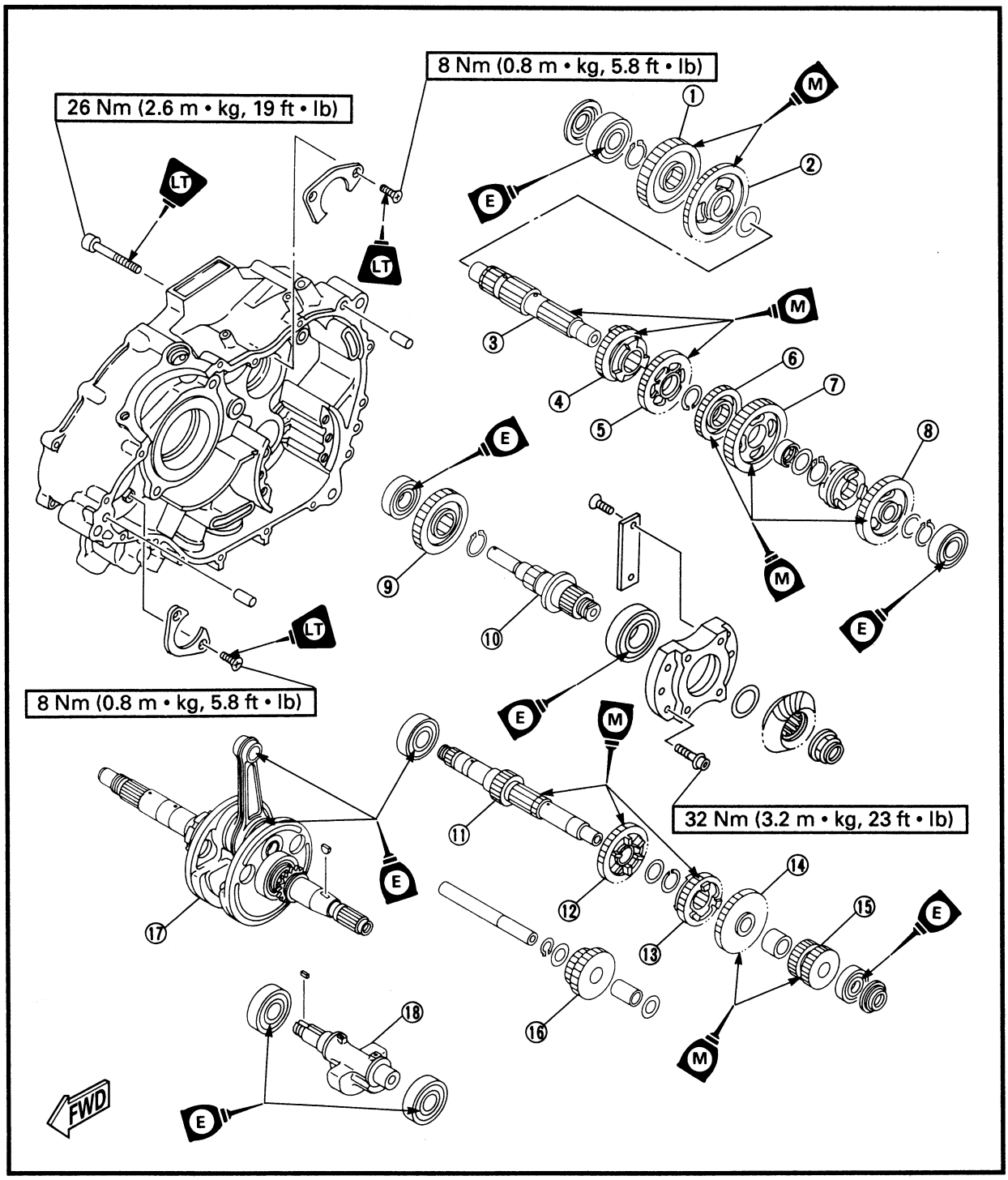
Bend the lock washer tab along the nut flats.

⚠ WARNING

Always use a new lock washer.

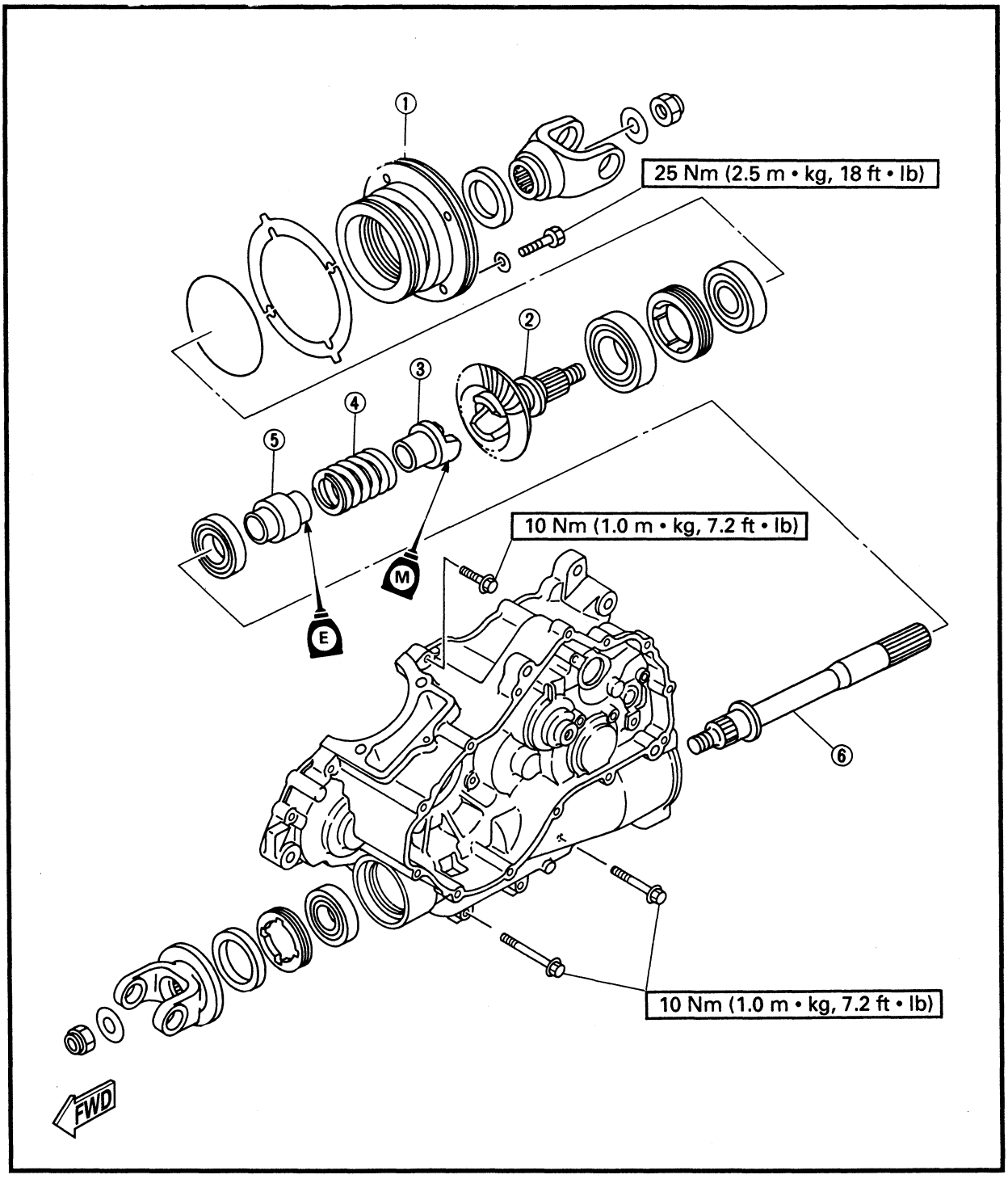
RIGHT CRANKCASE

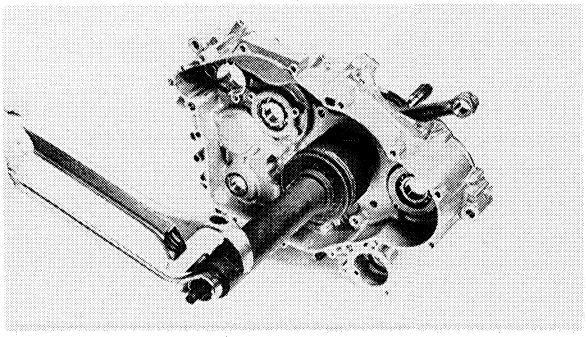
① Middle drive gear
② 1st wheel gear
③ Drive axle
④ 5th wheel gear
⑤ 3rd wheel gear
⑥ 4th wheel gear
⑦ Reverse wheel gear 1
⑧ 2nd wheel gear
⑨ Middle driven gear
⑩ Middle drive shaft
⑪ Main axle
⑫ 5th pinion gear
⑬ 3rd pinion gear
⑭ 4th pinion gear
⑮ 2nd pinion gear
⑯ Reverse wheel gear 2
⑰ Crankshaft
⑱ Balancer weight



LEFT CRANKCASE

① Bearing housing
② Driven pinion gear
③ Damper cam
④ Spring
⑤ Gear coupling
⑥ Middle drive shaft





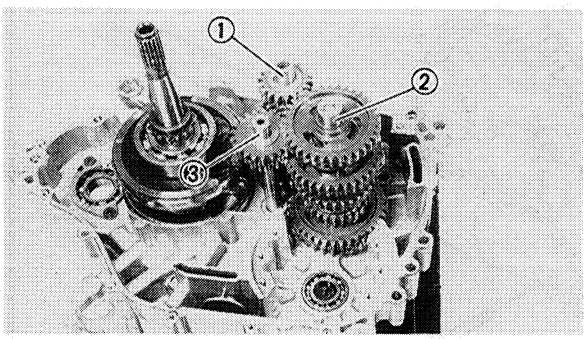
CRANKSHAFT

1. Install:
- Crankshaft
  Use the following tools.

Crankshaft installer set:
P/N. YU-90050
Buffer boss installer set:
P/N. 90890-04088
Adapter #11:
P/N. YM-33279
Pot extension:
P/N. YM-33280
Crank pot spacer:
P/N. YM-91044, 90890-04081
Spacer:
P/N. 90890-01016

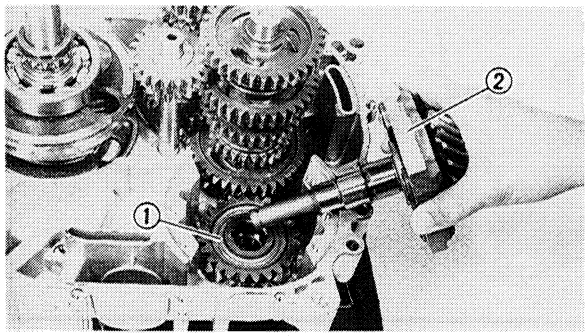
NOTE:
Hold the connecting rod at top dead center while turning the nut of the installing tool with the other. Operate the installing tool until the crankshaft bottoms against the bearing.

CAUTION:
To protect the crankshaft against scratches or to facilitate the operation of the installation. Apply the engine oil to each bearing.



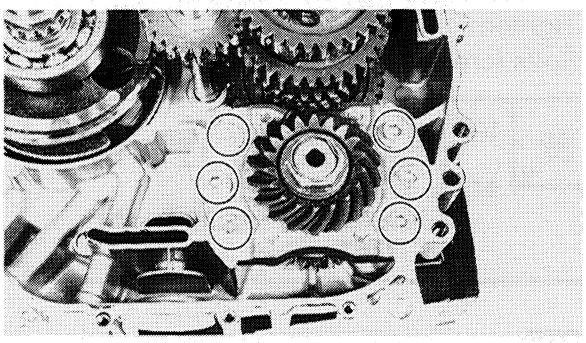
TRANSMISSION

1. Install:
- Main axle assembly ①
- Drive axle assembly ②
- Reverse wheel gear ③

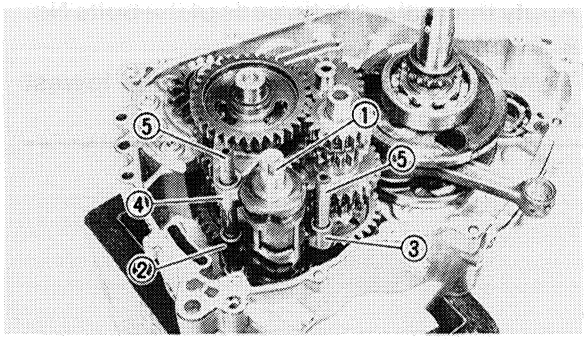


2. Install:
- Middle driven gear ①
- Drive pinion gear assembly ②

NOTE:
When installing the drive pinion gear, fit it onto the splines on the middle driven gear ①.

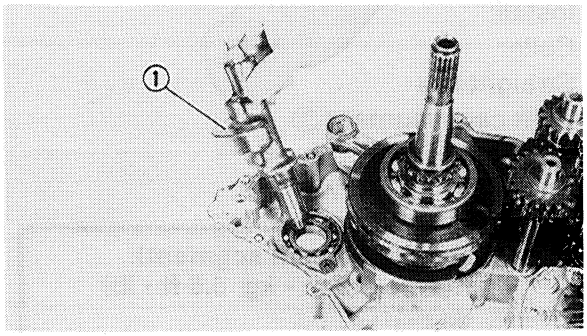


Bolt (bearing housing):
32 Nm (3.2 m • kg, 23 ft • lb)

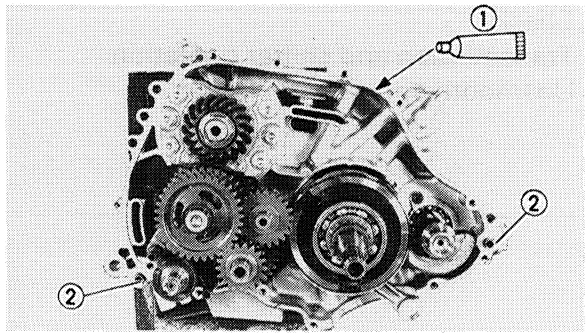


3. Install:
- Shift cam ①
- Shift fork "R" ②
- Shift fork "C" ③
- Shift fork "L" ④
- Guide bars ⑤

NOTE:
Install the shift forks with the embossed mark (R. C. L) on each shift fork facing right side of the engine.



CRANKCASE ASSEMBLY
1. Install:
- Balancer weight ①



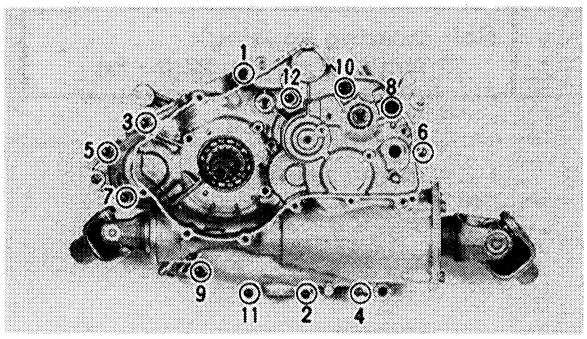
2. Apply
- Sealant ① (Quick Gasket®)
  (to the mating surfaces of both case halves)

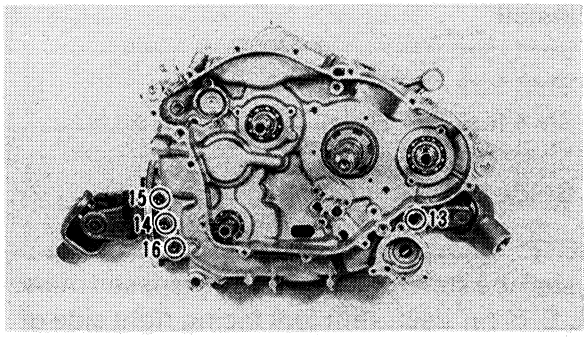
Sealant (Quick Gasket®):
P/N. ACC-11001-05-01
Yamaha bond No. 1215:
P/N. 90890-85505

3. Install:
- Dowel pin ②

4. Fit the left crankcase onto the right case. Tap lightly on the case with a soft hammer.

CAUTION:
Before installing and torquing the crankcase holding screws, be sure to check whether the transmission is functioning properly by manually rotating the shift cam either way.

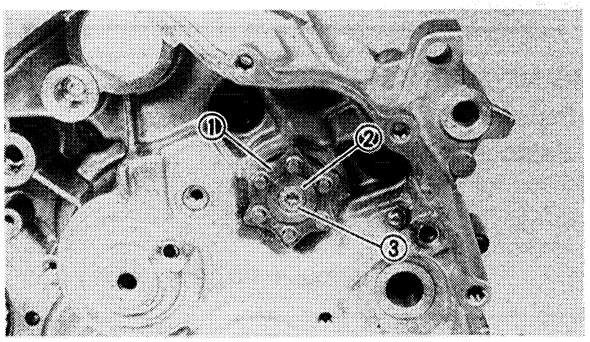




5. Tighten:
- Bolts (crankcase)

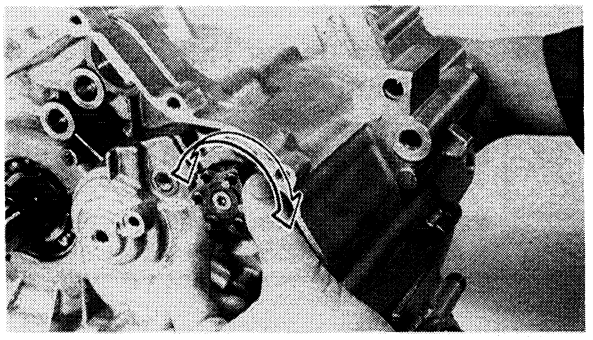
M6 bolt (crankcase):
10 Nm (1.0 m • kg, 7.2 ft • lb)
M8 bolt (crankcase):
26 Nm (2.6 m • kg, 19 ft • lb)
LOCTITE®

NOTE:
- Apply the sealant to threads of the bolts No. 8, 9 and 11.
- Tighten the bolts starting with the lowest numbered one.

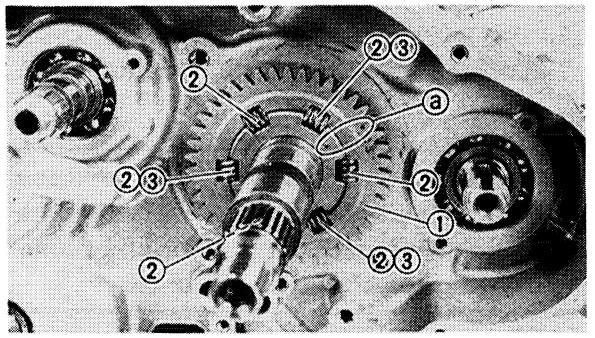


6. Install:
- Collar
- Straight key
- Shift cam segment ①
- Washer ②
- Screw ③

Screw (shift cam segment):
9 Nm (0.9 m • kg, 6.5 ft • lb)
LOCTITE®



7. Check:
- Transmission and shifter operation
  Unsmooth operation → Repair.



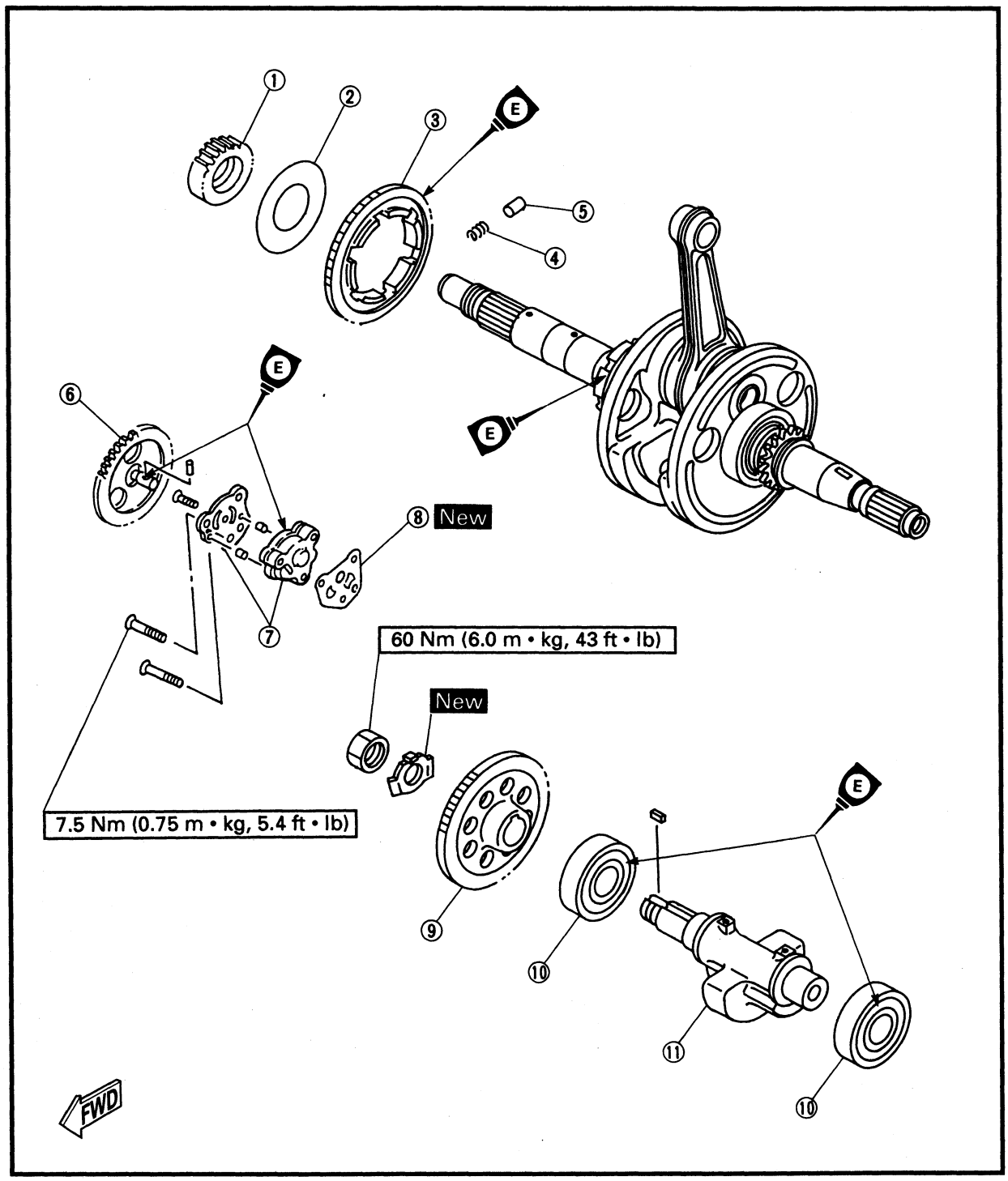
OIL PUMP AND BALANCER DRIVE GEARS

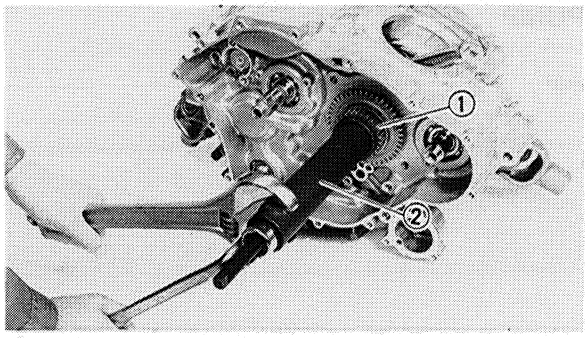
1. Install:
- Balancer drive gear ①
- Dowel pins ②
- Spring ③

NOTE:
Align the punch marks ⓐ on the buffer boss and balancer drive gear.

BALANCER DRIVE AND DRIVEN GEARS AND OIL PUMP

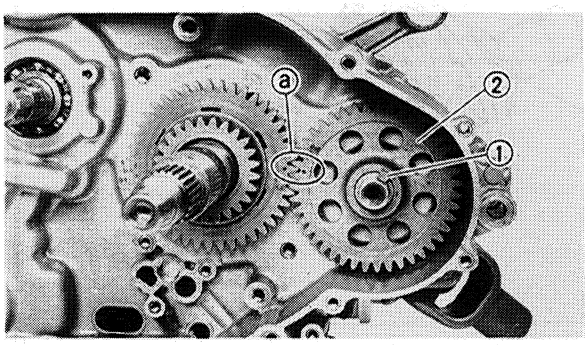
① Oil pump drive gear
② Washer
③ Balancer drive gear
④ Spring
⑤ Dowel pin
⑥ Oil pump driven gear
⑦ Oil pump assembly
⑧ Gasket
⑨ Balancer driven gear
⑩ Bearing
⑪ Balancer weight

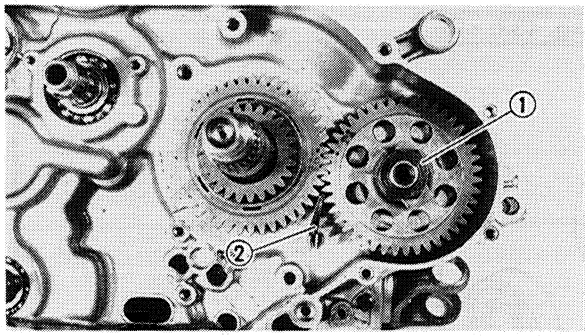




2. Install:
- Washer
- Oil pump drive gear ①
  Use the following tools ②.

Pot spacer:
P/N. YM-90070-A
Adapter #11:
P/N. YM-33279
Crankshaft installer set:
P/N. YM-90050
Buffer boss installer set:
P/N. 90890-04088





3. Install:
- Straight key ①
- Balancer driven gear ②
- Lock washer

NOTE:
- Align the punch marks ⓐ on the balancer drive and driven gear.
- Be sure the tab of the lock washer engages the slot on the balancer shaft.

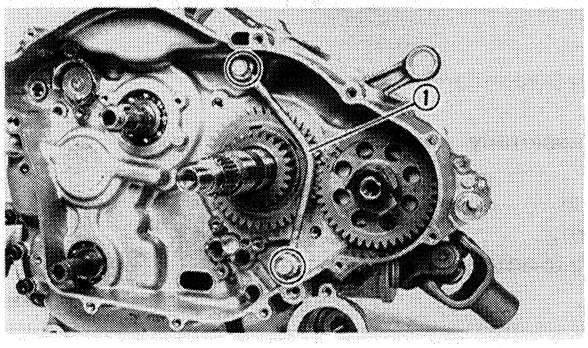
⚠ WARNING
Always use a new lock washer.

4. Install:
- Nut (balancer driven gear) ①

NOTE:
Place a copper plate ② between teeth of the drive gear and driven gear to lock them when tightening nut (balancer driven gear).

Nut (balancer driven gear):
60 Nm (6.0 m • kg, 43 ft • lb)

5. Bend the lock washer tabs.

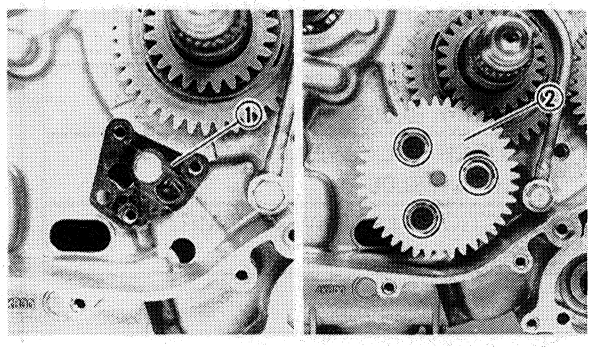


6. Install:
- Copper washers
- Oil pipe ①

	Bolt (oil pipe): 16 Nm (1.6 m • kg, 11 ft • lb)

⚠ WARNING

Always use a new copper washers.



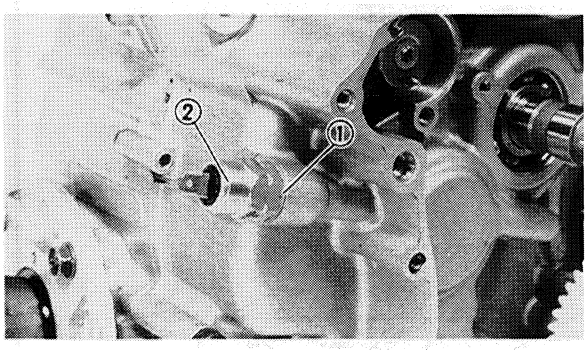
7. Install:
- Gasket ①
- Oil pump assembly ②

	Screw (oil pump): 7.5 Nm (0.75 m • kg, 5.4 ft • lb)

⚠ WARNING

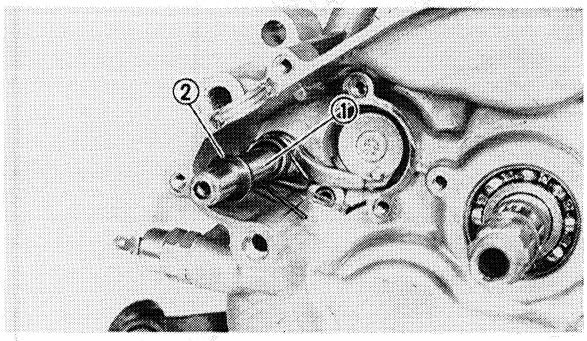
Always use a new gasket.

REVERSE SHIFT BRACKET



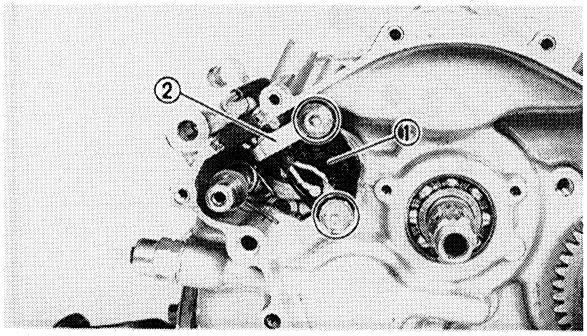
1. Install:
- Copper washer ①
- Thermo switch ②

	Thermo switch: 20 Nm (2.0 m • kg, 14 ft • lb)



2. Install:
- Reverse shift bracket assembly ①
- Washer ②

NOTE:
- Hook the spring ends on the reverse shift bracket and crankcase.
- Mesh the reverse shift bracket with the shift cam as shown.

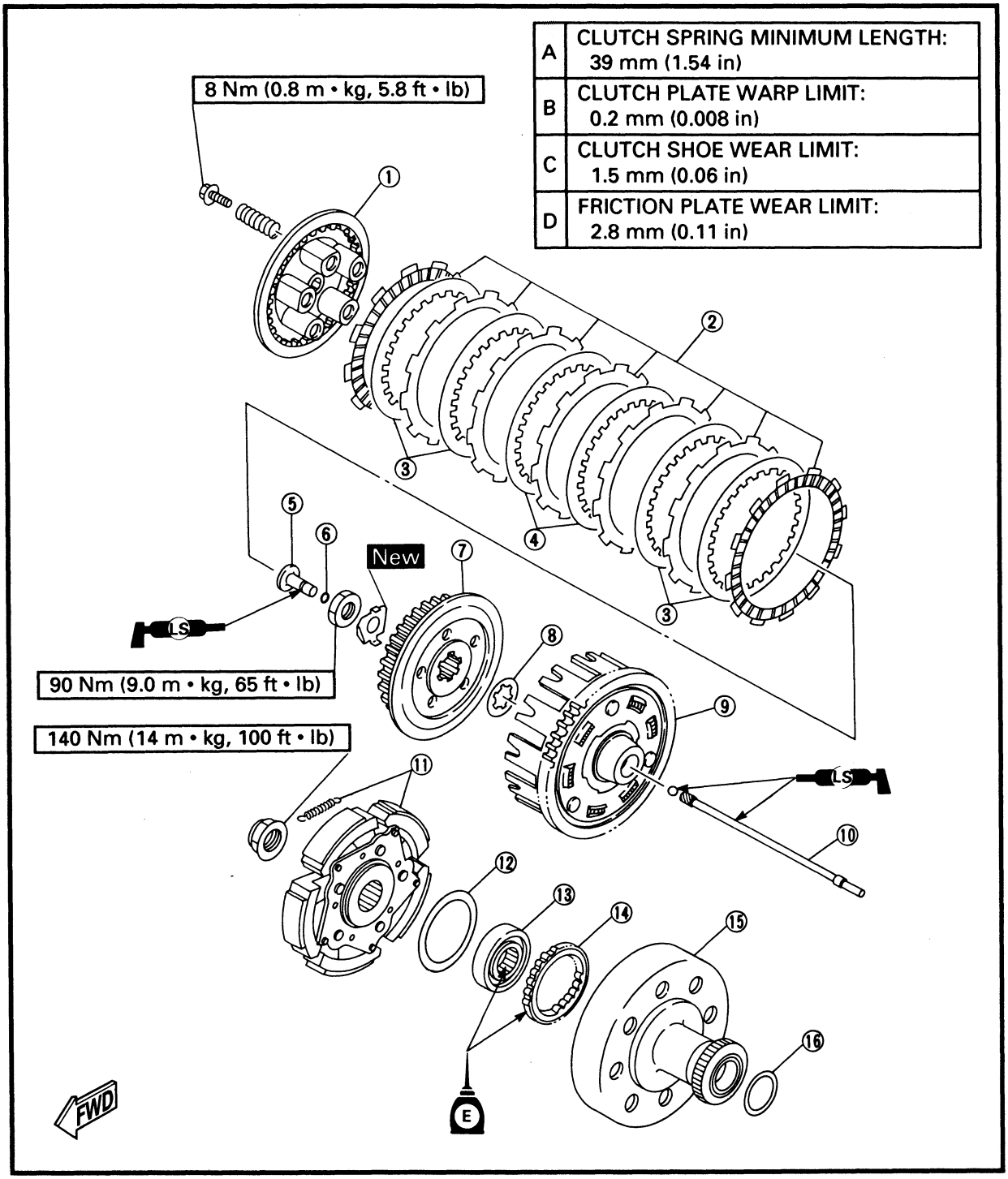


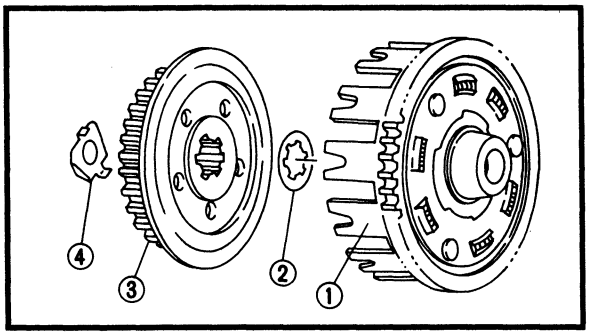
3. Install:
- Gear position switch ①
- Lead holder ②

	Bolt (gear position switch): 6 Nm (0.6 m • kg, 4.3 ft • lb) LOCTITE®

CLUTCH

① Pressure plate
② Friction plates (red – 7 pcs.)
③ Clutch plates (thickness: 1.6 mm – 4 pcs.)
④ Clutch plate (thickness: 2.0 mm – 2 pcs.)
⑤ Push rod #1
⑥ O-ring
⑦ Clutch boss
⑧ Thrust washer
⑨ Clutch housing (secondary)
⑩ Push rod #2
⑪ Clutch carrier assembly
⑫ Plain washer
⑬ Bearing retainer
⑭ One way bearing
⑮ Clutch housing (primary)
⑯ Plain washer



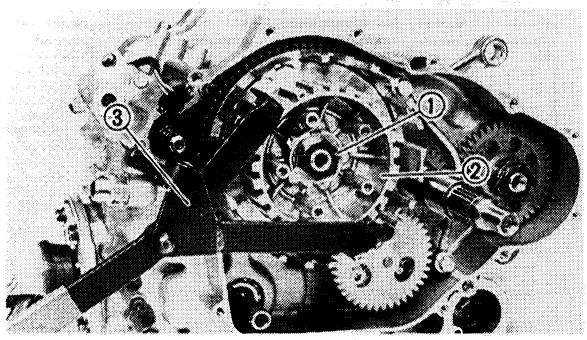


CLUTCH

1. Install:
- Clutch housing ①
- Thrust washer ②
- Clutch boss ③
- Lock washer ④

⚠ WARNING

Always use a new lock washer.



2. Install:
- Nut (clutch boss) ①

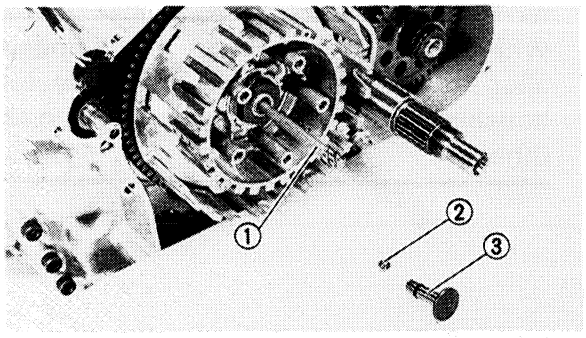
	Nut (clutch boss): **90 Nm (9.0 m • kg, 6.5 ft • lb)**

NOTE:

Tighten the nut (clutch boss) while holding the clutch boss ② with the universal clutch holder ③.

	Universal clutch holder: **P/N. YM-91042, 90890-04086**

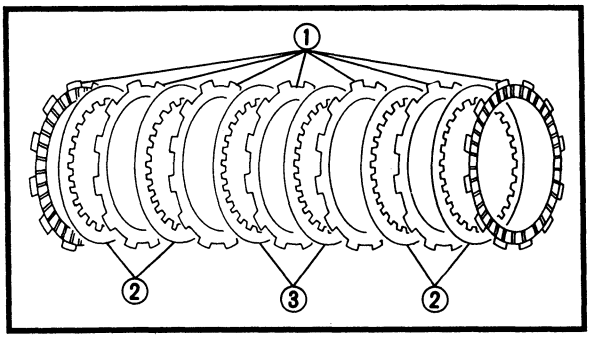
3. Bend the lock washer tab along a flat side of the nut.



4. Install:
- Push rod #2 ①
- Ball ②
- Push rod #1 ③
  (with O-ring)

NOTE:

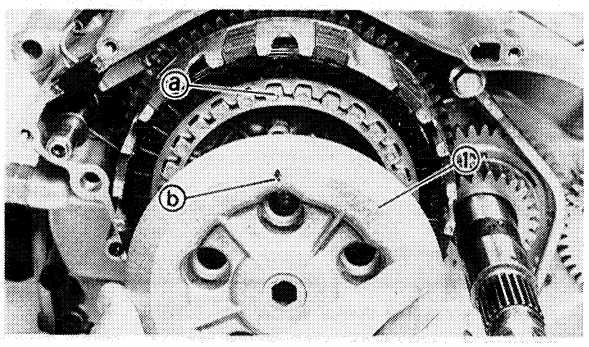
Apply lithium soap base grease to the ball and push rods #1, #2.



5. Install:
- Friction plates ①
- Clutch paltes (thickness: 1.6 mm - 4 pcs) ②
- Clutch plates (thickness:2.0 mm - 2 pcs) ③

NOTE:

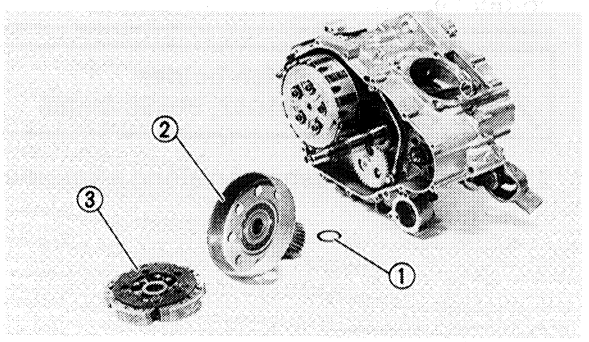
Mount friction and clutch plate alternately.



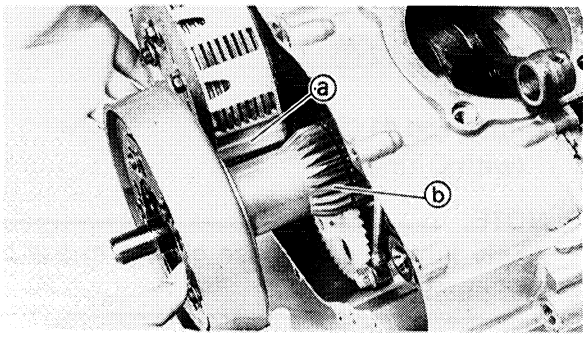
6. Install:
- Pressure plate ①
- Clutch springs
- Bolts (pressure plate)

NOTE:
- Align the punched mark ⓐ on the clutch boss with the arrow mark ⓑ on the pressure plate.
- Tighten the bolts (pressure plate) in stage, using a crisscross pattern.

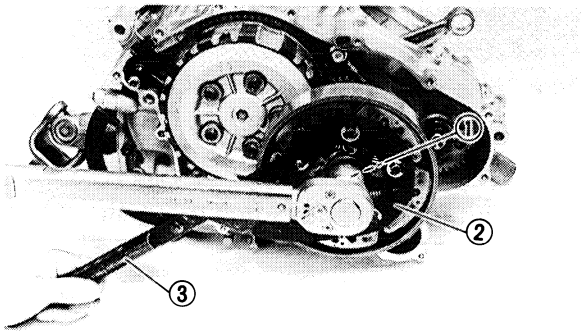
Bolt (pressure plate):
8 Nm (0.8 m • kg, 5.8 ft • lb)



7. Install:
- Plain washer ①
- Clutch housing ②
- Clutch carrier assembly ③



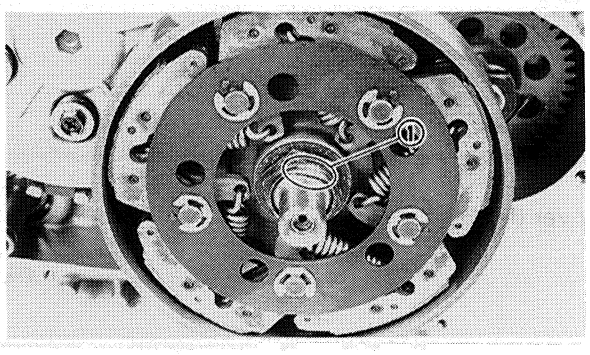
NOTE:
When installing the primary clutch housing, align the indentations in the secondary clutch housing ⓐ and the primary gear ⓑ with each other.



8. Install:
- Nut (primary clutch) ①

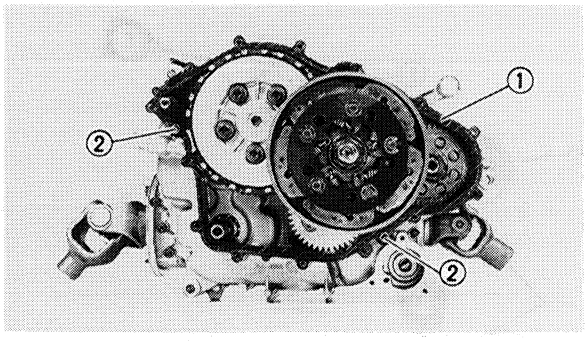
NOTE:
- Always use a new nut (primary clutch).
- Tighten the nut (primary clutch) while holding the clutch carrier assembly ② with the rotor holder ③.

Rotor holder:
P/N. YU-01235, 90890-01235



	Nut (primary clutch): 140 Nm (14 m • kg, 100 ft • lb)

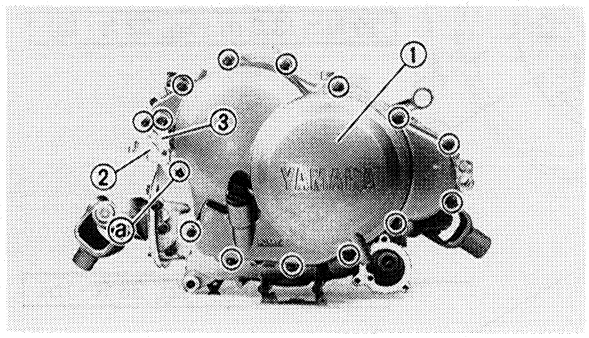
9. Lock the threads ① with center punch.



10. Install:
- Gasket ①
- Dowel pins ②

⚠ WARNING

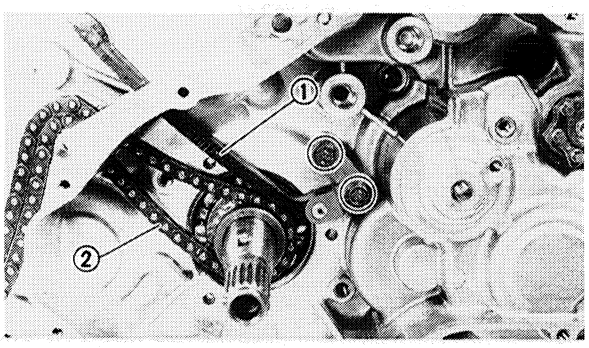
Always use a new gasket.



11. Install:
- Crankcase cover (right) ①
- Reverse control cable holder ②
- Reverse control lever ③

	Bolt (crankcase cover - right): 10 Nm (1.0 m • kg, 7.2 ft • lb)

NOTE:
- Apply the sealant to threads of the bolt ⓐ.
- Tighten the bolt (crankcase cover) in stage, using a crisscross pattern.



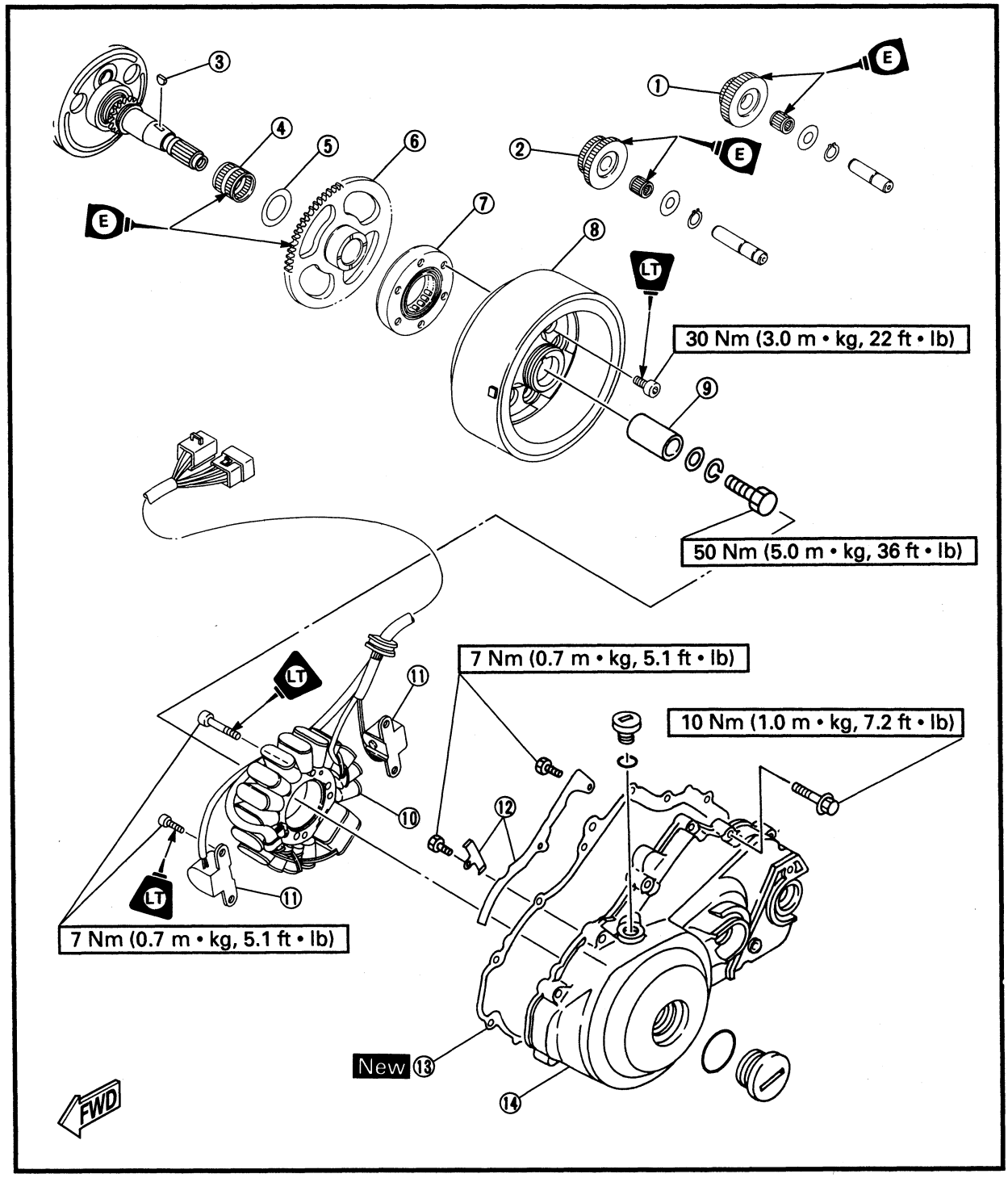
CDI ROTOR AND CAM CHAIN

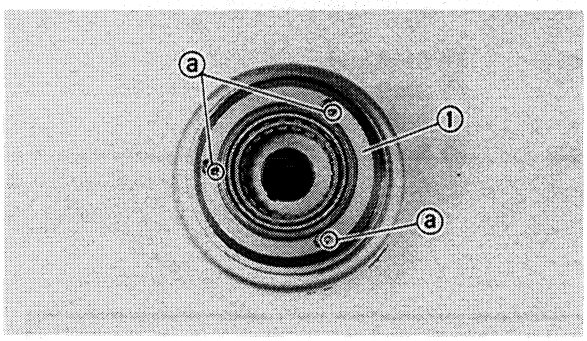
1. Install:
- Cam chain guide (intake) ①
- Cam chain ②

	Bolt (cam chain guide): 10 Nm (1.0 m • kg, 7.2 ft • lb)

CDI ROTOR AND STARTER

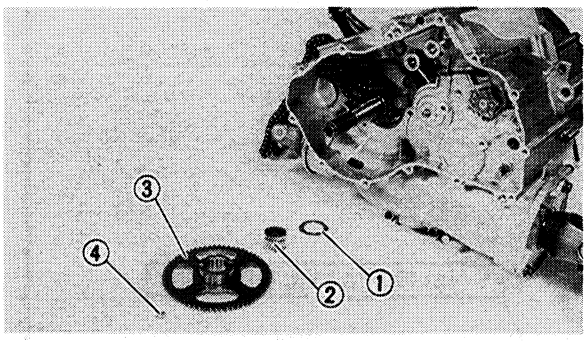
① Starter idle gear #1
② Starter idle gear #2
③ Woodruff key
④ Bearing
⑤ Washer
⑥ Starter wheel gear
⑦ Starter clutch
⑧ CDI rotor
⑨ Collar
⑩ Stator assembly
⑪ Pickup coil assembly
⑫ Lead holder
⑬ Gasket
⑭ Crankcase cover (left)



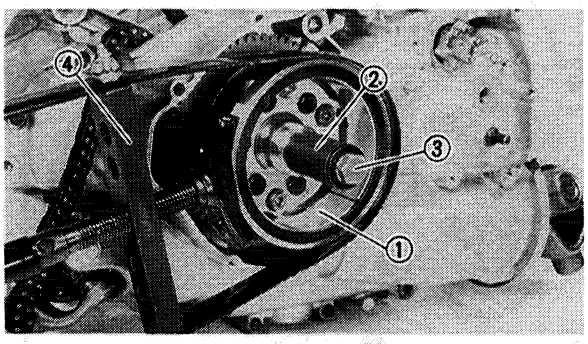


2. Install:
- Starter clutch ①

	Bolt (starter clutch): **30 Nm (3.0 m • kg, 22 ft • lb)** **LOCTITE®**



3. Install:
- Washer ①
- Bearing ②
- Starter wheel gear ③
- Woodruff key ④

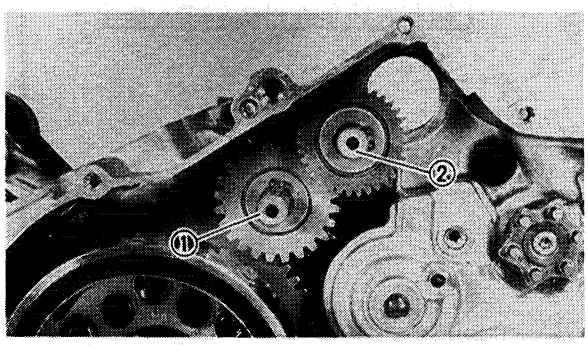


4. Install:
- CDI rotor ①
- Collar ② (for USA)
- Bolt (CDI rotor) ③ (for USA)

NOTE:
- When installing the CDI rotor make sure the woodruff key is properly seated in the key way of the crankshaft.
- For USA: Tighten the bolt (CDI rotor) while holding the rotor by the sheave holder ④.

	Sheave holder: **P/N. YU-01880, 90890-01701**

	Bolt (CDI rotor): **50 Nm (5.0 m • kg, 36 ft • lb)**

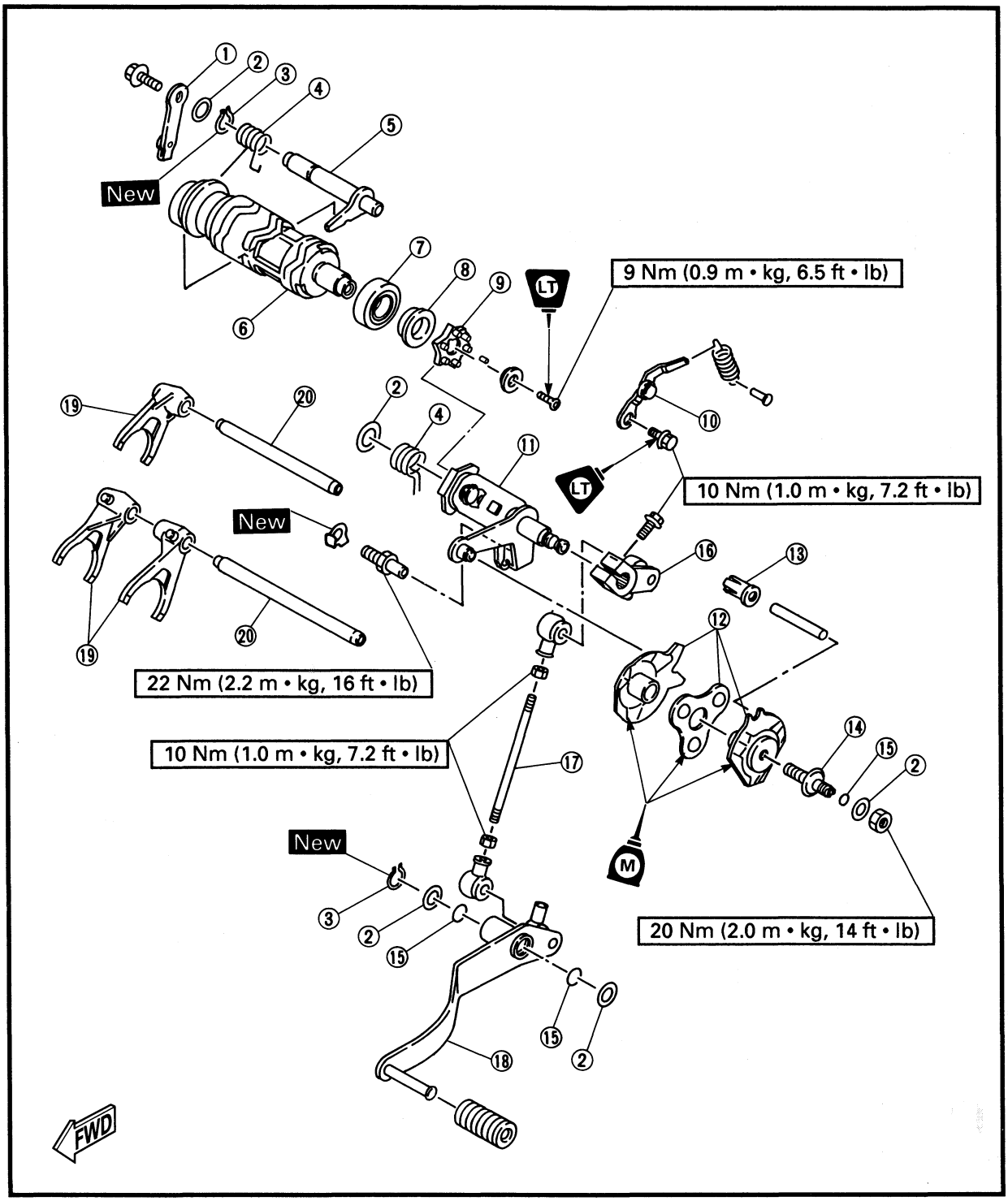


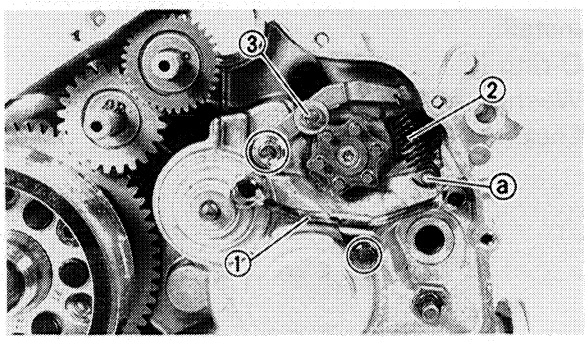
SHIFT SHAFT AND STARTER IDLE GEAR

1. Install:
- Starter idle gear #2 ①
- Starter idle gear #1 ②

SHIFTER

① Reverse control lever
② Washer
③ Circlip
④ Spring
⑤ Reverse shift bracket
⑥ Shift cam
⑦ Bearing
⑧ Collar
⑨ Shift cam segment
⑩ Stopper lever
⑪ Shift shaft
⑫ Shift guide assembly
⑬ Stopper collar
⑭ Adjuster
⑮ O-ring
⑯ Shift pedal link
⑰ Shift rod
⑱ Shift pedal
⑲ Shift fork
⑳ Shift fork guide bar

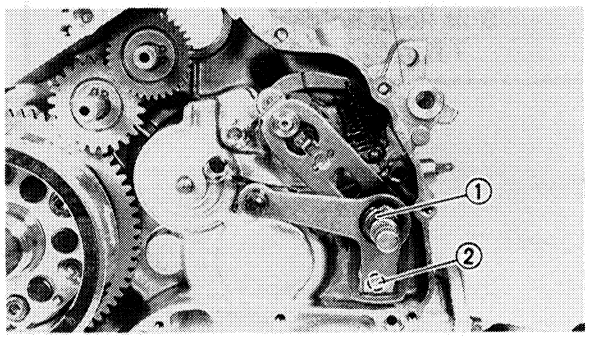




2. Install:
- O-rings
- Oil pipe ①
- Spring ②
- Stopper lever ③

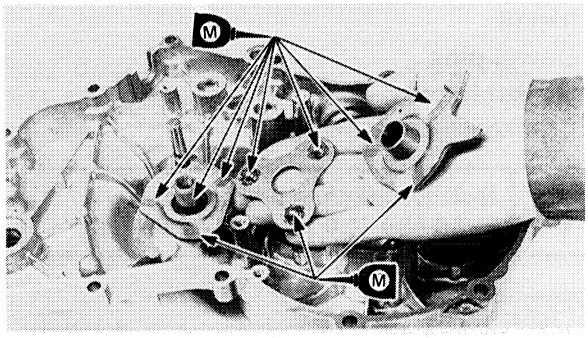
Bolt (stopper lever):
10 Nm (1.0 m • kg, 7.2 ft • lb)
LOCTITE®

NOTE:
- Hook the spring ends on the stopper lever ③ and crankcase boss ⓐ.
- Mesh the stopper lever ③ with the shift cam stopper.

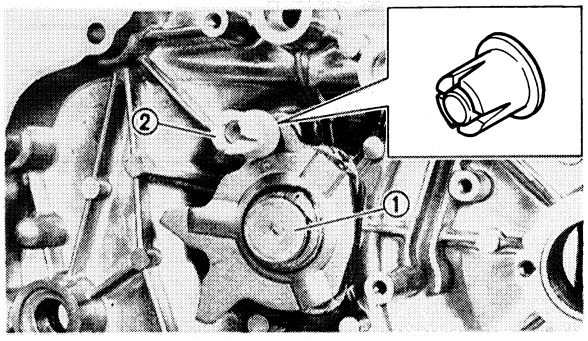


3. Install:
- Washer
- Shift shaft assembly ①

NOTE:
Hook the spring ends onto the stopper ②.

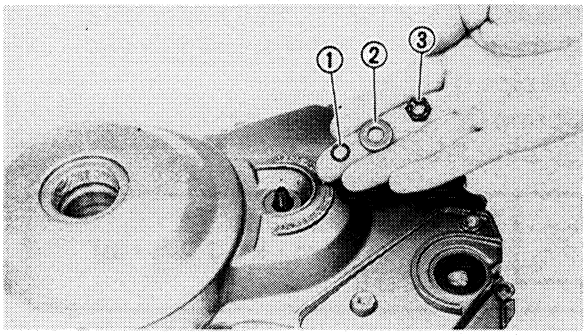


CRANKCASE COVER (LEFT)
1. Apply:
- Molybdenum disulfide oil (to shift guide assembly)

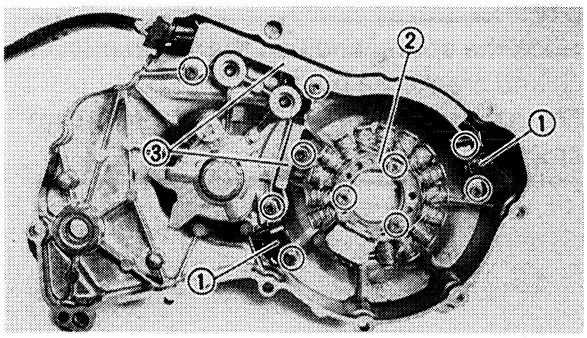


2. Install:
- Shift guide assembly ①
- Stopper collar ②

NOTE:
Install the shaft in the stopper collar as shown in the illustration, so that the tip of the shaft protrudes from the stopper collar.

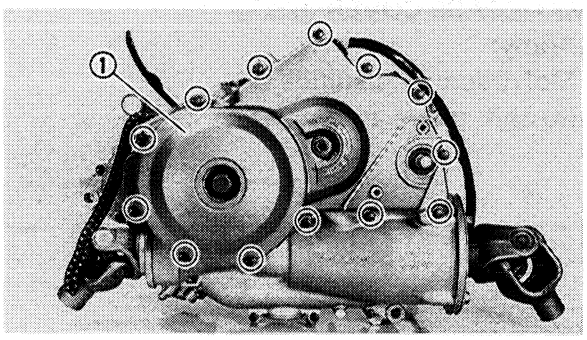


3. Install:
- O-ring ①
- Washer ②
- Locknut ③



4. Install:
- Pickup coil assembly ①
- Stator assembly ②
- Lead holder ③

Bolt (stator coil):
7 Nm (0.7 m • kg, 5.1 ft • lb)
LOCTITE®
Bolt (pickup coil):
7 Nm (0.7 m • kg, 5.1 ft • lb)
LOCTITE®
Bolt (lead holder):
7 Nm (0.7 m • kg, 5.1 ft • lb)



5. Install:
- Dowel pins
- Gasket (new)
- Crankcase cover (left) ①

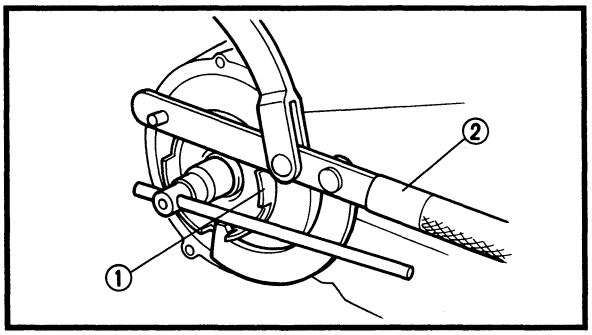
Bolt (crankcase cover - left):
10 Nm (1.0 m • kg, 7.2 ft • lb)

⚠ WARNING

Always use a new gasket.

NOTE:

Tighten the bolt (crankcase cover) in stage, using a crisscross pattern.



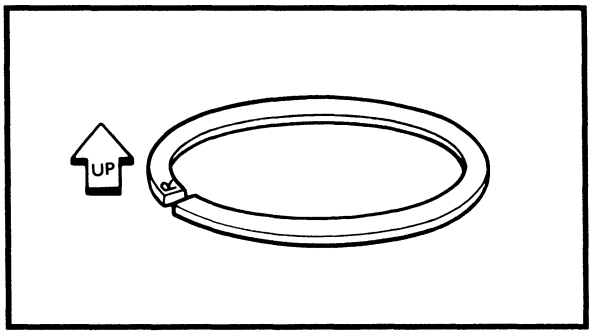
6. Install:
- Starter pulley ① (except for USA)

	Starter pulley: **50 Nm (5.0 m • kg, 36 ft • lb)**

Use the rotor holder ② to hold the starter pulley.

	Rotor holder: **P/N. YU-01235, 90890-01235**

NOTE:
Before installing the starter pulley, do not forget to fit the O-ring.



PISTON

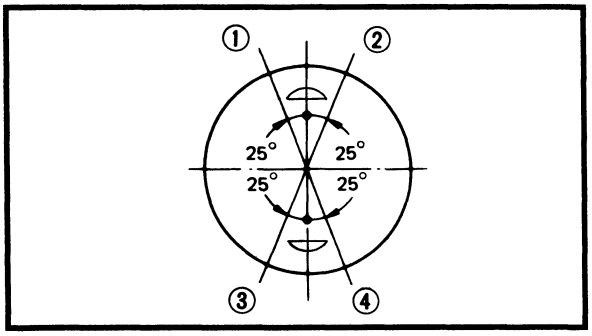
1. Install:
- Piston rings
  (onto the piston)

NOTE:
Be sure to install the rings so that manufacturer's marks or numbers are located on the top side of the rings.

2. Apply:
- 4-stroke engine oil
  (to the piston, piston rings and cylinder)

3. Set:
- Piston ring ends

CAUTION:
Make sure the ends of the oil ring expanders do not overlap.

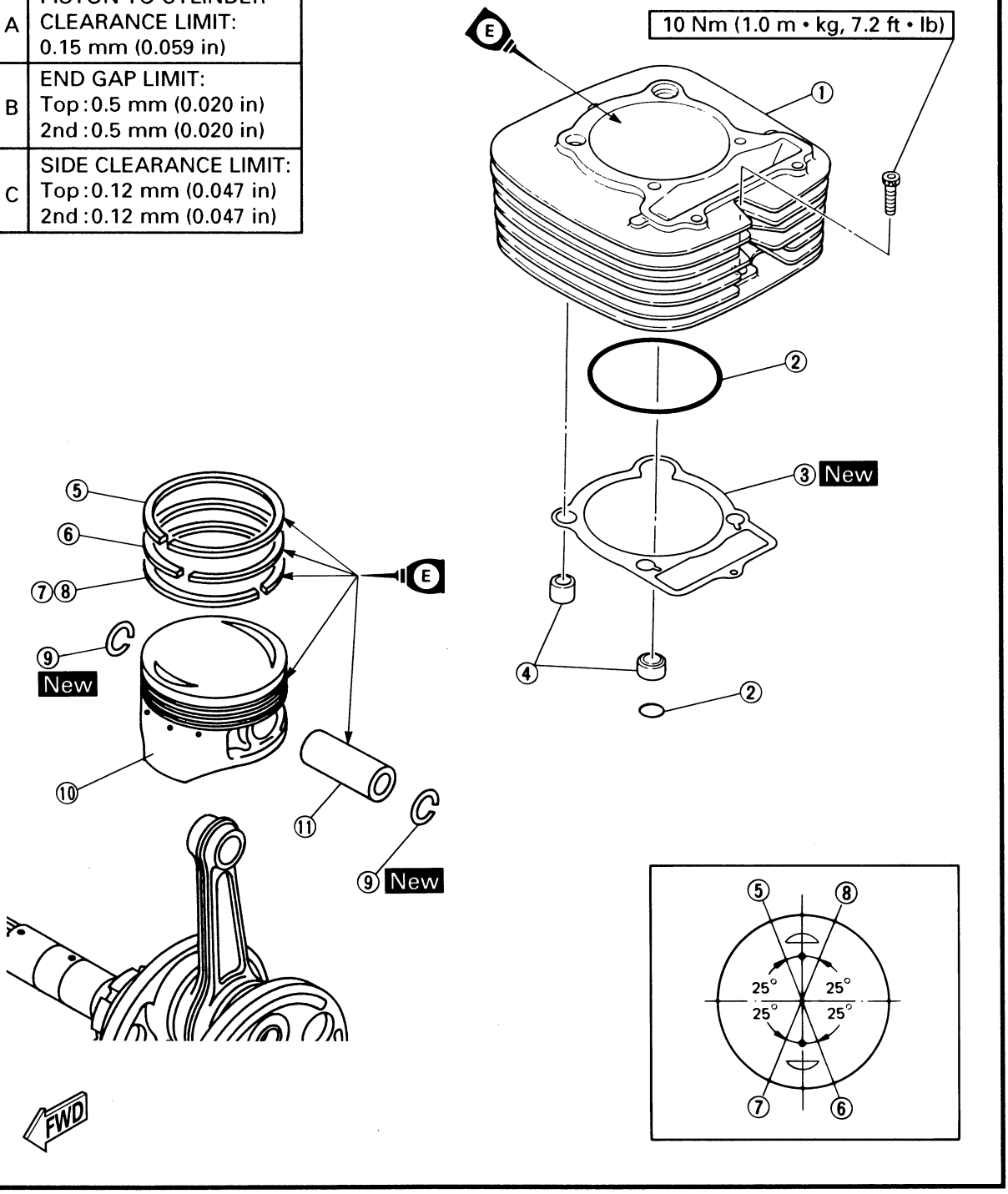


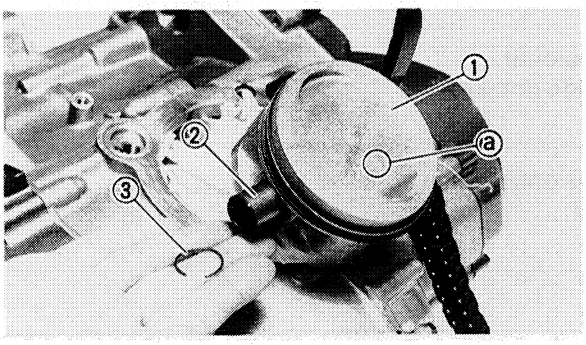
① TOP
② OIL RING (LOWER RAIL)
③ OIL RING (UPPER RAIL)
④ 2ND

PISTON AND CYLINDER

① Cylinder
② O-ring
③ Gasket
④ Dowel pin
⑤ Top ring
⑥ Second ring
⑦ Oil ring (upper)
⑧ Oil ring (lower)
⑨ Piston pin clip
⑩ Piston
⑪ Piston pin

A	PISTON TO CYLINDER CLEARANCE LIMIT: 0.15 mm (0.059 in)
B	END GAP LIMIT: Top : 0.5 mm (0.020 in) 2nd : 0.5 mm (0.020 in)
C	SIDE CLEARANCE LIMIT: Top : 0.12 mm (0.047 in) 2nd : 0.12 mm (0.047 in)





4. Install:
- Piston ①
- Piston pin ②
- Piston pin clip ③

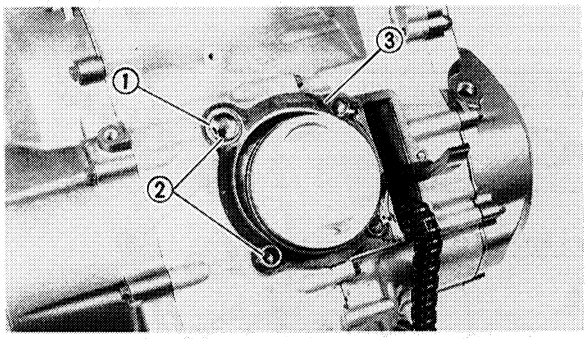
NOTE:
- The arrow ⓐ on the piston must point to the front of the engine.
- Before installing the piston pin clip, cover the crankcase with a clean towel or rag so you will not accidentally drop the pin clip and material into the crankcase.

⚠ WARNING

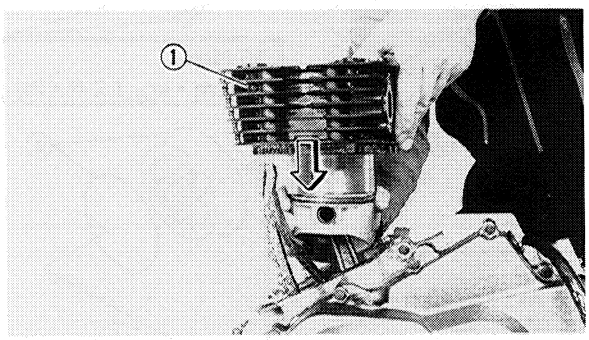
Always use a new piston pin clip.

5. Apply:
- 4-stroke engine oil
  (to the piston pin, piston ring grooves and piston skirt areas)

CYLINDER HEAD AND CYLINDER



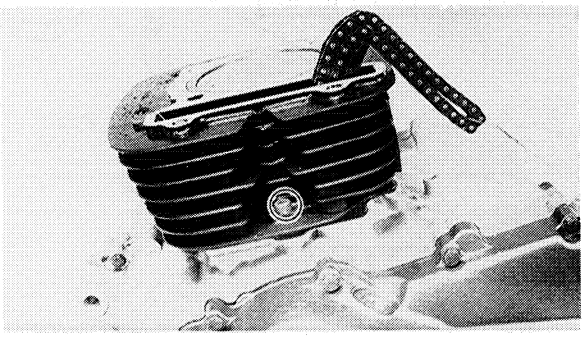
1. Install:
- O-ring ①
- Dowel pins ②
- Gasket (cylinder) ③



2. Install:
- Cylinder ①

NOTE:
Install the cylinder with one hand while compressing the piston rings with the other hand.

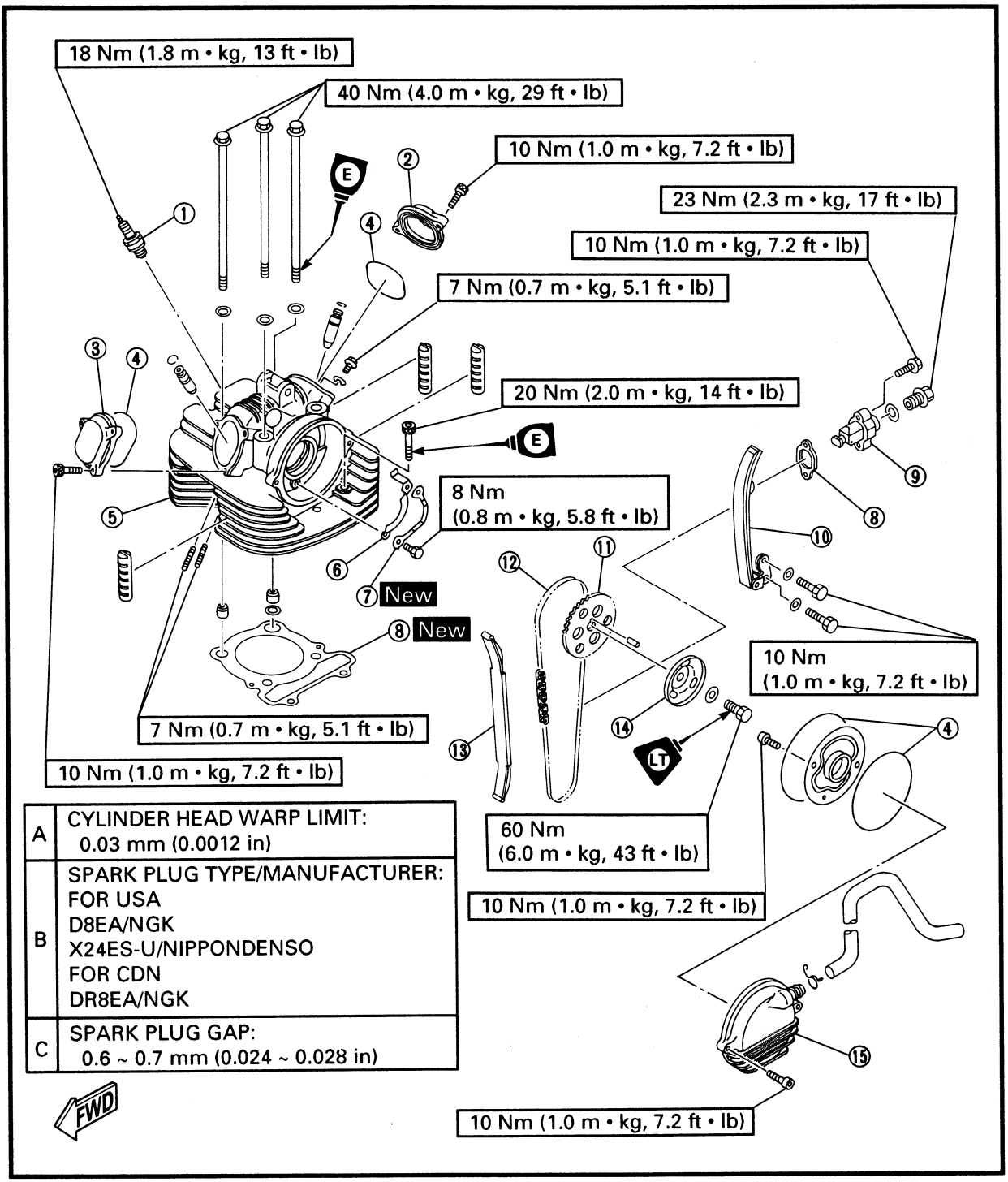
CAUTION:
- **Be careful not to damage the cam chain damper during installation.**
- **Pass the cam chain through the cam chain cavity.**



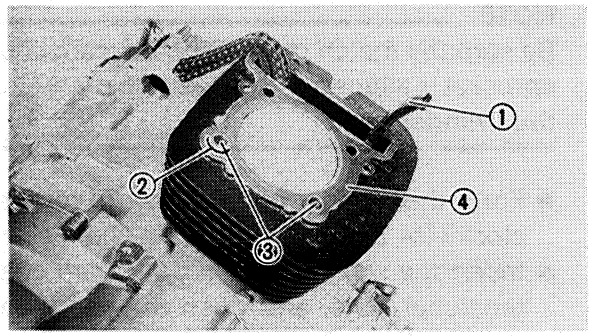
	Bolt (cylinder): **10 Nm (1.0 m • kg, 7.2 ft • lb)**

CYLINDER HEAD

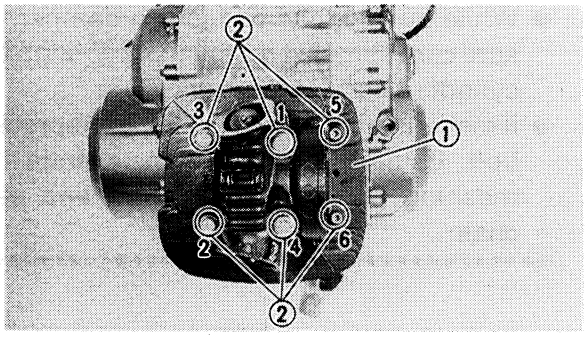
① Spark plug
② Tappet cove (intake)
③ Tappet cover (exhaust)
④ O-ring
⑤ Cylinder head
⑥ Bearing retainer
⑦ Lock washer
⑧ Gasket
⑨ Cam chain tensioner
⑩ Cam chain guide (intake)
⑪ Cam sprocket
⑫ Cam chain
⑬ Cam chain tensioner (exhaust)
⑭ Sprocket cover
⑮ Side cover



A	CYLINDER HEAD WARP LIMIT: 0.03 mm (0.0012 in)
B	SPARK PLUG TYPE/MANUFACTURER: FOR USA D8EA/NGK X24ES-U/NIPPONDENSO FOR CDN DR8EA/NGK
C	SPARK PLUG GAP: 0.6 ~ 0.7 mm (0.024 ~ 0.028 in)



3. Install:
- Cam chain guide (exhaust) ①
- O-ring ②
- Dowel pins ③
- Gasket (new) ④



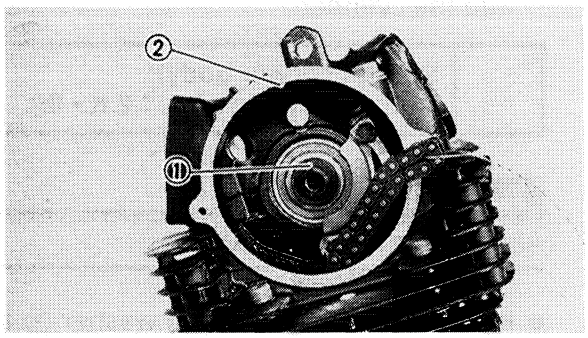
4. Install:
- Cylinder head ①

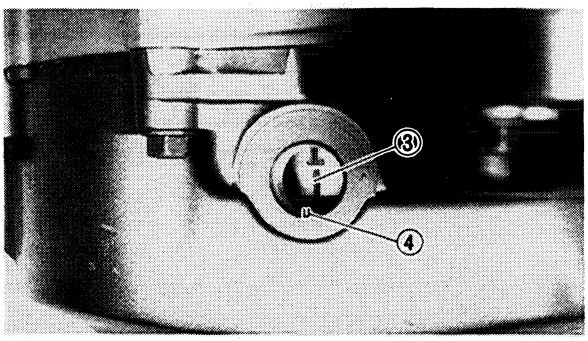
NOTE:
Tie the cam chain so that it does not fall into the crankcase.

- Bolts (cylinder head) ②

NOTE:
- Apply the 4-stroke engine oil onto the washers.
- Tighten the bolts starting with the lowest numbered one.

	M10 bolt (cylinder head): **40 Nm (4.0 m • kg, 29 ft • lb)** **M8 bolt (cylinder head):** **20 Nm (2.0 m • kg, 14 ft • lb)**

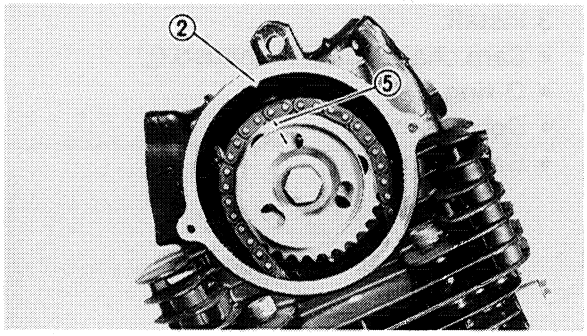




5. Install:
- Cam sprocket

****

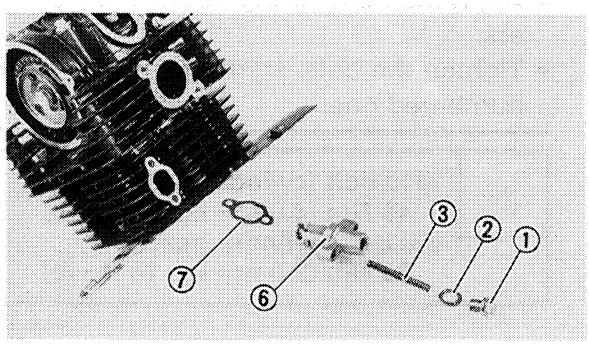
Cam sprocket installing steps:
- Rotate the camshaft to align the camshaft pin ① with the cylinder head match mark ②.
- Turn the flywheel until the "T" mark ③ is aligned with the stationary pointer ④ on the crankcase.
- Place the cam chain onto the cam chain sprocket.
- Install the cam chain sprocket onto the camshaft, and finger tighten the sprocket bolt.

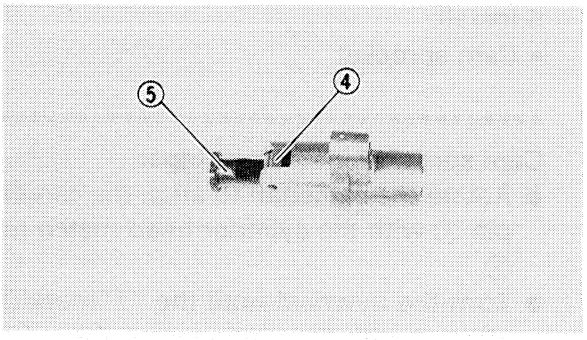


NOTE:
Be sure the match mark ⑤ on the cam chain sprocket is aligned with the match mark ② on the cylinder head.

- Force the camshaft clockwise and counter-clockwise to remove the cam chain slack.
- Insert the screwdriver into the cam chain tensioner hole, and push the cam chain damper inward.
- While pushing the cam chain damper, be sure cam sprocket match mark ⑤ align the cylinder head match mark ②.
- If marks is aligned, tighten the cam sprocket bolt. If marks do not align, change the meshing position of sprocket and cam chain.

****





6. Install:
- Chain tensioner

****

Installation steps:
- Remove the tensioner cap bolt ①, plain washer ② and spring ③.
- Release the chain tensioner one-way cam ④ and push the tension rod ⑤.
- Install the tensioner ⑥ with a new gasket ⑦ into the cylinder.

	Bolt (tensioner body): 10 Nm (1.0 m • kg, 7,2 ft • lb)

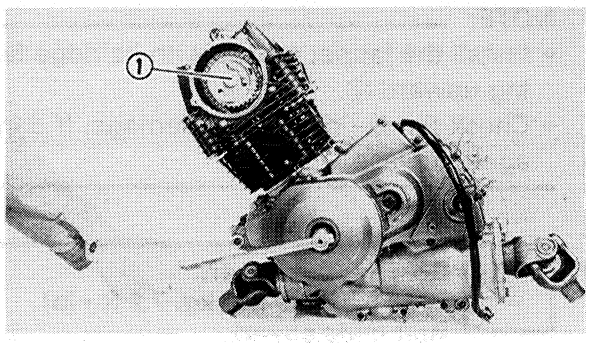
⚠ WARNING

Always use a new gasket.

- Install the spring ③, plain washer ② and tensioner cap bolt ①.

	Tensioner cap bolt: 23 Nm (2.3 m • kg, 17 ft • lb)

****



7. Tighten:
- Bolt (cam sprocket) ①

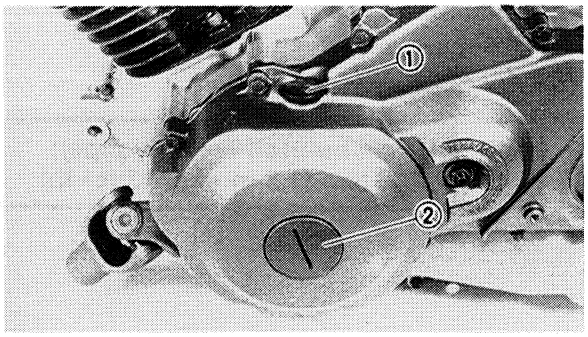
	Bolt (cam sprocket): 60 Nm (6.0 m • kg, 43 ft • lb)

NOTE:
Tighten the bolt (cam sprocket) while holding the flywheel with wrench.

8. Adjust:
- Valve clearance
  Refer to the "VALVE CLEARANCE ADJUSTMENT" section in CHAPTER 3.

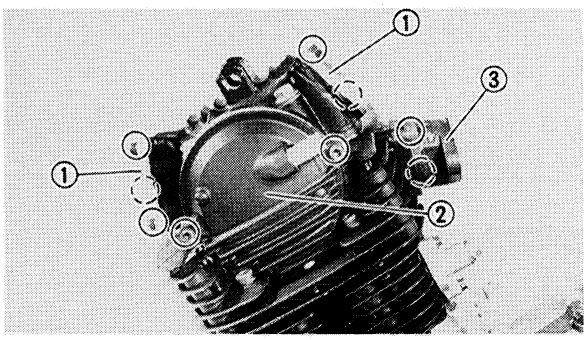
	Intake valve (cold): 0.06 ~ 0.10 mm (0.0024 ~ 0.0039 in) **Exhaust valve (cold): 0.16 ~ 0.20 mm (0.0063 ~ 0.0079 in)**

NOTE:
After adjusting the valve clearance, apply 4-stroke engine oil to the following parts.
- Camshaft
- Rocker arm shafts
- Rocker arms
- Valve assemblies

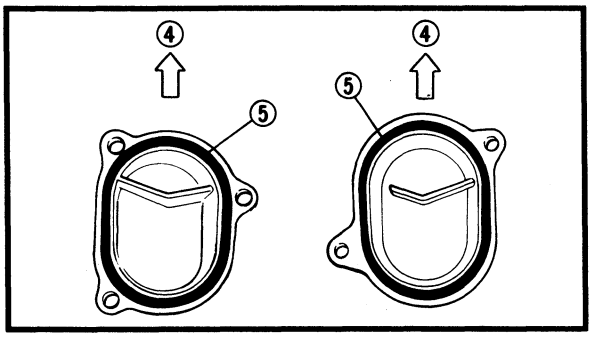


9. Install:
- Timing plug ①
- Straight plug ② (for USA)
- Spark plug

	Spark plug: 18 Nm (1.8 m • kg, 13 ft • lb)

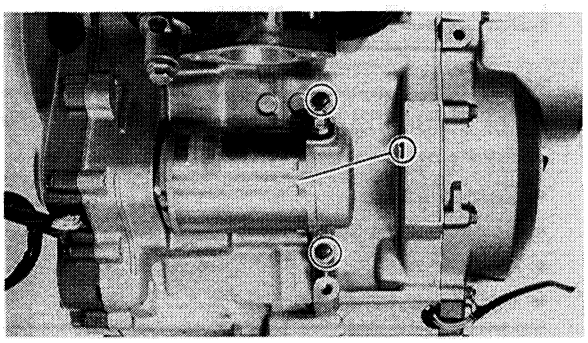


10. Install:
- O-rings
- Tappet covers (intake and exhaust) ①
- Side cover ②
- Intake manifold ③



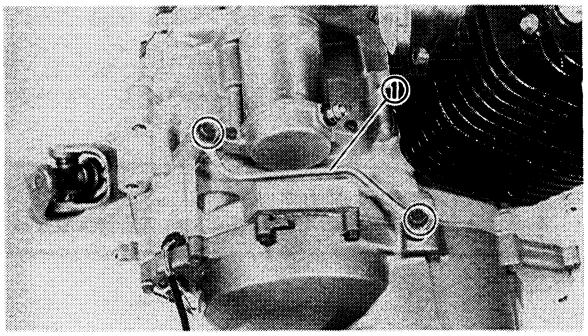
NOTE:
- Install the tappet covers with its ridge facing upward ④.
- Check the O-rings ⑤ for damage. If damaged, replace.

Bolt (tappet cover):
10 Nm (1.0 m • kg, 7.2 ft • lb)
Bolt (side cover):
10 Nm (1.0 m •kg, 7.2 ft • lb)
Bolt (intake manifold):
20 Nm (2.0 m • kg, 14 ft • lb)



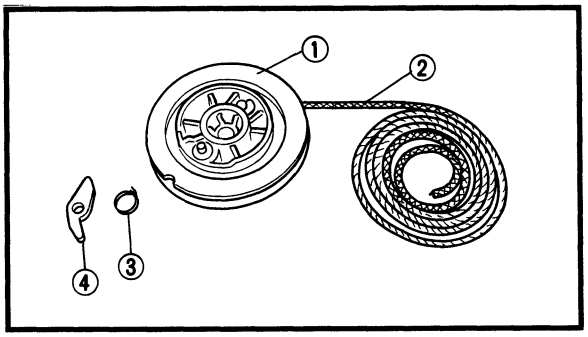
STARTER MOTOR
1. Install
- Starter motor ①

Bolt (starter motor):
10 Nm (1.0 m • kg, 7.2 ft • lb)



2. Install:
- Copper washers
- Oil delivery pipe ①

Union bolt (oil delivery pipe):
18 Nm (1.8 m • kg, 13 ft • lb)

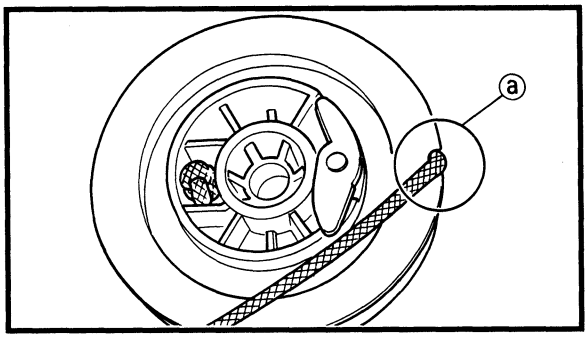


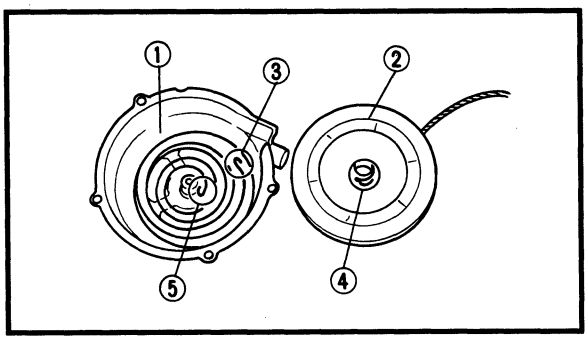
RECOIL STARTER (EXCEPT FOR USA)

1. Install:
- Sheave drum ①
- Rope ②
- Pawl spring ③
- Drive pawl ④

NOTE:

Wind the rope 4-1/2 turns clockwise around the sheave drum. Then insert the rope into the drum slit ⓐ.

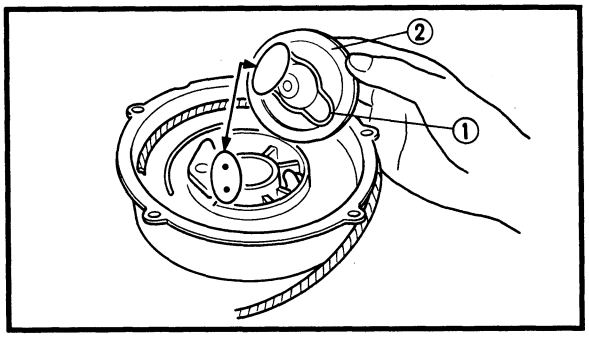




2. Install:
- Starter spring ①
- Sheave drum assembly ②

NOTE:

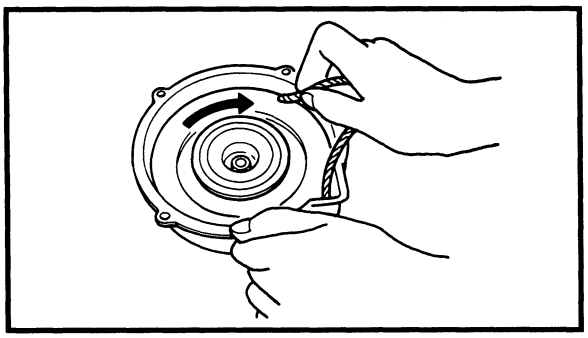
- Mesh the spring hook ③ with the case slit, then wind the spring clockwise into the case from larger to smaller diameter.
- Mesh the sheave drum hook ④ with the spring hook ⑤.



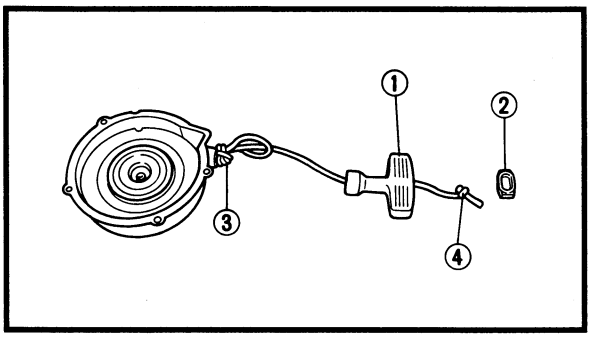
3. Install:
- Spring ①
- Friction plate ②
- Nut

NOTE:

Insert the spring hooks into the pawl side holes.

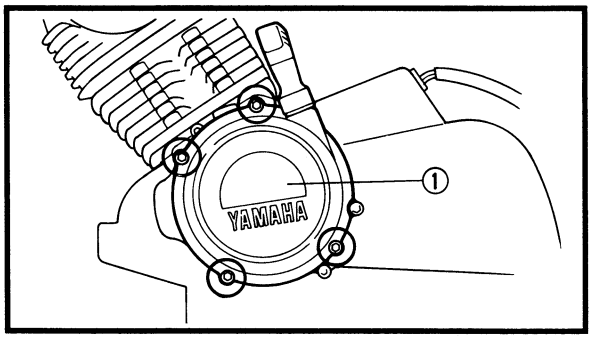


4. Turn the sheave drum 3-turns clockwise to give preload to the spring.



5. Install:
- Starter handle ①
- Cap ②

NOTE:
- Pass the rope through the case hole and make knot ③ on the rope so that the rope is not pulled into the case.
- Untying knot ③ after making knot ④.



6. Install:
- Gasket (new)
- Recoil starter assembly ①

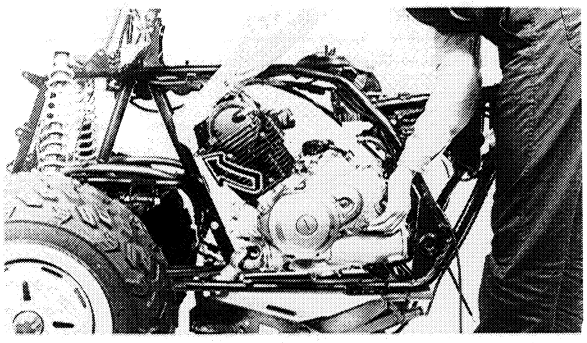
	Recoil starter: **10 Nm (1.0 m • kg, 7.2 ft • lb)**

REMOUNTING ENGINE

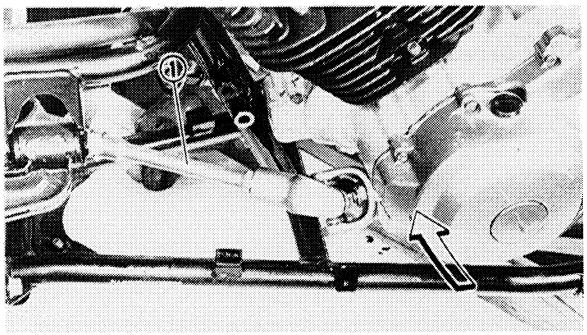
When remounting the engine, reverse the removal procedure. Note the following points.

⚠ WARNING

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



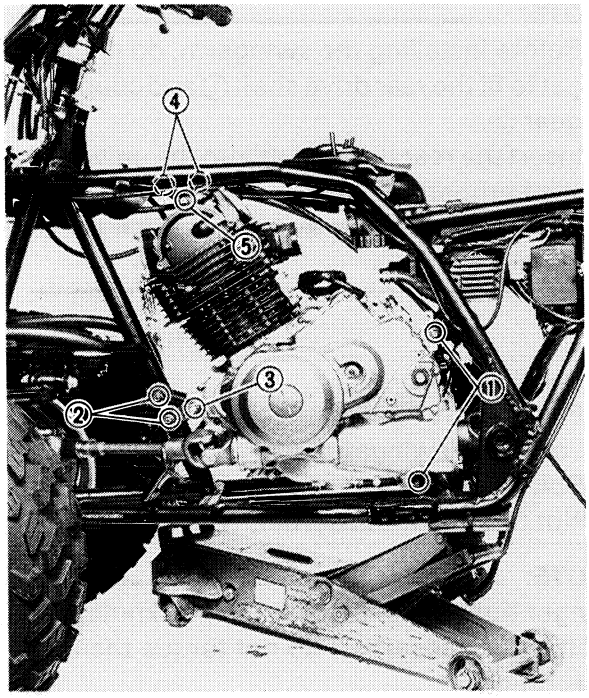
1. Install:
- Engine
  (from the left side)



2. Install:
- Front drive shaft ①

NOTE:

When installing the drive shaft, turn the engine clockwise.

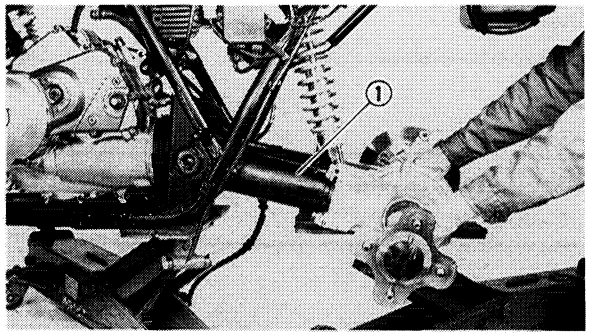


3. Install:
- Bolts (engine mounting-rear) ①
- Bolts (engine mounting stay-front) ②
- Bolt (engine mounting-front) ③
- Bolts (engine mounting stay-top) ④
- Bolt (engine mounting-top) ⑤

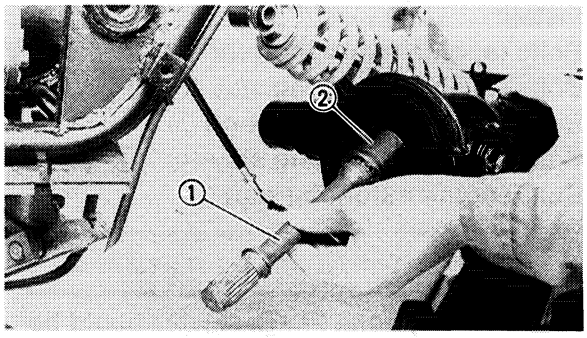
NOTE:

- All mounting bolts ①, ②, ③, ⑤ should be installed from the right of the machine.
- Install the all bolts and nuts first, and then tighten the bolts and nuts to specifications in the following order.

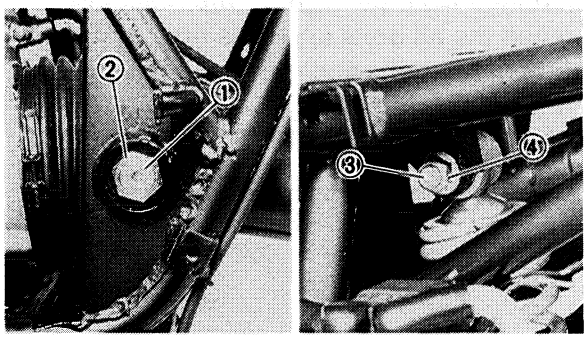
1st. Bolt (engine mounting stay-top):
30 Nm (3.0 m • kg, 22 ft • lb)
2nd. Nut (engine mounting-rear):
55 Nm (5.5 m • kg, 40 ft • lb)
3rd. Nut (engine mounting stay-front):
30 Nm (3.0 m • kg, 22 ft • lb)
4th. Nut (engine mounting-front):
55 Nm (5.5 m • kg, 40 ft • lb)
5th. Nut (engine mounting-top):
30 Nm (3.0 m • kg, 22 ft • lb)



4. Install:
- Rear drive assembly and swingarm ①

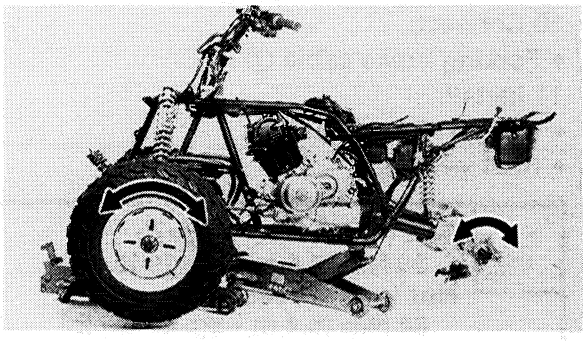


NOTE:
- Before installing the swingarm, do not forget to fit the rear drive shaft ① and coupling gear ②.
- Insert the rear drive shaft into the universal joint properly.
- When installing the swingarm, tilt it to the left side.



5. Install:
- Pivot shafts ①
- Locknuts (swingarm) ②
- Bolt (rear shock absorber) ③
- Nut (rear shock absorber) ④

NOTE:
Finger tighten the pivot shafts, locknuts and bolt (shock absorber) do not torque them at this point.



6. Check:
- Rear drive shaft operation

****

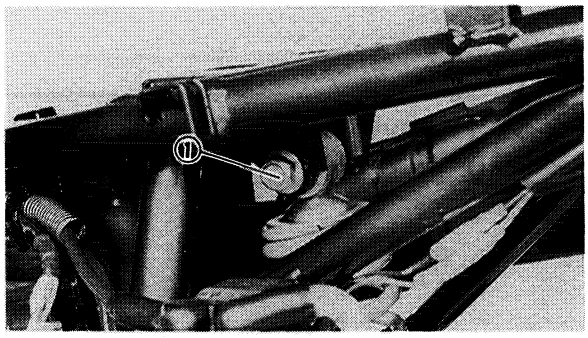
Rear drive shaft operation checking steps:
- Make sure that the machine is off the ground at the rear.
- Place the suitable block under the swingarm.
- Lift the front of the machine off the ground, too.

⚠ WARNING

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

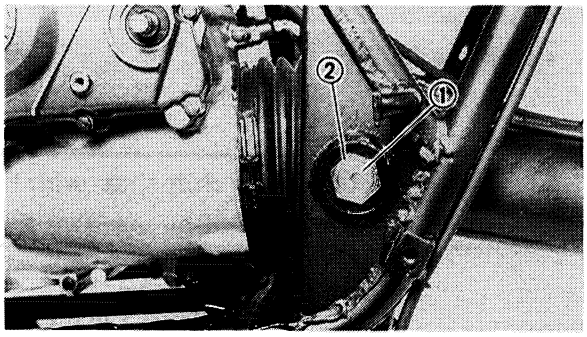
- Turn the front wheel back and forth.
- Check the rear axle operation. If the operation is unsmooth, reinstall the swingarm properly.

****



7. Tighten:
- Nut (rear shock absorber-upper) ①

	Nut (rear shock absorber-upper): 59 Nm (5.9 m • kg, 43 ft • lb)

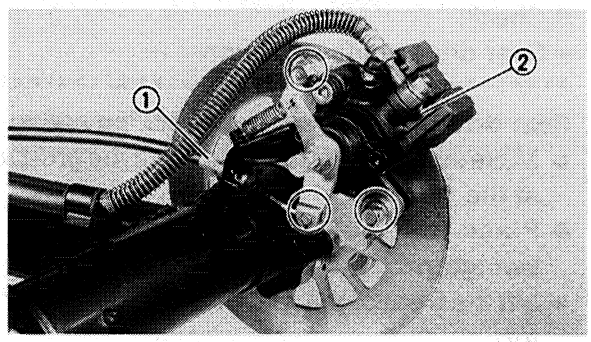


8. Tighten:
- Pivot shafts (swingarm) ①
- Locknuts (swingarm) ②

  Refer to the "REAR SHOCK ABSORBER AND SWINGARM - INSTALLATION" section in CHAPTER 7.

	Pivot shaft (swingarm): 6 Nm (0.6 m • kg, 4.3 ft • lb) **Locknut (swingarm): 130 Nm (13.0 m • kg, 94 ft • lb)**

9. Install:
- Cap (pivot shaft)
- Clamp (rubber boot)

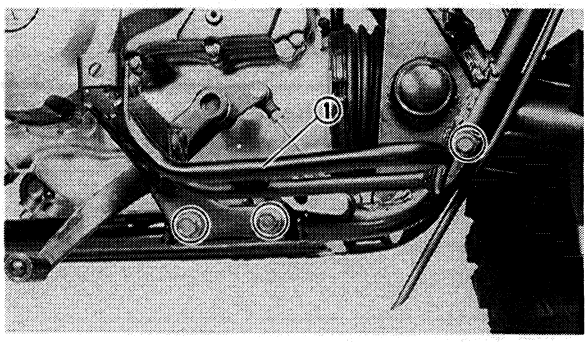


10. Connect:
- Parking brake cable ①

11. Install:
- Rear brake caliper ②
- Rear wheels

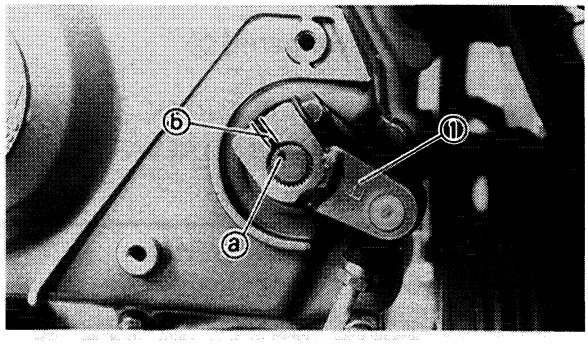
	Bolt (rear brake caliper): **26 Nm (2.6 m • kg, 19 ft • lb)** **Nut (rear wheel):** **64 Nm (6.4 m • kg, 46 ft • lb)**

Refer to the "REAR WHEEL" section in CHAPTER 7.



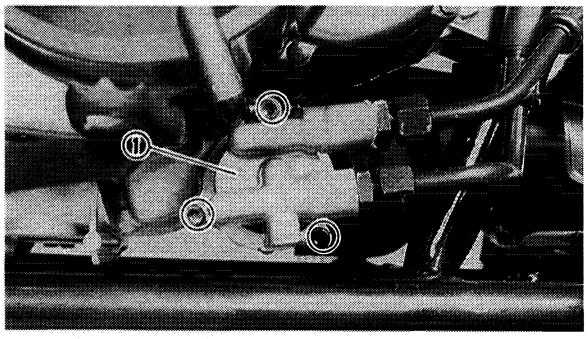
12. Install:
- Footrest (left) ①

	10 mm bolt (footrest): **64 Nm (6.4 m • kg, 46 ft • lb)**



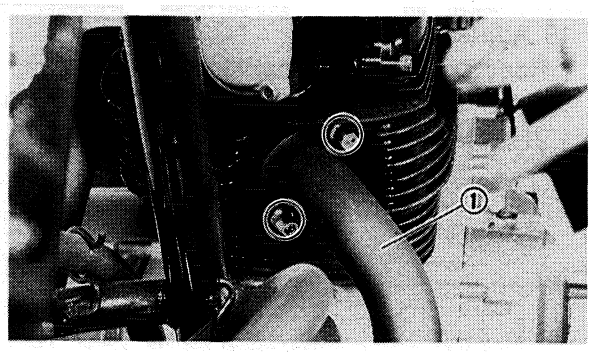
13. Install:
- Shift pedal link

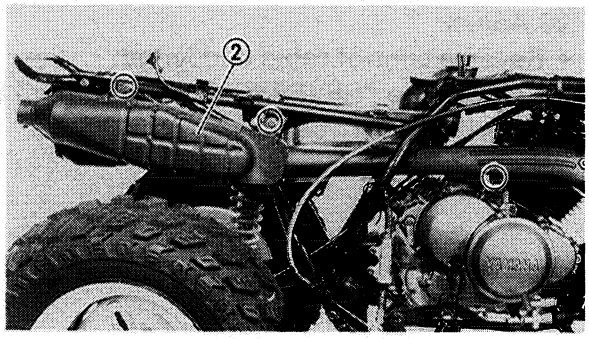
NOTE:
Align the mark ⓐ on the shift shaft with the slot ⓑ on the shift pedal link.



14. Install:
- Oil filter element
- Oil filter cover ①

NOTE:
Check the O-rings for damage if damaged, replace.





15. Install:
- Exhaust pipe ①
- Muffler ②

Nut (exhaust pipe):
12 Nm (1.2 m • kg, 8.7 ft • lb)
Bolt (muffler):
27 Nm (2.7 m • kg, 19 ft • lb)
LOCTITE®
Bolt (muffler and exhaust pipe):
20 Nm (2.0 m • kg, 14 ft • lb)

16. Install:
- Carburetor assembly
  Refer to the "CARBURETOR-INSTALLATION" section in CHAPTER 5.

17. Fill:
- Engine oil
  Refer to the "ENGINE OIL REPLACEMENT" section in CHAPTER 3.

18. Install:
- Rear fender
- Fuel tank
- Front fender
- Front carrier bar
- Seat
  Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section in CHAPTER 3.

19. Adjust:
- Rear parking brake cable
  Refer to the "REAR BRAKE CABLE ADJUSTMENT" section in CHAPTER 3.

20. Adjust:
- Reverse control cable end length
  Refer to the "REVERSE CONTROL CABLE ADJUSTMENT" section in CHAPTER 3.

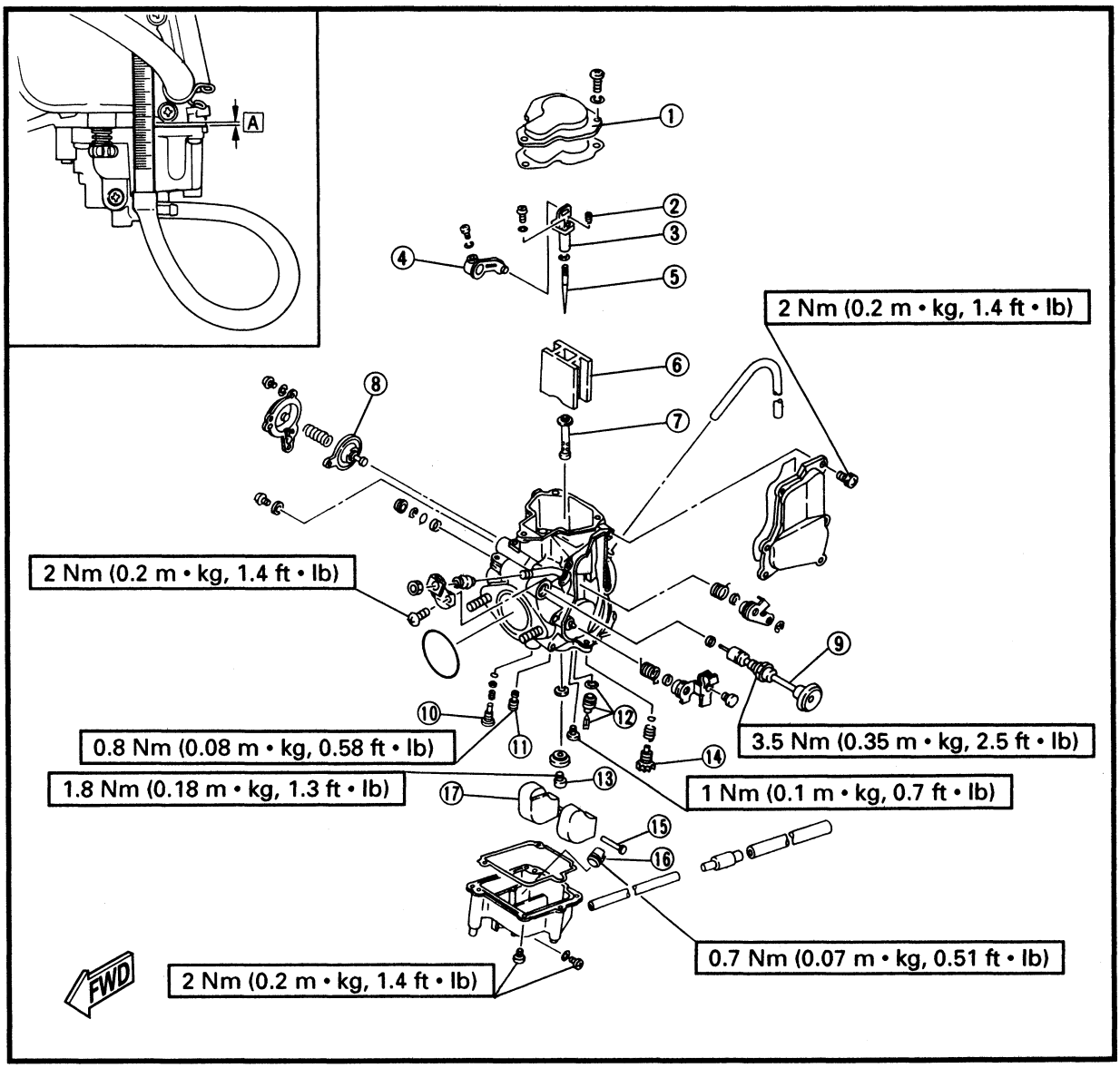
21. Adjust:
- Throttle cable free play
  Refer to the "THROTTLE CABLE FREE PLAY ADJUSTMENT" section in CHAPTER 3.

CARBURETION

CARBURETOR

① Carburetor top cap
② Spring
③ Needle holder
④ Connecting arm
⑤ Jet needle
⑥ Piston valve
⑦ Main nozzle
⑧ Coasting enricher diaphragm
⑨ Starter plunger assembly
⑩ Pilot screw
⑪ Pilot jet
⑫ Needle valve set
⑬ Main jet
⑭ Throttle stop screw
⑮ Float pin
⑯ Starter jet
⑰ Float

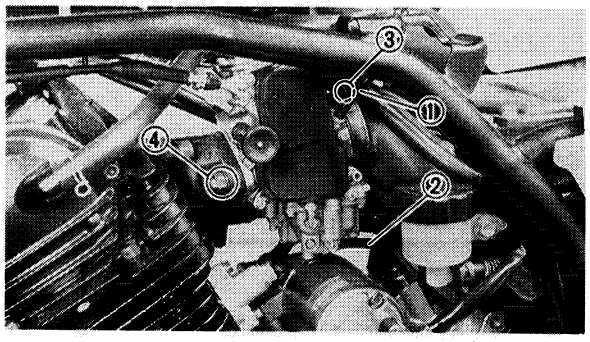
SPECIFICATIONS	
ID MARK	4KB01
MAIN JET (M.J.)	#135
PILOT JET (P.J.)	#40
JET NEEDLE (J.N.)	5HL43-3
NEEDLE JET (N.J.)	O-6 (#765)
PILOT SCREW (P.S.)	2 turns out
FLOAT HEIGHT (F.H.)	11.4 ~ 13.4 mm (0.45 ~ 0.53 in)
FUEL LEVEL [A] (F.L.)	2.0 ~ 3.0 mm (0.08 ~ 0.012 in) Above the float chamber mating surface
ENGINE IDLING SPEED	1,450 ~ 1,550 r/min



REMOVAL

1. Remove:
- Seat
- Front carrier bar
- Front fender
- Fuel tank

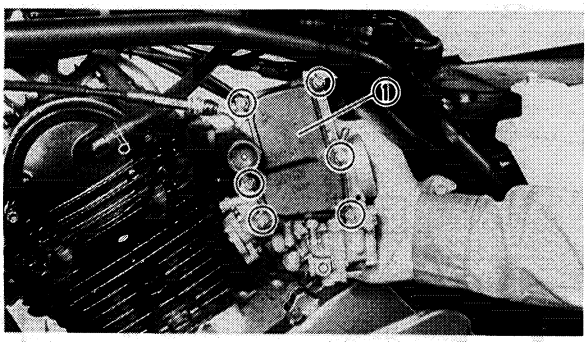
Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section in CHAPTER 3.



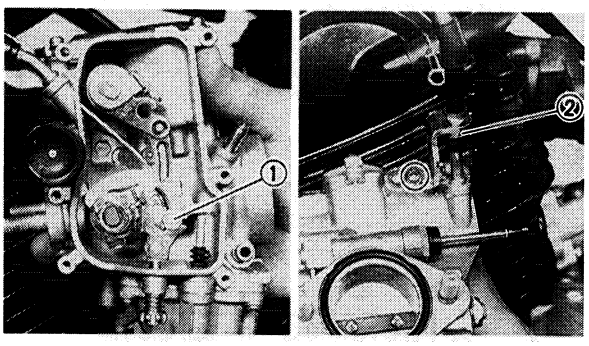
2. Disconnect:
- Air vent hose ①
- Overflow hose ②

3. Loosen
- Clamp screw ③

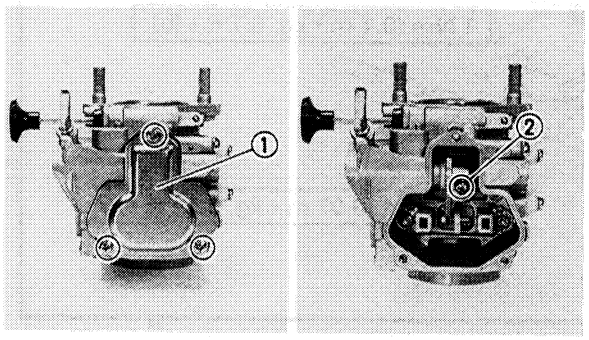
4. Remove:
- Nuts (carburetor joint) ④
- Carburetor assembly



5. Remove:
- Throttle valve cover ①

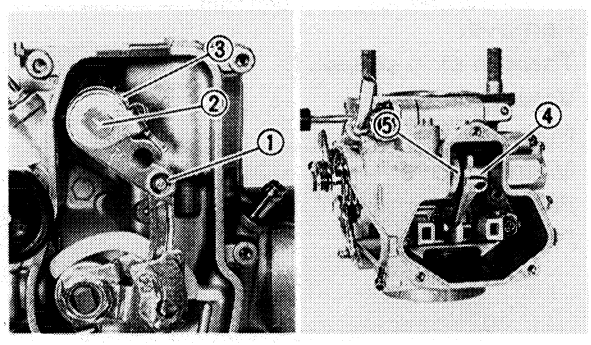


6. Disconnect:
- Throttle cable end ①
- Throttle cable ②

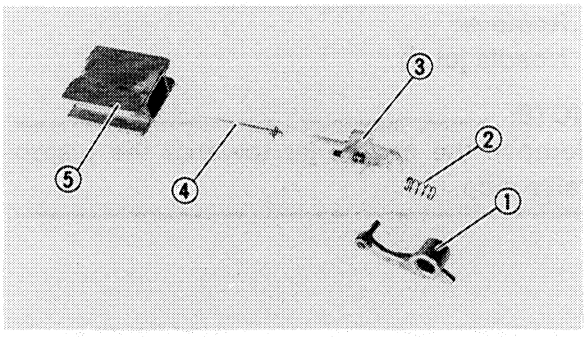


DISASSEMBLY

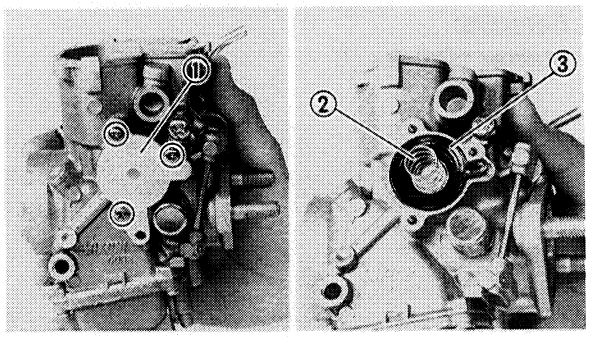
1. Remove
- Carburetor top cover ①
- Gasket
- Screw (connecting arm) ②



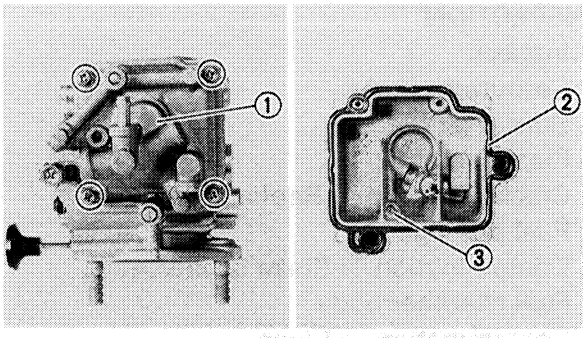
2. Remove:
- Circlips ①
- Piston valve shaft ②
- Spring ③
- Connecting arm ④ (with piston valve)
- Collar ⑤



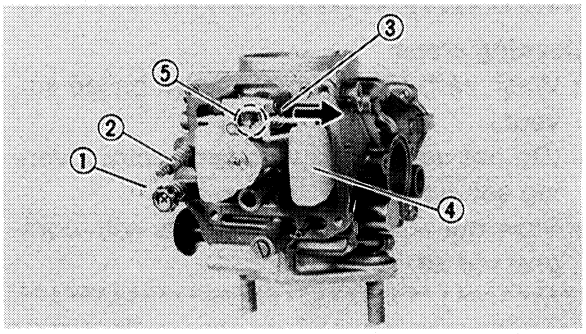
3. Remove:
- Connecting arm ①
- Spring ②
- Needle holder ③
- Jet needle ④
- Piston valve ⑤



4. Remove:
- Cover (coasting enricher) ①
- Spring ②
- Diaphragm ③

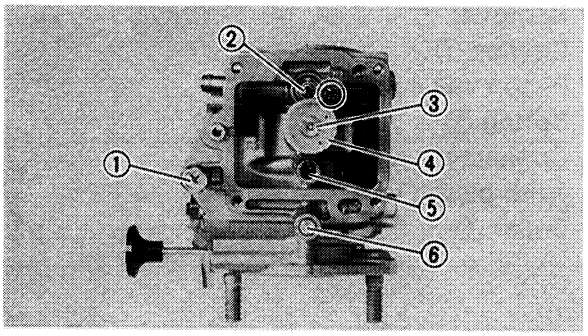


5. Remove:
- Float chamber ①
- O-ring ②
- Starter jet ③

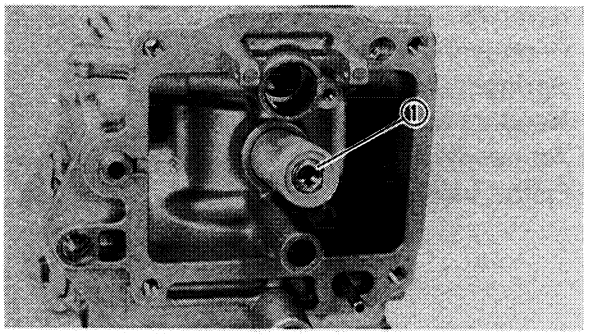


6. Remove:
- Spring ①
- Accelerator plunger ②
- Float pin ③
- Float ④
- Needle valve ⑤

NOTE:
Remove the float pin in the arrow direction.

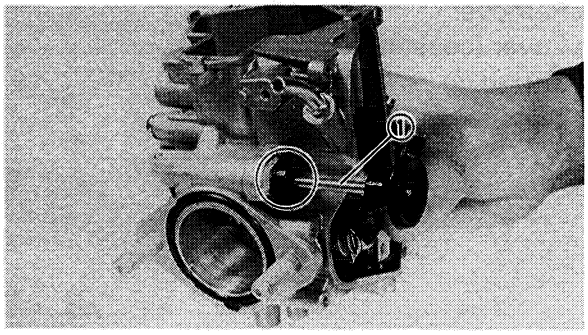


7. Remove:
- Throttle stop screw ①
- Valve seat ②
- Main jet ③
- Main jet cover ④
- Pilot jet ⑤
- Pilot screw ⑥

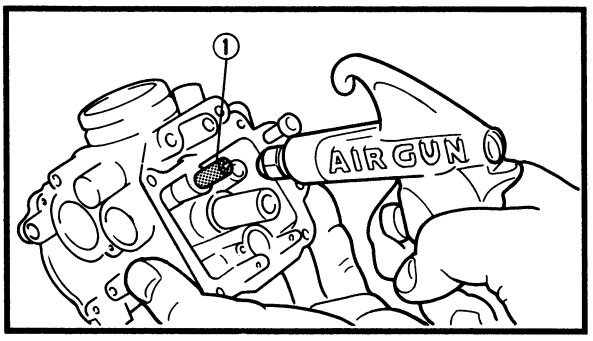


8. Remove:
- Needle jet ①

NOTE:
Remove the needle jet towards the piston valve side.



9. Remove:
Starter plunger ①



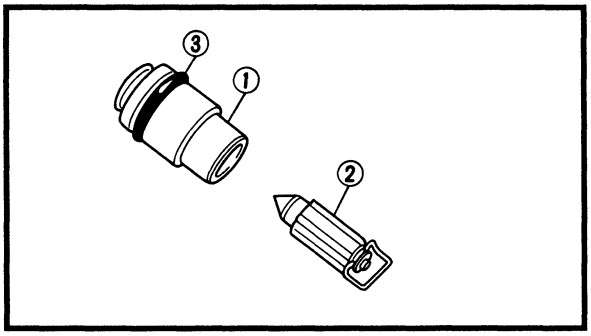
INSPECTION

1. Inspect:
- Carburetor body
- Starter jet ①
- Float chamber
  Cracks/Damage → Replace.
- Fuel passage
  Contamination → Clean as indicated.
- Fuel chamber body
  Contamination → Clean.

****

Cleaning steps:
- Wash carburetor in petroleum based solvent.
  (Do not use any caustic carburetor cleaning solution.)
- Blow out all passages and jets with compressed air.

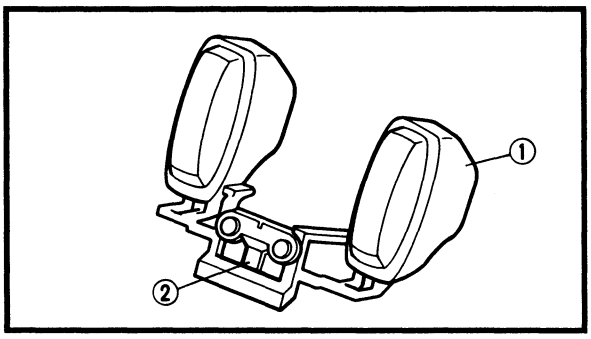
****



2. Inspect:
- Valve seat ①
- Needle valve ②
- O-ring ③

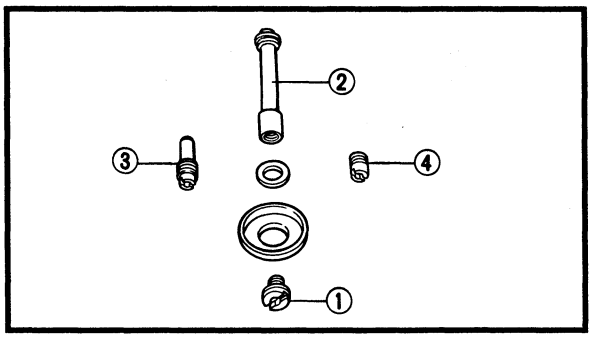
Damage/Wear/Contamination → Replace as a set.

NOTE:
Always replace the needle valve and valve seat as a set.



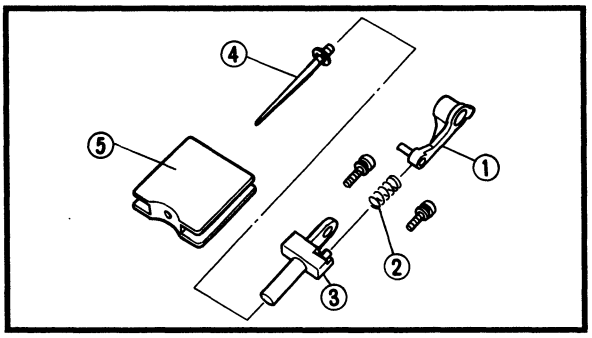
3. Inspect:
- Float ①
- Float arm ②

Damage → Replace.



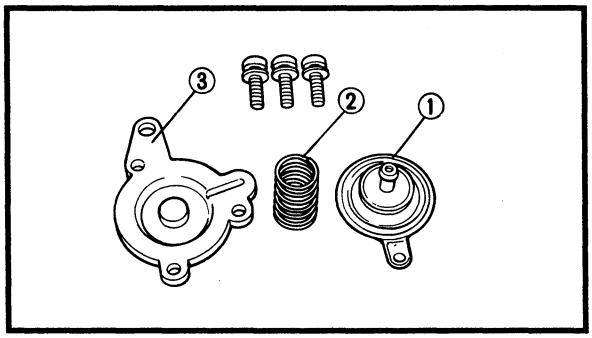
4. Inspect:
- Main jet ①
- Needle jet ②
- Pilot jet ③
- Starter jet ④

Wear/Damage → Replace.
Contamination → Blow out jets with compressed air.



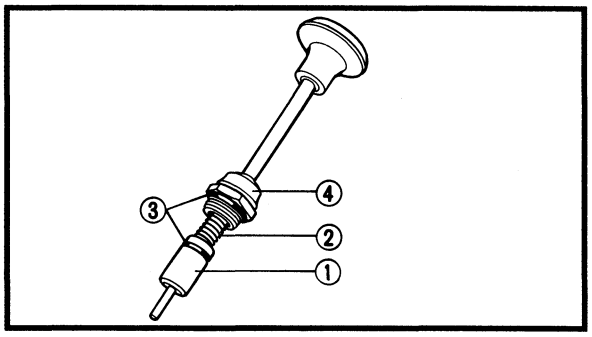
5. Inspect:
- Connecting arm ①
- Spring ②
- Needle holder ③
- Jet needle ④
- Piston valve ⑤

Damage/Bends/Wear → Replace.

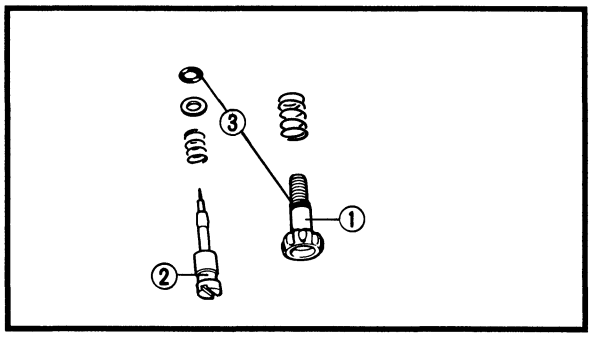


6. Inspect:
- Diaphragm (coasting enricher) ①
- Spring ②
- Cover ③

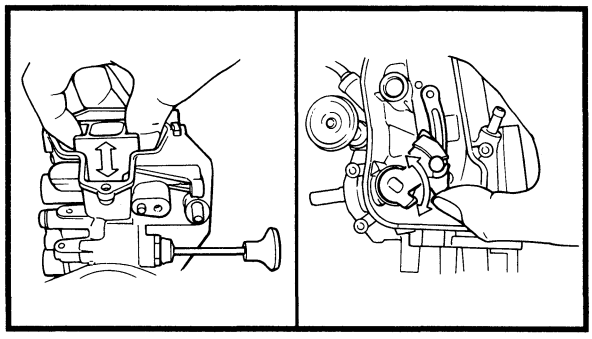
Damage/Tears (diaphragm) → Replace.



7. Inspect:
- Starter plunger ①
  Bends/Wear/Damage → Replace.
- Spring ②
  Damage → Replace.
- O-ring ③
  Damage → Replace.
- Plunger cap cover ④
  Damage → Replace.



8. Inspect:
- Throttle stop screw ①
- Pilot screw ②
  Wear/Contamination → Replace.
- O-ring ③
  Damage → Replace.



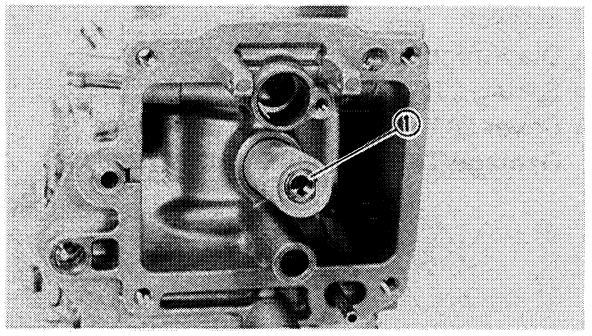
9. Check:
- Free movement (piston valve)
  Stick → Replace.
  Insert the piston valve into the carburetor body, and check for free movement.

10. Check:
- Free movement (throttle valve)
  Damage → Replace.

ASSEMBLY

Reverse the "DISASSEMBLY" procedures. Note the following points.

CAUTION:
- **Before reassembling, wash the all parts in clean petroleum based solvent.**
- **Always use a new gasket.**



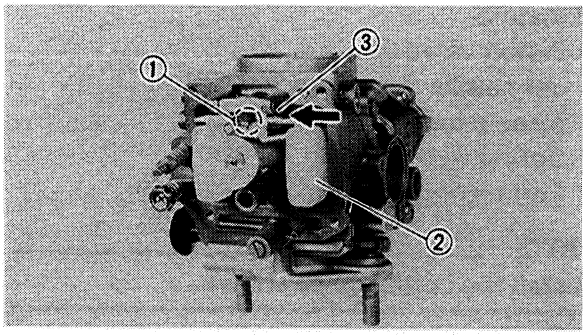
1. Install:
- Needle jet ①

NOTE:

Align the cut end of the needle jet with the slot on the body.

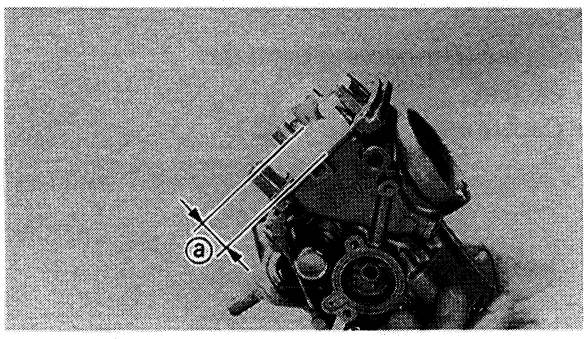
2. Install:
- O-ring
- Washer
- Spring
- Pilot screw

Pirot screw (turns out)
2



3. Install:
- Needle valve ①
- Float ②
- Float pin ③

NOTE:
Install the float pin reverse to the arrow.



4. Measure:
- Float height ⓐ
  Out of specification → Adjust.

Float height (F.H.):
11.4 ~ 13.4 mm (0.45 ~ 0.53 in)

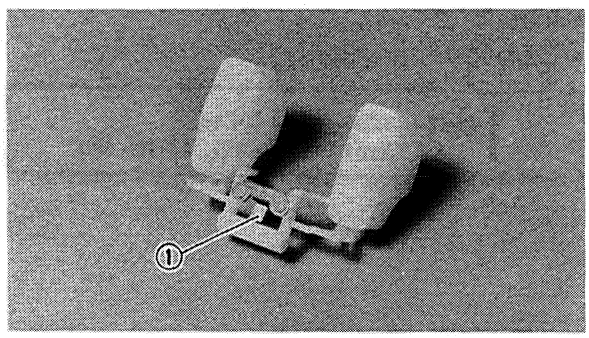
****

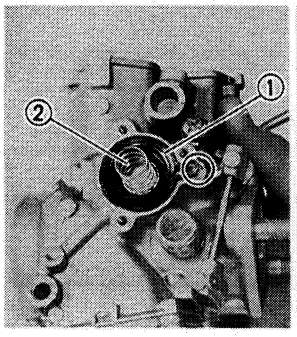
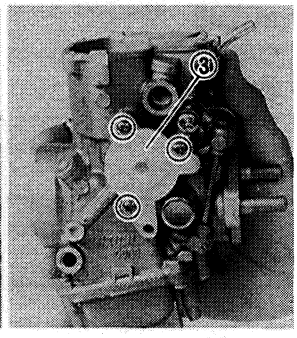
Measurement and adjustment steps:
- Hold the carburetor in an upside down position.
- Measure the distance from the front mating surface of the float chamber (gasket removed) to the top of the float.

NOTE:
The float arm should be resting on the needle valve, but not compressing the needle valve.

- If the float height is not within specification, inspect the valve seat and needle valve.
- If either is worn, replace them both.
- If both are fine, adjust the float height by bending the float tang ① on the float.
- Recheck the float height.

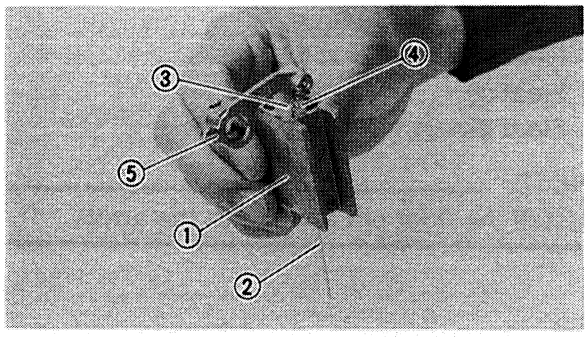
****



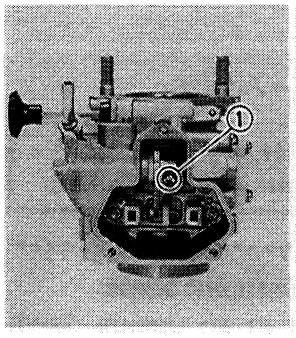
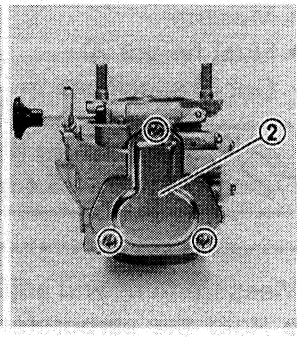
5. Install:
- Diaphragm (coasting enricher) ①
- Spring ②
- Cover ③

NOTE:
Match the tab on the rubber diaphragm to the matching recess in the carburetor body.



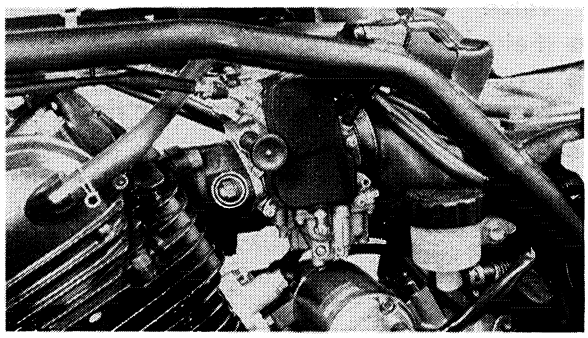
6. Install:
- Piston valve ①
- Jet needle ②
- Needle holder ③
- Spring ④
- Connecting arm ⑤

NOTE:
Install the spring ④ as shown.

7. Install:
- Screw (connecting arm) ①
- Gasket
- Carburetor top cover ②

INSTALLATION
Reverse the "REMOVAL" procedures. Note the following points.



1. Install:
- Carburetor assembly

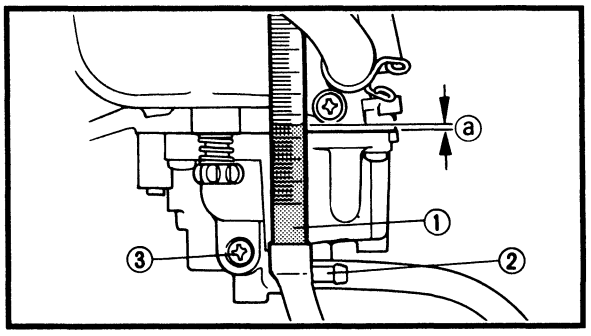
	Nut (carburetor joint): 16 Nm (1.6 m • kg, 11 ft • lb)

2. Adjust:
- Idle speed
  Refer to the "IDLE SPEED ADJUSTMENT" section in CHAPTER 3.

Engine idle speed:
1,450 ~ 1,550 r/min

3. Adjust:
- Throttle lever free play
  Refer to the "THROTTLE CABLE FREE PLAY ADJUSTMENT" section in CHAPTER 3.

Throttle lever free play:
3 ~ 5 mm (0.12 ~ 0.20 in)



FUEL LEVEL ADJUSTMENT

1. Measure:
- Fuel level ⓐ
  Out of specification → Adjust.

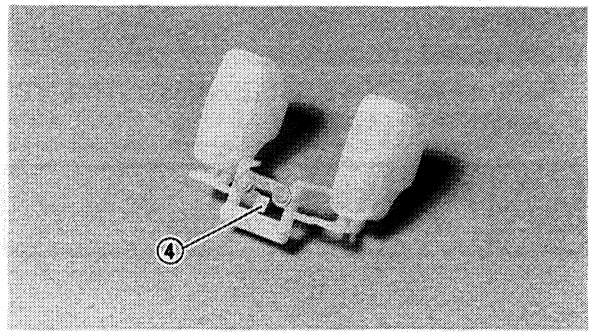
Fuel level:
2.0 ~ 3.0 mm (0.08 ~ 0.12 in)
Above the float chamber mating surface

****

Fuel level measurement and adjustment steps:
- Place the machine on a level surface.
- Use a garage jack under the engine to ensure that the carburetor is positioned vertically.
- Connect the fuel level gauge ① to the drain pipe ②.

Fuel level gauge:
P/N. YM-01312-A, 90890-01312

- Loosen the drain screw ③.
- Hold the gauge vertically next to the float chamber line.
- Measure the fuel level ⓐ with the gauge.



- If the fuel level is incorrect, adjust the fuel level.
- Remove the carburetor.
- Inspect the valve seat and needle valve.
- If either is worn, replace them both.
- If both are fine, adjust float level by bending the float tang ④ slightly.
- Install the carburetor.
- Recheck the fuel level.

****

DRIVE TRAIN

TROUBLESHOOTING

The following conditions may indicate damage shaft drive components:

Symptoms	Possible causes
1. A pronounced hesitation or "jerky" movement during acceleration, deceleration, or sustained speed. (this must not be confused with engine surging or transmission characteristics.) 2. A "rolling rumble" noticeable at low speed; a high-piched whine; a "clunk" from a shaft drive component or area. 3. A locked-up condition of the shaft drive train mechanism, no power transmitted from engine to front and/or rear wheel.	A. Bearing damage. B. Improper gear lash. C. Gear tooth damage. D. Broken drive shaft. E. Broken gear teeth. F. Seizure due to lack of lubrication. G. Small foreign object lodged between moving parts.

NOTE:

Areas A,B, and C above may be extremely difficult to diagnose. The symptoms are quite subtle and difficult to distinguish from normal machine operating noise. If there is reason to believe these components are damaged, remove the components for specific inspection.

INSPECTION NOTES

1.Investigate any unusual noises

****

The following "noises" may indicate a mechanical defect:

- A "rolling rumble" noise during coasting, acceleration, or deceleration. The noise increases with front and/or rear wheel speed, but it does not increase with higher engine or transmission speeds.
  Diagnosis: Possible wheel bearing damage.
- A "whining" noise that varies with acceleration and deceleration.
  Diagnosis: Possible incorrect reassembly, too-little gear lash.

CAUTION:

Too-little gear lash is extremely destructive to the gear teeth. If a test ride following reassembly indicates this condition, stop riding immediately to minimize gear damage.

- A slight "thunk" evident at low speed operation. This noise must be distinguished from normal machine operation.
  Diagnosis: Possible broken gear teeth.

⚠ WARNING

Stop riding immediately if broken gear teeth are suspected. This condition could result in a locking-up of the shaft drive assembly, causing loss of control of the machine and possible injury to the rider.

****

2. Inspect:
- Drained oil
  Drain plug shows large amount of metal.
  Particles → Check bearing fur seizure.

NOTE:

A small amount of metal particles in the oil is normal.

3. Inspect:
- Oil leakage

****

Inspection steps:
- Clean the entire machine thoroughly, then dry it.
- Apply a leak-localizing compound or dry powder spray to the shaft drive.
- Road test the machine for the distance necessary to locate the leak.

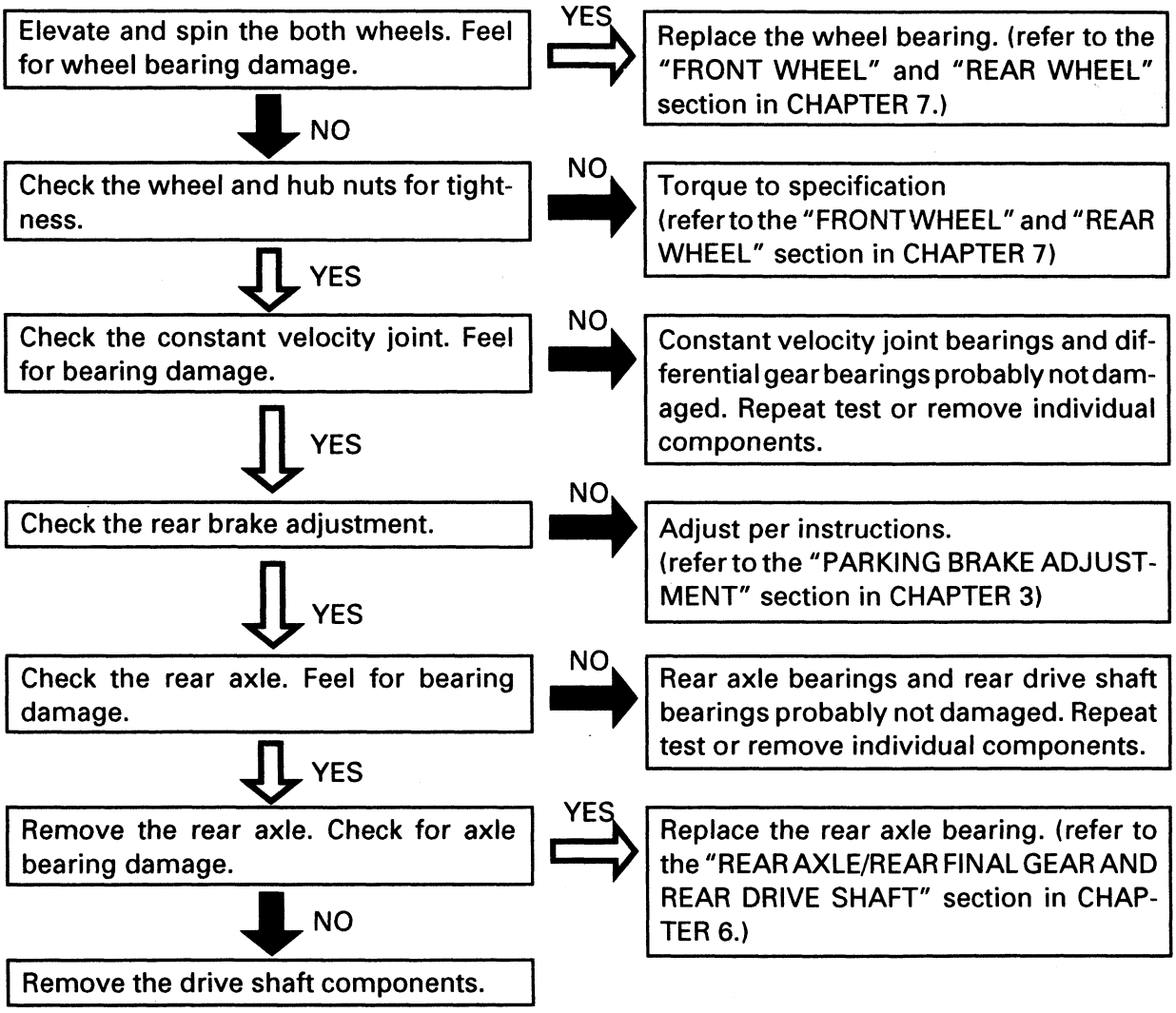
  Leakage → Inspect component housing, gasket, and/or seal for damage.
  Damage → Replace component.

NOTE:
- An apparent oil leak on a new or nearly new machine may be the result of a rust-preventative coating or excessive seal lubrication.
- Always clean the machine and recheck the suspected location of an apparent leakage.

****

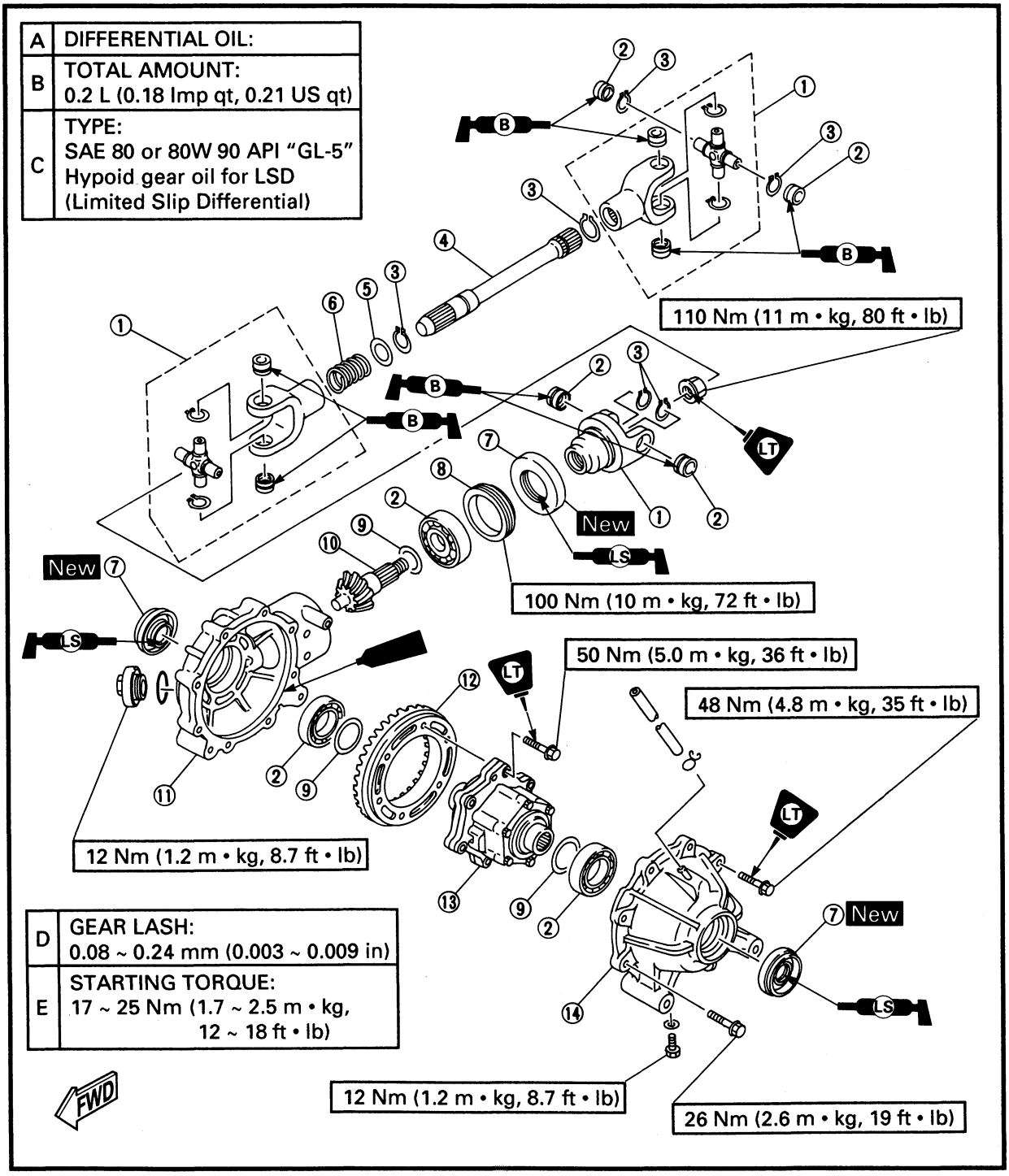
TROUBLESHOOTING CHART

When basic condition "a" and "b" above exist, check the following points:

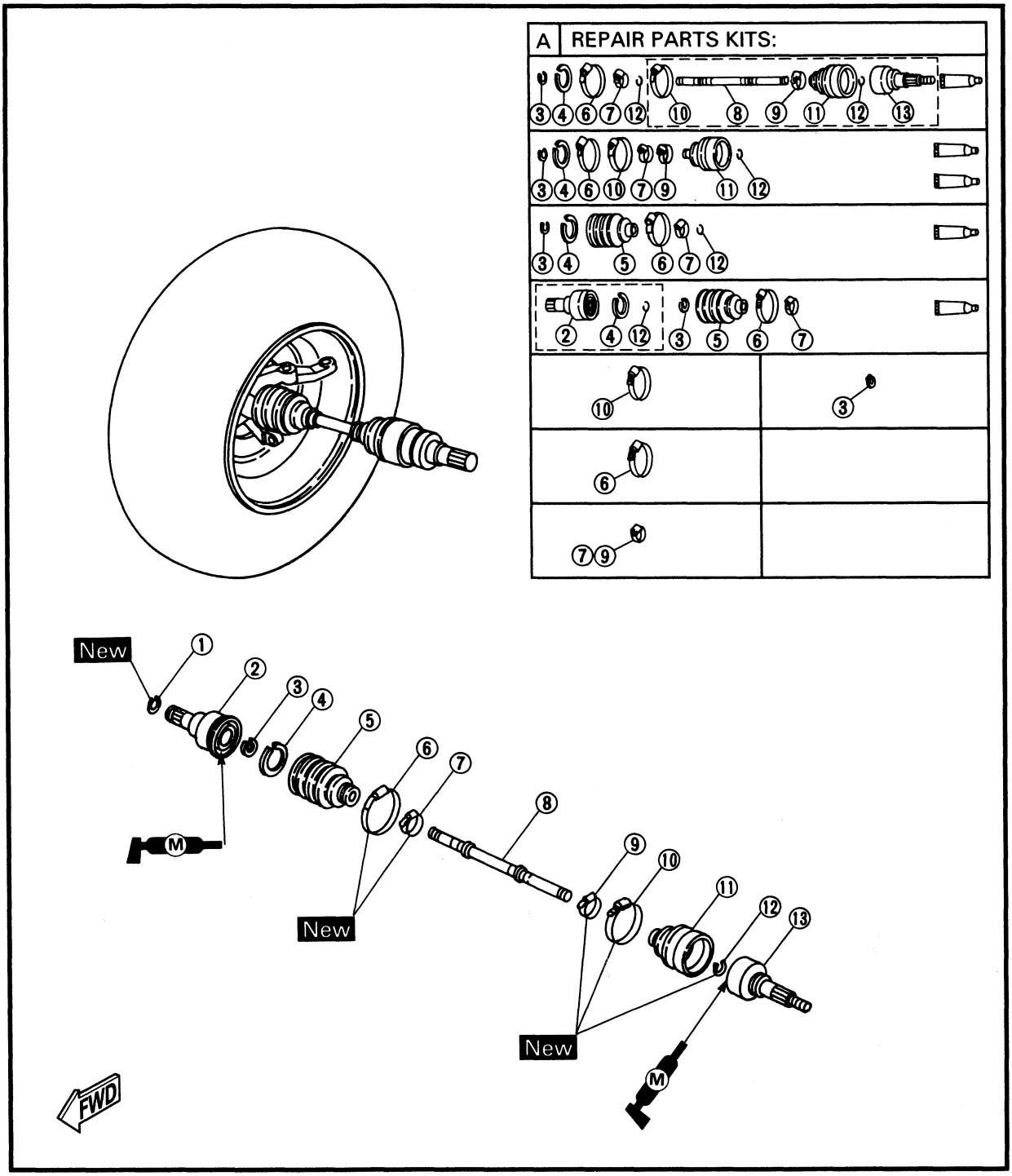


DIFFERENTIAL GEAR AND CONSTANT VELOCITY JOINTS

① Universal joint
② Bearing
③ Circlip
④ Front drive shaft
⑤ Washer
⑥ Spring
⑦ Oil seal
⑧ Bearing retainer
⑨ Shim(s)
⑩ Drive pinion gear
⑪ Differential gear case
⑫ Ring gear
⑬ Differential gear assembly
⑭ Bearing housing (ring gear)



① Circlip
② Double off-set joint
③ Circlip
④ Clip
⑤ Dust boot
⑥ Boot band
⑦ Boot band
⑧ Joint shaft
⑨ Boot band
⑩ Boot band
⑪ Dust boot
⑫ Circlip
⑬ Ball joint



REMOVAL

1. Place the machine on a level place.
2. Apply the parking brake.
3. Remove:
   - Engine guard
4. Drain:
   - Differential gear oil

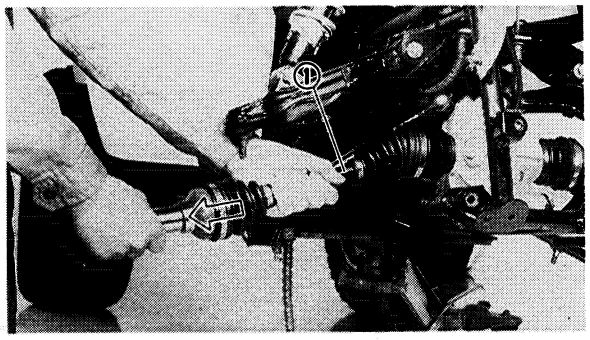
   Refer to the "DIFFERENTIAL GEAR OIL REPLACEMENT" section in CHAPTER 3.
5. Block the rear wheels, and elevate the front wheels by placing the suitable stand under the frame.

6. Remove:
   - Front wheels
   - Front brake calipers
   - Front wheel hubs

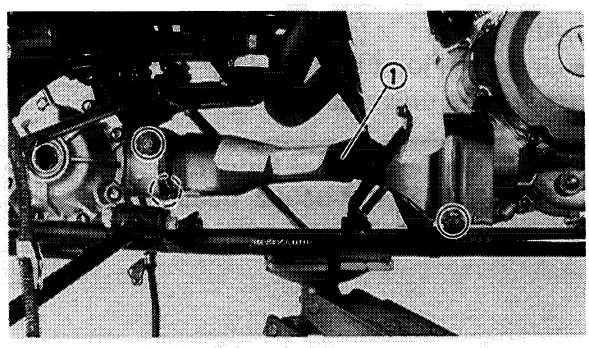
   Refer to the "FRONT WHEEL" section in CHAPTER 7.

7. Remove:
   - Tie-rod
   - Steering knuckle
   - Front lower arm (right)

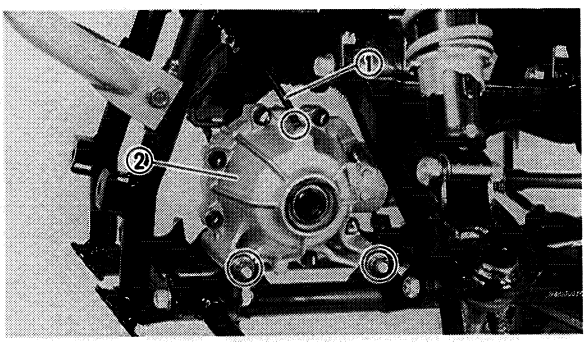
   Refer to the "STEERING SYSTEM" and "FRONT SHOCK ABSORBER AND FRONT ARM" section in CHAPTER 7.



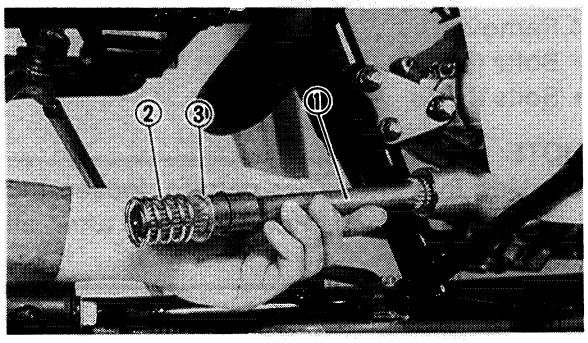
8. Remove:
   - Constant velocity joints ①
   - Circlips



9. Remove:
- Front drive shaft protector ①



10. Remove:
- Breather hose ①
- Differential gear assembly ②



11. Remove:
- Front drive shaft ①
- Spring ②
- Washer ③

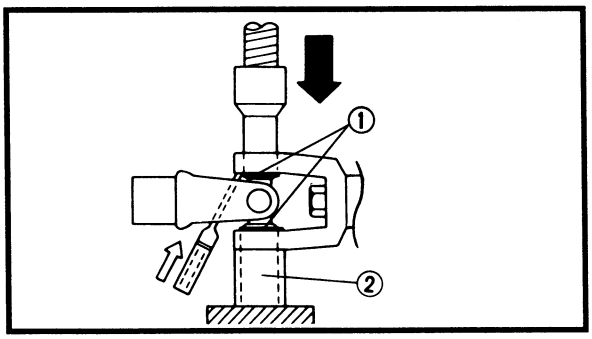
DISASSEMBLY

Differential Gear

1. Remove:
- Universal joint

****

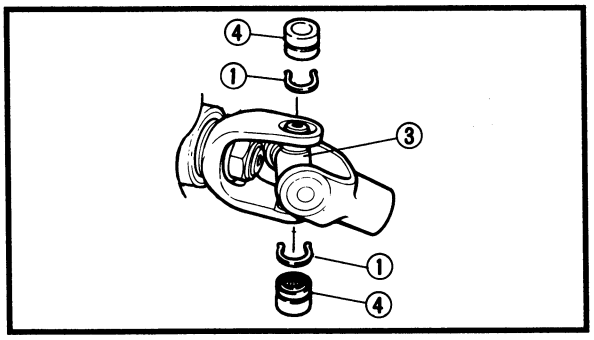
Universal joint removal steps:
- Remove the circlips ①.
- Place the U-joint in a press.
- With a suitable diameter pipe ② beneath the yoke ③, press the bearing ④ into the pipe as shown.



NOTE:

It may be necessary to lightly tap the yoke with a punch.

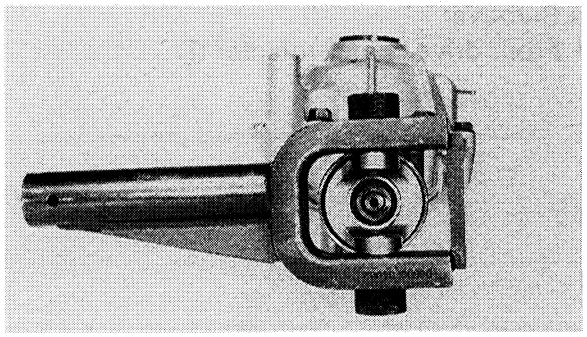
- Repeat the steps for the opposite bearing.
- Remove the yoke.



NOTE:

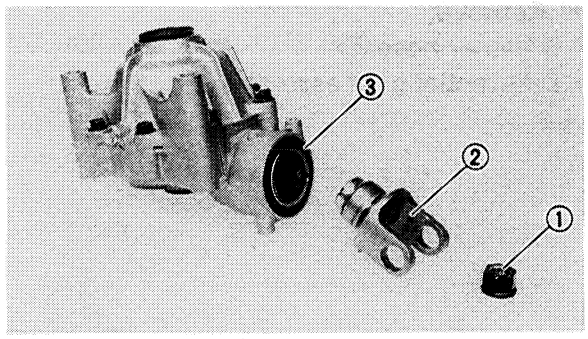
It may be necessary to lightly tap the yoke with a punch.

****

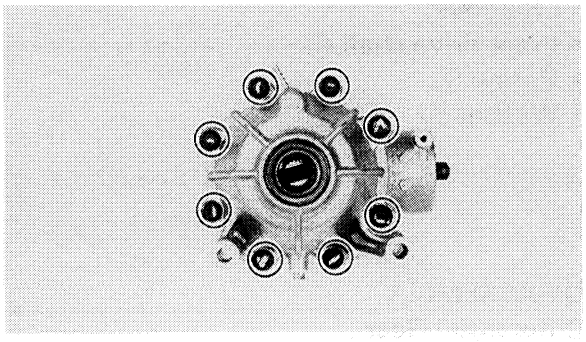


2. Attach:
- Universal joint holder
  (onto the universal joint yoke)

	Universal joint holder: **P/N. YM-04062, 90890-04062**

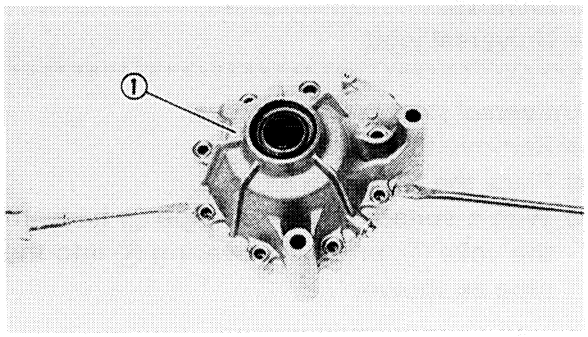


3. Remove:
- Nut ①
- Universal joint yoke ②
- Oil seal ③

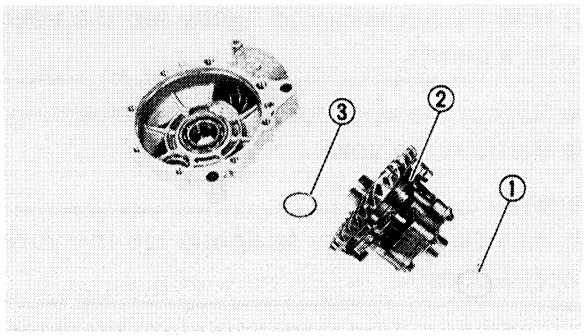


4. Remove:
- Bolts (M8)
- Bolts (M10)

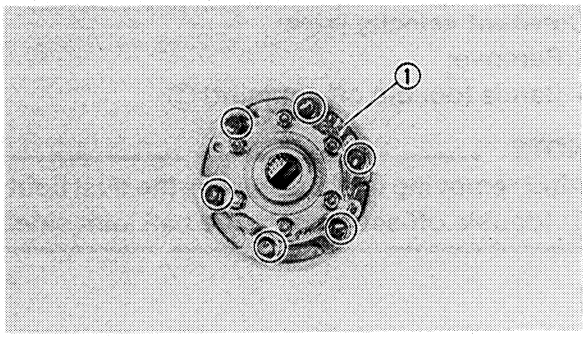
NOTE:
Working in a crisscross pattern, loosen the bolt 1/4 turn each. Remove then after all loosened.



5. Remove:
- Bearing housing ①



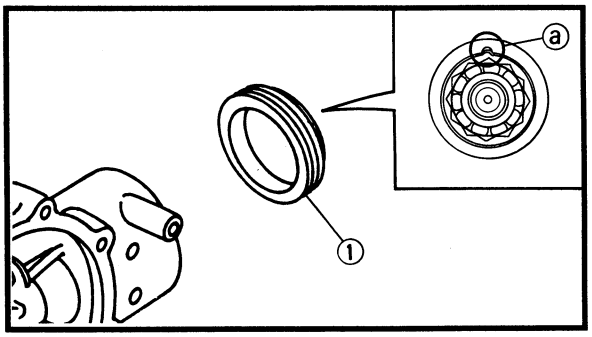
6. Remove:
- Shim(s) (left) ①
- Differential gear assembly ②
- Shim(s) (right) ③



7. Remove:
• Ring gear ①

NOTE:
The ring gear and the differential gear cover should be fastened together. Do not disassemble the differential gear.

CAUTION:
The differential gears are assembled into a proper unit at the factory by means of specialized equipment. Do not attempt to disassemble this unit. Disassembly will result in the malfunction of the unit.

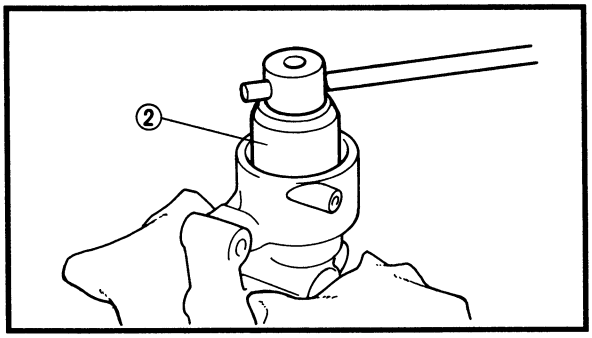


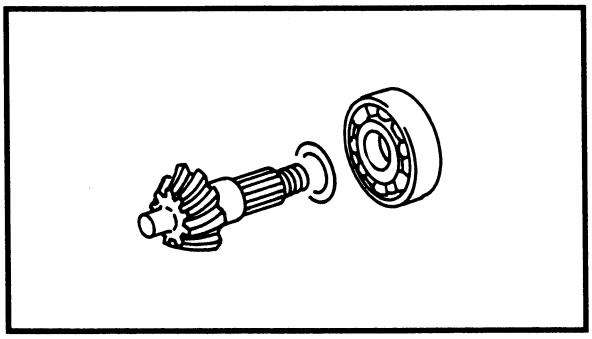
8. Remove:
• Bearing retainer ①

NOTE:
Straighten the punched portion ⓐ of the bearing retainer.

Use the hexagon wrench (44 mm) ②.

	Hexagon wrench (44 mm): P/N. YM-01462, 90890-01462

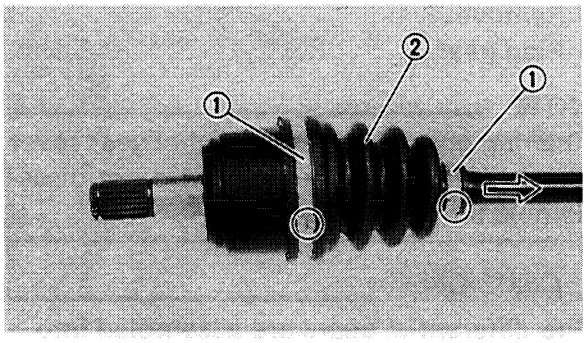




9. Remove:
• Drive pinion gear

NOTE:
When remove the drive pinion gear, heat the bearing housing to 150°C (302°F).

• Bearing
• Shim(s)
Use a universal bearig puller.

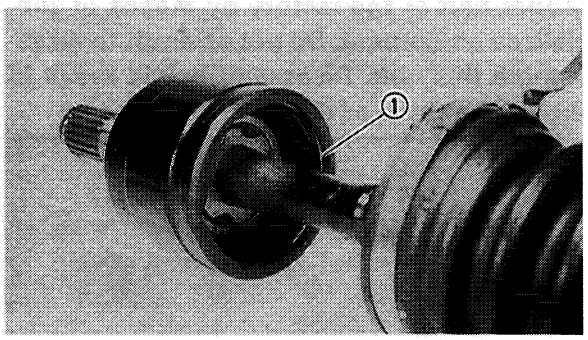


Constant velocity joint

1. Remove:
   - Bands (double off-set joint) ①

NOTE:

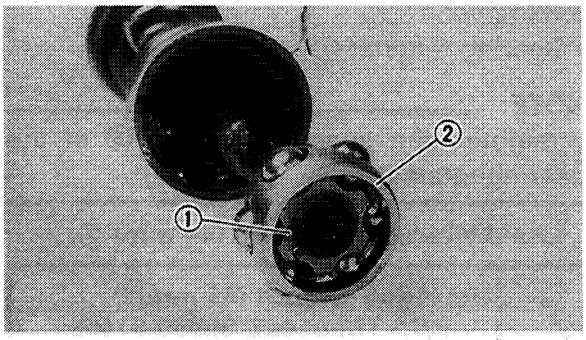
After removing the bands, slide the dust boot ② (double off-set joint) to the ball joint side.



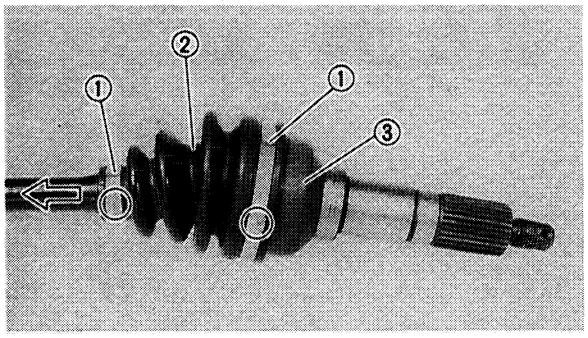
2. Remove:
   - Clip ①

NOTE:

After removing the circlip, pull out the shaft with bearing.



3. Remove:
   - Circlip ①
   - Ball bearing ②
   - Dust boot (double off-set joint)



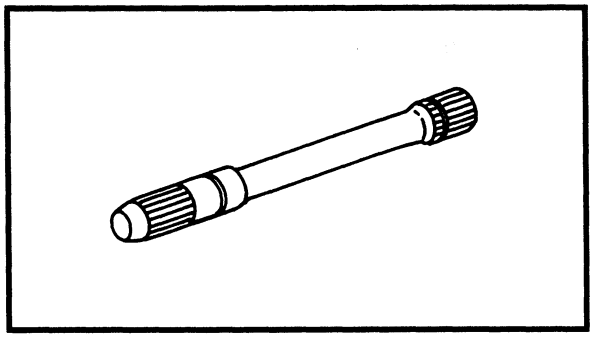
4. Remove:
   - Bands (ball joint) ①
   - Dust boot (ball joint) ②
     (from the ball joint assembly ③)

INSPECTION

Differential gear

1. Inspect:
- Gear teeth
  Pitting/Galling/Wear → Replace drive pinion gear and ring gear as a set.
- Bearing
  Pitting/Damage → Replace.
- O-ring
  Damage → Replace.

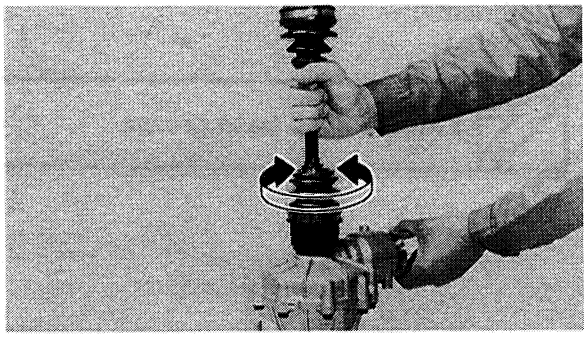
2. Inspect:
- Drive shaft splines
- Universal joints
- Front drive gear splines
  Wear/Damage → Replace.
- Spring
  Fatigue → Replace.



3. Inspect:
- Front drive shaft
  Bends → Replace.

⚠ WARNING

Do not attempt to straighten a bent shaft; this may dangerously weaken the shaft.



4. Check:
- Differential gear operation
  Unsmooth operation → Replace differential gear assembly.
  Insert the double off-set joint into the differential gear, and turn the gear back and forth.

Constant velocity joint

1. Inspect:
- Double off-set joint spline
- Ball joint spline
- Shaft spline

  Wear/Damage → Replace.

2. Inspect:
- Dust boots

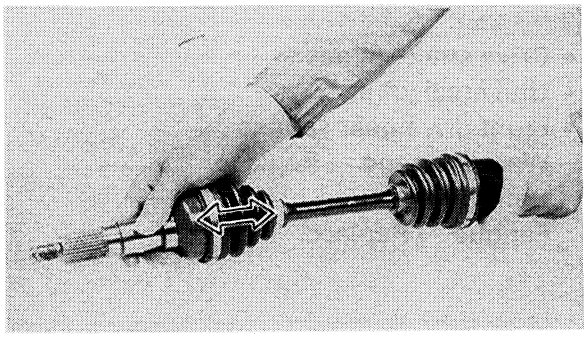
  Cracks/Damage → Replace.

CAUTION:

Always use new boot band.

3. Inspect:
- Balls and ball races
- Inner surface of double off-set joint

  Pitting/Damage/Wear → Replace.



4. Check:
- Free play (thrust movement)

  Excessive play → Replace joint assembly.

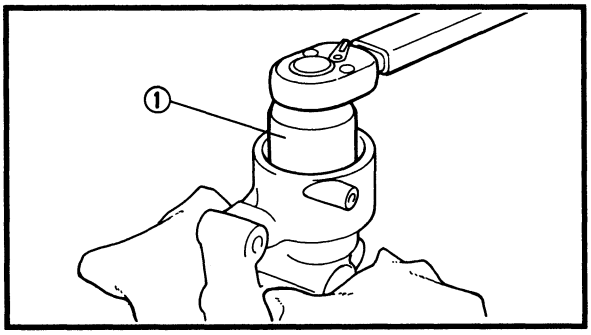
ASSEMBLY

Reverse the "DISASSEMBLY" procedure.
Note the following points.

Differential gear

1. Lubricate:
- Oil seals

	Lithium soap base grease



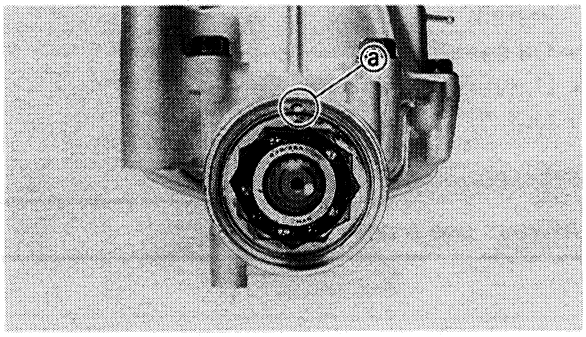
2. Install:
- Shim(s)
- Bearing
- Drive pinion gear
- Bearing retainer

Use the hexagon wrench (44 mm) ①.

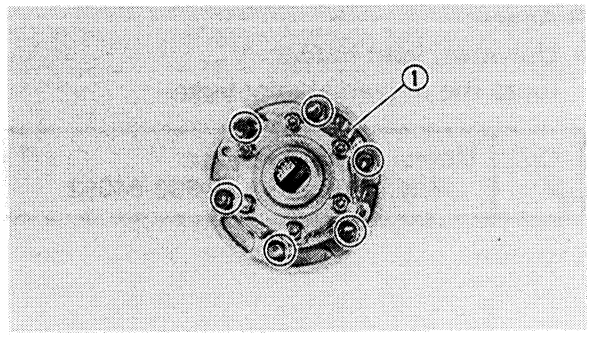
CAUTION:

Always use a new bearing retainer.

	Hexagon wrench (44 mm): P/N. YM-01462, 90890-01462
	Bearing retainer: 100 Nm (10 m • kg, 72 ft • lb)



3. Lock the thread ⓐ with center punch.



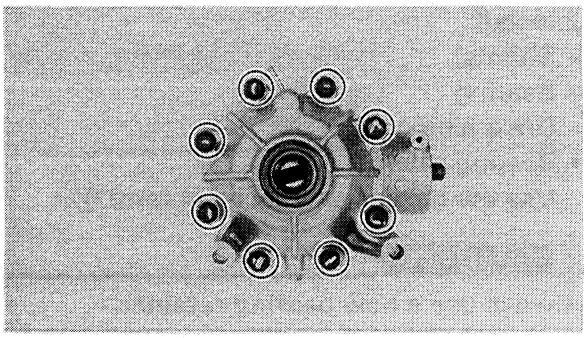
4. Install:
- Ring gear ①

	Bolt (ring gear): 50 Nm (5.0 m • kg, 36 ft • lb) LOCTITE®

5. Apply:
- Sealant

(onto bearing housing mating surfaces)

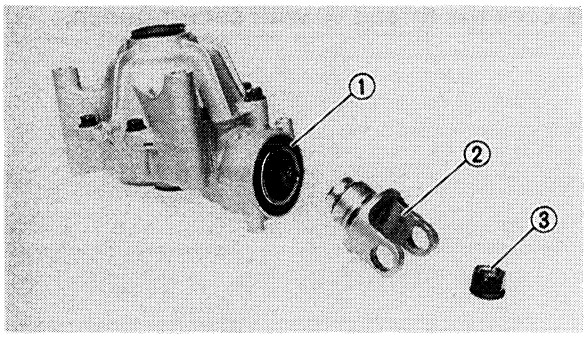
	Quick gasket®: ACC-11001-05-01 Yamaha bond No.1215: 90890-85505



6. Tighten:
- M10 bolts
- M8 bolts

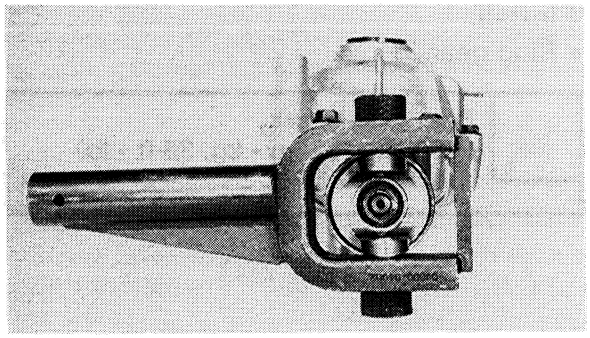
NOTE:
Tighten the bolts in stage, using a crisscross pattern.

M10 bolt:
48 Nm (4.8 m • kg, 35 ft • lb)
LOCTITE®
M8 bolt:
26 Nm (2.6 m • kg, 19 ft • lb)



7. Install:
- Oil seal ①
- Universal joint yoke ②
- Nut ③

CAUTION:
Always use a new oil seal.

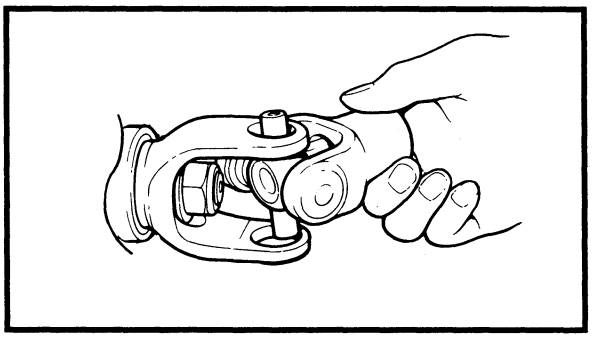


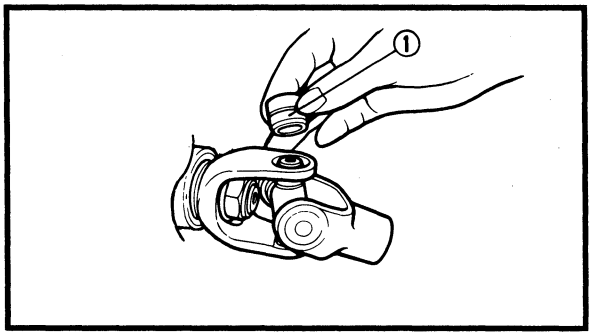
8. Attach:
- Universal joint holder
  (onto the universal joint yoke)

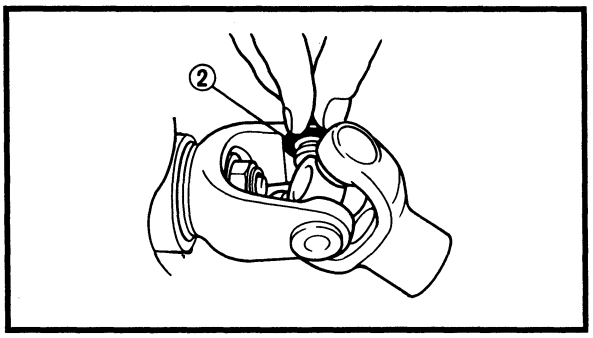
Universal joint holder:
P/N. YM-04062, 90890-04062

9. Tighten:
- Nut

Nut:
110 Nm (11 m • kg, 80 ft • lb)
LOCTITE®







10. Install:
- Universal joint

****

Universal joint installation steps:
- Install the opposite yoke into the U-joint.
- Apply the wheel bearing grease to the bearings.
- Install the bearing ① onto the yoke.

CAUTION:

Check each bearing. The needles can easily fall out of their races. Slide the yoke back and forth on the bearings; the yoke will not go all the way onto a bearing if a needle is out of place.

- Press each bearing into the U-joint using a suitable socket.

NOTE:

Bearing must be inserted far enough into U-joint so that circlip can be installed.

- Install the circlips ② into the groove of each bearing.

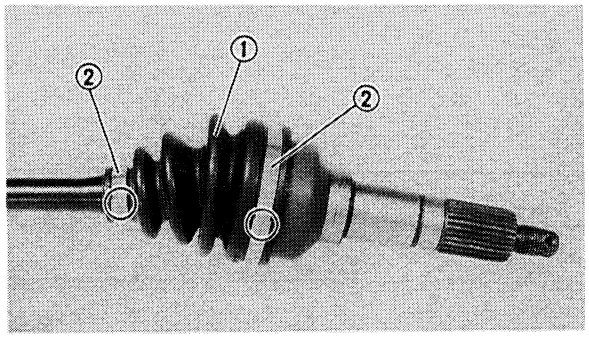
****

Constant velocity joint

1. Apply:
- Molybdenum disulfide grease (into the ball joint assembly)

NOTE:

Molybdenum disulfide grease is included in the repair kit.



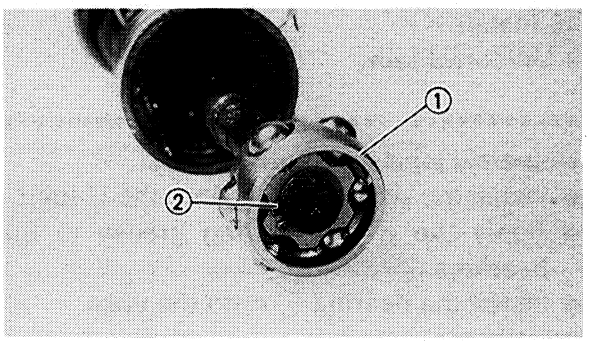
2. Install:
- Dust boot (ball joint) ①
- Bands (ball joint – new) ②

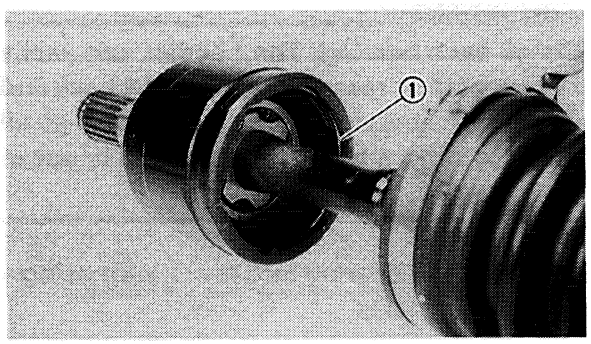
NOTE:

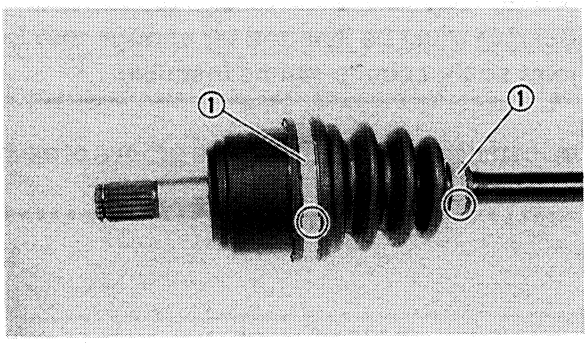
After installing the bands, bend the band ends securely.

CAUTION:

Always use the new bands.







3. Install:
- Dust boot (double off-set joint)
  (insert the shaft into the boot)
- Ball bearing ①
- Circlip ②

4. Lubricate:
- Ball bearing

Molybdenum disulfide grease

5. Install:
- Ball bearing with shaft
- Clip ①
  (to the double off-set joint)

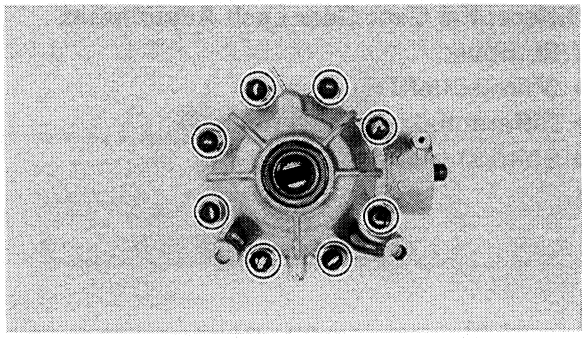
NOTE:
- Before installing the ball bearing, apply the molbdenum disulfide grease into the double off-set joint.
- Cover the double off-set joint with the dust boot.

6. Install:
- Bands (double off-set joint) ①

NOTE:
After installing the bands, bend the band ends securely.

CAUTION:
Always use the new bands.

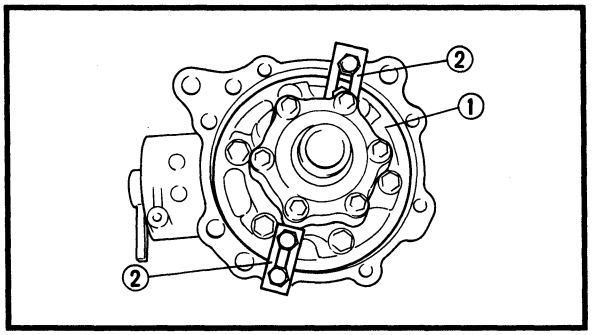
7. Check:
- Free play (thrust movement)
  Refer to the "INSPECTION" section.



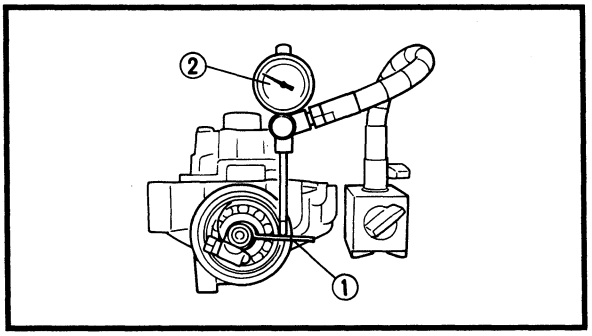
MEASUREMENT AND ADJUSTMENT

Differential gear gear lash measurement

1. Remove:
   - Universal joint yoke
   - Bearing housing



2. Secure the ring gear ① with the plates ② and bolts (8 mm) as shown.



3. Attach:
   - Gear lash measurement tool ①
   - Dial gauge ②



Gear lash measurement tool:
P/N. YM-01231, 90890-01231
Dial gauge:
P/N. YU-03097, 90890-03097

4. Measure:
   - Gear lash

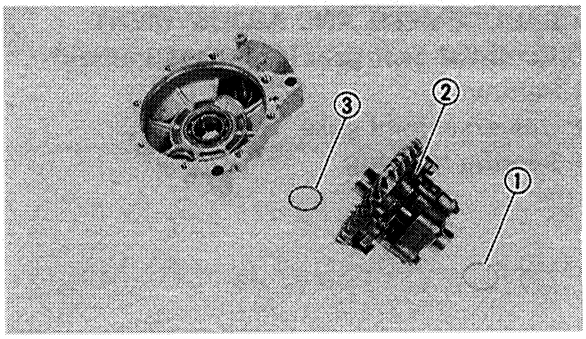
   Gently rotate the constant velocity joint from engagement to engagement.
   Over specified limit → Adjust.

NOTE:

Measure the gear lash at 4 positions. Rotate the ring gear 90° each time.



Differential gear gear lash:
0.08 ~ 0.24 mm (0.003 ~ 0.009 in)



Differential Gear Gear Lash Adjustment

1. Remove:
- Shim(s) (left) ①
- Differential gear assembly ②
- Shim(s) (right) ③

2. Adjust:
- Gear lash

****

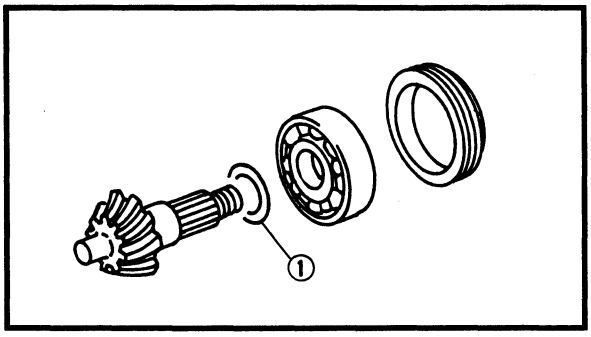
Gear lash adjustment steps:

- Select the suitable shim(s) by the following chart.

Too-little gear lash → Reduce left shim thickness.
Too-large gear lash → Increase left shim thickness.

- If increase by more than 0.05 mm(0.002 in): Reduce right shim thickness by 0.05 mm (0.002 in) for every 0.05 mm of left shim increase.
- If reduce by more than 0.05 mm (0.002 in): Increase right shim thickness by 0.05 mm (0.002 in) for every 0.05 mm of left shim decrease.

	Ring gear shim (left and right)		
Thickness (mm)	**0.50**	**0.90**	**1.30**
	0.55	**0.95**	**1.35**
	0.60	**1.00**	**1.40**
	0.65	**1.05**	**1.45**
	0.70	**1.10**	**1.50**
	0.75	**1.15**	**1.55**
	0.80	**1.20**	**1.60**
	0.85	**1.25**	

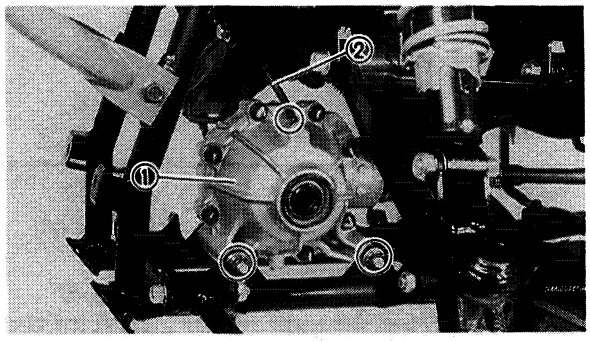


- If you cannot adjust the gear lash properly using the ring gear shim, use a drive pinion gear shim.
- Remove the drive pinion gear. Refer to the "DISASSEMBLY" section.
- Select the suitable shim(s) ①.

Too-little gear lash →
Reduce shim thickness.
Too-large gear lash →
Increase shim thickness.

Drive pinion gear shim			
Thickness (mm)	1.82	2.00	2.18
	1.88	2.06	
	1.94	2.06	

****



INSTALLATION

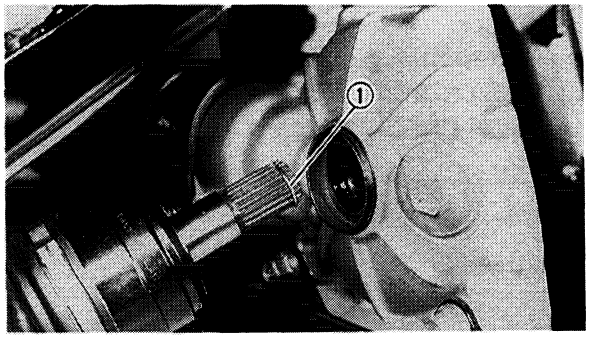
Reverse the "REMOVAL" procedure.
Note the following points.

1. Install:
- Differential gear assembly ①
- Breather hose ②

Nut (differential gear):
64 Nm (6.4 m • kg, 46 ft • lb)

2. Lubricate:
- Constant velocity joints
- Oil seals

Lithium soap base grease



3. Install:
- Circlip ①
- Constant velocity joints

⚠ WARNING

Always use a new circlip.

4. Install:
- Front lower arm (right)
- Steering knuckle
- Tie-rod

Refer to the "FRONT SHOCK ABSORBER AND FRONT ARM" and "STEERING SYSTEM" section in CHAPTER 7.

5. Install:
- Front wheel hubs
- Front brake calipers
- Front wheels

Refer to the "FRONT WHEEL" section in CHAPTER 7.

6. Install:
- Engine guard

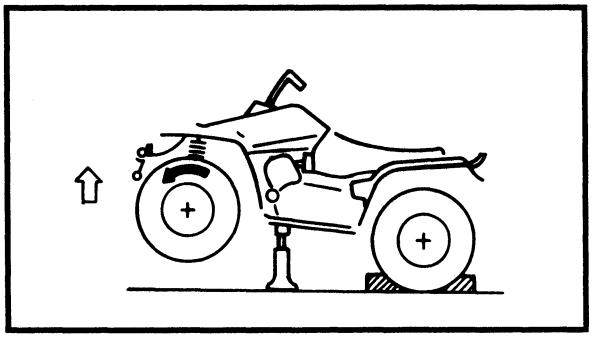
7. Fill:
- Differential gear case

Total amount:
0.2 L (0.18 Imp qt, 0.21 US qt)
Recommended oil:
SAE 80 or 80W90 API "GL-5"
Hypoid gear oil for LSD (Limited Slip Differential)

Refer to the "DIFFERENTIAL GEAR OIL REPLACEMENT" section in CHPATER 3.

8. Check:
- Differential gear operation.

Refer to the "DIFFERENTIAL GEAR OPERATION CHECK" section.



DIFFERENTIAL GEAR OPERATION CHECK

1. Block the rear wheels, and elevate the front wheels by placing a suitable stand under the frame.
2. Remove the wheel cap and cotter pin from the axle nut (right or left).
3. Measure the starting torque of the front wheel (i.e., differential gear preload) with the torque wrench.

NOTE:

- Repeat this step several times to obtain an average figure.
- During this test, the other front wheel will turn in the opposite direction.

Front wheel starting torque:
(differential gear preload):
17 ~ 25 Nm (1.7 ~ 2.5 m • kg,
12 ~ 18 ft • lb)

4. Out of the above specification, replace the differential gear assembly.
5. Within the above specification, install the cotter pin and wheel cap.

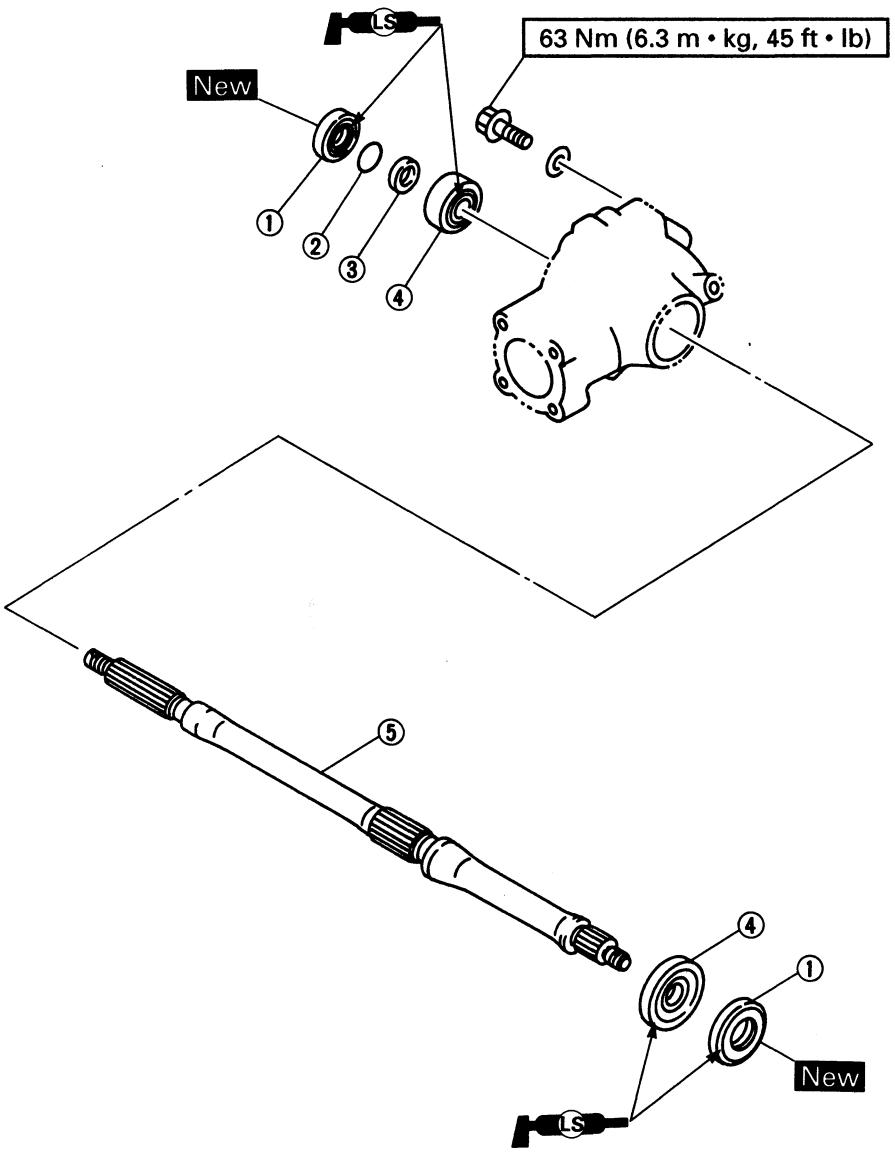
⚠ WARNING

Always use a new cotter pin.

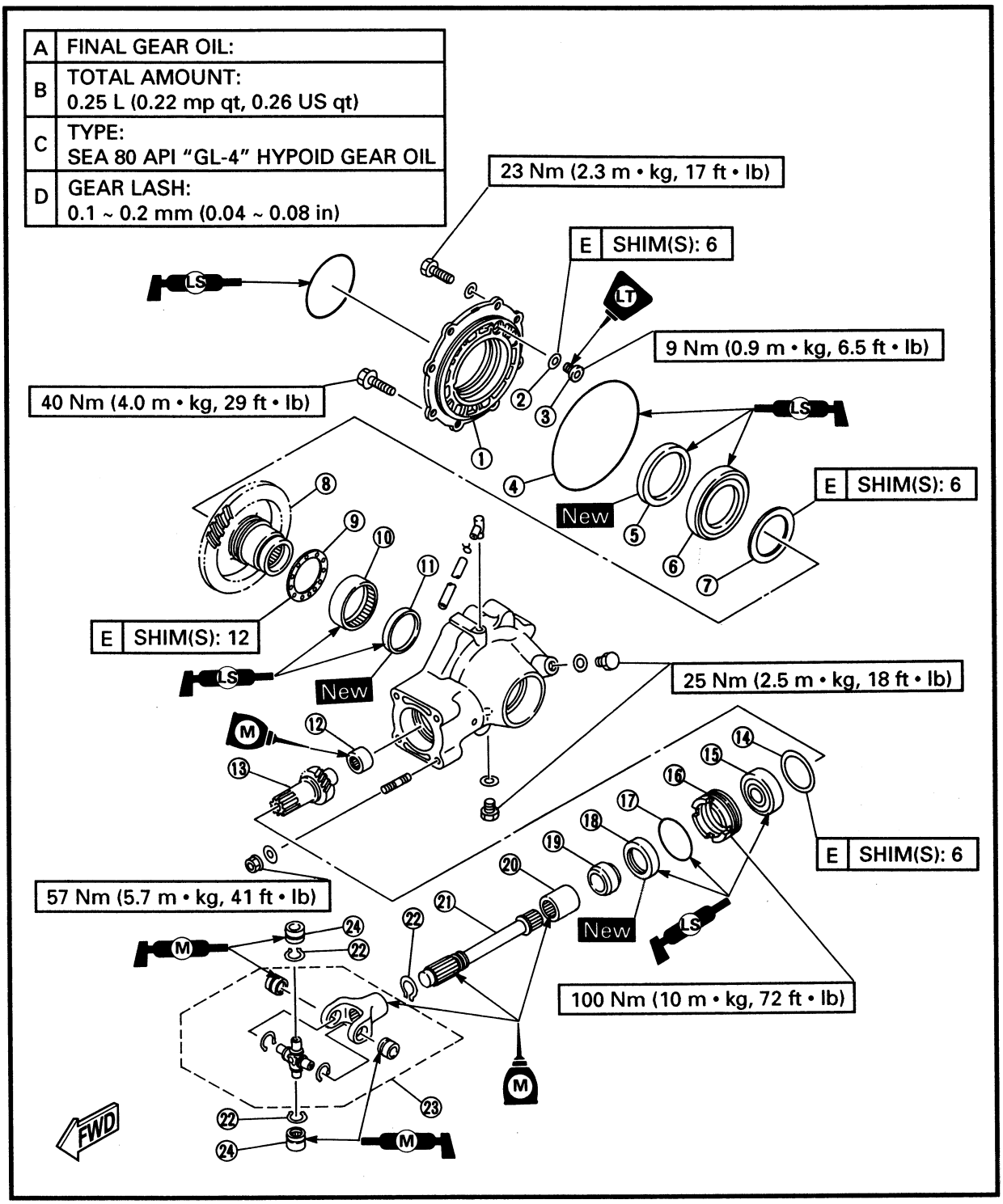
REAR AXLE/REAR FINAL GEAR AND REAR DRIVE SHAFT

① Oil seal
② O-ring
③ Plain washer
④ Bearing
⑤ Rear axle

A	REAR AXLE RUNOUT LIMIT: 1.5 mm (0.06 in)



① Bearing housing
② Ring gear stopper shim
③ Ring gear stopper
④ O-ring
⑤ Oil seal
⑥ Bearing
⑦ Ring gear shim
⑧ Ring gear
⑨ Thrust washer
⑩ Bearing
⑪ Oil seal
⑫ Bearing
⑬ Drive pinion gear
⑭ Final drive gear shim
⑮ Bearing
⑯ Bearing retainer
⑰ O-ring
⑱ Oil seal
⑲ Coller
⑳ Coupling gear
㉑ Drive shaft
㉒ Circlip
㉓ Universal joint
㉔ Bearing



REMOVAL

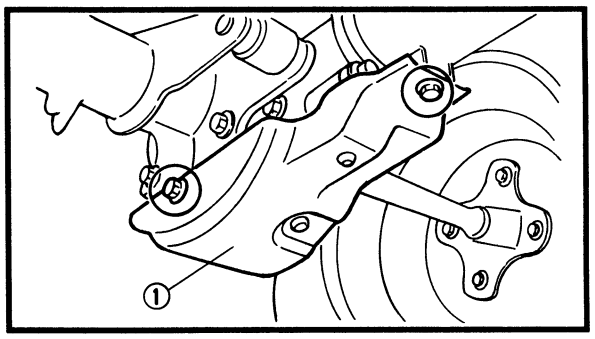
⚠ WARNING

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

1. Place the machine on a level place.

2. Remove:
- Rear wheels
- Rear wheel hubs

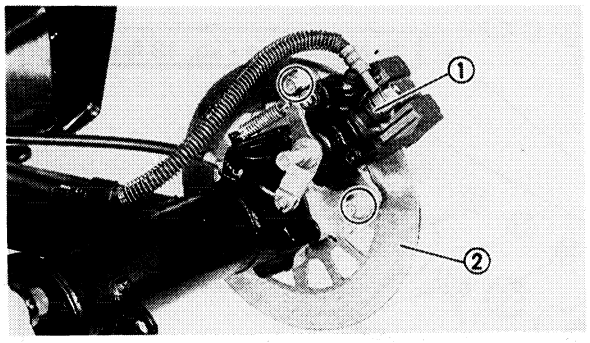
Refer to the "REAR WHEEL" section in CHAPTER 7.



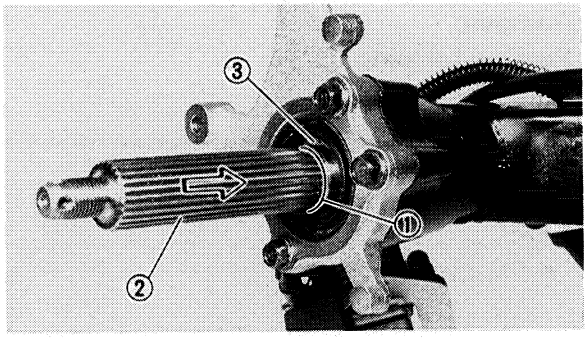
3. Remove:
- Final gear case protector ①

4. Drain:
- Final gear oil

Refer to the "FINAL GEAR OIL REPLACEMENT" section in CHAPTER 3.

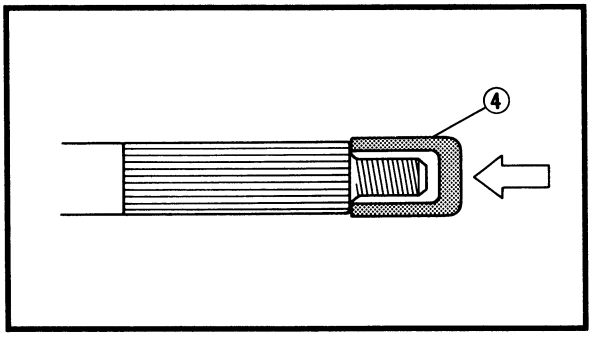


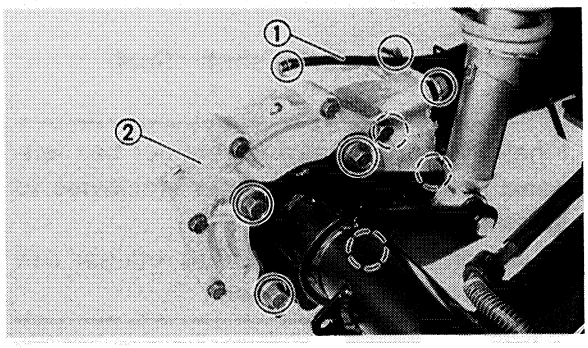
5. Remove:
- Rear brake caliper ①
- Brake disc ②



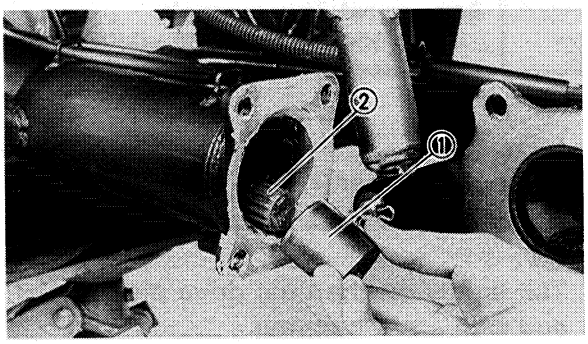
6. Remove:
- O-ring ①
- Rear axle ②
- Plain washer ③

CAUTION:
- **Never directly tap the axle end with a hammer, this will result in damage to the axle thread and spline.**
- **Install the suitable socket ④ on the axle end and tap it with a soft hammer. Pull out the rear axle to the left.**

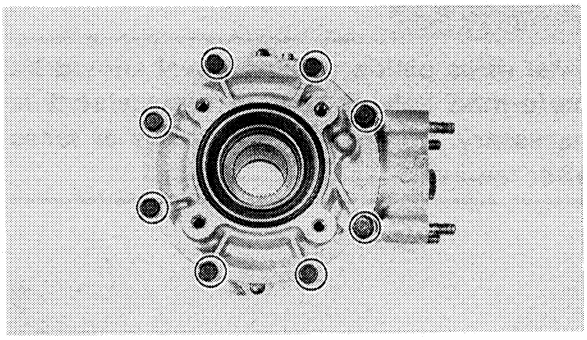




7. Remove:
- Breather hose ①
- Rear final gear assembly ②



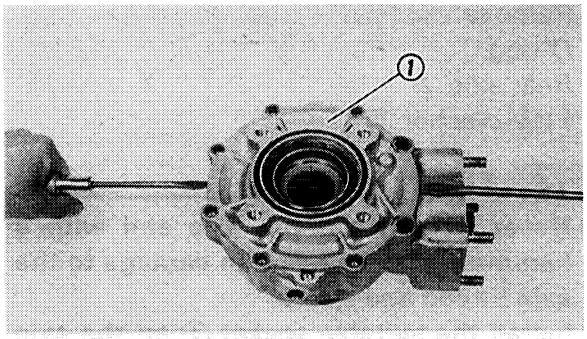
8. Remove:
- Coupling gear ①
- Rear drive shaft ②



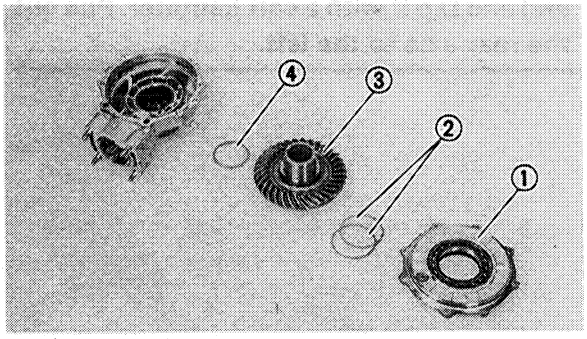
DISASSEMBLY

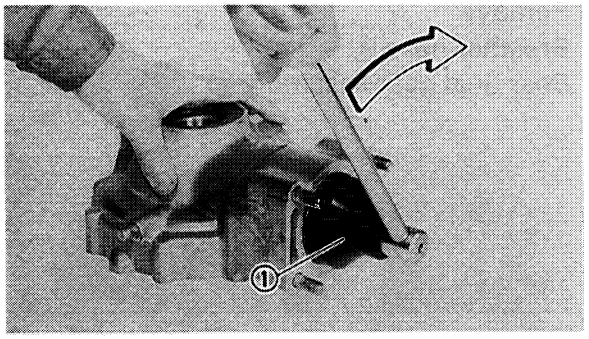
1. Remove:
- Bolts (M8)
- Bolts (M10)

NOTE:
Working in a crisscross pattern, loosen bolt 1/4 turn each. Remove them after all loosened.



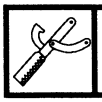
2. Remove:
- Bearing housing ①
- Shim(s) ②
- Ring gear ③
- Thrust washer(s) ④

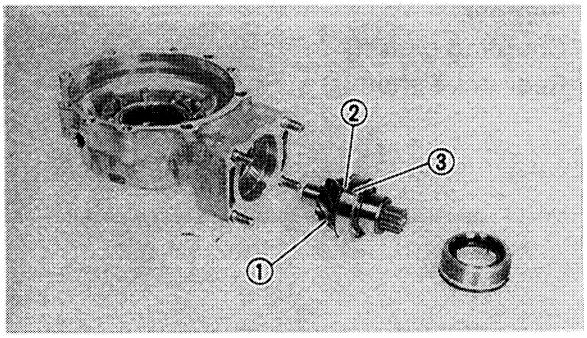




3. Remove:
- Bearing retainer (drive shaft - final)

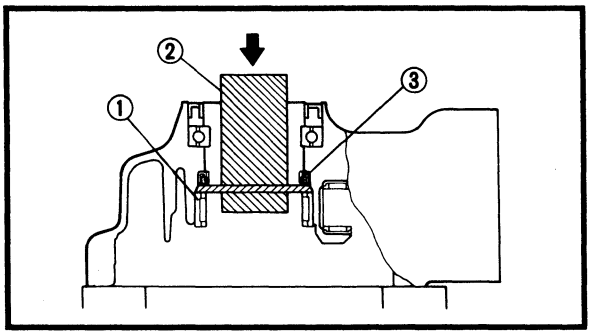
NOTE:
- Final-drive-shaft-bearing-retainer has left-hand threads. Turn retainer clockwise to loosen it.
- When remounting the bearing retainer, use the bearing retainer wrench ①.

	**Bearing retainer wrench; P/N. YM-04050, 90890-04050**

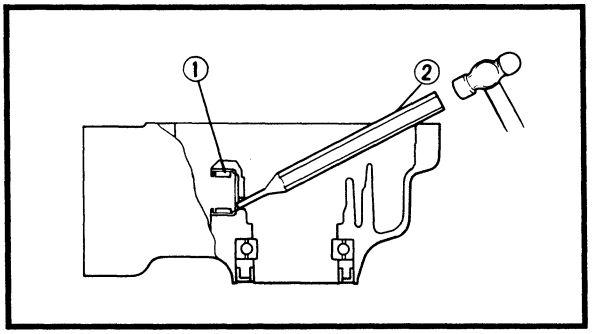


4. Remove:
- Drive pinion gear ①
  (together with the shim(s) ② and bearing ③)
  Tap lightly on the final drive pinion gear end with a soft hammer.

CAUTION:
Final drive pinion gear removal should be performed only if gearing replacement is necessary. Do not reuse bearings or races after removal.



5. Remove:
- Roller bearing (ring gear) ①
  Use a suitable press tool ② and an appropriate support for the main housing.
- Oil seal ③



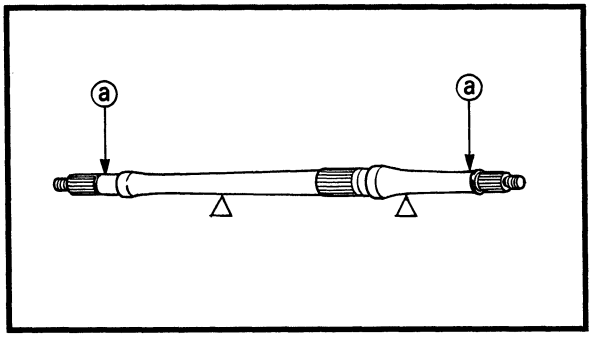
6. Remove:
- Roller bearing (drive pinion gear) ①

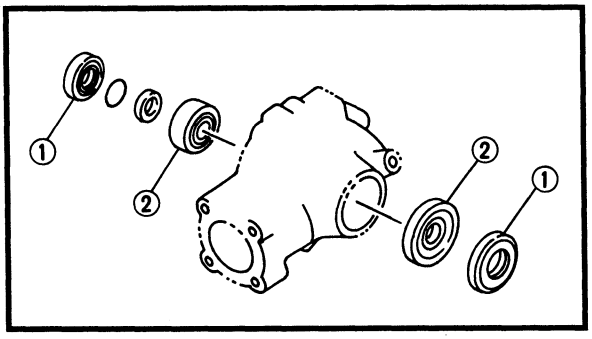
****

Removal steps:
- Heat the main housing only to 150°C (302°F).
- Remove the roller bearing outer race with an appropriately shaped punch ②.
- Remove the inner race from the final drive shaft.

NOTE:
The removal of the final drive shaft roller bearing is difficult seldom necessary.

****





INSPECTION

1. Inspect:
- Rear axle runout ⓐ
  Out of specification → Replace.

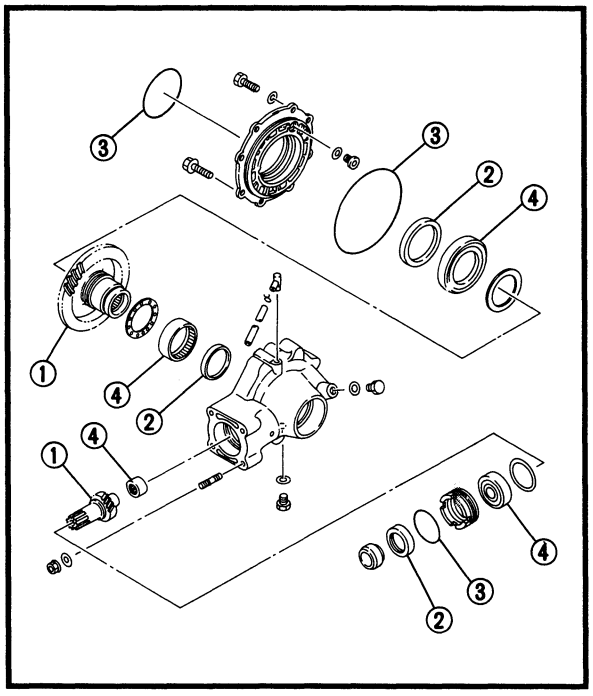
⚠ WARNING

Do not attempt to straighten a bent axle.

Rear axle runout limit:
1.5 mm (0.06 in)

2. Inspect:
- Oil seals ①
  Damage → Replace.

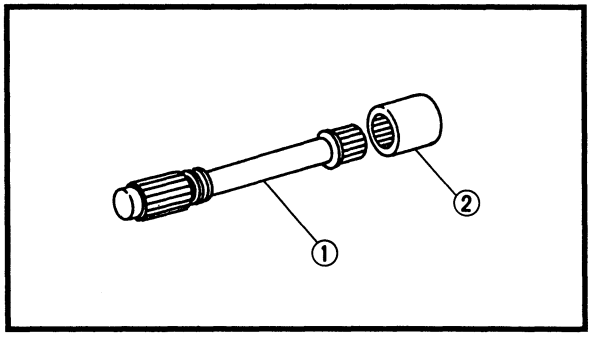
3. Check:
- Bearings ②
  Bearings allow play in the final gear housing and rear hub or rear axle turns roughly → Replace.



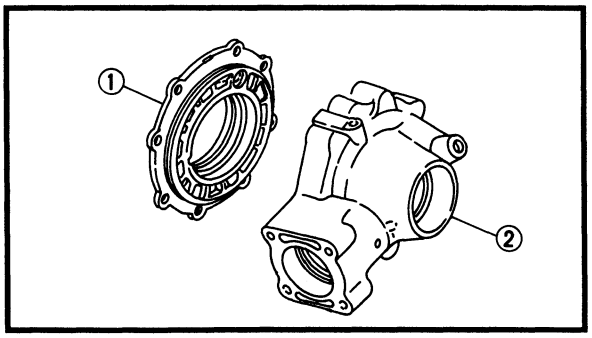
4. Inspect:
- Gear teeth ①
  Pitting/Galling/Wear → Replaced drive pinion gear and ring gear as a set.
- Oil seal ②
- O-ring ③
  Damage → Replace.

5. Inspect:
- Bearings ④
  Damage → Replace.

NOTE:
- Reuse of roller bearing OK, but Yamaha recommends installation of new bearing. Do not reuse the oil seal.
- When the final drive pinion gear and/or ring gear are replaced, be sure to adjust the shim of the final drive pinion gear and/or ring gear, refer to the "FINAL DRIVE PINION GEAR AND RING GEAR SHIM SELECTION" section.

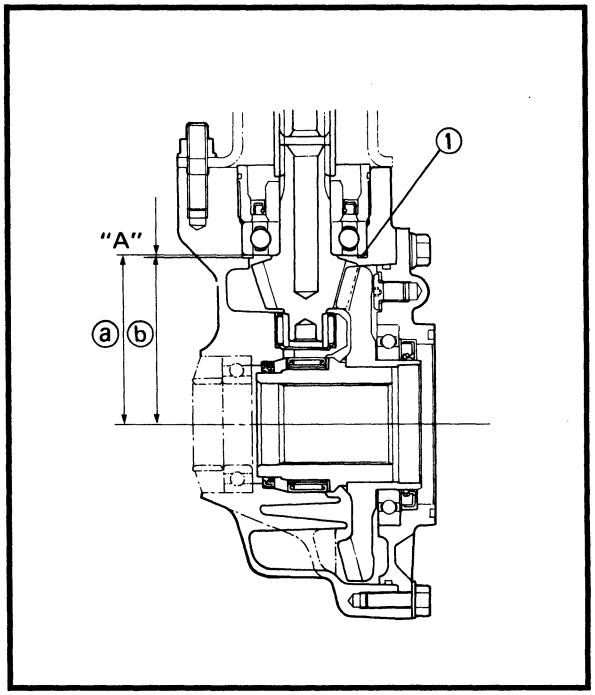


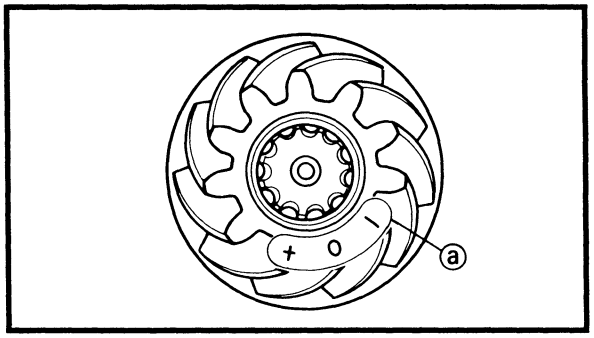
6. Inspect:
- Drive shaft (splines) ①
- Coupling gear (spline) ②
  Wear/Damage → Replace.

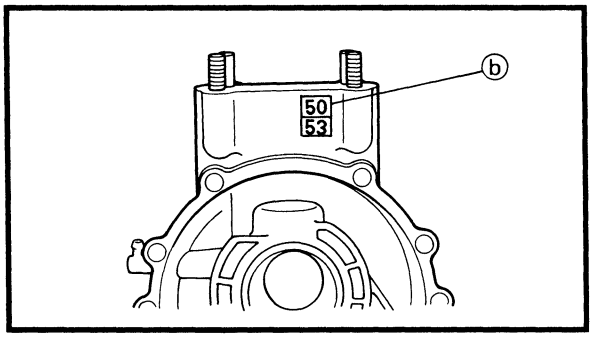


7. Inspect:
- Final gear case ①
- Bearing housing (ring gear) ②
  Cracks/Damage → Replace.

NOTE:
When the final gear case and/or ring gear bearing housing are replaced, be sure to adjust the shim of the final drive pinion gear and/or ring gear, refer to "FINAL DRIVE PINION GEAR AND RING GEAR SHIM SELECTION" section.







FINAL DRIVE PINION GEAR AND RING GEAR SHIM SELECTION

When the final drive pinion gear, ring gear, final gear case and/or ring gear bearing housing are replaced, be sure to adjust the positions for the final drive pinion gear and ring gear by the shim(s).

Final drive pinion gear shim(s) selection

1. Select:
- Final drive pinion gear shim(s) ①

****

Shim selection steps:

- To find final drive pinion gear shim thickness "A", use the following formula.

Final drive pinion gear shim thickness:
"A" = ⓐ - ⓑ

ⓐ = a numeral (usually a decimal number) on the final drive pinion gear is either added to or subtracted from "84".

ⓑ = a numeral (usually a decimal number) on the final gear case is either added to or subtracted from "83".

Example:

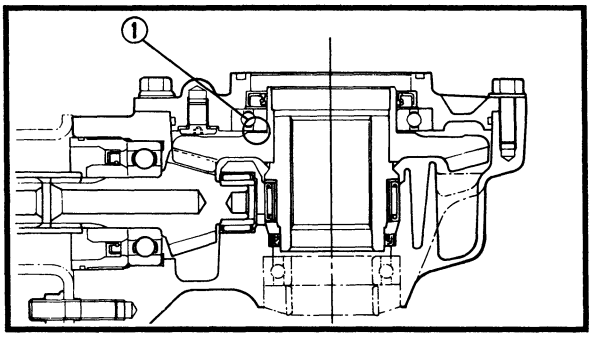
1) If the "+01" is stamped on the final drive pinion gear,
   ⓐ = 84 + 0.01 = 84.01
2) If the "50" is stamped on the final gear case,
   ⓑ = 83 + 0.50 = 83.50
3) Therefore, "A" is 0.51.
   "A" = 84.01 – 83.50
   = 0.51
4) Round off hundredths digit and select appropriate shim(s).
   In the example above, the calculated number is 0.51. The chart instructs you to round off 1 to 0 at the hundredth place. Thus, the shim thickness is 0.50 mm.

Hundredths	Round value
0, 1, 2	0
3, 4, 5, 6, 7	5
8, 9	10

Shim sizes are supplied in the following thickness.

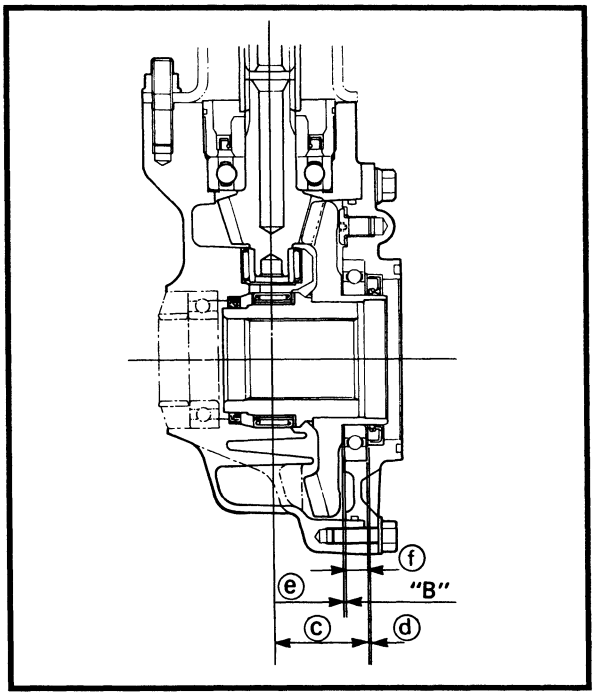
Final drive pinion gear shim	
Thickness (mm)	0.15 0.30 0.40 0.45 0.50 0.60

****



Ring gear shim(s) selection

1. Select:
- Ring gear shim(s) ①



****

Shim selection steps:

- To find ring gear shim thickness "B", use the following formula.

Ring gear shim thickness:
"B" = ⓒ + ⓓ – (ⓔ + ⓕ)

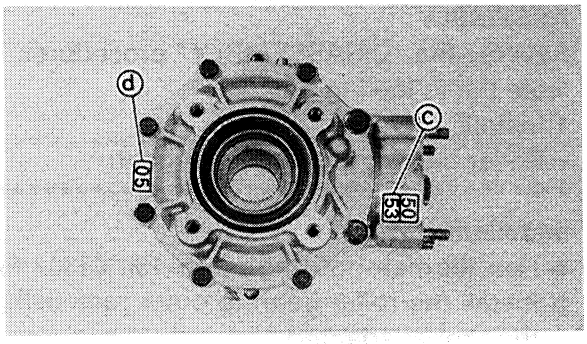
ⓒ = a numeral (usually a decimal number) on the final gear case is either added to or subtracted from 45.

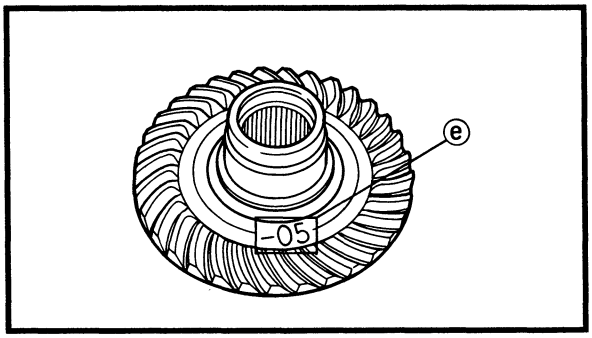
ⓓ = a numeral (usually a decimal number) on outside of ring gear bearing housing and added to 1.

ⓔ = a numeral (usually a decimal number) on inside of ring gear either added to or subtracted from 35.00.

ⓕ = bearing thickness (considered constant).

Bearing thickness ⓕ :
11.00 mm





Example:

1) If the "53" is stamped on the final gear case,
   ⓒ = 45 + 0.53 = 45.53
2) If the "05" is stamped on the ring gear bearing housing,
   ⓓ = 1 + 0.05
   = 1.05
3) If the "–05" is stamped on the ring gear,
   ⓔ = 35 – 0.05
   = 34.95
4) ⓕ = is 11.00.
5) Therefore, shim thickness "B" is,
   "B" = 45.53 + 1.05 – (34.95 + 11.00)
   = 46.58 – 45.95
   = 0.63
6) Round off hundredths digit and select appropriate shim(s).
   In the example above, the calculated number is 0.63. The chart instructs you to round off the 3 to 5 at the hundredth place.
   Thus, the shim thickness is 0.65 mm.

Hundredths	Round value
0, 1, 2	0
3, 4, 5, 6, 7	5
8, 9	10

Shim sizes are supplied in the following thickness.

Ring gear shim	
Thickness (mm)	0.25 0.30 0.35 0.40 0.45 0.50

****

ASSEMBLY

Reverse the "DISASSEMBLY" procedures.
Note the following points.

1. Install:
- Roller bearing (drive pinion gear)

****

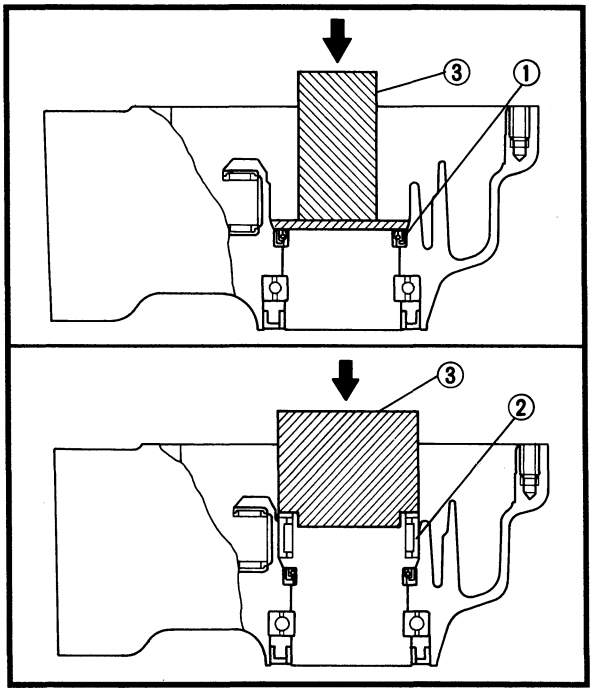
Installation steps:

- Heat the main housing only to 150°C (302°F).
- Install the roller bearing outer race using the proper adapted.
- Install the inner race onto the drive shaft.

****

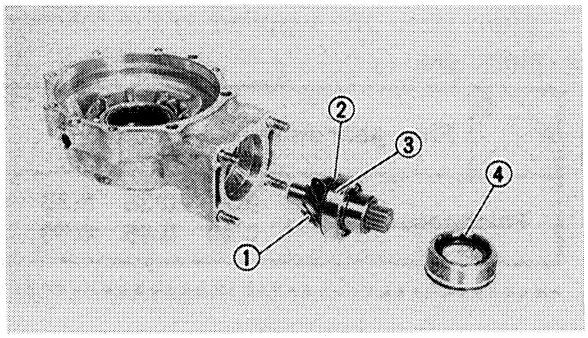
2. Install:
- Oil seal ①
- Roller bearing ②

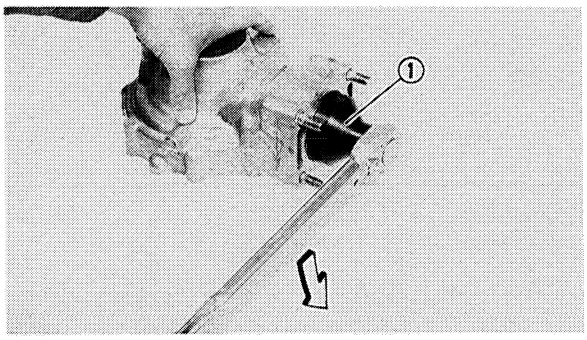
  Use a suitable press tool ③ and a press to install the above components into the main housing.



⚠ WARNING

Always use a new oil seal.





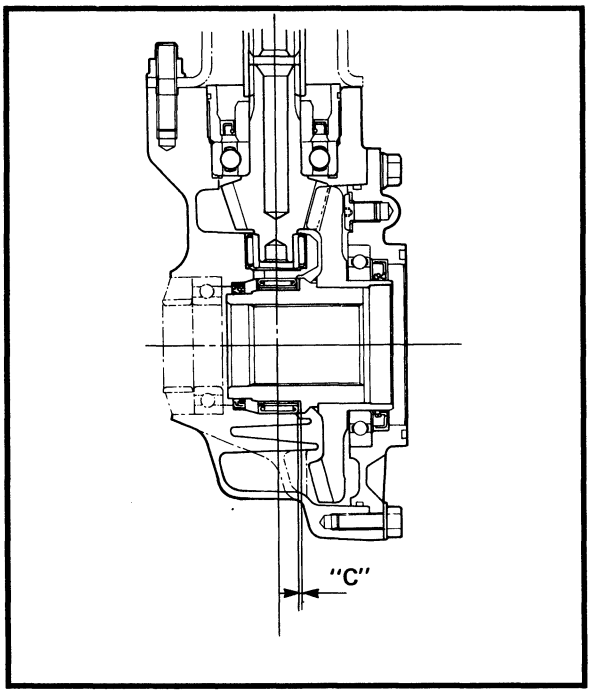
3. Install:
- Drive pinion gear ① (with shim(s) ② and bearing ③)

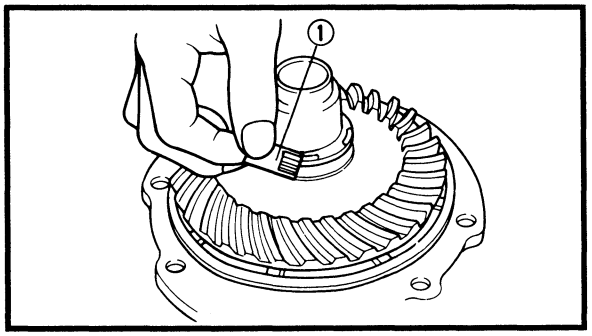
  Shim(s) → (proper size as calculated)
- Bearing retainer (drive pinion gear) ④

NOTE:

- The bearing retainer has left-hand threads; turn retainer counterclockwise to tighten it.
- Before installing the bearing retainer, apply the grease to the O-ring.
- When installing the bearing retainer, use the Bearing Retainer Wrench ①.

	Bearing retainer wrench: P/N. YM-04050, 90890-04050
	Bearing retainer: 100 Nm (10.0 m • kg, 72 ft • lb)





Thrust washer selection

1. Measure/select:
- Ring gear thrust clearance "C"

****

Thrust clearance measurement steps:

- Place four pieces of Plastigauge® between originally fitted thrust washer and ring gear.
- Install the ring gear assembly and tighten the bolts to specification.

M8 Bolts (bearing housing):
23 Nm (2.3 m • kg, 17 ft • lb)
M10 Bolts (bearing housing):
40 Nm (4.0 m • kg, 29 ft • lb)

NOTE:
Do not turn the shaft drive and ring gear when measuring clearance with Plastigauge®.

- Remove the ring gear assembly.
- Measure the thrust clearance. Calculate width of flattened Plastigauge® ①.

Ring gear thrust clearance:
0.1 ~ 0.2 mm (0.004 ~ 0.008 in)

- If the out of specification, select the correct washer.

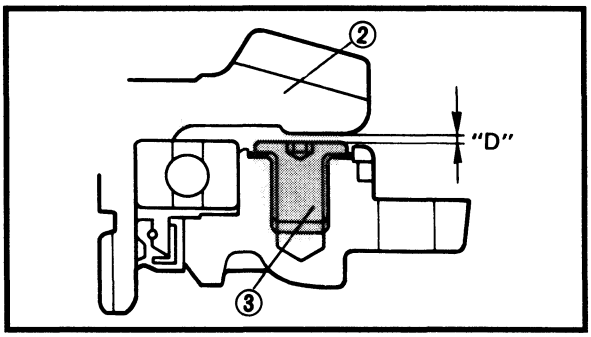
Thrust washer selection steps:

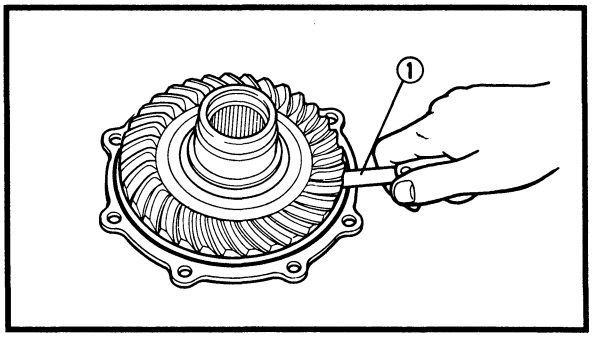
- Select the suitable thrust washer by the following chart.

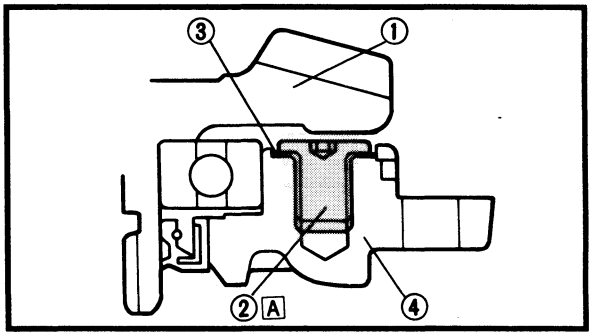
Thrust washer	
Thickness (mm)	1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1

- Repeat measurement steps until the ring gear thrust clearance is within the specified limits.

****







Ring Gear Stopper Shim Selection

1. Measure:
- Ring gear stopper clearance "D"
  Use the Feeler Gauge ①.
  Out of specification → Adjust.

	Ring gear stopper clearance "D": 0.30 ~ 0.60 mm (0.012 ~ 0.024 in)

② Ring gear
③ Ring gear stopper

Ring gear stopper clearance adjustment

1. Remove:
- Ring gear ①
- Ring gear stopper ②
- Shim(s) ③

④ Bearing housing
A Left-hand-threads

2. Select:
- Suitable shim(s)

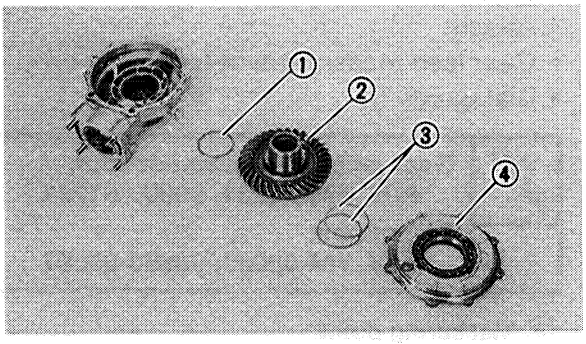
	Shim	
Thickness (mm)	**0.10** **0.20** **0.40**	**0.15** **0.30** **0.50**

3. Install:
- Shim(s)
- Ring gear stopper (left-hand-threads)
- Ring gear

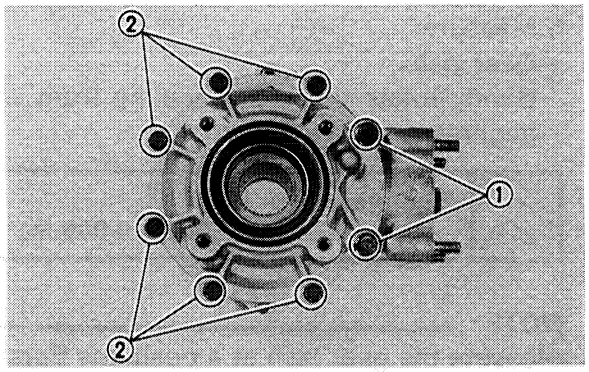
	Ring gear stopper: 9 Nm (0.9 m • kg, 6.5 ft • lb) LOCTITE®

4. Measure:
- Ring gear stopper clearance.
  Out of specification → Repeat.

	Ring gear stopper clearance: 0.30 ~ 0.60 mm (0.012 ~ 0.024 in)



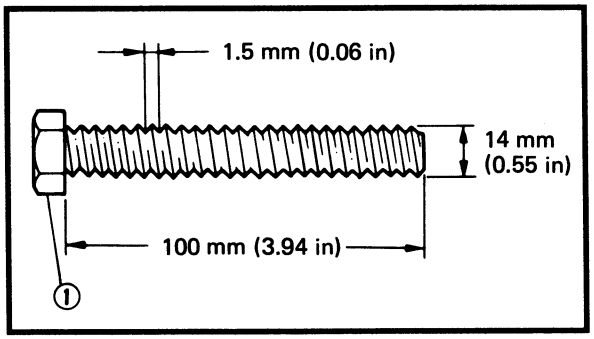
5. Install:
- Thrust washer(s) ①
- Ring gear ②
- Shim(s) (proper size as calculated) ③
- Bearing housing ④

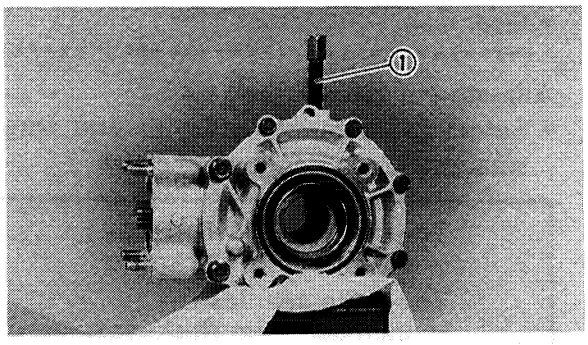


6. Install:
- M10 Bolts ①
- M8 mm Bolts ②

NOTE:
Tighten the bolts in stage, using a crisscross pattern.

M10 Bolts (bearing housing):
40 Nm (4.0 m • kg, 29 ft • lb)
M8 Bolts (bearing housing):
23 Nm (2.3 m • kg, 17 ft • lb)



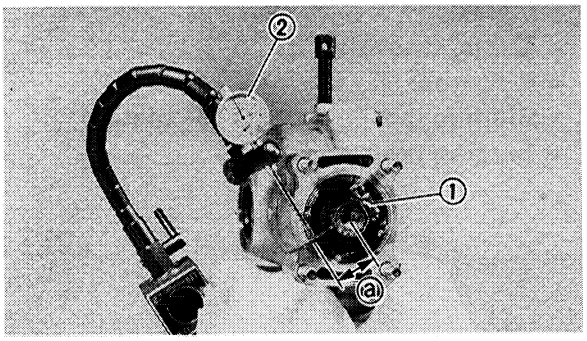


FINAL GEAR GEAR LASH MEASUREMENT AND ADJUSTMENT

Final gear gear lash measurement

1. Secure the gear case in a vise or other support.
2. Remove:
- Drain plug
- Gasket
3. Install:
- A bolt of the specified size ①
(into the drain plug hole)

CAUTION:
Finger tighten the bolt until it holds the ring gear. Otherwise, the ring gear will be damage.



4. Attach:
- Gear lash measurement tool ①
- Dial gauge ②

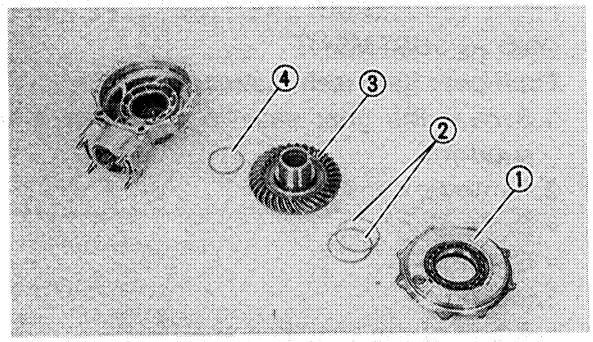
Gear lash measurement tool:
P/N. YM-01231, 90890-01231
Dial gauge:
P/N. YM-03097, 90890-03097

ⓐ Measuring point

5. Measure:
- Gear lash
  Gently rotate the gear coupling from engagement to engagement.

Final gear gear lash:
0.1 ~ 0.2 mm (0.004 ~ 0.008 in)

NOTE:
Measure the gear lash at 4 positions Rotate the shaft 90° each time.



Final gear gear lash adjustment

1. Remove:
- Bearing housing ①
- Shim(s) ②
- Ring gear ③
- Thrust washer ④
  Refer to the "REAR AXLE/REAR FINAL GEAR AND REAR SHAFT DRIVE - DISASSEMBLY" section.

2. Adjust:
- Gear lash

****

Adjustment steps:
- Select the suitable shim(s) and thrust washer(s) by the following chart.

Too-little gear lash →
Reduce shim thickness.
Too-large gear lash →
Increase shim thickness.

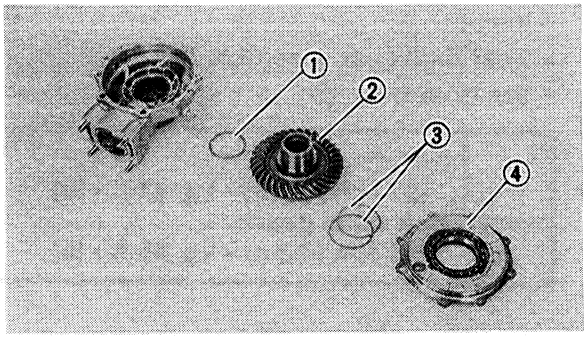
****

- If increase by more than 0.1 mm (0.004 in): Reduce thrust washer thickness by 0.1 mm (0.004 in) for every 0.1 mm of ring gear shim increase.
- If reduce by more than 0.1 mm (0.004 in): Inclease thrust washer thickness by 0.1 mm (0.004 in) for every 0.1 mm of ring gear shim decrease.

Ring gear shim	
Thickness (mm)	0.25 0.30 0.35 0.40 0.45 0.50

Thrust Washer	
Thickness (mm)	1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1

****



3. Install:
- Thrust washer(s) ①
- Ring gear ②
- Shim(s) ③
- Bearing housing ④

M10 Bolts (bearing housing): 40 Nm (4.0 m • kg, 29 ft • lb)
M8 Bolts (bearing housing): 23 Nm (2.3 m • kg, 17 ft • lb)

Refer to the "REAR AXLE/REAR FINAL GEAR AND REAR SHAFT DRIVE - ASSEMBLY" section.

4. Measure:
- Gear lash
  If the gear lash is incorrect → Repeat.

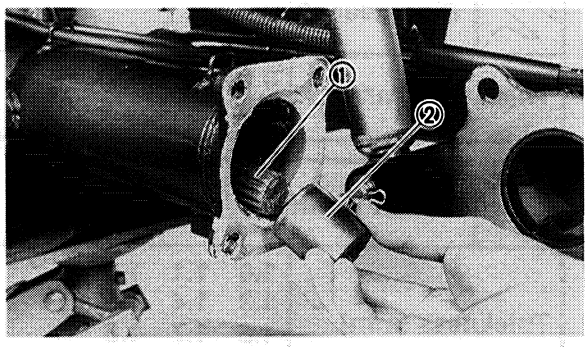
Final gear lash: 0.1 ~ 0.2 mm (0.004 ~ 0.008 in)

INSTALLATION

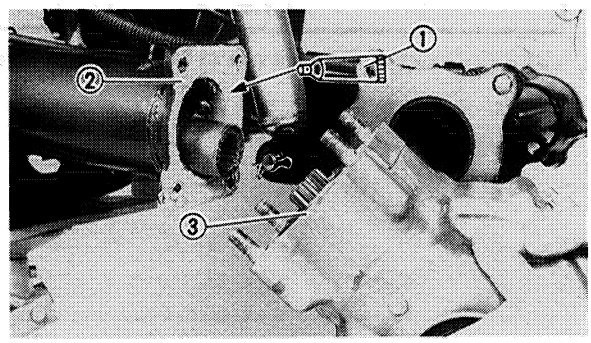
Reverse the "REMOVAL" procedures. Note the following points.

1. Lubricate:
- Drive shaft
- Coupling gear
- O-ring
- Oil seal
- Bearing

	Lithium soap base grease

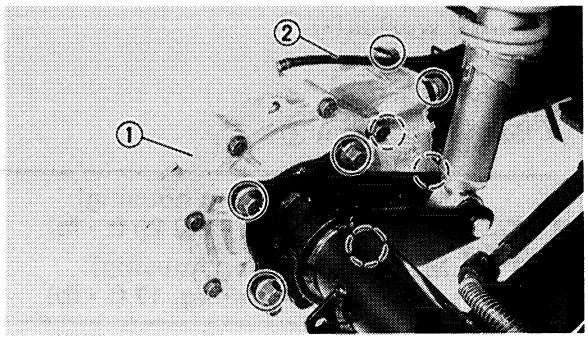


2. Install:
- Drive shaft ①
- Coupling gear ②
  (to universal joint)



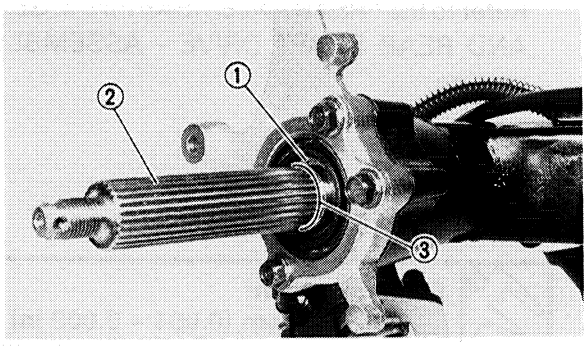
3. Apply:
- Sealant ①
  (to matching surfaces of swingarm ② and final gear case ③)

	Sealant (Quick Gasket®): **ACC-11001-05-01** **Yamaha bond No. 1215:** **90890-85505**



4. Install:
- Rear final gear assembly ①
- Breather hose ②

	Nut (final gear): **57 Nm (5.7 m • kg, 41 ft • lb)** **Bolt (final gear):** **63 Nm (6.3 m • kg, 45 ft • lb)**



5. Install:
- Plain washer ①
- Rear axle ②
- O-ring ③

NOTE:

Before installing the rear axle, insert the plain washer ① inside the oil seal on the brake caliper bracket.

6. Install:
- Brake disc
- Rear brake caliper



Bolt (rear brake caliper):
26 Nm (2.6 m • kg, 19 ft • lb)

7. Install:
- Rear wheel hubs
- Rear wheels

Refer to the "REAR WHEEL" section in CHAPTER 7.

8. Fill:
- Final gear case

Refer to the "FINAL GEAR OIL REPLACEMENT" section in CHAPTER 3.



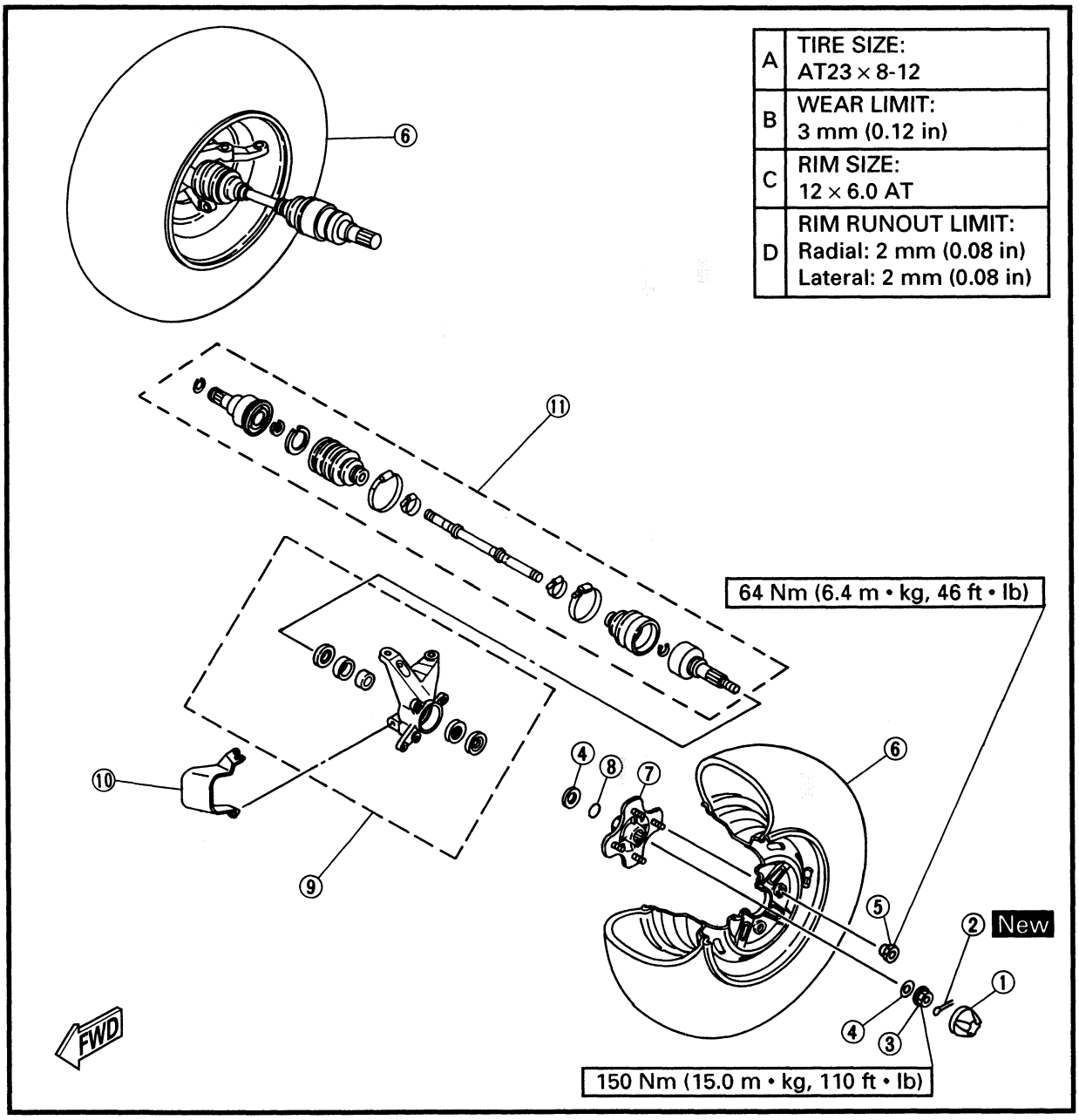
Total amount:
0.25 L (0.22 Imp qt, 0.26 US qt)
Recommended oil:
SAE 80 API "GL-4" Hypoid gear oil

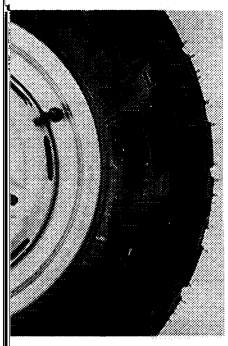
CHASSIS

FRONT WHEEL

① Wheel cap
② Cotter pin
③ Axle nut
④ Plain washer
⑤ Wheel nut
⑥ Front wheel
⑦ Wheel hub
⑧ O-ring
⑨ Steering knuckle
⑩ Constant velocity joint protector
⑪ Constant velocity joint

TIRE AIR PRESSURE		
Cold Tire Pressure	Front	Rear
Standard	25 kPa (0.25 kg/cm², 3.6 psi)	25 kPa (0.25 kg/cm², 3.6 psi)
Minimum	22 kPa (0.22 kg/cm², 3.2 psi)	22 kPa (0.22 kg/cm², 3.2 psi)
Maximum	28 kPa (0.28 kg/cm², 4.0 psi)	28 kPa (0.28 kg/cm², 4.0 psi)

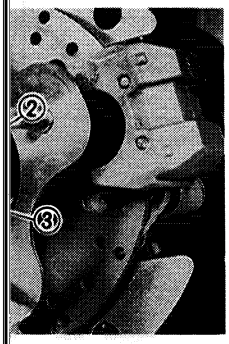




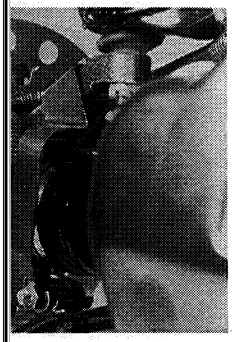
REMOVAL

1. Block the rear wheels, and elevate the front wheels by placing the suitable stand under the frame.

2. Remove:
- Nuts (front wheel)
- Front wheel



3. Remove:
- Wheel cap
- Cotter pin ①
- Nut (wheel hub) ②
- Washer ③



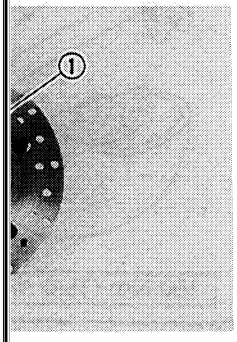
4. Remove:
- Front brake caliper ①

NOTE:

Do not depress the brake lever when the wheel is off the machine otherwise the brake pads will be forced shut.



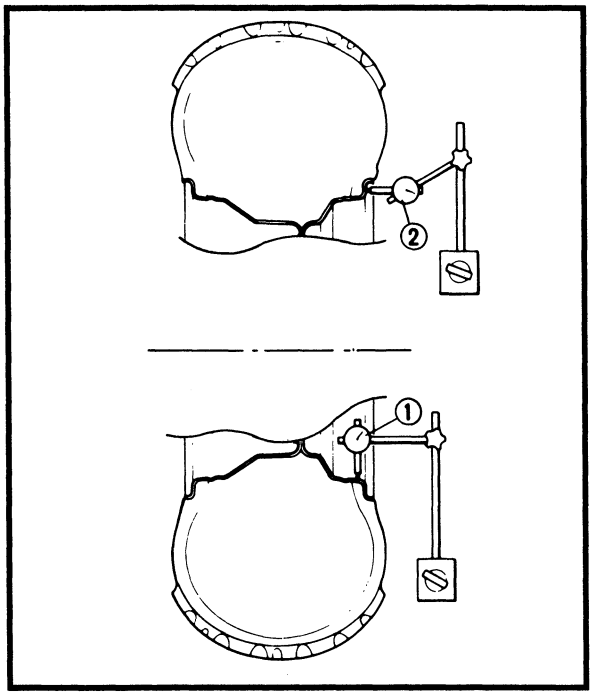
5. Remove:
- Front wheel hub ①
  (with brake disc)



6. Remove:
- Front brake disc ①

INSPECTION

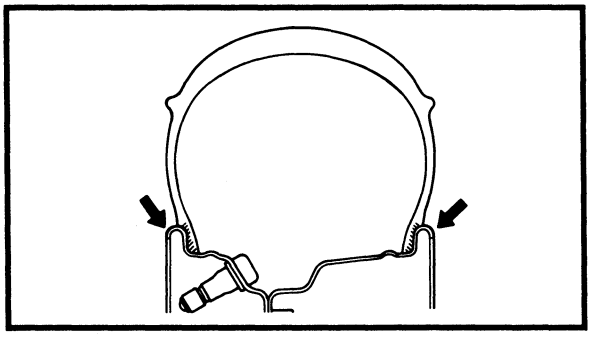
1. Inspect:
- Tire
  Wear/Damage → Replace.
  Refer to the "TIRE INSPECTION" section in CHAPTER 3.
- Wheel
  Refer to the "WHEEL INSPECTION" section in CHAPTER 3.



2. Measure:
- Wheel runout
  Over specified limit → Replace.

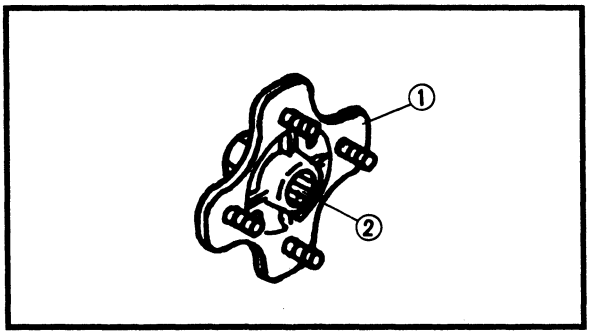
Rim runout limits:
Radial ①: 2.0 mm (0.08 in)
Lateral ②: 2.0 mm (0.08 in)

3. Check:
- Wheel balance
  Out of balance → Adjust.



⚠ WARNING

After replacing the tire, ride conservatively to allow the tire to be properly seated in the rim. Failure to do so may cause an accident resulting in machine damage and possible operator injury.

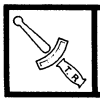


4. Inspect:
- Wheel hub ①
  Cracks/Damage → Replace.
- Splines (wheel hub) ②
  Wear/Damage → Replace.

INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

1. Install:
- Front brake disc

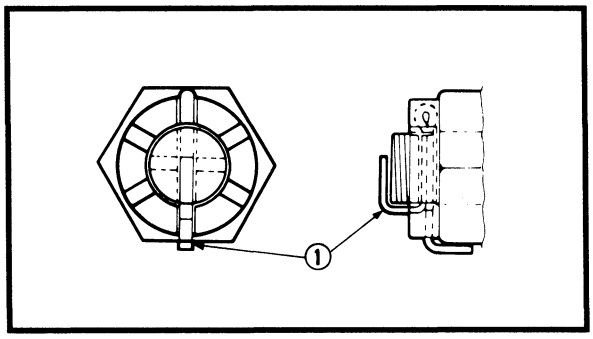
	**Bolt (front brake disc):** **30 Nm (3.0 m • kg, 22 ft • lb)**

2. Install:
- Front brake caliper

	**Bolt (front brake caliper):** **30 Nm (3.0 m • kg, 22 ft • lb)**

3. Install:
- Washer
- Nut (wheel hub)

	**Nut (wheel hub):** **150 Nm (15.0 m • kg, 110 ft • lb)**



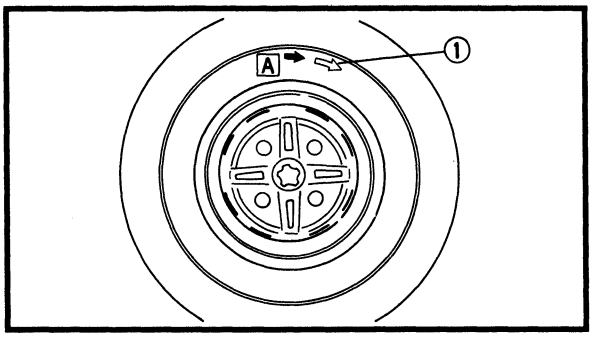
4. Install:
- Cotter pin ① (new)

NOTE:

Do not loosen the axle nut after torque tightening. If the axle nut groove is not aligned with the cotter pin hole, align groove with the hole by tightening up on the axle nut.

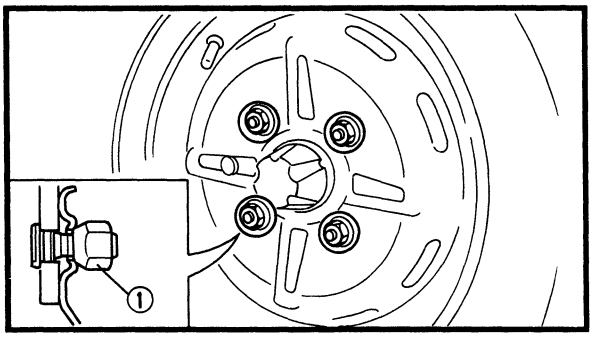
⚠ WARNING

Always use a new cotter pin.



5. Install:
- Front wheel

NOTE:
The arrow mark ① on the tire must point toward the rotating direction [A] of the wheel.



6. Tighten:
- Nuts (front wheel) ①

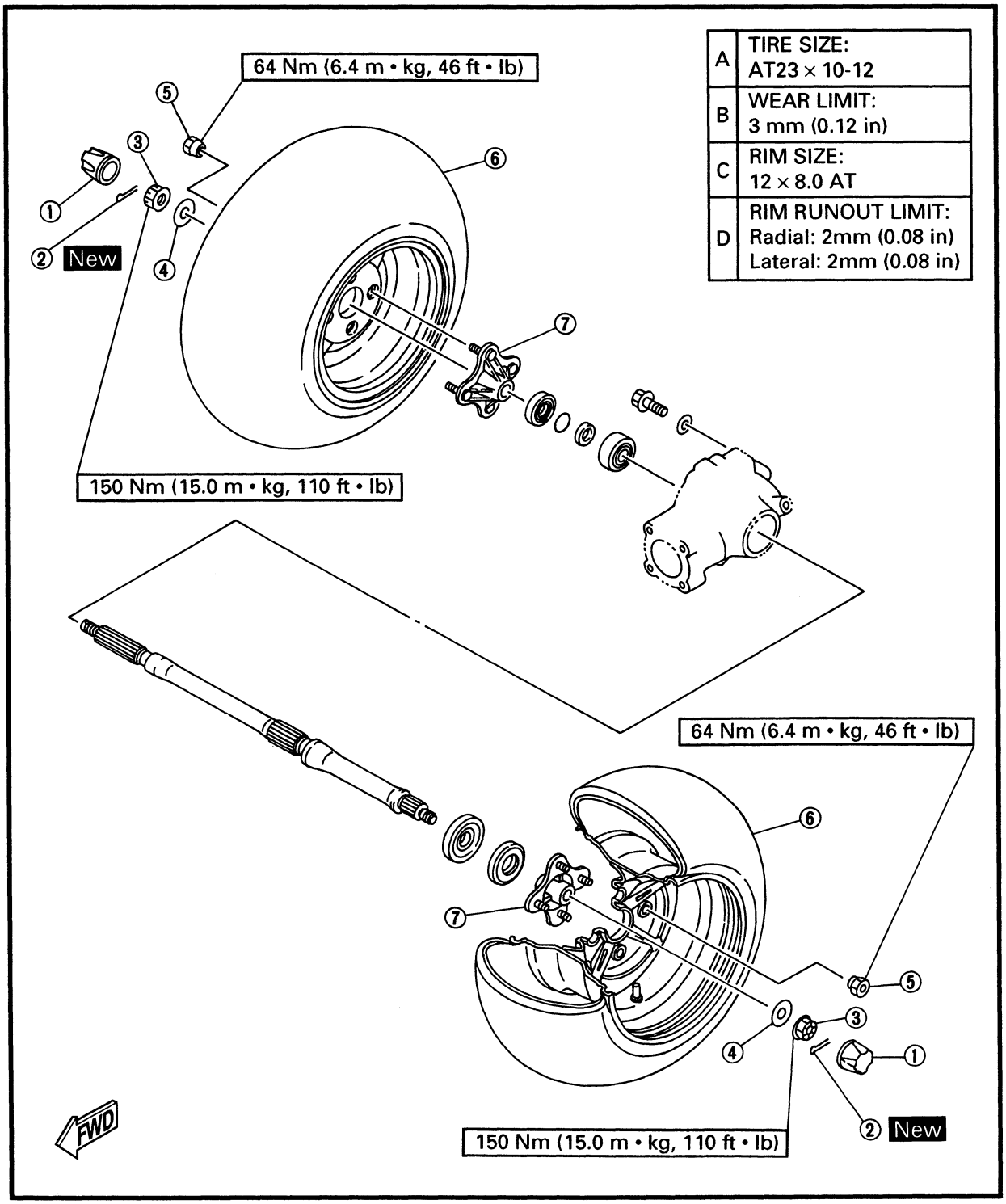
⚠ WARNING

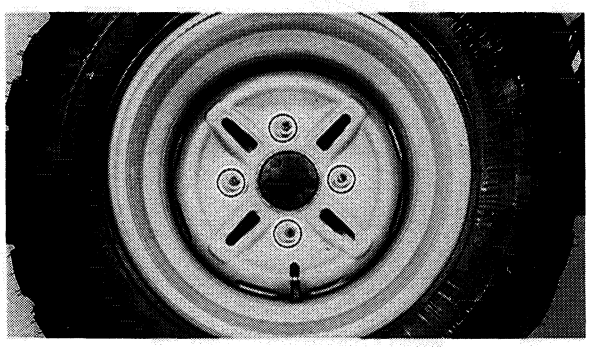
Tapered wheel nuts ① are used for both front and rear wheels. Install the nut with its tapered side towards the wheel.

	Nut (front wheel): **64 Nm (6.4 m • kg, 46 ft • lb)**

REAR WHEEL

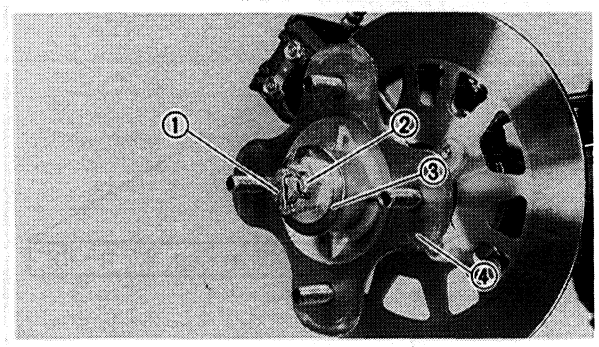
① Wheel cap
② Cotter pin
③ Axle nut
④ Plain washer
⑤ Wheel nut
⑥ Rear wheel
⑦ Wheel hub





REMOVAL

1. Block the front wheels, and elevate the rear wheels by placing the suitable stand under the frame.
2. Remove:
- Nuts (rear wheel)
- Rear wheel



3. Remove:
- Wheel cap
- Cotter pin ①
- Nut (wheel hub) ②
- Washer ③
- Wheel hub ④

INSPECTION

1. Inspect:
- Tire
- Wheel
- Wheel hub

Refer to the "FRONT WHEEL-INSPECTION" section.

2. Measure:
- Wheel runout

Refer to the "FRONT WHEEL-INSPECTION" section.

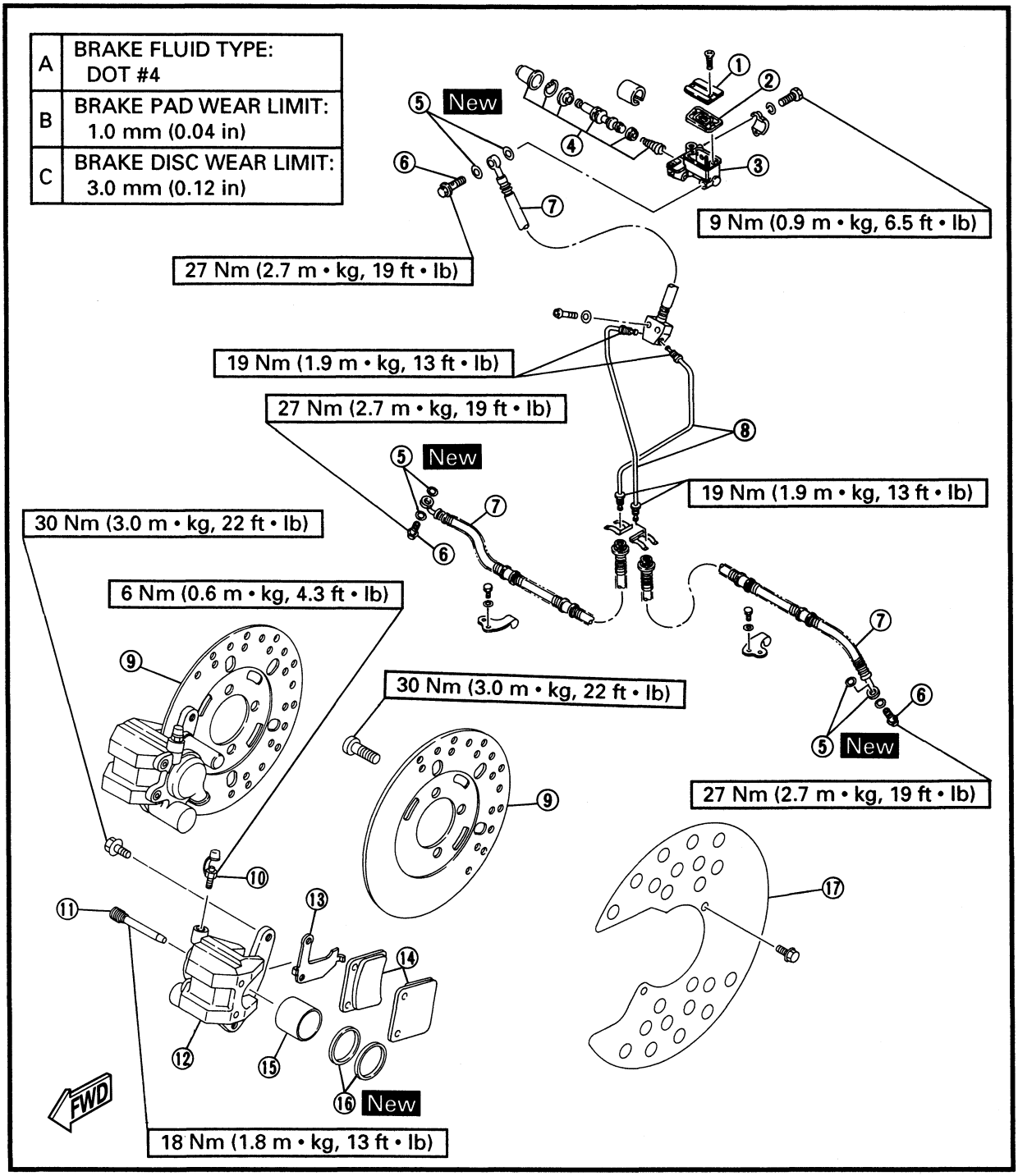
INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.
1. Install:
- Wheel hub
- Rear wheel

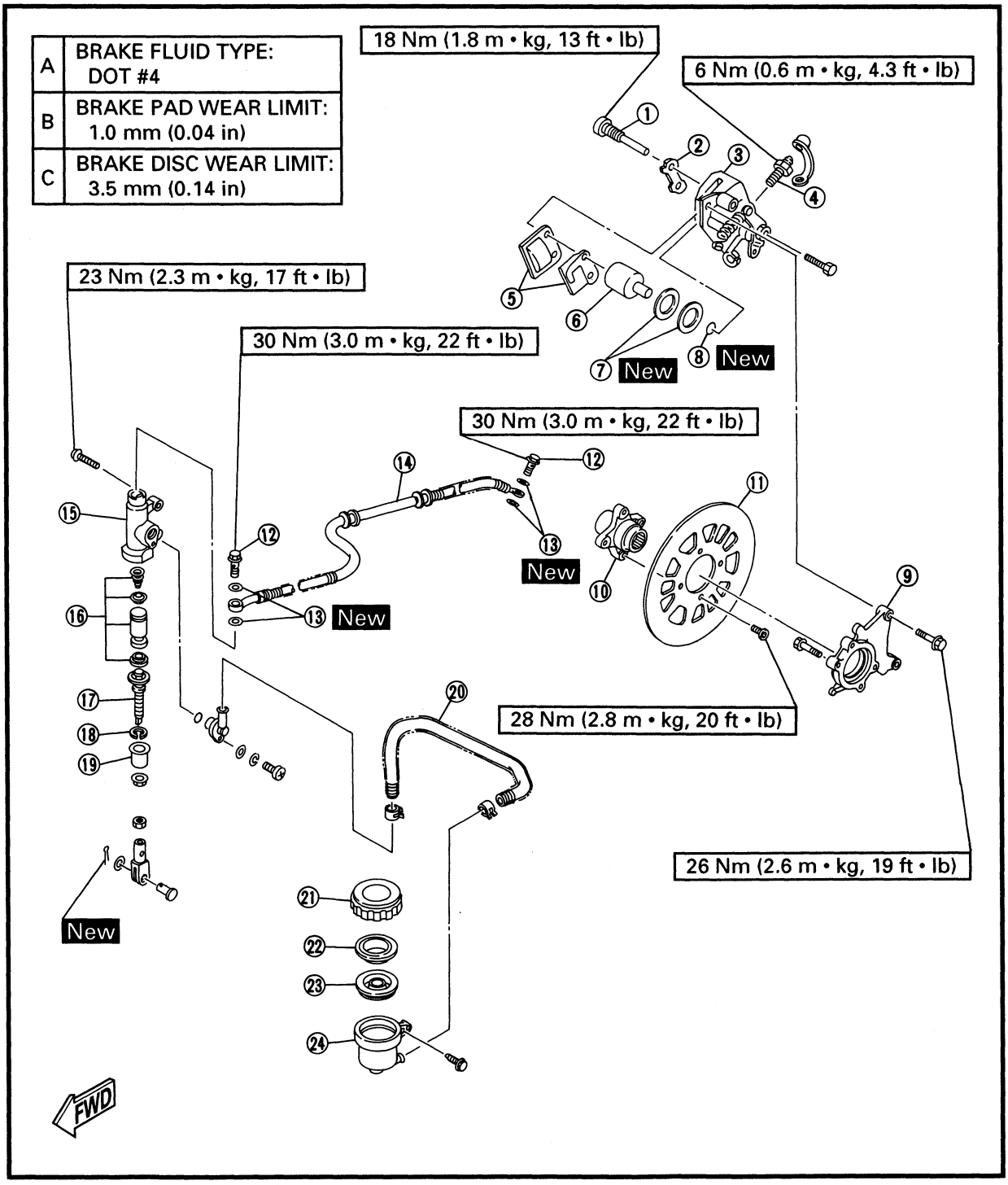
Refer to the "FRONT WHEEL-INSTALLATION" section.

FRONT AND REAR BRAKE

① Reservoir tank cap
② Diaphragm
③ Master cylinder
④ Master cylinder kit
⑤ Copper washer
⑥ Union bolt
⑦ Brake hose
⑧ Brake pipe
⑨ Brake disc
⑩ Bleed screw
⑪ Retaining bolt
⑫ Brake caliper
⑬ Pad shim
⑭ Brake pad
⑮ Piston
⑯ Piston seal
⑰ Brake disc guard



① Retaining bolt
② Lock washer
③ Brake caliper
④ Bleed screw
⑤ Brake pad
⑥ Piston
⑦ Piston seal
⑧ O-ring
⑨ Caliper bracket
⑩ Wheel hub
⑪ Brake disc
⑫ Union bolt
⑬ Copper washer
⑭ Brake hose
⑮ Master cylinder
⑯ Master cylinder kit
⑰ Push rod
⑱ Circlip
⑲ Dust boot
⑳ Reservoir hose
㉑ Reservoir tank cap
㉒ Holder (diaphragm)
㉓ Diaphragm
㉔ Reservoir tank



CAUTION:

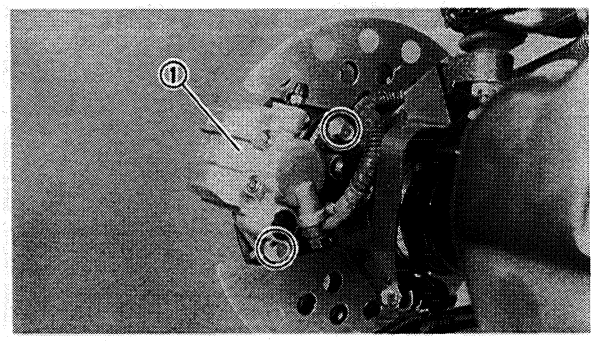
Disc brake components rarely require disassembly. DO NOT:

- **Disassemble components unless absolutely necessary.**
- **Use solvents on internal brake components.**
- **Use contaminated brake fluid for cleaning. Use only clean brake fluid.**
- **Allow brake fluid to come in contact with the eyes, otherwise eye injury may occur.**
- **Allow brake fluid to contact painted surfaces or plastic parts otherwise damage may occur.**
- **Disconnect any hydraulic connection otherwise the entire system must be disassembled, drained, cleaned, and then properly filled and bled after reassembly.**

BRAKE PAD REPLACEMENT

NOTE:

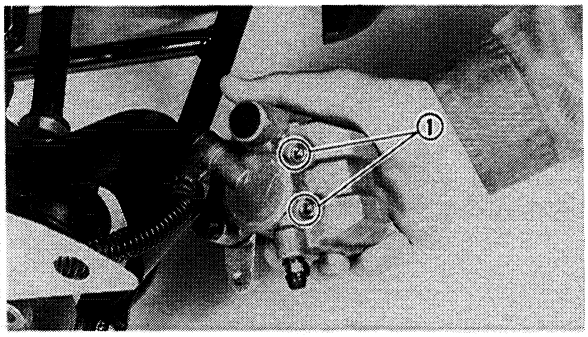
It is not necessary to disassemble the brake caliper and brake hose to replace the brake pads.



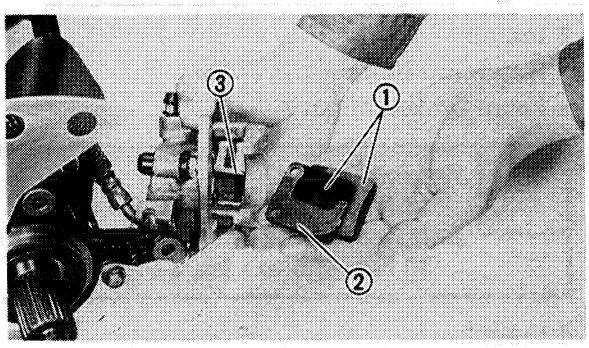
Front brake

1. Remove:
- Front wheel
- Front brake caliper ①

Refer to the "FRONT WHEEL - REMOVAL" section.

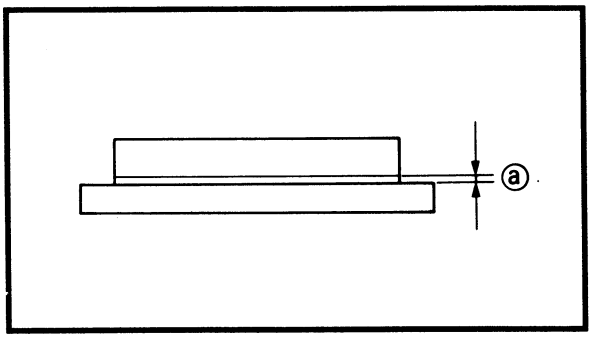


2. Remove:
- Retaining bolts ①



3. Remove:
- Brake pads ①
  (with pad shim ②)
- Pad spring ③

NOTE:
- When pad replacement is required, also replace the pad spring and shim.
- Replace the pads as a set if either is found to be worn to the wear limit ⓐ.

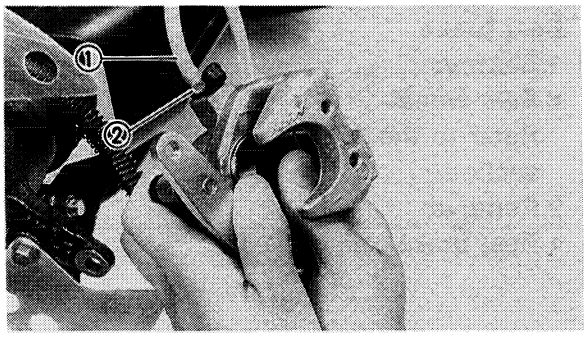


Wear limit ⓐ:
1.0 mm (0.04 in)

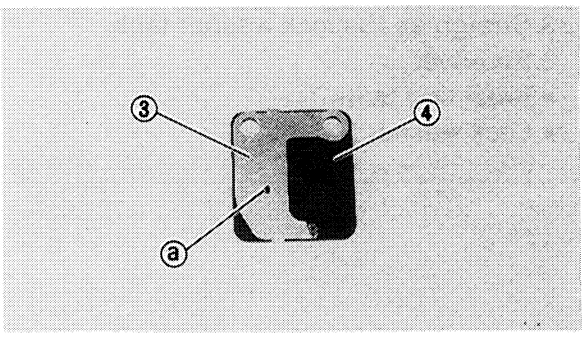
4. Install:
- Pad shim
  (onto inside brake pad)
- Pad spring
- Brake pads

****

Installation steps:
- Connect a suitable hose ① tightly to the caliper bleed screw ②. Then, place the other end of this hose into an open container.
- Loosen the caliper bleed screw and push the pistons into the caliper with the finger.
- Tighten the caliper bleed screw ②.



Caliper bleed screw:
6 Nm (0.6 m • kg, 4.3 ft • lb)



- Install the pad shim ③ (new) onto the brake pad ④ (new).

NOTE:
The arrow mark ⓐ on the pad shim must point in the direction of the disc rotation.

- Install the pad spring (new) and brake pads (new).

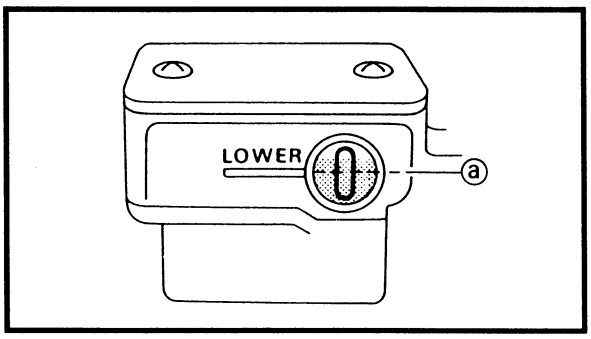
****

5. Install:
- Retaining bolts
- Front brake caliper

Retaining bolt:
18 Nm (1.8 m • kg, 13 ft • lb)
Bolt (front brake caliper):
30 Nm (3.0 m • kg, 22 ft • lb)

6. Install:
- Front wheel
  Refer to the "FRONT WHEEL - INSTALLATION" section.

7. Inspect:
- Brake fluid level
  Refer to the "BRAKE FLUID INSPECTION" section in CHAPTER 3.



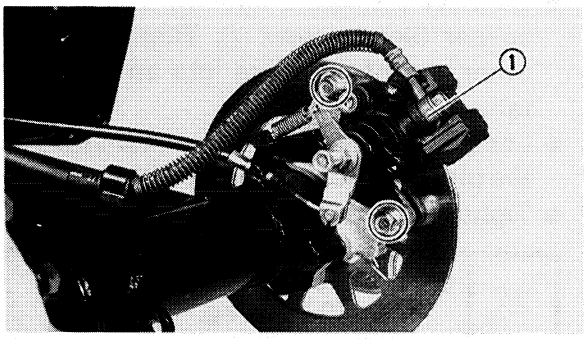
ⓐ "LOWER" level line

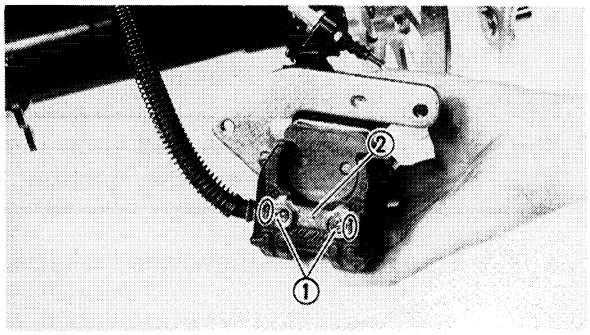
8. Check:
- Brake lever operation
  A soft or spongy feeling → Bleed brake system.
  Refer to the "AIR BLEEDING" section in CHAPTER 3.

Rear brake

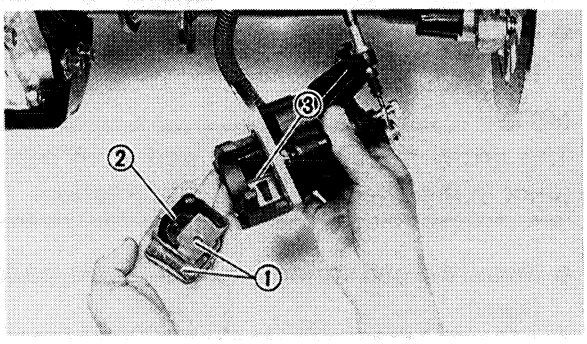
1. Remove:
- Rear wheel
  Refer to the "REAR WHEEL - REMOVAL" section.

2. Remove:
- Rear brake caliper ①



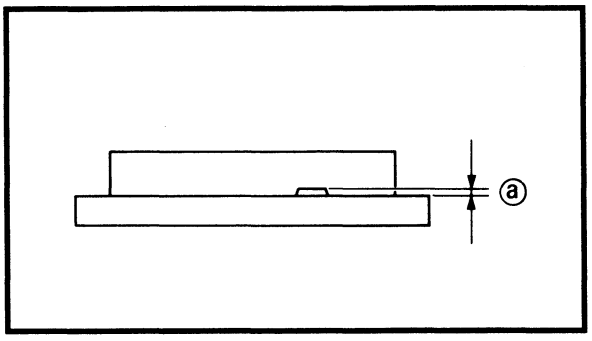


3. Straighten the lock washer tabs.
4. Remove:
- Retaining bolts ①
- Lock washer ②



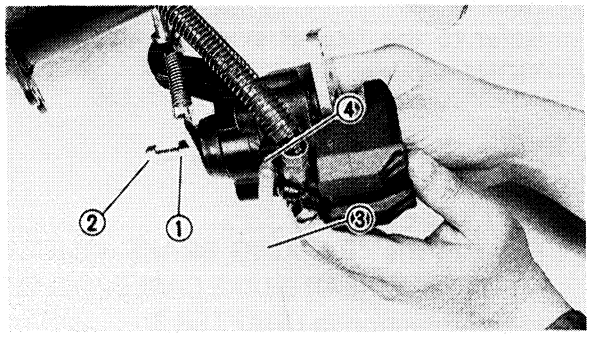
5. Remove:
- Brake pads ①
  (with pad shim ②)
- Pad spring ③

NOTE:
- When pad replacement is required, also replace the pad spring and shims.
- Replace the pads as a set if either is found to be worn to the wear limit ⓐ.



Wear limit ⓐ:
1.0 mm (0.04 in)

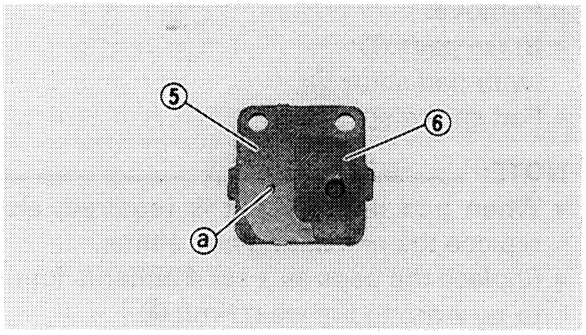
6. Install:
- Pad shim
  (onto inside brake pad)
- Pad spring
- Brake pads



****

Installation steps:
- Loosen the locknut ① and parking brake adjuster ②.
- Connect a suitable hose ③ tightly to the caliper bleed screw ④. Then, place the other end of this hose into an open container.
- Loosen the caliper bleed screw and push the pistons into the caliper with the finger.
- Tighten the caliper bleed screw ④.

Caliper bleed screw:
6 Nm (0.6 m • kg, 4.3 ft • lb)



- Install the pad shim ⑤ (new) on the brake pad ⑥ (new).

NOTE:
The arrow mark ⓐ on the pad shim must point in the direction of the disc rotation.

- Install the pad spring (new) and brake pads (new).

****

7. Install:
- Lock washer (new)
- Retaining bolts

NOTE:
Bend the lock washer tab along a flat side of the nut.

⚠ WARNING
Always use a new lock washer.

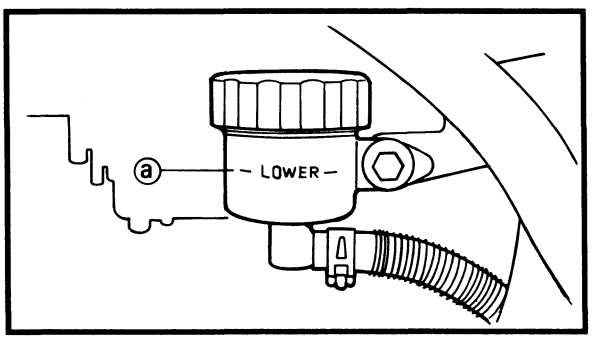
	Retaining bolt: **18 Nm (1.8 m • kg, 13 ft • lb)**

8. Install:
- Rear brake caliper

	Bolt (rear brake caliper): **26 Nm (2.6 m • kg, 19 ft • lb)**

9. Install:
- Rear wheel
  Refer to the "REAR WHEEL - INSTALLATION" section.

10. Adjust:
- Parking brake
- Rear brake cable
  Refer to the "PARKING BRAKE ADJUSTMENT" and "REAR BRAKE CABLE ADJUSTMENT" section in CHAPTER 3.



11. Inspect:
- Brake fluid level
  Refer to the "BRAKE FLUID INSPECTION" section in CHAPTER 3.

ⓐ "LOWER" level line

12. Check:
- Brake lever and pedal operation
  A soft or spongy feeling → Bleed brake system.
  Refer to the "AIR BLEEDING" section in CHAPTER 3.

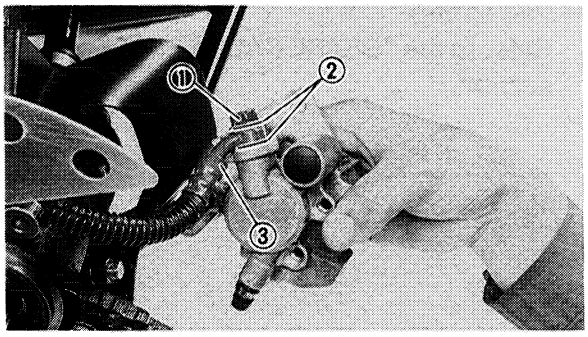
CALIPER DISASSEMBLY

NOTE:
Before disassembling the front brake caliper or rear brake caliper, drain the brake hose, master cylinder, brake caliper and reservoir tank of their brake fluid.

Front brake

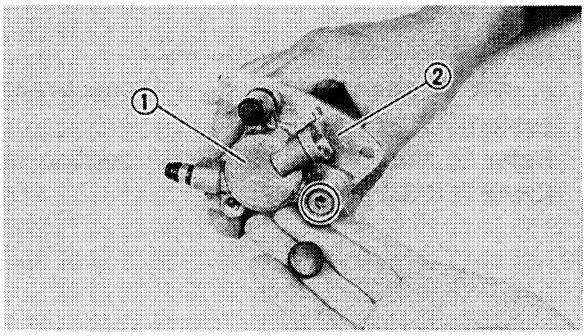
1. Loosen:
- Union bolt

2. Remove:
- Front wheel
- Front brake caliper
- Retaining bolts
- Brake pads
  (with pad shim)
- Pad spring
  Refer to the "BRAKE PAD REPLACEMENT" section.



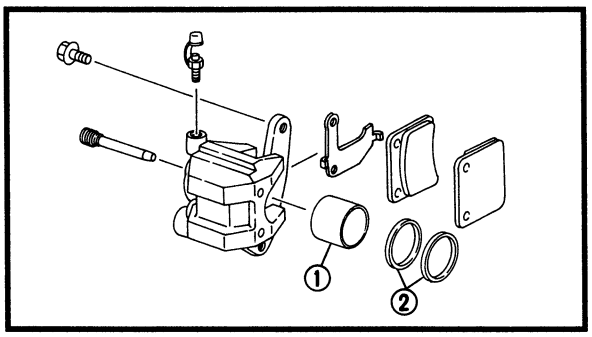
3. Remove:
- Union bolt ①
- Copper washers ②
- Brake hose ③

NOTE:
Place the open end of the hose into a container and pump the oil fluid out carefully.



4. Remove:
- Caliper body ①
- Caliper bracket ②

NOTE:
Before removing the caliper body from the bracket, disconnect the dust boot from the guide shaft on the bracket.



5. Remove:
- Piston ①
- Piston seals ②

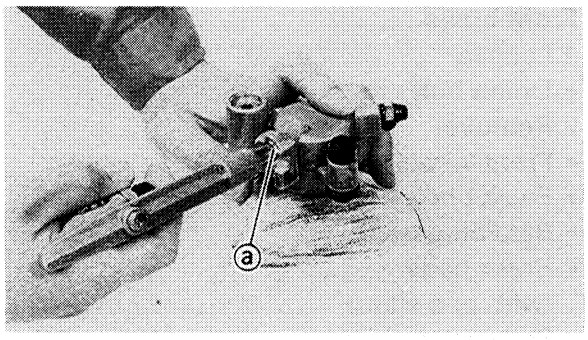
****

Removal steps:
- Blow compressed air into the hose joint opening ⓐ to force out the caliper piston from the caliper body.
- Remove the piston seals.

⚠ WARNING

Never try to pry out the piston.

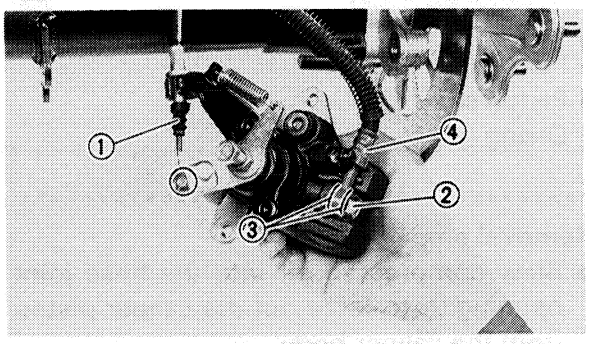
****



Rear brake

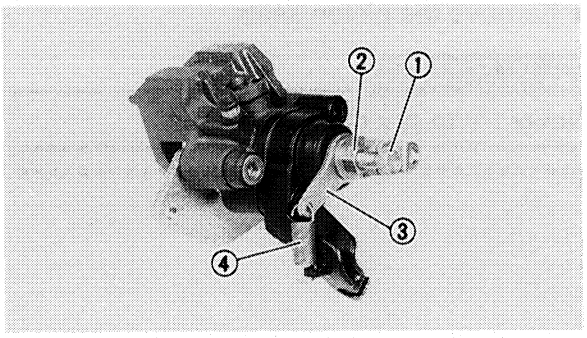
1. Loosen:
- Union bolt

2. Remove:
- Rear wheel
- Rear brake caliper
- Retaining bolts
- Lock washer
- Brake pads
  (with pad shim)
- Pad spring
  Refer to the "BRAKE PAD REPLACEMENT" section.

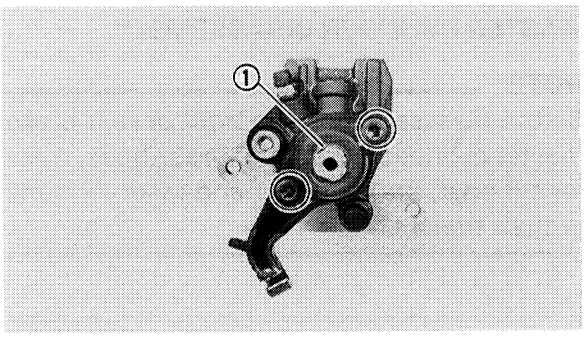


3. Remove:
- Parking brake cable ①
- Union bolt ②
- Copper washers ③
- Brake hose ④

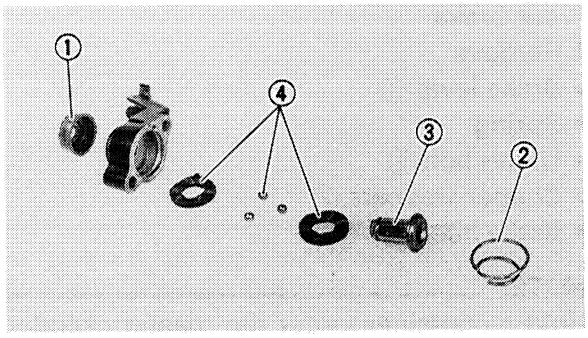
NOTE:
Place the open end of the hose into a container and pump the oil fluid out carefully.



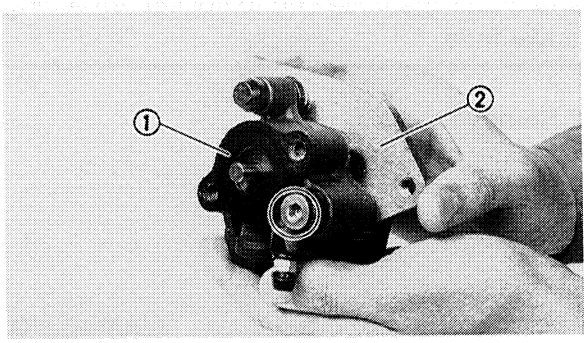
4. Remove:
- Adjuster ①
- Locknut ②
- Parking brake lever ③
- Spring ④



5. Remove:
- Parking brake assembly ①
- Gasket

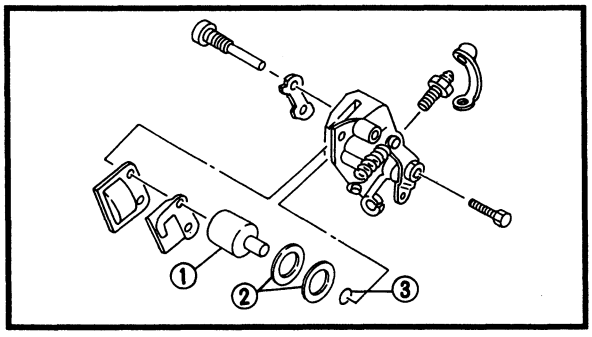


6. Remove:
- Cover ①
- Spring ②
- Adjuster nut ③
- Parking brake cam ④



7. Remove:
- Caliper body ①
- Caliper bracket ②

NOTE:
Before removing the caliper body from the bracket, disconnect the dust boot from the guide shaft on the bracket.



8. Remove:
- Piston ①
- Piston seals ②
- O-ring ③

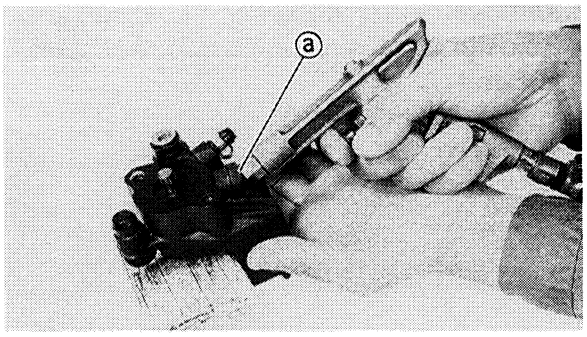
****

Removal steps:
- Blow compressed air into the hose joint opening ⓐ to force out the caliper piston from the caliper body.
- Remove the piston seals.

⚠ WARNING

Never try to pry out the piston.

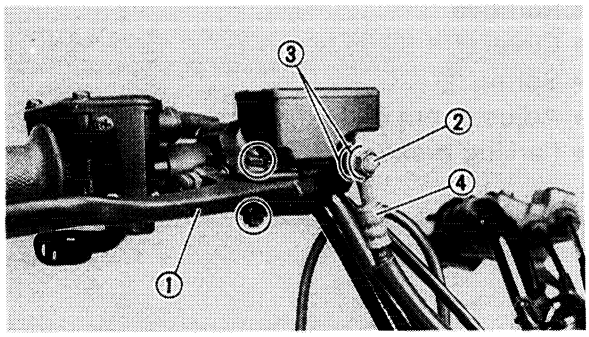
****



MASTER CYLINDER DISASSEMBLY

NOTE:

Before disassembling the front or rear brake master cylinders, drain the brake hose, master cylinder, brake caliper and reservoir tank of their brake fluid.

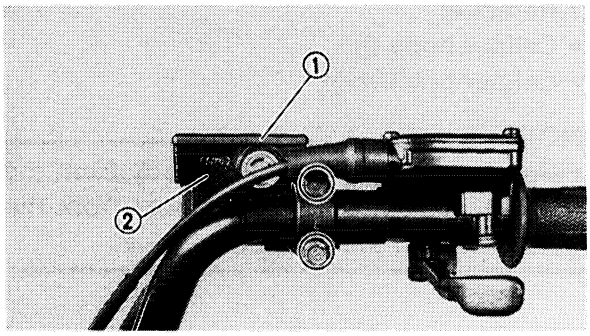


Front brake

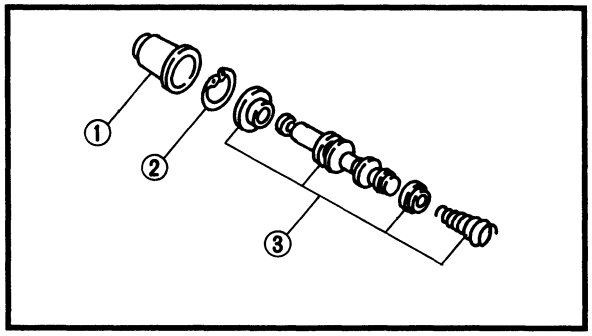
1. Remove:
- Brake lever ①
- Spring
- Union bolt ②
- Copper washers ③
- Brake hose ④

NOTE:

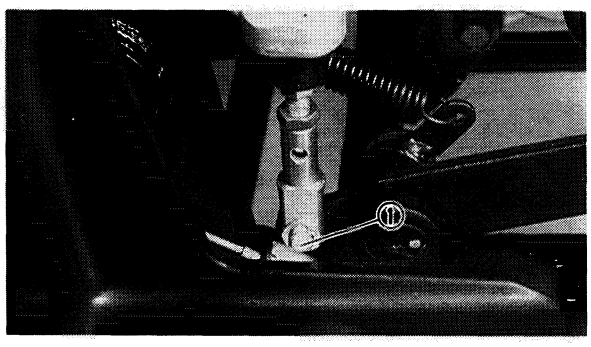
Hold a container under the master cylinder and under the hose end to collect remaining brake fluid.



2. Remove:
- Master cylinder cap ①
- Diaphragm
- Master cylinder ②

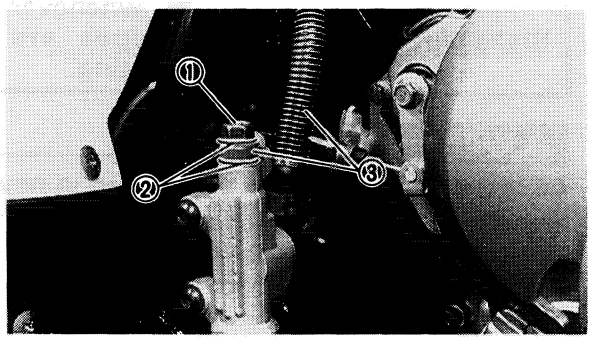


3.Remove:
- Dust boot ①
- Circlip ②
- Master cylinder kit ③
  Drain the excess fluid.



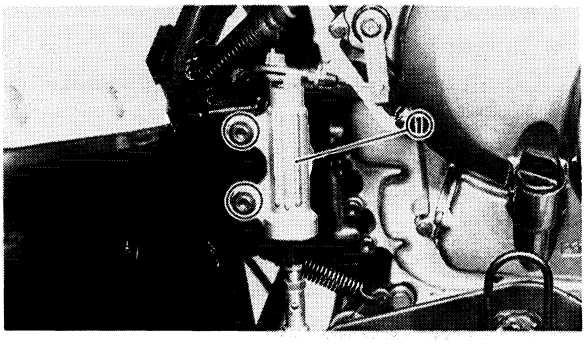
Rear brake

1.Remove:
- Cotter pin
- Washer
- Clevis pin ①

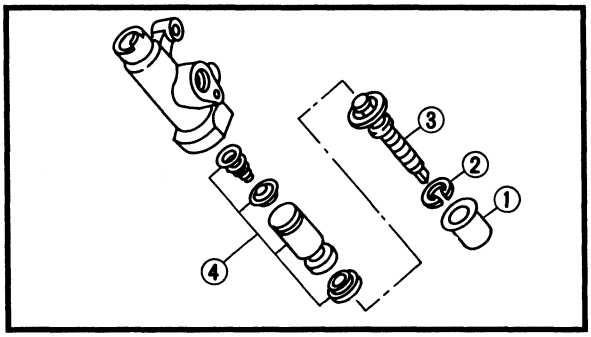


2.Remove:
- Union bolt ①
- Copper washers ②
- Brake hoses ③

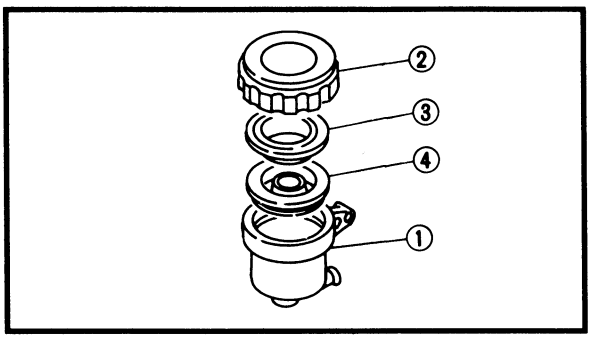
NOTE:
Hold a container under the master cylinder and under the hose ends to collect remaining brake fluid.



3.Remove:
- Master cylinder ①



4.Remove:
- Dust boot ①
- Circlip ②
- Push rod ③
- Master cylinder kit ④



5. Remove:
- Reservoir tank ①
- Cap (reservoir tank) ②
- Holder (diaphragm) ③
- Diaphragm ④

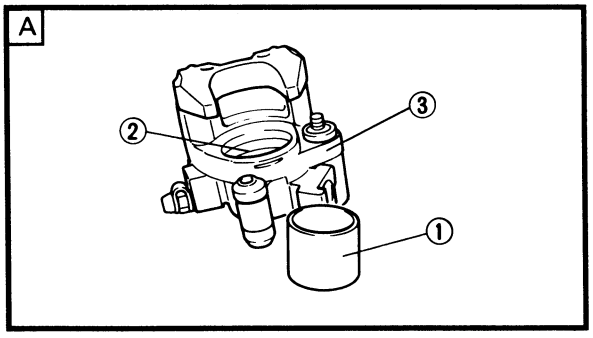
INSPECTION AND REPAIR

Recommended brake component replacement schedule:	
Brake pads	As required
Piston seal, dust seal	Every two years
Brake hoses	Every two years
Brake fluid	Replace only when brakes are disassembled.
Brake pipes	Replace whenever brake pipes are disconnecting.

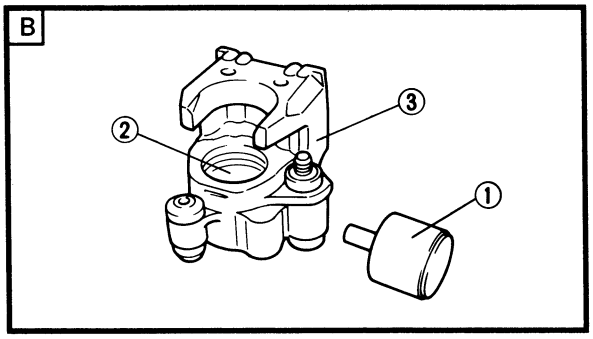
⚠ WARNING

All internal parts should be cleaned in new brake fluid only. Do not use solvents as they will cause seals to swell and distort.

A



B

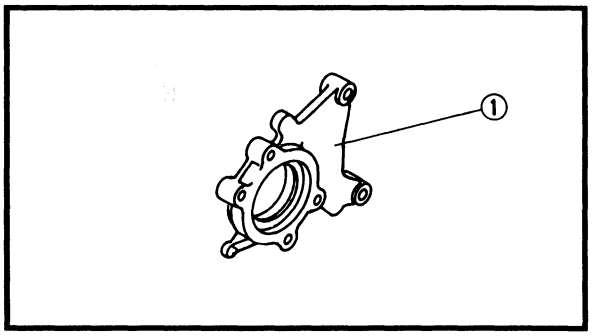


1. Inspect:
- Caliper piston ①
  Scratches/Rust/Wear → Replace caliper assembly.
- Caliper cylinder ②
  Wear/Scratches → Replace caliper assembly.
- Caliper body ③
  Cracks/Damage → Replace.
- Oil delivery passage (caliper body)
  Blow out with compressed air.

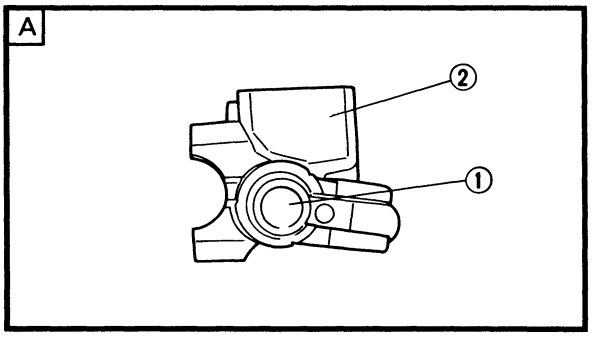
⚠ WARNING

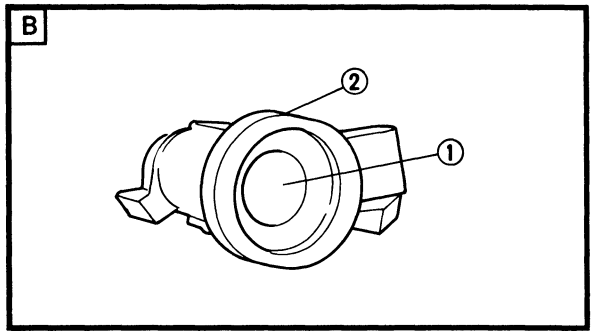
Replace the piston seal and dust seal whenever the caliper is disassembled.

A Front
B Rear



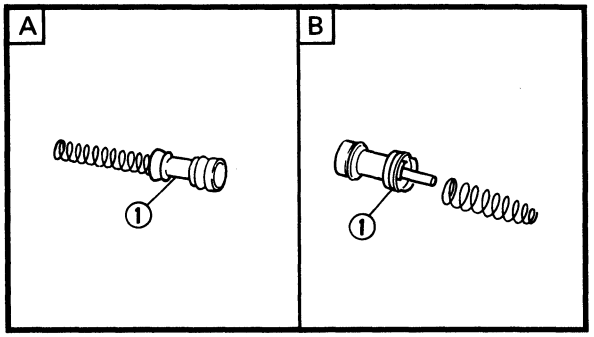
2. Inspect:
- Caliper bracket (rear) ①
  Cracks/Damage → Replace.





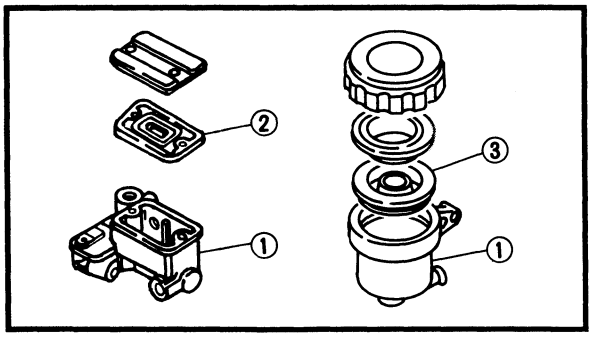
3. Inspect:
- Master cylinder ①
  Wear/Scratches → Replace the master cylinder assembly.
- Master cylinder body ②
  Cracks/Damage → Replace.
- Oil delivery passage (master cylinder body)
  Blow out with compressed air.

Ⓐ Front
Ⓑ Rear

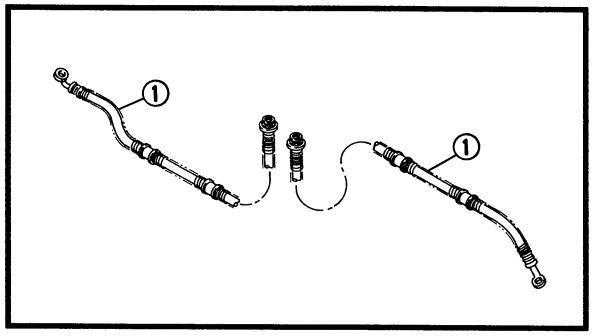


4. Inspect:
- Master cylinder kit ①
  Scratches/Wear/Damage → Replace as a set.

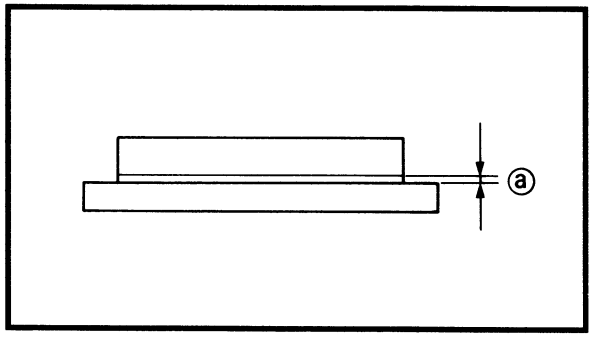
Ⓐ Front
Ⓑ Rear



5. Inspect:
- Reservoir tank ①
  Cracks/Damage → Replace.
- Diaphragm (front) ②
- Diaphragm (rear) ③
  Wear/Damage → Replace.



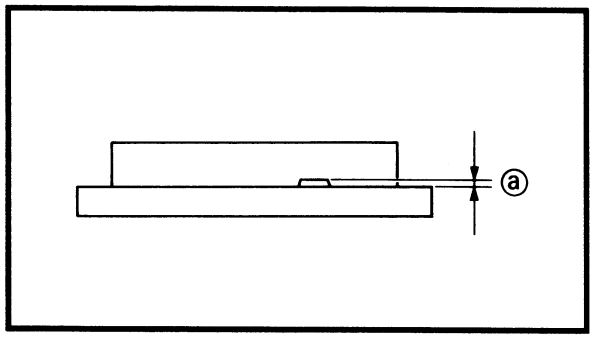
6. Inspect:
- Brake hoses ①
  Cracks/Wear/Damage → Replace.



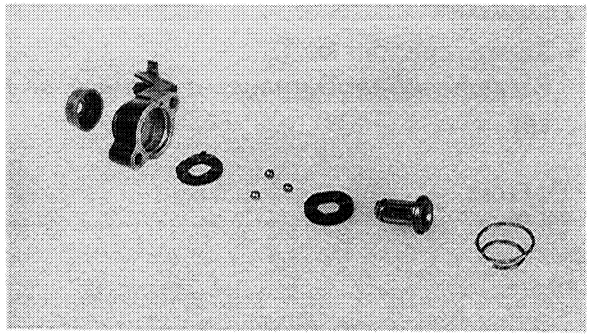
7. Measure:
- Brake pads (thickness) ⓐ
  Out of specification → Replace.

NOTE:
- When pad replacement is required, also replace the pad spring and shims.
- Replace the pads as a set if either is found to be worn to the wear limit ⓐ.

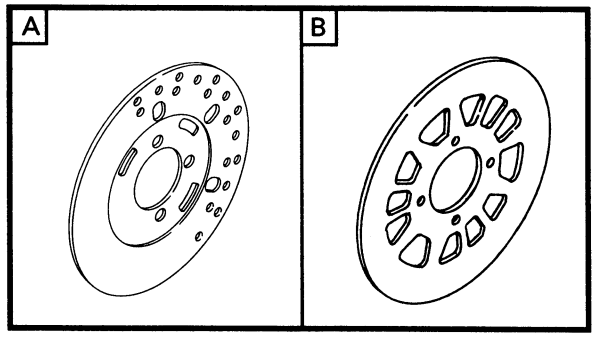
Wear limit ⓐ (front and rear):
1.0 mm (0.04 in)



Ⓐ Front
Ⓑ Rear

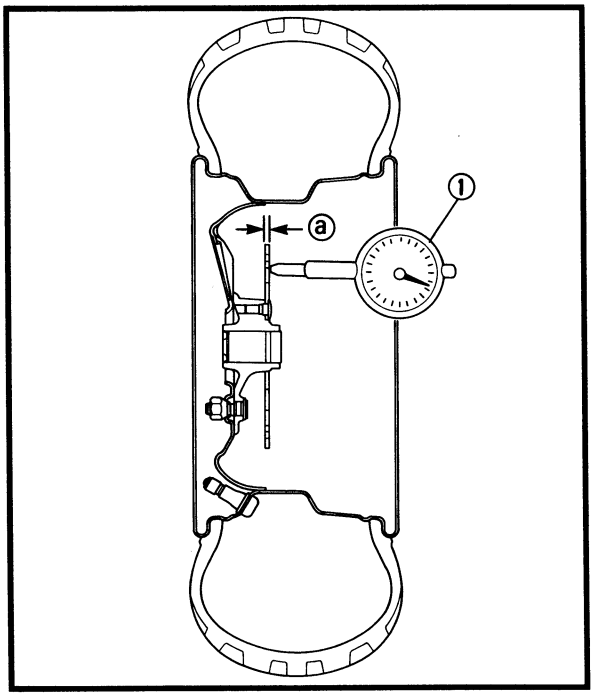


8. Inspect:
- Parking brake assembly
  Cracks/Wear/Damage → Replace.



9. Inspect:
- Brake discs (front and rear)
  Galling/Damage → Replace.

Ⓐ Front
Ⓑ Rear



9. Measure:
- Brake disc deflection
  Out of specification → Inspect wheel runout.
  If wheel runout is in good condition, replace the brake disc(s).

Maximum deflection:
Front: 0.15 mm (0.006 in)
Rear: 0.15 mm (0.006 in)

- Brake disc thickness ⓐ
  Out of specification → Replace.

Minimum thickness:
Front: 3.0 mm (0.12 in)
Rear: 3.5 mm (0.14 in)

① Dial gauge

NOTE:
Tighten the bolts (brake disc) in stage using a crisscross pattern.

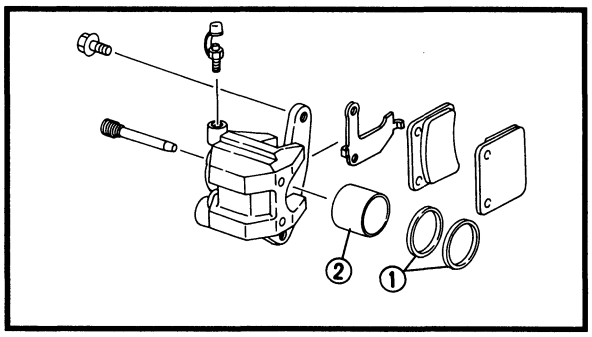
Bolt (front brake disc):
30 Nm (3.0 m • kg, 22 ft • lb)
Bolt (rear brake disc):
28 Nm (2.8 m • kg, 20 ft • lb)

CALIPER ASSEMBLY

⚠ WARNING
- **All internal parts should be cleaned in new brake fluid only.**
- **Internal parts should be lubricated with brake fluid when installed.**

Recommended brake fluid:
DOT #4

- **Replace the piston seals and dust seals whenever a caliper is disassembled.**

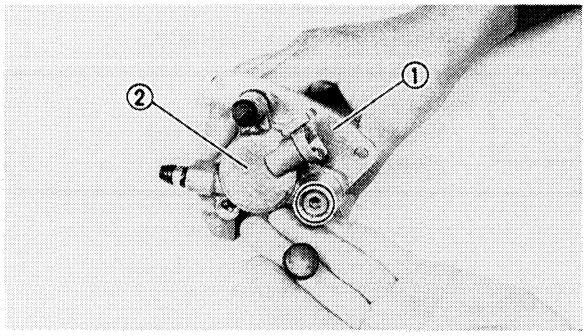


Front brake

1. Install:
- Piston seals ①
- Piston ②

⚠ WARNING

Always use new piston seals.

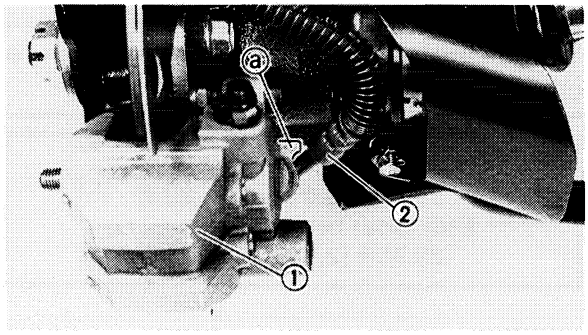


2. Install:
- Caliper bracket ①
- Caliper body ②

NOTE:

Apply the lithium soap base grease onto the caliper guide shaft and retaining bolt.

	Retaining bolt: **28 Nm (2.8 m • kg, 20 ft • lb)**



3. Install:
- Brake caliper ①
  (temporarily)
- Copper washers
- Brake hose ②
- Union bolt

	Union bolt: **27 Nm (2.7 m • kg, 19 ft • lb)**

CAUTION:

When installing the brake hose on the caliper ①, be sure to keep the distance between the pipe and the projection ⓐ on the brake caliper shorter than 2 mm (0.08 in).

⚠ WARNING

- **Proper hose routing is essential to insure safe machine operation. Refer to "CABLE ROUTING".**
- **Always use new copper washers.**

4. Remove:
- Brake caliper

5. Install:
- Pad spring
- Brake pads
  (with pad shim)
- Retaining bolts
- Front brake caliper
  Refer to the "BRAKE PAD REPLACEMENT" section.



Retaining bolt:
18 Nm (1.8 m • kg, 13 ft • lb)
Bolt (front brake caliper):
30 Nm (3.0 m • kg, 22 ft • lb)

6. Fill:
- Reservoir tank



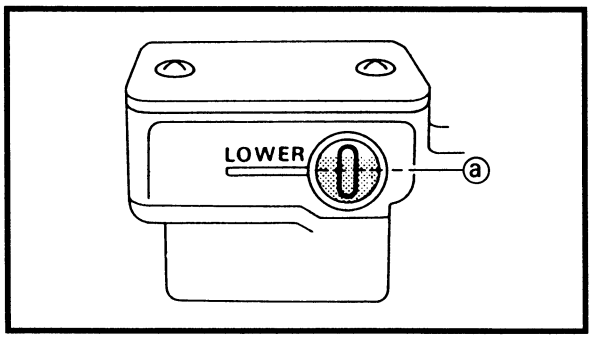
Recommended brake fluid:
DOT #4

NOTE:
If DOT #4 is not available, #3 can be used.

CAUTION:
Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

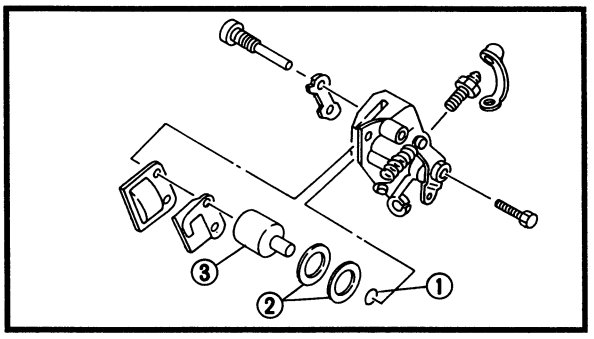
⚠ WARNING
- **Use only the designated quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid: mixing fluids may result in a harmful chemical reaction and lead to poor performance.**
- **Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.**

7. Air bleed
- Brake system
  Refer to the "AIR BLEEDING" section in CHAPTER 3.



8. Inspect:
- Brake fluid level
  Fluid level is under "LOWER" level line → Replenish.
  Refer to the "BRAKE FLUID INSPECTION" section in CHAPTER 3.

ⓐ "LOWER" level line

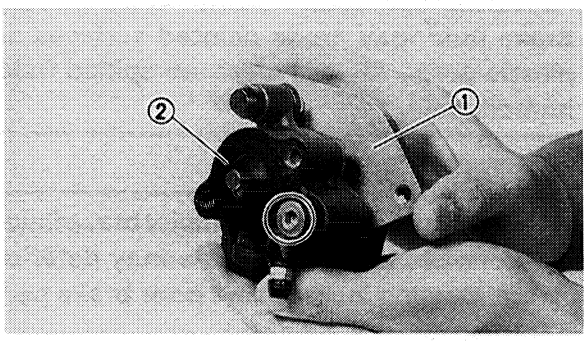


Rear brake

1. Install:
- O-ring ①
- Piston seals ②
- Piston ③

⚠ WARNING

Always use new O-ring and piston seals.

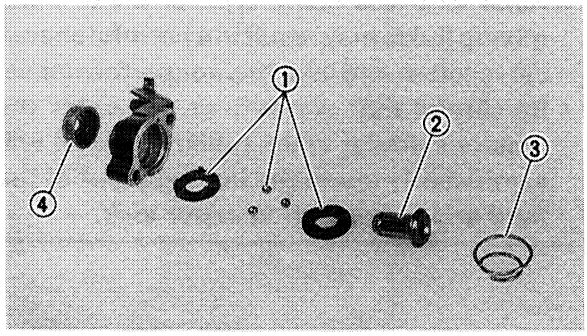


2. Install:
- Caliper bracket ①
- Caliper body ②

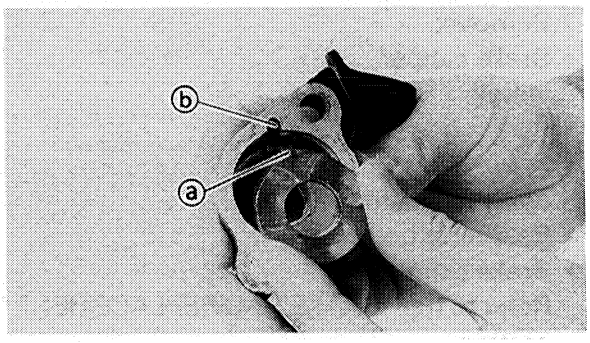
NOTE:

Apply the lithium soap base grease onto the caliper guide shaft and retaining bolt.

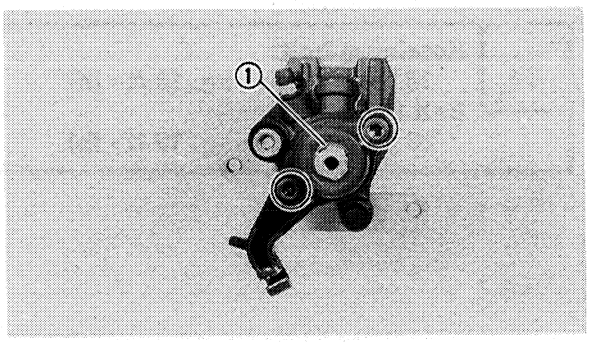
	Retaining bolt: **26 Nm (2.6 m • kg, 19 ft • lb)**



3. Install:
- Parking brake cam ①
- Adjuster nut ②
- Spring ③
- Cover ④

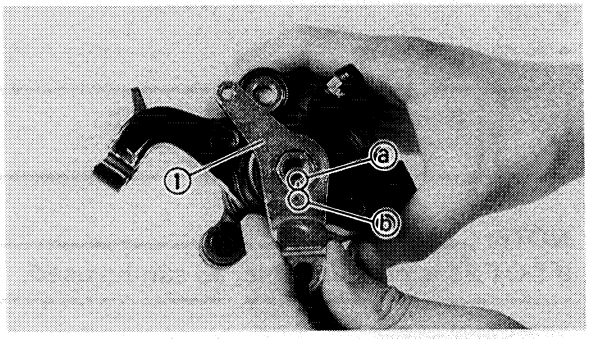


NOTE:
- Mesh the parking brake cam tab ⓐ with parking brake case slit ⓑ.
- Apply wheel bearing grease to the parking brake cam assembly.



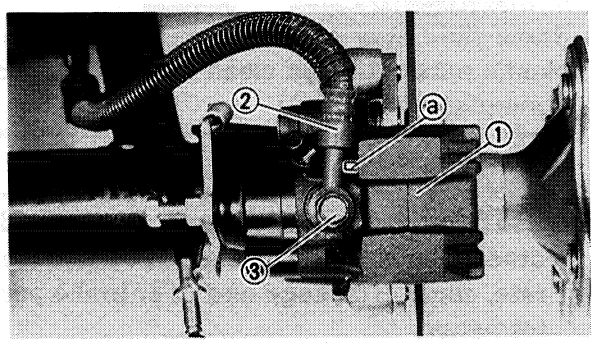
4. Install:
- Gasket
- Parking brake assembly ①

Bolt (parking brake assembly): 23 Nm (2.3 m • kg, 17 ft • lb) LOCTITE®



5. Install:
- Spring
- Parking brake lever ①
- Locknut
- Adjuster

NOTE:
Align the adjuster nut mark ⓐ with the parking brake lever mark ⓑ.



6. Install:
- Brake caliper ① (temporarily)
- Copper washers
- Brake hose ②
- Union bolt ③
- Parking brake cable

Union bolt: 30 Nm (3.0 m • kg, 22 ft • lb)

CAUTION:
When installing the brake hose on the caliper, take care that the pipe touches the projection ⓐ on the brake caliper.

⚠ WARNING
- **Proper hose routing is essential to insure safe machine operation. Refer to the "CABLE ROUTING".**
- **Always use new copper washer.**

7. Remove:
- Brake caliper

8. Install:
- Pad spring
- Brake pads
  (with pad shim)
- Retaining bolts
- Brake caliper
  Refer to the "BRAKE PAD REPLACEMENT" section.



Retaining bolt:
18 Nm (1.8 m • kg, 13 ft • lb)
Bolt (brake caliper):
26 Nm (2.6 m • kg, 19 ft • lb)

9. Fill:
- Reservoir tank



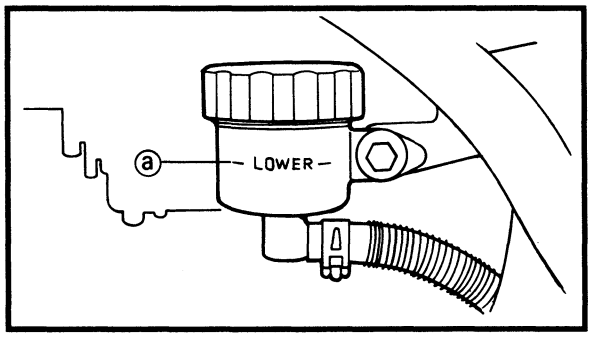
Recommended brake fluid:
DOT #4

NOTE:
If DOT #4 is not available, #3 can be used.

CAUTION:
Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

⚠ WARNING
- **Use only the designated quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid: mixing fluids may result in a harmful chemical reaction and lead to poor performance.**
- **Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.**

10. Air bleed:
- Brake system
  Refer to the "AIR BLEEDING" section in CHAPTER 3.



11. Inspect:
- Brake fluid level
  Fluid level is under "LOWER" level line → Replenish.
  Refer to the "BRAKE FLUID INSPECTION" section in CHAPTER 3.

ⓐ "LOWER" level line

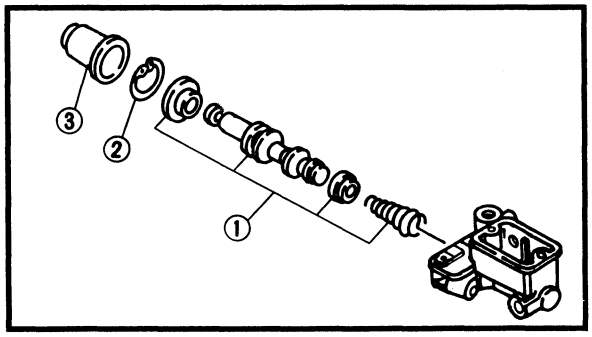
MASTER CYLINDER ASSEMBLY

⚠ WARNING

- **All internal parts should be cleaned in new brake fluid only.**
- **Internal parts should be lubricated with brake fluid when installed.**

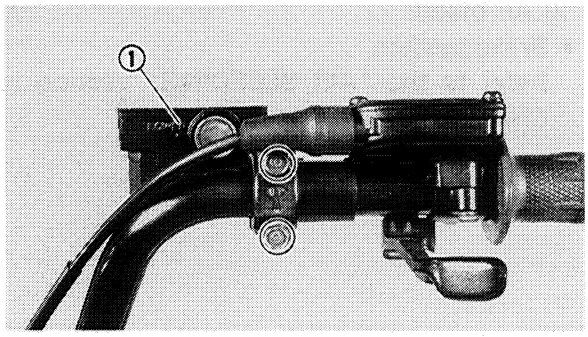
Recommended brake fluid:
DOT #4

- **Replace the piston seals and dust seals whenever a caliper is disassembled.**



Front brake

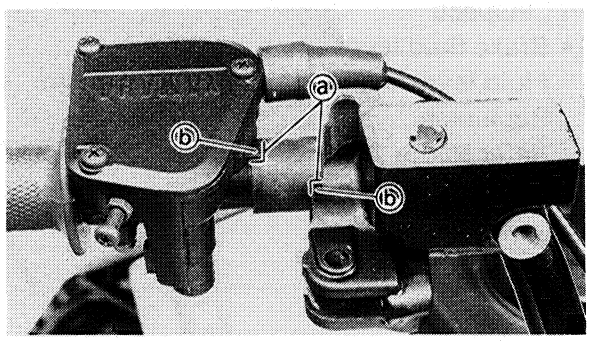
1. Install:
- Master cylinder kit ①
- Circlip ②
- Dust boot ③

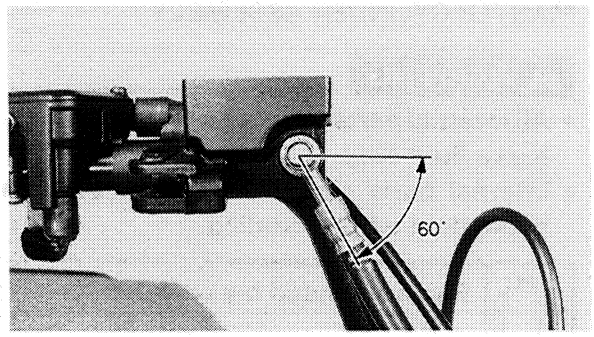


2. Install:
- Master cylinder ①

CAUTION:
- **Install the master cylinder holder with the "UP" mark facing upward.**
- **Engage the indentations ⓐ in the collar with the lobes ⓑ on the throttle lever assembly and master cylinder.**
- **Tighten first the upper bolt, then the lower bolt.**

T.R.	**Bolt (master cylinder holder): 9 Nm (0.9 m • kg, 6.5 ft • lb)**



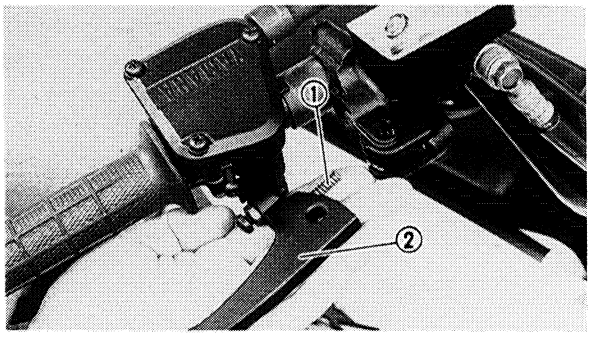


3. Install:
- Copper washers
- Brake hose
- Union bolt

T.R.	**Union bolt: 27 Nm (2.7 m • kg, 19 ft • lb)**

NOTE:
- Tighten the union bolt while holding the brake hose as shown.
- Check that the brake hose does not touch other parts (throttle cable, wire harness, leads, etc.) by turning the handlebar left and right, and correct if necessary.

⚠ WARNING
- **Proper hose routing is essential to insure safe machine operation. Refer to "CABLE ROUTING".**
- **Always use new copper washers.**



4. Install:
- Spring ①
- Brake lever ②

5. Fill:
- Reservoir tank

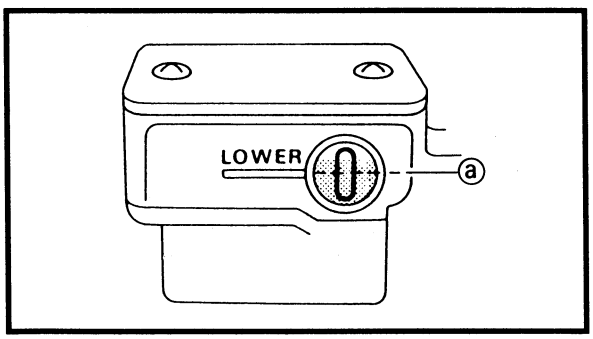
	Recommended brake fluid: DOT #4

NOTE:
If DOT #4 is not available, #3 can be used.

CAUTION:
Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

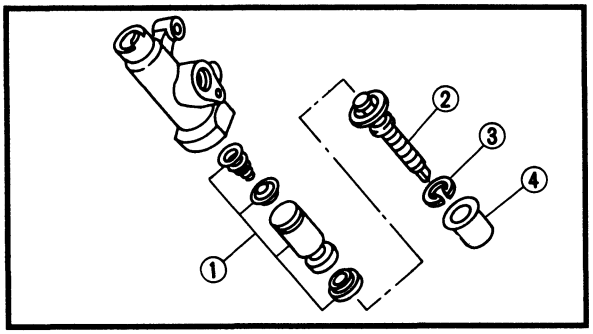
⚠ WARNING
- **Use only the designated quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid: mixing fluids may result in a harmful chemical reaction and lead to poor performance.**
- **Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.**

6. Air bleed:
- Brake system
  Refer to the "AIR BLEEDING" section in CHAPTER 3.



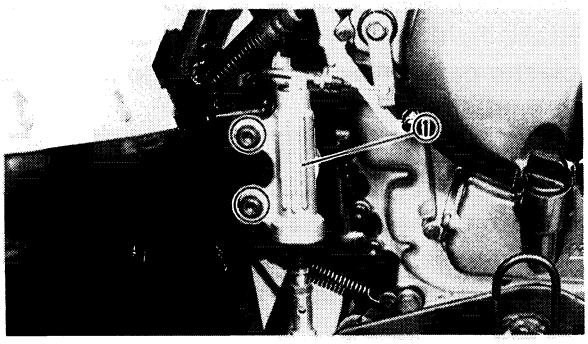
7. Inspect:
- Brake fluid level
  Fluid level is under "LOWER" level line → Replenish.
  Refer to the "BRAKE FLUID INSPECTION" section in CHAPTER 3.

ⓐ "LOWER" level line



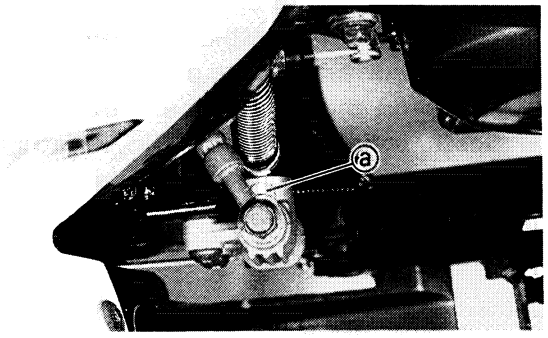
Rear brake

1. Install:
- Reservoir tank (onto frame)
- Master cylinder kit ①
- Push rod ②
- Circlip ③
- Dust boot ④



2. Install:
- Master cylinder ①

	Bolt (master cylinder): 23 Nm (2.3 m • kg, 17 ft • lb)



3. Install:
- Copper washers
- Brake hoses
- Union bolt

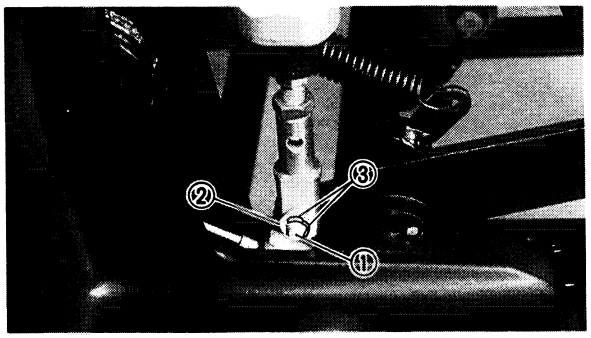
	Union bolt: 30 Nm (3.0 m • kg, 22 ft • lb)

CAUTION:

When installing the brake hose on the master cylinder, take care that the pipe touches the projection ⓐ as shown.

⚠ WARNING

- **Proper hose routing is essential to insure safe machine operation. Refer to "CABLE ROUTING".**
- **Always use new copper washers.**



4. Install:
- Clevis pin ①
- Washer ②
- Cotter pin ③

⚠ WARNING

Always use a new cotter pin.

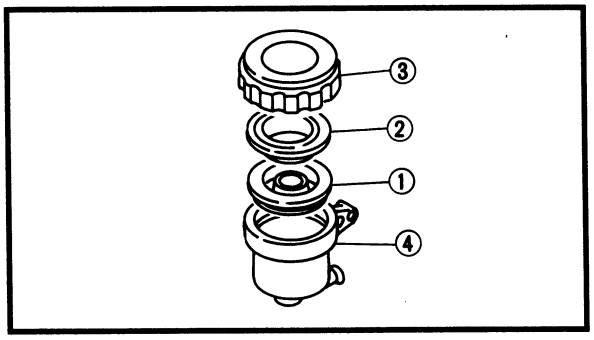
5. Fill:
- Reservoir tank

Recommended brake fluid:
DOT #4 or DOT #3

NOTE:
If DOT #4 is not available, #3 can be used.

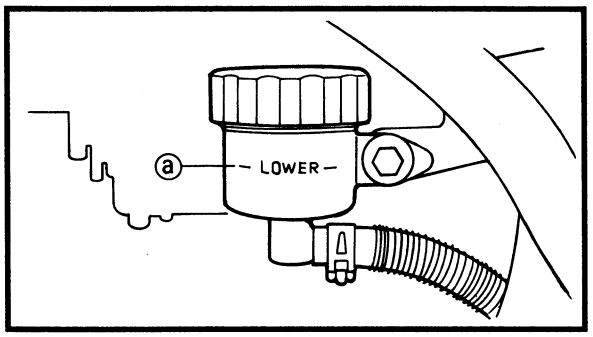
CAUTION:
Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

⚠ WARNING
- **Use only the designated quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid: mixing fluids may result in a harmful chemical reaction and lead to poor performance.**
- **Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.**



6. Install:
- Diaphragm ①
- Holder (diaphragm) ②
- Cap (reservoir tank) ③
- Reservoir tank ④

7. Air bleed:
- Brake system
  Refer to the "AIR BLEEDING" section in CHAPTER 3.

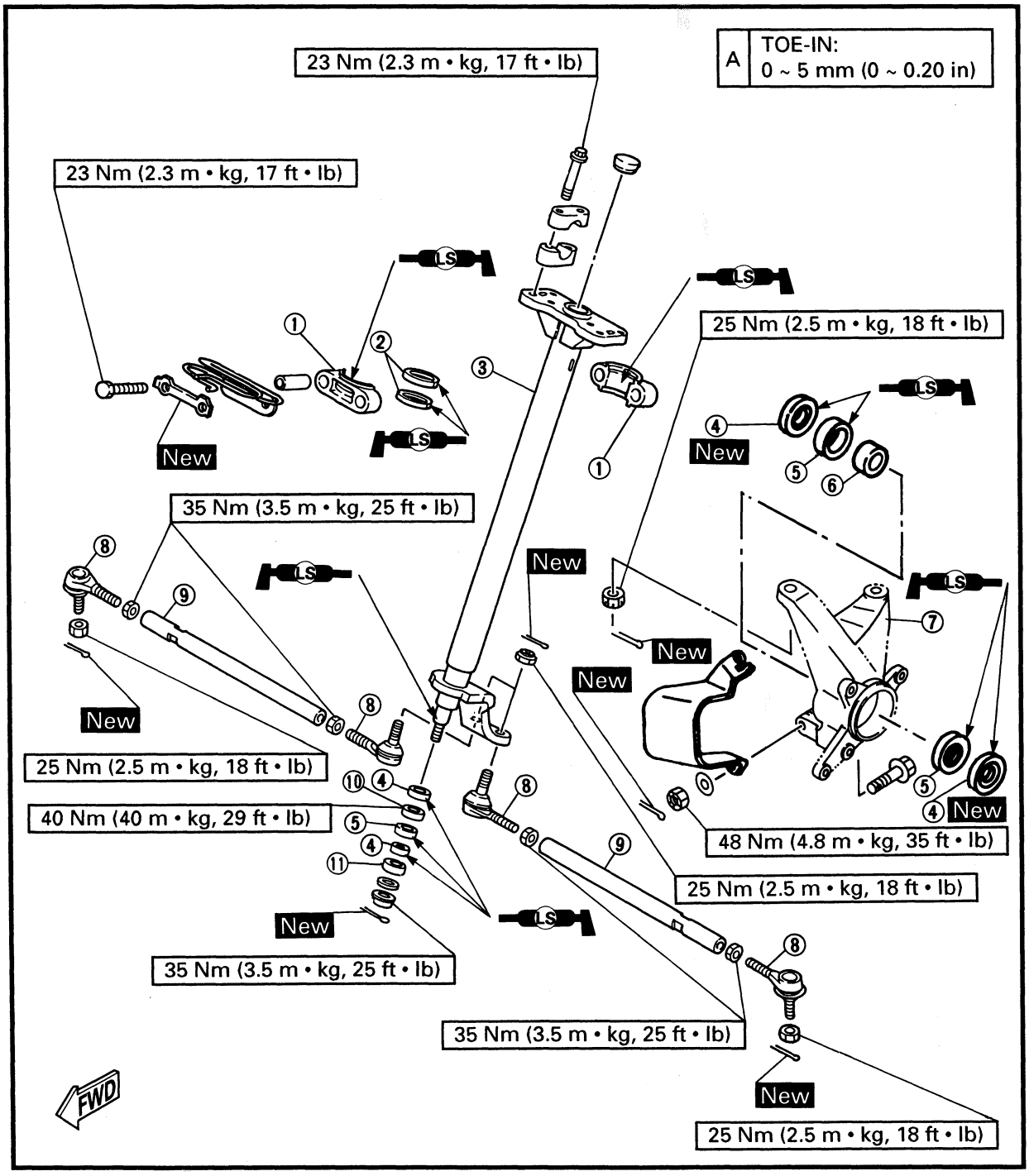


8. Inspect:
- Brake fluid level
  Fluid level is under "LOWER" level line → Replenish.
  Refer to the "BRAKE FLUID INSPECTION" section in CHAPTER 3.

ⓐ "LOWER" level line

STEERING SYSTEM

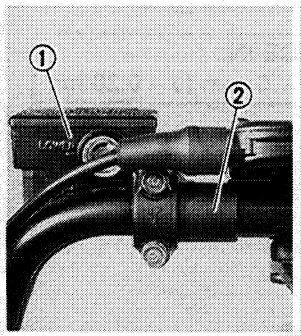
① Steering shaft bushing
② Oil seal
③ Steering shaft
④ Oil seal
⑤ Bearing
⑥ Spacer
⑦ Steering knuckle
⑧ Tie-rod end
⑨ Tie-rod
⑩ Bearing retainer
⑪ Collar

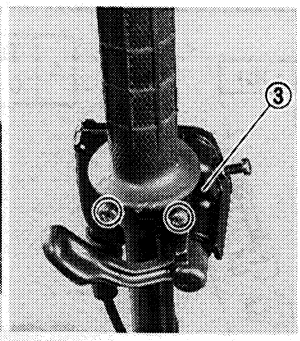


REMOVAL

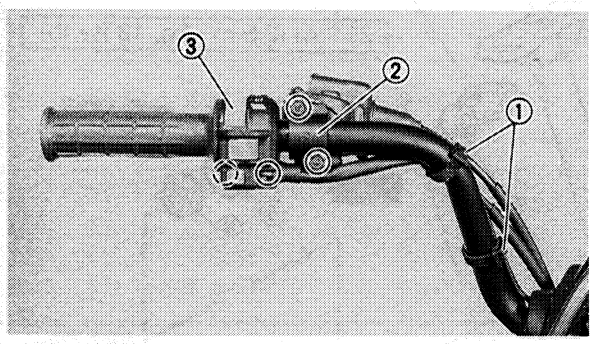
1. Remove:
- Seat
- Front carrier bar
- Front fender

Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section in CHAPTER 3.

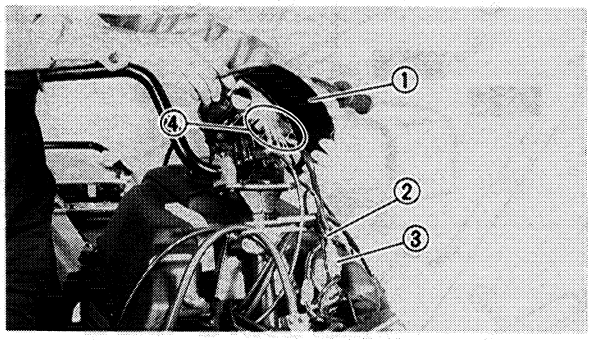




2. Remove:
- Master cylinder assembly ①
- Collar ②
- Throttle lever assembly ③

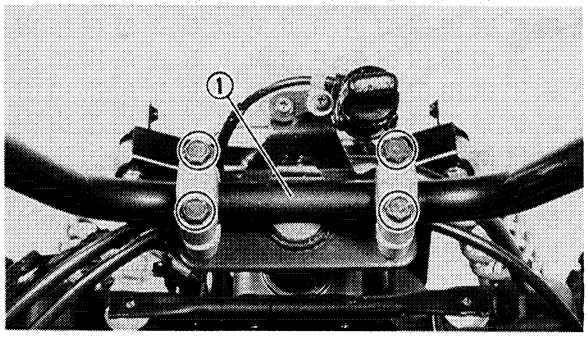


3. Remove:
- Bands ①
- Lever holder ②
- Handlebar switch ③

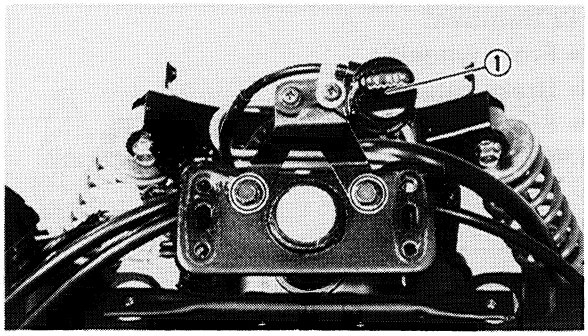


4. Remove:
- Handlebar cover ①
- Band ②

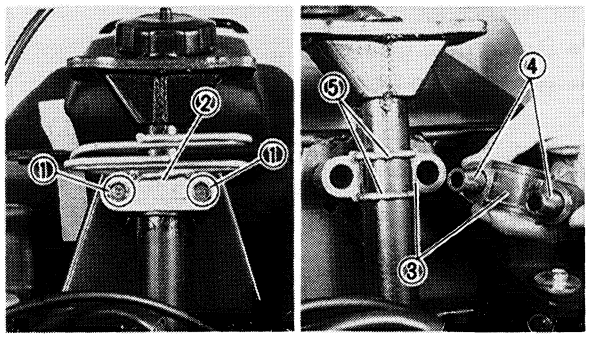
5. Disconnect:
- Main switch coupler ③
- Indicator light leads ④



6. Remove:
- Handlebar ①

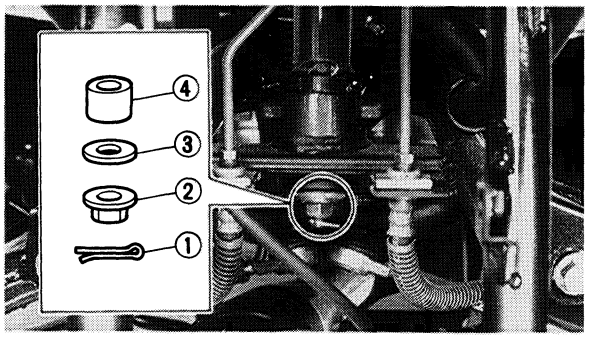


7. Remove:
- Reverse control knob ①

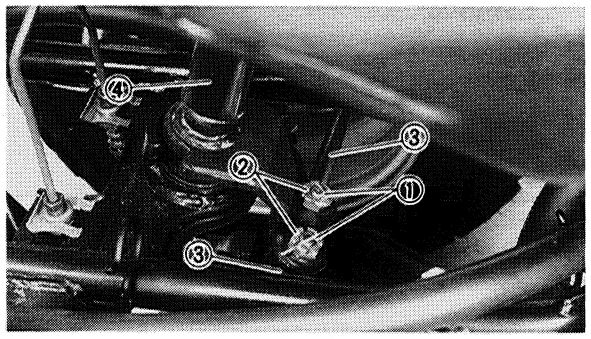


8. Straighten:
- Lock washer tabs ①

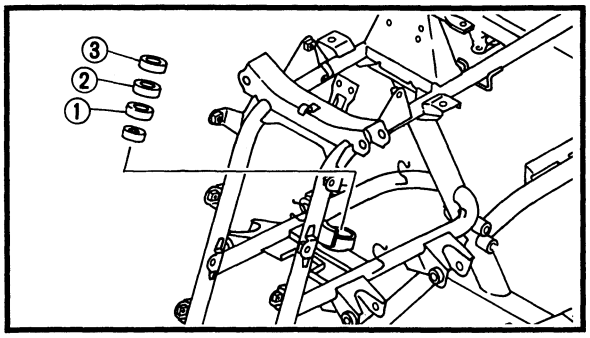
9. Remove:
- Cable holder ②
- Steering shaft bushings ③
- Collars ④
- Oil seals ⑤



10. Remove:
- Cotter pin ①
- Nut (steering shaft) ②
- Plain washer ③
- Collar ④



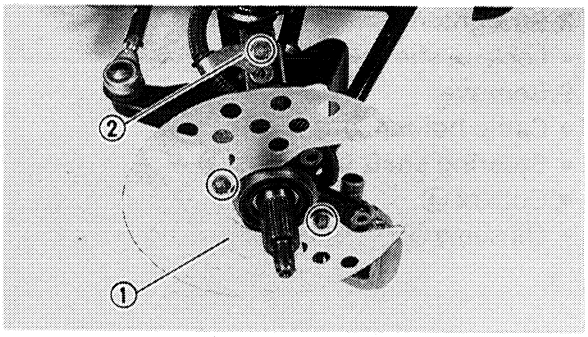
11. Remove:
- Cotter pin ①
- Nuts (tie-rod end) ②
- Tie-rod ends ③
- Steering shaft ④



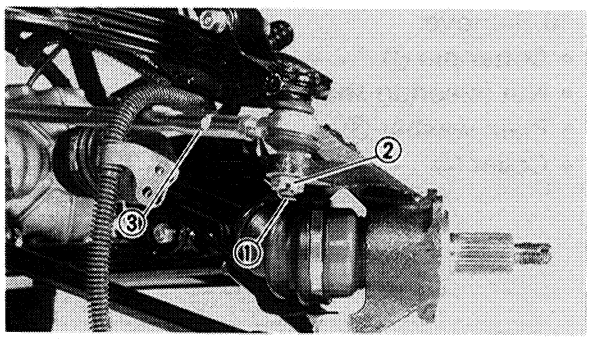
12. Remove:
- Oil seals ①
- Bearing retainer ②
  Use the damper rod holder
- Bearing ③

	Damper rod holder: **P/N YM-01327, 90890-01327**

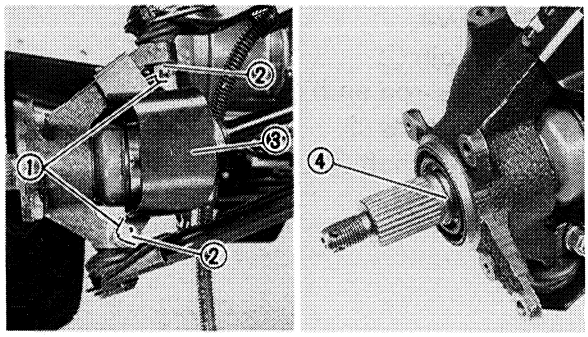
13. Remove:
- Front wheels
- Brake calipers
- Front wheel hubs
  Refer to the "FRONT WHEEL" section.



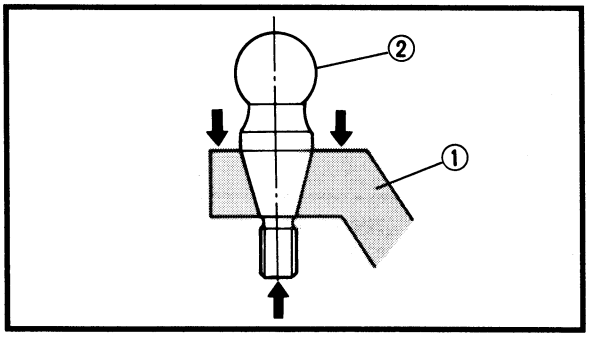
14. Remove:
- Brake disc guard ①
- Brake hose holder ②



15. Remove:
- Cotter pin ①
- Nuts (tie-rod end) ②
- Tie-rod ③



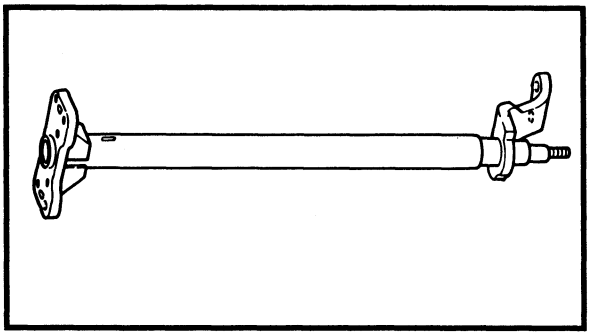
16. Remove:
- Cotter pins ①
- Nuts (steering knuckle) ②
- Bolt (steering knuckle)
- Constant velocity joint protector ③
- O-ring ④



17. Remove:
- Steering knuckle ①

NOTE

Use the General Puller to separate the ball joint ② and steering knuckle.

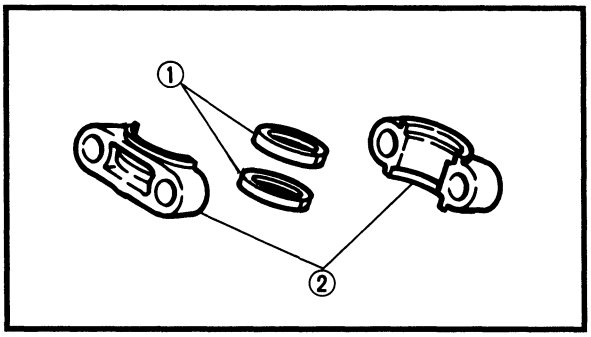


INSPECTION

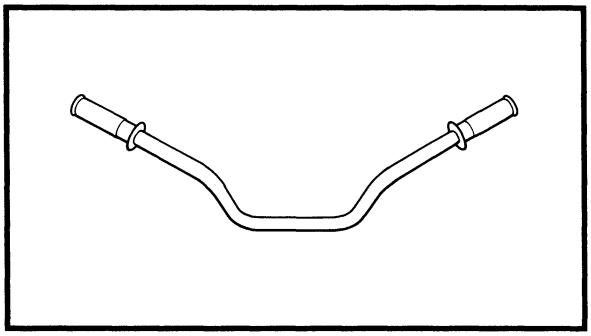
1. Inspect:
- Steering shaft
  Bends → Replace.

⚠ WARNING

Do not attempt to straighten a bent shaft; this may dangerously weaken the shaft.



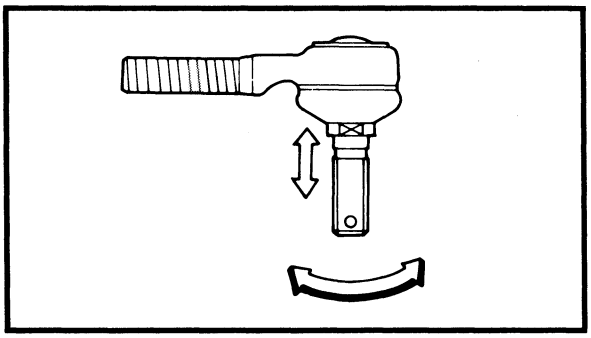
2. Inspect:
- Oil seals ①
- Steering shaft bushings ②
  Wear/Damage → Replace.



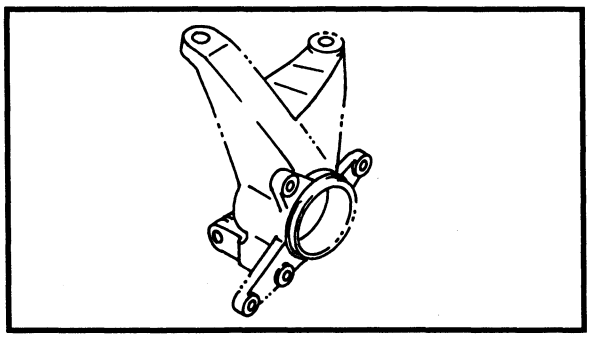
3. Inspect
- Handlebar
  Bends/Cracks/Damage → Replace.

⚠ WARNING

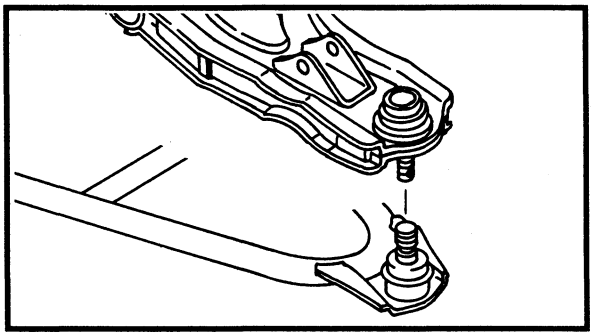
Do not attempt to straighten a bent handlebar as this may dangerously weaken the handlebar.



4. Check:
- Tie-rod free play and movement
  Tie-rod is exists free play → Replace tie-rod end.
  Tie-rod is turns roughly → Replace tie-rod end.

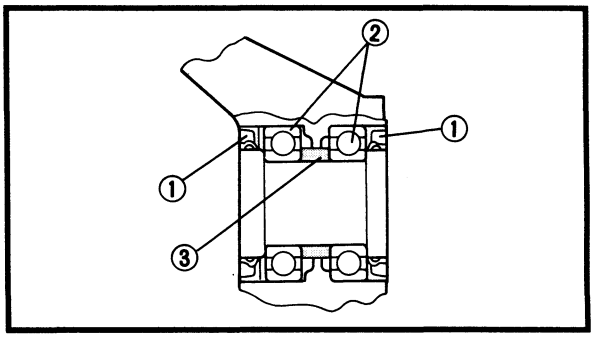


5. Inspect:
- Steering knuckle
  Damage/Pitting → Replace.



6. Inspect:
- Ball joints
  Damage/Pitting → Replace front arms.
  Ball joint is exists free play → Replace front arms.
  Ball joint turns roughly → Replace front arms.

7. Inspect:
- Wheel bearings
  Bearings allow play in the wheel hubs or wheel turns roughly → Replace.
- Oil seals
  Damage → Replace.



****

Wheel bearing replacement steps:
- Clean the outside of the steering knuckle.
- Remove the oil seals ①.
- Drive out the bearings ②.

⚠ WARNING

Eye protection is recommended when using striking tools.

- Remove the spacer ③.
- Apply the lithium base grease to the bearings and oil seals.
- Install the spacer to the steering knuckle.
- Install the new bearings.

NOTE:
Install the outside bearing first.

CAUTION:

Do not strike the center race or balls of the bearing. Contact should be made only with the outer race.

- Install the new oil seal.

NOTE:
When installing the oil seals, sealed side of oil seal comes outside.

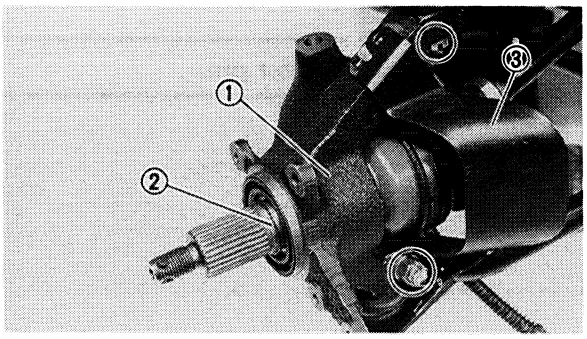
****

INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

1. Lubricate:
- Bearing
- Oil seal
- Steering shaft bushing

	Lithium soap base grease



2. Install:
- Steering knuckle ①
- O-ring ②
- Constant velocity joint protector ③

	Nut (steering knuckle - upper): 25 Nm (2.5 m • kg, 18 ft • lb) **Nut (steering knuckle - lower): 48 Nm (4.8 m • kg, 35 ft • lb)**

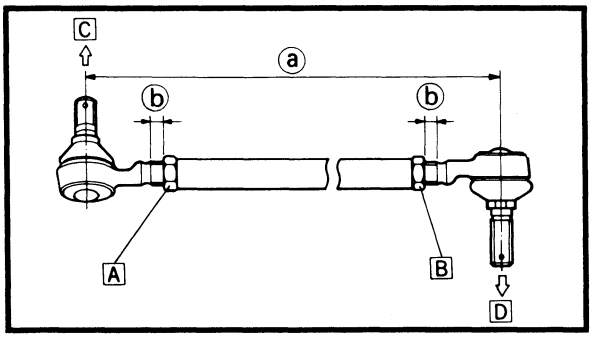
⚠ WARNING

Always use a new cotter pin.

3. Adjust:
- Tie-rod assembly length

****

Adjustment steps:
- Loosen the lock nuts.
- Adjust tie-rod assembly length ⓐ by turning both tie-rod ends.



	Tie-rod assembly length ⓐ: 361 mm (14.2 in)

A Right-hand-threads
B Left-hand-threads
C To steering shaft
D To knuckle

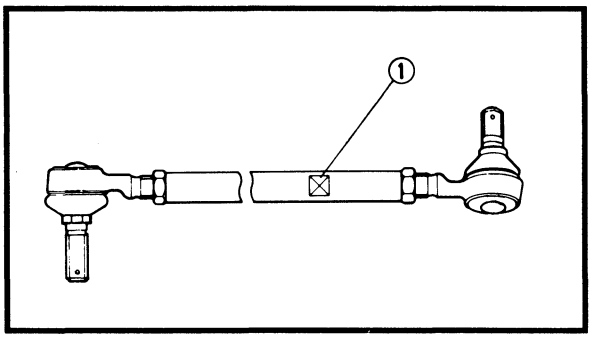
NOTE:

The threads ⓑ on both tie-rod ends must be of the same length.

- Tighten the locknuts.

	Locknut (tie-rod): 35 Nm (3.5 m • kg, 25 ft • lb)

****



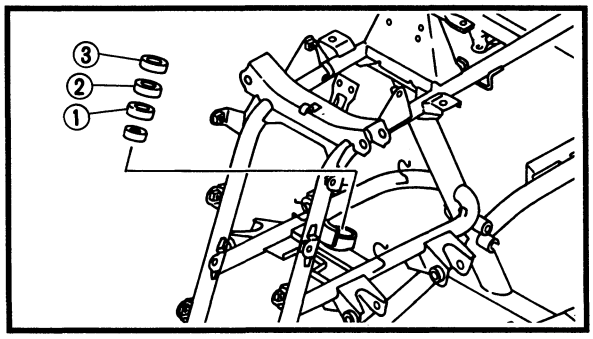
4. Install:
- Tie-rods (left and right)

NOTE:
Be sure to position the tie-rod so that its white painted mark ① is right-hand rod.

	Nuts (tie-rod end): **25 Nm (2.5 m • kg, 18 ft • lb)**

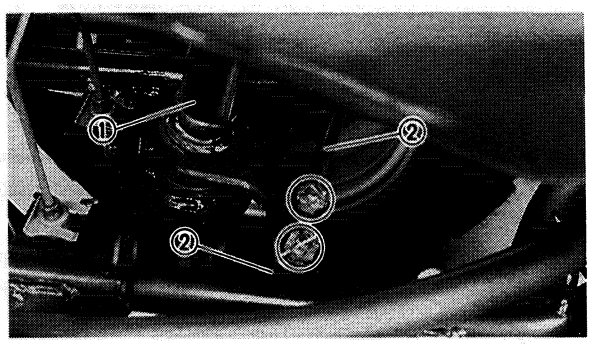
⚠ WARNING
Always use a new cotter pin.

5. Install:
- Front wheel hubs
- Brake calipers
- Front wheels
  Refer to the "FRONT WHEEL" section.



6. Install:
- Bearing ①
- Bearing retainer ②
  Use the damper rod holder.
- Oil seals ③

	Damper rod holder: **P/N. YM-01327, 90890-01327**
	Bearing retainer: **40 Nm (4.0 m • kg, 29 ft • lb)**



7. Install:
- Steering shaft ①
- Tie-rod ends ②

	Nut (steering shaft): **35 Nm (3.5 m • kg, 25 ft • lb)** **Nut (tie-rod end):** **25 Nm (2.5 m • kg, 18 ft • lb)**

⚠ WARNING

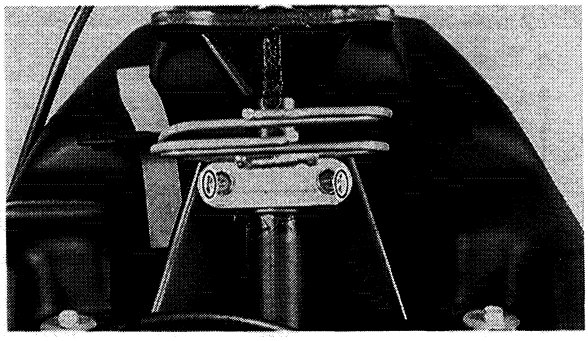
- **Make sure the brake hoses and pipes are properly routed, and are not damaged or twisted.**
- **Always use a new cotter pin.**

8. Install:
- Steering shaft bushings
- Cable guide

	Bolt (steering shaft bushing): **23 Nm (2.3 m • kg, 17 ft • lb)**

⚠ WARNING

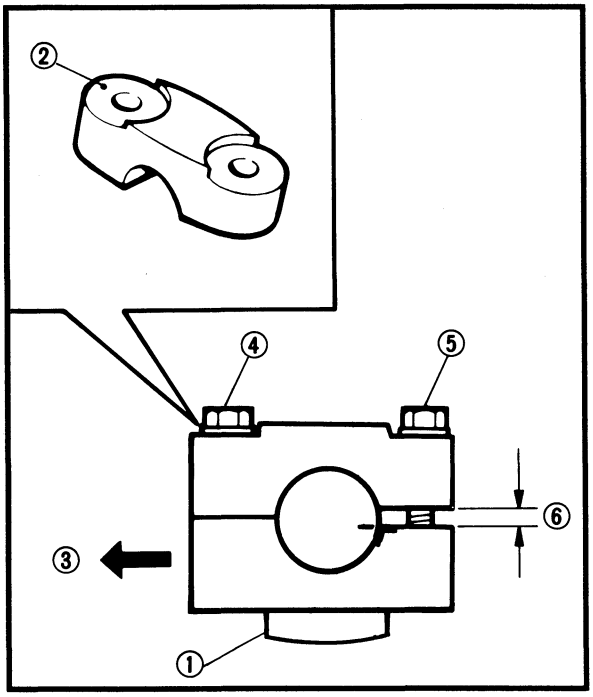
Always use a new lock washer.



9. Bend the lock washer tab along the bolt flats.

NOTE:

Pass the cables and hose through the cable guide. Refer to the "CABLE ROUTING" section in CHAPTER 2.

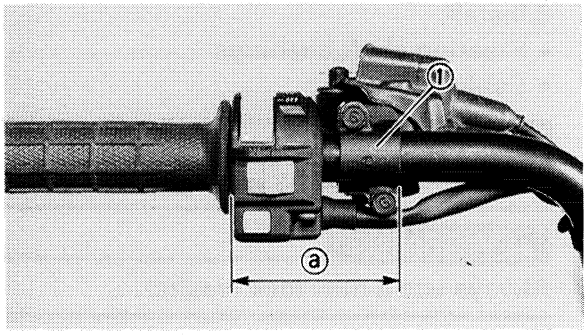


10. Install:
- Handlebar
- Handlebar holders (upper and lower)

NOTE:
- Insert the projection ① of handlebar holder (lower) into the steering shaft hole.
- The upper handlebar holder should be installed with the punched mark ② forward ③.

CAUTION:
First tighten the bolts on the front side on the handlebar holder, and then tighten the bolts on the rear side.

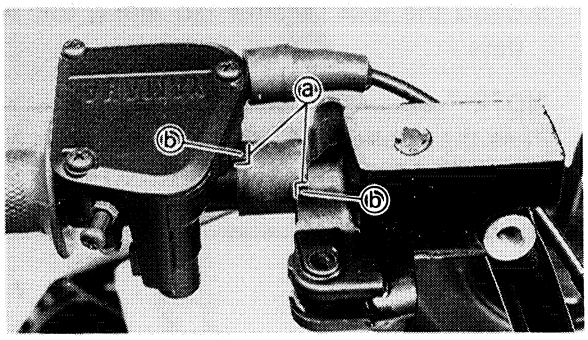
	Bolt (handlebar holder): 23 Nm (2.3 m • kg, 17 ft • lb)



11. Install:
- Handlebar switch
- Lever holder ①

NOTE:
Install the lever holder as shown.

ⓐ 70 mm (2.8 in)



12. Install:
- Throttle lever assembly
- Collar
- Master cylinder assembly

NOTE:
- Engage the indentations ⓐ in the collar with the lobes ⓑ on the throttle lever assembly and master cylinder.
- The "UP" mark on the master cylinder bracket should be upward.

13. Install:
- Front fender
- Front carrier bar
- Seat

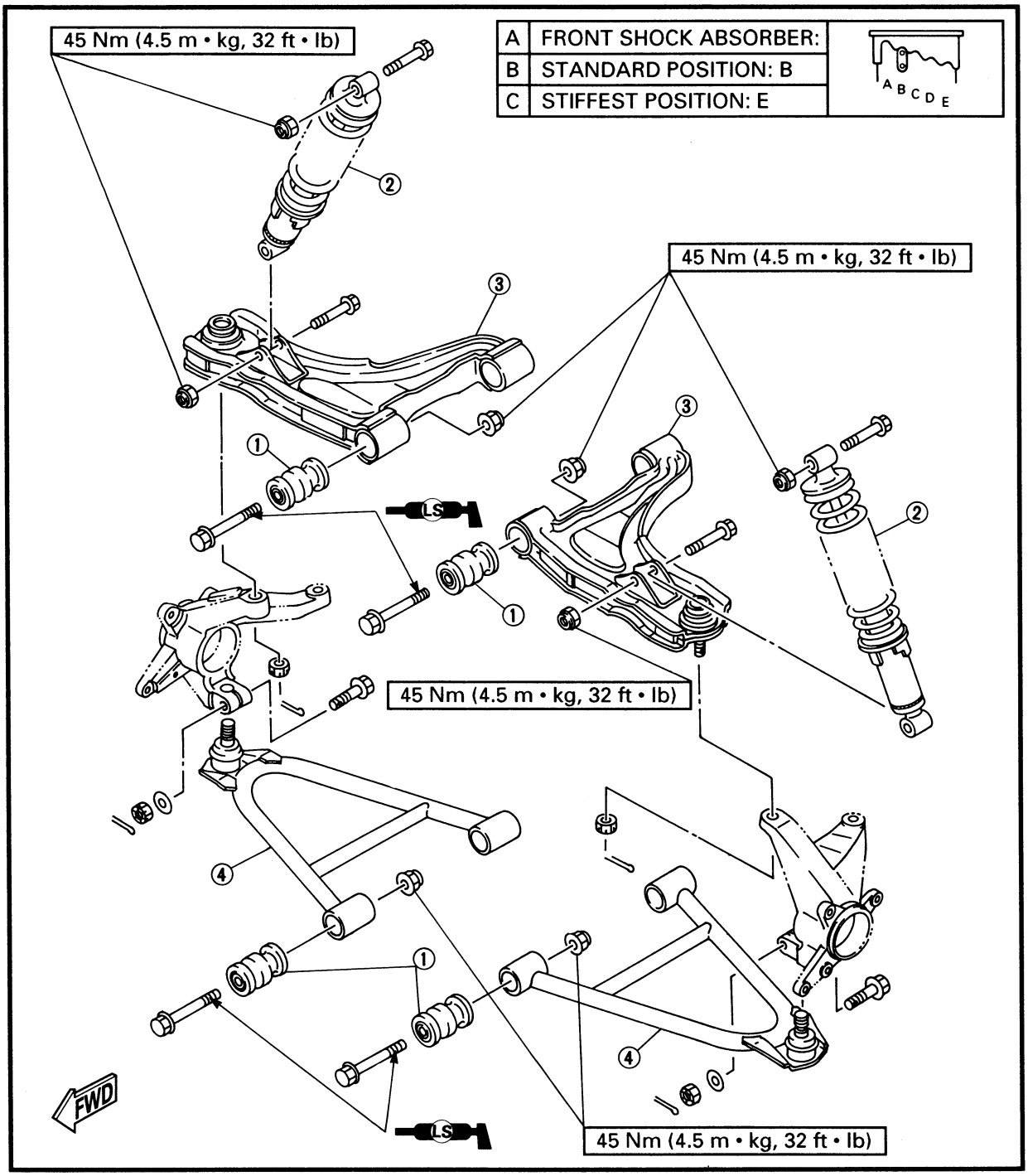
Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section in CHAPTER 3.

14. Adjust:
- Toe-in

Refer to the "TOE-IN ADJUSTMENT" section in CHAPTER 3.

FRONT SHOCK ABSORBER AND FRONT ARM

① Bushing
② Front shock absorber
③ Upper arm
④ Lower arm



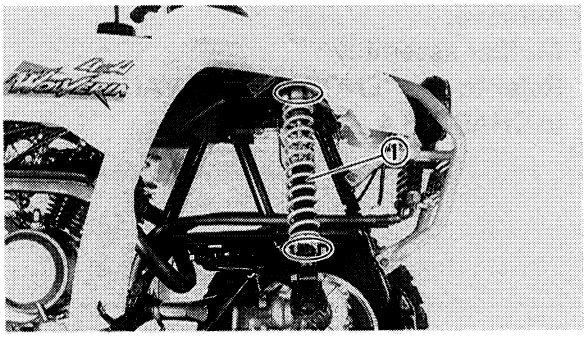
REMOVAL

1. Remove:
- Front wheels
- Front brake calipers
- Front wheel hubs

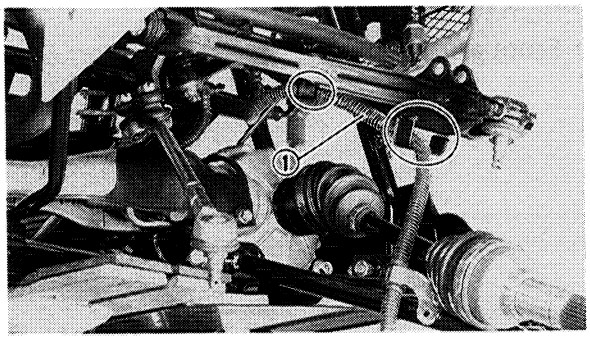
Refer to the "FRONT WHEEL" section.

2. Remove:
- Brake disc guard
- Tie-rod
- Steering knuckle

Refer to the "STEERING SYSTEM" section.

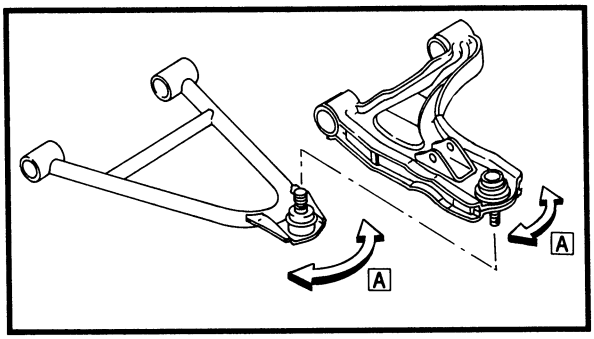


3. Remove:
- Front shock absorber ①



4. Unhook:
- Brake hose ①

(from clamp)



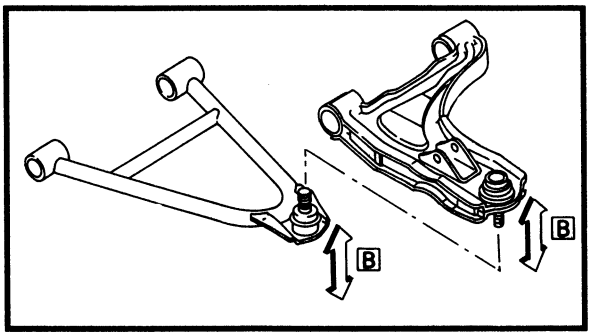
5. Check:
- Front arm free play

****

Checking steps:

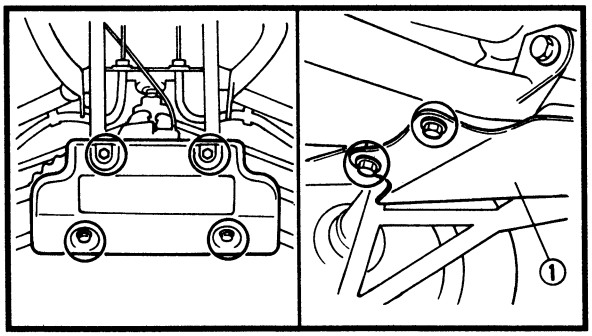
- Check the front arm side play [A] by moving it from side to side.

If side play is noticeable, check the bushings.



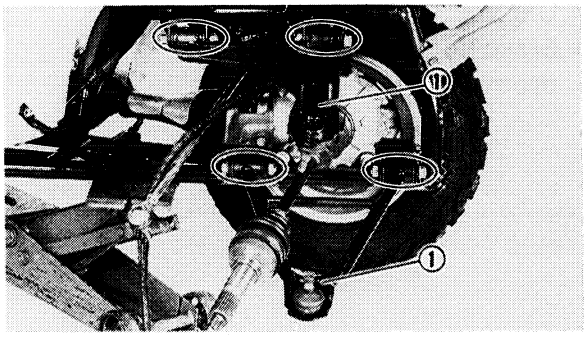
- Check the front arm vertical movement [B] by moving it up and down.
  If vertical movement is tight, binding or rough, check the bushings.

****

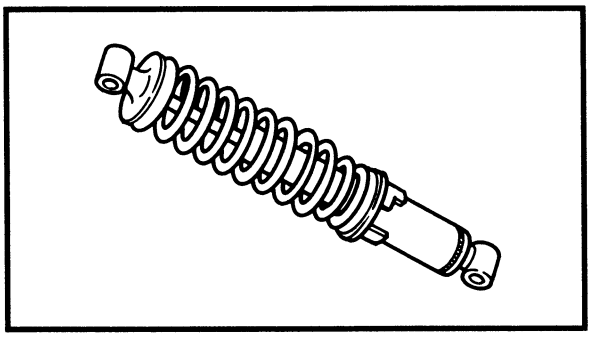


6. Remove:
- Engine guard ①

7. Remove:
- Muffler assembly
  Refer to the "ENGINE REMOVAL" section in CHAPTER 4.

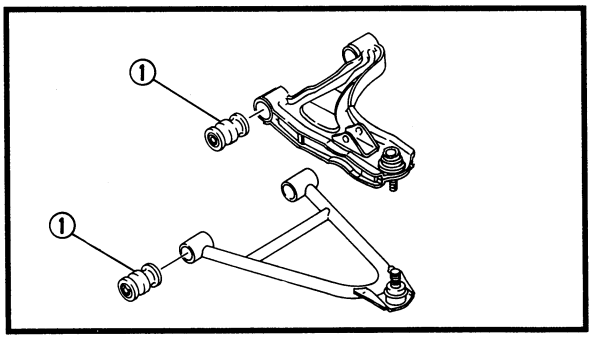


8. Remove:
- Front arms ①



INSPECTION

1. Inspect:
- Shock absorber rod
  Bends/Damage → Replace the shock absorber assembly.
- Shock absorber assembly
  Oil leaks → Replace the shock absorber assembly.
- Spring
  Fatigue → Replace the shock absorber assembly.
  Move the spring up and down.



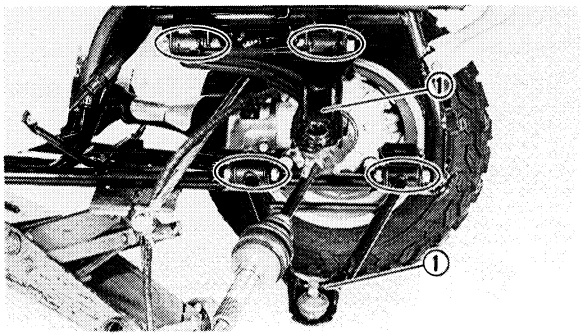
2. Inspect:
- Bushings ①
  Wear/Damage → Replace.

INSTALLATION

Reverse the "REMOVAL" procedure.
Note the following points.

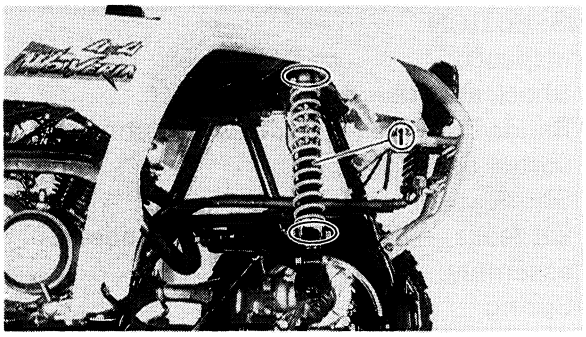
1. Lubricate:
- Pivot bolts (front arm)

	Lithium - soap base grease



2. Install:
- Front arms ①
- Bolts
- Nuts

NOTE:
- Be sure to position the bolts (upper and lower) so that the bolt head face outward.
- Temporarily tighten the nuts (front arm).



3. Install:
- Front shock absorber ①

	Nut (front shock absorber): 45 Nm (4.5 m • kg, 32 ft • lb)

4. Install:
- Steering knuckle
- Tie-rod
- Brake disc guard

Refer to the "STEERING SYSTEM" section.

5. Tighten:
- Nuts (front arm)

	Nut (front arm): 45 Nm (4.5 m • kg, 32 ft • lb)

6. Install:
- Front wheel hubs
- Front brake calipers
- Front wheels

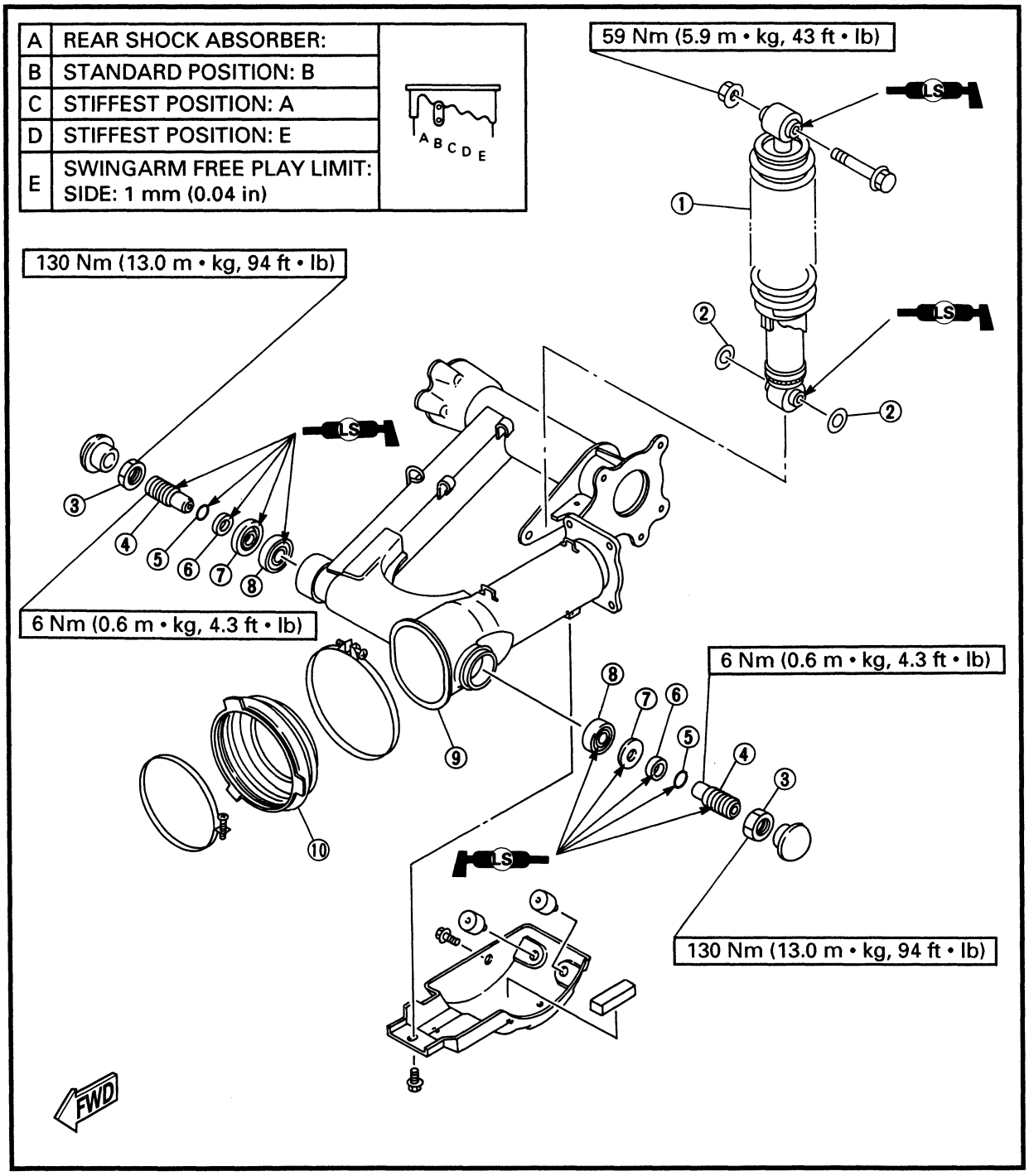
Refer to the "FRONT WHEEL" section.

7. Adjust:
- Toe-in

Refer to the "TOE-IN ADJUSTMENT" section in CHAPTER 3.

REAR SHOCK ABSORBER AND SWINGARM

① Rear shock absorber
② Spacer collar
③ Locknut
④ Pivot shaft
⑤ O-ring
⑥ Collar
⑦ Oil seal
⑧ Taper roller bearing
⑨ Swingarm
⑩ Rubber boot



REMOVAL

1. Remove:
- Seat
- Rear fender

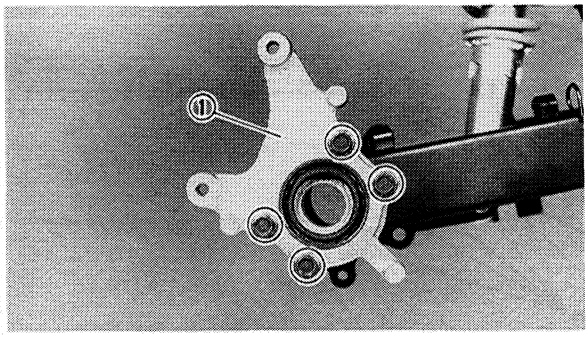
Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section in CHAPTER 3.

2. Remove:
- Rear wheels
- Rear wheel hubs

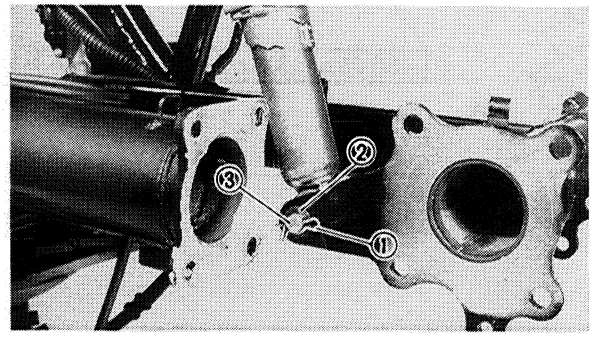
Refer to the "REAR WHEEL" section.

3. Remove:
- Rear brake caliper
- Brake disc
- Rear axle
- Rear final gear assembly
- Rear drive shaft

Refer to the "REAR AXLE/REAR FINAL GEAR AND REAR DRIVE SHAFT" section in CHAPTER 6.



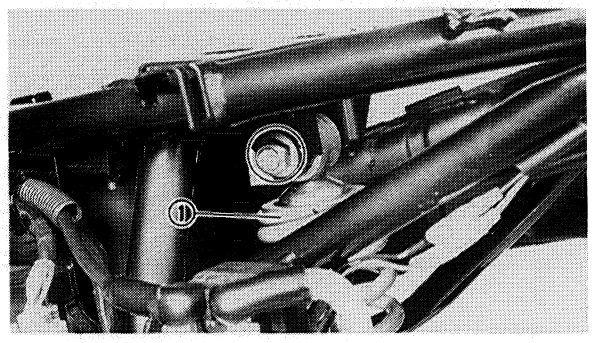
4. Remove:
- Brake caliper bracket ①



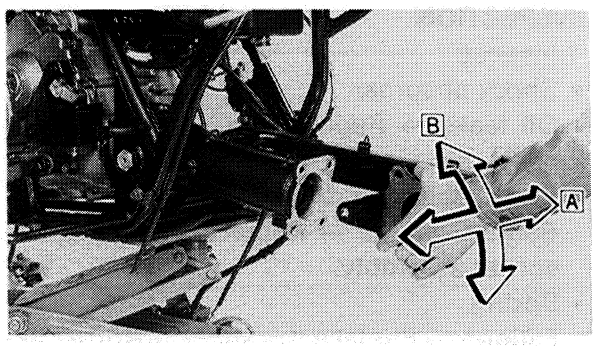
5. Remove:
- Clip ①
- Washer ②
- Shaft (shock absorber - lower) ③
- Spacer collars

NOTE:

When removing the lower shaft ③, hold the swingarm so that it does not drop downwards when the shaft is removed.



6. Remove:
- Bolt (shock absorber - upper)
- Shock absorber ①



7. Remove:
- Caps (pivot shaft)

8. Inspect:
- Swingarm free play

****

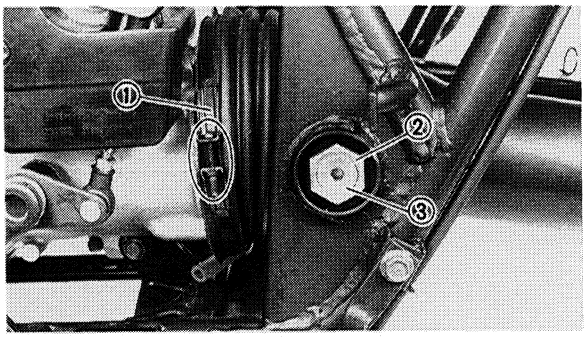
Inspection steps:

- Check the tightening torque of the pivot shafts (swingarm) and locknuts (pivot shaft).

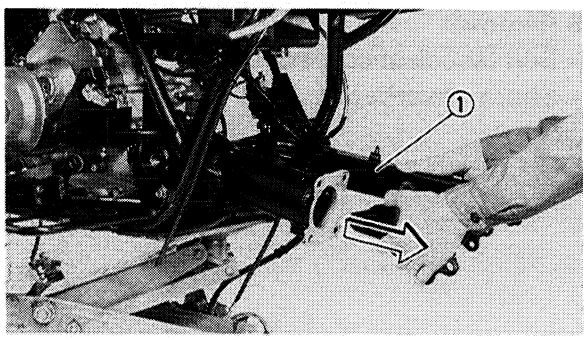
	Pivot shaft (swingarm): **6 Nm (0.6 m • kg, 4.3 ft • lb)** **Locknut (pivot shaft):** **130 Nm (13 m • kg, 94 ft • lb)**

- Check the swingarm side play [A] by moving it from side to side.
  If side play noticeable, check the spacer collar, bearing and frame pivot.
- Check the swingarm vertical movement [B] by moving it up and down.
  If vertical movement is tight, binding or rough, check the spacer collar, bearing and frame pivot.

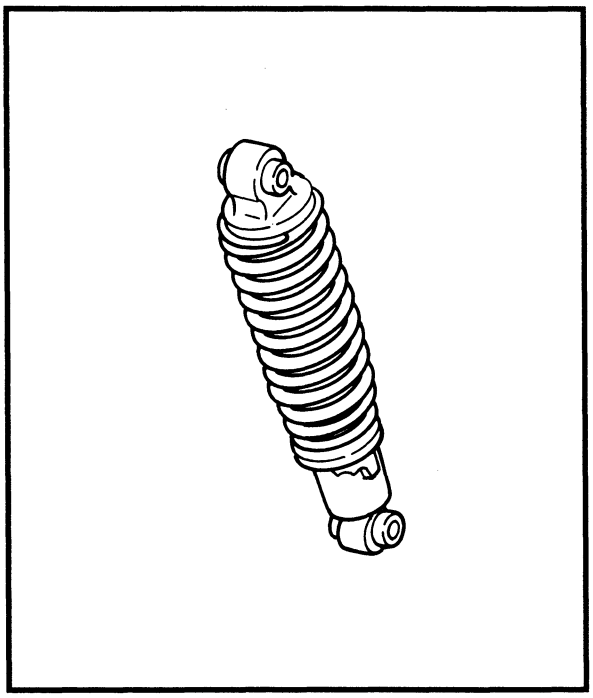
****



9. Remove:
- Clamp (rubber boot) ①
- Locknuts (pivot shaft) ②
- Pivot shafts (swingarm) ③

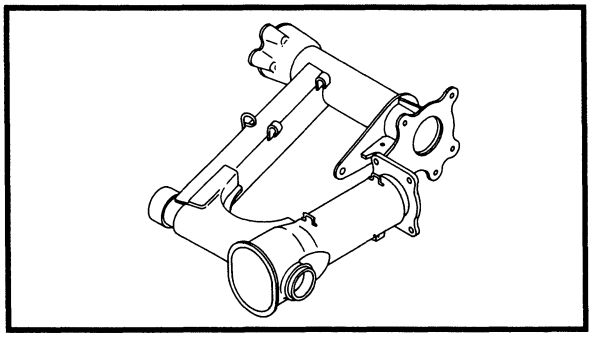


10. Remove:
- Swingarm ①

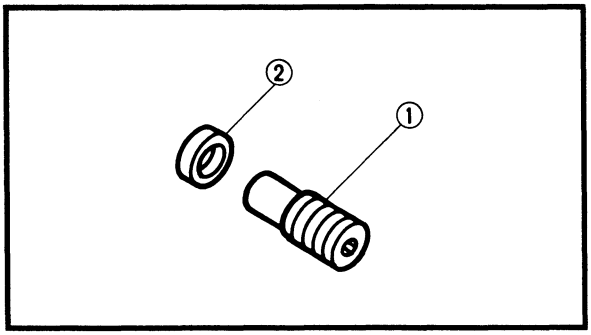


INSPECTION

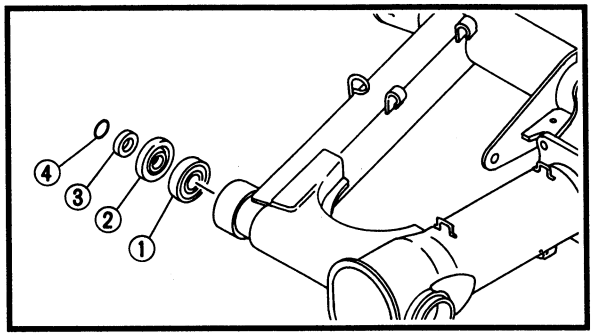
1. Inspect:
- Shock absorber
  Oil leaks → Replace the shock absorber assembly.
- Shock absorber rod
  Bends/Damage → Replace the shock absorber assembly.
- Spring
  Fatigue → Replace the shock absorber assembly.
  Move the spring up and down.



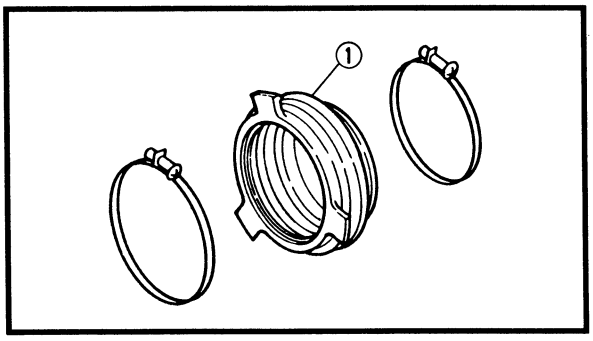
2. Inspect:
- Swingarm
  Cracks/Bends/Damage → Replace.



3. Inspect:
- Pivot shaft (swingarm) ①
- Spacer collar ②
  Wear/Damage → Replace.



4. Inspect:
- Bearings (swingarm) ①
  Bearings allow play in the swingarm or to the bearing turns roughly → Replace.
- Oil seals ②
- Collars ③
- O-ring ④
  Wear/Damage → Replace.



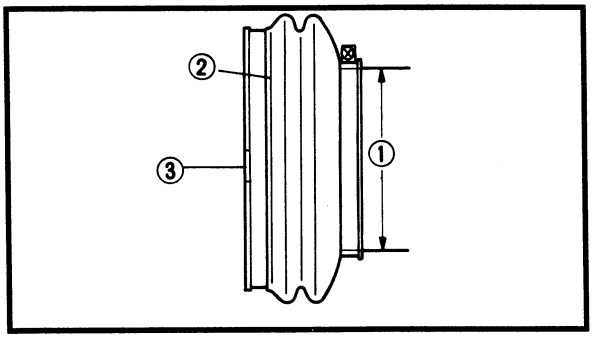
5. Inspect:
- Rubber boot ①
  Damage → Replace.

INSTALLATION

Reverse the "REMOVAL" procedures.
Note the following points.

1. Lubricate:
- Bearings ①
- Oil seals ②
- Collars ③
- O-ring ④
- Pivot shafts ⑤

	Lithium-soap base grease

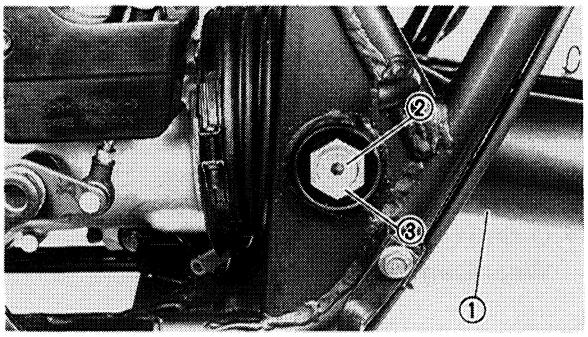


2. Apply:
- Adhesive (for rubber)
  (to the swingarm end ①)

3. Install:
- Rubber boot ②

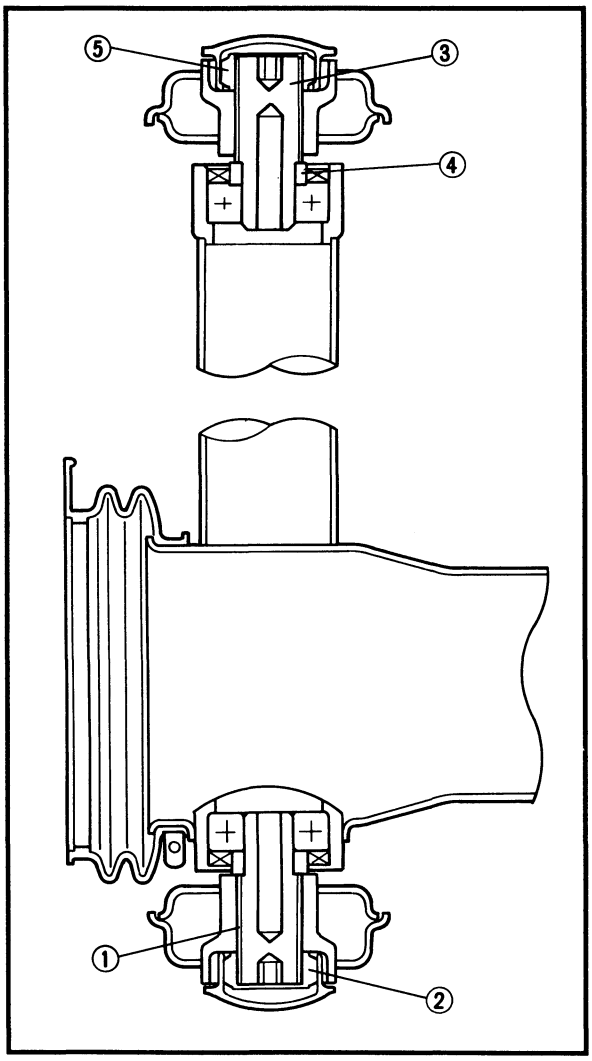
NOTE:

Be sure to position the rubber boot so that the tang ③ faces left.



4. Install:
- Swingarm ①
- Pivot shafts ②
- Locknuts (swingarm) ③

NOTE:
Finger tighten the pivot shafts and locknuts, do not torque them at this point.



5. Tighten:
- Pivot shafts

****

Tightening steps:
- Tighten the pivot shaft (left) ① to specification.

	Pivot shaft (left): 6 Nm (0.6 m • kg, 4.3 ft • lb)

- Tighten the locknut (left) ② to specification.

	Locknut (left): 130 Nm (13 m • kg, 94 ft • lb)

- Tighten the pivot shaft (right) ③ unit it contacts the collar ④.

	Pivot shaft (right): 6 Nm (0.6 m • kg, 4.3 ft • lb)

- Tighten the locknut (right) ⑤ to specification.

	Locknut (right): 130 Nm (13 m • kg, 94 ft • lb)

****

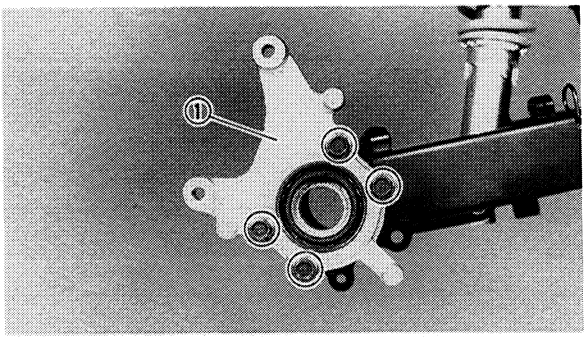
6. Lubricate:
- Bushings (shock absorber-upper and lower)

	Litium-soap base grease

7. Install:
- Shock absorber

	Nut (shock absorber - upper): 59 Nm (5.9 m • kg, 43 ft • lb)

NOTE:
Lift up the swingarm to install rear shock absorber.



8. Install:
- Brake caliper bracket ①

	Bolt (brake caliper bracket): 28 Nm (2.8 m • kg, 20 ft • lb)

9. Install:
- Rear drive shaft
- Rear final gear assembly
- Rear axle
- Brake disc
- Rear brake caliper

Refer to the "REAR AXLE/REAR FINAL GEAR AND REAR DRIVE SHAFT" section in CHAPTER 6.

10. Install:
- Rear wheel hubs
- Rear wheels

Refer to the "REAR WHEEL" section.

11. Install:
- Rear fender
- Seat

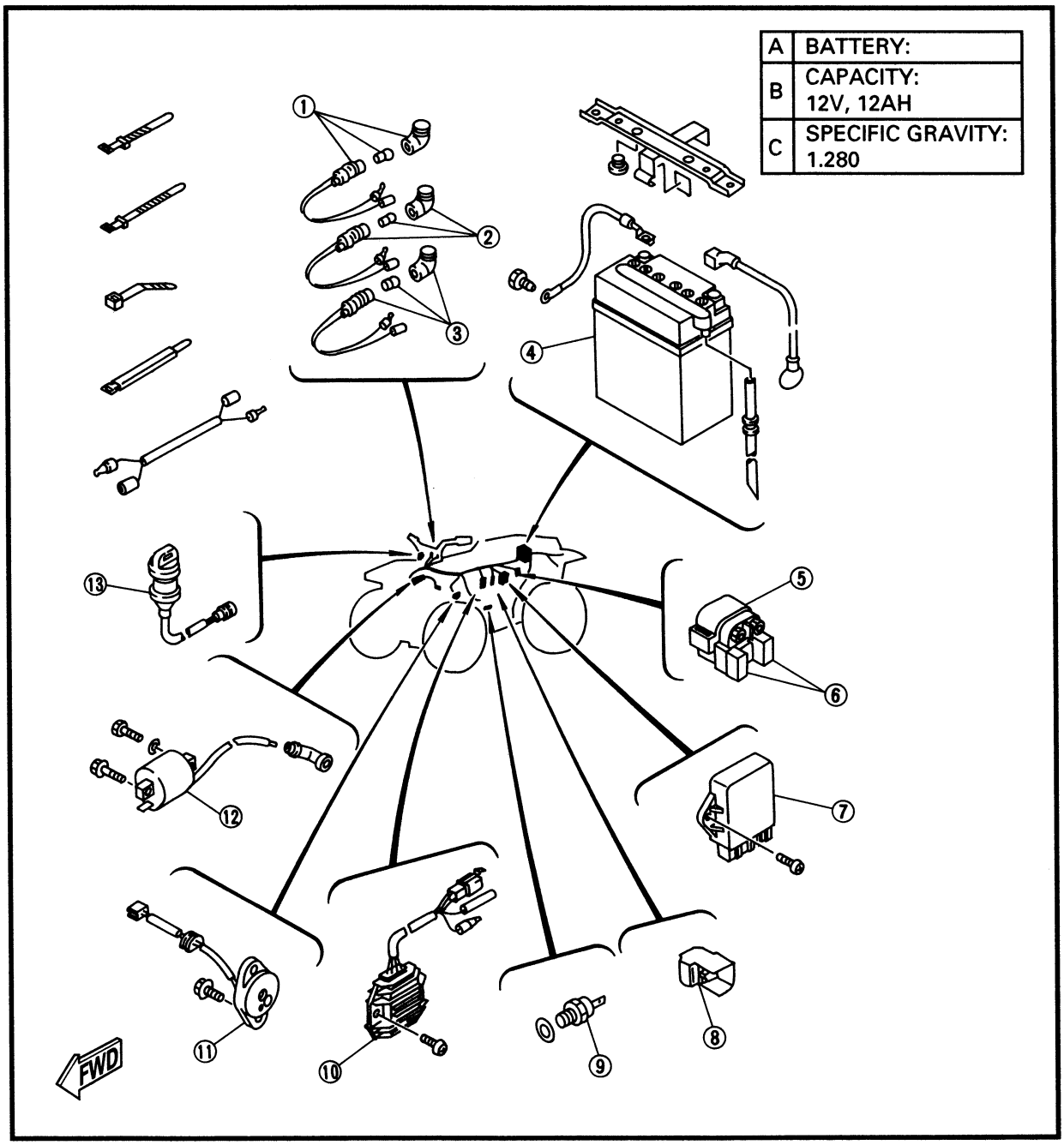
Refer to the "SEAT, CARRIERS, FENDERS AND FUEL TANK" section in CHAPTER 3.

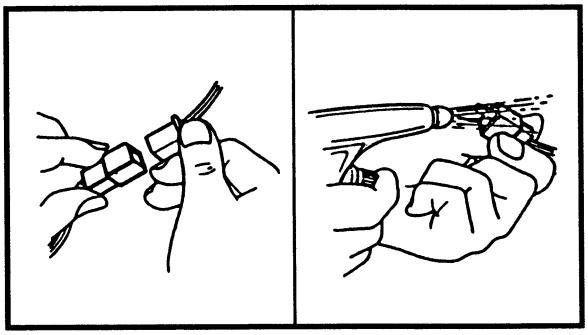
ELECTRICAL

ELECTRICAL COMPONENTS

① "OIL TEMP" indicator light
② "NEUTRAL" indicator light
③ "REVERSE" indicator light
④ Battery
⑤ Starter relay
⑥ Fuse
⑦ CDI unit
⑧ Starting circuit cut-off relay
⑨ Thermo switch
⑩ Rectifier/regulator
⑪ Gear position switch
⑫ Ignition coil
⑬ Main switch
⑭ Wire harness

SPECIFICATIONS	RESISTANCE
IGNITION COIL:	
PRIMARY	0.36 ~ 0.48 Ω
SECONDARY	5.44 ~ 7.36 kΩ
PICK-UP COIL	459 ~ 561 Ω
SOURCE COIL	270 ~ 330 Ω
CHARGING COIL	0.45 ~ 0.55 Ω

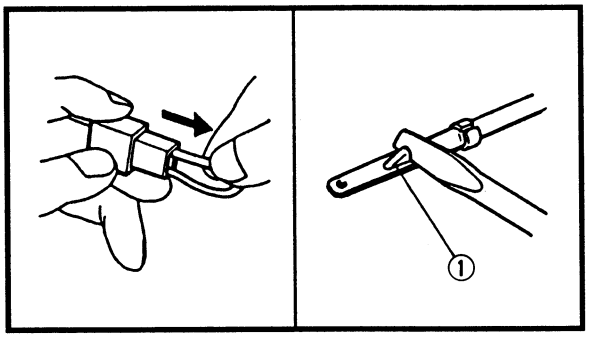




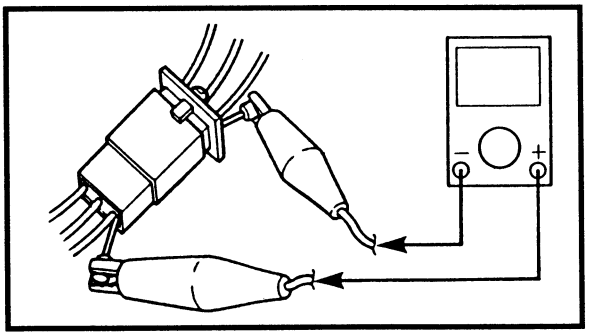
CHECKING OF CONNECTIONS

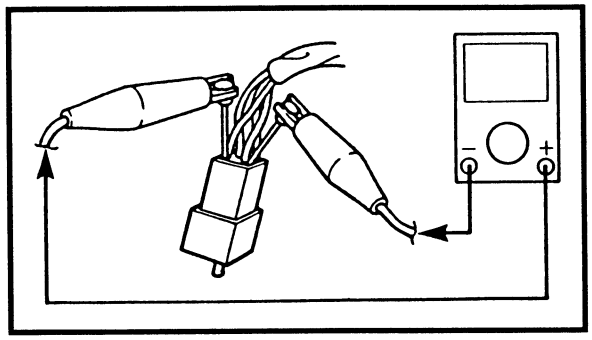
Dealing with stains, rust, moisture, etc. on the connector.

1. Disconnect:
   - Connector
2. Dry each terminal by an air blower.



3. Connect and disconnect the connector two or three times.
4. Pull the lead to check that it will not come off.
5. If the terminal comes off, bend up the pin ① and reinsert the terminal into connector.





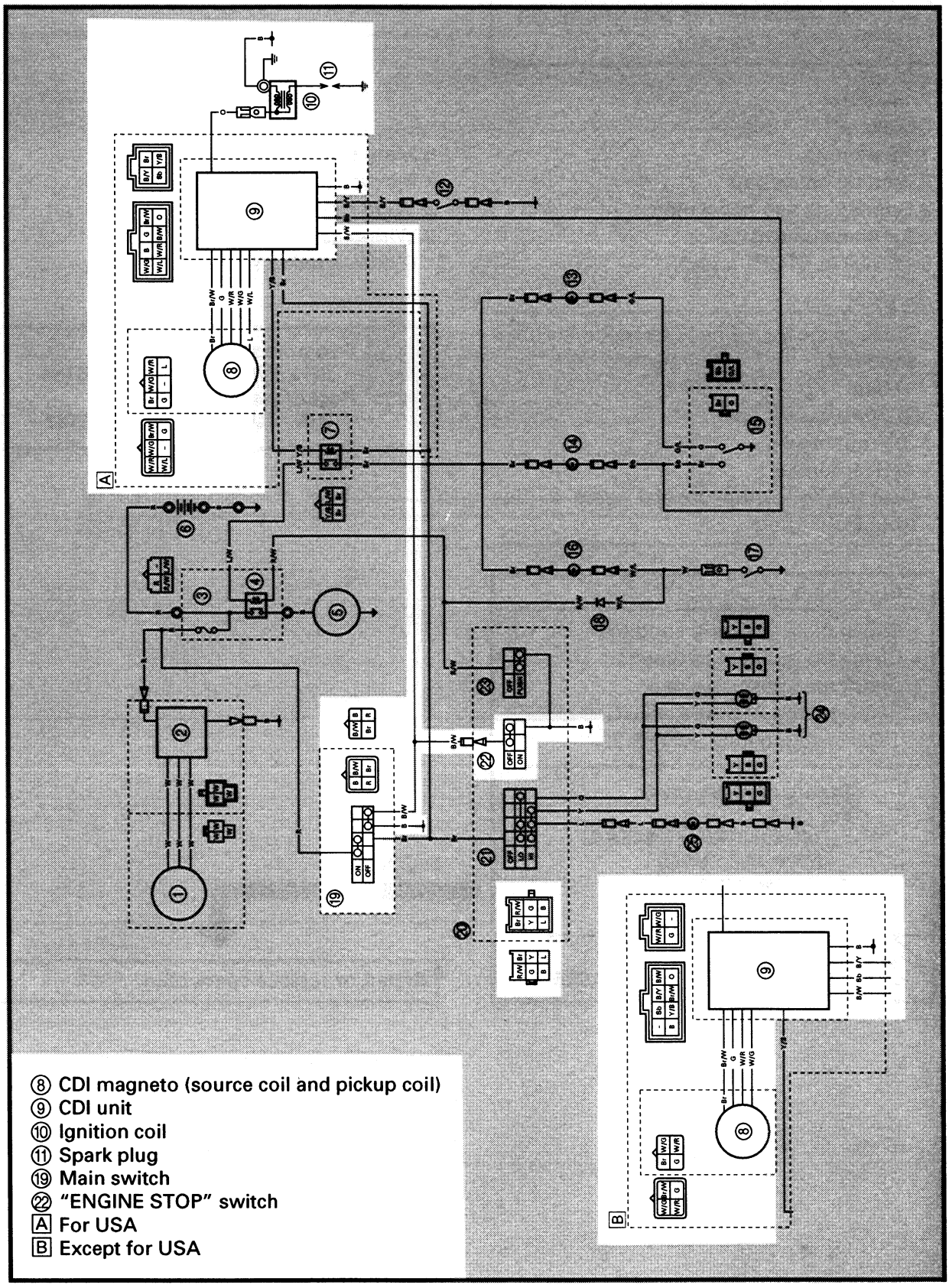
6. Connect:
   - Connector
7. Check for continuity by a tester.

NOTE:

- If there is no continuity, clean the terminals.
- Be sure to perform the above steps 1 to 7 when checking the wireharness.
- When replacing the CDI unit, be sure to check its connector.
- For a field remedy, use a contact revitalizer available on the market.
- Us the tester on the connector as shown.

IGNITION SYSTEM

CIRCUIT DIAGRAM



TROUBLESHOOTING

IF THE IGNITION SYSTEM SHOULD BECOME INOPERATIVE (NO SPARK OR INTERMITTENT SPARK).

Procedure

Check:

1. Spark plug
2. Ignition spark gap
3. Spark plug cap resistance
4. Ignition coil resistance
5. "ENGINE STOP" switch
6. Main switch
7. Pickup coil resistance
8. Source coil resistance
9. Wiring connection. (Entire ignition system)

NOTE:

- Remove the following parts before troubleshooting.
  1) Seat
  2) Front carrier bar
  3) Front fender
  4) Rear fender
- Use the following special tools in this troubleshooting.



Dynamic spark tester:
P/N. YM-34487, 90890-06754
Pocket tester:
P/N. YU-03112, 90890-03112

1. Spark plug

- Check the spark plug condition.
- Check the spark plug type.
- Check the spark plug gap.
  Refer to the "SPARK PLUG INSPECTION" section in CHAPTER 3.

Standard spark plug:
For USA
D8EA (NGK) or X24ES-U (NIPPONDENSO)
Except for USA
DR8EA (NGK)



Spark plug gap:
0.6 ~ 0.7 mm (0.024 ~ 0.028 in)

INCORRECT → Repair or replace spark plug.

CORRECT ⇩

*

*

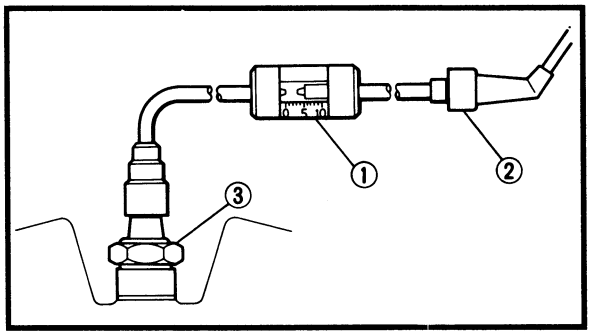
2. Ignition spark gap

- Disconnect the spark plug cap from the spark plug.
- Connect the dynamic spark tester ① as shown.

② Spark plug cap
③ Spark plug

- Turn the main switch to "ON".
- Check the ignition spark gap.
- Start the engine and increase the spark gap until misfiring occurs.

Minimum spark gap:
6.0 mm (0.24 in)



MEETS SPECIFICATION

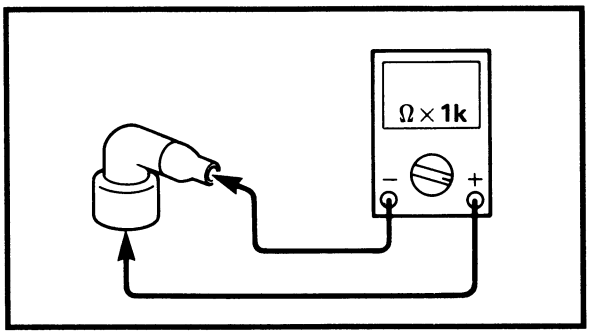
Ignition system is good.

OUT OF SPECIFICATION OR NO SPARK

3. Spark plug cap resistance

- Remove the spark plug cap.
- Connect the pocket tester (Ω × 1k) to the spark plug cap.
- Check the spark plug cap for specified resistance.

Spark plug cap resistance:
10kΩ at 20°C (68°F)



OUT OF SPECIFICATION

Spark plug cap is faulty, replace it.

MEETS SPECIFICATION

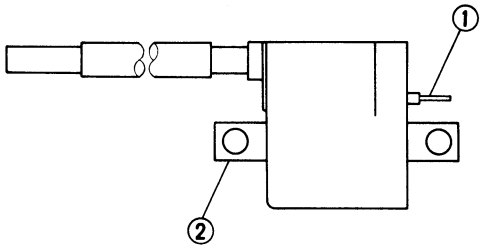
4. Ignition coil resistance

- Disconnect the ignition coil lead (Orange) from the ignition coil.
- Connect the pocket tester (Ω × 1) to the ignition coil.

Tester (+) lead → Lead terminal ①
Tester (–) lead → Ignition coil base ②

- Check the primary coil for specified resistance.

Primary coil resistance:
0.36 ~ 0.48Ω at 20°C (68°F)
(lead terminal – ignition coil base)

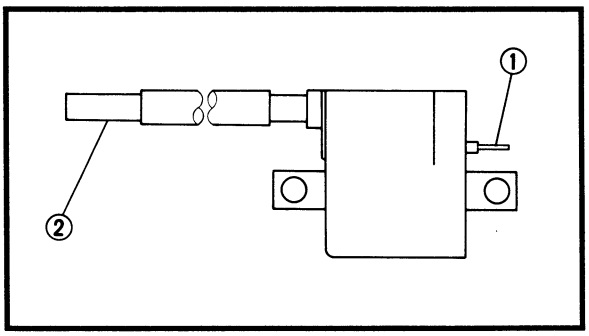


- Connect the Pocket tester (Ω × 1k) to the ignition coil.

Tester (+) lead → Lead terminal ①
Tester (–) lead → Spark plug lead ②

- Check the secondary coil for specificated resistance.

Secondary coil resistance:
5.44 ~ 7.36kΩ at 20°C (68°F)
(lead terminal - spark plug lead)

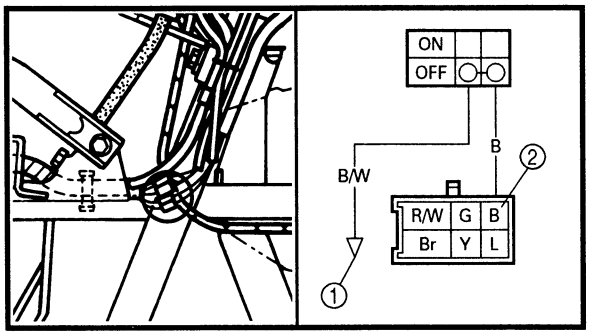


OUT OF SPECIFICATION → Ignition coil is faulty, replace it.

BOTH MEET SPECIFICATIONS ⇩

5. "ENGINE STOP" switch

- Disconnect the "ENGINE STOP" switch coupler from the wireharness.



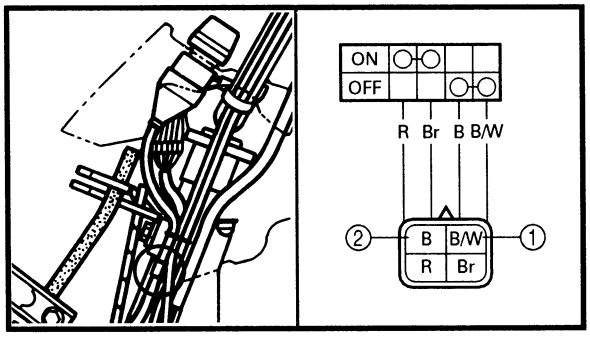
- Check the switch component for the continuity between "Black/White ① and Black ②".

INCORRECT → "ENGINE STOP" switch is faulty, replace handlebar switch (left).

CORRECT ⇩

6. Main switch

- Disconnect the main switch coupler from the wireharness.



- Check the switch component for the continuity between "Black/White ① and Black ②".

INCORRECT → Main switch is faulty, replace it.

CORRECT ⇩

*

*

7. Pickup coil resistance

- Disconnect the CDI magneto coupler from the wireharness.
- Connect the pocket tester (Ω × 100) to the pickup coil leads.

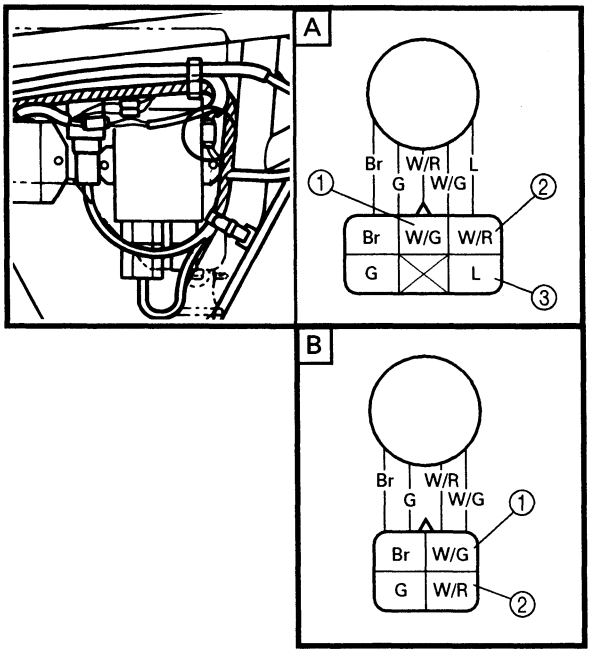
Tester (+) lead → White/Green terminal ①
Tester (–) lead → White/Red terminal ②

Ⓐ only:
Tester (+) lead → Blue terminal ③
Tester (–) lead → White/Red terminal ②

Ⓐ For USA
Ⓑ Except for USA

- Check the pickup coil for specified resistance.

Pickup coil resistance:
Ⓐ: 459 ~ 561Ω at 20°C (68°F)
(White/Green – White/Red)
(Blue – White/Red)
Ⓑ: 459 ~ 561Ω at 20°C (68°F)
(White/Green – White/Red)



OUT OF SPECIFICATION

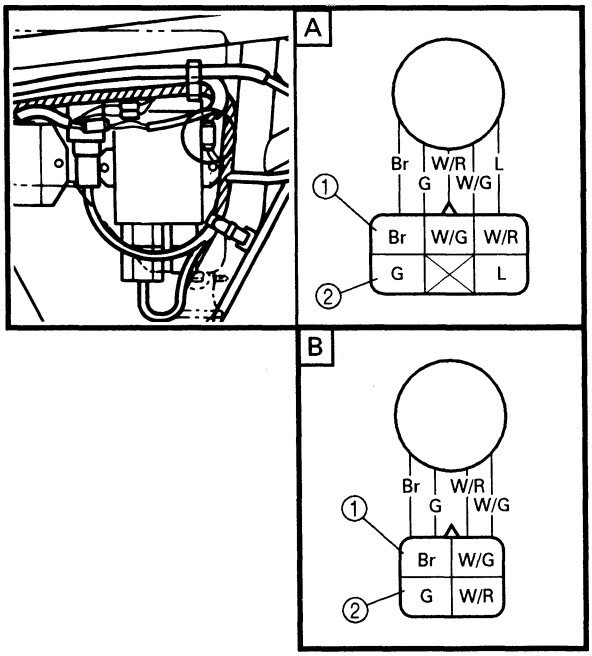
Pickup coil is faulty, replace it.

MEETS SPECIFICATION

8. Source coil resistance

- Disconnect the CDI magneto coupler from the wireharness.
- Connect the pocket tester (Ω × 100) to the source coil leads.

Tester (+) lead → Brown terminal ①
Tester (–) lead → Green terminal ②



Ⓐ For USA
Ⓑ Except for USA

- Check the source coil for specified resistance.

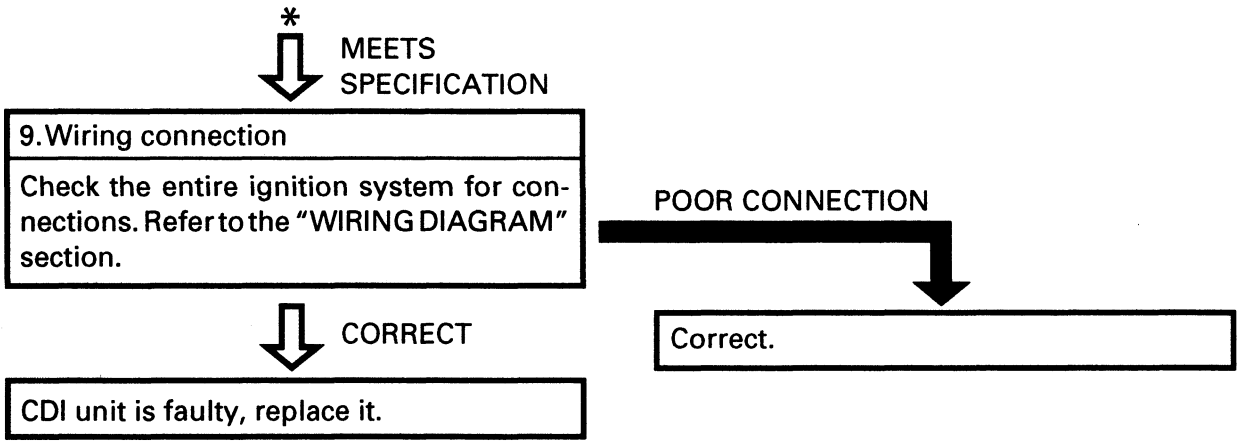
Source coil resistance:
270 ~ 330Ω at 20°C (68°F)
(Brown – Green)

OUT OF SPECIFICATION

Source coil is faulty, replace it.

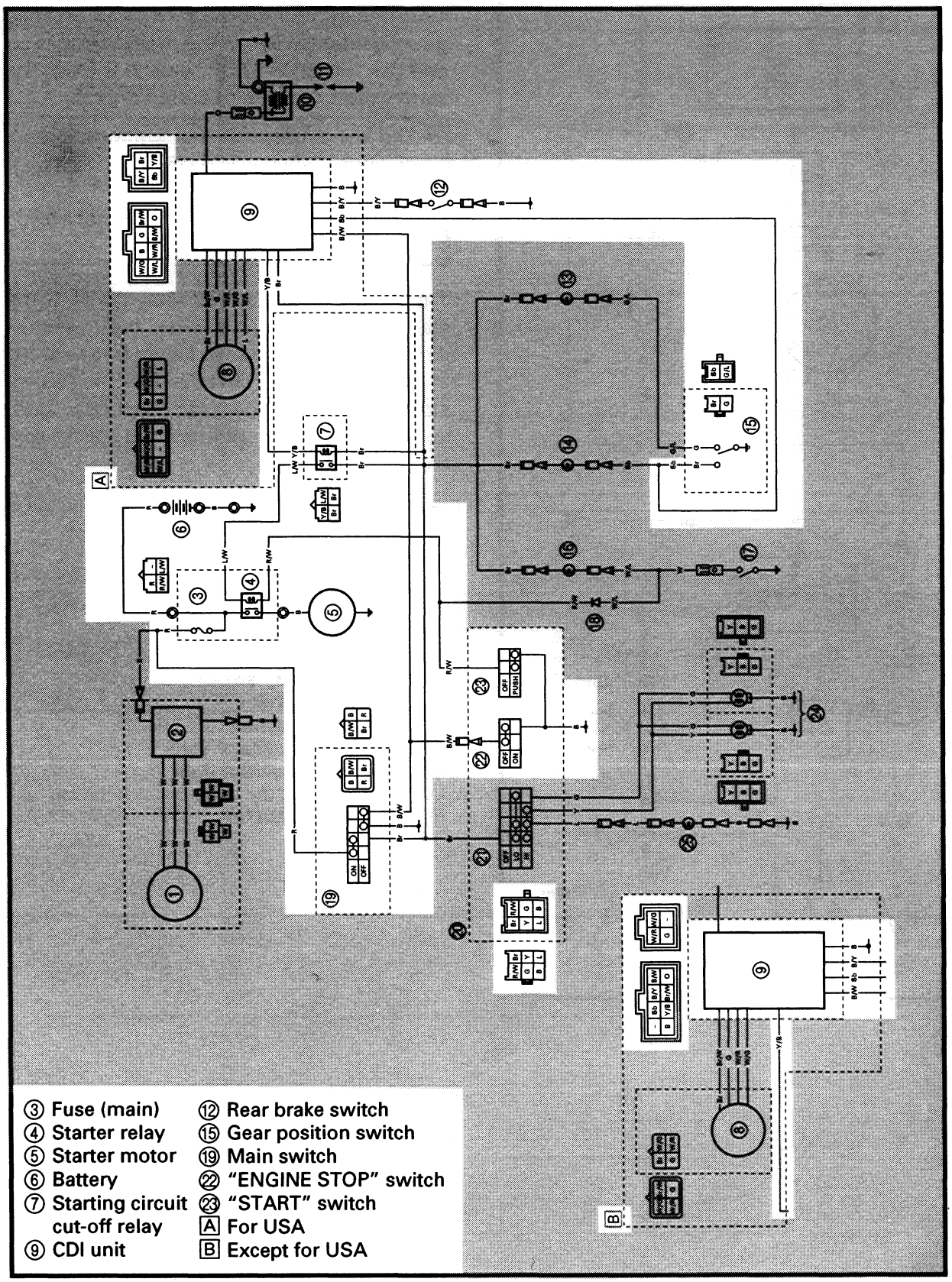
MEETS SPECIFICATION

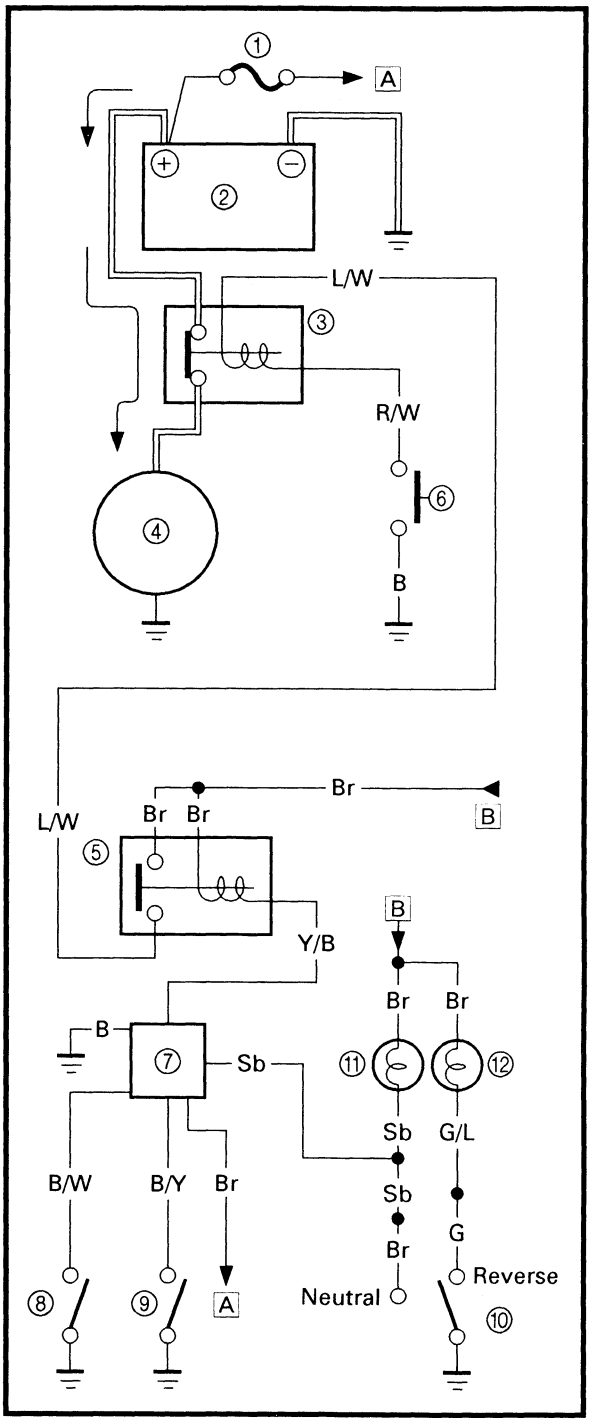
*


*
MEETS SPECIFICATION
9. Wiring connection
Check the entire ignition system for connections. Refer to the "WIRING DIAGRAM" section.
POOR CONNECTION
Correct.
CORRECT
CDI unit is faulty, replace it.

ELECTRICAL STARTING SYSTEM

CIRCUIT DIAGRAM





STARTING CIRCUIT OPERATION

The starting circuit on this model consists of the starter motor, starter relay, starting circuit cut-off relay, rear brake switch, CDI unit and gear position switch. If the main switch is on and the "ENGINE STOP" switch is RUN, the starter motor can be operated only if:

- The transmission is in neutral (the gear position switch is NEUTRAL).

  or

- Pull in the rear brake lever (the rear brake switch is ON).

The starting circuit cut-off relay prevents the starter from operating when the transmission is in gear or the select lever is in reverse, and the rear brake lever is free. In this instance, the starting circuit cut-off relay is off so that current cannot reach the starter motor.

① Fuse
② Battery
③ Starter relay
④ Starter motor
⑤ Starting circuit cut-off relay
⑥ "START" switch
⑦ CDI unit
⑧ "ENGINE STOP" switch
⑨ Rear brake switch
⑩ Gear position switch
⑪ "NEUTRAL" indicator light
⑫ "REVERSE" indicator light
[A] TO MAIN SWITCH
[B] FROM MAIN SWITCH

TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

Procedure

Check:

1. Fuse
2. Battery
3. Starter motor
4. Starter relay
5. Main switch
6. "START" switch
7. Starting circuit cut-off relay
8. "ENGINE STOP" switch
9. Gear position switch
10. Rear brake switch
11. Wiring connection
    (entire electric starting system)

NOTE:

- Remove the following before troubleshooting.
  1) Seat
  2) Front carrier bar
  3) Front fender
  4) Rear fender
- Use the following special tool in this troubleshooting.



Pocket tester:
P/N. YU-03112, 90890-03112

1. Fuse (main)
   - Check the fuse condition. Refer to the "FUSE INSPECTION" section in the CHAPTER 3.

INCORRECT → Fuse is faulty, replace it.

CORRECT ↓

2. Battery
   - Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

   Specific gravity:
   1.280 at 20°C (68°F)

INCORRECT →
- Refill the battery fluid
- Clean the battery terminals.
- Recharge or replace the battery

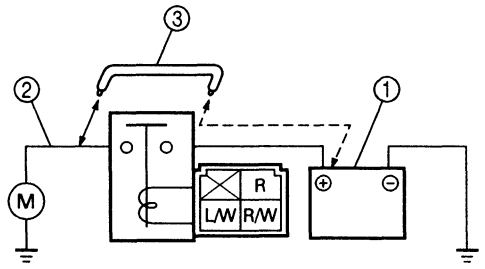
CORRECT ↓

*

*

3. Starter motor

- Connect the battery positive terminal ① and starter motor cable ② using a jumper lead ③ * as shown.



- Check the starter motor for operation.

*

⚠ WARNING

A wire for the jumper lead must have a capacity equivalent to or greater than that of the battery lead. Otherwise it may cause the jumper lead to be burned. This check is likely to produce sparks, so be sure that no flammable gas or fluid is in the vicinity.

DOES NOT MOVE

Starter motor is faulty, repair or replace it.

MOVES

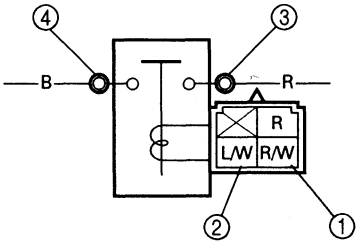
4. Starter relay

- Disconnect the starter relay coupler.
- Connect the pocket tester (Ω × 1) and battery (12V) to the relay coupler terminals.

Battery (+) terminal →
Red/White terminal ①
Battery (–) terminal →
Blue/White terminal ②

Tester (+) lead → Red terminal ③
Tester (–) lead → Black terminal ④

- Check the starter relay for continuity.



NO CONTINUITY

Starter relay is faulty, replace it.

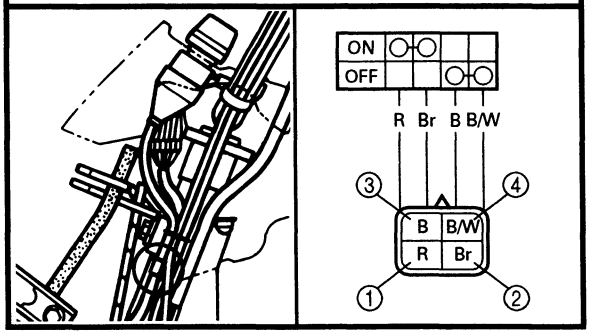
CONTINUITY

*

*

5. Main switch

- Disconnect the main switch coupler from the wireharness.
- Check the switch component for the continuity between "Red ① and Brown ②" and "Black ③ and Black/White ④". Refer to the "CHECKING OF SWITCHES" section.



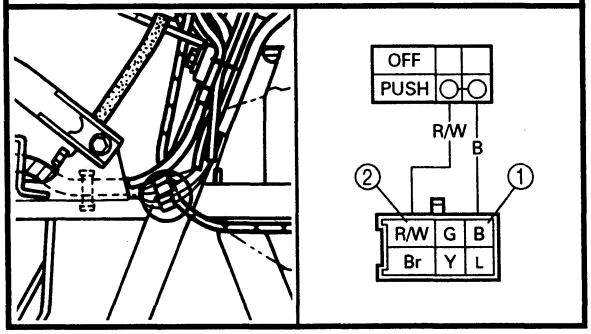
INCORRECT

Main switch is faulty, replace it.

CORRECT

6. "START" switch

- Disconnect the handlebar switch coupler from the wireharness.
- Check the switch component for the continuity between "Black ① and Red/White ②".



INCORRECT

"START" switch is faulty, replace handlebar switch (left).

CORRECT

*

*

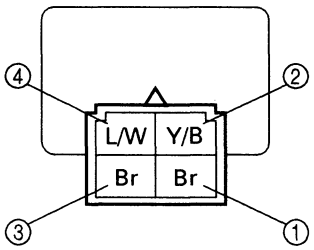
7. Starting circuit cut-off relay

- Disconnect the starting circuit cut-off relay coupler from the wireharness.
- Connect the pocket tester (Ω × 1) and battery (12 V) to the relay coupler terminals.

Battery (+) terminal →
Brown terminal ①
Battery (–) terminal →
Yellow/Black terminal ②

Tester (+) lead → Brown terminal ③
Tester (–) lead → Blue/White terminal ④

- Check the starting circuit cut-off relay for continuity.



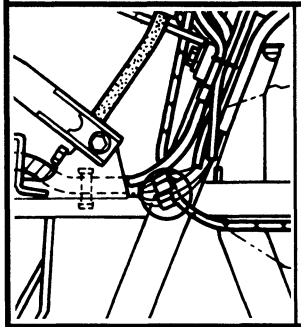
NO CONTINUITY

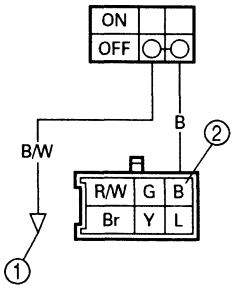
Starting circuit cut-off relay is faulty, replace it.

CONTINUITY

8. "ENGINE STOP" switch

- Disconnect the "ENGINE STOP" switch coupler from the wireharness.





- Check the switch component for the continuity between "Black/White ① and Black ②".

INCORRECT

"ENGINE STOP" switch is faulty, replace handlebar switch (left).

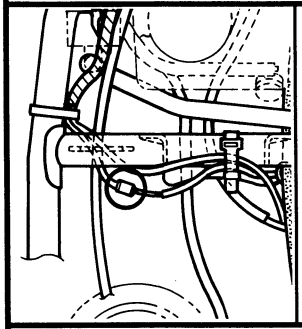
CORRECT

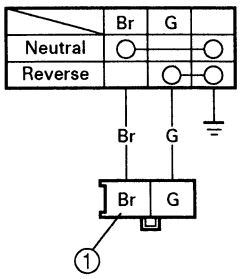
*

*

9. Gear position switch

- Disconnect the gerar position switch coupler from the wireharness.





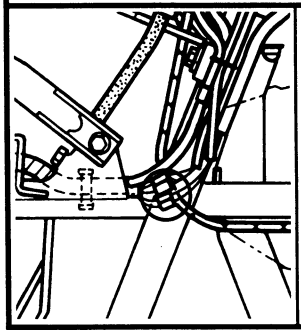
- Check the switch component for the continuity between "Brown ① and ground".

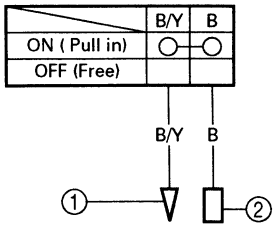
INCORRECT → Gear position switch is faulty, replace it.

CORRECT

10. Rear brake switch

- Disconnect the rear brake switch leads from the wire harness.





- Check the switch component for the continuity between "Black/Yellow ① and Black ②".

INCORRECT → Brake switch is faulty, replace it.

CORRECT

11. Wiring connection

- Check the entire starting system for connections. Refer to the "WIRING DIAGRAM" section.

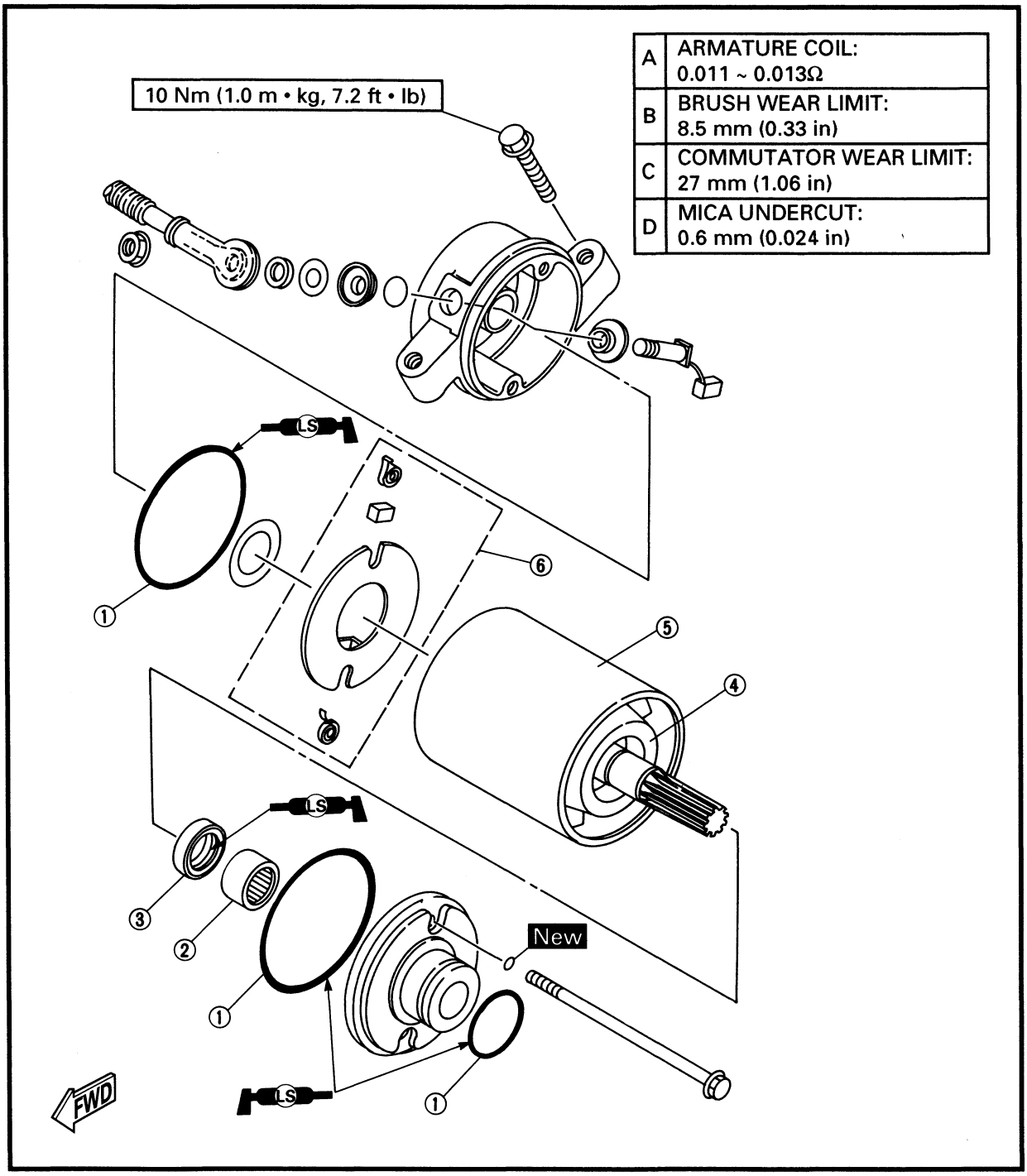
POOR CONNECTION → Correct.

CORRECT

CDI unit is faulty, replace it.

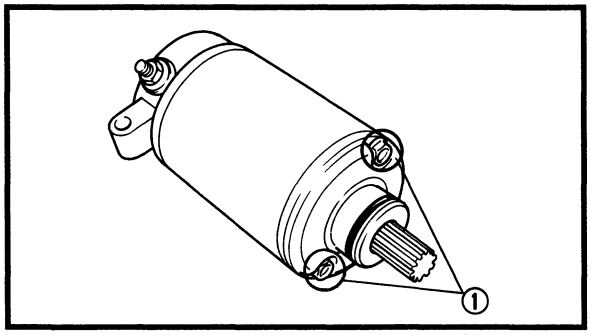
STARTER MOTOR

① O-ring
② Bearing
③ Oil seal
④ Armature coil assembly
⑤ Yoke assembly
⑥ Brush set



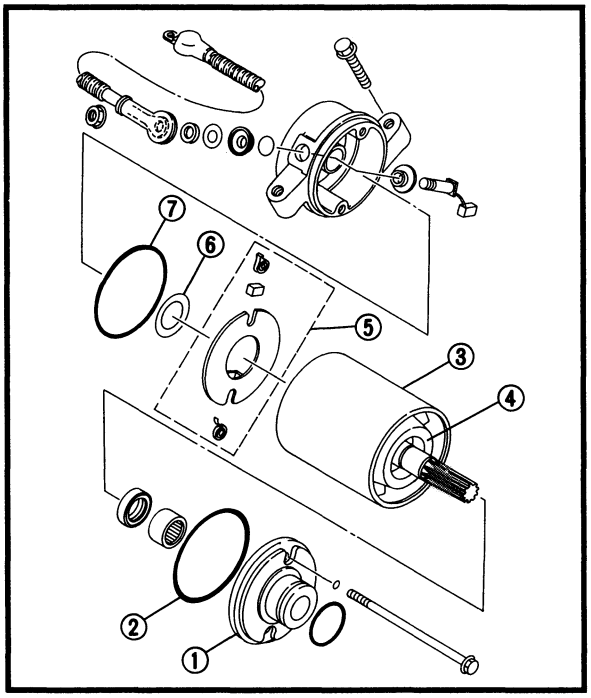
Removal

1. Remove:
- Starter motor
  Refer to the "ENGINE REMOVAL" section in CHAPTER 4.

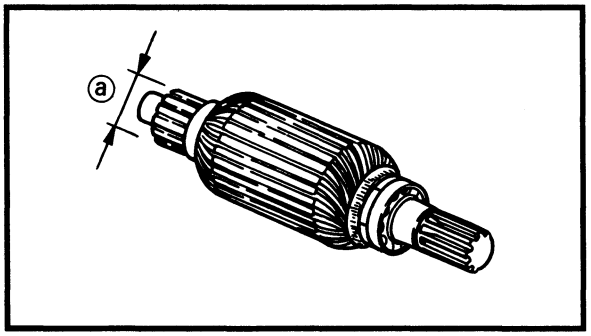


Disassembly

1. Remove:
- Bolts ①
- O-rings



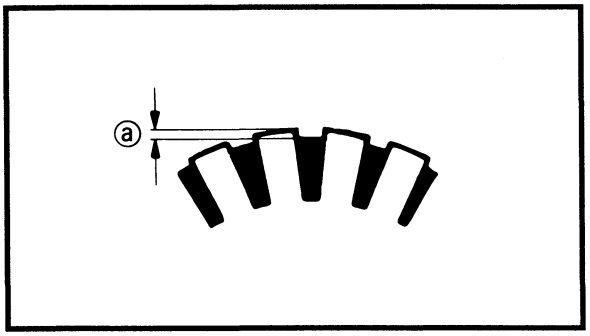
2. Remove:
- Bracket ①
- O-ring ②
- Washer
- Shim
- Yoke ③
- Armature ④
- Brush assembly ⑤
- Shim ⑥
- O-ring ⑦



Inspection and repair

1. Inspect:
- Commutator
  Dirty → Clean it with #600 grit sandpaper.
2. Measure:
- Commutator diameter ⓐ
  Out of specification → Replace.

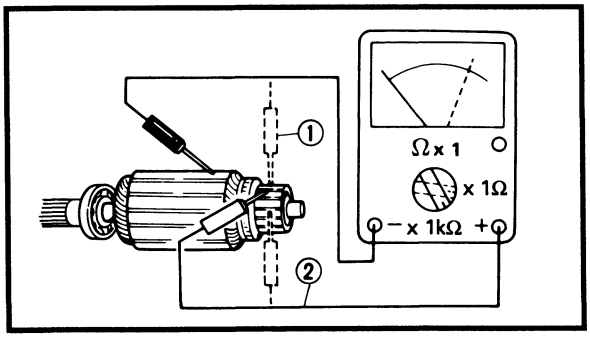
Outside diameter:
28 mm (1.10 in)
<Wear limit:>
<27 mm (1.06 in)>



3. Measure:
- Mica undercut ⓐ
  Out of specification → Scrape mica using a hacksaw blade.

Mica undercut:
0.6 mm (0.024 in)

NOTE:
The mica insulation of the commutator must be undercut to ensure proper operation of the commutator.



4. Inspect:
- Armature coil (insulation/continuity)
  Defects(s) → Replace starter motor.

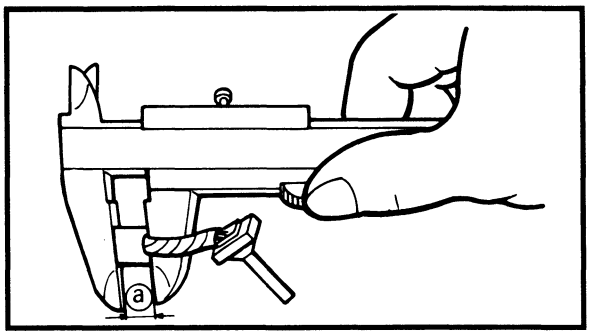
****

Armature coil inspecting steps:
- Connect the pocket tester for continuity check ① and insulation check ②.
- Measure the armature resistances.

Armature coil resistance:
Continuity check ①:
0.011 ~ 0.013Ω at 20°C (68°F)
Insulation check ②:
More than 1MΩ at 20°C (68°F)

- If the resistance is incorrect, replace the starter motor.

****

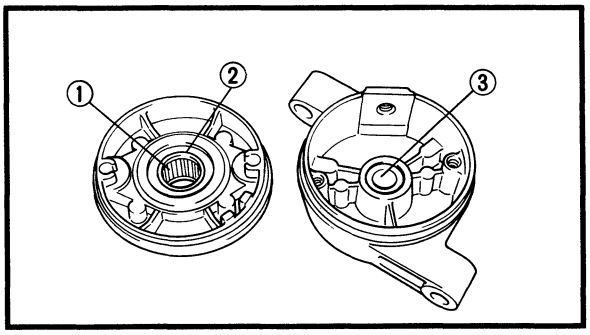


5. Measure:
- Brush length ⓐ (each)
  Out of specification → Replace brush.

Brush length:
12.0 mm (0.47 in)
<Wear limit:>
<8.5 mm (0.33 in)>

6. Measure:
- Brush spring force
  Fatigue/Out of specification → Replace as a set.

Brush spring force:
650 ~ 950 g (22.9 ~ 33.5 oz)

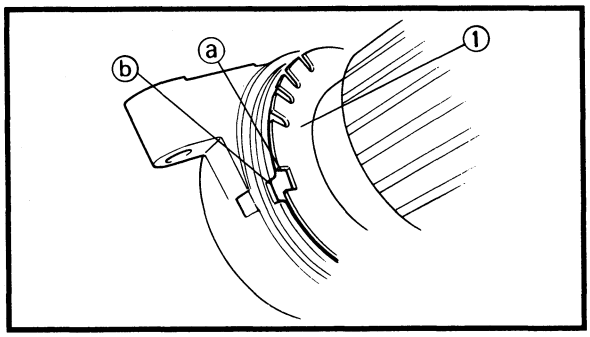


7. Inspect:
- Bearing ①
- Oil seal ②
- Bushing ③
- O-rings
  Wear/Damage → Replace.

Assembly

Reverse the "Disassembly" procedures. Note the following points.

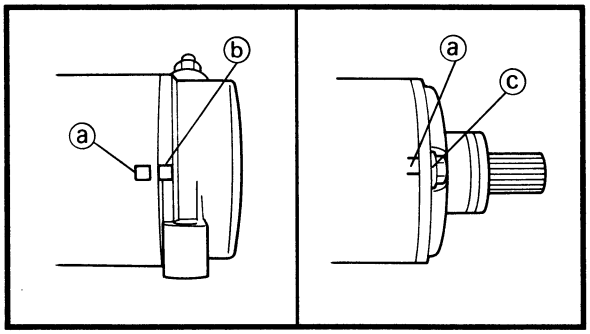
1. Apply:
- Lithium soap base grease
  (onto oil seal lips and o-rings)



2. Install:
- Brush seat ①

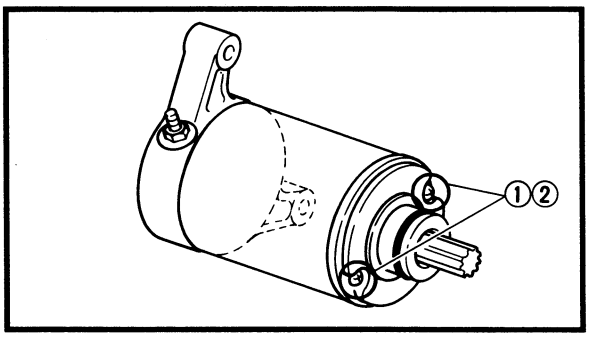
NOTE:

Align the slot ⓐ on the brush seat with the slot ⓑ on the housing.



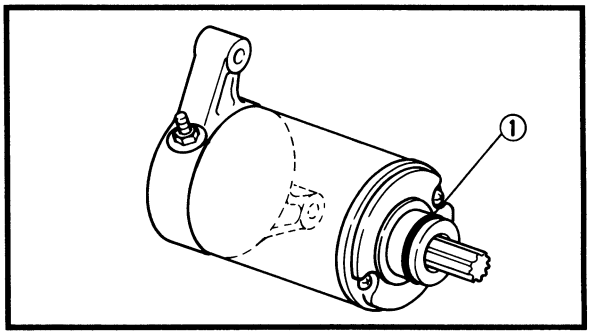
3. Install:
- Yoke
- Bracket

NOTE:
Align the match marks ⓐ on the yoke with the match mark ⓑ and bolt hole ⓒ on the bracket.



4. Install:
- O-rings ①
- Bolts ②

⚠ WARNING
Always use new O-rings.



Installation
1. Install:
- Starter motor

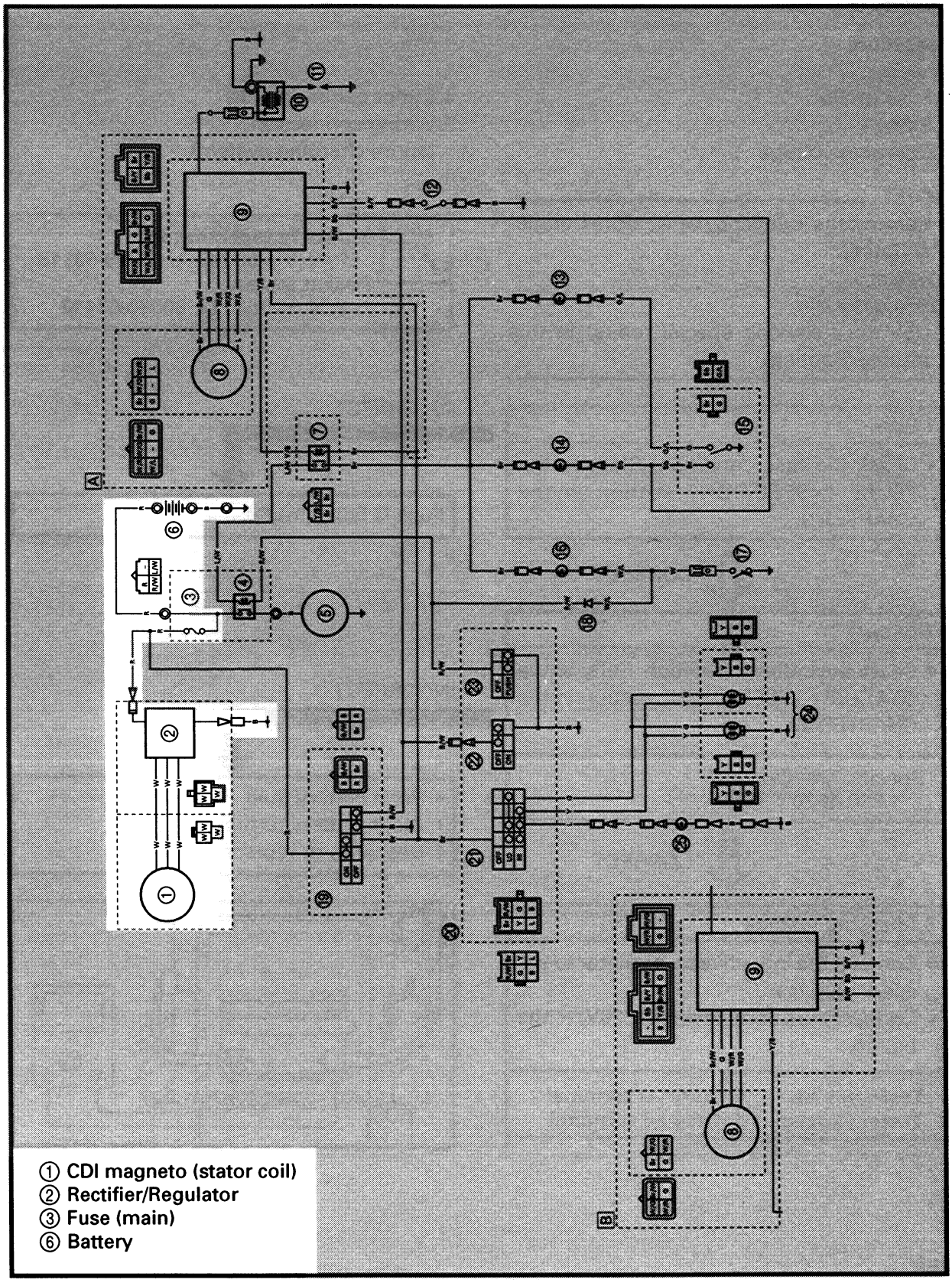
NOTE:
Apply grease lightly to the O-ring ①.

	Bolts (starter motor): 10 Nm (1.0 m • kg, 7,2 ft • lb)

Refer to the "ENGINE ASSEMBLY AND ADJUSTMENT" section in CHAPTER 4.

CHARGING SYSTEM

CIRCUIT DIAGRAM



TROUBLESHOOTING

THE BATTERY IS NOT CHARGED.

Procedure
Check:
1. Fuse (main)
2. Battery
3. Charging voltage
4. Stator coil resistance
5. Wiring connection (entire charging system)

NOTE:
- Remove the following parts before troubleshooting.
  1) Seat
  2) Rear fender
- Use the following special tool(s) in this troubleshooting.

Inductive tachometer:
P/N. YU-08036-A, 90890-03113
Pocket tester:
P/N. YU-03112, 90890-03112

1. Fuse
- Check the fuse condition. Refer to the "FUSE INSPECTION" section in the CHAPTER 3.

INCORRECT → Fuse is faulty, replace it.

CORRECT ⇩

2. Battery
- Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

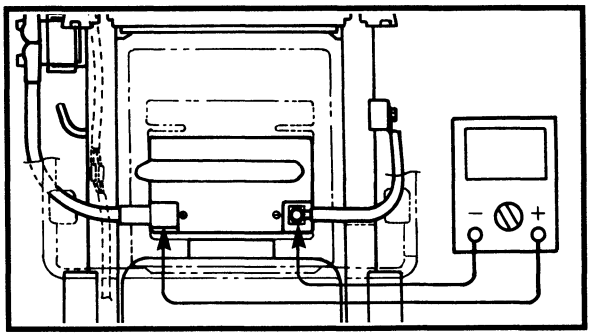
Specific gravity:
1.280 at 20°C (68°C)

INCORRECT →
- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery

CORRECT ⇩

3. Charging voltage
- Connect the inductive tachometer to the spark plug lead.
- Connect the pocket tester (DC20V) to the battery.

Tester (+) lead → Battery (+) terminal
Tester (–) lead → Battery (–) terminal



- Start the engine and accelerate to about, 5,000 r/min.
- Check charging voltage.

Charging voltage:
14.0V at 5,000 r/min

NOTE:
Use a full charged battery.

MEETS SPECIFICATION → Charging circuit is good.

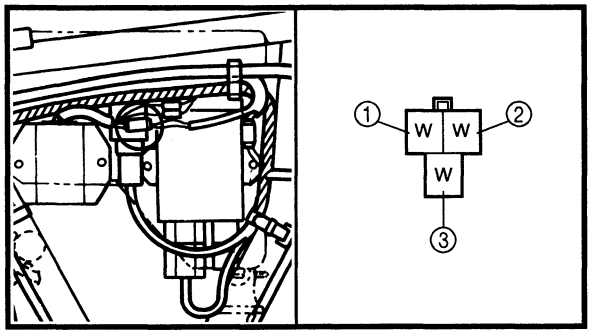
OUT OF SPECIFICATION ↓

4. Stator coil resistance

- Disconnect the stator coil coupler from the wireharness.
- Connect the pocket tester (Ω × 1) to the stator coils.
- Measure the stator coil resistances.

Tester (+) lead → White lead ①
Tester (–) lead → White lead ②

Tester (+) lead → White lead ①
Tester (–) lead → White lead ③



Stator coil resistance:
For USA
0.45 ~ 0.55Ω at 20°C (68°F)
Except for USA
0.70 ~ 0.86Ω at 20°C (68°F)

OUT OF SPECIFICATION → Stator coil is faulty, replace it.

BOTH MEET SPECIFICATION ↓

5. Wiring connection

Check the entire ignition system for connections.
Refer to the "WIRING DIAGRAM" section.

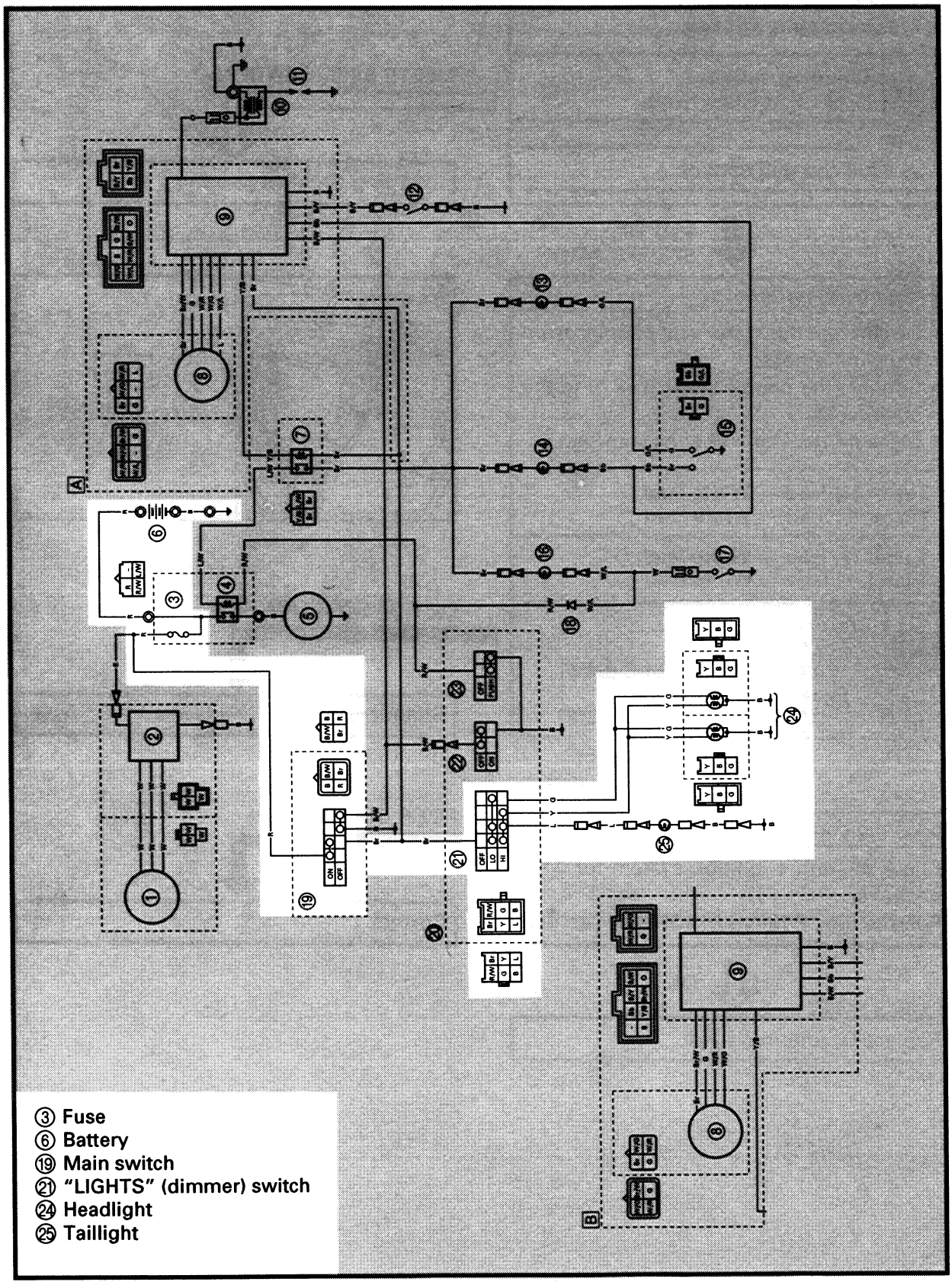
POOR CONNECTION → Correct.

OK ↓

Replace rectifier/regulator.

LIGHTING SYSTEM

CIRCUIT DIAGRAM



TROUBLESHOOTING

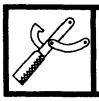
HEADLIGHT AND/OR TAILLIGHT DO NOT COME ON.

Procedure

Check:
1. Fuse
2. Battery
3. Main switch
4. "LIGHTS" (dimmer) switch
5. Wiring connection (entire lighting system)

NOTE:

- Remove the following parts before troubleshooting.
  1) Seat
  2) Front carrier bar
  3) Front fender
  4) Rear fender
- Use the following special tool in this troubleshooting.



Pocket tester:
P/N. YU-03112, 90890-03112

1. Fuse (main)
- Check the fuse condition. Refer to the "FUSE INSPECTION" section in the CHAPTER 3.

INCORRECT → Fuse is faulty, replace it.

CORRECT ⇩

2. Battery
- Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Specific gravity:
1.280 at 20°C (68°F)

INCORRECT →
- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

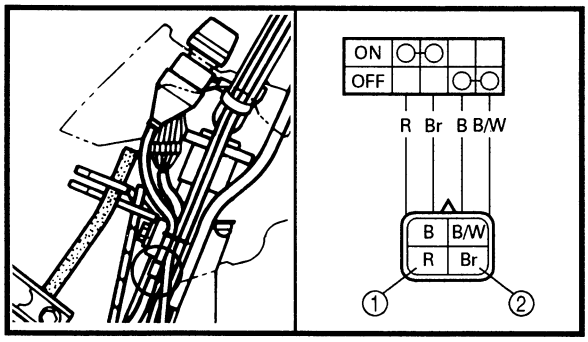
CORRECT ⇩

*

*

3. Main switch

- Disconnect the main switch coupler from the wireharness.



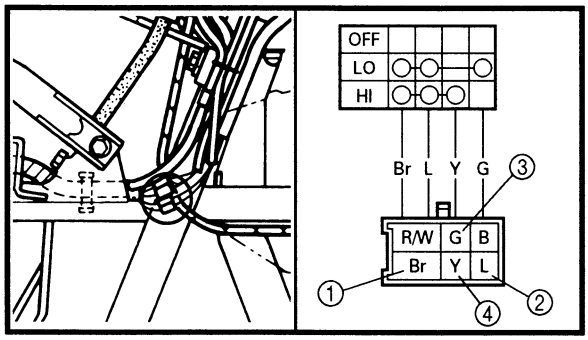
- Check the switch component for the continuity between Red ① and Brown ②.

INCORRECT → Main switch is faulty, replace it.

CORRECT

4. "LIGHTS" (dimmer) switch

- Disconnect the handlebar switch coupler from the wireharness.



- Check the switch component for the continuity between "Brown ① and Blue ②", "Brown ① and Green ③" and "Brown ① and Yellow ④"

INCORRECT → "LIGHTS" (dimmer) switch is faulty, replace handlebar switch (left).

CORRECT

5. Wiring connection

- Check the entire lighting system for connections.
  Refer to the "WIRING DIAGRAM" section.

POOR CONNECTION → Correct.

CORRECT

Check condition of each circuit for lighting system.
Refer to the "LIGHTING SYSTEM CHECK" section.

LIGHTING SYSTEM CHECK

1. Headlights do not come on.

1. Bulb and bulb socket

- Check the bulb and bulb socket for continuity.

NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY ↓

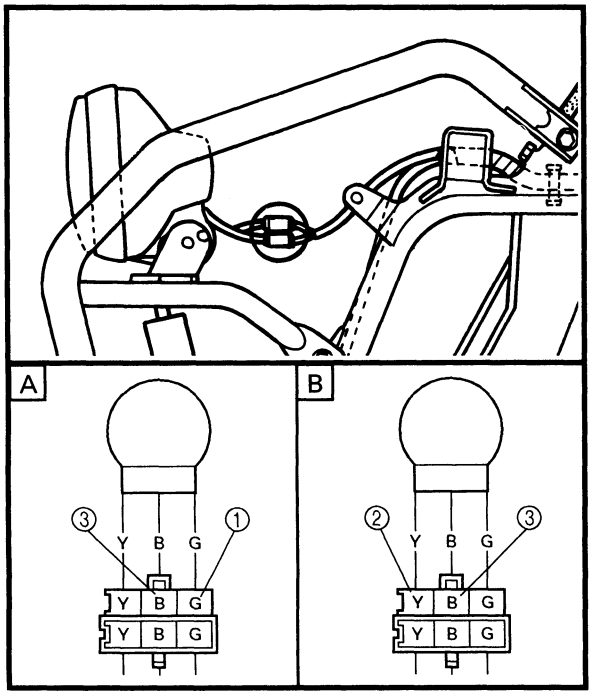
2. Lighting voltage

- Connect the pocket tester (DC20V) to the headlight coupler.

Headlight:
Tester (+) lead → Green ① Yellow ② terminal
Tester (–) lead → Black terminal ③

Ⓐ When "LIGHT" (dimmer) switch is "LO" position.
Ⓑ When "LIGHT" (dimmer) switch is "HI" position.

- Turn the main switch to "ON".
- Turn the "LIGHTS" (dimmer) switch to "LO" or "HI" position.
- Check for voltage (12V) on the "Green" and "Yellow" lead at bulb socket connectors.



OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

BOTH MEET SPECIFICATION (12V) ↓

This circuit is good.

2.Taillight does not come on.

1.Bulb and bulb socket

- Check the bulb and bulb socket for continuity.

NO CONTINUITY

Replace bulb and/or bulb socket.

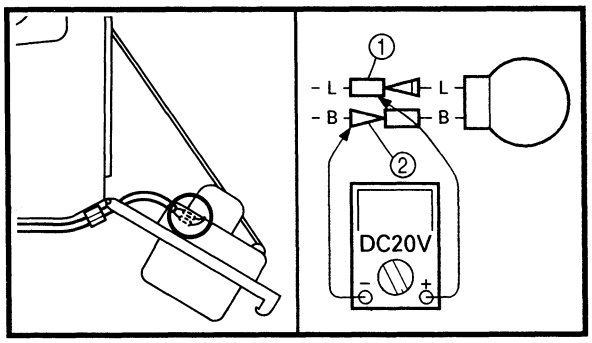
CONTINUITY

2.Lighting voltage

- Connect the pocket tester (DC20V) to the bulb socket leads.

Tester (+) lead → Blue lead ①
Tester (–) lead → Black lead ②

- Turn the main switch to "ON".
- Turn the "LIGHTS" (dimmer) switch to "LO" or "HI" position.
- Check for voltage (12V) on the "Blue" lead at the bulb socket connector.



OUT OF SPECIFICATION

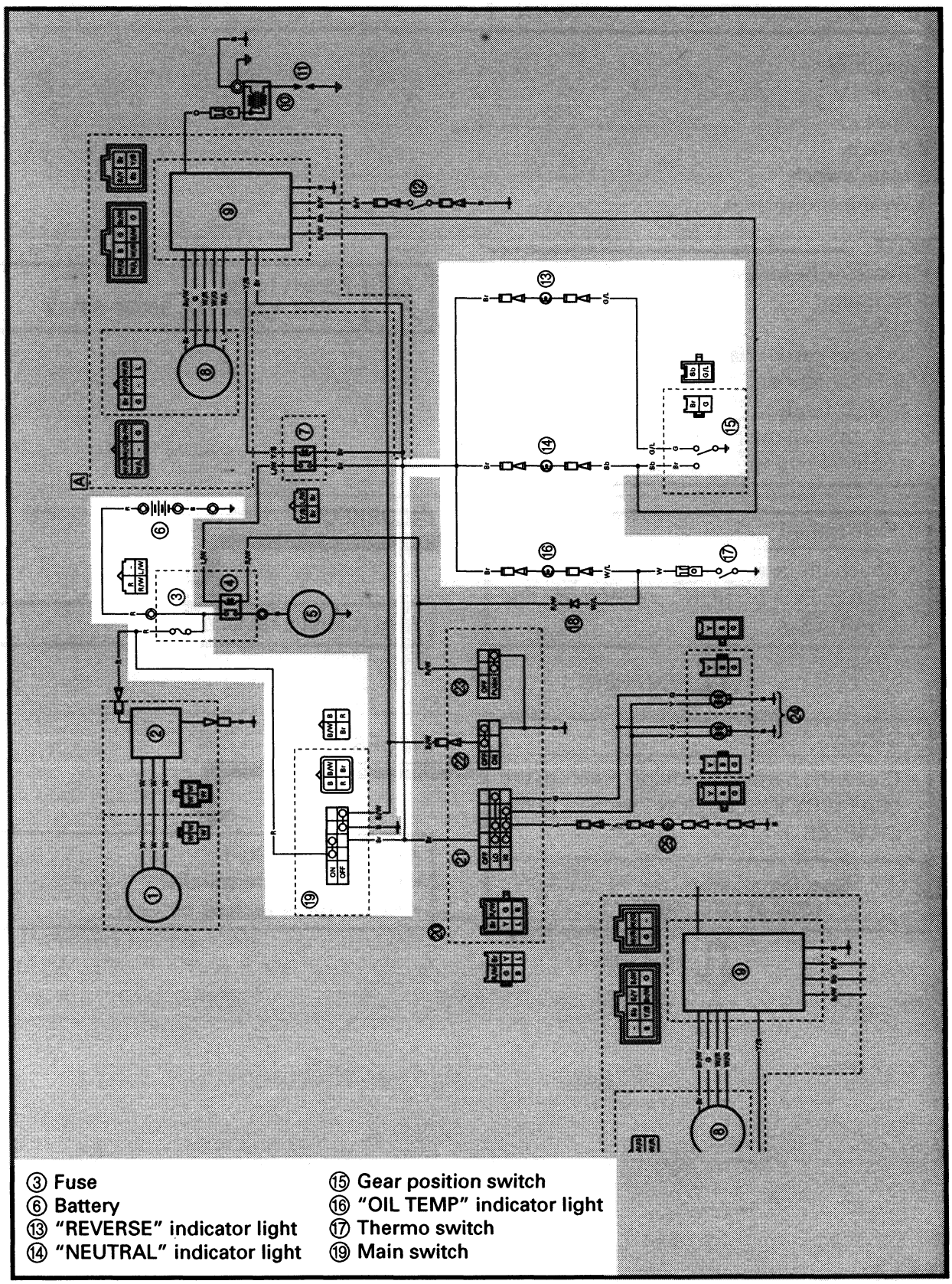
Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V)

This circuit is good.

SIGNAL SYSTEM

CIRCUIT DIAGRAM



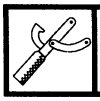
③ Fuse
⑥ Battery
⑬ "REVERSE" indicator light
⑭ "NEUTRAL" indicator light
⑮ Gear position switch
⑯ "OIL TEMP" indicator light
⑰ Thermo switch
⑲ Main switch

TROUBLESHOOTING

"NEUTRAL", "REVERSE" and "OIL TEMP" INDICATOR LIGHTS DO NOT COME ON.

Procedure
Check:
1. Fuse
2. Battery
3. Main switch
4. Wiring connection

NOTE:
- Remove the following parts before troubleshooting.
  1) Seat
  2) Front carrier bar
  3) Front fender
  4) Rear fender
- Use the following special tools in this troubleshooting.



Pocket tester:
P/N. YU-03112, 90890-03112

1. Fuse (main)
- Check the fuse condition. Refer to the "FUSE INSPECTION" section in the CHAPTER 3.

INCORRECT → Fuse is faulty, replace it.

CORRECT ⇩

2. Battery
- Check the battery condition. Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

Specific gravity:
1.280 at 20°C (68°F)

INCORRECT →
- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

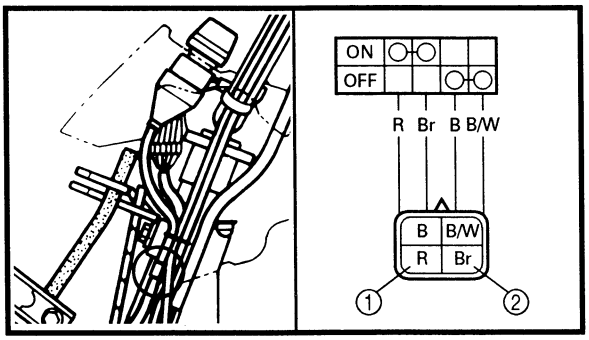
CORRECT ⇩

*

*

3. Main switch

- Disconnect the main switch coupler from the wireharness.



- Check the switch component for the continuity between "Red ① and Brown ②".

INCORRECT

Main switch is faulty, replace it.

CORRECT

4. Wiring connection

- Check the entire signal system for connections. Refer to the "WIRING DIAGRAM" section.

CORRECT

Check condition of each circuit for signal system. Refer to "SIGNAL SYSTEM CHECK" section.

POOR CONNECTION

Correct.

SIGNAL SYSTEM CHECK

1. "NEUTRAL" indicator light does not come on.

1. Bulb and bulb socket

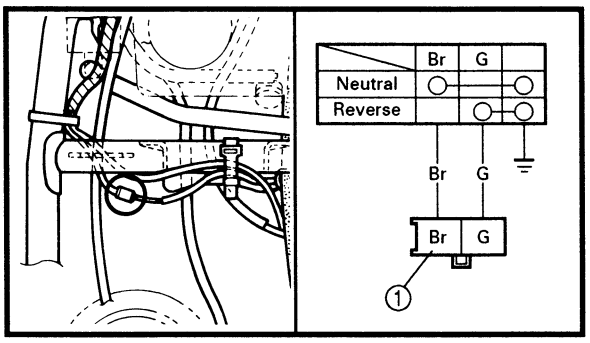
- Check the bulb and bulb socket for continuity.

NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY ⇩

2. Gear position switch

- Disconnect the gear position switch coupler from the wireharness.



- Check the switch component for continuity between the "Brown ① and ground".

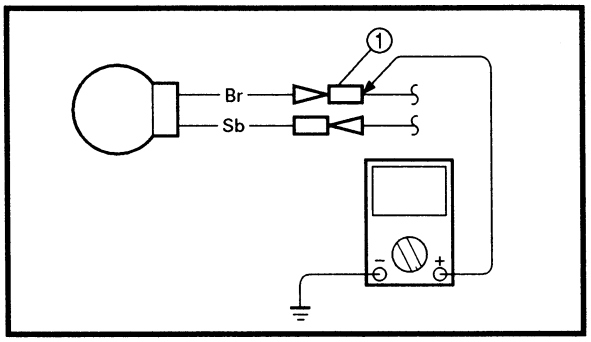
INCORRECT → Gear position switch is faulty, replace it.

CORRECT ⇩

3. Voltage

- Connect the pocket tester (DC20V) to the bulb socket connector.

Tester (+) lead → Brown lead ①
Tester (–) lead → Frame ground



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V) ⇩

This circuit is good.

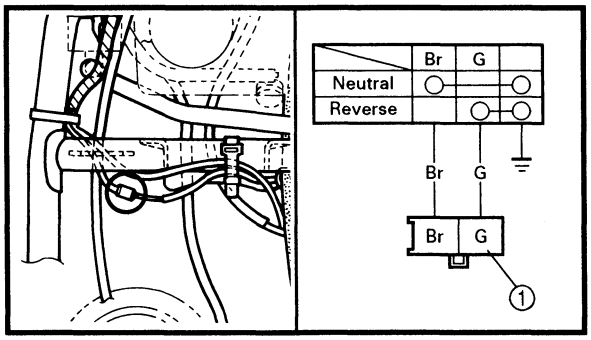
2. "REVERSE" indicator light does not come on.

1. Bulb and bulb socket
- Check the bulb and bulb socket for continuity.

NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY ⇩

2. Gear position switch
- Disconnect the gear position switch coupler from the wireharness.



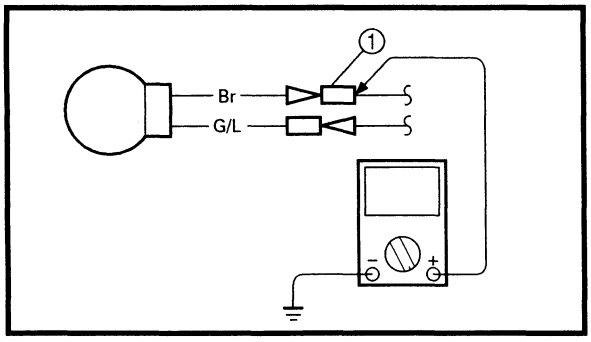
- Check the switch component for continuity between the "Green ① and ground".

INCORRECT → Gear position switch is faulty, replace it.

CONTINUITY ⇩

3. Voltage
- Connect the pocket tester (DC20V) to the bulb socket connector.

Tester (+) lead → Brown lead ①
Tester (–) lead → Frame ground



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V) ⇩

This circuit is good.

3. "OIL TEMP" indicator light does not come on, or "OIL TEMP" indicator light does not go off, or "OIL TEMP" indicator light does not come on at temperature is high (more than 147°C (297°F) ~ 163°C (325°F)).

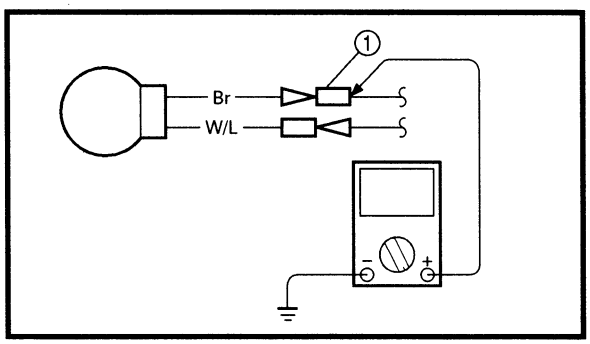
1. Bulb and bulb socket
- Check the bulb and bulb socket for continuity.

NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY ⇩

2. Voltage
- Connect the pocket tester (DC20V) to the bulb socket connector.

Tester (+) lead → Brown lead ①
Tester (–) lead → Frame ground



- Turn the main switch to "ON".
- Check for voltage (12V) on the "Brown" lead at bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12V) ⇩

Thermo switch is faulty, replace it.

TROUBLESHOOTING

NOTE:
The following troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to troubleshooting. Refer to the relative procedure in this manual for inspection, adjustment and replacement of parts.

STARTING FAILURE/HARD STARTING

FUEL SYSTEM

Fuel tank
- Empty
- Clogged fuel filter
- Clogged fuel strainer
- Clogged fuel breather hose
- Deteriorated fuel or fuel containing water or foreign material

Fuel cock
- Clogged fuel hose

Carburetor
- Deteriorated fuel, fuel containing water or foreign material
- Clogged pilot jet
- Clogged pilot air passage
- Sucked-in air
- Deformed float
- Groove-worn needle valve
- Improperly sealed valve seat
- Improperly adjusted fuel level
- Improperly set pilot jet
- Clogged starter jet
- Starter plunger malfunction

Air cleaner
- Clogged air filter element

ELECTRICAL SYSTEM

Spark plug
- Improper plug gap
- Worn electrodes
- Wire between terminals broken
- Improper heat range
- Faulty spark plug cap

Ignition coil
- Broken or shorted primary/secondary
- Faulty spark plug lead
- Broken body

CDI system
- Faulty CDI unit
- Faulty pickup coil
- Faulty source coil
- Broken woodruff key

Switches and wiring
- Faulty main switch
- Faulty "ENGINE STOP" switch
- Broken or shorted wiring
- Faulty gear position switch
- Faulty "START" switch
- Faulty rear brake switch

Starter motor
- Faulty starter motor
- Faulty starter relay
- Faulty starter circuit cut-off relay
- Faulty starter clutch

COMPRESSION SYSTEM

Cylinder and cylinder head
- Loose spark plug
- Loose cylinder head or cylinder
- Broken cylinder head gasket
- Worn, damaged or seized cylinder

Piston and piston ring
- Improperly installed piston ring
- Worn, fatigued or broken piston ring
- Seized piston ring
- Seized or damaged piston

Valve, camshaft and crankshaft
- Improperly sealed valve
- Improperly contacted valve and valve seat
- Improper valve timing
- Broken valve spring
- Seized camshaft
- Seized crankshaft

POOR IDLE SPEED PERFORMANCE

POOR IDLE SPEED PERFORMANCE

Carburetor
- Improperly returned starter plunger
- Loose pilot jet
- Clogged pilot jet
- Clogged pilot air jet
- Improperly adjusted idle speed (Throttle stop screw)
- Improper throttle cable play
- Flooded carburetor

Electrical system
- Faulty spark plug
- Faulty CDI unit
- Faulty pickup coil
- Faulty souse coil
- Faulty ignition coil

Valve train
- Improperly adjusted valve clearance

Air cleaner
- Clogged air filter element

POOR MEDIUM AND HIGH SPEED PERFORMANCE

POOR MEDIUM AND HIGH SPEED PERFORMANCE

Refer to the "STARTING FAILURE/HARD STARTING" and "POOR IDLE SPEED PERFORMANCE-valve train" section.

Carburetor
- Improper jet needle clip position
- Improperly adjusted fuel level
- Clogged or loose main jet
- Deteriorated fuel containing water or foreign material

Air cleaner
- Clogged air filter element

FAULTY DRIVE TRAIN

The following conditions may indicate damaged shaft drive components:

Symptoms	Possible Causes
1. A pronounced hesitation or "jerky" movement during acceleration, deceleration, or sustained speed. (this must not be confused with engine surging or transmission characteristics.) 2. A "rolling rumble" noticeable at low speed; a high-pitched whine; a "clunk" from a shaft drive component or area. 3. A locked-up condition of the shaft drive mechanism, no power transmitted from engine to front and/or rear wheel.	A. Bearing damage. B. Improper gear lash. C. Gear tooth damage. D. Broken drive shaft. E. Broken gear teeth. F. Seizure due to lack of lubrication. G. Small foreign object lodged between moving parts.

NOTE:

Areas A, B, and C above may be extremely difficult to diagnose. The symptoms are quite subtle and difficult to distinguish from normal machine operating noise. If there is reason to believe these components are damaged, remove the components for specific inspection.

FAULTY GEAR SHIFTING

HARD SHIFTING

Refer to the "CLUTCH SLIPPING/DRAGGING-CLUTCH DRAGGING" section.

SHIFT PEDAL DOES NOT MOVE

Shift shaft
- Bent shift shaft

Shift cam, shift fork
- Groove jammed with impurities
- Seized shift fork
- Bent shift fork guide bar

Transmission
- Seized transmission gear
- Jammed impurities
- Incorrectly assembled transmission

Shift guide
- Broken shift guide

JUMP-OUT GEAR

Shift shaft
- Improperly adjusted shift lever position
- Worn shift shaft lever
- Improperly returned stopper level

Shift fork
- Worn shift fork

Shift cam
- Improper thrust play
- Worn shift cam groove

Transmission
- Worn gear dog

CLUTCH SLIPPING/DRAGGING

CLUTCH SLIPPING

Clutch
- Improperly adjusted clutch lever free play
- Loose clutch spring (primary and/or secondary)
- Fatigued clutch spring (primary and/or secondary)
- Worn friction plate
- Worn clutch plate
- Worn clutch shoe (primary)

Engine oil
- Low oil level
- Improper quality (low viscosity)
- Deterioration

CLUTCH DRAGGING

Clutch
- Improperly adjusted clutch release lever free play
- Improper engagement of release lever and push rod
- Warped clutch plate
- Swollen friction plate
- Broken clutch boss

Engine oil
- High oil level
- Improper quality (high viscosity)
- Deterioration

OVERHEATING

OVERHEATING

Ignition system
- Improper spark plug gap
- Improper spark plug heat range
- Faulty CDI unit

Fuel system
- Improper carburetor main jet (improper setting)
- Improperly adjusted fuel level
- Clogged air filter element

Compression system
- Heavy carbon build-up

Engine oil
- Incorrect oil level
- Improper oil viscosity
- Inferior oil quality

Brake
- Dragging brake

Oil cooling system
- Clogged or damaged oil coolar

FAULTY BRAKE

POOR BRAKING EFFECT

Disc brake
- Worn brake pads
- Worn disc
- Air in brake fluid
- Leaking brake fluid
- Faulty master cylinder kit cup
- Faulty caliper kit seal
- Loose union bolt
- Broken brake hose and pipe
- Oily or greasy disc/brake pads
- Improper brake fluid level

Rear parking brake
- Improper parking brake cable free play

SHOCK ABSORBER MALFUNCTION

MALFUNCTION

- Bent or damaged damper rod
- Damaged oil seal lip
- Fatigued shock absorber spring

INSTABLE HANDLING

INSTABLE HANDLING

Handlebars
- Improperly installed or bent

Steering
- Incorrect toe-in
- Bent steering shaft
- Improperly installed steering shaft
- Damaged bearing or bearing race
- Bent tie-rods.
- Deformed steering knuckles

Tires
- Uneven tire pressures on both sides
- Incorrect tire pressure
- Unevenly worn tires

Wheels
- Deformed wheel
- Loose bearing
- Bent or loose wheel axle
- Excessive wheel run-out

Frame
- Twisted
- Damaged frame

Swingarm
- Worn bearing or bush
- Bent or damaged

LIGHTING SYSTEM

HEADLIGHT DARK
- Improper bulb
- Too many electric accessories
- Hard charging (broken stator coil and/or faulty rectifier/regulator)
- Incorrect connection
- Improperly grounded
- Poor contacts main or "LIGHTS" (dimmer) switch
- Bulb life expired

BULB BURNT OUT
- Improper bulb
- Faulty battery
- Faulty rectifier/regulator
- Improperly grounded
- Faulty main and/or "LIGHTS" (dimmer) switch
- Bulb life expired

YAMAHA MOTOR CO.,LTD.

PRINTED IN U.S.A

YAMAHA

YFM350FXM
YFM350FXMC

SUPPLEMENTARY SERVICE MANUAL

LIT-11616-13-05

4KB-28197-23

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and new data for the YFM350FXM/YFM350FXMC. For complete information on service procedures, it is necessary to use this Supplementry Service Manual together with the following manual.

YFM350FXG SERVICE MANUAL: LIT-11616-09-58
YFM350FXH SUPPLEMENTARY SERVICE MANUAL: LIT-11616-09-95
YFM350FXLC (for California) SUPPLEMENTARY SERVICE MANUAL: LIT-11616-12-03

YFM350FXM/YFM350FXMC
SUPPLEMENTARY
SERVICE MANUAL

©1999 Yamaha Motor Corporation, U.S.A.
First Edition, July 1999
All rights reserved.
All rights reserved. Any reproduction or unauthorized use without the written permission of Yamaha Motor Corporation, U.S.A. is expressly prohibited.

Printed in USA
LIT-11616-13-05

EB001000

NOTICE

This manual was produced by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual, so it is assumed that anyone who uses this book to perform maintenance and repairs on Yamaha machine has a basic understanding of the mechanical ideas and the procedures of machine repair. Repairs attempted by anyone without this knowledge are likely to render the machine unsafe and unfit for use.

Yamaha Motor Company, Ltd. is continually striving to improve all its models. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will appear in future editions of this manual where applicable.

NOTE:
Designs and specifications are subject to change without notice.

IMPORTANT INFORMATION

Particularly important information is distinguished in this manual by the following notations.

⚠ The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠ WARNING Failure to follow WARNING instructions could result in severe injury or death to the machine operator, a bystander or a person inspecting or repairing the machine.

CAUTION: A CAUTION indicates special precautions that must be taken to avoid damage to the machine.

NOTE: A NOTE provides key information to make procedures easier or clearer.

HOW TO USE THIS MANUAL

CONSTRUCTION OF THIS MANUAL

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

1st title ①: This is a chapter with its symbol on the upper right of each page.

2nd title ②: This title appears on the upper of each page on the left of the chapter symbol. (For the chapter "Periodic inspection and adjustment" the 3rd title appears.)

3rd title ③: This is a final title.

MANUAL FORMAT

All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspections.

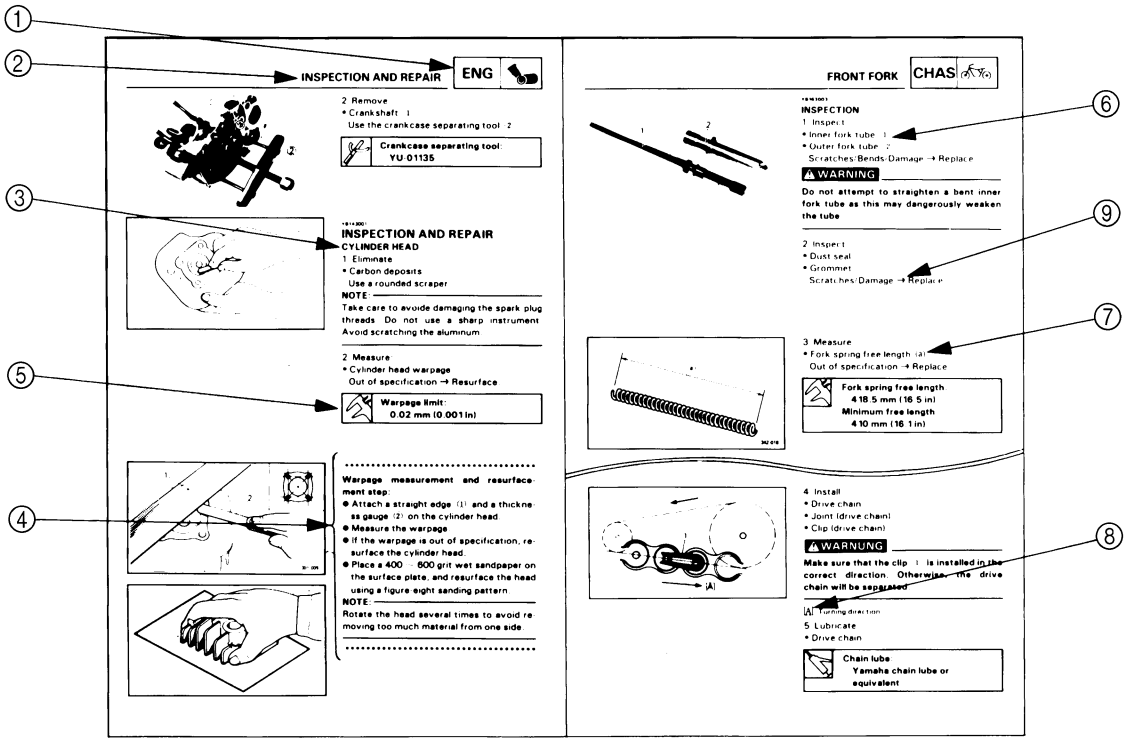
A set of particularly important procedure ④ is placed between a line of asterisks "*" with each procedure preceded by "●".

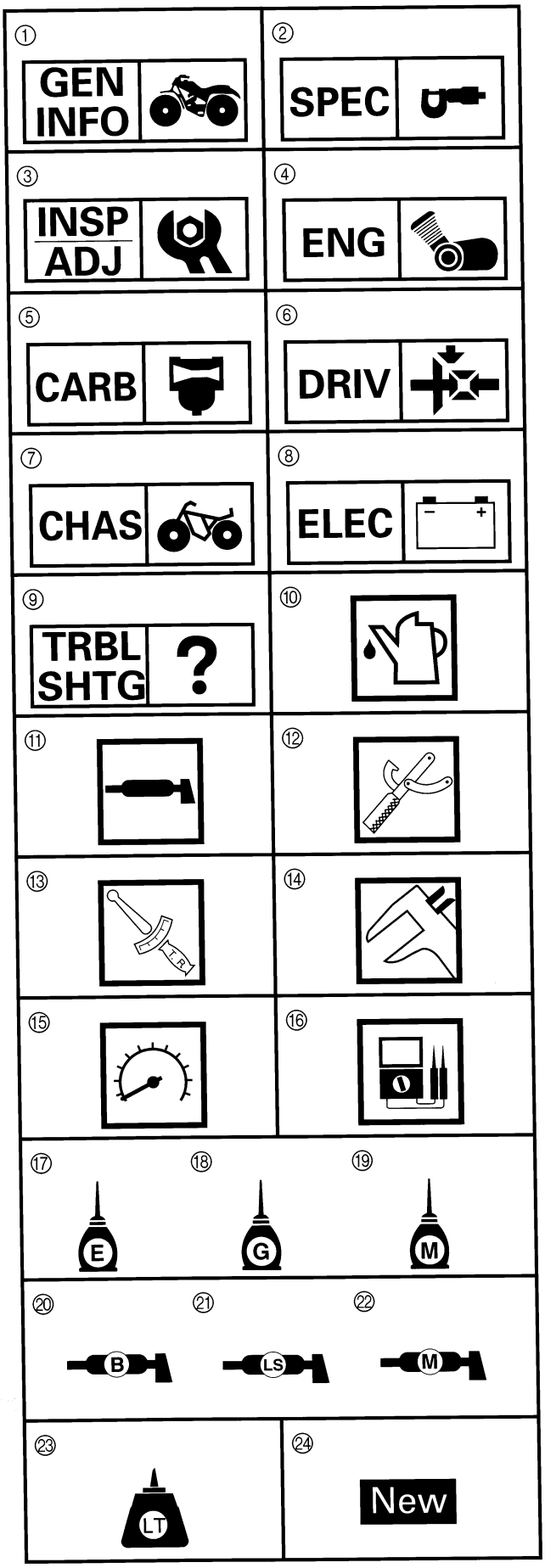
IMPORTANT FEATURES

- Data and a special tool are framed in a box preceded by a relevant symbol ⑤.
- An encircled numeral ⑥ indicates a part name, and an encircled alphabetical letter data or an alignment mark ⑦, the others being indicated by an alphabetical letter in a box ⑧.
- A condition of a faulty component will precede an arrow symbol ⑨ and the course of action will follow it.

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.





ILLUSTRATED SYMBOLS
(Refer to the illustration)

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and content.

① General information
② Specifications
③ Periodic inspection and adjustment
④ Engine
⑤ Carburetion
⑥ Drive train
⑦ Chassis
⑧ Electrical
⑨ Troubleshooting

Illustrated symbols ⑩ to ⑯ are used to identify the specifications appearing in the text.

⑩ Filling fluid
⑪ Lubricant
⑫ Special tool
⑬ Tightening
⑭ Wear limit, clearance
⑮ Engine speed
⑯ Ω, V, A

Illustrated symbols ⑰ to ㉔ in the exploded diagram indicate grade of lubricant and location of lubrication point.

⑰ Apply engine oil
⑱ Apply gear oil
⑲ Apply molybdenum disulfide oil
⑳ Apply wheel bearing grease
㉑ Apply lightweight lithium-soap base grease
㉒ Apply molybdenum disulfide grease
㉓ Apply locking agent (LOCTITE®)
㉔ Use new one

CONTENTS

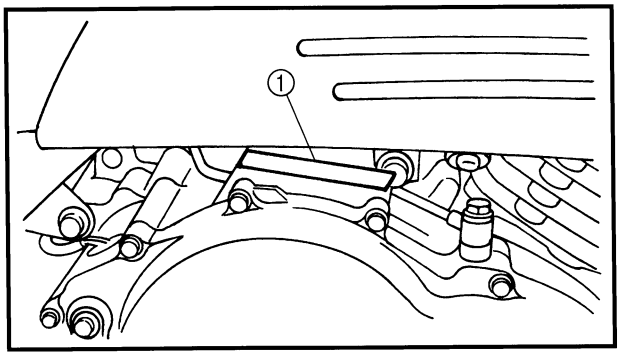
GENERAL INFORMATION 1
MACHINE IDENTIFICATION 1
ENGINE SERIAL NUMBER 1
MODEL LABEL 1

SPECIFICATIONS 2
GENERAL SPECIFICATIONS 2
MAINTENANCE SPECIFICATIONS 3
ENGINE 3
ELECTRICAL 5

ENGINE OVERHAUL 7
ENGINE DISASSEMBLY 7
RECOIL STARTER 7
CRANKCASE COVER (LEFT) 8
INSPECTION AND REPAIR 10
STARTER PULLEY AND RECOIL STARTER 10
ENGINE ASSEMBLY AND ADJUSTMENT 11
CRANKCASE COVER (LEFT) 11
RECOIL STARTER 13

DRIVE TRAIN 15
DIFFERENTIAL GEAR AND CONSTANT VELOCITY JOINTS 15
REAR AXLE/REAR FINAL GEAR AND REAR DRIVE SHAFT 16

YFM350FX WIRING DIAGRAM

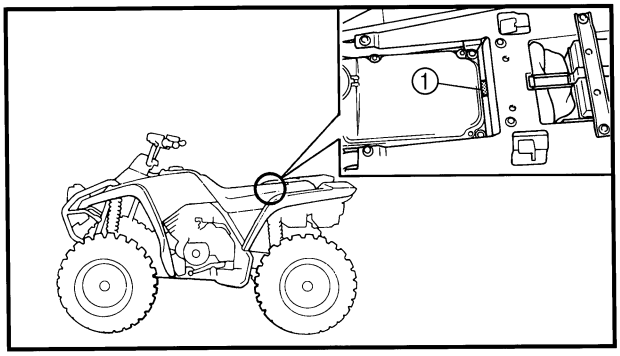


GENERAL INFORMATION

MACHINE IDENTIFICATION

ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the right side of the engine.



MODEL LABEL

The model label ① is affixed to the frame. This information will be needed to order spare parts.

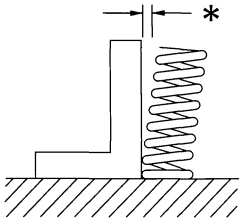
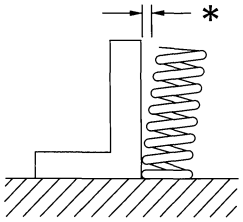
SPECIFICATIONS

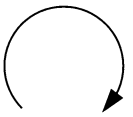
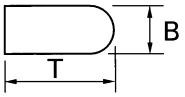
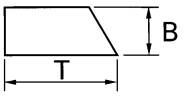
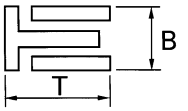
GENERAL SPECIFICATIONS

Model	YFM350FX
Model code:	4KBG (for USA) 4KBH (for California) 4KBJ (for CDN)
Dimensions:	
Overall length	1,870 mm (73.6 in)
Overall width	1,075 mm (42.3 in)
Overall height	1,150 mm (45.3 in)
Seat height	790 mm (31.1 in)
Wheelbase	1,230 mm (48.4 in)
Minimum ground clearance	220 mm (8.66 in)
Minimum turning radius	3,500 mm (137.8 in)
Basic weight:	
With oil and full fuel tank	234.5 kg (517 lb)
Maximum load-except motorcycle	180 kg (397 lb)
Engine:	
Engine type	Air-cooled 4-stroke, SOHC
Cylinder arrangement	Forward-inclined single cylinder
Displacement	349 cm^3
Bore × stroke	83.0 × 64.5 mm (3.27 × 2.54 in)
Compression ratio	9.2 : 1
Compression pressure (STD)	850 kPa (8.5 kg/cm^2, 121 psi) at 350 r/min
Starting system	Electric and recoil starter

MAINTENANCE SPECIFICATIONS

ENGINE

Model		YFM350FX
Valve spring:		
Inner spring:		
Free length	IN	39.9 mm (1.57 in)
	EX	39.9 mm (1.57 in)
<Limit>	IN	<37.9 mm (1.49 in)>
	EX	<37.9 mm (1.49 in)>
Set length (valve closed)	IN	33.6 mm (1.32 in)
	EX	33.6 mm (1.32 in)
Compressed pressure	IN	105 ~ 121 N (10.5 ~ 12.1 kg, 23.6 ~ 27.1 lb)
(installed)	EX	105 ~ 121 N (10.5 ~ 12.1 kg, 23.6 ~ 27.1 lb)
Tilt limit	IN	2.5°/1.6 mm (2.5°/0.06 in)
	EX	2.5°/1.6 mm (2.5°/0.06 in)
		
Direction of winding	IN	Counterclockwise
(top view)	EX	Counterclockwise
		
Outer spring:		
Free length	IN	43.27 mm (1.70 in)
	EX	43.27 mm (1.70 in)
<Limit>	IN	<41.27 mm (1.62 in)>
	EX	<41.27 mm (1.62 in)>
Set length (valve closed)	IN	36.6 mm (1.44 in)
	EX	36.6 mm (1.44 in)
Compressed pressure	IN	226 ~ 261 N (22.6 ~ 26.1 kg, 50.7 ~ 58.7 lb)
(installed)	EX	226 ~ 261 N (22.6 ~ 26.1 kg, 50.7 ~ 58.7 lb)
Tilt limit	IN	2.5°/1.6 mm (2.5°/0.06 in)
	EX	2.5°/1.6 mm (2.5°/0.06 in)
		

Model		YFM350FX
Direction of winding	IN	Clockwise
(top view)	EX	Clockwise
		
Piston rings:		
Top ring:		
		
Type		Barrel
Dimensions (B × T)		1.2 × 3.3 mm (0.047 × 0.130 in)
End gap (installed)		0.2 ~ 0.4 mm (0.008 ~ 0.016 in)
<Limit>		<0.5 mm (0.020 in)>
Side clearance (installed)		0.03 ~ 0.09 mm (0.0012 ~ 0.0035 in)
<Limit>		<0.12 mm (0.0047 in)>
2nd ring:		
		
Type		Taper
Dimensions (B × T)		1.5 × 3.4 mm (0.059 × 0.134 in)
End gap (installed)		0.2 ~ 0.4 mm (0.008 ~ 0.016 in)
<Limit>		<0.5 mm (0.020 in)>
Side clearance		0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)
<Limit>		<0.12 mm (0.0047 in)>
Oil ring:		
		
Dimensions (B × T)		2.8 × 2.8 mm (0.110 × 0.110 in)
End gap (installed)		0.3 ~ 0.9 mm (0.012 ~ 0.035 in)
Air filter oil grade:		Air-cooled 2-stroke engine oil
Carburetor:		
I. D. mark		4KBD 11 (except for California) 4KBC 20 (for California)
Main jet	(M.J)	#140 (except for California) #141.3 (for California)
Main air jet	(M.A.J)	0.8
Jet needle	(J.N)	5GH60-3 (except for California) 5H53-1 (for California)
Needle jet	(N.J)	P-0 (#781) (except for California) P-0M (#823) (for California)
Pilot air jet	(P.A.J.1)	#80
Pilot air jet	(P.A.J.2)	1.3

Model		YFM350FX
Pilot outlet	(P.O)	0.85
Pilot jet	(P.J)	#42.5
Bypass 1	(B.P.1)	0.8
Bypass 2	(B.P.2)	0.8
Bypass 3	(B.P.3)	0.8
Valve seat size	(V.S)	2.0
Starter jet	(G.S.1)	#45
Starter jet	(G.S.2)	0.7
Throttle valve size	(Th.V)	#130
Float height	(F.H)	12 ~ 14 mm (0.47 ~ 0.55 in)
Fuel level	(F.L)	2.0 ~ 3.0 mm (0.08 ~ 0.12 in) Above the float chamber mating surface
Engine idle speed		1,450 ~ 1,550 r/min
Intake vacuum		33.3 kPa (250 mmHg, 9.8 inHg)

ELECTRICAL

Model	YFM350FX
C.D.I.:	
Magneto model/manufacturer	F4T423/MITSUBISHI
Pickup coil resistance/color	459 ~ 561 Ω at 20°C (68°F)/ White/Green-White/Red
Source coil resistance/color	270 ~ 330 Ω at 20°C (68°F)/Brown-Green
Lighting coil resistance/color	0.70 ~ 0.86 Ω at 20°C (68°F)/White-White
C.D.I. unit model/manufacturer	F8T32374/MITSUBISHI
Rectifier:	
Type	Semi conductor-short circuit type
Model/manufacturer	SH640/SHINDENGEN
No load regulated voltage	14.1 ~ 14.9 V
Capacity	14 A
Withstand voltage	200 V
Electric starter system:	
Type	Constant mesh type
Starter motor:	
Model/manufacturer	DB4DS/DENSO
I.D. number	DB4DS
Output	0.7 kW
Armature coil resistance	0.011 ~ 0.013 Ω at 20°C (68°F)
Brush overall length	12 mm (0.47 in)
<Limit>	<8.5 mm (0.33 in)>
Spring force	650 ~ 950 g (22.9 ~ 33.5 oz)
Commutator diameter	28 mm (1.10 in)
<Wear limit>	<27 mm (1.06 in)>
Mica undercut	0.6 mm (0.02 in)

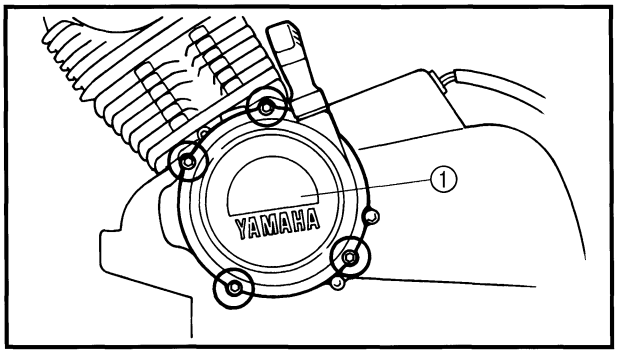
Model	YFM350FX
Starter relay:	
Model/manufacturer	MS5E-541/JIDECO
Amperage rating	100 A
Coil winding resistance/color	4.18 ~ 4.62 Ω at 20°C (68°F)/ Blue/White-Red/White
Circuit breaker:	
Type:	Fuse
Amperage for individual circuit	
MAIN	20 A
Lubrication system:	
Oil filter type	Wire mesh type
Oil pump type	Trochoid type
Tip clearance	0.15 mm (0.006 in)
<Limit>	<0.2 mm (0.008 in)>
Side clearance	0.04 ~ 0.09 mm (0.002 ~ 0.004 in)
Bypass valve setting pressure	40 ~ 80 kPa (0.4 ~ 0.8 kg/cm^2, 5.8 ~ 11.6 psi)
Relief valve operating pressure	60 kPa (0.6 kg/cm^2, 8.53 psi)
Oil pressure (hot)	8 kPa (0.08 kg/cm^2, 1.14 psi) at 1,500 r/min
Pressure check location	HEAD CYLINDER

ENGINE OVERHAUL

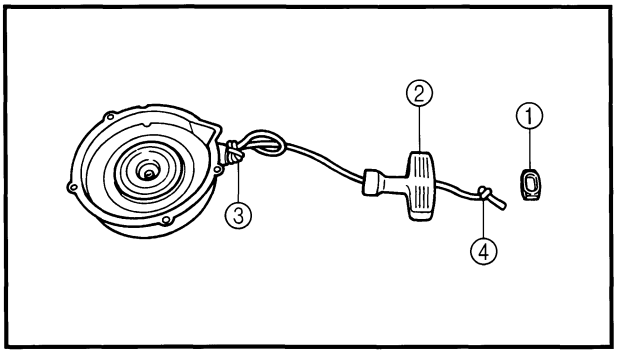
ENGINE DISASSEMBLY

RECOIL STARTER

NOTE:
With the engine mounted, the recoil starter can be maintained.

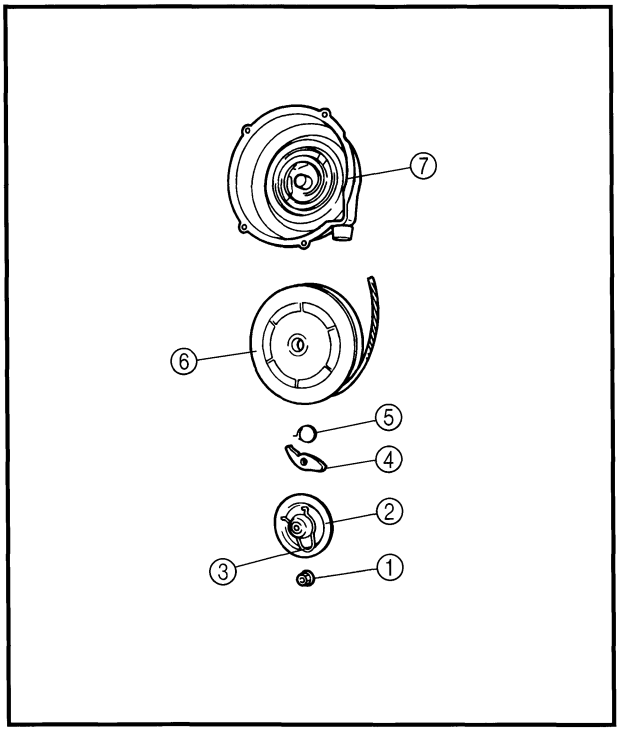


1.Remove:
- Recoil starter assembly ①
- Gasket



2.Remove:
- Cap ①
- Starter handle ②

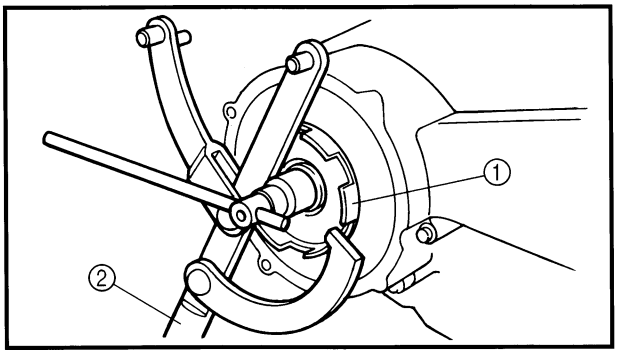
NOTE:
Before untying knot ③, pull out the rope long enough to make knot ④ on the rope so that the rope is not pulled into the case.



3.Remove:
- Nut ①
- Plate ②
- Spring ③
- Drive pawl ④
- Pawl spring ⑤
- Sheave drum ⑥
- Coil spring ⑦

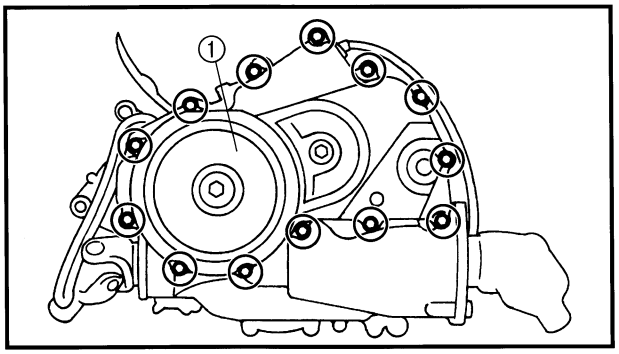
CRANKCASE COVER (LEFT)

NOTE:
With the engine mounted, the crankcase cover (left) can be maintained by removing the following parts.
- Shift pedal
- Footrest (left)
- Recoil starter

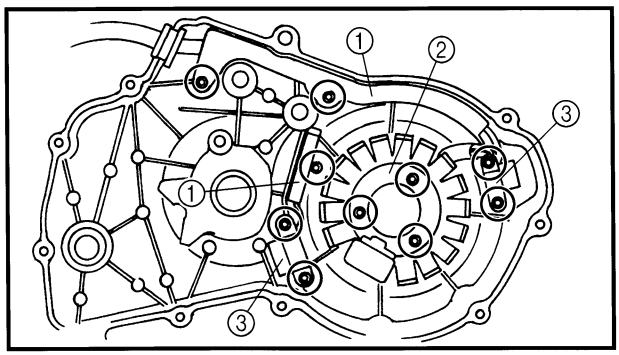


1.Remove:
- Starter pulley ①
  Use the rotor holder ② to hold the starter pulley.

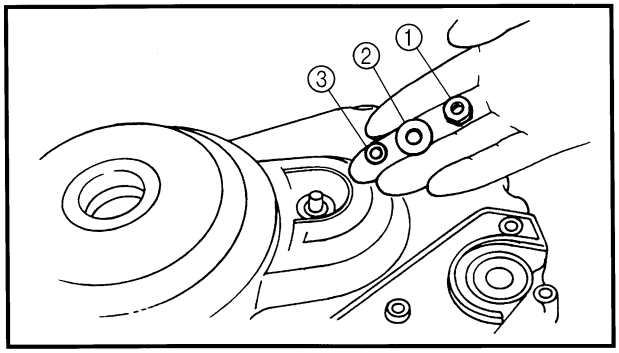
	Rotor holder: **P/N. YU-01235, 90890-01235**



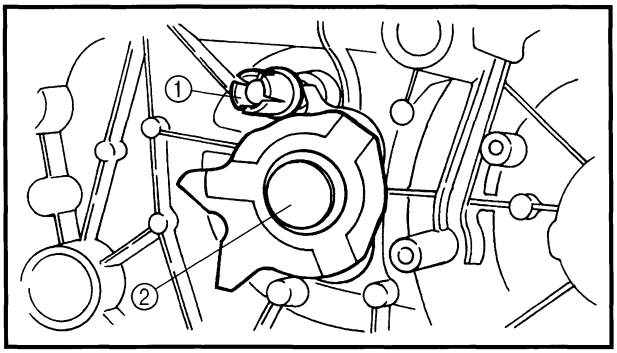
2.Remove:
- Crankcase cover (left) ①
- Gasket
- Dowel pins



3.Remove:
- Lead holder ①
- Stator assembly ②
- Pickup coil assembly ③

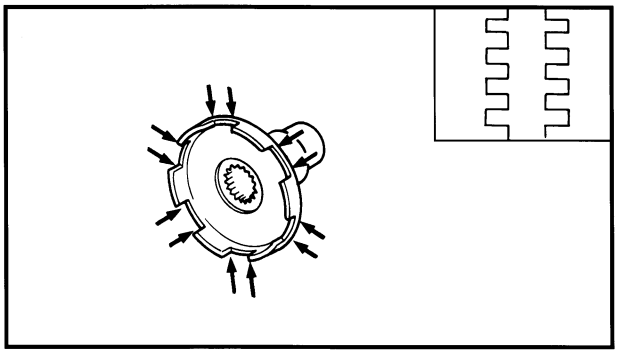


4.Remove:
- Locknut ①
- Washer ②
- O-ring ③



5.Remove:
- Stopper collar ①
- Shift guide assembly ②

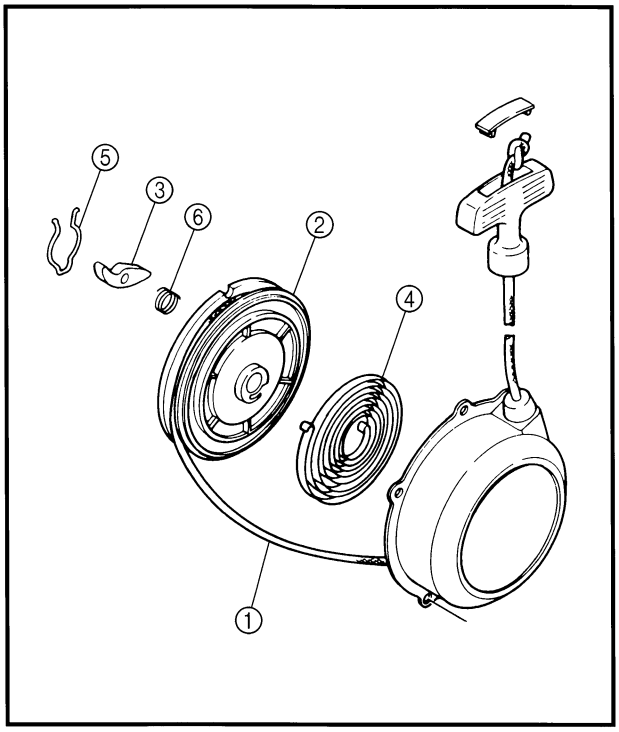
NOTE:
When removing the left crankcase cover, the stopper collar ① can easily fall off. Make sure that you do not lose this part.



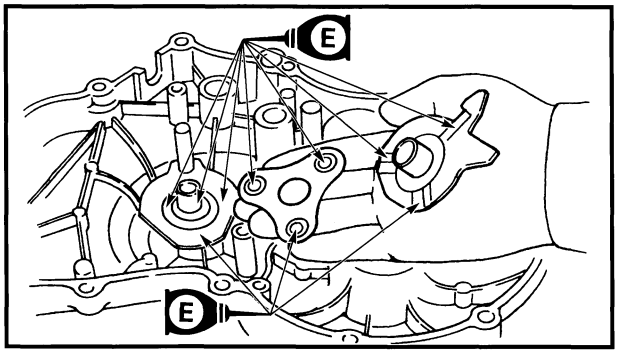
INSPECTION AND REPAIR

STARTER PULLEY AND RECOIL STARTER

1.Inspect:
- Starter pulley
  Cracks/pitting → Deburr or replace.



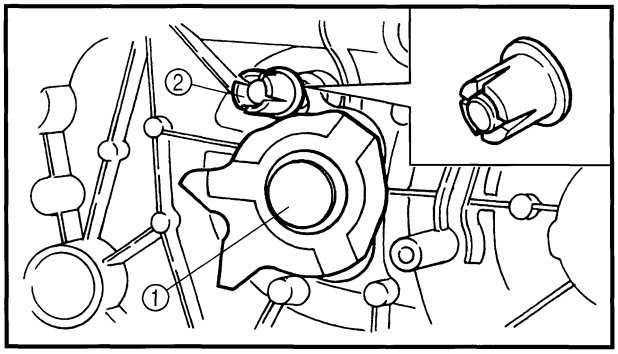
2.Inspect:
- Rope ①
- Sheave drum ②
- Drive pawl ③
  Wear/damage → Replace.
- Coil spring ④
- Pawl spring ⑤
- Spring ⑥
  Fatigue → Replace.



ENGINE ASSEMBLY AND ADJUSTMENT

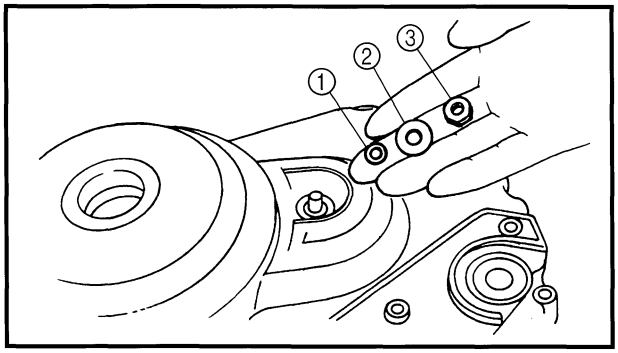
CRANKCASE COVER (LEFT)

1.Apply:
- Molybdenum disulfide oil (to shift guide assembly)

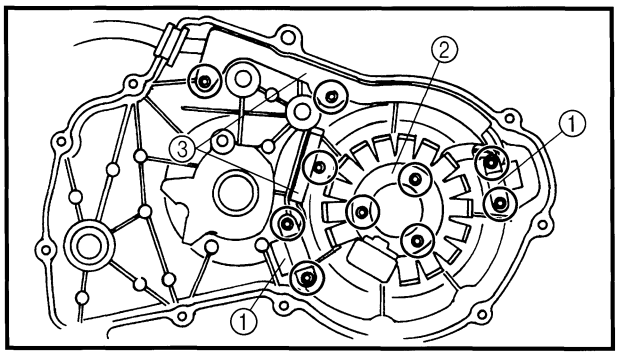


2.Install:
- Shift guide assembly ①
- Stopper collar ②

NOTE:
Install the shaft in the stopper collar as shown in the illustration, so that the tip of the shaft protrudes from the stopper collar.

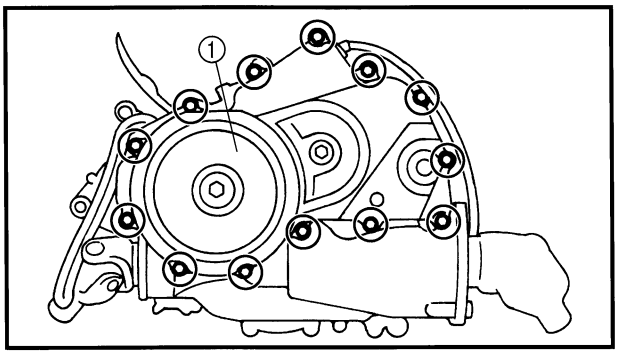


3.Install:
- O-ring ①
- Washer ②
- Locknut ③



4.Install:
- Pickup coil assembly ①
- Stator assembly ②
- Lead holder ③

Bolt (stator coil):
7 Nm (0.7 m • kg, 5.1 ft • lb)
LOCTITE®
Bolt (pickup coil):
7 Nm (0.7 m • kg, 5.1 ft • lb)
LOCTITE®
Bolt (lead holder):
7 Nm (0.7 m • kg, 5.1 ft • lb)



5.Install:
- Dowel pins
- Gasket (new)
- Crankcase cover (left) ①

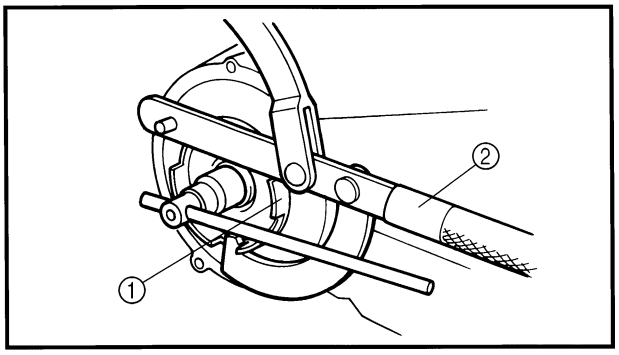
	Bolt (crankcase cover - left): 10 Nm (1.0 m • kg, 7.2 ft • lb)

⚠ WARNING

Always use a new gasket.

NOTE:

Tighten the bolt (crankcase cover) in stage, using a crisscross pattern.



6.Install:
- Starter pulley ①

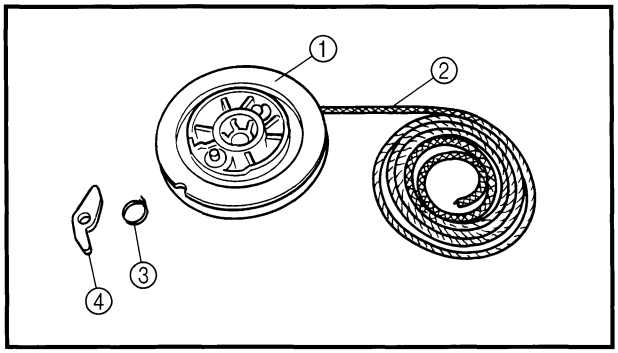
	Starter pulley: 50 Nm (5.0 m • kg, 36 ft • lb)

Use the rotor holder ② to hold the starter pulley.

	Rotor holder: P/N. YU-01235, 90890-01235

NOTE:

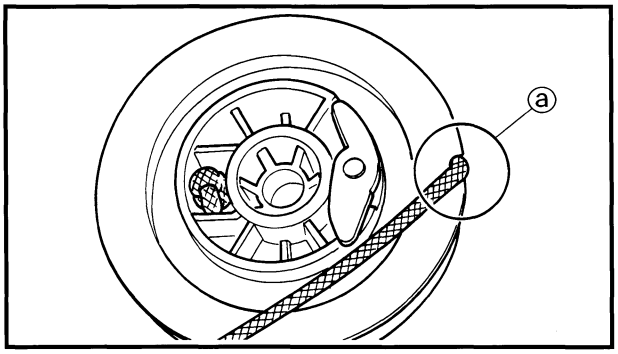
Before installing the starter pulley, do not forget to fit the O-ring.

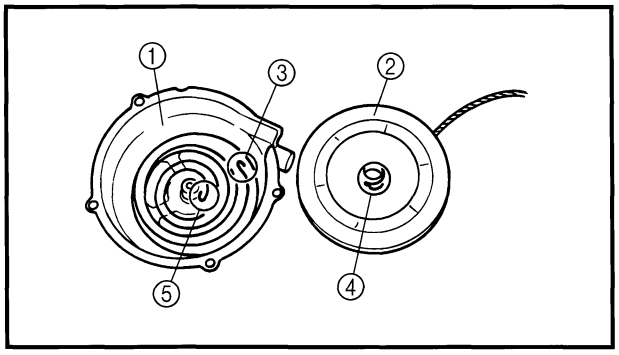


RECOIL STARTER

1.Install:
- Sheave drum ①
- Rope ②
- Pawl spring ③
- Drive pawl ④

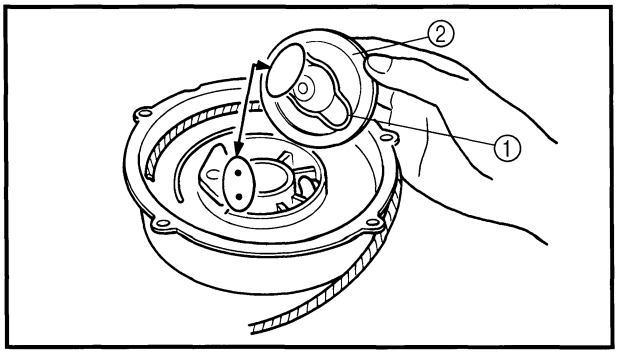
NOTE:
Wind the rope 4-1/2 turns clockwise around the sheave drum. Then insert the rope into the drum slit ⓐ.





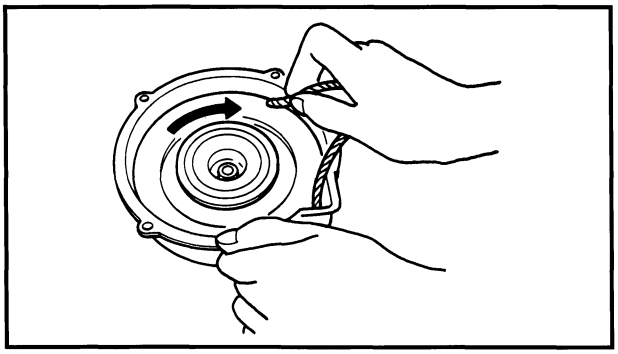
2.Install:
- Starter spring ①
- Sheave drum assembly ②

NOTE:
- Mesh the spring hook ③ with the case slit, then wind the spring clockwise into the case from larger to smaller diameter.
- Mesh the sheave drum hook ④ with the spring hook ⑤.

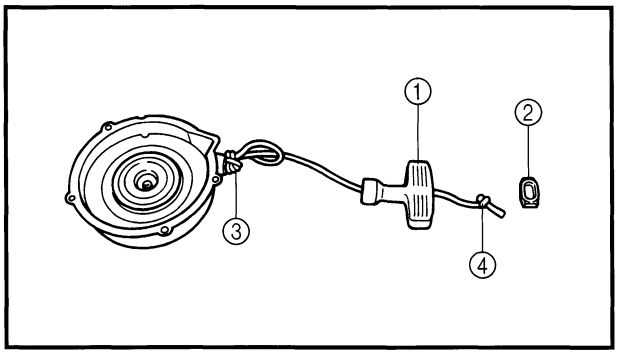


3.Install:
- Spring ①
- Friction plate ②
- Nut

NOTE:
Insert the spring hooks into the pawl side holes.

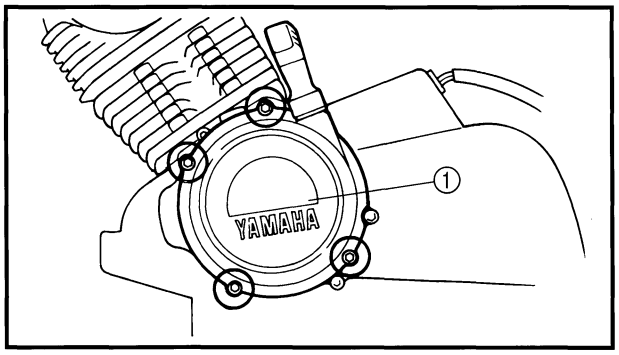


4.Turn the sheave drum 3-turns clockwise to give preload to the spring.



5.Install:
- Starter handle ①
- Cap ②

NOTE:
- Pass the rope through the case hole and make knot ③ on the rope so that the rope is not pulled into the case.
- Untying knot ③ after making knot ④.



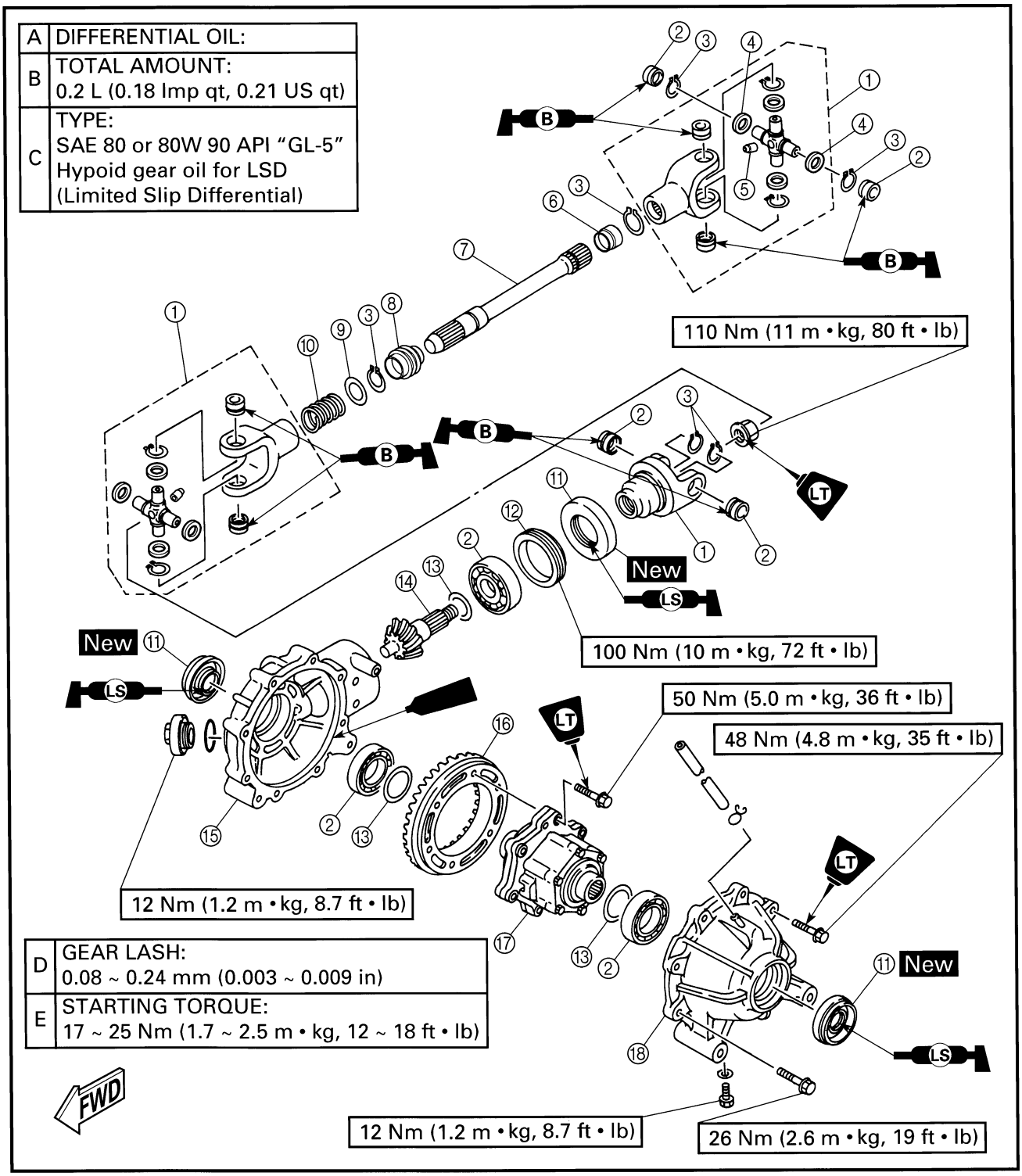
6.Install:
- Gasket (new)
- Recoil starter assembly ①

	Recoil starter: **10 Nm (1.0 m • kg, 7.2 ft • lb)**

DRIVE TRAIN

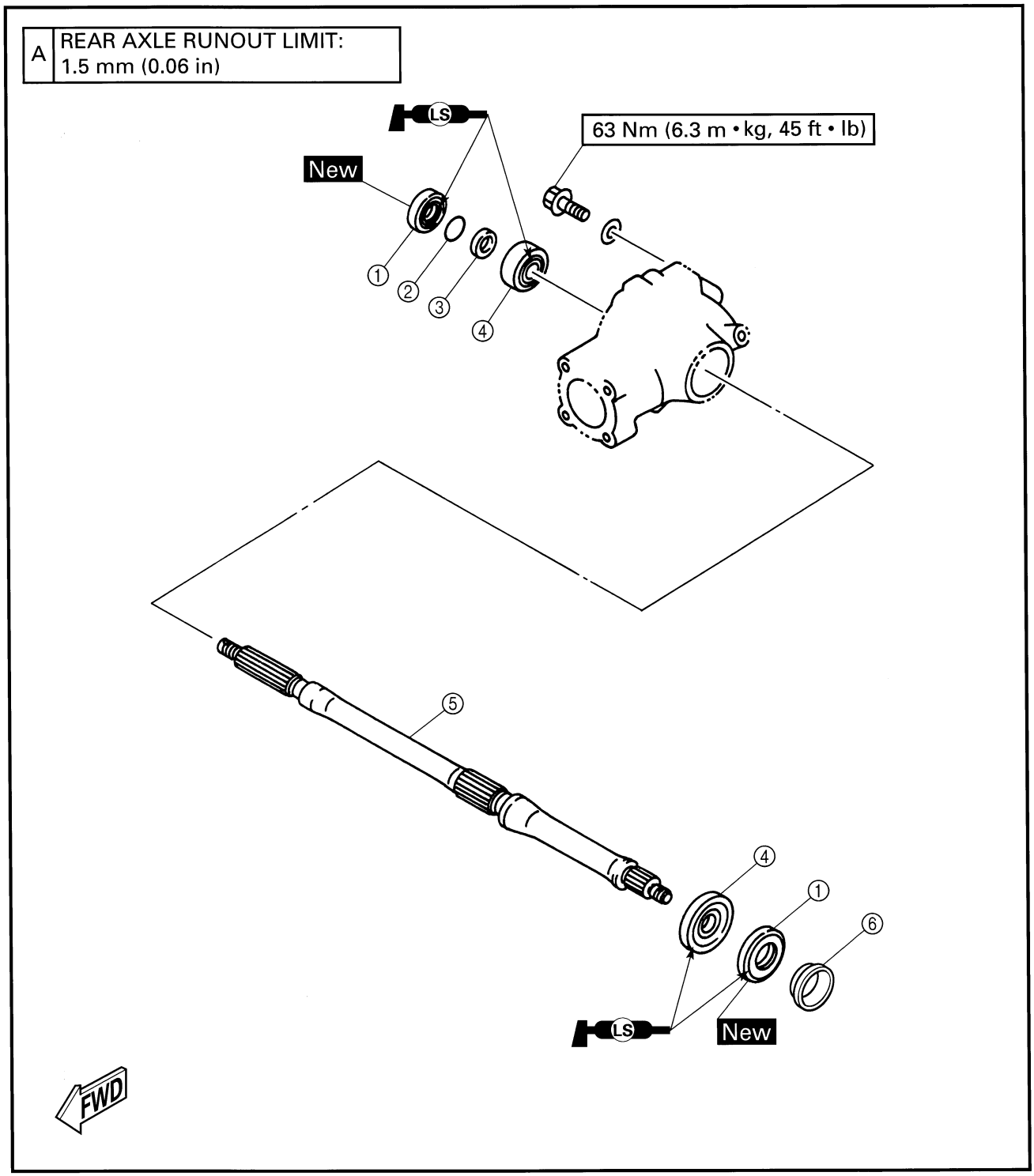
DIFFERENTIAL GEAR AND CONSTANT VELOCITY JOINTS

① Universal joint
② Bearing
③ Circlip
④ Outer seal
⑤ Grease nipple
⑥ Dust seal
⑦ Front drive shaft
⑧ Boot
⑨ Washer
⑩ Spring
⑪ Oil seal
⑫ Bearing retainer
⑬ Shim(s)
⑭ Drive pinion gear
⑮ Differential gear case
⑯ Ring gear
⑰ Differential gear assembly
⑱ Bearing housing (ring gear)



REAR AXLE/REAR FINAL GEAR AND REAR DRIVE SHAFT

① Oil seal
② O-ring
③ Plain washer
④ Bearing
⑤ Rear axle
⑥ Cover



YAMAHA

YFM350FXLC
(for California)

SUPPLEMENTARY SERVICE MANUAL

LIT-11616-12-03

4KB-28197-22

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and new data for the YFM350FXLC. For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with the following manual.

YFM350FXG SERVICE MANUAL: 4KB-28197-20
YFM350FXH SUPPLEMENTARY SERVICE MANUAL: 4KB-28197-21

YFM350FXLC
SUPPLEMENTARY
SERVICE MANUAL
© 1998 by Yamaha Motor Corporation, U.S.A.
First Edition, May 1998
All rights reserved. Any reproduction or unauthorized use without the written permission of Yamaha Motor Corporation, U.S.A. is expressly prohibited.
Printed in U.S.A.
LIT-11616-12-03

NOTICE

This manual was written by the Yamaha Motor Company, Ltd. primarily for use by Yamaha dealers and qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so persons using this book to perform maintenance and repairs on Yamaha machines should have a basic understanding of the mechanical concepts and the procedures inherent in machine repair technology. Without such knowledge, attempted repairs or service to the machine may render it unfit to use and/or unsafe.

Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

NOTE:
Designs and specifications are subject to change without notice.

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

⚠ The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠ WARNING Failure to follow WARNING instructions could result in severe injury or death to the machine operator, a bystander, or a person inspecting or repairing the machine.

CAUTION: A CAUTION indicates special precautions that must be taken to avoid damage to the machine.

NOTE: A NOTE provides key information to make procedures easier or clearer.

HOW TO USE THIS MANUAL

CONSTRUCTION OF THIS MANUAL

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

1st title ①: This is a chapter with its symbol on the upper right of each page.

2nd title ②: This title appears on the upper of each page on the left of the chapter symbol. (For the chapter "Periodic inspection and adjustment" the 3rd title appears.)

3rd title ③: This is a final title.

MANUAL FORMAT

All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspections.

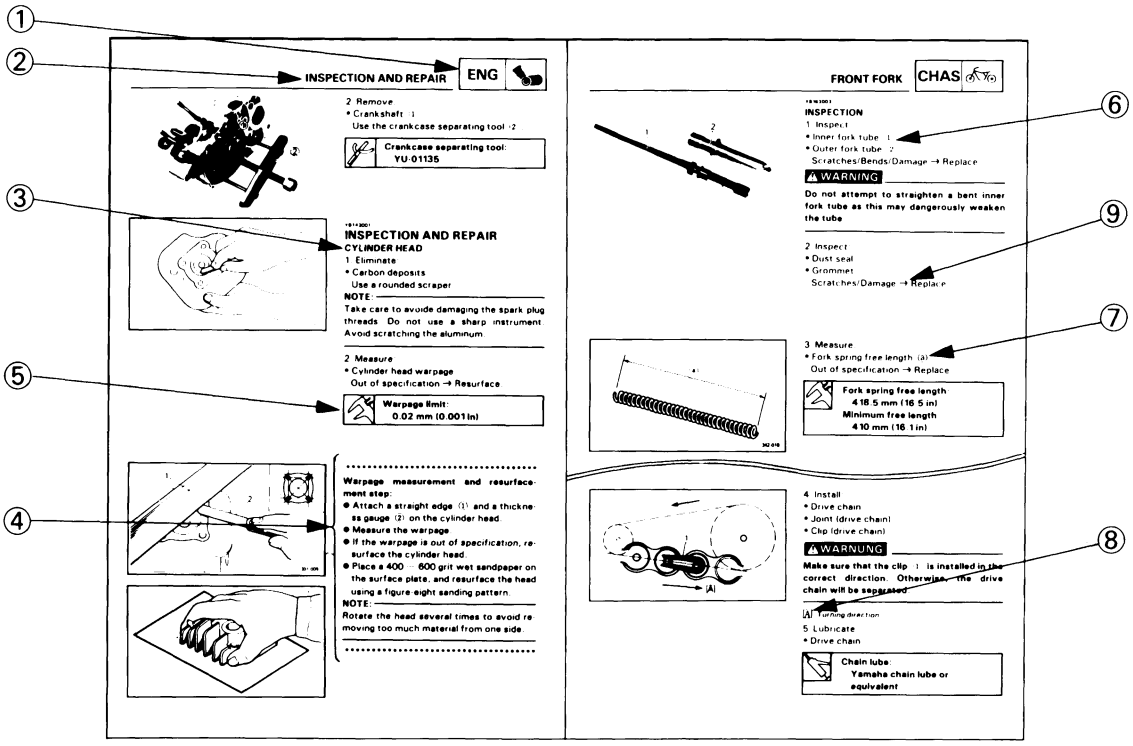
A set of particularly important procedure ④ is placed between a line of asterisks "*" with each procedure preceded by "●".

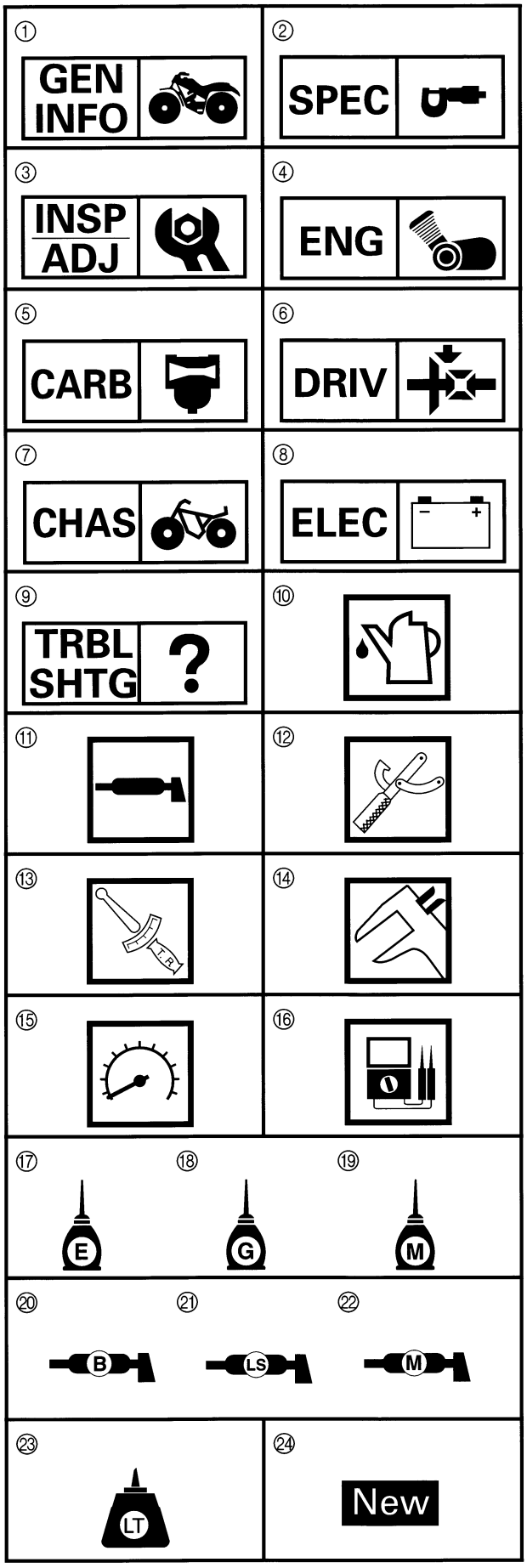
IMPORTANT FEATURES

- Data and a special tool are framed in a box preceded by a relevant symbol ⑤.
- An encircled numeral ⑥ indicates a part name, and an encircled alphabetical letter data or an alignment mark ⑦, the others being indicated by an alphabetical letter in a box ⑧.
- A condition of a faulty component will precede an arrow symbol ⑨ and the course of action will follow it.

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.





ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and content.

① General information
② Specifications
③ Periodic inspection and adjustment
④ Engine
⑤ Carburetion
⑥ Drive train
⑦ Chassis
⑧ Electrical
⑨ Troubleshooting

Illustrated symbols ⑩ to ⑯ are used to identify the specifications appearing in the text.

⑩ Filling fluid
⑪ Lubricant
⑫ Special tool
⑬ Tightening
⑭ Wear limit, clearance
⑮ Engine speed
⑯ Ω, V, A

Illustrated symbols ⑰ to ㉔ in the exploded diagram indicate grade of lubricant and location of lubrication point.

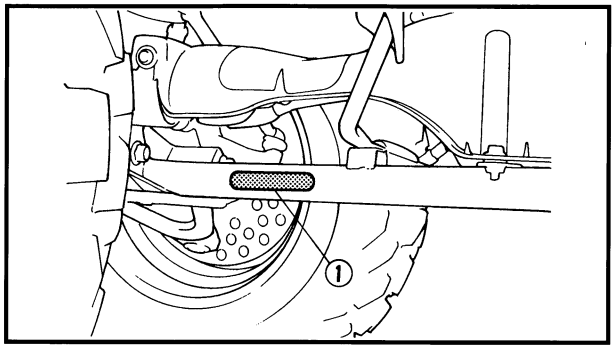
⑰ Apply engine oil
⑱ Apply gear oil
⑲ Apply molybdenum disulfide oil
⑳ Apply wheel bearing grease
㉑ Apply lightweight lithium-soap base grease
㉒ Apply molybdenum disulfide grease
㉓ Apply locking agent (LOCTITE®)
㉔ Use new one

CONTENTS

GENERAL INFORMATION 1
MACHINE IDENTIFICATION 1
ENGINE SERIAL NUMBER 1
MODEL LABEL 1

SPECIFICATIONS 2
GENERAL SPECIFICATIONS 2
MAINTENANCE SPECIFICATIONS 3
ENGINE 3
CHASSIS 6
ELECTRICAL 6

PERIODIC INSPECTIONS AND ADJUSTMENTS 7
INTRODUCTION 7
PERIODIC MAINTENANCE/LUBRICATION 7
ENGINE 9
SPARK ARRESTER CLEANING 9

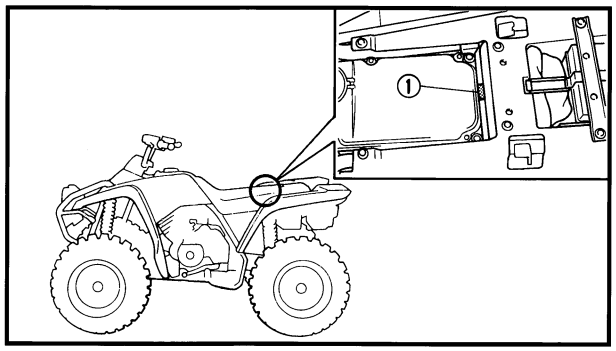


GENERAL INFORMATION

MACHINE IDENTIFICATION

ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the right side of the engine.



MODEL LABEL

The model label ① is affixed to the frame. This information will be needed to order spare parts.

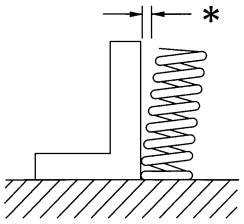
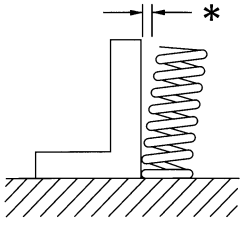
SPECIFICATIONS

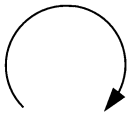
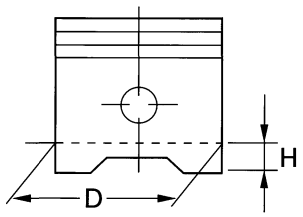
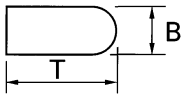
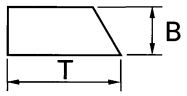
GENERAL SPECIFICATIONS

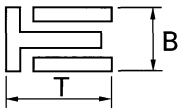
Model	YFM350FXLC
Model code:	4KBC
Dimensions:	
Overall length	1,870 mm (73.6 in)
Overall width	1,075 mm (42.3 in)
Overall height	1,150 mm (45.3 in)
Seat height	790 mm (31.1 in)
Wheelbase	1,230 mm (48.4 in)
Minimum ground clearance	220 mm (8.66 in)
Minimum turning radius	3,500 mm (137.8 in)
Electrical:	
Ignition system	C.D.I.
Generator system	C.D.I. magneto
Battery capacity	12V 12AH
Battery type	GM12CZ-4A-2

MAINTENANCE SPECIFICATIONS

ENGINE

Model		YFM350FXLC
Valve spring:		
Inner spring:		
Free length	IN	39.9 mm (1.57 in)
	EX	39.9 mm (1.57 in)
<Limit>	IN	<37.9 mm (1.49 in)>
	EX	<37.9 mm (1.49 in)>
Set length (valve closed)	IN	33.6 mm (1.32 in)
	EX	33.6 mm (1.32 in)
Compressed pressure	IN	10.7 ~ 12.3 kg (23.6 ~ 27.1 lb)
(installed)	EX	10.7 ~ 12.3 kg (23.6 ~ 27.1 lb)
Tilt limit	IN	2.5°/1.6 mm (2.5°/0.06 in)
	EX	2.5°/1.6 mm (2.5°/0.06 in)
		
Direction of winding	IN	Counterclockwise
(top view)	EX	Counterclockwise
		
Outer spring:		
Free length	IN	43.27 mm (1.70 in)
	EX	43.27 mm (1.70 in)
<Limit>	IN	<41.27 mm (1.62 in)>
	EX	<41.27 mm (1.62 in)>
Set length (valve closed)	IN	36.6 mm (1.44 in)
	EX	36.6 mm (1.44 in)
Compressed pressure	IN	23.0 ~ 26.6 kg (50.7 ~ 58.6 lb)
(installed)	EX	23.0 ~ 26.6 kg (50.7 ~ 58.6 lb)
Tilt limit	IN	2.5°/1.6 mm (2.5°/0.06 in)
	EX	2.5°/1.6 mm (2.5°/0.06 in)
		

Model		YFM350FXLC
Direction of winding	IN	Clockwise
(top view)	EX	Clockwise
		
Piston:		
Piton to cylinder clearance		0.04 ~ 0.06 mm (0.0016 ~ 0.0024 in)
<Limit>		<0.15 mm (0.0059 in)>
Piston size "D"		82.92 ~ 82.97 mm (3.265 ~ 3.267 in)
		
Measuring point "H"		5.5 mm (0.22 in)
Piston off-set		0.5 mm (0.02 in)
Piston off-set direction		IN side
Piston pin bore inside diameter		19.004 ~ 19.015 mm (0.7482 ~ 0.7486 in)
Piston pin outside diameter		18.991 ~ 19.000 mm (0.7477 ~ 0.7480 in)
Piston rings:		
Top ring:		
		
Type		Barrel
Dimensions (B × T)		1.2 × 3.3 mm (0.047 × 0.130 in)
End gap (installed)		0.2 ~ 0.4 mm (0.008 ~ 0.016 in)
<Limit>		<0.5 mm (0.020 in)>
Side clearance (installed)		0.03 ~ 0.09 mm (0.0012 ~ 0.0035 in)
<Limit>		<0.12 mm (0.0047 in)>
2nd ring:		
		
Type		Taper
Dimensions (B × T)		1.5 × 3.4 mm (0.059 × 0.134 in)
End gap (installed)		0.2 ~ 0.4 mm (0.008 ~ 0.016 in)
<Limit>		<0.5 mm (0.020 in)>
Side clearance		0.03 ~ 0.07 mm (0.0012 ~ 0.0028 in)
<Limit>		<0.12 mm (0.0047 in)>

Model		YFM350FXLC
Oil ring:		
		
Dimensions (B × T)		2.8 × 2.8 mm (0.110 × 0.110 in)
End gap (installed)		0.3 ~ 0.9 mm (0.012 ~ 0.035 in)
Air filter oil grade:		Engine oil
Carburetor:		
I. D. mark		4KBC 20
Main jet	(M.J)	#141.3
Main air jet	(M.A.J)	0.8
Jet needle	(J.N)	5H53-1
Needle jet	(N.J)	P–0M (#823)
Pilot air jet	(P.A.J.1)	#80
Pilot air jet	(P.A.J.2)	1.3
Pilot outlet	(P.O)	0.85
Pilot jet	(P.J)	#42.5
Bypass 1	(B.P.1)	0.8
Bypass 2	(B.P.2)	0.8
Bypass 3	(B.P.3)	0.8
Pilot screw	(P.S)	1 turns out
Valve seat size	(V.S)	2.0
Starter jet	(G.S.1)	#45
	(G.S.2)	0.7
Throttle valve size	(Th.V)	#130
Float height	(F.H)	12 ~ 14 mm (0.47 ~ 0.55 in)
Fuel level	(F.L)	2.0 ~ 3.0 mm (0.08 ~ 0.12 in) Above the float chamber mating surface
Engine idle speed		1,450 ~ 1,550 r/min
Intake vacuum		32.9 kPa (250 mmHg, 9.84 inHg)

CHASSIS

Model		YFM350FXLC
Steering system:		
Steering bearing type		Ball and rece bearing
Front wheel:		
Type		Panel wheel
Rim size		12 × 6.0AT
Rim material		Steel
Rim runout limit	Radial	2 mm (0.08 in)
	Lateral	2 mm (0.08 in)
Rear wheel:		
Type		Panel wheel
Rim size		12 × 8.0AT
Rim material		Steel
Rim runout limit	Radial	2 mm (0.08 in)
	Lateral	2 mm (0.08 in)

ELECTRICAL

Model	YFM350FXLC
Charging system:	
Type	C.D.I. magneto
Model / manufacturer	F4T20471/MITSUBISHI
Nominal output	14 V 12.5 A at 3,000 r/min
Stator coil resistance / color	0.45 ~ 0.55 Ω at 20°C (68°F) / White – White

PERIODIC INSPECTIONS AND ADJUSTMENTS

INTRODUCTION

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

PERIODIC MAINTENANCE/LUBRICATION

ITEM	ROUTINE	INITIAL			EVERY	
		1 month	3 months	6 months	6 months	1 year
Valves*	• Check valve clearance. • Adjust if necessary.	○		○	○	○
Spark plug	• Check condition. • Adjust gap and clean. • Replace if necessary.	○	○	○	○	○
Air filter	• Clean. • Replace if necessary.	Every 20~40 hours (More often in wet or dusty areas.)				
Carburetor*	• Check idle speed/starter operation. • Adjust if necessary.		○	○	○	○
Cylinderhead cover breather system*	• Check breather hose for cracks or damage. • Replace if necessary.			○	○	○
Exhaust system*	• Check leakage. • Retighten if necessary. • Replace gasket if necessary.			○	○	○
Spark arrester	• Clean			○	○	○
Fuel line*	• Check fuel hose for cracks or damage. • Replace if necessary.			○	○	○
Engine oil	• Replace (Warm engine before draining).	○		○	○	○
Engine oil filter	• Replace.	○		○		○
Engine oil strainer	• Clean.	○		○		○
Final gear oil **Differential gear oil**	• Check oil level/oil leakage. • Replace every 12 months.	○				○
Brakes*	• Check operation/fluid leakage/See NOTE. • Correct if necessary.	○	○	○	○	○
Clutch*	• Check operation. • Adjust if necessary.	○		○	○	○
Reverse release cable*	• Check operation. • Adjust if necessary.			○	○	○
Wheels*	• Check balance/damage/runout. • Replace if necessary.	○		○	○	○
Wheel bearings*	• Check bearing assembly for looseness/ damage. • Replace if damaged.	○		○	○	○
Steering system*	• Check operation. • Replace if damaged. • Check toe-in. • Adjust if necessary.	○	○	○	○	○
Front axle boots*	• Replace if damaged.	○				○



ITEM	ROUTINE	INITIAL			EVERY	
		1 month	3 months	6 months	6 months	1 year
Fittings and Fasteners*	• Check all chassis fittings and fasteners. • Correct if necessary.	○	○	○	○	○
Battery*	• Check specific gravity. • Check that the breather hose is positioned properly. • Correct if necessary.	○	○	○	○	○

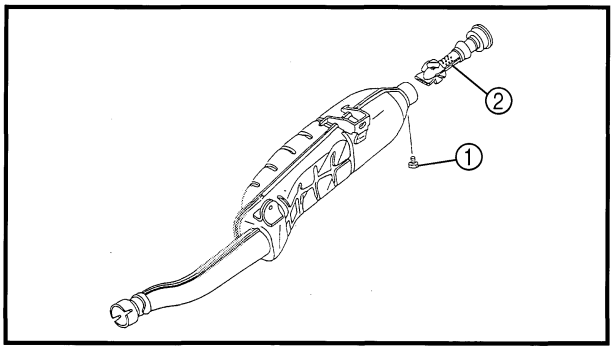
* It is recommended that these items be serviced by a Yamaha dealer.

NOTE:

Recommended brake fluid: DOT 4 (If DOT 4 is not available, DOT 3 can be used.)

⚠ WARNING

Indicates a potential hazard that could result in serious injury or death.



ENGINE

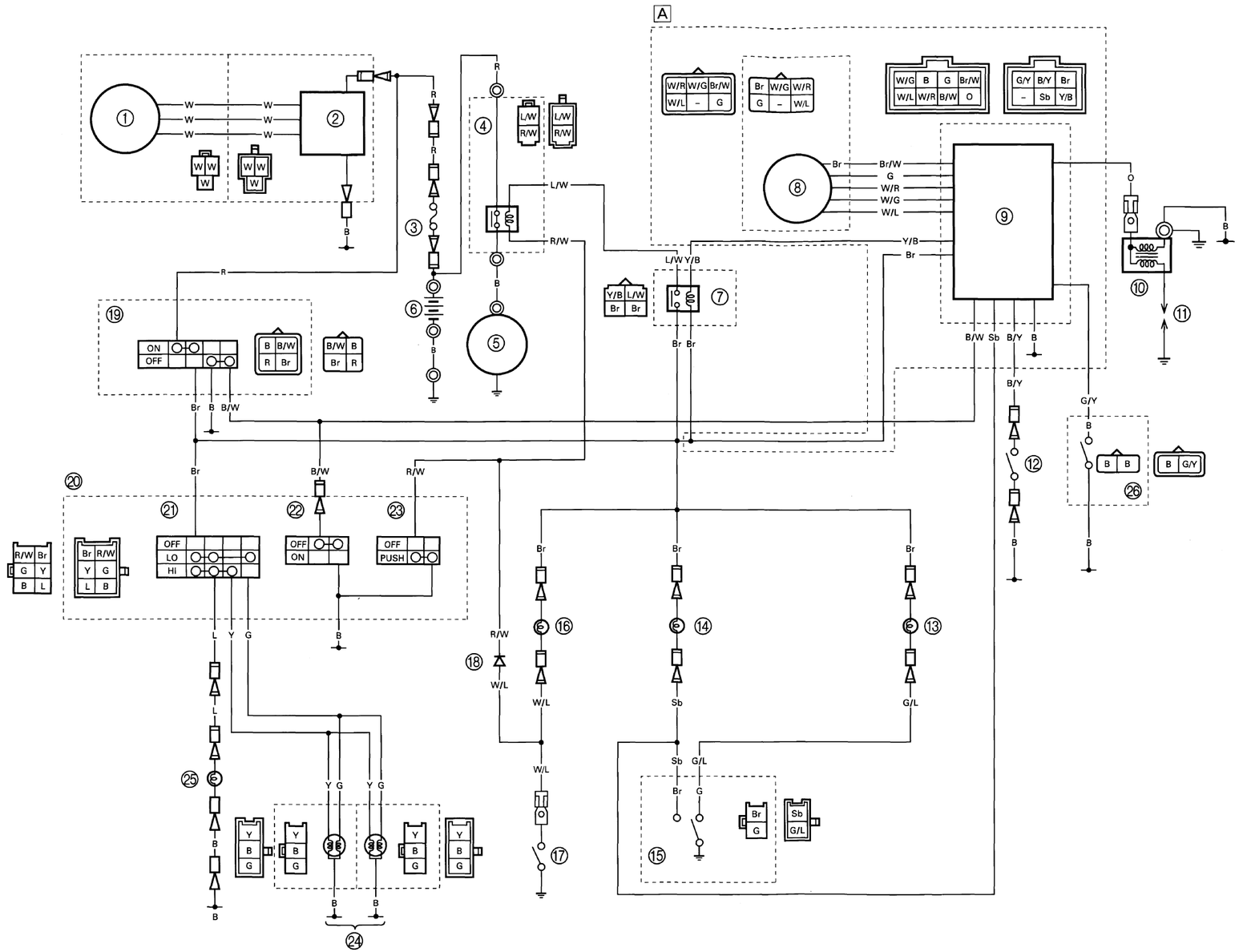
SPARK ARRESTER CLEANING

1. Remove the bolt ①.
2. Remove the tailpipe ② by pulling it out of the muffler.
3. Tap the tailpipe lightly with a soft-face hammer or suitable tool, then use a wire brush to remove any carbon deposits from the spark arrester portion of the tailpipe and the inner contact surfaces of the muffler.
4. Insert the tailpipe ② into the muffler and align the bolt holes.
5. Install the bolt ① and tighten it.

⚠ WARNING

Always let the exhaust system cool before performing this operation.
Do not start the engine when cleaning the spark arrester or exhaust system.

YFM350FX WIRING DIAGRAM



① CDI magneto (stator coil)
② Rectifier/Regulator
③ Fuse (main)
④ Starter relay
⑤ Starter motor
⑥ Battery
⑦ Starting circuit cut-off relay
⑧ CDI magneto (source coil and pickup coil)
⑨ CDI unit
⑩ Ignition coil
⑪ Spark plug
⑫ Rear brake switch
⑬ "REVERSE" indicator light
⑭ "NEUTRAL" indicator light
⑮ Gear position switch
⑯ "OIL TEMP" indicator light
⑰ Thermo switch
⑱ Diode
⑲ Main switch
⑳ Handlebar switch (left)
㉑ "LIGHTS" (dimmer) switch
㉒ "ENGINE STOP" switch
㉓ "START" switch
㉔ Headlight
㉕ Taillight
㉖ Parking switch
Ⓐ For USA
Ⓑ Except for USA

COLOR CODE

B	Black	Y	Yellow	L/W	Blue/White
Br	Brown	W	White	R/W	Red/White
G	Green	B/Y	Black/Yellow	W/G	White/Green
L	Blue	B/W	Black/White	W/L	White/Blue
O	Orange	Br/W	Brown/White	W/R	White/Red
R	Red	G/L	Green/Blue	Y/B	Yellow/Black
Sb	Sky blue	G/Y	Green/Yellow		



YAMAHA MOTOR CO., LTD.
2500 SHINGAI IWATA SHIZUOKA JAPAN

PRINTED IN U.S.A.