



**SERVICE MANUAL
MANUEL D'ATELIER
INSTRUKTIONSBOK**

**RS90K
RS90RK
RSG90K
RS90MK
RST90K
RST90TFK**

8FJ-28197-J0

981097

NOTICE

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

HOW TO USE THIS MANUAL

Particularly important information is distinguished in this manual by the following notations:



The Safety Alert Symbol means ATTENTION! BE ALERT! YOUR SAFETY IS INVOLVED!

WARNING

Failure to follow WARNING instructions could result in severe injury or death to the snowmobile operator, a bystander, or a person inspecting or repairing the snowmobile.

CAUTION:

A CAUTION indicates special precautions that must be taken to avoid damage to the snowmobile.

NOTE:

A NOTE provides key information that can make procedures easier or clearer.

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 inspection, repair, assembly, and disassembly operations. In this revised format, the condition of a faulty component will precede an arrow symbol and the course of action required to correct the problem will follow the symbol, e.g.,

- Bearings
Pitting/damage → Replace.

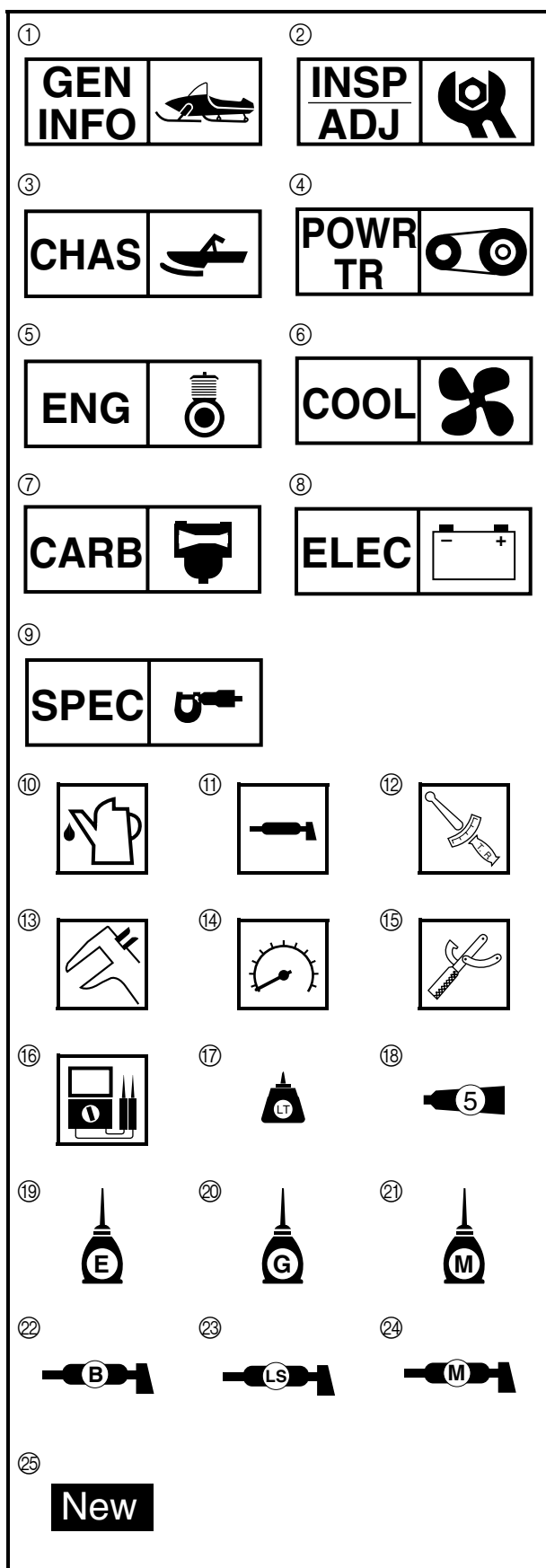
EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section to facilitate correct disassembly and assembly procedures.

**RS90K, RS90RK, RSG90K,
RS90MK, RST90K, RST90TFK
SERVICE MANUAL**

**©2004 by Yamaha Motor Co., Ltd.
1st Edition, July 2004**

**All rights reserved. Any reprinting or
unauthorized use without the written
permission of Yamaha Motor Co., Ltd.
is expressly prohibited.
Printed in Japan**



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 Periodic inspection and adjustment
- ③ Chassis
- ④ Power train
- ⑤ Engine
- ⑥ Cooling system
- ⑦ Carburetion
- ⑧ Electrical
- ⑨ Specifications

Illustrated symbols ⑩ to ⑯ are used to identify the specifications which appear.

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

Illustrated symbols ⑰ to ⑳ in the exploded diagram indicate grade of lubricant and location of lubrication point.

- ⑰ Apply locking agent (LOCTITE®)
- ⑱ Apply Yamabond No.5®
- ⑲ Apply engine oil
- ⑳ Apply gear oil
- ㉑ Apply molybdenum disulfide oil
- ㉒ Apply wheel bearing grease
- ㉓ Apply low-temperature lithium-soap base grease
- ㉔ Apply molybdenum disulfide grease
- ㉕ Use new one

INDEX
INDEX
INNEHÅLLSFÖRTECKNING

GENERAL INFORMATION RENSEIGNEMENTS GENERAUX ALLMÄN INFORMATION	 GEN INFO 1
PERIODIC INSPECTION AND ADJUSTMENT INSPECTIONS ET REGLAGES PERIODIQUES PERIODISK INSPEKTION OCH JUSTERING	 INSP ADJ 2
CHASSIS CHASSIS CHASSI	 CHAS 3
POWER TRAIN TRAIN DE ROULEMENT DRIVENHET	 POWR TR 4
ENGINE MOTEUR MOTOR	 ENG 5
COOLING SYSTEM SYSTEME DE REFROIDISSEMENT KYLSYSTEM	 COOL 6
CARBURETION CARBURATION FÖRGASNING	 CARB 7
ELECTRICAL PARTIE ELECTRIQUE ELSYSTEM	 ELEC 8
SPECIFICATIONS CARACTERISTIQUES SPECIFIKATIONER	 SPEC 9

CHAPTER 1. GENERAL INFORMATION

MACHINE IDENTIFICATION	1-1
FRAME SERIAL NUMBER.....	1-1
ENGINE SERIAL NUMBER.....	1-1
IMPORTANT INFORMATION	1-2
PREPARATION FOR REMOVAL AND DISASSEMBLY.....	1-2
ALL REPLACEMENT PARTS.....	1-2
GASKETS, OIL SEALS, AND O-RINGS.....	1-3
LOCK WASHERS/PLATES AND COTTER PINS	1-3
BEARINGS AND OIL SEALS	1-3
CIRCLIPS	1-3
LOCTITE®	1-3
SPECIAL TOOLS	1-4
FOR TUNE UP.....	1-4
FOR ENGINE SERVICE.....	1-4
FOR POWER TRAIN SERVICE	1-7
FOR CARBURETION SERVICE	1-8
FOR ELECTRICAL SERVICE	1-8

CHAPTER 2. PERIODIC INSPECTION AND ADJUSTMENT

INTRODUCTION	2-1
PERIODIC MAINTENANCE CHART	2-1
ENGINE	2-3
SPARK PLUGS.....	2-3
FUEL LINE INSPECTION.....	2-3
COOLING SYSTEM.....	2-4
VALVE CLEARANCE ADJUSTMENT	2-7
CARBURETOR SYNCHRONIZATION	2-13
ENGINE IDLE SPEED ADJUSTMENT	2-14
THROTTLE CABLE FREE PLAY ADJUSTMENT.....	2-15
THROTTLE OVERRIDE SYSTEM (T.O.R.S.) CHECK.....	2-16
COMPRESSION PRESSURE MEASUREMENT	2-17
ENGINE OIL LEVEL INSPECTION	2-18
ENGINE OIL REPLACEMENT	2-20
CRANKCASE BREATHER HOSE INSPECTION	2-23
CARBURETOR JOINTS INSPECTION	2-23
CHECKING THE AIR FILTER ELEMENT	2-23
EXHAUST SYSTEM INSPECTION	2-24

POWER TRAIN	2-25
SHEAVE OFFSET ADJUSTMENT	2-25
DRIVE V-BELT.....	2-27
ENGAGEMENT SPEED CHECK.....	2-29
PARKING BRAKE ADJUSTMENT.....	2-30
BRAKE FLUID LEVEL INSPECTION	2-30
BRAKE PAD INSPECTION.....	2-31
BRAKE HOSE INSPECTION.....	2-31
AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)	2-32
DRIVE CHAIN	2-33
TRACK TENSION ADJUSTMENT	2-35
SLIDE RUNNER INSPECTION	2-37
MAXIMIZING DRIVE TRACK LIFE	2-37

CHASSIS	2-39
SKI/SKI RUNNER	2-39
STEERING SYSTEM.....	2-40
LUBRICATION.....	2-41

ELECTRICAL	2-44
HEADLIGHT BEAM ADJUSTMENT	2-44
BATTERY INSPECTION.....	2-44
FUSE INSPECTION.....	2-52
SPEEDOMETER UNIT INSPECTION	2-54

TUNING	2-55
CARBURETOR TUNING	2-55
CLUTCH.....	2-62
GEAR SELECTION.....	2-67
HIGH ALTITUDE TUNING	2-73
FRONT SUSPENSION	2-74
REAR SUSPENSION.....	2-75

CHAPTER 3. CHASSIS

STEERING	3-1
RS90/RS90R/RSG90/RST90/RST90TF	3-1
RS90M	3-3
REMOVAL.....	3-7
INSPECTION	3-7
INSTALLATION.....	3-8
SKI	3-12
RS90/RS90R/RSG90 "USA/Canada"	3-12
RSG90 "Europe"/RST90 "Europe"/ RST90TF.....	3-13
RS90M	3-14
RST90 "USA/Canada".....	3-15
INSPECTION	3-16
INSTALLATION (RST90 "USA/Canada")	3-17

FRONT SUSPENSION	3-18
HANDLING NOTES	3-20
INSPECTION	3-20
INSTALLATION	3-21

CHAPTER 4. POWER TRAIN

PRIMARY SHEAVE AND DRIVE V-BELT	4-1
REMOVAL	4-3
DISASSEMBLY	4-3
INSPECTION	4-4
ASSEMBLY	4-6
INSTALLATION	4-9

SECONDARY SHEAVE	4-10
DISASSEMBLY	4-12
INSPECTION	4-12
ASSEMBLY	4-13
INSTALLATION	4-15

DRIVE CHAIN HOUSING	4-16
WITHOUT REVERSE MODEL	4-16
REMOVAL	4-18
INSPECTION	4-18
INSTALLATION	4-20
WITH REVERSE MODEL	4-21
REMOVAL	4-24
INSPECTION	4-24
INSTALLATION	4-25

SECONDARY SHAFT	4-27
REMOVAL	4-28
INSPECTION	4-29
INSTALLATION	4-29
SECONDARY SHAFT AND DRIVE CHAIN HOUSING INSTALLATION	4-32

BRAKE	4-34
BRAKE PAD REPLACEMENT	4-35
BRAKE CALIPER DISASSEMBLY	4-38
BRAKE CALIPER INSPECTION AND REPAIR	4-38
BRAKE CALIPER ASSEMBLY	4-39
BRAKE CALIPER INSTALLATION	4-39
INSPECTION	4-41
BRAKE MASTER CYLINDER ASSEMBLY	4-41
INSTALLATION	4-41

SLIDE RAIL SUSPENSION	4-42
RS90/RS90R	4-42
RSG90	4-48
RS90M	4-53
RST90	4-59
RST90TF	4-65
REMOVAL	4-72
INSPECTION	4-72
ASSEMBLY	4-73
INSTALLATION	4-75

FRONT AXLE AND TRACK	4-78
INSPECTION	4-79
INSTALLATION	4-79

CHAPTER 5. ENGINE

SEAT AND FUEL TANK	5-1
RS90/RS90R/RSG90/RS90M	5-1

BACKREST AND PASSENGER SEAT	5-2
RST90/RST90TF	5-2

RIDER SEAT AND FUEL TANK	5-3
RST90/RST90TF	5-3
REMOVAL	5-4
INSTALLATION	5-4

OIL TANK	5-5
-----------------------	------------

ENGINE ASSEMBLY	5-6
HOSE AND LEADS	5-6
ENGINE ASSEMBLY	5-8
REMOVAL	5-9
INSTALLATION	5-9

EXHAUST PIPE AND MUFFLER	5-11
INSTALLATION	5-12

CAMSHAFTS	5-14
CYLINDER HEAD COVER	5-14
CAMSHAFTS	5-15
REMOVAL	5-16
INSPECTION	5-17
INSTALLATION	5-20

CYLINDER HEAD	5-24
REMOVAL	5-25
INSPECTION	5-25
INSTALLATION	5-26

VALVES AND VALVE SPRINGS	5-28
REMOVAL	5-29
INSPECTION	5-30
INSTALLATION	5-34

A.C. MAGNETO ROTOR AND STARTER CLUTCH	5-37
REMOVAL	5-38
INSPECTION	5-39
INSTALLATION	5-40
OIL PAN AND OIL PUMP	5-42
REMOVAL	5-45
INSPECTION	5-45
INSTALLATION	5-47
CRANKCASE	5-49
CRANKCASE.....	5-49
CONNECTING RODS AND PISTONS	5-51
CRANKSHAFT AND BALANCER SHAFT	5-52
REMOVAL	5-54
INSPECTION	5-56
INSTALLATION	5-67

CHAPTER 6. COOLING SYSTEM

HEAT EXCHANGER	6-1
INSPECTION	6-4
INSTALLATION	6-5
THERMOSTAT	6-6
INSPECTION	6-7
INSTALLATION	6-7
WATER PUMP	6-9
REMOVAL	6-11
DISASSEMBLY.....	6-11
INSPECTION	6-12
ASSEMBLY.....	6-12
INSTALLATION	6-13

CHAPTER 7. CARBURETION

CARBURETORS AND FUEL PUMP	7-1
INSPECTION	7-6
ASSEMBLY.....	7-8
INSTALLATION	7-9
FUEL LEVEL ADJUSTMENT	7-10
THROTTLE POSITION SENSOR (T.P.S.) INSPECTION AND ADJUSTMENT	7-11
INSPECTION	7-12
INSTALLATION	7-13

CHAPTER 8. ELECTRICAL

SWITCH INSPECTION	8-1
SWITCH INSPECTION	8-1
INSPECTING A SWITCH SHOWN IN THE MANUAL	8-1
IGNITION SYSTEM	8-2
CIRCUIT DIAGRAM	8-2
TROUBLESHOOTING	8-3
IGNITION SPARK GAP	8-5
IGNITION COIL.....	8-5
PICKUP COIL	8-6
THROTTLE OVERRIDE SYSTEM (T.O.R.S.).....	8-7
ENGINE STOP SWITCH	8-7
THROTTLE SWITCH	8-8
MAIN SWITCH.....	8-8
ELECTRICAL STARTING SYSTEM	8-9
CIRCUIT DIAGRAM	8-9
TROUBLESHOOTING	8-10
STARTER MOTOR	8-12
CHARGING SYSTEM	8-17
CIRCUIT DIAGRAM	8-17
TROUBLESHOOTING	8-18
BATTERY.....	8-19
A.C. MAGNETO	8-19
LIGHTING SYSTEM	8-20
CIRCUIT DIAGRAM	8-20
TROUBLESHOOTING	8-21
BULB(S)	8-23
HEADLIGHT BEAM SWITCH	8-23
HEADLIGHT RELAY	8-23
LOAD CONTROL RELAY	8-24
SIGNAL SYSTEM	8-25
CIRCUIT DIAGRAM	8-25
TROUBLESHOOTING	8-26
BRAKE LIGHT SWITCH	8-32
GEAR POSITION SWITCH (RS90R/RSG90/RST90/RST90TF).....	8-32
DC BACK BUZZER (RS90R/RSG90/RST90/RST90TF).....	8-32
COOLANT TEMPERATURE SENSOR	8-33
OIL LEVEL SWITCH	8-34
FUEL SENDER	8-34
SPEED SENSOR.....	8-35

GRIP WARMER SYSTEM	8-36
CIRCUIT DIAGRAM.....	8-36
TROUBLESHOOTING.....	8-37
GRIP AND THUMB WARMER COIL	8-39
THUMB WARMER ADJUSTMENT	
SWITCH.....	8-39
GRIP WARMER ADJUSTMENT	
SWITCH.....	8-40
PASSENGER GRIP WARMER	
(RST90/RST90TF).....	8-40
PASSENGER GRIP WARMER SWITCH	
(RST90/RST90TF).....	8-41
PASSENGER GRIP WARMER RELAY	
(RST90/RST90TF).....	8-41
 CARBURETOR HEATER SYSTEM	8-42
CIRCUIT DIAGRAM.....	8-42
TROUBLESHOOTING.....	8-43
CARBURETOR HEATER RELAY	8-44
CARBURETOR HEATER	8-44
 SELF-DIAGNOSIS	8-45
SELF-DIAGNOSIS CODE	8-46

CHAPTER 9. SPECIFICATIONS

GENERAL SPECIFICATIONS	9-1
 MAINTENANCE SPECIFICATIONS	9-4
ENGINE	9-4
POWER TRAIN.....	9-9
CHASSIS	9-15
ELECTRICAL.....	9-17
HIGH ALTITUDE SETTINGS.....	9-19
 TIGHTENING TORQUE	9-20
ENGINE	9-20
POWER TRAIN.....	9-22
CHASSIS	9-25
 GENERAL TORQUE SPECIFICATIONS	9-26
 DEFINITION OF UNITS	9-26
 CABLE ROUTING	9-27

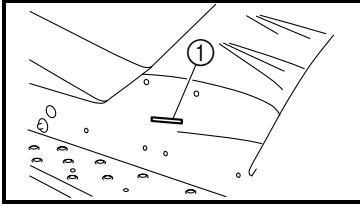


GENERAL INFORMATION

MACHINE IDENTIFICATION

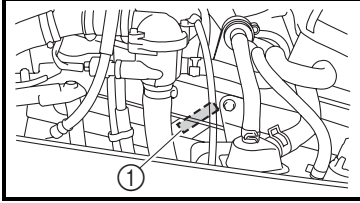
FRAME SERIAL NUMBER

The frame serial number ① is located on the right-hand side of the frame (just below the front of the seat).



ENGINE SERIAL NUMBER

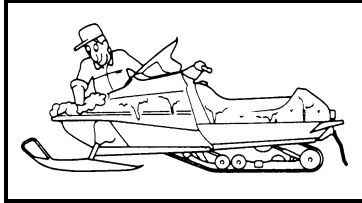
The engine serial number ① is located on the right-hand side of the crank-case.



NOTE:

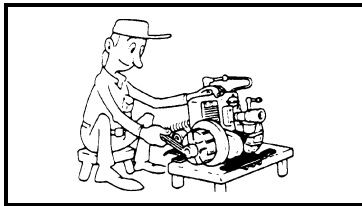
Designs and specifications are subject to change without notice.

IMPORTANT INFORMATION PREPARATION FOR REMOVAL AND DISASSEMBLY



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

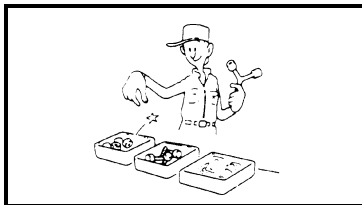
While cleaning, take care to protect the electrical parts, such as relays, switches, motor, resistors, controllers, etc., from high pressure water splashes.



2. Use proper tools and cleaning equipment.
Refer to "SPECIAL TOOLS".

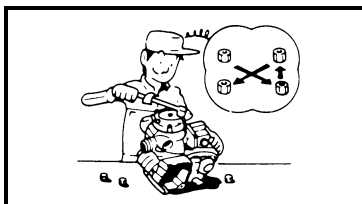


3. When disassembling the machine, keep mated parts together. This includes gears, cylinders, pistons, and other parts that have been "mated" through normal wear. Mated parts must be reused or replaced as an assembly.

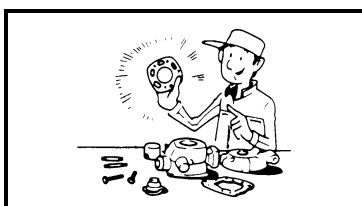


4. During disassembly of the machine, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help ensure that all parts are reinstalled correctly.

5. Keep all parts away from any source of fire.



6. Be sure to keep to the tightening torque specifications. When tightening bolts, nuts, and screws, start with those that have larger diameters, and proceed from the inside to the outside in a crisscross pattern.

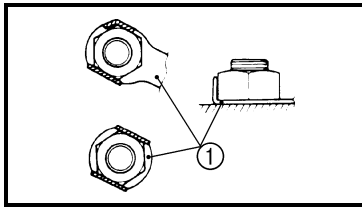


ALL REPLACEMENT PARTS

We recommend using genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for assembly and adjustments.

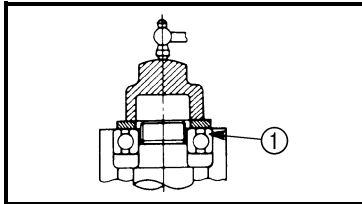
GASKETS, OIL SEALS, AND O-RINGS

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.



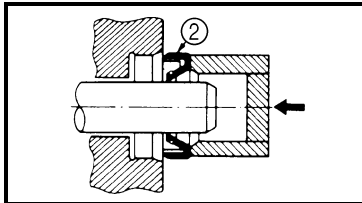
LOCK WASHERS/PLATES AND COTTER PINS

All lock washers/plates ① and cotter pins must be replaced if 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.



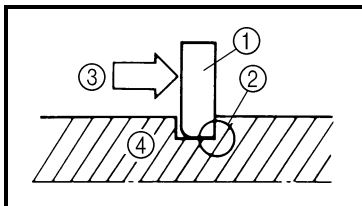
BEARINGS AND OIL SEALS

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



CAUTION:

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



CIRCLIPS

All circlips should be inspected carefully before reassembly. Always replace piston pin clips after one use. Replace misshapen 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

LOCTITE®

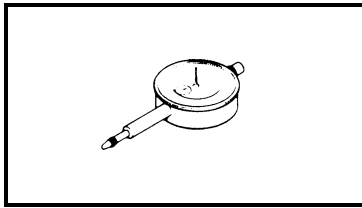
After installing fasteners that have LOCTITE® applied, wait 24 hours before using the machine. This will give the LOCTITE® time to dry properly.

SPECIAL TOOLS

Some special tools are necessary for a completely accurate tune-up and assembly. Using the correct special tool will help prevent damage that can be caused by the use of improper tools or improvised techniques.

NOTE:

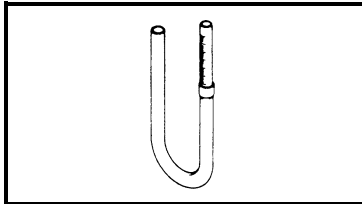
- Be sure to use the correct part number when ordering the tool, since the part number may differ according to country.
- For USA and Canada, use part number starting with “YB-”, “YM-”, “YU-”, “YS-” or “ACC-”.
- For others, use part number starting with “90890-”.



FOR TUNE UP

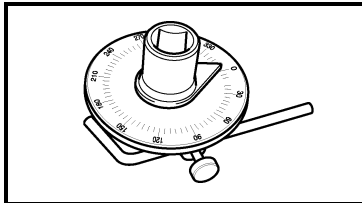
- Dial gauge
P/N: YU-03097
90890-03097

This gauge is used for run out measurement.



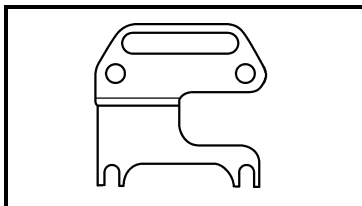
- Fuel level gauge
P/N: YM-01312-A
90890-01312

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



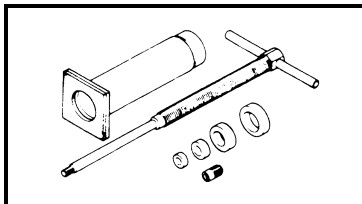
- Angle gauge
Use goods on the market.

This tool is used to tightening the torque.



- Steering linkage alignment plate
P/N: YS-01487
90890-01487

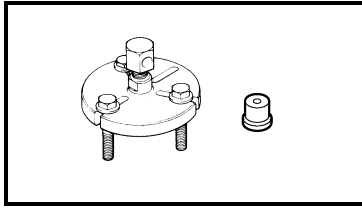
Locks steering relay arms in place while adjusting the steering linkage for front-end alignment.



FOR ENGINE SERVICE

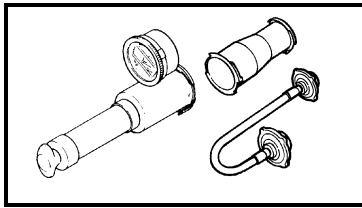
- Piston pin puller
P/N: YU-01304
90890-01304

This tool is used to remove the piston pin.



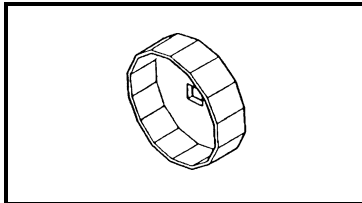
- Rotor holding puller
P/N: YU-33270-B
90890-01362
- Flywheel puller attachment
P/N: YM-33282
90890-04089

These tools are used to remove the magneto rotor.



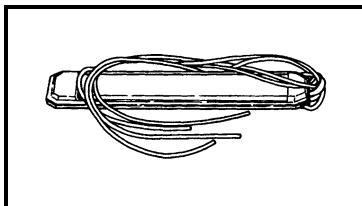
- Cooling system tester
P/N: YU-24460-01
90890-01325
- Adapter
P/N: YU-33984
90890-01352

This tester and its adapter are used for checking the cooling system.



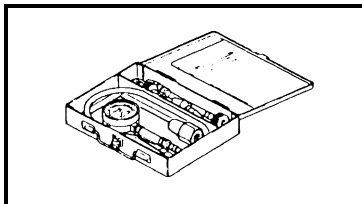
- Oil filter wrench
P/N: YM-01469
90890-01469

This tool is needed to loosen or tighten the oil filter cartridge.



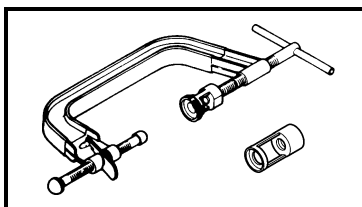
- Vacuum gauge
P/N: YU-44456
90890-03094

This guide is used to synchronize the carburetors.



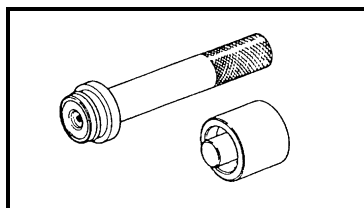
- Compression gauge set
P/N: YU-33223 (compression gage)
90890-03081
P/N: YU-33223-4 (adapter)
90890-04136

These tools are used to measure engine compression.



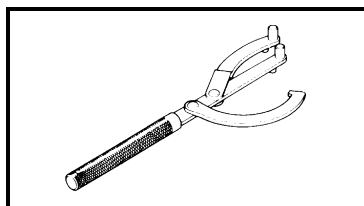
- Valve spring compressor set
P/N: YM-04019 (valve spring compressor)
90890-04019
P/N: YM-04108 (attachment)
90890-04108

These tools are used to remove or install the valve assemblies.



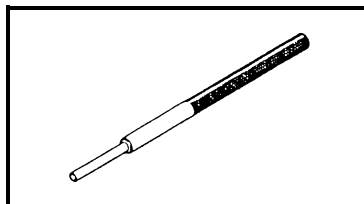
- 40 and 50 mm bearing driver
P/N: YM-04058
90890-04058
- Mechanical seal installer
P/N: YM-04145
90890-04145

These tools are used to install the water pump seal.



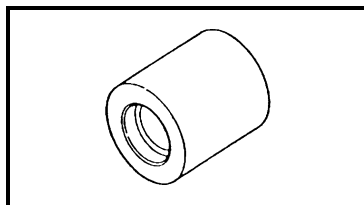
- Rotor holding tool
P/N: YU-01235
90890-01235

This tool is used to hold the camshaft sprocket.



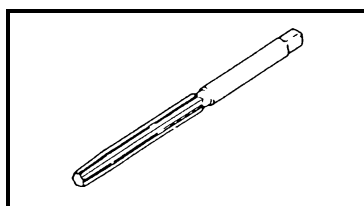
- Valve guide remover (ø5)
P/N: YM-04097
90890-04097

This tool is used to remove or install the valve guides.



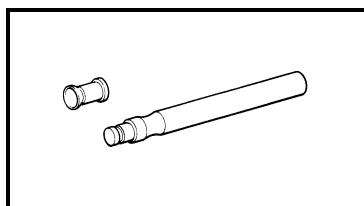
- Valve guide installer (ø5)
P/N: YM-04098
90890-04098

This tool is used to install the valve guides.



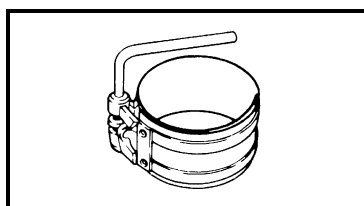
- Valve guide reamer (ø5)
P/N: YM-04099
90890-04099

This tool is used to rebores the new valve guides.



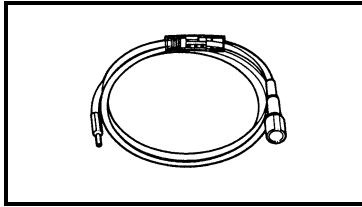
- Valve lapper
P/N: 90890-04101

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



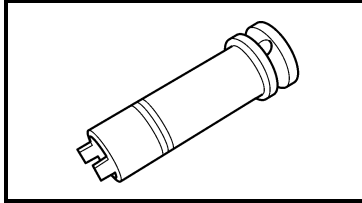
- Piston ring compressor
P/N: YM-08037
90890-05158

This tool is used to compress the piston rings when installing the piston into the cylinder.



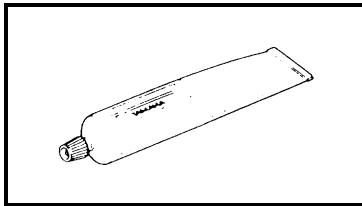
- Dynamic spark tester
P/N: YM-34487
- Ignition checker
P/N: 90890-06754

This tool is used to check the ignition system component.



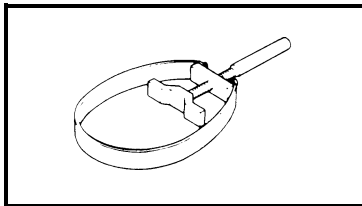
- Engine mount spacer wrench
P/N: YS-01489
90890-01489

Used to turn the engine mounting bolts when removing/installing engine.



- Quick gasket®
P/N: ACC-QUICK-GS-KT
- Yamaha bond No. 1215
P/N: 90890-85505

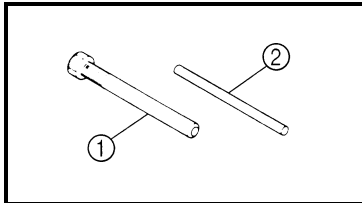
This bond is used to seal two mating surfaces (e.g., crankcase mating surfaces.)



FOR POWER TRAIN SERVICE

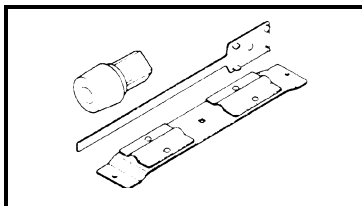
- Sheave holder
P/N: YS-01880-A
90890-01701

This tool is used to hold the primary sheave and A.C. magneto rotor.



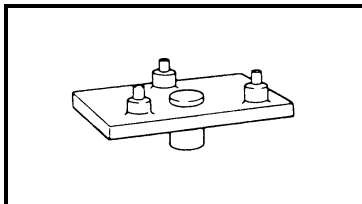
- Primary sheave puller (18 mm)
P/N: YS-01881-A ①, YS-01881-1 ②
90890-01898

This tool is used for removing the primary sheave.



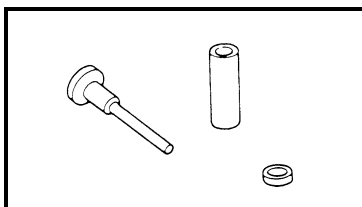
- Clutch spider separator
P/N: YS-28890-C
90890-01711

This tool is used when disassembling and assembling the primary sheave.



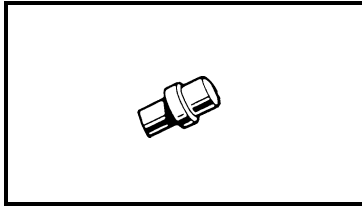
- Clutch separator adapter
P/N: YS-34480
90890-01740

This tool is used when disassembling and assembling the primary sheave.



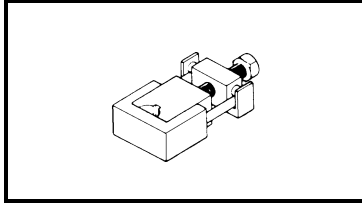
- YXR clutch bushing jig kit
P/N: YS-39752

This tool is used for removal and installation of primary clutch weight and roller bushings.



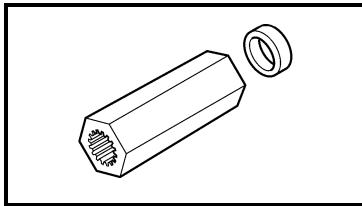
- Clutch bushing press
P/N: YS-42424

This tool is used for removing and installing the post bushings (primary sheave cap bush, sliding sheave bush and torque cam bush).



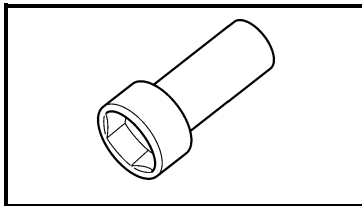
- Track clip installer
P/N: YS-91045-C
90890-01721

This tool is used for installing the track clip.



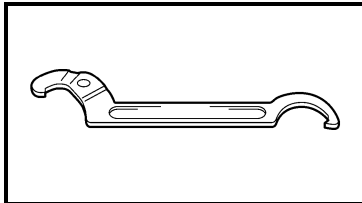
- Secondary shaft slide & holder
P/N: YS-01492
90890-01492

Remove and install secondary shaft bearing tapered collar.
Also used to hold the secondary shaft when used with the drive gear socket (YS-01490/90890-01490).



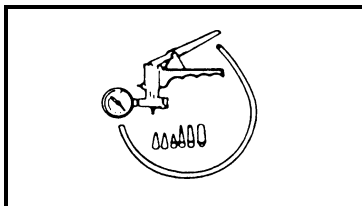
- Drive gear socket
P/N: YS-01490
90890-01490

Remove and install drive chain sprocket nut (36 × 100 mm (1.4 × 4 in) deep well socket).



- Ring nut wrench
P/N: YU-01268
90890-01268

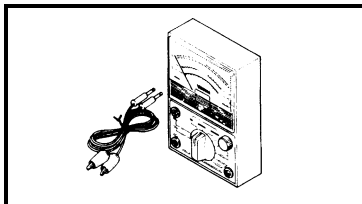
Remove and install secondary shaft bearing nut.



FOR CARBURETION SERVICE

- Mity vac
P/N: YS-42423
90890-06756

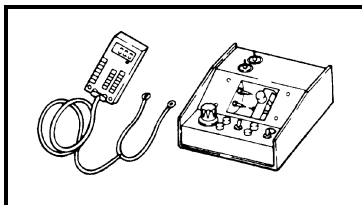
This tool is used to check the fuel pump.



FOR ELECTRICAL SERVICE

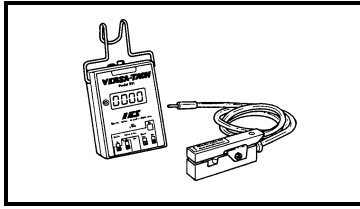
- Pocket tester
P/N: YU-03112-C
90890-03112

This instrument is necessary for checking the electrical components.



- Electro tester
P/N: YU-33260-A
90890-03021

This instrument is invaluable for checking the electrical system.



- Engine tachometer
P/N: YU-08036-C
90793-80009

This tool is used to check engine speed.

PERIODIC INSPECTION AND ADJUSTMENT

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 CHART

Regular maintenance is most important for best performance and safe operation.

Item	Remarks	Pre-operation check (Daily)	Initial 1 month or 800 km (500 mi) (40 hr)	Every
				Seasonally or 3,200 km (2,000 mi) (160 hr)
Spark plugs	Check condition. Adjust gap and clean. Replace if necessary.			●
Valve clearance	Check clearance. Adjust clearance when engine is cold.	Every 40,000 km (25,000 mi)		
Engine oil	Check oil level.	●		
	Replace.		●	●
Engine oil filter cartridge	Replace.		●	Every 20,000 km (12,000 mi)
Fuel	Check fuel level.	●		
Fuel filter	Check condition. Replace if necessary.			●
Fuel line	Check fuel hose for cracks or damage. Replace if necessary.			●
Engine coolant	Check coolant level.	●		
	Air bleed the cooling system if necessary.			●
	The coolant should be changed at least every season.			●
Carburetor	Check throttle lever operation.	●		
	Adjust the jets.	Whenever operating condition (elevation/temperature) is changed.		
Engine stop switch	Check operation. Repair if necessary.	●		
Throttle override system (T.O.R.S.)	Check operation. Repair if necessary.	●		
Throttle lever	Check operation. Repair if necessary.	●		
Exhaust system	Check for leakage. Tighten or replace gasket if necessary.			●
Drive guard	Check for cracks, bends or damage. Replace if necessary.	●		
V-belt	Check for wear and damage. Replace if necessary.	●		
Drive track and idler wheels	Check deflection, and for wear and damage. Adjust/replace if necessary.	●		
Slide runners	Check for wear and damage.	●		
	Replace if necessary.			●
Brake and parking brake	Check operation and fluid leakage.	●		
	Adjust free play and/or replace pads if necessary.			●
	Replace brake fluid.	See NOTE on page 2-2.		
Disc brake installation	Check for slight free play. Lubricate shaft with specified grease as required.			Every 1,600 km (1,000 mi)

PERIODIC MAINTENANCE CHART

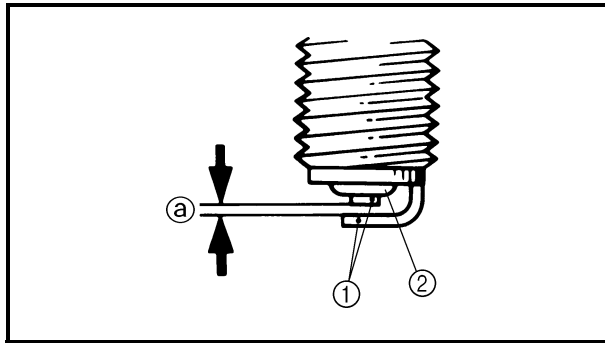


Item	Remarks	Pre-operation check (Daily)	Initial 1 month or 800 km (500 mi) (40 hr)	Every
				Seasonally or 3,200 km (2,000 mi) (160 hr)
Drive chain oil	Check oil level.		●	
	Replace.			●
Drive chain	Check deflection. Adjust if necessary.	Initial at 500 km (300 mi) and every 800 km (500 mi) thereafter.		
Skis and ski runners	Check for wear and damage.	●		
	Replace if necessary.			●
Steering system	Check operation.	●		
	Adjust toe-out if necessary.			●
Strap (RS90M)	Check for damage.	●		
	Replace if necessary.			
Lights	Check operation.	●		
	Replace bulbs if necessary.			
Battery	Check condition.			●
	Charge if necessary.			
Primary and secondary clutches	Check engagement and shift speed. Adjust if necessary.			●
		Whenever operating elevation is changed.		
	Inspect sheaves for wear/damage. Inspect weights/rollers and bushings for wear-for primary. Inspect ramp shoes/bushings for wear-for secondary. Replace if necessary.			●
	Lubricate with specified grease.			●
				●
Steering column bearing	Lubricate with specified grease.			●
Ski and front suspension	Lubricate with specified grease.			●
Suspension component	Lubricate with specified grease.			●
Parking brake cable end and lever end/throttle cable end	Lubricate with specified grease.			●
	Check cable damage.			●
	Replace if necessary.			
Shroud latches	Make sure that the shroud latches are hooked.	●		
Fittings and fasteners	Check tightness.	●		
	Repair if necessary.			
Tool kit and recommended equipment	Check for proper placement.	●		

NOTE:

Brake fluid replacement:

1. When disassembling the master cylinder or caliper cylinder, replace the brake fluid. Normally check the brake fluid level and add the fluid as required.
2. On the inner parts of the master cylinder and caliper cylinder, replace the oil seals every two years.
3. Replace the brake hose every four years, or if cracked or damaged.

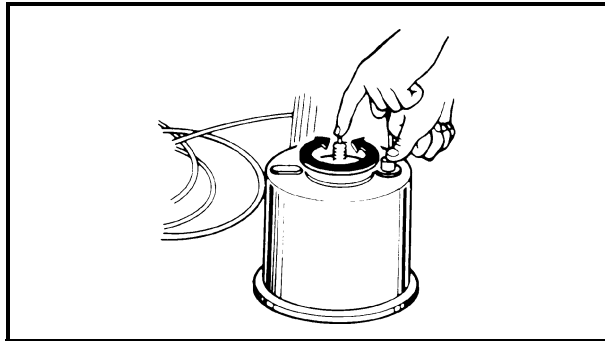


ENGINE SPARK PLUGS

1. Remove:
 - Spark plug caps
 - Spark plugs
2. Inspect:
 - Electrodes ①
Damage/wear → Replace the spark plug.
 - Insulator color ②
3. Measure:
 - Spark plug gap ③
Out of specification → Regap.
Use a wire thickness gauge.



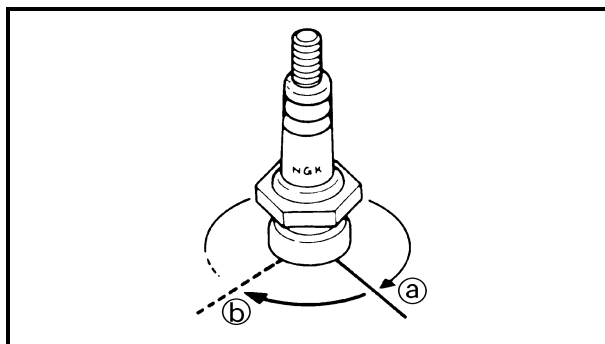
Spark plug gap:
0.7 ~ 0.8 mm (0.028 ~ 0.031 in)



If necessary, clean the spark plugs with a spark plug cleaner.

Standard spark plug:
NGK R CR8E (NGK)

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

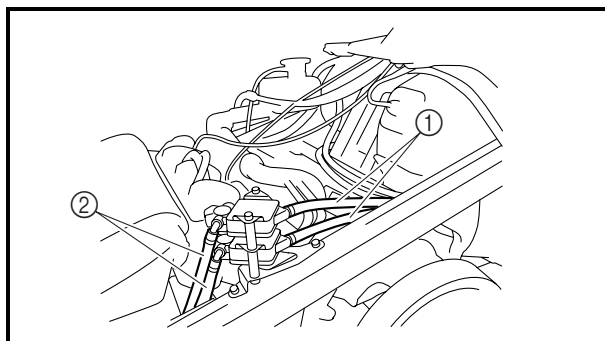


4. Install:
 - Spark plugs



Spark plug:
13 Nm (1.3 m · kg, 9.4 ft · lb)

NOTE: _____
Finger-tighten ③ the spark plug before torquing ④ it to specification.



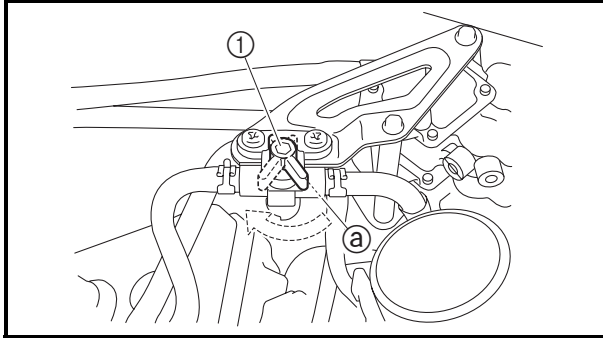
FUEL LINE INSPECTION

1. Inspect:
 - Fuel hoses ①
 - Fuel delivery hoses ②
Cracks/damage → Replace.

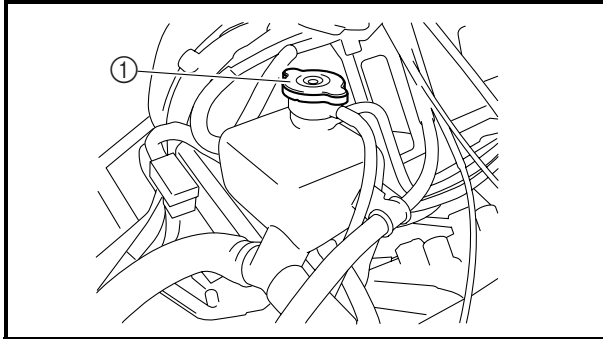
COOLING SYSTEM**Coolant replacement****NOTE:** _____

The coolant should be changed at least every season.

1. Place the machine on a level surface.



2. Make sure that the carburetor coolant shut-off lever (1) is turned to "ON" (a).
(for RS90M)

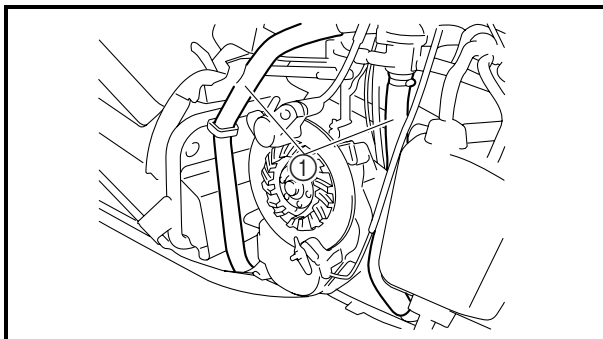


3. Remove:

- Coolant filler cap (1)

⚠ WARNING _____

Do not remove the coolant filler cap (1) when the engine is hot. Pressurized scalding hot fluid and steam may be blown out, which could cause serious injury. When the engine has cooled, place a thick rag or a towel over the coolant filler cap. Slowly turn the cap counterclockwise until it stop. This allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning it counterclockwise to remove it.



4. Place an open container under the coolant hoses.

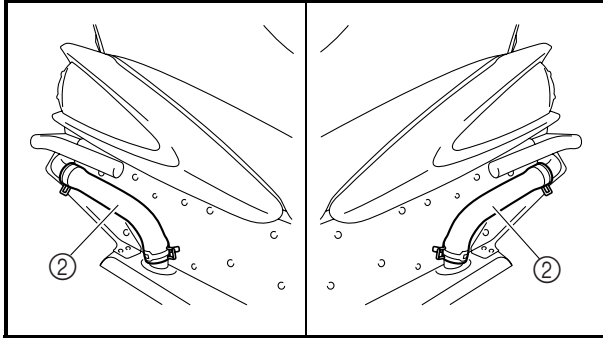
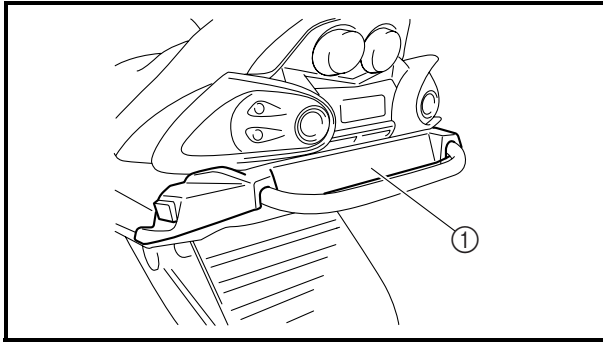
5. Disconnect:

- Coolant hoses (1)

6. Drain the coolant.

NOTE: _____

Lift up the tail of the machine to drain the coolant.



7. Remove:
 - Rear bumper cover ①
8. Disconnect:
 - Coolant hoses ②
9. Drain the coolant.

NOTE:

Lift up the front of the machine to drain the coolant completely.

⚠ WARNING

Coolant is poisonous. It is harmful or fatal if swallowed.

- If coolant is swallowed, induce vomiting immediately and get immediate medical attention.
- If coolant splashes in your eyes, thoroughly wash them with water and consult a doctor.
- If coolant splashes on your skin or clothes, quickly wash it away with soap and water.

10. Connect:
 - Front coolant hoses
11. Connect:
 - Rear coolant hoses
12. Fill:
 - Cooling system



Recommended coolant:

High quality silicate-free ethylene glycol antifreeze containing corrosion inhibitors

Coolant mixing ratio (coolant:water):
3:2 (60%:40%)

Total amount:

RS90/RS90R/RSG90

4.8 L (4.22 Imp qt, 5.07 US qt)

RS90M

6.3 L (5.55 Imp qt, 6.66 US qt)

RST90 "USA/Canada"/RST90TF
"Canada"

5.2 L (4.58 Imp qt, 5.50 US qt)

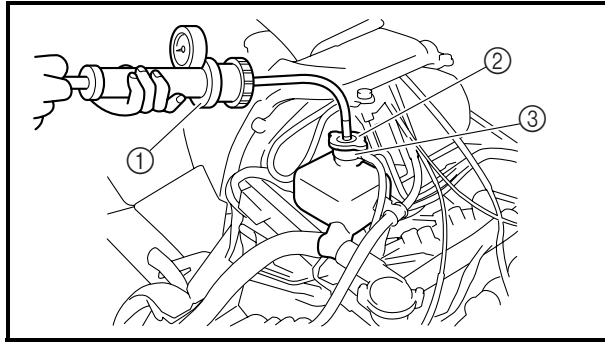
RST90 "Europe"/RST90TF
"Europe"

5.4 L (4.75 Imp qt, 5.71 US qt)

CAUTION:

- Hard water or salt water is harmful to engine parts. If soft water is not available, use boiled or distilled water.
- Do not use water containing impurities or oil.

13. Bleed the air from the cooling system.



14. Inspect:

- Cooling system

Decrease of pressure (leaks) → Repair as required.

Inspection steps:

- Attach the cooling system tester ① and adapter ② to the coolant filler ③.



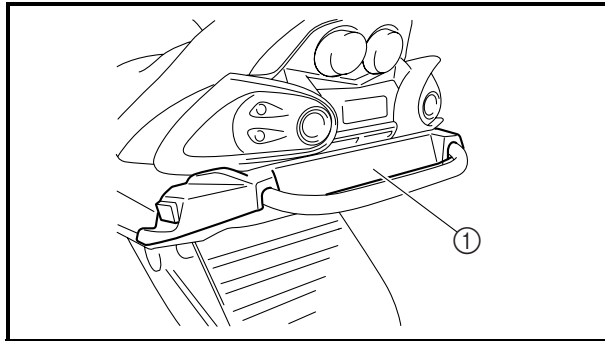
Cooling system tester:

90890-01325, YU-24460-01

Adapter:

90890-01352, YU-33984

- Apply 100 kPa (1.0 kg/cm², 14 psi).
- Measure the pressure with the gauge.

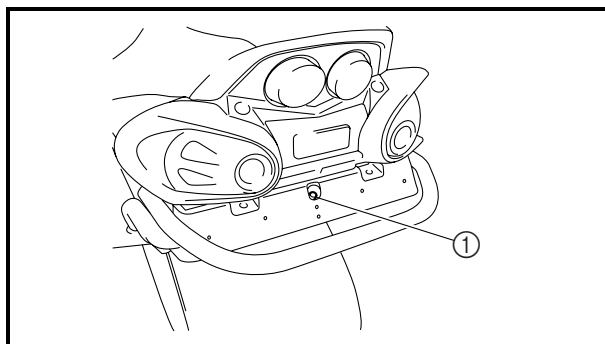


Air bleeding

1. Remove:

- Rear bumper cover ①

2. Bleed air from the cooling system.



Air bleeding steps:

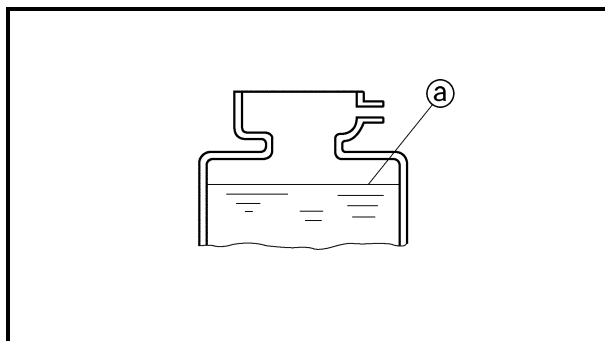
- Lift up the tail of the machine.
- Remove the bleed bolt ① on the heat exchanger.
- While slowly adding coolant to the coolant filler, drain the coolant until no more air bubbles appear.
- Tighten the bleed bolt ①.



Bleed bolt:

13 Nm (1.3 m · kg, 9.4 ft · lb)

- Add coolant to the coolant cold level ②.



- Install the coolant filler cap.
Apply and lock the parking brake. Start the engine and run it at approximately 2,500 ~ 2,700 r/min until the coolant circulates (approximately 3 ~ 5 minutes). The rear heat exchanger will be warm to the touch.

⚠ WARNING

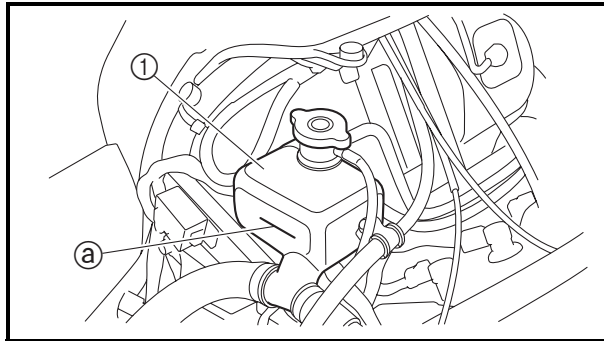
To avoid severe injury or death:

- **Make sure the machine is securely supported with a suitable stand.**
- **Do not exceed 2,800 r/min. Drive line damage and excessive V-belt wear could occur, or the machine could unexpectedly move forward if the clutch engages.**
- **Operate the engine only in a well-ventilated area.**

- Remove the coolant filler cap and bleed the cooling system again, as described above.
No air bubbles → OK.
- Pour coolant into the coolant reservoir ① until the coolant level reaches the “COLD LEVEL” level mark ②.

3. Install:

- Rear bumper cover



**Rear bumper cover bolt:
4 Nm (0.4 m · kg, 2.9 ft · lb)**

VALVE CLEARANCE ADJUSTMENT

NOTE:

- Valve clearance adjustment should be made on a cold engine, at room temperature.
- When the valve clearance is to be measured or adjusted, the piston must be at the top dead center (TDC) on the compression stroke.

1. Drain:

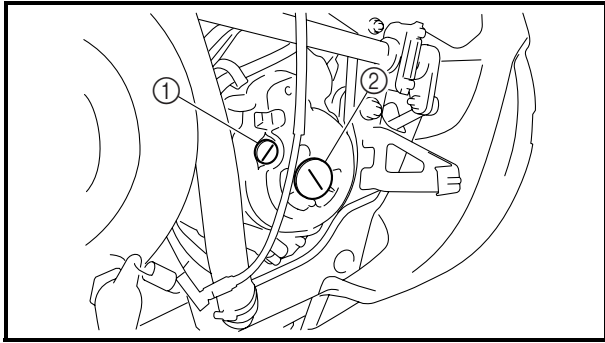
- Coolant
Refer to “COOLING SYSTEM”.

2. Drain:

- Engine oil
Refer to “ENGINE OIL REPLACEMENT”.

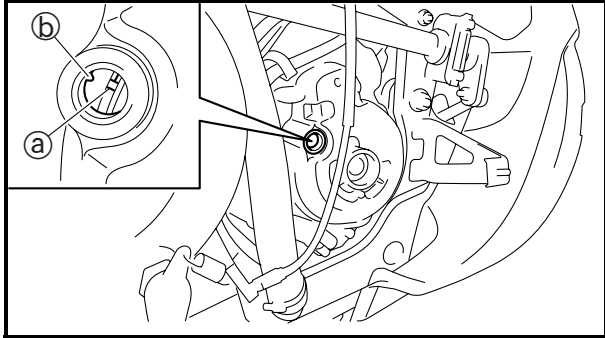
3. Remove:

- Oil tank
Refer to “A.C. MAGNETO ROTOR AND STARTER CLUTCH” in CHAPTER 5.



4. Remove:

- Cylinder head cover
Refer to "CAMSHAFTS" in CHAPTER 5.
- Timing mark accessing screw ①
- Crankshaft end accessing screw ②



5. Measure:

- Valve clearance
Out of specification → Adjust.



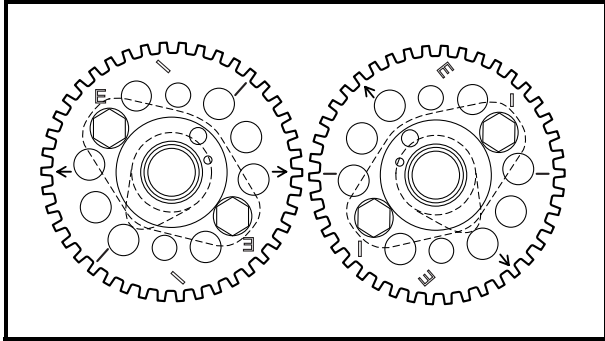
Valve clearance (cold):

Intake valve:

0.15 ~ 0.22 mm
(0.0059 ~ 0.0087 in)

Exhaust valve:

0.21 ~ 0.25 mm
(0.0083 ~ 0.0098 in)



Checking steps:

- Turn the crankshaft clockwise.
- When piston #3 is at TDC on the compression stroke, align the TDC mark ① on the A.C. magneto rotor with the mark ② on the A.C. magneto cover.

NOTE:

TDC on the compression stroke can be found when the camshaft lobes are turned away from each other.

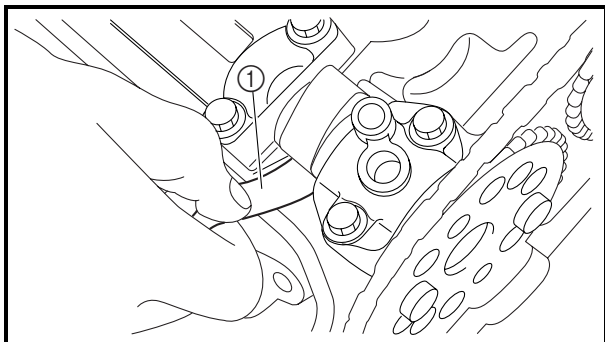
- Measure the valve clearance with a thickness gauge ①.

NOTE:

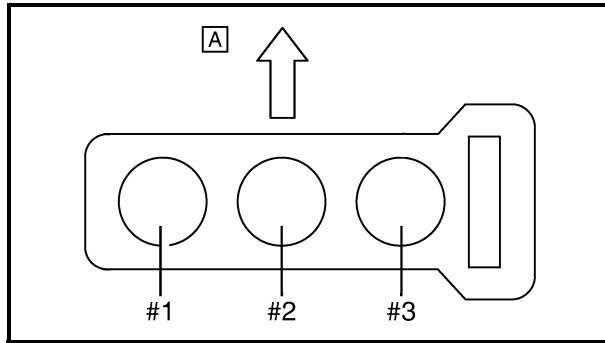
- If the valve clearance is incorrect, record the measured reading.
- Measure the valve clearance in the following sequence.

Valve clearance measuring sequence

Cylinder #3 → #2 → #1



VALVE CLEARANCE ADJUSTMENT



A Front

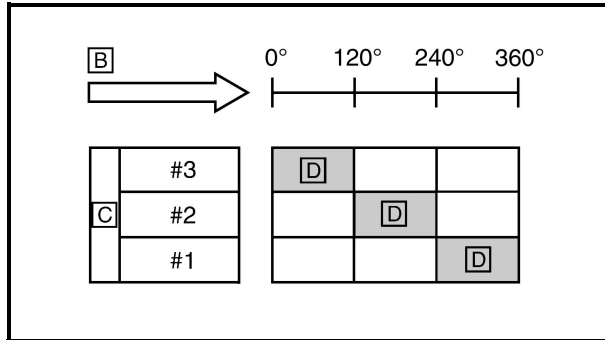
For each cylinder, starting with cylinder #3 at TDC, turn the crankshaft clockwise as specified in the following table.

B Degrees that the crankshaft is turned clockwise

C Cylinder

D Combustion cycle

#2 Cylinder	120°
#1 Cylinder	240°



6. Loosen:

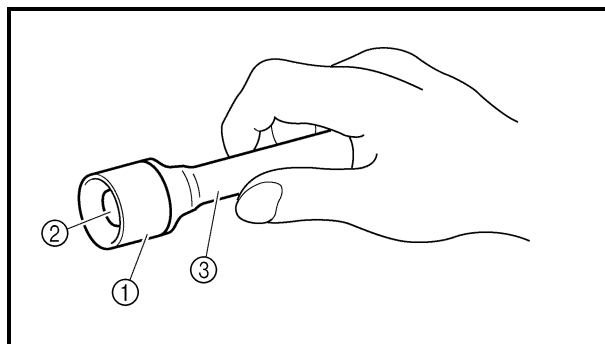
- Timing chain tensioner cap bolt
Refer to “CAMSHAFTS” in chapter 5.

7. Remove:

- Intake camshaft
- Exhaust camshaft

NOTE:

- Refer to “CAMSHAFTS” in CHAPTER 5.
- When removing the timing chain and camshafts, fasten a wire to the timing chain to retrieve it if it falls into the crankcase.



8. Adjust:

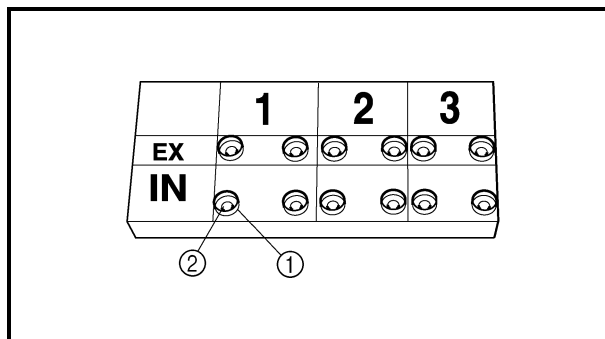
- Valve clearance

Adjustment steps:

- Remove the valve lifter ① and the valve pad ② with a valve lapper ③.

NOTE:

- Cover the timing chain opening with a rag to prevent the valve pad from falling into the crankcase.
- Make a note of the position of each valve lifter ① and valve pad ② so that they can be installed in the correct place.



- Select the proper valve pad from the following table.

Valve pad thickness range		Available valve pads
Nos. 120 ~ 240	1.20 ~ 2.40 mm (0.047 ~ 0.094 in)	25 thicknesses in 0.05 mm (0.0020 in) increments

NOTE:

- The thickness ① of each valve pad is marked in hundredths of millimeters on the side that touches the valve lifter.
- Since valve pads of various sizes are originally installed, the valve pad number must be rounded in order to reach the closest equivalent to the original.

- Round off the original valve pad number according to the following table.

Last digit	Rounded value
0 or 2	0
5	5
8	10

EXAMPLE:

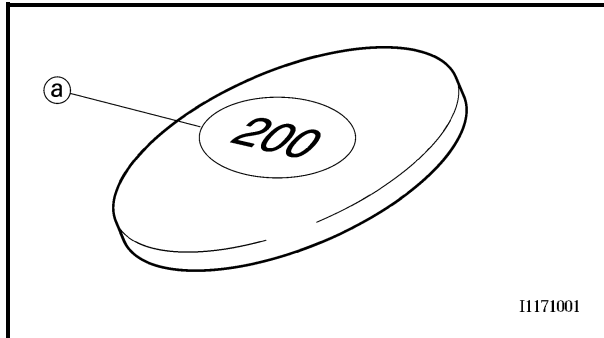
Original valve pad number = 148 (thickness = 1.48 mm (0.058 in))

Rounded value = 150

- Locate the rounded number of the original valve pad and the measured valve clearance in the valve pad selection table. The point where the column and row intersect is the new valve pad number.

NOTE:

The new valve pad number is only an approximation. The valve clearance must be measured again and the above steps should be repeated if the measurement is still incorrect.



VALVE CLEARANCE ADJUSTMENT



VALVE PAD SELECTION TABLE INTAKE

	Measured clearance ↓	INSTALLED PAD NUMBER																											
		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240			
exa →	0.00 ~ 0.04				120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	
	0.05 ~ 0.09			120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235		
	0.10 ~ 0.14		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235			
	0.15 ~ 0.22	Specification																											
	0.23 ~ 0.27	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240				
	0.28 ~ 0.32	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240					
	0.33 ~ 0.37	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240						
	0.38 ~ 0.42	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240							
	0.43 ~ 0.47	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240								
	0.48 ~ 0.52	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240									
	0.53 ~ 0.57	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240										
	0.58 ~ 0.62	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240											
	0.63 ~ 0.67	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240												
	0.68 ~ 0.72	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240													
	0.73 ~ 0.77	175	180	185	190	195	200	205	210	215	220	225	230	235	240														
	0.78 ~ 0.82	180	185	190	195	200	205	210	215	220	225	230	235	240															
	0.83 ~ 0.87	185	190	195	200	205	210	215	220	225	230	235	240																
	0.88 ~ 0.92	190	195	200	205	210	215	220	225	230	235	240																	
	0.93 ~ 0.97	195	200	205	210	215	220	225	230	235	240																		
	0.98 ~ 1.02	200	205	210	215	220	225	230	235	240																			
1.03 ~ 1.07	205	210	215	220	225	230	235	240																					
1.08 ~ 1.12	210	215	220	225	230	235	240																						
1.13 ~ 1.17	215	220	225	230	235	240																							
1.18 ~ 1.22	220	225	230	235	240																								
1.23 ~ 1.27	225	230	235	240																									
1.28 ~ 1.32	230	235	240																										
1.33 ~ 1.37	235	240																											
1.38 ~ 1.42	240																												

EXAMPLE:

VALVE CLEARANCE:

0.15 ~ 0.22 mm (0.0059 ~ 0.0087 in)

Installed is 150

Measured clearance is 0.25 mm (0.0098 in)

Replace 150 pad with 160 pad

EXAMPLE:

VALVE CLEARANCE:

0.15 ~ 0.22 mm (0.0059 ~ 0.0087 in)

Installed is 150

Measured clearance is 0.25 mm (0.0098 in)

Replace 150 pad with 160 pad

EXHAUST

Measured clearance ↓	INSTALLED PAD NUMBER																											
	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240			
0.00 ~ 0.02						120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220		
0.03 ~ 0.07					120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225		
0.08 ~ 0.12				120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230		
0.13 ~ 0.17			120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235		
0.18 ~ 0.20		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240		
0.21 ~ 0.25	Specification																											
0.26 ~ 0.30	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240				
0.31 ~ 0.35	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240					
0.36 ~ 0.40	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240						
0.41 ~ 0.45	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240							
0.46 ~ 0.50	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240								
0.51 ~ 0.55	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240									
0.56 ~ 0.60	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240										
0.61 ~ 0.65	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240											
0.66 ~ 0.70	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240												
0.71 ~ 0.75	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240													
0.76 ~ 0.80	175	180	185	190	195	200	205	210	215	220	225	230	235	240														
0.81 ~ 0.85	180	185	190	195	200	205	210	215	220	225	230	235	240															
0.86 ~ 0.90	185	190	195	200	205	210	215	220	225	230	235	240																
0.91 ~ 0.95	190	195	200	205	210	215	220	225	230	235	240																	
0.96 ~ 1.00	195	200	205	210	215	220	225	230	235	240																		
1.01 ~ 1.05	200	205	210	215	220	225	230	235	240																			
1.06 ~ 1.10	205	210	215	220	225	230	235	240																				
1.11 ~ 1.15	210	215	220	225	230	235	240																					
1.16 ~ 1.20	215	220	225	230	235	240																						
1.21 ~ 1.25	220	225	230	235	240																							
1.26 ~ 1.30	225	230	235	240																								
1.31 ~ 1.35	230	235	240																									
1.36 ~ 1.40	235	240																										
1.41 ~ 1.45	240																											

example
→

EXAMPLE:

VALVE CLEARANCE:

0.21 ~ 0.25 mm (0.0083 ~ 0.0098 in)

Installed is 175

Measured clearance is 0.35 mm (0.0138 in)

Replace 175 pad with 185 pad

EXAMPLE:

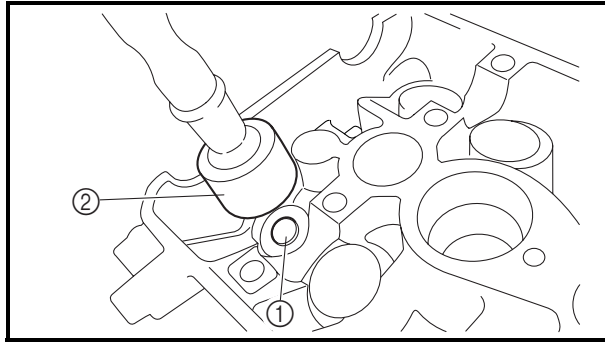
VALVE CLEARANCE:

0.21 ~ 0.25 mm (0.0083 ~ 0.0098 in)

Installed is 175

Measured clearance is 0.35 mm (0.0138 in)

Replace 175 pad with 185 pad



- Install the new valve pad ① and the valve lifter ②.

NOTE:

- Apply molybdenum disulfide oil to the valve pad and the valve lifter.
- The valve lifter must turn smoothly when rotated by hand.
- Install the valve lifter and the valve pad in the correct place.

- Install the exhaust and intake camshafts, timing chain and camshaft caps.



Camshaft cap bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)

NOTE:

- Refer to “CAMSHAFTS” in CHAPTER 5.
- Lubricate the camshaft caps, camshaft lobes, camshaft journals and camshaft cap bolts.
- Align the camshaft marks with the camshaft cap marks.
- Rotate the crankshaft clockwise several turns to seat the parts.

- Measure the valve clearance again.
- If the valve clearance is still out of specification, repeat all of the valve clearance adjustment steps until the specified clearance is obtained.

9. Install:

- Crankshaft end accessing screw
- Timing mark accessing screw

10. Install:

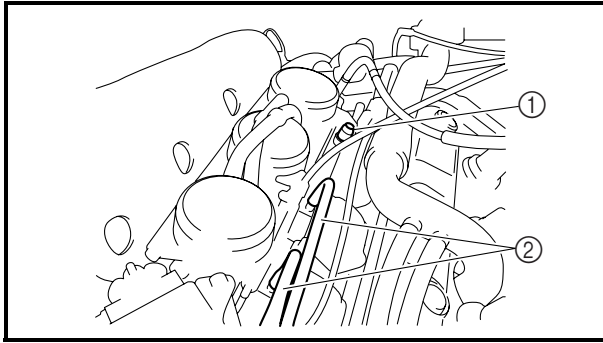
- Cylinder head cover
- Refer to “CAMSHAFTS” in CHAPTER 5.

11. Install:

- All removed parts

NOTE:

For installation, reverse the removal procedure.
Note the following points.



CARBURETOR SYNCHRONIZATION

NOTE:

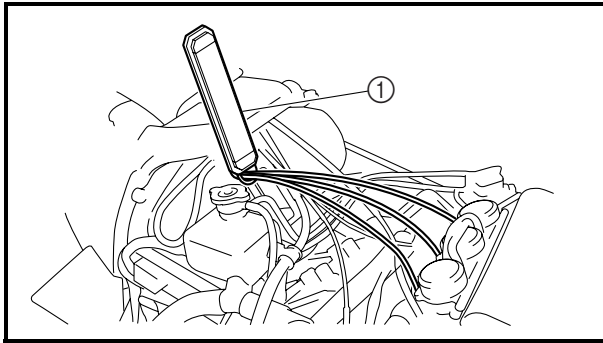
Prior to synchronizing the carburetors, the valve clearance and the engine idle speed should be properly adjusted.

1. Remove:

- Vacuum cap ①

2. Disconnect:

- Vacuum hoses ②



3. Install:

- T-joint
- Vacuum gauge ①
- Engine tachometer (near the spark plug)



Vacuum gauge:

90890-03094, YU-44456

Engine tachometer:

90793-80009, YU-08036-C

NOTE:

Connect the vacuum hose and vacuum gauge hose to the T-joint.

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

5. Inspect:

- Engine idle speed

Out of specification → Adjust.

Refer to “ENGINE IDLE SPEED ADJUSTMENT”.

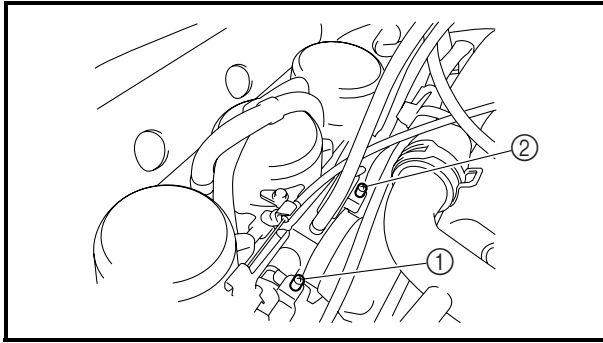


Engine idle speed:

1,300 ~ 1,500 r/min

6. Adjust:

- Carburetor synchronization



Adjustment steps:

- Synchronize carburetor #3 to carburetor #2 by turning the synchronizing screw ① in either direction until both gauges read the same.

NOTE:

After each step, rev the engine two or three times, each time for less than a second, and check the synchronization again.

- Synchronize carburetor #3 to carburetor #1 by turning the synchronizing screw ② in either direction until both gauges read the same.



Vacuum pressure at engine idling speed:
24.0 kPa (0.24 kg/cm², 3.41 psi)

NOTE:

The difference in vacuum pressure between two carburetors should not exceed 1.33 kPa (0.01 kg/cm², 0.19 psi).

7. Measure:

- Engine idle speed
Out of specification → Adjust.
Make sure that the vacuum pressure is within specification.

8. Stop the engine and remove the measuring equipment.

9. Adjust:

- Throttle cable free play
Refer to “THROTTLE CABLE FREE PLAY ADJUSTMENT”.

ENGINE IDLE SPEED ADJUSTMENT

NOTE:

Prior to adjusting the engine idling speed, the carburetor synchronization should be adjusted properly, the air filter should be clean, and the engine should have adequate compression.

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

2. Install:

- Engine tachometer
(near the spark plug)



Engine tachometer:
90793-80009, YU-08036-C

ENGINE IDLE SPEED ADJUSTMENT/ THROTTLE CABLE FREE PLAY ADJUSTMENT



3. Measure:

- Engine idle speed
- Out of specification → Adjust.



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

4. Adjust:

- Engine idle speed

Adjustment steps:

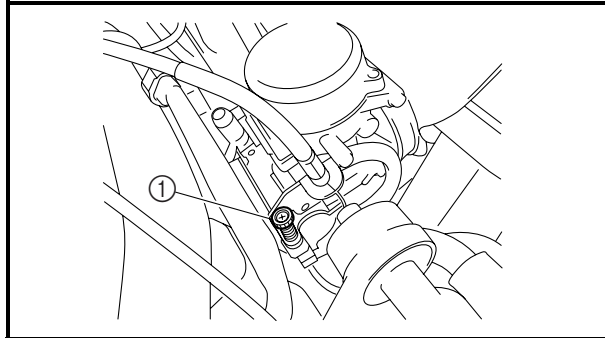
- Turn the throttle stop screw ① in or out until the specified engine idle speed is obtained.

Turning in → Idle speed is increased.

Turning out → Idle speed is decreased.

NOTE:

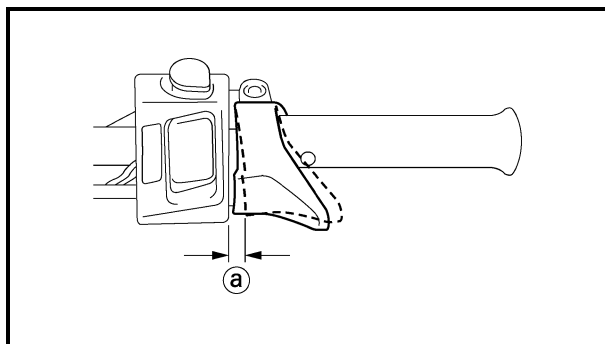
After adjusting the engine idle speed, the throttle cable free play should be adjusted.



THROTTLE CABLE FREE PLAY ADJUSTMENT

NOTE:

- Before adjusting the throttle cable free play, the engine idle speed should be adjusted.
- Adjust the throttle cable free play while the cable is in the cable guide.



1. Measure:

- Throttle cable free play ②
- Out of specification → Adjust.



Throttle cable free play:
2.0 ~ 3.0 mm (0.08 ~ 0.12 in)

2. Adjust:

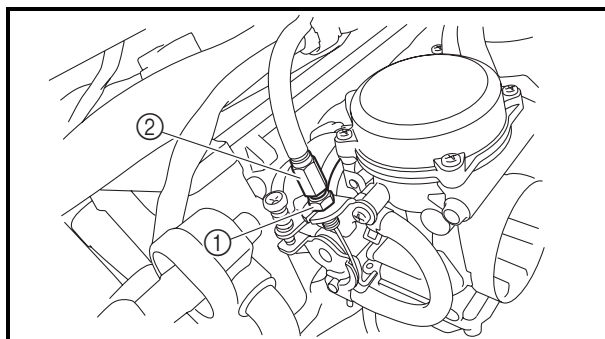
- Throttle cable free play

Adjustment steps:

- Loosen the locknut ①.
- Turn the adjusting nut ② in or out until the specified free play is obtained.

Turning in → Free play is increased.

Turning out → Free play is decreased.



THROTTLE CABLE FREE PLAY ADJUSTMENT/ THROTTLE OVERRIDE SYSTEM (T.O.R.S.) CHECK



- Tighten the locknut.

NOTE:

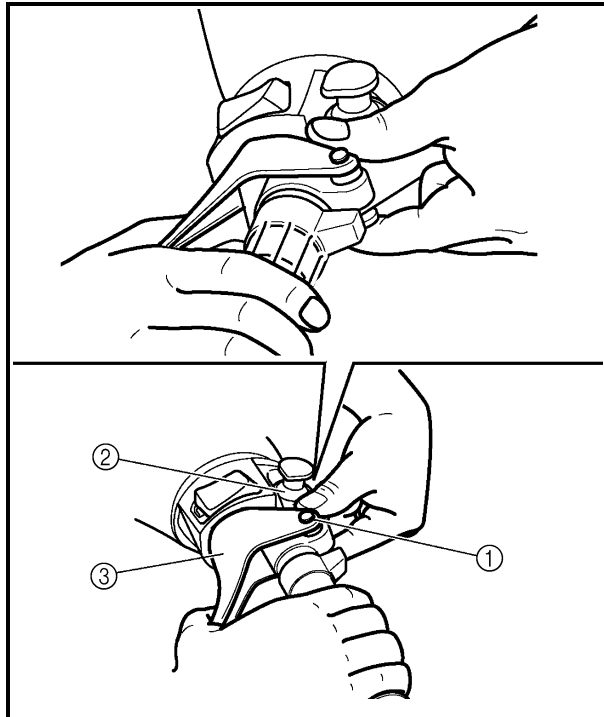
After adjusting the free play, turn the handlebar to right and left, and make sure that the engine idling does not run faster.

THROTTLE OVERRIDE SYSTEM (T.O.R.S.) CHECK

⚠ WARNING

When checking T.O.R.S.:

- Be sure the parking brake is applied.
- Be sure the throttle lever moves smoothly.
- Do not run the engine up to the clutch engagement speed. Otherwise, the machine could start moving forward unexpectedly, which could cause an accident.



1. Start the engine.

2. Hold the pivot point of the throttle lever away from the throttle switch by putting your thumb (above) and forefinger (below) between the throttle lever pivot ① and stop switch housing ②.

While holding as described above, press the throttle lever ③ gradually.

The T.O.R.S. will operate and the engine should run between 2,800 and 3,000 r/min.

⚠ WARNING

If the engine does not run between 2,800 and 3,000 r/min, stop the engine by turning the main switch to the “OFF” position and check the electrical system.

COMPRESSION PRESSURE MEASUREMENT

NOTE:

Insufficient compression pressure will result in a loss of performance.

1. Measure:

- Valve clearance

Out of specification → Adjust.

Refer to “VALVE CLEARANCE ADJUSTMENT”.

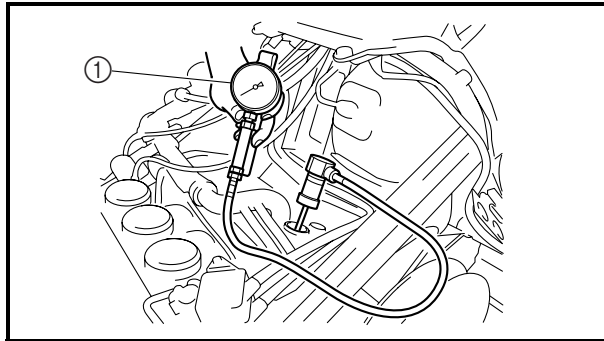
2. Start the engine, warm it up for several minutes, and then turn it off.

3. Remove:

- Spark plug

CAUTION:

Before removing the spark plugs, use compressed air to blow away any dirt accumulated in the spark plug wells to prevent it from falling into the cylinders.



4. Install:

- Compression gauge ①



Compression gauge:

90890-03081, YU-33223

Compression gauge adapter:

90890-04136, YU-33223-4

5. Measure:

- Compression pressure

Above the maximum pressure → Inspect the cylinder head, valve surfaces, and piston crown for carbon deposits.

Below the minimum pressure → Squirt a few drops of oil into the affected cylinder and measure again.

Refer to the following table.

Compression pressure (with oil applied into cylinder)	
Reading	Diagnosis
Higher than without oil	Piston ring(-s) wear or damage → Repair.
Same as without oil	Piston, valves, cylinder head gasket or piston possibly defective → Repair. Compression pressure (at sea level)



Compression pressure (at sea level):

Standard:

1,450 kPa (14.5 kg/cm², 206 psi)
at 400 r/min

Minimum:

1,260 kPa (12.6 kg/cm², 179 psi)
at 400 r/min

Maximum:

1,620 kPa (16.2 kg/cm², 230 psi)
at 400 r/min

Measurement steps:

- Turn the main switch to “ON”.
- With the throttle wide open, crank the engine until the reading on the compression gauge stabilizes.

⚠ WARNING

To prevent sparking, ground all ignition coil leads before cranking the engine.

NOTE:

The difference in compression pressure between cylinders should not exceed 100 kPa (1 kg/cm², 14.2 psi).

6. Install:

- Spark plug



Spark plug:

13 Nm (1.3 m · kg, 9.4 ft · lb)

ENGINE OIL LEVEL INSPECTION

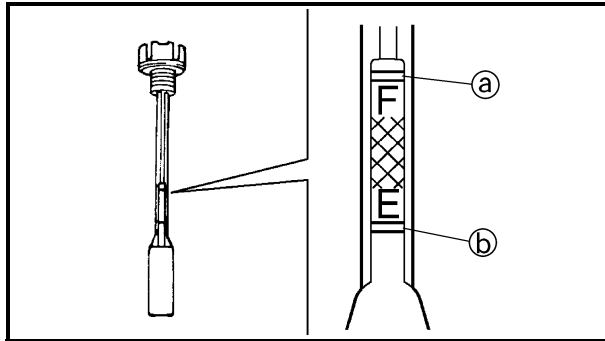
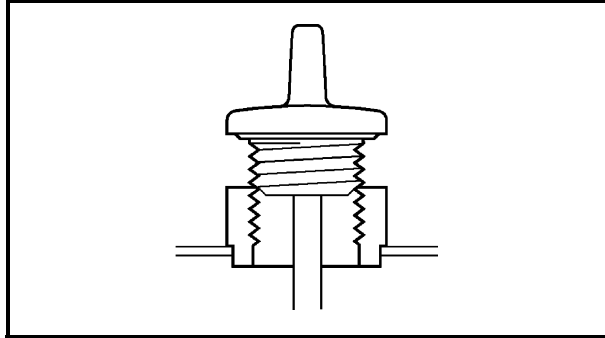
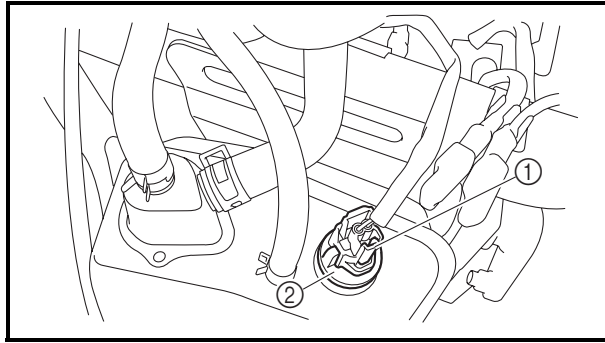
1. Inspect:

- Engine oil level

CAUTION:

Do not run the engine with too much or not enough oil in the oil tank. Oil could flow into the air filter and the engine could be damaged.

ENGINE OIL LEVEL INSPECTION



SAE						API
-40°	-20°	0°	20°	40°	60°F	
-40°	-29°	-18°	-7°	4°	16°C	
SAE 0W-30						SE, SF, SG or higher

Inspection steps:

- Place the snowmobile on a level surface and apply the parking brake.
- Start the engine, warm it up for 10 ~ 15 minutes, and then turn off.
- Disconnect the oil level switch coupler ①.

CAUTION:

Disconnect the oil level switch coupler before removing the oil level gauge. Otherwise the lead can twist and become severed.

- Remove the oil level gauge/dipstick ②, wipe it clean, insert it back into the filler hole (without screwing it in), and then remove it again to check the oil level.
- The engine oil level should be between the maximum level mark ① and minimum level mark ②.

Below the minimum level mark → Add the recommended engine oil to the proper level.

CAUTION:

When adding the engine oil, be careful not to fill above the maximum level mark and minimum level mark on the oil level gauge.



Recommended oil:

Refer to the chart for the engine oil grade which is best suited for certain atmospheric temperatures.

API standard:

API SE, SF, SG or higher
SAE 0W-30

CAUTION:

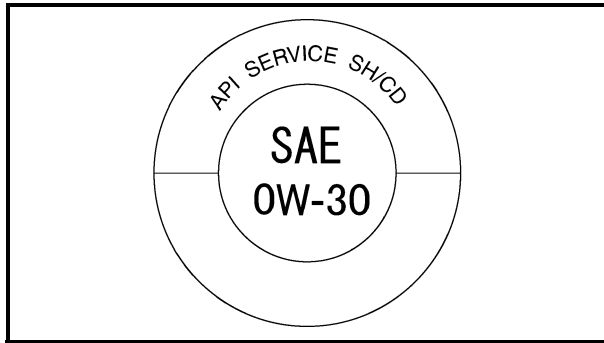
Do not allow foreign materials to enter the crankcase.

NOTE:

Before checking the engine oil level, wait a few minutes until the oil has settled.

- Start the engine, warm it up for several minutes, and then turn it off.

ENGINE OIL LEVEL INSPECTION/ ENGINE OIL REPLACEMENT



- Check the engine oil level again.

NOTE:

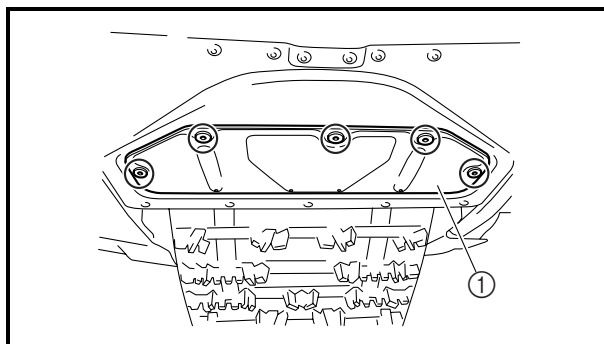
Before checking the engine oil level, wait a few minutes until the oil has settled.

CAUTION:

- Use only 4-stroke engine oil.
- Engine oil also lubricates the starter clutch. In order to prevent clutch slippage, do not mix any chemical additives with the oil or use oils of a higher grade than "CD". In addition, do not use oils labeled "ENERGY CONSERVING II" or higher.

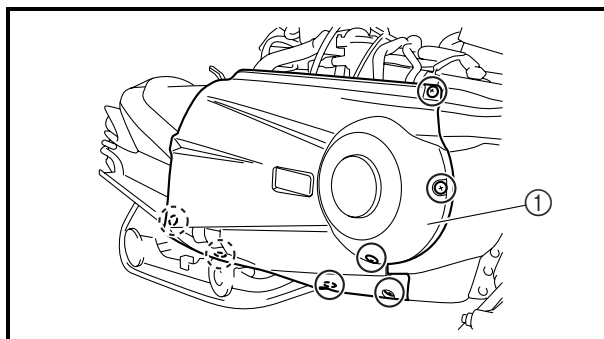
ENGINE OIL REPLACEMENT

1. Place the snowmobile on a level surface and apply the parking brake.
2. Start the engine, warm up for several minutes, and then turn it off.
3. Place a containers under the engine oil drain bolt and oil tank.



4. Remove:

- Bottom panel ①



5. Remove:

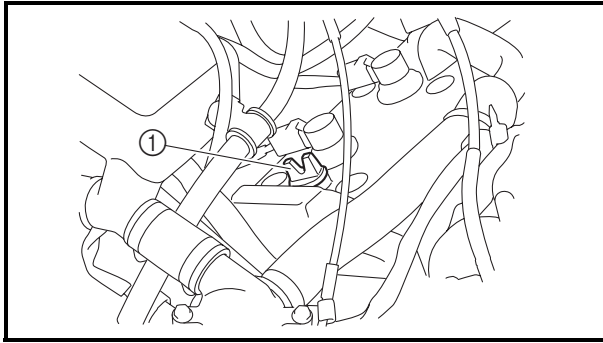
- Right side cover ①

6. Disconnect:

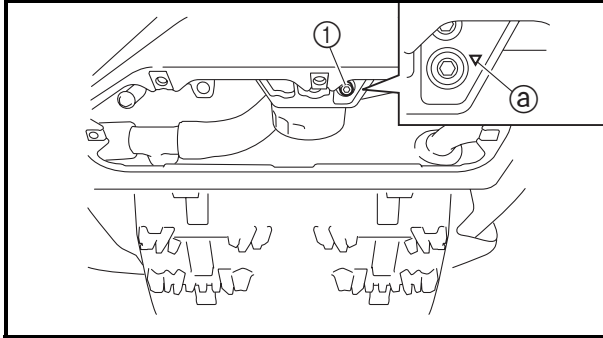
- Oil level gauge coupler
Refer to "ENGINE OIL LEVEL INSPECTION".

7. Remove:

- Oil level gauge/dipstick
Refer to "ENGINE OIL LEVEL INSPECTION".



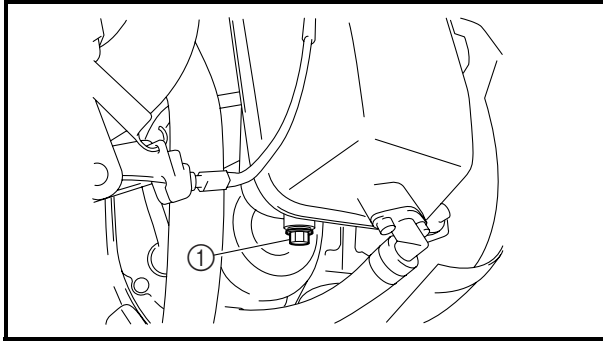
8. Remove:
- Cylinder head cap ①



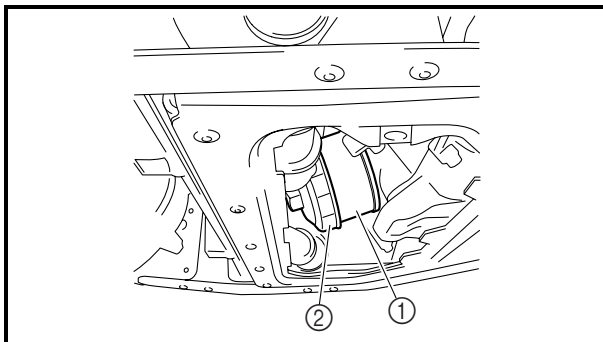
9. Remove:
- Oil pan drain bolt ①

NOTE:

A “▽” mark ③ is stamped the oil pan near the oil pan drain bolt.



10. Remove:
- Oil tank engine oil drain bolt ①
11. Drain:
- Engine oil
(completely from the oil pan and oil tank)
12. If the oil filter cartridge is also to be replaced, perform the following procedure.



Replacement steps:

- Remove the oil filter cartridge ① with an oil filter wrench ②.



Oil filter wrench:
90890-01469, YM-01469

- Apply a thin coat of engine oil onto the O-ring ① of the new oil filter cartridge.

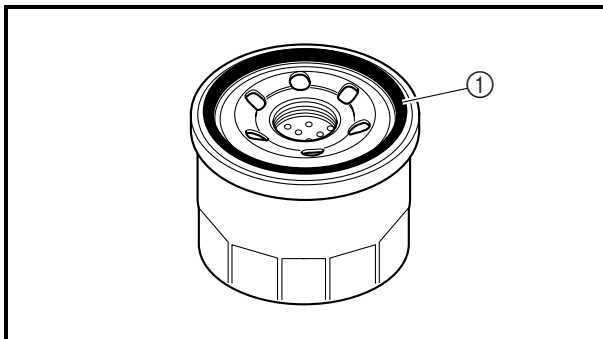
CAUTION:

Make sure that the O-ring ① is positioned correctly in the groove of the oil filter cartridge.

- Tighten the new oil filter cartridge to specification with an oil filter wrench.



Oil filter cartridge:
17 Nm (1.7 m · kg, 12 ft · lb)



13. Install:

- Drain bolts
(along with the new gaskets)



Oil tank drain bolt:
16 Nm (1.6 m · kg, 12 ft · lb)
Oil pan drain bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)

14. Fill:

- Engine oil
(with the specified amount of the recommended engine oil)
Add 2.0 L (1.8 Imp qt, 2.1 US qt) of the recommended engine oil to the oil tank, and then install and tighten the oil level gauge/dipstick and the cylinder head cap.



Quantity:
Total amount:
3.7 L (3.3 Imp qt, 3.9 US qt)
Periodic oil change:
2.8 L (2.5 Imp qt, 3.0 US qt)
With oil filter replacement:
3.0 L (2.6 Imp qt, 3.2 US qt)

15. Inspect:

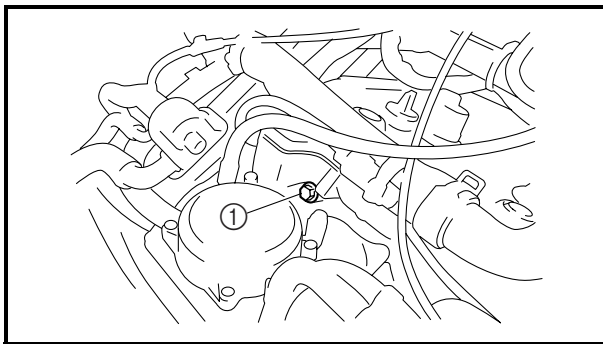
- Engine and oil tank
(for engine oil leaks)

16. Inspect:

- Engine oil level
Refer to “ENGINE OIL LEVEL INSPECTION”.

17. Inspect:

- Engine oil pressure

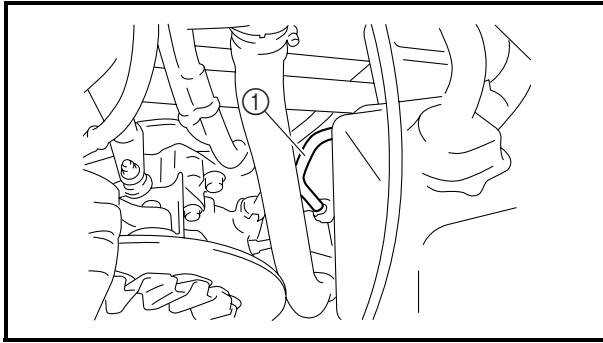


Inspection steps:

- Slightly loosen the oil gallery bolt ①.
- Start the engine and keep it idling until engine oil starts to seep from the oil gallery bolt.
If no engine oil comes out after one minute, turn the engine off so that it will not seize.
- Check the engine oil passages, the oil filter and the oil pump for damage or leakage.
- Start the engine after solving the problem(-s) and check the engine oil pressure again.
Tighten the oil gallery bolt to specification.



Oil gallery bolt:
20 Nm (2.0 m · kg, 14 ft · lb)



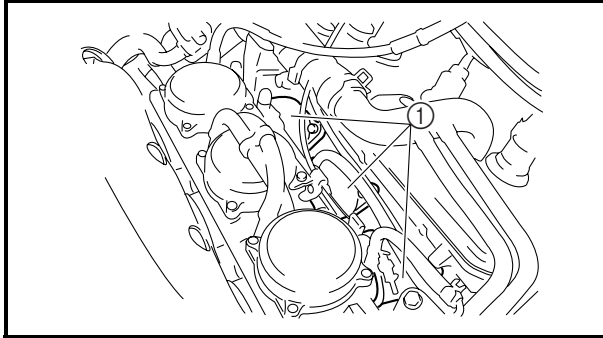
CRANKCASE BREATHER HOSE INSPECTION

1. Inspect:

- Crankcase breather hose ①
Cracks/damage → Replace.
Loosen connection → Connect properly.

CAUTION: _____

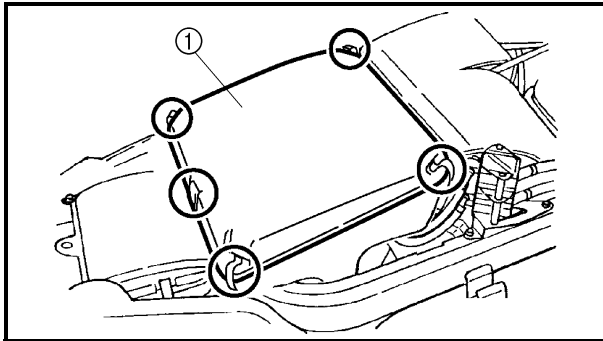
Make sure that the crankcase breather hose is routed correctly.



CARBURETOR JOINTS INSPECTION

1. Inspect:

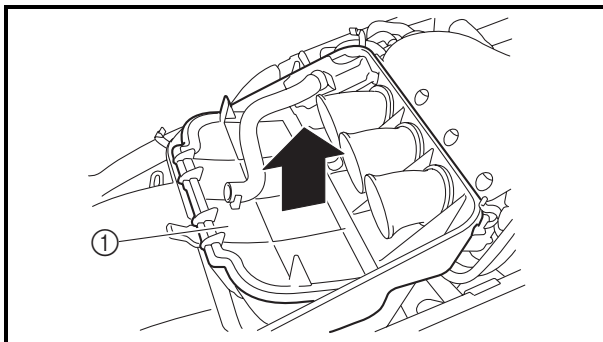
- Carburetor joints ①
Cracks/damage → Replace.
Refer to CARBURETORS AND FUEL PUMP in CHAPTER 7.



CHECKING THE AIR FILTER ELEMENT

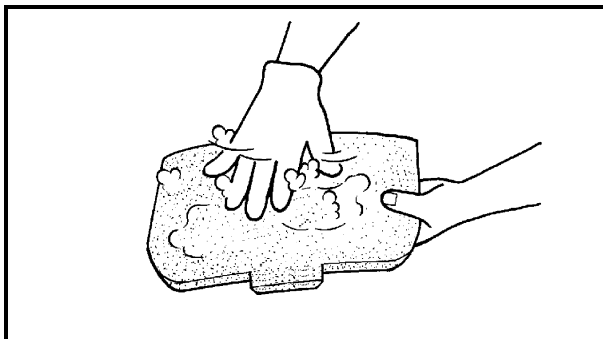
1. Remove:

- Air filter case cover ①



2. Remove:

- Air filter ①
- Air filter element



3. Clean:

- Air filter element

NOTE: _____

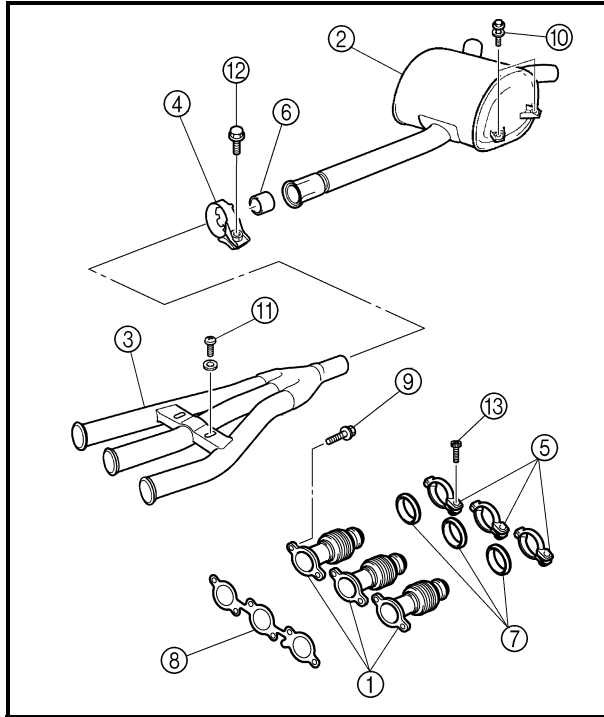
Remove the snow.

4. Inspect:

- Air filter element
Damage/clogs → Replace.

5. Install:

- Air filter element
- Air filter
- Air filter case cover



EXHAUST SYSTEM INSPECTION

1. Remove:

- Seat
- Fuel tank

Refer to “SEAT AND FUEL TANK” in CHAPTER 5.

2. Inspect:

- Exhaust joints ①
- Muffler ②
- Exhaust pipe ③
- Muffler band ④
- Exhaust pipe bands ⑤
Cracks/damage → Replace.
- Gasket ⑥
- Gaskets ⑦
- Gasket ⑧
Exhaust gas leaks → Replace.

3. Inspect:

- Tightening torque



Exhaust joint bolt ⑨:
25 Nm (2.5 m · kg, 18 ft · lb)
Muffler bolt ⑩:
16 Nm (1.6 m · kg, 11 ft · lb)
Exhaust pipe bolt ⑪:
25 Nm (2.5 m · kg, 18 ft · lb)
Muffler band bolt ⑫:
20 Nm (2.0 m · kg, 14 ft · lb)
Exhaust pipe band bolt ⑬:
9 Nm (0.9 m · kg, 6.5 ft · lb)

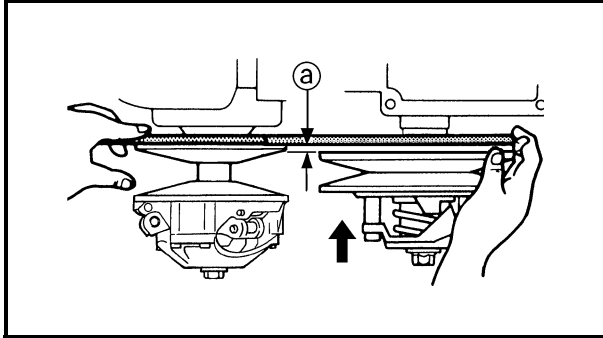
4. Install:

- Fuel tank
- Seat

Refer to “SEAT AND FUEL TANK” in CHAPTER 5.

POWER TRAIN**SHEAVE OFFSET ADJUSTMENT**

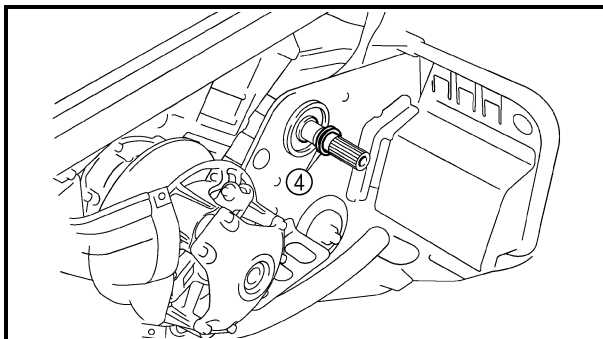
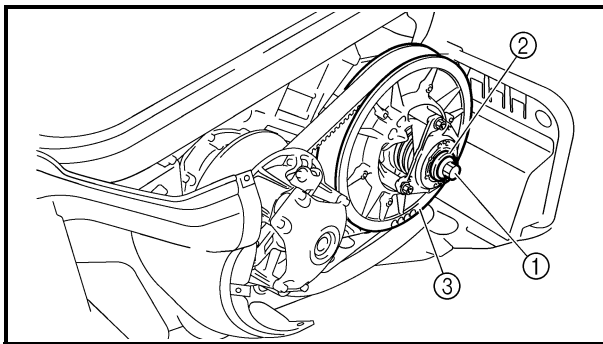
1. Lift up the shroud.
2. Remove:
 - Left side cover
Refer to “PRIMARY SHEAVE AND DRIVE V-BELT” in CHAPTER 4.
3. Remove:
 - Drive V-belt
4. Measure:
 - Sheave offset ①
Use a straightedge that is approximately 470 mm (18.5 in) long, 20 mm (0.79 in) wide, and 4 mm (0.16 in) thick.
Out of specification → Adjust.



Sheave offset:
13.5 ~ 16.5 mm (0.53 ~ 0.65 in)

NOTE:

Push the secondary sheave inward towards the frame, and then measure the sheave offset.



5. Adjust:
 - Sheave offset

Adjustment steps:

- Apply the brake to lock the secondary sheave.
- Remove the bolt (secondary sheave) ①, washer ② and secondary sheave ③.
- Adjust the sheave offset by adding or removing shim(s) ④.

Adding shim → Offset is increased.

Removing shim → Offset is decreased.

Shim size	
Part number	Thickness
90201-252F1	0.5 mm (0.02 in)
90201-25527	1.0 mm (0.04 in)
90201-25289	1.6 mm (0.06 in)
90201-25526	2.0 mm (0.08 in)

- Install the secondary sheave, bolt (secondary sheave) and washer.

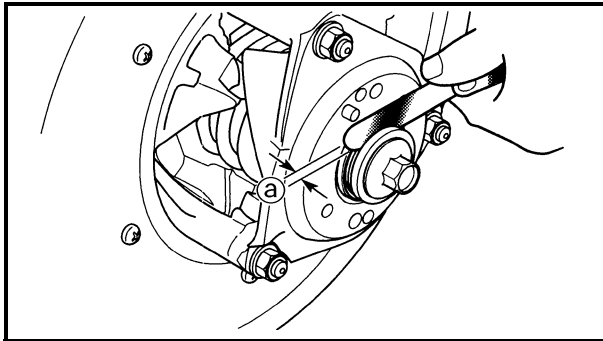


Bolt (secondary sheave):
64 Nm (6.4 m · kg, 46 ft · lb)

- Recheck the sheave offset. If out of specification, repeat the above steps.

NOTE:

When adjusting the sheave offset, the secondary sheave free play (clearance) should be adjusted.

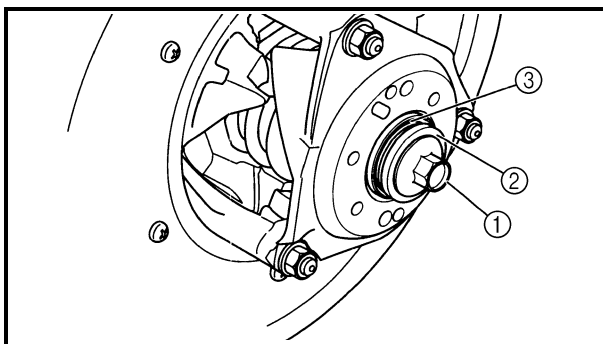


6. Measure:

- Secondary sheave free play (clearance) ①
Use a feeler gauge.
Out of specification → Adjust.



Secondary sheave free play (clearance):
1.0 ~ 2.0 mm (0.04 ~ 0.08 in)



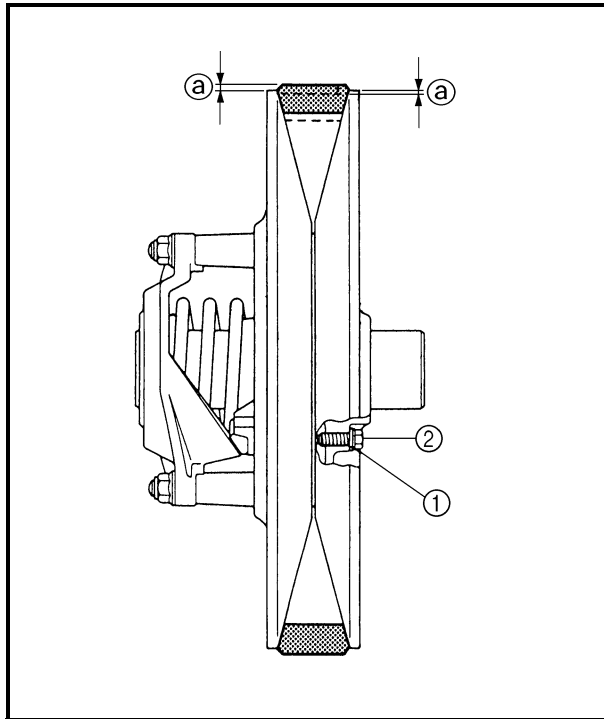
7. Adjust:

- Secondary sheave free play (clearance)

Adjustment steps:

- Apply the brake to lock the secondary sheave.
- Remove the bolt ① and washer ②.
- Adjust the secondary sheave free play (clearance) by adding or reducing a shim(s) ③.

Shim size	
Part number	Thickness
90201-222F0	0.5 mm (0.02 in)
90201-225A4	1.0 mm (0.04 in)



DRIVE V-BELT

WARNING

When installing the new V-belt, make sure that it is positioned from 1.5 mm (0.06 in) above the edge of the secondary sheave to -0.5 mm (-0.02 in) below the edge ③.

If the V-belt is not positioned correctly, the clutch engagement speed will be changed. The machine may move unexpectedly when the engine is started.

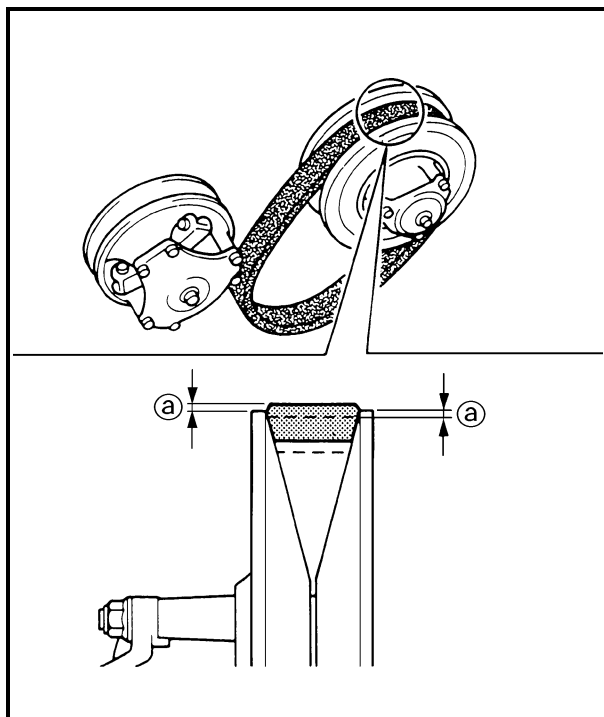
Adjust the V-belt position by removing or adding a spacer ① on each adjusting bolt ②.

CAUTION:

As the V-belt wears, adjustment may be necessary. To ensure proper clutch performance, the V-belt position should be adjusted by adding a spacer on each adjusting bolt when the V-belt position reaches 1.5 mm (0.06 in) below the edge.



New belt width:
34.5 mm (1.36 in)
Belt wear limit width:
32.5 mm (1.28 in)



1. Measure:

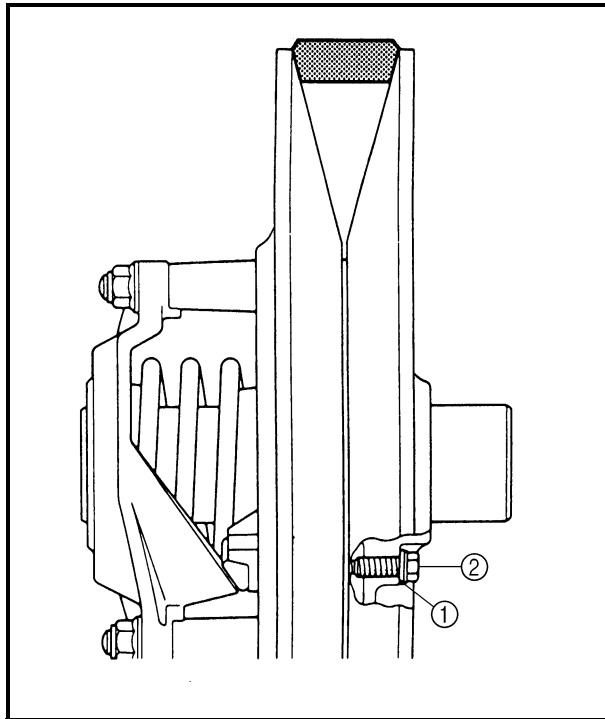
- V-belt position ③

NOTE:

Install the new V-belt onto the secondary sheave only. Do not force the V-belt between the sheaves; the sliding and fixed sheaves must touch each other.



Standard V-belt height:
-0.5 ~ 1.5 mm (-0.02 ~ 0.06 in)



2. Adjust the position of the V-belt by removing or adding a spacer ① on each adjusting bolt ②.

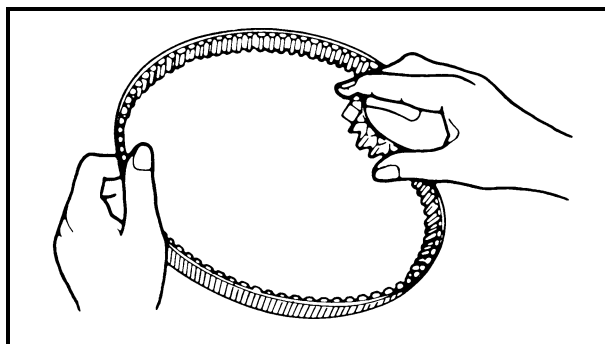
V-belt position	Adjustment
More than 1.5 mm (0.06 in) above the edge	Remove a spacer
From 1.5 mm (0.06 in) above the edge to –0.5 mm (–0.02 in) below the edge	Not necessary (It is correct.)
More than –0.5 mm (–0.02 in) below the edge	Add spacer

Part number	Thickness
90201-061H1	0.5 mm (0.02 in)
90201-06037	1.0 mm (0.04 in)

3. Tighten:

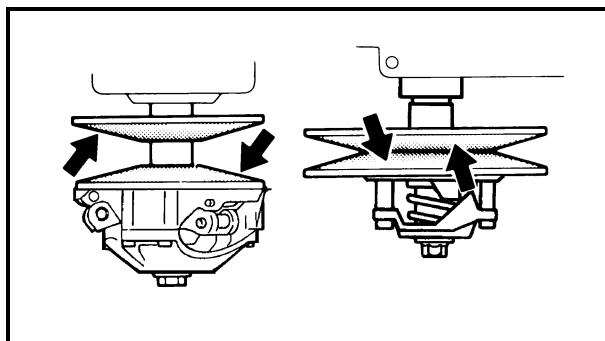
- Adjusting bolt ②

	Adjusting bolt: 10 Nm (1.0 m · kg, 7.2 ft · lb)
--	--



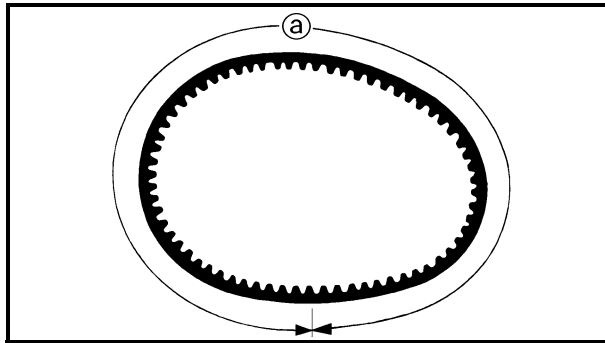
4. Inspect:

- Drive V-belt
Cracks/damage/wear → Replace.
Oil or grease on the V-belt → Check the primary and secondary sheaves.



5. Inspect:

- Primary sheave
- Secondary sheave
Oil or grease on the primary and secondary sheaves → Use a rag soaked in lacquer thinner or solvent to remove the oil or grease. Check the primary and secondary sheaves.



6. Measure:

- Drive V-belt circumference ①
- Out of specification → Replace.



V-belt circumference:
1,129 ~ 1,137 mm (44.4 ~ 44.8 in)

ENGAGEMENT SPEED CHECK

1. Place the machine on a level surface of hard-packed snow.
2. Inspect:
 - Clutch engagement speed

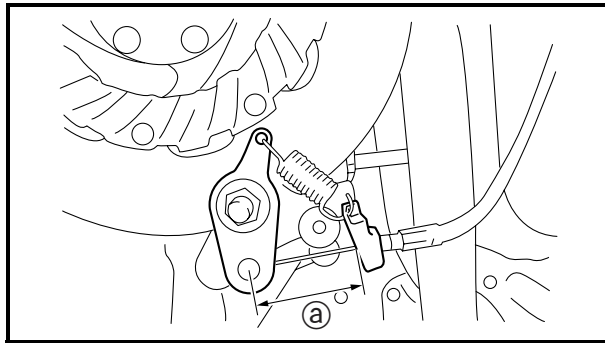
Inspection steps:

- Start the engine, and open the throttle lever gradually.
 - Check the engine speed when the machine starts moving forward.
- Out of specification → Adjust the primary sheave.



Engagement speed:
RS90/RS90R:
 3,300 ~ 3,700 r/min
RSG90:
 3,400 ~ 3,800 r/min
RS90M:
 3,800 ~ 4,200 r/min
RST90 "For USA/Canada":
 3,000 ~ 3,400 r/min
RST90 "For Europe"/RST90TF:
 2,800 ~ 3,200 r/min

PARKING BRAKE ADJUSTMENT/ BRAKE FLUID LEVEL INSPECTION



PARKING BRAKE ADJUSTMENT

1. Measure:

- Parking brake cable distance (a)
Out of specification → Adjust.



Parking brake cable distance:
43.5 ~ 46.5 mm (1.713 ~ 1.831 in)

2. Adjust:

- Parking brake cable

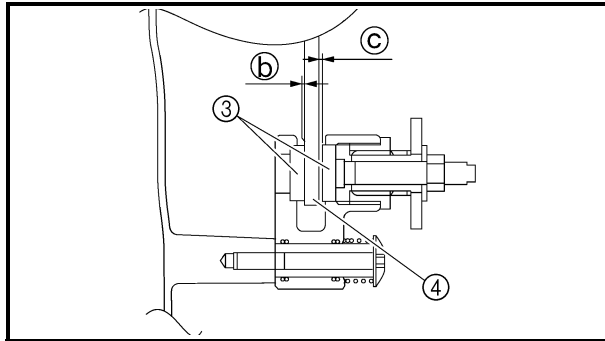
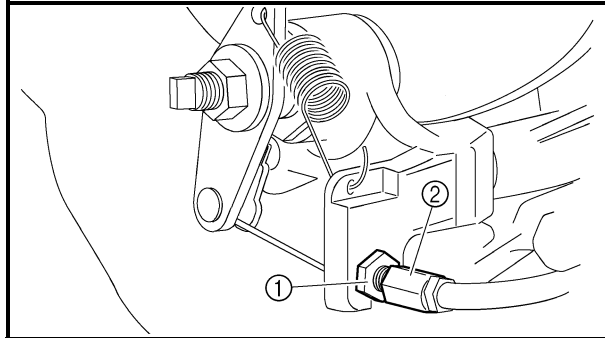
Adjustment steps:

- Loosen the locknut (1).
- Turn the adjuster (2) in or out until the specified distance (a) is obtained.

Turning in → Distance (a) is increased.

Turning out → Distance (a) is decreased.

- Tighten the locknut.

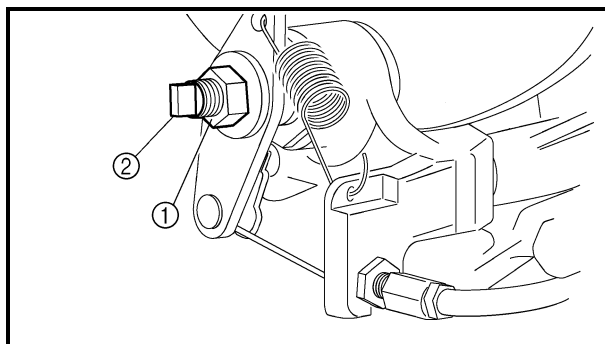


3. Measure:

- Brake pad clearance (b + c)
Out of specification → Adjust.



Brake pad clearance (b + c):
1.5 ~ 2.0 mm (0.059 ~ 0.079 in)

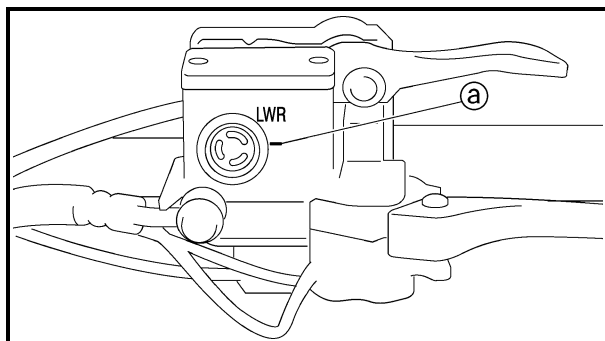


4. Adjust:

- Brake pad clearance

Adjustment steps:

- Loosen the locknut (1).
- Turn the adjuster (2) in or out until the specified clearance between the brake pad (3) and brake disc (4) is obtained.
- Tighten the locknut.



BRAKE FLUID LEVEL INSPECTION

1. Place the machine on a level surface.

2. Check:

- Fluid level
Fluid level is under the lower level line (a) →
Fill to the proper level.



Recommended brake fluid:
DOT 4

NOTE:

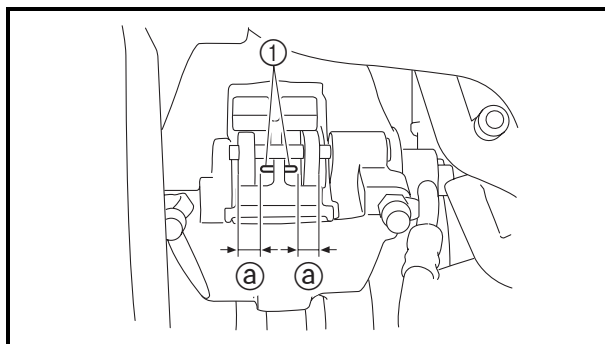
For a correct reading of the brake fluid level, make sure that the top of the handlebar brake master cylinder reservoir is horizontal.

CAUTION:

Brake fluid may corrode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

⚠ WARNING

- Use only the designated brake fluid. Other fluids may deteriorate the rubber seals, causing leakage and poor brake performance.
- Refill with the same type of fluid. Mixing fluids may result in a harmful chemical reaction leading to poor brake performance.
- When refilling, be careful that water does not enter the brake master cylinder reservoir. Water will significantly lower the boiling point of the fluid and may cause vapor lock.



BRAKE PAD INSPECTION

1. Apply the brake lever.

2. Inspect:

- Brake pad wear (a)
Wear indicator (1) nearly contacts the brake disc → Replace as a set.



Wear limit:
7.5 mm (0.30 in)

BRAKE HOSE INSPECTION

1. Inspect:

- Brake hose
Cracks/damage/wear → Replace.

2. Check:

- Fluid leakage
Apply the brake lever several times.
Fluid leakage → Replace the defective parts.

AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

WARNING

Bleed the brake system in the following cases:

- The system has been disassembled.
- A brake hose is loosened or removed.
- The brake fluid has been very low.
- Brake operation is faulty.

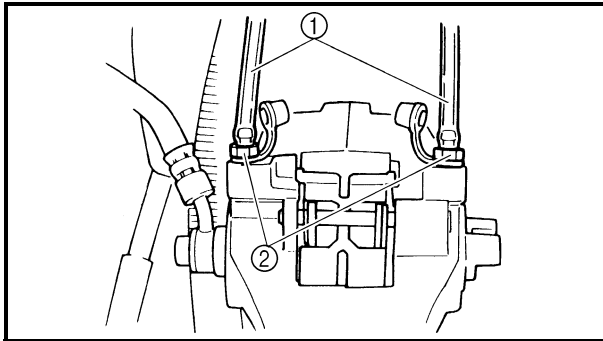
If the brake system is not properly bled a loss of braking performance may occur.

1. Bleed:

- Brake system

Air bleeding steps:

- Fill the brake master cylinder reservoir with the proper brake fluid.
- Install the diaphragm. Be careful not to spill any fluid or allow the brake master cylinder reservoir to overflow.
- Connect clear plastic hoses ① tightly to the brake caliper bleed screws ②.
- Place the other ends of the hoses in a container.
- Slowly apply the brake lever several times.
- Pull the lever in, then hold the lever in position.
- Loosen the bleed screws and allow the brake lever to travel towards its limit.
- Tighten the bleed screws when the brake lever limit has been reached, then release the lever.
- Repeat steps (e) to (h) until all of the air bubbles have disappeared from the fluid.
- Tighten the bleed screws.



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.

- Add brake fluid to the proper level.

Refer to “BRAKE FLUID LEVEL INSPECTION”.

WARNING

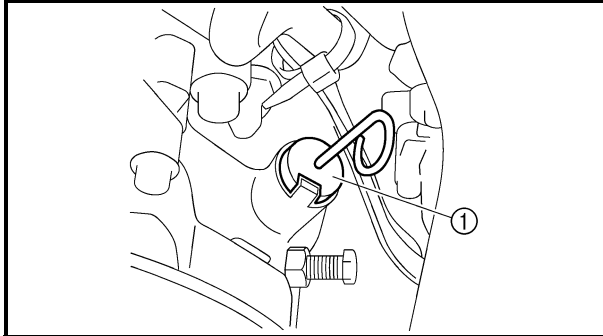
After bleeding the brake system, check the brake operation.

DRIVE CHAIN

Oil level inspection

WARNING

The engine and muffler will be very hot after the engine has run. Avoid touching a hot engine and muffler while they are still hot with any part of your body or clothing during inspection or repair.



1. Place the machine on a level surface.
2. Check:
 - Oil level

Checking steps:

- Remove the dipstick ① and wipe it off with a clean rag.
- Put the dipstick in the hole.

CAUTION:

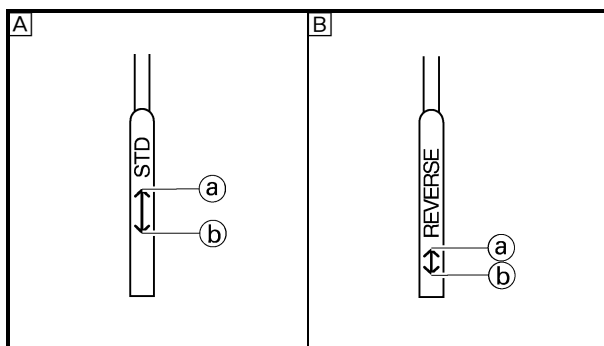
There is a magnet attached to the end of the dipstick. It is used to remove any metal particles that may accumulate in the drive chain housing.

Be sure to:

- Pull the dipstick out slowly and gently so the metal particles do not fall off the magnet back into the drive chain housing.
- Wipe off the magnet before reinserting the dipstick into the drive chain housing.

- Remove the dipstick and check that the oil is between the upper ③ and lower ④ levels. If not, add oil to the upper level.

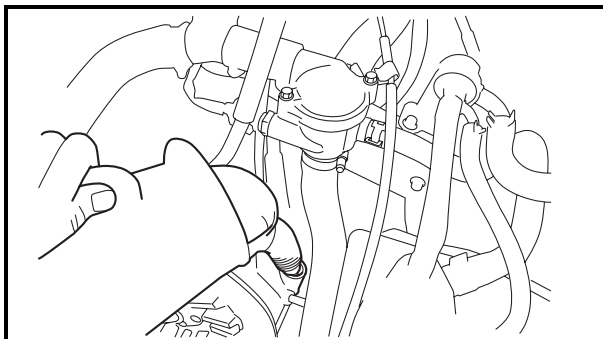
- A For models without reverse transmissions (RS90/RS90M)
- B For models with reverse transmissions (RS90R/RSG90/RST90/RST90TF)

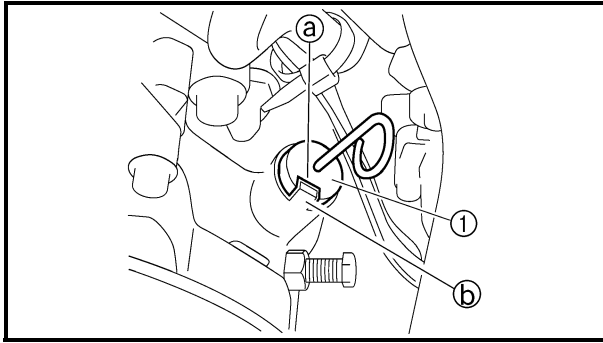


Recommended oil:
Gear oil "GL-3"
75W or 80W

CAUTION:

Make sure that no foreign material enters the drive chain housing.

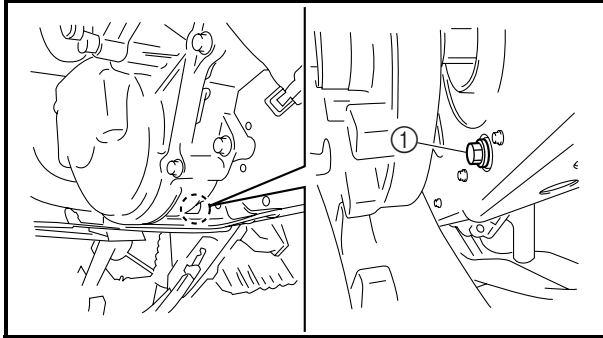




- Reinstall the dipstick ①.

NOTE:

Align the notch ② of the dipstick handle with the projection ③ of the drive chain housing.



Oil replacement

Oil replacement steps:

- Place the oil pan under the drain hole.
- Remove the oil drain bolt (along with the gasket) ① and drain the oil.

CAUTION:

Be sure to remove any oil from the heat protector.

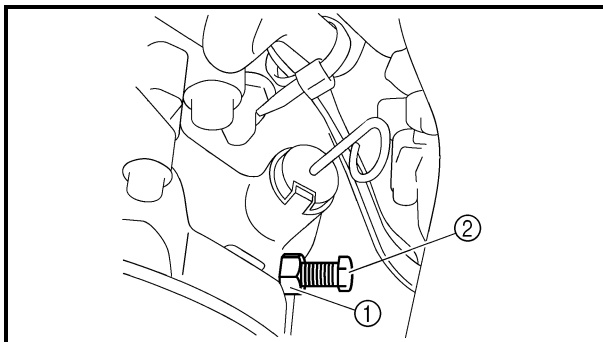
- Install the new gasket and oil drain bolt ①.



Oil drain bolt:
16 Nm (1.6 m · kg, 11 ft · lb)



Recommended oil:
Gear oil "GL-3"
75W or 80W
Oil capacity:
0.25 L (0.22 Imp qt, 0.26 US qt)



Chain slack adjustment

1. Adjust:

- Drive chain slack

Adjustment steps:

- Loosen the locknut ①.
- Turn the adjusting bolt ② clockwise until it is finger tight, and then loosen it 1/4 turn.
- Hold the adjusting bolt ② in place while tightening the chain adjusting locknut ①.



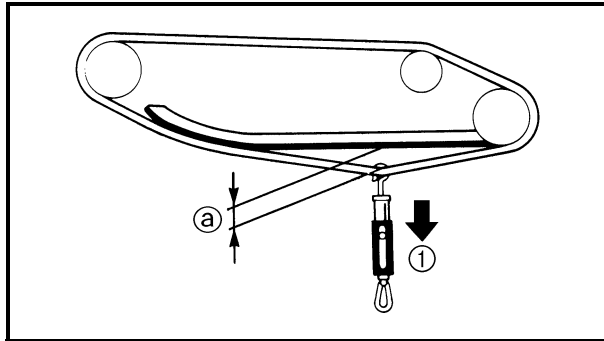
Drive chain adjusting locknut:
25 Nm (2.5 m · kg, 18 ft · lb)

TRACK TENSION ADJUSTMENT

WARNING

A broken track or track fittings, and debris thrown by the track could be dangerous to an operator or by standers. Observe the following precautions.

- Do not allow anyone to stand behind the machine when the engine is running.
- When the rear of the machine is raised to allow the track to spin, a suitable stand must be used to support the rear of the machine. Never allow anyone to hold the rear of the machine off the ground to allow the track to spin. Never allow anyone near a rotating track.
- Inspect the condition of the track frequently. Replace the track if it is damaged to a level where the fabric reinforcement material is visible.



1. Lift the rear of the machine onto a suitable stand to raise the track off the ground.

2. Measure:

- Track deflection ①

Using a spring scale ①, pull down on the center of the track with 100 N (10 kg, 22 lb) of force.

Out of specification → Adjust.



Track deflection:

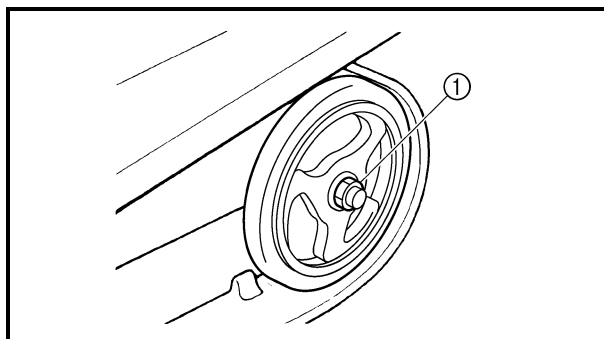
For RSG90:

25 ~ 30 mm (0.98 ~ 1.18 in)

RS90/RS90R/RS90M/RST90/

RST90TF:

30 ~ 35 mm (1.18 ~ 1.38 in)



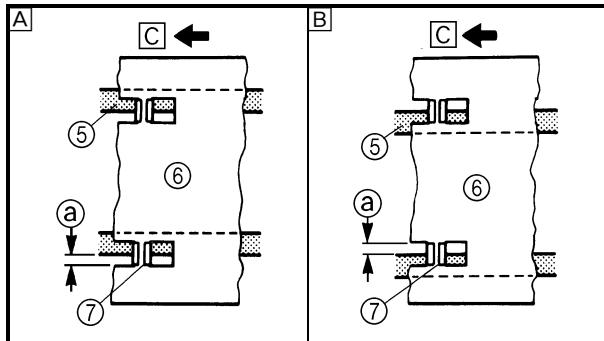
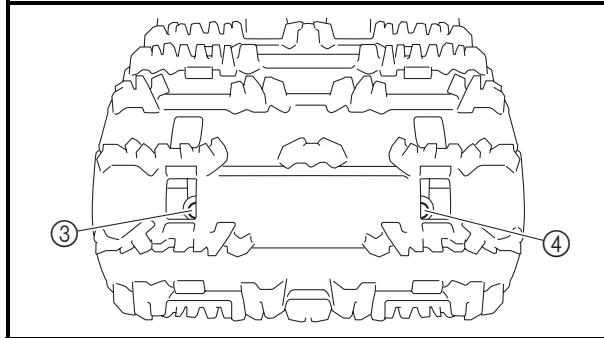
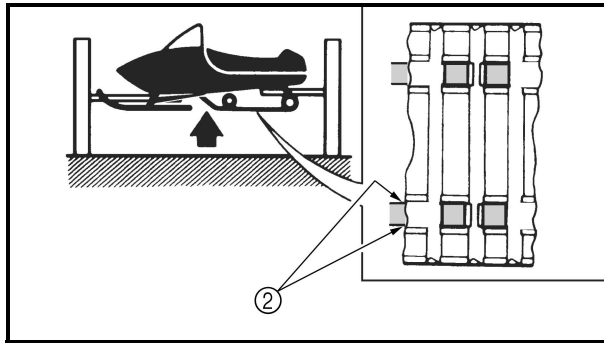
3. Adjust:

- Track deflection

Adjustment steps:

- Place the machine onto a suitable stand to raise the track off of the ground.
- Loosen the rear axle nut ①.
- Start the engine and rotate the track once or twice. Stop the engine.

TRACK TENSION ADJUSTMENT



- d. Check the track alignment with the slide runner
 ②. If the alignment is incorrect, turn the left and right adjusters to adjust.

Track alignment	A Shifted to right	B Shifted to left
③ Left adjuster	Turn out	Turn in
④ Right adjuster	Turn in	Turn out

- ⑤ Slide runner
 ⑥ Track
 ⑦ Track metal
 a Gap
 C Forward

- e. Adjust the track deflection until the specified amount is obtained.

Track deflection	More than specified	Less than specified
③ Left adjuster	Turn in	Turn out
④ Right adjuster	Turn in	Turn out

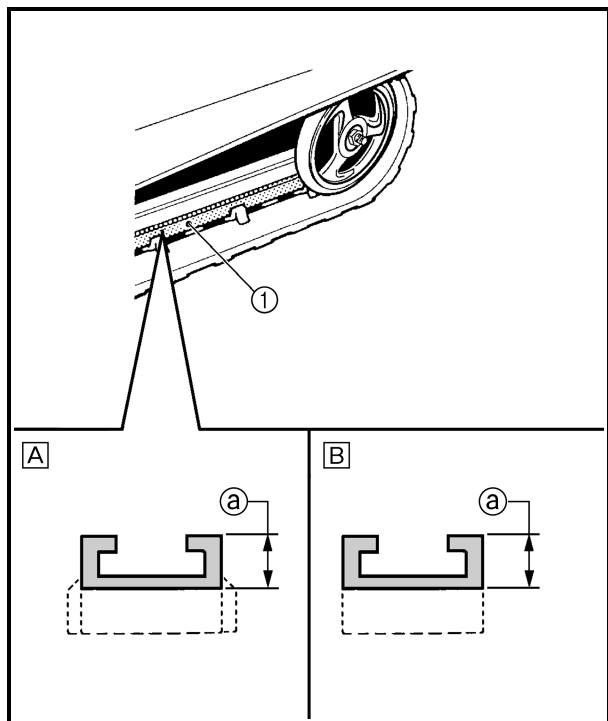
CAUTION:

The adjusters should be turned an equal amount.

- f. Recheck the alignment and deflection. If necessary, repeat steps (c) to (e) until the specified amount is obtained.
 g. Tighten the rear axle nut.



Rear axle nut:
RS90/RS90R/RSG90/RS90M/
RST90:
 75 Nm (7.5 m · kg, 54 ft · lb)
RST90TF:
 80 Nm (8.0 m · kg, 58 ft · lb)



SLIDE RUNNER INSPECTION

1. Inspect:

- Slide runner ①
Cracks/damage/wear → Replace.

2. Measure:

- Slide runner thickness ②
Out of specification → Replace.



Slide runner wear limit:
**RS90/RS90R/RS90M/RST90/
RST90TF:**
10.5 mm (0.41 in)
RSG90:
10 mm (0.39 in)

- A** RS90/RS90R/RS90M/RST90/RST90TF
B RSG90

MAXIMIZING DRIVE TRACK LIFE

Recommendations

Track tension

During initial break-in, the new drive track will tend to stretch quickly as the track settles. Be sure to correct the track tension and alignment frequently. (See pages 2-35 ~ 2-36 for adjustment procedures.) A loose track can slip (ratchet), derail or catch on suspension parts causing severe damage. Do not overtighten the drive track, otherwise it may increase the friction between the track and the slide runners, resulting in the rapid wear of both components. Also, this may put an excessive load on the suspension components, resulting in component failure.

Marginal snow

The drive track and the slide runners are lubricated and cooled by snow and water. To prevent the drive track and slide runners from overheating, avoid sustained high-speed usage in areas such as icy trails, frozen lakes and rivers that have minimal snow coverage. An overheated track will be weakened internally, which may cause failure or damage.

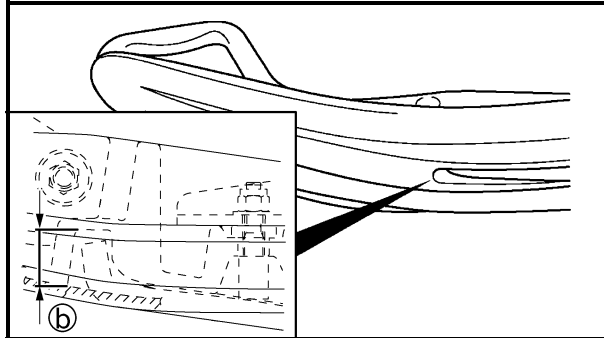
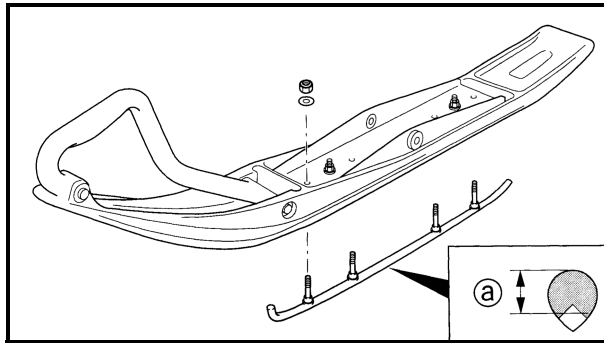
Off-trail riding

Avoid off-trail riding until there is sufficient snow coverage. It generally takes several feet of snow to provide a good overall base to properly cover debris, such as rocks, logs, etc. If snow coverage is not sufficient, stay on trails to avoid impact damage to the drive track.

Studded track

In general, track life will be shortened when studs are installed. Drilling stud holes into the drive track will cut the internal fibers, which weakens the track. Avoid spinning the drive track. Studs may catch on an object and pull out of the track, leaving tears and damage around the already weakened area. To minimize possible damage, consult your stud manufacturer for installation and stud pattern recommendations.

Yamaha does not recommend track studding.

**CHASSIS****SKI/SKI RUNNER**

1. Inspect:

- Ski
- Ski runner
 - Damage/wear → Replace.
- Ski runner thickness **a**
- Plastic ski thickness **b**
 - Out of specification → Replace.



Ski runner wear limit:
8 mm (0.31 in)

Plastic ski wear limit:

RS90/RS90R:

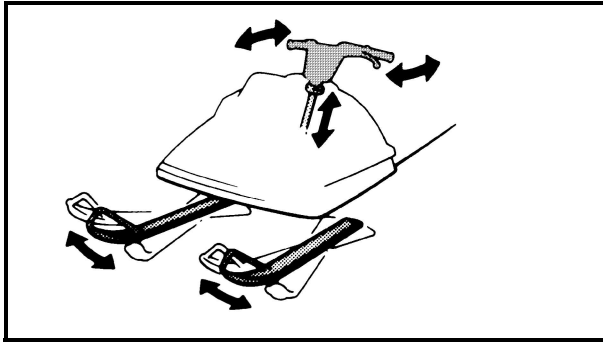
12 mm (0.47 in)

RS90M/RSG90/RST90/RST90TF:

24 mm (0.95 in)

CAUTION:

To avoid scratching, wearing and damaging the plastic skis, be careful when loading and unloading the snowmobile and avoid riding in areas with little or no snow and on surfaces with sharp edges such as concrete, curbs, etc.



STEERING SYSTEM

Free play check

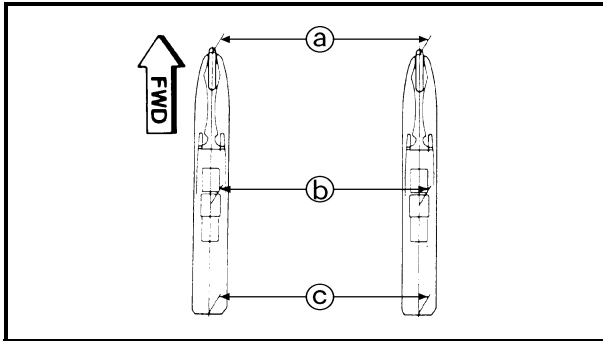
1. Check:

- Steering system free play

Move the handlebar up and down and back and forth.

Turn the handlebar slightly to the right and left.

Excessive free play → Check that the handlebar, tie rod ends and relay rod ends are installed securely in position. If free play still exists, check the steering bearing, front suspension links and ski mounting area for wear. Replace if necessary.



Toe-out adjustment

1. Place the machine on a level surface.

2. Measure:

- Ski toe-out (a – c)
- Ski stance (b)

Point the skis forward.

Out of specification → Adjust.



Ski toe-out:

0 ~ 15 mm (0 ~ 0.59 in)

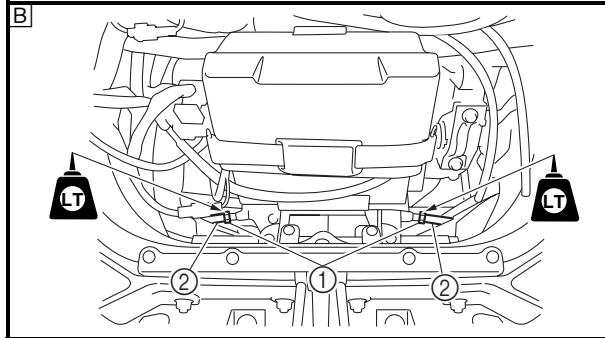
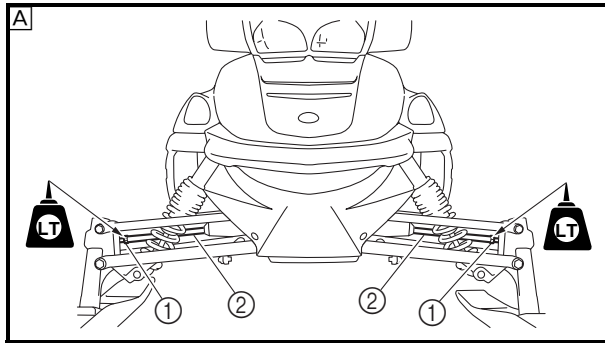
Ski stance (center to center):

Except for RS90M

1,086 mm (42.8 in)

For RS90M

980 mm (38.6 in)



3. Adjust:
- Ski toe-out

Adjustment steps:

- Loosen the locknuts (tie-rods) ①.
- Turn the tie rods ② in or out until the specified toe-out is obtained.
- Tighten the locknuts (tie-rods) ①.

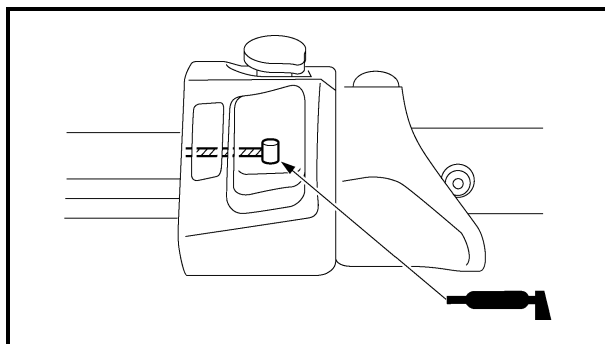


Tie-rod end locknut:
25 Nm (2.5 m · kg, 18 ft · lb)
LOCTITE®

CAUTION:

After tightening the inside and outside ball joint locknuts ①, make sure the tie rods ② can be rotated freely through the ball joint travel. If not, loosen the locknuts ① and reposition the ball joint so that the tie rods ② can be rotated freely. Tighten the locknuts to specification.

- A Outside
B Inside



LUBRICATION

Brake lever, throttle lever and throttle cable end

1. Lubricate the brake lever pivot, throttle lever and the ends of the throttle cables.



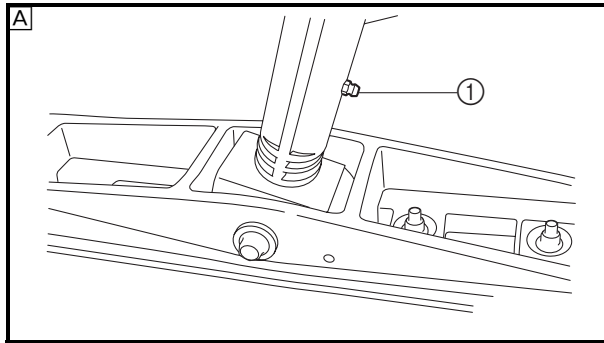
Recommended lubricant:
ESSO Beacon 325 Grease or
Aeroshell Grease #7A

⚠ WARNING

Apply a dab of grease onto only the end of the cables.

Do not grease the throttle cables.

They could freeze and cause a loss of control.

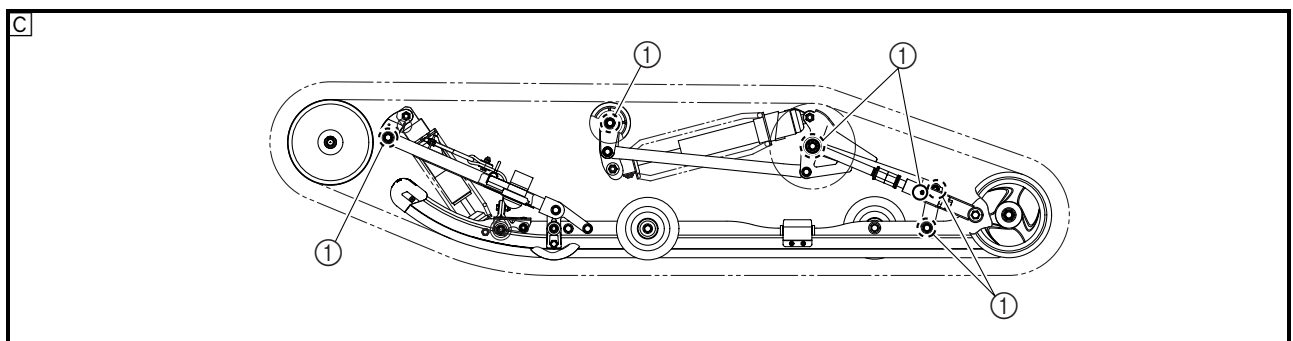
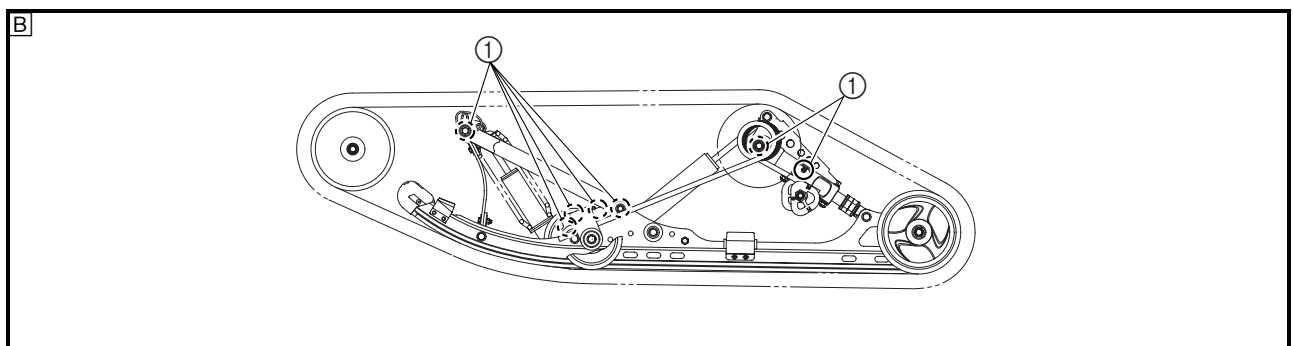
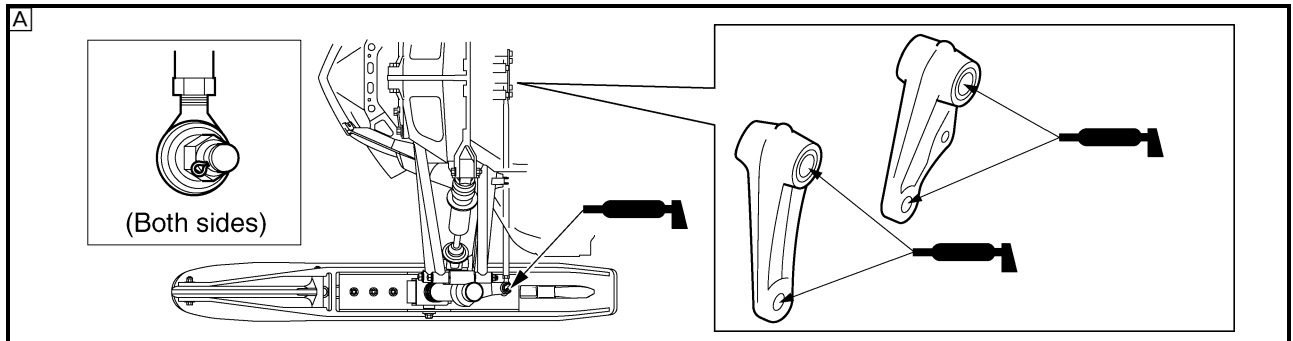


Front and rear suspension

1. Use a grease gun to inject grease into the nipples ①.
2. Apply grease to the pivoting parts.

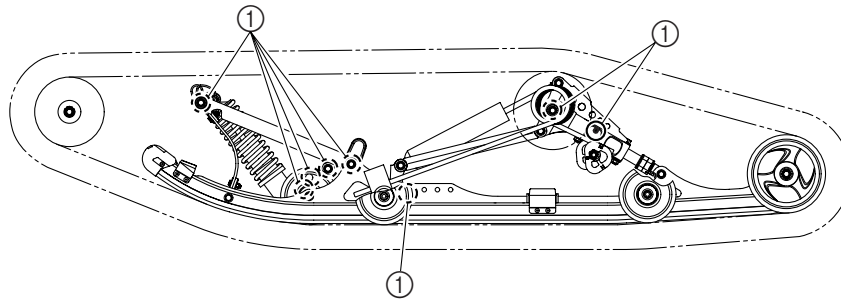
Recommended lubricant:
ESSO Beacon 325 Grease or
Aeroshell Grease #7A

- A** Front
- B** Rear (RS90/RS90R)
- C** Rear (RSG90)
- ① Nipple

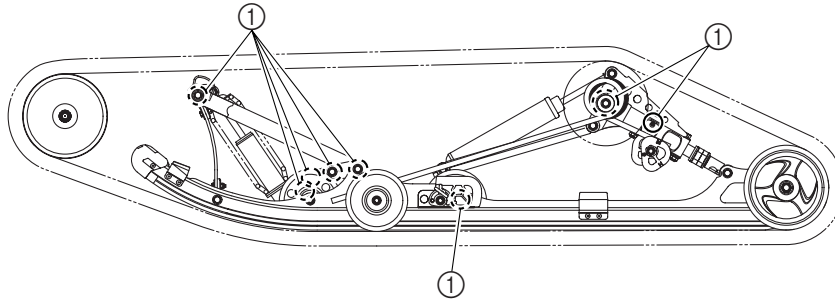




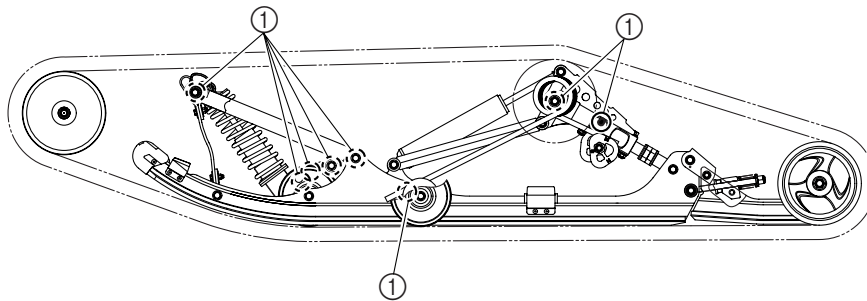
D



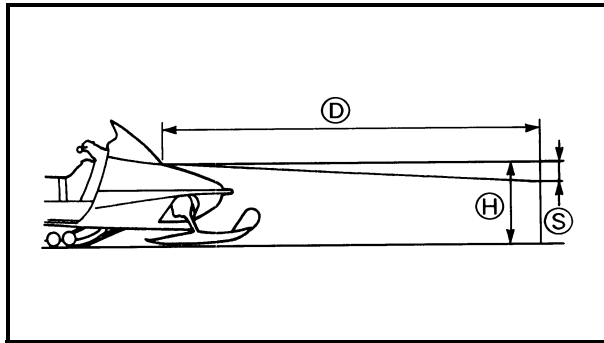
E



F



- D Rear (RS90M)
- E Rear (RST90)
- F Rear (RST90TF)
- ① Nipple



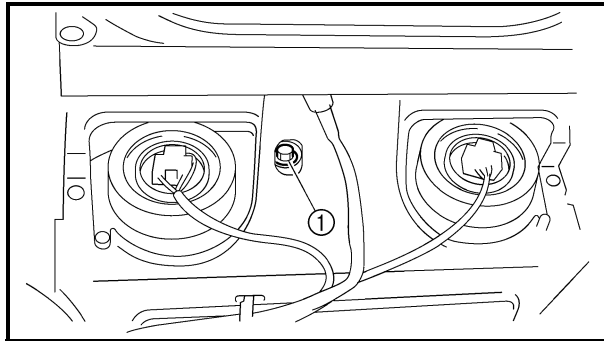
ELECTRICAL

HEADLIGHT BEAM ADJUSTMENT

1. Place the machine on a level surface.
2. Place the machine in front of a wall at the recommended distance $\textcircled{D}$. Refer to the table below.
3. Measure the distance $\textcircled{H}$ from the floor to the center of the headlight and place a mark on the wall at that height.
4. With a person sitting on the machine, apply the parking brake, start the engine and let it idle.
5. Switch on the headlight's high beam and check the height of the projected beam on the wall. The projection should be at the position marked in step 3 or $1/2^\circ$ lower (set range $\textcircled{S}$).

$\textcircled{D}$	3.0 m (10 ft)	7.6 m (25 ft)
$\textcircled{S}$	26 mm (1.0 in)	66 mm (2.6 in)

$\textcircled{D}$: Distance $\textcircled{H}$: Height $\textcircled{S}$: Set range



6. Adjust:
 - Headlight beam (vertically)

Vertical adjustment

- | | |
|---------------|---|
| Higher | Turn the adjusting bolt $\textcircled{1}$ clockwise. |
| Lower | Turn the adjusting bolt $\textcircled{1}$ counterclockwise. |



BATTERY INSPECTION

⚠ WARNING

Batteries generate explosive hydrogen gas and contain electrolyte which is made of poisonous and highly caustic sulfuric acid. Therefore, always follow these preventive measures:

- Wear protective eye gear when handling or working near batteries.
- Charge batteries in a well-ventilated area.
- Keep batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes).
- **DO NOT SMOKE** when charging or handling batteries.
- **KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.**
- Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.

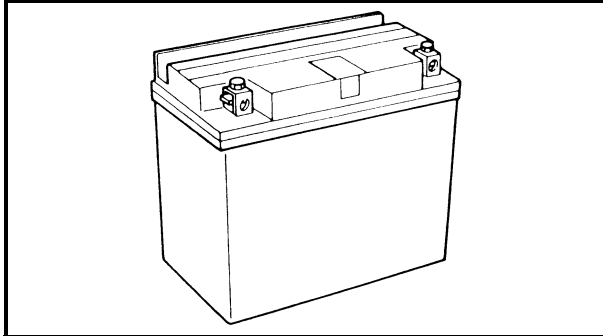
First aid in case of bodily contact:

External

- SKIN – Wash with water.
- EYES – Flush with water for 15 minutes and get immediate medical attention.

Internal

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

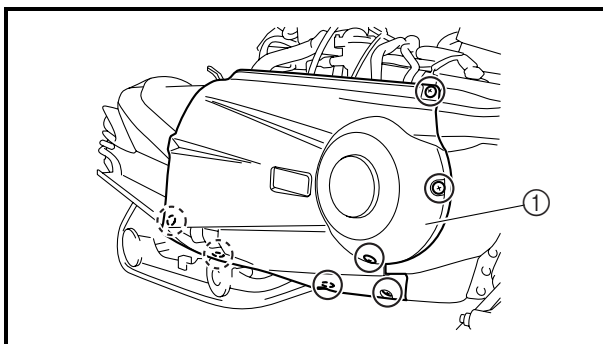


CAUTION:

- This is a sealed battery. Never remove the sealing caps because the balance between cells will not be maintained and battery performance will deteriorate.
- Charging time, charging amperage and charging voltage for a MF battery are different from those of conventional batteries. The MF battery should be charged as explained in the charging method illustrations. If the battery is overcharged, the electrolyte level will drop considerably. Therefore, take special care when charging the battery.

NOTE:

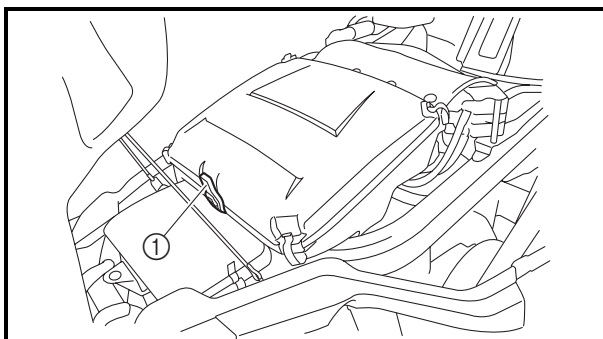
Since MF batteries are sealed, it is not possible to check the charge state of the battery by measuring the specific gravity of the electrolyte. Therefore, the charge of the battery has to be checked by measuring the voltage at the battery terminals.



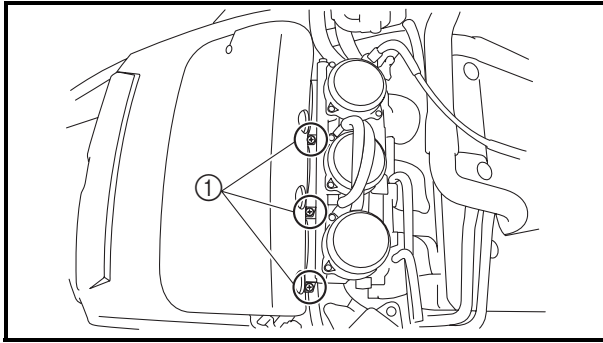
1. Lift up the shroud.

2. Remove:

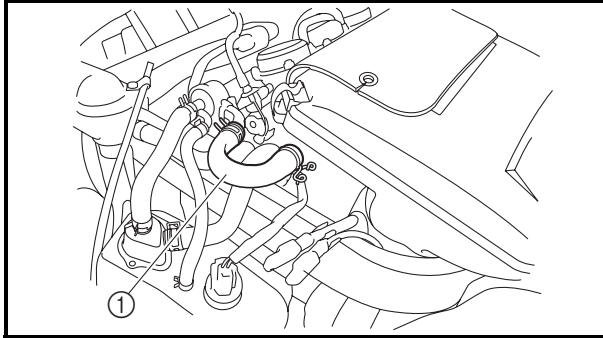
- Right side cover ①



3. Unhook the latch ①.

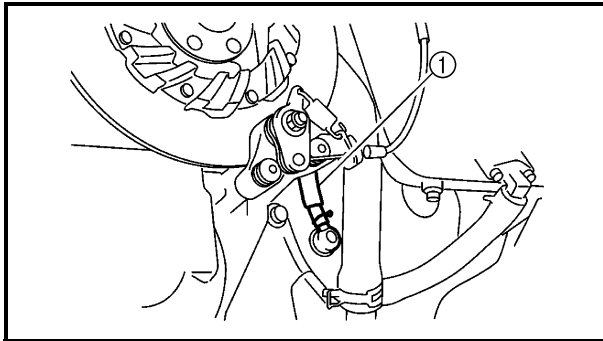


4. Loosen the joint clamp screws ①.



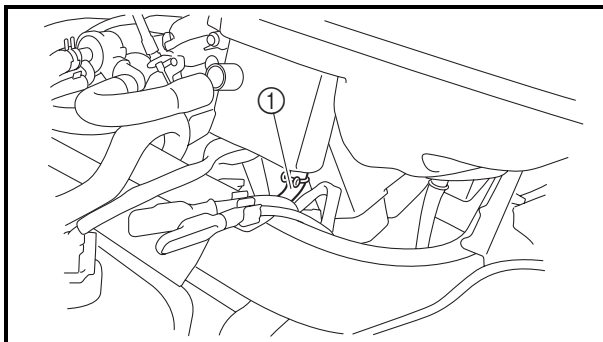
5. Disconnect:

- Oil cut valve outlet hose ①

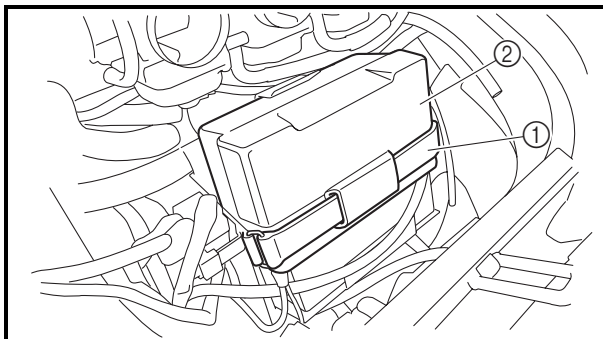


6. Disconnect:

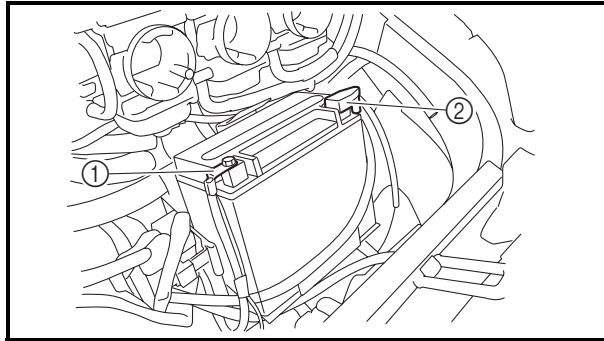
- Crankcase breather hose ① (engine side)



7. Lift up the air filter case, disconnect the crankcase breather hose ① from the air filter case.



8. Unhook the battery band ① and then remove the battery cover ②.



9. Disconnect:

- Battery leads
(from the battery terminals)

CAUTION:

First, disconnect the negative battery lead ①, then the positive battery lead ②.

10. Remove:

- Battery

11. Inspect:

- Battery charge

Inspection steps:

- Connect a pocket tester to the battery terminals.

Positive tester probe →

positive battery terminal

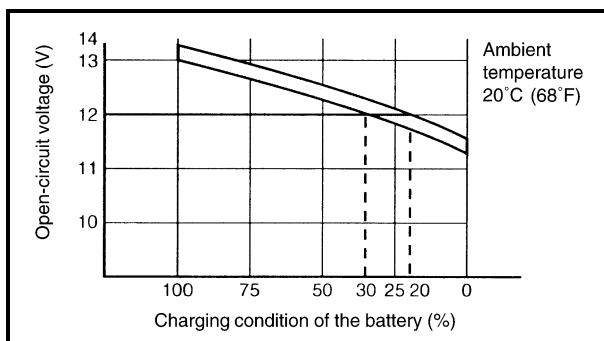
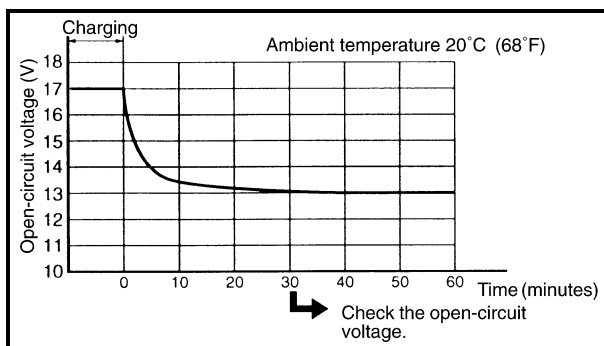
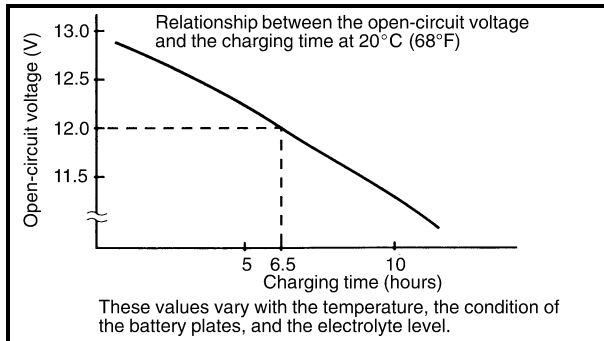
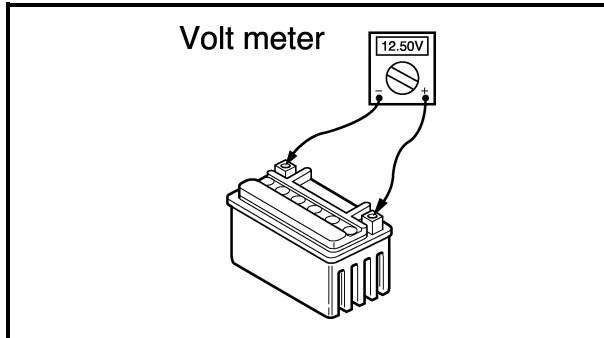
Negative tester probe →

negative battery terminal

NOTE:

- The charge state of a MF battery can be checked by measuring its open-circuit voltage (i.e., the voltage when the positive terminal is disconnected).
- No charging is necessary when the open-circuit voltage equals or exceeds 12.8 V.

- Check the charge of the battery, as shown in the charts and the following example.



Example

- Open-circuit voltage = 12.0 V
- Charging time = 6.5 hours
- Charge of the battery = 20 ~ 30%

12. Charge:

- Battery

(refer to the appropriate charging method illustration)

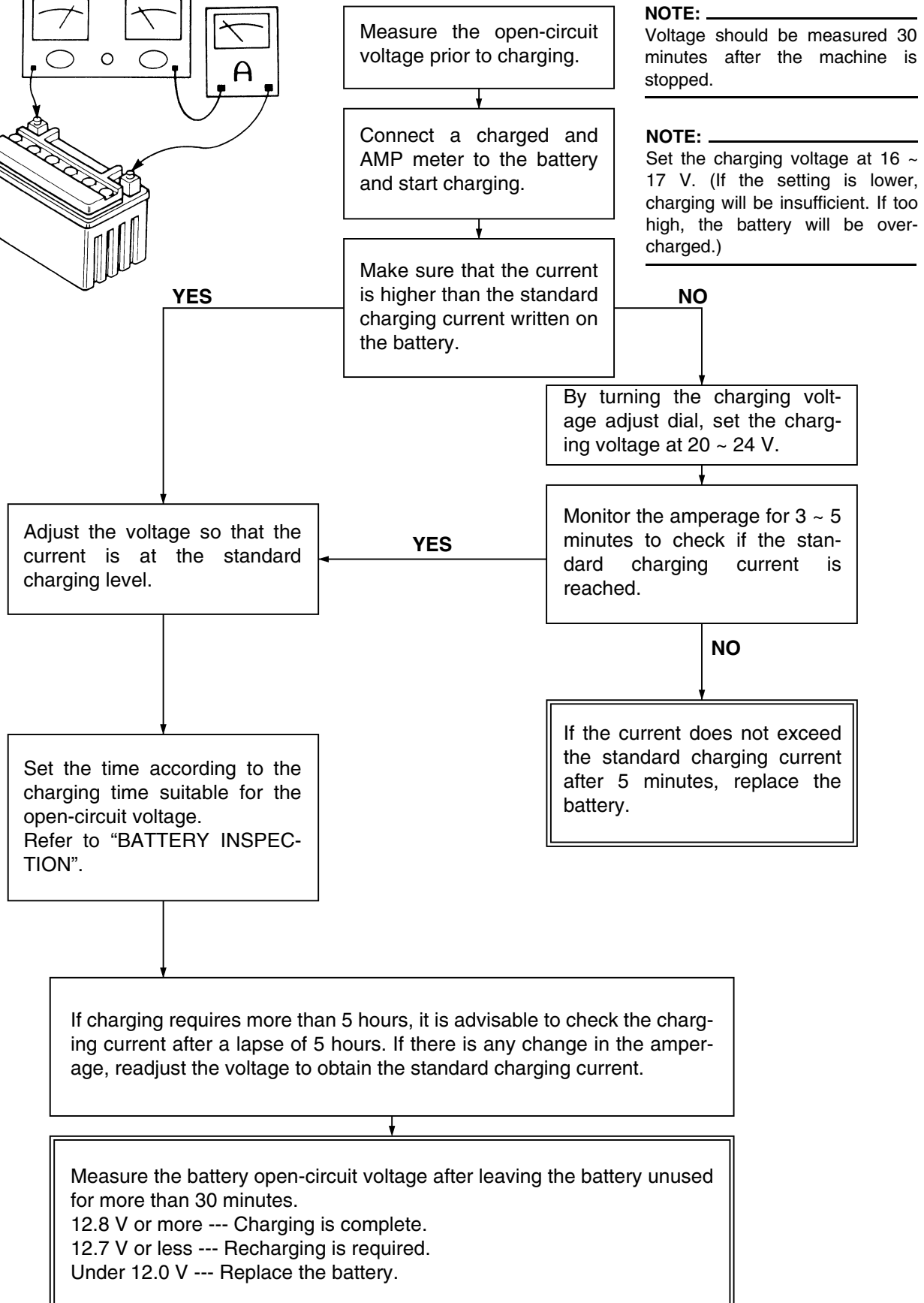
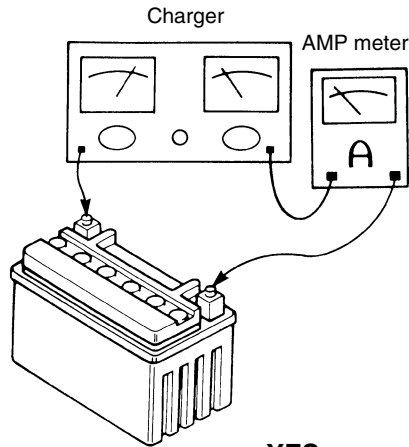
** WARNING**

Do not quick charge a battery.

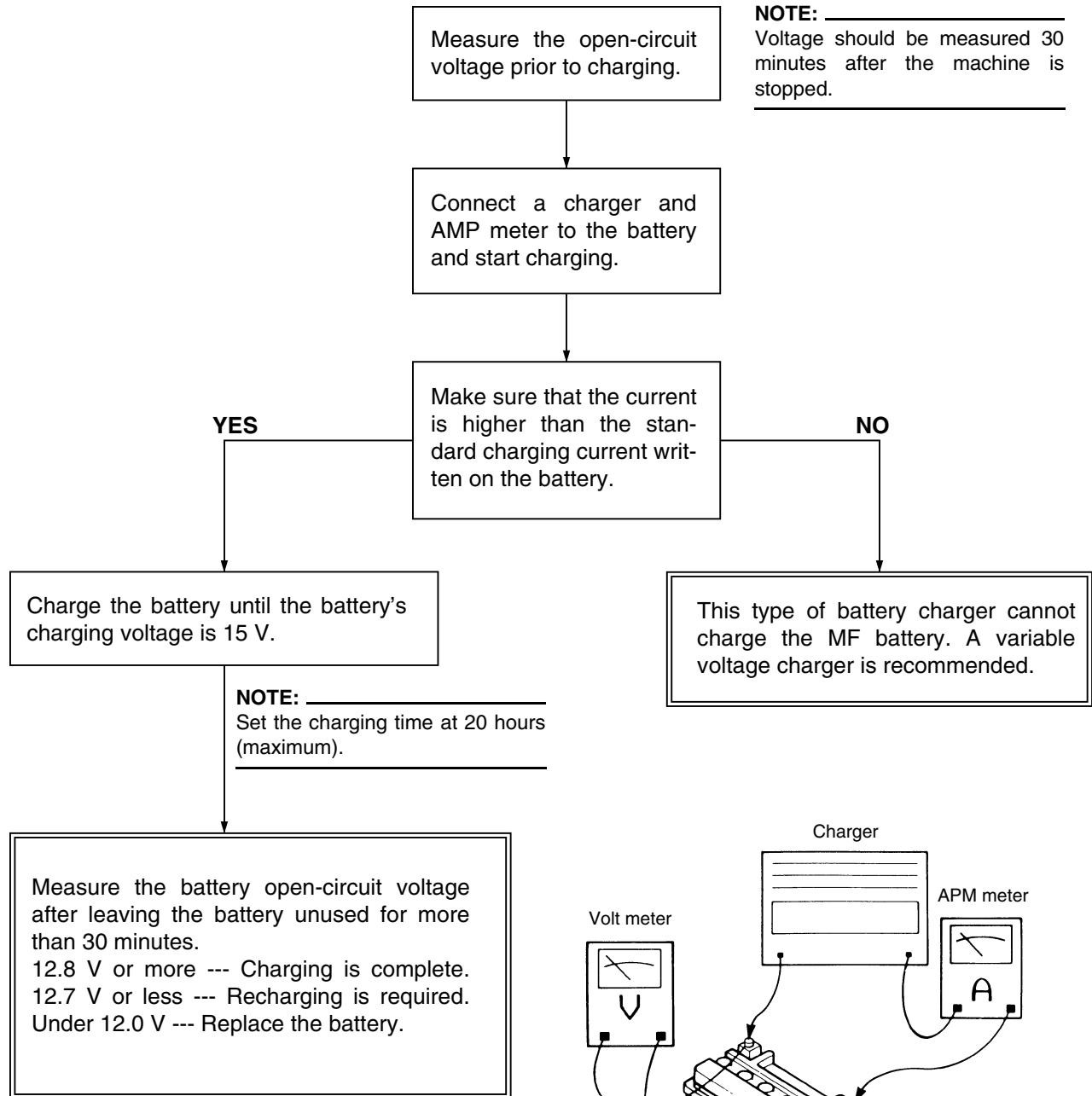
CAUTION:

- Make sure that the battery vent is free of obstructions.
 - Never remove the MF battery sealing caps.
 - Do not use a high-rate battery charger. They force a high-amperage current into the battery quickly and can cause battery overheating and battery plate damage.
 - If it is impossible to regulate the charging current on the battery charger, be careful not to overcharge the battery.
 - When charging a battery, be sure to remove it from the snowmobile. (If charging has to be done with the battery mounted on the snowmobile, disconnect the negative lead from the battery terminal.)
 - To reduce the chance of sparks, do not plug in the battery charger until the battery charger leads are connected to the battery.
 - Before removing the battery charger lead clips from the battery terminals, be sure to turn off the battery charger.
 - Make sure that the battery charger lead clips are in full contact with the battery terminal and that they are not shorted. A corroded battery charger lead clip may generate heat in the contact area and a weak clip spring may cause sparks.
 - If the battery becomes hot to the touch at any time during the charging process, disconnect the battery charger and let the battery cool before reconnecting it. Hot batteries can explode!
 - As shown in the following illustration, the open-circuit voltage of a MF battery stabilizes about 30 minutes after charging has been completed. Therefore, wait 30 minutes after charging is completed before measuring the open-circuit voltage.
-

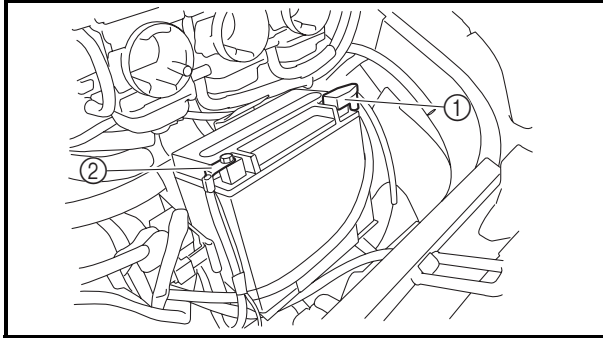
Charging method using a variable voltage charger



Charging method using a constant voltage charger



13. Install:
- Battery



14. Connect:
- Battery leads
(to the battery terminals)

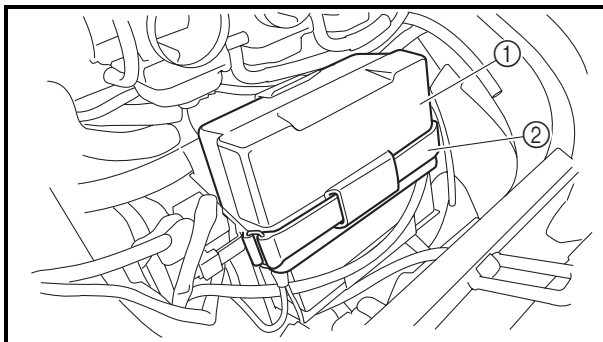
CAUTION:

First, connect the positive battery lead ①, then the negative battery lead ②.

15. Check:
- Battery terminals
Dirt → Clean with a wire brush.
Loose connection → Connect properly.
16. Lubricate:
- Battery terminals



Recommended lubricant:
Dielectric grease



17. Install the battery cover ① and then hook the battery band ②.
18. Install the air filter case by reversing the removal steps.

NOTE:

Ensure the crankcase breather hose is proper connected to the air filter case and to the engine.

19. Install:
- Right side cover
20. Closed the shroud.

FUSE INSPECTION

The following procedure applies to all of the fuses.

CAUTION:

To avoid a short circuit, always set the main switch to “OFF” when checking or replacing a fuse.

1. Inspect:

- Continuity

Inspection steps:

- Connect the pocket tester to the fuse and check the continuity.

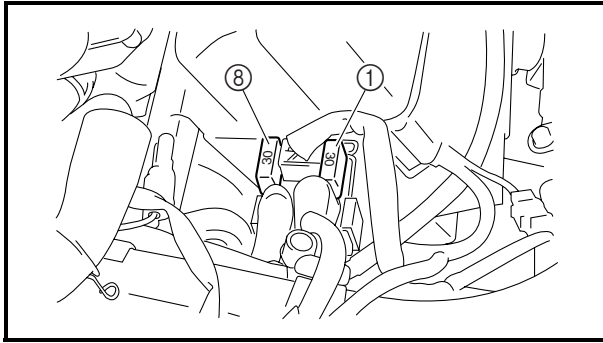
NOTE:

Set the pocket tester selector to “ $\Omega \times 1$ ”.



Pocket tester:
90890-03112, YU-03112-C

- If the pocket tester indicates “ ∞ ”, replace the fuse.



2. Replace:
- Blown fuse

Replacing steps:

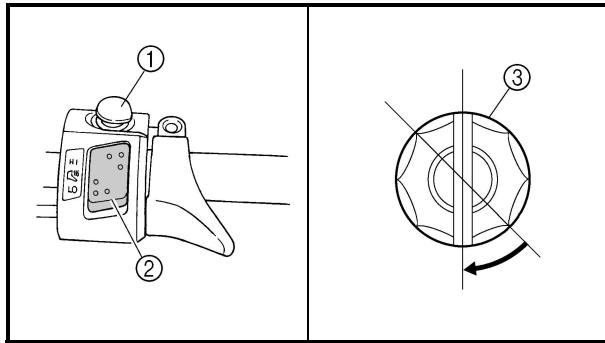
- Set the main switch to “OFF”.
- Install a new fuse of the correct amperage.
- Set the main switch to “ON” and verify if the electrical circuit is operational.
- If the fuse immediately blows again, check the electrical circuit.



Item	Amperage	Q'ty
① Main fuse	30 A	1
② Headlight fuse	20 A	1
③ Signal fuse	10 A	1
④ Ignition fuse	15 A	1
⑤ Carburetor heater fuse	20 A	1
⑥ DC terminal fuse	3 A	1
⑦ Reserve fuse	20 A 15 A 10 A 3 A	1 1 1 1
⑧ Reserve fuse	30 A	1

⚠ WARNING

Never use a fuse with an amperage other than that specified. Improvising or using a fuse with the wrong amperage rating may cause extensive damage to the electrical system, cause the lighting, ignition, grip warmer, signal and meter systems to malfunction and could possibly cause a fire.



SPEEDOMETER UNIT INSPECTION

1. Inspect:

- Speedometer unit

Inspection steps:

- Check that the main switch is set to “OFF”, the thumb warmer adjustment switch is not pressed, and the speedometer unit, headlights, and taillights are off.
- Set the engine stop switch ① to the on position (pulled out).
- Set the main switch to “ON” while pressing the “LO” side of the thumb warmer adjustment switch ②.

NOTE:

Continue to press the thumb warmer adjustment switch for at least 8 seconds after the main switch ③ is set to “ON”.

- Check that the speedometer unit, headlights, and taillights come on.

Light does not come on → Replace the bulb.

Nothing appears in the speedometer unit LCD

→ Replace the speedometer unit.

- Set the main switch to “OFF” and check that the speedometer unit, headlights, and taillights go off.
- Set the engine stop switch to the off position (pushed in).

TUNING

CARBURETOR TUNING

The carburetors are set at the factory to run at temperatures of 0 °C ~ -20 °C (32 °F ~ -4 °F) at sea level. If the machine is to be operated under conditions other than those specified above, the carburetors must be properly adjusted. Special care should be taken in carburetor setting so that the pistons will not be damaged or will not seize.

CAUTION:

Before performing the carburetor tuning, make sure that the following items are set to specification.

- Engine idle speed
- Throttle cable free play
- Carburetor synchronization

Carburetor tuning data

1. Standard specifications

Type	CVK40
Manufacturer	KEIHIN
I.D. Mark	8ES1 00
Main jet (M.J.)	#148
Pilot jet (P.J.)	#45
Pilot screw (P.S.)	2 turns out
Float height	16 mm (0.63 in)
Idle speed	1,300 ~ 1,500 r/min

Mid-range and high speed tuning

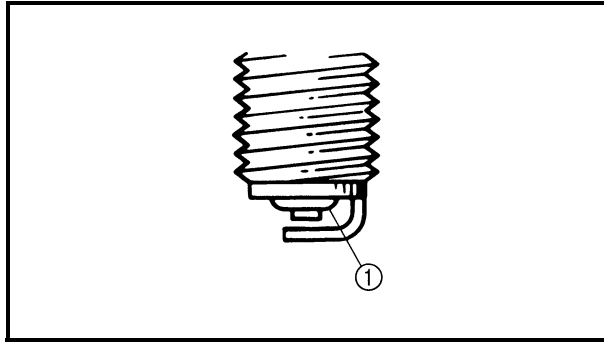
Adjustments are normally not required, but may sometimes be necessary, depending on temperatures, altitude or both.

Mid-range speed and high speed tuning (from 1/4 to full-throttle) can be done by adjusting the main jet.

CAUTION:

Never run the engine without the air filter case installed. Severe engine damage may result.

1. Start the engine and operate the machine under normal conditions to make sure that the engine operates smoothly. Stop the engine.
2. Remove:
 - Spark plugs



3. Check:

- Spark plug insulator ① color

A medium to light tan color indicates normal conditions.

Distinctly different color → Replace the main jet.

4. The main jet should be adjusted on the basis of the “Main jet selection chart”.

NOTE:

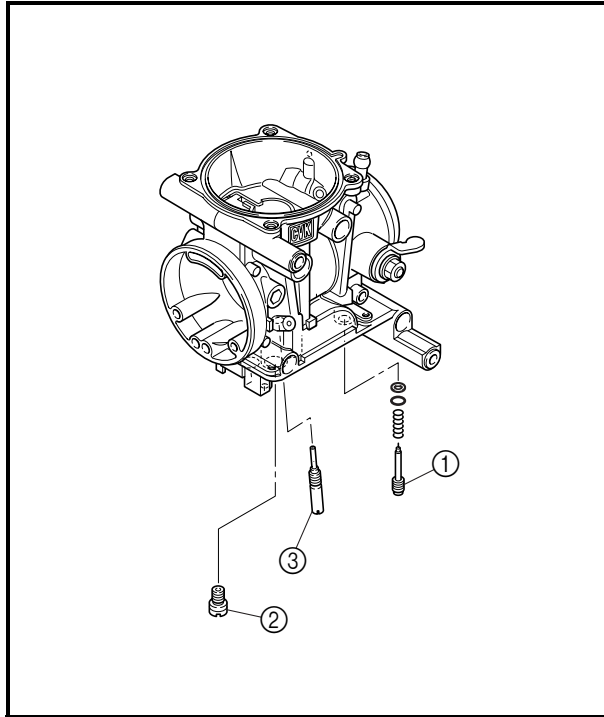
By checking the condition of the spark plugs, it is easy to get some idea of the condition of the engine. This may diagnose potential problems before engine damage occurs.

High altitude tuning

Use the chart in CHAPTER 9 to select main jets according to variations in elevation and temperature.

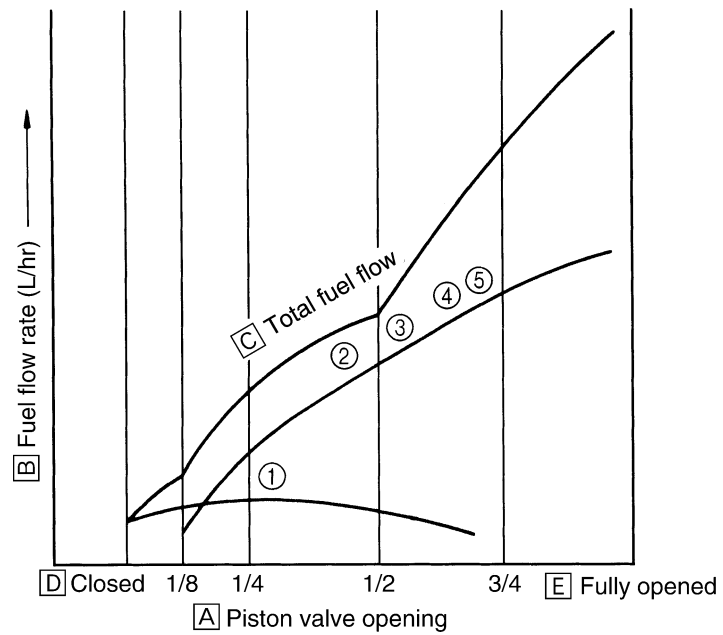
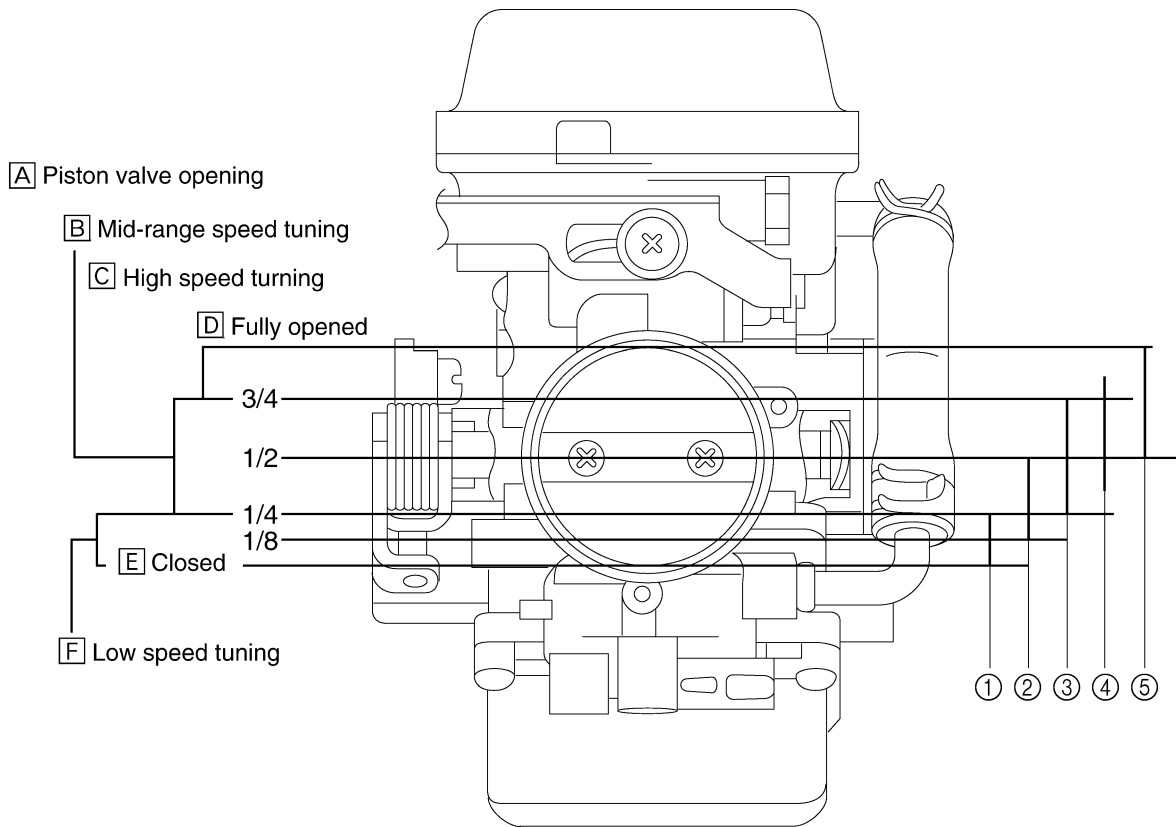
NOTE:

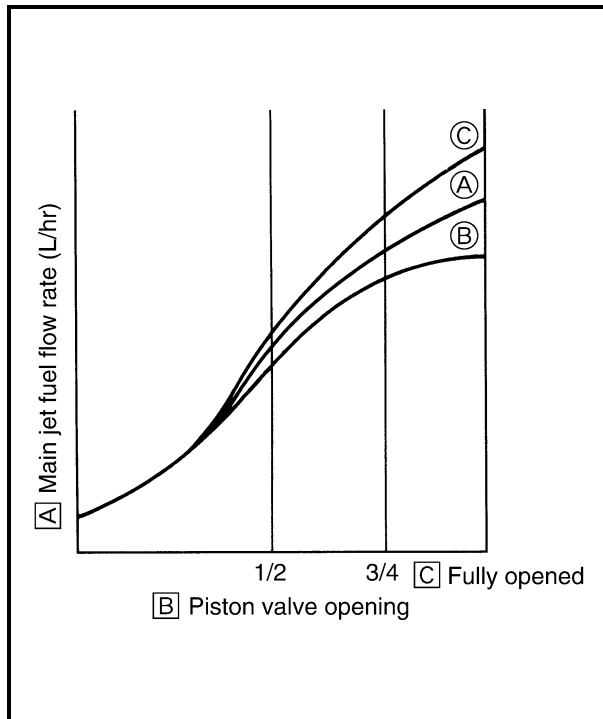
These jetting specifications are subject to change. Consult the latest technical information from Yamaha to be sure you have the most up-to-date jetting specifications.



- ① Pilot screw
- ② Main jet
- ③ Pilot jet

Guide for carburetion

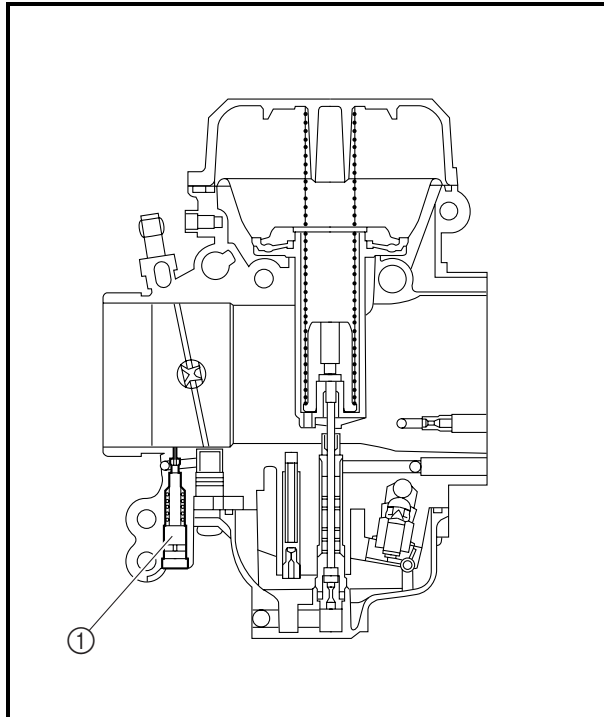




- A Standard main jet
- B Main jet whose diameter is 10% smaller than standard
- C Main jet whose diameter is 10% larger than standard

CAUTION:

If the air filter case is removed from the carburetors, the change in pressure in the intake will create a lean mixture that may cause severe engine damage. The air filter case has no effect on performance characteristics and must be secured to the carburetors during carburetor tuning and adjustment. Also, it must always be in place when the engine is operated. Regularly clean the air filter and keep it free from obstructions.



Low-speed tuning

The carburetors are built so that low speed tuning can be done by adjusting the pilot screw ① and throttle stop screw ②.

CAUTION:

Never run the engine without the air filter case installed. Severe engine damage may result.

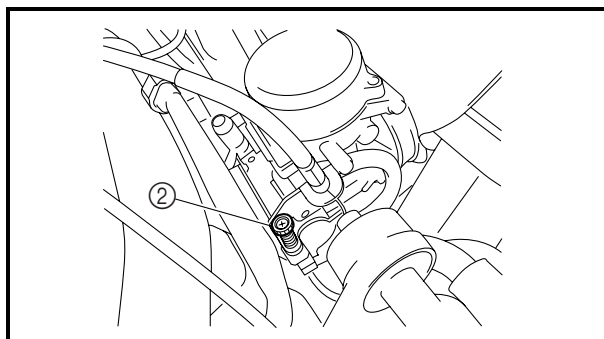
1. Tighten the pilot screw until it is lightly seated and then back it out the specified number of turns.

Pilot screw ①:
2 turns out

NOTE:

Number of return rotation of pilot screw may vary depending on each cylinder.

Make sure to rotate the screw backward after listing its present number of return rotation on each cylinder.



Pilot screw effects:

Turn in	← STD setting →	Turn out
Leaner Mixture	←	Richer Mixture

2. Set the engine idle speed by turning the throttle stop screw ② in (to increase engine speed) or out (to decrease engine speed).



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

3. If low-speed performance is still poor at higher elevations under extreme conditions, the standard pilot jets may need to be replaced. In this way, the proper air/fuel mixture is obtained.

NOTE: _____

In this case, use a larger numbered pilot jet to enrich the air/fuel mixture.

Standard pilot jet:

#45

Main jet selection chart		
Spark plug color	Diagnosis	Remedy
Light tan or gray	Carburetors are tuned properly.	
Dry black or fluffy deposits	Mixture is too rich.	Replace the main jet with the next smaller size.
White or light gray	Mixture is too lean.	Replace the main jet with the next larger size.
White or gray insulator with small black or grayish brown spots and electrodes having a bluish-burnt appearance	Mixture is too lean. The piston is damaged or seized.	Replace the piston and spark plug. Tune the carburetors again. Begin with low-speed tuning.
Melted electrodes and possibly a blistered insulator Metallic deposits on insulator	Mixture is too lean. The spark plug melted.	Check the piston for holes or seizure. Check the cooling system, gasoline octane rating and ignition timing. After replacing the spark plug with a colder type, tune the carburetors again. Begin with low-speed tuning.

Troubleshooting

Trouble	Diagnosis	Adjustment
Hard starting	Insufficient fuel	Add gasoline.
	Excessive use of the starter or choke	Return the starter lever to its seated position so that the starter valve is fully closed.
	Fuel passage is clogged or frozen	• Check and, if necessary, clean the fuel tank air vent, the fuel filter and all of the fuel passages. • Check and, if necessary, clean the carburetor air vents, fuel passages and the float valve. • Clean the float chamber of any ice or water.
	Overflow	Adjust the fuel level.
Poor idling: • Poor performance at low speeds • Poor acceleration • Slow response to throttle • Engine tends to stall	Improper idling speed adjustment	Adjust the engine idle speed. Refer to "Low-speed tuning".
	Damaged pilot screw	Replace the pilot screw.
	Clogged bypass hole	Clean the bypass hole.
	Clogged or loose pilot jet	• Remove the pilot jet, clean it with compressed air and then install it. • Make sure that the pilot jet is fully tightened.
	Air leaking into the carburetor joint	Retighten the clamp screws on the carburetor joints.
	Defective starter valve seat	Clean or replace the starter valve seat.
	Overflow	Adjust the fuel level.

Trouble	Diagnosis	Adjustment
Poor performance at mid-range speeds: • Momentary slow response to the throttle • Poor acceleration	Clogged or loose pilot jet	• Remove the pilot jet, clean it with compressed air, and then install it. • Make sure that the pilot jet is fully tightened.
	Lean mixture	Overhaul the carburetors.
Poor performance at normal speeds: • Excessive fuel consumption • Poor acceleration	Clogged air vent	Remove the air vent hose and clean it.
	Clogged or loose main jet	• Remove the main jet, clean it with compressed air, and then install it. • Make sure that the main jet is fully tightened.
	Overflow	Check and, if necessary, clean the float and float valve.
Poor performance at high speeds: • Power loss • Poor acceleration	Starter valve is left open	Return the starter lever to its seated position so that the starter valve is fully closed.
	Clogged air vent	Remove and clean the air vent.
	Clogged or loose main air jet	• Remove the main jet, clean it with compressed air, and then install it. • Make sure that the main jet is fully tightened.
	Clogged fuel line	Clean or replace the fuel line.
	Dirty fuel tank	Clean the fuel tank.
	Air leaks into the fuel line	Tighten or replace the fuel line joint.
	Low fuel pump performance	Repair or replace the fuel pump.
	Clogged fuel filter	Replace the fuel filter.
	Clogged intake	Remove any obstructions (e.g., ice).
Abnormal combustion: • Backfiring	Lean mixture	Clean and adjust the carburetors.
	Dirty carburetors	Clean the carburetors.
	Dirty or clogged fuel line	Clean or replace the fuel line.
Overflow: • Poor idling • Poor performance at low, mid-range, and high speeds • Excessive fuel consumption • Hard starting • Power loss • Poor acceleration	Clogged air vent	Clean the air vent.
	Clogged float valve	• Disassemble and clean the float valve. • Do not scratch the valve seat.
	Scratched or unevenly worn float valve or valve seat	• Clean or replace the float valve and valve seat. • The valve seat and body must be replaced as a set.
	Broken float	Replace the float.
	Incorrect float level	Check and, if necessary, replace the following parts: • Float tang • Float (entire assembly) • Arm pin

CLUTCH

High altitude

G	Green	O	Orange	P	Pink
S	Silver	Y	Yellow		

Specifications Model: RS90/RS90R

[A] Elevation	~ 800 m (~ 2,500 ft)	600 ~ 1,400 m (2,000 ~ 4,500 ft)	1,200 ~ 2,000 m (4,000 ~ 6,500 ft)	1,800 ~ 2,600 m (6,000 ~ 8,500 ft)	2,400 ~ 3,000 m (8,000 ~ 10,000 ft)
[B] Engine idle speed	1,400 ± 100 r/min	←	←	←	←
[C] Engagement r/min	Approx. 3,500 r/min	←	Approx. 3,600 r/min	Approx. 3,700 r/min	←
[D] Shift r/min	Approx. 8,500 r/min	←	←	←	←
[E] Main jet	[b] Refer to "HIGH ALTITUDE SETTINGS" in "MAINTENANCE SPECIFICATIONS".				
[F] Pilot jet					
[G] Pilot screw					
[H] Secondary reduction ratio (number of links)	22/38 (68 L)	←	21/38 (68 L)	20/38 (68 L)	←
[I] Primary sheave spring	90501-582L1	←	90501-582L2	90501-624L8	←
[J] Color	Y-S-Y	←	G-S-G	O-S-O	←
[K] Free length	87.4 mm (3.44 in)	←	86.1 mm (3.39 in)	84.2 mm (3.31 in)	←
[L] Preload	343 N (35 kg, 77 lb)	←	←	←	←
[M] Spring rate	24.5 N/mm (2.5 kg/mm, 140 lb/in)	←	27.0 N/mm (2.75 kg/mm, 154 lb/in)	31.9 N/mm (3.25 kg/mm, 182 lb/in)	←
[N] Wire diameter	5.8 mm (0.228 in)	←	←	6.2 mm (0.244 in)	←
[O] Outside diameter	59.5 mm (2.34 in)	←	←	←	←
[P] Weight (ID)	8ES-17605-00 (8ES00)	←	←	←	←
[Q] Weight rivet	Steel 13.9 (OUT) Steel 13.9 (IN)	Steel 13.3 (OUT) Steel 13.3 (IN)	Steel 10.3 (OUT) Steel 10.3 (IN)	Steel 10.3 (OUT) Aluminum 10.3 (IN)	None (OUT) None (IN)
[R] Weight bushing	VESPEL TP-8549	←	←	←	←
[S] Roller outer dia.	15.6 mm (0.61 in)	←	←	←	←
[T] Roller bushing	VESPEL TP-8549	←	←	←	←
[U] Pri. clutch shim	None	←	←	←	←
[V] Secondary sheave spring	90508-60012	←	←	←	←
[W] Color	P	←	←	←	←
[X] Free length	75 mm (2.95 in)	←	←	←	←
[Y] Preload rate	60° (3-3) 1,211 kg · mm/rad	←	←	←	←
[Z] Wire diameter	6.0 mm (0.236 in)	←	←	←	←
[a] Outside diameter	69.5 mm (2.74 in)	←	←	←	←
[b] Sec. torque cam angle	43°	←	←	←	←
[c] Sec. clutch shim	1.0 mm (0.04 in)	←	←	←	←

G	Green	L	Blue
P	Pink	W	White

Specifications Model: RSG90

A Elevation	~ 800 m (~ 2,500 ft)	600 ~ 1,400 m (2,000 ~ 4,500 ft)	1,200 ~ 2,000 m (4,000 ~ 6,500 ft)	1,800 ~ 2,600 m (6,000 ~ 8,500 ft)	2,400 ~ 3,000 m (8,000 ~ 10,000 ft)
B Engine idle speed	1,400 ± 100 r/min	←	←	←	←
C Engagement r/min	Approx. 3,600 r/min	←	Approx. 3,700 r/min	Approx. 3,800 r/min	←
D Shift r/min	Approx. 8,500 r/min	←	←	←	←
E Main jet	b Refer to "HIGH ALTITUDE SETTINGS" in "MAINTENANCE SPECIFICATIONS".				
F Pilot jet					
G Pilot screw					
H Secondary reduction ratio (number of links)	22/39 (70 L)	←	21/39 (68 L)	20/39 (68 L)	←
I Primary sheave spring	90501-552L5	←	90501-582L6	90501-602L8	←
J Color	L-G-L	←	W-G-W	G-G-G	←
K Free length	93.4 mm (3.68 in)	←	91.2 mm (3.59 in)	87.9 mm (3.46 in)	←
L Preload	392 N (40 kg, 88 lb)	←	←	←	←
M Spring rate	17.6 N/mm (2.0 kg/mm, 120 lb/in)	←	22.1 N/mm (2.25 kg/mm, 126 lb/in)	22.3 N/mm (2.275 kg/mm, 127 lb/in)	←
N Wire diameter	5.5 mm (0.217 in)	←	5.8 mm (0.228 in)	6.0 mm (0.236 in)	←
O Outside diameter	59.5 mm (2.34 in)	←	←	←	←
P Weight (ID)	8ES-17605-00 (8ES00)	←	←	←	←
Q Weight rivet	Steel 17.2 (OUT) Steel 13.9 (IN)	Steel 13.3 (OUT) Steel 13.3 (IN)	Steel 10.3 (OUT) Steel 10.3 (IN)	Steel 10.3 (OUT) Aluminum 10.3 (IN)	None (OUT) None (IN)
R Weight bushing	VESPEL TP-8549	←	←	←	←
S Roller outer dia.	15.6 mm (0.61 in)	←	←	←	←
T Roller bushing	VESPEL TP-8549	←	←	←	←
U Pri. clutch shim	None	←	←	←	←
V Secondary sheave spring	90508-60012	←	←	←	←
W Color	P	←	←	←	←
X Free length	75 mm (2.95 in)	←	←	←	←
Y Preload rate	60° (3-3) 1,211 kg · mm/rad	←	←	←	←
Z Wire diameter	6.0 mm (0.236 in)	←	←	←	←
a Outside diameter	69.5 mm (2.74 in)	←	←	←	←
b Sec. torque cam angle	43°	←	←	←	←
c Sec. clutch shim	1.0 mm (0.04 in)	←	←	←	←

G	Green	P	Pink
W	White		

Specifications Model: RS90M

A Elevation	~ 800 m (~ 2,500 ft)	600 ~ 1,400 m (2,000 ~ 4,500 ft)	1,200 ~ 2,000 m (4,000 ~ 6,500 ft)	1,800 ~ 2,600 m (6,000 ~ 8,500 ft)	2,400 ~ 3,000 m (8,000 ~ 10,000 ft)
B Engine idle speed	1,400 ± 100 r/min	←	←	←	←
C Engagement r/min	Approx. 3,900 r/min	←	←	Approx. 4,000 r/min	←
D Shift r/min	Approx. 8,500 r/min	←	←	←	←
E Main jet	b Refer to "HIGH ALTITUDE SETTINGS" in "MAINTENANCE SPECIFICATIONS".				
F Pilot jet					
G Pilot screw					
H Secondary reduction ratio (number of links)	22/40 (70 L)	←	21/40 (70 L)	20/40 (68 L)	←
I Primary sheave spring	90501-603L3	←	←	←	←
J Color	G-W-G	←	←	←	←
K Free length	89.8 mm (3.54 in)	←	←	←	←
L Preload	441 N (45 kg, 99.2 lb)	←	←	←	←
M Spring rate	27.0 N/mm (2.75 kg/mm, 154 lb/in)	←	←	←	←
N Wire diameter	6.0 mm (0.236 in)	←	←	←	←
O Outside diameter	59.5 mm (2.34 in)	←	←	←	←
P Weight (ID)	8BU-17605-20 (8BU10)	←	←	←	←
Q Weight rivet	Steel 13.9 (OUT) Steel 13.9 (IN)	Steel 13.9 (OUT) Steel 10.3 (IN)	Steel 10.3 (OUT) Steel 10.3 (IN)	Steel 10.3 (OUT) None (IN)	Aluminum 10.3 (OUT) None (IN)
R Weight bushing	VESPEL TP-8549	←	←	←	←
S Roller outer dia.	16.0 mm (0.63 in)	←	←	←	←
T Roller bushing	VESPEL TP-8549	←	←	←	←
U Pri. clutch shim	None	←	←	←	←
V Secondary sheave spring	90508-60012	←	←	←	←
W Color	P	←	←	←	←
X Free length	75 mm (2.95 in)	←	←	←	←
Y Preload rate	70° (1-6) 1,211 kg · mm/rad	←	←	←	←
Z Wire diameter	6.0 mm (0.236 in)	←	←	←	←
a Outside diameter	69.5 mm (2.74 in)	←	←	←	←
b Sec. torque cam angle	39°	←	←	←	←
c Sec. clutch shim	1.0 mm (0.04 in)	←	←	←	←

P	Pink	S	Silver
W	White	Y	Yellow

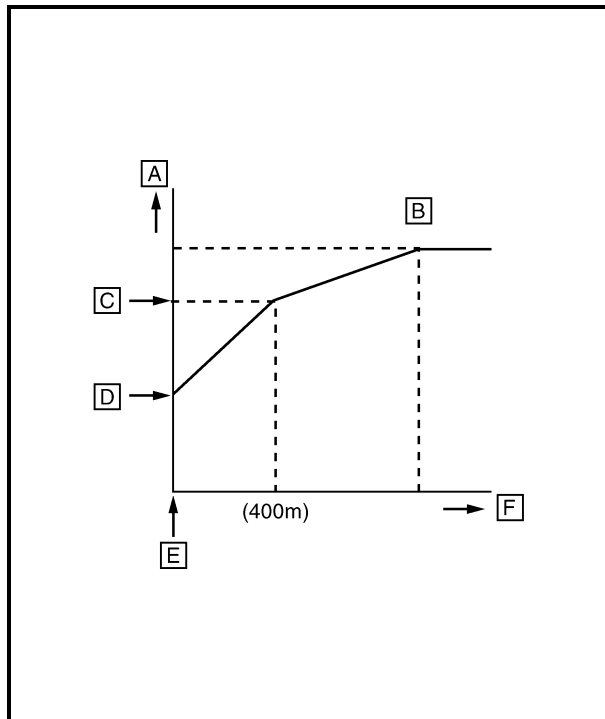
Specifications Model: RST90 “USA/Canada”

A Elevation	~ 800 m (~ 2,500 ft)	600 ~ 1,400 m (2,000 ~ 4,500 ft)	1,200 ~ 2,000 m (4,000 ~ 6,500 ft)	1,800 ~ 2,600 m (6,000 ~ 8,500 ft)	2,400 ~ 3,000 m (8,000 ~ 10,000 ft)
B Engine idle speed	1,400 ± 100 r/min	←	←	←	←
C Engagement r/min	Approx. 3,200 r/min	←	Approx. 3,300 r/min	Approx. 3,400 r/min	←
D Shift r/min	Approx. 8,500 r/min	←	←	←	←
E Main jet	b Refer to “HIGH ALTITUDE SETTINGS” in “MAINTENANCE SPECIFICATIONS”.				
F Pilot jet					
G Pilot screw					
H Secondary reduction ratio (number of links)	22/39 (70 L)	←	21/39 (68 L)	20/39 (68 L)	←
I Primary sheave spring	90501-583L4	←	90501-582L1	90501-602L3	←
J Color	W-S-W	←	Y-S-Y	P-S-P	←
K Free length	89.0 mm (3.50 in)	←	87.4 mm (3.44 in)	85.1 mm (3.35 in)	←
L Preload	343 N (35 kg, 77 lb)	←	←	←	←
M Spring rate	22.1 N/mm (2.25 kg/mm, 126 lb/in)	←	24.5 N/mm (2.5 kg/mm, 140 lb/in)	29.4 N/mm (3.0 kg/mm, 168 lb/in)	←
N Wire diameter	5.8 mm (0.228 in)	←	←	6.0 mm (0.236 in)	←
O Outside diameter	59.5 mm (2.34 in)	←	←	←	←
P Weight (ID)	8ES-17605-00 (8ES00)	←	←	←	←
Q Weight rivet	Steel 13.9 (OUT) Steel 17.2 (IN)	Steel 13.3 (OUT) Steel 13.3 (IN)	Steel 10.3 (OUT) Steel 10.3 (IN)	Aluminum 10.3 (OUT) Steel 10.3 (IN)	None (OUT) None (IN)
R Weight bushing	VESPEL TP-8549	←	←	←	←
S Roller outer dia.	15.0 mm (0.59 in)	←	←	←	←
T Roller bushing	VESPEL TP-8549	←	←	←	←
U Pri. clutch shim	None	←	←	←	←
V Secondary sheave spring	90508-60012	←	←	←	←
W Color	P	←	←	←	←
X Free length	75 mm (2.95 in)	←	←	←	←
Y Preload rate	60° (3-3) 1,211 kg · mm/rad	←	←	←	←
Z Wire diameter	6.0 mm (0.236 in)	←	←	←	←
a Outside diameter	69.5 mm (2.74 in)	←	←	←	←
b Sec. torque cam angle	41°	←	←	←	←
c Sec. clutch shim	1.0 mm (0.04 in)	←	←	←	←

G	Green	P	Pink
W	White	Y	Yellow

Specifications Model: RST90 “Europe”/RST90TF

A Elevation	~ 800 m (~ 2,500 ft)	600 ~ 1,400 m (2,000 ~ 4,500 ft)	1,200 ~ 2,000 m (4,000 ~ 6,500 ft)	1,800 ~ 2,600 m (6,000 ~ 8,500 ft)	2,400 ~ 3,000 m (8,000 ~ 10,000 ft)
B Engine idle speed	1,400 ± 100 r/min	←	←	←	←
C Engagement r/min	Approx. 3,000 r/min	←	Approx. 3,100 r/min	←	←
D Shift r/min	Approx. 8,500 r/min	←	←	←	←
E Main jet	b Refer to “HIGH ALTITUDE SETTINGS” in “MAINTENANCE SPECIFICATIONS”.				
F Pilot jet					
G Pilot screw					
H Secondary reduction ratio (number of links)	20/39 (68 L)	←	←	←	←
I Primary sheave spring	90501-582L7	←	90501-602L8	90501-602L9	←
J Color	Y-G-Y	←	G-G-G	P-G-P	←
K Free length	89.4 mm (3.52 in)	←	87.9 mm (3.46 in)	86.7 mm (3.41 in)	←
L Preload	392 N (40 kg, 88 lb)	←	←	←	←
M Spring rate	24.5 N/mm (2.50 kg/mm, 140 lb/in)	←	27.0 N/mm (2.75 kg/mm, 154 lb/in)	29.4 N/mm (3.00 kg/mm, 168 lb/in)	←
N Wire diameter	5.8 mm (0.228 in)	←	6.0 mm (0.236 in)	←	←
O Outside diameter	59.5 mm (2.34 in)	←	←	←	←
P Weight (ID)	8FA-17605-10 (8FA00)	←	←	←	←
Q Weight rivet	Steel 17.2 (OUT) Steel 17.2 (IN)	Steel 13.3 (OUT) Steel 17.2 with-hole (IN)	Steel 13.3 with-hole (OUT) Steel 13.3 (IN)	Aluminum 13.3 with-hole (OUT) Steel 13.3 with-hole (IN)	None (OUT) None (IN)
R Weight bushing	VESPEL TP-8549	←	←	←	←
S Roller outer dia.	14.5 mm (0.57 in)	←	←	←	←
T Roller bushing	VESPEL TP-8549	←	←	←	←
U Pri. clutch shim	None	←	←	←	←
V Secondary sheave spring	90508-60007	←	←	←	←
W Color	W	←	←	←	←
X Free length	75 mm (2.95 in)	←	←	←	←
Y Preload rate	70° (1-6) 1,290 kg · mm/rad	←	←	←	←
Z Wire diameter	6.0 mm (0.236 in)	←	←	←	←
a Outside diameter	69.5 mm (2.74 in)	←	←	←	←
b Sec. torque cam angle	39°	←	←	←	←
c Sec. clutch shim	1.0 mm (0.04 in)	←	←	←	←



The clutch may require tuning depending upon where the machine will be operated and the desired handling characteristics. The clutch can be tuned by changing the engagement and shifting speeds. Clutch engagement speed is defined as the engine speed at which the machine first begins to move from a complete stop.

Clutch shifting speed is defined as the engine speed reached when the machine has travelled 800 m (2,500 ft) after being started at full-throttle from a dead stop.

Normally, when a machine reaches shifting speed, the vehicle speed increases but the engine speed remains nearly constant. Under unfavorable conditions (wet snow, icy snow, hills, or rough terrain), however, engine speed may decrease after the shifting speed has been reached.

- [A] Engine speed
- [B] Good condition
- [C] Clutch shifting speed
- [D] Clutch engagement speed
- [E] Starting position
- [F] Distance travelled 800 m (2,500 ft)

GEAR SELECTION

The reduction ratio of the driven gear to the drive gear must be set according to the snow conditions. If there are many rough surfaces or unfavorable snow conditions, the drive/driven gear ratio should be increased. If the surfaces are fairly smooth or better snow conditions exist, decrease the ratio.

Gear ratio chart

The drive and driven gears and the chains shown in the gear ratio chart are available as options. The figures containing a decimal point represent the drive/driven gear ratios, while the bottom numbers designate the number of links in the chain.

① Chain and sprocket part number

[A] Parts name	[B] Teeth & links	[C] Parts no.	[D] Standard
[E] Drive sprocket	19 teeth	8FA-17682-90	
	20 teeth	8FA-17682-00	RS90M/RST90 "Europe"/RST90TF
	21 teeth	8FA-17682-10	
	22 teeth	8FA-17682-20	RS90/RS90R/RSG90/ RST90 "USA/Canada"
	23 teeth	8FA-17682-30	
	24 teeth	8FA-17682-40	
[F] Driven sprocket	37 teeth	8DW-47587-71	
	38 teeth	8DW-47587-81	RS90
	38 teeth	8FB-47587-80	RS90R
	39 teeth	8DW-47587-91	
	39 teeth	8FB-47587-90	RSG90/RST90/RST90TF
	40 teeth	8DW-47587-01	RS90M
	40 teeth	8FB-47587-00	
[G] Chain	68 links	94890-09068	RS90/RS90R/RS90M/ RST90 "Europe"/RST90TF
	70 links	94890-09070	RSG90/RST90 "USA/Canada"

② Gear ratio

[A] Drive gear \ [B] Driven gear	19 teeth	20 teeth	21 teeth	22 teeth	23 teeth	24 teeth
37 teeth			1.76 68 links	1.68 68 links	1.61 68 links	1.54 70 links
38 teeth		1.90 68 links	1.81 68 links	1.73 68 links	1.65 70 links	1.58 70 links
39 teeth	2.05 68 links	1.95 68 links	1.86 68 links	1.77 70 links	1.70 70 links	1.63 70 links
40 teeth	2.11 68 links	2.00 68 links	1.91 70 links	1.82 70 links	1.74 70 links	1.67 70 links

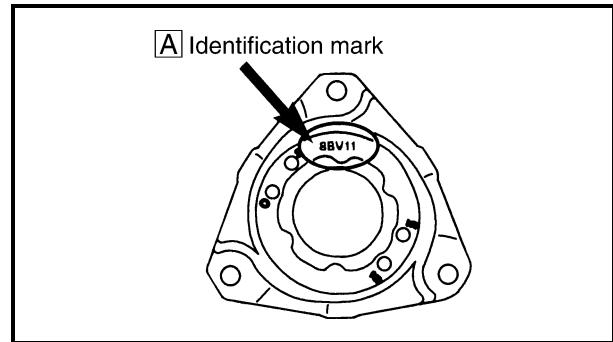
③ Secondary sheave spring

[A] Part No.	[B] Spring rate N · mm/rad (kg · mm/rad)	[C] Preload N/mm (kg/mm) (lb/in)	[D] Color	[E] Wire gauge mm (in)	[F] No. of coils	[G] Free length mm (in)	[H] Outside diameter mm (in)	[I] Standard
90508-500B1	6003 (613)	6.2 (0.63), 35.28	Brown	5.0 (0.196)	5.19	75 (2.95)	69.5 (2.736)	
90508-536A9	7147 (729)	7.3 (0.74), 41.44	Red	5.3 (0.209)	5.53	75 (2.95)	69.5 (2.736)	
90508-556A2	8314 (848)	8.5 (0.87), 48.72	Green	5.5 (0.217)	5.53	75 (2.95)	69.5 (2.736)	
90508-556A7	9460 (965)	10.2 (1.04), 58.24	Silver	5.5 (0.217)	4.86	75 (2.95)	69.5 (2.736)	
90508-60012	11876 (1211)	12.3 (1.26), 70.56	Pink	6.0 (0.236)	5.53	75 (2.95)	69.5 (2.736)	RS90/RS90R/ RSG90/RS90M/ RST90 "USA/ Canada"
90508-60007	12654 (1290)	13.5 (1.37) 76.72	White	6.0 (0.236)	5.19	75 (2.95)	69.5 (2.736)	RST90 "Europe"/ RST90TF

④ Secondary spring twist angle

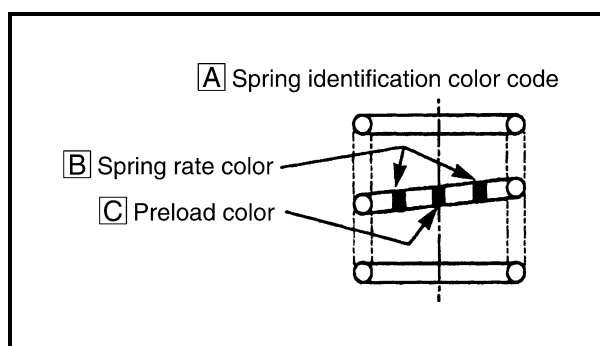
A Seat B Sheave	0	3	6	9
1	10°	40°	70°	100°
2	20°	50°	80°	110°
3	30°	60°	90°	120°

⑤ Torque cam (secondary spring seat)



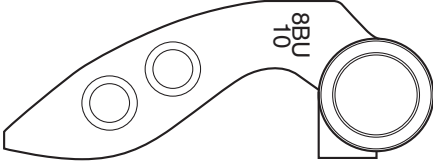
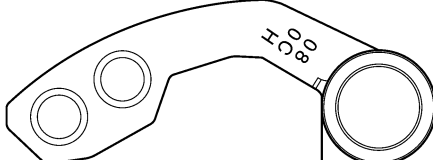
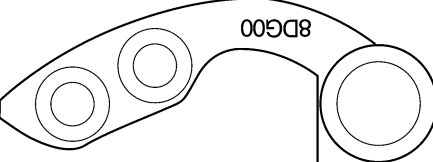
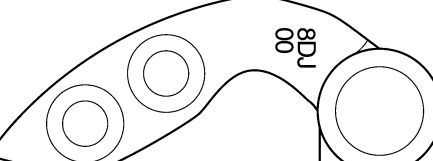
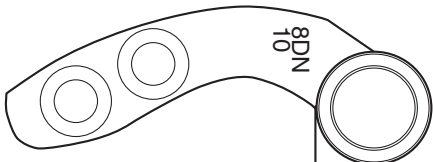
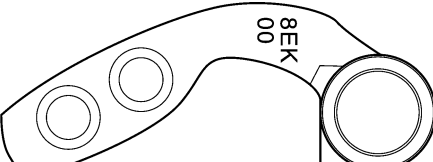
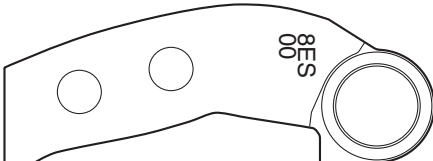
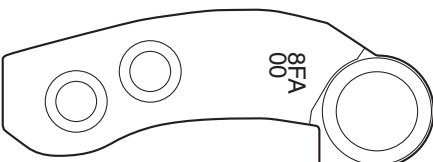
B Effects	C Part no.	D Cam angle	E Identification mark	F Standard
G Quicker upshifting during acceleration ↑	8FA-17604-00	51-43°	8BVFA	
	8BV-17604-71	47°	8BV71	
	8BV-17604-51	45°	8BV51	
	8BV-17604-31	43°	8BV31	RS90/RS90R/ RSG90
	8BV-17604-11	41°	8BV11	RST90 "USA/ Canada"
↓ H Quicker backshifting under load	8BV-17604-91	39°	8BV91	RS90M/ RST90 "Europe"/ RST90TF

⑥ Primary spring



D Parts No.	E Spring rate N/mm (kg/mm)	F Preload N (kg)	G Color	H Wire gauge mm (in)	I Outside diameter mm (in)	J No. of coils	K Free length mm (in)	L Standard
90501-551L3	19.6 (2.00)	294 (30)	Blue-Pink-Blue	5.5 (0.217)	59.5 (2.34)	4.91	88.4 (3.48)	
90501-551L9	19.6 (2.00)	343 (35)	Blue-Silver-Blue	5.5 (0.217)	59.5 (2.34)	4.91	90.9 (3.58)	
90501-552L5	19.6 (2.00)	392 (40)	Blue-Green-Blue	5.5 (0.217)	59.5 (2.34)	4.91	93.4 (3.68)	RSG90
90501-581L5	24.5 (2.50)	294 (30)	Yellow-Pink-Yellow	5.8 (0.228)	59.5 (2.34)	4.92	85.4 (3.36)	
90501-581L6	27.0 (2.75)	294 (30)	Green-Pink-Green	5.8 (0.228)	59.5 (2.34)	4.66	84.3 (3.32)	
90501-582L1	24.5 (2.50)	343 (35)	Yellow-Silver-Yellow	5.8 (0.228)	59.5 (2.34)	4.92	87.4 (3.44)	RS90/RS90R
90501-582L2	27.0 (2.75)	343 (35)	Green-Silver-Green	5.8 (0.228)	59.5 (2.34)	4.66	86.1 (3.39)	
90501-582L6	22.1 (2.25)	392 (40)	White-Green-White	5.8 (0.228)	59.5 (2.34)	5.25	91.2 (3.59)	
90501-582L7	24.5 (2.50)	392 (40)	Yellow-Green-Yellow	5.8 (0.228)	59.5 (2.34)	4.92	89.4 (3.52)	RST90 "Europe"/ RST90TF
90501-583L0	19.6 (2.00)	441 (45)	Blue-White-Blue	5.8 (0.228)	59.5 (2.34)	5.65	95.9 (3.78)	
90501-583L1	22.1 (2.25)	441 (45)	White-White-White	5.8 (0.228)	59.5 (2.34)	5.25	93.4 (3.68)	
90501-583L4	22.1 (2.25)	343 (35)	White-Silver-White	5.8 (0.228)	59.5 (2.34)	5.25	89.0 (3.50)	RST90 "USA/Canada"
90501-583L5	22.1 (2.25)	294 (30)	White-Pink-White	5.8 (0.228)	59.5 (2.34)	5.25	86.7 (3.41)	
90501-601L7	29.4 (3.00)	294 (30)	Pink-Pink-Pink	6.0 (0.236)	59.5 (2.34)	4.82	83.4 (3.28)	
90501-601L8	31.9 (3.25)	294 (30)	Orange-Pink-Orange	6.0 (0.236)	59.5 (2.34)	4.60	82.6 (3.25)	
90501-602L3	29.4 (3.00)	343 (35)	Pink-Silver-Pink	6.0 (0.236)	59.5 (2.34)	4.82	85.1 (3.35)	
90501-602L8	27.0 (2.75)	392 (40)	Green-Green-Green	6.0 (0.236)	59.5 (2.34)	5.08	87.9 (3.46)	
90501-602L9	29.4 (3.00)	392 (40)	Pink-Green-Pink	6.0 (0.236)	59.5 (2.34)	4.82	86.7 (3.41)	
90501-603L2	24.5 (2.50)	441 (45)	Yellow-White-Yellow	6.0 (0.236)	59.5 (2.34)	5.39	91.4 (3.60)	
90501-603L3	27.0 (2.75)	441 (45)	Green-White-Green	6.0 (0.236)	59.5 (2.34)	5.08	89.8 (3.54)	RS90M
90501-624L8	31.9 (3.25)	343 (35)	Orange-Silver-Orange	6.2 (0.244)	59.5 (2.34)	5.00	84.2 (3.31)	

⑦ Clutch weight

[A] Parts No.	[B] Weight g (oz) without bush and rivets	[C] Shape & ID mark	[D] Standard
8BU-17605-20	45.41 (1.603)		RS90M
8CH-17605-10	35.32 (1.246)		
8DG-17605-00	34.26 (1.208)		
8DJ-17605-00	37.77 (1.332)		
8DN-17605-10	39.76 (1.402)		
8EK-17605-00	39.00 (1.376)		
8ES-17605-00	54.63 (1.928)		RS90/RS90R/ RSG90/RST90 "USA/Canada"
8FA-17605-10	63.81 (2.251)		RST90 "Europe"/ RST90TF

⑧ Weight rivets

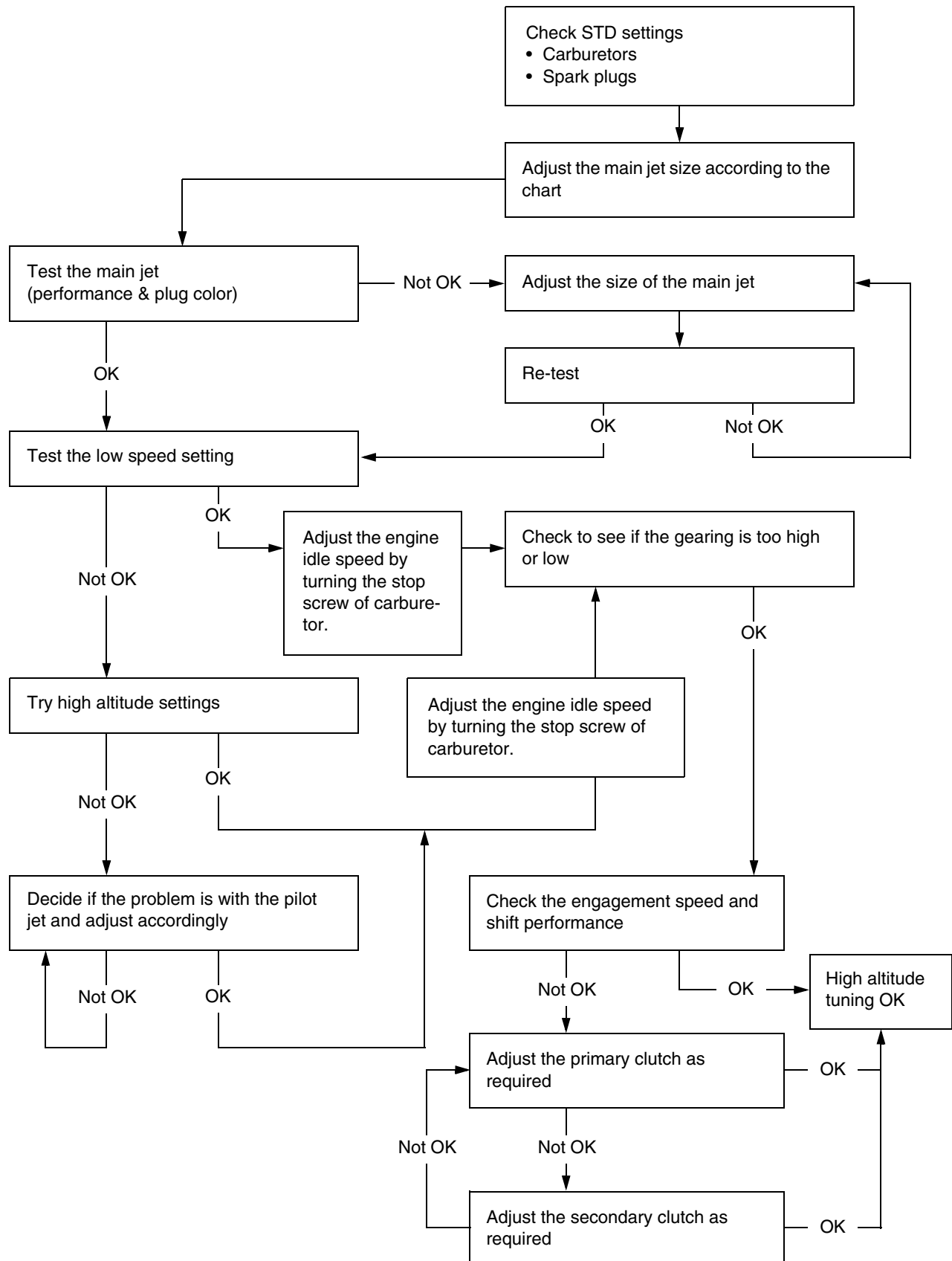
A Parts No.	B Material	C Length mm (in)	D Weight g (oz)	E Standard	F Effects
90261-06033	Steel	17.2 (0.677)	4.5 (0.159)	IN: RST90/RST90TF OUT: RSG90/RST90 "Europe"/ RST90TF	G Increased force H Decreased force
90261-06034	Steel	13.9 (0.547)	3.6 (0.127)	IN, OUT: RS90/RS90R IN: RSG90 OUT: RST90 "USA/Canada"	
90261-06019	Steel	13.3 (0.524)	3.1 (0.109)		
90261-06015	Steel	10.3 (0.406)	2.44 (0.086)		
90261-06028	Aluminum	10.3 (0.406)	0.85 (0.030)	OUT: RS90M	
None				IN: RS90M	

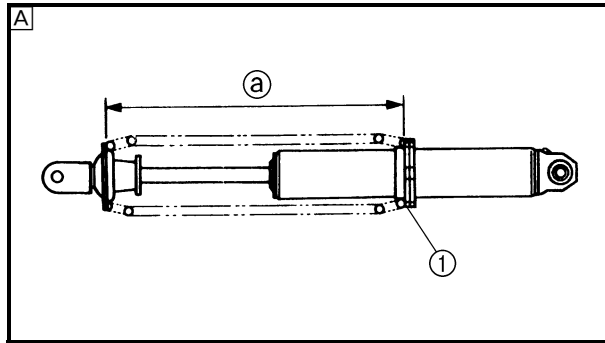
⑨ Rollers

I.D. 9 mm (0.354 in)					
A Roller with bush- ing part number	B Outside diameter mm (in)	C Bushing type (P/N)	D Identification mark (Width)	E Standard	F Effects
8FG-17624-00	14.5 (0.57)	VESPEL TP-8549 90386-09001	G Grooved & Machined (14.6 mm)	RST90 "Europe"/ RST90TF	L Increased force M Decreased force
8FG-17624-10	15.0 (0.59)	VESPEL TP-8549 90386-09001	H Grooved (14.6 mm)	RST90 "USA/ Canada"	
8FG-17624-20	15.6 (0.61)	VESPEL TP-8549 90386-09001	I No Mark (14.6 mm)	RS90/RS90R/ RSG90	
8FG-17624-30	16.0 (0.63)	VESPEL TP-8549 90386-09001	J Grooved & Grooved (14.6 mm)	RS90M	
8FG-17624-40	16.5 (0.65)	VESPEL TP-8549 90386-09001	K Machined (14.6 mm)		

HIGH ALTITUDE TUNING

To attain the best performance in high altitude conditions, carefully tune the snowmobile as outlined below.





FRONT SUSPENSION

Spring preload

1. Adjust:
 - Spring preload

Adjustment steps:

- Turn the spring seat ① in or out.

RS90/RS90R/RSG90

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
Length ①	Min.		Max.
	220 mm (8.66 in)	230 mm (9.06 in)	236.5 mm (9.31 in)

RS90M

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
Length ①	Min.		Max.
	205 mm (8.07 in)	215 mm (8.46 in)	215 mm (8.46 in)

- Turn the adjusting ring ② to the proper position.

RST90

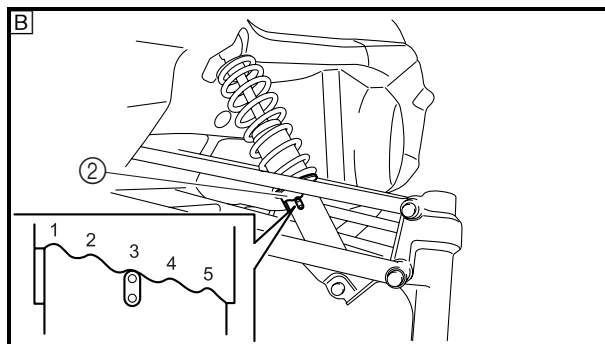
Spring adjuster position	1	2	3	4	5
Preload	Softer ← → Harder				
Standard	1				

RST90TF

Spring adjuster position	1	2	3	4	5
Preload	Softer ← → Harder				
Standard	3				

A RS90/RS90R/RSG90/RS90M

B RST90/RST90TF



CAUTION:

Be sure that the left and right spring preloads are the same.

⚠ WARNING

These shock absorber contain highly pressurized nitrogen gas.

Do not tamper with or attempt to open the shock absorber assemblies.

Do not subject the shock absorber assemblies to flames or high heat, which could cause it to explode.

REAR SUSPENSION

Stopper band (RS90/RS90R/RS90M/RST90/RST90TF)

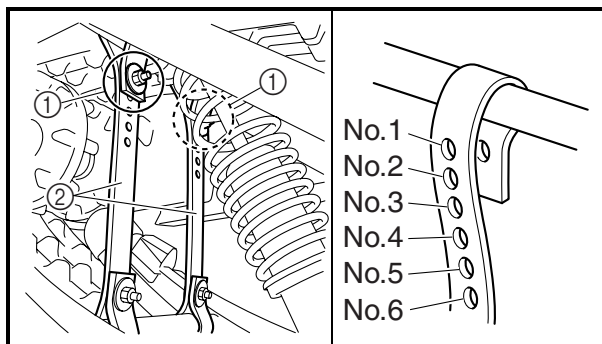
1. Adjust:
 - Stopper band length

CAUTION:

Make sure the left and right rear suspension stopper bands are adjusted evenly.

NOTE:

This adjustment affects the handling characteristics of the machine.



Adjustment steps:

- Remove the stopper band bolts ①, nuts and washers.
- Adjust the length of the stopper bands by inserting the bolts in different holes ②.

Standard setting:

No. 1 hole

- Tighten the stopper band nuts.



Stopper band nut:

4 Nm (0.4 m · kg, 2.9 ft · lb)

Choosing other settings:

CAUTION:

The standard settings work well under most general riding conditions. The suspension can be adjusted to work better in one condition, but only at the expense of another. Keep this in mind when you adjust the suspension.

No. 6 hole (shortest)	No. 1 hole (longest)
More weight on skis: • Heavy steering/oversteer • More maneuverability Favors: hardpack snow, ice, smooth trails, tight turns	Less weight on skis: • Light steering/understeer • Better acceleration and speed Favors: deep snow, straight line acceleration, top speed

Stopper band (RSG90)

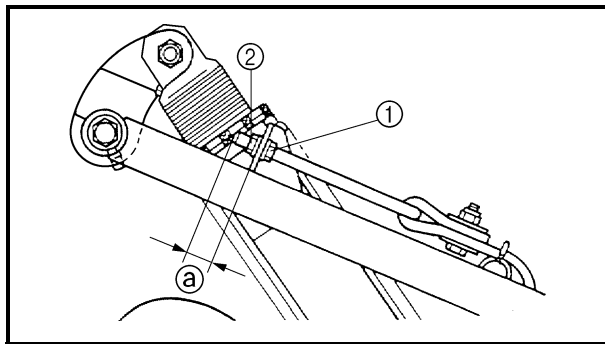
1. Adjust:
- Stopper band tension

CAUTION:

Make sure the left and right sides of the rear suspension stopper band are adjusted evenly.

NOTE:

This adjustment affects the handling characteristics of the machine.



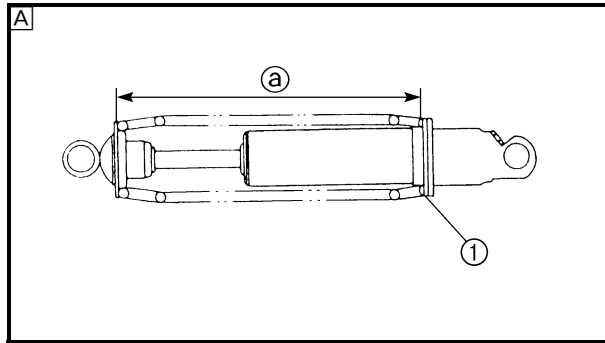
Adjustment steps:

- Loosen the locknut ①.
- Turn the adjusting nut ② in or out to adjust the stopper band tension.

Adjuster thread length ②	15 ± 0.5 mm (0.59 ± 0.02 in) Maximum: 35 mm (1.37 in) Minimum: 10 mm (0.40 in)
Effects	Longer More weight on skis; Less weight transfer Shorter Less weight on skis; More weight transfer

- Tighten the locknut.

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



Spring preload

1. Adjust:
 - Spring preload

Adjustment step:

Front side

- Turn the spring seat ① in or out.

RS90/RS90R “USA/Canada”

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
Length ①	Min.		Max.
	184 mm (7.24 in)	194 mm (7.64 in)	204 mm (8.03 in)

RS90R “Europe”

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
Length ①	Min.		Max.
	193 mm (7.60 in)	194 mm (7.64 in)	204 mm (8.03 in)

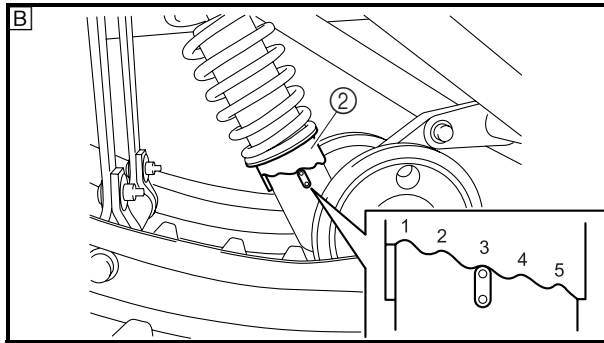
RSG90 “USA/Canada”

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
Length ①	Min.		Max.
	175.5 mm (6.91 in)	185.5 mm (7.30 in)	186.5 mm (7.34 in)

RSG90 “Europe”

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
Length ①	Min.		Max.
	180 mm (7.09 in)	190 mm (7.48 in)	190 mm (7.48 in)

A RS90/RS90R/RSG90



- Turn the adjusting ring ② to the proper position.

RS90M/RST90 “USA/Canada”/RST90TF

Spring adjuster position	1	2	3	4	5
Preload	Softer ← → Harder				
Standard	3				

RST90 “Europe”

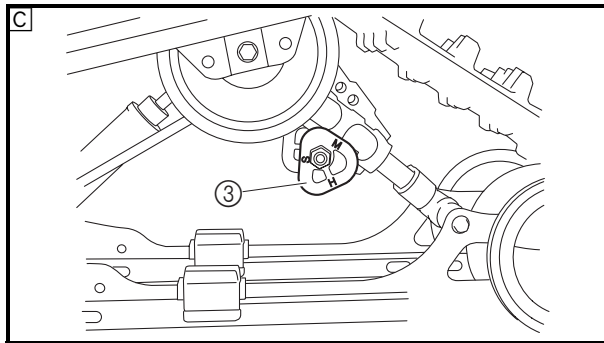
Spring adjuster position	1	2	3	4	5
Preload	Softer ← → Harder				
Standard	2				

⚠ WARNING

This shock absorber contains highly pressurized nitrogen gas.

Do not tamper with or attempt to open the shock absorber assembly.

Do not subject the shock absorber assembly to flames or high heat, which could cause it to explode.



ⓑ RS90M/RST90/RST90TF

Rear side

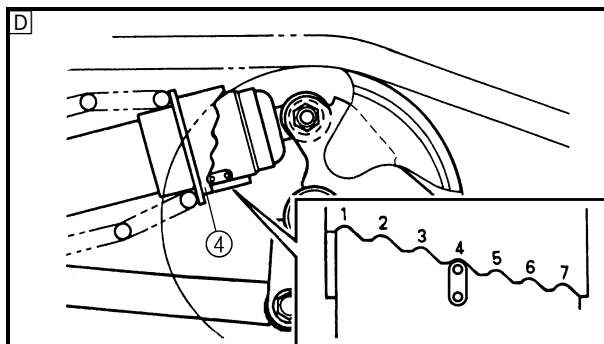
- Turn the adjuster ③ to proper position.

RS90/RS90R/RS90M/RST90/RST90TF

Spring adjuster position	S	M	H
Spring rate	Soft	Medium	Hard
Standard	M		

⚠ WARNING

Always adjust both spring preloads (left and right) to the same setting. Uneven adjustment can cause poor handling and loss of stability.



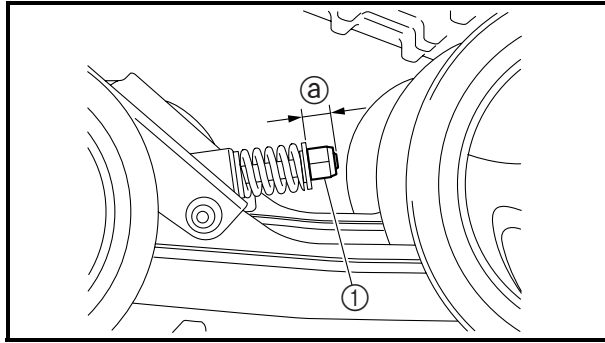
- Turn the adjusting ring ④ to the proper position.

RSG90

Spring adjuster position	1	2	3	4	5	6	7
Preload	Softer ← → Harder						
Standard	4						

ⓒ RS90/RS90R/RS90M/RST90/RST90TF

ⓓ RSG90



2. Adjust:
- Extension spring preload

Adjustment steps:

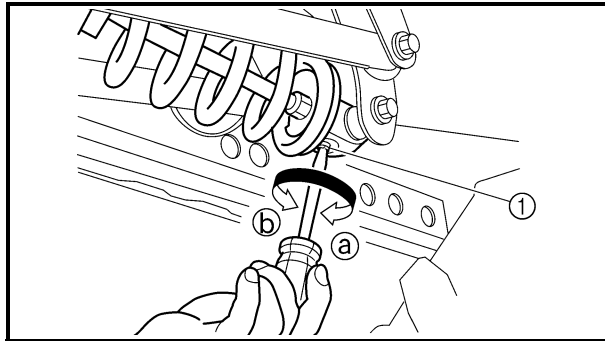
- Turn the adjusting nut ① in or out.

RST90TF

Adjusting nut	Turn in	Turn out
Preload	Harder	Softer
Snow condition	Icy	Soft
Standard length ②	16 ~ 18 mm (0.63 ~ 0.71 in)	

CAUTION:

Be sure the left and right spring preload is same.



Rear suspension damping force adjustment

The damping force can be adjusted by turning the adjuster ①.

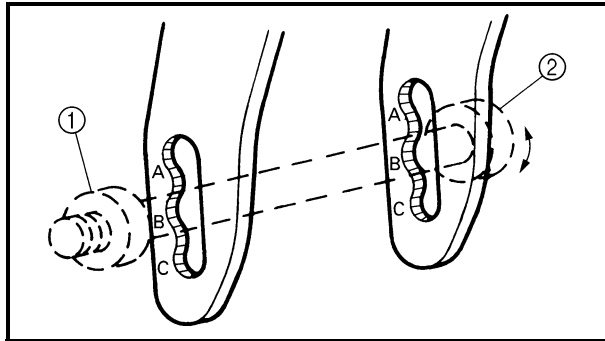
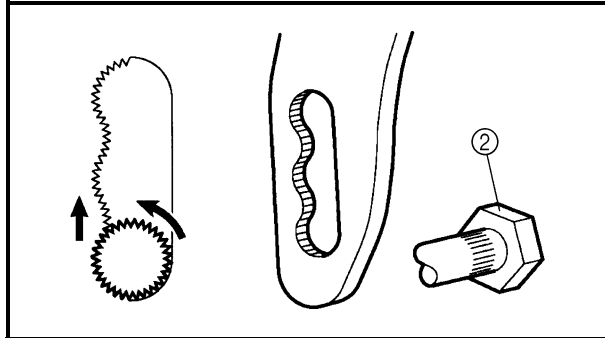
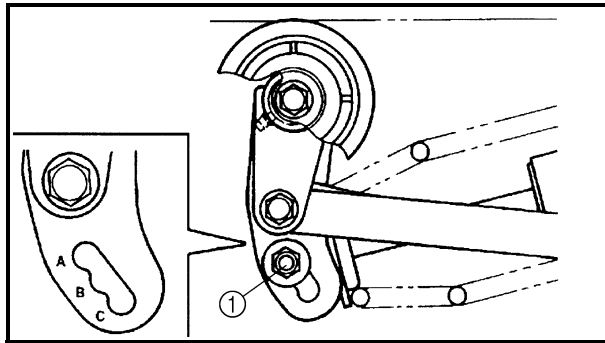
RSG90

Adjuster position	16 clicks out	7 clicks out	1 click out
	----- ----- -----		
	Minimum	Standard	Maximum
	Turns out (b)* ← → Turns in (a)		
Damping force	Soft ← → Hard		

* With the adjuster fully turned lightly in direction ②

CAUTION:

- Do not continue to turn the adjuster in direction ② after it stops. The shock absorber can be damaged and damping force adjustments cannot be made.
- Do not turn the adjuster in direction (b) more than 16 clicks. Even if the adjuster is continually turned after 16 clicks, there will be no change in the damping force.
- Be sure to stop the adjuster at a position where there is a click.



Rear suspension full rate (RSG90)

1. Adjust:

- Full rate adjuster

Adjustment steps:

Installation position	A	B	C
Spring rate and damping	Soft	Medium	Hard
Standard	B		

NOTE:

Be sure to make this adjustment when there is no load (rider or cargo) on the snowmobile.

- Loosen the full rate adjusting nut ① 1/2 or 3/4 turns, while holding the adjusting bolt ② securely with a wrench so it does not move.

CAUTION:

Never allow the adjusting bolt ② to move while loosening the nut.

- Turn the adjusting bolt ② to the desired position.

CAUTION:

Be sure the adjusting bolt ends are set at the same position on each side.

- While holding the adjusting bolt securely, tighten the nut ①.



Shock absorber nut:
49 Nm (4.9 m · kg, 35 ft · lb)

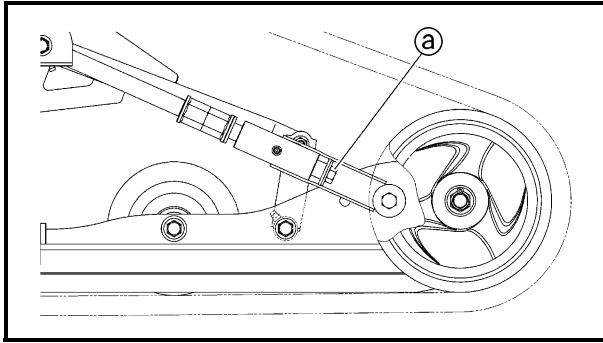
CAUTION:

Never allow the adjusting bolt to move while tightening the nut.

- This model has a “Easy adjust” system for the Full rate adjuster. The bolt has teeth on it. So when the bolt is turned, it rides up and down the bracket.

NOTE:

- The nut has to be loosen first, while the bolt is held in place with a wrench.
- Then the bolt can be turned to adjust the shock position up or down.
- If the bolt is turned with the nut tight, it is possible to strip the teeth off the bolt.

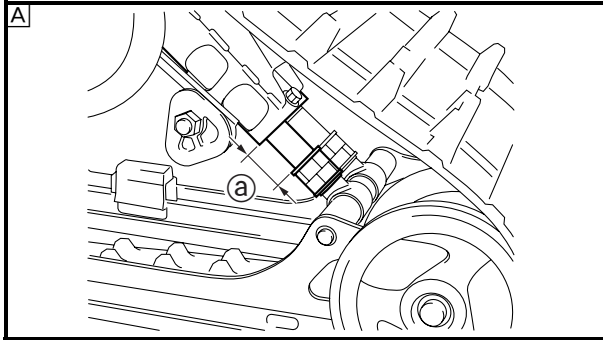


Control rod

1. Check:
 - Control rod bolt ① (RSG90)



Control rod bolt:
32 Nm (3.2 m · kg, 23 ft · lb)



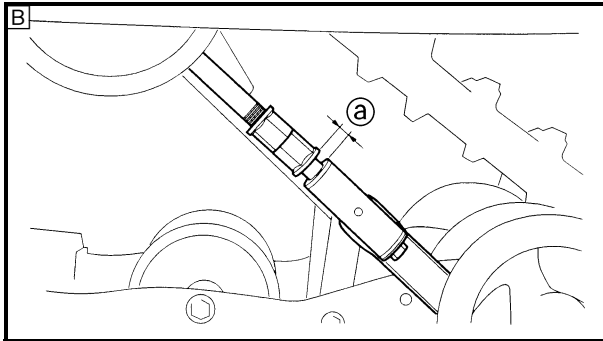
2. Adjust:
 - Control rod stroke ②

CAUTION:

Make sure the adjusting bolt ends are set at the same position on each side.

Adjustment steps:

- Loosen the locknut ①.
- Turn the adjusting nut ② in or out to adjust the control rod stroke.



RS90/RS90R/RS90M/RST90/RST90TF

Adjusting position	1	2	3
Effect	Increase weight transfer ←		→ Decrease weight transfer
Standard	2		

RSG90

Adjusting position	1	2	3	4
Effect	Increase weight transfer ←		→ Decrease weight transfer	
Standard	3			

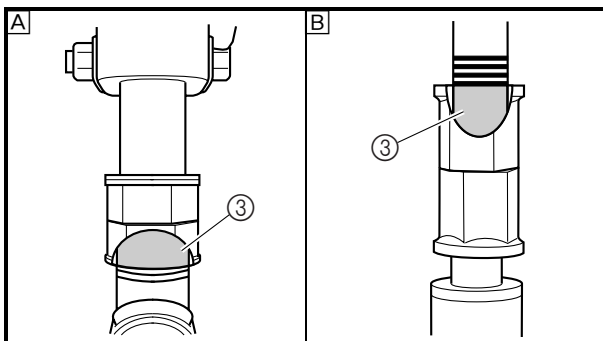
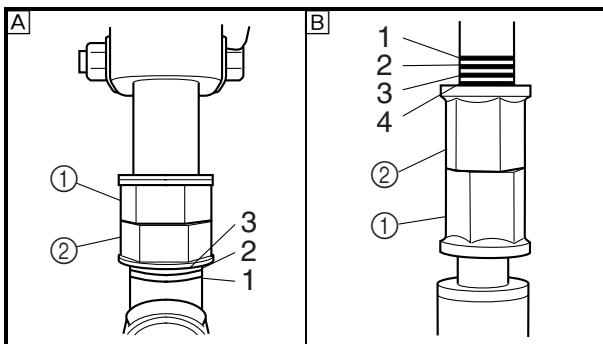
⚠ WARNING

Never adjust the control rods beyond the maximum range indicated on the rods with red paint ③.

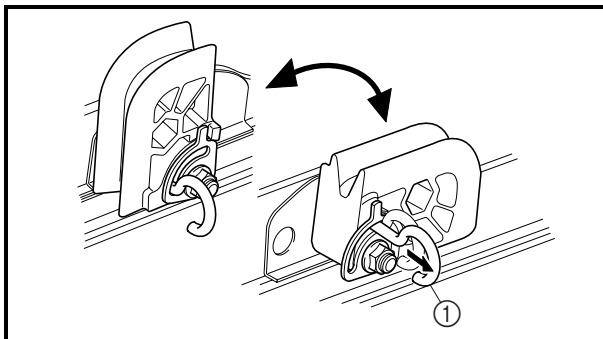
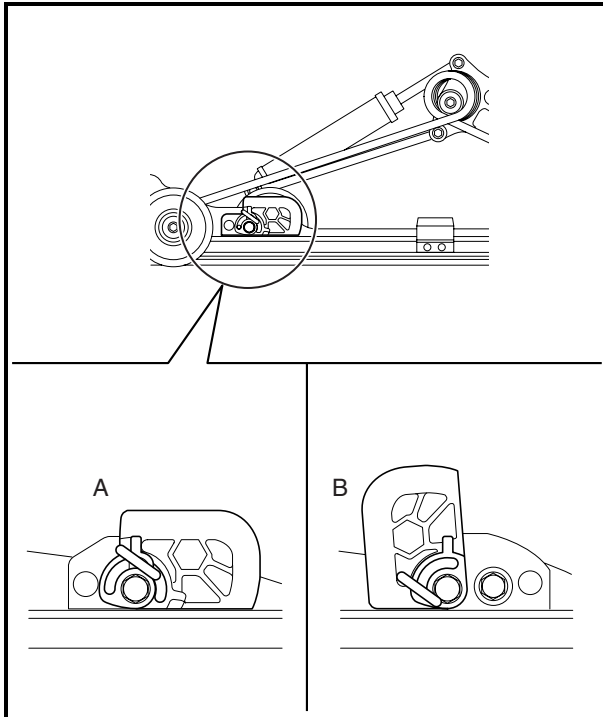
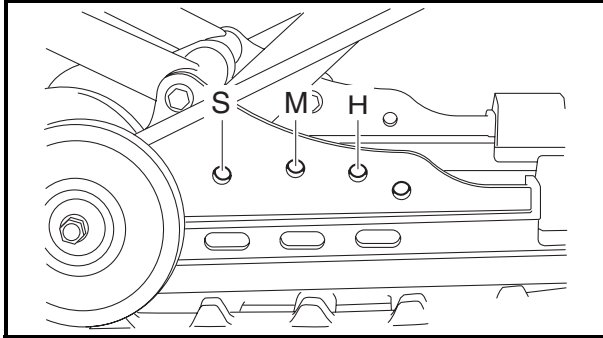
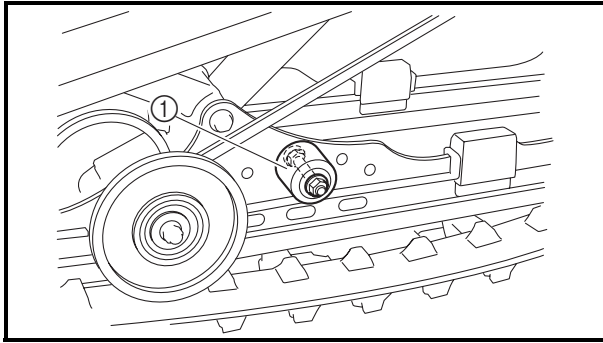
- While holding the adjusting bolt securely, tighten the locknut ①.



Locknut:
25 Nm (2.5 m · kg, 18 ft · lb)



- A RS90/RS90R/RS90M/RST90/RST90TF
- B RSG90



Anti-bottoming stopper (RS90/RS90R)

1. Adjust:

- Anti-bottoming stopper position ①

CAUTION:

Make sure that the anti-bottoming stoppers are installed in the same location on both sides.

Anti-bottoming stopper position	S	M	H
Spring force	Soft	Medium	Hard
Standard	M		

NOTE:

Be sure to make this adjustment when there is no load (rider or cargo) on the snowmobile.

	Anti-bottoming stopper nut: 60 Nm (6.0 m · kg, 43 ft · lb)
---	--

2-up adjusting block (RST90)

1. Position:

- 2-up adjusting blocks

	Solo (rider only)	2-up (rider and passenger)
Position	A	B
Spring force	Soft	Hard

NOTE:

Be sure to change the position of the 2-up adjusting blocks when there is no load (rider or cargo) on the snowmobile.

Positioning steps:

- Pull the lock lever ① and turn the 2-up adjusting block until it is in the desired position.
- Release the lock lever.

NOTE:

- Make sure that the lock lever has returned to its original position and that the 2-up adjusting block is locked in place.
- Do not ride the snowmobile with the lock lever pulled out.

CAUTION:

Make sure that the 2-up adjusting blocks are in the same position on both sides of the machine.



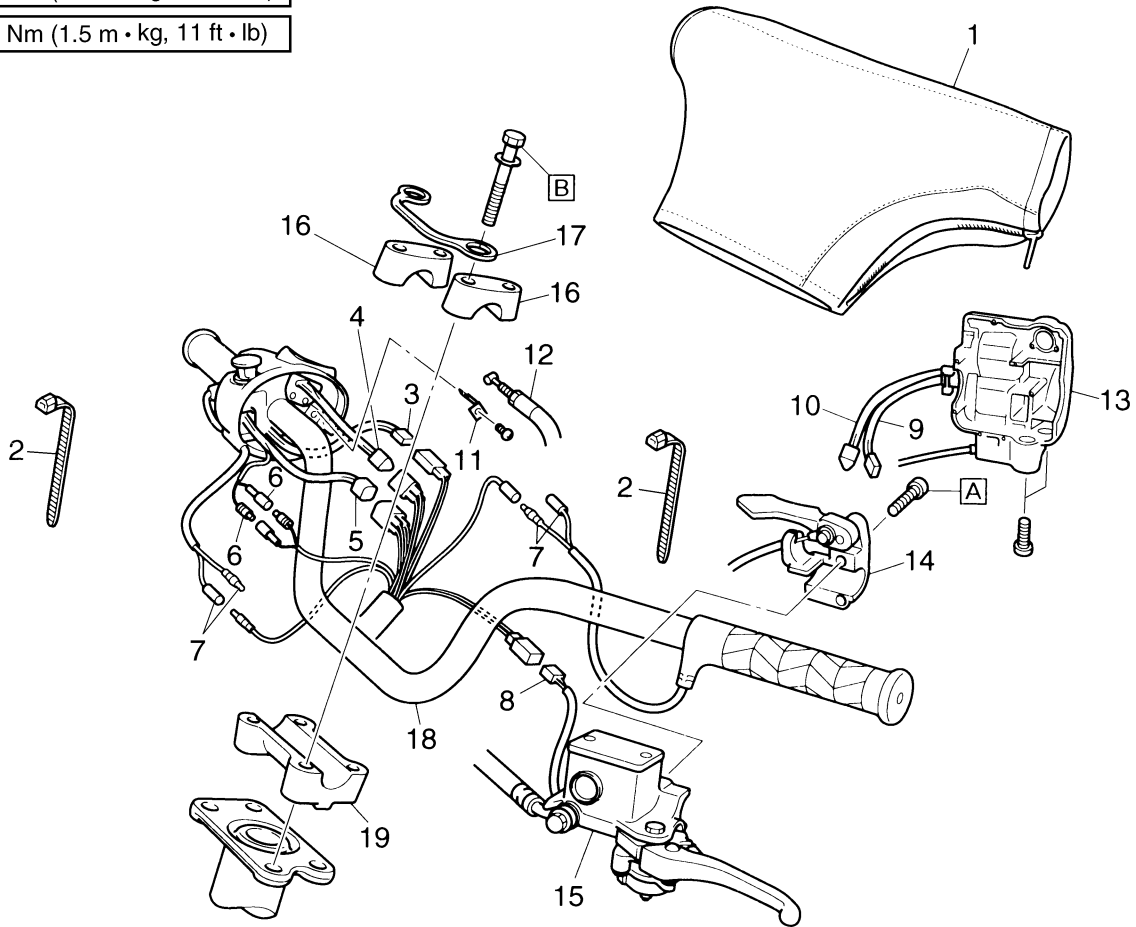
CHASSIS

STEERING

RS90/RS90R/RSG90/RST90/RST90TF

[A]: 10 Nm (1.0 m • kg, 7.2 ft • lb)

[B]: 15 Nm (1.5 m • kg, 11 ft • lb)

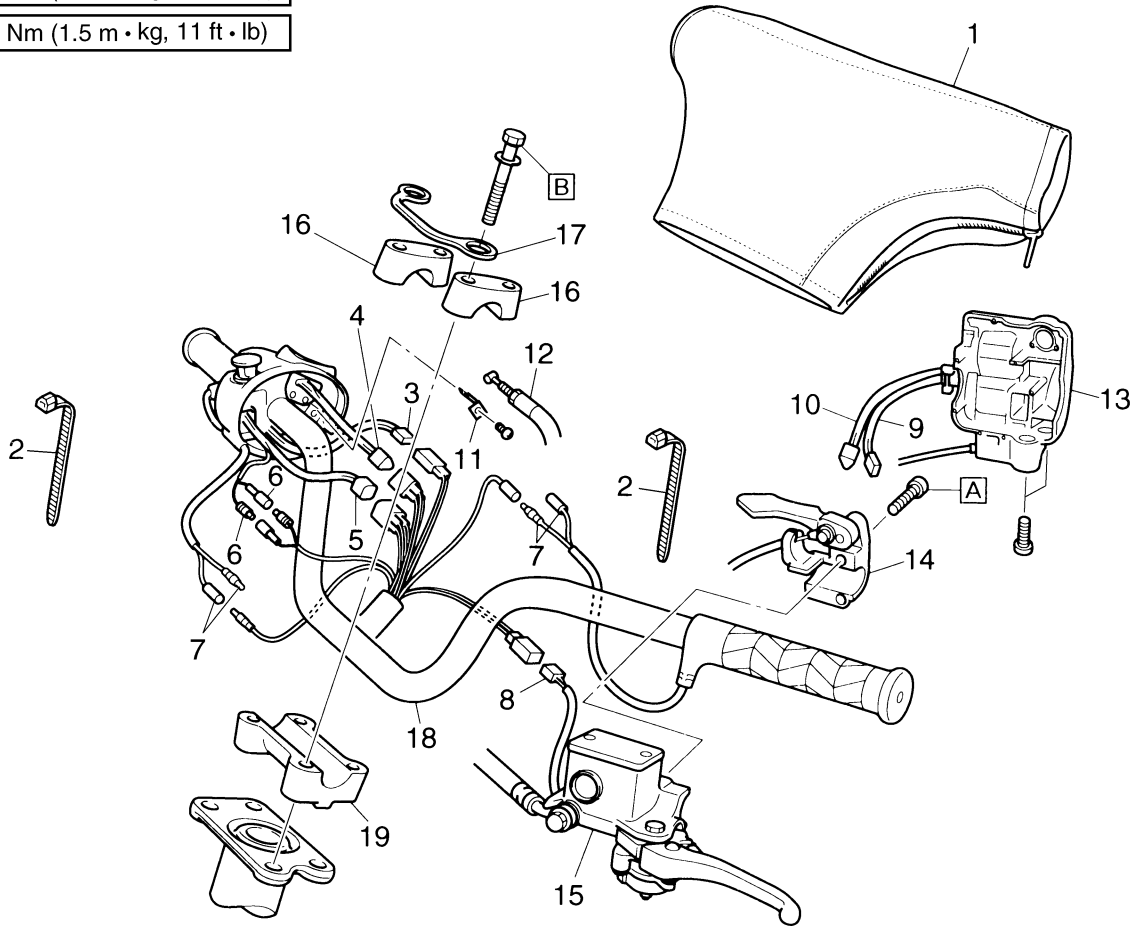


Order	Job name/Part name	Q'ty	Remarks
	Handlebar removal		Remove the parts in the order listed below.
1	Handlebar cover	1	
2	Plastic band	2	
3	Thumb warmer lead coupler	1	Disconnect.
4	Thumb warmer adjustment switch lead coupler	1	Disconnect.
5	Engine stop switch coupler	1	Disconnect.
6	Throttle switch coupler	2	Disconnect.
7	Grip warmer lead connector	4	Disconnect.
8	Brake switch coupler	1	Disconnect.
9	Headlight beam switch coupler	1	Disconnect.
10	Grip warmer switch lead coupler	1	Disconnect.
11	Throttle cable holder	1	
12	Throttle cable	1	
13	Left handlebar switch	1	
14	Brake lever holder	1	



[A]: 10 Nm (1.0 m • kg, 7.2 ft • lb)

[B]: 15 Nm (1.5 m • kg, 11 ft • lb)



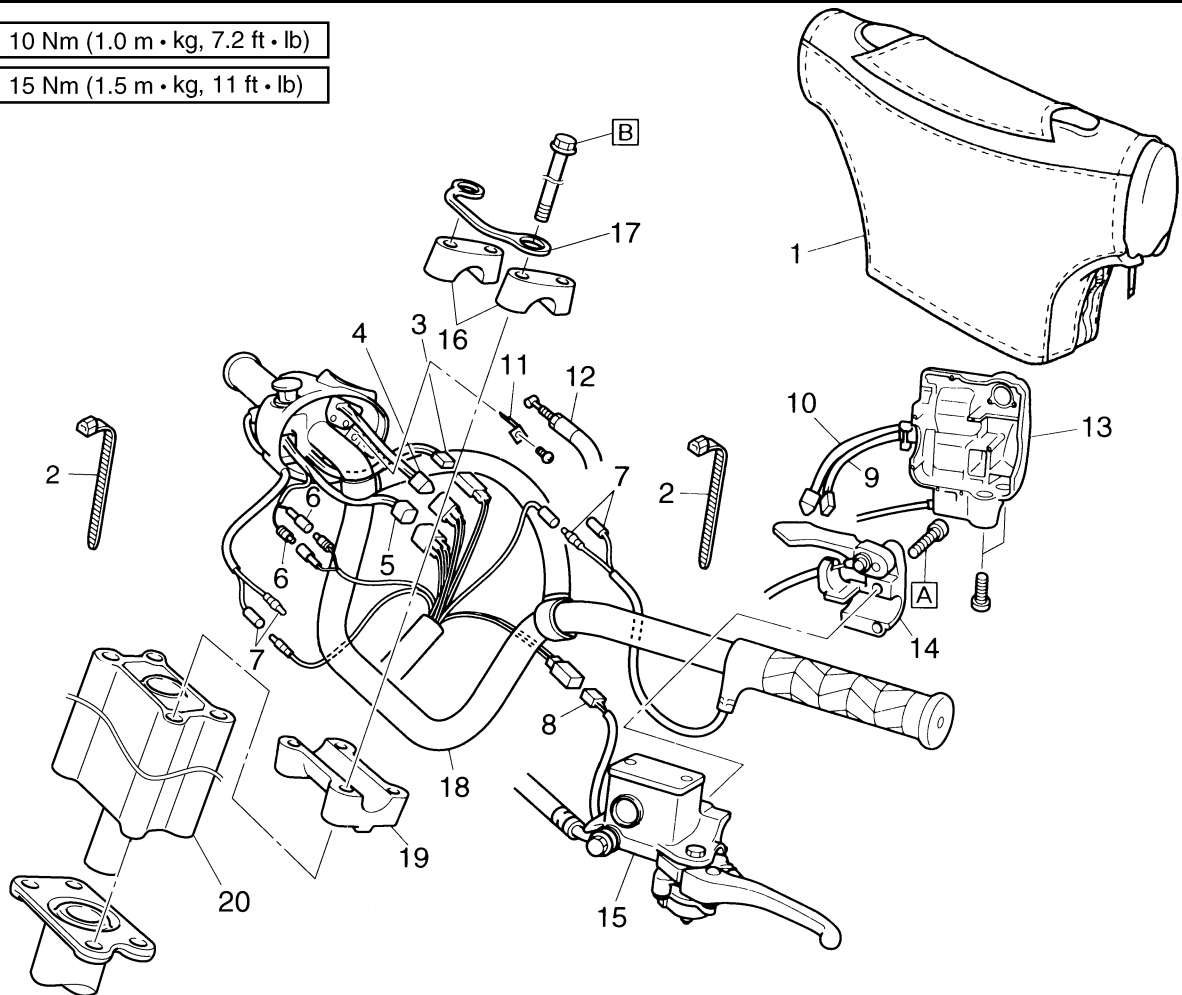
Order	Job name/Part name	Q'ty	Remarks
15	Master cylinder assembly	1	NOTE: _____ After installing all parts, refer to "CABLE ROUTING" in CHAPTER 9, to check the cable and lead routings. _____ For installation, reverse the removal procedure.
16	Handlebar holder (upper)	2	
17	Cable holder	1	
18	Handlebar	1	
19	Handlebar holder (lower)	1	



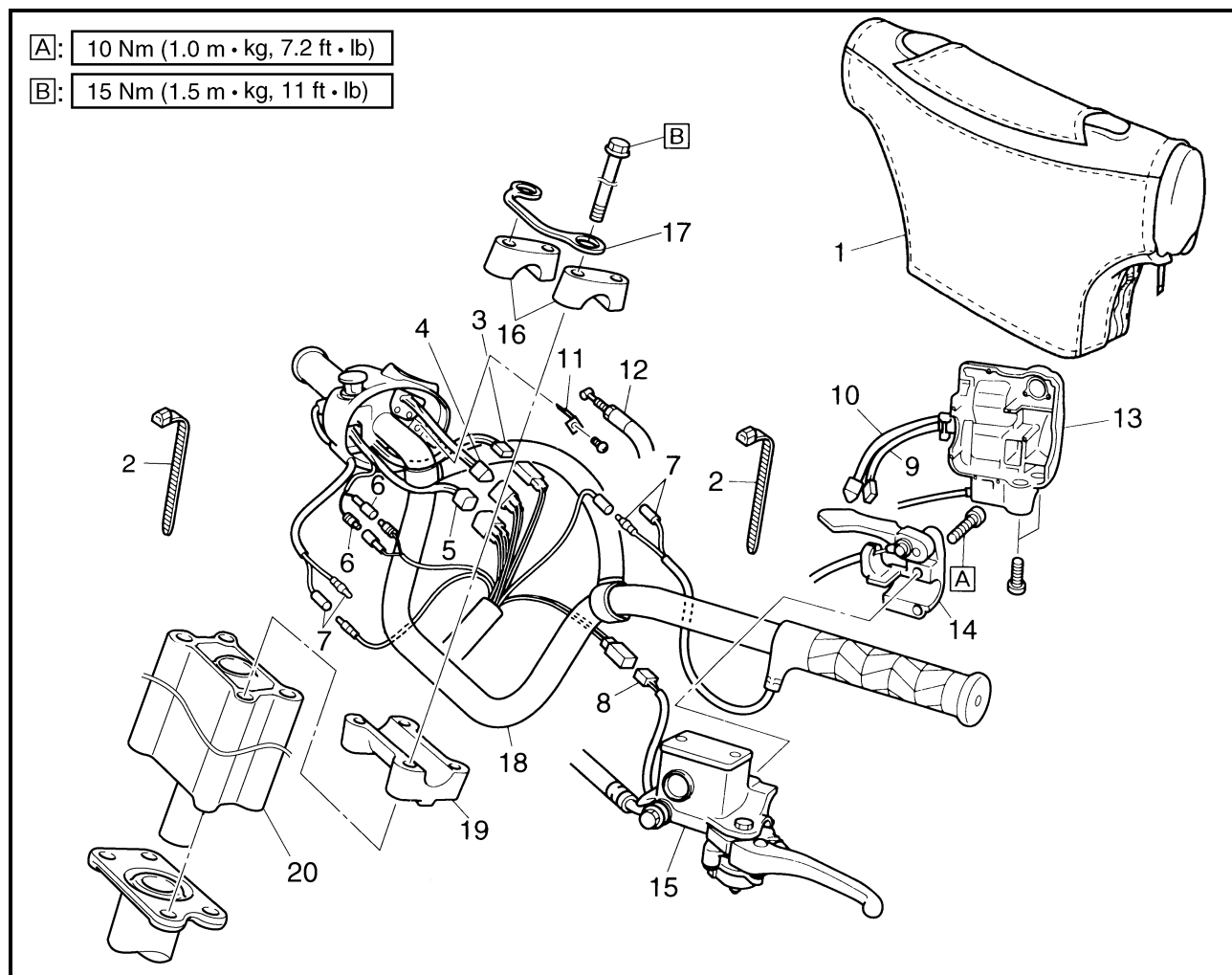
RS90M

[A]: 10 Nm (1.0 m • kg, 7.2 ft • lb)

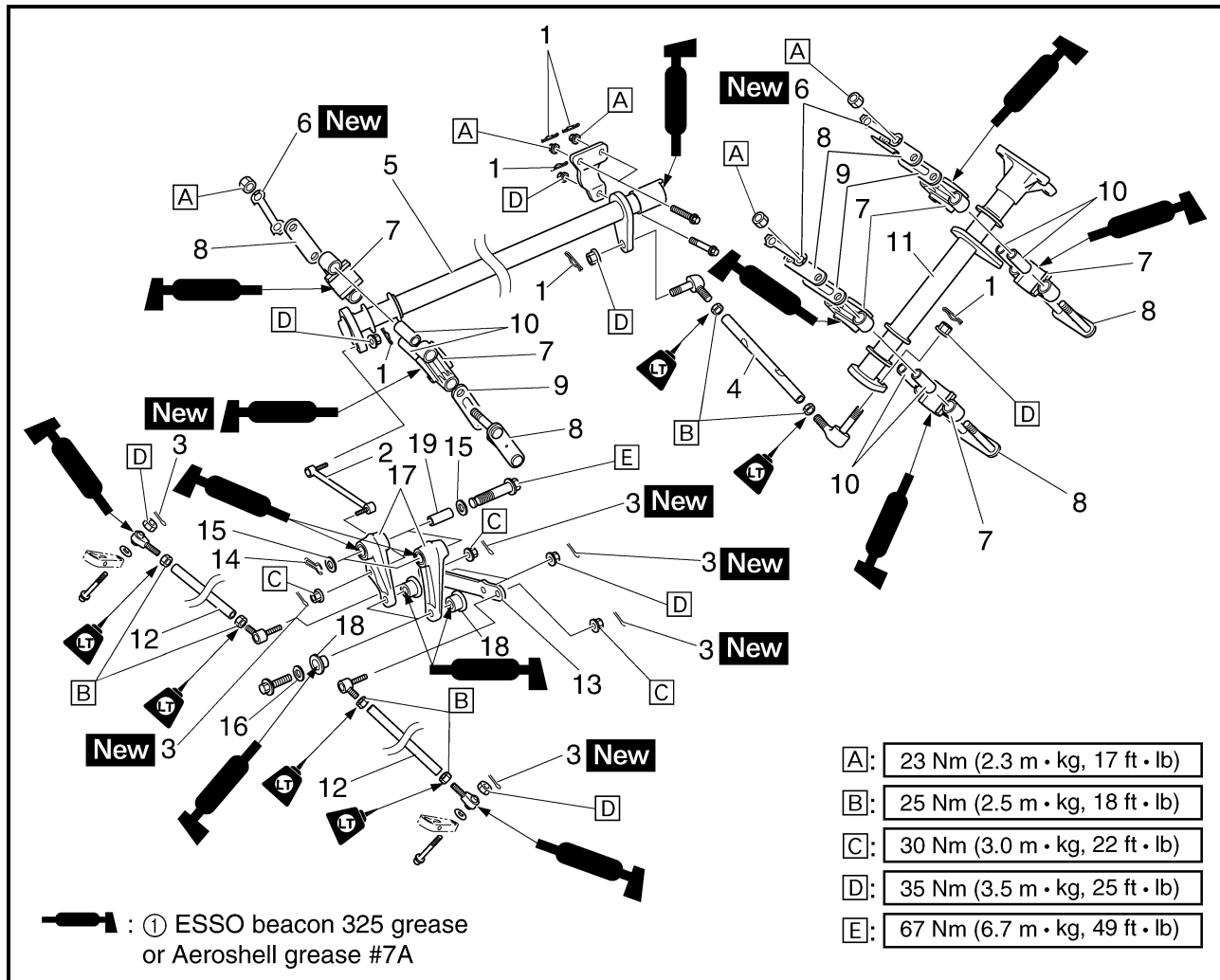
[B]: 15 Nm (1.5 m • kg, 11 ft • lb)



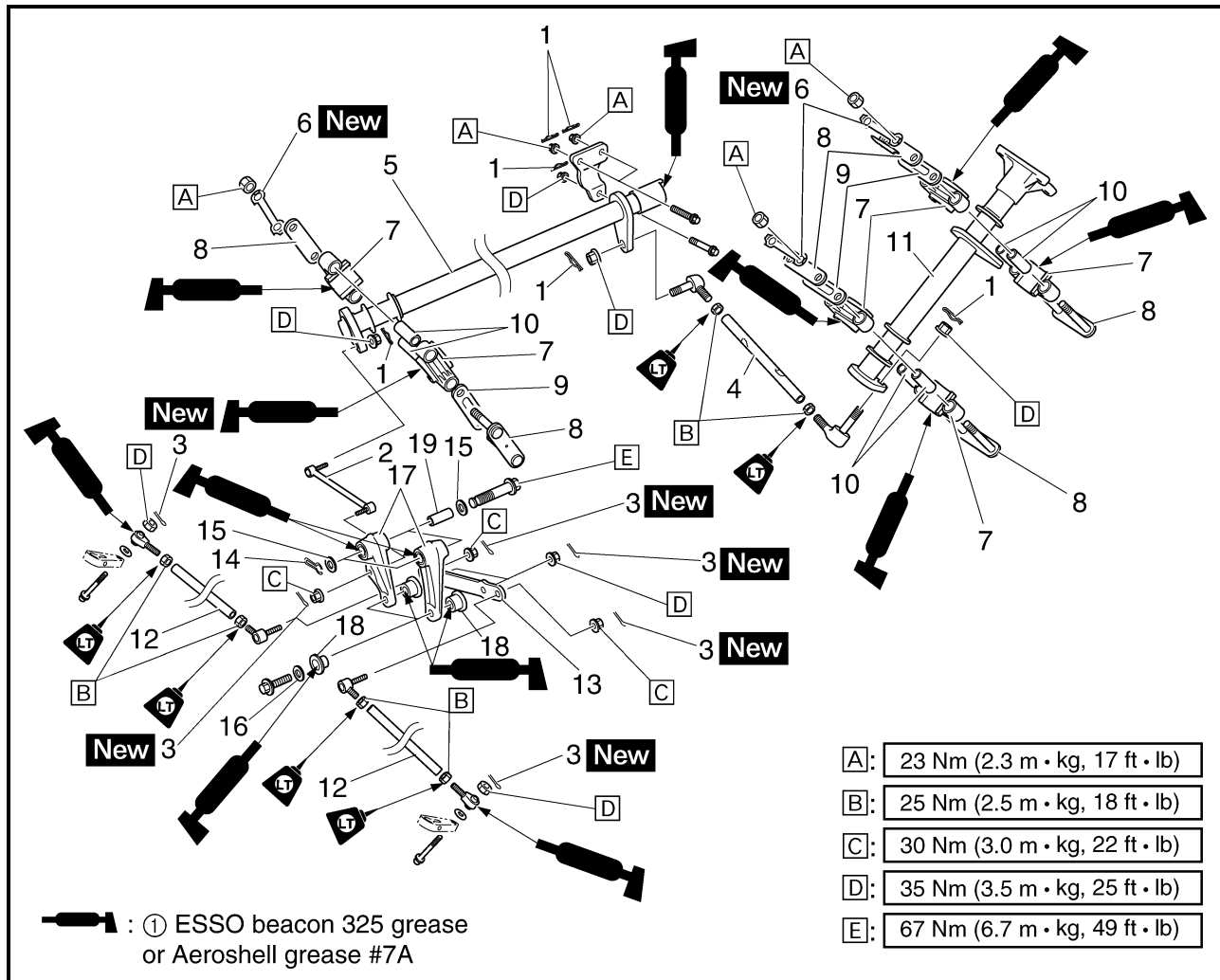
Order	Job name/Part name	Q'ty	Remarks
	Handlebar removal		Remove the parts in the order listed below.
1	Handlebar cover	1	
2	Plastic band	2	
3	Thumb warmer lead coupler	1	Disconnect.
4	Thumb warmer adjustment switch lead coupler	1	Disconnect.
5	Engine stop switch coupler	1	Disconnect.
6	Throttle switch coupler	2	Disconnect.
7	Grip warmer lead connector	4	Disconnect.
8	Brake switch coupler	1	Disconnect.
9	Headlight beam switch coupler	1	Disconnect.
10	Grip warmer switch lead coupler	1	Disconnect.
11	Throttle cable holder	1	
12	Throttle cable	1	
13	Left handlebar switch	1	
14	Brake lever holder	1	



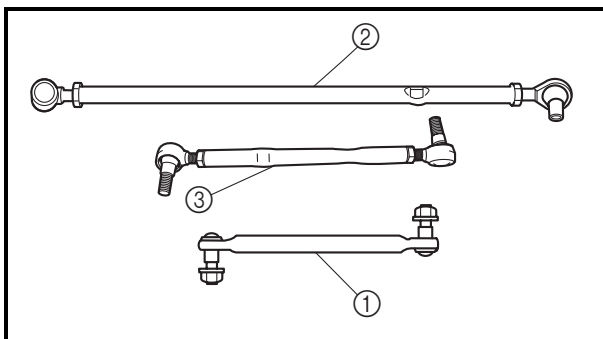
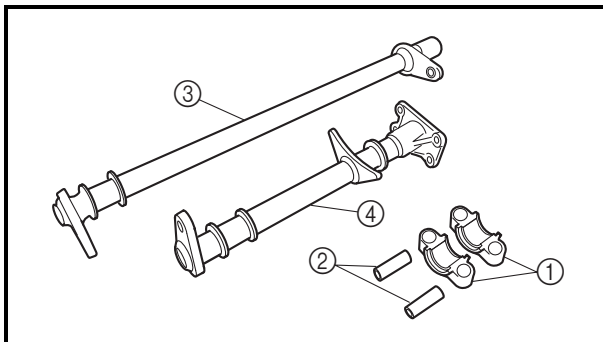
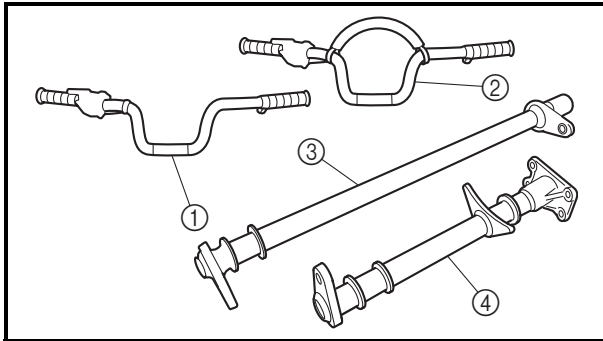
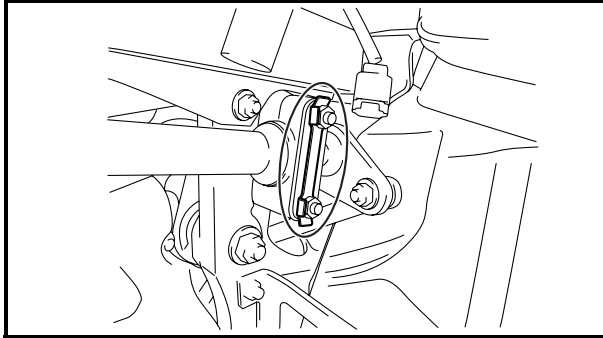
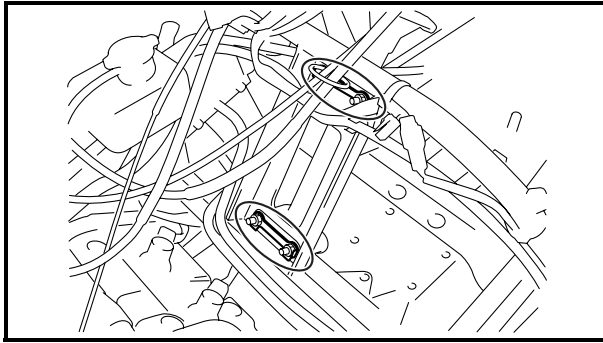
Order	Job name/Part name	Q'ty	Remarks
15	Master cylinder assembly	1	NOTE: _____ After installing all parts, refer to "CABLE ROUTING" in CHAPTER 9, to check the cable and lead routings. _____ For installation, reverse the removal procedure.
16	Handlebar holder (upper)	2	
17	Cable holder	1	
18	Handlebar	1	
19	Handlebar holder (lower)	1	
20	Steering joint	1	



Order	Job name/Part name	Q'ty	Remarks
	Steering column and tie rod removal		
	Fuel tank		Remove the parts in the order listed below. Refer to "SEAT AND FUEL TANK" in CHAPTER 5.
	Oil tank		Refer to "OIL TANK" in CHAPTER 5.
	Shift lever assembly		Refer to "DRIVE CHAIN HOUSING" in CHAPTER 4. (RS90R/RSG90/RST90/RST90TF)
1	Clip	6	
2	Relay rod	1	
3	Cotter pin	7	
4	Steering shaft	1	
5	Steering column 1	1	
6	Lock washer	3	
7	Bearing	6	
8	Bearing holder	6	
9	Plate	3	
10	Collar	6	
11	Steering column 2	1	



Order	Job name/Part name	Q'ty	Remarks
12	Tie rod	2	NOTE: _____ Remove the tie rod and the parts listed thereafter after removing the engine.
13	Idler arm	1	
14	Clip	2	
15	Washer	4	
16	Washer	2	
17	Relay arm	2	
18	Bushing	4	
19	Collar	2	
			For installation, reverse the removal procedure.



REMOVAL

1. Straighten the lock washer tabs.

INSPECTION

1. Inspect:

- Handlebar ① (RS90/RS90R/RSG90/RST90/RST90TF)
 - Handlebar ② (RS90M)
 - Steering column 1 ③
 - Steering column 2 ④
- Bends/cracks/damage → Replace.

⚠ WARNING

Do not attempt to straighten a bent column. This may dangerously weaken the column.

2. Inspect:

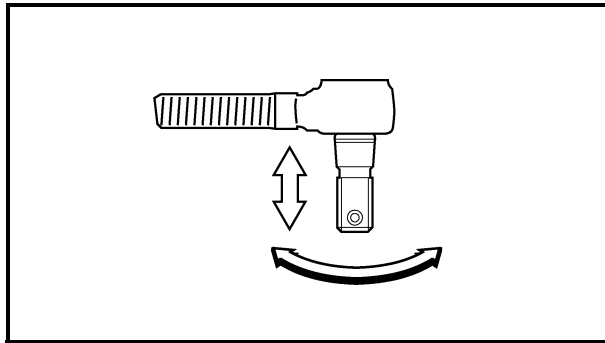
- Bearings (steering column) ①
 - Collars ②
- Wear/damage → Replace.
- Steering column 1 ③ (bearing contact surfaces)
 - Steering column 2 ④ (bearing contact surfaces)
- Scratches/wear/damage → Replace.

3. Inspect:

- Relay rod ①
 - Tie rods ②
 - Steering shaft ③
- Bends/cracks/damage → Replace.

⚠ WARNING

Do not attempt to straighten bent rods. This may dangerously weaken the rods.

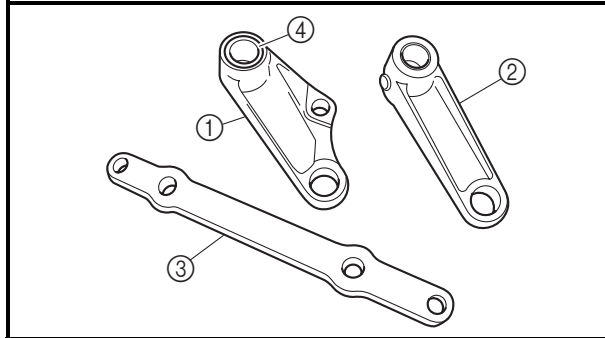


4. Check:

- Rod end movement

Rod end free play exists → Replace the rod end.

Rod end turns roughly → Replace the rod end.



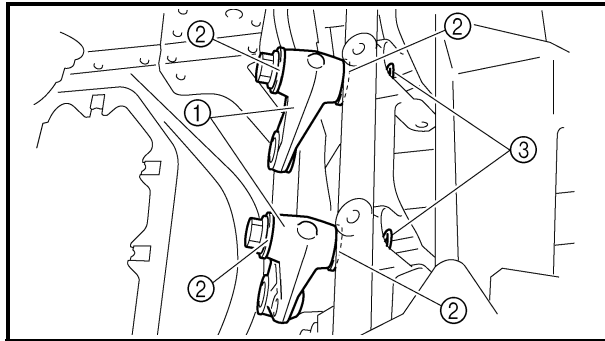
5. Inspect:

- Right relay arm ①
- Left relay arm ②
- Idler arm ③

Cracks/damage → Replace.

- Bearings ④

Wear/damage → Replace.



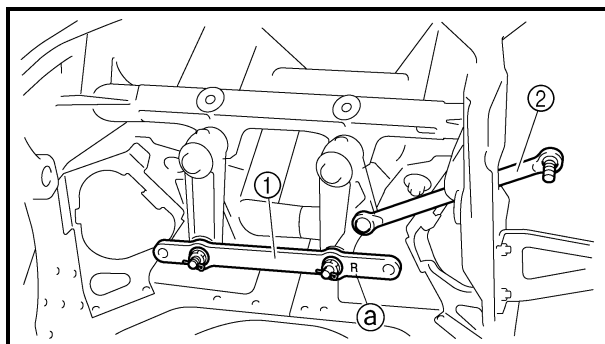
INSTALLATION

1. Install:

- Relay arms ①
- Bushings ②
- Washers ②
- Clips ③



Relay arm bolt:
67 Nm (6.7 m · kg, 48 ft · lb)



2. Install:

- Idler arm ①
- Bushings
- Washers
- Relay rod ②
- Cotter pins

CAUTION:

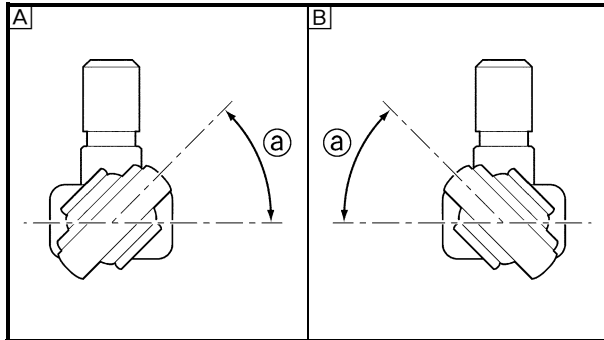
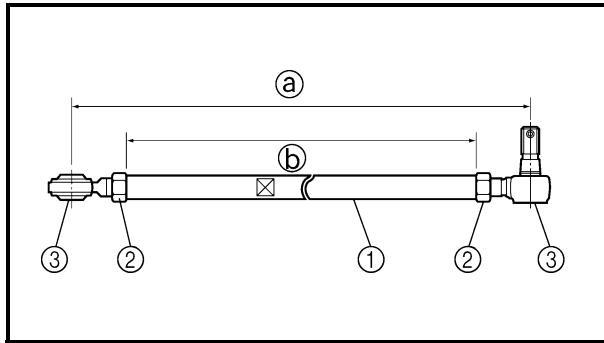
Always use new cotter pins.

NOTE:

Install the idler arm with the "R" mark (a) on the right side facing towards the rear of the machine.



Idler arm nut:
35 Nm (3.5 m · kg, 25 ft · lb)
Relay rod-idler arm nut:
30 Nm (3.0 m · kg, 22 ft · lb)



3. Install:

- Tie rod ①
- Locknuts ②
- Joints ③

Tie rod part number	Set length ①	Tie rod length ②
8ES-23830-00 (RS90/RS90R/ RSG90/RST90/ RST90TF)	424.0 mm (16.70 in)	361.0 mm (14.21 in)
8FW-23830-00 (RS90M)	374.0 mm (14.72 in)	311.0 mm (12.24 in)

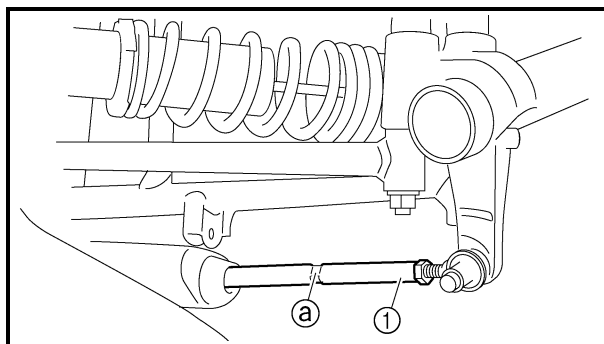
4. Check:

- Tie rod angle ①

**CAUTION:**

After tightening the inside and outside ball joint locknut ②, make sure the tie rod ① can be rotated freely through the ball joint travel. If not, loosen the locknut ② and re-position the ball joint so that the tie rod ① can be rotated freely. Tighten the locknut to specification.

- A Left side
 B Right side



5. Install:

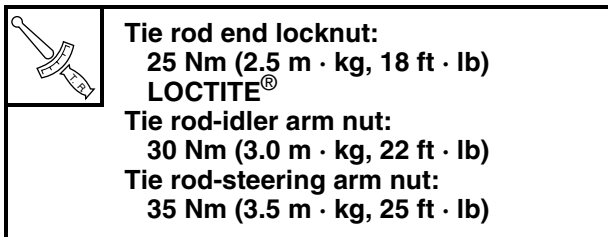
- Tie rods ①

NOTE:

- Make sure that the indentation ① on the tie rod faces out.
- The threads on both rod ends must be the same length.

CAUTION:

Always use new cotter pins.

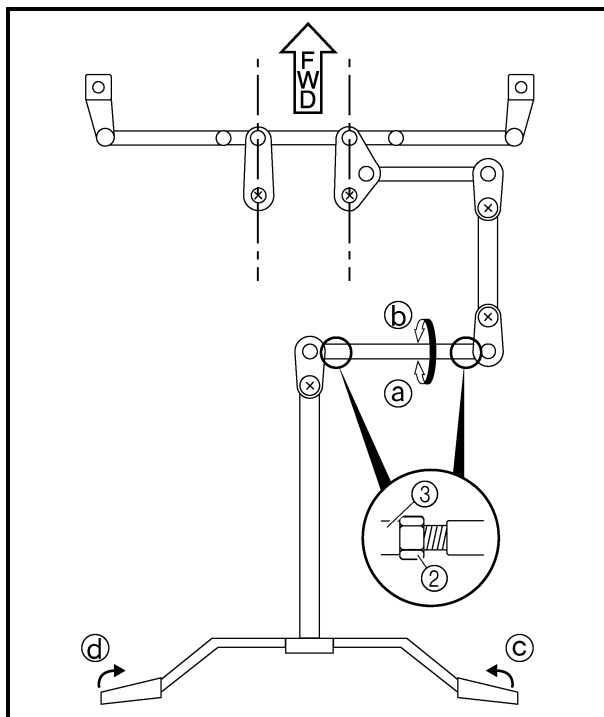
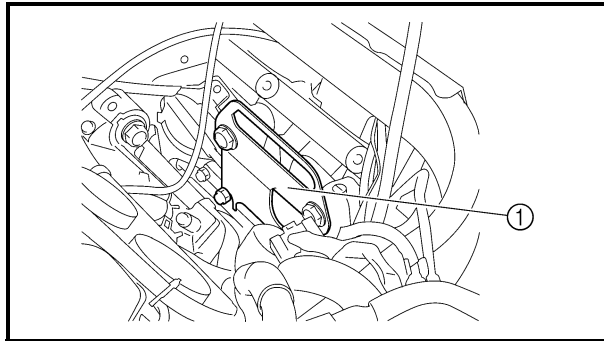
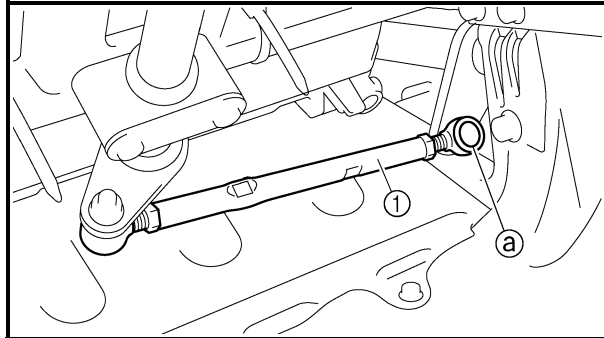
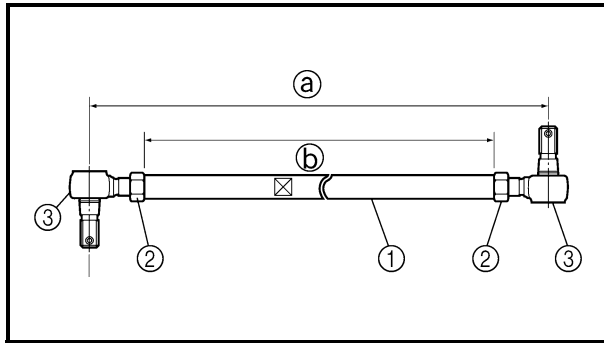


Tie rod end locknut:
 25 Nm (2.5 m · kg, 18 ft · lb)
 LOCTITE®

Tie rod-idler arm nut:
 30 Nm (3.0 m · kg, 22 ft · lb)

Tie rod-steering arm nut:
 35 Nm (3.5 m · kg, 25 ft · lb)

6. Bend the lock washer tab along a flat side of the bolt.



7. Install:

- Steering shaft ①
- Locknuts ②
- Joints ③

A Steering Shaft part number	B Set length a	C Shaft length b
8FA-23840-00	227.8 mm (8.9685 in)	169.8 mm (6.6850 in)

NOTE:

Install the silver-colored end of the joint ③ to the steering column 1.

CAUTION:

Always use new cotter pins.



Steering shaft nut:
35 Nm (3.5 m · kg, 25 ft · lb)

8. Adjust:

- Skis

Adjustment steps:

- Temporarily install the handlebar.
- Hold the handlebar straight and check that the skis and relay arms are at right angles to the handlebar.
- Install the steering linkage alignment plate ①.



Steering linkage alignment plate:
90890-01487, YS-01487

- Loosen the locknuts (steering shaft) ②.
- Hold the handlebar straight.
- Adjust the steering shaft ③ by turning so that the right and left relay arms point right under.
- Adjust each angle of right and left skis by turning the tie rod respectively.

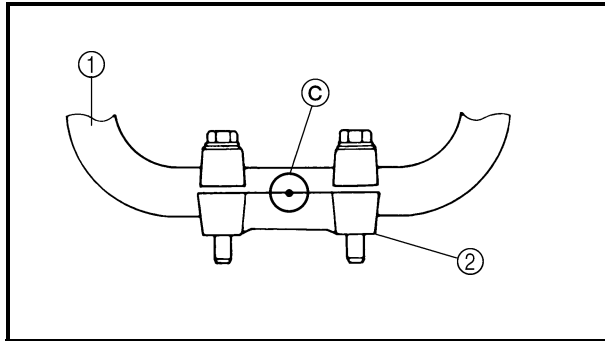
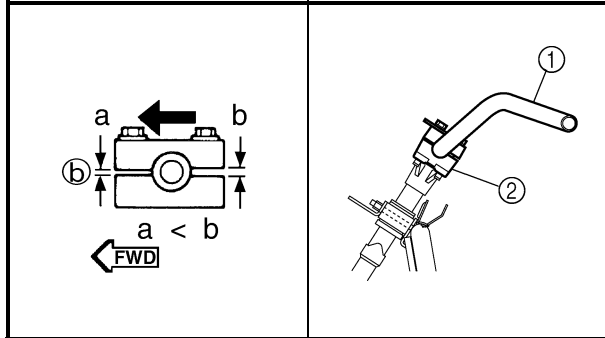
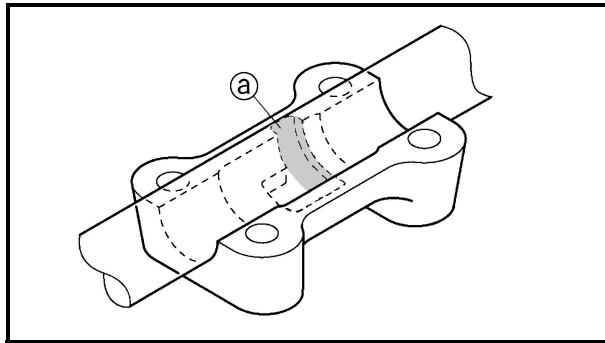
Turning the steering shaft in direction a	Turning the handlebar in direction c
Turning the steering shaft in direction b	Turning the handlebar in direction d

- Tighten the locknuts (steering shaft) ②.



Steering shaft locknut:
25 Nm (2.5 m · kg, 18 ft · lb)
LOCTITE®

- Remove the steering linkage alignment plate ①.



9. Install:

- Handlebar

CAUTION:

- Be sure the projection on the handlebar is not installed into the area (a) shown.
- Be sure the side of the holder with the small gap (b) faces forward.
- First tighten the bolts on the front side of the handlebar holder, and then tighten the bolts on the rear side.
- Center the match mark (c) on the handlebar (1) between the lower handlebar holder (2).



Handlebar holder bolt:
15 Nm (1.5 m · kg, 11 ft · lb)

10. Check:

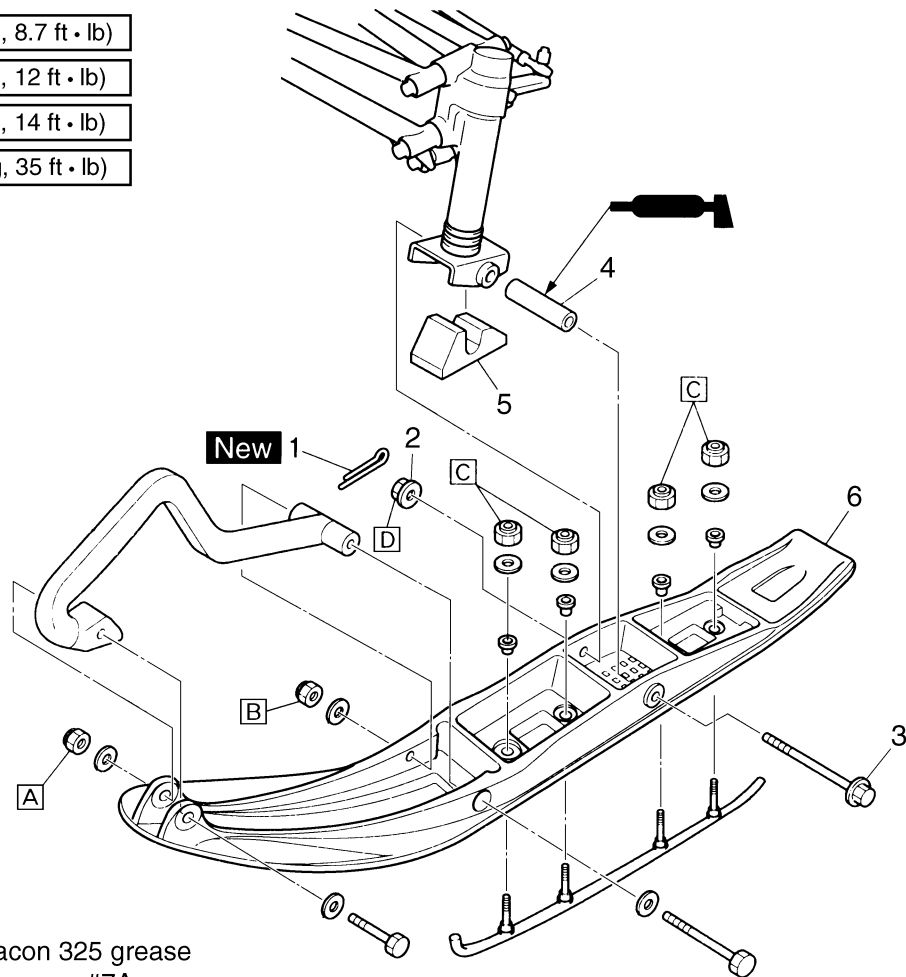
- Ski toe-out
Refer to "STEERING SYSTEM" in CHAPTER 2.



SKI

RS90/RS90R/RSG90 "USA/Canada"

- [A]: 11 Nm (1.1 m • kg, 8.7 ft • lb)
 [B]: 17 Nm (1.7 m • kg, 12 ft • lb)
 [C]: 19 Nm (1.9 m • kg, 14 ft • lb)
 [D]: 48 Nm (4.8 m • kg, 35 ft • lb)

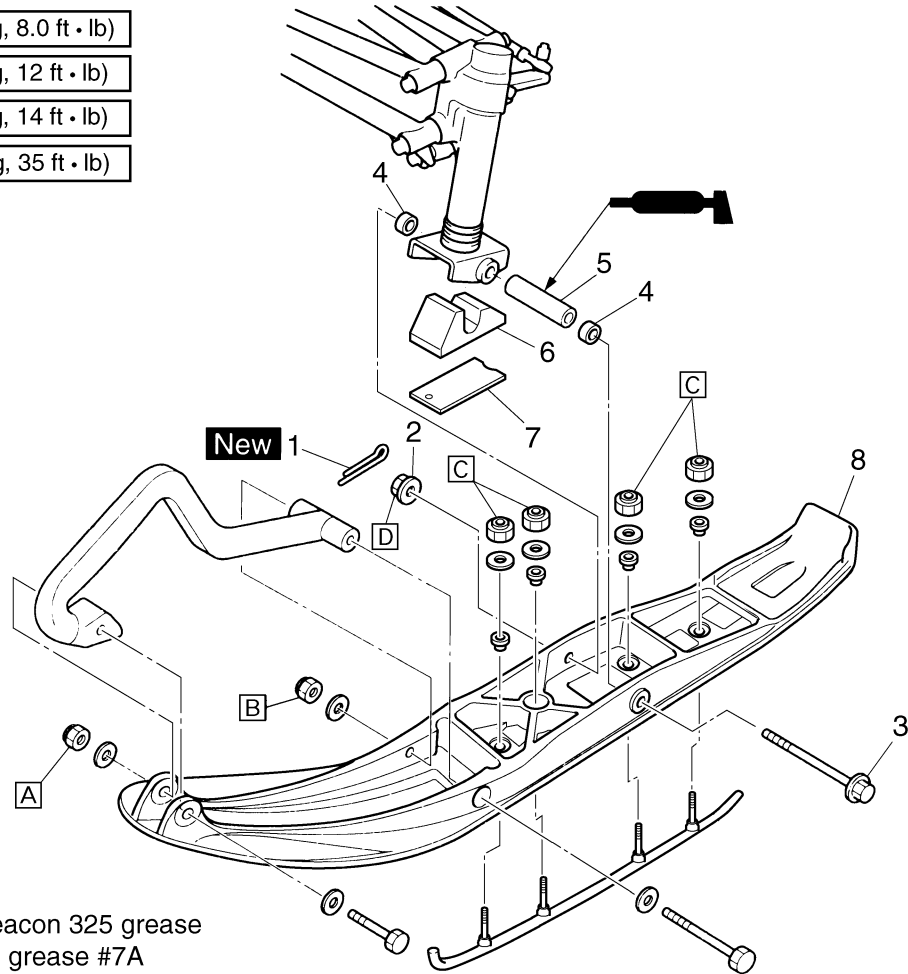


 : ① ESSO beacon 325 grease
or Aeroshell grease #7A

Order	Job name/Part name	Q'ty	Remarks
	Ski removal		Remove the parts in the order listed below.
1	Cotter pin	1	
2	Nut	1	
3	Bolt	1	
4	Collar	1	
5	Ski stopper	1	
6	Ski	1	
			For installation, reverse the removal procedure.


RSG90 “Europe”/RST90 “Europe”/RST90TF

- [A]: 11 Nm (1.1 m • kg, 8.0 ft • lb)
 [B]: 17 Nm (1.7 m • kg, 12 ft • lb)
 [C]: 19 Nm (1.9 m • kg, 14 ft • lb)
 [D]: 48 Nm (4.8 m • kg, 35 ft • lb)



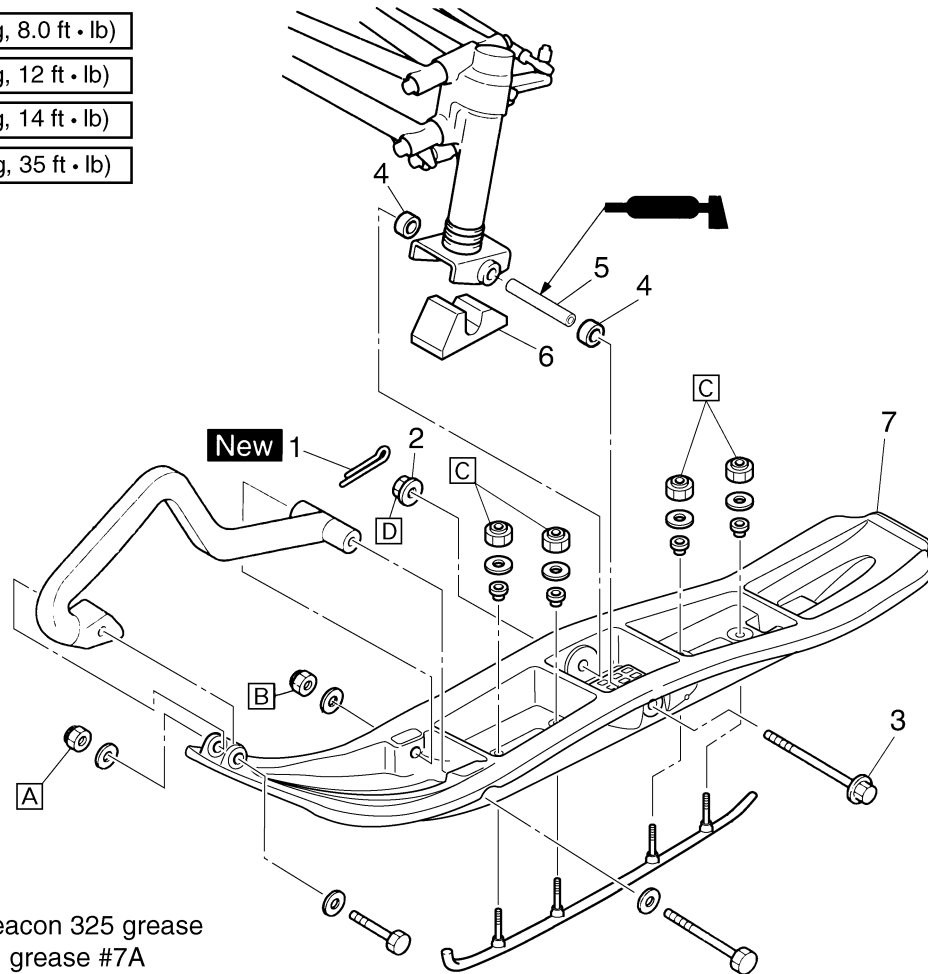
 : ① ESSO beacon 325 grease
or Aeroshell grease #7A

Order	Job name/Part name	Q'ty	Remarks
	Ski removal		Remove the parts in the order listed below.
1	Cotter pin	1	
2	Nut	1	
3	Bolt	1	
4	Collar	2	For RSG90 “Europe”/RST90 “Europe”/ RST90TF
5	Collar	1	
6	Ski stopper	1	
7	Ski stopper plate	1	For RSG90 “Europe”/RST90 “Europe”/ RST90TF
8	Ski	1	For installation, reverse the removal procedure.



RS90M

- [A]: 11 Nm (1.1 m • kg, 8.0 ft • lb)
 [B]: 17 Nm (1.7 m • kg, 12 ft • lb)
 [C]: 19 Nm (1.9 m • kg, 14 ft • lb)
 [D]: 48 Nm (4.8 m • kg, 35 ft • lb)



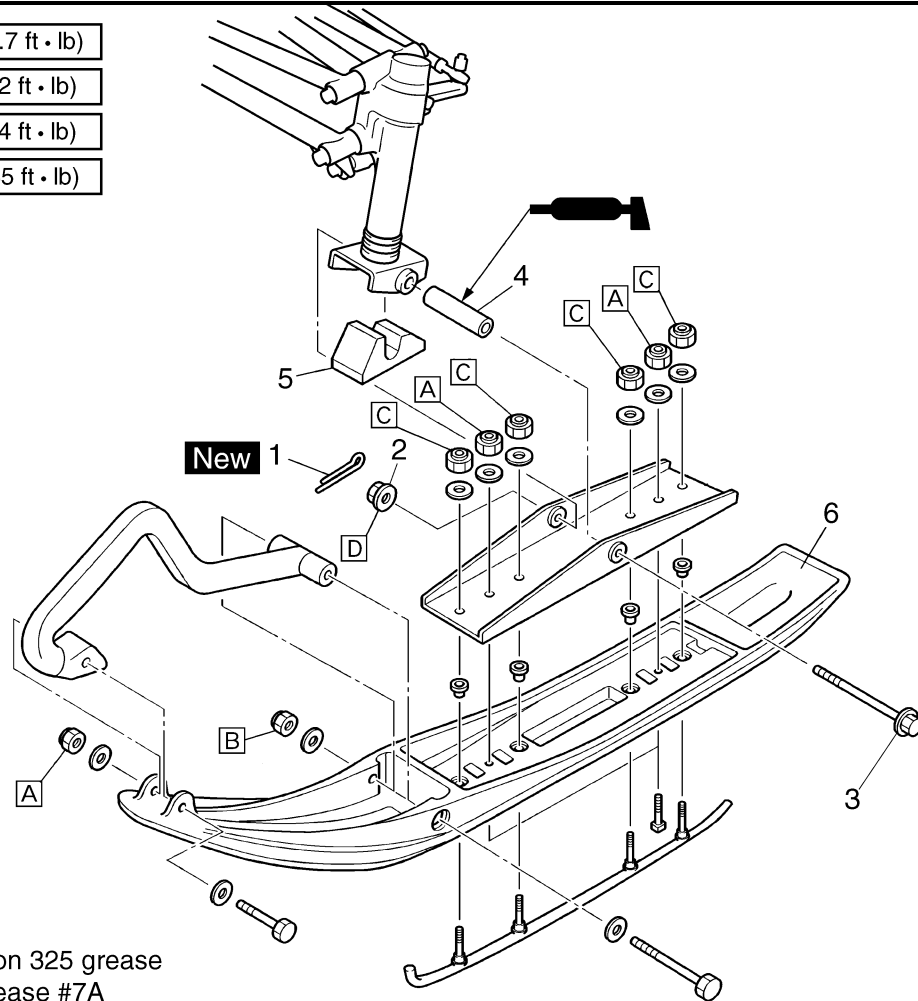
 : ① ESSO beacon 325 grease
 or Aeroshell grease #7A

Order	Job name/Part name	Q'ty	Remarks
	Ski removal		Remove the parts in the order listed below.
1	Cotter pin	1	
2	Nut	1	
3	Bolt	1	
4	Collar	2	For RS90M
5	Collar	1	
6	Ski stopper	1	
7	Ski	1	
			For installation, reverse the removal procedure.



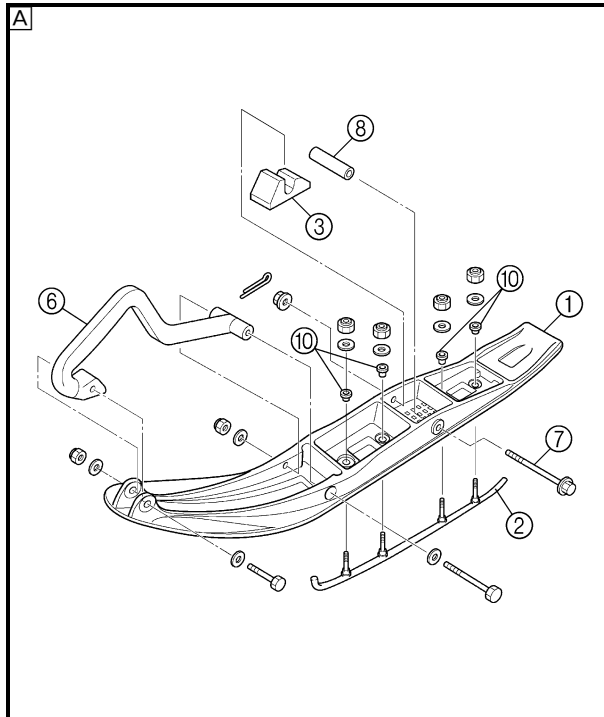
RST90 "USA/Canada"

- [A]: 11 Nm (1.1 m • kg, 8.7 ft • lb)
 [B]: 17 Nm (1.7 m • kg, 12 ft • lb)
 [C]: 19 Nm (1.9 m • kg, 14 ft • lb)
 [D]: 48 Nm (4.8 m • kg, 35 ft • lb)



 : ① ESSO beacon 325 grease
or Aeroshell grease #7A

Order	Job name/Part name	Q'ty	Remarks
	Ski removal		Remove the parts in the order listed below.
1	Cotter pin	1	
2	Nut	1	
3	Bolt	1	
4	Collar	1	
5	Ski stopper	1	
6	Ski	1	
			For installation, reverse the removal procedure.



INSPECTION

1. Inspect:

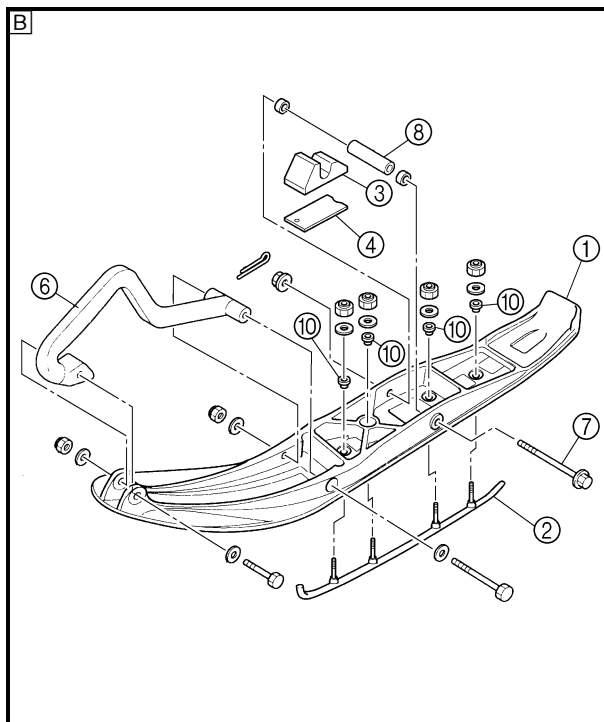
- Ski ①
- Ski runner ②
- Ski stopper ③
- Ski stopper plate ④ (RS90M/RST90 "Europe"/RST90TF)
- Ski column lower bracket ⑤ (RST90)
- Ski handle ⑥
- Wear/cracks/damage → Replace.
- Mounting bolt ⑦
- Collar ⑧
- Bolts ⑨ (RST90)
- Collars ⑩
- Wear/damage → Replace.

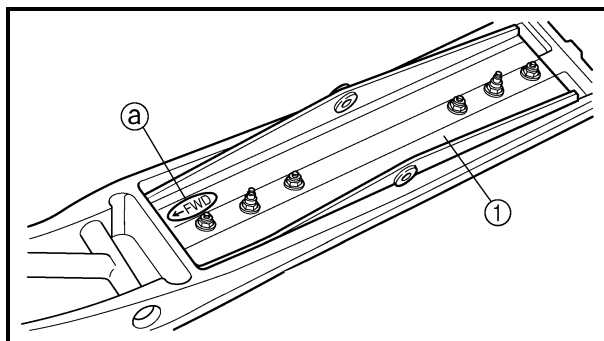
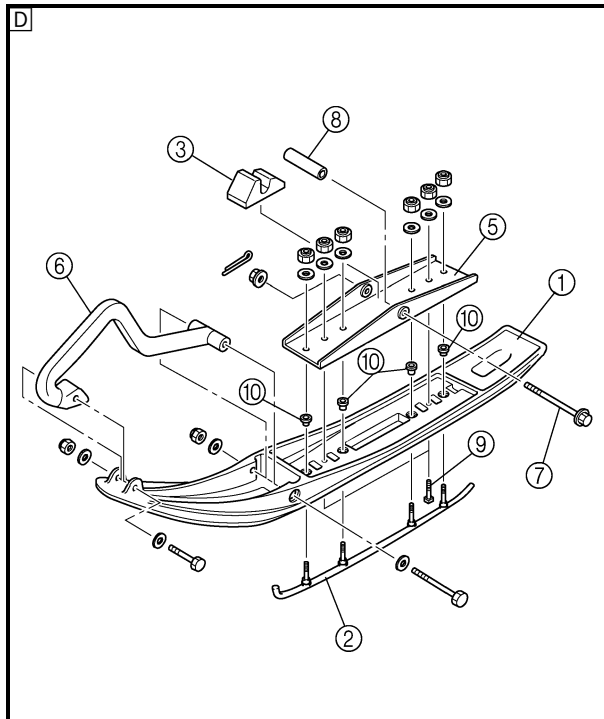
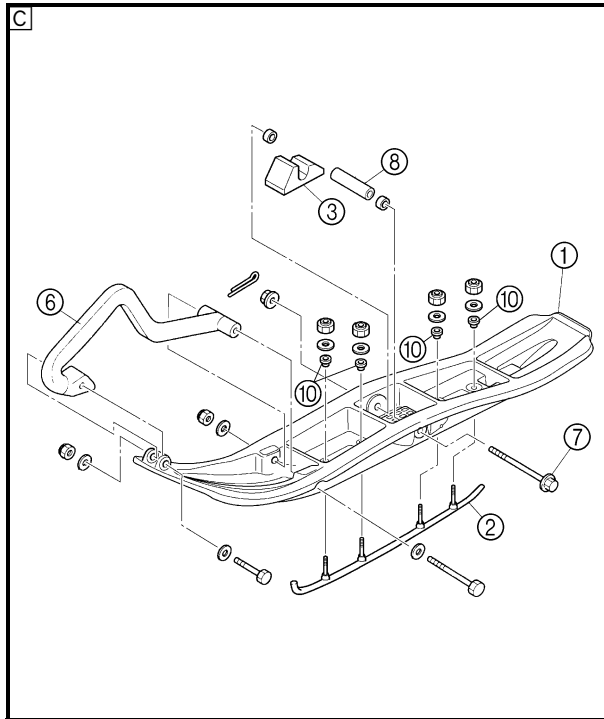
A RS90/RS90R/RSG90 "USA/Canada"

B RSG90 "Europe"/RST90 "Europe"/RST90TF

C RS90M

D RST90 "USA/Canada"





INSTALLATION (RST90 “USA/Canada”)

1. Install:

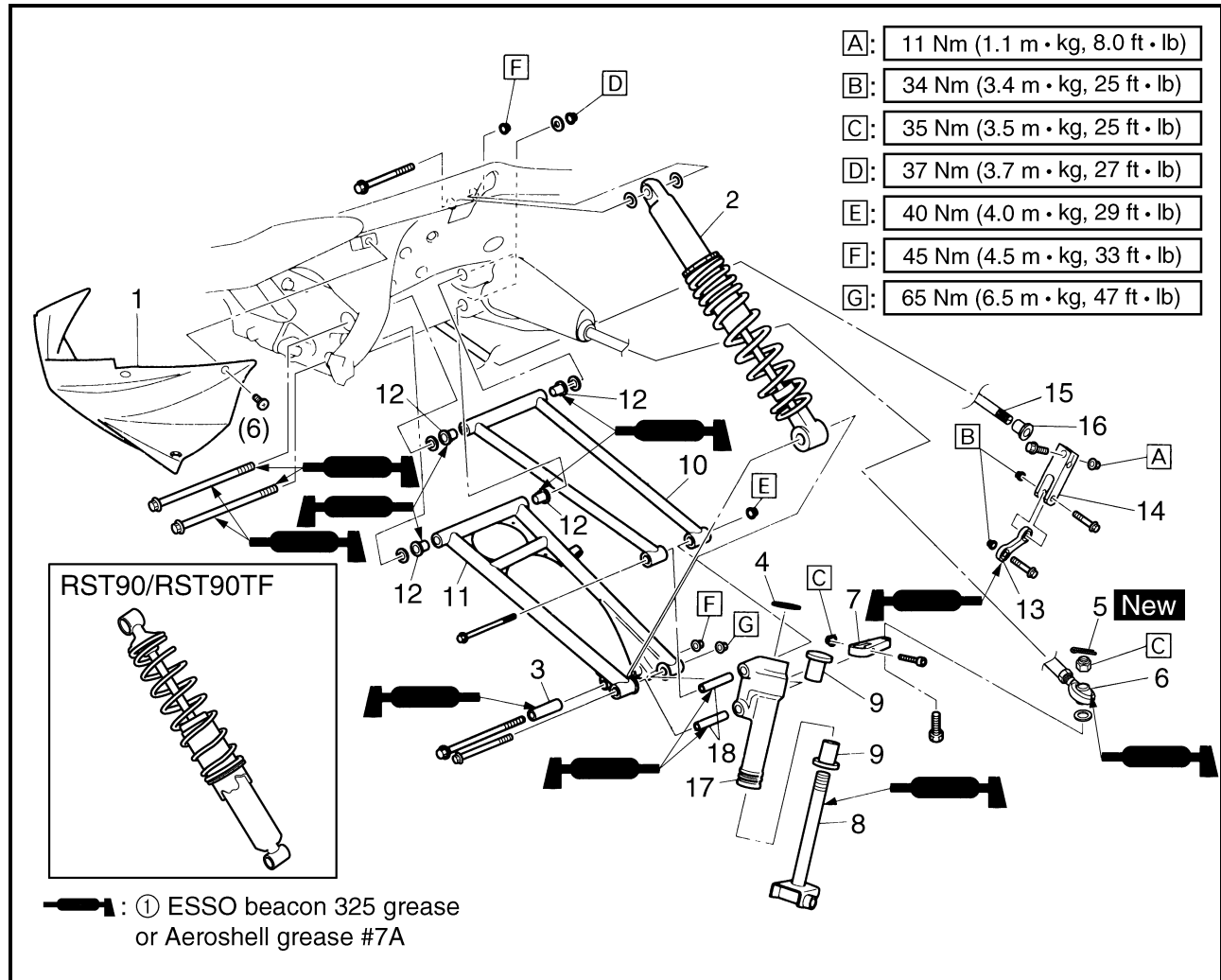
- Ski column lower bracket ①

NOTE:

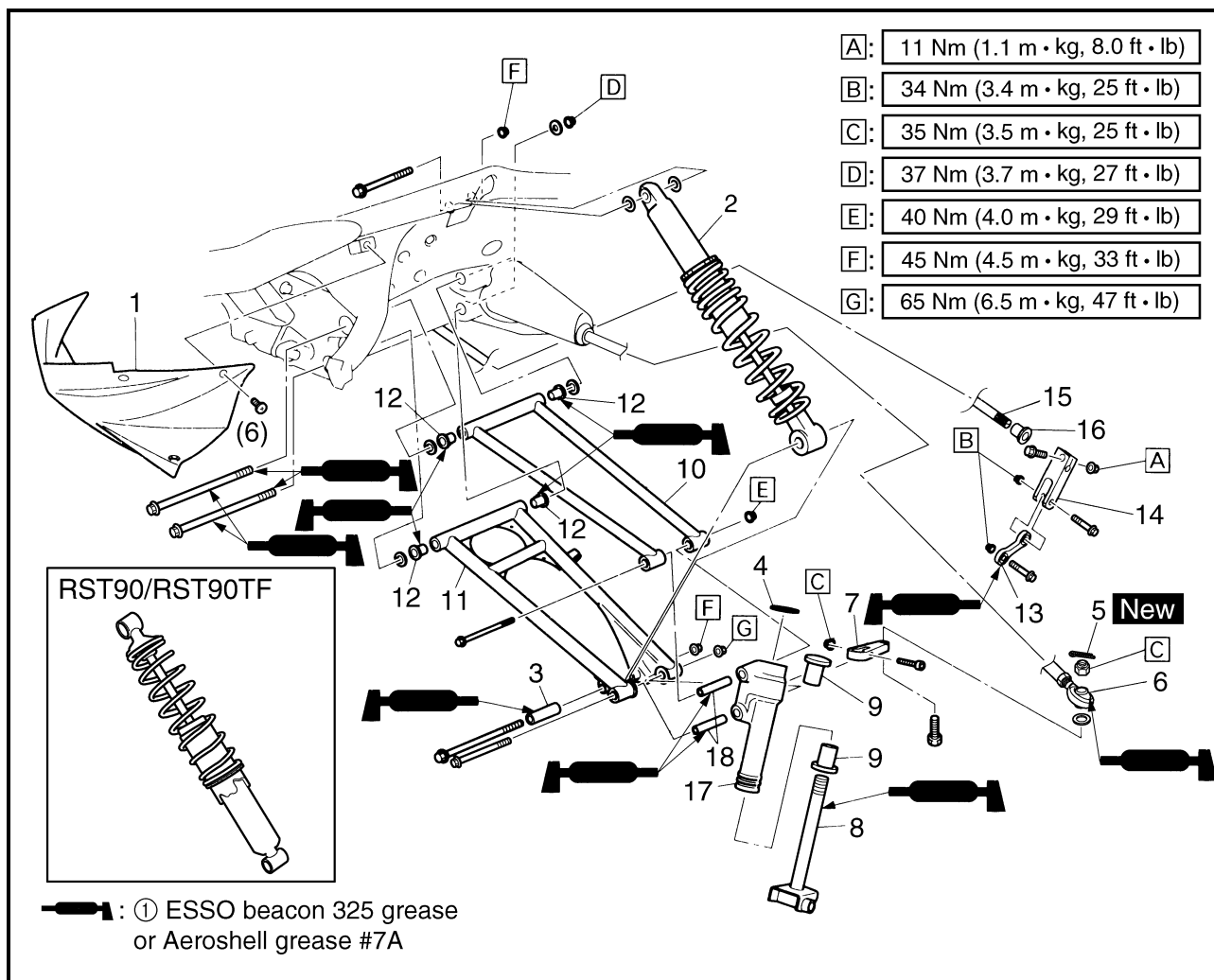
Be sure to install the ski column lower bracket with the arrow mark **a** pointing forward the tip of the ski.



FRONT SUSPENSION



Order	Job name/Part name	Q'ty	Remarks
	Front suspension removal		
	Ski		Remove the parts in the order listed below. Refer to "SKI".
1	Front cover	1	
2	Shock absorber	1	
3	Collar	1	
4	Cap	1	
5	Cotter pin	1	
6	Tie rod	1	Disconnect.
7	Steering arm	1	
8	Ski column	1	
9	Bushing	2	
10	Upper arm	1	
11	Lower arm	1	
12	Bushing	4	
13	Connecting rod	1	
14	Stabilizer arm	1	



Order	Job name/Part name	Q'ty	Remarks
15	Stabilizer	1	
16	Bushing	1	
17	Steering knuckle	1	
18	Collar	2	
			For installation, reverse the removal procedure.



HANDLING NOTES

⚠ WARNING

RS90/RS90R/RSG90/RS90M

This shock absorber contains highly compressed nitrogen gas. Before handling the shock absorber read and make sure that you understand the following information. The manufacturer cannot be held responsible for property damage or personal injury that may result from improper handling.

- Do not tamper or attempt to open the gas chamber.
- Do not subject the shock absorber to flames or any other source of high heat. This may cause the unit to explode due to excessive gas pressure.
- Do not deform or damage the gas chamber in any way. Gas chamber damage will result in poor damping performance.

INSPECTION

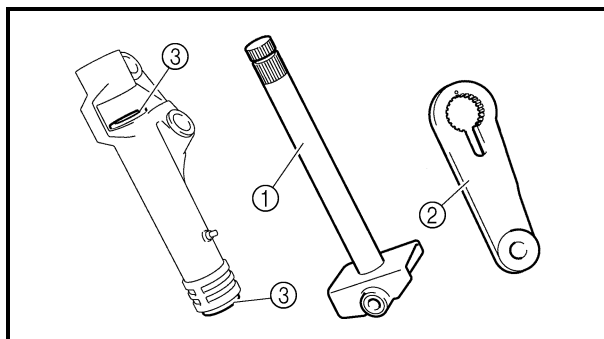
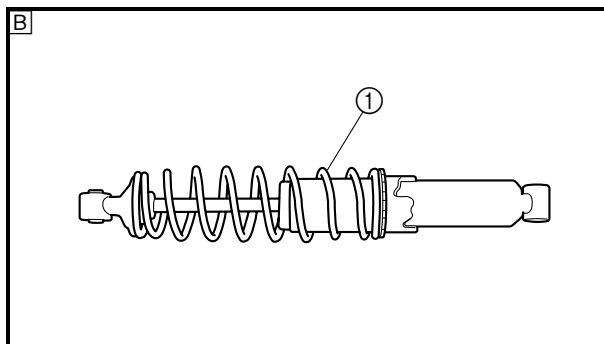
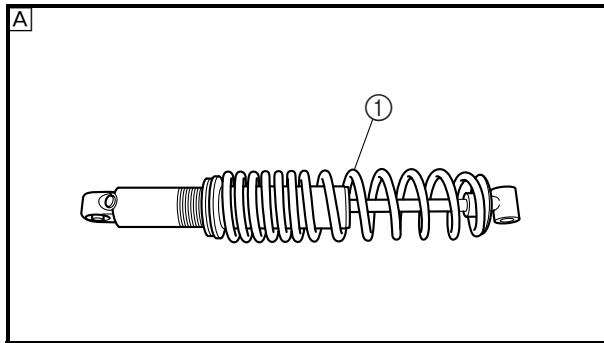
1. Inspect:

- Shock absorber ①

Oil (gas) leaks/bends/damage → Replace.

A RS90/RS90R/RSG90/RS90M

B RST90/RST90TF

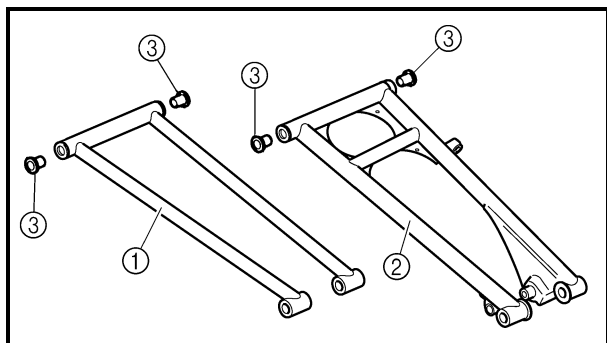


2. Inspect:

- Ski column ①
- Steering arm ②
- Bushing ③

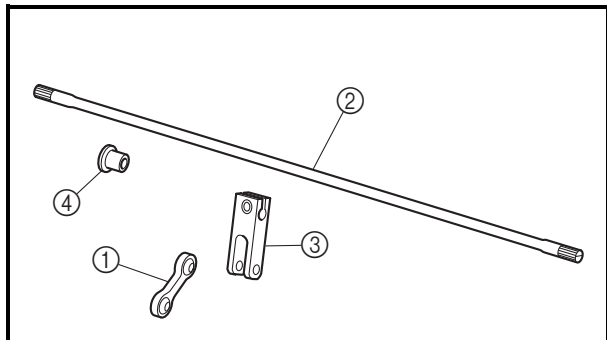
Cracks/bends/damage → Replace.

Wear/scratches/damage → Replace.



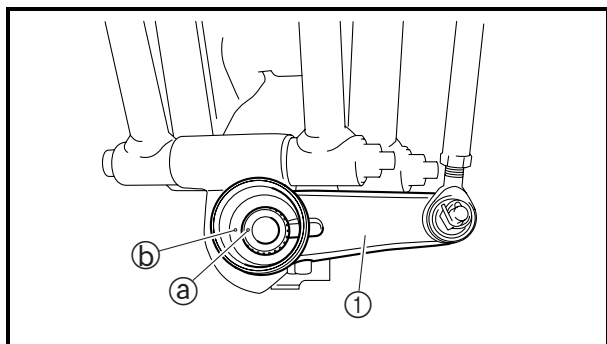
3. Inspect:

- Upper arms ①
- Lower arms ②
- Cracks/bends/damage → Replace.
- Bushings ③
- Wear/scratches/damage → Replace.



4. Inspect:

- Connecting rods ①
- Stabilizer ②
- Stabilizer arms ③
- Cracks/bends/damage → Replace.
- Bushings ④
- Wear/scratches/damage → Replace.



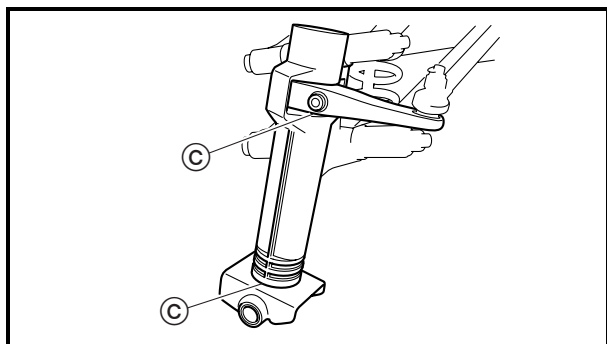
INSTALLATION

1. Install:

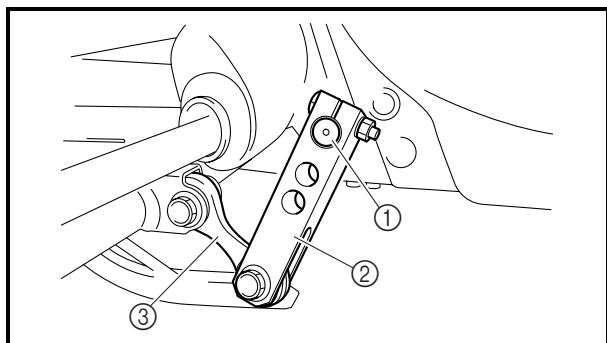
- Steering arm ①

NOTE:

- Align the punch mark (a) on the ski column with the punch mark (b) on the steering arm.
- Install the steering arm so that there are no gaps between the bushings and the ski column in the indicated locations (c).



Steering arm nut:
35 Nm (3.5 m · kg, 25 ft · lb)



2. Install:

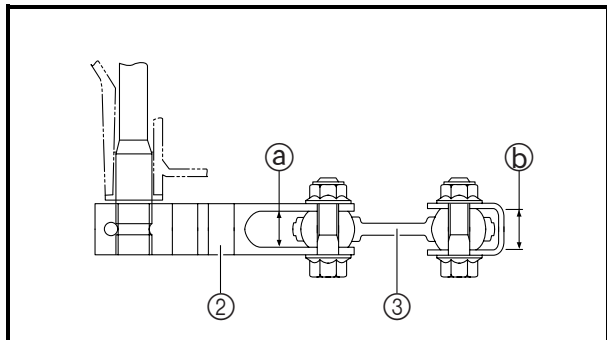
- Stabilizer ①
- Stabilizer arm ②
- Connecting rod ③

NOTE:

- The installation angles of the left and right stabilizer arms should be within 6° of each other.
- Install the connecting rod end with the width ② to the stabilizer arm.

②: 14 mm (0.55 in)

③: 16 mm (0.63 in)

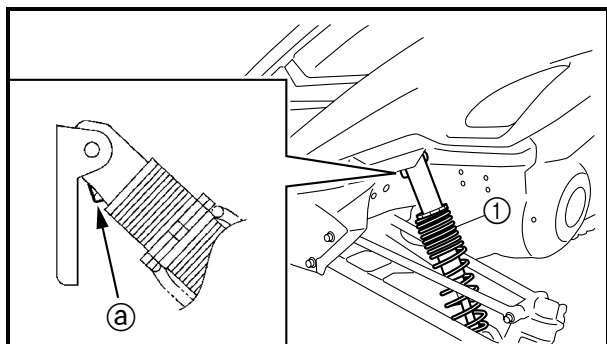


Stabilizer arm nut:

11 Nm (1.1 m · kg, 8.0 ft · lb)

Connecting rod nut:

34 Nm (3.4 m · kg, 25 ft · lb)



3. Install:

- Shock absorber ① (RS90/RS90R/RSG90/RS90M)

NOTE:

Install the shock absorber with the charging valve ② facing inward.

**Ski alignment****NOTE:**

Be sure to verify the spring preload setting before adjusting the ski toe-out since this adjustments may affect the ski toe-out setting.

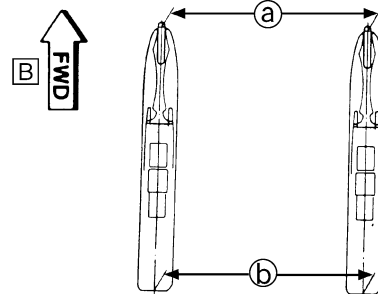
Point the skis straight forward and measure the amount of ski toe-out.

[A] Ski toe-out:

0 ~ 15 mm (0 ~ 0.59 in)

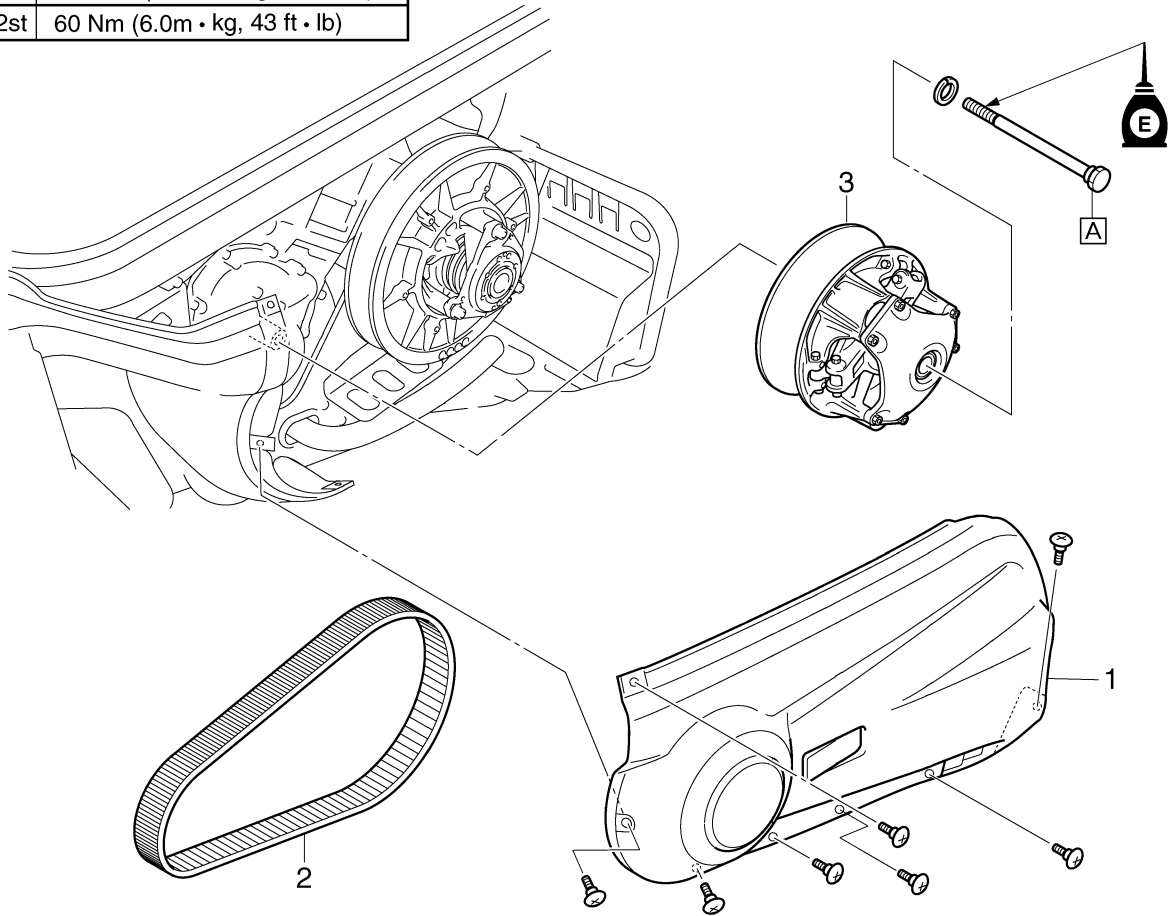
① – ② = Toe-out

Refer to “STEERING SYSTEM” in CHAPTER 2.



POWER TRAIN**PRIMARY SHEAVE AND DRIVE V-BELT**

A:	1st	120 Nm (12.0 m • kg, 85 ft • lb)
	2st	60 Nm (6.0m • kg, 43 ft • lb)

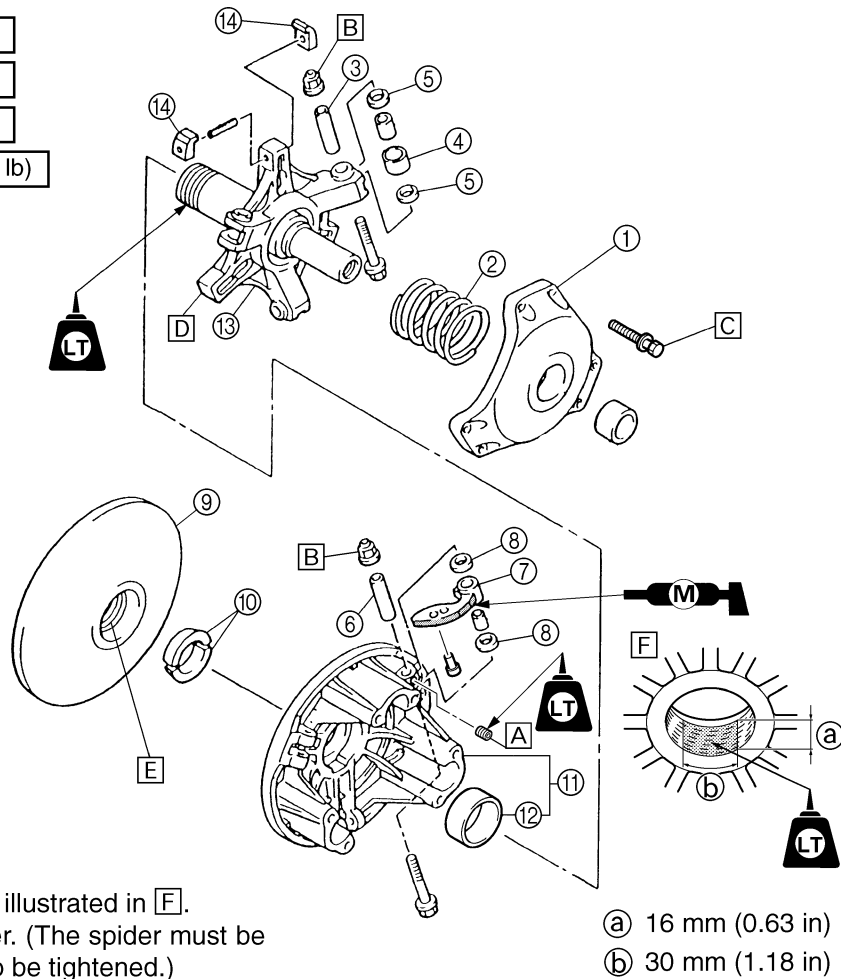


Order	Job name/Part name	Q'ty	Remarks
	Primary sheave removal		
1	Left side cover	1	Remove the parts in the order listed below. For installation, reverse the removal procedure.
2	V-belt	1	
3	Primary sheave assembly	1	

PRIMARY SHEAVE AND DRIVE V-BELT

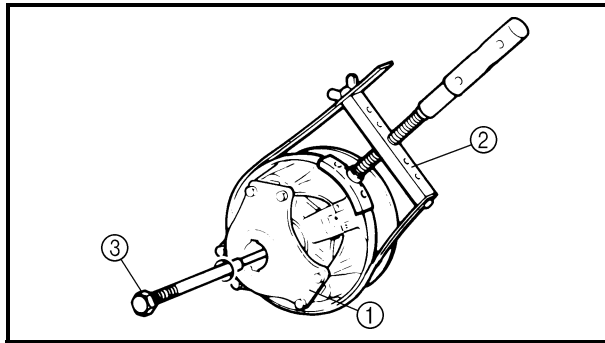


- [A]: 4 Nm (0.4 m • kg, 2.9 ft • lb)
 [B]: 6 Nm (0.6 m • kg, 4.3 ft • lb)
 [C]: 14 Nm (1.4 m • kg, 10 ft • lb)
 [D]: 200 Nm (20.0 m • kg, 145 ft • lb)



[E] : Clean the threads.
 Apply LOCTITE® #648 as illustrated in [F].
 And then tighten the spider. (The spider must be
 turned counterclockwise to be tightened.)

Order	Job name/Part name	Q'ty	Remarks
	Primary sheave disassembly		Remove the parts in the order listed below.
①	Primary sheave cap	1	
②	Primary sheave spring	1	
③	Collar	3	
④	Roller	3	
⑤	Washer	6	
⑥	Collar	3	
⑦	Weight	3	
⑧	Washer	6	
⑨	Fixed sheave	1	
⑩	Stopper	2	
⑪	Sliding sheave	1	
⑫	Bushing	1	
⑬	Spider	1	Left-handed thread.
⑭	Slider	6	For assembly, reverse the disassembly procedure.



REMOVAL

1. Remove:

- Primary sheave assembly ①

NOTE:

Use the primary sheave holder ② and primary sheave puller ③.



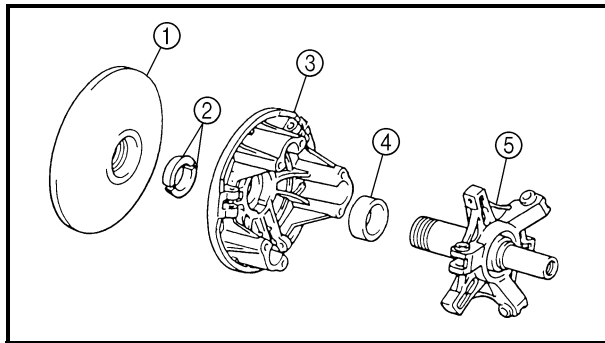
Sheave holder:

90890-01701, YS-01880-A

Primary sheave puller:

90890-01898,

YS-01881-A, YS-01881-1



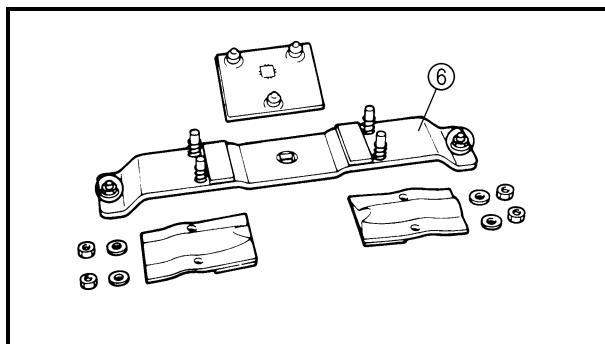
DISASSEMBLY

1. Remove:

- Fixed sheave ①
- Stopper ②
- Sliding sheave ③
- Bushing ④
- Spider ⑤

Removal steps:

- Immerse the primary sheave assembly in 80 ~ 100 °C (176 ~ 212 °F) water for several minutes.
- Attach the lower piece of the clutch spider separator ⑥ onto a rigid table using suitable mounting bolts.
- Then, install the clutch separator adapter ⑦ onto the separator.

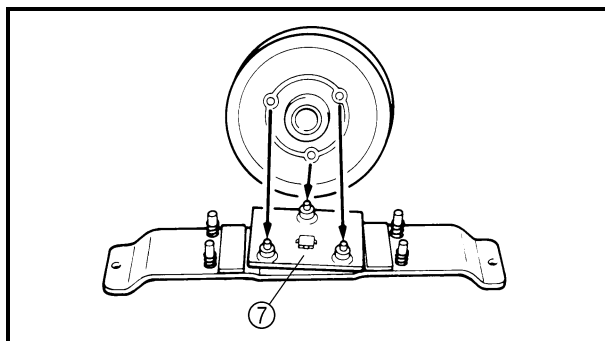


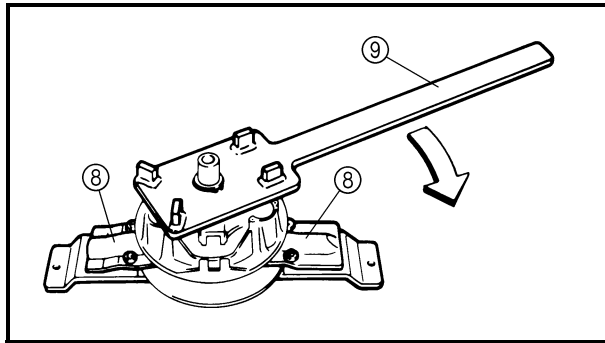
Clutch spider separator:

90890-01711, YS-28890-C

Clutch separator adapter:

90890-01740, YS-34480





- Fit the primary sheave assembly onto the adapter and secure the supporting plates (8).

NOTE:

Securely fit the projections on the adapter into the fixed sheave holes.

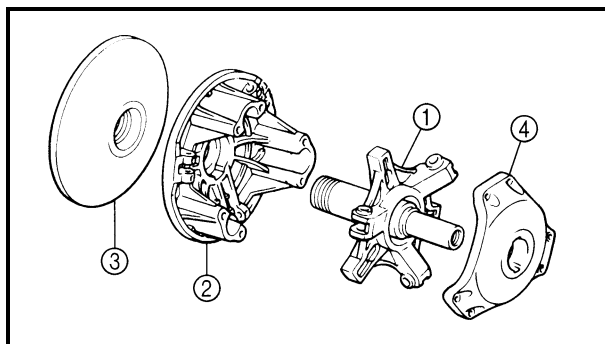
- Set the bar wrench (9) onto the spider and turn the special tool clockwise to loosen the spider.



Clutch spider separator (bar wrench):
90890-01711, YS-28890-C

CAUTION:

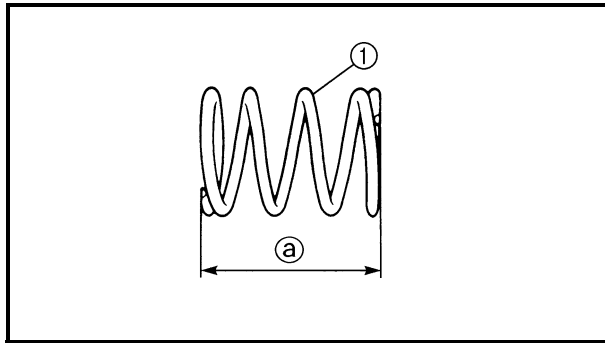
- The spider has a left-handed thread.
- Since a high torque is required to loosen the spider, make sure that the spider, fixed sheave and special tool are well secured. Loosen the spider carefully to prevent cracks and damage to the sheaves and spider.
- Remove the fixed sheave, fixed sheave stopper, and sliding sheave from the spider.



INSPECTION

1. Inspect:

- Spider (1)
 - Sliding sheave (2)
 - Fixed sheave (3)
 - Primary sheave cap (4)
- Cracks/damage → Replace.



2. Inspect:

- Primary sheave spring ①
Cracks/damage → Replace.

3. Measure:

- Primary sheave spring (standard) free length
①
Out of specification → Replace the primary sheave spring.



Primary sheave spring (standard) free length:

RS90/RS90R:

87.4 mm (3.44 in)

RSG90:

93.4 mm (3.68 in)

RS90M:

89.8 mm (3.54 in)

RST90 "USA/Canada":

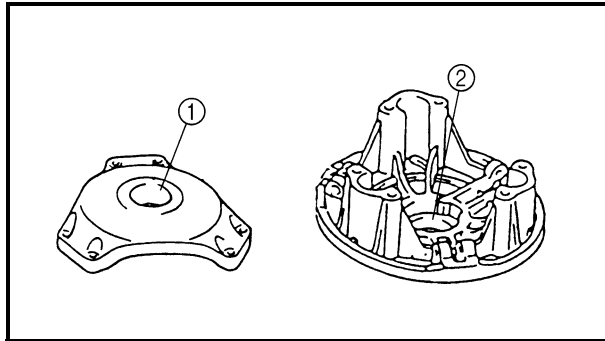
89.0 mm (3.50 in)

RST90 "Europe"/RST90TF:

89.4 mm (3.52 in)

NOTE:

When changing the primary sheave springs, refer to "GEAR SELECTION" in CHAPTER 2.

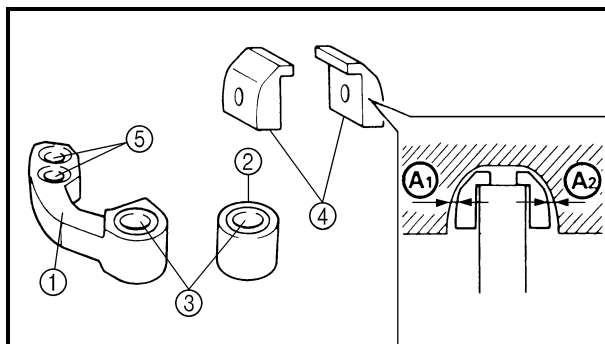


4. Inspect:

- Primary sheave cap bush ①
- Sliding sheave bush ②
Cracks/damage → Replace.



Clutch bushing press: YS-42424

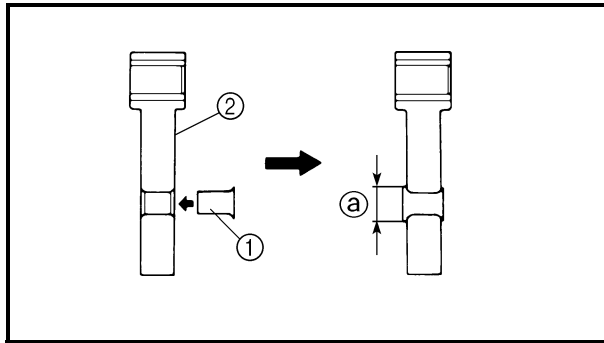


5. Inspect:

- Weight ①
- Roller ②
- Bushing ③
- Slider ④
- Rivet ⑤
- Collar ⑥
Wear/scratches/damage → Replace.

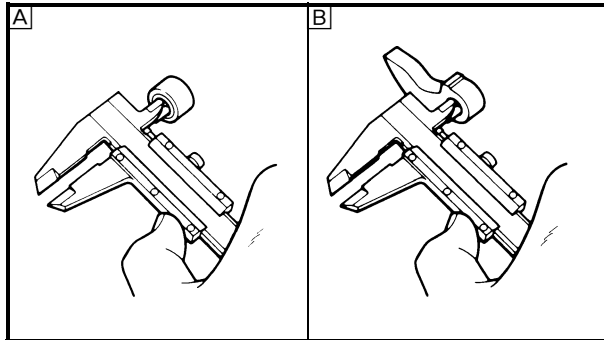


Slider inside clearance ① + ② :
Min. 0 mm (0 in)
Max. 0.3 mm (0.0118 in)



Rivet replacement steps:

- Remove old rivet with the appropriate drill.
- Insert the rivet ① from the ID mark ② side.
- Press or peen the rivet head so that the diameter (a) of the rivet head measures 8.2 mm (0.32 in) or larger.



6. Measure:

- Bushing inside diameter
Out of specification → Replace as a set.



Bushing inside diameter:

Roller [A]:

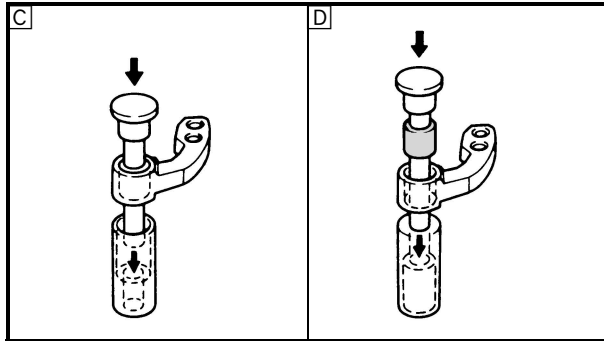
New: 9.077 mm (0.357 in)

Wear limit: 9.3 mm (0.366 in)

Weight [B]:

New: 8.077 mm (0.318 in)

Wear limit: 8.3 mm (0.327 in)



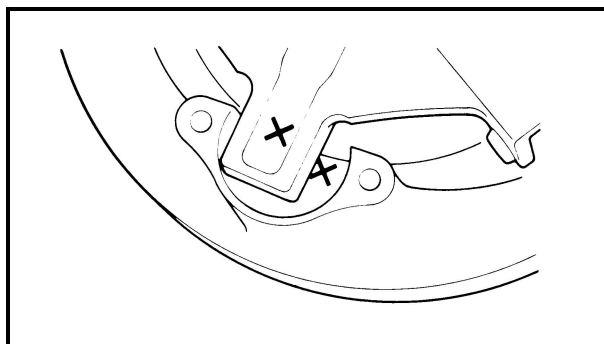
NOTE:

When replacing the weight and roller bushings, use the YXR clutch bushing jig kit.



YXR clutch bushing jig kit: YS-39752

- ☐ C Removing
- ☐ D Installing



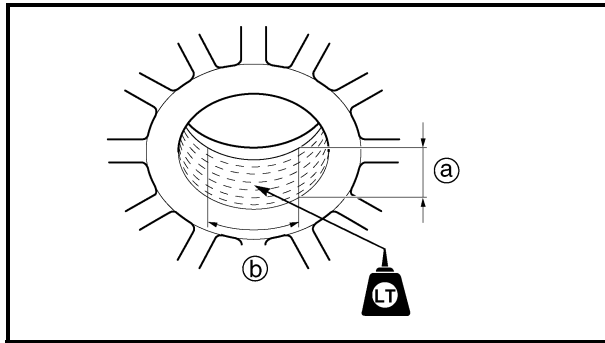
ASSEMBLY

1. Install:

- Sliding sheave
(onto the spider)

NOTE:

Be sure the sliding sheave match mark (X) is aligned with the spider match mark (X).



2. Install:
- Fixed sheave
(onto the spider)

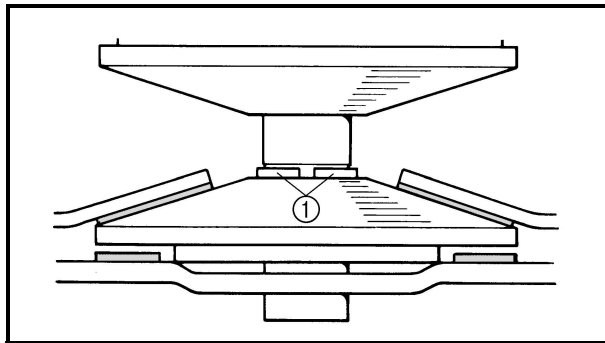
NOTE:

- Clean the threads.
- Apply LOCTITE® #648 to the fixed sheave as shown.

CAUTION:

LOCTITE® should be applied only to the specified area. Never apply it to the bushings and other areas.

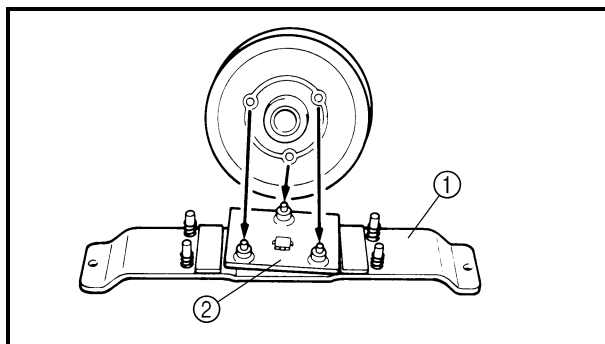
- Ⓐ 16 mm (0.63 in)
- Ⓑ 30 mm (1.18 in)



3. Install:
- Fixed sheave stoppers ①

NOTE:

Stopper tapered portion should face fixed sheave.



4. Tighten:
- Spider

Tightening steps:

- Finger-tighten the spider until it is stopped by the fixed sheave stopper.
- Hold the fixed sheave with the clutch spider separator ①.

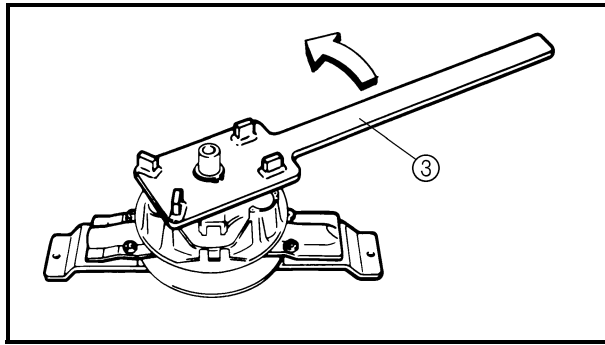


**Clutch spider separator:
90890-01711, YS-28890-C**

NOTE:

Securely fit the projections on the clutch separator adapter ② into the fixed sheave holes.

PRIMARY SHEAVE AND DRIVE V-BELT



- Tighten the spider to specification using the bar wrench ③.



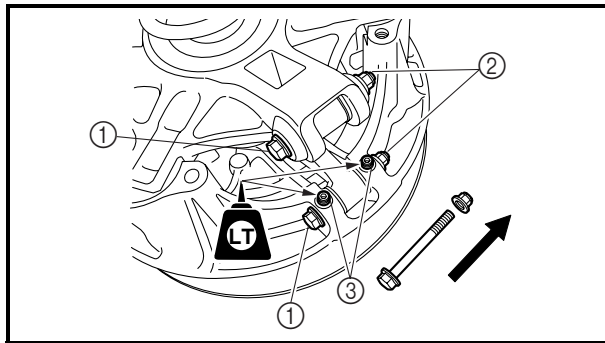
Spider:
200 Nm (20.0 m · kg, 145 ft · lb)

CAUTION:

The spider has a left-handed thread.

⚠ WARNING

- Do not operate the primary sheave until the LOCTITE® has dried completely. Wait 24 hours before operating the primary sheave.
- Since a high torque is required to tighten the spider, make sure the spider, fixed sheave, and special tool are well secured. Tighten the spider carefully to prevent cracks and damage to the sheaves and spider.



5. Install:

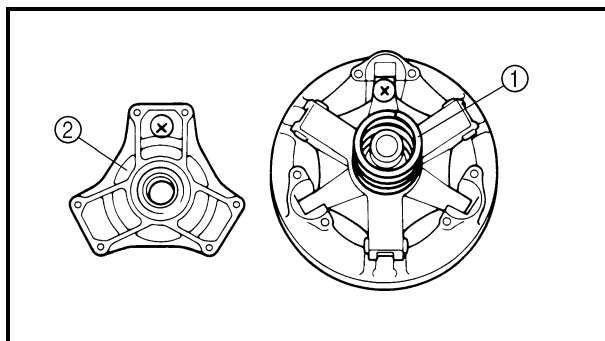
- Weight
- Bolts ①
- Nuts ②
- Set bolt ③



Nut:
6 Nm (0.6 m · kg, 4.3 ft · lb)
Set bolt:
4 Nm (0.4 m · kg, 2.9 ft · lb)
LOCTITE®

NOTE:

To maintain the primary sheave balance, the bolts ① must be installed with their threaded portions pointing in a counterclockwise direction, as illustrated.



6. Install:

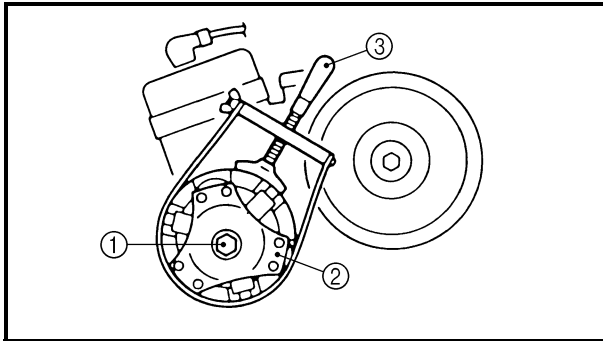
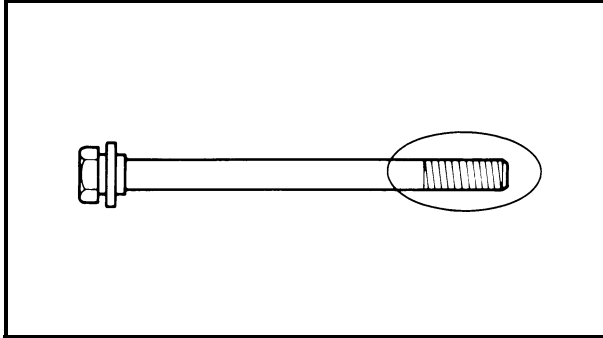
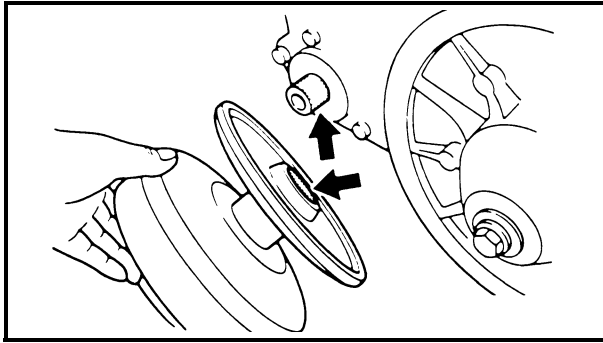
- Primary sheave spring ①
- Primary sheave cap ②

NOTE:

Be sure the sheave cap match mark (X) is aligned with the spider match mark (X).



Primary sheave cap bolt:
14 Nm (1.4 m · kg, 10 ft · lb)



INSTALLATION

1. Install:
 - Primary sheave assembly

CAUTION:

Be sure to remove any oil or grease from the tapered portion of the crankshaft and spider using a cloth dampened with thinner.

2. Apply:
 - Engine oil (to threads of primary sheave bolt)

3. Tighten:
 - Primary sheave bolt ①

Tightening steps:

- Hold the primary sheave ② using the primary sheave holder ③ and tighten the primary sheave bolt to specification.



Sheave holder:
90890-01701, YS-01880-A



Primary sheave bolt:
1st:
120 Nm (12.0 m · kg, 85 ft · lb)

- Loosen the primary sheave bolt completely.
- Retighten the primary sheave bolt to specification.

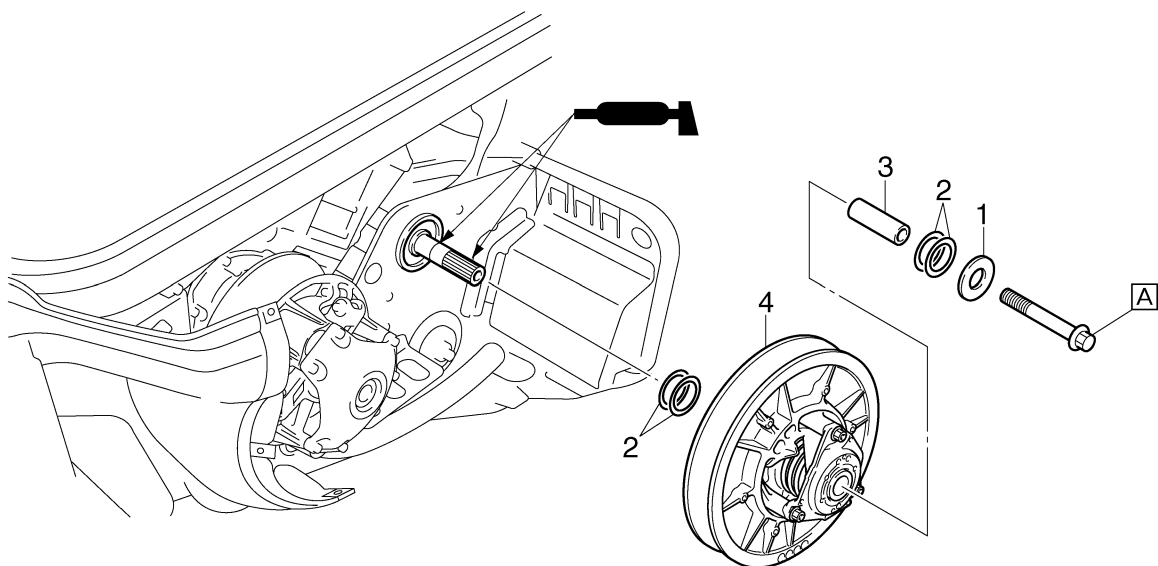


Primary sheave bolt:
2nd:
60 Nm (6.0 m · kg, 43 ft · lb)

4. Adjust:
 - V-belt position
Refer to “DRIVE V-BELT” in CHAPTER 2.
 - Sheave offset
 - Secondary sheave free play (clearance)
Refer to “SHEAVE OFFSET ADJUSTMENT” in CHAPTER 2.

SECONDARY SHEAVE

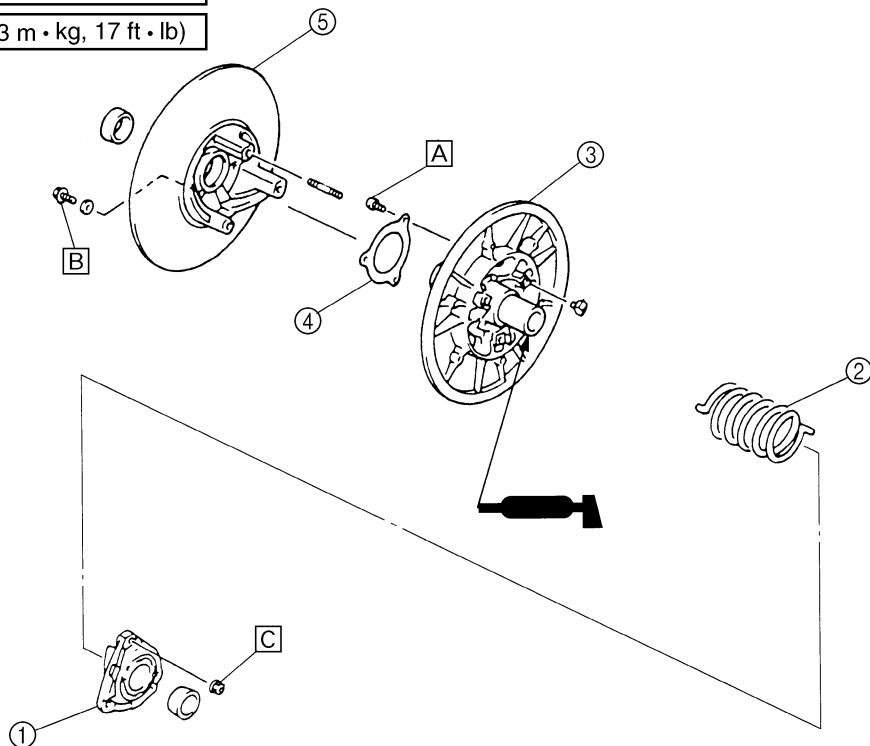
[A]: 64 Nm (6.4 m • kg, 46 ft • lb)



 : ① ESSO beacon 325 grease
or Aeroshell grease #7A

Order	Job name/Part name	Q'ty	Remarks
	Secondary sheave removal		Remove the parts in the order listed below.
	Left side cover		Refer to "PRIMARY SHEAVE AND DRIVE V-BELT".
	V-belt		
1	Washer	1	Refer to "SHEAVE OFFSET ADJUSTMENT" in CHAPTER 2.
2	Shim	—	
3	Collar	1	For installation, reverse the removal procedure.
4	Secondary sheave assembly	1	

- [A]: 7 Nm (0.7 m • kg, 5.1 ft • lb)
- [B]: 10 Nm (1.0 m • kg, 7.2 ft • lb)
- [C]: 23 Nm (2.3 m • kg, 17 ft • lb)



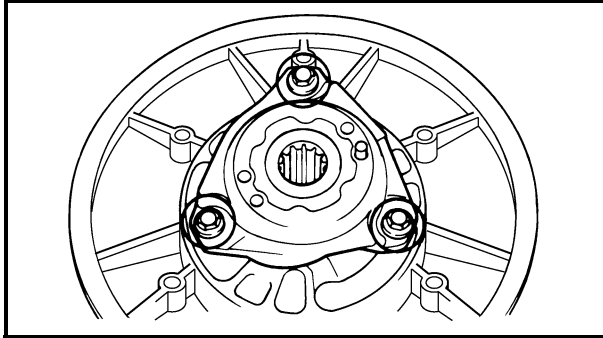
 : ① ESSO beacon 325 grease
or Aeroshell grease #7A

Order	Job name/Part name	Q'ty	Remarks
	Secondary sheave disassembly		Remove the parts in the order listed below.
①	Spring seat	1	
②	Secondary sheave spring	1	
③	Fixed sheave	1	
④	Stopper	1	
⑤	Sliding sheave	1	
			For assembly, reverse the disassembly procedure.

DISASSEMBLY

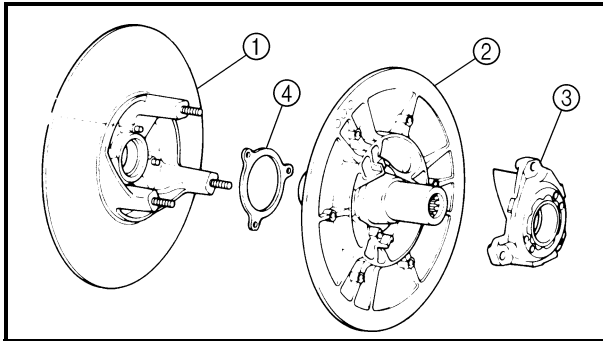
WARNING

- Use extreme **CAUTION** when disassembling the secondary sheave since serious injury can occur due to the sudden release of spring tension. Use the sheave compressor to contain the spring tension before removing the spring seat nuts.
- Do not attempt this procedure unless you have the proper tools and understand the instructions thoroughly.



1. Remove:

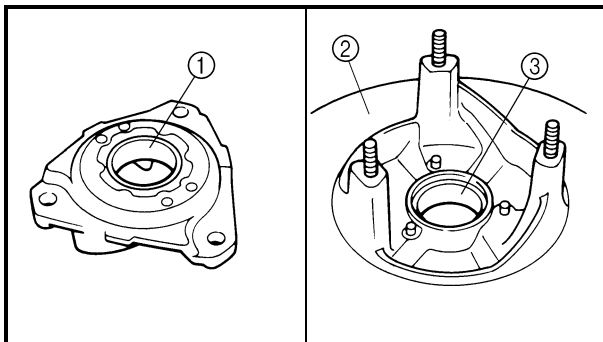
- Spring seat nuts



INSPECTION

1. Inspect:

- Sliding sheave ①
- Fixed sheave ②
- Spring seat ③
Cracks/damage → Replace.
- Stopper ④
Wear/damage → Replace.



2. Inspect:

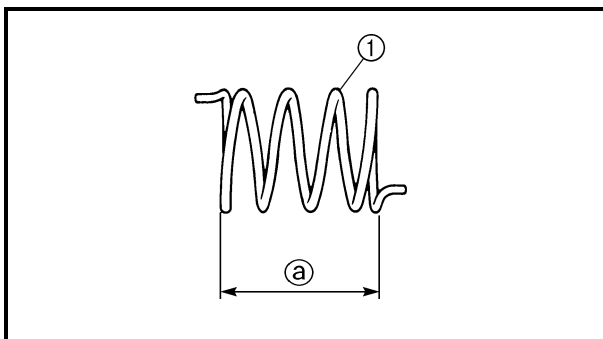
- Bushing (spring seat) ①
- Sliding sheave (V-belt contact surface) ②
Scratches/wear/damage → Replace.
- Sliding bushing ③
Unsymmetrical wear/damage → Replace.

3. Inspect:

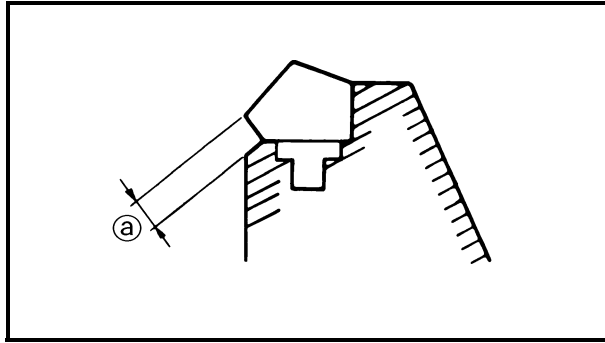
- Secondary sheave spring ①
Cracks/damage → Replace.

4. Measure:

- Secondary sheave spring (standard) free length ①
Below specification → Replace the secondary sheave spring.



**Secondary sheave spring (standard)
free length:
75 mm (2.95 in)**



5. Measure:

- Ramp shoe thickness ①

Out of specification → Replace the ramp shoe.



Wear limit:
1.0 mm (0.04 in)

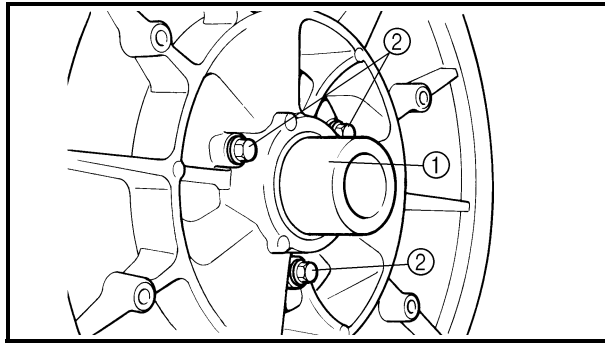
ASSEMBLY

1. Install:

- Stopper



Stopper screw:
7 Nm (0.7 m · kg, 5.1 ft · lb)

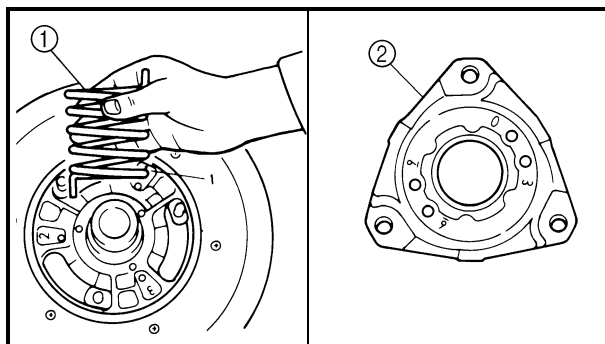


2. Install:

- Sliding sheave
- Fixed sheave ①
- Bolts ②
(along with the shims)



Bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)



3. Install:

- Secondary sheave spring ①
- Spring seat ②

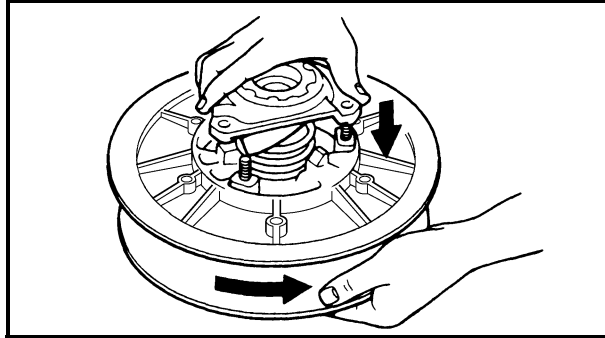
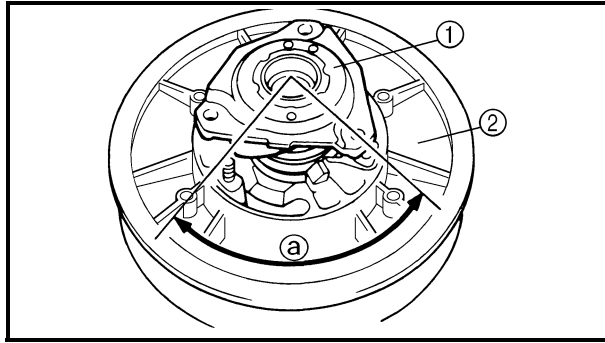
NOTE:

Hook the end of the secondary sheave spring into the spring holes in the fixed sheave. Hook the other end of the spring into the holes in the spring seat.

Standard spring position:

3-3 (RS90/RS90R/RSG90/RST90 “USA/Canada”)

1-6 (RS90M/RST90 “Europe”/RST90TF)



Installation steps:

- Hold the spring seat ① and turn the fixed sheave ② counterclockwise to the specified angle ③.

NOTE:

The holes in the spring seat should align with the bolts on the sliding sheave.

③ = (sheave hole number + spring seat hole number) × 10



Twist angle:

60° (RS90/RS90R/RSG90/RST90
"USA/Canada")

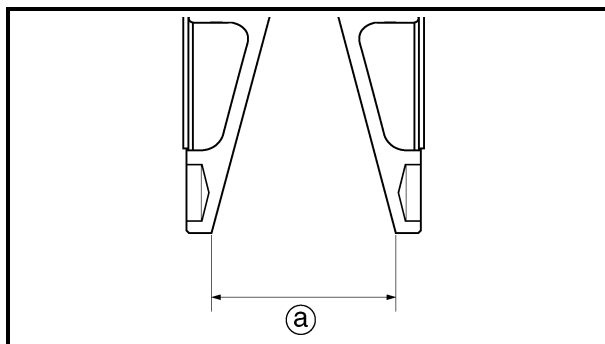
70° (RS90M/RST90 "Europe"/
RST90TF)

- Push down on the spring seat until the bolts come through the holes.
- While pushing down on the spring seat, install the nuts and tighten them to the specified torque.



Spring seat nut:

23 Nm (2.3 m · kg, 17 ft · lb)



4. Measure:

- Secondary sheave clearance ④
- Out of specification → Adjust.



Secondary sheave clearance:

35.0 ~ 35.8 mm (1.38 ~ 1.41 in)

5. Calculate:

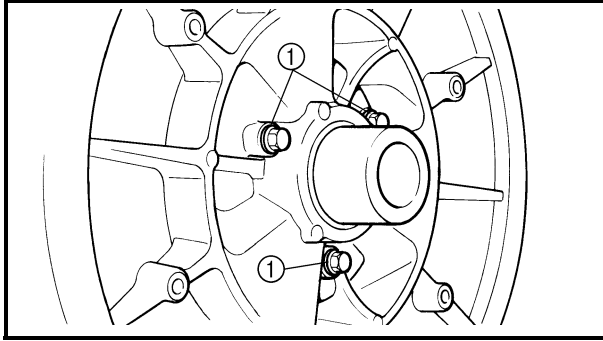
- Shim thickness

NOTE:

For example, if the clearance is 36 mm (1.42 in), install a 0.5 mm (0.02 in) shim on each bolt so the clearance is 35.5 mm (1.40 in).

6. Adjust:

- Secondary sheave clearance



Adjustment steps:

- Disassemble the secondary sheave.
- Remove the bolts and original shims ①.
- Install new shims of the proper thickness and reassemble the secondary sheave.
- Measure the secondary sheave clearance again.

Repeat these steps until the clearance is within specification.

NOTE:

Yamaha recommends keeping the original shims.

Shims:

Part number	Thickness
90201-061H1	0.5 mm (0.02 in)
90201-06037	1.0 mm (0.04 in)

INSTALLATION

1. Lubricate:

- Splines (fixed sheave)



Recommended grease:
ESSO beacon 325 grease or
Aeroshell grease #7A

2. Tighten:

- Secondary sheave bolt

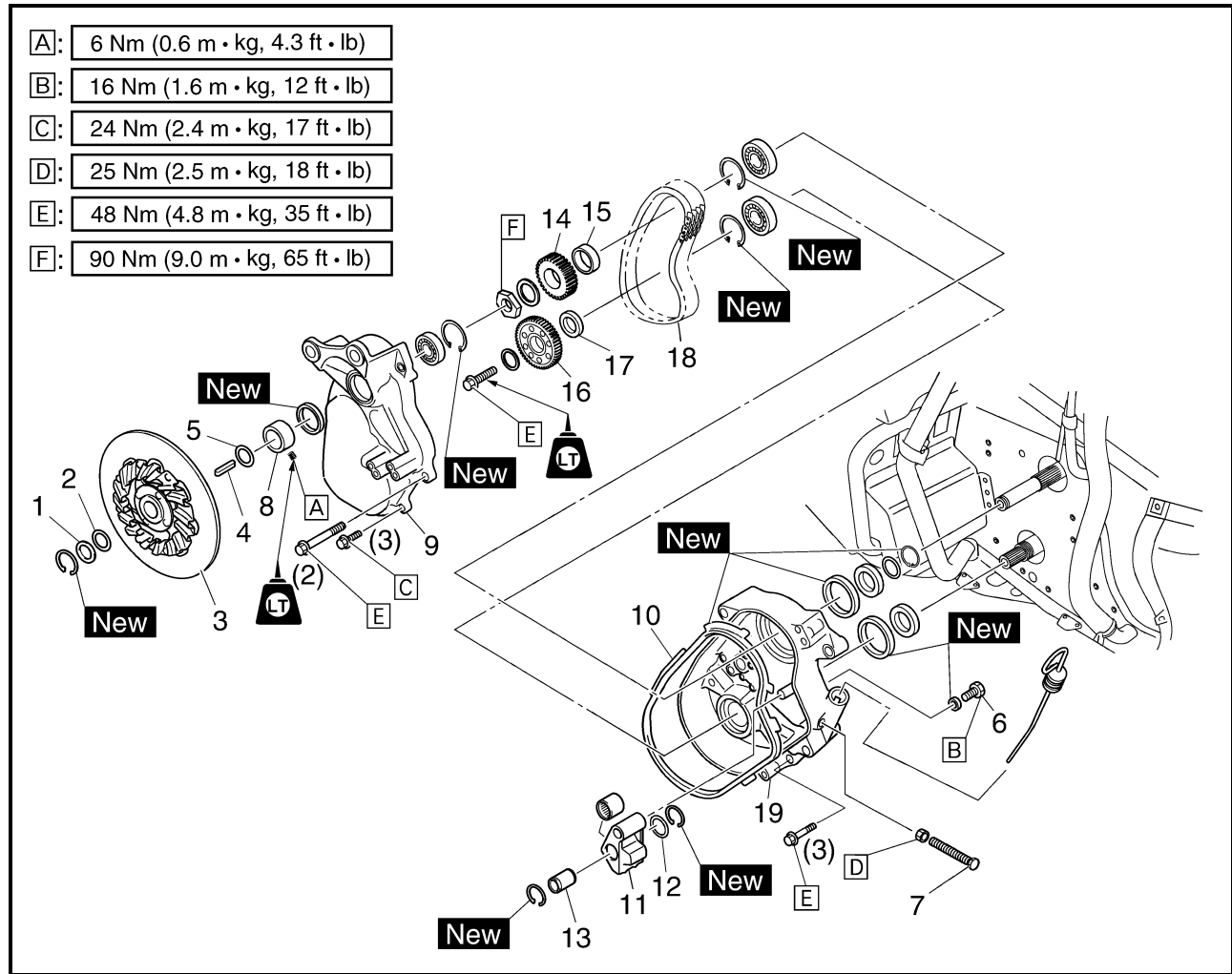


Secondary sheave bolt:
64 Nm (6.4 m · kg, 46 ft · lb)

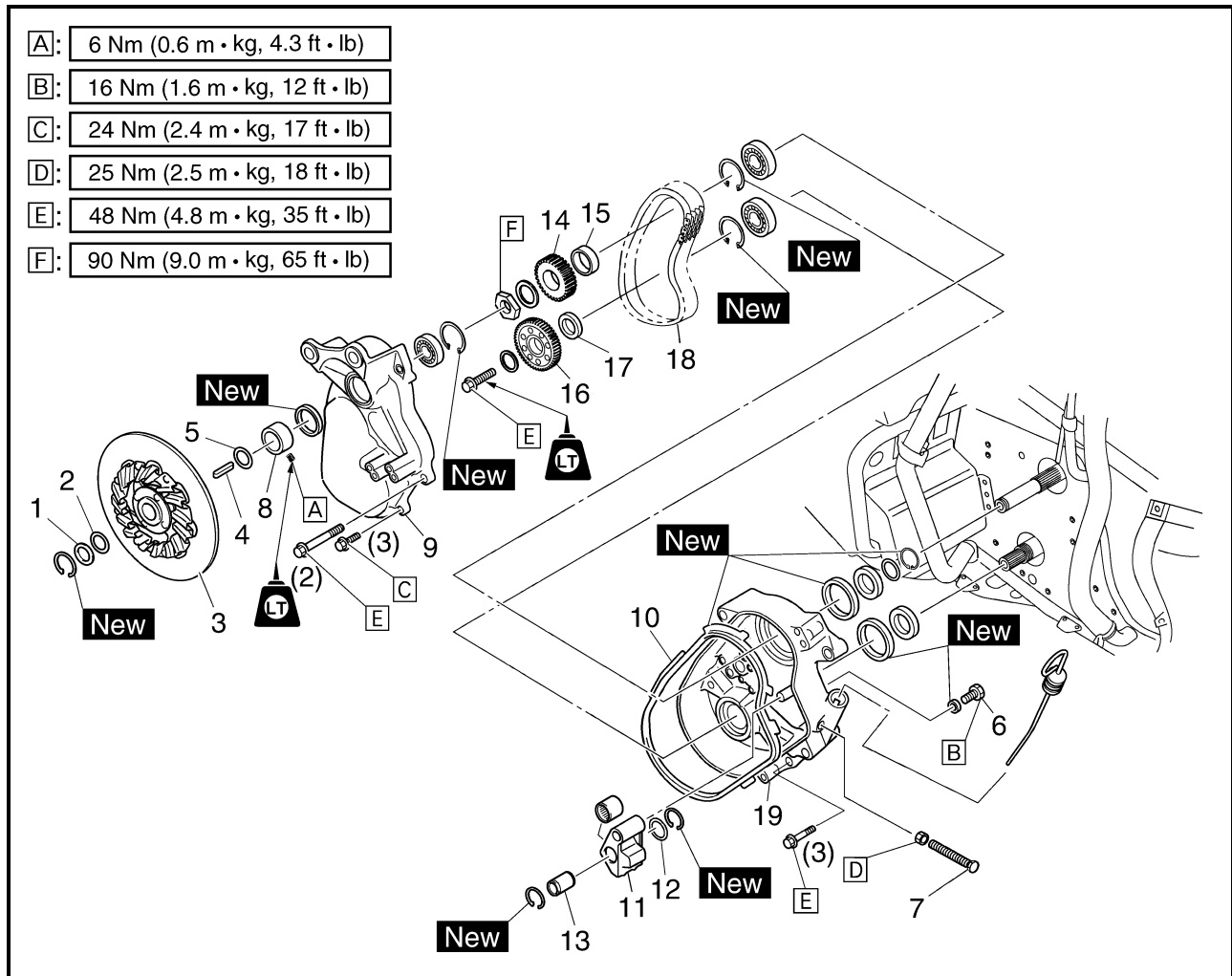
3. Adjust:

- V-belt position
Refer to "DRIVE V-BELT" in CHAPTER 2.
- Sheave offset
- Secondary sheave free play (clearance)
Refer to "SHEAVE OFFSET ADJUSTMENT" in CHAPTER 2.

DRIVE CHAIN HOUSING WITHOUT REVERSE MODEL



Order	Job name/Part name	Q'ty	Remarks
	Drive chain housing removal		
	Secondary sheave		Remove the parts in the order listed below. Refer to "SECONDARY SHEAVE".
	Right side cover/brake caliper/parking brake		Refer to "BRAKE".
1	Shim	—	t = 0.5
2	Washer	1	t = 1.6
3	Brake disc	1	
4	Straight key	1	
5	Washer	1	t = 1.0
6	Drain bolt	1	Drain.
7	Chain tension adjusting bolt	1	Loosen.
8	Collar	1	
9	Drive chain housing cover	1	
10	Rubber seal	1	
11	Chain tensioner	1	
12	Washer	1	t = 0.5
13	Collar	1	



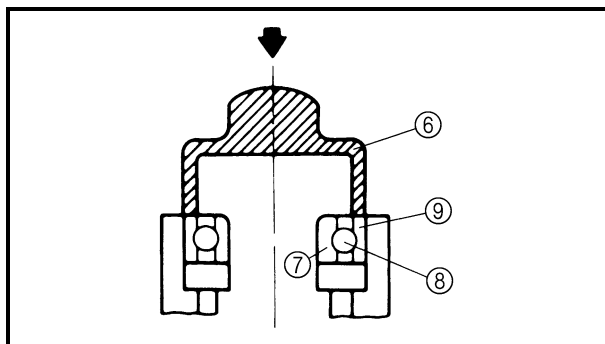
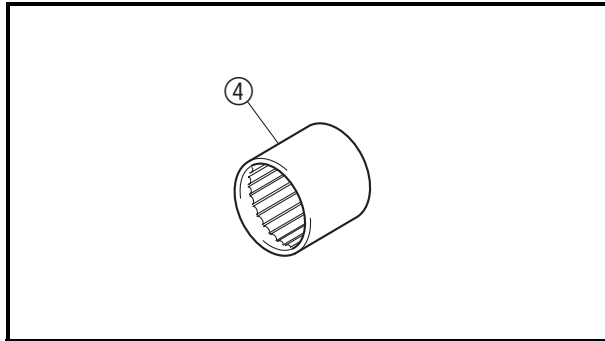
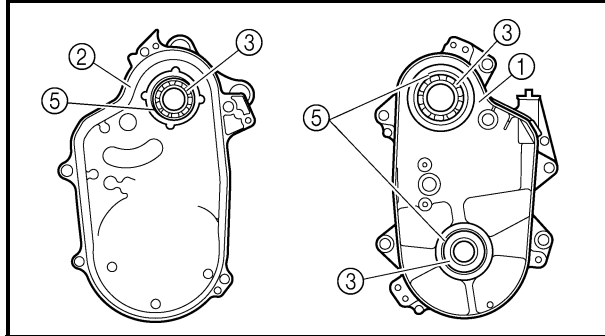
Order	Job name/Part name	Q'ty	Remarks
14	Drive sprocket	1	For installation, reverse the removal procedure.
15	Collar	1	
16	Driven sprocket	1	
17	Collar	1	
18	Drive chain	1	
19	Drive chain housing	1	

REMOVAL

1. Remove:

- Driven sprocket
- Drive sprocket

Refer to "WITH REVERSE MODEL".



INSPECTION

1. Inspect:

- Drive chain housing ①
- Drive chain housing cover ②
Cracks/damage → Replace.
- Oil seals (drive chain housing and cover)
Wear/damage → Replace.
- Bearings (drive chain housing and cover) ③
Pitting/damage → Replace.
- Bearing (chain tensioner) ④
Pitting/damage → Replace the bearing and the inner race holder as a set.

Replacement steps:

- Remove the circlip ⑤ (drive chain housing and cover).
- Remove the bearing(s) ③ using a general bearing puller.
- Install the new bearing(s).

NOTE:

Use a socket ⑥ that is the same size as the outside diameter of the bearing race.

CAUTION:

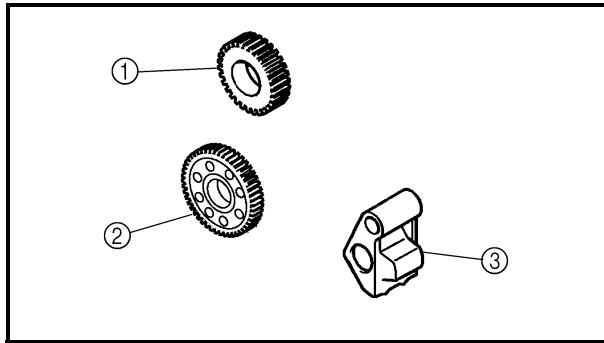
Do not strike the inner race ⑦ or ball bearings ⑧.

Contact only the outer race ⑨.

- Install a new circlip (drive chain housing and cover).

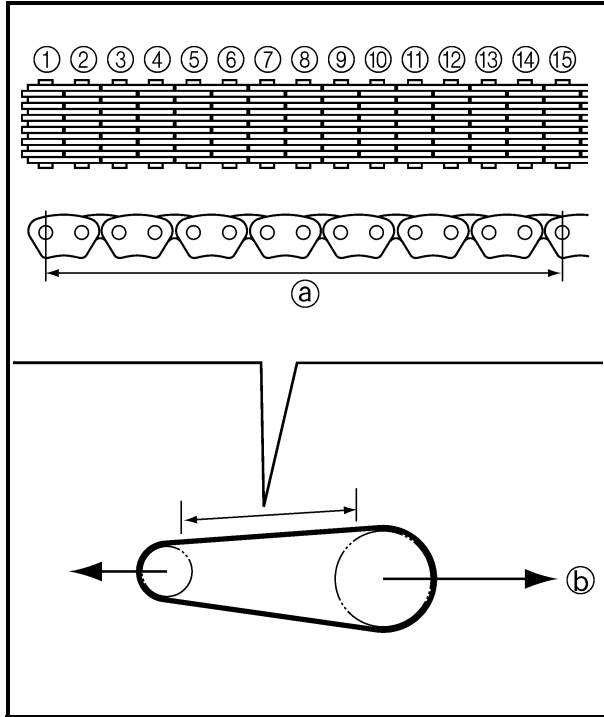
CAUTION:

Always use new circlips.



2. Inspect:

- Drive sprocket ①
 - Driven sprocket ②
 - Chain tensioner ③
- Pitting/wear/damage → Replace.



3. Measure:

- 14 link section ① of the drive chain
- Using a spring scale, pull on the drive chain with 36 kg (80 lb) of force ②.
- Out of specification → Replace the drive chain.

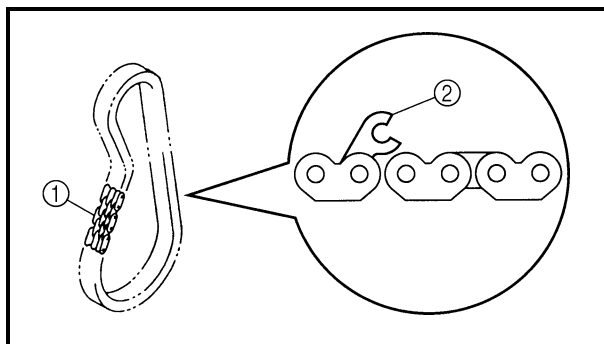


Maximum 14 link drive chain section length:
133.35 mm (5.25 in)
Limit: 137.35 mm (5.41 in)

NOTE:

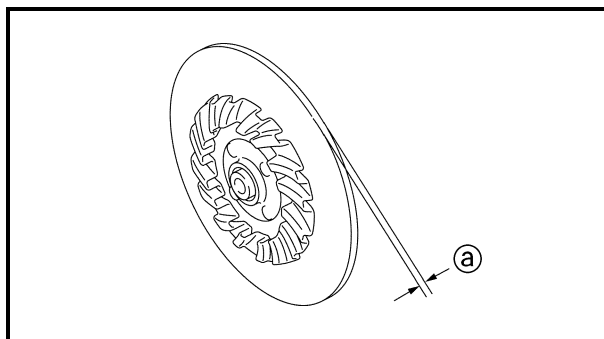
- Measure the length between drive chain pin ① and ⑮ as shown.
- Perform this measurement at two or three different places.

If replacement is necessary, always replace the chain and the sprockets as a set.



4. Inspect:

- Drive chain ①
- Stiffness → Clean and lubricate or replace.
- Drive chain plates ②
- Damage/wear → Replace the drive chain.
- Cracks → Replace the drive chain.

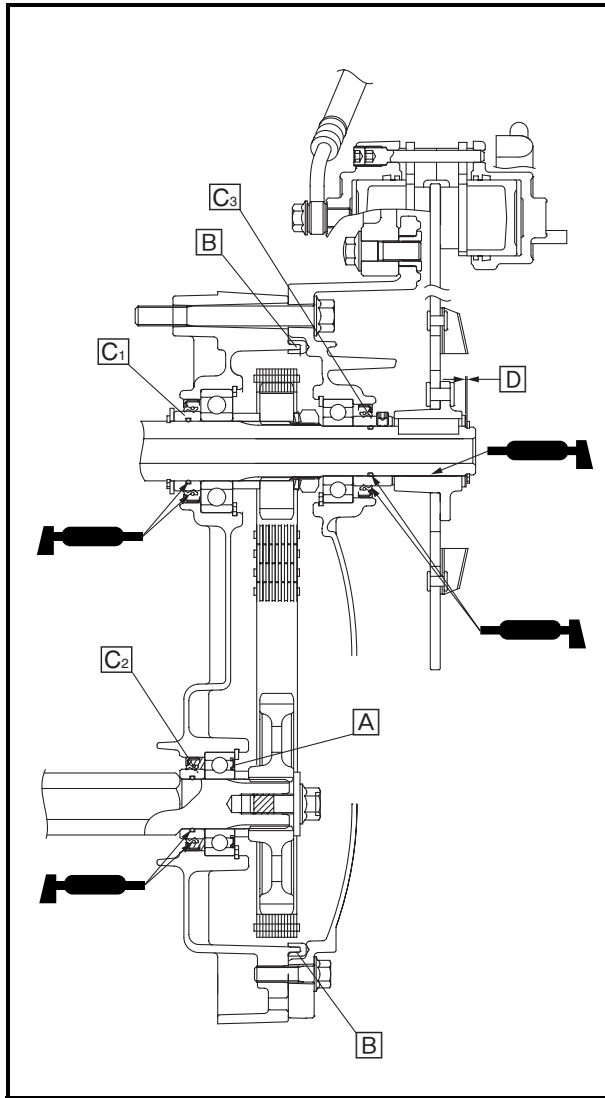


5. Measure:

- Brake disc thickness ①
- Measure the brake disc thickness 1 ~ 3 mm (0.04 ~ 0.12 in) from the edge of the brake disc.
- Out of specification → Replace.



Minimum thickness:
5.0 mm (0.20 in)



INSTALLATION

1. During installation, pay attention to the following.

- A** Make sure that the bearing seals face towards the drive chain as shown.
- B** Properly install the rubber seal onto the drive chain housing, making sure that there are no gaps.
- C1 C2 C3** Be sure to install the spacers in their original positions, otherwise the brake disc and jackshaft will stick.

D 0.2 ~ 0.7 mm (0.008 ~ 0.028 in)

 : ESSO beacon 325 grease or Aeroshell grease #7A

For the jackshaft and drive chain housing installation, refer to "SECONDARY SHAFT".

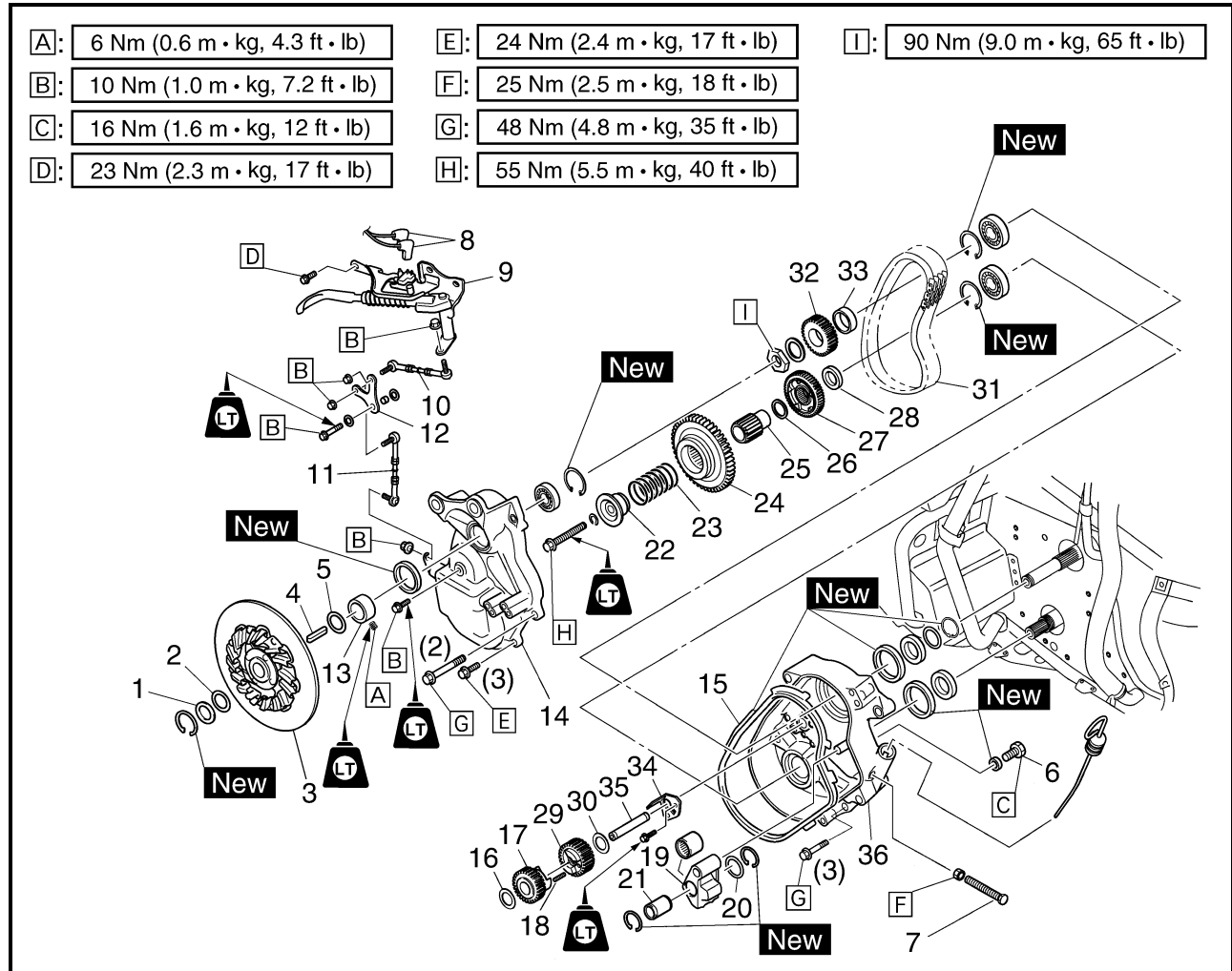
2. Fill:

- Drive chain housing oil
Refer to "DRIVE CHAIN" in CHAPTER 2.

3. Adjust:

- Drive chain slack
Refer to "DRIVE CHAIN" in CHAPTER 2.

WITH REVERSE MODEL

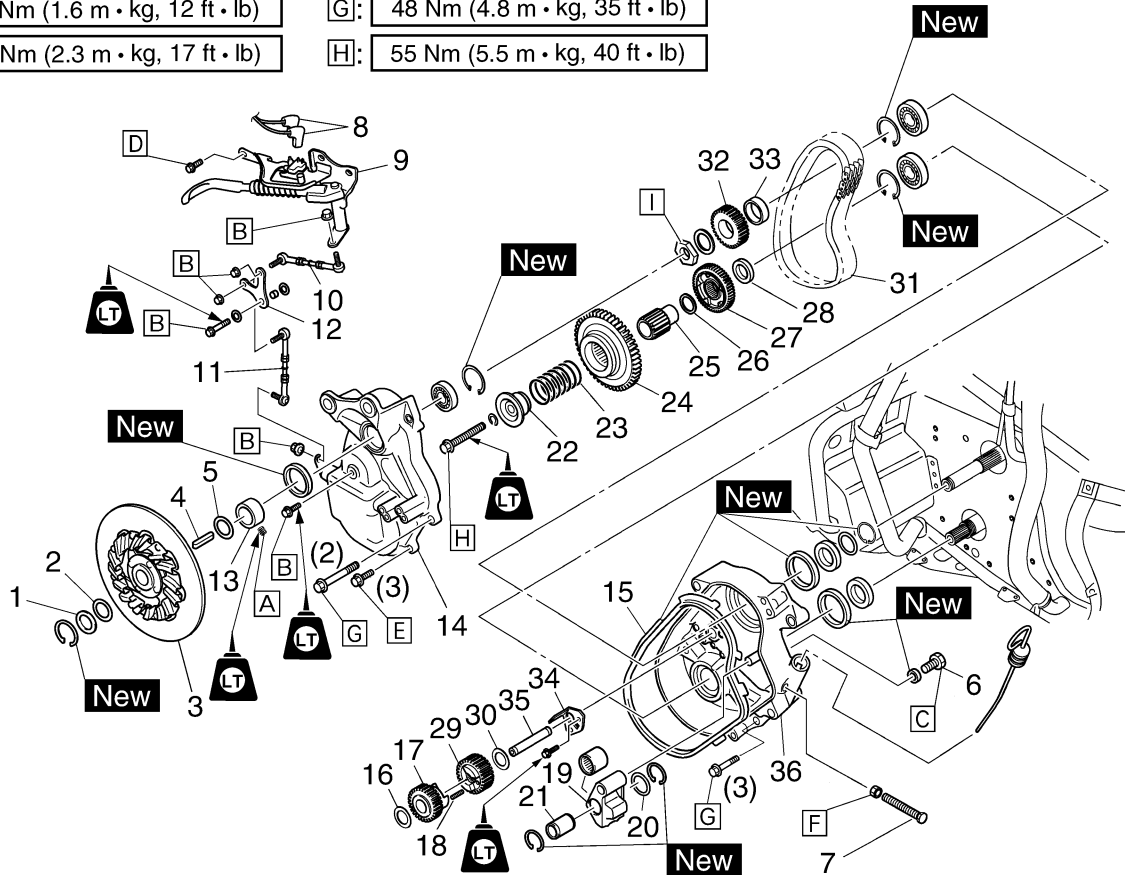


Order	Job name/Part name	Q'ty	Remarks
	Drive chain housing removal		Remove the parts in the order listed below.
	Secondary sheave		Refer to "SECONDARY SHEAVE".
	Right side cover/brake caliper/parking brake		Refer to "BRAKE".
1	Shim	—	t = 0.5
2	Washer	1	t = 1.6
3	Brake disc	1	
4	Straight key	1	
5	Washer	1	t = 1.0
6	Drain bolt	1	Drain.
7	Chain tension adjusting bolt	1	Loosen.
8	Gear position switch connector	2	Disconnect.
9	Shift lever assembly	1	Disconnect the gear position switch leads.
10	Lever rod	1	
11	Shift rod	1	
12	Lever	1	
13	Collar	1	

DRIVE CHAIN HOUSING

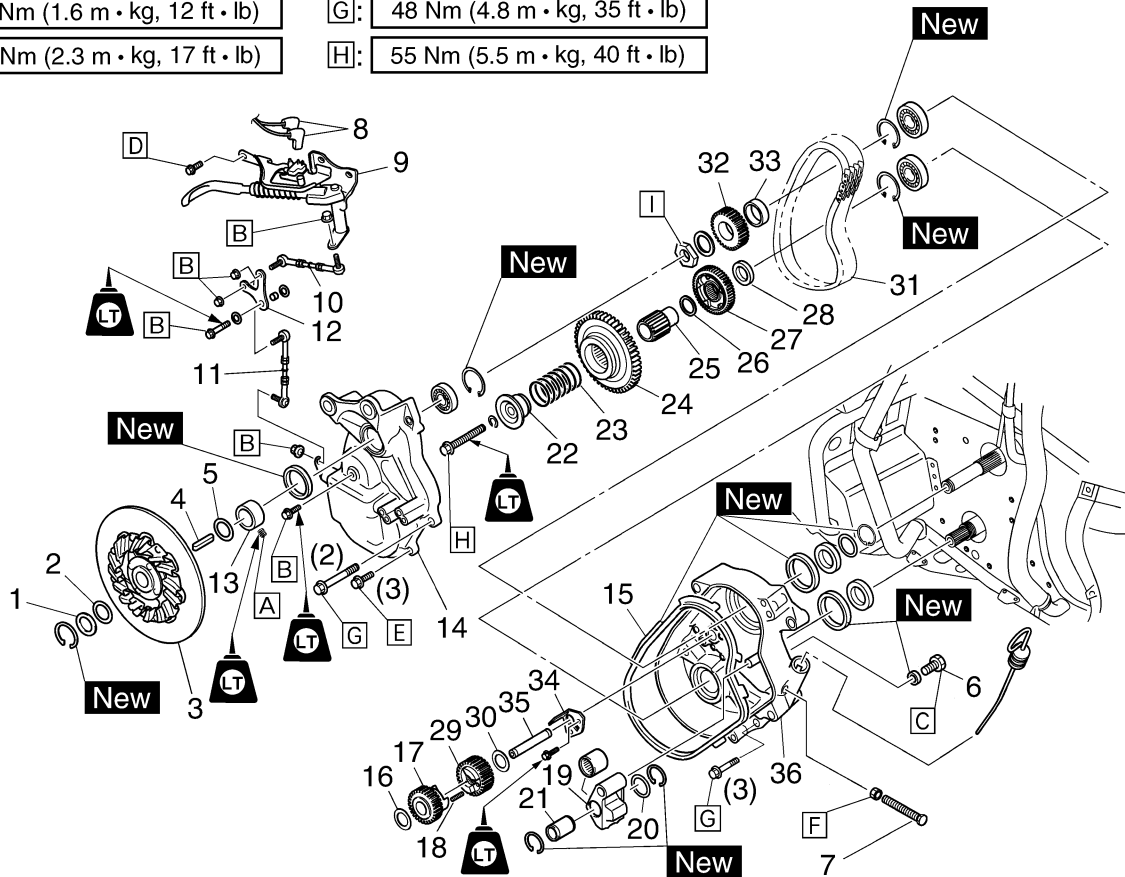


- | | | |
|---|--|--|
| A: 6 Nm (0.6 m • kg, 4.3 ft • lb) | E: 24 Nm (2.4 m • kg, 17 ft • lb) | I: 90 Nm (9.0 m • kg, 65 ft • lb) |
| B: 10 Nm (1.0 m • kg, 7.2 ft • lb) | F: 25 Nm (2.5 m • kg, 18 ft • lb) | |
| C: 16 Nm (1.6 m • kg, 12 ft • lb) | G: 48 Nm (4.8 m • kg, 35 ft • lb) | |
| D: 23 Nm (2.3 m • kg, 17 ft • lb) | H: 55 Nm (5.5 m • kg, 40 ft • lb) | |

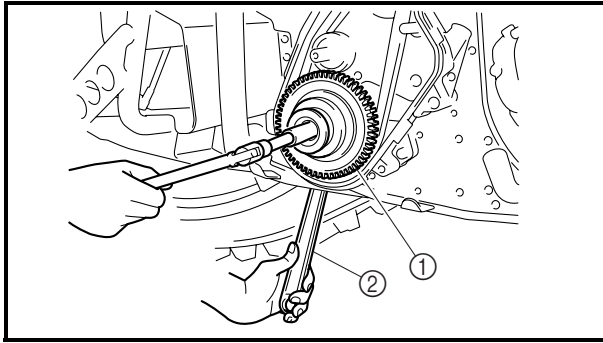


Order	Job name/Part name	Q'ty	Remarks
14	Drive chain housing cover	1	t = 0.5
15	Rubber seal	1	
16	Washer	1	
17	Counter gear	1	
18	Spring	1	
19	Chain tensioner	1	
20	Washer	1	
21	Collar	1	
22	Collar	1	
23	Spring	1	
24	Reverse driven gear	1	
25	Journal	1	
26	Washer	1	
27	Forward driven sprocket	1	
28	Collar	1	
29	Reverse drive gear	1	
30	Washer	1	
31	Drive chain	1	

A: 6 Nm (0.6 m • kg, 4.3 ft • lb)	E: 24 Nm (2.4 m • kg, 17 ft • lb)	I: 90 Nm (9.0 m • kg, 65 ft • lb)
B: 10 Nm (1.0 m • kg, 7.2 ft • lb)	F: 25 Nm (2.5 m • kg, 18 ft • lb)	
C: 16 Nm (1.6 m • kg, 12 ft • lb)	G: 48 Nm (4.8 m • kg, 35 ft • lb)	
D: 23 Nm (2.3 m • kg, 17 ft • lb)	H: 55 Nm (5.5 m • kg, 40 ft • lb)	



Order	Job name/Part name	Q'ty	Remarks
32	Drive sprocket	1	
33	Collar	1	
34	Plate	1	
35	Shaft	1	
36	Drive chain housing	1	
			For installation, reverse the removal procedure.



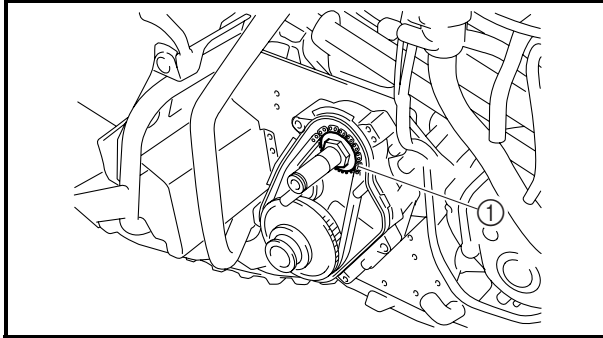
REMOVAL

1. Remove:

- Reverse driven gear ① (driven sprocket for without reverse model)

NOTE:

While holding the front axle assembly with spanner wrench ②, loosen the reverse driven gear bolt.



2. Remove:

- Drive sprocket ①

NOTE:

While holding the secondary shaft with the secondary shaft slide & holder ②, loosen the drive sprocket nut with drive gear socket ③.

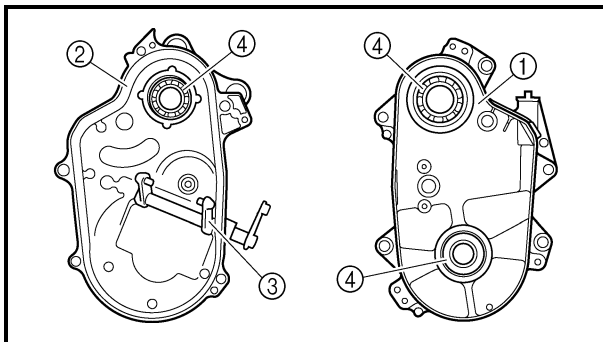
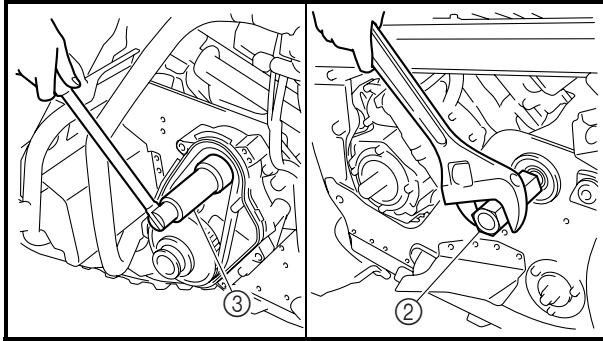


Drive gear socket:

90890-01490, YS-01490

Secondary shaft slide & holder:

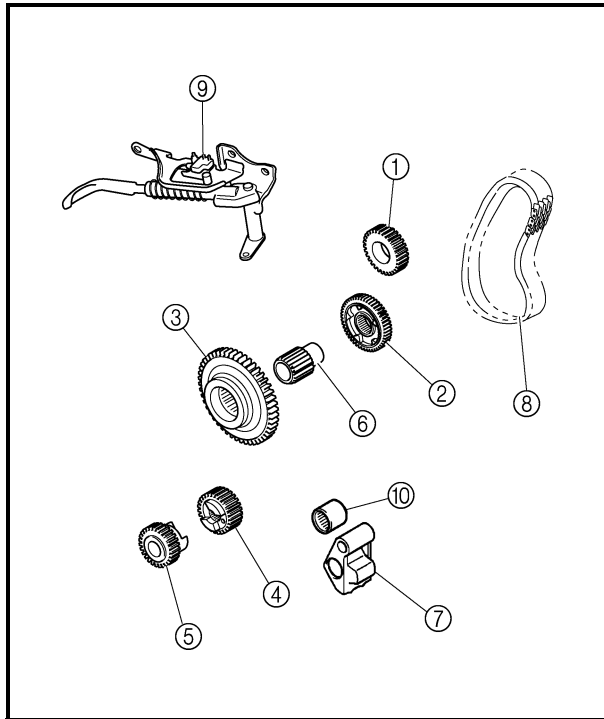
90890-01492, YS-01492



INSPECTION

1. Inspect:

- Drive chain housing ①
- Drive chain housing cover ②
Cracks/damage → Replace.
- Shift fork ③
Pitting/wear/damage → Replace.
- Oil seals (drive chain housing and cover)
Wear/damage → Replace.
- Bearings (drive chain housing and cover) ④
Pitting/damage → Replace.



2. Inspect:

- Drive sprocket ①
- Forward driven sprocket ②
- Reverse driven gear ③
- Reverse drive gear ④
- Counter gear ⑤
- Journal ⑥
- Chain tensioner ⑦
Pitting/wear/damage → Replace.
- Drive chain ⑧
Wear/damage → Replace.
Shift → Clean or replace.
- Shift lever assembly ⑨
- Bearing (chain tensioner) ⑩
Pitting/damage → Replace the bearing and the inner race holder as a set.

For the bearing replacement and drive chain inspection, refer to “WITHOUT REVERSE MODEL”.

INSTALLATION

1. During installation, pay attention to the following.

A Properly install the rubber seal onto the drive chain housing, making sure that there are no gaps.

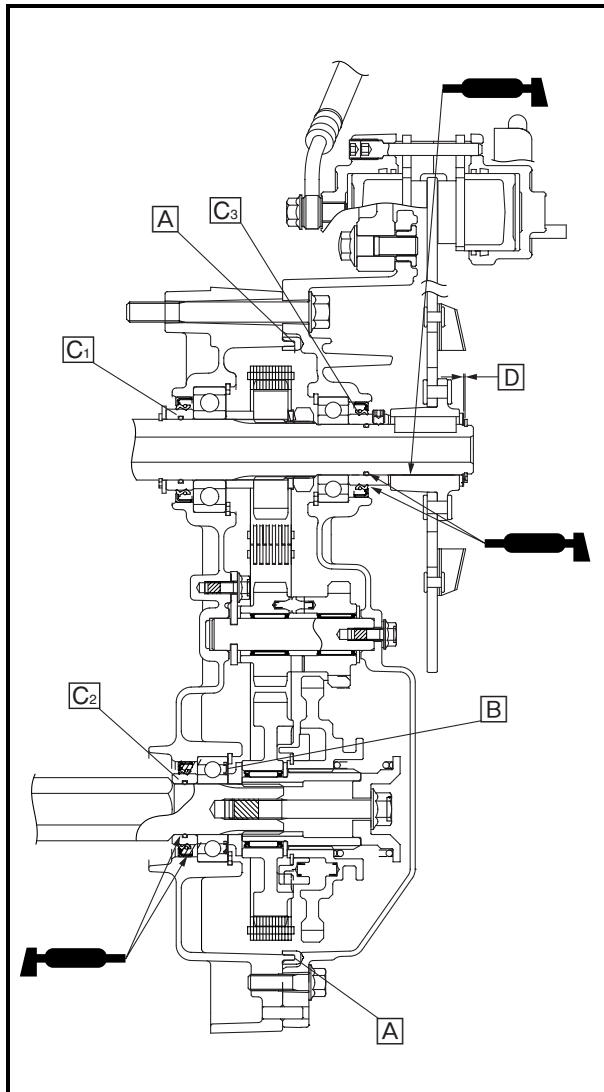
B Make sure that the bearing seals face towards the drive chain as shown.

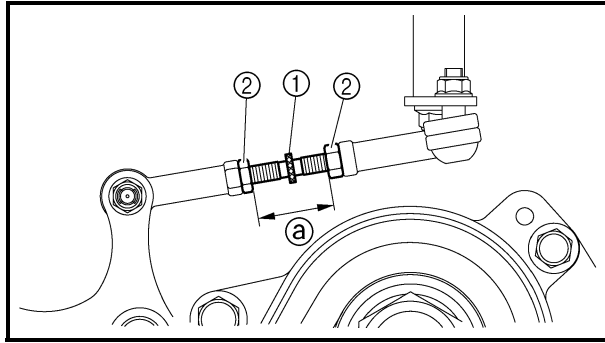
C₁ **C₂** **C₃** Be sure to install the spacers in their original positions, otherwise the brake disc and jackshaft will stick.

D 0.2 ~ 0.7 mm (0.008 ~ 0.028 in)

 : ESSO beacon 325 grease or Aeroshell grease #7A

For the jackshaft and drive chain housing installation, refer to “SECONDARY SHAFT”.





2. Install:
 - Lever rod ①
3. Adjust:
 - Lever rod length ②

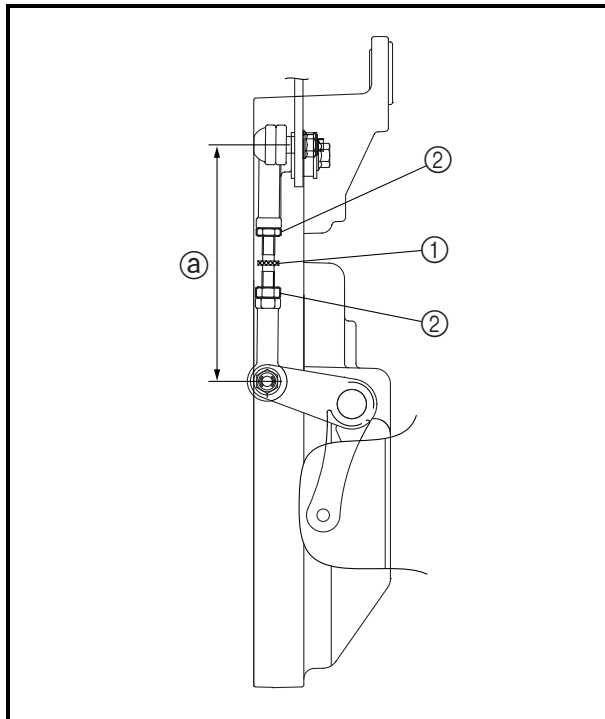
Adjustment steps:

- Loosen the locknuts ②.
- Turn the lever rod ① in or out until the specified length is obtained.



**Lever rod length:
27 mm (1.06 in)**

- Tighten the locknuts.



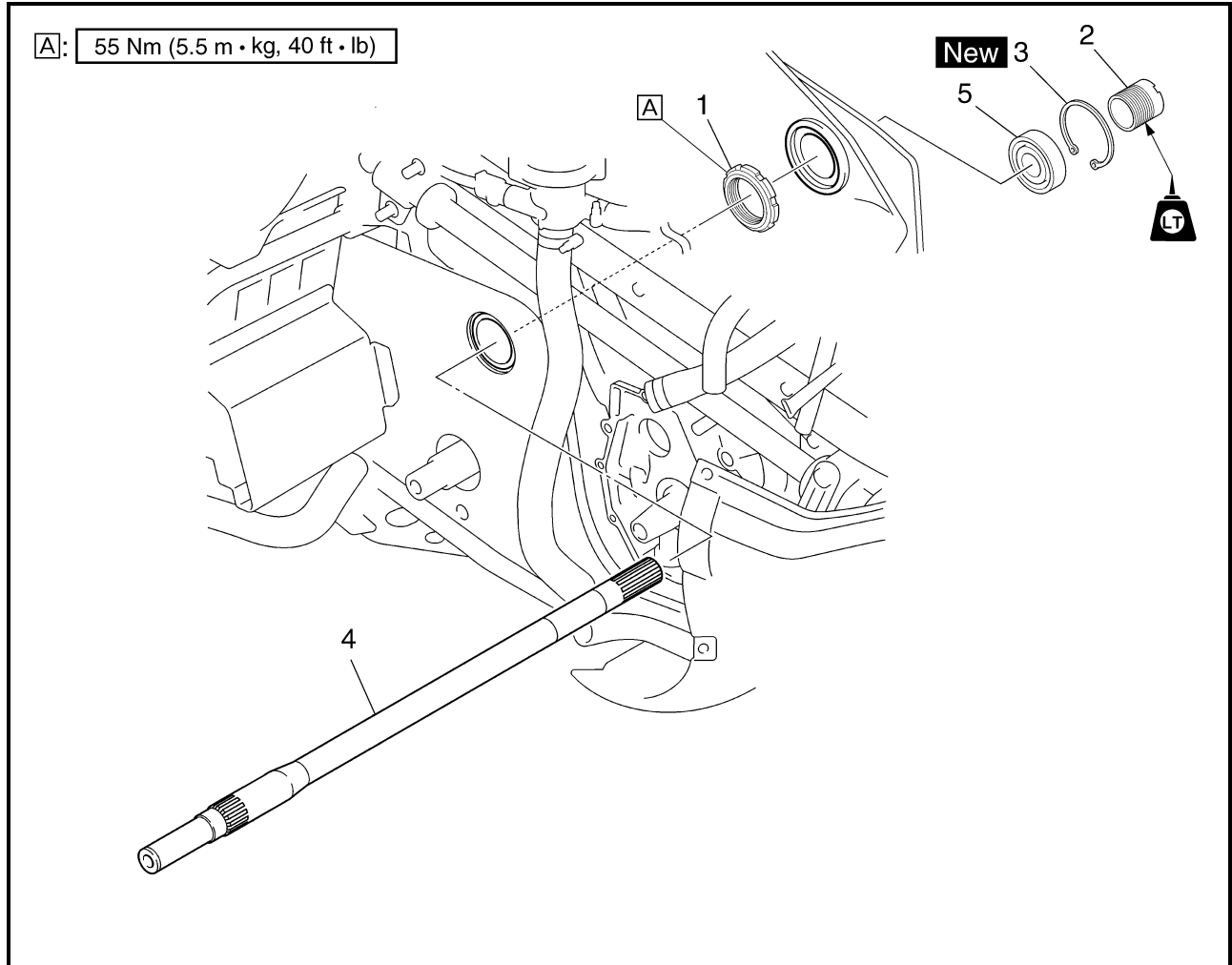
4. Install:
 - Shift rod ①
5. Adjust:
 - Shift rod length ②

Adjustment steps:

- Move the shift lever to the “FWD.” position.
- Loosen the locknuts ②.
- Turn the shift rod ① so that shift rod free play is 0 mm (in direction where ② can be shortened appropriately) and then turn back the shift rod 1/2 turns.
- Tighten the locknuts.

6. Fill:
 - Drive chain housing oil
Refer to “DRIVE CHAIN” in CHAPTER 2.
7. Adjust:
 - Drive chain slack
Refer to “DRIVE CHAIN” in CHAPTER 2.

SECONDARY SHAFT

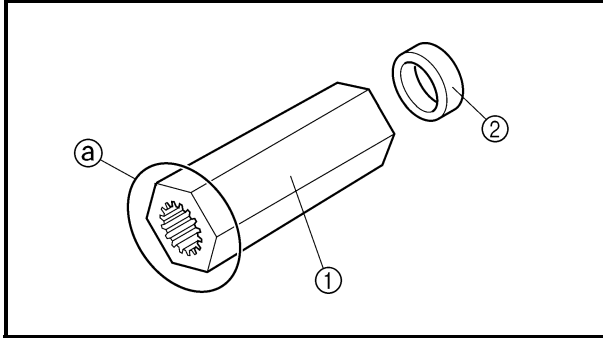


Order	Job name/Part name	Q'ty	Remarks
	Secondary shaft removal		Remove the parts in the order listed below. Refer to "SECONDARY SHEAVE". Refer to "DRIVE CHAIN HOUSING".
1	Bearing collar nut	1	
2	Collar	1	
3	Circlip	1	
4	Secondary shaft	1	
5	Bearing	1	
			For installation, reverse the removal procedure.

REMOVAL

1. Remove:

- Drive chain housing parts
Refer to "DRIVE CHAIN HOUSING".
- Secondary sheave assembly
Refer to "SECONDARY SHEAVE".



2. Install:

- Secondary shaft slide & holder ①

NOTE:

- This procedure does not require the use of the collar ② included with the special tool.
- Install the end ③ of the secondary shaft slide & holder ① to the engine.



Secondary shaft slide & holder:
90890-01492, YS-01492

3. Remove:

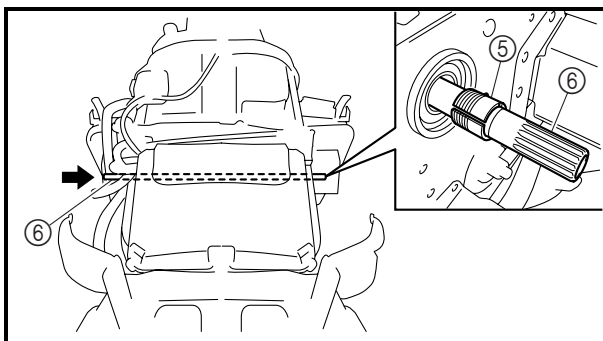
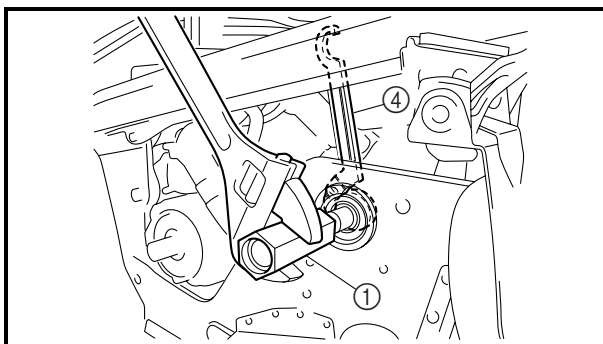
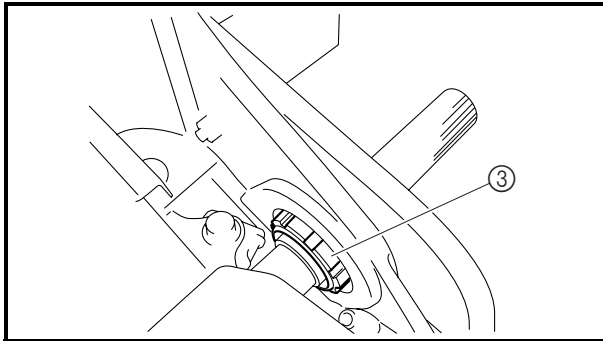
- Bearing collar nut ③

NOTE:

Remove the bearing collar nut using the ring nut wrench ④.



Ring nut wrench:
90890-01268, YU-01268

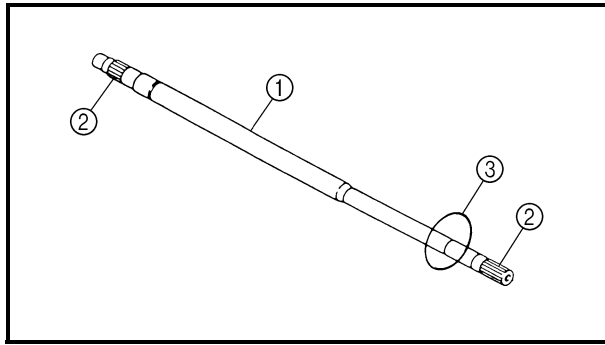


4. Remove:

- Collar ⑤
- Secondary shaft ⑥

Removal steps:

- Tap the secondary shaft with a soft hammer from the right side of the machine to remove the collar ⑤.
- Remove the secondary shaft ⑥ from the right side of the machine.



INSPECTION

1. Inspect:

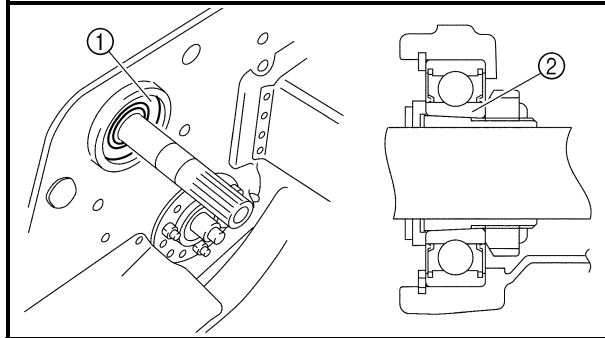
- Secondary shaft ①
Scratches (excessive)/damage → Replace.
- Splines ②
Wear/damage → Replace the secondary shaft.
- Bearing contact surface ③
Scratches/wear/damage → Replace the secondary shaft.

2. Inspect:

- Bearing ①
Pitting/damage → Replace.

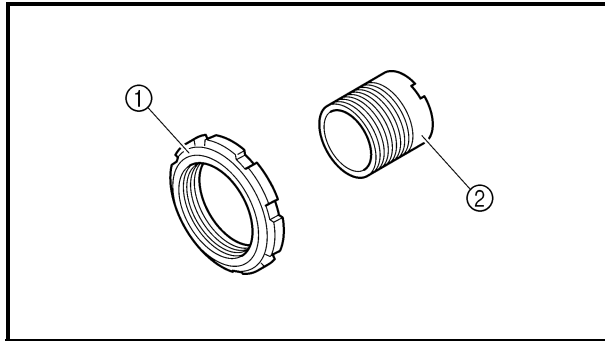
NOTE:

Install the bearing ① so that the larger side of its inner race ② is facing away from the machine.



3. Inspect:

- Bearing collar nut ①
Cracks/damage → Replace.
- Collar ②
Cracks/damage → Replace.



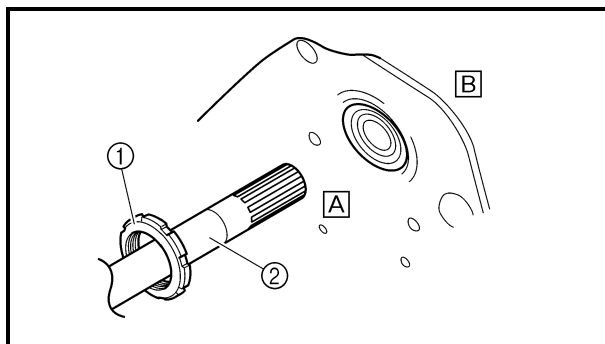
INSTALLATION

1. Install:

- Bearing collar nut ①
- Secondary shaft ②

NOTE:

Install the bearing collar nut ① with its chamfered side towards the secondary sheave.

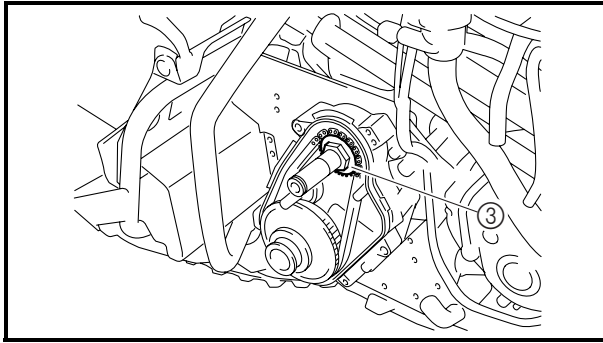


A Engine side

B Secondary sheave side

2. Install

- Drive chain housing parts
Refer to “DRIVE CHAIN HOUSING”.



3. Tighten:

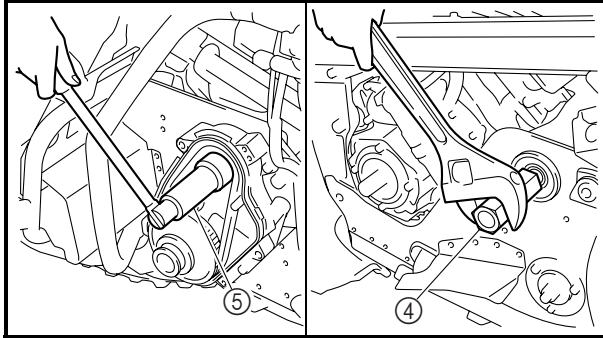
- Drive sprocket nut ③



Drive sprocket nut:
90 Nm (9.0 m · kg, 65 ft · lb)

NOTE:

While holding the secondary shaft with the secondary shaft slide & holder ④, tighten the drive sprocket nut with the drive gear socket ⑤.



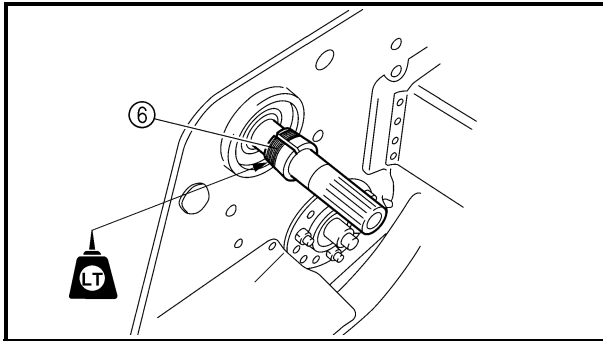
Drive gear socket:
90890-01490, YS-01490
Secondary shaft slide & holder:
90890-01492, YS-01492

4. Install:

- Collar ⑥

NOTE:

Apply LOCTITE® to the collar as shown.



5. Install:

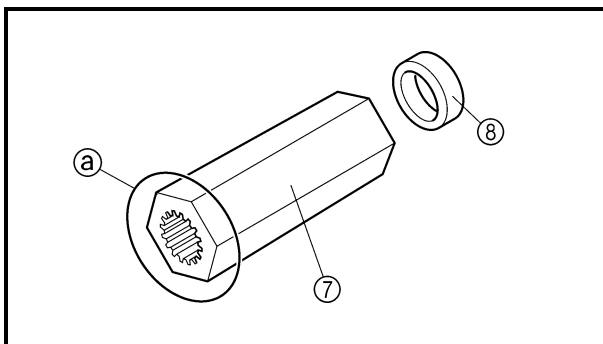
- Secondary shaft slide & holder ⑦

NOTE:

- This procedure does not require the use of the collar ⑥ included with the special tool.
- Install the end ⑧ of the secondary shaft slide & holder ⑦ to the engine.

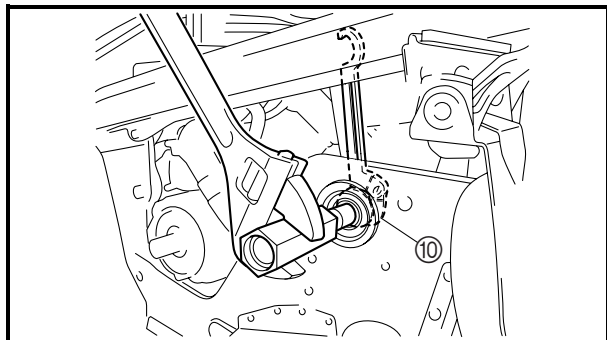
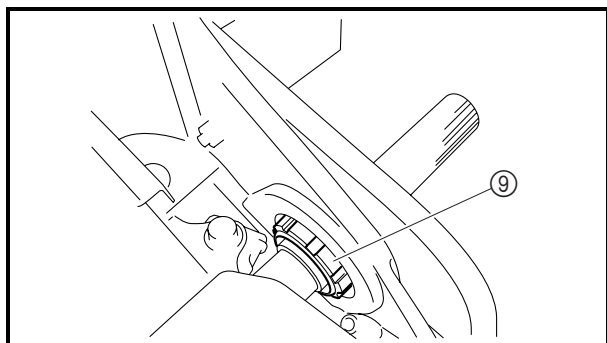
CAUTION:

Contact the secondary shaft slide & holder only with the inner race of the bearing.



Secondary shaft slide & holder:
90890-01492, YS-01492

SECONDARY SHAFT



6. Tighten:

- Bearing collar nut ⑨



Ring nut wrench:
90890-01268, YU-01268



Bearing collar nut:
55 Nm (5.5 m · kg, 40 ft · lb)

NOTE:

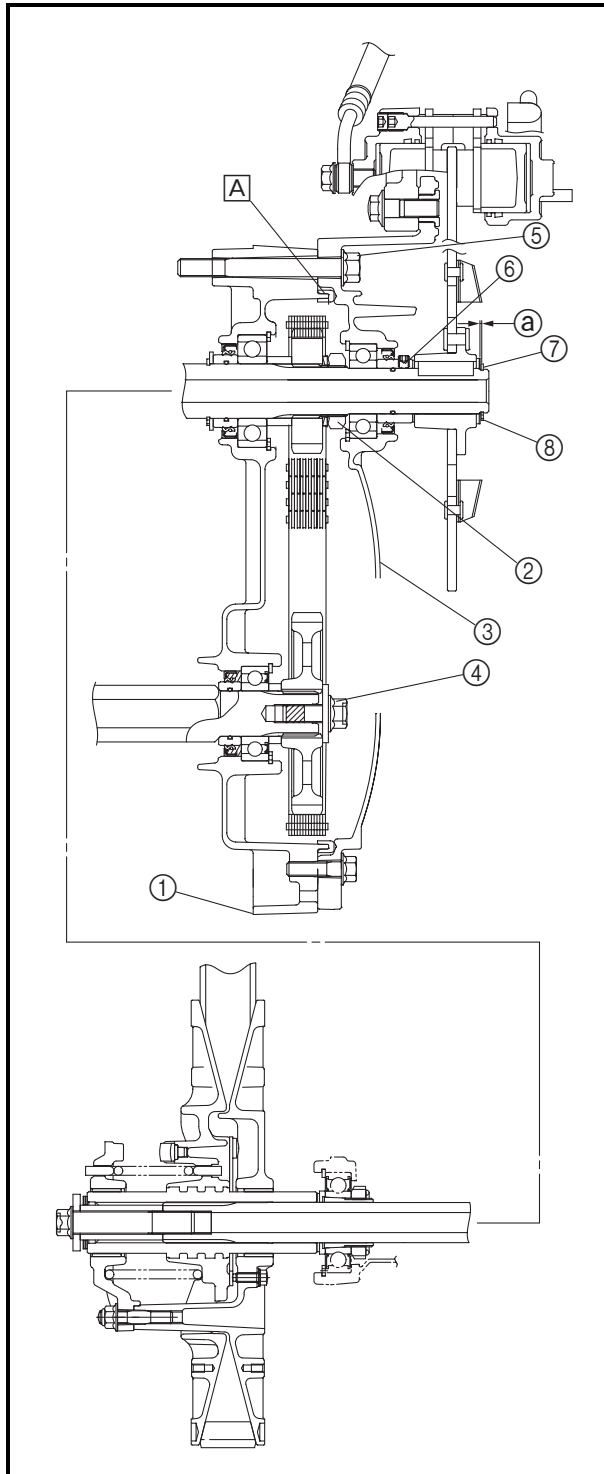
Install the ring nut wrench ⑩ and then tighten the bearing collar nut.

7. Check:

- Secondary shaft stiffness

CAUTION:

When the secondary shaft is operated in periodic motion, and if its movement is heavy, install it again correctly.



SECONDARY SHAFT AND DRIVE CHAIN HOUSING INSTALLATION

1. Install:

- Secondary shaft
- Drive chain housing

Installation steps:

- Install the secondary shaft.
- Install the drive chain housing ①.
- Tighten the bolts.



Drive chain housing bolt:
48 Nm (4.8 m · kg, 35 ft · lb)

- Install the drive chain, drive sprocket and driven sprocket.
- Tighten the nut ②.



Secondary shaft nut:
90 Nm (9.0 m · kg, 65 ft · lb)

- Install the drive chain housing cover ③.

A Properly install the rubber seal onto the drive chain housing, making sure that there are no gaps.

- Tighten the bolts ④.



Drive chain housing cover:
48 Nm (4.8 m · kg, 35 ft · lb)

- Tighten the bolts ⑤.



Drive chain housing cover bolt:
24 Nm (2.4 m · kg, 17 ft · lb)

- Install the collar.
- Tighten the collar set screw ⑥.



Collar set screw:
6 Nm (0.6 m · kg, 4.3 ft · lb)
LOCTITE®

- Install the brake disc.
- Adjust the brake disc clearance.

2. Measure:

- Brake disc clearance ⑦
Out of the specification → Adjust.



Brake disc clearance:
0.2 ~ 0.7 mm (0.008 ~ 0.028 in)



3. Adjust:

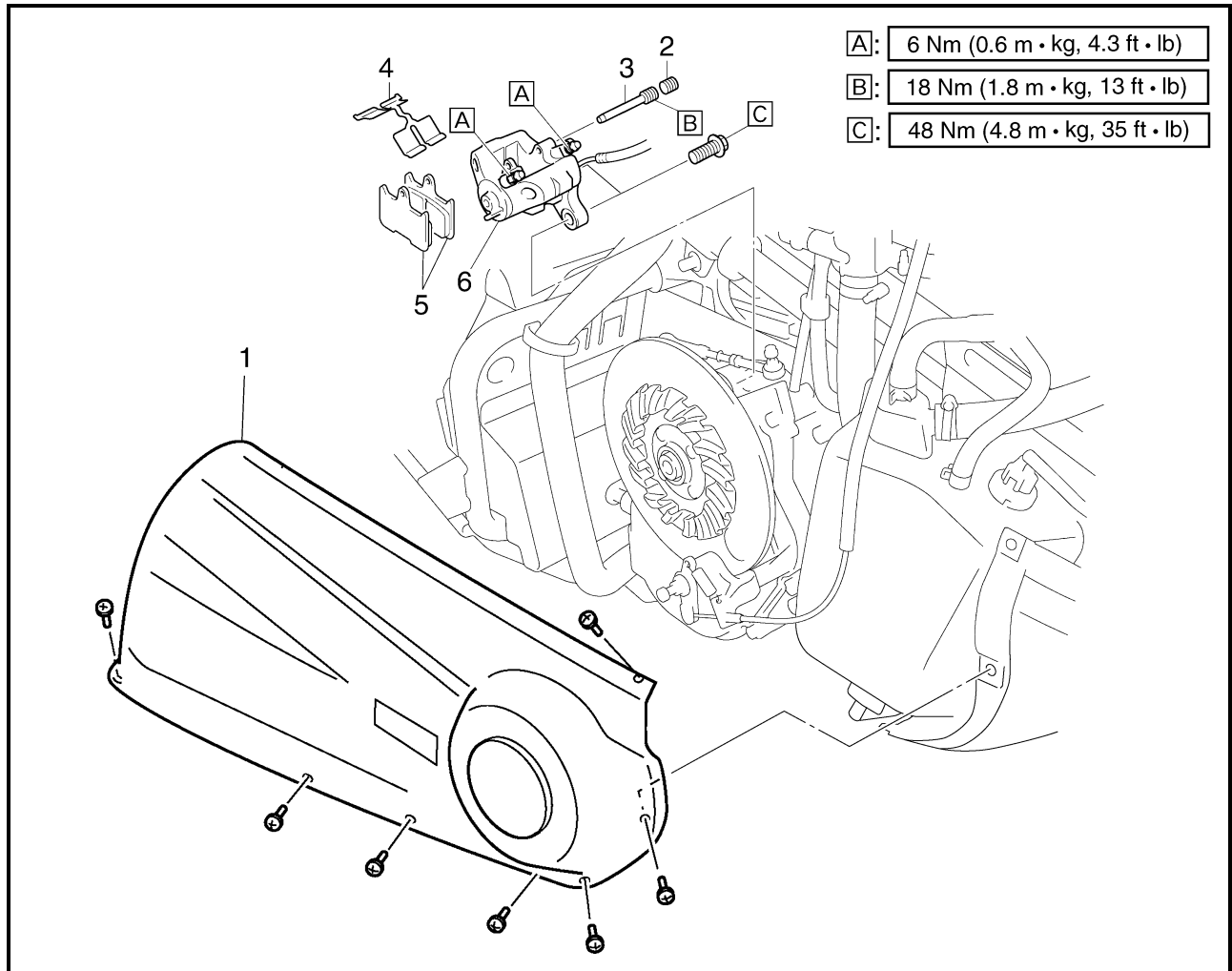
- Brake disc clearance

Adjustment steps:

- Remove the circlip ⑦.
- Adjust the brake disc clearance by adding or removing shim(s) ⑧.

Shim size	
Part number	Thickness
90201-252F1	0.5 mm (0.02 in)

- Install the new circlip.

BRAKE

Order	Job name/Part name	Q'ty	Remarks
	Brake pad removal		Remove the parts in the order listed below.
1	Right side cover	1	
2	Cap bolt	1	
3	Retaining pin	1	
4	Pad spring	1	
5	Brake pad	2	
6	Brake caliper assembly	1	For installation, reverse the removal procedure.

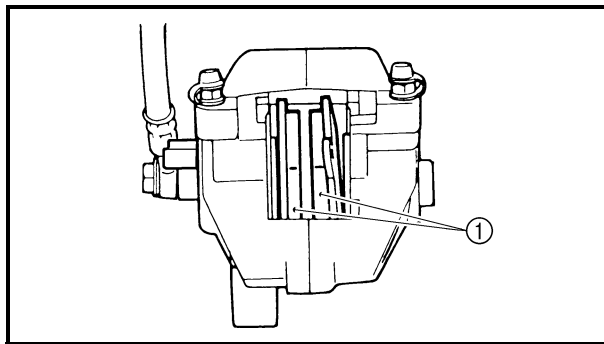
CAUTION:

Disc brake components rarely require disassembly. **DO NOT:**

- Do not disassemble components unless absolutely necessary.
- Do not use solvents on internal brake components.
- Do not use contaminated brake fluid for cleaning.
- Use only clean brake fluid.
- Do not allow brake fluid to contact the eyes, otherwise eye injury may occur.
- Do not allow brake fluid to contact painted surfaces or plastic parts otherwise damage may occur.
- Do not 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 in order to replace the brake pads.

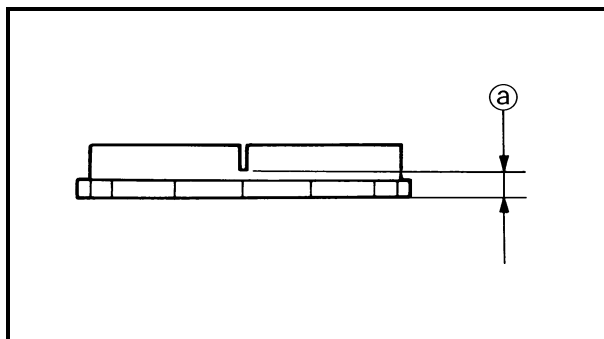


1. Remove:

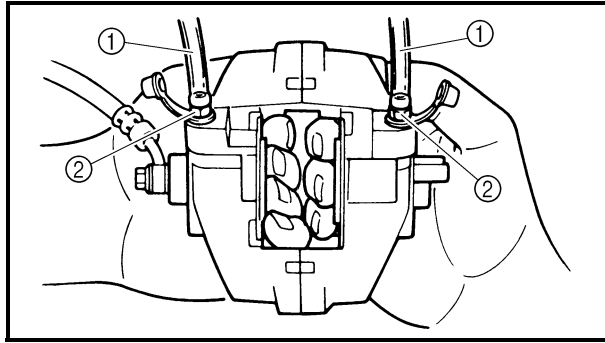
- Brake pads ①

NOTE:

- Do not depress the brake lever when the caliper or disc is off the machine otherwise the brake pads will be forced shut.
- Install a new brake pad spring and shims when the brake pads are replaced.
- Replace the pads as a set if either one is found to be worn to the wear limit ②.



Wear limit:
7.5 mm (0.30 in)



2. Install:

- Brake pads
- Pad spring

Installation steps:

- Connect a suitable hoses ① tightly to the caliper bleed screws ②. Put the other end of this hose into an open container.
- Loosen the caliper bleed screws and push the pistons into the caliper with your finger.
- Tighten the caliper bleed screws ②.



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

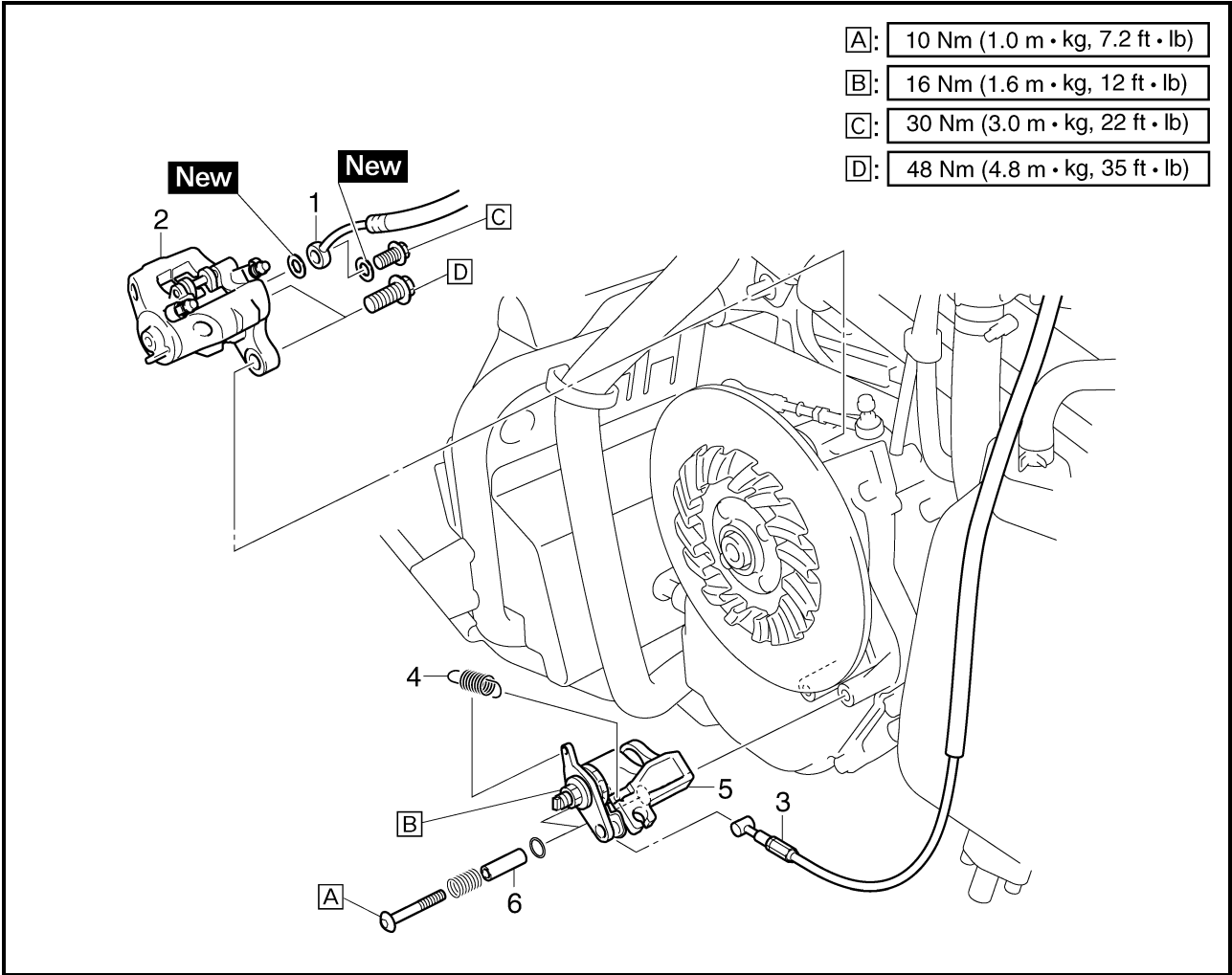
- Install the brake pads and pad spring.

3. Check:

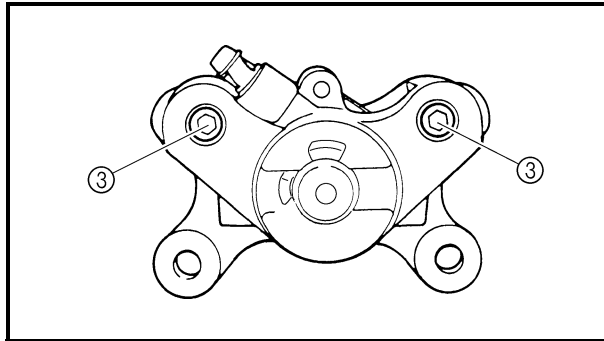
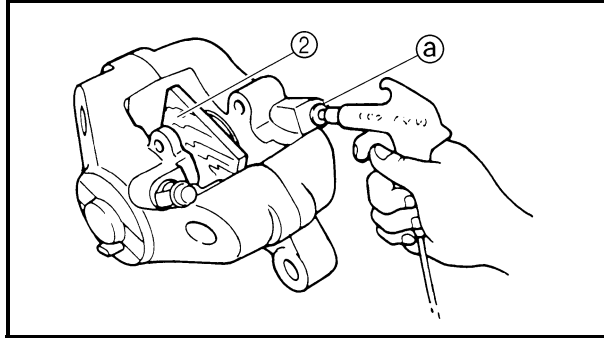
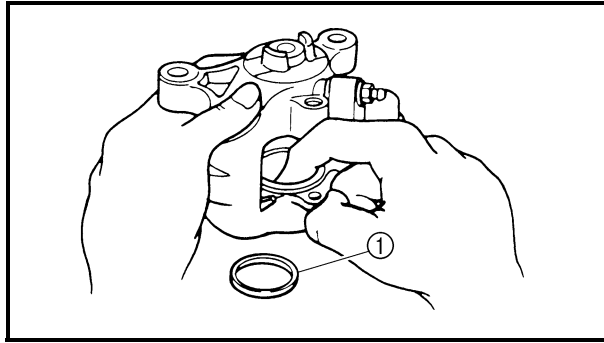
- Brake fluid level
Refer to “BRAKE FLUID LEVEL INSPECTION” in CHAPTER 2.

4. Check:

- Brake lever operation
A soft or spongy feeling → Bleed brake system.
Refer to “AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)” in CHAPTER 2.



Order	Job name/Part name	Q'ty	Remarks
	Brake caliper and parking brake removal		Remove the parts in the order listed below.
	Brake fluid		Drain.
1	Brake hose	1	
2	Brake caliper assembly	1	
3	Parking brake cable	1	
4	Spring	1	
5	Parking brake assembly	1	
6	Collar	2	
			For installation, reverse the removal procedure.



BRAKE CALIPER DISASSEMBLY

NOTE:

Before disassembling a caliper, drain brake fluid from brake hose, master cylinder, brake caliper and brake reservoir of their brake fluid.

1. Remove:

- Pistons
- Piston oil seals ①

Removal steps:

- Using a wood of piece ②, lock the right piston.
- Blow compressed air into the hose joint opening ③ to force out the left piston from the caliper body.
- Remove the piston seals and reinstall the piston.
- Repeat the previous steps to force out the right piston from the caliper body.

⚠ WARNING

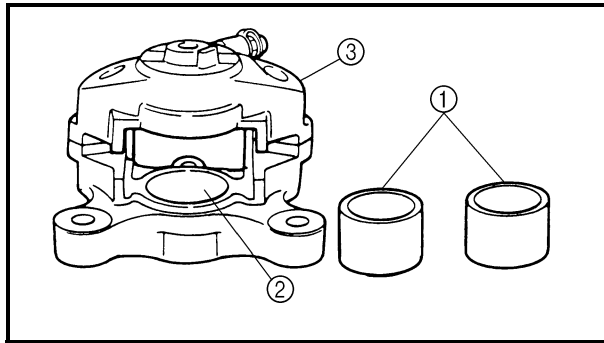
- Never try to pry out the pistons.
- Do not loosen the retaining pins ③.

BRAKE CALIPER INSPECTION AND REPAIR

Recommended brake component replacement schedule	
Brake pads	As required
Piston seals and dust seals	Every two years
Brake hose	Every two years
Brake fluid	Only when brakes are disassembled.

⚠ WARNING

All internal brake components should be cleaned only with new brake fluid. Do not use solvents as they will cause seals to swell and distort.



1. Inspect:

- Caliper piston ①
Scratches/rust/wear → Replace the caliper assembly.
- Caliper cylinder ②
Wear/scratches → Replace the caliper assembly.
- Caliper body ③
Cracks/damage → Replace.
- Oil delivery passage (caliper body)
Blow out with compressed air.

⚠ WARNING

Replace the piston seals and dust seals whenever a caliper is disassembled.

BRAKE CALIPER ASSEMBLY

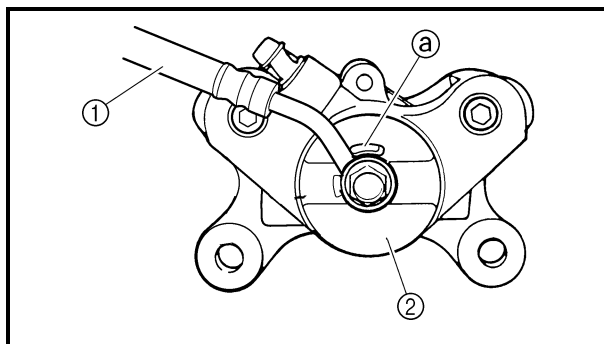
⚠ WARNING

- All internal parts should be cleaned only with new brake fluid.
- 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.



BRAKE CALIPER INSTALLATION

1. Install:

- Brake hose ①

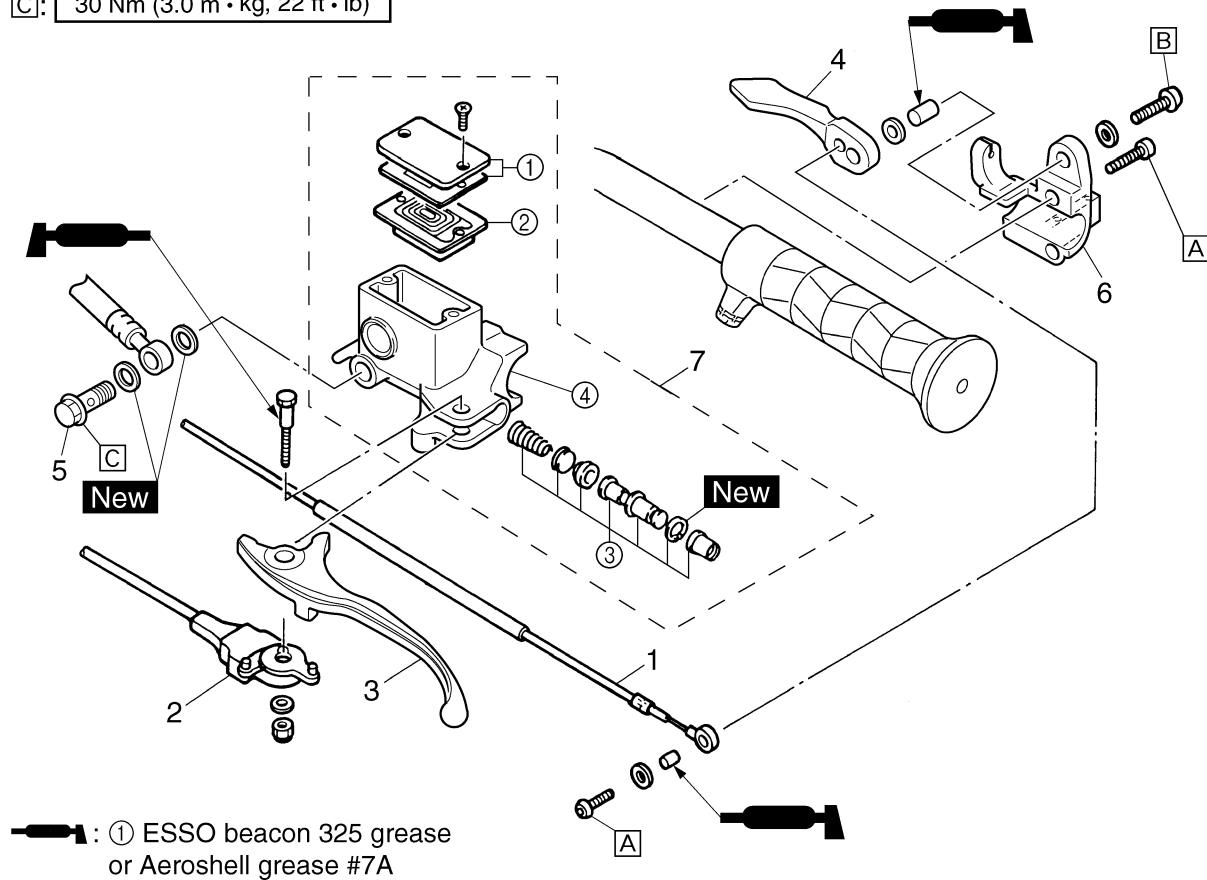
CAUTION:

When installing the brake hose ① onto the brake caliper ②, make sure that the brake pipe touches the projection a on the brake caliper.

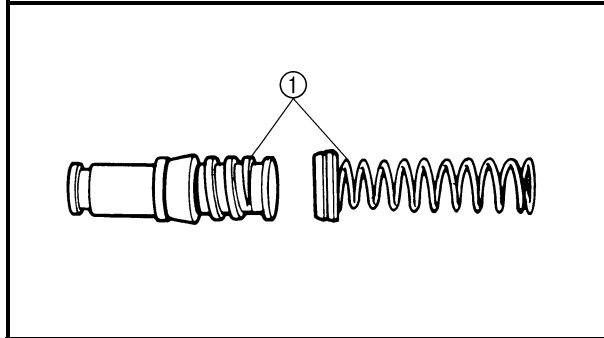
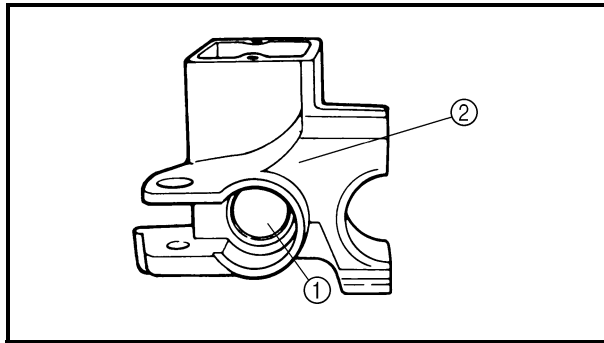


Union bolt (brake hose):
30 Nm (3.0 m · kg, 22 ft · lb)

- [A]: 10 Nm (1.0 m • kg, 7.2 ft • lb)
 [B]: 23 Nm (2.3 m • kg, 17 ft • lb)
 [C]: 30 Nm (3.0 m • kg, 22 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Brake master cylinder removal		Remove the parts in the order listed below. Drain. Disconnect.
1	Brake fluid	1	
2	Parking brake cable	1	
3	Brake switch	1	
4	Brake lever	1	
5	Parking brake lever	1	
6	Union bolt	1	
7	Holder	1	
	Master cylinder assembly	1	
			For installation, reverse the removal procedure.
	Brake master cylinder disassembly		Remove the parts in the order listed below.
①	Reservoir cap set	1	
②	Diaphragm	1	
③	Master cylinder kit	1	
④	Master cylinder body	1	
			For assembly, reverse the disassembly procedure.



INSPECTION

1. 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.

2. Inspect:

- Master cylinder kit ①
Scratches/wear/damage → Replace as a set.

BRAKE MASTER CYLINDER ASSEMBLY

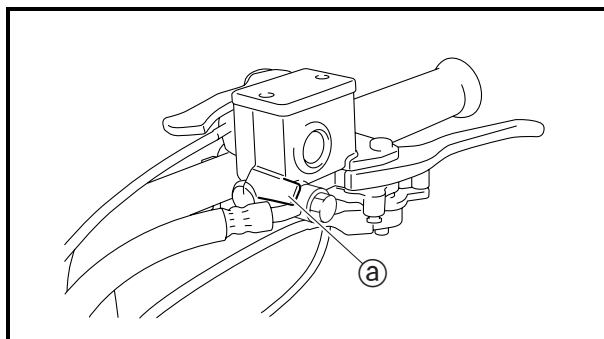
WARNING

- All internal parts should be cleaned only with new brake fluid.
- 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.



INSTALLATION

1. Install:

- Brake hose

CAUTION:

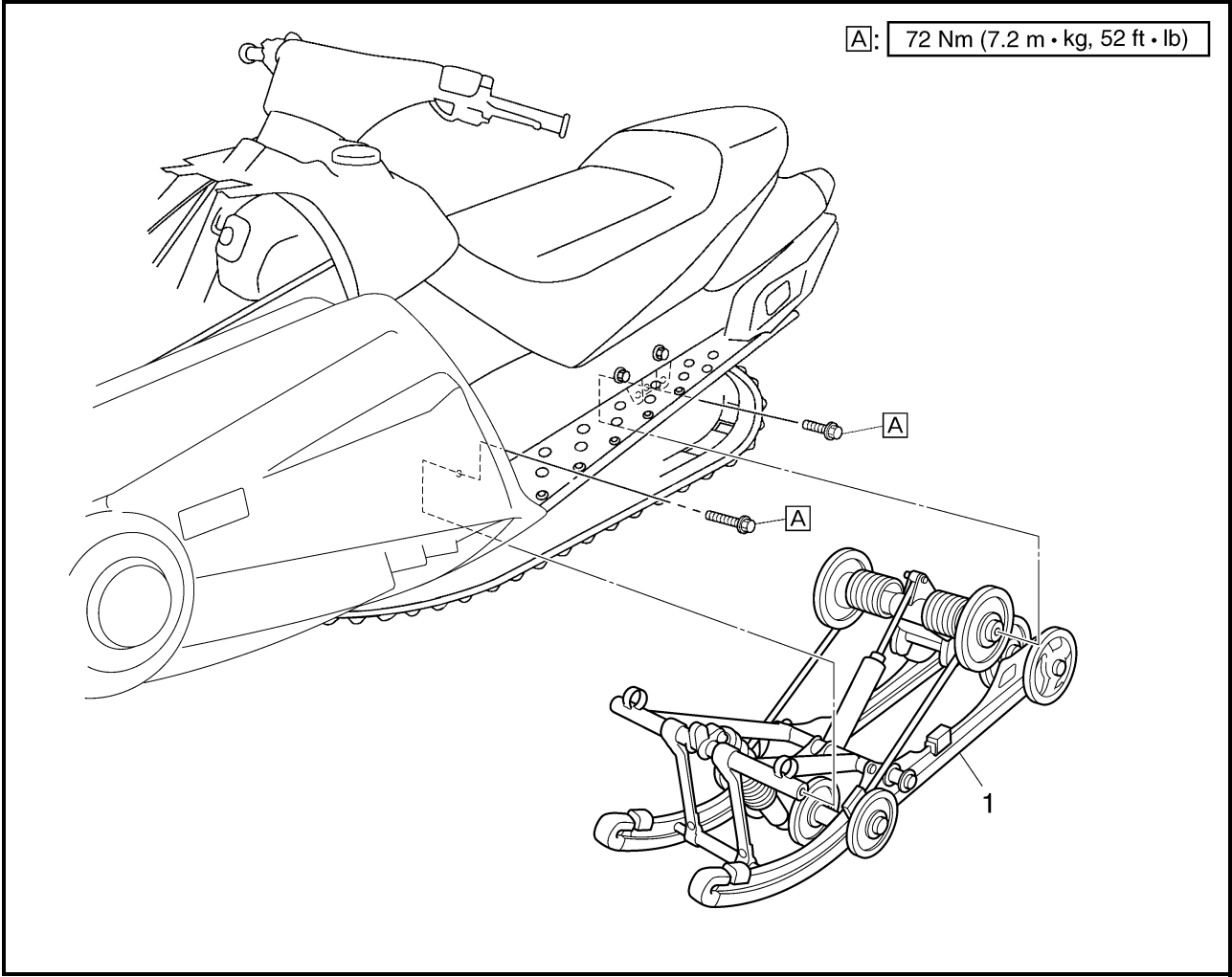
When installing the brake hose onto the brake master cylinder, make sure that the brake pipe touches the projection ① as shown.



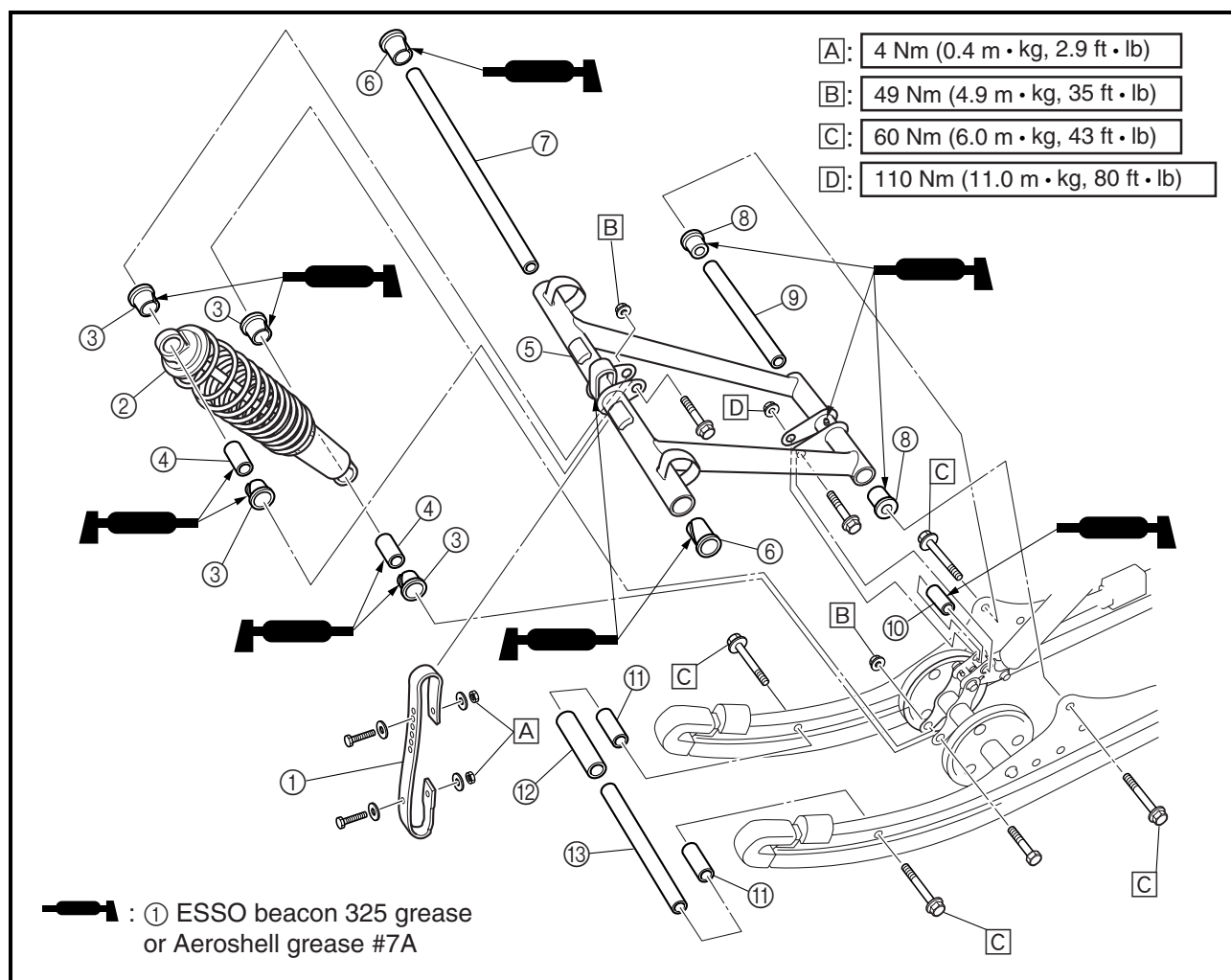
Union bolt (brake hose):
30 Nm (3.0 m · kg, 22 ft · lb)



SLIDE RAIL SUSPENSION
RS90/RS90R

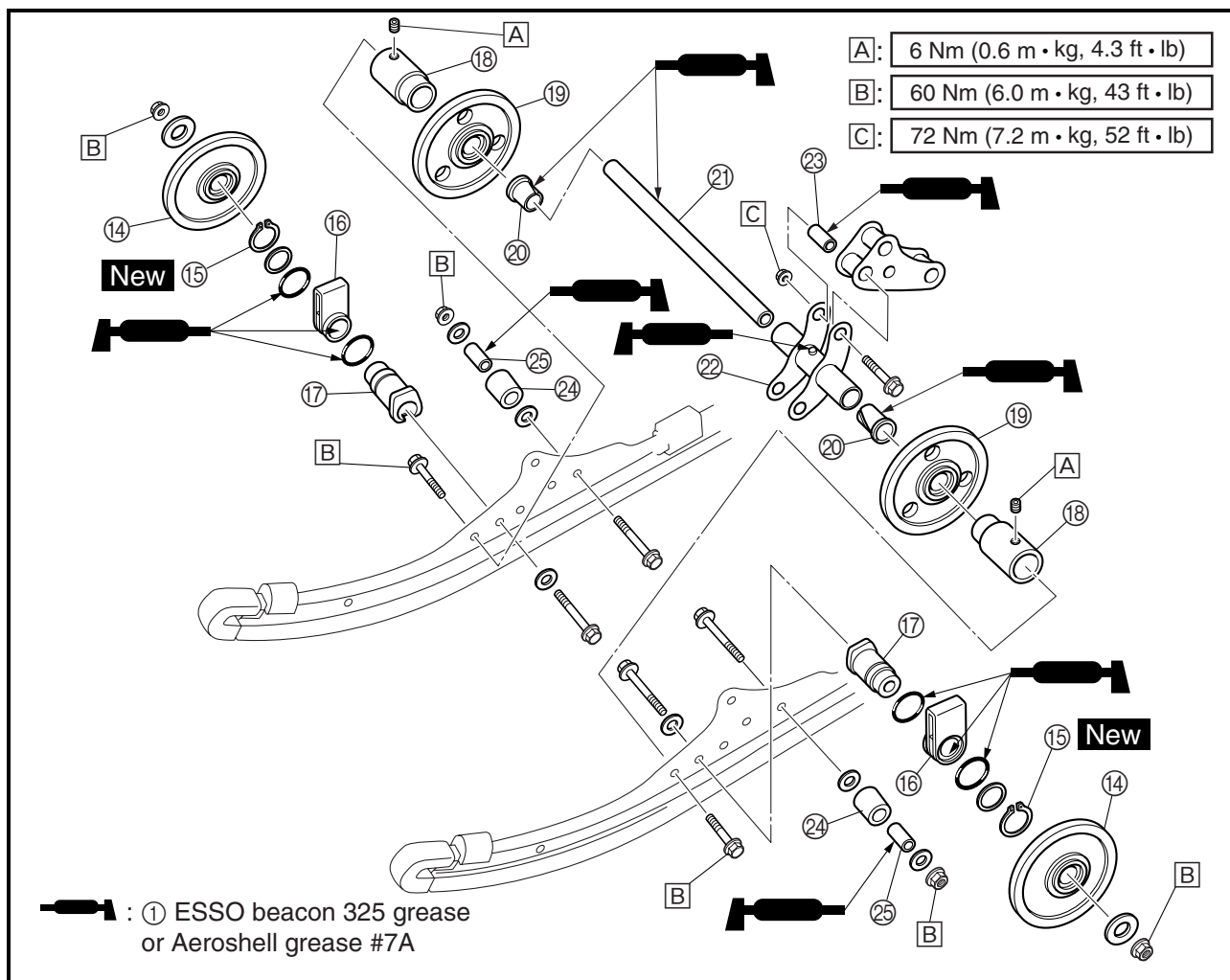


Order	Job name/Part name	Q'ty	Remarks
1	Slide rail suspension removal Rear axle nut Tension adjuster Slide rail suspension	1	Remove the parts in the order listed below. Loosen. Loosen. For installation, reverse the removal procedure.

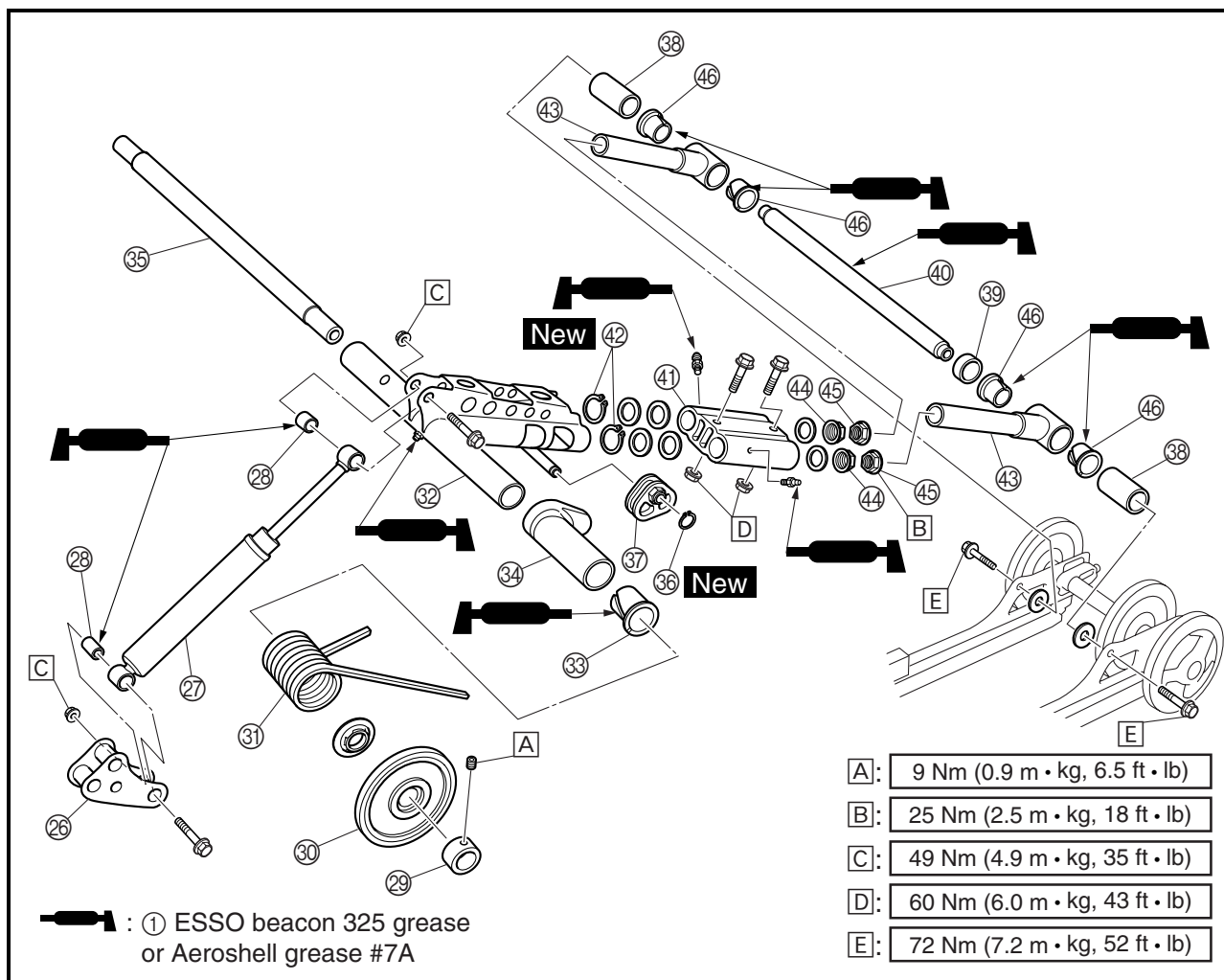


Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension disassembly		Remove the parts in the order listed below.
①	Stopper band	2	
②	Front shock absorber	1	
③	Bushing	4	
④	Collar	2	
⑤	Front pivot arm	1	
⑥	Bushing	2	
⑦	Shaft	1	
⑧	Collar	2	
⑨	Shaft	1	
⑩	Collar	1	
⑪	Collar	2	
⑫	Collar	1	
⑬	Shaft	1	

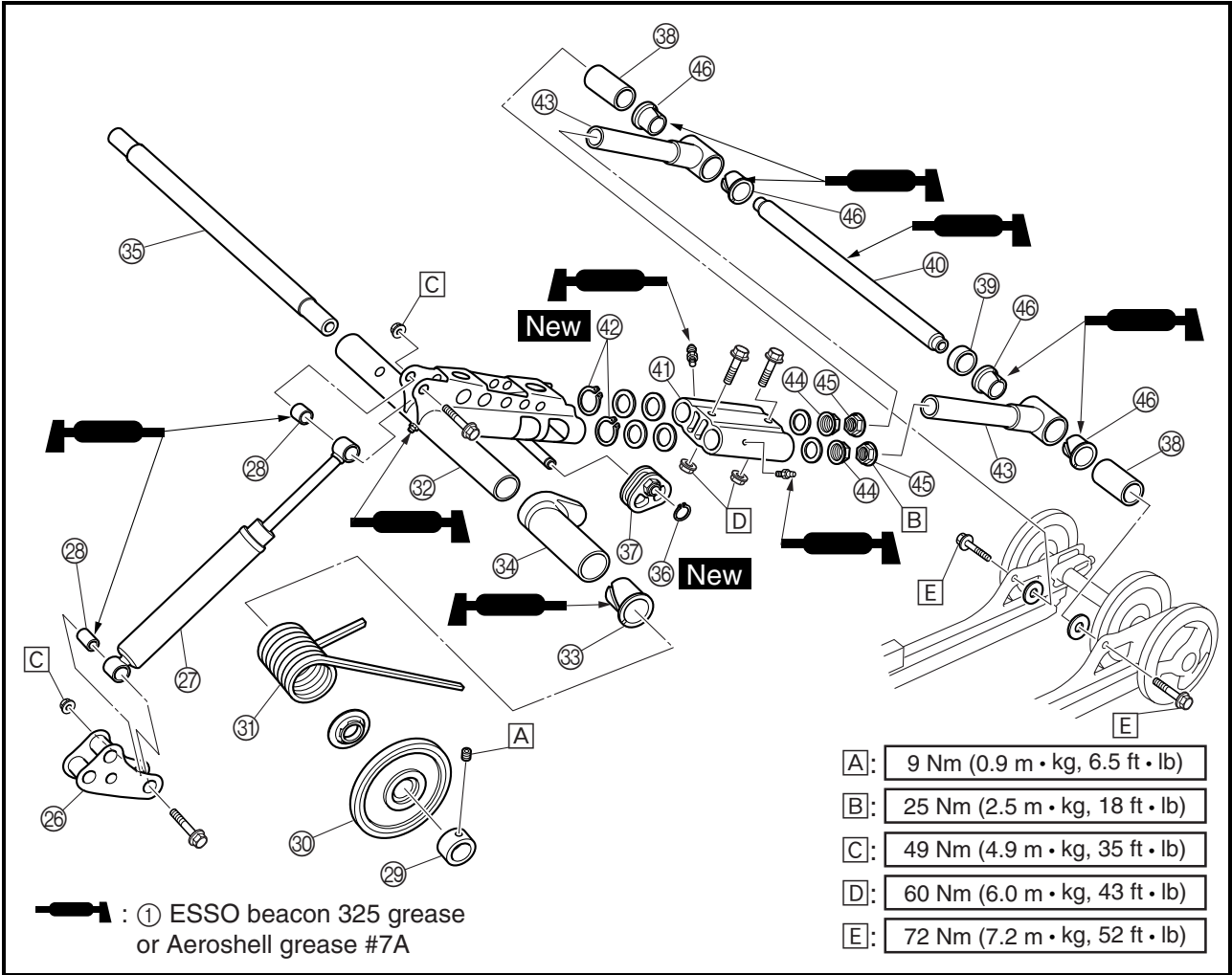
SLIDE RAIL SUSPENSION



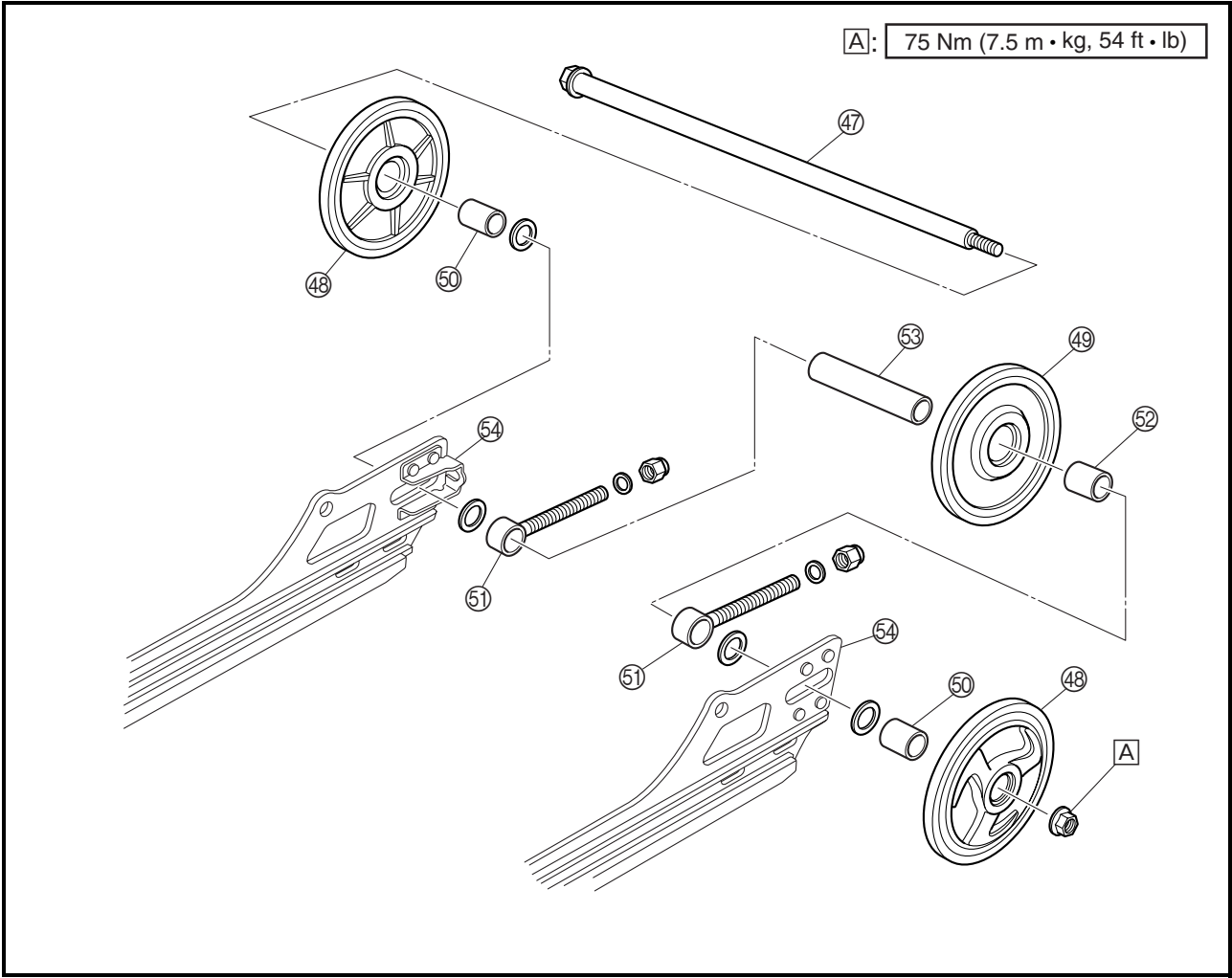
Order	Job name/Part name	Q'ty	Remarks
⑭	Suspension wheel	2	NOTE: _____ Apply grease to the inner surface of each spring end guide.
⑮	Circlip	2	
⑯	Spring end guide	2	
⑰	Spring end guide bracket	2	
⑱	Wheel bracket	2	
⑲	Suspension wheel	2	
⑳	Bushing	2	
㉑	Shaft	1	
㉒	Front suspension bracket	1	
㉓	Collar	1	
㉔	Anti-bottoming stopper	2	
㉕	Collar	2	



Order	Job name/Part name	Q'ty	Remarks
②⑥	Connecting arm	1	
②⑦	Rear shock absorber	1	
②⑧	Collar	2	
②⑨	Collar	2	
③①	Guide wheel	2	
③②	Torsion spring	2	
③③	Rear pivot arm	1	
③④	Bushing	2	
③⑤	Rear pivot arm protector	2	
③⑥	Shaft	1	
③⑦	Circlip	2	
③⑧	Adjuster	2	



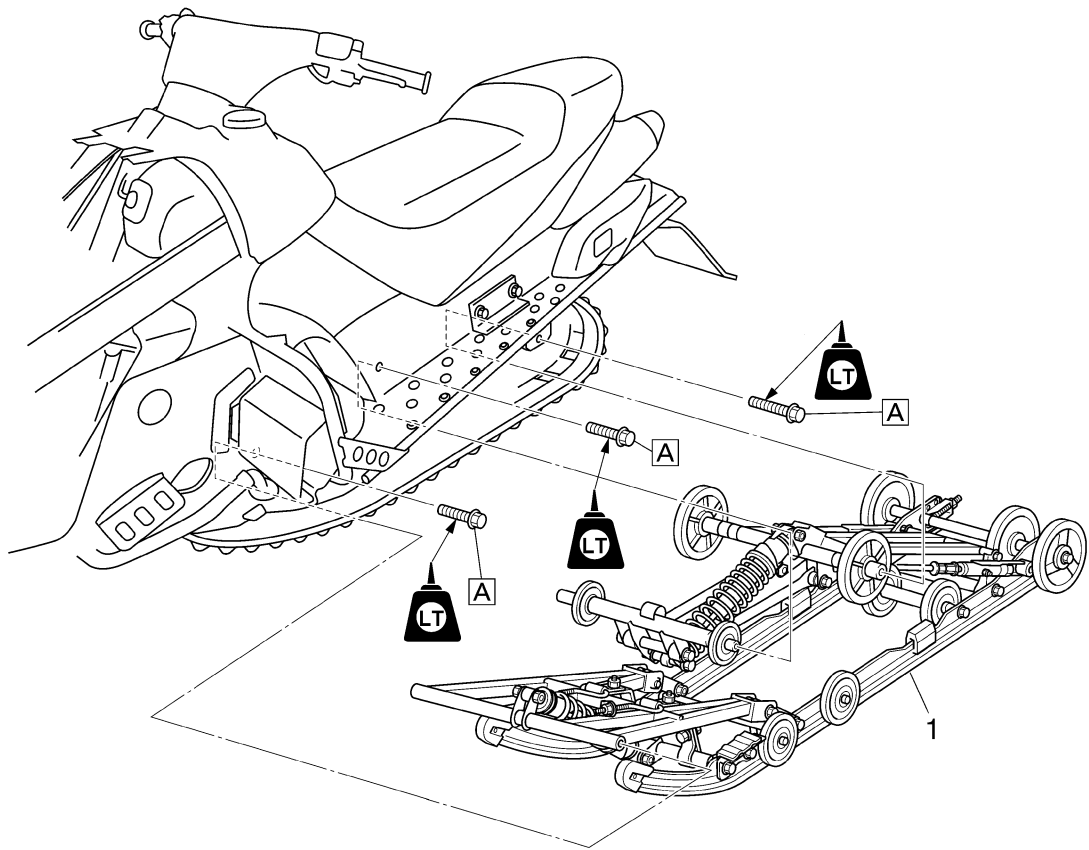
Order	Job name/Part name	Q'ty	Remarks
③⑧	Collar	2	
③⑨	Collar	1	
④⑩	Shaft	1	
④①	Control rod stopper	1	
④②	Circlip	2	
④③	Control rod	2	
④④	Locknut	2	
④⑤	Adjuster nut	2	
④⑥	Bushing	4	



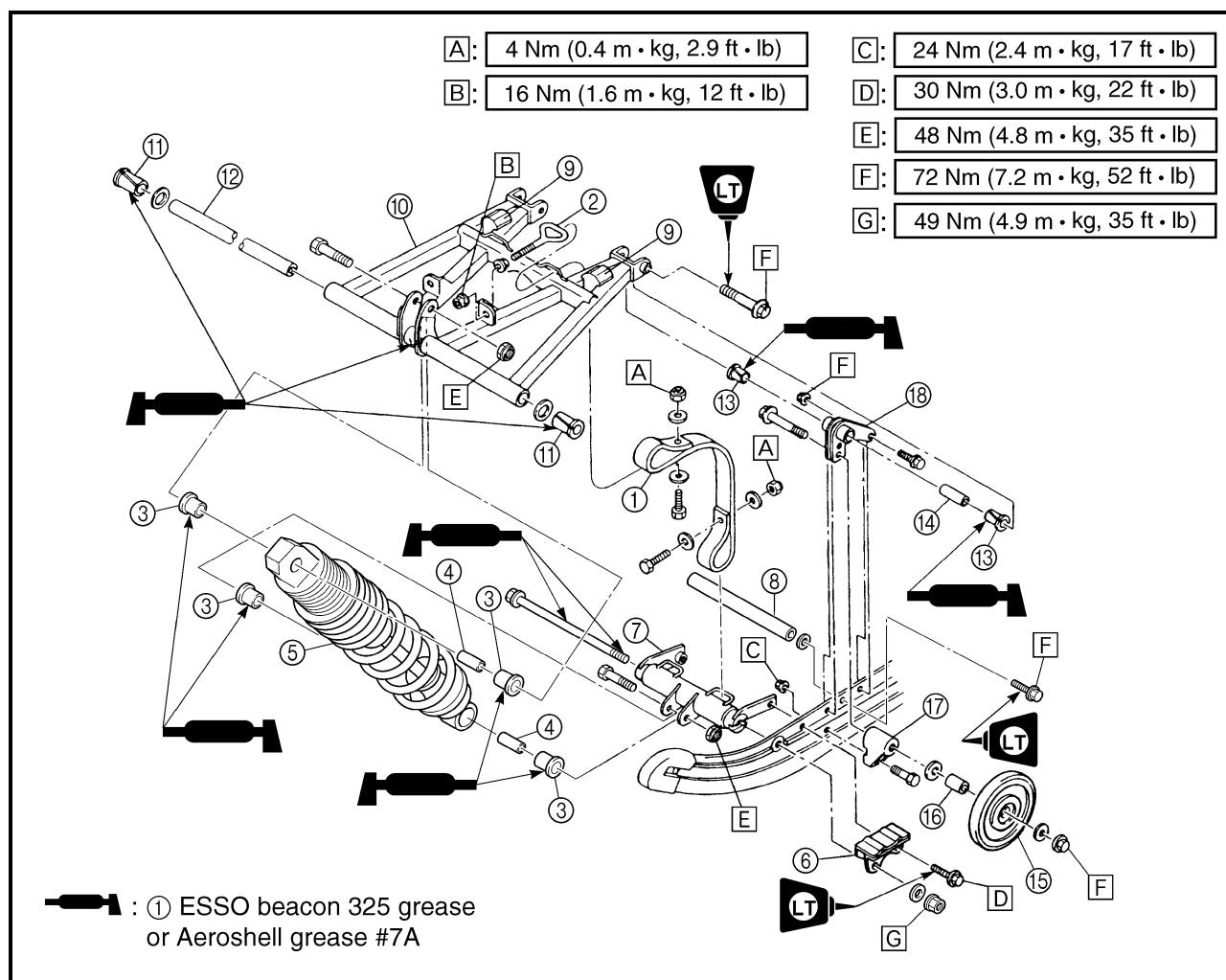
Order	Job name/Part name	Q'ty	Remarks
④⑦	Rear axle	1	For assembly, reverse the disassembly procedure.
④⑧	Guide wheel	2	
④⑨	Guide wheel	1	
⑤①	Collar	2	
⑤②	Tension adjuster	2	
⑤③	Collar	1	
⑤④	Collar	1	
⑤⑤	Sliding frame	2	

RSG90

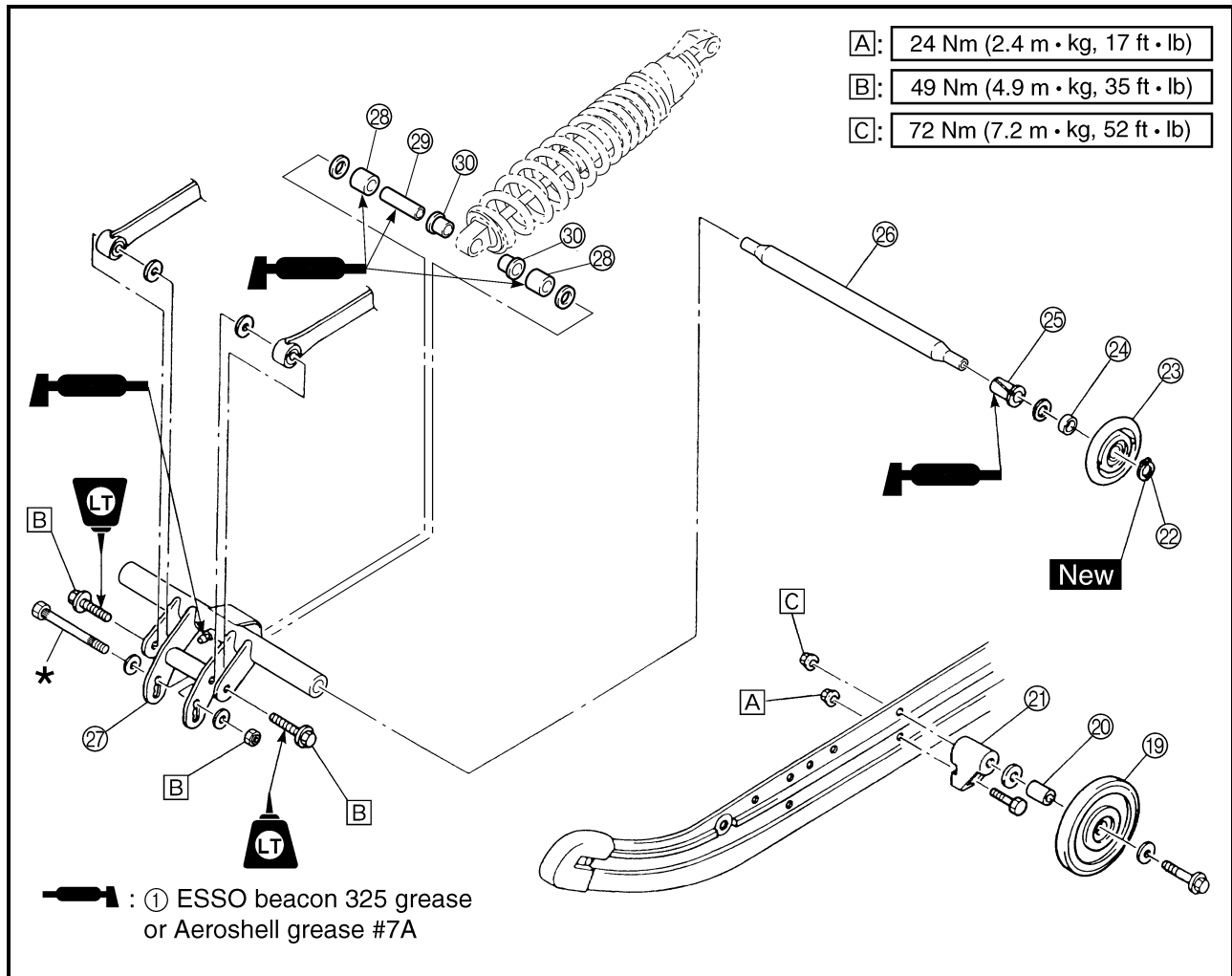
A: 72 Nm (7.2 m • kg, 52 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
1	Slide rail suspension removal	1	Remove the parts in the order listed below.
	Rear axle nut		Loosen.
	Tension adjuster		Loosen.
	Left side cover		Refer to "PRIMARY SHEAVE AND DRIVE V-BELT".
	Slide rail suspension		For installation, reverse the removal procedure.



Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension disassembly		Remove the parts in the order listed below.
①	Stopper band	2	
②	Hook	2	
③	Bushing	4	
④	Bushing	2	
⑤	Front shock absorber	1	
⑥	Bracket	2	
⑦	Front suspension bracket	1	
⑧	Shaft	1	
⑨	Rubber damper	2	
⑩	Front pivot arm	1	
⑪	Bushing	2	
⑫	Shaft	1	
⑬	Bushing	4	
⑭	Collar	2	
⑮	Suspension wheel	2	
⑯	Collar	2	
⑰	Wheel bracket	2	
⑱	Front pivot arm bracket	2	



Order	Job name/Part name	Q'ty	Remarks
①⑨	Suspension wheel	2	
②⑩	Collar	2	
②①	Wheel bracket	2	
②②	Circlip	2	
②③	Suspension wheel	2	
②④	Collar	2	
②⑤	Bushing	2	
②⑥	Shaft	1	
②⑦	Rear suspension bracket	1	
②⑧	Spacer	2	
②⑨	Collar	1	
③⑩	Bushing	2	

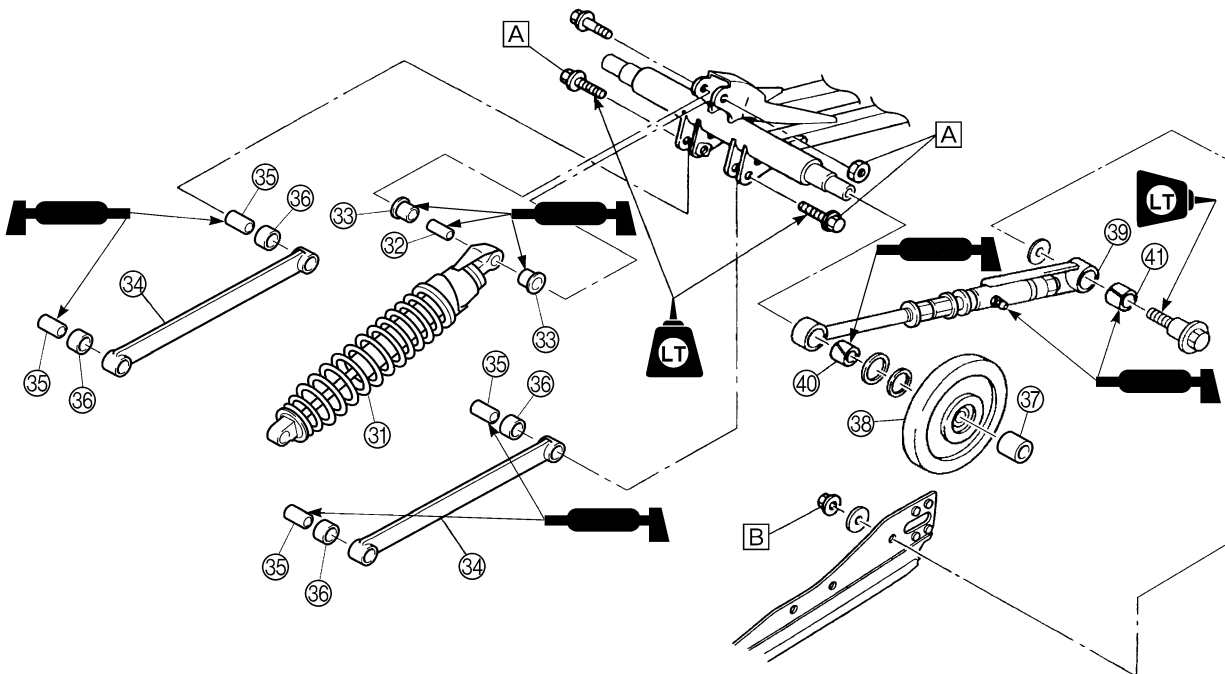
* This model has a "Easy adjust" system for the full rate adjuster. The bolt has teeth on it. So when the bolt is turned, it rides up and down the bracket.

NOTE:

- The nut has to be loosened first, while the bolt is held in place with a wrench.
- Then the bolt can be turned to adjust the shock position up or down.
- If the bolt is turned with the nut tight, it is possible to strip the teeth off the bolt.

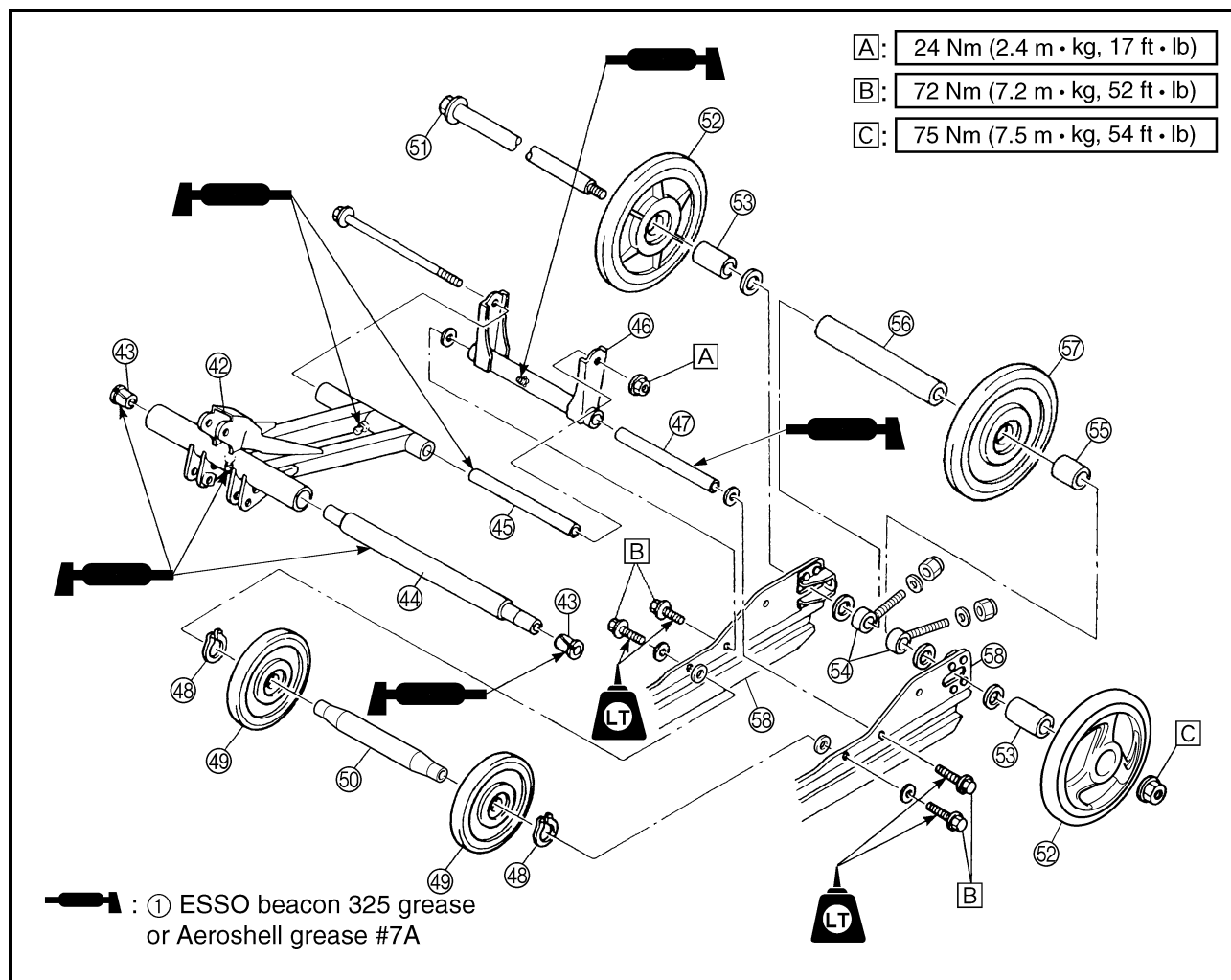


- [A]: 49 Nm (4.9 m • kg, 35 ft • lb)
- [B]: 75 Nm (7.5 m • kg, 54 ft • lb)



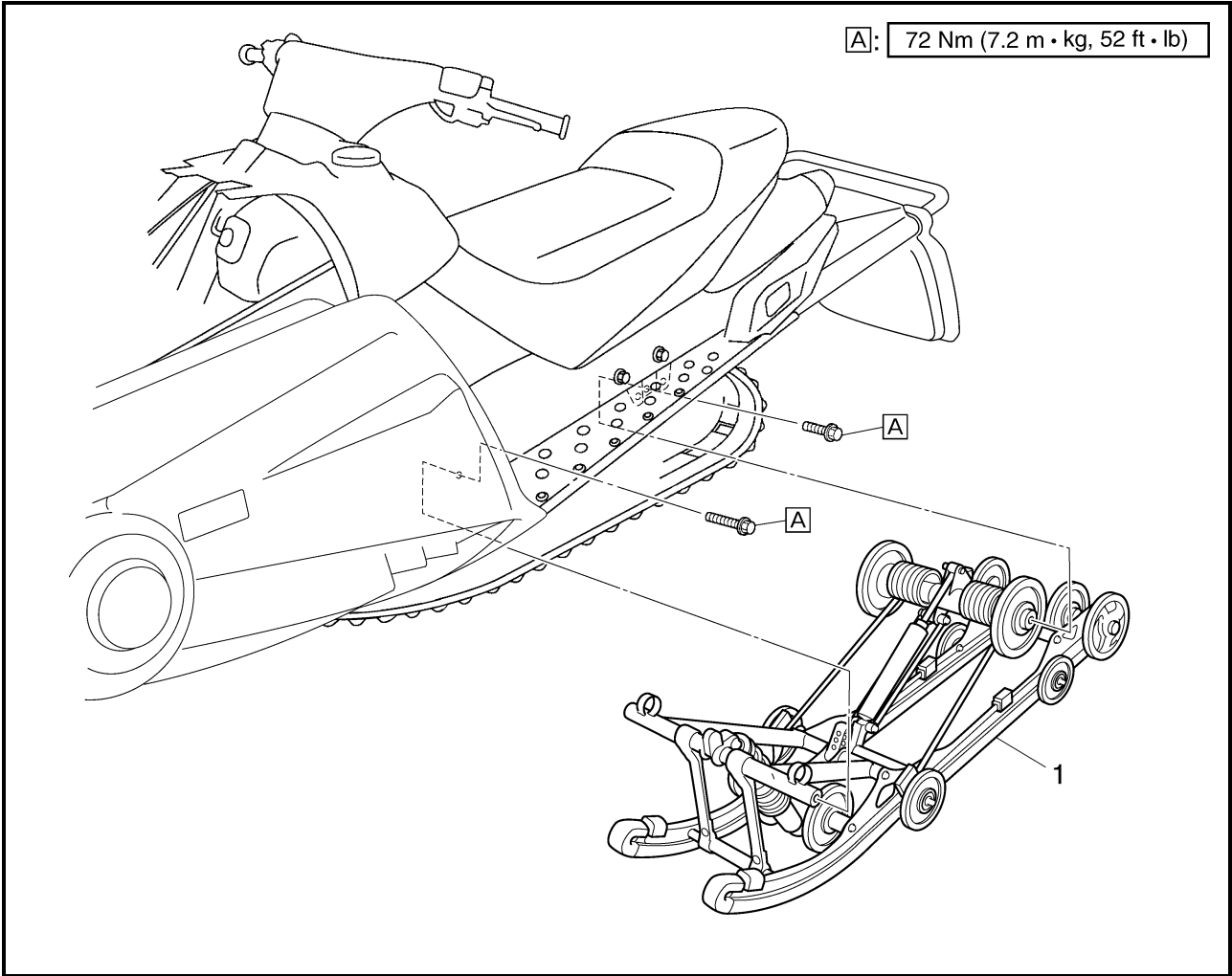
 : ① ESSO beacon 325 grease
or Aeroshell grease #7A

Order	Job name/Part name	Q'ty	Remarks
③①	Rear shock absorber	1	
③②	Collar	1	
③③	Bushing	2	
③④	Pull rod	2	
③⑤	Collar	4	
③⑥	Bushing	4	
③⑦	Collar	2	
③⑧	Suspension wheel	2	
③⑨	Control rod	2	
④⑩	Bushing	2	
④①	Bushing	2	

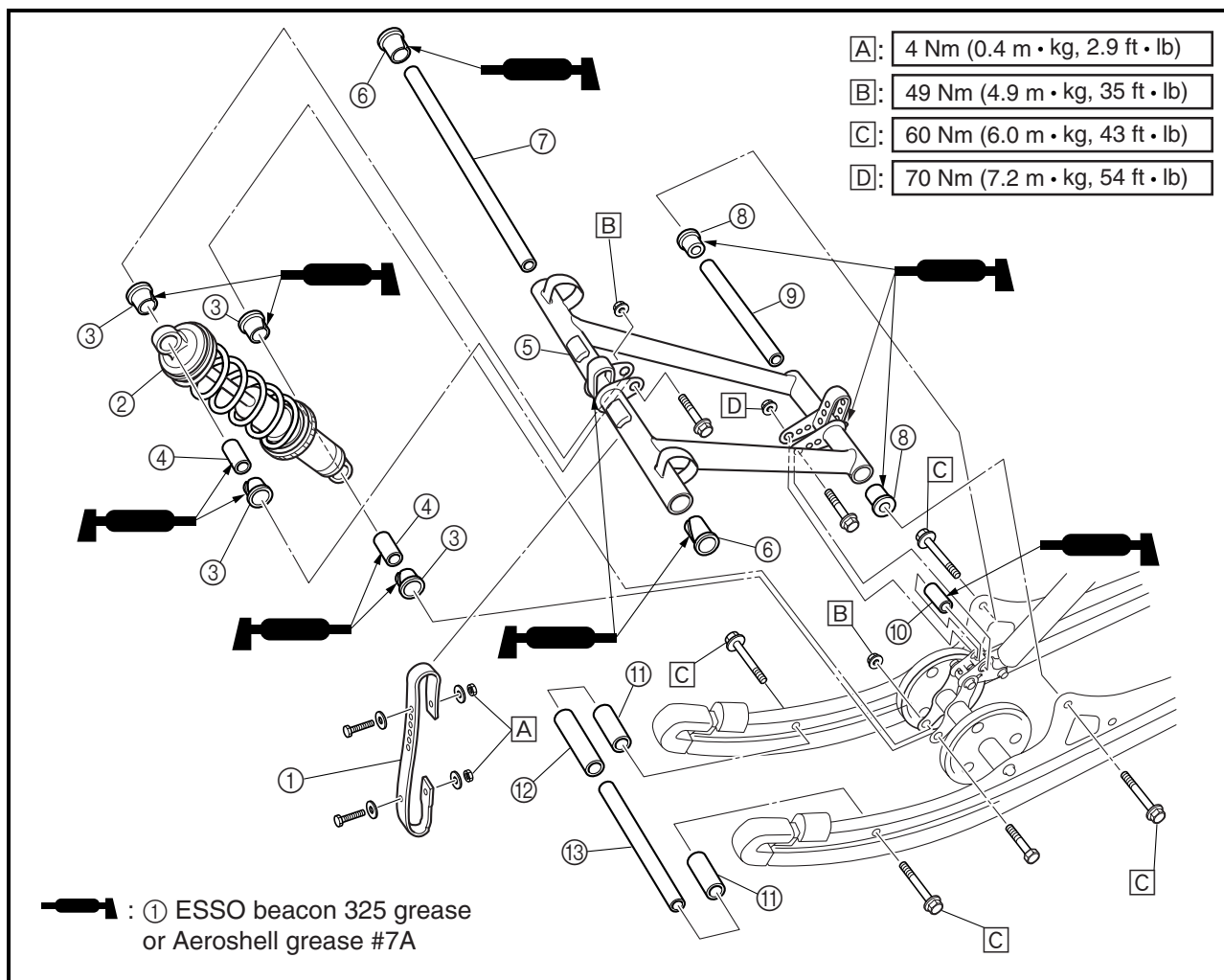


Order	Job name/Part name	Q'ty	Remarks
42	Rear pivot arm	1	For assembly, reverse the disassembly procedure.
43	Bushing	2	
44	Shaft	1	
45	Shaft	1	
46	Rear pivot arm bracket	1	
47	Shaft	1	
48	Circlip	2	
49	Suspension wheel	2	
50	Wheel bracket shaft	1	
51	Rear axle	1	
52	Guide wheel	2	
53	Collar	2	
54	Tension adjuster	2	
55	Collar	1	
56	Collar	1	
57	Guide wheel	1	
58	Sliding frame	2	

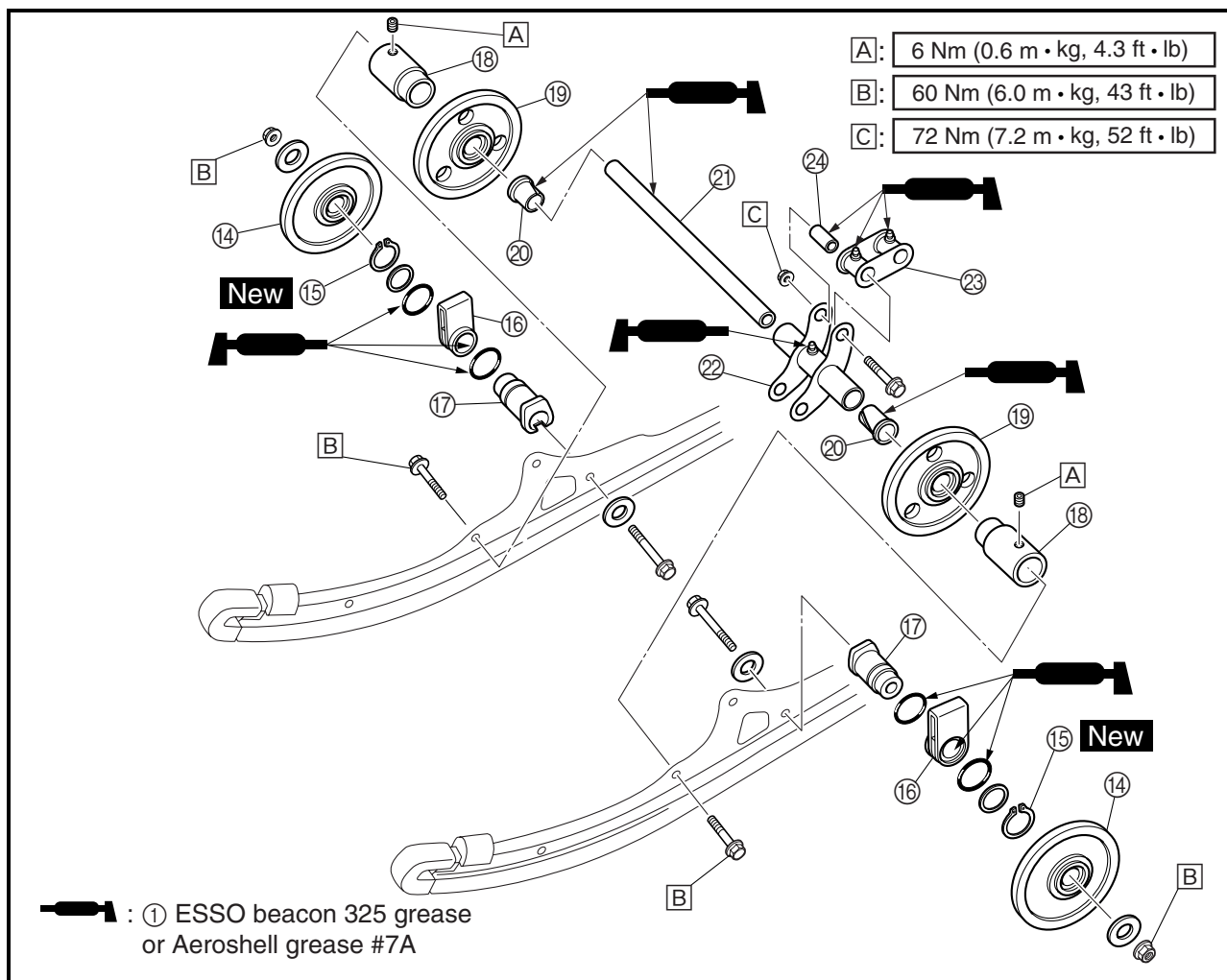
RS90M



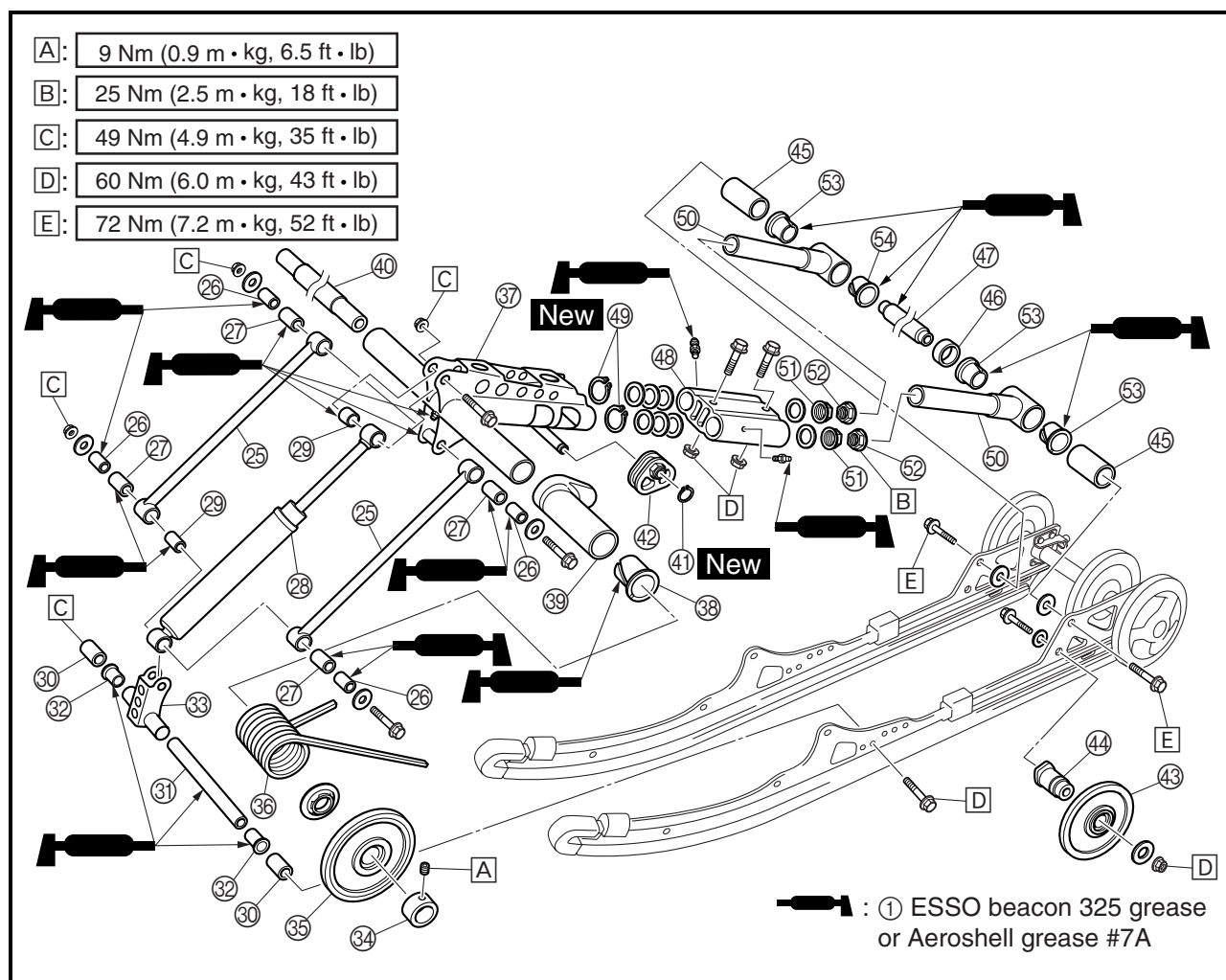
Order	Job name/Part name	Q'ty	Remarks
1	Slide rail suspension removal Rear axle nut Tension adjuster Slide rail suspension	1	Remove the parts in the order listed below. Loosen. Loosen. For installation, reverse the removal procedure.



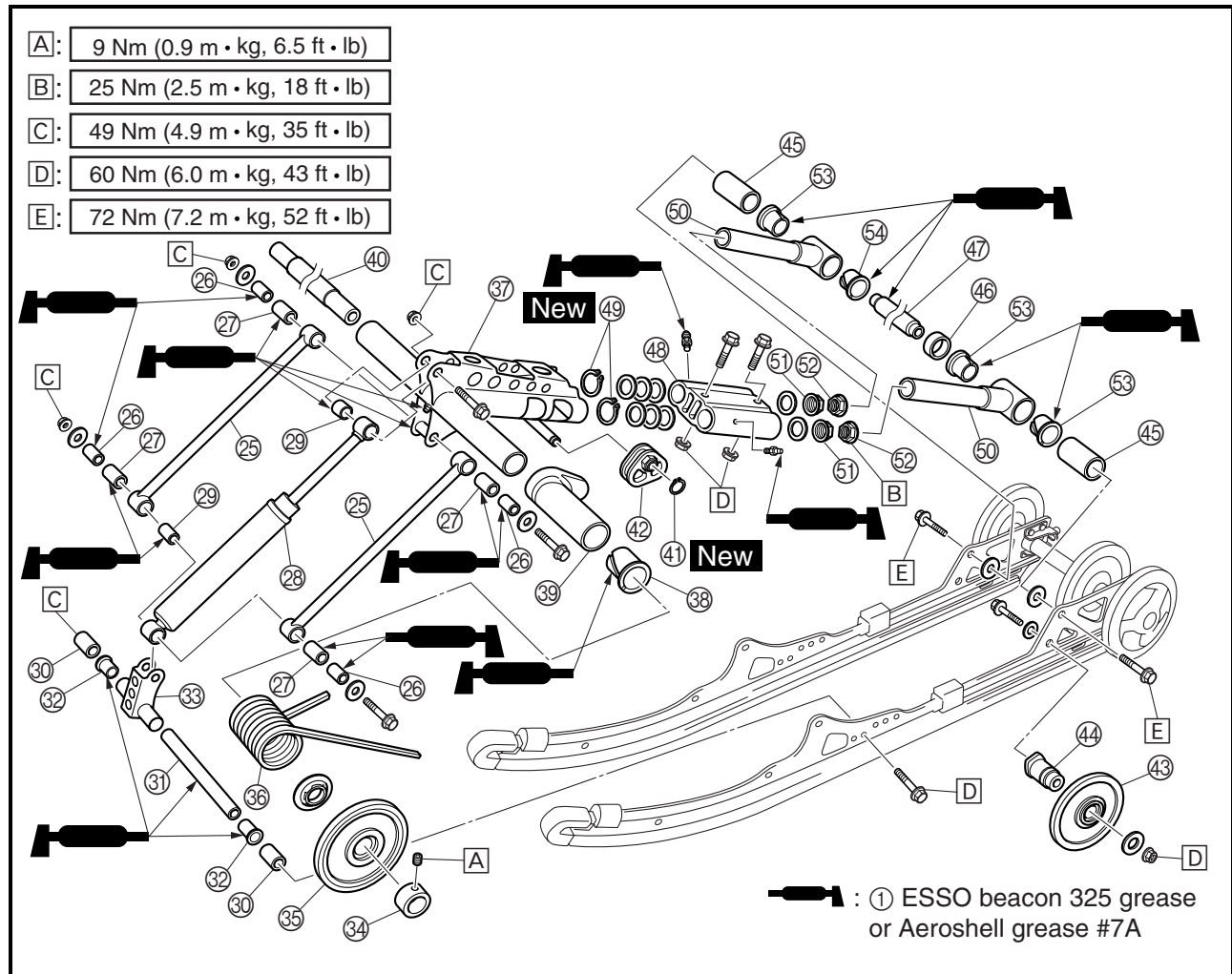
Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension disassembly		Remove the parts in the order listed below.
①	Stopper band	2	
②	Front shock absorber	1	
③	Bushing	4	
④	Collar	2	
⑤	Front pivot arm	1	
⑥	Bushing	2	
⑦	Shaft	1	
⑧	Collar	1	
⑨	Shaft	1	
⑩	Collar	1	
⑪	Collar	2	
⑫	Collar	1	
⑬	Shaft	1	



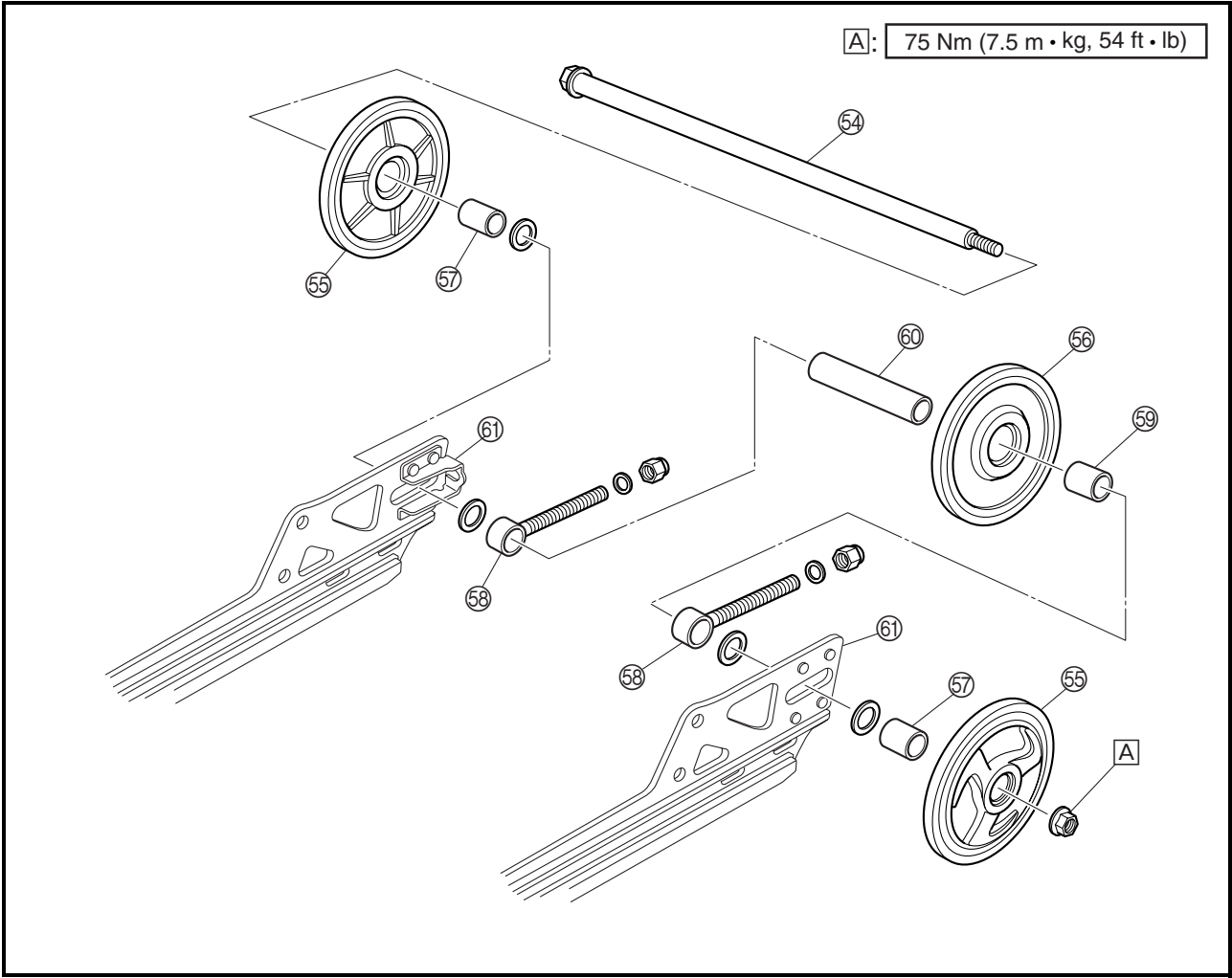
Order	Job name/Part name	Q'ty	Remarks
⑭	Suspension wheel	2	NOTE: _____ Apply grease to the inner surface of each spring end guide. _____
⑮	Circlip	2	
⑯	Spring end guide	2	
⑰	Spring end guide bracket	2	
⑱	Wheel bracket	2	
⑲	Suspension wheel	2	
⑳	Bushing	2	
㉑	Shaft	1	
㉒	Front suspension bracket	1	
㉓	Connecting arm	1	
㉔	Collar	1	



Order	Job name/Part name	Q'ty	Remarks
25	Pull rod	2	
26	Collar	4	
27	Bushing	4	
28	Rear shock absorber	1	
29	Collar	2	
30	Collar	2	
31	Shaft	1	
32	Bushing	2	
33	Rear suspension bracket	1	
34	Collar	2	
35	Guide wheel	2	
36	Torsion spring	2	
37	Rear pivot arm	1	
38	Bushing	2	
39	Rear pivot arm protector	2	
40	Shaft	1	
41	Circlip	2	
42	Adjuster	2	



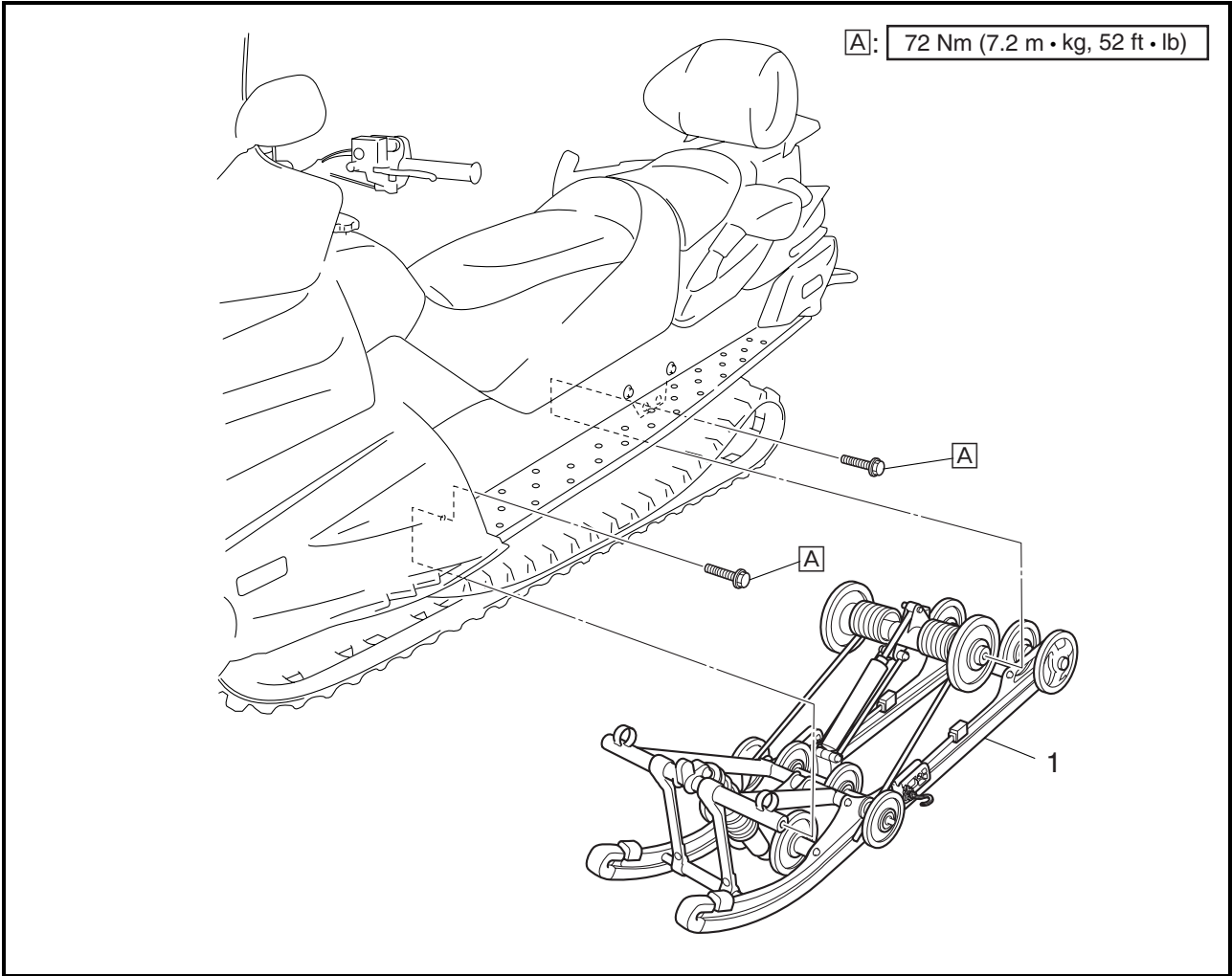
Order	Job name/Part name	Q'ty	Remarks
43	Suspension wheel	2	
44	Wheel bracket	2	
45	Collar	2	
46	Collar	1	
47	Shaft	1	
48	Control rod stopper	1	
49	Circlip	2	
50	Control rod	2	
51	Locknut	2	
52	Adjuster nut	2	
53	Bushing	4	



Order	Job name/Part name	Q'ty	Remarks
54	Rear axle	1	For assembly, reverse the disassembly procedure.
55	Guide wheel	2	
56	Guide wheel	1	
57	Collar	2	
58	Tension adjuster	2	
59	Collar	1	
60	Collar	1	
61	Sliding frame	2	

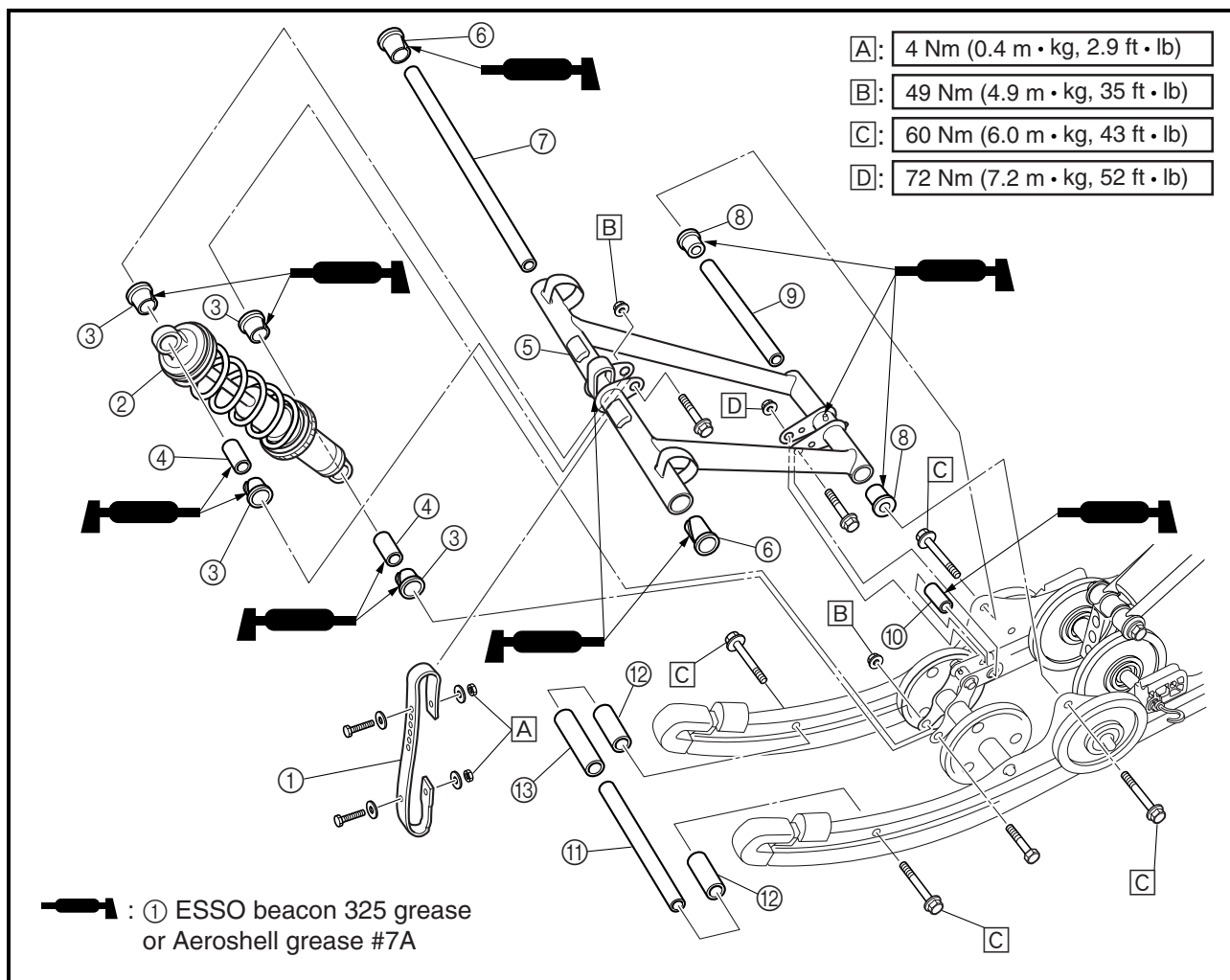


RST90

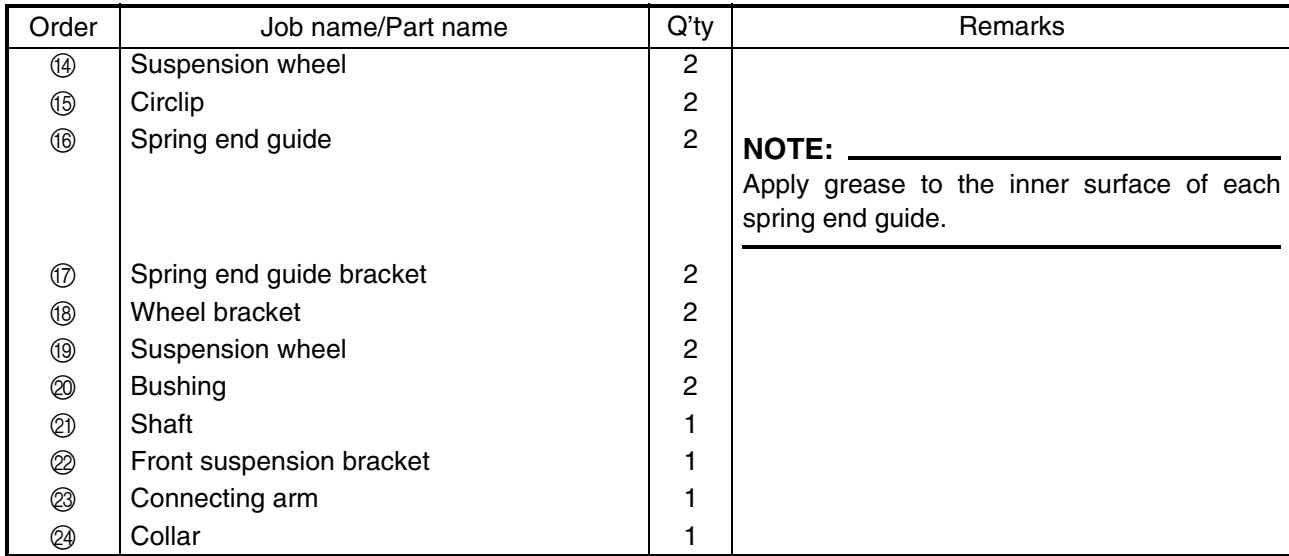


Order	Job name/Part name	Q'ty	Remarks
1	Slide rail suspension removal Rear axle nut Tension adjuster Slide rail suspension	1	Remove the parts in the order listed below. Loosen. Loosen. For installation, reverse the removal procedure.

SLIDE RAIL SUSPENSION



Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension disassembly		Remove the parts in the order listed below.
①	Stopper band	2	
②	Front shock absorber	1	
③	Bushing	4	
④	Collar	2	
⑤	Front pivot arm	1	
⑥	Bushing	2	
⑦	Shaft	1	
⑧	Collar	2	
⑨	Shaft	1	
⑩	Collar	1	
⑪	Shaft	1	
⑫	Collar	2	
⑬	Collar	1	



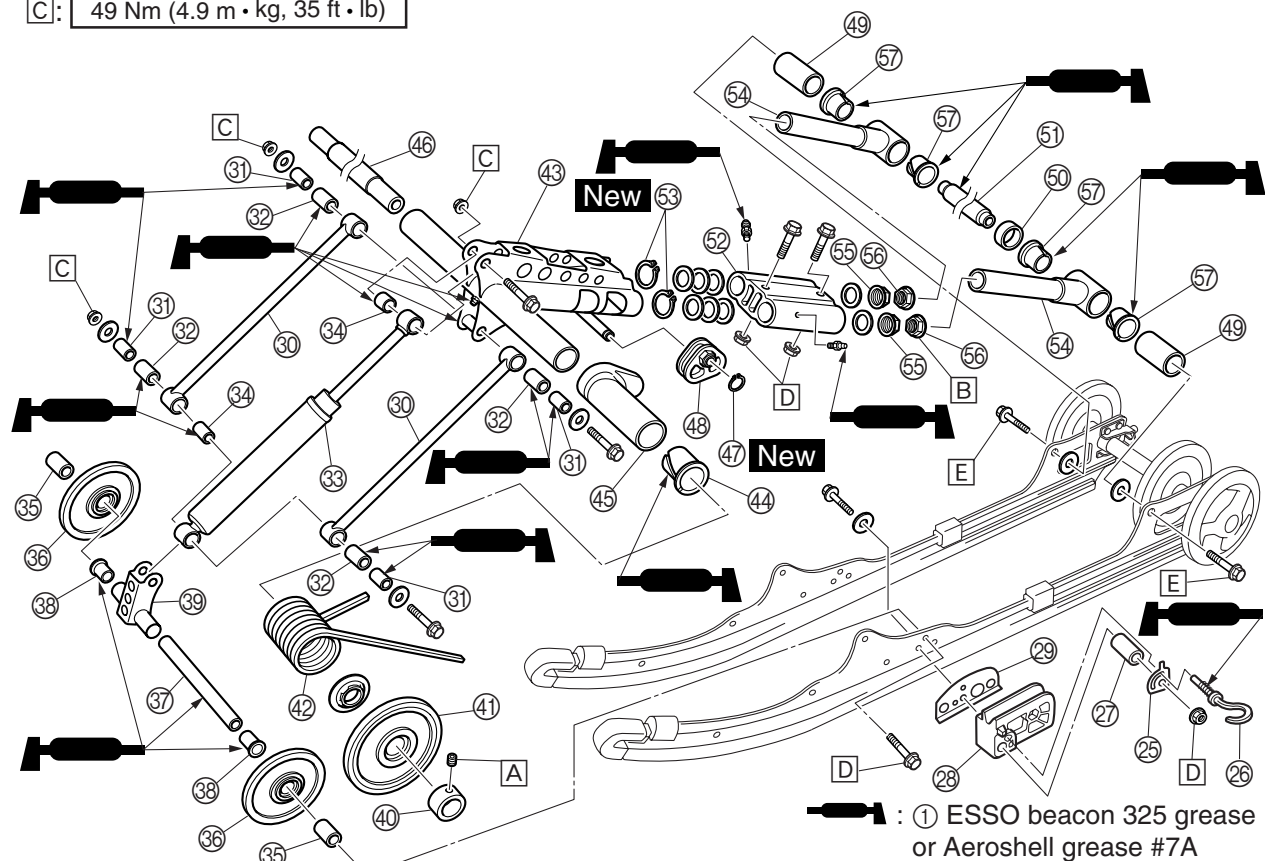
A: 9 Nm (0.9 m • kg, 6.5 ft • lb)

D: 60 Nm (6.0 m • kg, 43 ft • lb)

B: 25 Nm (2.5 m • kg, 18 ft • lb)

E: 72 Nm (7.2 m • kg, 52 ft • lb)

C: 49 Nm (4.9 m • kg, 35 ft • lb)



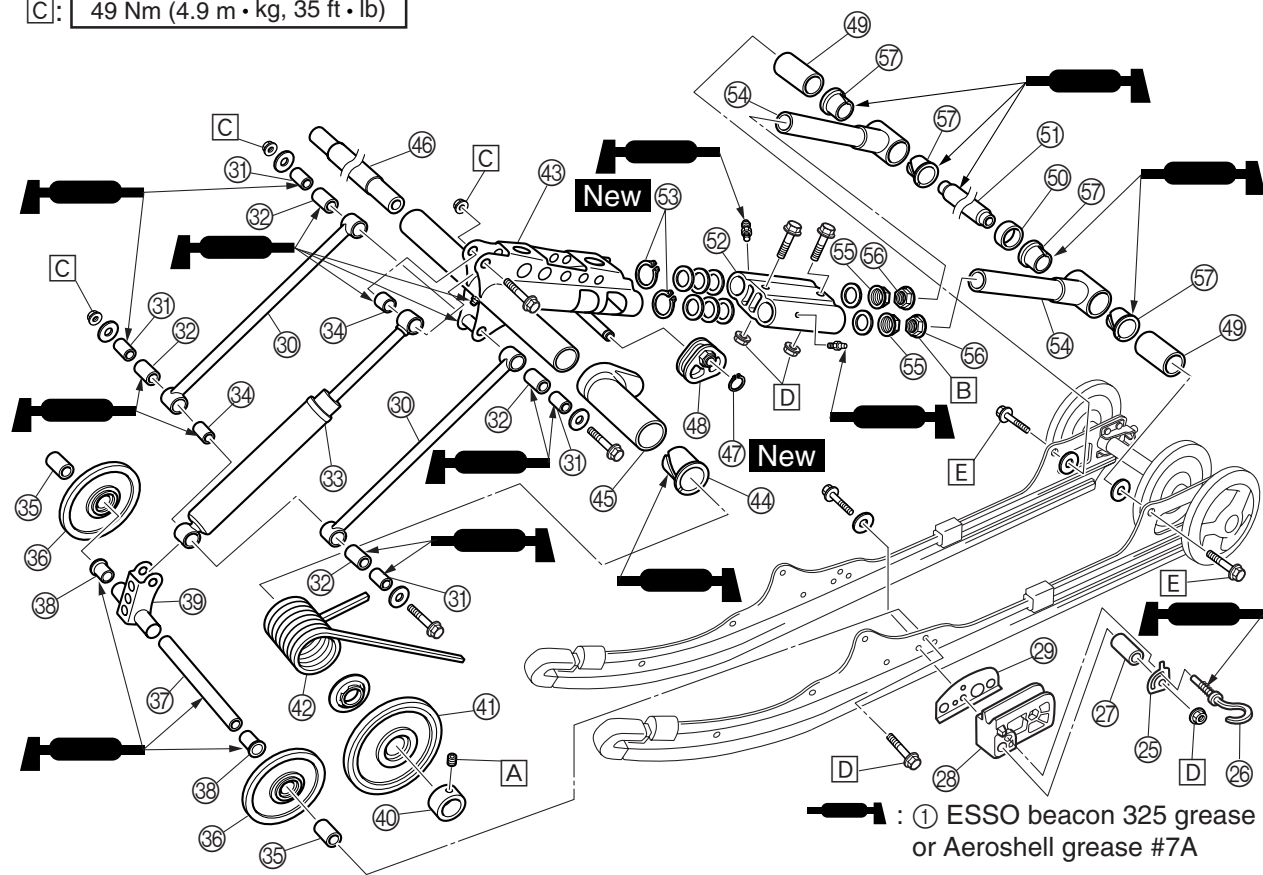
Order	Job name/Part name	Q'ty	Remarks
25	Lock lever guide plate	2	
26	Lock lever	2	
27	Collar	2	
28	2-up adjusting block	2	
29	2-up adjusting block plate	2	
30	Pull rod	2	
31	Collar	4	
32	Bushing	4	
33	Rear shock absorber	1	
34	Collar	2	
35	Collar	2	
36	Suspension wheel	2	
37	Shaft	1	
38	Bushing	2	
39	Rear suspension bracket	1	
40	Collar	2	
41	Guide wheel	2	
42	Torsion spring	2	

A: 9 Nm (0.9 m • kg, 6.5 ft • lb)

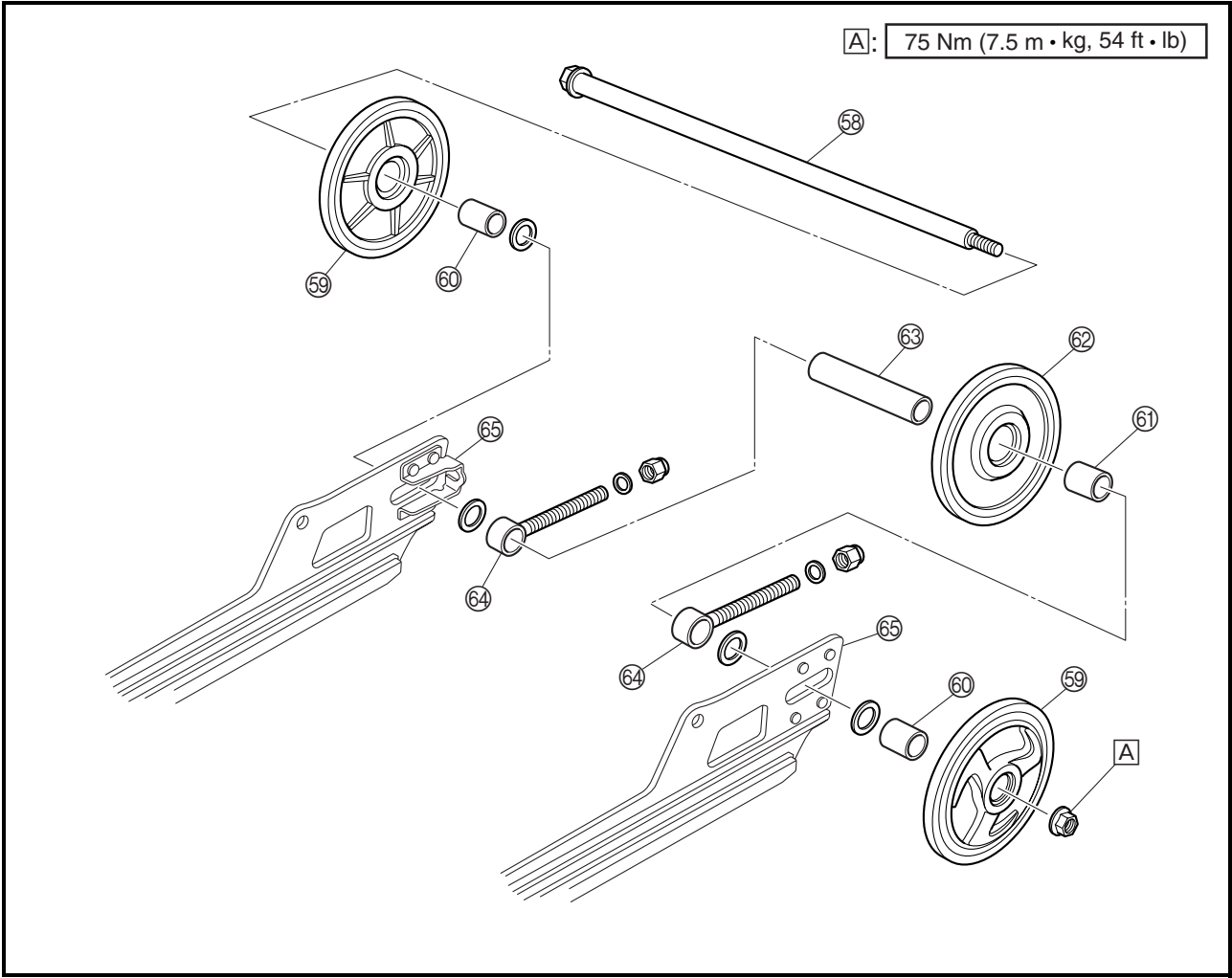
D: 60 Nm (6.0 m • kg, 43 ft • lb)

B: 25 Nm (2.5 m • kg, 18 ft • lb)

E: 72 Nm (7.2 m • kg, 52 ft • lb)

C: 49 Nm (4.9 m • kg, 35 ft • lb)


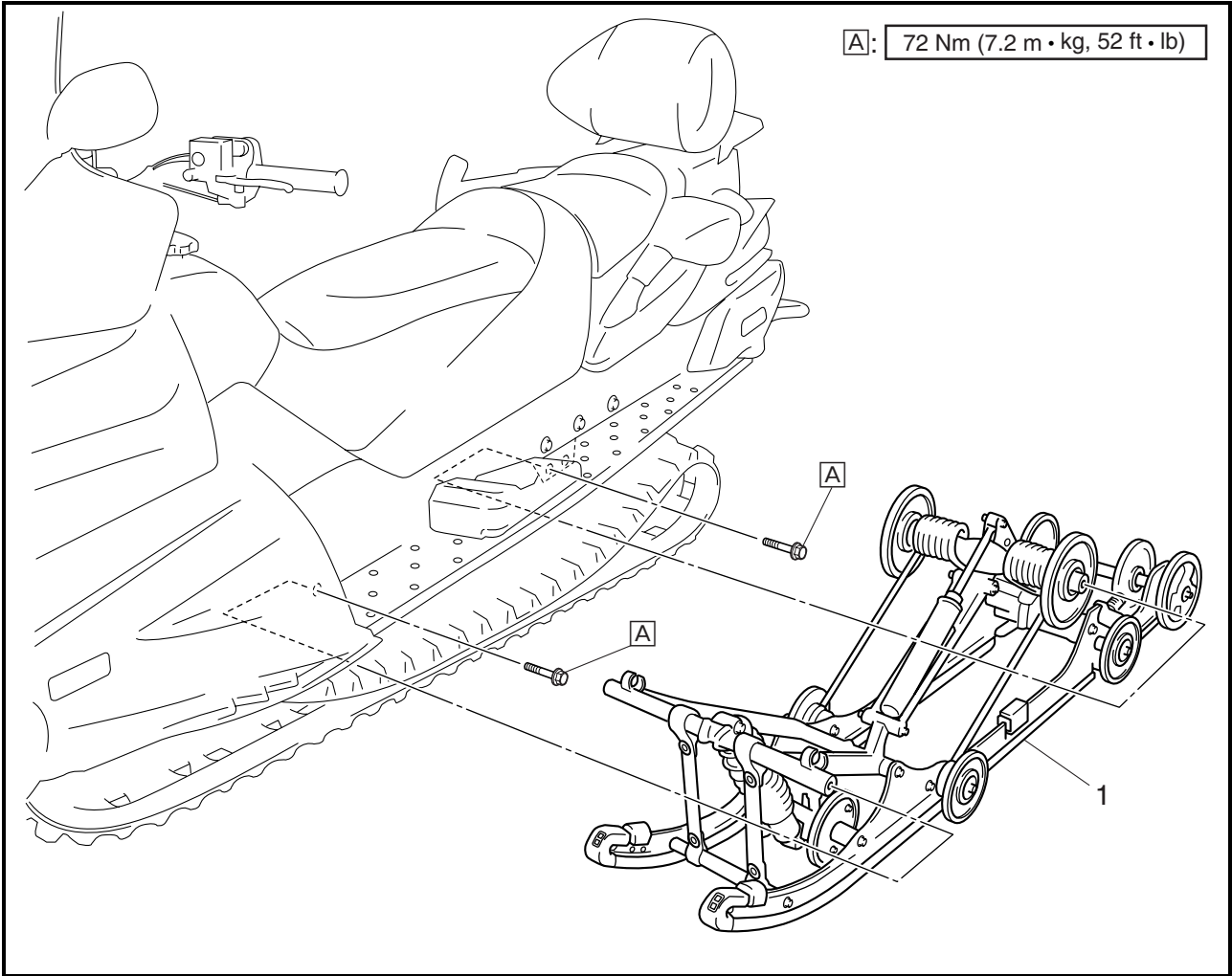
Order	Job name/Part name	Q'ty	Remarks
43	Rear pivot arm	1	
44	Bushing	1	
45	Rear pivot arm protector	2	
46	Shaft	1	
47	Circlip	2	
48	Adjuster	2	
49	Collar	2	
50	Collar	1	
51	Shaft	1	
52	Control rod stopper	1	
53	Circlip	2	
54	Control rod	2	
55	Locknut	2	
56	Adjuster nut	2	
57	Bushing	4	



Order	Job name/Part name	Q'ty	Remarks
58	Rear axle	1	For assembly, reverse the disassembly procedure.
59	Guide wheel	2	
60	Collar	2	
61	Collar	1	
62	Guide wheel	1	
63	Collar	1	
64	Tension adjuster	2	
65	Sliding frame	2	

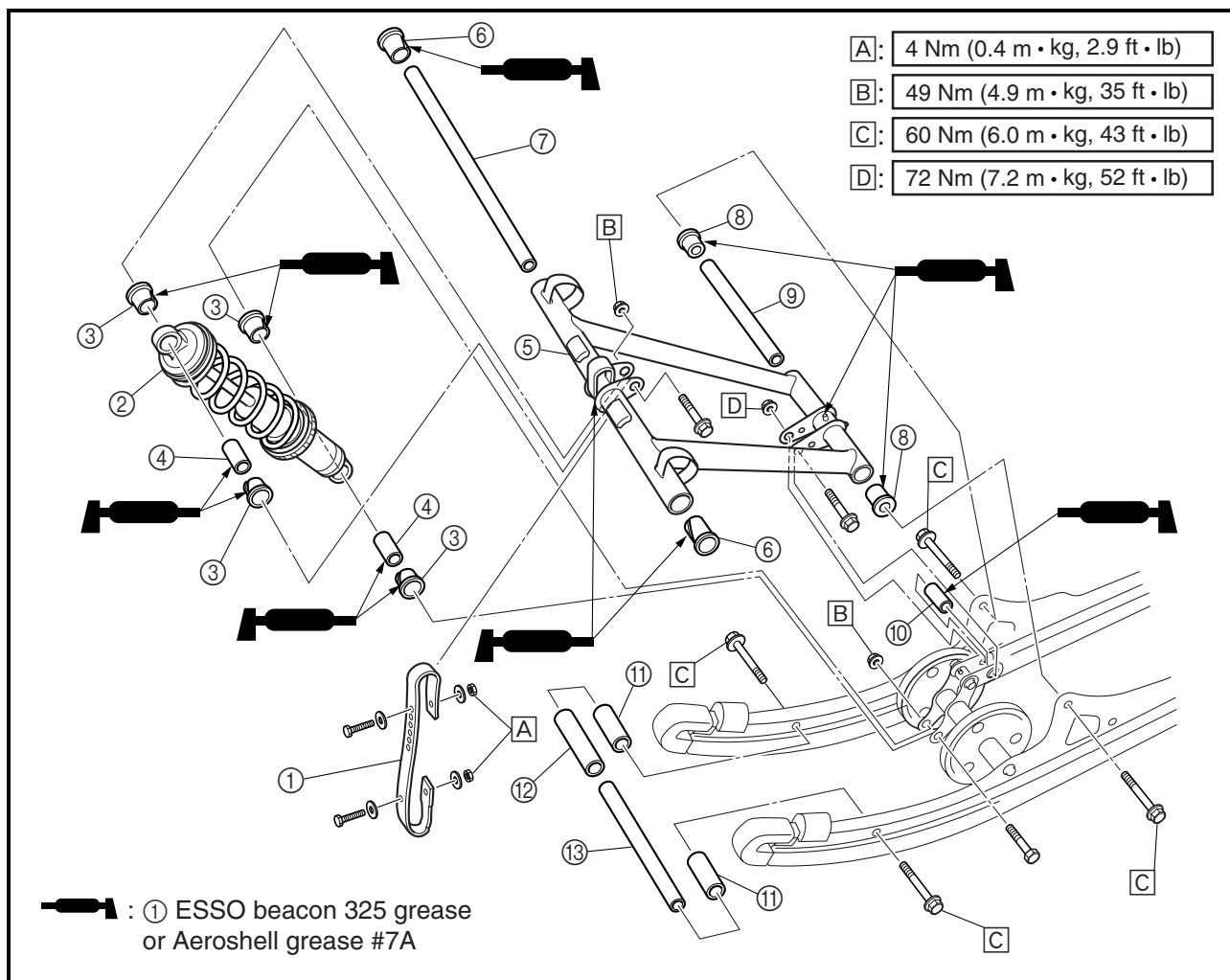


RST90TF

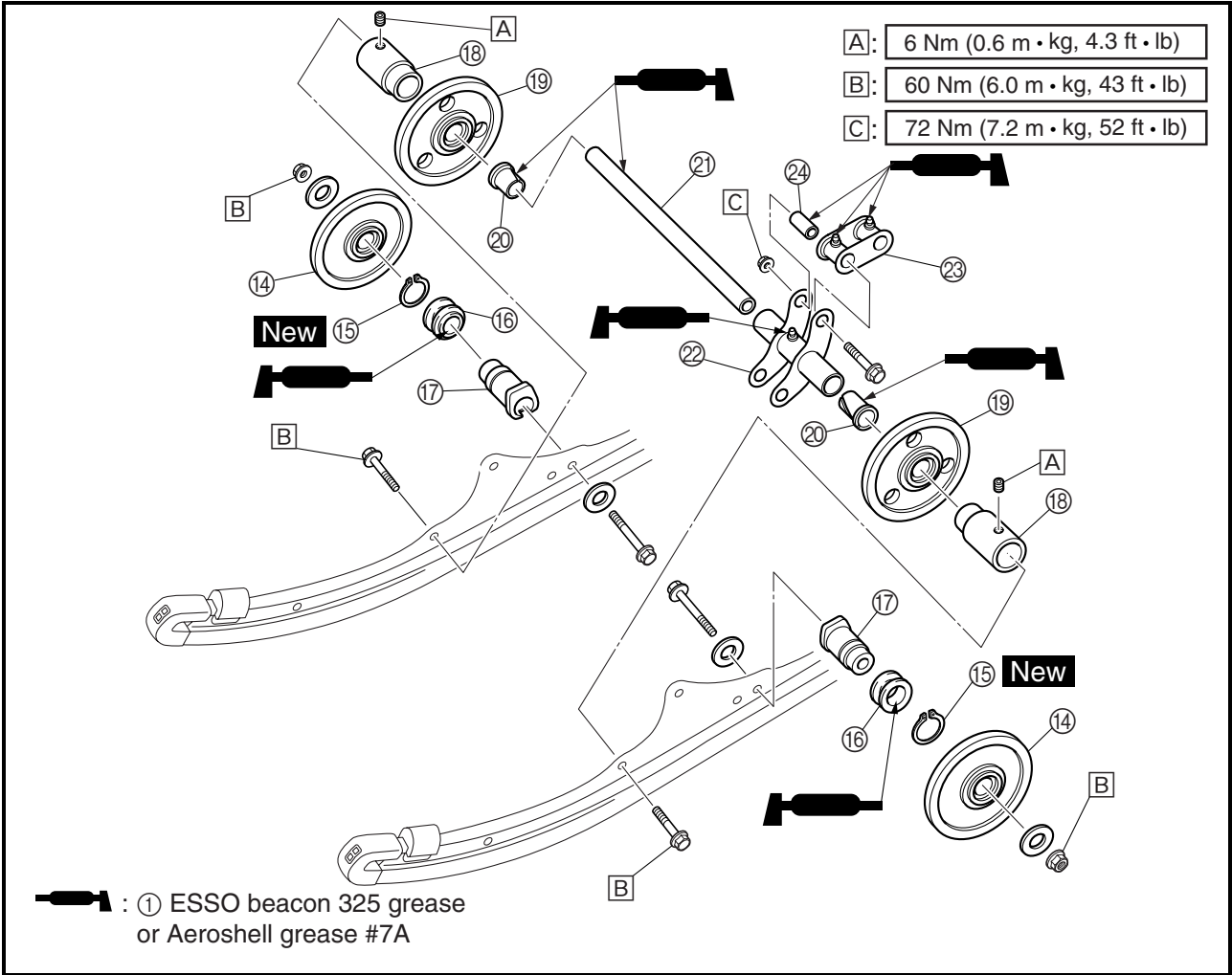


Order	Job name/Part name	Q'ty	Remarks
1	Slide rail suspension removal Rear axle nut Tension adjuster Slide rail suspension	1	Remove the parts in the order listed below. Loosen. Loosen. For installation, reverse the removal procedure.

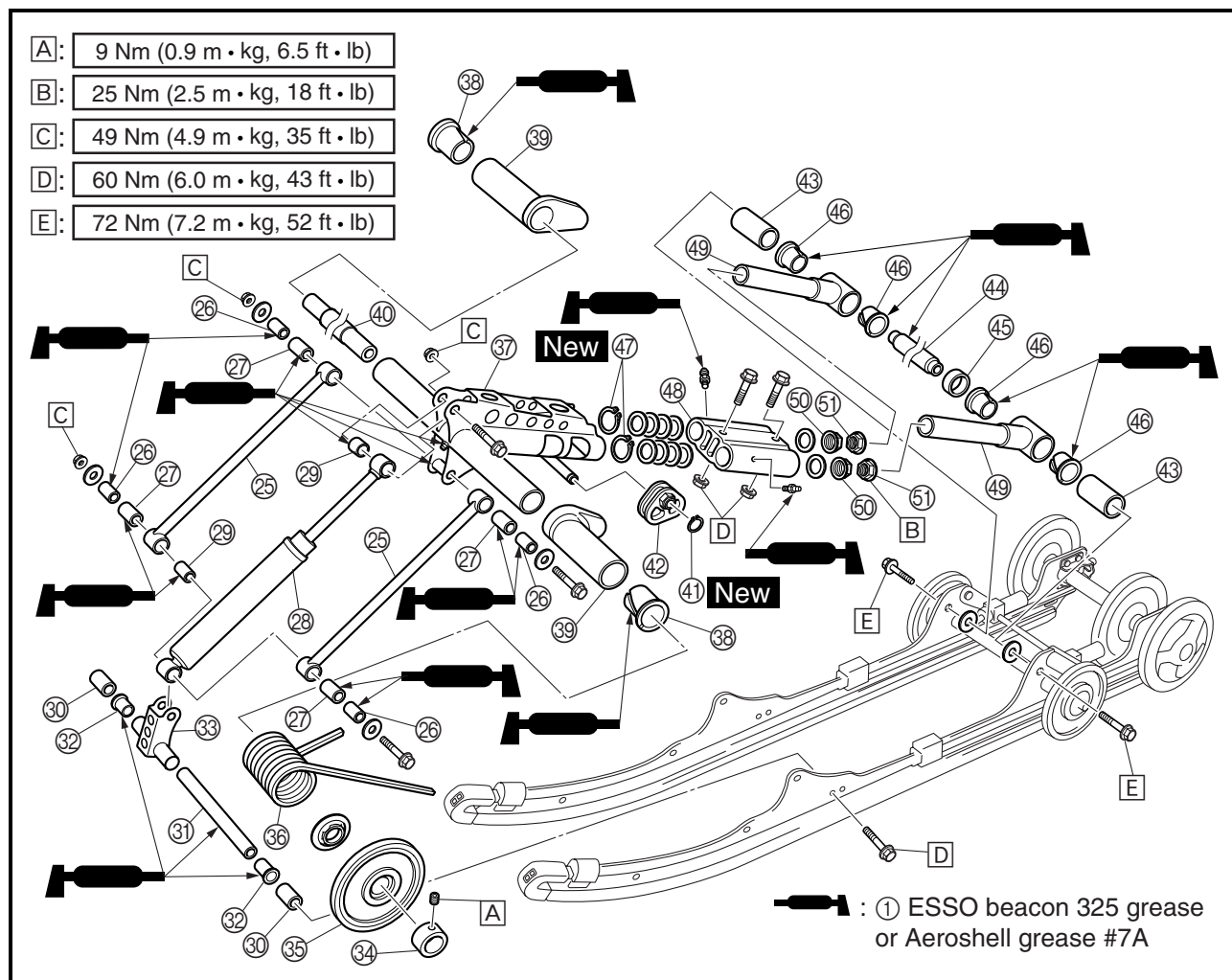
SLIDE RAIL SUSPENSION



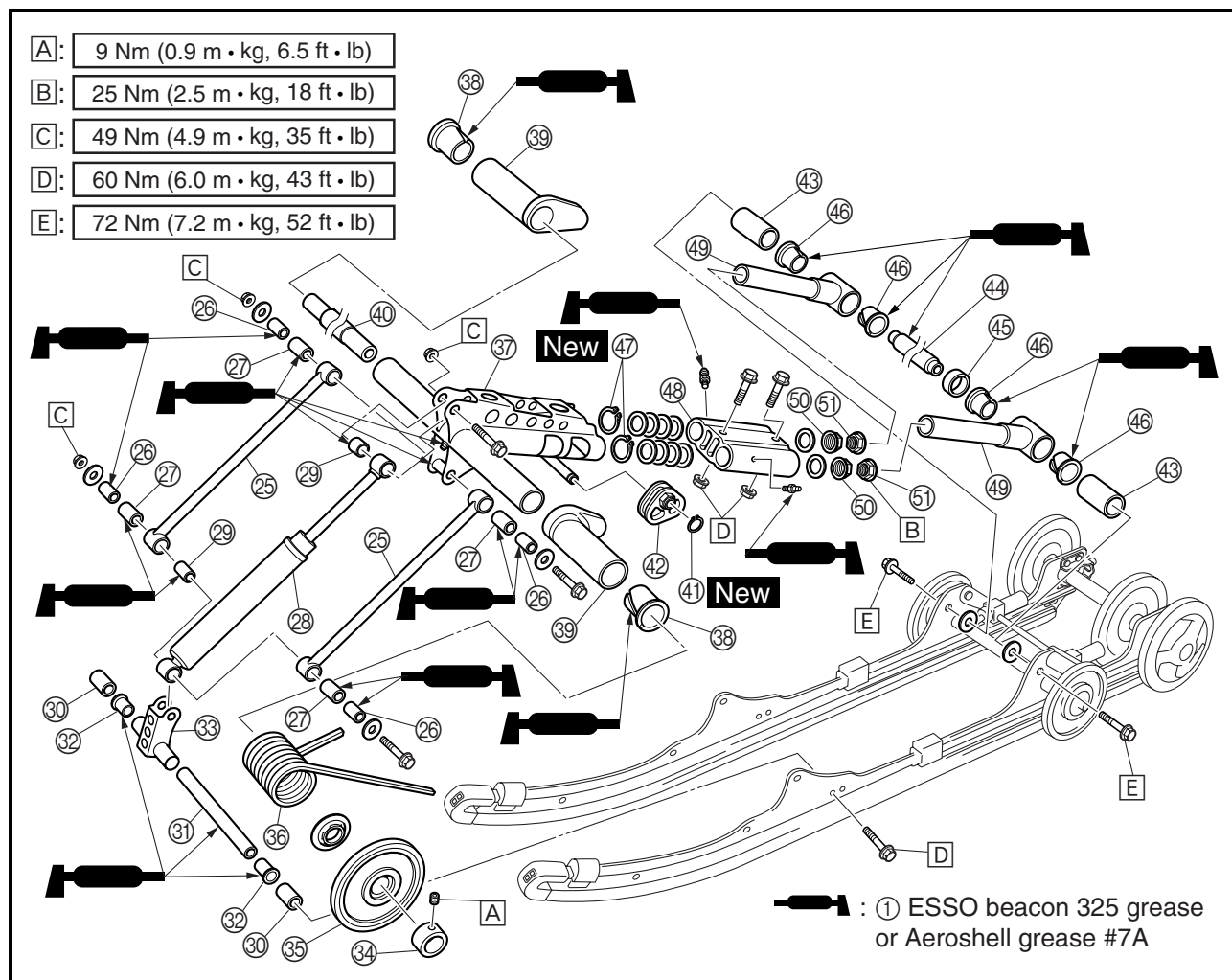
Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension disassembly		Remove the parts in the order listed below.
①	Stopper band	2	
②	Front shock absorber	1	
③	Bushing	4	
④	Collar	2	
⑤	Front pivot arm	1	
⑥	Bushing	2	
⑦	Shaft	1	
⑧	Collar	2	
⑨	Shaft	1	
⑩	Collar	1	
⑪	Collar	2	
⑫	Collar	1	
⑬	Shaft	1	



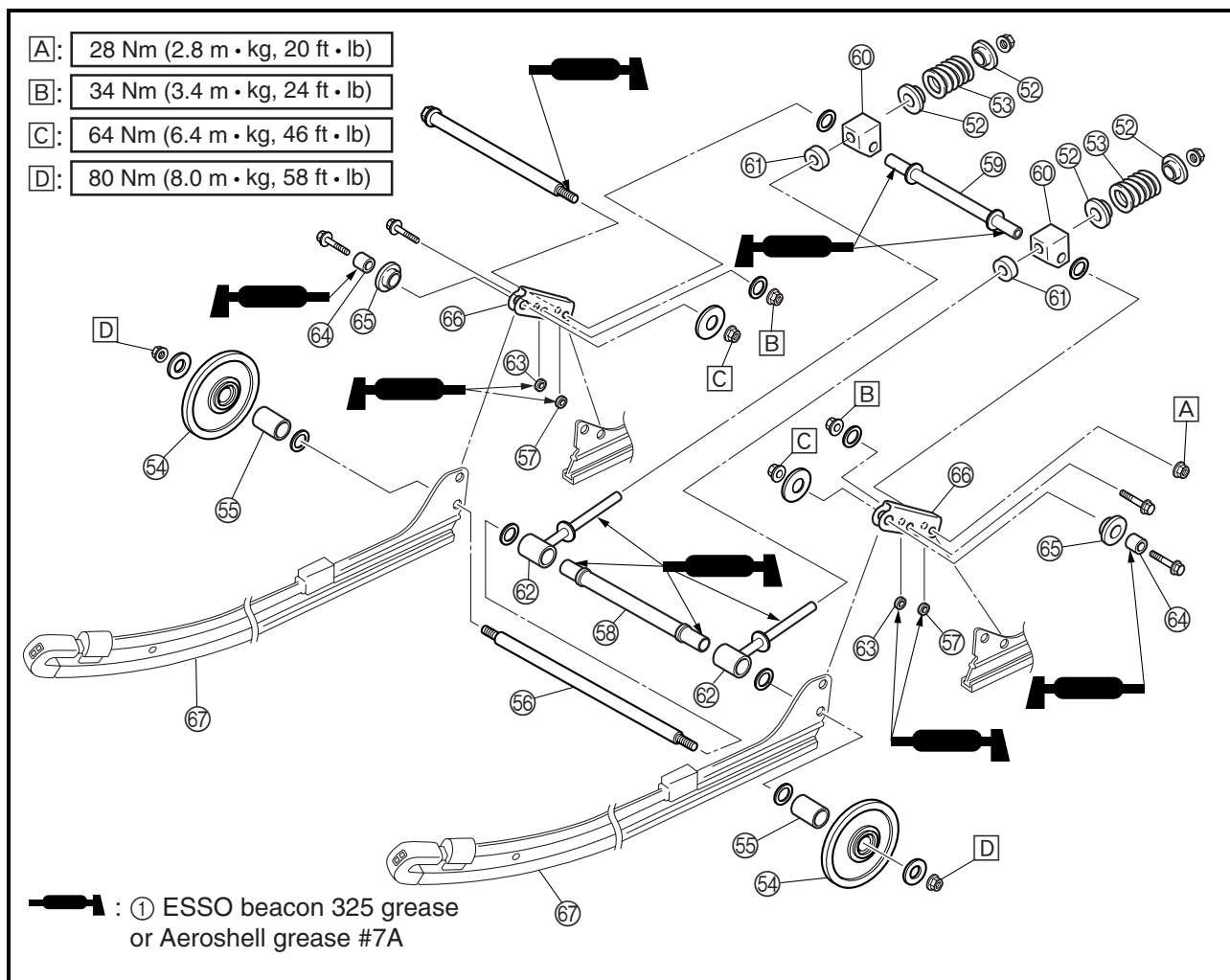
Order	Job name/Part name	Q'ty	Remarks
⑭	Suspension wheel	2	NOTE: _____ Apply grease to the inner surface of each spring end guide. _____
⑮	Circlip	2	
⑯	Hook	2	
⑰	Hook bracket	2	
⑱	Wheel bracket	2	
⑲	Suspension wheel	2	
⑳	Bushing	2	
㉑	Shaft	1	
㉒	Front suspension bracket	1	
㉓	Connecting arm	1	
㉔	Collar	1	



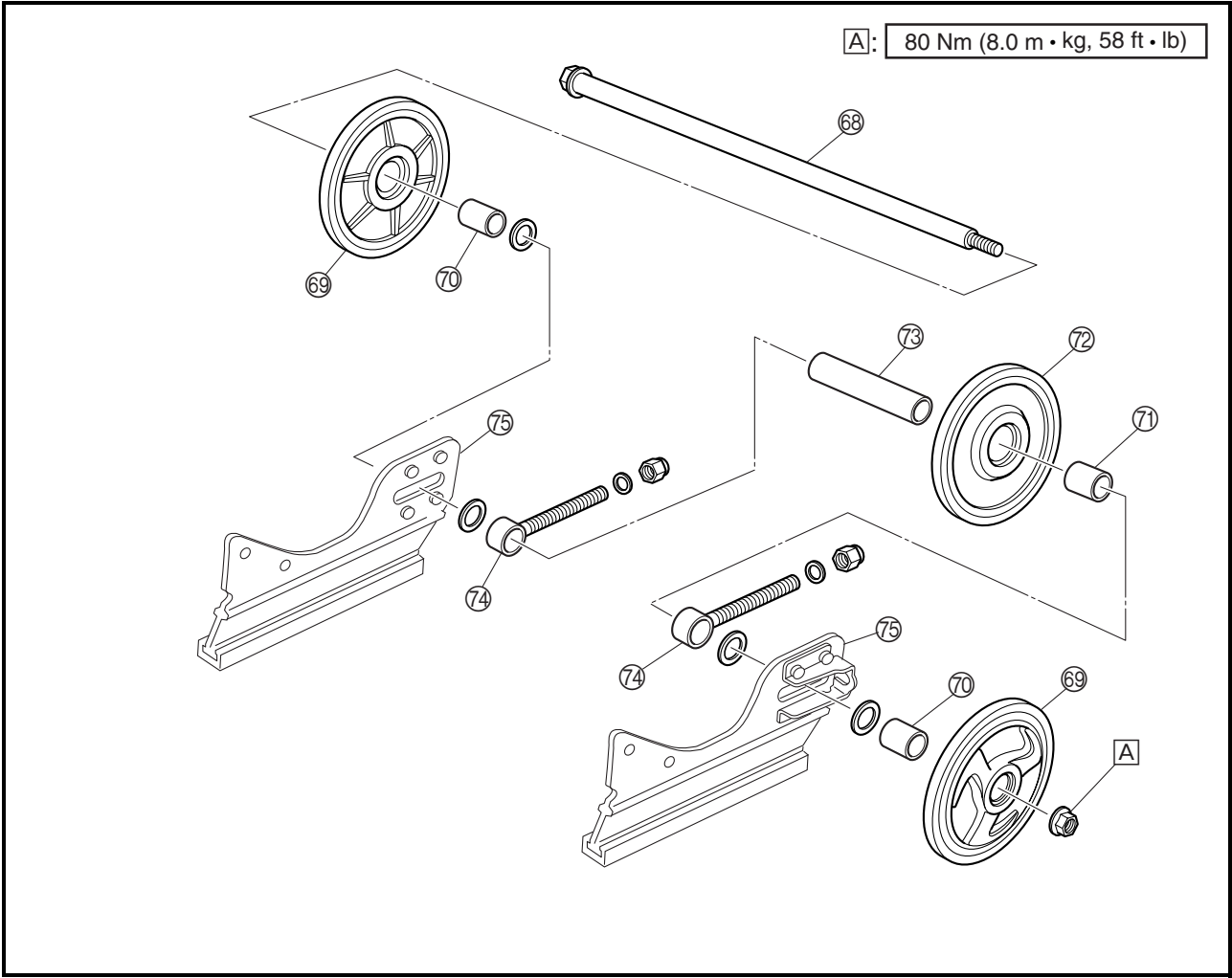
Order	Job name/Part name	Q'ty	Remarks
25	Pull rod	2	
26	Collar	4	
27	Bushing	4	
28	Rear shock absorber	1	
29	Collar	2	
30	Collar	2	
31	Shaft	1	
32	Bushing	2	
33	Rear suspension bracket	1	
34	Collar	2	
35	Guide wheel	2	
36	Torsion spring	2	
37	Rear pivot arm	1	
38	Bushing	2	
39	Rear pivot arm protector	2	
40	Shaft	1	
41	Circlip	2	
42	Adjuster	2	



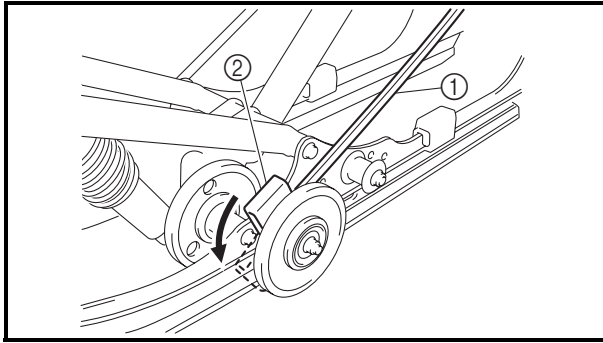
Order	Job name/Part name	Q'ty	Remarks
④③	Collar	2	
④④	Shaft	1	
④⑤	Collar	1	
④⑥	Bushing	4	
④⑦	Circlip	2	
④⑧	Control rod stopper	1	
④⑨	Control rod	2	
⑤⑩	Locknut	2	
⑤①	Adjuster nut	2	



Order	Job name/Part name	Q'ty	Remarks
52	Spring retainer	4	
53	Spring	2	
54	Suspension wheel	2	
55	Collar	2	
56	Shaft	1	
57	Collar	2	
58	Collar	1	
59	Collar	1	
60	Spring hook	2	
61	Damper	2	
62	Pivot shaft	2	
63	Collar	2	
64	Collar	2	
65	Collar	2	
66	Pivot bracket	2	
67	Front sliding frame	2	



Order	Job name/Part name	Q'ty	Remarks
68	Rear axle	1	For assembly, reverse the disassembly procedure.
69	Guide wheel	2	
70	Collar	2	
71	Collar	1	
72	Guide wheel	1	
73	Collar	1	
74	Tension adjuster	2	
75	Rear sliding frame	2	

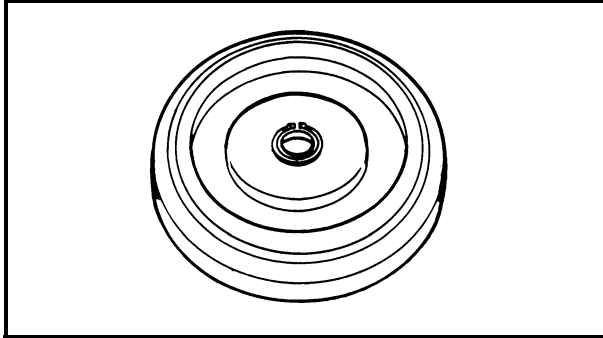
**REMOVAL**

1. Unhook the torsion spring ① (Except for RSG90)

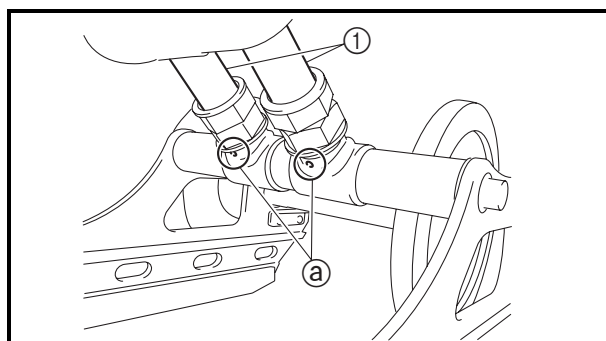
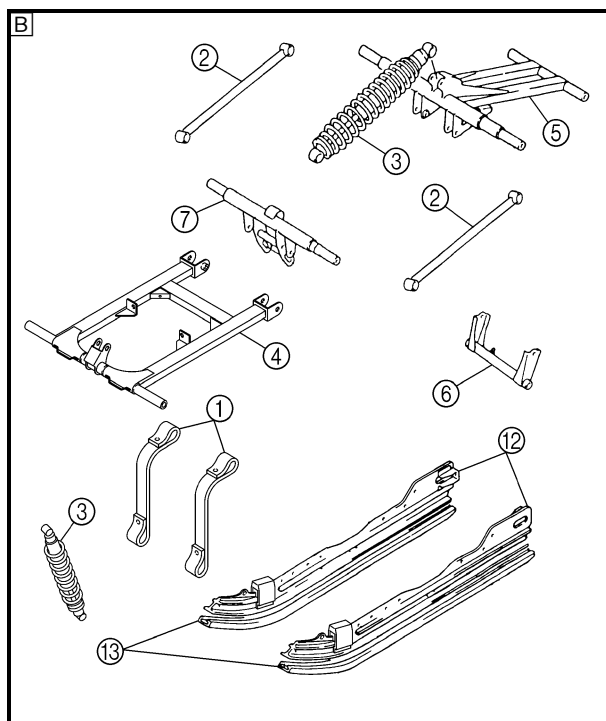
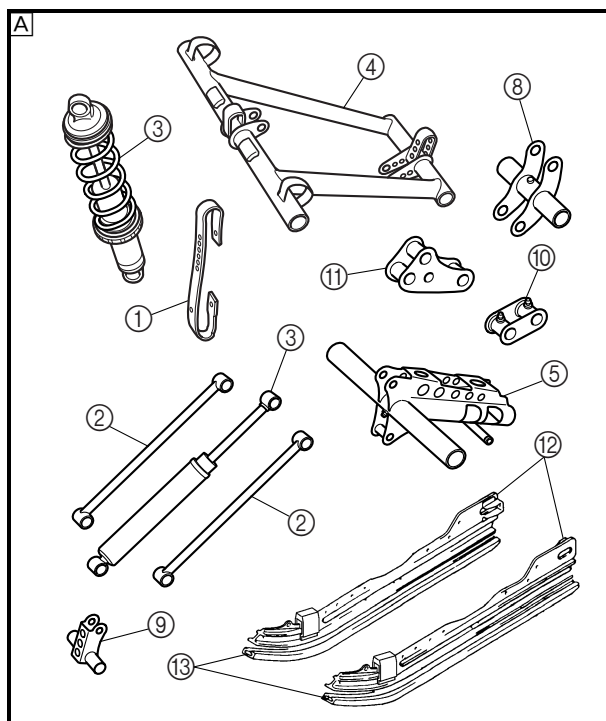
NOTE: _____

For RS90/RS90R/RS90M

Rotate the spring end guide ② in the direction of the arrow shown to unhook the end of the torsion spring.

**INSPECTION**

1. Inspect:
 - Suspension wheel
 - Guide wheel
Cracks/damage → Replace.
 - Wheel bearing
Wheel turns roughly → Replace.



2. Inspect:

- Stopper band ①
Frayed/damage → Replace.
- Pull rod ②
Bends/damage → Replace.
- Shock absorber ③
Oil leaks/damage → Replace.
- Bushings
Wear/cracks/damage → Replace.
- Front pivot arm ④
- Rear pivot arm ⑤
- Rear pivot arm bracket ⑥
- Suspension wheel bracket ⑦
- Front suspension bracket ⑧
- Rear suspension bracket ⑨
- Connecting arm ⑩ (RS90/RS90R)
- Connecting arm ⑪ (RS90M/RST90/RST90TF)
- Sliding frame ⑫
Cracks/damage → Replace.
- Slide runner ⑬
Wear/damage → Replace.

A RS90/RS90R/RS90M

B RSG90

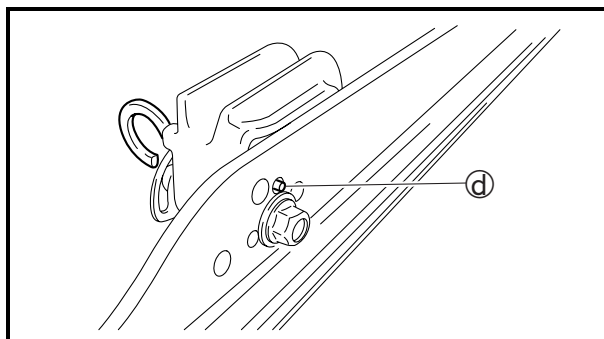
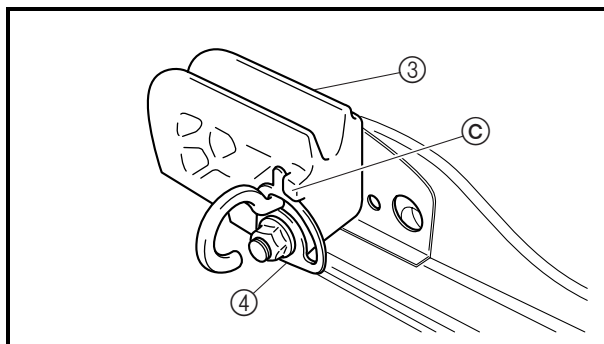
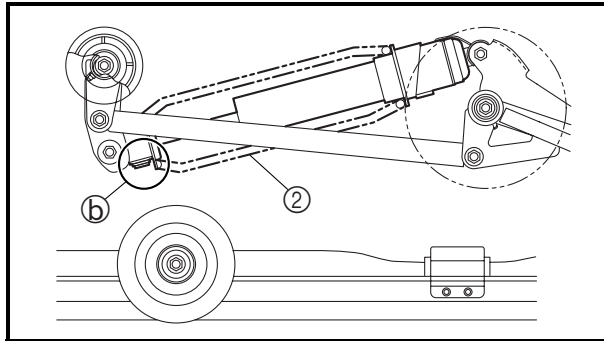
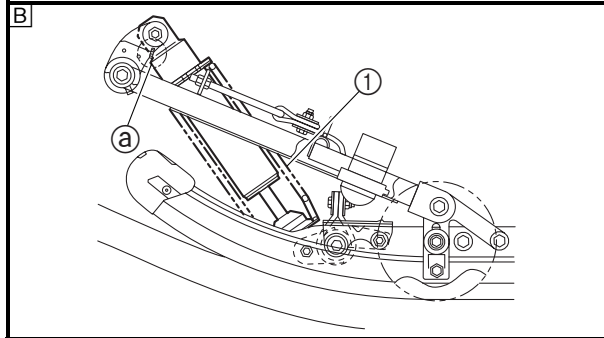
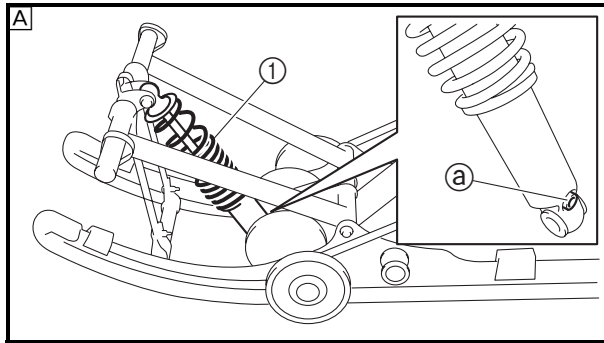
ASSEMBLY

1. Install:

- Control rod ① (Except for RSG90)

NOTE:

Install the control rods with the water drain holes **a** facing downward.



2. Install:

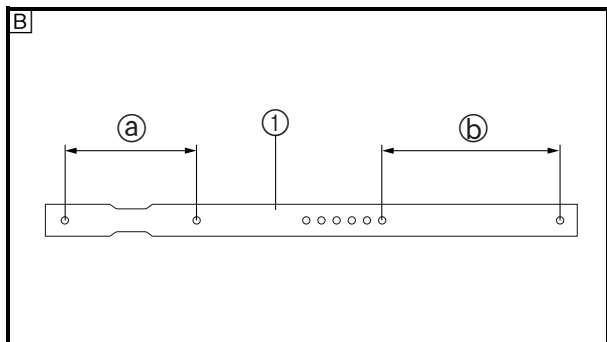
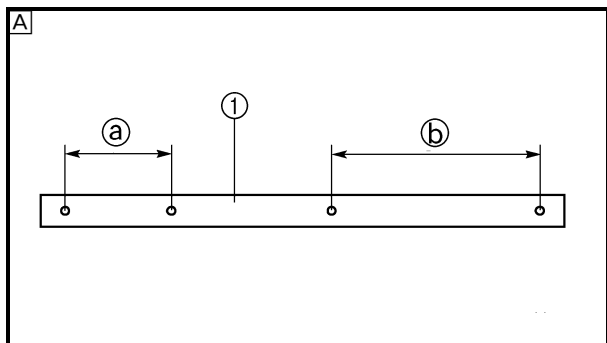
- Front shock absorber ① (RS90/RS90R/ RSG90)
- Rear shock absorber ② (RSG90)
- 2-up adjusting block ③ (RST90)

NOTE:

- For RS90/RS90R:
Install the front shock absorber with the charging valve ③ facing towards the rear of the machine.
- For RSG90:
Install the front shock absorber with the charging valve ③ facing towards the front of the machine.
Install the rear shock absorber with the damping force adjustment screw ④ facing downward.
- For RST90:
Install the lock lever guide plate ④ as shown in the illustration so that the projection on the plate contacts the projection ③ on the 2-up adjusting block.
Make sure that the 2-up adjusting block is locked in place and the end ④ of the lock lever is sticking out from the sliding frame.

A RS90/RS90R

B RSG90



3. Install:

- Stopper band ①

NOTE:

- For RSG90:

Install the stopper band with ① toward the hook and ② toward the front suspension bracket.

- Except for RSG90:

Install the stopper band with ① toward the front pivot arm and ② toward the shaft.

A For RSG90

B Except for RSG90



Stopper band nut:
4 Nm (0.4 m · kg, 2.9 ft · lb)

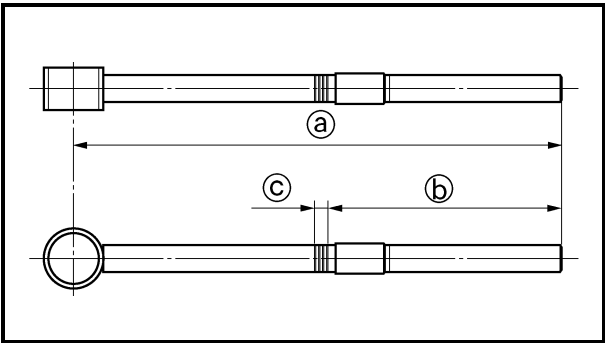
INSTALLATION

1. Adjust:

- Track tension

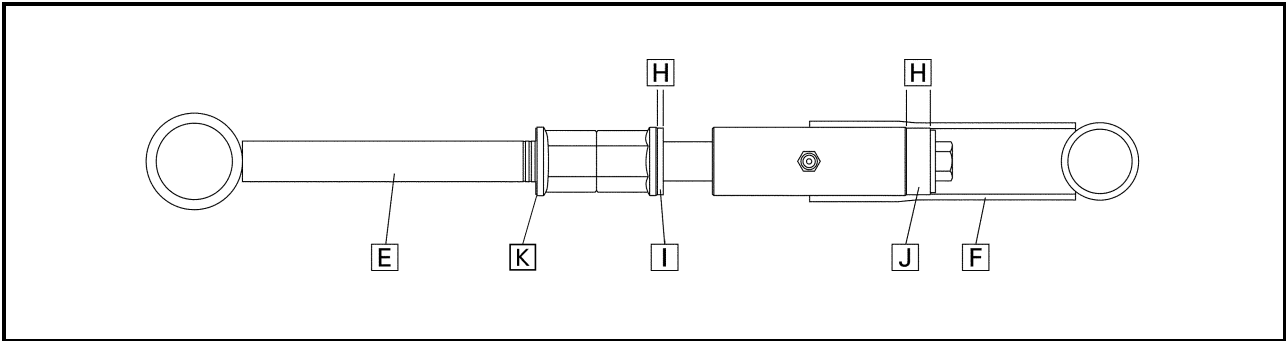
Refer to “TRACK TENSION ADJUSTMENT” in CHAPTER 2.

Control rod parts number (for RSG90)



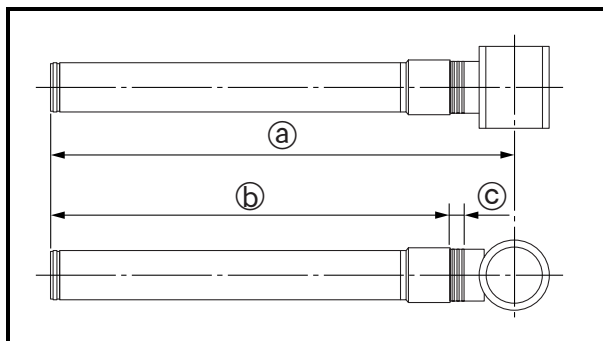
A Control rod 1	B Length a mm (in)	C Length b mm (in)	D Length c mm (in)
RSG90	303.5 (11.95)	160.0 (6.30)	$2.5P \times 3 = 7.5$ $(0.098P \times 3 = 0.295)$

E Control rod 1 parts number	F Control rod 2 parts number	G Washer plate parts number H Washer plate thickness mm (in)	
		I Upper	J Lower
8FG-4745A-00	8CR-4745B-00	90202-16229 2.5 (0.098)	90202-16232 10.0 (0.394)



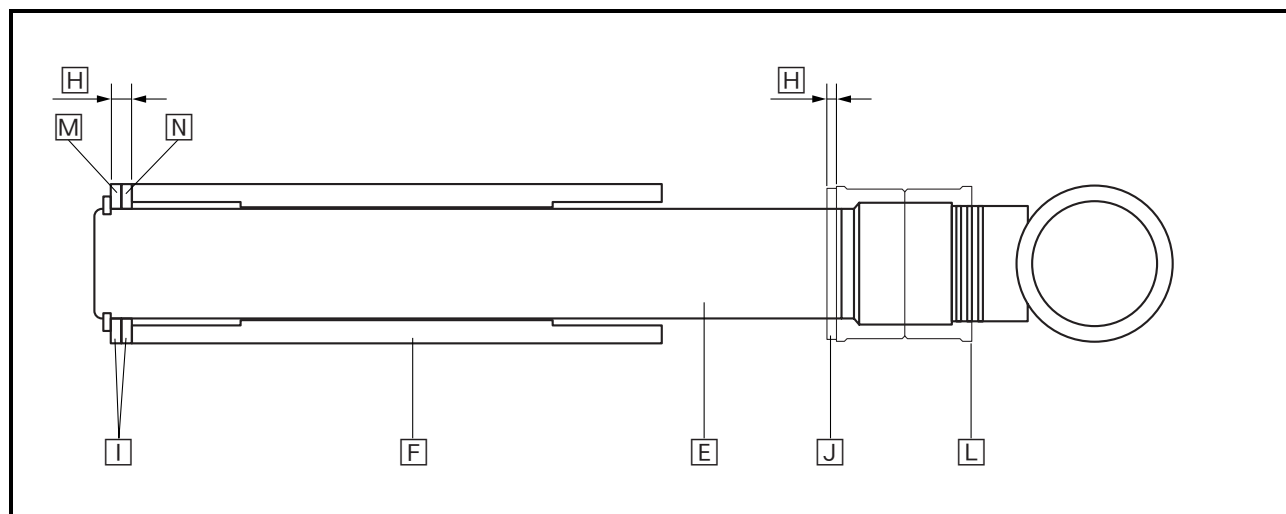
K Standard position

Control rod part numbers (except for RSG90)



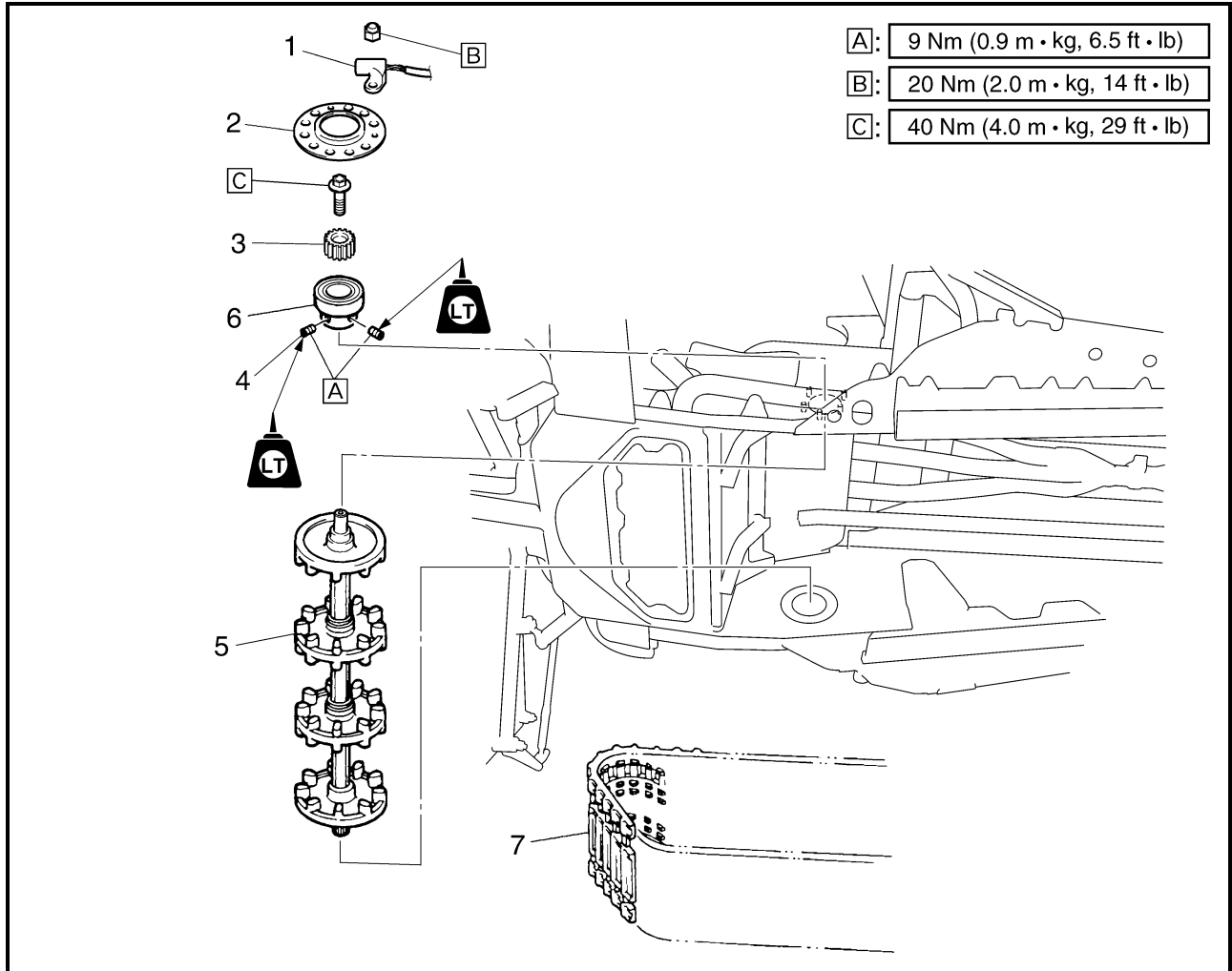
[A] Control rod 1	[B] Length a mm (in)	[C] Length b mm (in)	[D] Length c mm (in)
RS90/RS90R	228.8 (9.01)	198.7 (7.80)	2.5P × 2 = 5 (0.098P × 2 = 0.197)
RS90M/RST90TF	240.3 (9.46)		
RST90	242.3 (9.54)	188.7 (7.43)	

E Control rod 1 part numbers	F Control rod stopper part numbers	G Washer part numbers H Washer thickness mm (in)				
		I Upper	K Q'ty	J Lower	K Q'ty	
8ES-4745A-00 (RS90/RS90R)	8ES-4745D-00	90202-25001 2.0 (0.079)	1	90202-25001 2.0 (0.079)	1	
		90202-24015 2.0 (0.079)	1			
		90202-25001 2.0 (0.079)	2			
8FK-4745A-00 (RS90M/RST90TF)			90201-24015 2.0 (0.079)	1		
8ET-4745A-00 (RST90)			90202-25001 2.0 (0.079)	1	90202-25002 4.0 (0.157)	1
			90201-24015 2.0 (0.079)	1		
			90202-25002 4.0 (0.157)	1		

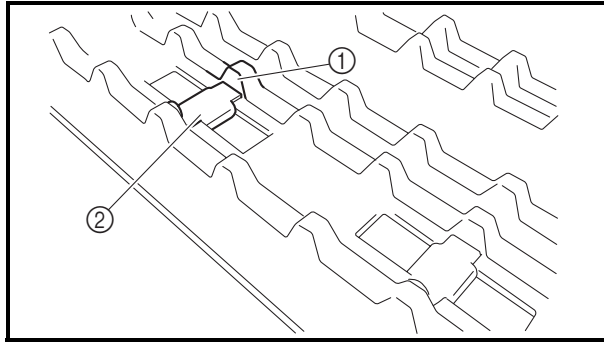


[L] Standard position [M] Metal washer(s) [N] Plastic washer(s)

FRONT AXLE AND TRACK



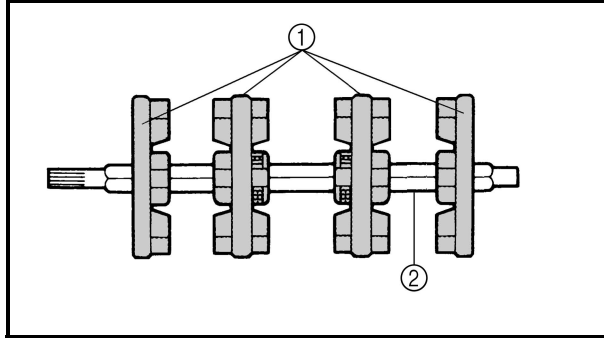
Order	Job name/Part name	Q'ty	Remarks
	Front axle and track removal		Remove the parts in the order listed below.
	Drive chain housing		Refer to "DRIVE CHAIN HOUSING".
	Slide rail suspension		Refer to "SLIDE RAIL SUSPENSION".
	Secondary sheave		Refer to "SECONDARY SHEAVE".
1	Speed sensor	1	
2	Bearing holder	1	
3	Gear unit	1	
4	Set bolt	2	
5	Front axle assembly	1	
6	Bearing	1	
7	Track	1	
			For installation, reverse the removal procedure.



INSPECTION

1. Inspect:

- Track ①
 - Slide metal ②
- Wear/cracks/damage → Replace.

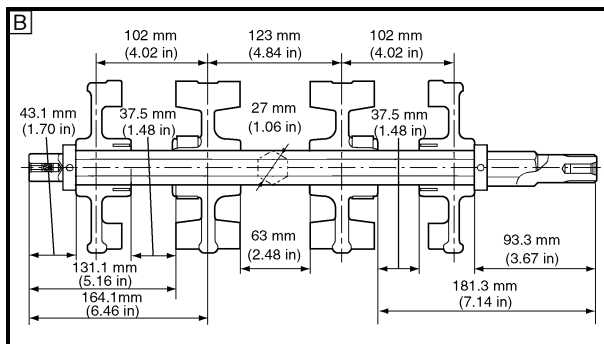
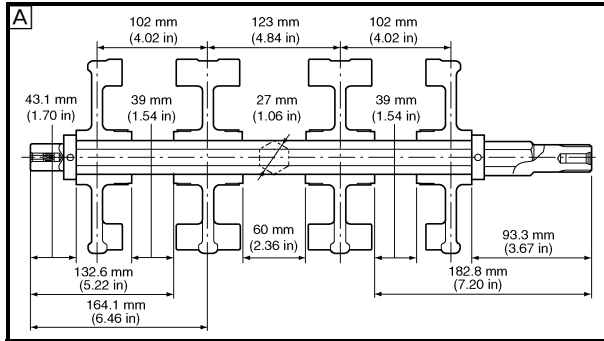


2. Inspect:

- Sprocket wheel ①
 - Front axle ②
- Wear/break/damage → Replace.
- Bends/scratches (excessive)/damage → Replace.

3. Inspect:

- Bearing
- Pitting/damage → Replace.



INSTALLATION

1. Install:

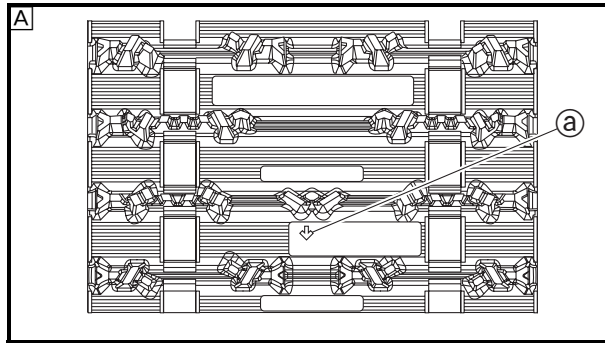
- Sprocket wheels
- Guide wheels

NOTE:

- When pressing the sprocket wheels onto the front axle, align the lugs on each sprocket wheel.
- Position each sprocket wheel on the axle as shown in the illustration.

A RS90/RS90R/RSG90/RST90/RST90TF

B RS90M



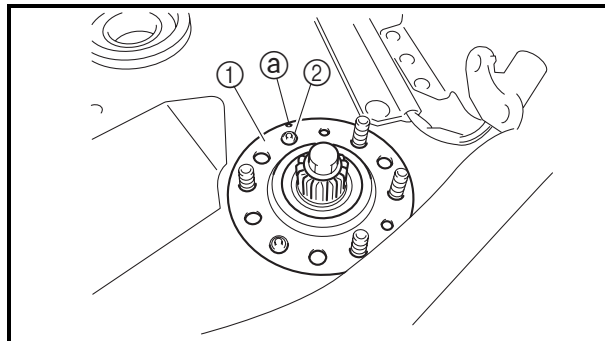
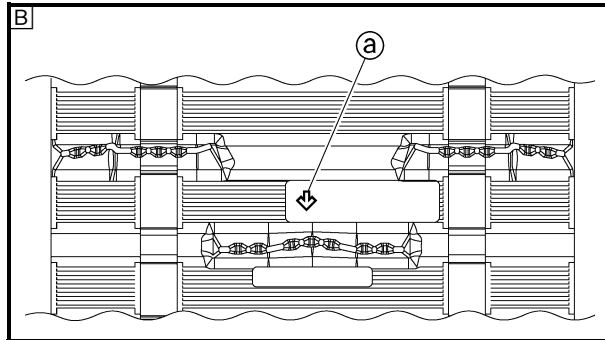
2. Place the track in the chassis.

NOTE:

For track with a direction of rotation mark ⓐ:
Install the track with the mark pointing in the direction of track rotation.

A RS90/RS90R/RSG90/RST90/RST90TF

B RS90M



3. Install:

- Bearing holder ①

NOTE:

Align the punch mark ⓐ on the bearing holder ①
with the rivet ②.



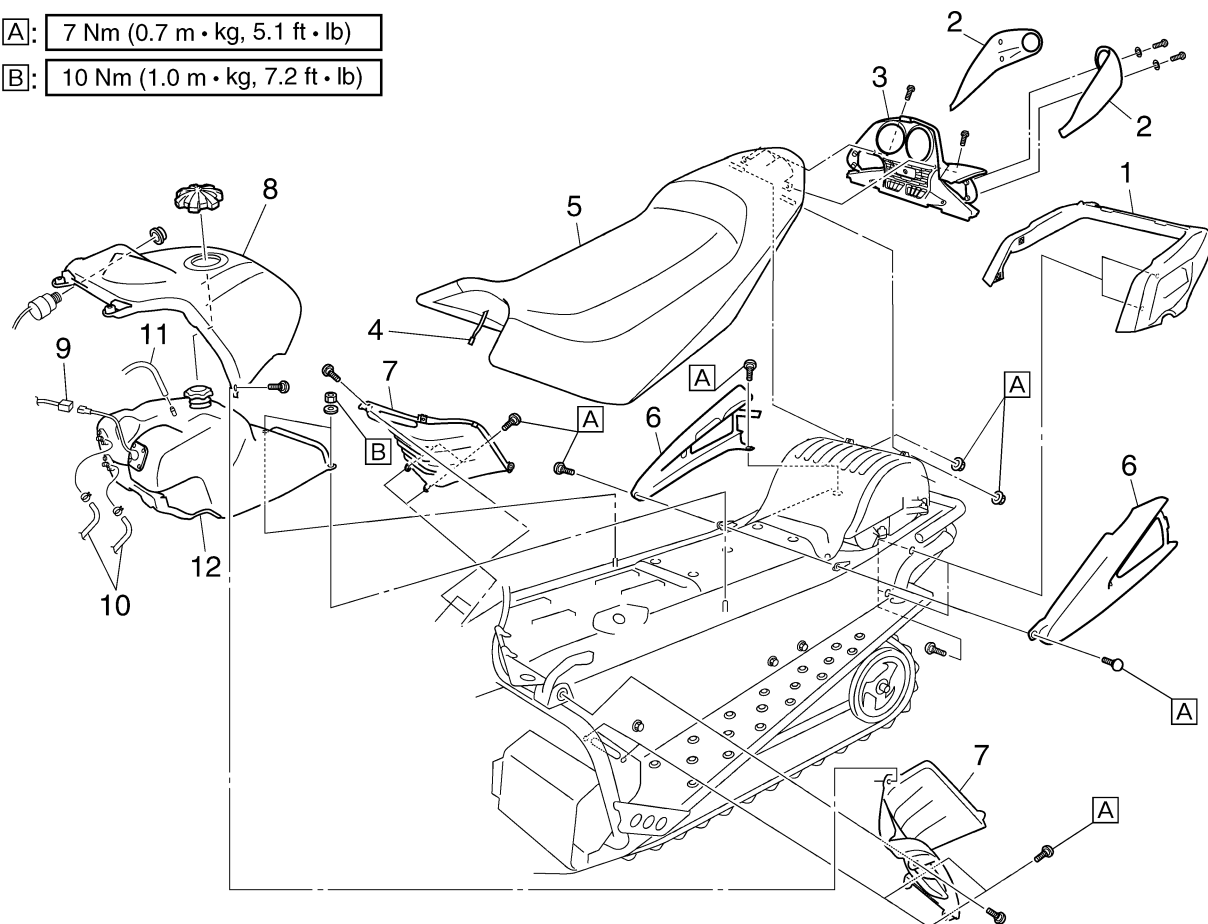
ENGINE

SEAT AND FUEL TANK

RS90/RS90R/RSG90/RS90M

[A]: 7 Nm (0.7 m • kg, 5.1 ft • lb)

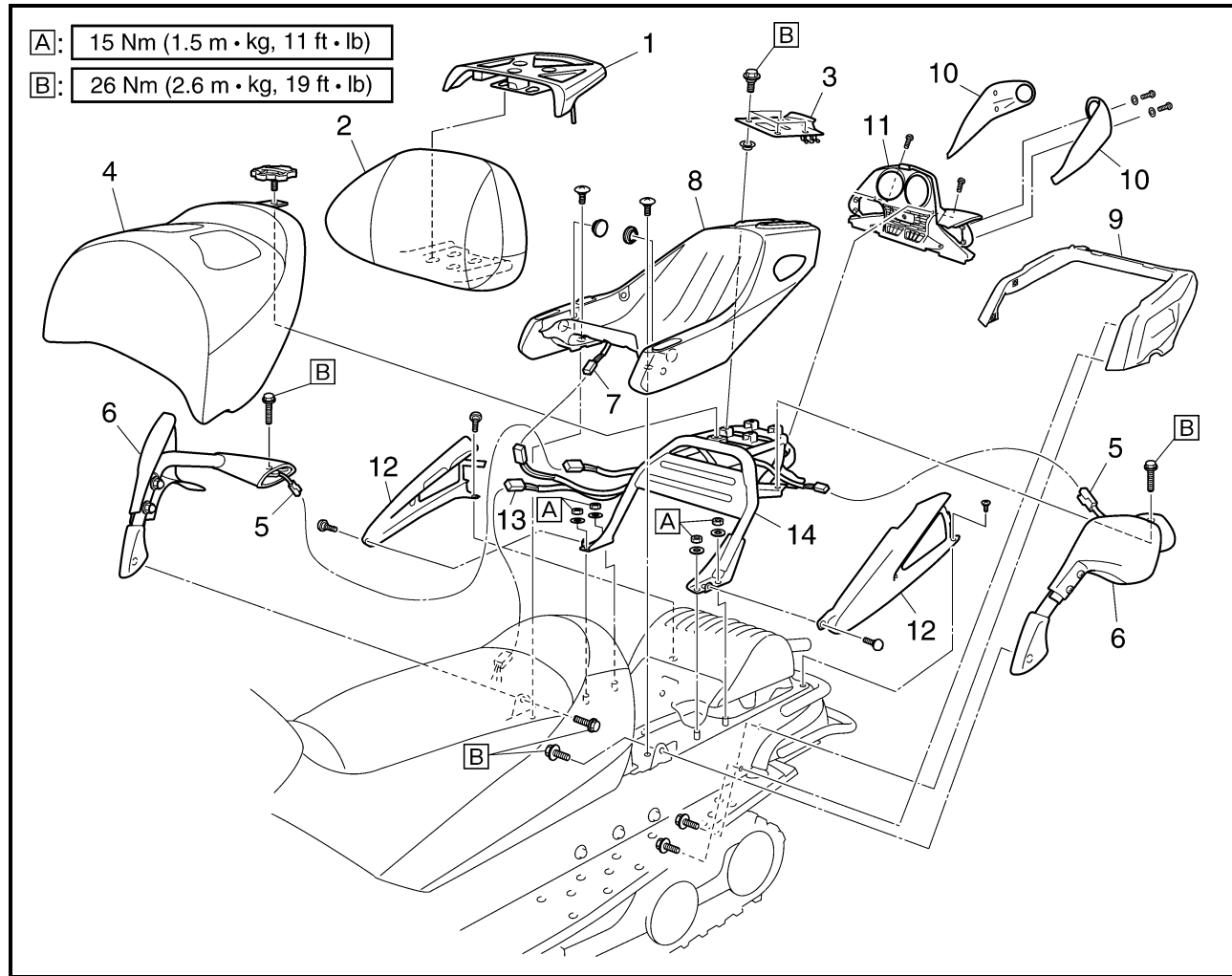
[B]: 10 Nm (1.0 m • kg, 7.2 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Seat and fuel tank removal		Remove the parts in the order listed below. Refer to "STEERING" in CHAPTER 3.
1	Rear cover	1	
2	Muffler protector	2	
3	Tail/brake light cover	1	
4	Tail/brake light sub-wire harness	1	Disconnect.
5	Seat	1	
6	Muffler side cover	2	
7	Side cover	2	
8	Fuel tank cover	1	
9	Fuel sender coupler	1	Disconnect.
10	Fuel hose	2	Disconnect.
11	Fuel tank breather hose	1	Disconnect.
12	Fuel tank	1	For installation, reverse the removal procedure.



BACKREST AND PASSENGER SEAT RST90/RST90TF



Order	Job name/Part name	Q'ty	Remarks
	Backrest and passenger seat removal		Remove the parts in the order listed below.
1	Carrier assembly	1	
2	Backrest	1	
3	Carrier lock bracket	1	
4	Passenger seat	1	
5	Passenger grip warmer coupler	2	Disconnect.
6	Passenger grip warmer assembly	2	
7	Passenger grip warmer switch coupler	1	Disconnect.
8	Passenger seat base	1	
9	Rear cover	1	
10	Muffler protector	2	
11	Tail/brake light cover	1	
12	Muffler side cover	2	
13	Tail/brake light switch coupler	1	Disconnect.
14	Tail/brake light assembly	1	
			For installation, reverse the removal procedure.

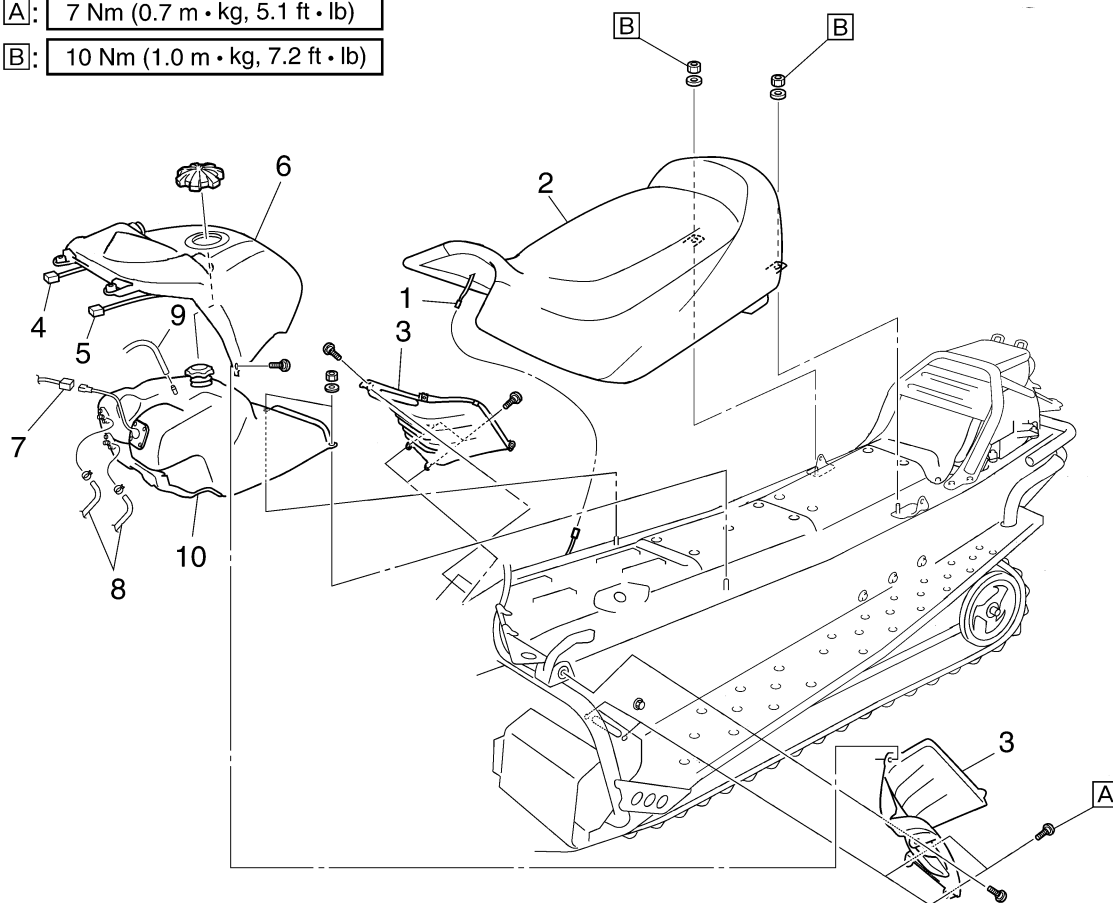


RIDER SEAT AND FUEL TANK

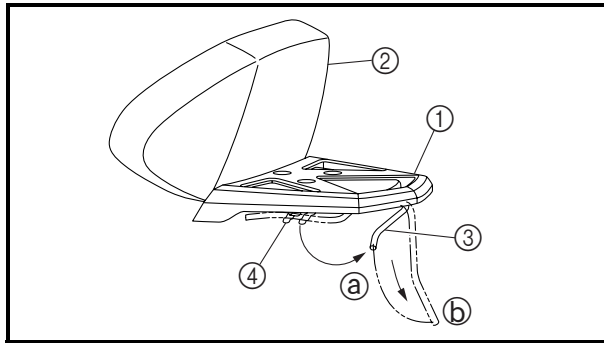
RST90/RST90TF

[A]: 7 Nm (0.7 m • kg, 5.1 ft • lb)

[B]: 10 Nm (1.0 m • kg, 7.2 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Rider seat and fuel tank removal		Remove the parts in the order listed below.
	Handlebar		Refer to "STEERING" in CHAPTER 3.
	Passenger seat		Refer to "BACKREST AND PASSENGER SEAT".
1	Tail/brake light sub-wire harness coupler	1	Disconnect.
2	Rider seat	1	
3	Side cover	2	
4	Main switch coupler	1	Disconnect.
5	Auxiliary DC jack	1	Disconnect.
6	Fuel tank cover	1	
7	Fuel sender coupler	1	Disconnect.
8	Fuel hose	2	Disconnect.
9	Fuel tank breather hose	1	Disconnect.
10	Fuel tank	1	
			For installation, reverse the removal procedure.



REMOVAL

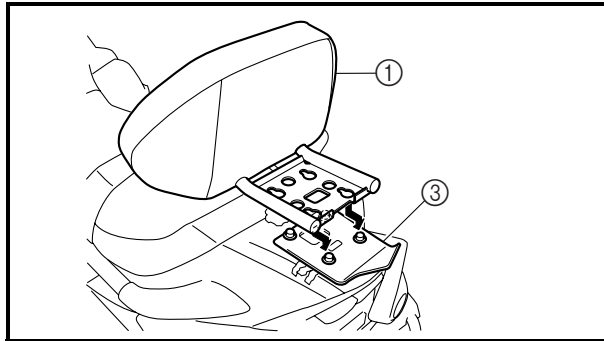
1. Remove:

- Carrier assembly ①
- Backrest ②

Removal step:

- Pull the carrier lock lever ③ away from the carrier lock bracket ④, and then turn the carrier lock lever to position ⑥ to remove the carrier assembly and backrest.

- ⑥ Lock
- ⑦ Unlock



INSTALLATION

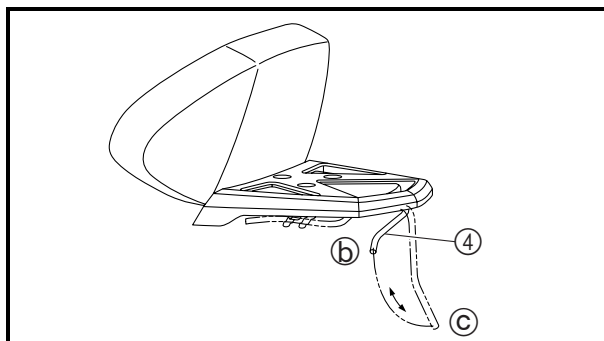
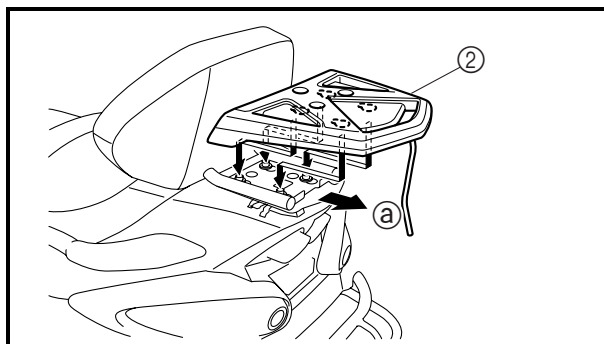
1. Install:

- Backrest ①
- Carrier assembly ②

Installation steps:

- Align the holes in the backrest with the bolts on the carrier lock bracket ③, and then place the backrest on the carrier lock bracket.
- Align the holes in the carrier assembly with the bolts on the carrier lock bracket, and then place the carrier assembly on the carrier lock bracket.
- Slide both the backrest and carrier assembly in the direction ⑧ shown in the illustration until they stop.
- Turn the carrier lock lever ④ to position ⑥ to lock the backrest and carrier assembly in place. Then, place the lever under the carrier assembly and fasten it with the holder.

- ⑥ Lock
- ⑦ Unlock

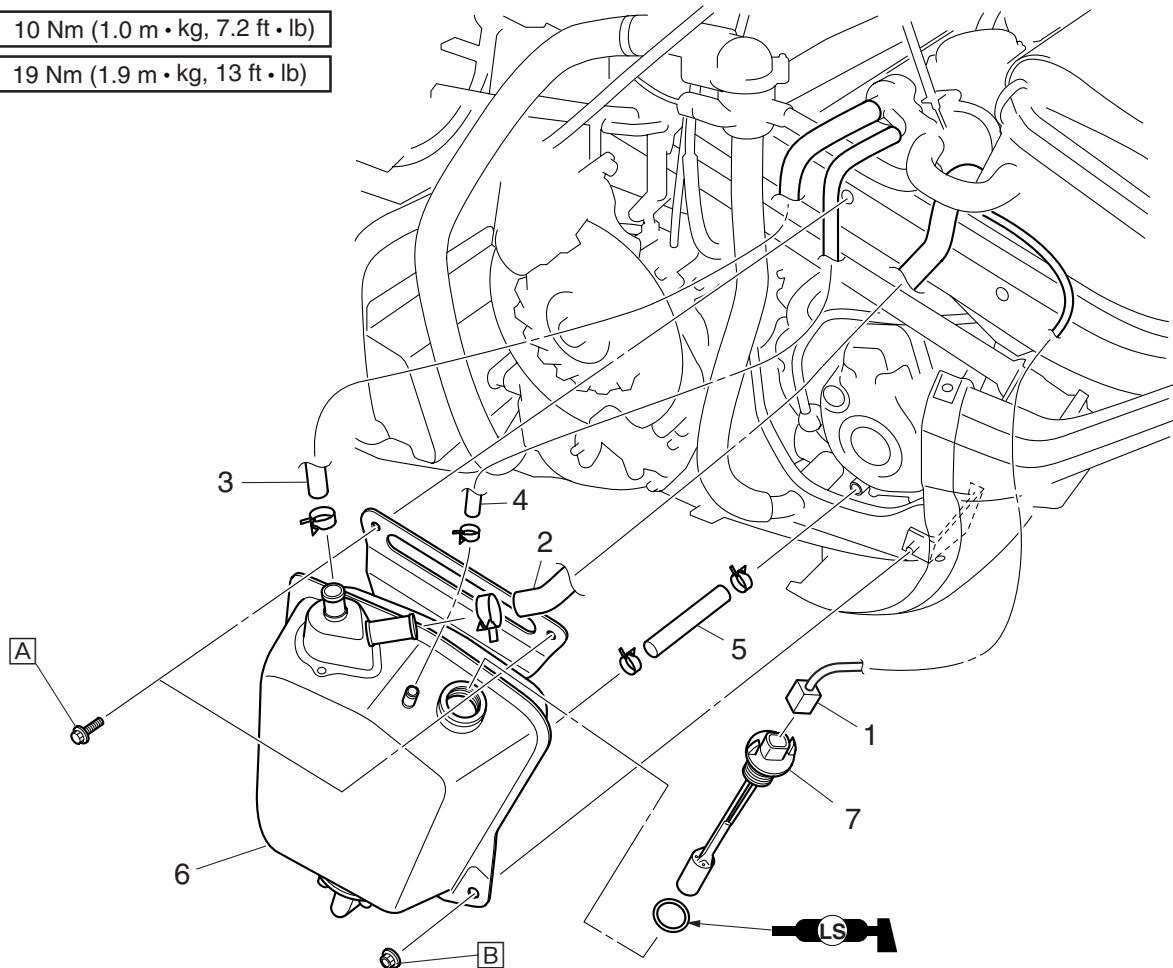




OIL TANK

[A]: 10 Nm (1.0 m • kg, 7.2 ft • lb)

[B]: 19 Nm (1.9 m • kg, 13 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Oil tank removal		Remove the parts in the order listed below.
	Right side cover		Refer to "BRAKE" in CHAPTER 4.
	Engine oil		Drain.
			Refer to "ENGINE OIL REPLACEMENT" in CHAPTER 2.
1	Oil level switch coupler	1	Disconnect.
2	Oil tank inlet hose	1	Disconnect.
3	Oil cut valve inlet hose 1	1	Disconnect.
4	Oil cut valve inlet hose 2	1	Disconnect.
5	Oil tank outlet hose	1	Disconnect.
6	Oil tank	1	
7	Oil level gauge 1 dipstick	1	
			For installation, reverse the removal procedure.



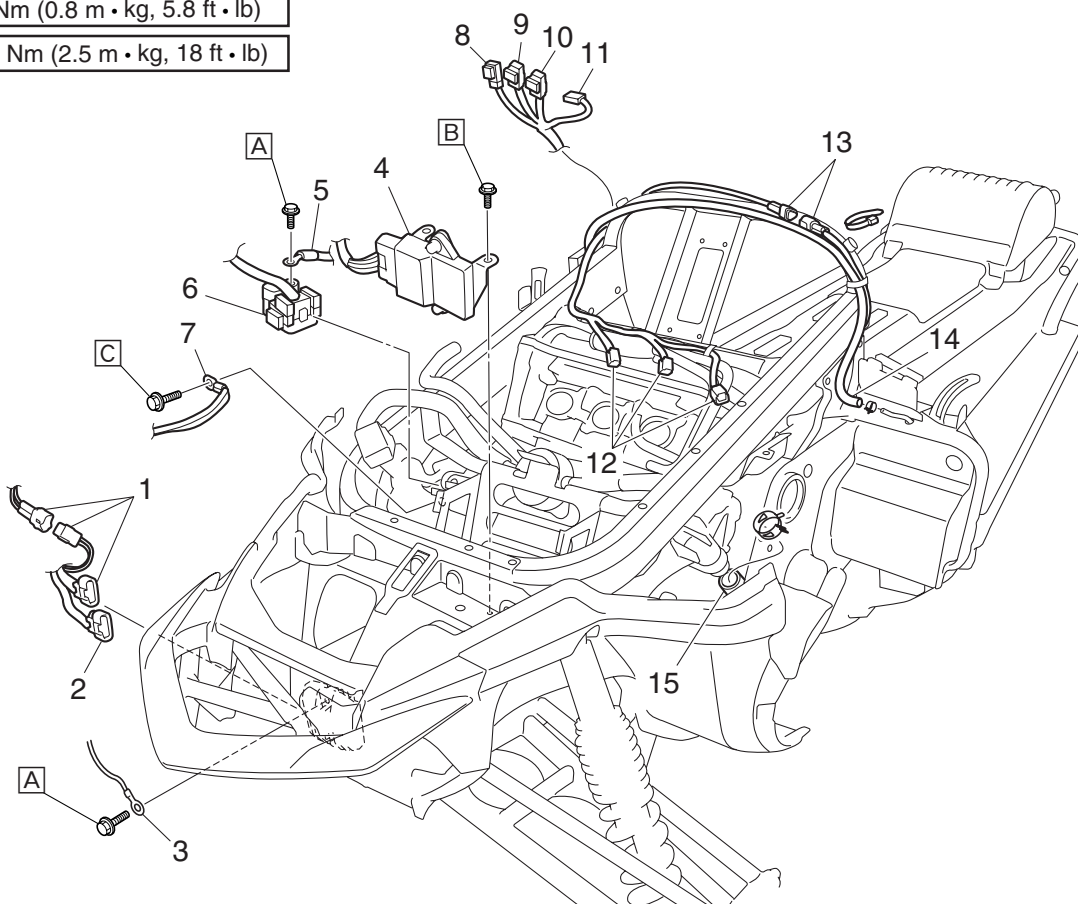
ENGINE ASSEMBLY

HOSE AND LEADS

[A]: 7 Nm (0.7 m • kg, 5.1 ft • lb)

[B]: 8 Nm (0.8 m • kg, 5.8 ft • lb)

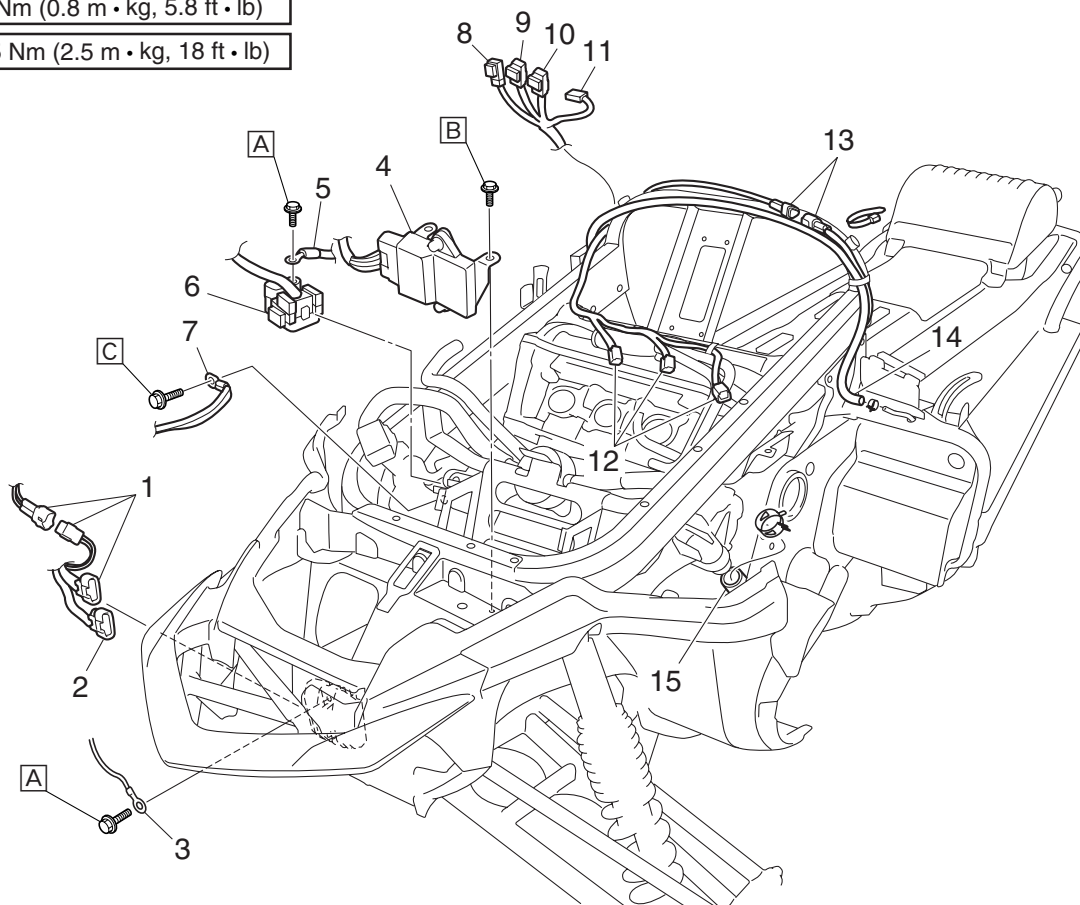
[C]: 25 Nm (2.5 m • kg, 18 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Hose and leads removal		Remove the parts in the order listed below.
	Coolant		Drain. Refer to "COOLING SYSTEM" in CHAPTER 2.
	Engine oil		Drain. Refer to "ENGINE OIL REPLACEMENT" in CHAPTER 2.
	Air filter case/carburetor assembly/fuel pump		Refer to "CARBURETORS AND FUEL PUMP" in CHAPTER 7.
	Primary sheave		Refer to "PRIMARY SHEAVE AND DRIVE V-BELT" in CHAPTER 4.
	Secondary sheave		Refer to "SECONDARY SHEAVE" in CHAPTER 4.
	Coolant reservoir/thermostat		Refer to "HEAT EXCHANGER" in CHAPTER 6.
	Handlebar/steering column 1		Refer to "STEERING" in CHAPTER 3.
	Oil tank		Refer to "OIL TANK".
	Fuel tank		Refer to "SEAT AND FUEL TANK".
	Battery		Refer to "BATTERY INSPECTION" in CHAPTER 2.



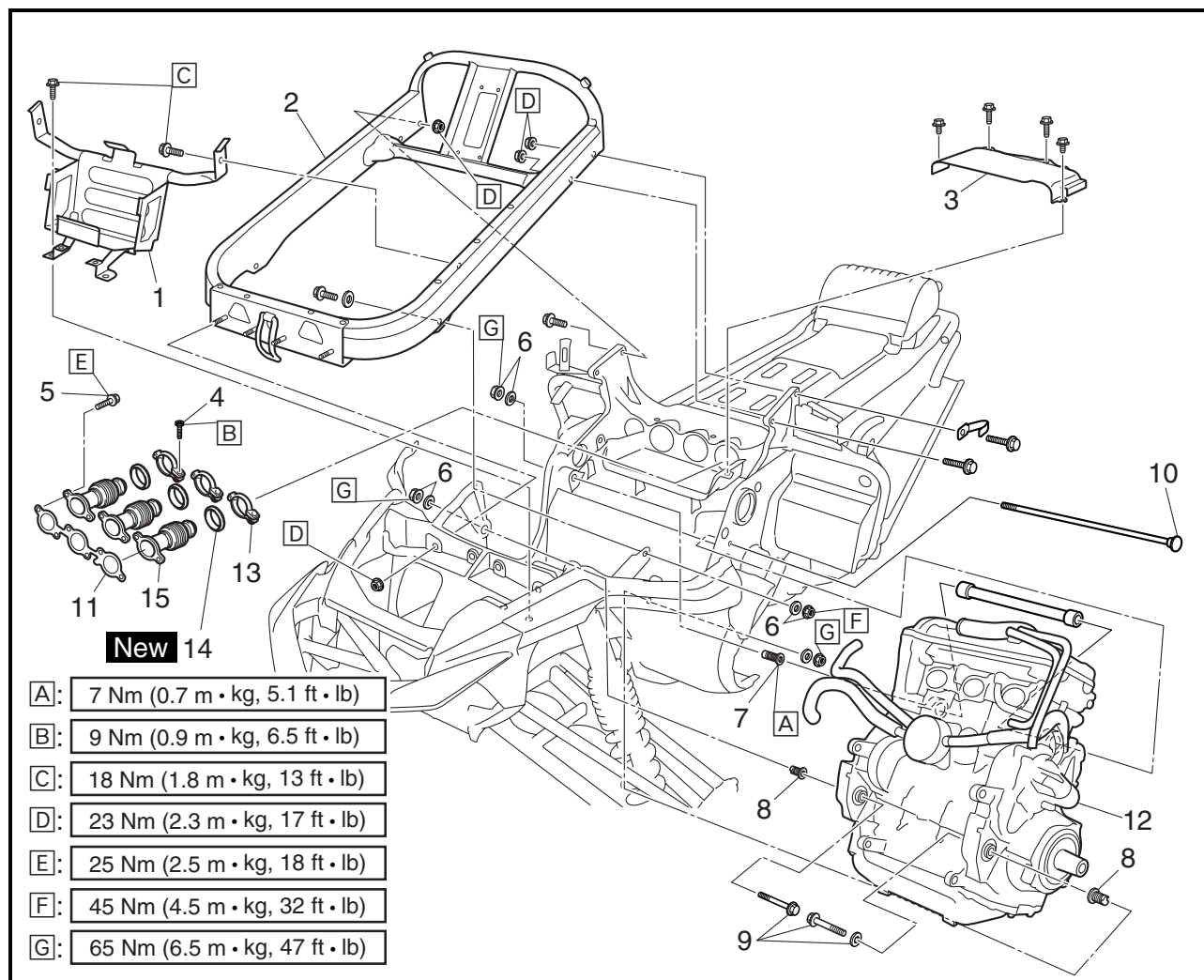
- [A]: 7 Nm (0.7 m • kg, 5.1 ft • lb)
 [B]: 8 Nm (0.8 m • kg, 5.8 ft • lb)
 [C]: 25 Nm (2.5 m • kg, 18 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
1	A.C. magneto lead coupler	2	Disconnect.
2	Rectifier/regulator lead coupler	1	Disconnect.
3	Ground earth lead	1	Disconnect.
4	Ignitor unit	1	
5	Starter motor lead	1	Disconnect.
6	Starter relay	1	
7	Ground earth lead	1	Disconnect.
8	Load control relay	1	
9	Headlight relay	1	
10	Carburetor warmer relay	1	
11	Back buzzer lead coupler	1	Disconnect. (RS90R/RSG90/RST90/RST90TF)
12	Ignition coil lead coupler	3	Disconnect.
13	Speed sensor lead coupler	1	Disconnect.
14	Fuel tank breather hose	1	
15	Coolant hose 6	1	Disconnect. For installation, reverse the removal procedure.



ENGINE ASSEMBLY



Order	Job name/Part name	Q'ty	Remarks
	Engine assembly removal		Remove the parts in the order listed below.
1	Battery bracket	1	Loosen.
2	Frame cross member	1	
3	Exhaust pipe joint cover	1	
4	Exhaust pipe band bolt	3	
5	Exhaust pipe joint bolt	6	
6	Nut/washer	3/3	
7	Rear engine mounting bolt spacer	1	
8	Front engine mounting bolt spacer	2	
9	Front engine mounting bolt/washer	2/1	
10	Rear engine mounting bolt	1	
11	Gasket	1	
12	Engine assembly	1	
13	Exhaust pipe band	3	
14	Gasket	3	
15	Exhaust pipe joint	3	
			For installation, reverse the removal procedure.

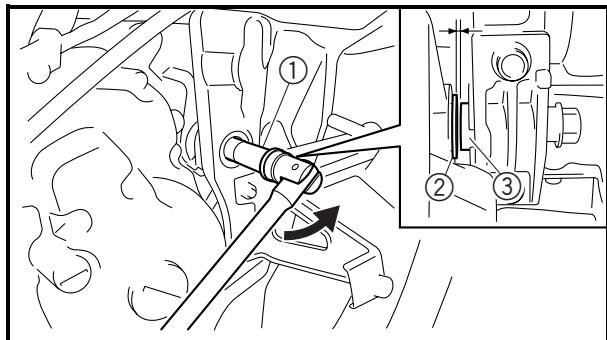
**REMOVAL**

1. Remove:

- Rear engine mounting nut
- Front engine mounting nuts
- Washers

NOTE:

Do not remove the engine mounting bolts.



2. Remove:

- Engine assembly

Removal steps:

- Screw in the engine mounting bolt spacers (front and rear) using the engine mount spacer wrench ① so that there is a gap between each engine mounting bolt spacer ② and engine damper ③.



Engine mount spacer wrench:
90890-01489, YS-01489

- Remove the engine mounting bolts, and then remove the engine assembly.

INSTALLATION**NOTE:**

After installing all parts, refer to “CABLE ROUTING” in CHAPTER 9, to check the cable, lead and hose routing.

1. Install:

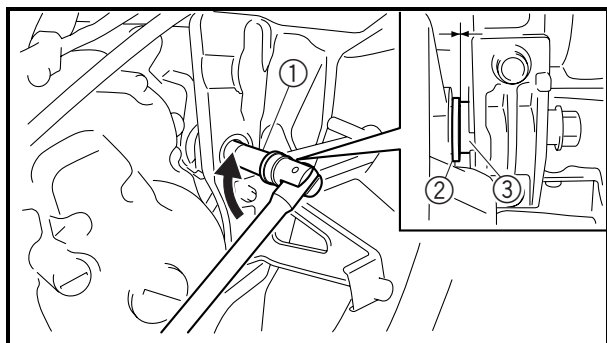
- Engine assembly

NOTE:

Use the pivot shaft wrench to tighten the engine mounting bolt spacers.

Installation steps:

- Install the engine mounting bolt spacers (front and rear).
- Install the engine assembly and then, install the rear engine mounting bolt, front engine mounting bolts and washer.



- Install the engine mount spacer wrench ①.



Engine mount spacer wrench:
90890-01489, YS-01489

- Tighten the rear engine mounting bolt spacer.



Rear engine mounting bolt spacer:
7 Nm (0.7 m · kg, 5.1 ft · lb)

- Tighten the rear engine mounting nut.



Rear engine mounting nut:
65 Nm (6.5 m · kg, 47 ft · lb)

- Tighten the front engine mounting bolt spacers ② (right and left) until they come to contact with the engine damper ③.

NOTE:

Do not apply torque to the front engine mounting bolt spacers.

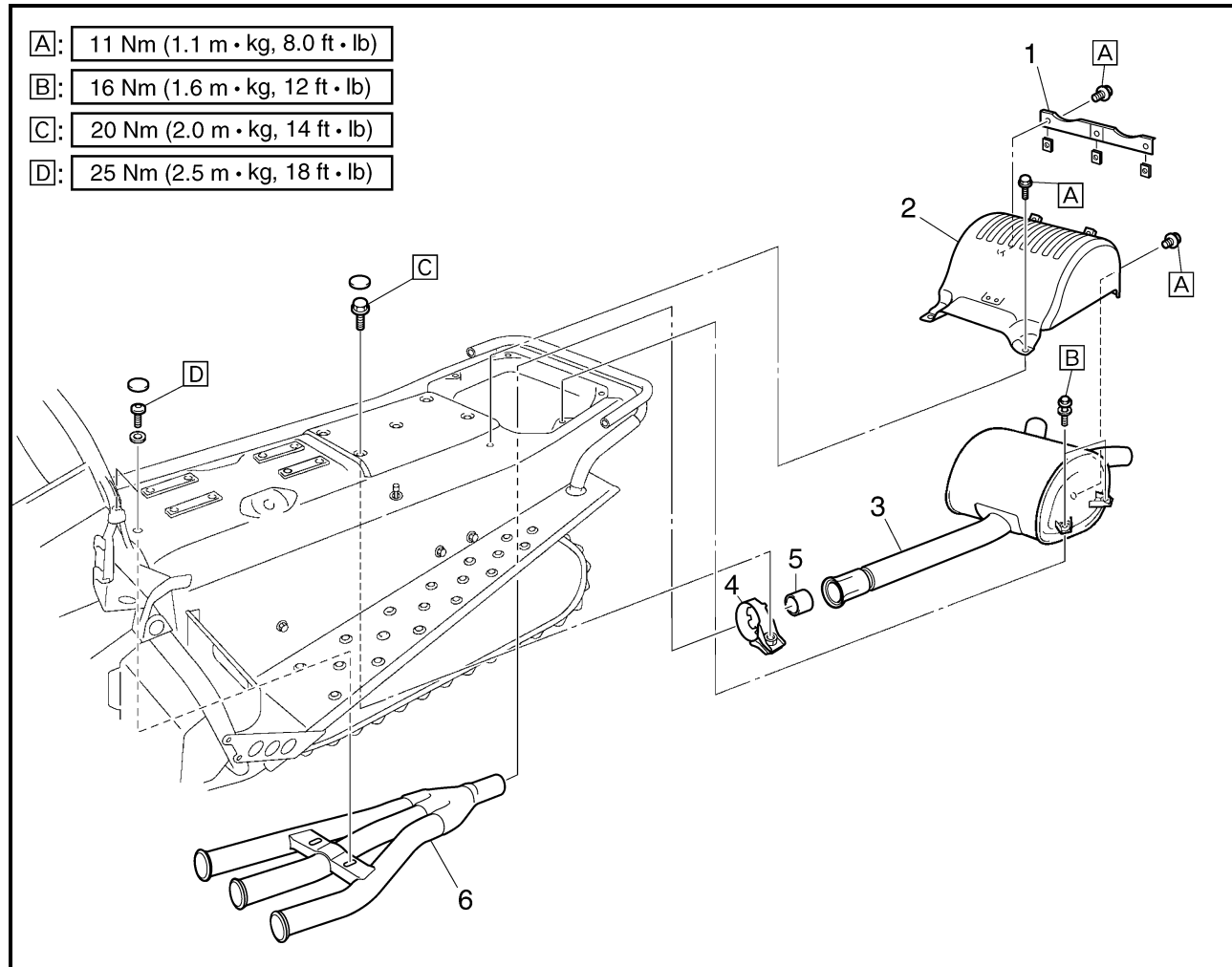
- Install the washers and nuts and then, tighten the front engine mounting nuts (right and left).



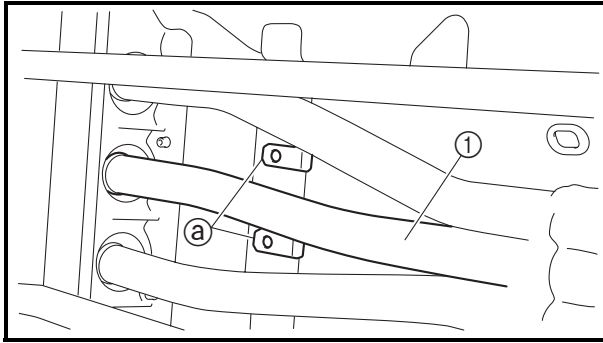
Front engine mounting nut:
65 Nm (6.5 m · kg, 47 ft · lb)



EXHAUST PIPE AND MUFFLER



Order	Job name/Part name	Q'ty	Remarks
	Exhaust pipe and muffler removal		Remove the parts in the order listed below.
	Slide rail suspension		Refer to "SLIDE RAIL SUSPENSION" in CHAPTER 4.
	Front axle assembly/track		Refer to "FRONT AXLE AND TRACK" in CHAPTER 4.
	Seat and fuel tank		Refer to "SEAT AND FUEL TANK".
1	Muffler cover plate	1	
2	Muffler cover	1	
3	Muffler	1	
4	Muffler band	1	
5	Gasket	1	
6	Exhaust pipe	1	
			NOTE: Remove the exhaust pipe after removing the engine.
			For installation, reverse the removal procedure.



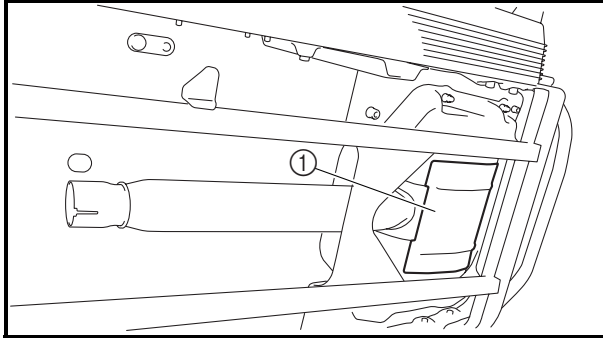
INSTALLATION

1. Install:

- Exhaust pipe ①

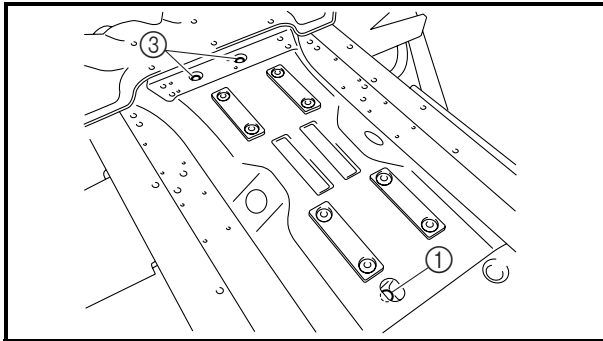
NOTE:

Hang the exhaust pipe to the frame ②.



2. Install:

- Muffler ①



3. Tighten:

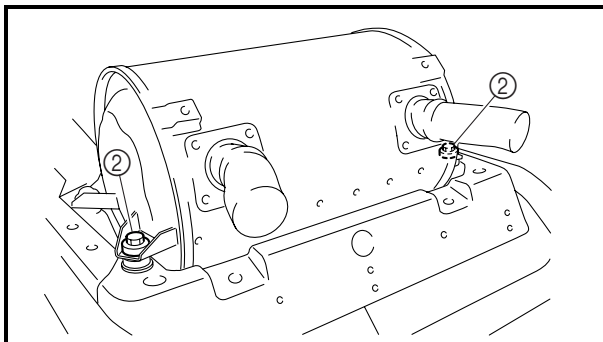
- Muffler band bolt ①
- Muffler bolts ②
- Exhaust pipe bolts ③

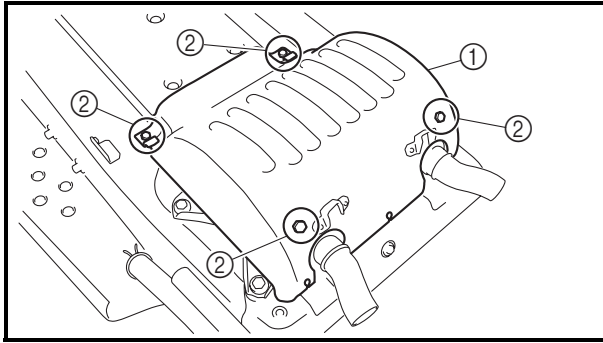


Muffler band bolt:
20 Nm (2.0 m · kg, 14 ft · lb)

Muffler bolt:
16 Nm (1.6 m · kg, 12 ft · lb)

Exhaust pipe bolt:
25 Nm (2.5 m · kg, 18 ft · lb)





4. Install:

- Muffler cover ①

5. Tighten:

- Muffler cover bolts ②

Tightening steps:

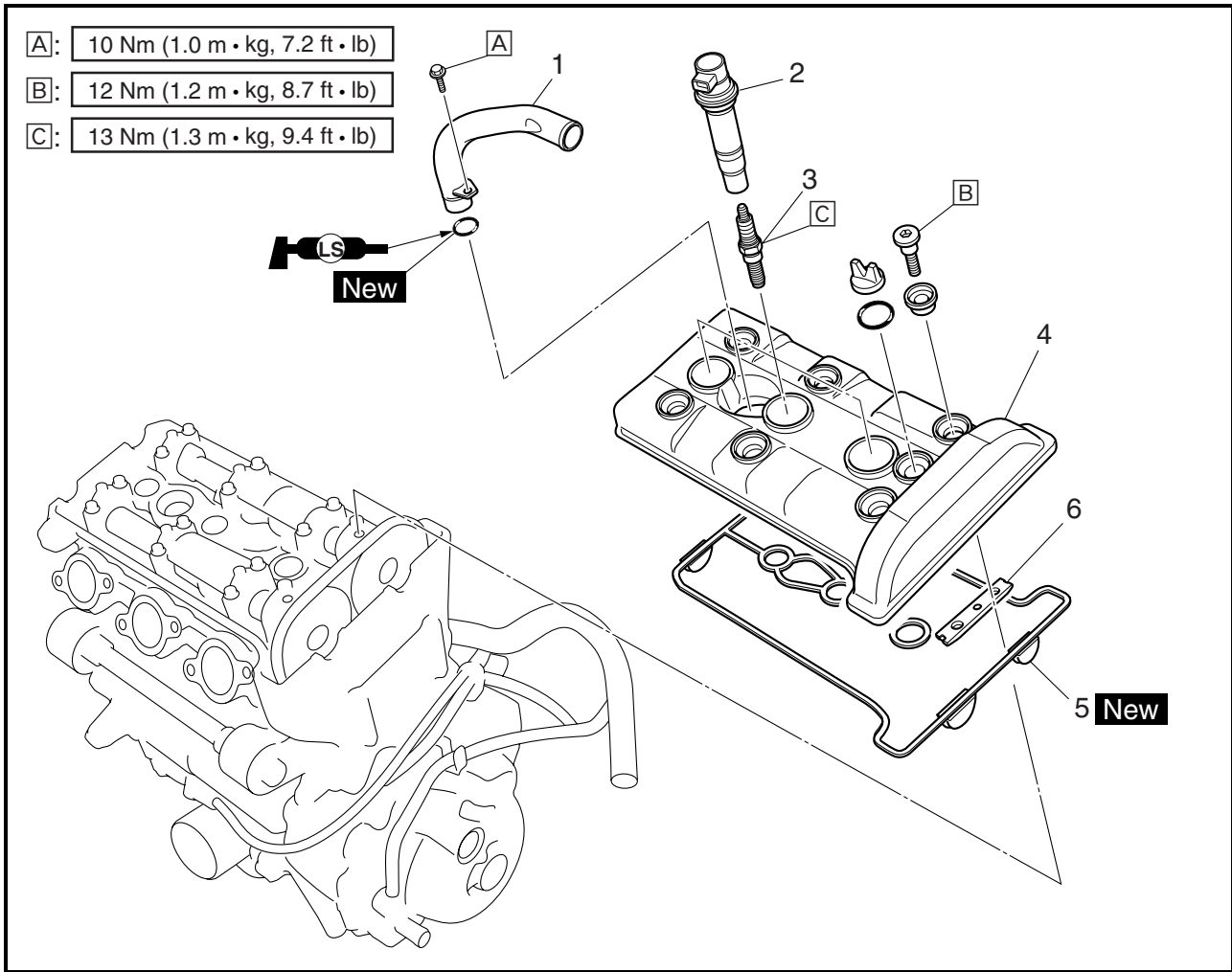
- Finger tighten the muffler cover bolts.
- Tighten the bolts towards the rear of the machine to the specified torque.
- Tighten the bolts towards the front of the machine to the specified torque.

**Muffler cover bolt:****11 Nm (1.1 m · kg, 8.0 ft · lb)**



CAMSHAFTS

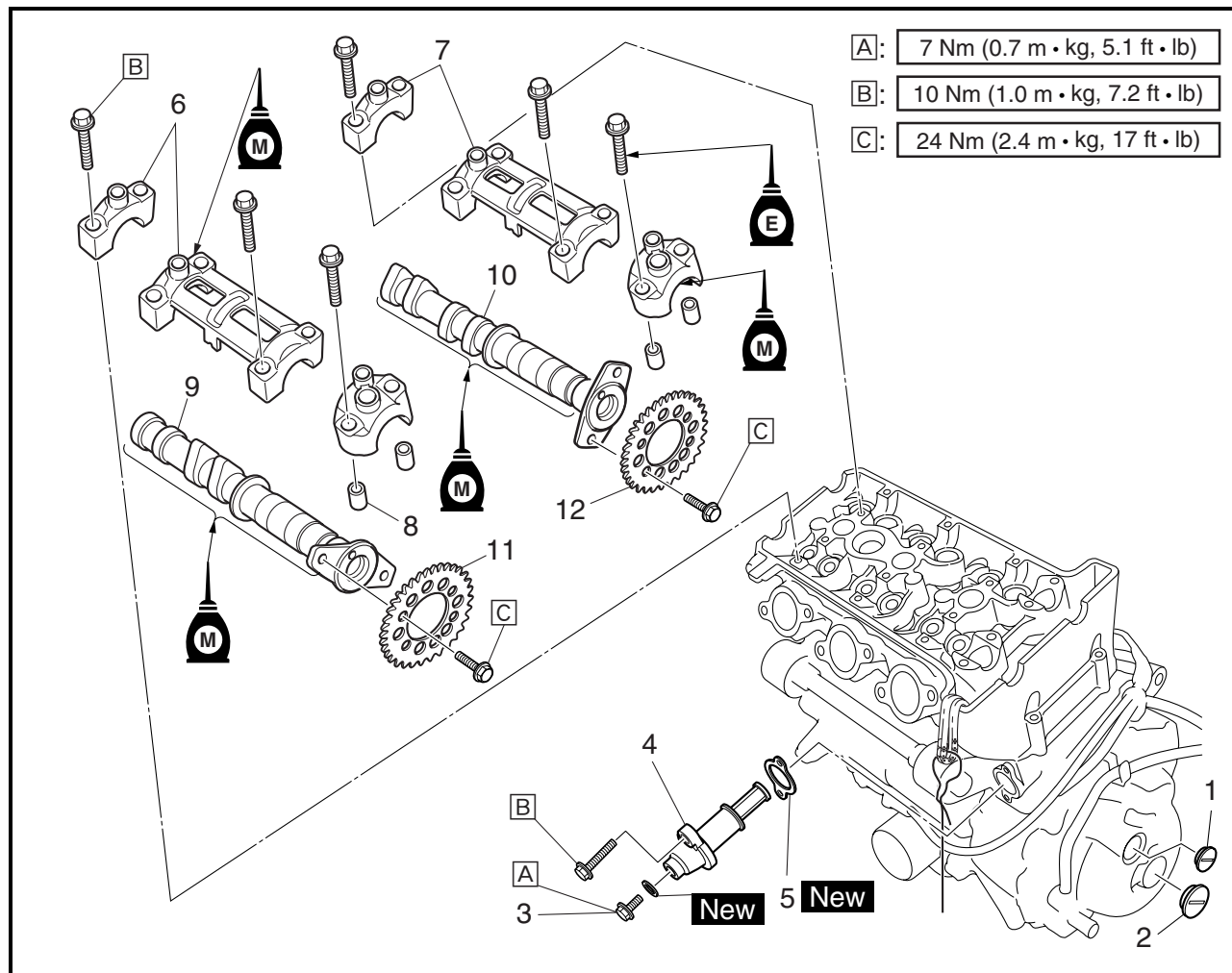
CYLINDER HEAD COVER



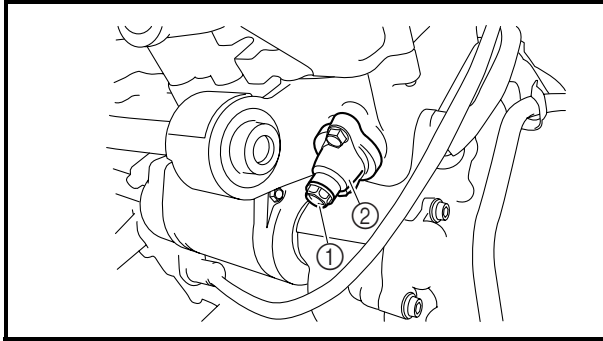
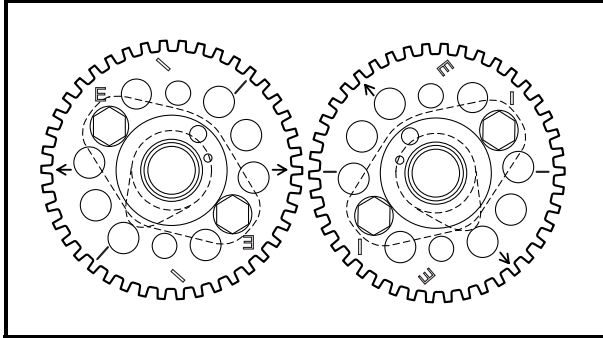
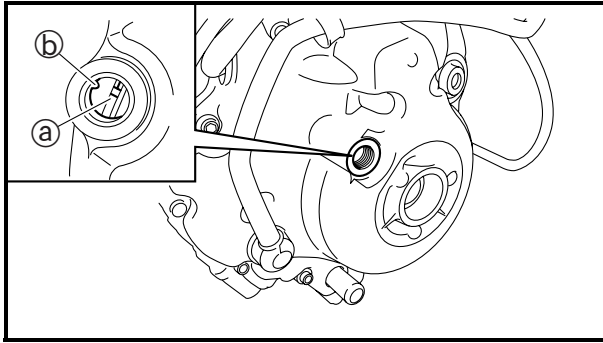
Order	Job name/Part name	Q'ty	Remarks
	Cylinder head cover removal		Remove the parts in the order listed below. Drain.
	Coolant		Refer to "HEAT EXCHANGER" in CHAPTER 6.
	Coolant hose 8/coolant hose 4/carburetor heating hose		
1	Cylinder head water jacket	1	
2	Ignition coil	3	
3	Spark plug	3	
4	Cylinder head cover	1	
5	Cylinder head cover gasket	1	
6	Timing chain guide (top side)	1	
			For installation, reverse the removal procedure.



CAMSHAFTS



Order	Job name/Part name	Q'ty	Remarks
	Camshaft removal		
	Engine		Remove the parts in the order listed below. Refer to "ENGINE ASSEMBLY".
1	Timing accessing screw	1	
2	Crankshaft end accessing screw	1	
3	Timing chain tensioner cap bolt	1	
4	Timing chain tensioner	1	
5	Timing chain tensioner gasket	1	
6	Intake camshaft cap	3	NOTE: _____ During removal, the dowel pins may still be connected to the camshaft caps.
7	Exhaust camshaft cap	3	
8	Dowel pin	4	
9	Intake camshaft	1	
10	Exhaust camshaft	1	
11	Intake camshaft sprocket	1	
12	Exhaust camshaft sprocket	1	
			For installation, reverse the removal procedure.

**REMOVAL**

1. Remove:

- Timing accessing screw
- Crankshaft end accessing screw

2. Align:

- "I" mark ① on the A.C. magneto rotor (with the stationary pointer ② on the A.C. magneto cover)

NOTE:

- Turn the crankshaft clockwise.
- When piston #3 is at TDC on the compression stroke, align the "I" mark ① on the A.C. magneto rotor with the stationary pointer ② on the A.C. magneto cover.
- TDC on the compression stroke can be found when the camshaft lobes are turned away from each other.

3. Loosen:

- Timing chain tensioner cap bolt ①
- Gasket

4. Remove:

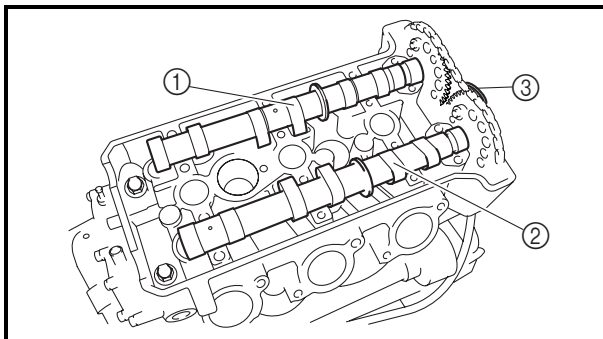
- Timing chain tensioner ②
- Gasket

5. Remove:

- Camshaft caps
- Dowel pins

CAUTION:

To prevent damage to the cylinder head, camshafts or camshaft caps, loosen the camshaft cap bolts in stages and in a crisscross pattern, working from the outside in.

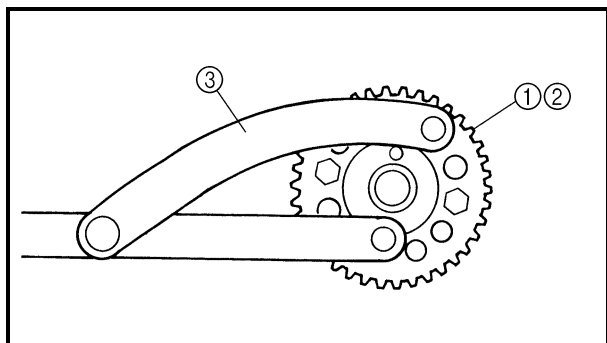


6. Remove:

- Intake camshaft ① (with camshaft sprocket)
- Exhaust camshaft ② (with camshaft sprocket)

NOTE:

To prevent the timing chain from falling into the crankcase, fasten it with a wire ③.



7. Remove:

- Intake camshaft sprocket ①
- Exhaust camshaft sprocket ②
(Use the special tool ③)

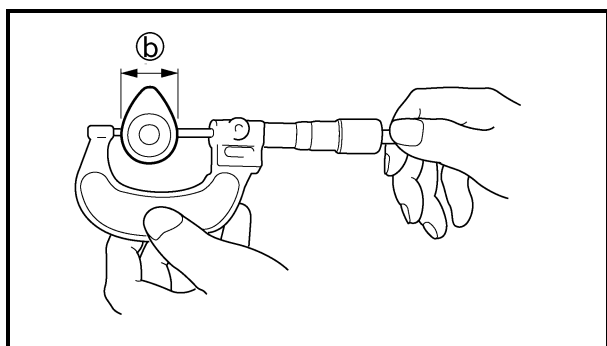
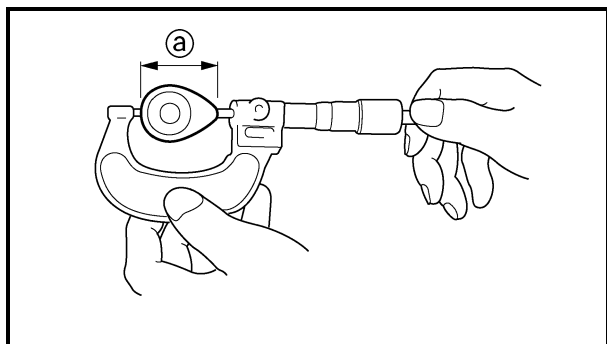


Rotor holding tool:
90890-01235, YU-01235

INSPECTION

1. Inspect:

- Camshaft lobes
Blue discoloration/pitting/scratches →
Replace the camshaft.



2. Measure:

- Camshaft lobe dimensions ① and ②
Out of specification → Replace the camshaft.

**Camshaft dimensions:****Intake:**

<Limit>:

① 33.65 mm (1.3248 in)

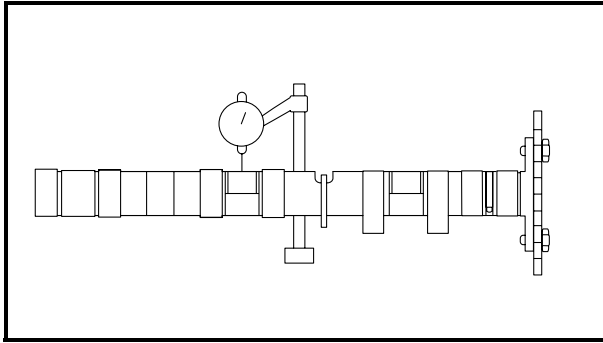
② 24.85 mm (0.9783 in)

Exhaust:

<Limit>:

① 33.65 mm (1.3248 in)

② 24.85 mm (0.9783 in)



3. Measure:

- Camshaft runout
Out of specification → Replace.



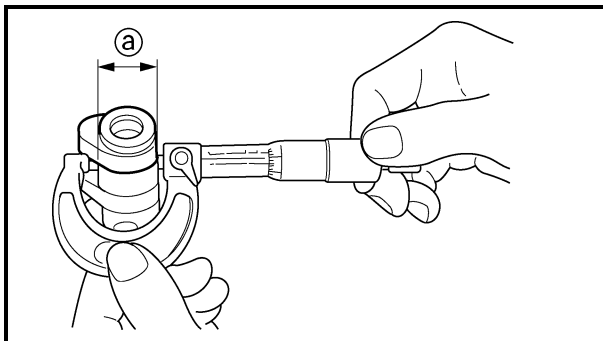
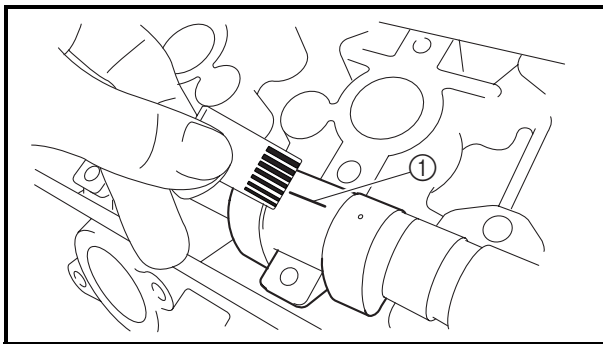
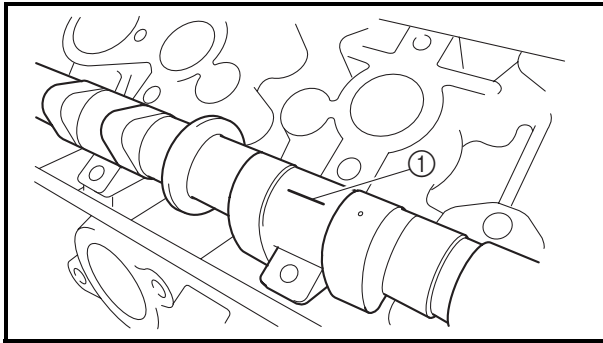
Camshaft runout:
0.03 mm (0.0012 in)

4. Measure:

- Camshaft-journal-to-camshaft-cap clearance
Out of specification → Measure the camshaft journal diameter.



Camshaft-journal-to-camshaft-cap clearance:
0.028 ~ 0.062 mm
(0.0011 ~ 0.0024 in)

**Measurement steps:**

- Install the camshaft into the cylinder head (without the dowel pins and camshaft caps).
- Position a strip of Plastigauge® ① onto the camshaft journal as shown.
- Install the dowel pins and camshaft caps.

NOTE:

- Tighten the camshaft cap bolts in stages and in a crisscross pattern, working from the inner caps out.
- Do not turn the camshaft when measuring the camshaft journal-to-camshaft cap clearance with the Plastigauge®.



Camshaft cap bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)

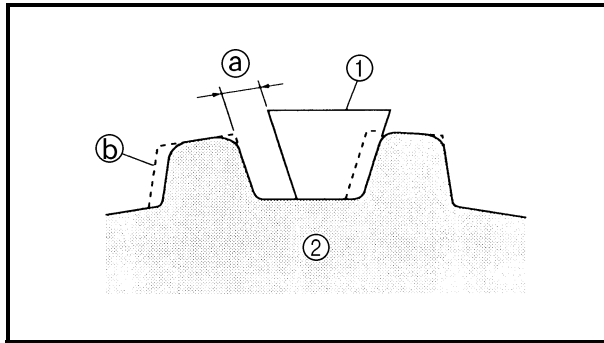
- Remove the camshaft caps and then measure the width of the Plastigauge® ①.

5. Measure:

- Camshaft journal diameter ②
Out of specification → Replace the camshaft.
Within specification → Replace the cylinder head and the camshaft caps as a set.



Camshaft journal diameter:
24.459 ~ 24.472 mm
(0.9630 ~ 0.9635 in)

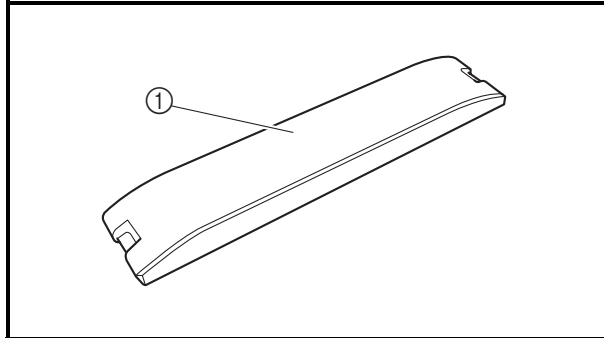


6. Inspect:

- Camshaft sprocket

More than 1/4 tooth (a) wear → Replace the camshaft sprockets and the timing chain as a set.

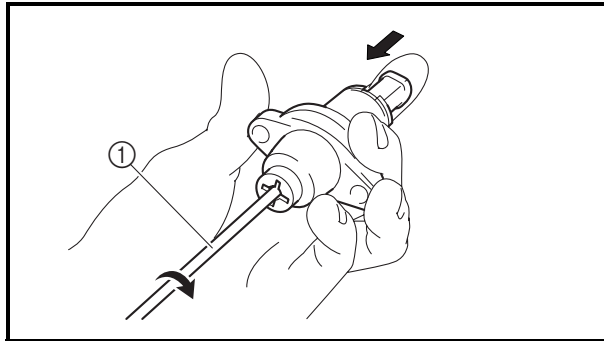
- (a) 1/4 tooth
- (b) Correct
- (1) Timing chain roller
- (2) Camshaft sprocket



7. Inspect:

- Timing chain guide (top side (1))

Damage/wear → Replace the timing chain guide.

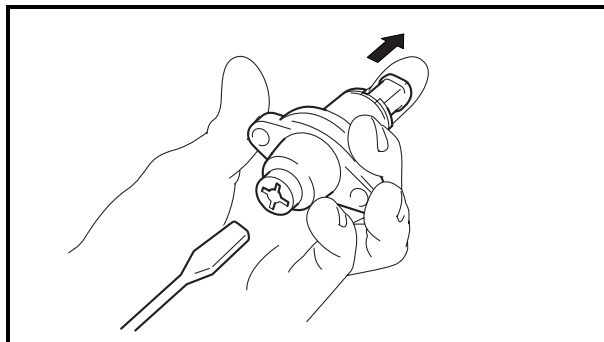


8. Inspect:

- Timing chain tensioner
- Cracks/damage → Replace.

Inspection steps:

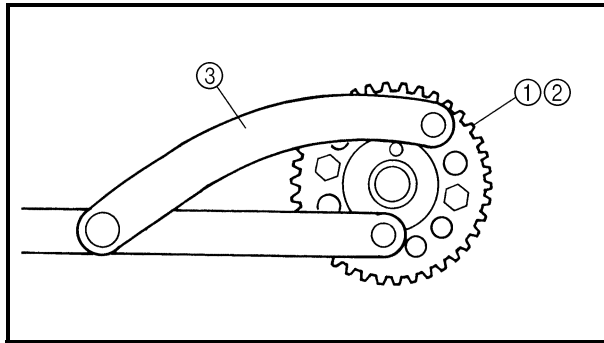
- While lightly pressing the timing chain tensioner rod by hand, turn the tensioner rod fully clockwise with a thin screwdriver (1).
- Remove the screwdriver and slowly release the timing chain tensioner rod.
- Make sure that the timing chain tensioner rod comes out of the timing chain tensioner housing smoothly. If there is rough movement, replace the timing chain tensioner.



9. Inspect:

- All parts

Damage/wear → Replace the defective part(-s).



INSTALLATION

1. Install:

- Exhaust camshaft sprocket ①
- Intake camshaft sprocket ②
(with the special tool ③)

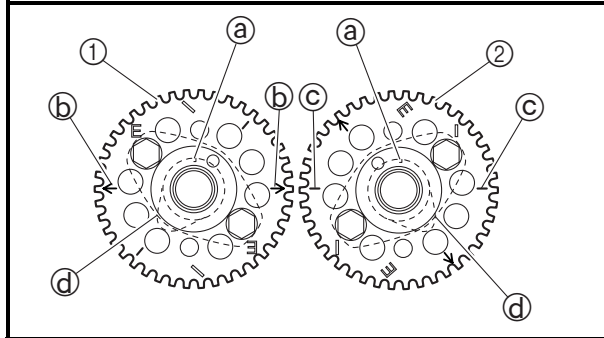


Rotor holding tool:
90890-01235, YU-01235

- Camshaft sprocket bolts



Camshaft sprocket bolt:
24 Nm (2.4 m · kg, 17 ft · lb)



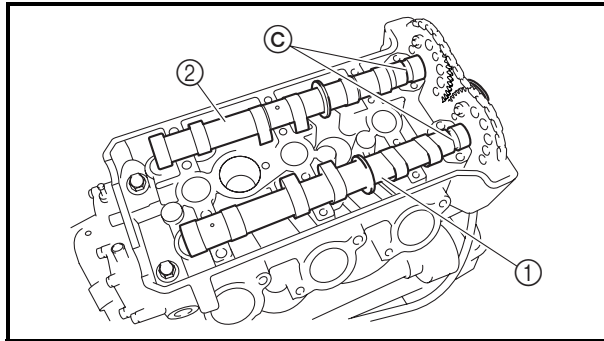
NOTE:

Make sure that the holes (a) in the cylinder #3 cam and marks (b) and (c) on the camshaft sprockets are in the position shown in the illustration.

(b): Exhaust side “→”

(c): Intake side “—”

(d): Cylinder #3 - cam



2. Install:

- Exhaust camshaft ①
- Intake camshaft ②
(with the camshaft sprockets)

Installation steps:

- Turn the crankshaft clockwise.
- When piston #3 is at TDC on the compression stroke, align the “I” mark (a) on the A.C. magneto rotor with the stationary pointer (b) on the A.C. magneto cover.
- Install the timing chain onto both camshaft sprockets, and then install the camshafts.

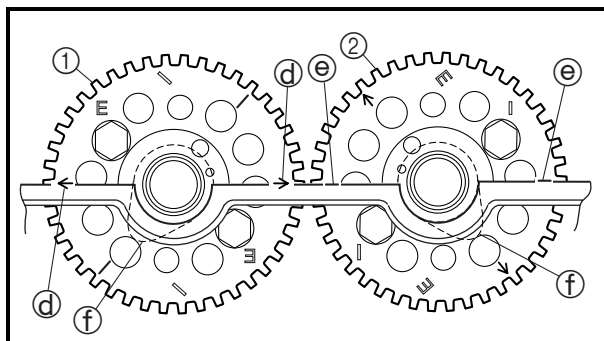
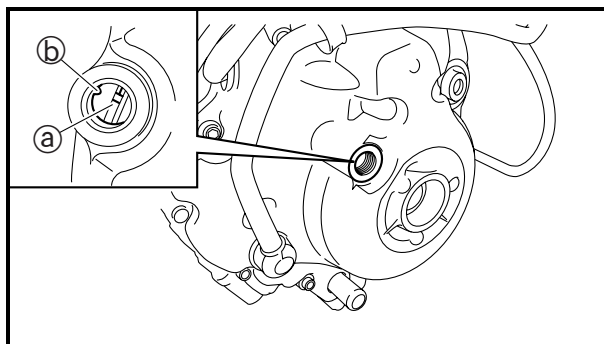
NOTE:

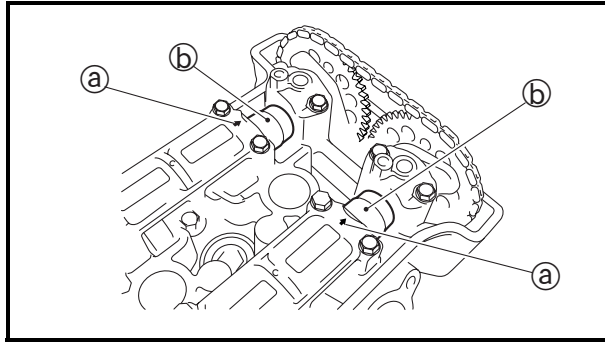
- Install the camshafts with the hole (c) in the cylinder #3 - cam facing up.
- When installing the timing chain, start with the exhaust camshaft and be sure to keep the timing chain as tight as possible on the exhaust side.
- Make sure the marks (d) and (e) on the timing chain sprockets are parallel with the edge of the cylinder head.

(d): Exhaust side “→”

(e): Intake side “—”

(f): Cylinder #3 - cam





3. Install:

- Dowel pins
- Intake camshaft caps
- Exhaust camshaft caps

NOTE:

- The “I” mark refers to the intake camshaft caps and the “E” mark refers to the exhaust camshaft cap.
- Install the camshaft caps with the arrow mark (a) pointing towards the right side of the engine.
- Make sure the punch marks (b) in the camshaft are aligned with the arrow mark (a) on the camshaft caps.

4. Install:

- Camshaft cap bolts



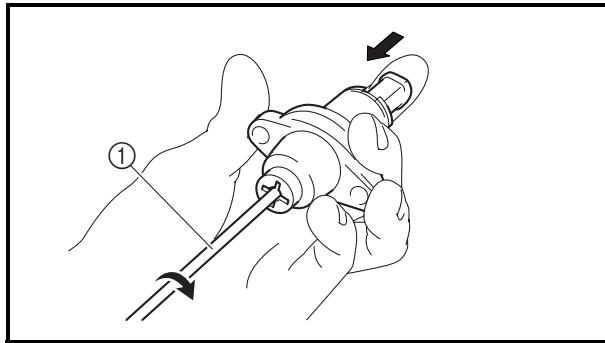
Camshaft cap bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)

NOTE:

Tighten the camshaft cap bolts in stages and in a crisscross pattern, working from the inner caps out.

CAUTION:

- Lubricate the camshaft cap bolts with the engine oil.
- The camshaft cap bolts must be tightened evenly or damage to the cylinder head, camshaft caps, and camshafts will result.
- Do not turn the crankshaft when installing the camshaft to avoid damage or improper valve timing.



5. Install:

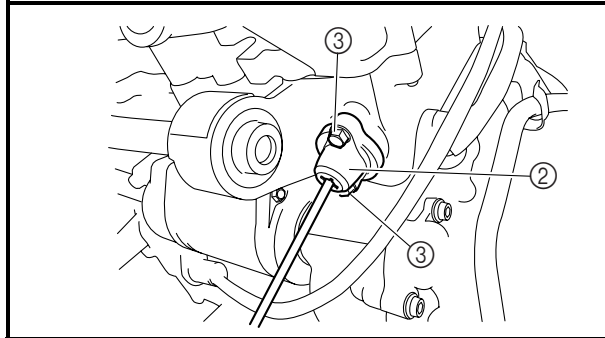
- Timing chain tensioner

Installation steps:

- While lightly pressing the timing chain tensioner rod by hand, turn the tensioner rod fully clockwise with a thin screwdriver ①.

NOTE:

Make sure that the tensioner rod has been fully set clockwise.



- With the timing chain tensioner rod turned all the way into the timing chain tensioner housing (with the thin screwdriver still installed), install the gasket and the timing chain tensioner ② onto the cylinder block.

⚠ WARNING

Always use a new gasket.

- Tighten the timing chain tensioner bolts ③ to the specified torque.

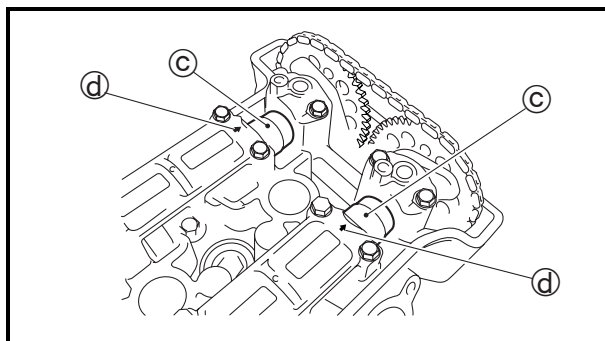
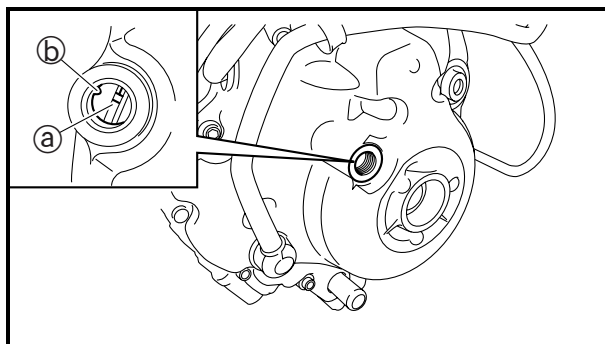


Timing chain tensioner bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)

- Remove the screwdriver, make sure the timing chain tensioner rod releases, and then tighten the cap bolt to the specified torque.



Cap bolt:
7 Nm (0.7 m · kg, 5.1 ft · lb)



6. Turn:

- Crankshaft
(several turns clockwise)

7. Inspect:

- “I” mark ①
Make sure the “I” mark ① on the A.C. magneto rotor is aligned with the stationary pointer ② on the A.C. magneto cover.
- Camshaft punch marks ③
Make sure the punch marks ③ in the cylinder #3 - cam are aligned with the arrow marks ④ on the camshaft caps.
Out of alignment → Adjust.
Refer to the installation steps above.

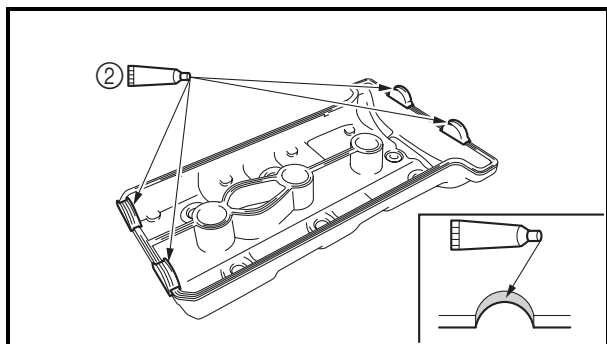
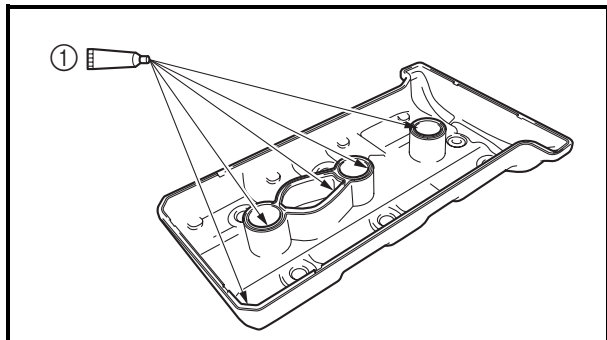


8. Measure:

- Valve clearance

Out of specification → Adjust.

Refer to “VALVE CLEARANCE ADJUSTMENT” in CHAPTER 2.



9. Install

- Cylinder head cover gasket **New**
- Cylinder head cover



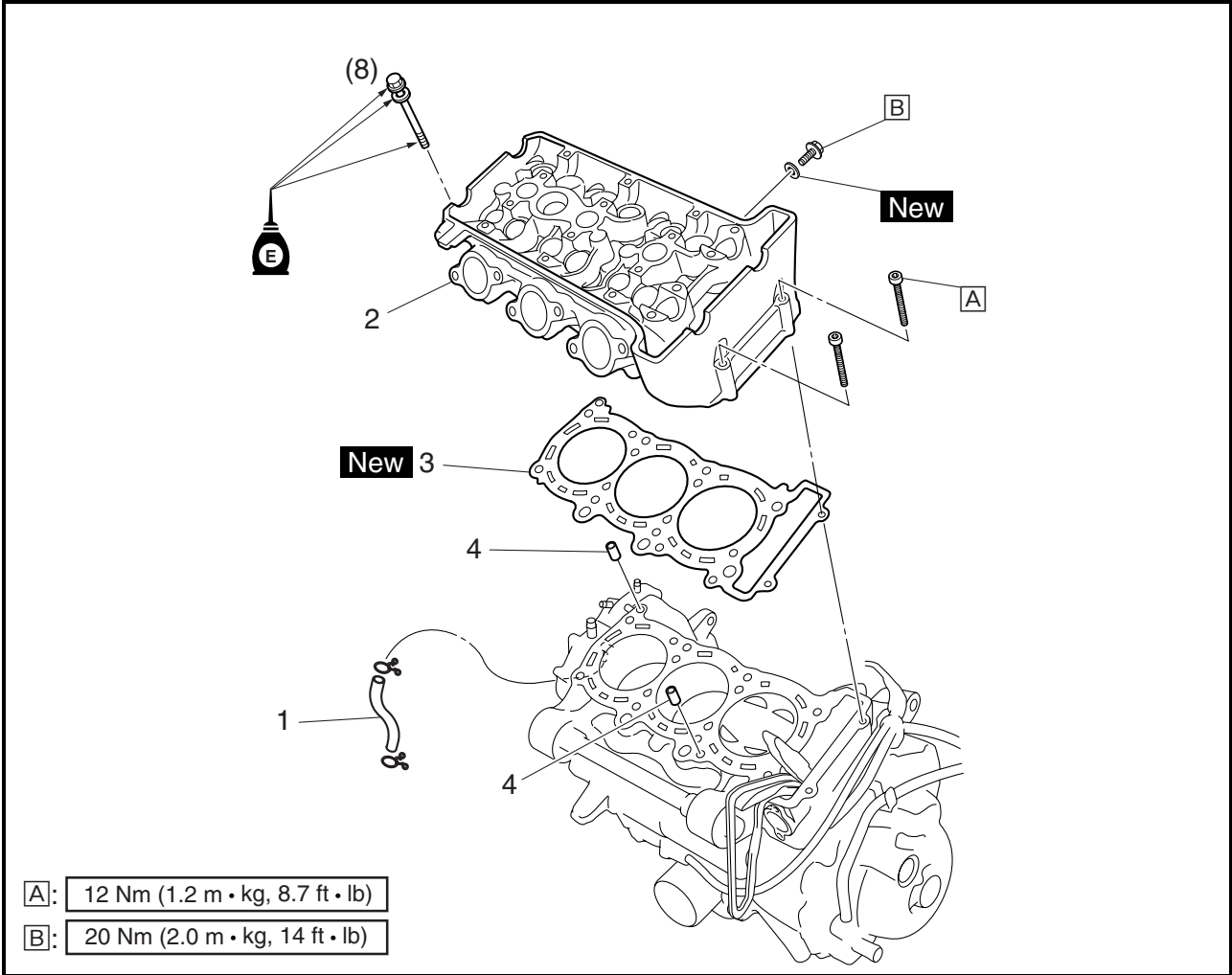
Cylinder head cover bolt:
12 Nm (1.2 m · kg, 8.7 ft · lb)

NOTE:

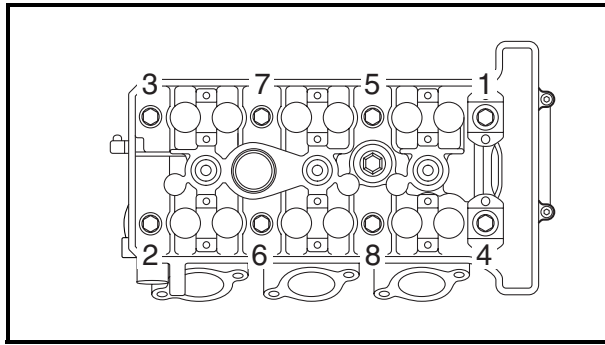
- Apply bond TB1541 ① onto the mating surfaces of the cylinder head cover and cylinder head cover gasket.
- Apply Sealant (Quick Gasket®) or Yamaha bond No. 1215 ② onto the mating surfaces of the cylinder head cover gasket and cylinder head.
- Tighten the cylinder head cover bolts stages and in a crisscross pattern.



CYLINDER HEAD



Order	Job name/Part name	Q'ty	Remarks
	Cylinder head removal		
	Engine		Remove the parts in the order listed below.
	Camshafts		Refer to "ENGINE ASSEMBLY".
1	Oil delivery hose	1	Refer to "CAMSHAFTS".
2	Cylinder head	1	
3	Cylinder head gasket	1	
4	Dowel pin	2	
			For installation, reverse the removal procedure.

**REMOVAL**

1. Remove:

- Cylinder head bolts

NOTE:

Loosen each bolt 1/2 of a turn at a time. After all of the bolt are fully loosened, remove them.

INSPECTION

1. Eliminate:

- Combustion chamber carbon deposits (with a rounded scraper)

NOTE:

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

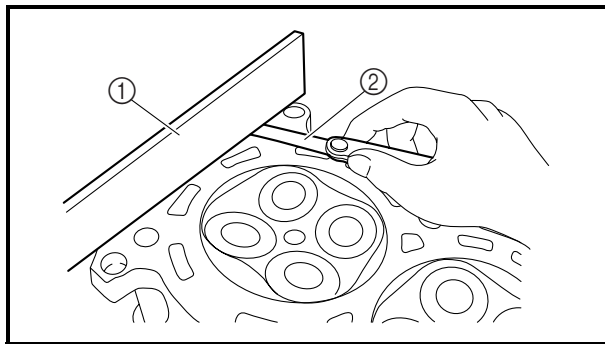
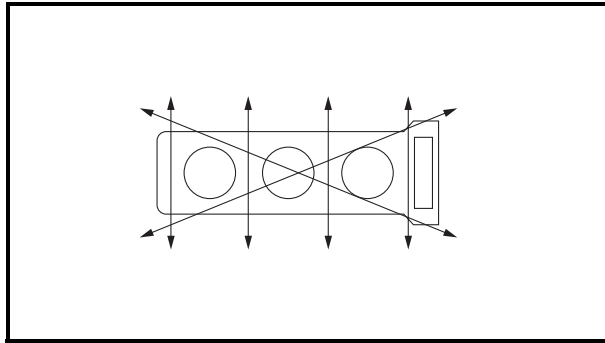
- spark plug bore threads
- valve seats

2. Check:

- Cylinder head
Damage/scratches → Replace.
- Cylinder head water jacket
Mineral deposits/rust → Eliminate.

3. Measure:

- Cylinder head warpage
Out of specification → Resurface the cylinder head.



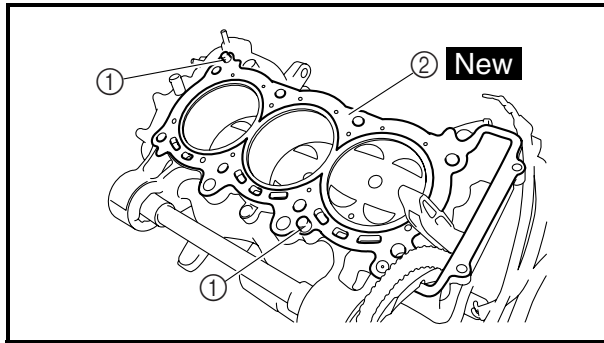
Maximum cylinder head warpage:
0.10 mm (0.0039 in)

Measurement steps:

- Place a straightedge ① and a thickness gauge ② across the cylinder head.
- Measure the warpage.
- If the limit is exceeded, resurface the cylinder head as follows.
- Place a 400 ~ 600 grit wet sandpaper on the surface plate and resurface the cylinder head using a figure-eight sanding pattern.

NOTE:

To ensure an even surface, rotate the cylinder head several times.

**INSTALLATION****1. Install:**

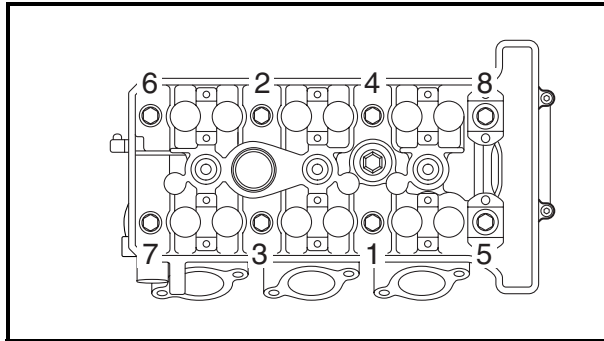
- Dowel pins ①
- Gasket ② **New**

2. Install:

- Cylinder head

NOTE:

Pass the timing chain through the timing chain cavity.

**3. Tighten:**

- Cylinder head bolts (M10)

NOTE:

The tightening procedure of the cylinder head bolts is angle controlled, therefore tighten the bolts using the following procedure.

Tightening steps:

- Lubricate the cylinder head bolts and washers with engine oil.
- Install the washers and cylinder head bolts.
- Tighten the cylinder head bolts in the proper tightening sequence as shown.

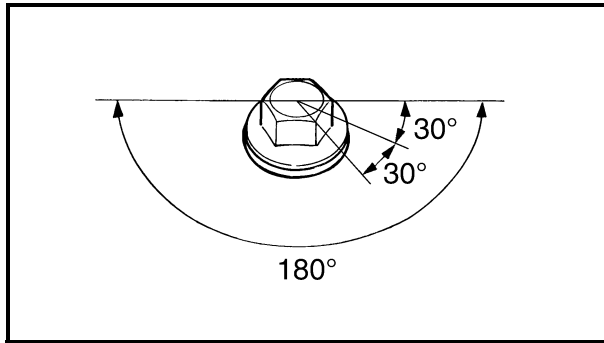
**Cylinder head bolt (M10):****1st:**

25 Nm (2.5 m · kg, 18 ft · lb)

- Loosen and retighten the cylinder head bolts in the proper tightening sequence as shown.

**Cylinder head bolt (M10):****2nd:**

25 Nm (2.5 m · kg, 18 ft · lb)



- Tighten the cylinder head bolts further to reach the specified angle 180° in the proper tightening sequence as shown.



Cylinder head bolt (M10):
Final:
Specified angle 180°

⚠ WARNING

When the bolts are tightened more than the specified angle, do not loosen the bolt and then retighten it.

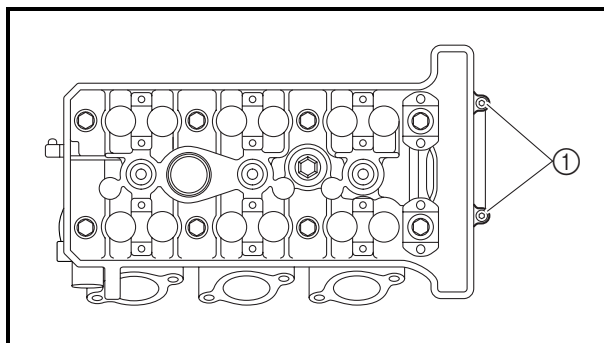
Replace the bolt with a new one and perform the procedure again.

CAUTION:

- Do not use a torque wrench to tighten the bolt to the specified angle.
- Tighten the bolt until it is at the specified angle.

NOTE:

When using a hexagonal bolt, note that the angle from one corner to another is 60° .



4. Tighten:

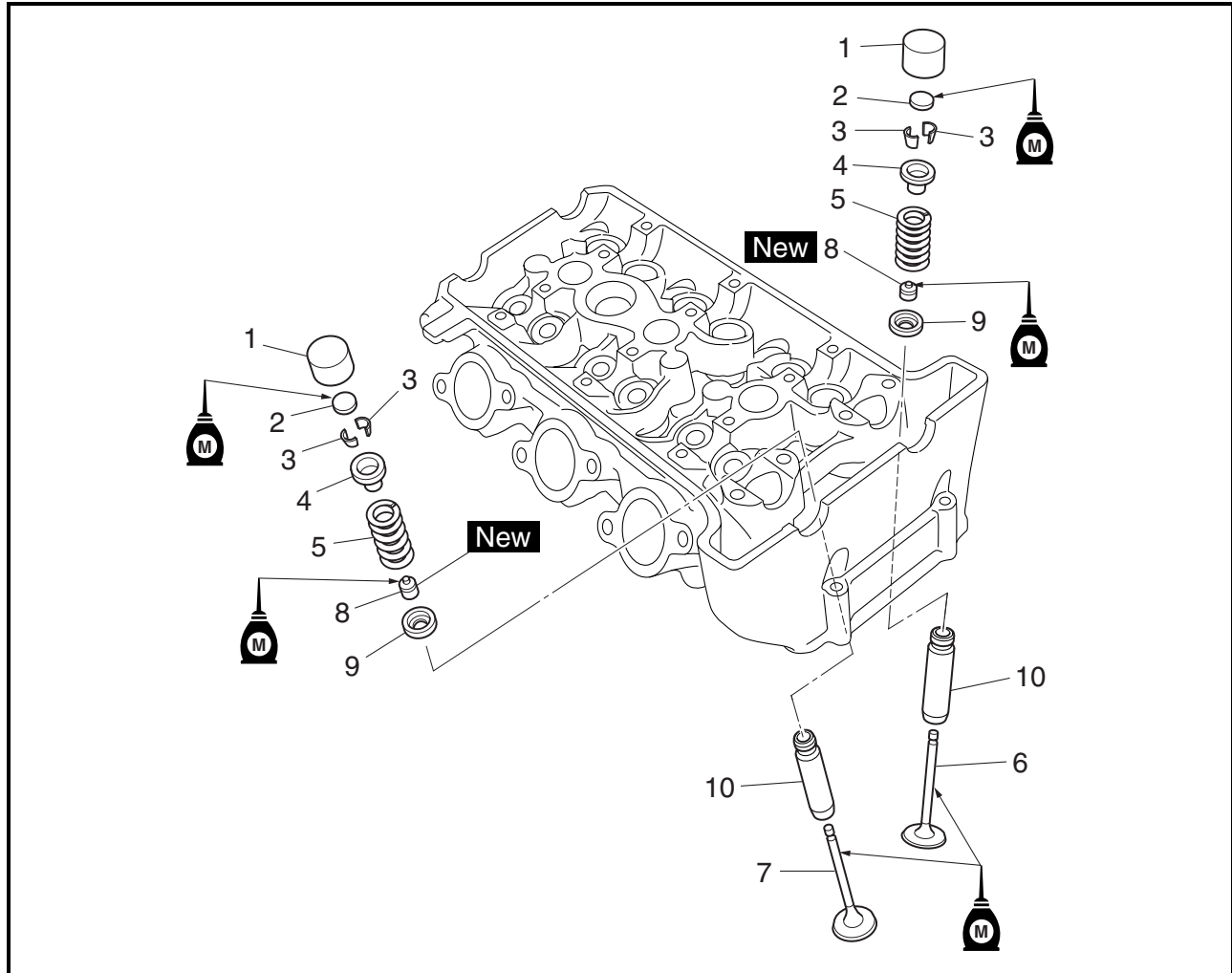
- Cylinder head bolts (M6) ①



Cylinder head bolt:
12 Nm (1.2 m · kg, 8.7 ft · lb)



VALVES AND VALVE SPRINGS



Order	Job name/Part name	Q'ty	Remarks
	Valves and valve springs removal		
	Cylinder head		Remove the parts in the order listed below. Refer to "CYLINDER HEAD".
1	Valve lifter	12	
2	Valve pad	12	
3	Valve cotter	24	
4	Upper spring seat	12	
5	Valve spring	12	
6	Intake valve	6	
7	Exhaust valve	6	
8	Oil seal	12	
9	Lower spring seat	12	
10	Valve guide	12	
			For installation, reverse the removal procedure.

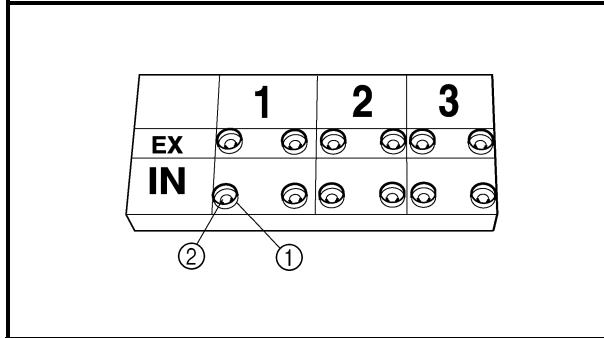


REMOVAL

The following procedure applies to all of the valves and related components.

NOTE:

Before removing the internal parts of the cylinder head (e.g., valves, valve springs, valve seats), make sure the valves properly seal.

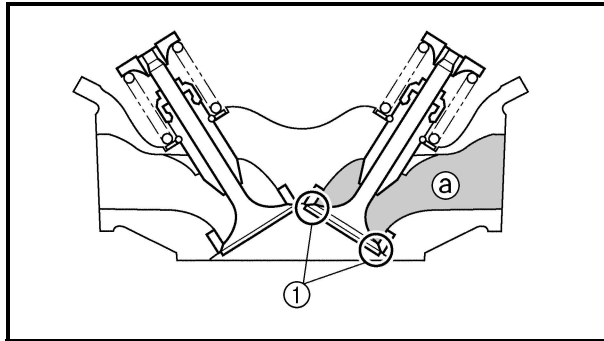


1. Remove:

- Valve lifter ①
- Valve pad ②

NOTE:

Make a note of the position of each valve lifter and valve pad so that they can be reinstalled in their original place.



2. Inspect:

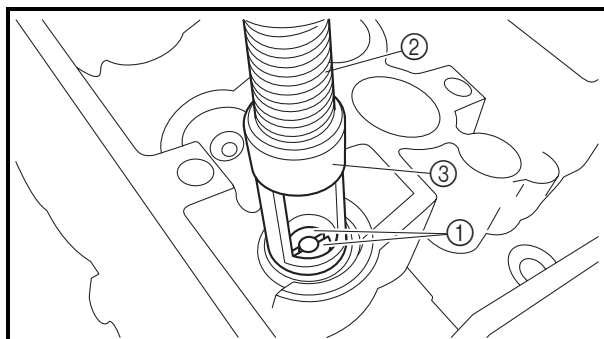
- Valve (for leakage)
Leakage at the valve seat → Check the valve face, valve seat, and valve seat width.

Inspection steps:

- Pour a clean solvent ① into the intake and exhaust ports.
- Check that the valves properly seal.

NOTE:

There should be no leakage at the valve seat ①.



3. Remove:

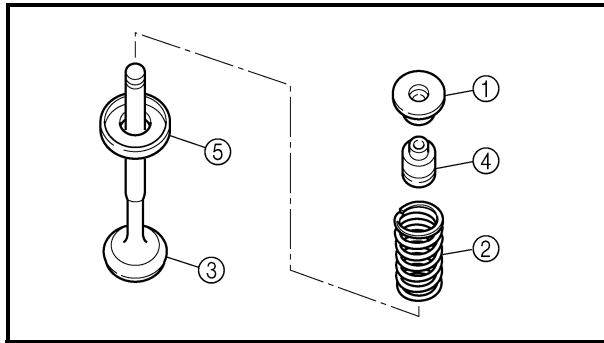
- Valve cotteners ①

NOTE:

Remove the valve cotteners by compressing the valve spring with the valve spring compressor set ② and attachment ③.



Valve spring compressor set:
90890-04019, YM-04019
Attachment:
90890-04108, YM-04108



4. Remove:

- Upper spring seat ①
- Valve spring ②
- Valve ③
- Valve stem seal ④
- Lower spring seat ⑤

NOTE:

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

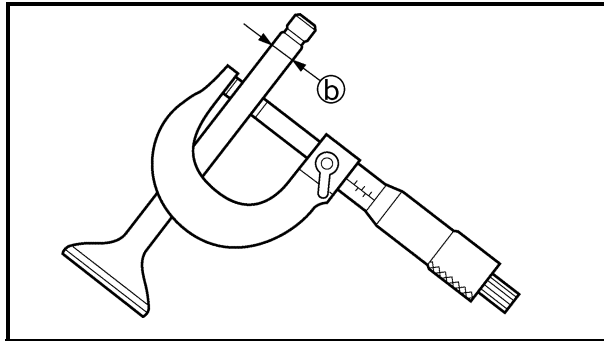
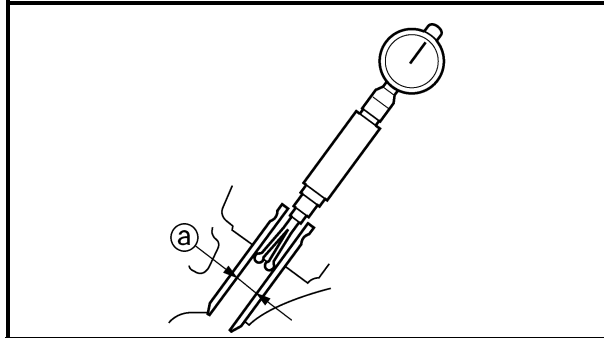
INSPECTION

1. Measure:

- Valve-stem-to-valve-guide clearance

Valve-stem-to-valve-guide clearance =
Valve guide inside diameter ① –
Valve stem diameter ②

Out of specification → Replace the valve guide.



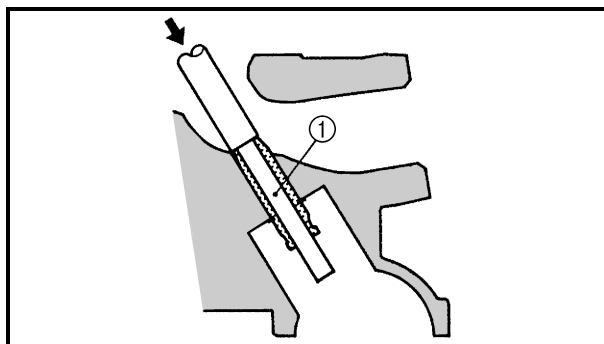
Valve-stem-to-valve-guide clearance:

Intake:

0.010 ~ 0.037 mm
 (0.0004 ~ 0.0015 in)
 <Limit>: 0.08 mm (0.0031 in)

Exhaust:

0.020 ~ 0.047 mm
 (0.0008 ~ 0.0019 in)
 <Limit>: 0.10 mm (0.004 in)



2. Replace:

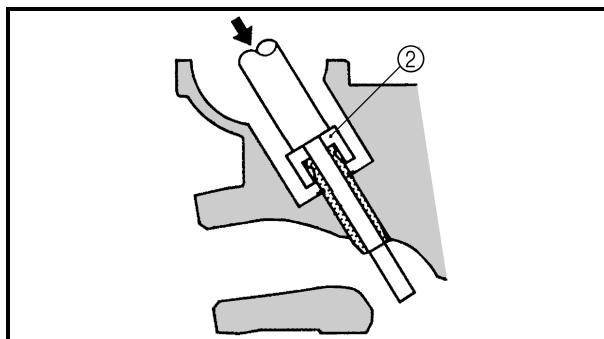
- Valve guide

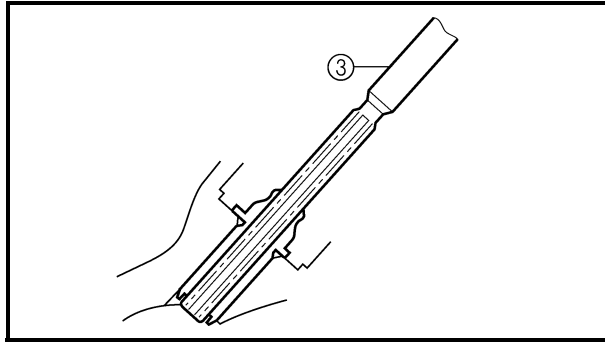
NOTE:

To ease valve guide removal and installation, and to maintain the correct fit, heat the cylinder head to 100 °C (212 °F) in an oven.

Replacement steps:

- Remove the valve guide with the valve guide remover ①.
- Install the new valve guide with the valve guide installer ② and valve guide remover ①.





- After installing the valve guide, bore the valve guide with the valve guide reamer ③ to obtain the proper valve-stem-to-valve-guide clearance.

NOTE:

After replacing the valve guide, reface the valve seat.



Valve guide remover (ø5):
90890-04097, YM-04097

Valve guide installer (ø5):
90890-04098, YM-04098

Valve guide reamer (ø5):
90890-04099, YM-04099

3. Eliminate:

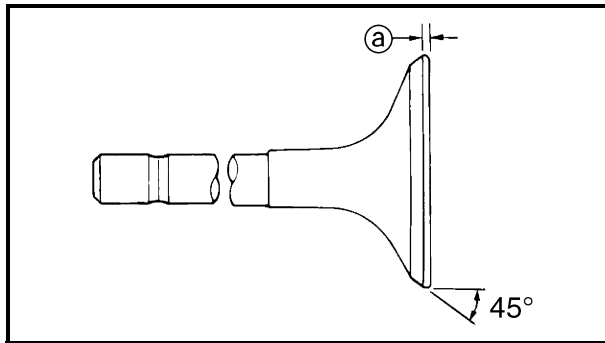
- Carbon deposits
(from the valve face and valve seat)

4. Inspect:

- Valve face
Pitting/wear → Grind the valve face.
- Valve stem end
Mushroom shape or diameter larger than the body of the valve stem → Replace the valve.

5. Measure:

- Valve margin thickness ①
Out of specification → Replace the valve.



Valve margin thickness:

Intake:

0.8 ~ 1.2 mm (0.0315 ~ 0.0472 in)

Exhaust:

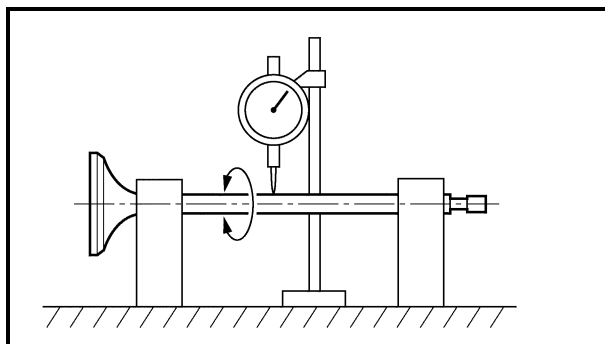
0.5 ~ 0.9 mm (0.0197 ~ 0.0354 in)

6. Measure:

- Valve stem runout
Out of specification → Replace the valve.

NOTE:

- When installing a new valve, always replace the valve guide.
- If the valve is removed or replaced, always replace the oil seal.



Valve stem runout:

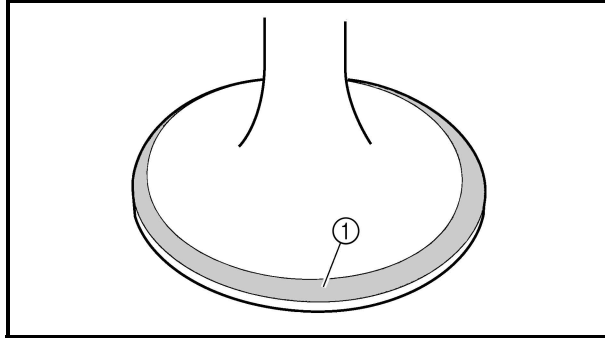
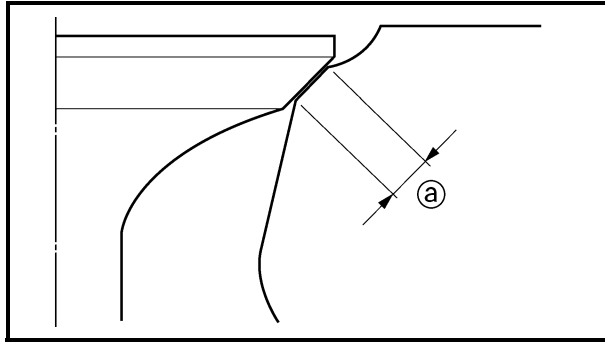
0.01 mm (0.0004 in)

7. Eliminate:

- Carbon deposits
(from the valve face and valve seat)

8. Inspect:

- Valve seat
Pitting/wear → Replace the cylinder head.



9. Measure:

- Valve seat width (a)

Out of specification → Replace the cylinder head.

**Valve seat width:****Intake:**

0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)

<Limit>: 1.6 mm (0.0630 in)

Exhaust:

0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)

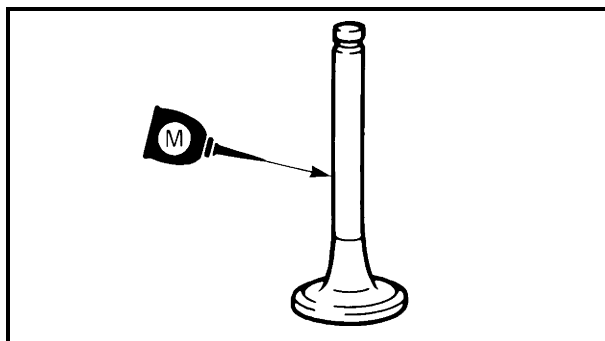
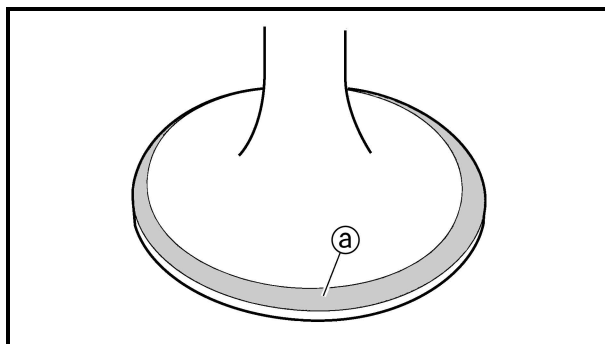
<Limit>: 1.6 mm (0.0630 in)

Measurement steps:

- Apply Mechanic's blueing dye (Dykem) (1) onto 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 impression.
- Measure the valve seat width.

NOTE:

Where the valve seat and valve face contacted one another, the blueing will have been removed.



10. Lap:

- Valve face
- Valve seat

NOTE:

After replacing the cylinder head or replacing the valve and valve guide, the valve seat and valve face should be lapped.

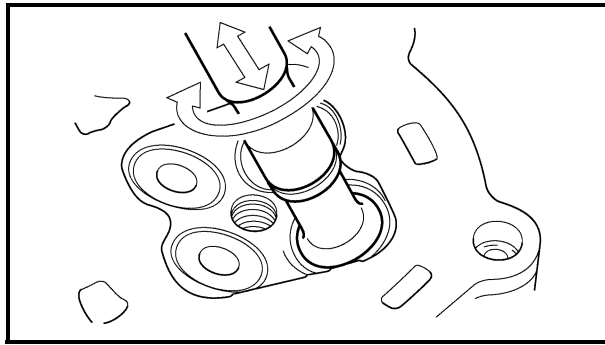
Lapping steps:

- Apply a coarse lapping compound (a) to the valve face.

CAUTION:

Do not let the lapping compound enter the gap between the valve stem and the valve guide.

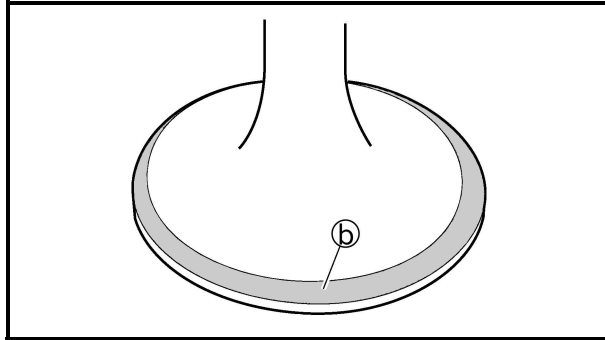
- Apply molybdenum disulfide oil onto the valve stem.



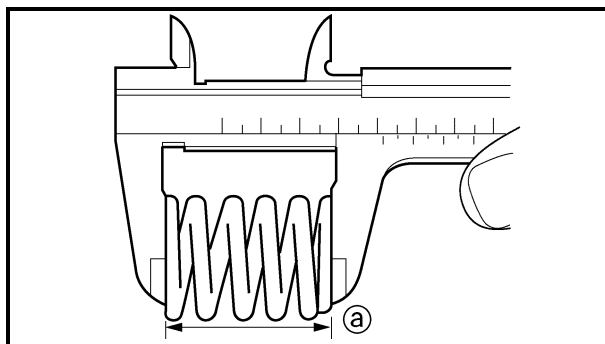
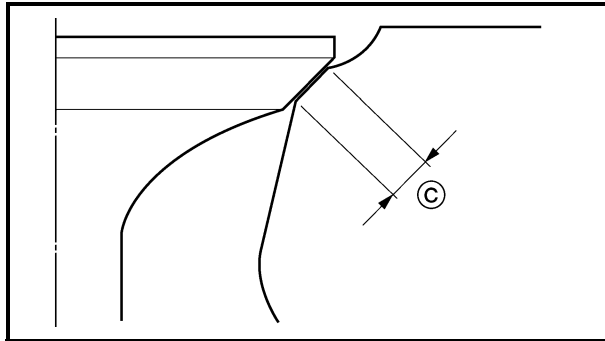
- Install the valve into the cylinder head.
- Turn the valve until the valve face and valve seat are evenly polished, then clean off all of the lapping compound.

NOTE:

For 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.
- After every lapping procedure, be sure to clean off all of the lapping compound from the valve face and valve seat.
- Apply Mechanic's blueing dye (Dykem) (b) onto 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 impression.
- Measure the valve seat width (c) again. If the valve seat width is out of specification, reface and lap the valve seat.

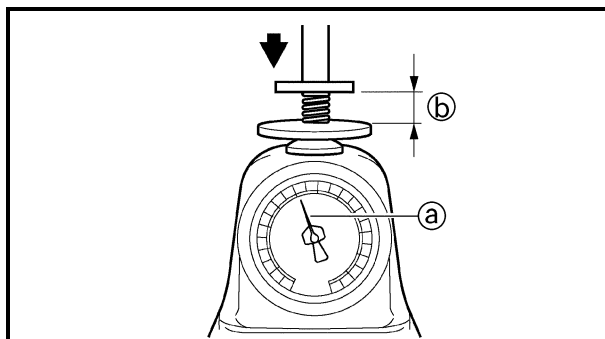
**11. Measure:**

- Valve spring free length (a)
Out of specification → Replace the valve spring.

**Valve spring free length (intake and exhaust):**

39.73 mm (1.56 in)

<Limit>: 37.7 mm (1.48 in)

**12. Measure:**

- Compressed valve spring force (a)
Out of specification → Replace the valve spring.

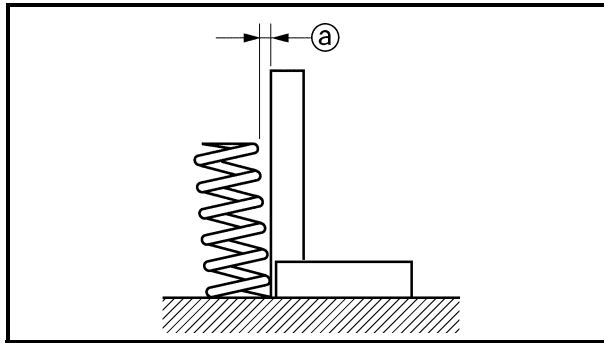
(b) Installed length

**Compressed valve spring force (installed):**

136 ~ 158 N at 33 mm

(13.9 ~ 16.1 kg at 33 mm,

30.6 ~ 35.5 lb at 1.30 in)

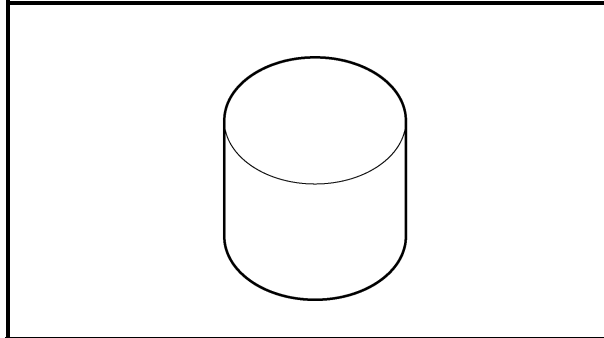


13. Measure:

- Valve spring tilt ①
- Out of specification → Replace the valve spring.

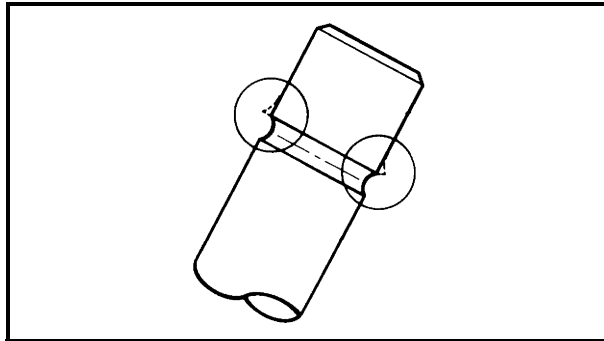


Maximum valve spring tilt:
2.5°/1.7 mm (0.07 in)



14. Inspect:

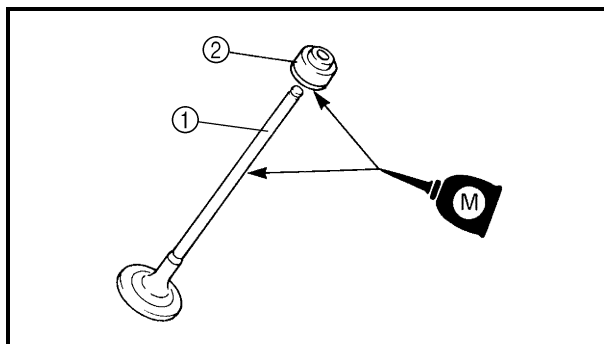
- Valve lifter
- Damage/scratches → Replace the valve lifters and cylinder head.



INSTALLATION

1. Deburr:

- Valve stem end
- (with an oil stone)

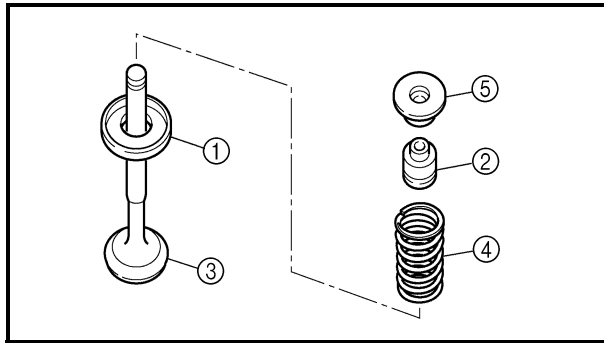


2. Lubricate:

- Valve stem ①
 - Valve stem seal ②
- (with the recommended lubricant)



Recommended lubricant:
Molybdenum disulfide oil



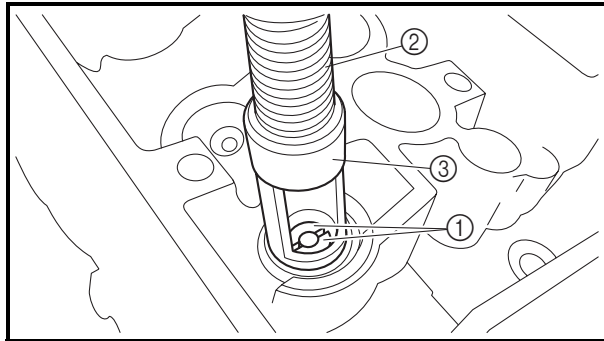
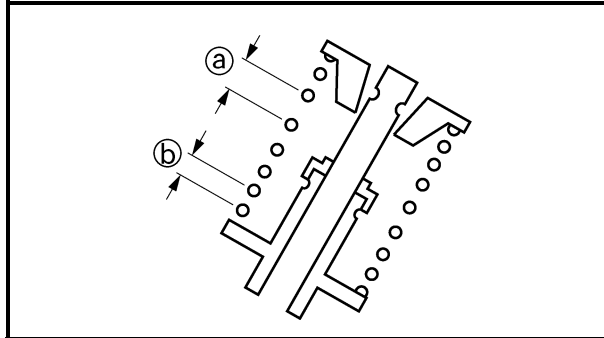
3. Install:

- Lower spring seat ①
- Valve stem seal ②
- Valve ③
- Valve spring ④
- Upper spring seat ⑤
(into the cylinder head)

NOTE:

- Make sure each valve is installed in its original place.
- Install the valve spring with the larger pitch (a) facing up.

(b) Smaller pitch



4. Install:

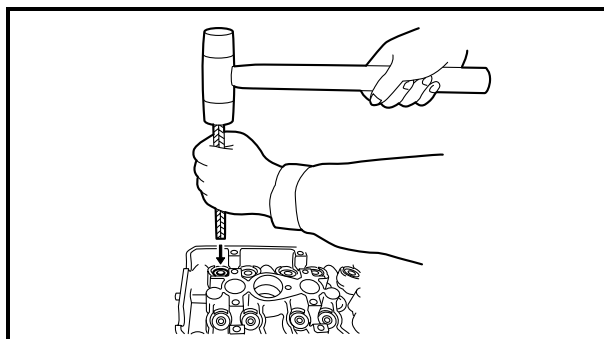
- Valve cotten ①

NOTE:

Install the valve cotten by compressing the valve spring with the valve spring compressor set ② and attachment ③.



Valve spring compressor set:
90890-04019, YM-04019
Attachment:
90890-04108, YM-04108



- To secure the valve cotten onto the valve stem, lightly tap the valve tip with a soft-face hammer.

CAUTION:

Hitting the valve tip with excessive force could damage the valve.



6. Lubricate:

- Valve pad
 - Valve lifter
- (with the recommended lubricant)



Recommended lubricant:
Molybdenum disulfide oil

7. Install:

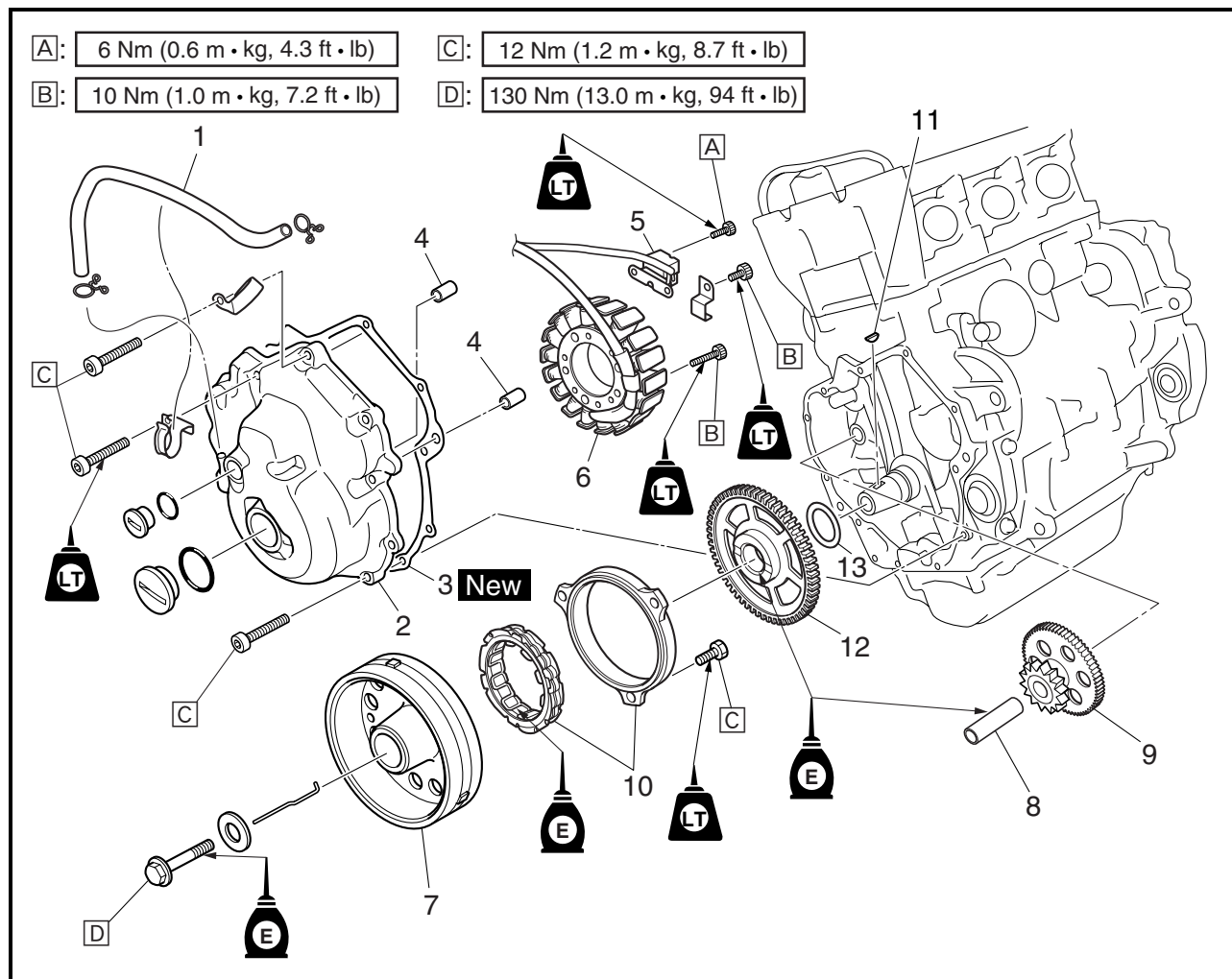
- Valve pad
- Valve lifter

NOTE: _____

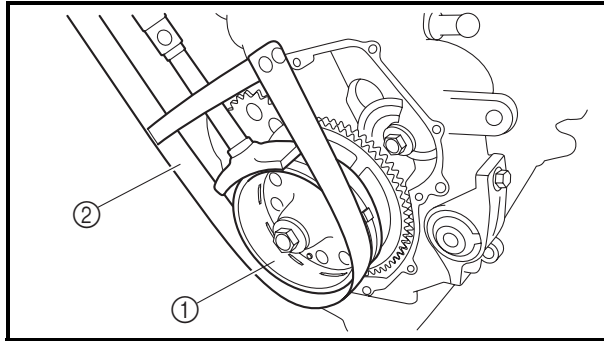
- The valve lifter must move smoothly when rotated with a finger.
- Each valve lifter and valve pad must be reinstalled in its original position.



A.C. MAGNETO ROTOR AND STARTER CLUTCH



Order	Job name/Part name	Q'ty	Remarks
	A.C. magneto rotor and starter clutch removal		Remove the parts in the order listed below.
	Engine assembly		Refer to "ENGINE ASSEMBLY".
1	Crankcase breather hose	1	
2	A.C. magneto cover	1	
3	Gasket	1	
4	Dowel pin	2	
5	Pickup coil	1	
6	Stator coil	1	
7	A.C. magneto rotor	1	
8	Idle gear shaft	1	
9	Starter clutch idle gear	1	
10	Starter clutch	1	
11	Woodruff key	1	
12	Starter clutch gear	1	
13	Washer	1	
			For installation, reverse the removal procedure.



REMOVAL

1. Remove:

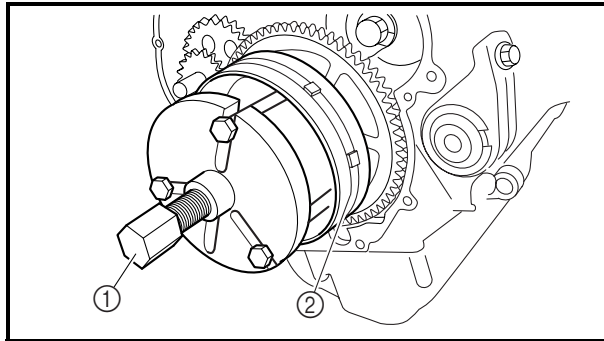
- A.C. magneto rotor bolt
- Washer

NOTE:

- While holding the A.C. magneto rotor (1) with the sheave holder (2), loosen the magneto rotor bolt.
- Do not allow the sheave holder to touch the projection on the A.C. magneto rotor.



Sheave holder:
90890-01701, YS-01880-A



2. Remove:

- A.C. magneto rotor (1)
(with the rotor holding puller (2) and flywheel puller attachment)
- Woodruff key

CAUTION:

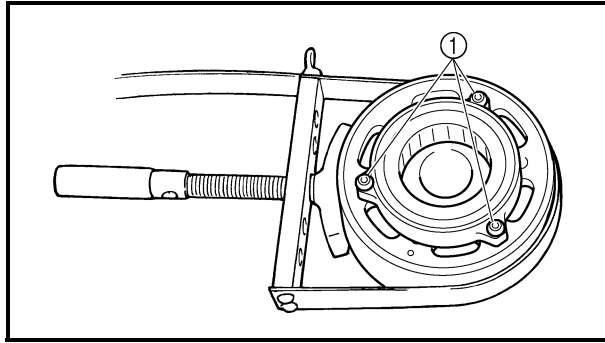
To protect the end of the crankshaft, place an appropriate sized socket between the rotor holding puller set's center bolt and the crankshaft.

NOTE:

Make sure the rotor holding puller is centered over the A.C. magneto rotor.



Rotor holding puller:
90890-01362, YU-33270-B
Flywheel puller attachment:
90890-04089, YM-33282



3. Remove:

- Starter clutch

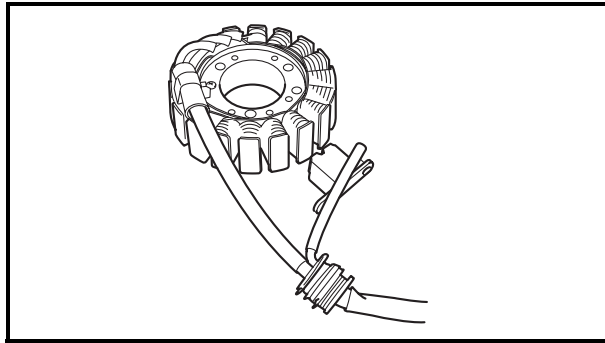
NOTE:

- While holding the A.C. magneto rotor with the sheave holder, remove the starter clutch bolts ①.
- Do not allow the sheave holder to touch the projection on the magneto rotor.



Sheave holder:

90890-01701, YS-01880-A

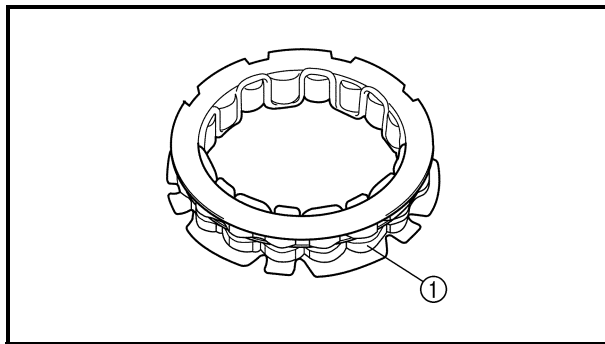


INSPECTION

1. Inspect:

- Stator coil
- Pickup coil

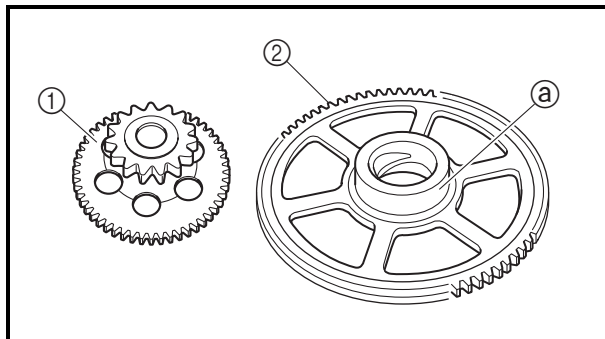
Damage → Replace the pickup coil/stator assembly.



2. Inspect:

- Starter clutch rollers ①

Damage/wear → Replace.

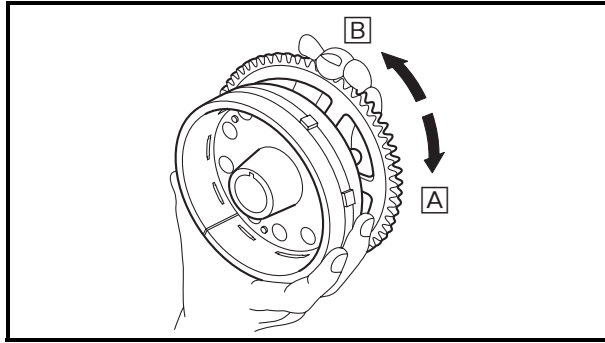


3. Inspect:

- Starter clutch idle gear ①
- Starter clutch gear ②

Burrs/chips/roughness/wear → Replace the defective part(s).

- Starter clutch gear's contacting surfaces @
Damage/pitting/wear → Replace the starter clutch gear.



4. Inspect:

- Starter clutch operation

Installation steps:

- Install the starter clutch gear onto the starter clutch and hold the starter clutch.
- When turning the starter clutch gear clockwise [A], the starter clutch and the starter clutch gear should engage, otherwise the starter clutch is faulty and must be replaced.
- When turning the starter clutch gear counter-clockwise [B], it should turn freely, otherwise the starter clutch is faulty and must be replaced.

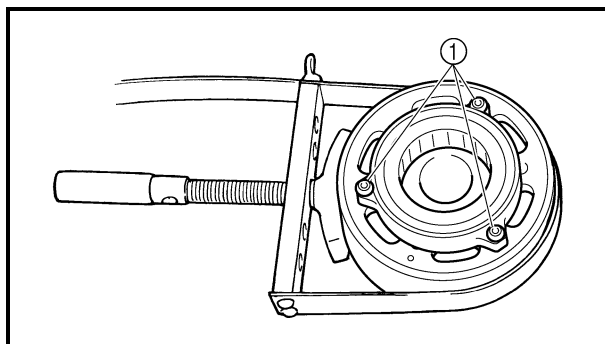
INSTALLATION

1. Install:

- Starter clutch

NOTE:

- While holding the magneto rotor with the sheave holder, tighten the starter clutch bolt.
- Do not allow the sheave holder to touch the projection on the magneto rotor.



Sheave holder:
90890-01701, YS-01880-A

2. Tighten:

- Starter clutch bolts ①



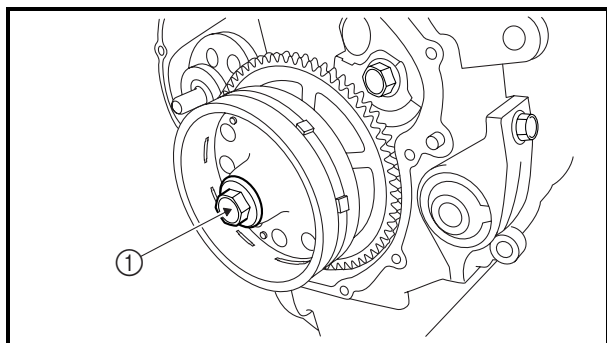
Starter clutch bolt:
12 Nm (1.2 m · kg, 8.7 ft · lb)
LOCTITE®

3. Install:

- Woodruff key
- A.C. magneto rotor
- Washer
- A.C. magneto rotor bolt

NOTE:

- Clean the tapered portion of the crankshaft and the magneto rotor hub.
- When installing the magneto rotor, make sure the woodruff key is properly seated in the key-way of the crankshaft.



4. Tighten:

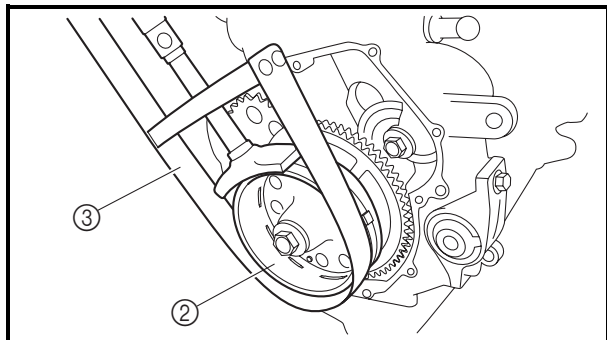
- A.C. magneto rotor bolt ①



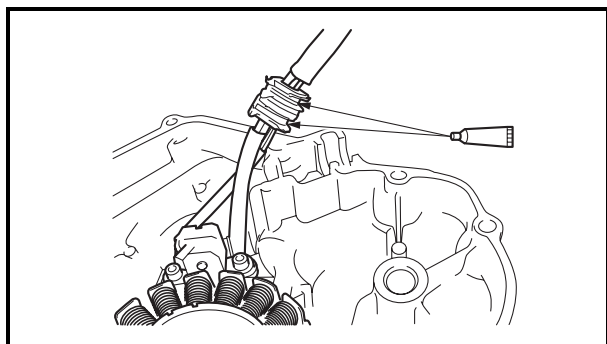
A.C. magneto rotor bolt:
130 Nm (13.0 m · kg, 94.0 ft · lb)

NOTE:

- Lubricate the A.C. magneto rotor bolt and washer with engine oil.
- While holding the A.C. magneto rotor ② with the sheave holder ③, tighten the magneto rotor bolt.
- Do not allow the sheave holder to touch the projection on the magneto rotor.



Sheave holder:
90890-01701, YS-01880-A



5. Apply:

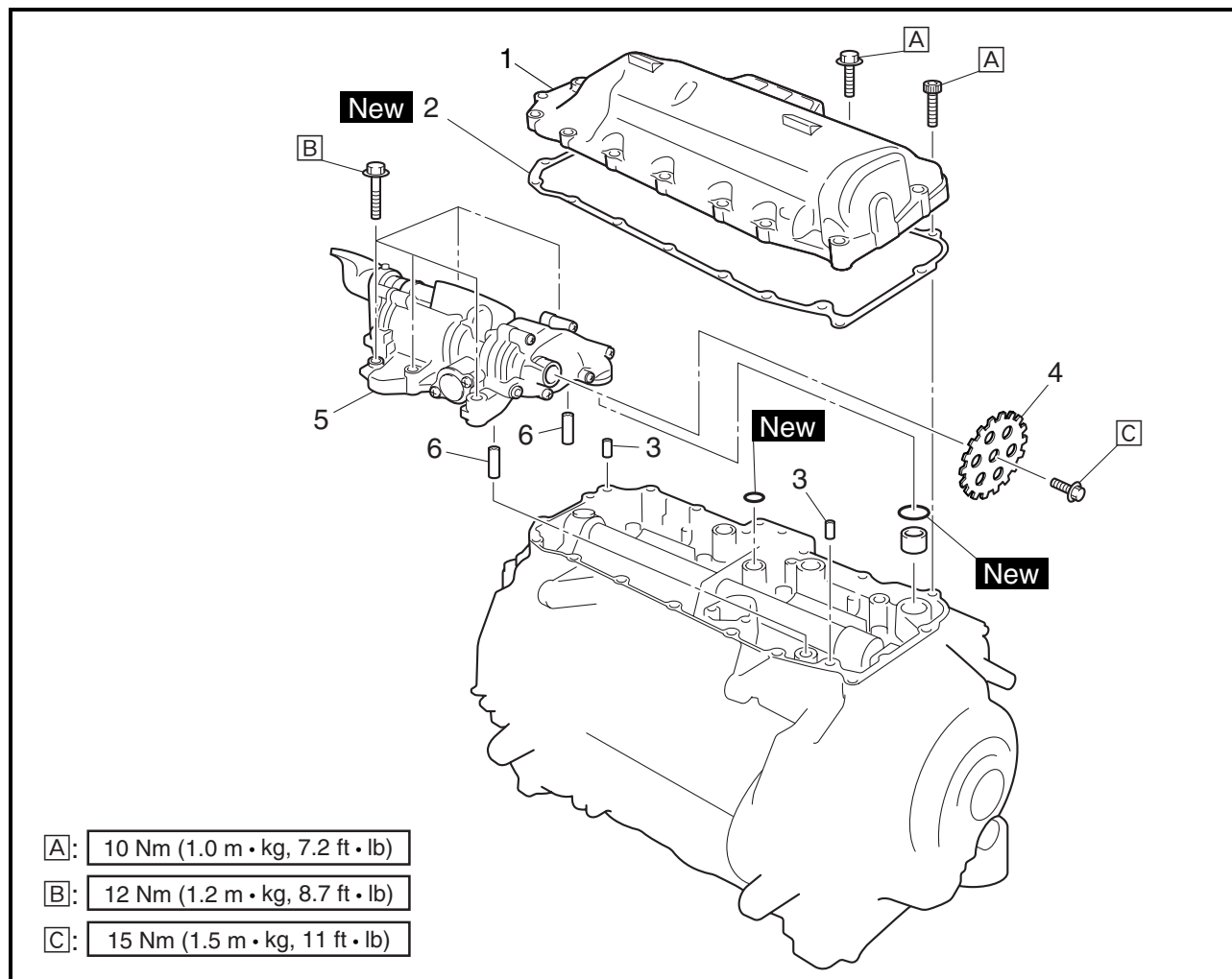
- Sealant
(onto the A.C. magneto lead grommet)



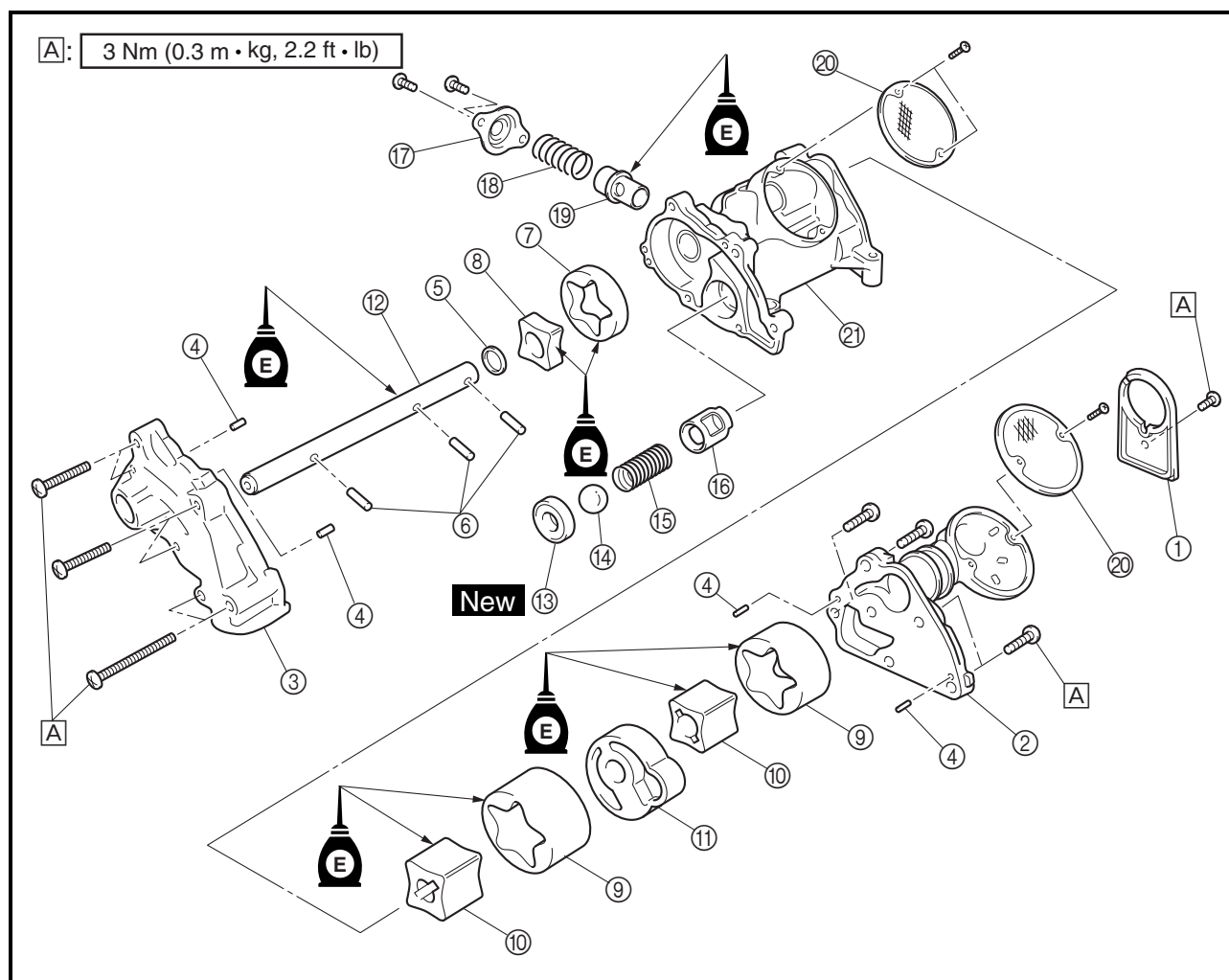
Yamaha bond No. 1215:
90890-85505
Quick gasket®:
ACC-QUICK-GS-KT



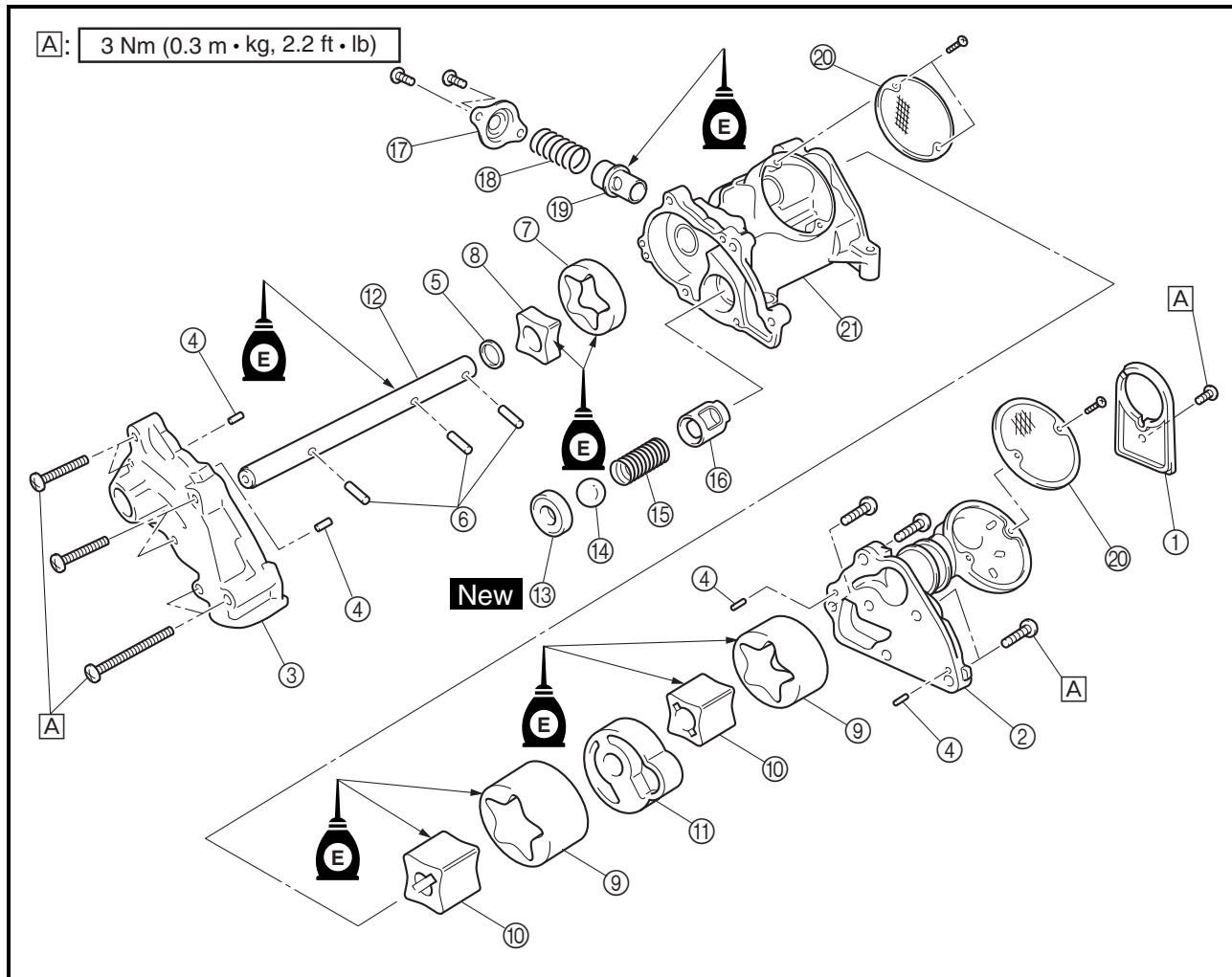
OIL PAN AND OIL PUMP



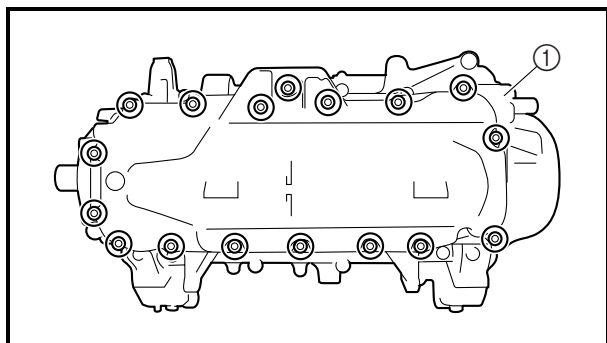
Order	Job name/Part name	Q'ty	Remarks
	Oil pan and oil pump removal		Remove the parts in the order listed below. Refer to "ENGINE ASSEMBLY".
1	Engine		
1	Oil pan	1	
2	Gasket	1	
3	Dowel pin	4	
4	Oil pump driven gear	1	
5	Oil pump assembly	1	
6	Dowel pin	2	
			For installation, reverse the removal procedure.



Order	Job name/Part name	Q'ty	Remarks
	Oil pump disassembly		Remove the parts in the order listed below.
①	Oil pan divider	1	
②	Oil pump housing cover 1	1	
③	Oil pump housing cover 2	1	
④	Pin	4	
⑤	Washer	1	
⑥	Pin	3	
⑦	Oil pump outer rotor 1	1	
⑧	Oil pump inner rotor 1	1	
⑨	Oil pump outer rotor 2	2	
⑩	Oil pump inner rotor 2	2	
⑪	Spacer	1	
⑫	Oil pump shaft	1	



Order	Job name/Part name	Q'ty	Remarks
⑬	Check ball seat	1	For assembly, reverse the disassembly procedure.
⑭	Check ball	1	
⑮	Spring	1	
⑯	Spacer	1	
⑰	Relief valve cover	1	
⑱	Spring	1	
⑲	Relief valve	1	
⑳	Oil strainer	2	
㉑	Oil pump housing	1	

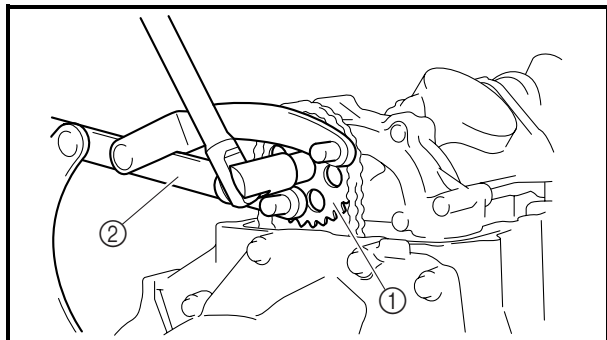
**REMOVAL**

1. Remove:

- Oil pan ①

NOTE:

Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, remove them.

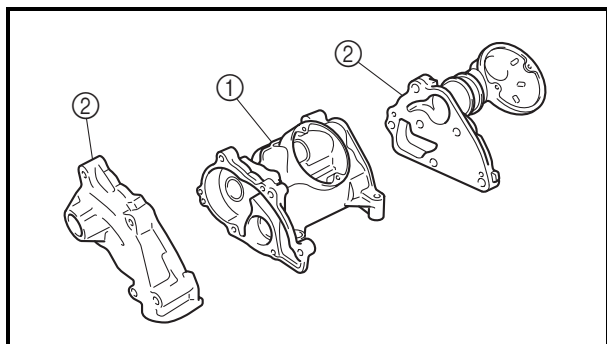


2. Remove:

- Oil pump driven gear ①

NOTE:

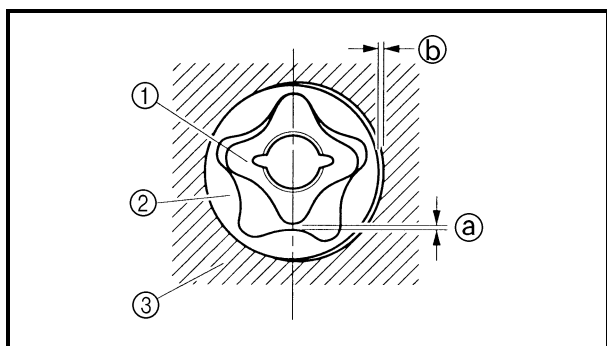
- While holding the oil pump driven gear with the rotor holding tool ②, loosen the oil pump driven gear bolt.
- To prevent the oil pump chain falling into the crankcase, fasten it with a wire.

**INSPECTION**

1. Inspect:

- Oil pump housing ①
- Oil pump cover ②

Cracks/damage/wear → Replace the defective part(-s).



2. Measure:

- Inner-rotor-to-outer-rotor-tip clearance ① (between inner rotor ① and outer rotor ②)
 - Outer-rotor-to-oil-pump-housing clearance ② (between outer rotor ② and pump housing ③)
- Out of specifications → Replace oil pump assembly.

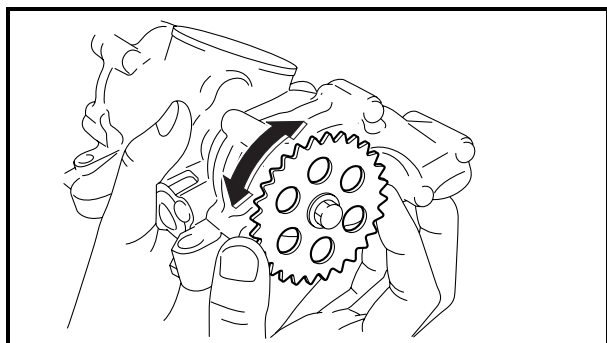


Inner-rotor-to-outer-rotor-tip clearance:

0.09 ~ 0.15 mm (0.004 ~ 0.006 in)

Outer-rotor-to-oil-pump-housing clearance:

0.03 ~ 0.08 mm (0.001 ~ 0.003 in)



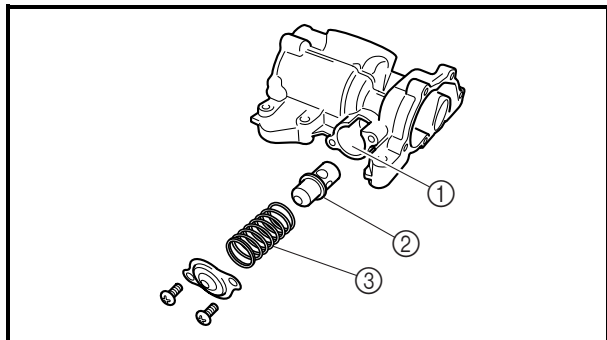
3. Inspect:

- Oil pump operation

Rough movement → Repeat steps (1) and (2) or replace the defective part(s).

NOTE:

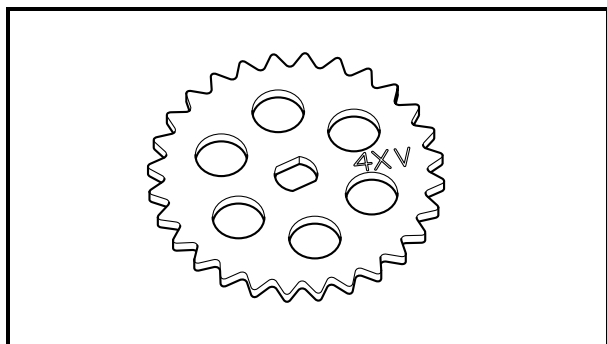
Install the oil pump gear to check the oil pump operation.



4. Inspect:

- Relief valve body ①
- Relief valve ②
- Spring ③

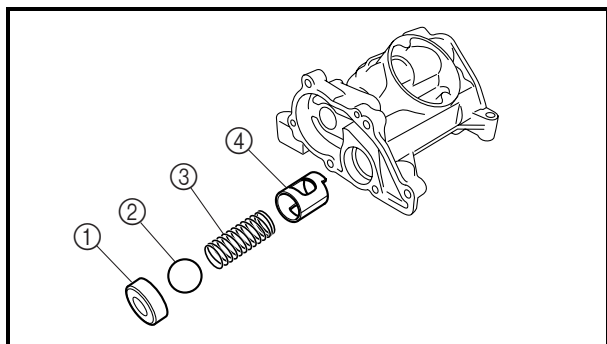
Damage/wear → Replace the defective part(s).



5. Inspect:

- Oil pump driven gear

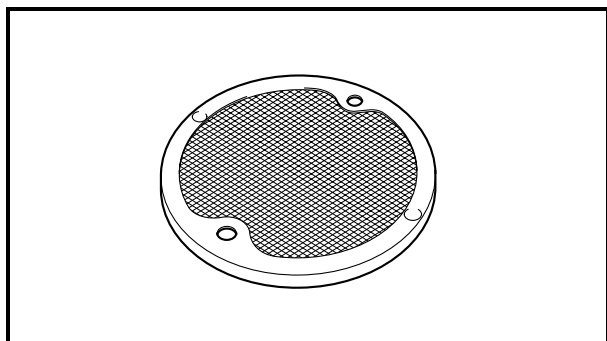
Cracks/damage/wear → Replace.



6. Inspect:

- Check ball seat ①
- Check ball ②
- Spring ③
- Spacer ④

Damage/wear → Replace the defective part(-s).



7. Inspect:

- Oil strainer

Damage → Replace.

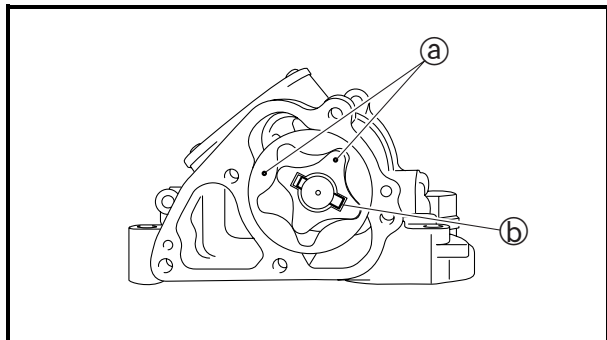
Obstruction → Wash and blow out with compressed air.

Contaminants → Clean with engine oil.

**INSTALLATION**

1. Lubricate:

- Inner rotor
- Outer rotor
- Oil pump shaft
(with the recommended lubricant)

**Recommended lubricant:
Engine oil**

2. Install:

- Pin
- Inner rotor
- Outer rotor

NOTE:

- Each set of inner and outer rotors should be installed with both punch marks ① facing in the same direction, either away from or towards the oil pump assembly.
- When installing the inner rotor, align the pin in the oil pump shaft with the groove ② on the inner rotor.

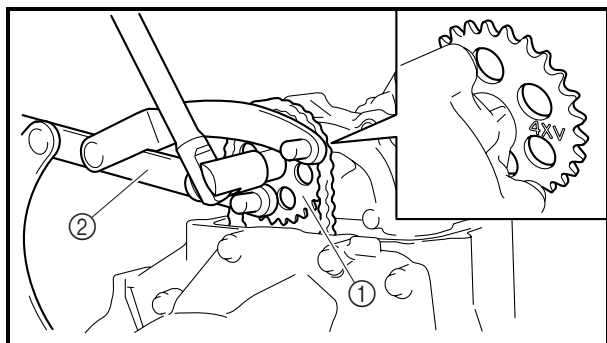
3. Inspect:

- Oil pump operation
Unsmooth operation → Replace.

4. Install:

- Oil pump assembly
- Oil pump assembly bolt

**Oil pump assembly bolt:
12 Nm (1.2 m · kg, 8.7 ft · lb)**



5. Install:

- Oil pump driven gear ①



Oil pump driven gear bolt:
15 Nm (1.5 m · kg, 11 ft · lb)

NOTE:

- Install the oil pump gear with the stamped mark “4XV” facing towards the oil pump assembly.
- While holding the oil pump driven gear with the rotor holding tool ②, tighten the oil pump driven gear bolt.



Rotor holding tool:
90890-01235, YU-01235

6. Install:

- Dowel pin
- Gasket **New**
- Oil pan
- Oil pan bolts



Oil pan bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)

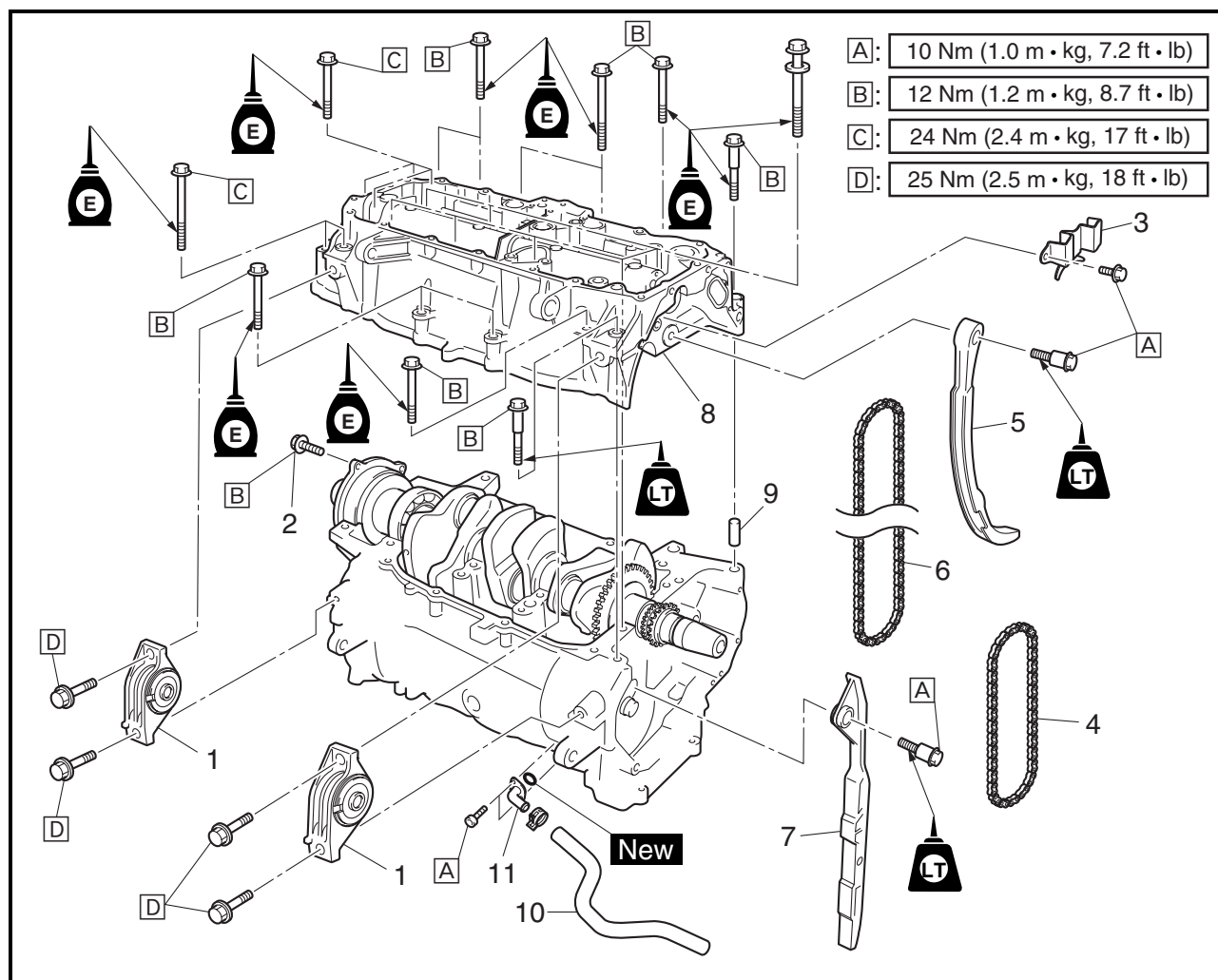
NOTE:

Tighten the oil pan bolts in stages and in a criss-cross pattern.

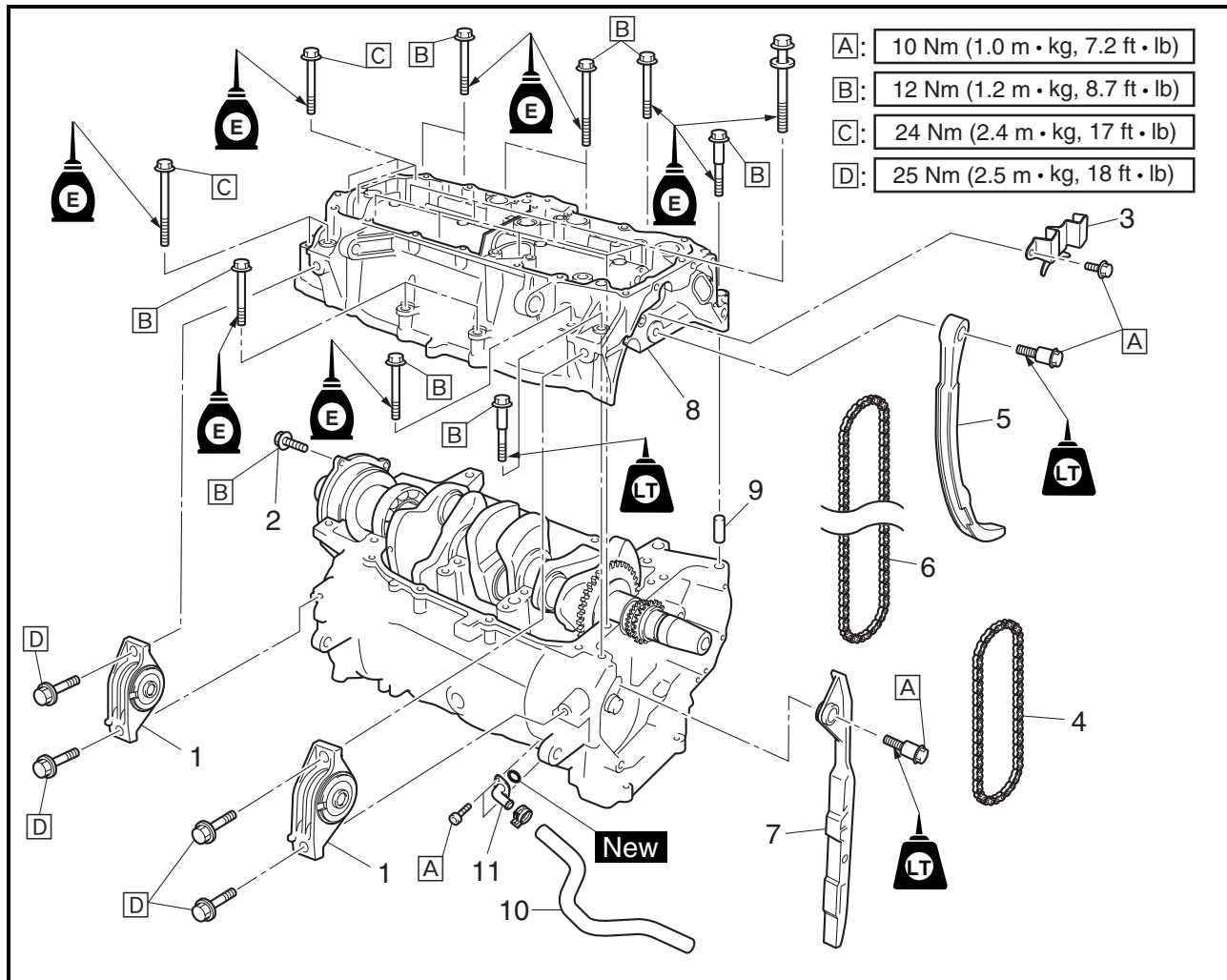


CRANKCASE

CRANKCASE



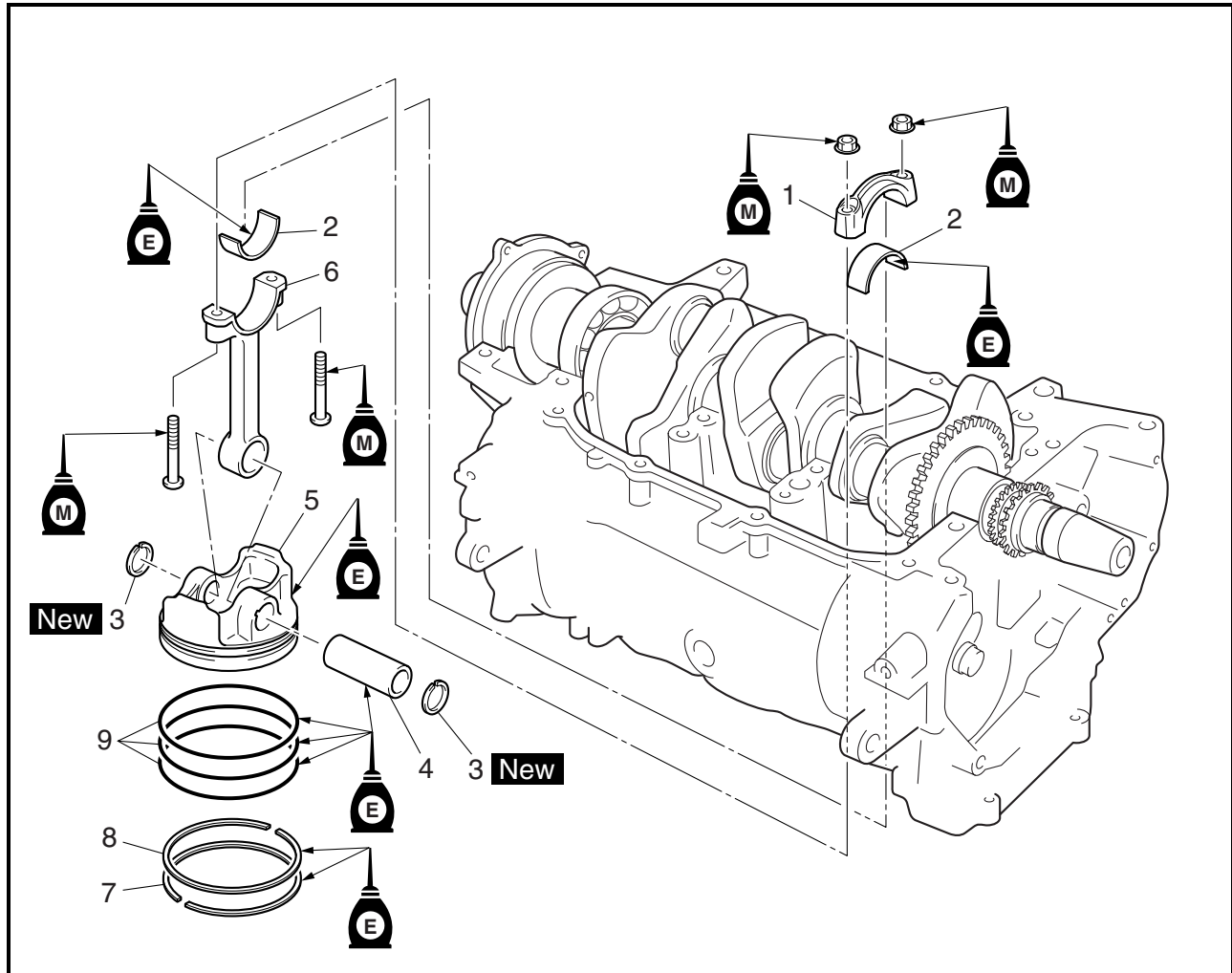
Order	Job name/Part name	Q'ty	Remarks
	Crankcase removal		
	Engine		Remove the parts in the order listed below. Refer to "ENGINE ASSEMBLY".
	Cylinder head		Refer to "CYLINDER HEAD".
	A.C. magneto rotor/starter clutch gear		Refer to "A.C. MAGNETO ROTOR AND STARTER CLUTCH".
	Oil pump		Refer to "OIL PAN AND OIL PUMP".
	Water pump		Refer to "WATER PUMP" in CHAPTER 6.
	Starter motor		Refer to "STARTER MOTOR" in CHAPTER 8.
1	Engine mounting bracket	2	
2	Primary sheave drive shaft assembly bolt	4	
3	Oil pump drive chain guide	1	
4	Oil pump drive chain	1	
5	Timing chain guide (exhaust side)	1	
6	Timing chain	1	
7	Timing chain guide (intake side)	1	
8	Lower crankcase	1	



Order	Job name/Part name	Q'ty	Remarks
9	Dowel pin	1	For installation, reverse the removal procedure.
10	Oil tank inlet hose	1	
11	Oil cooler outlet pipe	1	



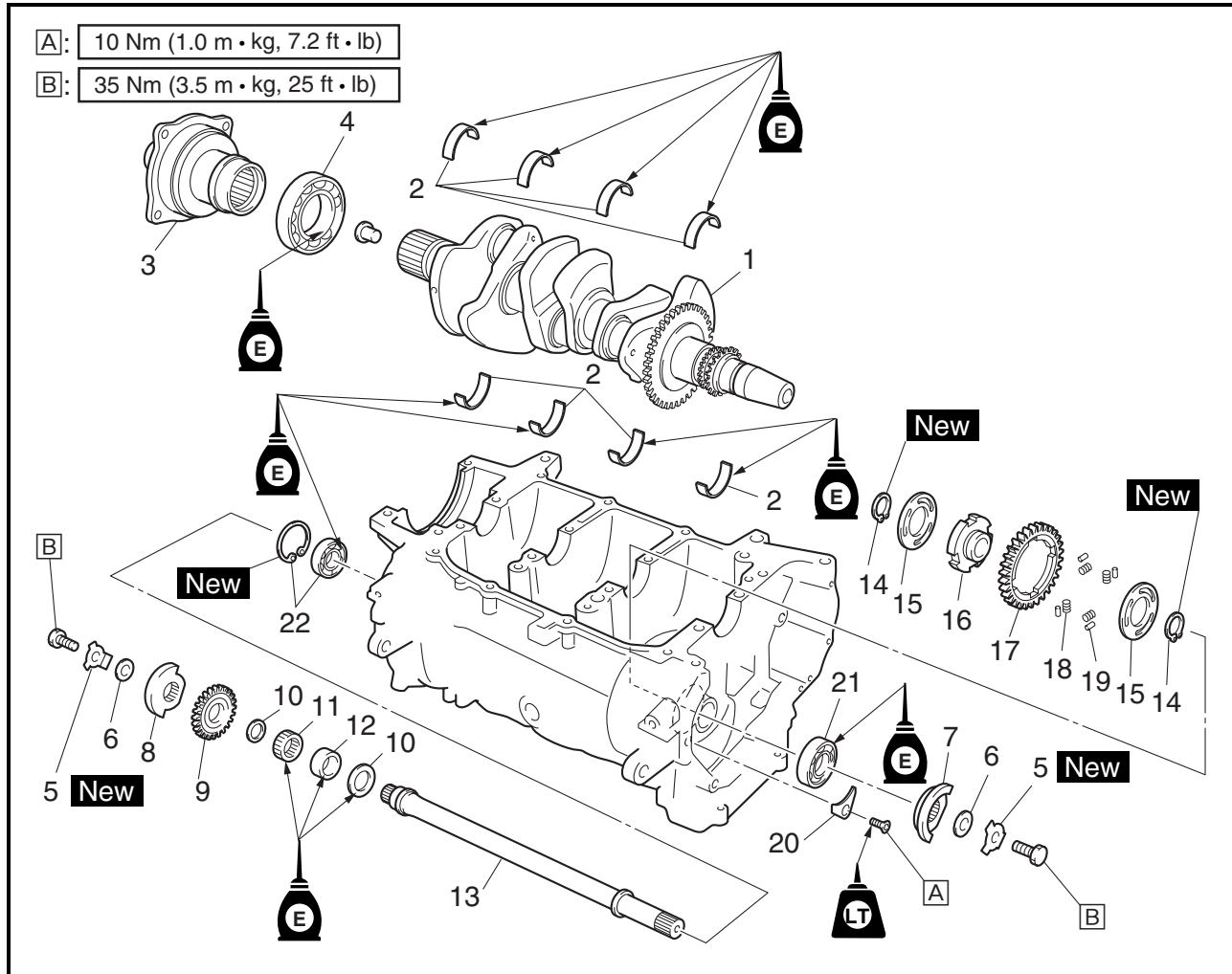
CONNECTING RODS AND PISTONS



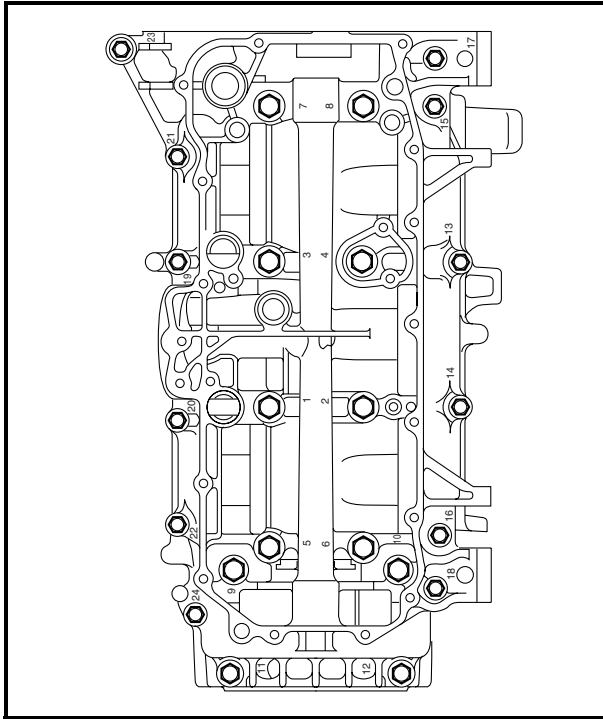
Order	Job name/Part name	Q'ty	Remarks
	Connecting rods and pistons removal		Remove the parts in the order listed below.
1	Connecting rod cap	3	
2	Big end bearing	6	
3	Piston pin clip	6	
4	Piston pin	3	
5	Piston	3	
6	Connecting rod	3	
7	Top ring	3	
8	2nd ring	3	
9	Oil ring	3	
			For installation, reverse the removal procedure.



CRANKSHAFT AND BALANCER SHAFT



Order	Job name/Part name	Q'ty	Remarks
	Crankshaft and balancer shaft removal		Remove the parts in the order listed below.
1	Crankshaft	1	
2	Crankshaft journal bearing	8	
3	Primary sheave drive shaft assembly	1	
4	Bearing	1	
5	Lock washer	2	
6	Washer	2	
7	Balancer weight 2	1	
8	Balancer weight 1	1	
9	Water pump drive gear	1	
10	Spacer	2	
11	Bearing	1	
12	Bearing	1	
13	Balancer shaft	1	
14	Circlip	2	
15	Plate	2	
16	Boss	1	
17	Balancer driven gear	1	

**REMOVAL**

1. Remove:

- Crankcase bolts

NOTE:

- Place the engine upside down.
- Loosen the bolts in decreasing numerical order of the embossed numbers on the crankcase.
- Loosen each bolt 1/4 of a turn at a time. After all of the bolts are fully loosened, remove them.

2. Remove:

- Lower crankcase

CAUTION:

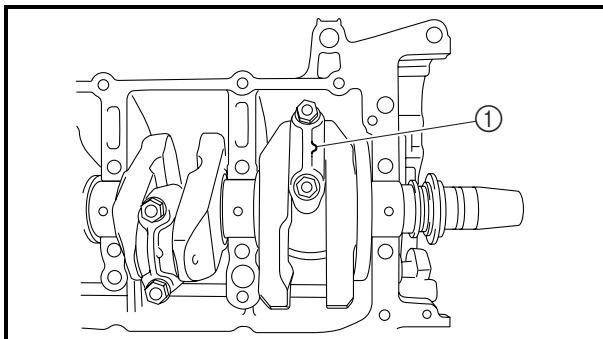
Tap on one side of the crankcase with a soft-face hammer. Tap only on reinforced portions of the crankcase, not on the crankcase mating surfaces. Work slowly and carefully and make sure that the crankcase halves separate evenly.

3. Remove:

- Dowel pins
- Crankshaft journal bearing

NOTE:

Identify the position of each crankshaft journal lower bearing so that it can be reinstalled in its original place.

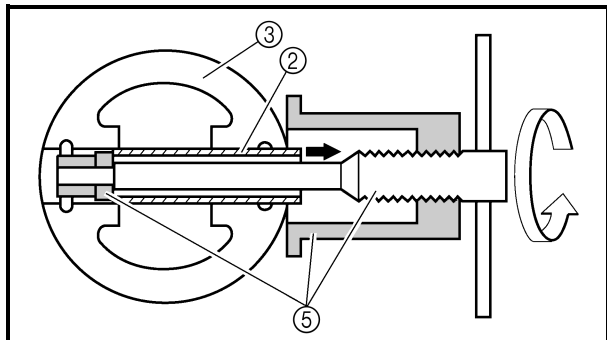
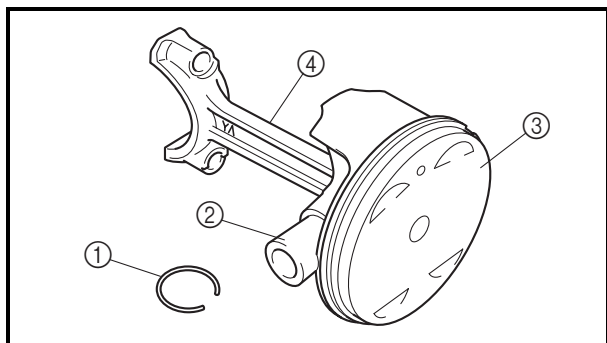


4. Remove:

- Connecting rod cap ①
- Big end bearing

NOTE:

Identify the position of each big end bearing so that it can be reinstalled in its original place.



5. Remove:

- Piston pin clips ①
- Piston pin ②
- Piston ③
- Connecting rod ④

CAUTION:

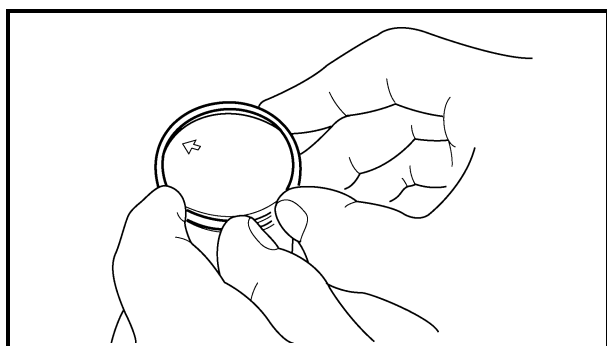
Do not use a hammer to drive the piston pin out.

NOTE:

- For reference during installation, put identification marks on the piston crown.
- Before removing the piston pin, deburr the piston pin clip's groove and the piston's pin bore area. If both areas are deburred and the piston pin is still difficult to remove, remove it with the piston pin puller ⑤.



Piston pin puller:
90890-01304, YU-01304



6. Remove:

- Top ring
- 2nd ring
- Oil ring

NOTE:

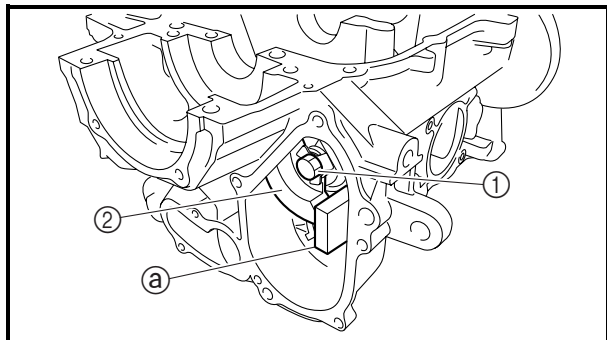
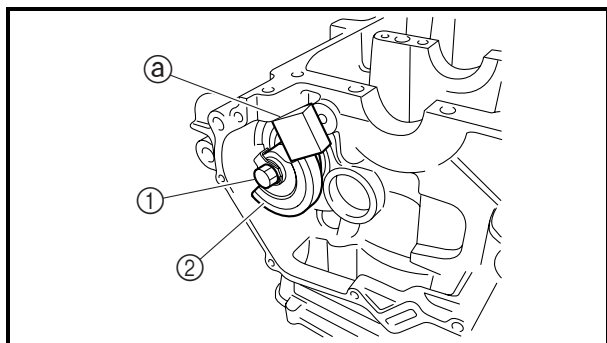
When removing a piston ring, open the end gap with your fingers and lift the other side of the ring over the piston crown.

7. Remove:

- Crankshaft
- Crankshaft journal bearing

NOTE:

Identify the position of each crankshaft journal upper bearing so that it can be reinstalled in its original place.



8. Straighten the lock washer tab.

9. Loosen:

- Balance weight bolts ①

NOTE:

Place a piece of wood ② between the balancer ② and crankcase.

10. Remove:

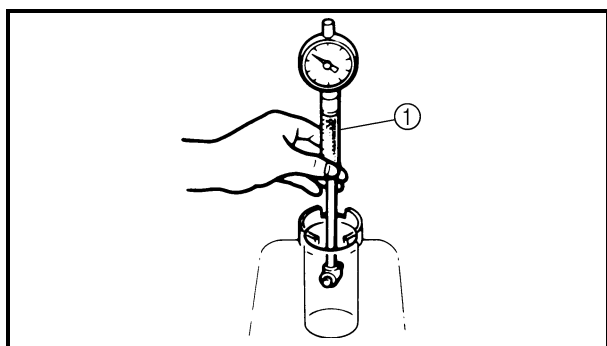
- Balancer weight 1
- Balancer weight 2
- Water pump drive gear
- Balancer shaft
- Balancer driven gear assembly

INSPECTION

1. Inspect:

- Piston wall
- Cylinder wall

Vertical scratches → Rebore or replace the cylinder, and replace the piston and piston rings as a set.



2. Measure:

- Piston-to-cylinder clearance

Measurement steps:

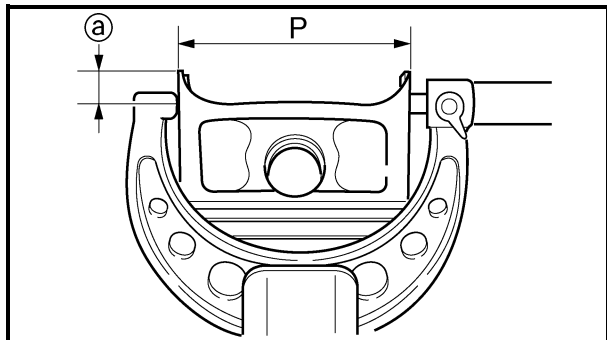
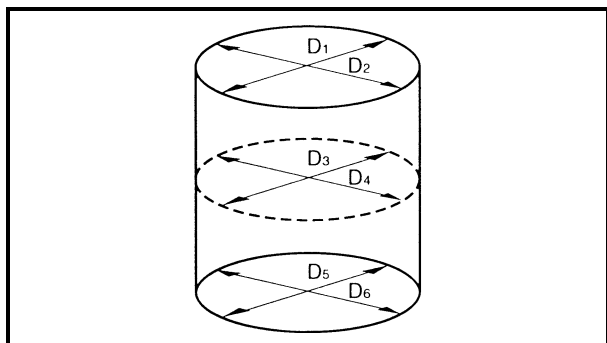
1st step:

- Measure cylinder bore “C” with the cylinder bore gauge ①.

NOTE:

Measure cylinder bore “C” by taking side-to-side and front-to-back measurements of the cylinder. Then, find the average of the measurements.

Cylinder bore “C”	79.000 ~ 79.010 mm (3.1102 ~ 3.1106 in)
Taper limit “T”	0.050 mm (0.0020 in)
Out of round “R”	0.050 mm (0.0020 in)



“C” = maximum of $D_1 \sim D_6$

“T” = maximum of D_1 or D_2 – maximum of D_5 or D_6

“R” = maximum of D_1 D_3 or D_5 – maximum of D_2 D_4 or D_6

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

2nd step:

- Measure piston skirt diameter “P” with the micrometer.

Ⓐ 5.0 mm (0.20 in) from the bottom edge of the piston.



Piston size (standard) (P):
78.935 ~ 78.950 mm
(3.1077 ~ 3.1083 in)

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

3rd step:

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

Piston-to-cylinder clearance =

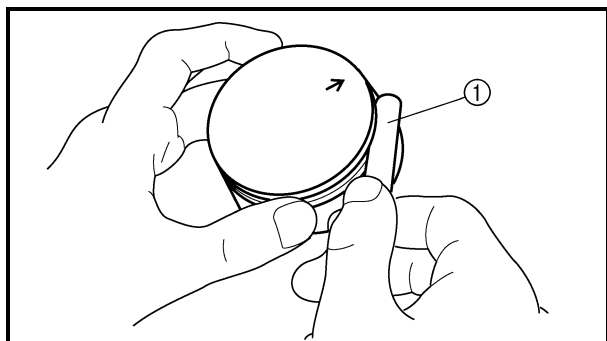
Cylinder bore “C” –

Piston skirt diameter “P”



Piston-to-cylinder clearance:
0.050 ~ 0.075 mm
(0.0020 ~ 0.0030 in)
<Limit>: 0.120 mm (0.0047 in)

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



3. Measure:

- Piston ring side clearance

Use the thickness gauge ①.

Out of specification → Replace the piston and piston rings as a set.

NOTE:

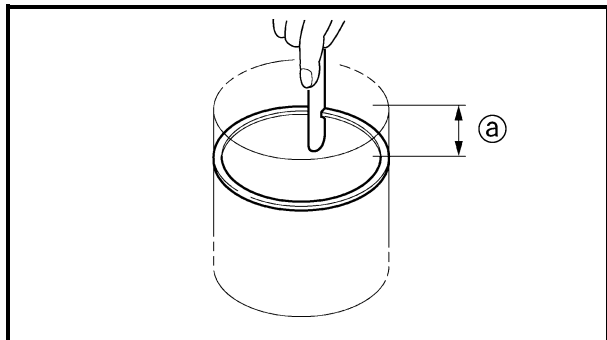
Eliminate the carbon deposits from the piston ring grooves and rings before measuring the side clearance.

**Piston rings side clearance:****Top ring:**

0.030 ~ 0.070 mm
(0.0012 ~ 0.0028 in)

2nd ring:

0.020 ~ 0.060 mm
(0.0008 ~ 0.0024 in)

**4. Install:**

- Piston ring
(into the cylinder)

NOTE:

Level the piston ring in the cylinder with the piston crown.

① 5.0 mm (0.20 in)

5. Measure:

- Piston ring end gap
Out of specification → Replace the piston rings as a set.

NOTE:

The oil ring expander spacer's end gap cannot be measured. If the oil ring rail's gap is excessive, replace all three piston rings.

**Piston ring end gap:****Top ring:**

0.35 ~ 0.45 mm (0.014 ~ 0.018 in)

2nd ring:

0.75 ~ 0.85 mm (0.030 ~ 0.033 in)

Oil ring:

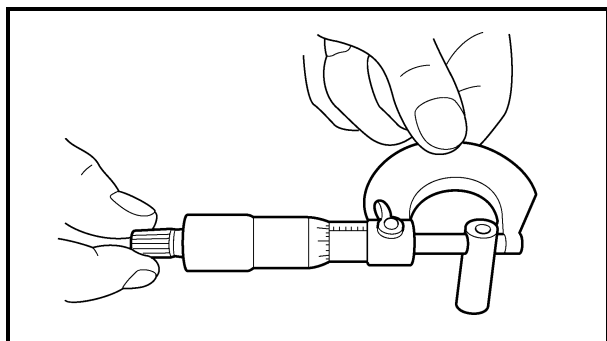
0.20 ~ 0.60 mm (0.008 ~ 0.024 in)

6. Inspect:

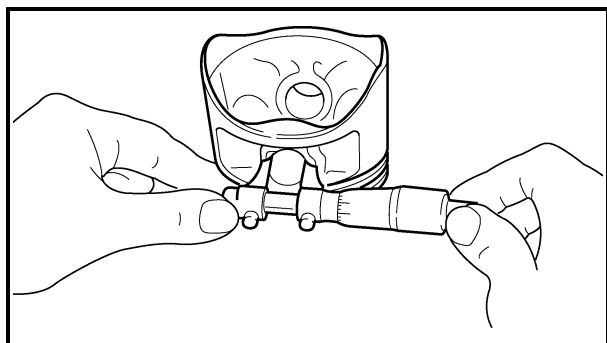
- Piston pin
Blue discoloration/grooves → Replace the piston pin and then check the lubrication system.

7. Measure:

- Piston pin outside diameter
Out of specification → Replace the piston pin.

**Piston pin outside diameter:**

18.991 ~ 19.000 mm
(0.7477 ~ 0.7480 in)



8. Measure:

- Piston pin bore inside diameter
- Out of specification → Replace the piston.



Piston pin bore inside diameter:
19.004 ~ 19.015 mm
(0.7482 ~ 0.7486 in)

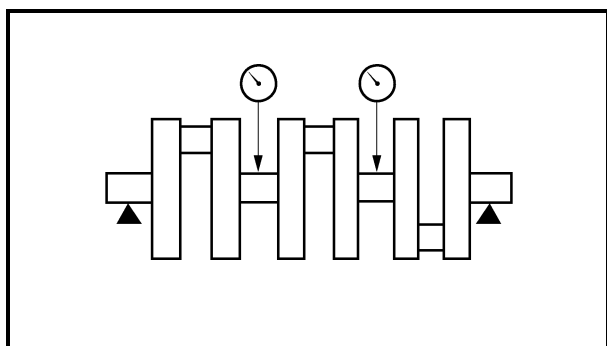
9. Calculate:

- Piston pin to piston pin bore clearance
- Out of specification → Replace the piston pin and piston as a set.

Piston pin to piston pin bore clearance =
Piston pin bore size –
Piston pin outside diameter



Piston pin to piston pin bore clearance:
0.004 ~ 0.024 mm
(0.0002 ~ 0.0009 in)
<Limit>: 0.074 mm (0.0029 in)



10. Measure:

- Crankshaft runout
- Use the V-blocks and a dial gauge.
- Out of specification → Replace the crankshaft.



Dial gauge:
90890-03097, YU-03097



Crankshaft runout:
0.03 mm (0.0012 in)



11. Inspect:

- Crankshaft journal surfaces
- Crankshaft pin surfaces
- Bearing surfaces

Scratches/wear → Replace the crankshaft.

12. Measure:

- Crankshaft-journal-to-crankshaft-journal-bearing clearance

Out of specification → Replace the crankshaft journal bearings.

**Crankshaft-journal-to-crankshaft-journal-bearing clearance:**

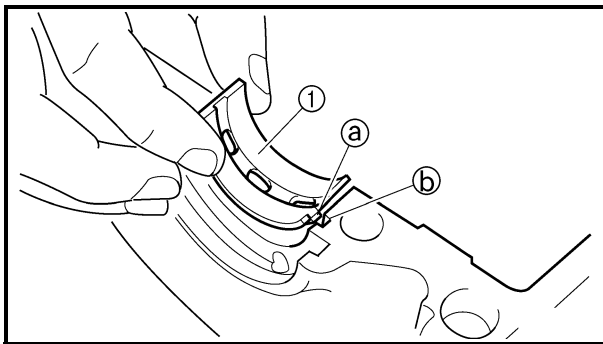
0.027 ~ 0.045 mm

(0.0011 ~ 0.0018 in)

Measurement steps:**CAUTION:**

Do not interchange the crankshaft journal bearings. To obtain the correct crankshaft-journal-to-crankshaft-journal-bearing clearance and prevent engine damage, the crankshaft journal bearings must be installed in their original positions.

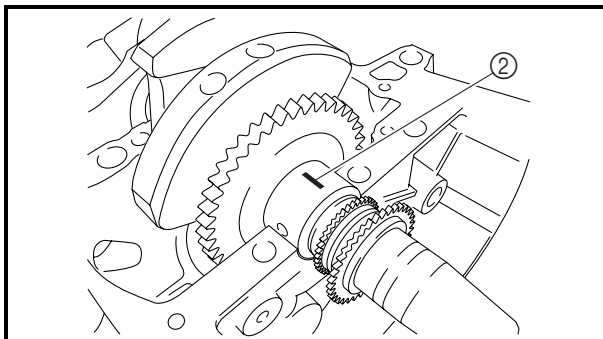
- Clean the crankshaft journal bearings, crankshaft journals, and bearing portions of the crankcase.
- Place the upper crankcase upside down on a bench.



- Install the crankshaft journal upper bearings ① and the crankshaft into the upper crankcase.

NOTE:

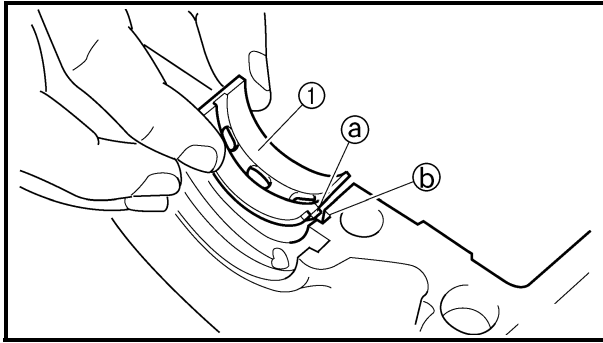
Align the projections ③ of the crankshaft journal upper bearings with the notches ④ in the crankcase.



- Put a piece of Plastigauge® ② on each crankshaft journal.

NOTE:

Do not put the Plastigauge® over the oil hole in the crankshaft journal.

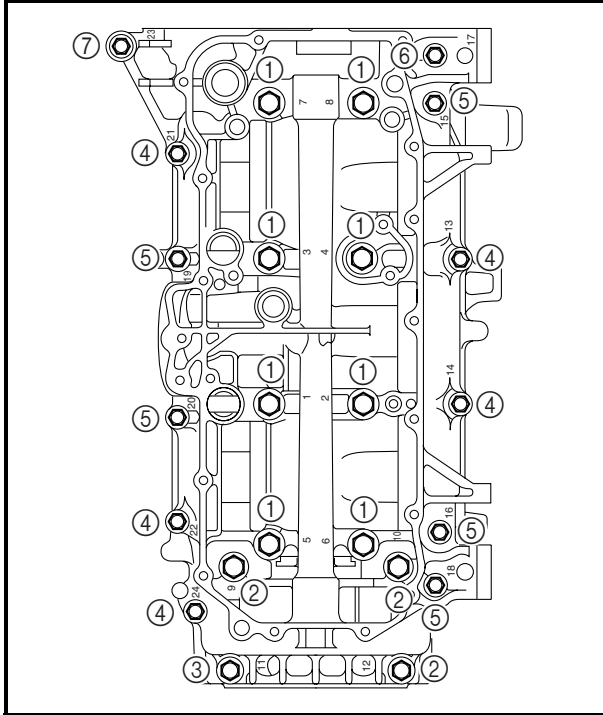


- Install the crankshaft journal lower bearings ① into the lower crankcase and assemble the crankcase halves.

NOTE:

- Align the projections ① of the crankshaft journal lower bearings with the notches ② in the crankcase.
- Do not move the crankshaft until the clearance measurement has been completed.

- Tighten the bolts in the order of the embossed numbers on the crankcase.

**Crankcase bolt:****Bolt ①:**

1st: 15 Nm (1.5 m · kg, 11 ft · lb)

2nd: 15 Nm (1.5 m · kg, 11 ft · lb)

Final: Specified angle 65 ~ 70°

Bolt ②, ③:

24 Nm (2.4 m · kg, 17 ft · lb)

Bolt ④ ~ ⑦:

12 Nm (1.2 m · kg, 8.7 ft · lb)

M9 × 105 mm bolts: ①

M8 × 70 mm bolts: ②

M8 × 55 mm bolt: ③

M6 × 55 mm bolts: ④

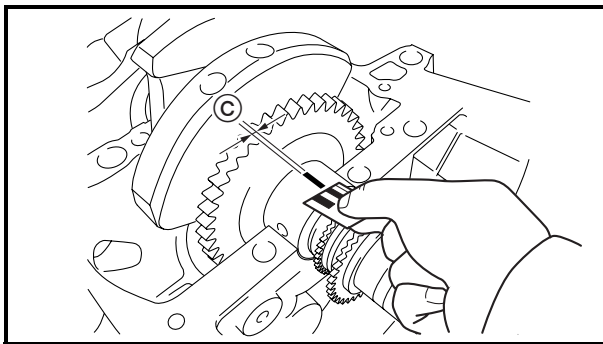
M6 × 80 mm bolts: ⑤

M6 × 80 mm bolt: ⑥ (with LOCTITE®)

M6 × 52 mm bolt: ⑦

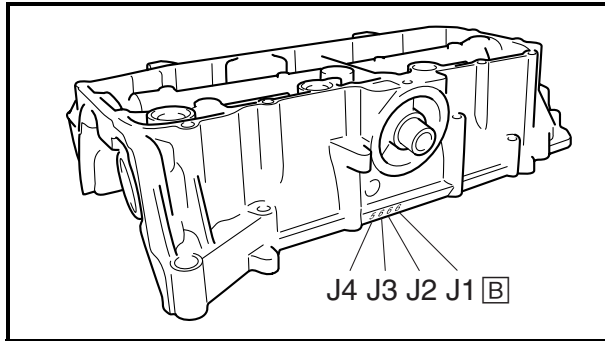
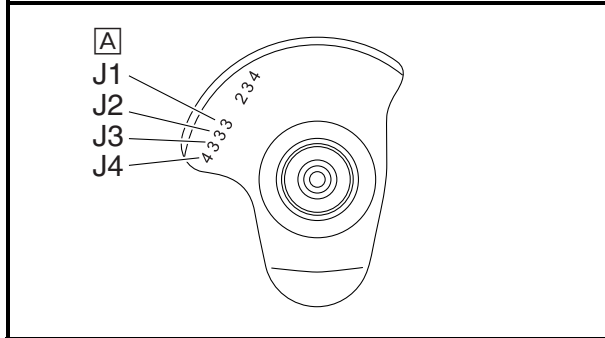
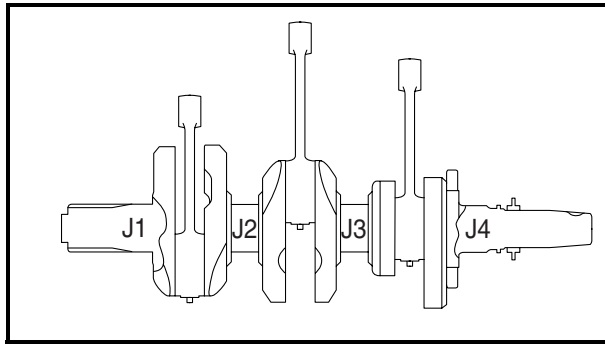
NOTE:

Lubricate the crankcase bolt threads with engine oil.



- Remove the lower crankcase and the crankshaft journal lower bearings.
- Measure the compressed Plastigauge® width ③ on each crankshaft journal.

If the clearance is out of specification, select replacement crankshaft journal bearings.



13. Select:

- Crankshaft journal bearings (J1 ~ J4)

NOTE:

- The numbers **A** stamped into the crankshaft web and the numbers **B** stamped into the lower crankcase are used to determine the replacement crankshaft journal bearing sizes.
- “J1 ~ J4” refer to the bearings shown in the crankshaft illustration.
- If “J1 ~ J4” are the same, use the same size for all of the bearings.

Selection of bearings:

For example, if the crankcase “J1” and crankshaft web “J1” numbers are “6” and “2” respectively, then the bearing size for “J1” is:

Bearing size for J1:

$$\text{J1 (crankcase)} - \text{J1 (crankshaft web)} + 2 = 6 - 2 + 2 = 6$$

CRANKSHAFT JOURNAL BEARING COLOR CODE

2	black
3	brown
4	green
5	yellow
6	pink
7	red
8	white

14. Measure:

- Crankshaft-pin-to-big-end-bearing clearance
Out of specification → Replace the big end bearings.



Crankshaft-pin-to-big-end-bearing clearance:
0.033 ~ 0.050 mm
(0.0013 ~ 0.0020 in)



Measurement steps:

CAUTION:

Do not interchange the big end bearings and connecting rods. To obtain the correct crankshaft-pin-to-big-end-bearing clearance and prevent engine damage, the big end bearings must be installed in their original positions.

- Clean the big end bearings, crankshaft pins, and bearing portions of the connecting rods.
- Install the big end upper bearing into the connecting rod and the big end lower bearing into the connecting rod cap.

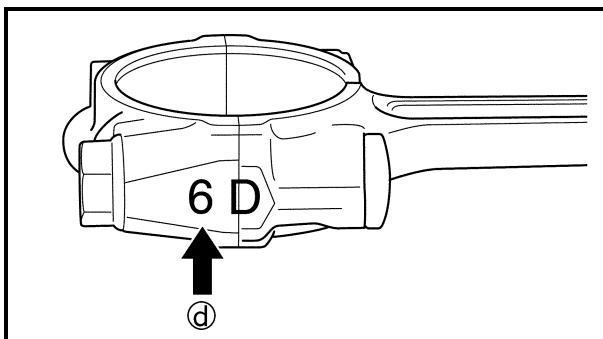
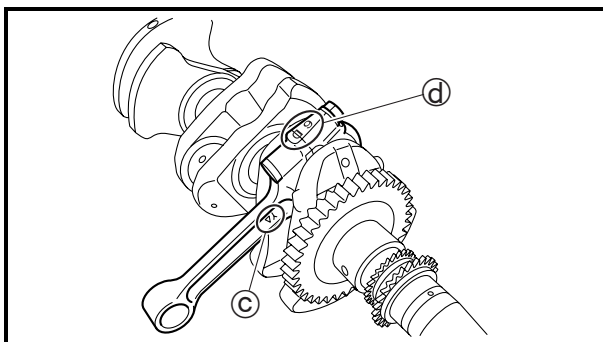
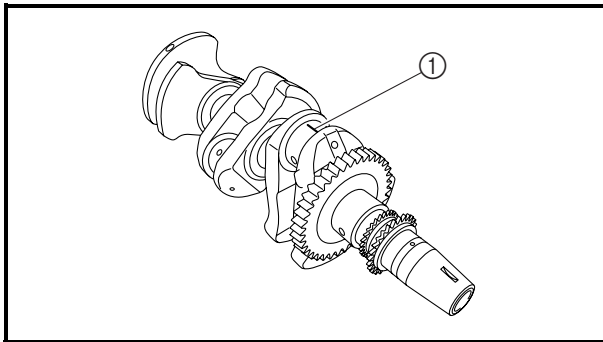
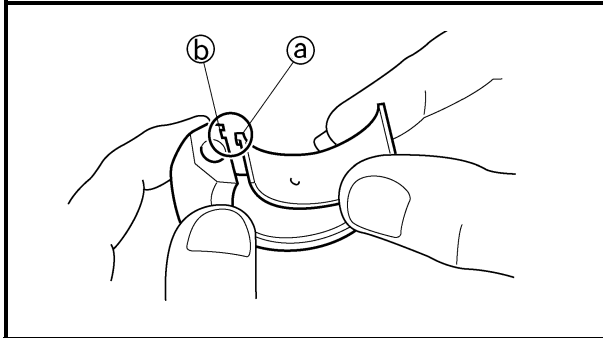
NOTE:

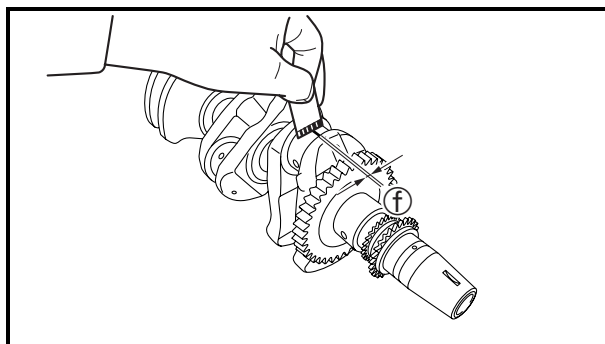
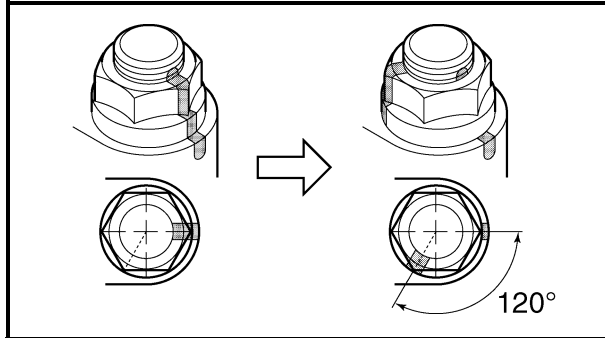
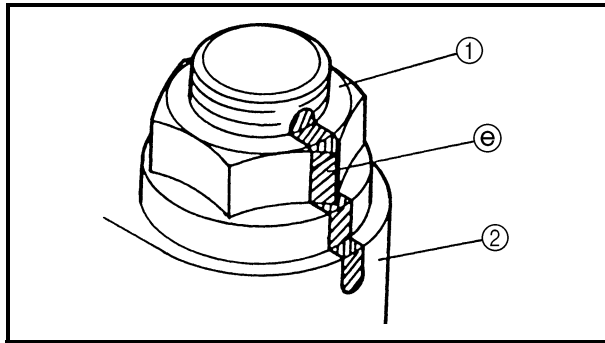
Align the projections ③ on the big end bearings with the notches ② in the connecting rod and connecting rod cap.

- Put a piece of Plastigauge® ① on the crankshaft pin.
- Assemble the connecting rod halves.

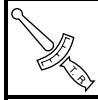
NOTE:

- Do not move the connecting rod or crankshaft until the clearance measurement has been completed.
- Apply molybdenum disulfide grease onto the bolts, threads, and nut seats.
- Make sure that the “Y” mark ④ on the connecting rod faces towards the right side of the crankshaft.
- Make sure that the characters ⑤ on both the connecting rod and connecting rod cap are aligned.





- Tighten the connecting rod nuts.

**Connecting rod nut:****1st: 20 Nm (2.0 m · kg, 14 ft · lb)****Final: Specified angle 120°**

- Replace the connecting rod bolts and nuts with new ones.

CAUTION:

Tighten the connecting rod bolts using the plastic-region tightening angle method. Always install new bolts and nuts.

- Clean the connecting rod bolts and nuts.
- Tighten the connecting rod nuts.
- Put a mark (e) on the corner of the connecting rod nut (1) and the connecting rod (2).
- Tighten the connecting rod nut further to reach the specified angle (120°).

⚠ WARNING

When the nut is tightened more than the specified angle, do not loosen the nut and then retighten it.

Replace the bolt with a new one and perform the procedure again.

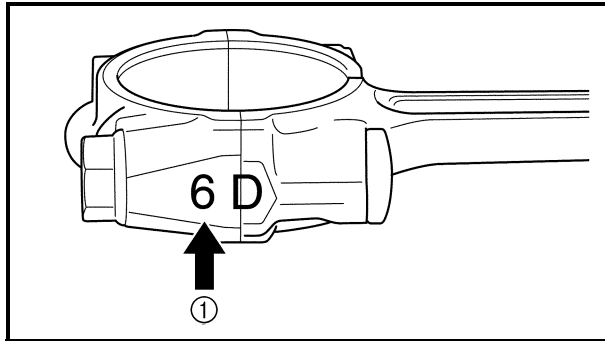
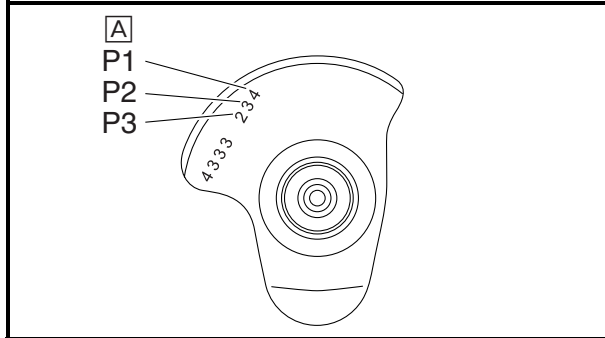
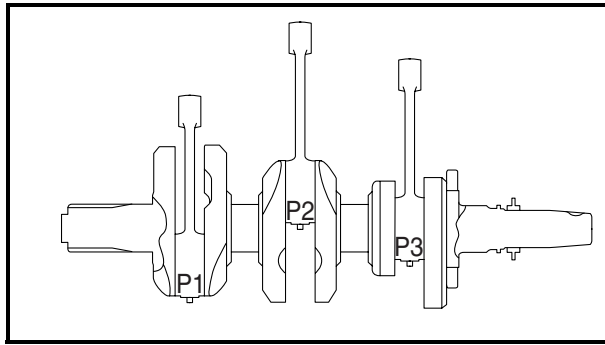
CAUTION:

- **Do not use a torque wrench to tighten the nut to the specified angle.**
- **Tighten the nut until it is at the specified angles.**

NOTE:

When using a hexagonal nut, note that the angle from one corner to another is 60°.

- Remove the connecting rod and big end bearings.
- Measure the compressed Plastigauge® width (f) on the crankshaft pin.
If the clearance is out of specification, select replacement big end bearings.



15. Select:

- Big end bearings (P1 ~ P3)

NOTE:

- The numbers **A** stamped into the crankshaft web and the numbers **①** on the connecting rods are used to determine the replacement big end bearing sizes.
- “P1” ~ “P3” refer to the bearings shown in the crankshaft illustration.

Selection of bearings:

- For example, if the connecting rod “P1” and the crankshaft web “P1” numbers are “5” and “1” respectively, then the bearing size for “P1” is:

Bearing size for “P1”:

“P 1” (connecting rod) – “P1” (crankshaft web) – 1 = 5 – 1 – 1 = 3 (brown)

BIG END BEARING COLOR CODE

0	white
1	blue
2	black
3	brown
4	green
5	yellow

16. Inspect:

- Crankcase:
Cracks/damage → Replace.

NOTE:

- Thoroughly wash the crankcase halves in a mild solvent.
- Thoroughly clean all the gasket surfaces and crankcase mating surfaces.

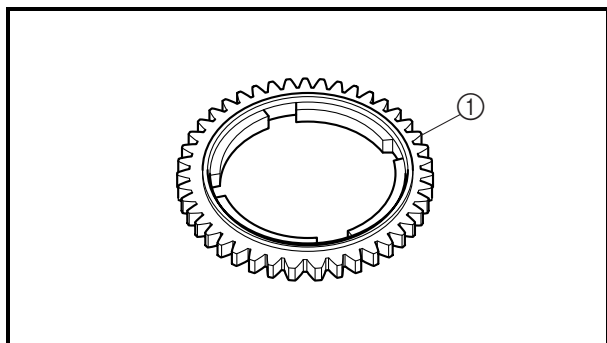
- Oil delivery passages
Obstruction → Blow out with compressed air.

17. Inspect:

- Bearings
Clean and lubricate the bearings, then rotate the inner race with your finger.
Rough movement → Replace.

18. Inspect:

- Oil seals
Damage/wear → Replace.

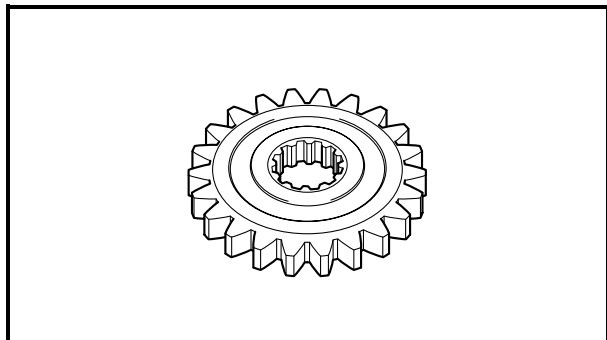


19. Inspect:

- Balancer drive gear
- Balancer driven gear ①

Damage/wear → Replace the crankshaft assembly and balancer driven gear as a set.

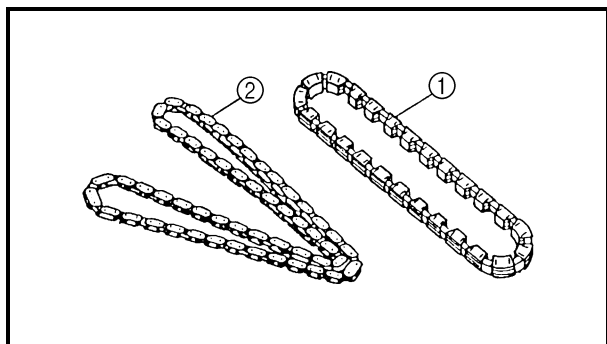
Excessive noise during operation → Replace the crankshaft assembly and balancer driven gear as a set.



20. Inspect:

- Water pump drive gear

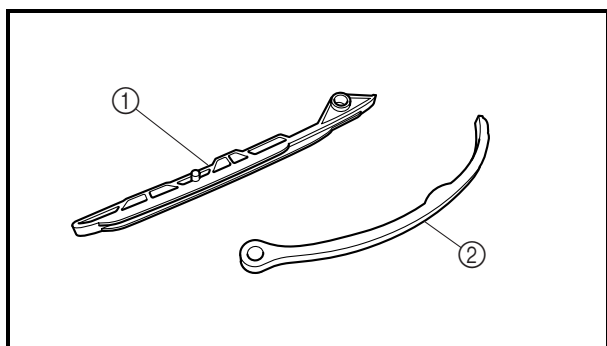
Cracks/damage/wear → Replace.



21. Inspect:

- Timing chain ①
- Oil pump drive chain ②

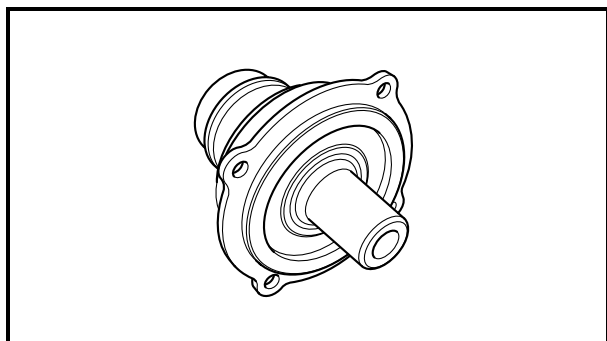
Damage/stiffness → Replace the chain and sprocket as a set.



22. Inspect:

- Timing chain guide (intake side) ①
- Timing chain guide (exhaust side) ②

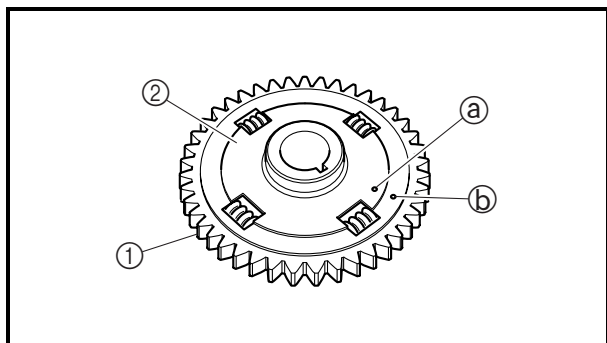
Damage/wear → Replace the timing chain guide.



23. Inspect:

- Primary sheave drive shaft assembly

Damage → Replace.

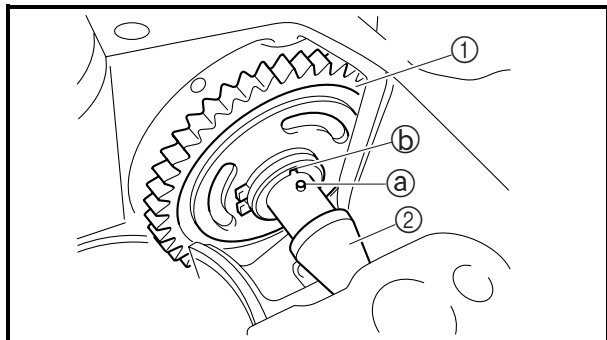
**INSTALLATION**

1. Install:

- Balancer driven gear ①
- Boss ②

NOTE:

Align the punch mark (a) on the boss with the punch mark (b) on the balancer driven gear.

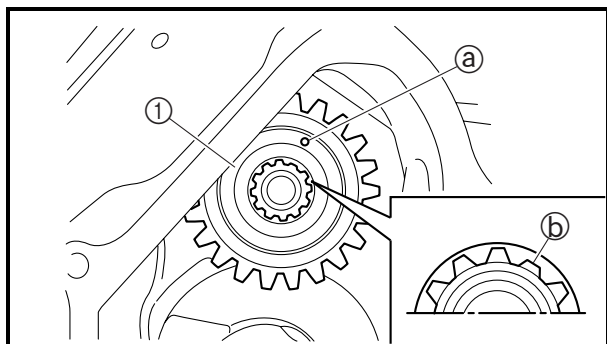


2. Install:

- Balancer driven gear assembly ①
- Balancer shaft ②

NOTE:

Align the projection (a) on the balancer shaft with the slot (b) in the balancer driven gear.

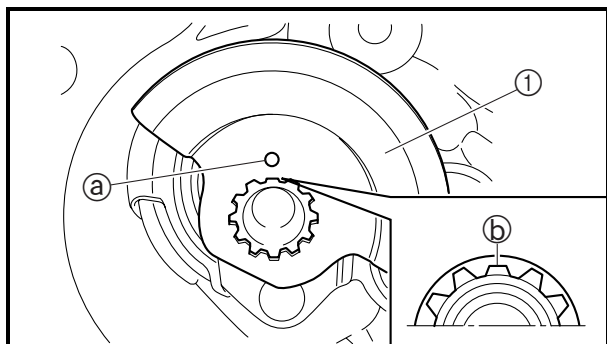


3. Install:

- Water pump drive gear ①

NOTE:

Align the punch mark (a) on the water pump gear with the shorter spline (b) on the balancer shaft end.

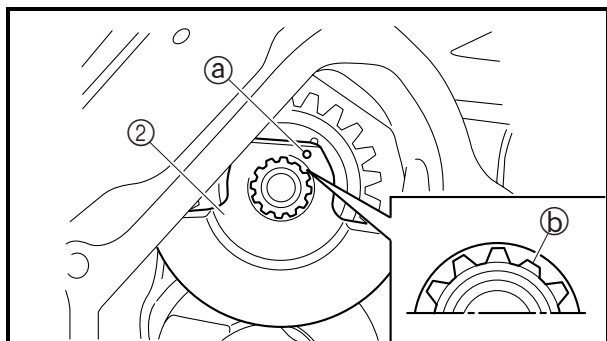


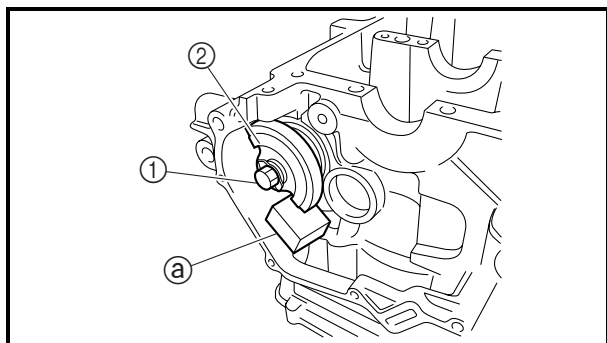
4. Install:

- Balancer weight 1 ①
- Balancer weight 2 ②
- Washer
- Lock washer
- Balancer weight bolts

NOTE:

Align the punch mark (a) on the balancer weight with the shorter spline (b) on the balancer shaft end.





5. Tighten:

- Balancer weight bolts ①

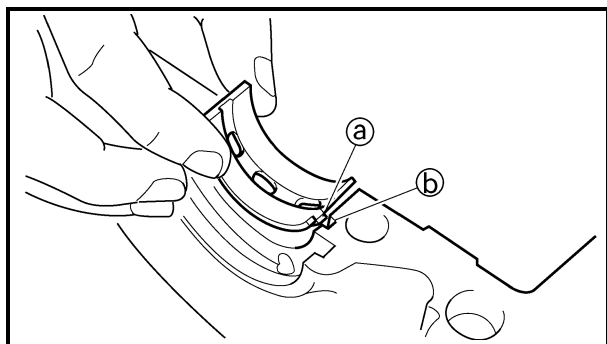
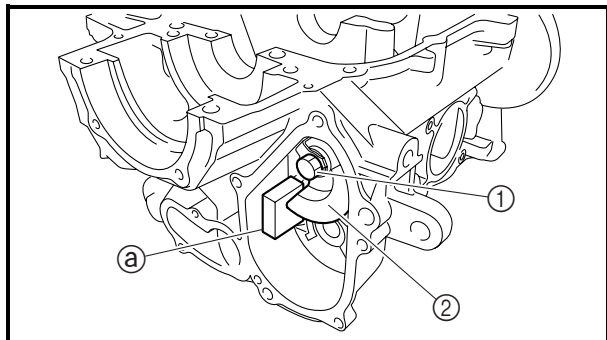
NOTE:

Place a wood ① between the balancer ② and crankcase.



Balancer weight bolt:
35 Nm (3.5 m · kg, 25 ft · lb)

6. Bend the lock washer tab.

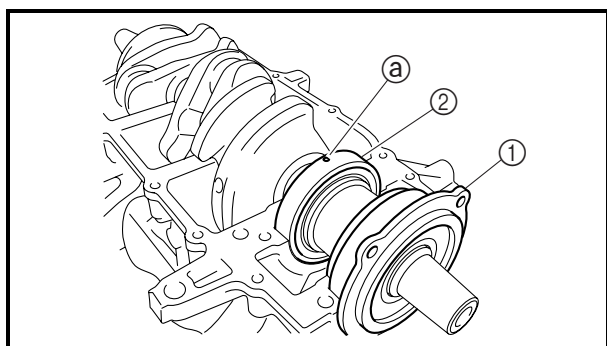


7. Install:

- Crankshaft journal upper bearing (into the upper crankcase)
- Crankshaft journal lower bearing (into the lower crankcase)

NOTE:

- Align the projections ① on the crankshaft journal bearings with the notches ② in the crankcase.
- Be sure to install each crankshaft journal bearing in its original place.

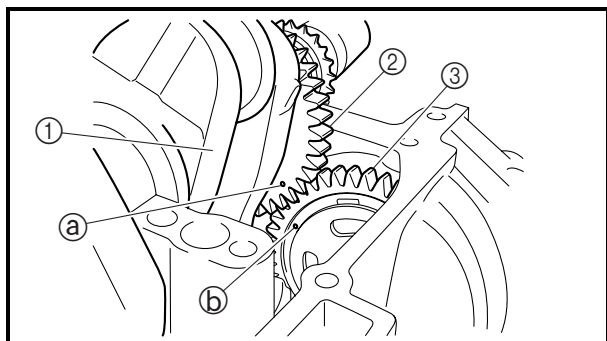


8. Install:

- Primary sheave drive shaft assembly ①
- Bearing ②

NOTE:

Install the bearing with its hole ① facing towards the crankshaft.



9. Install:

- Crankshaft ①

NOTE:

Align the punch mark ① of the balancer drive gear ② on the crankshaft with the punch mark ② of the balancer driven gear ③.

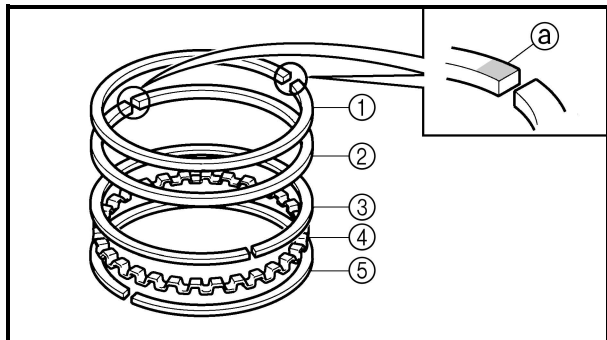


10. Lubricate:

- Crankshaft pins
- Connecting rod inner surface
(with the recommended lubricant)



Recommended lubricant:
Engine oil

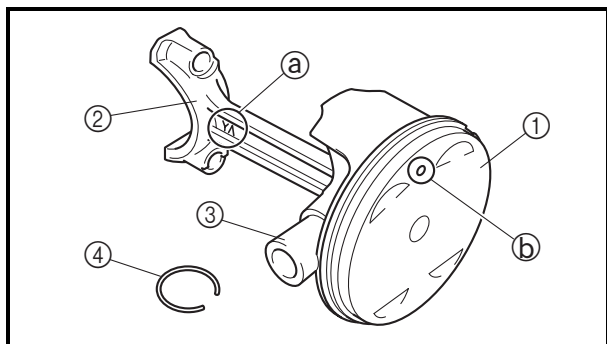


11. Install:

- Top ring ①
- 2nd ring ②
- Upper oil ring rail ③
- Oil ring expander ④
- Lower oil ring rail ⑤

NOTE:

Be sure to install the piston rings so that the manufacturer's marks or numbers ① face up.

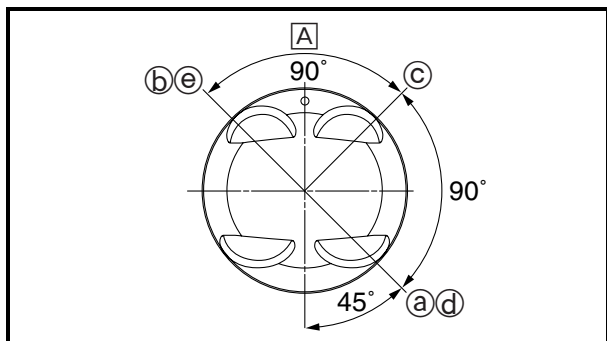


12. Install:

- Piston ①
(onto the respective connecting rod ②)
- Piston pin ③
- Piston pin clip **New** ④

NOTE:

- Apply engine oil onto the piston pin.
- Make sure that the "Y" mark ① on the connecting rod faces left when the punch mark ② on the piston is pointing up. Refer to the illustration.
- Reinstall each piston into its original cylinder (numbering order starting from the left: #1 to #3).



13. Offset:

- Piston ring end gaps

- ① Top ring
- ② 2nd ring
- ③ Upper oil ring rail
- ④ Oil ring expander
- ⑤ Lower oil ring rail
- A Exhaust side



14. Lubricate:

- Piston
- Piston rings
- Cylinder



Recommended lubricant:
Engine oil

15. Lubricate:

- Bolt threads
 - Nut seats
- (with the recommended lubricant)



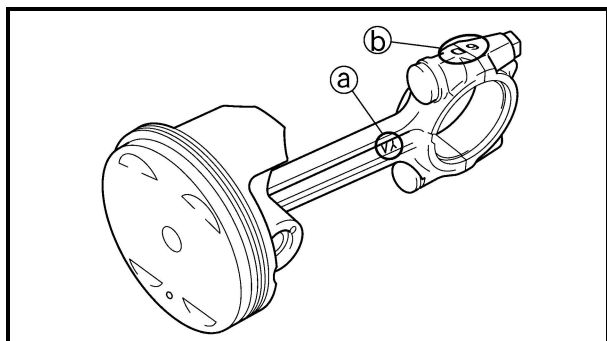
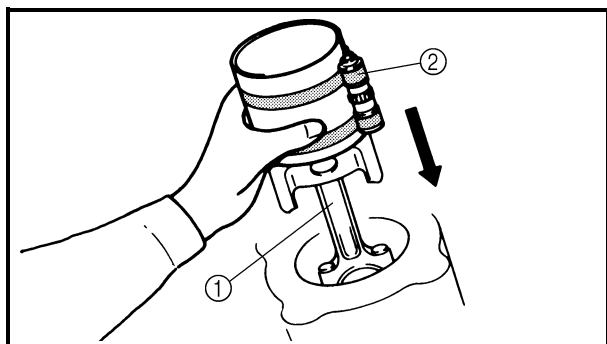
Recommended lubricant:
Molybdenum disulfide grease

16. Lubricate:

- Crankshaft pins
 - Big end bearings
 - Connecting rod inner surface
- (with the recommended lubricant)



Recommended lubricant:
Engine oil



17. Install:

- Big end bearings
- Connecting rod assembly ①
(into the cylinder and onto the crankshaft pin).
- Connecting rod cap
(onto the connecting rod)

NOTE:

- Align the projections on the big end bearings with the notches in the connecting rods and connecting rod caps.
- Be sure to reinstall each big end bearing in its original place.
- While compressing the piston rings with piston ring compressor ②, install the connecting rod assembly into the cylinder with the other hand.
- Make sure that the "Y" marks ④ on the connecting rods face towards the A.C. magneto.
- Make sure that the characters ⑤ on both the connecting rod and connecting rod cap are aligned.



Piston ring compressor:
90890-05158, YM-08037



18. Align:

- Bolt heads
(with the connecting rod caps)

19. Tighten:

- Connecting rod nuts



Connecting rod nut:

1st: 20 Nm (2.0 m · kg, 14 ft · lb)

Final: Specified angle 120°

- Replace the connecting rod bolts and nuts with new ones.

CAUTION:

Tighten the connecting rod bolts using the plastic-region tightening angle method. Always install new bolts and nuts.

- Clean the connecting rod bolts and nuts.
- Tighten the connecting rod nuts.
- Put a mark (a) on the corner of the connecting rod nut ① and the connecting rod ②.
- Tighten the connecting rod nut further to reach the specified angle (120°).

WARNING

When the nut is tightened more than the specified angle, do not loosen the nut and then retighten it.

Replace the bolt with a new one and perform the procedure again.

CAUTION:

- Do not use a torque wrench to tighten the nut to the specified angle.
- Tighten the nut until it is at the specified angles.

NOTE:

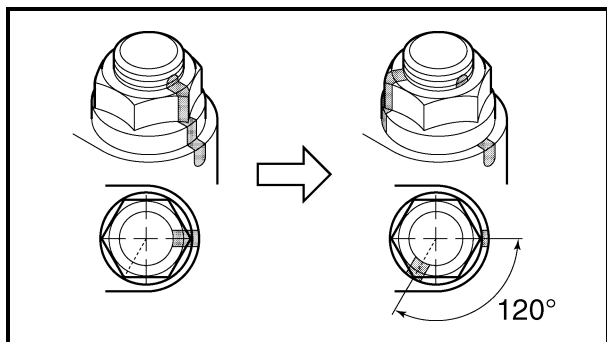
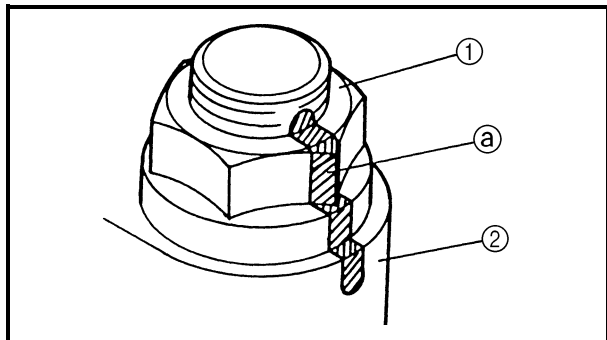
When using a hexagonal nut, note that the angle from one corner to another is 60°.

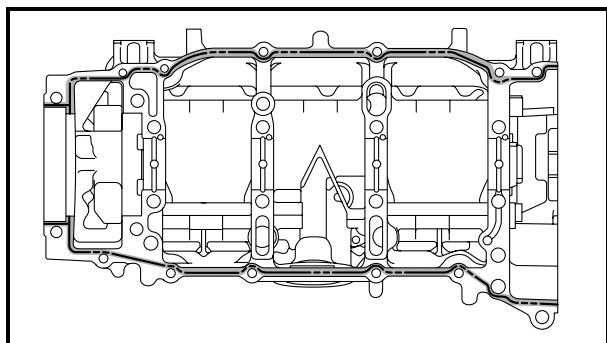
20. Lubricate:

- Crankshaft journal bearings
(with the recommended lubricant)



Recommended lubricant:
Engine oil





21. Apply:

- Sealant
(onto the crankcase mating surfaces)



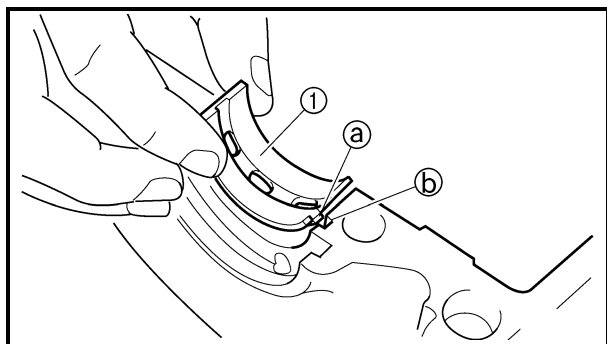
Yamaha bond No. 1215:
90890-85505
Quick gasket®:
ACC-QUICK-GS-KT

NOTE:

Do not allow any sealant to come into contact with the oil gallery or crankshaft journal bearings. Do not apply sealant to within 2 ~ 3 mm (0.08 ~ 0.12 in) of the crankshaft journal bearings.

22. Install:

- Dowel pin

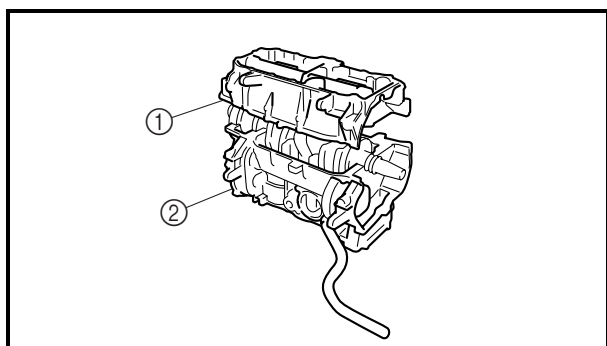


23. Install:

- Crankshaft journal bearings ①
(into the lower crankcase)

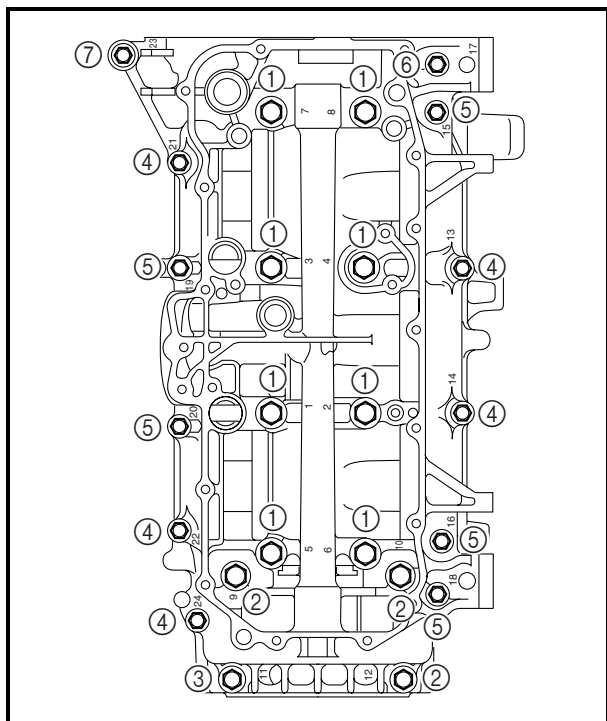
NOTE:

- Align the projections (a) on the crankshaft journal lower bearings with the notches (b) in the crankcase.
- Install each crankshaft journal lower bearing in its original place.



24. Install:

- Lower crankcase ①
(onto the upper crankcase ②)



25. Install:

- Crankcase bolts

NOTE:

- Lubricate the bolt threads with engine oil.
- Tighten the bolts in the order of the embossed numbers on the crankcase.



Crankcase bolt:

Bolt ①:

1st: 15 Nm (1.5 m · kg, 11 ft · lb)

2nd: 15 Nm (1.5 m · kg, 11 ft · lb)

Final: Specified angle 65° ~ 70°

Bolt ②, ③:

24 Nm (2.4 m · kg, 17 ft · lb)

Bolt ④ ~ ⑦:

12 Nm (1.2 m · kg, 8.7 ft · lb)

M9 × 105 mm bolts: ①

M8 × 70 mm bolts: ②

M8 × 55 mm bolt: ③

M6 × 55 mm bolts: ④

M6 × 80 mm bolts: ⑤

M6 × 80 mm bolt: ⑥ (with LOCTITE®)

M6 × 52 mm bolt: ⑦

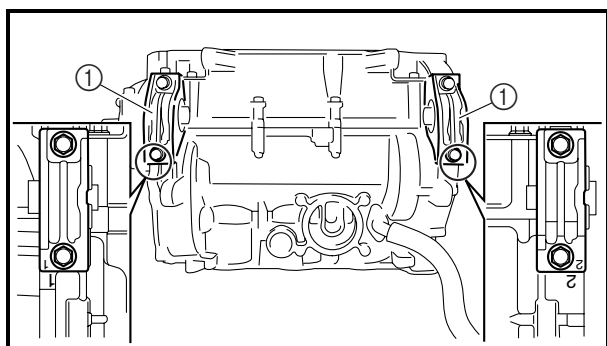
26. Install:

- Primary sheave drive shaft assembly bolts



Primary sheave drive shaft assembly bolts:

12 Nm (1.2 m · kg, 8.7 ft · lb)



27. Install:

- Engine mounting bracket ①
- Engine mounting bracket bolts

NOTE:

When installing the engine mounting brackets, make sure that the number on each side of the upper crankcase is aligned with the identical number on the brackets.



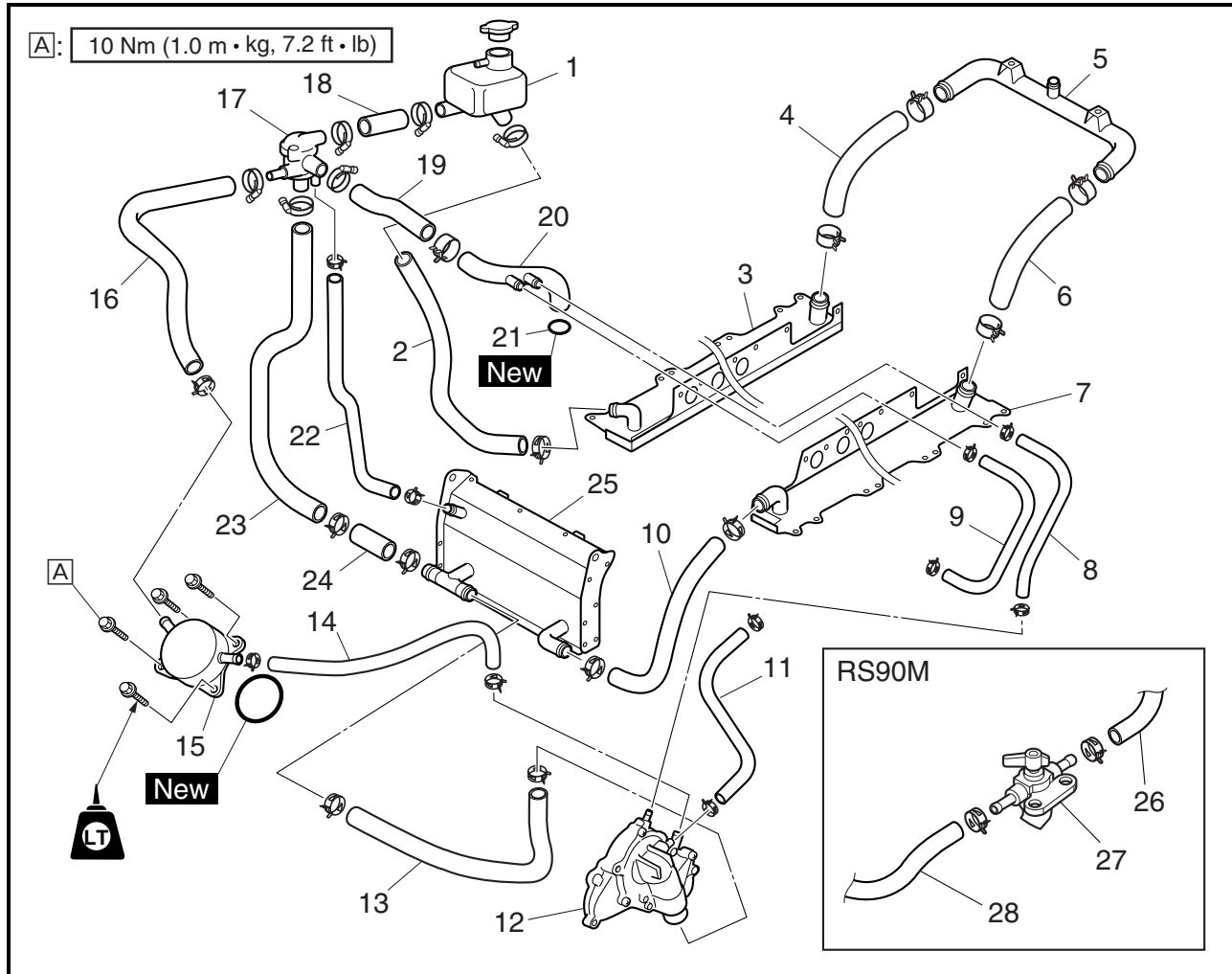
Engine mounting bracket bolts:

25 Nm (2.5 m · kg, 18 ft · lb)

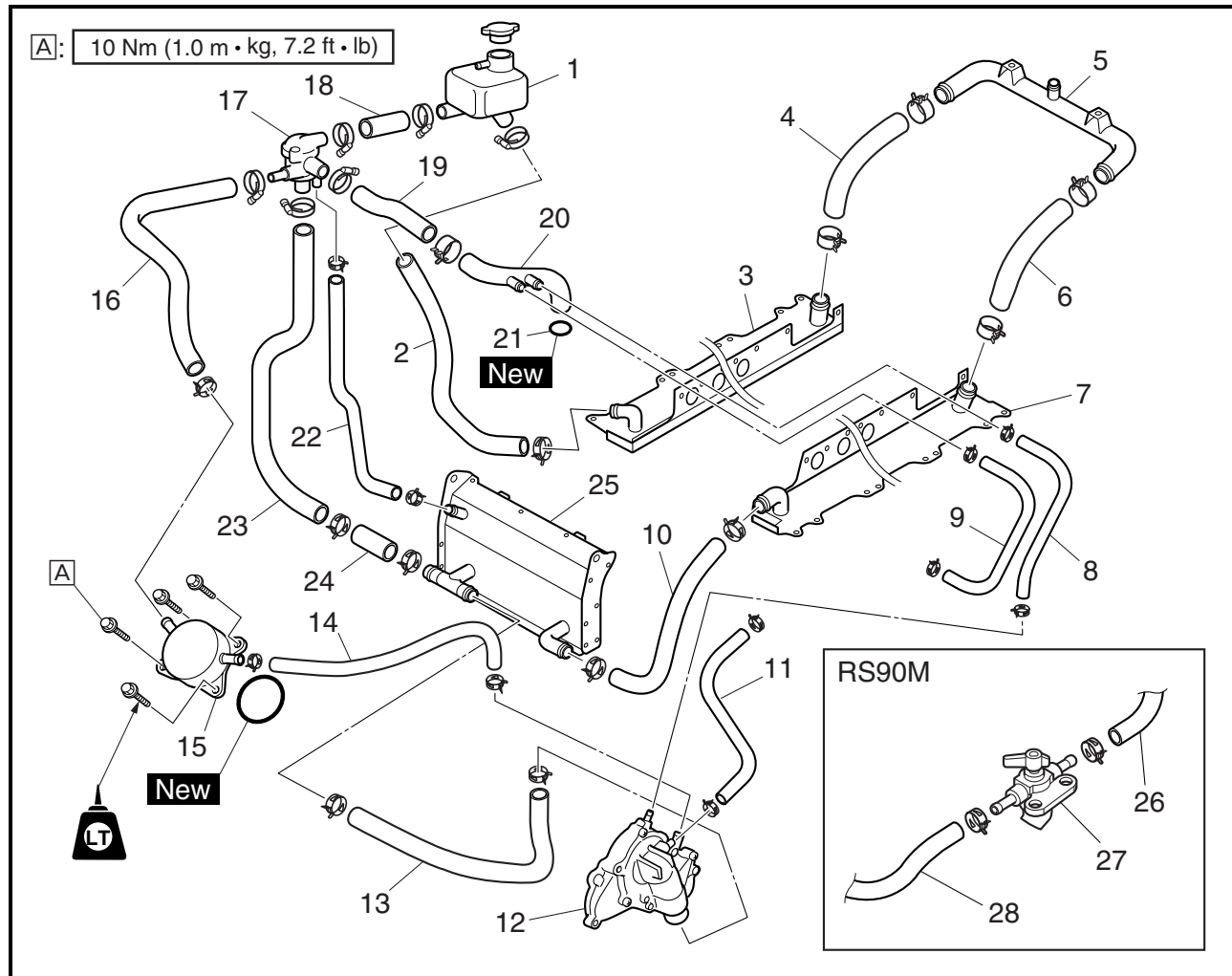


COOLING SYSTEM

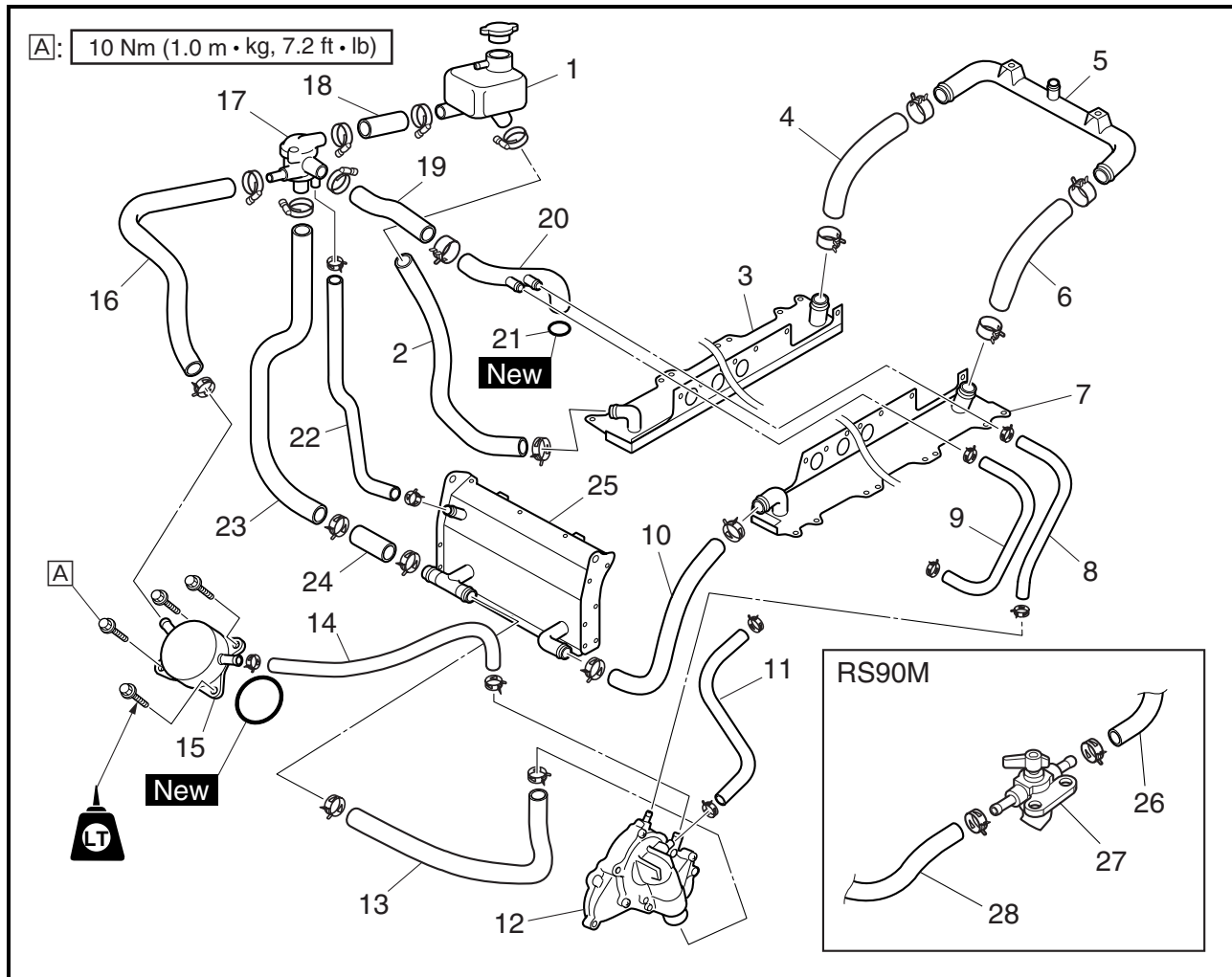
HEAT EXCHANGER



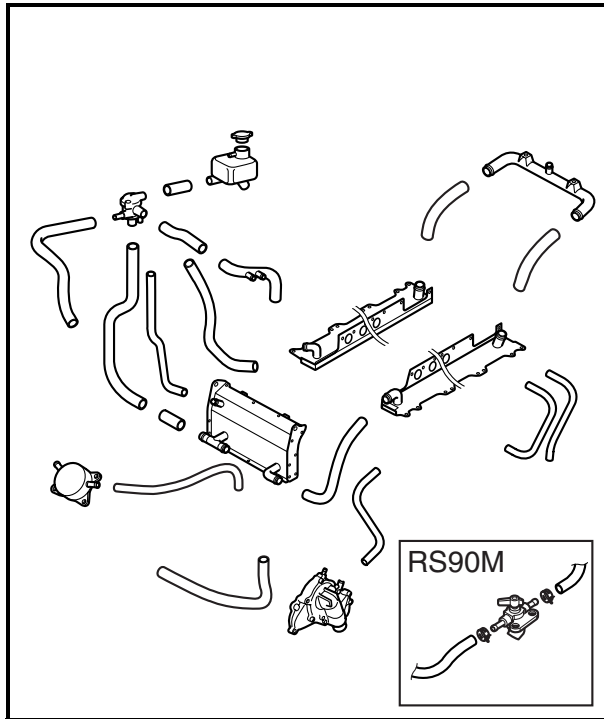
Order	Job name/Part name	Q'ty	Remarks
	Heat exchanger removal		Remove the parts in the order listed below.
	Coolant		Drain.
	Engine assembly		Refer to "COOLING SYSTEM" in CHAPTER 2.
			Refer to "ENGINE ASSEMBLY" in CHAPTER 5.
1	Coolant reservoir	1	
2	Coolant hose 1	1	
3	Heat exchanger (right)	1	
4	Coolant hose 2	1	
5	Heat exchanger (rear)	1	
6	Coolant hose 3	1	
7	Heat exchanger (left)	1	
8	Coolant hose 4	1	
9	Carburetor heating inlet hose	1	Except for RS90M
10	Coolant hose 5	1	



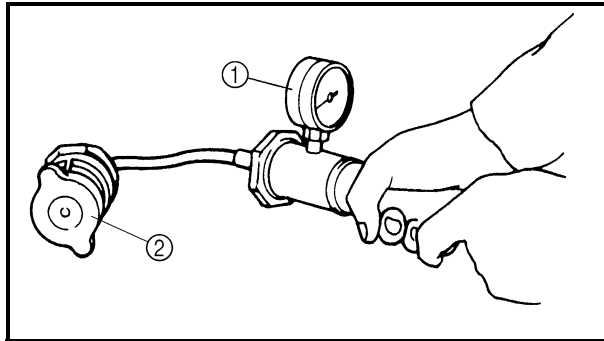
Order	Job name/Part name	Q'ty	Remarks
11	Carburetor heating outlet hose	1	
12	Water pump assembly	1	
13	Coolant hose 6	1	
14	Oil cooler inlet hose	1	
15	Oil cooler	1	
16	Oil cooler outlet hose	1	
17	Thermostat assembly	1	
18	Coolant hose 7	1	
19	Coolant hose 8	2	
20	Cylinder head water jacket	1	
21	O-ring	1	
22	Coolant hose 9	1	
23	Coolant hose 10	1	
24	Coolant hose 11	1	
25	Heat exchanger (front)	1	



Order	Job name/Part name	Q'ty	Remarks
26	Carburetor heating inlet hose 1	1	For RS90M
27	Carburetor coolant shut-off assembly	1	For RS90M
28	Carburetor heating inlet hose 2	1	For RS90M
			For installation, reverse the removal procedure.

**INSPECTION****1. Inspect:**

- Coolant hoses
 - Heat exchangers
 - Oil cooler
 - Coolant pipes
 - Carburetor coolant shut-off assembly (For RS90M)
- Cracks/damage → Replace.

**2. Measure:**

- Filler cap opening pressure
- Cap opens with a pressure below the specified pressure → Replace.



Filler cap opening pressure:
 93.3 ~ 122.7 kPa
 (0.93 ~ 1.23 kg/cm², 13.2 ~ 17.5 psi)

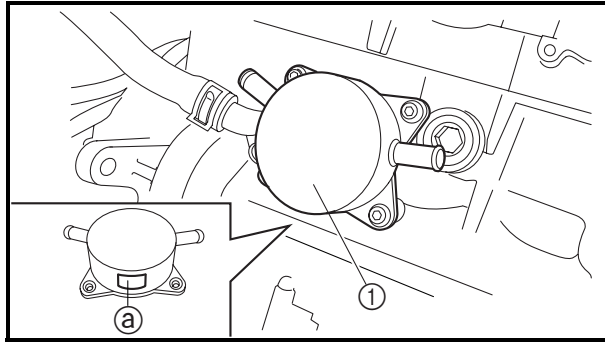
Measurement steps:

- Attach the cooling system tester ① to the coolant filler cap ②.



Cooling system tester:
 90890-01325, YU-24460-01
Adapter:
 90890-01352, YU-33984

- Apply the specified pressure for 10 seconds and make sure there is no pressure drop.

**INSTALLATION**

1. Install:
 - Heat exchangersUse the rivet gun.
2. Install:
 - O-ring
 - Oil cooler ①



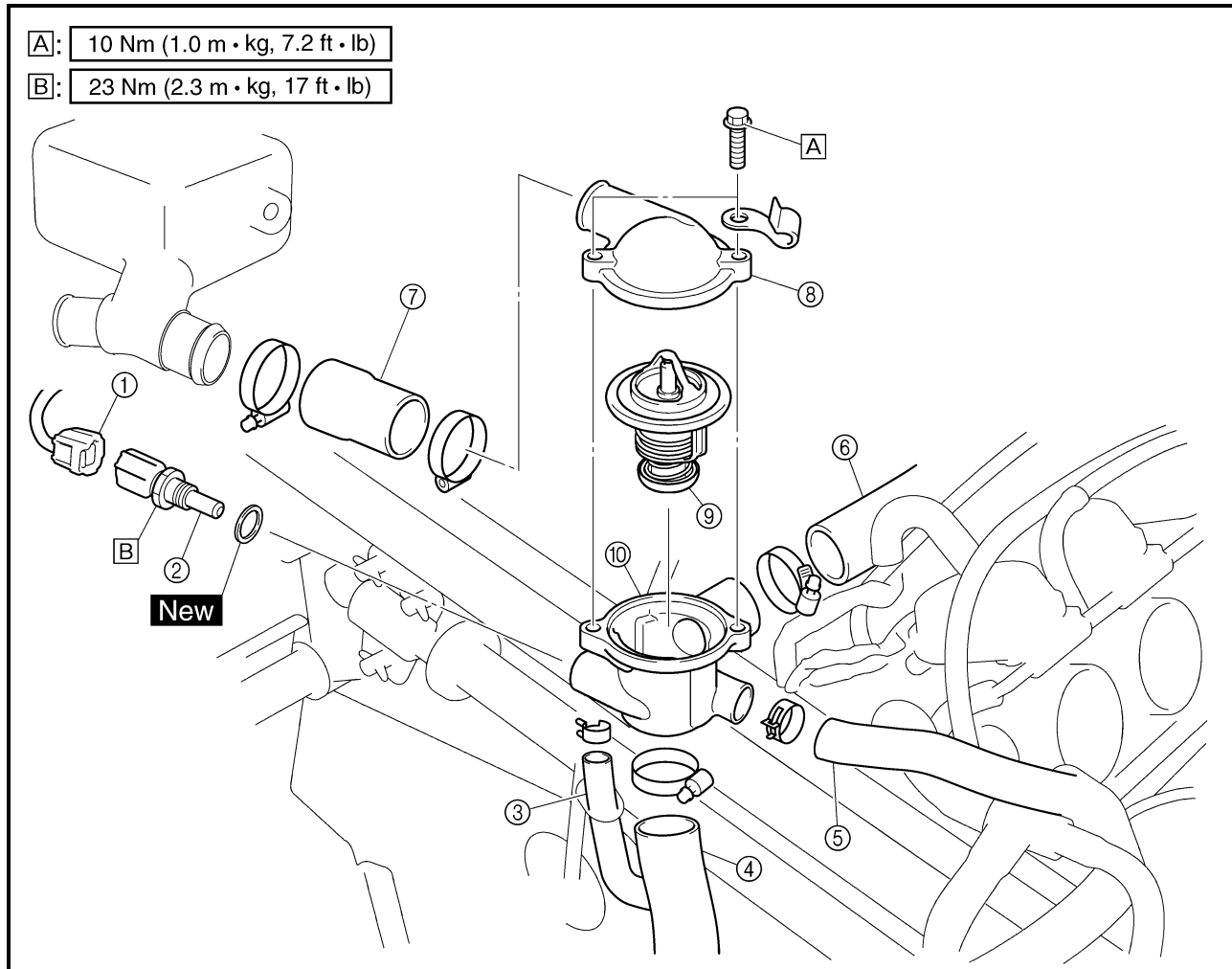
Oil cooler bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)
LOCTITE®

NOTE:

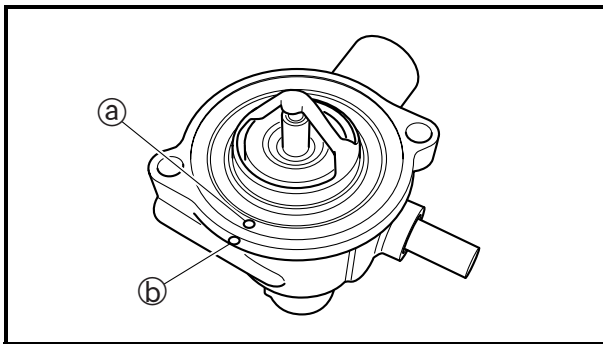
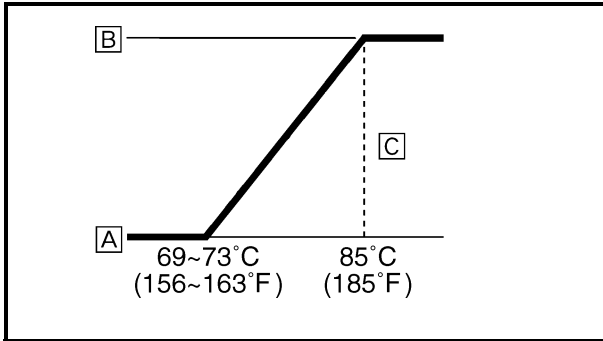
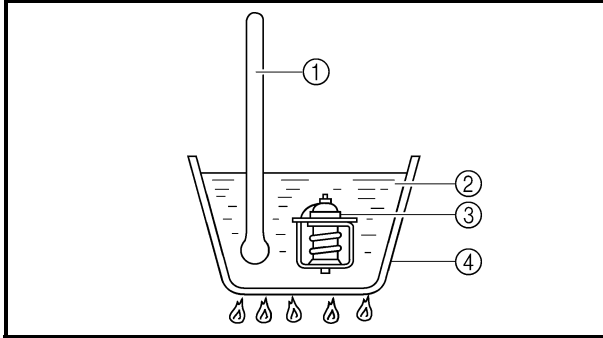
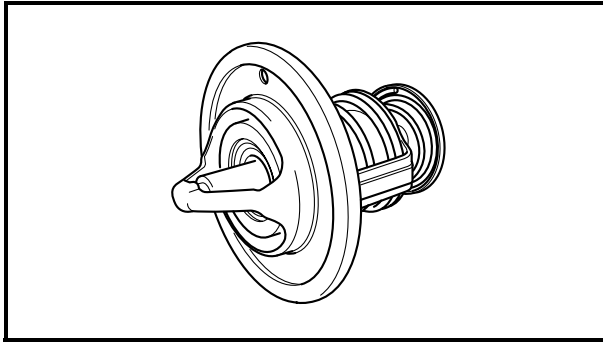
Install the oil cooler with the manufacturer's mark
Ⓐ facing down.



THERMOSTAT



Order	Job name/Part name	Q'ty	Remarks
	Thermostat disassembly		Remove the parts in the order listed below.
①	Coolant temperature sensor coupler	1	Disconnect.
②	Coolant temperature sensor	1	
③	Coolant hose 9	1	Disconnect.
④	Coolant hose 10	1	Disconnect.
⑤	Oil cooler outlet hose	1	Disconnect.
⑥	Coolant hose 8	1	Disconnect.
⑦	Coolant hose 7	1	Disconnect.
⑧	Thermostat housing cover	1	
⑨	Thermostat	1	
⑩	Thermostat housing	1	
			For assembly, reverse the disassembly procedure.



INSPECTION

1. Inspect:

- Thermostat

Does not open at 69 ~ 73 °C (156 ~ 163 °F)

→ Replace.

Inspection steps:

- Suspend the thermostat in a container filled with water.
- Slowly heat the water.
Place a thermometer in the water.
- While stirring the water, observe the thermostat and thermometer's indicated temperature.

① Thermometer

② Water

③ Thermostat

④ Container

[A] Fully closed

[B] Fully open

[C] More than 7 mm (0.28 in)

NOTE:

If the accuracy of the thermostat is in doubt, replace it. A faulty thermostat could cause serious overheating or overcooling.

2. Inspect:

- Thermostat housing cover

- Thermostat housing

Cracks/damage → Replace.

INSTALLATION

1. Install:

- Thermostat

(into the thermostat housing)

NOTE:

Install the thermostat with its breather hole (a) aligned with this place (b) on the thermostat housing.

2. Install:

- Thermostat housing cover

- Thermostat housing cover bolts



Thermostat housing cover bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)



3. Install:

- Coolant temperature sensor
(to the thermostat housing)



Coolant temperature sensor:
23 Nm (2.3 m · kg, 17 ft · lb)

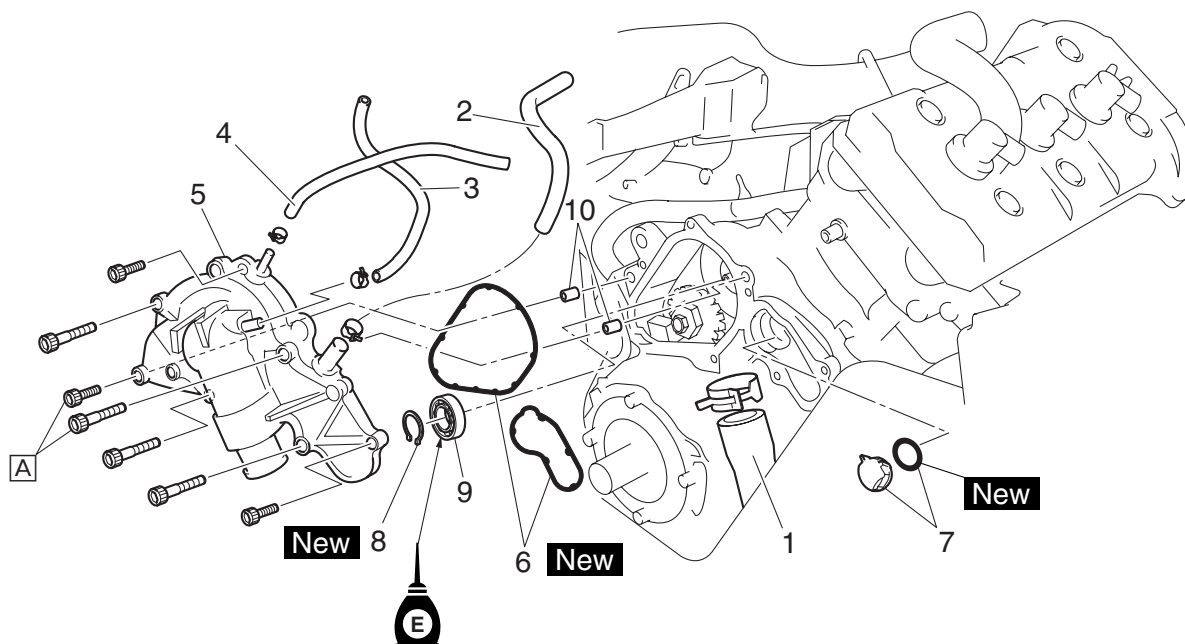
CAUTION:

Use extreme care when handling the coolant temperature sensor. Replace any part that was dropped or subjected to a strong impact.

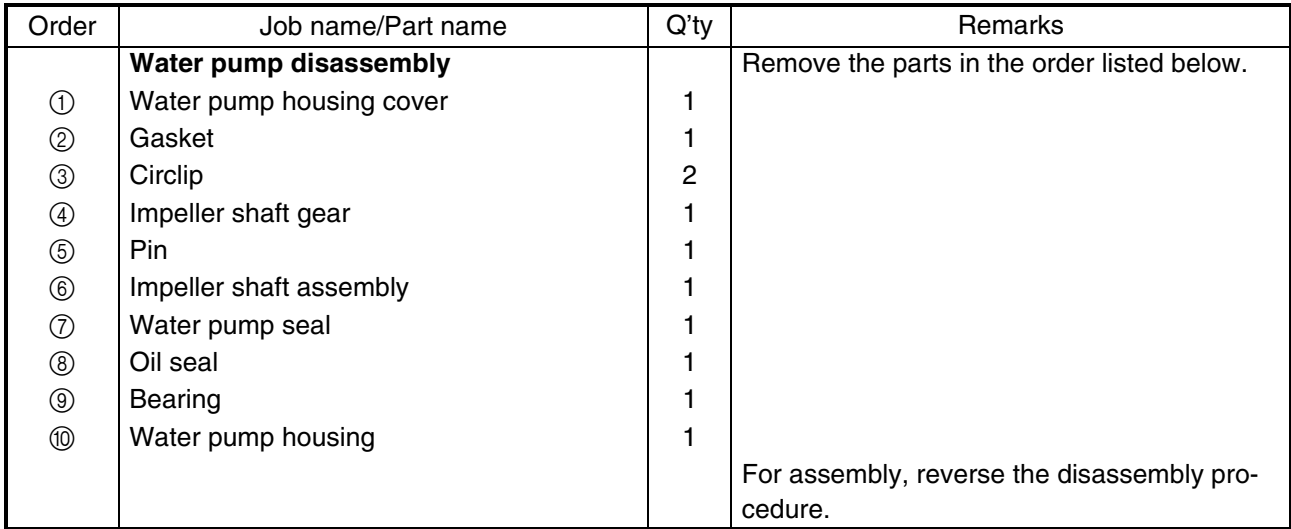


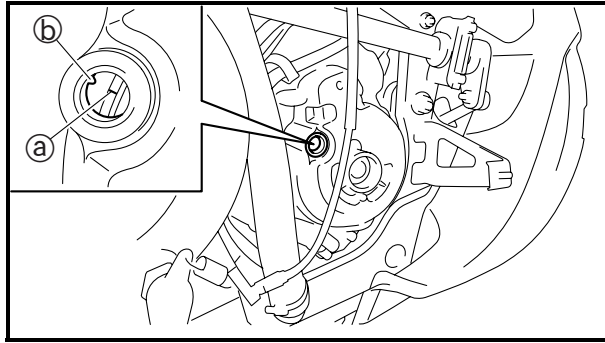
WATER PUMP

A: 12 Nm (1.2 m • kg, 8.7 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Water pump removal		Remove the parts in the order listed below.
	Frame cross member		Refer to "ENGINE ASSEMBLY" in CHAPTER 5.
1	Coolant hose 6	1	Disconnect.
2	Oil cooler inlet hose	1	Disconnect.
3	Carburetor heating outlet hose	1	
4	Coolant hose 4	1	Disconnect.
5	Water pump assembly	1	
6	Gasket	2	
7	Cap/O-ring	1/1	
8	Circlip	1	
9	Bearing	1	
10	Dowel pin	2	
			For installation, reverse the removal procedure.





REMOVAL

1. Remove:

- Timing mark accessing screw
- Crankshaft end accessing screw

2. Align:

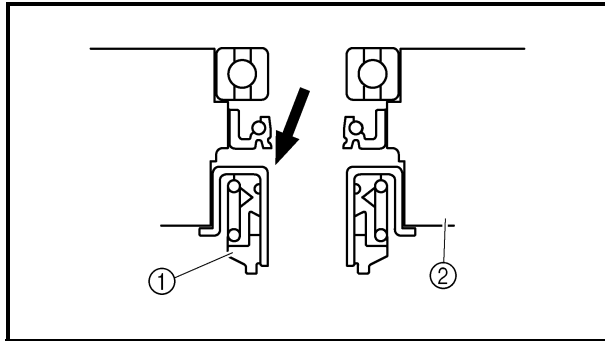
- "I" mark ① on the A.C. magneto rotor (with the stationary pointer ② on the A.C. magneto cover)

NOTE:

Turn the crankshaft clockwise.

3. Remove:

- Water pump assembly



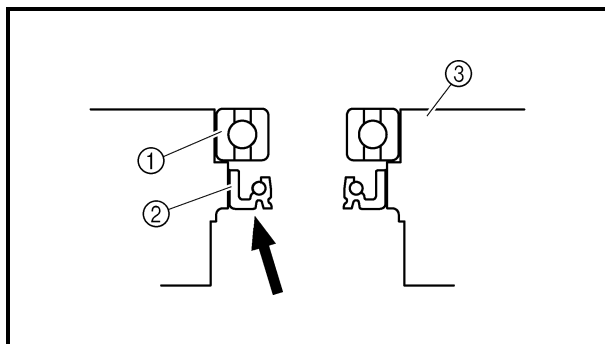
DISASSEMBLY

1. Remove:

- Impeller
- Water pump seal ①

NOTE:

Remove the water pump seal ① from the inside of the water pump housing ②.

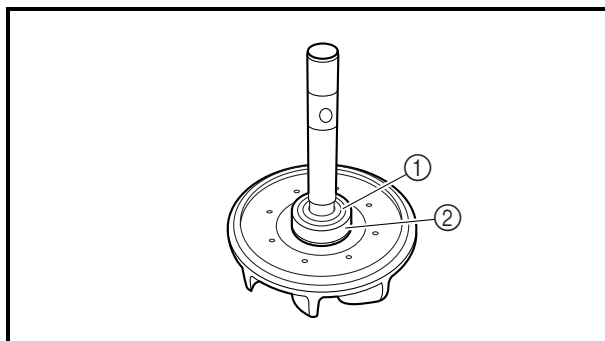


2. Remove:

- Bearing ①
- Oil seal ②

NOTE:

Remove the bearing ① and oil seal ② from the inside of the water pump housing ③.

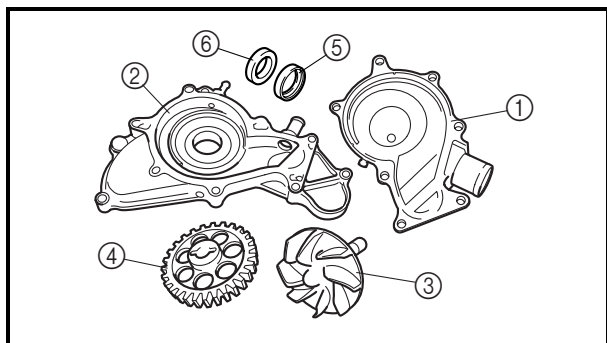


3. Remove:

- Rubber damper holder ①
- Rubber damper ② (from the impeller, with a thin, flat-head screwdriver)

NOTE:

Do not scratch the impeller shaft.



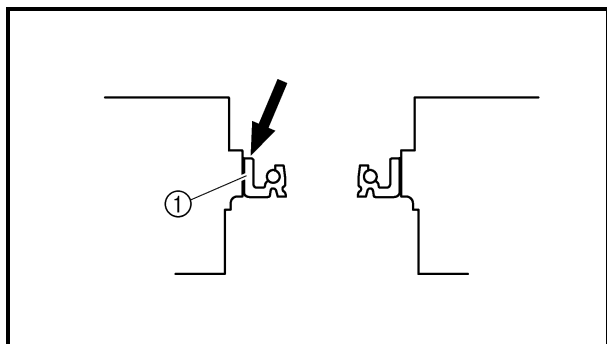
INSPECTION

1. Inspect:

- Water pump housing cover ①
 - Water pump housing ②
 - Impeller ③
 - Impeller shaft gear ④
 - Rubber damper ⑤
 - Rubber damper holder ⑥
 - Water pump seal
 - Oil seal
- Cracks/damage/wear → Replace.

2. Inspect:

- Bearing
- Rough movement → Replace.



ASSEMBLY

1. Install:

- Oil seal ① **New**
- (to the water pump housing)

NOTE:

- Before installing the oil seal, apply tap water or coolant onto its outer surface.
- Install the oil seal with a socket that matches its outside diameter.

2. Install:

- Bearing

NOTE:

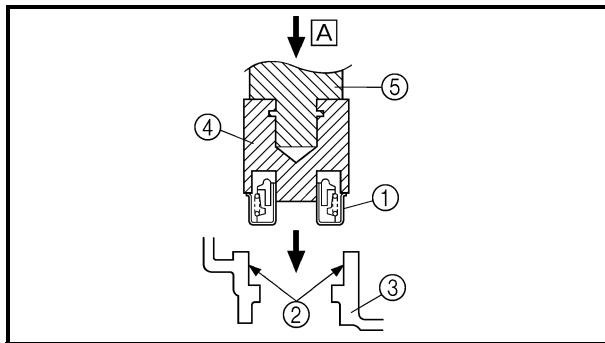
Install the bearing with a socket that matches its outside diameter.

3. Install:

- Water pump seal **New**

CAUTION:

Never apply oil or grease onto the water pump seal surface.



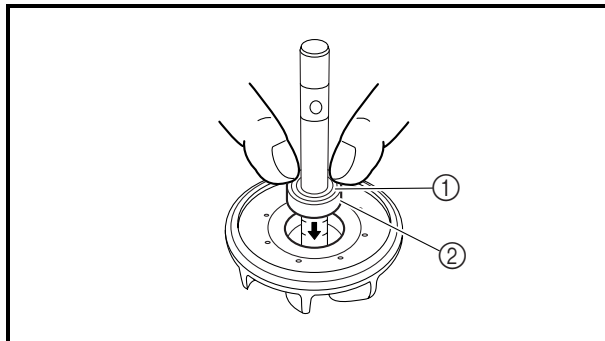
NOTE:

- Install the water pump seal ① with the mechanical seal installer ④ and 40 and 50 mm bearing driver ⑤.
- Before installing the water pump seal, apply Yamaha bond No.1215 ② or Quick gasket® to the water pump housing ③.



Mechanical seal installer:
90890-04145, YM-04145
40 and 50 mm bearing driver:
90890-04058, YM-04058
Yamaha bond No. 1215:
90890-85505
Quick gasket®:
ACC-QUICK-GS-KT

A Push down



4. Install:

- Rubber damper holder ①
- Rubber damper ②

NOTE:

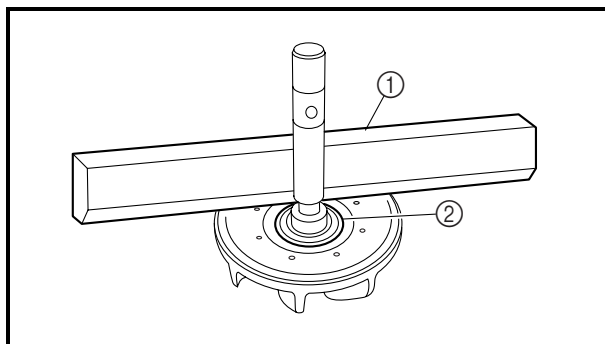
Before installing the rubber damper, apply tap water or coolant onto its outer surface.

5. Measure:

- Impeller shaft tilt
Out of specification → Repeat steps (4) and (5).

CAUTION:

Make sure the rubber damper and rubber damper holder are flush with the impeller.



Max. impeller shaft tilt:
0.15 mm (0.0059 in)

- ① Straightedge
- ② Impeller

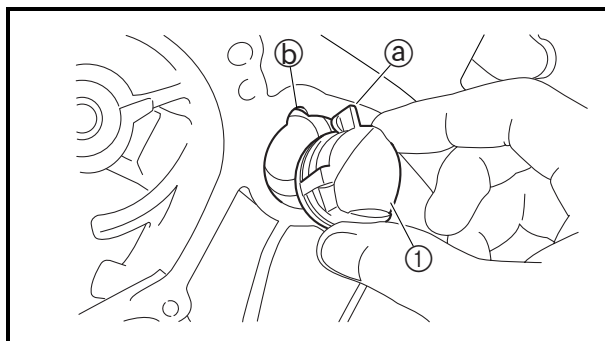
INSTALLATION

1. Install:

- Cap ①

NOTE:

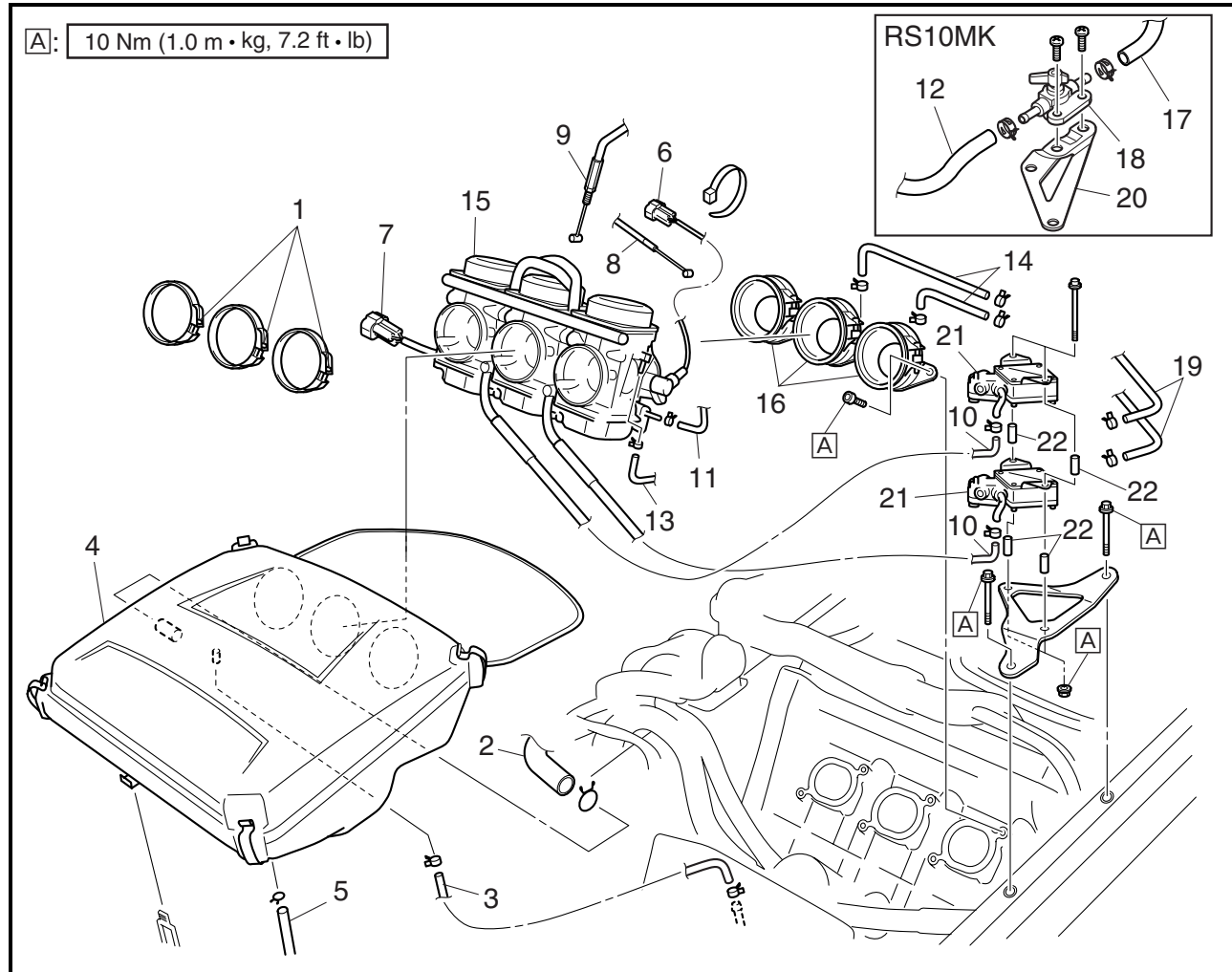
Align the projection ① on the cap with the slot in the upper crankcase ②.



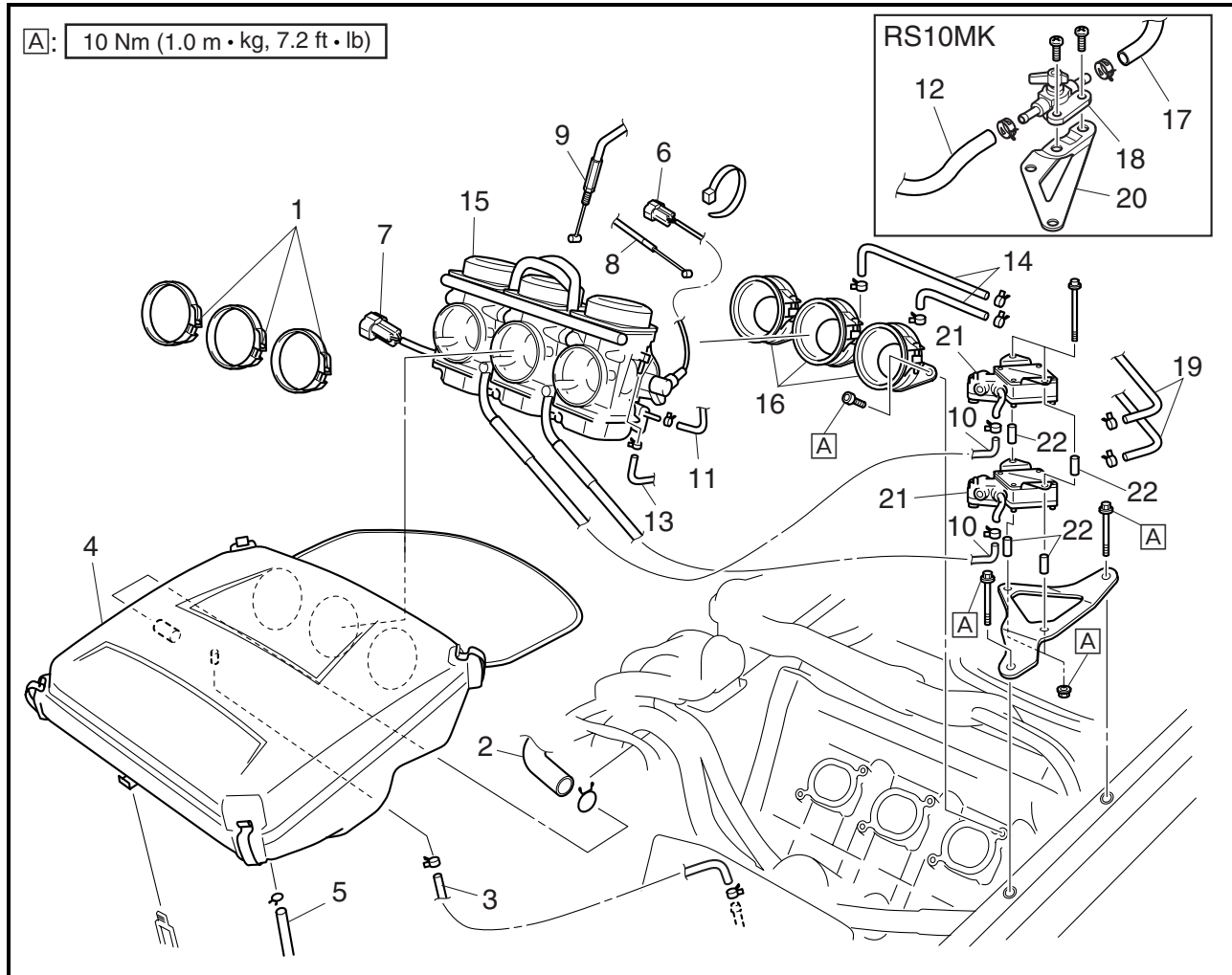


CARBURETION

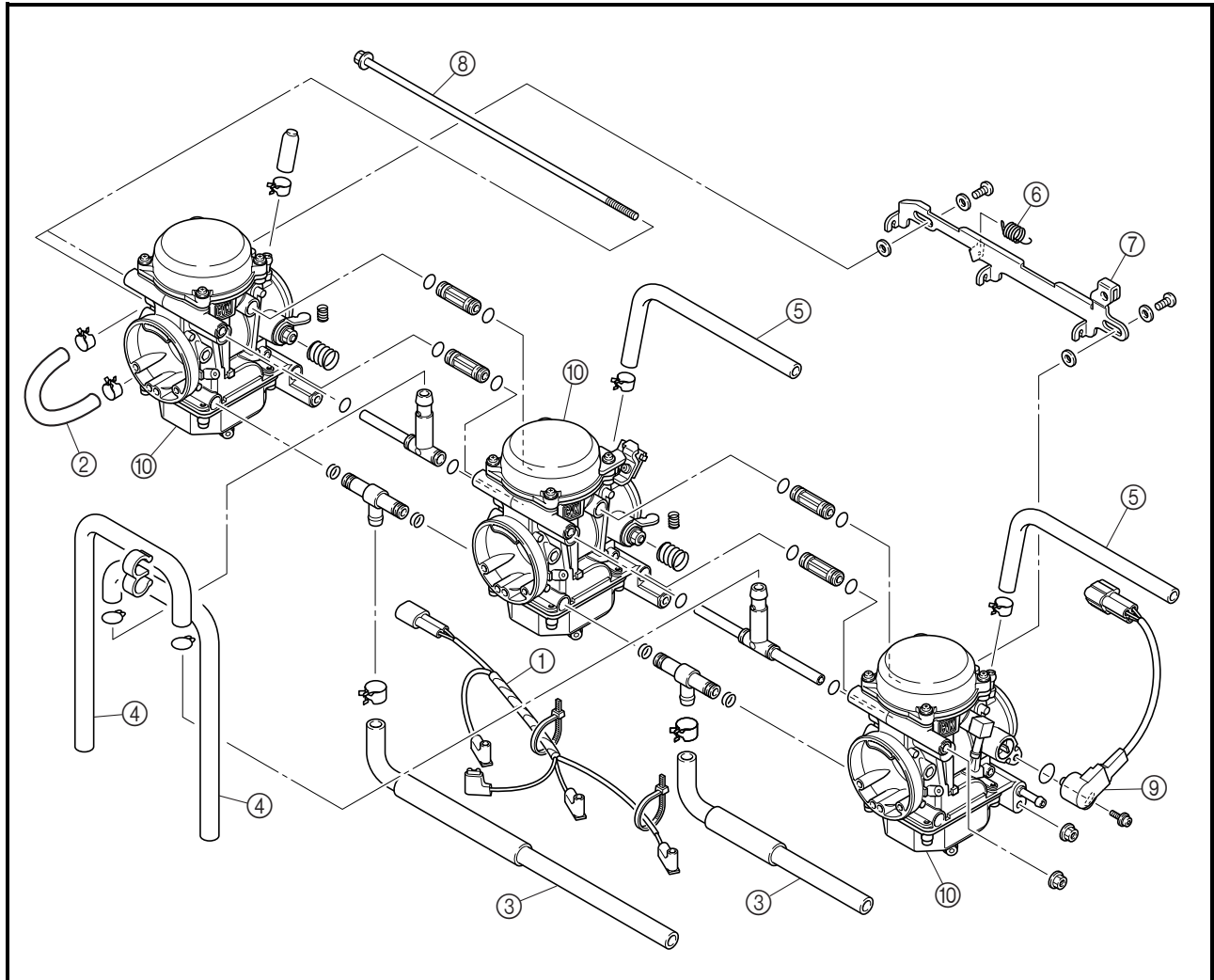
CARBURETORS AND FUEL PUMP



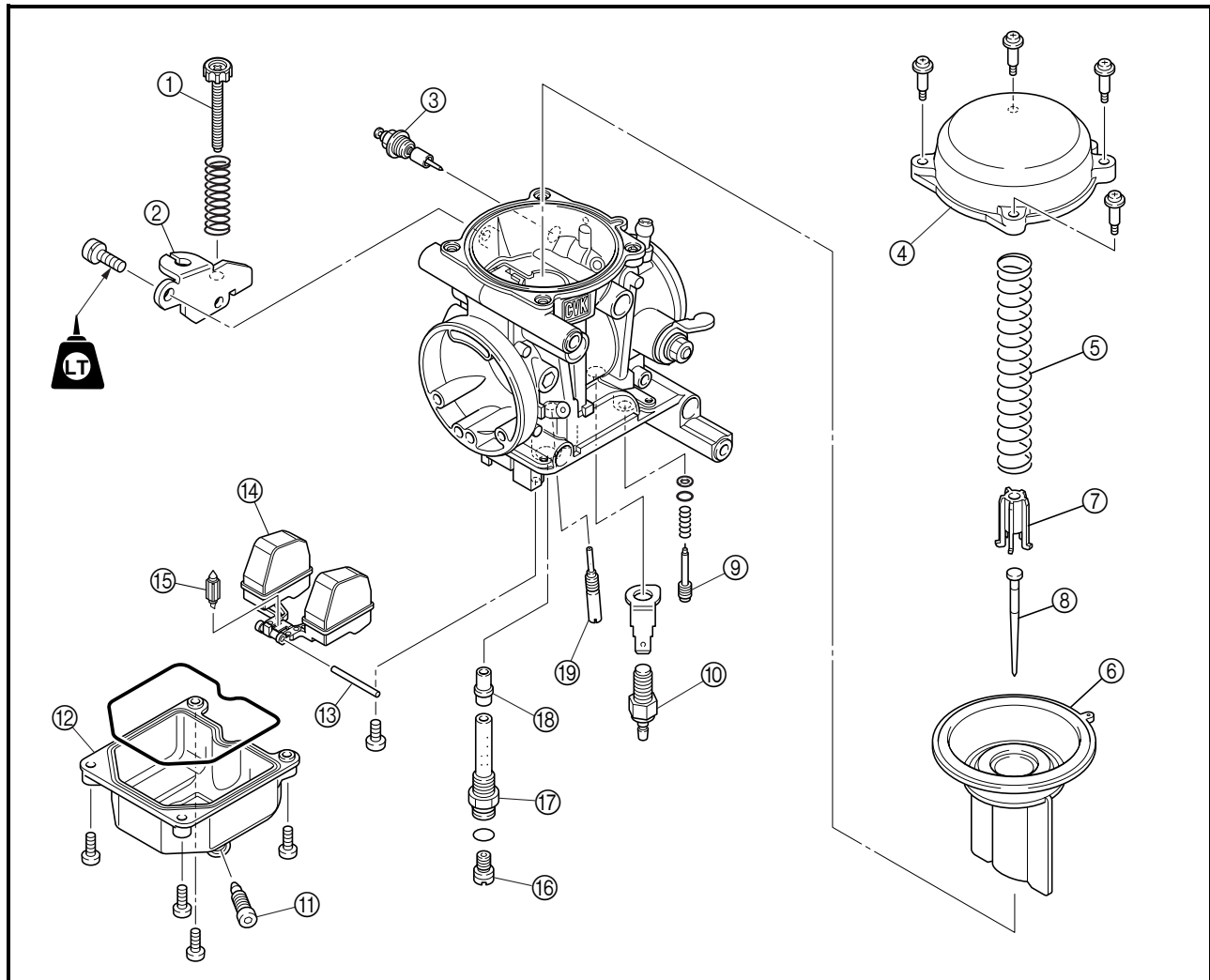
Order	Job name/Part name	Q'ty	Remarks
	Carburetor removal		Remove the parts in the order listed below. Refer to "BRAKE" in CHAPTER 4.
	Right side cover		Loosen.
1	Air filter case joint clamp screw	3	Disconnect.
2	Oil cut valve outlet hose	1	
3	Crankcase breather hose	1	
4	Air filter case	1	
5	Air filter case breather hose	1	
6	Throttle position sensor coupler	1	Disconnect.
7	Carburetor heater coupler	1	Disconnect.
8	Starter cable	1	Loosen the screw.
9	Throttle cable	1	
10	Fuel delivery hose	2	
11	Carburetor heating inlet hose	1	Except for RS90M
12	Carburetor heating inlet hose 2	1	For RS90M
13	Carburetor heating outlet hose	1	Disconnect.
14	Vacuum hose	2	



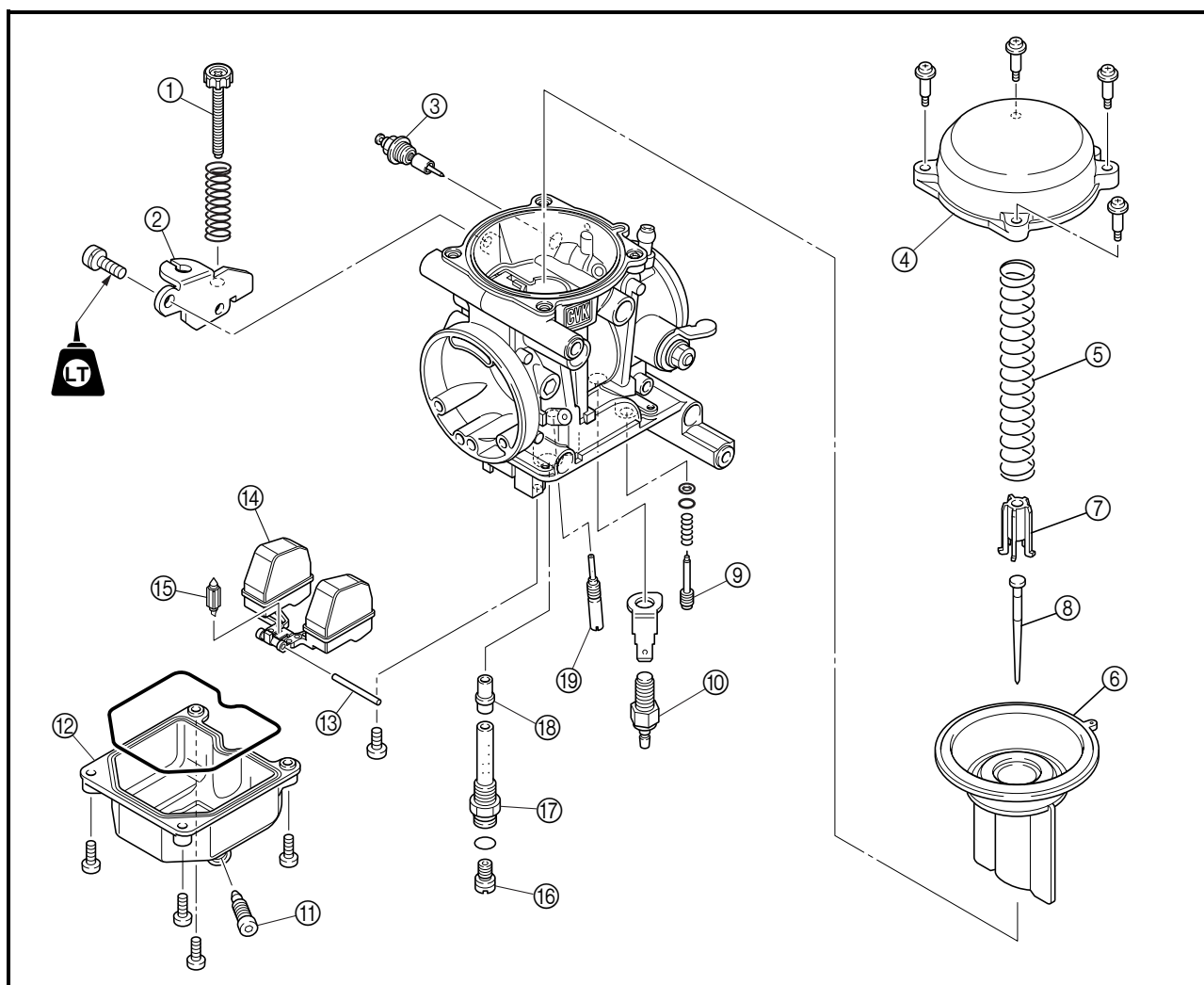
Order	Job name/Part name	Q'ty	Remarks
15	Carburetor assembly	1	
16	Carburetor joint	3	
17	Carburetor heating inlet hose 1	1	Disconnect. For RS90M
18	Carburetor coolant shut-off assembly	1	For RS90M
19	Fuel hose	2	Disconnect.
20	Carburetor coolant shut-off assembly bracket	1	For RS90M
21	Fuel pump	2	
22	Collar	4	
			For installation, reverse the removal procedure.



Order	Job name/Part name	Q'ty	Remarks
	Carburetor separation		Remove the parts in the order listed below.
①	Sub-wire harness 3	1	
②	Carburetor heating hose	1	
③	Fuel delivery hose	2	
④	Float chamber air vent hose	2	
⑤	Vacuum hose	2	
⑥	Spring	1	
⑦	Starter plunger link	1	
⑧	Connecting bolt	2	
⑨	Throttle position sensor	1	
⑩	Carburetor	3	
			For installation, reverse the removal procedure.



Order	Job name/Part name	Q'ty	Remarks
	Carburetor disassembly		Remove the parts in the order listed below. NOTE: _____ The following procedure applies to all of the carburetors. _____
①	Throttle stop screw	1	
②	Throttle cable holder	1	
③	Starter plunger	1	
④	Vacuum chamber cover	1	
⑤	Piston valve spring	1	
⑥	Piston valve	1	
⑦	Jet needle holder	1	
⑧	Jet needle	1	
⑨	Pilot screw	1	
⑩	Carburetor heater	1	



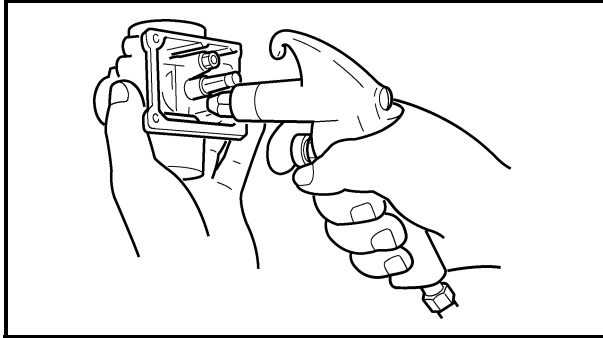
Order	Job name/Part name	Q'ty	Remarks
⑪	Fuel drain bolt	1	For assembly, reverse the disassembly procedure.
⑫	Float chamber	1	
⑬	Float pin	1	
⑭	Float	1	
⑮	Needle valve	1	
⑯	Main jet	1	
⑰	Needle jet holder	1	
⑱	Needle jet	1	
⑲	Pilot jet	1	



INSPECTION

1. Inspect:

- Carburetor body
 - Float chamber
- Cracks/damage → Replace.

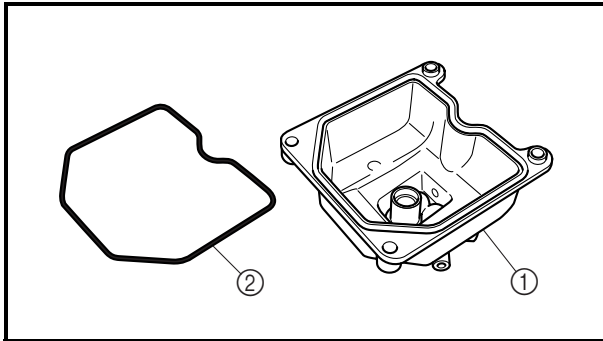


2. Inspect:

- Fuel passages
- Obstruction → Clean.

NOTE:

- Use a petroleum based solvent for cleaning.
- Blow out all passage and jets with compressed air.

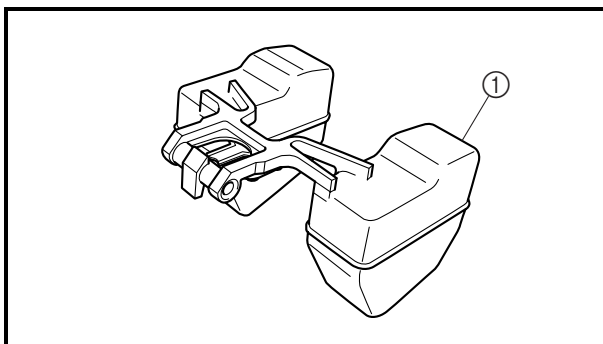


3. Inspect:

- Float chamber body ①

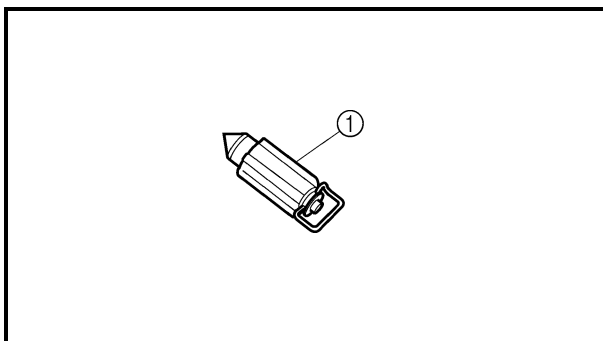
4. Inspect:

- Float chamber rubber gasket ②
- Cracks/damage/wear → Replace.



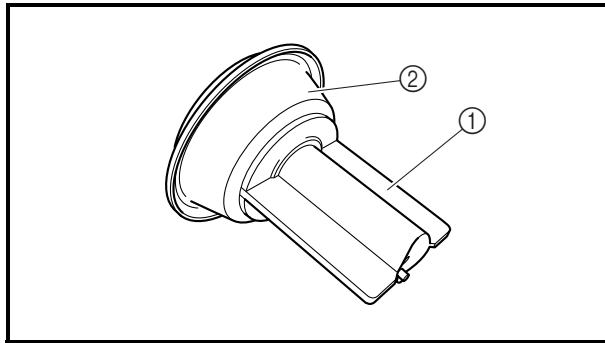
5. Inspect:

- Float ①
- Damage → Replace.



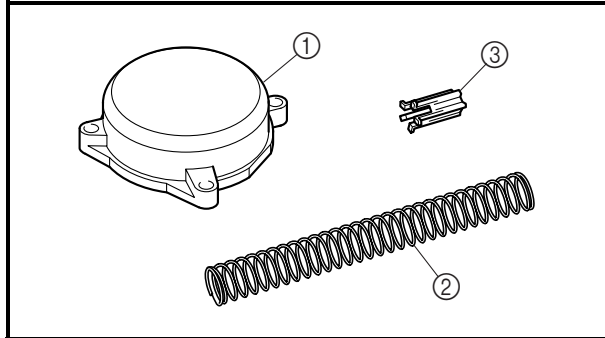
6. Inspect:

- Needle valve ①
 - Needle valve seat
- Damage/obstruction/wear → Replace the carburetor assembly.



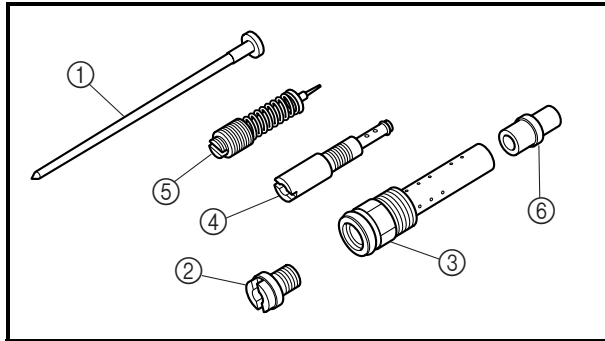
7. Inspect:

- Piston valve ①
Damage/scratches/wear → Replace.
- Rubber diaphragm ②
Cracks/tears → Replace.



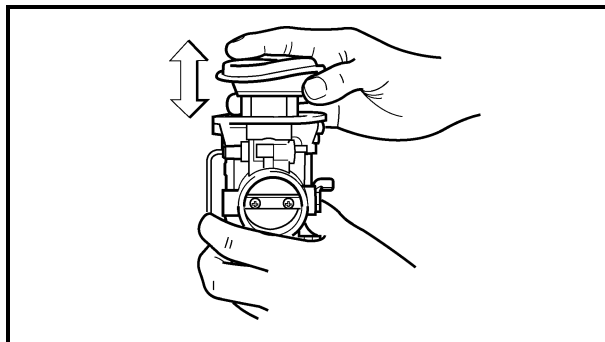
8. Inspect:

- Vacuum chamber cover ①
- Piston valve spring ②
- Jet needle holder ③
Cracks/damage → Replace.



9. Inspect:

- Jet needle ①
- Main jet ②
- Needle jet holder ③
- Pilot jet ④
- Pilot screw ⑤
- Needle jet ⑥
Bends/damage/wear → Replace.
Obstruction → Clean.
Blow out the jets with compressed air.



10. Inspect:

- Piston valve movement
Insert the piston valve into the carburetor body and move it up and down.
Tightness → Replace the piston valve.

11. Inspect:

- Fuel feed pipes
- Hose joint
Cracks/damage → Replace.
Obstruction → Clean.
Blow out the pipes with compressed air.

12. Inspect:

- Fuel delivery hoses
Cracks/damage/wear → Replace.
Obstruction → Clean.
Blow out the hoses with compressed air.



ASSEMBLY

NOTE:

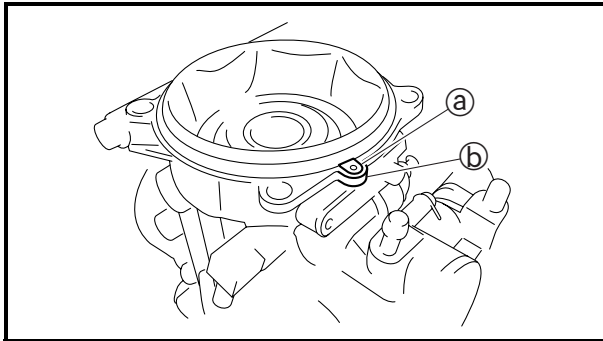
- Before assembling the carburetors, wash all of the parts in a petroleum based solvent.
- Always use a new gasket and O-rings.

1. Install:

- Needle jet
- Pilot jet
- Main jet
- Pilot screw



Pilot screw:
2 turns out

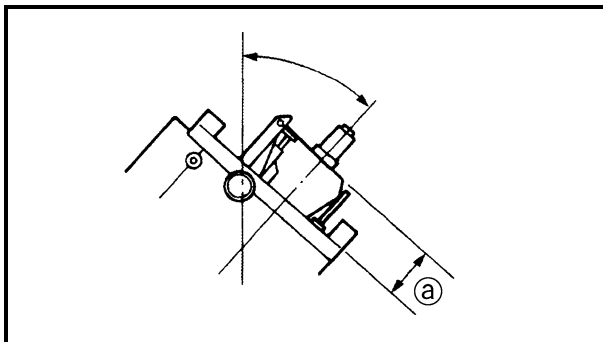


2. Install:

- Jet needle
- Piston valve
- Piston valve spring
- Vacuum chamber cover

NOTE:

Align the projection (a) on the piston valve diaphragm with the slot (b) in the carburetor body.



3. Measure:

- Float height (a)
- Out of specification → Adjust.



Float height:
16 mm (0.63 in)

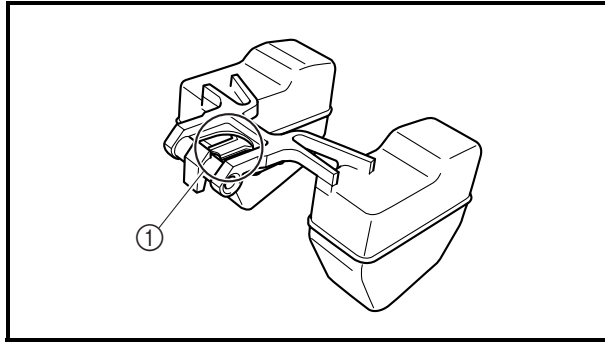
Measurement and adjustment steps:

- Hold the carburetor upside down.
- Measure the distance between the carburetor body and top of the floats.

NOTE:

The float arm should resting on the needle valve without exerting pressure on it.

- 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 arm tang ① on the float.
- Recheck the float height.

INSTALLATION

NOTE:

After installing all parts, refer to “CABLE ROUTING” in CHAPTER 9, to check the cable, lead and hose routing.

1. Adjust:

- Carburetor synchronization

Refer to “CARBURETOR SYNCHRONIZATION” in CHAPTER 2.

2. Adjust:

- Engine idling speed



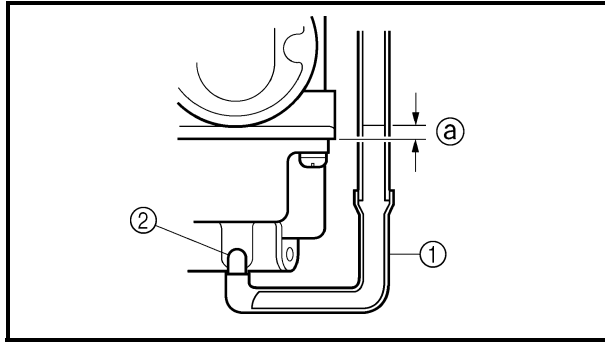
Engine idle speed:
1,300 ~ 1,500 r/min

Refer to “ENGINE IDLE SPEED ADJUSTMENT” in CHAPTER 2.

3. Adjust:

- Throttle cable free play

Refer to “THROTTLE CABLE FREE PLAY ADJUSTMENT” in CHAPTER 2.



FUEL LEVEL ADJUSTMENT

1. Measure:

- Fuel level ①

Out of specification → Adjust.



Fuel level (below the line on the float chamber):
0.2 ~ 2.2 mm (0.008 ~ 0.087 in)

Measurement steps:

- Install the fuel level gauge ① to the fuel drain pipe ②.

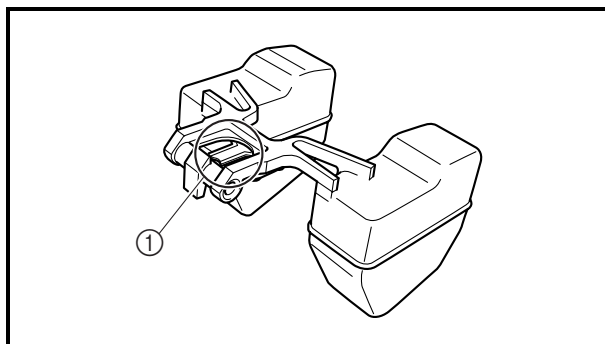
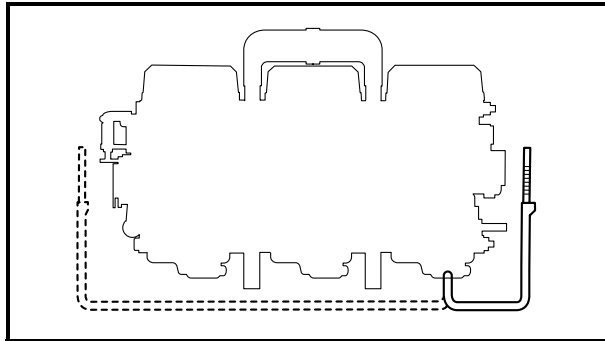


Fuel level gauge:
90890-01312, YM-01312-A

- Loosen the fuel drain bolt.
- Hold the fuel level gauge vertically next to the line on the float chamber.
- Measure the fuel level ① on both sides of the carburetor assembly.

NOTE:

The fuel level readings should be equal on both sides.



2. Adjust:

- Fuel level

Adjustment steps:

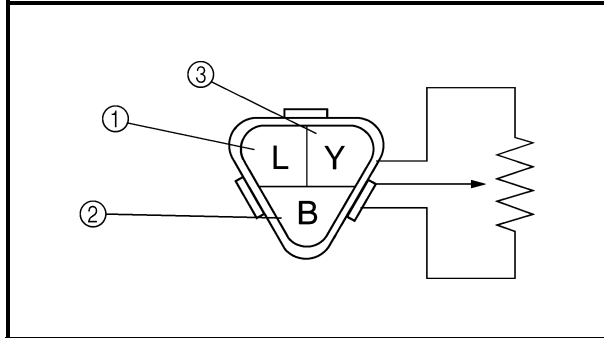
- Remove the carburetor assembly.
- Inspect the needle valve seat and needle valve.
- If either is worn, replace them as a set.
- If both are fine, adjust the float height by bending the float tang ① or the float.
- Recheck the fuel level.



THROTTLE POSITION SENSOR (T.P.S.) INSPECTION AND ADJUSTMENT

NOTE:

Before adjusting the throttle position sensor, properly adjust the idle speed.



1. Inspect:

- Throttle position sensor

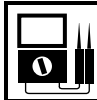
Inspection steps:

- Disconnect the throttle position sensor coupler.
- Connect the pocket tester ($\Omega \times 1k$) to the throttle position sensor coupler.

Positive tester probe → **Blue** ①

Negative tester probe → **Black** ②

- Check the throttle position sensor resistance.



Throttle position sensor resistance

“R₁”:

4 ~ 6 k Ω at 20 °C (68 °F)
(Blue – Black)

Out of specification → Replace the throttle position sensor.

- Connect the pocket tester ($\Omega \times 1k$) to the throttle position sensor coupler.

Positive tester probe → **Yellow** ③

Negative tester probe → **Black** ②

- While slowly pushing the throttle check the throttle position sensor resistance.



Throttle position sensor resistance

“R₂”:

0 ~ 4 k Ω at 20 °C (68 °F)
(Yellow – Black)

Out of specification → Replace the throttle position sensor.



2. Adjust:

- Throttle position sensor angle

Adjustment steps:

- Disconnect the throttle position sensor coupler.
- Connect the test coupler to the throttle position sensor.
- Connect three dry cells (1.5 V × 3 pcs.) in series to the test coupler.

Dry cells negative end → ①

Dry cells positive end → ②

- Connect the digital multi meter to the test coupler.

Digital multi meter negative lead → ①

Digital multi meter positive lead → 2-③

- Measure the voltage ④.

NOTE:

When measuring the voltage ④ be sure that the test coupler is connected to the throttle position sensor.

- Calculate the specified voltage ⑤.

Specified voltage ⑤ = Voltage ④ × (0.136)

- Loosen the throttle position sensor bolt ④.
- Connect the digital multi meter to the test coupler.

Digital multi meter negative lead → ①

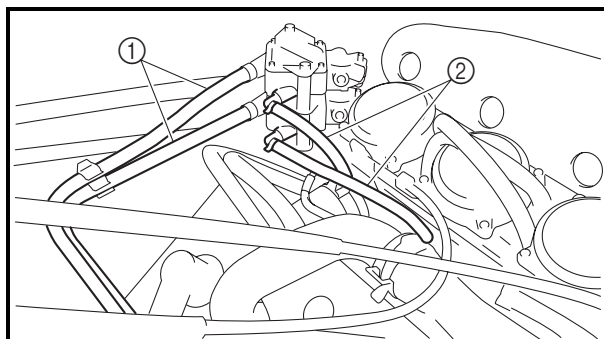
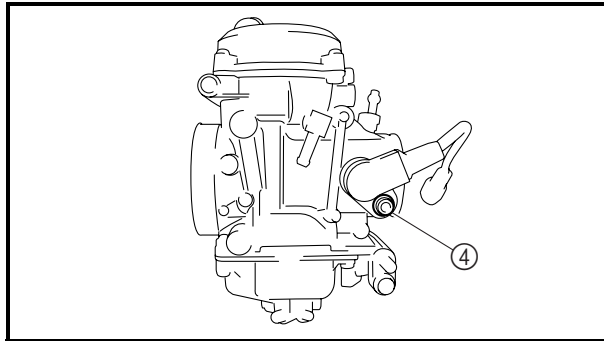
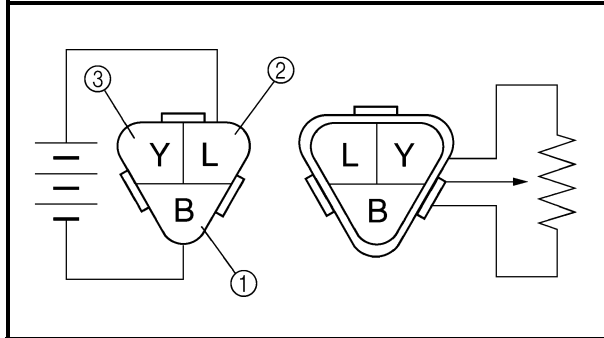
Digital multi meter positive lead → ③

- Adjust the throttle position sensor position to obtain the specified voltage ⑤.
- Tighten the throttle position sensor bolt ④.
- Disconnect the test coupler and connect the throttle position sensor coupler.

INSPECTION

1. Inspect:

- Fuel hoses ①
- Vacuum hoses ②
- Clogs/damage → Replace.





2. Remove:

- Air filter case

Refer to “BATTERY INSPECTION” in CHAPTER 2.

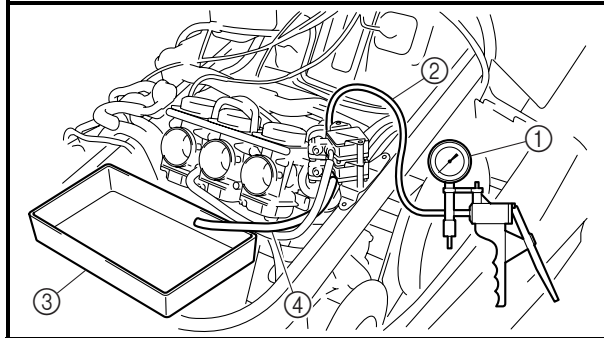
3. Inspect:

- Fuel pump operation

Inspection steps:

The following procedure applies to both of the fuel pump.

- Connect the Mity vac ① to the vacuum hose ②.



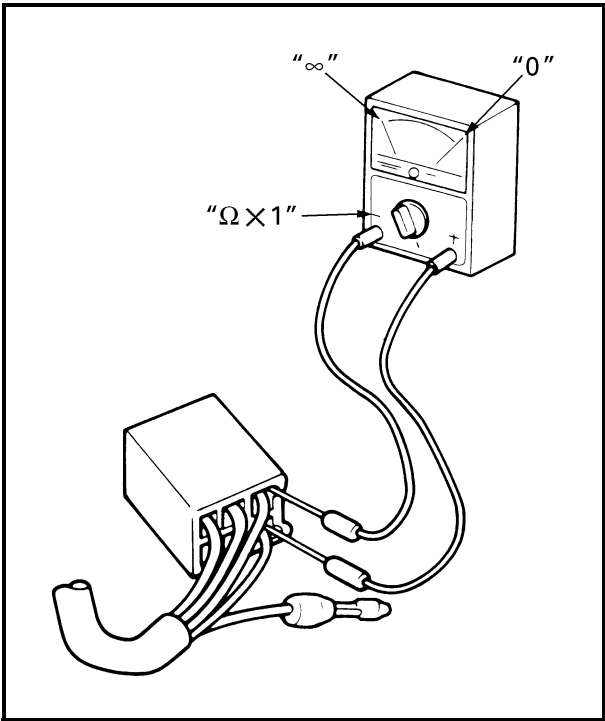
Mity vac:
90890-06756, YS-42423

- Place a container ③ under the end of the fuel delivery hose ④.
- Operate the Mity vac ① while checking that fuel flows from the fuel delivery hose ④.
- If fuel does not flow out, replace the fuel pump.

INSTALLATION

NOTE:

After installing all parts, refer to “CABLE ROUTING” in CHAPTER 9, to check the cable, lead and hose routings.



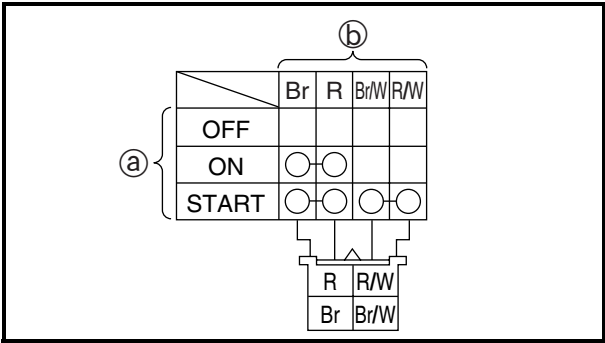
ELECTRICAL

SWITCH INSPECTION
SWITCH INSPECTION

Use a pocket tester to check the terminals for continuity. If the continuity is faulty at any point, replace the switch.

Pocket tester:
90890-03112, YU-03112-C

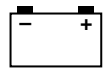
- NOTE:
- Set the pocket tester to “0” before starting a test.
 - When testing the switch for continuity the pocket tester should be set to the “ $\times 1 \Omega$ ” range.
 - When checking the switch turn it on and off a few times.



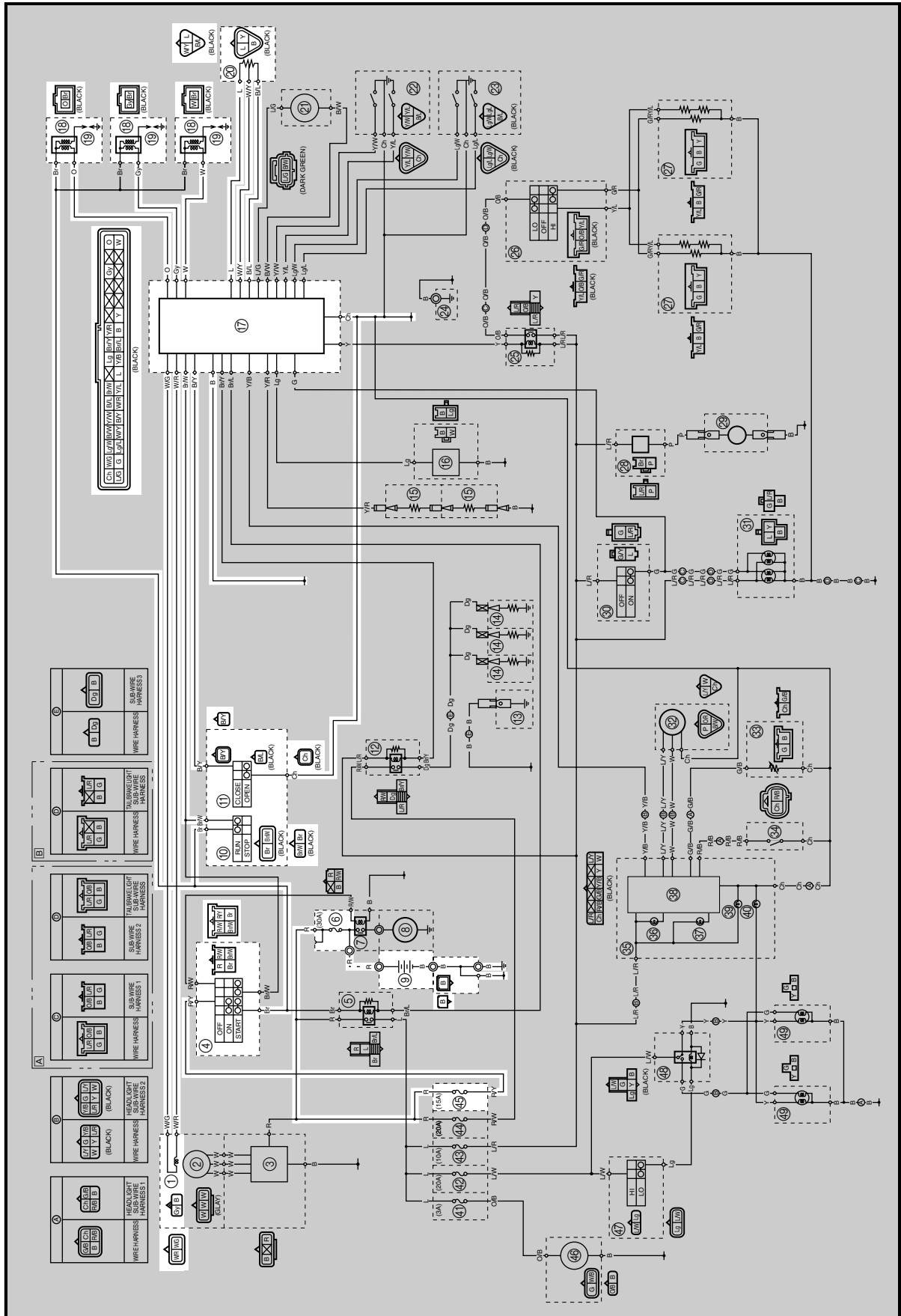
INSPECTING A SWITCH SHOWN IN THE
MANUAL

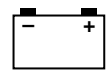
The terminal connections for switches (main switch, handlebar switch, engine stop switch, light switch, etc.) are shown in a chart similar to the one on the left. This chart shows the switch positions (a) in the column and the switch lead colors (b) in the top row. For each switch position, “○—○” indicates the terminals with continuity.

The example chart shows that:
There is continuity between the “Brown and Red” leads when the switch is set to “ON”.
There is continuity between the “Brown and Red” and between “Brown/White and Red/White” leads when the switch is set to “START”.



IGNITION SYSTEM
CIRCUIT DIAGRAM



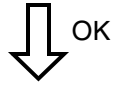


TROUBLESHOOTING

NO SPARK OR WEAK SPARK.

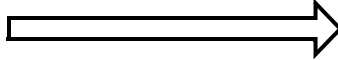
Check the main fuse and ignition fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

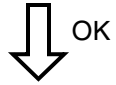
FAULTY



Replace the main fuse and/or ignition fuse.

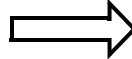
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

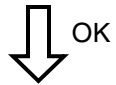
OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

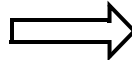
Check the spark plug gap.

Refer to "SPARK PLUGS" in CHAPTER 2.



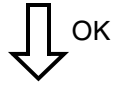
OK

OUT OF SPECIFICATION



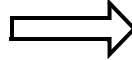
Repair or replace the spark plug.
Refer to "SPARK PLUGS" in CHAPTER 2.

Check the ignition spark gap.



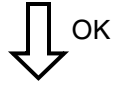
OK

OUT OF SPECIFICATION



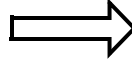
Replace the ignition coil.

Check the ignition coil resistance.



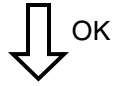
OK

OUT OF SPECIFICATION



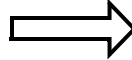
Replace the ignition coil.

Check the pickup coil.



OK

OUT OF SPECIFICATION



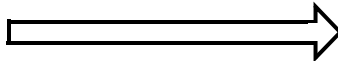
Replace the stator coil assembly.

Check the engine stop switch, throttle switch and main switch.



OK

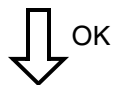
FAULTY



Replace the right handlebar switch, and/or main switch.

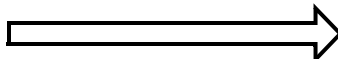
Check the throttle position sensor.

Refer to "THROTTLE POSITION SENSOR (T.P.S.)
INSPECTION AND ADJUSTMENT" in CHAPTER 7.



OK

FAULTY



Replace the throttle position sensor.

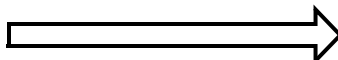
Check the ignition system's wiring.

Refer to "CIRCUIT DIAGRAM".



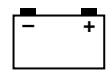
OK

FAULTY



Properly connect or repair the ignition system's wiring.

Correct the connection and/or ignitor unit.



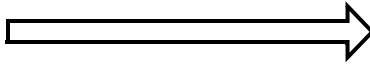
T.O.R.S. OPERATES.

Is self-diagnosis code 15, 16, or 42 displayed?



NO

YES



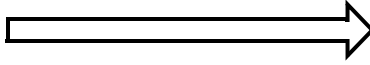
Check the affected item(s).

Has carburetor icing occurred or is foreign material stuck in the carburetor?



NO

YES



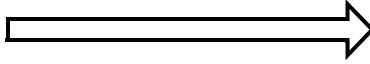
Perform carburetor maintenance.

Is the throttle switch malfunctioning?



NO

YES



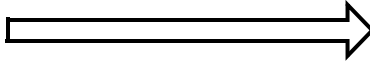
Repair or replace the throttle switch.

Is the throttle cable free play out of specification?



NO

YES



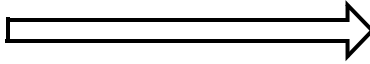
Adjust the throttle cable free play.
Refer to "THROTTLE CABLE FREE PLAY
ADJUSTMENT" in CHAPTER 2.

Was the engine revved with the V-belt removed?



NO

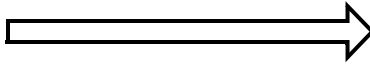
YES



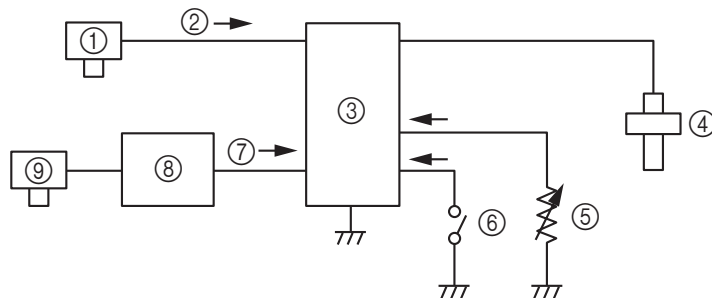
When the engine is revved with the V-belt removed, the speed sensor is diagnosed as malfunctioning and T.O.R.S. operates.

Is the throttle position sensor, speedometer unit, or speed sensor installed incorrectly?

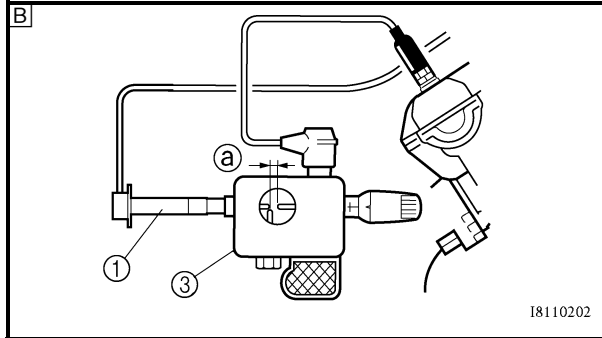
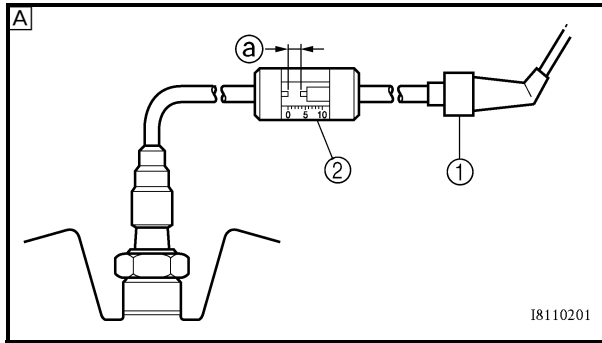
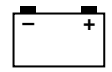
YES



Install correctly.



- ① Pickup coil
- ② Engine speed
- ③ Ignitor unit
- ④ Ignition
- ⑤ Throttle position sensor
- ⑥ Throttle switch
- ⑦ Speed
- ⑧ Speedometer unit
- ⑨ Speed sensor



IGNITION SPARK GAP

1. Remove:
 - Ignition coil
2. Measure:
 - Ignition spark gap

Out of specification → Replace the ignition coil.

Measurement steps:

- Disconnect the ignition coil ① from the spark plug.
- Connect the dynamic spark tester ② or ignition checker ③.



Dynamic spark tester:

YM-34487

Ignition checker:

90890-06754

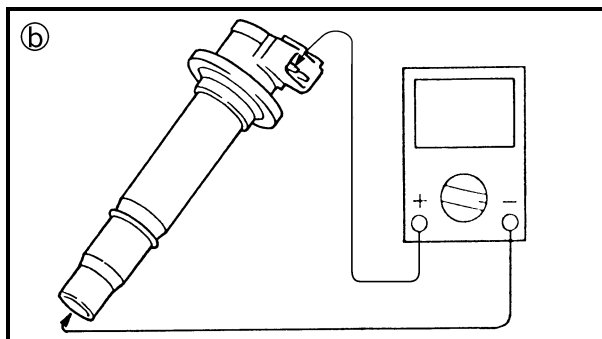
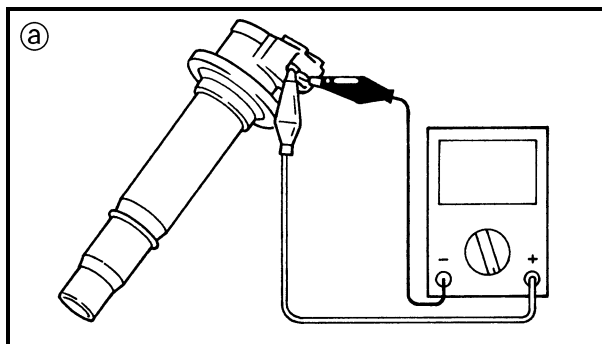
- Set the main switch to "ON".
- Measure the ignition spark gap ①.
- Crank the engine by pushing the start switch and gradually increase the spark gap until a misfire occurs.



Ignition spark gap:
6.0 mm (0.24 in)

A For USA/Canada

B For Europe



IGNITION COIL

1. Disconnect:
 - Ignition coil lead
2. Connect:
 - Pocket tester
3. Measure:
 - Primary coil resistance ①
 - Secondary coil resistance ②

Out of specification → Replace.

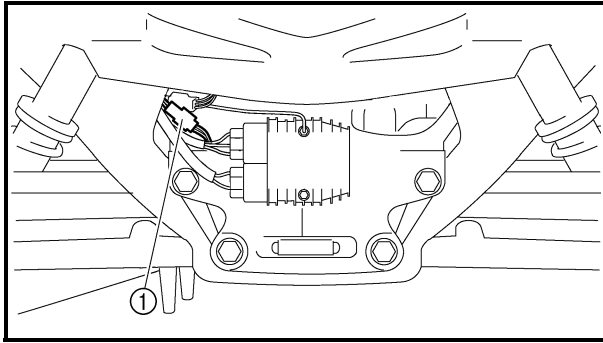
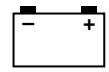


Primary coil resistance:

1.19 ~ 1.61 Ω at 20 °C (68 °F)

Secondary coil resistance:

8.5 ~ 11.5 k Ω at 20 °C (68 °F)

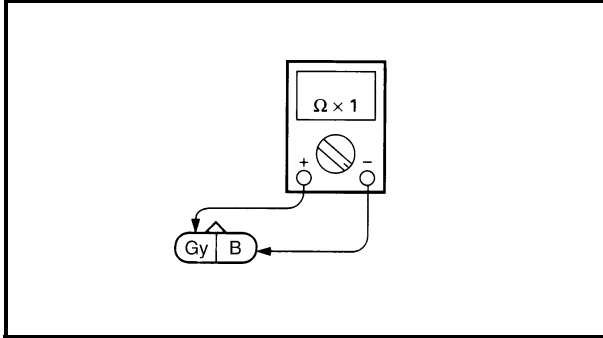


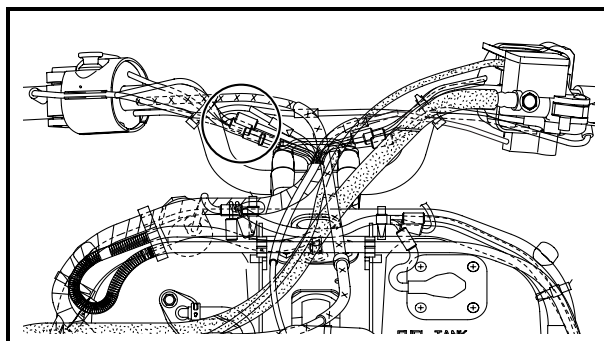
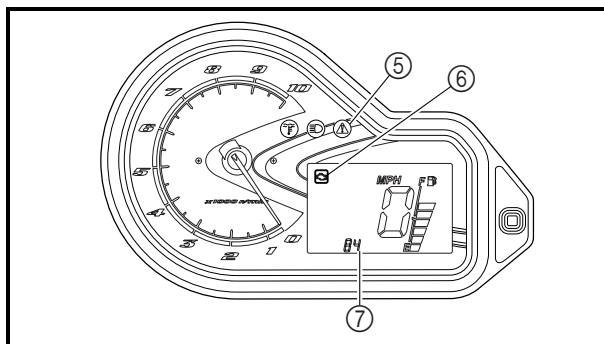
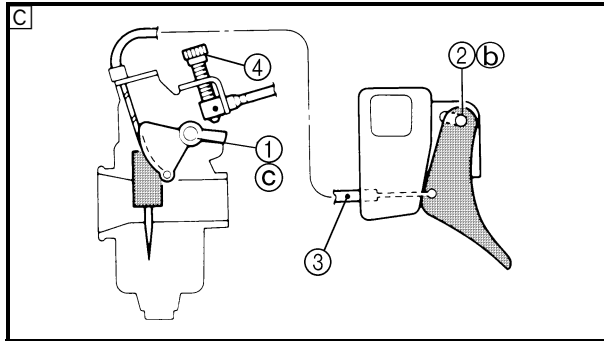
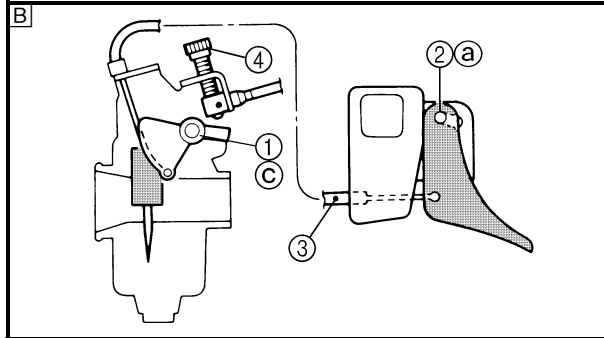
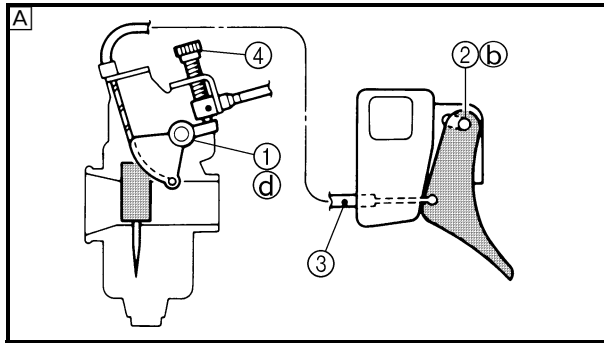
PICKUP COIL

1. Disconnect:
 - Pickup coil coupler ①
2. Connect:
 - Pocket tester
(to the pickup coil coupler)
3. Measure:
 - Pickup coil resistance
Out of specification → Replace.



Pickup coil resistance:
 189 ~ 231 Ω at 20 °C (68 °F)
 (Gray – Black)





THROTTLE OVERRIDE SYSTEM (T.O.R.S.)

If the carburetor or throttle cable should malfunction during operation, T.O.R.S. will operate when the throttle lever is released.

T.O.R.S. is designed to interrupt the ignition and keep the engine revolutions between 2,800 and 3,000 r/min if the carburetor fails to return to idle when the lever is released.

⚠ WARNING

- If T.O.R.S. operates, make sure that the cause of the malfunction is corrected and that the engine can be operated without a problem before restarting the engine.
- Be sure to use the standard resistance-type spark plug and ignition coil. Otherwise, T.O.R.S. will not work properly.

Status	A	B	C
Idling or starting	Idling or starting	Running	Trouble
Throttle switch	OFF	ON	OFF
Throttle position sensor	CLOSE	OPEN	OPEN
Engine	Running	Running	T.O.R.S. will operate

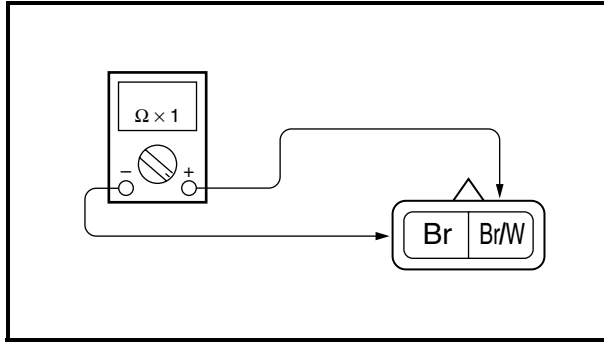
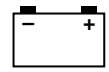
- ① Throttle valve (throttle position sensor)
- ② Throttle switch
- ③ Throttle cable
- ④ Throttle stop screw
- a ON
- b OFF
- c Open
- d Close

NOTE:

When the T.O.R.S. is activated, the warning light ⑤ and self-diagnosis warning indicator ⑥ will flash and the two-digit error code "84" ⑦ will flash in the tripmeter/odometer display.

ENGINE STOP SWITCH

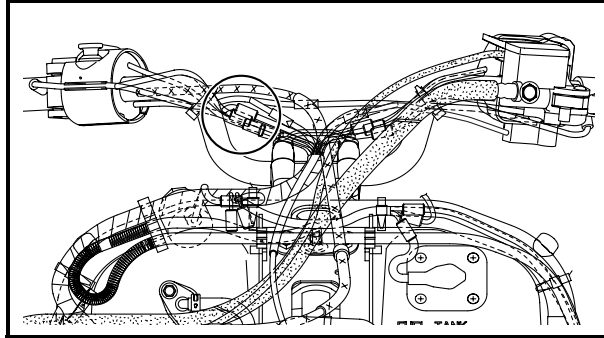
1. Disconnect:
 - Engine stop switch coupler
2. Connect:
 - Pocket tester



3. Check:

- Engine stop switch continuity
- Faulty → Replace the right handlebar switch.

Switch position	Continuity
RUN (pulled out)	Yes
OFF (pushed in)	No



THROTTLE SWITCH

1. Disconnect:

- Throttle switch couplers

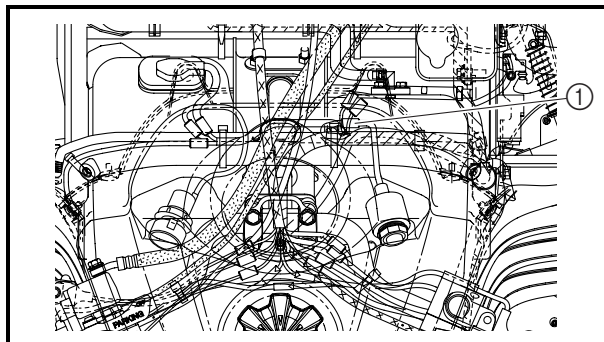
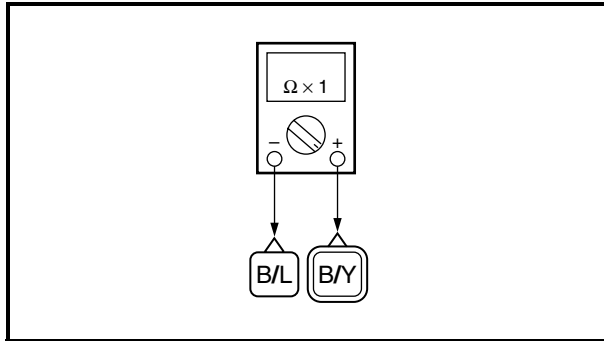
2. Connect:

- Pocket tester

3. Check:

- Throttle switch continuity
- Faulty → Replace the right handlebar switch.

Throttle switch position	Continuity
Throttle lever is operated.	Yes
Throttle lever is not operated.	No



MAIN SWITCH

1. Disconnect:

- Main switch coupler ①

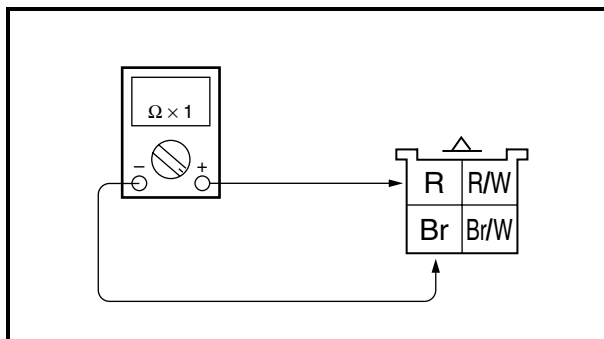
2. Connect:

- Pocket tester

3. Check:

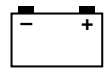
- Main switch continuity
- Faulty → Replace.

Switch position	Continuity
OFF	No
ON	Yes

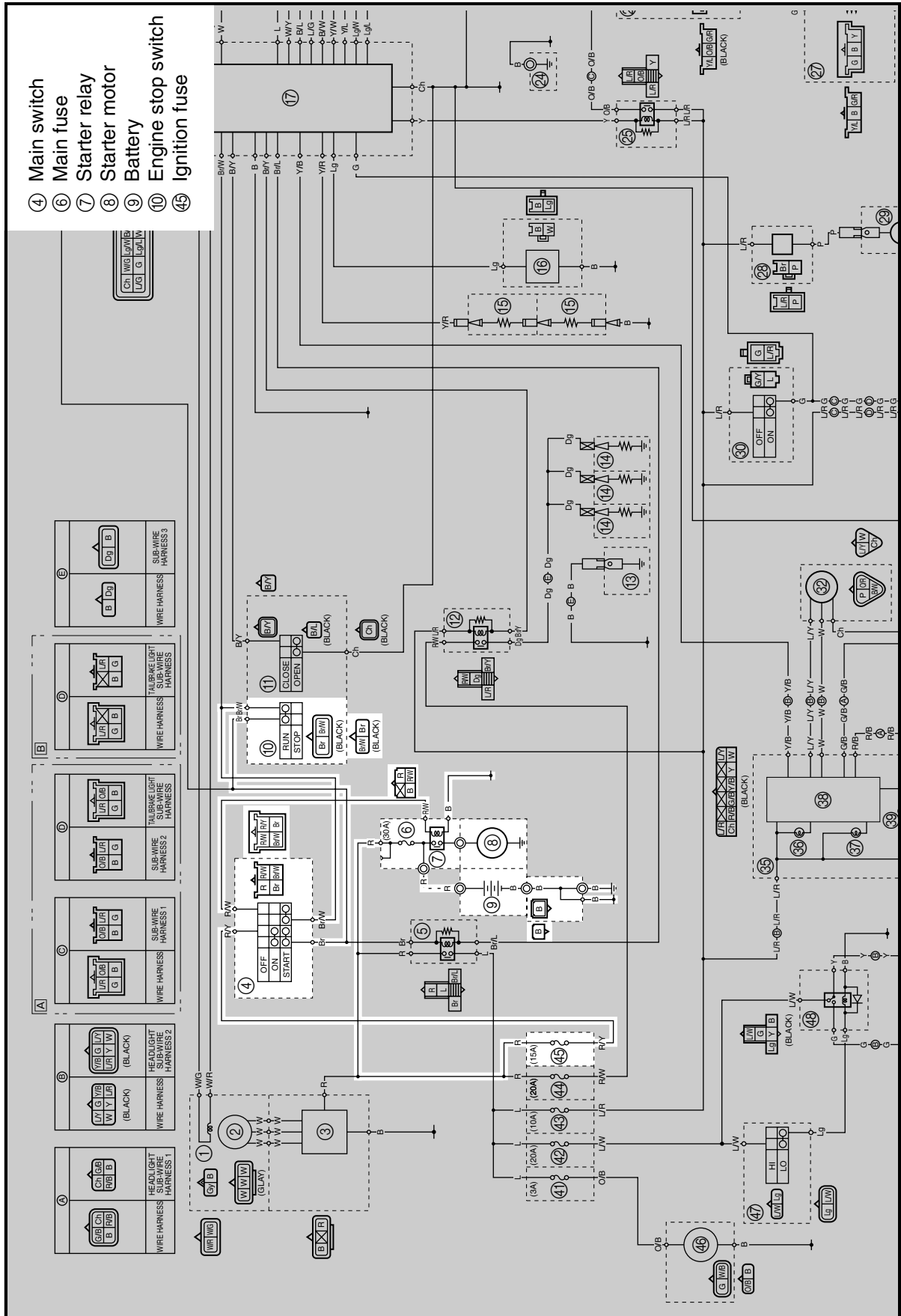


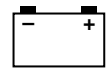
Switch position	Color code			
	Br	R	Br/W	R/W
OFF				
ON	○ — ○			
START	○ — ○		○ — ○	

○ — ○ Continuity



ELECTRICAL STARTING SYSTEM CIRCUIT DIAGRAM



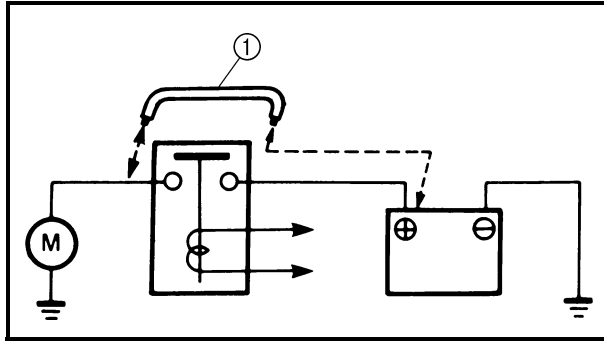


TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

1. Connect:

- Starter relay terminals (battery side and starter motor side)



① Jumper lead

2. Check:

- Starter motor operation



NO

Check the battery and connectors.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

OK

NO

Charge and/or replace the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

Repair or replace the starter motor.

⚠ WARNING

A wire for the jumper lead ① must have the equivalent capacity as that of the battery lead or more, otherwise it may cause the jumper lead to be burned.

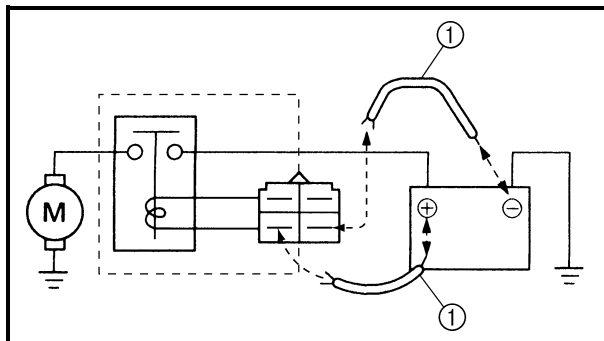
This check is likely to produce sparks, so be sure that no flammable gas or fluid is in the vicinity.

3. Disconnect:

- Starter relay coupler

4. Connect:

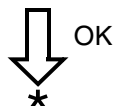
- Starter relay coupler terminals



① Jumper lead

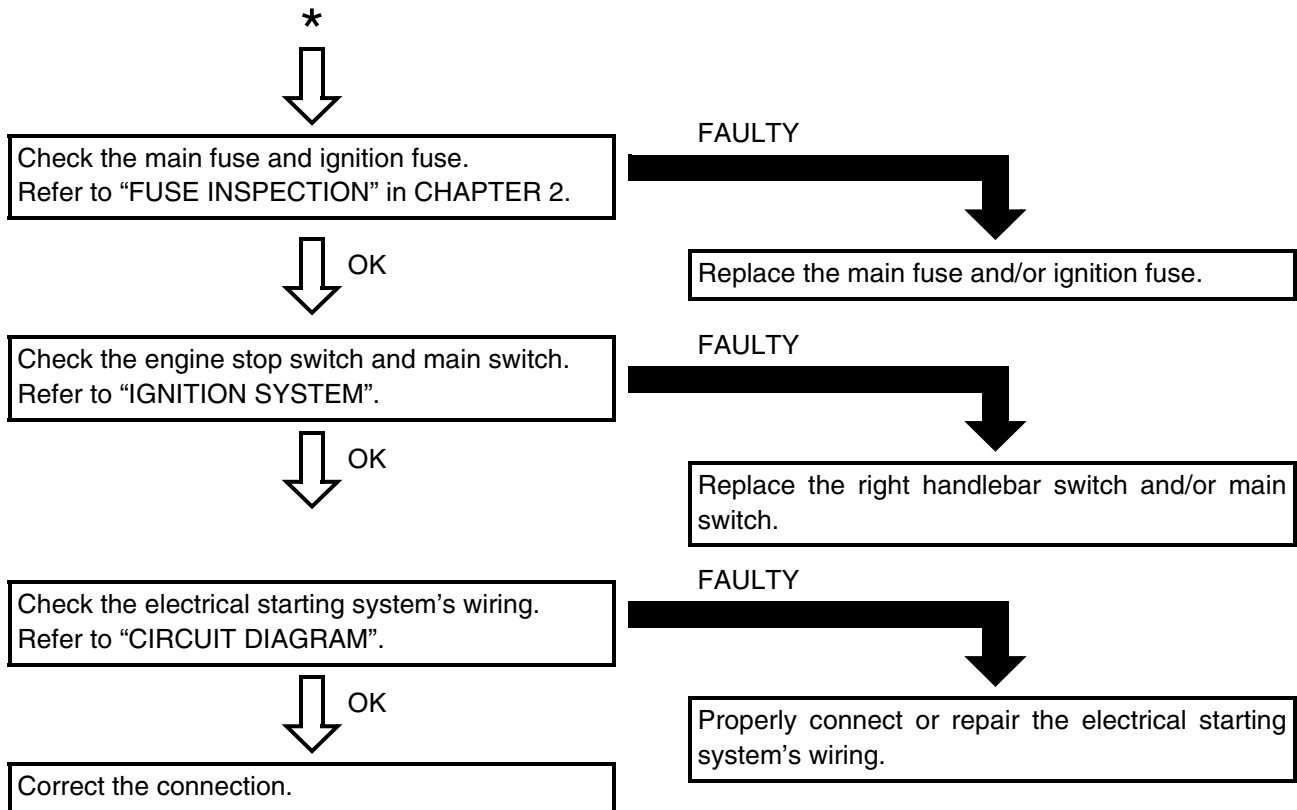
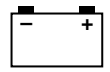
5. Check:

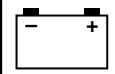
- Starter motor operation



NO

Replace the starter relay.



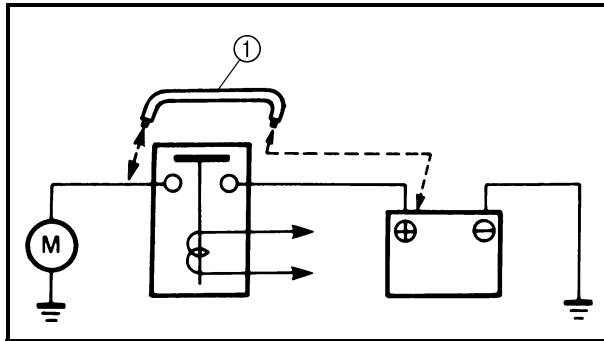


FELSÖKNING

STARTMOTORN FUNGERAR INTE.

1. Anslut:

- Startreläpolerna
(batterisidan och startmotorsidan)



① Förbindningsledning

2. Kontrollera:

- Startmotorns funktion



NEJ

Kontrollera batteriet och kontakterna.
Vi hänvisar till "INSPEKTION AV BATTERI" i kapitel 2.

OK

NEJ

Ladda och/eller byt ut batteriet.
Vi hänvisar till "INSPEKTION AV BATTERI" i kapitel 2.

Reparera eller byt ut startmotorn.

⚠ VARNING

Tråden för förbindningsledningen ① måste ha likvärdig kapacitet som batterikabeln eller högre kapacitet. Annars kan det hända att förbindningsledningen bränns av.

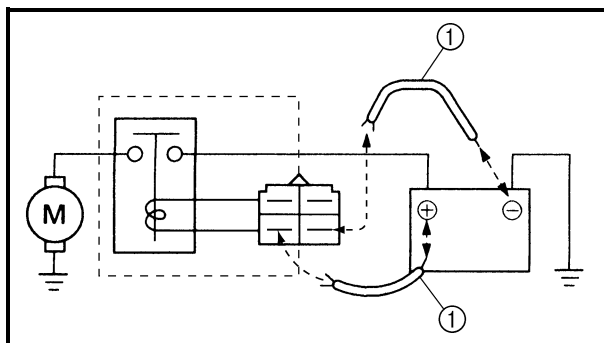
Denna kontroll kommer troligen att orsaka gnistor, så se till att inga antändliga gaser eller vätskor finns i närheten.

3. Koppla ur:

- Startreläets kopplingsdon

4. Anslut:

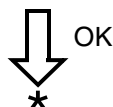
- Startreläets kopplingspoler



① Förbindningsledning

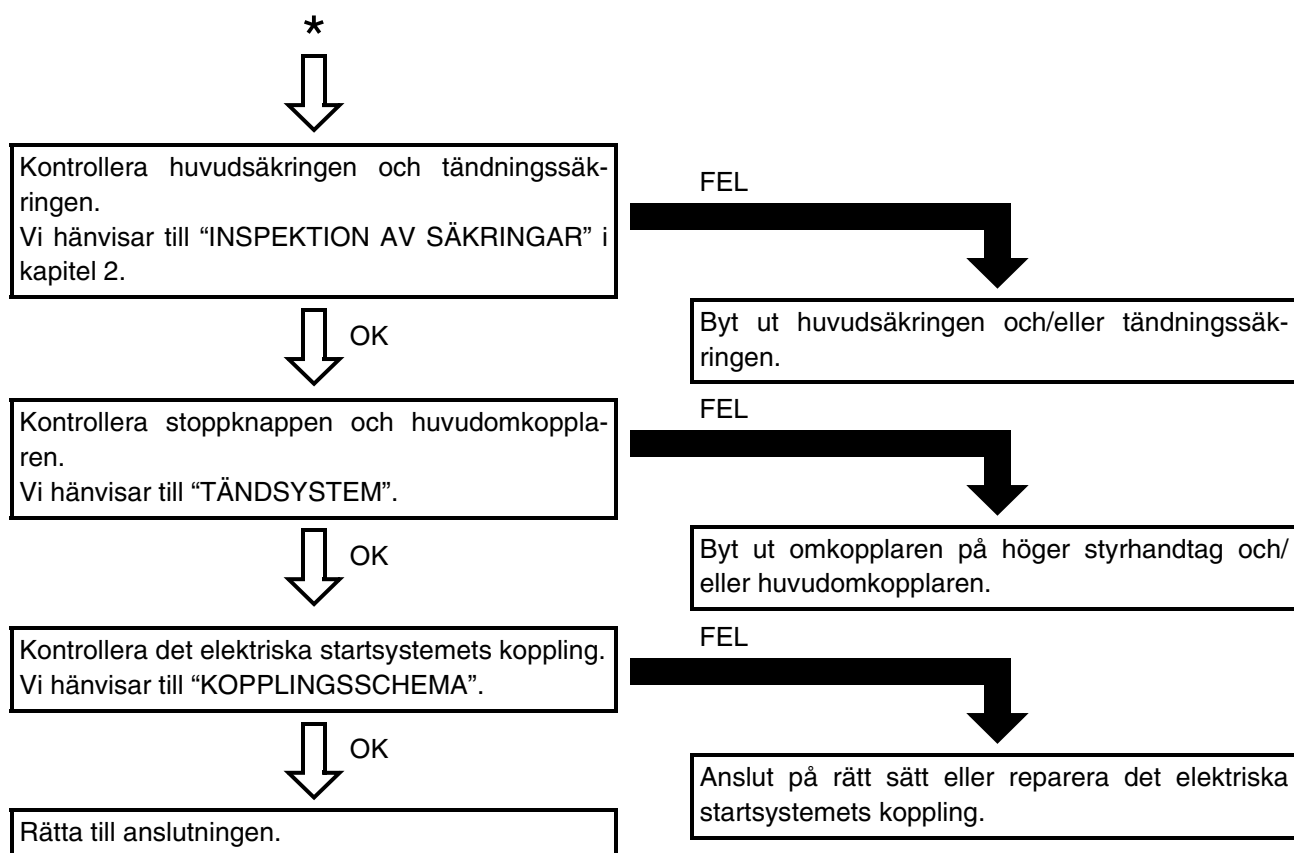
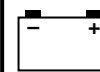
5. Kontrollera:

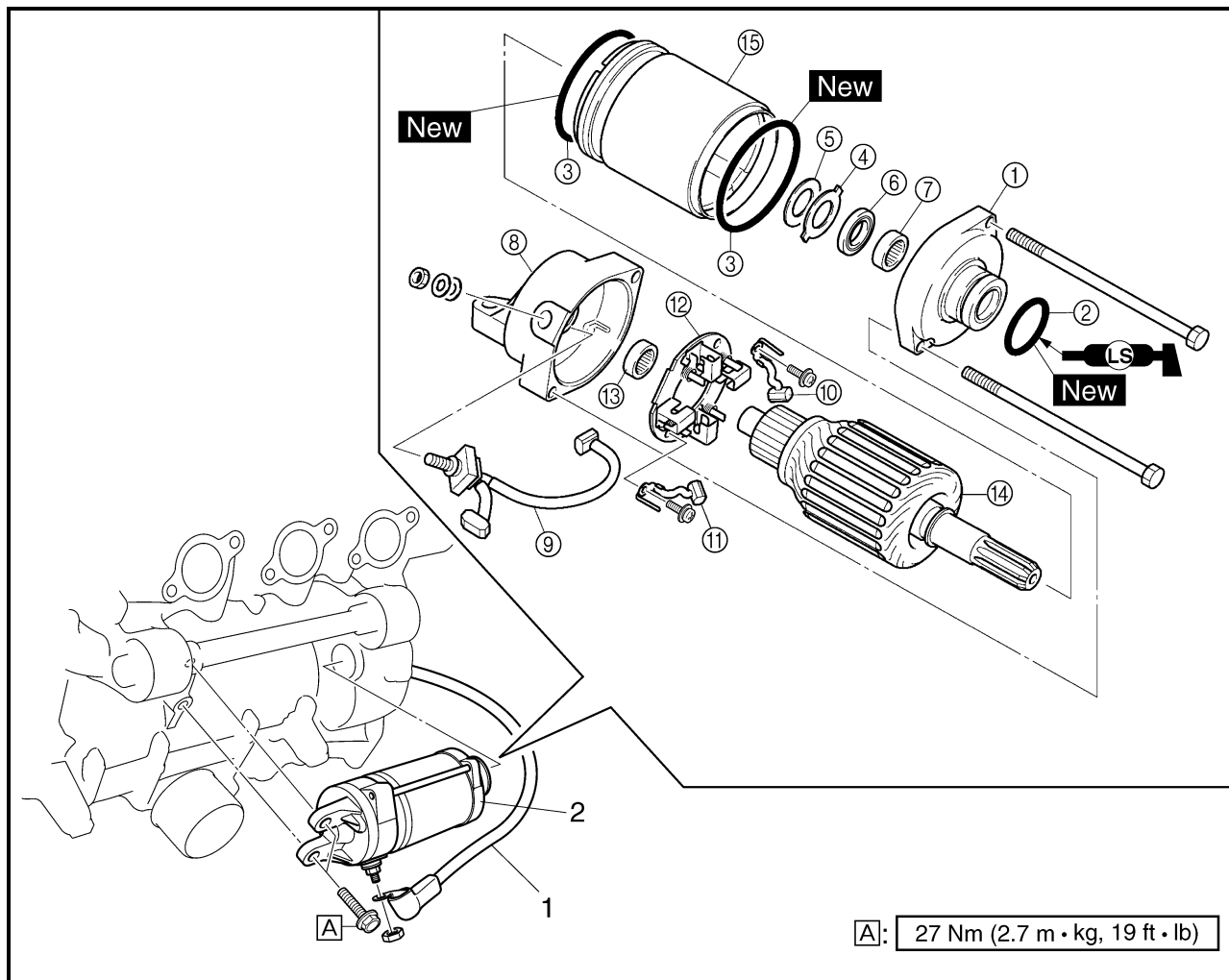
- Startmotorns funktion

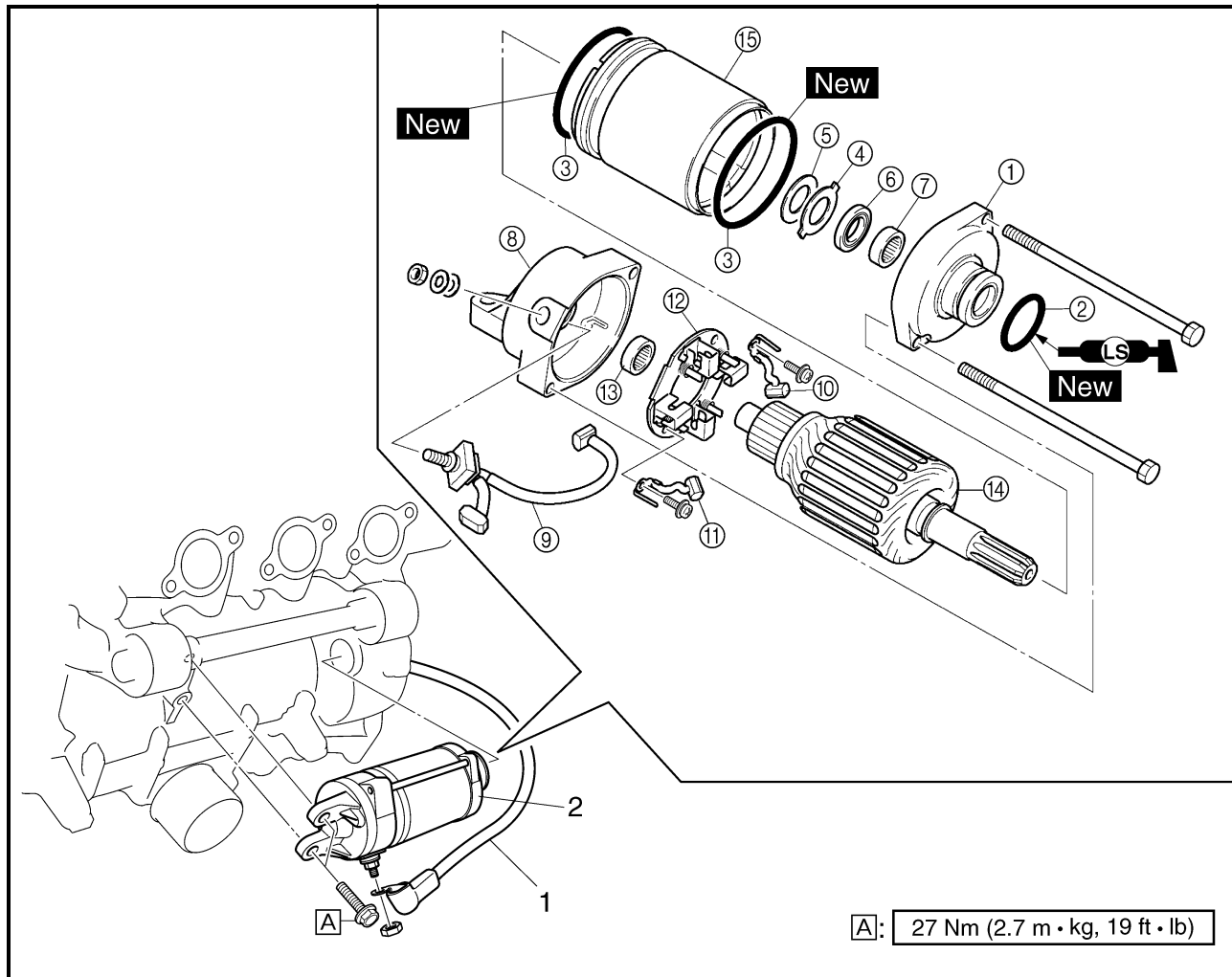


NEJ

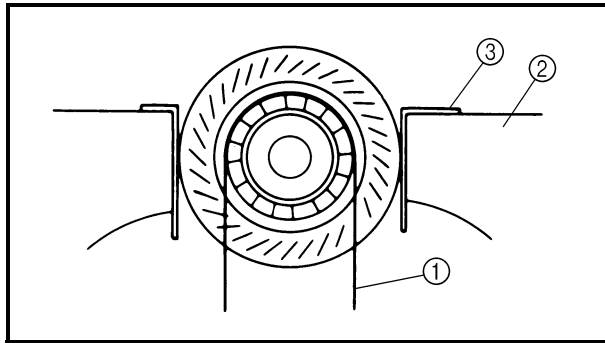
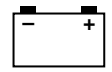
Byt ut startreläet.







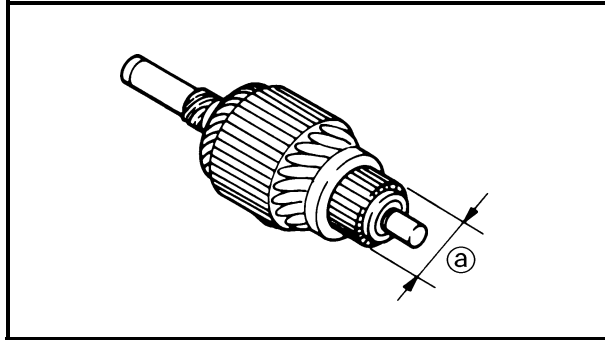
Order	Job name/Part name	Q'ty	Remarks
⑪	Brush 3	1	For assembly, reverse the disassembly procedure.
⑫	Brush holder	1	
⑬	Bearing	1	
⑭	Armature assembly	1	
⑮	Starter motor yoke	1	

**Inspection****1. Inspect:**

- Commutator (outer surface)
Dirty → Clean with #600 grit sandpaper ①.
Hold the armature in a vise ② and copper or aluminium plate ③.

CAUTION:

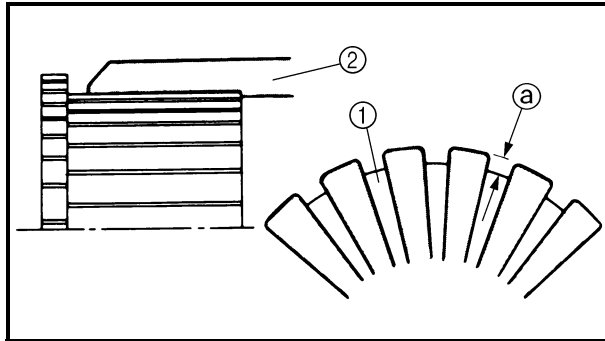
Lightly grip the armature with a vise.

**2. Measure:**

- Commutator diameter ②
Measure the diameter ② of the commutator at points where the brush comes in contact.
Out of specification → Replace the starter motor.



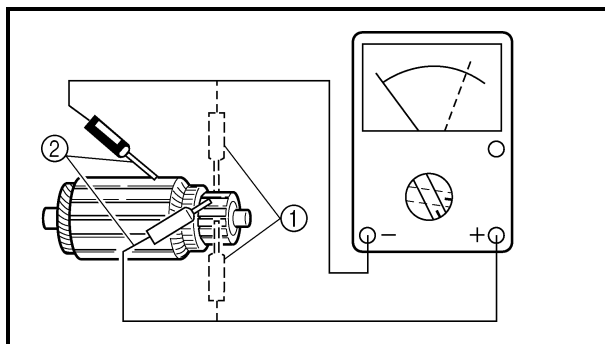
Commutator diameter wear limit:
27.5 mm (1.08 in)

**3. Measure:**

- Mica undercut (insulation depth) ②
(between commutator segments)
Out of specification → Scrape mica ① to proper limits.
Use a hacksaw blade ② that is ground to fit.



Mica undercut:
1.5 mm (0.059 in)

**4. Measure:**

- Armature coil resistance
(insulation/continuity)
Defect(s) → Replace the starter motor.

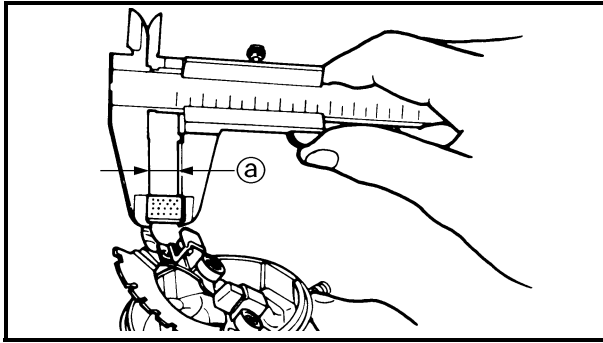
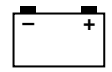
Inspecting steps:

- Connect the pocket tester for the continuity check ① and the insulation check ②.
- Measure the armature coil resistances.



Armature coil resistance:
Continuity check:
0.008 ~ 0.010 Ω at 20 °C (68 °F)
Insulation check:
More than 100 k Ω at 20 °C (68 °F)

- If the resistance is incorrect, replace the starter motor.



5. Measure:

- Brush length ①

Out of specification → Replace the starter motor.



Brush length wear limit:
5.0 mm (0.20 in)

6. Measure:

- Brush spring pressure

Fatigue/out of specification → Replace as a set.

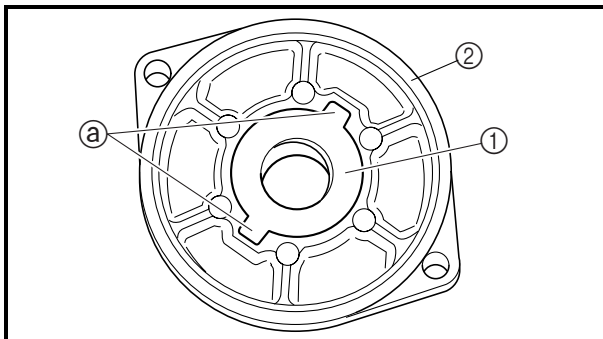
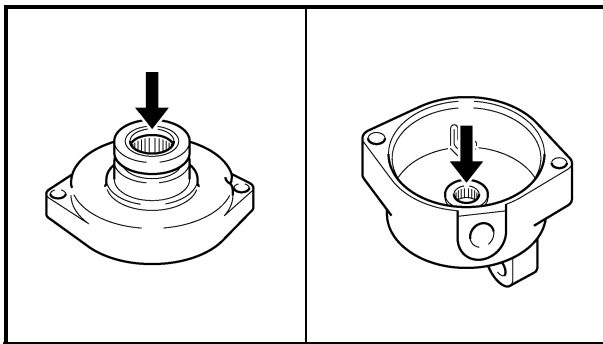


Brush spring pressure:
7.36 ~ 11.04 N
(750 ~ 1,126 g, 26.5 ~ 39.7 oz)

7. Check:

- Bearings
- Oil seal

Damage/wear → Replace the defective part(s).

**Assembly**

Reverse the “Disassembly” procedure.

Note the following points.

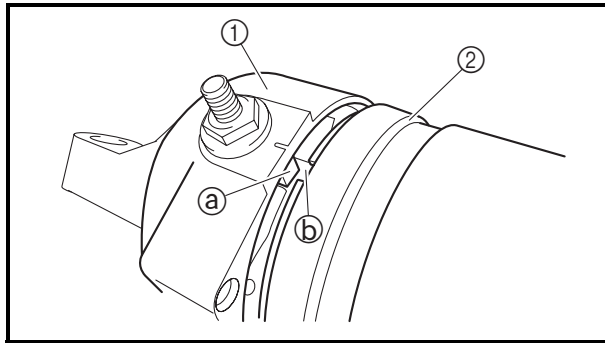
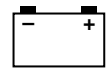
1. Before installing the front bracket and rear bracket, apply bearing grease to the bearings of the front bracket and rear bracket.

2. Install:

- Oil seal **New**
- Lock washer ①

NOTE:

Align the projection ① on the lock washer ① with the slot in the front bracket ②.



3. Install:

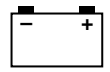
- O-ring **New**
- Rear bracket ①

NOTE:

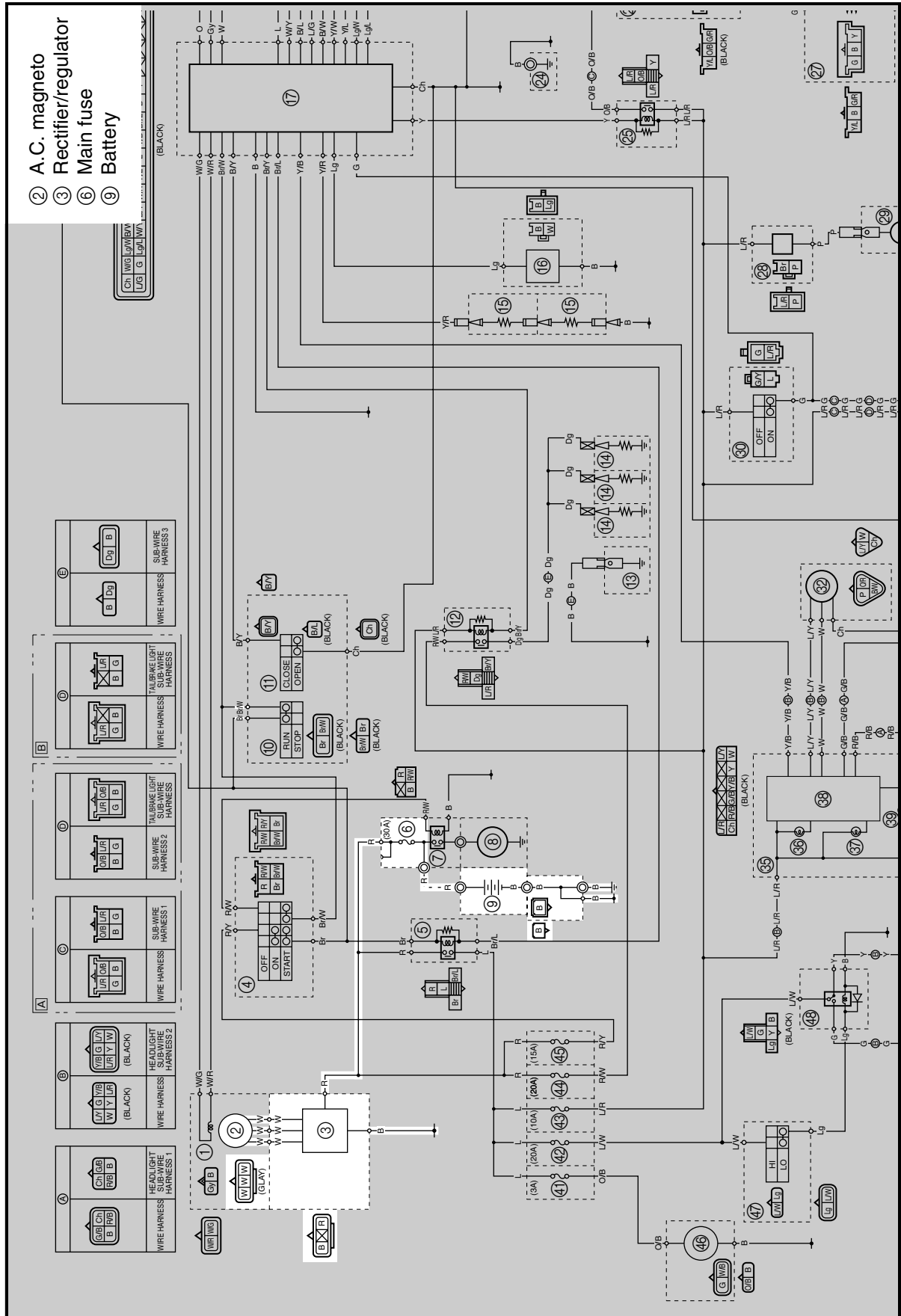
Align the projection ① on the rear bracket ① with the slot ② in the starter motor yoke ②.

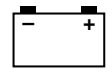
4. Install:

- Starter motor yoke
- O-ring **New**
- Front bracket
- Bolts



CHARGING SYSTEM CIRCUIT DIAGRAM





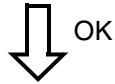
TROUBLESHOOTING

BATTERY IS NOT CHARGED.

1. Connect:
 - Pocket tester
(to the battery terminals)
2. Measure:
 - Battery voltage



Battery voltage:
more than 12 V at 20 °C (68 °F)



3. Start the engine and accelerate to 5,000 r/min.

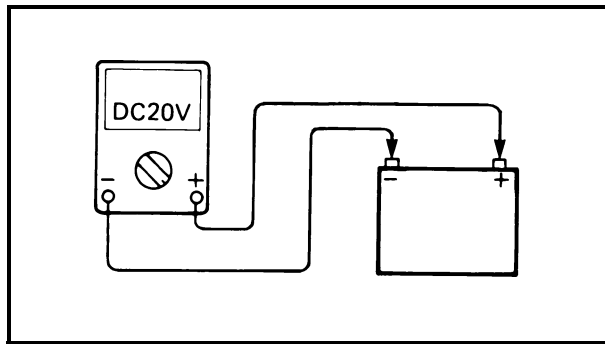
NOTE:

Place the machine onto a suitable stand to raise the track off of the ground.

4. Measure:
 - Charging voltage



Charging voltage:
14 V/5,000 r/min

**CAUTION:**

Never disconnect the battery cables while the generator is operating; otherwise, the rectifier/regulator will be damaged.



Check the charging system's wiring. Refer to "CIRCUIT DIAGRAM".



Correct the connector.

OUT OF SPECIFICATION

- Check the battery.
 - Replace and/or charge the battery.
- Refer to "BATTERY INSPECTION" in CHAPTER 2.

OUT OF SPECIFICATION

- Check the main fuse.
- Refer to "FUSE INSPECTION" in CHAPTER 2.
- Check the stator coil.

OK

FAULTY

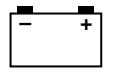
Replace the main fuse and/or the stator coil assembly.

Replace the rectifier/regulator.

FAULTY

Properly connect or repair the charging system's wiring.

ELEC



**BATTERY****Inspection**

1. Inspect:

- Battery condition

Refer to "BATTERY INSPECTION" in CHAPTER 2.

Battery Storage

The battery should be stored if the machine is not going to be used for a long period.

1. Remove:

- Battery

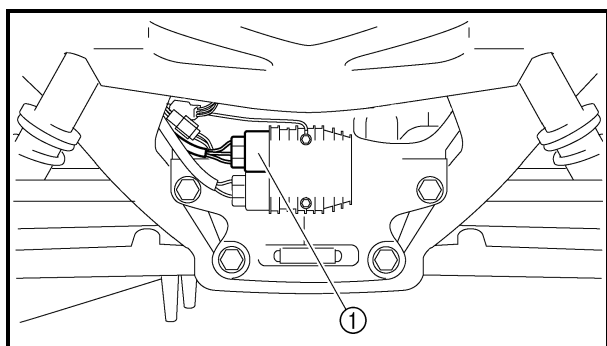
WARNING

When removing the battery, disconnect the negative lead first.

Battery storage and maintenance tips:

- Recharge the battery periodically.
- Store the battery in a cool, dry place.
- Recharge the battery before reinstalling.

Refer to "BATTERY INSPECTION" in CHAPTER 2.

**A.C. MAGNETO**

1. Disconnect:

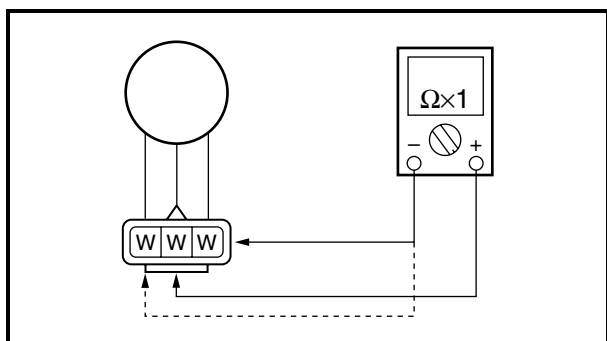
- A.C. magneto coupler ①

2. Connect:

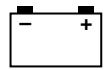
- Pocket tester
(to A.C. magneto coupler)

3. Measure:

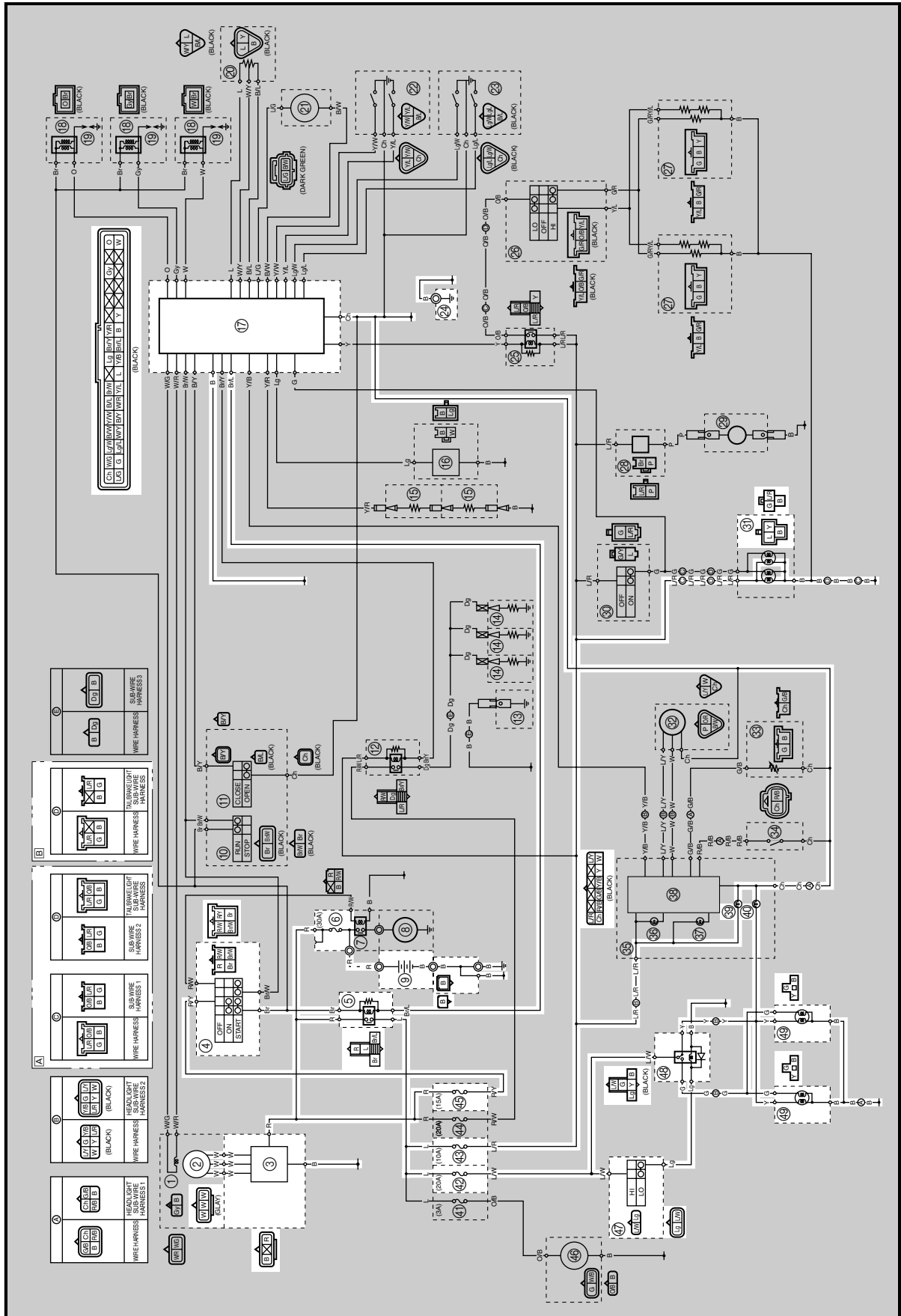
- Stator coil resistance
Out of specification → Replace.

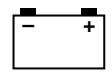


Stator coil resistance:
 $0.22 \sim 0.26 \Omega$ at 20°C (68°F)
 (White – White)



LIGHTING SYSTEM CIRCUIT DIAGRAM





TROUBLESHOOTING

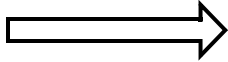
HEADLIGHT AND/OR METER LIGHT DO NOT COME ON.

Check the headlight and meter light bulb(s).



OK

NO CONTINUITY



Replace the bulb(s).

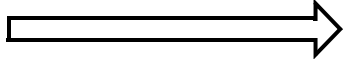
Check the main fuse, ignition fuse, and headlight fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

FAULTY



Replace the main fuse, ignition fuse, and/or headlight fuse.

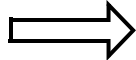
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

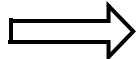
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

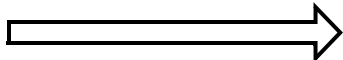
Check the main switch.

Refer to "CIRCUIT DIAGRAM".



OK

FAULTY



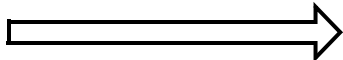
Replace the main switch.

Check the headlight beam switch.



OK

FAULTY



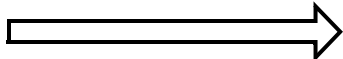
Replace the left handlebar switch.

Check the headlight relay.



OK

FAULTY



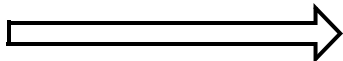
Replace the headlight relay.

Check the load control relay.



OK

FAULTY



Replace the load control relay.

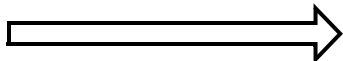
Check the lighting system's wiring.

Refer to "CIRCUIT DIAGRAM".



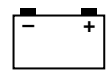
OK

FAULTY

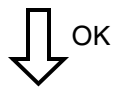


Properly connect or repair the lighting system's wiring.

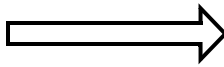
Correct the connection and/or replace the rectifier/regulator and/or ignitor unit.

**TAIL LIGHT DOES NOT COME ON.**

Check the tail/brake light bulb(s).

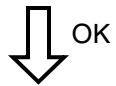


NO CONTINUITY

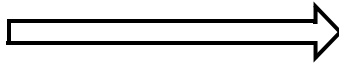


Replace the tail/brake light bulb(s).

Check the main fuse, ignition fuse, and signal fuse.
Refer to "FUSE INSPECTION" in CHAPTER 2.



FAULTY

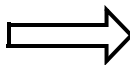


Replace the main fuse, ignition fuse, and/or signal fuse.

Check the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.



OUT OF SPECIFICATION

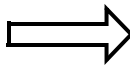


Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

Check the stator coil.
Refer to "CHARGING SYSTEM".



OUT OF SPECIFICATION

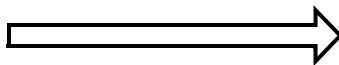


Replace the stator coil assembly.

Check the main switch.
Refer to "CIRCUIT DIAGRAM".



FAULTY

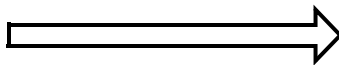


Replace the main switch.

Check the load control relay.

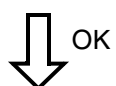


FAULTY

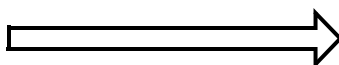


Replace the load control relay.

Check the lighting system's wiring.
Refer to "CIRCUIT DIAGRAM".

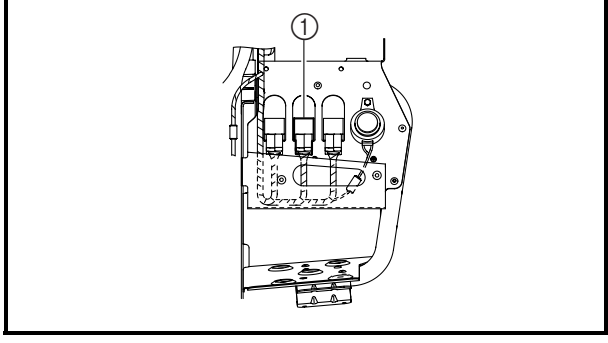
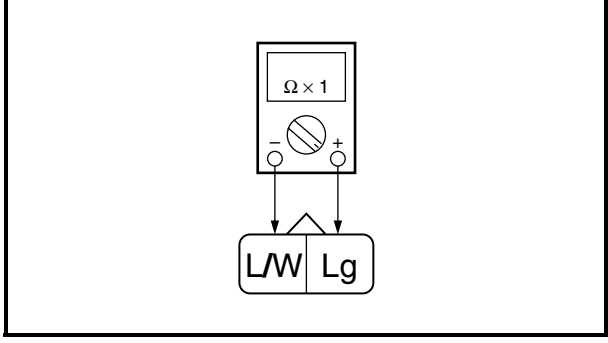
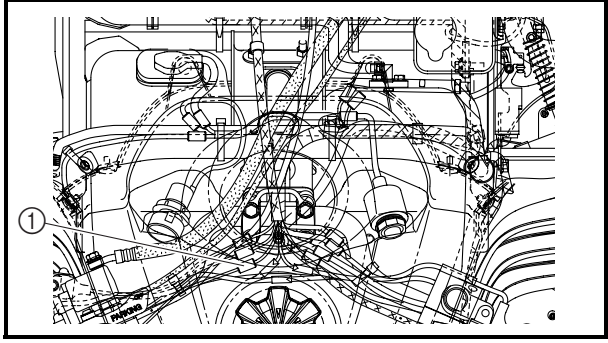
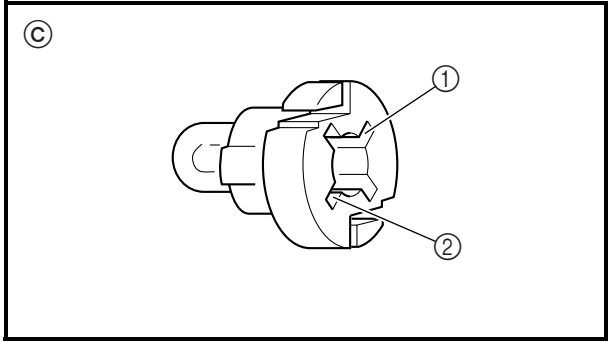
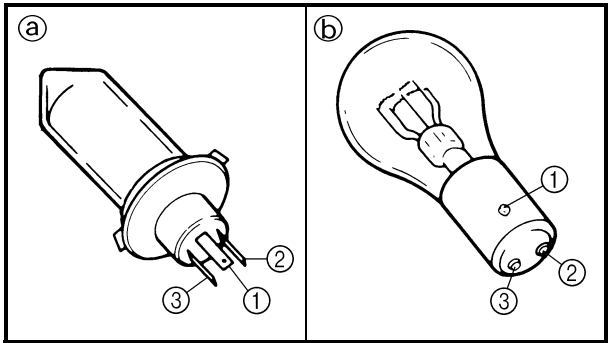
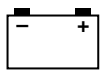


FAULTY



Properly connect or repair the lighting system's wiring.

Correct the connection and/or replace the rectifier/
regulator and/or ignitor unit.



BULB(S)

1. Remove:
 - Headlight bulb ①
 - Tail/brake light bulb ②
 - Meter light bulb ③
2. Connect:
 - Pocket tester
(to the bulb terminals)

⚠ 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. Check:
 - Bulb(s)

Terminal	Continuity
① – ②	Yes
① – ③	Yes

HEADLIGHT BEAM SWITCH

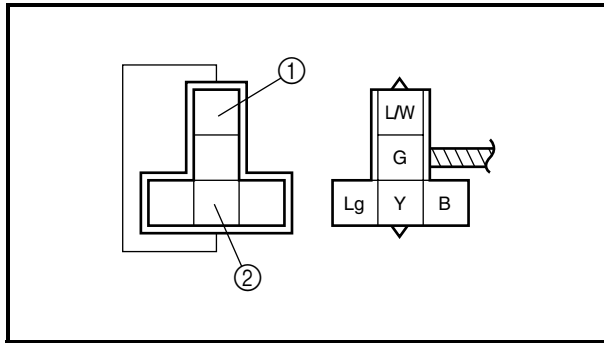
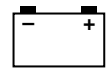
1. Disconnect:
 - Headlight beam switch coupler ①
2. Connect:
 - Pocket tester
(to the headlight beam switch coupler)

3. Check:
 - Headlight beam switch continuity
Faulty → Replace the left handlebar switch.

Switch position	Continuity
HI	No
LO	Yes

HEADLIGHT RELAY

1. Inspect:
 - Headlight relay (with the black coupler) ①



Inspection steps:

- Disconnect the headlight relay from the coupler.
- Connect the pocket tester ($\Omega \times 1$) to the headlight relay terminals as shown.

Positive tester probe → Blue/White ①

Negative tester probe → Yellow ②

- If headlight relay does not have continuity between the blue/white and yellow terminals, replace it.
- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the headlight relay terminals as shown.

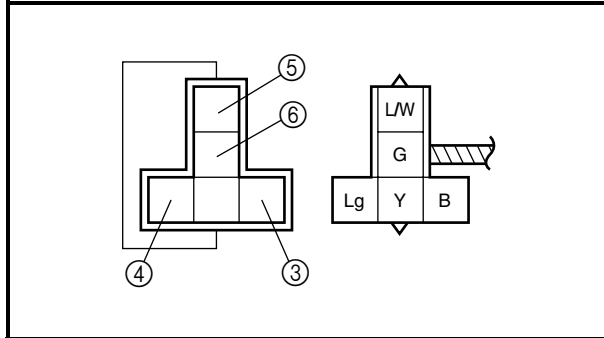
Positive battery terminal → Light green ③

Negative battery terminal → Black ④

Positive tester probe → Blue/White ⑤

Negative tester probe → Green ⑥

- If headlight relay does not have continuity between the blue/white and green terminals, replace it.



LOAD CONTROL RELAY

1. Inspect:

- Load control relay ①

Inspection steps:

- Disconnect the load control relay from the coupler.
- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the load control relay terminals as shown.

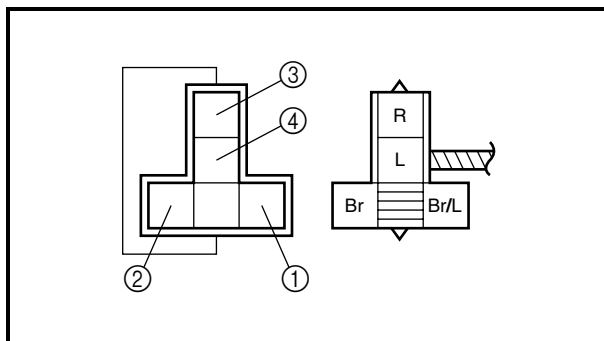
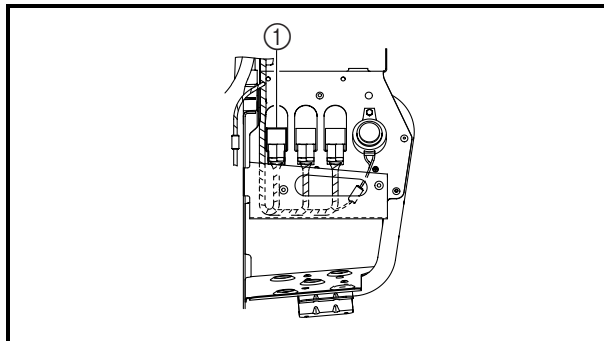
Positive battery terminal → Brown ①

Negative battery terminal → Brown/Blue ②

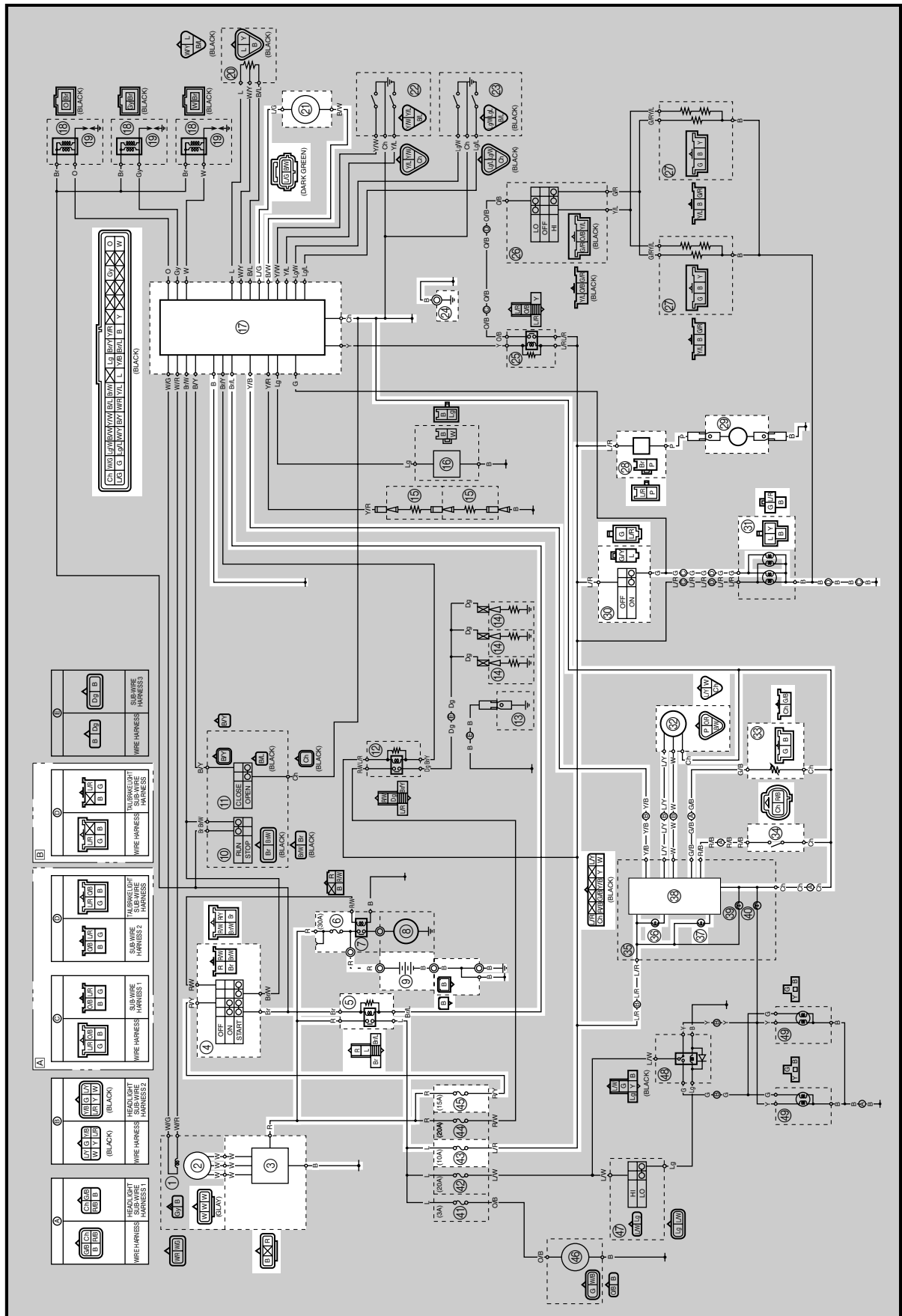
Positive tester probe → Red ③

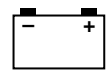
Negative tester probe → Blue ④

- If load control relay does not have continuity between the red and blue terminals, replace it.



SIGNAL SYSTEM CIRCUIT DIAGRAM





TROUBLESHOOTING

BRAKE LIGHT DOES NOT COME ON.

Check the tail/brake light bulb(s).
Refer to "LIGHTING SYSTEM".

↓ OK NO CONTINUITY → Replace the bulb(s).

Check the main fuse, ignition fuse, and signal fuse.
Refer to "FUSE INSPECTION" in CHAPTER 2.

↓ OK FAULTY → Replace the main fuse, ignition fuse, and/or signal fuse.

Check the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

↓ OK OUT OF SPECIFICATION → Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

Check the stator coil.
Refer to "CHARGING SYSTEM".

↓ OK OUT OF SPECIFICATION → Replace the stator coil assembly.

Check the main switch.
Refer to "IGNITION SYSTEM".

↓ OK FAULTY → Replace the main switch.

Check the brake light switch.

↓ OK FAULTY → Replace the brake light switch.

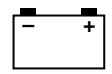
Check the load control relay.
Refer to "IGNITION SYSTEM".

↓ OK FAULTY → Replace the load control relay.

Check the signal system's wiring.
Refer to "CIRCUIT DIAGRAM".

↓ OK FAULTY → Properly connect or repair the signal system's wiring.

Correct the connection and/or replace the rectifier/
regulator and/or ignitor unit.

**LOW COOLANT TEMPERATURE INDICATOR LIGHT, COOLANT TEMPERATURE WARNING INDICATOR AND/OR WARNING LIGHT DO NOT COME ON.**

Check the low coolant temperature indicator light bulb and warning light bulb.
Refer to "LIGHTING SYSTEM".

↓ OK NO CONTINUITY → Replace the low coolant temperature indicator light bulb and/or warning light bulb.

Check the main fuse, ignition fuse, and signal fuse.
Refer to "FUSE INSPECTION" in CHAPTER 2.

↓ OK FAULTY → Replace the main fuse, ignition fuse, and/or signal fuse.

Check the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

↓ OK OUT OF SPECIFICATION → Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

Check the stator coil.
Refer to "CHARGING SYSTEM".

↓ OK OUT OF SPECIFICATION → Replace the stator coil assembly.

Check the main switch.
Refer to "IGNITION SYSTEM".

↓ OK FAULTY → Replace the main switch.

Check the coolant temperature sensor.

↓ OK FAULTY → Replace the coolant temperature sensor.

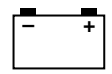
Check the load control relay.
Refer to "IGNITION SYSTEM".

↓ OK FAULTY → Replace the load control relay.

Check the signal system's wiring.
Refer to "CIRCUIT DIAGRAM".

↓ OK FAULTY → Properly connect or repair the signal system's wiring.

Correct the connection and/or replace the meter assembly and/or rectifier/regulator and/or ignitor unit.

**FUEL METER AND/OR FUEL LEVEL WARNING INDICATOR AND/OR WARNING LIGHT DOES NOT OPERATE.**

Check the warning light bulb.
Refer to "LIGHTING SYSTEM".

↓ OK NO CONTINUITY → Replace the bulb.

Check the main fuse, ignition fuse, and signal fuse.
Refer to "FUSE INSPECTION" in CHAPTER 2.

↓ OK FAULTY → Replace the main fuse, ignition fuse, and/or signal fuse.

Check the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

↓ OK OUT OF SPECIFICATION → Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

Check the stator coil.
Refer to "CHARGING SYSTEM".

↓ OK OUT OF SPECIFICATION → Replace the stator coil assembly.

Check the main switch.
Refer to "IGNITION SYSTEM".

↓ OK FAULTY → Replace the main switch.

Check the fuel sender.

↓ OK FAULTY → Replace the fuel sender.

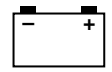
Check the load control relay.
Refer to "IGNITION SYSTEM".

↓ OK FAULTY → Replace the load control relay.

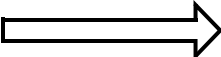
Check the signal system's wiring.
Refer to "CIRCUIT DIAGRAM".

↓ OK FAULTY → Properly connect or repair the signal system's wiring.

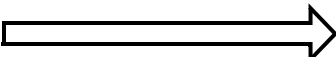
Correct the connection and/or replace the meter assembly and/or rectifier/regulator and/or ignitor unit.

**OIL LEVEL WARNING INDICATOR AND/OR WARNING LIGHT DO NOT COME ON.**

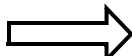
Check the warning light bulb.
Refer to "LIGHTING SYSTEM".

 OK NO CONTINUITY  Replace the bulb.

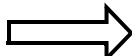
Check the main fuse, ignition fuse, and signal fuse.
Refer to "FUSE INSPECTION" in CHAPTER 2.

 OK FAULTY  Replace the main fuse, ignition fuse, and/or signal fuse.

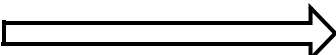
Check the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

 OK OUT OF SPECIFICATION  Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

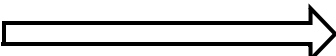
Check the stator coil.
Refer to "CHARGING SYSTEM".

 OK OUT OF SPECIFICATION  Replace the stator coil assembly.

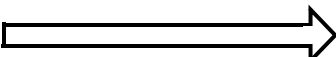
Check the main switch.
Refer to "IGNITION SYSTEM".

 OK FAULTY  Replace the main switch.

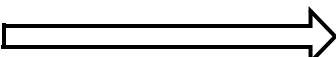
Check the oil level switch.

 OK FAULTY  Replace the oil level switch.

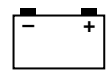
Check the load control relay.
Refer to "IGNITION SYSTEM".

 OK FAULTY  Replace the load control relay.

Check the signal system's wiring.
Refer to "CIRCUIT DIAGRAM".

 OK FAULTY  Properly connect or repair the signal system's wiring.

Correct the connection and/or replace the meter assembly and/or rectifier/regulator and/or ignitor unit.

**SPEEDOMETER DOES NOT OPERATE.**

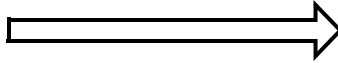
Check the main fuse, ignition fuse, and signal fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

FAULTY



Replace the main fuse, ignition fuse, and/or signal fuse.

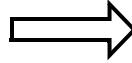
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

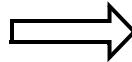
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

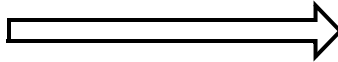
Check the main switch.

Refer to "IGNITION SYSTEM".



OK

FAULTY



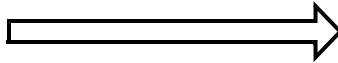
Replace the main switch.

Check the speed sensor.



OK

FAULTY



Replace the speed sensor.

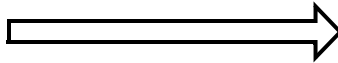
Check the load control relay.

Refer to "IGNITION SYSTEM".



OK

FAULTY



Replace the load control relay.

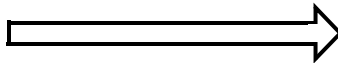
Check the signal system's wiring.

Refer to "CIRCUIT DIAGRAM".



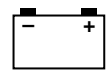
OK

FAULTY



Properly connect or repair the signal system's wiring.

Correct the connection and/or replace the meter assembly and/or rectifier/regulator and/or ignitor unit.

**BACK BUZZER DOES NOT SOUND. (RS90R/RSG90/RST90/RST90TF)**

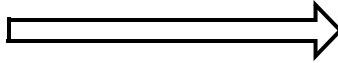
Check the main fuse, ignition fuse, and signal fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

FAULTY



Replace the main fuse, ignition fuse, and/or signal fuse.

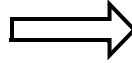
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

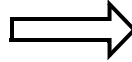
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

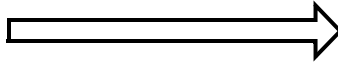
Check the main switch.

Refer to "IGNITION SYSTEM".



OK

FAULTY



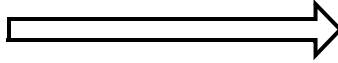
Replace the main switch.

Check the gear position switch.



OK

FAULTY



Replace the gear position switch.

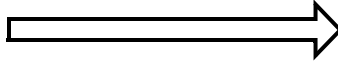
Check the load control relay.

Refer to "IGNITION SYSTEM".



OK

FAULTY



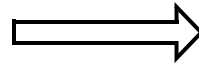
Replace the load control relay.

Check the DC back buzzer.



OK

DOES NOT SOUND



Replace the DC back buzzer.

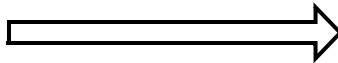
Check the signal system's wiring.

Refer to "CIRCUIT DIAGRAM".



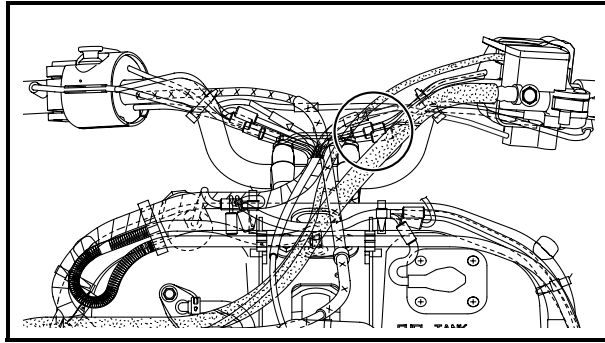
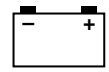
OK

FAULTY



Properly connect or repair the signal system's wiring.

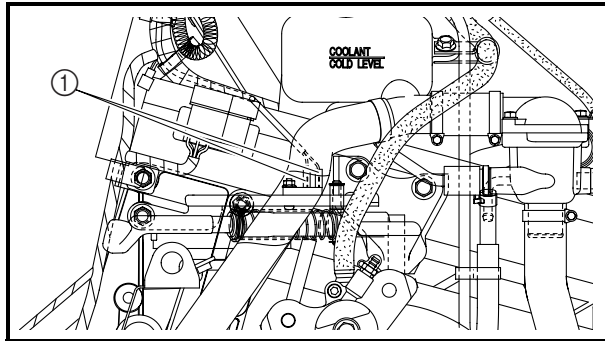
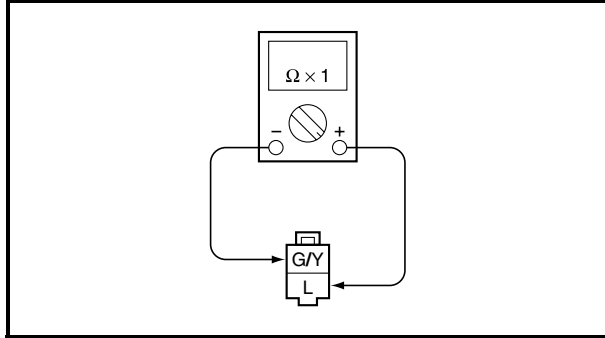
Correct the connection and/or replace the rectifier/
regulator and/or ignitor unit.



BRAKE LIGHT SWITCH

1. Disconnect:
 - Brake light switch coupler
2. Connect:
 - Pocket tester
(to the brake light switch coupler)
3. Check:
 - Brake light switch continuity
Faulty → Replace.

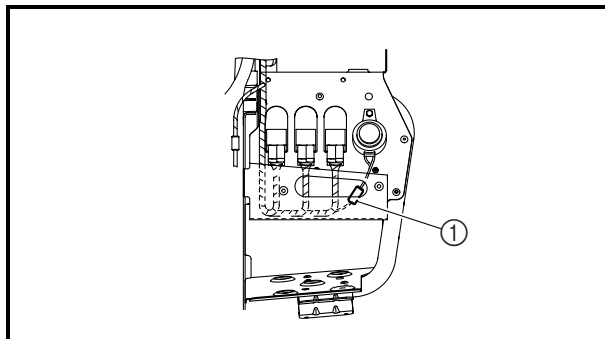
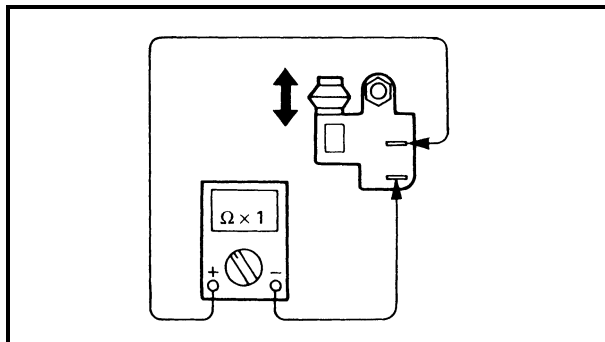
Switch position	Continuity
Brake lever operates	Yes
Brake lever does not operate	No



GEAR POSITION SWITCH (RS90R/RSG90/RST90/RST90TF)

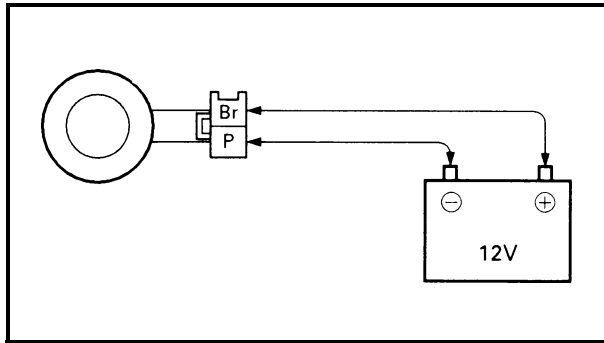
1. Check:
 - Gear position switch ① continuity
Faulty → Replace.

Shift lever position	Continuity
FORWARD	No
REVERSE	Yes



DC BACK BUZZER (RS90R/RSG90/RST90/RST90TF)

1. Disconnect:
 - DC back buzzer coupler ①

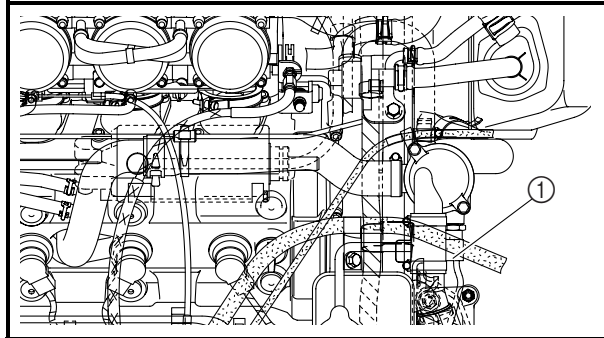


2. Connect:

- Battery

3. Check:

- DC back buzzer
- Does not sound → Replace.



COOLANT TEMPERATURE SENSOR

1. Disconnect the coolant temperature sensor coupler ① and remove the coolant temperature sensor.

CAUTION:

Handle the coolant temperature sensor with special care. Never subject it to shock or allow it to be dropped. If it is dropped, it must be replaced.

2. Connect:

- Pocket tester ①
- (to the coolant temperature sensor)

NOTE:

Set the tester selector to the " $\Omega \times 1k$ " position.

3. Immerse the coolant temperature sensor ② in coolant ③ and check the coolant temperature sensor operation.



Coolant temperature sensor resistance:

5.21 ~ 6.37 k Ω at 0 °C (32 °F)

0.290 ~ 0.354 k Ω at 80 °C (176 °F)

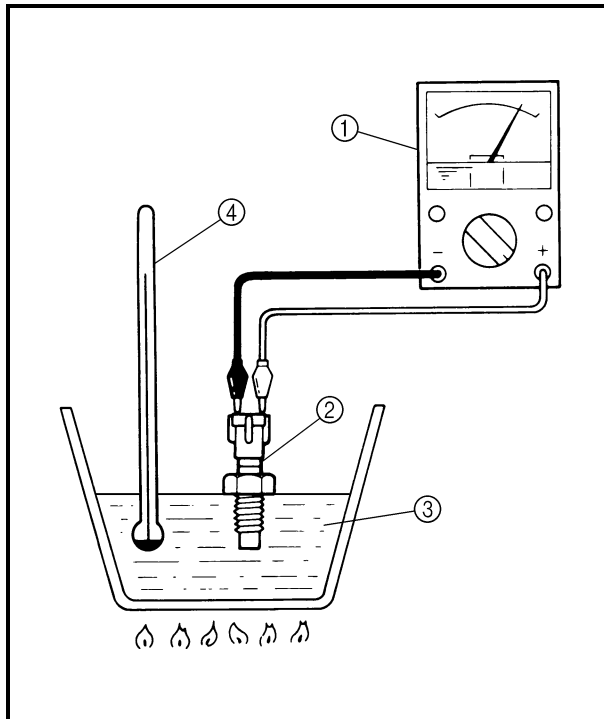
0.170 ~ 0.208 k Ω at 100 °C (212 °F)

④ Temperature gauge

CAUTION:

Never heat the coolant to a temperature of 120 °C (248 °F) or more.

4. If the coolant temperature sensor operation is defective, replace it.





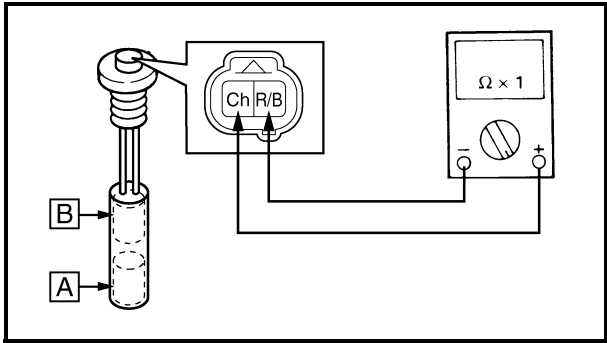
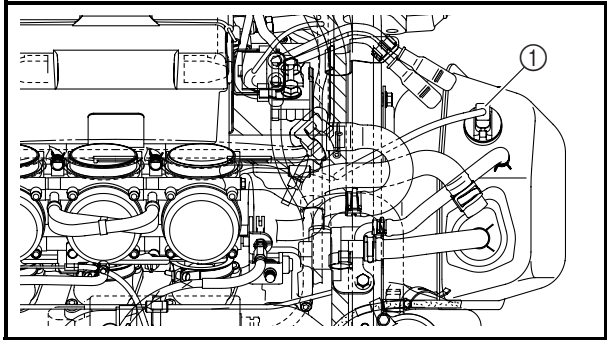
5. Install the coolant temperature sensor and connect the coolant temperature sensor coupler.



Coolant temperature sensor:
23 Nm (2.3 m · kg, 17 ft · lb)

CAUTION:

Do not overtighten the coolant temperature sensor.



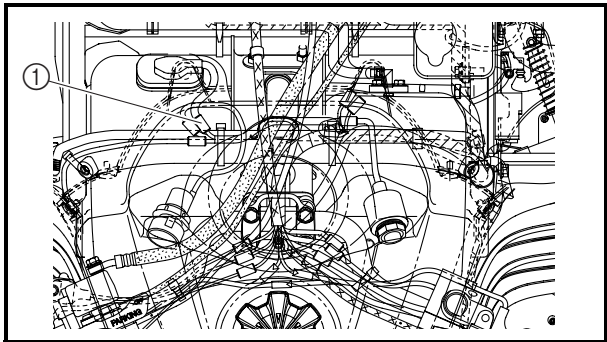
OIL LEVEL SWITCH

1. Remove:
- Oil level switch ①

2. Connect:
- Pocket tester
(to the oil level switch coupler)
3. Check:
- Oil level switch continuity
Faulty → Replace.

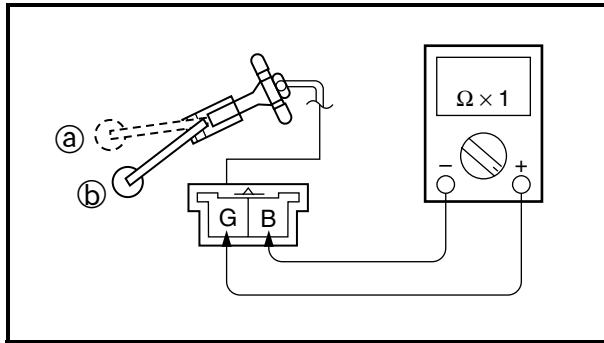
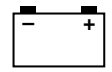
Switch position		Good condition	Bad condition		
A	Down position	○	×	×	○
	Up position	×	○	×	○

○ : Continuity × : No continuity



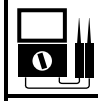
FUEL SENDER

1. Remove:
- Fuel sender ①
(from the fuel tank)
2. Connect:
- Pocket tester
(to the fuel sender coupler)

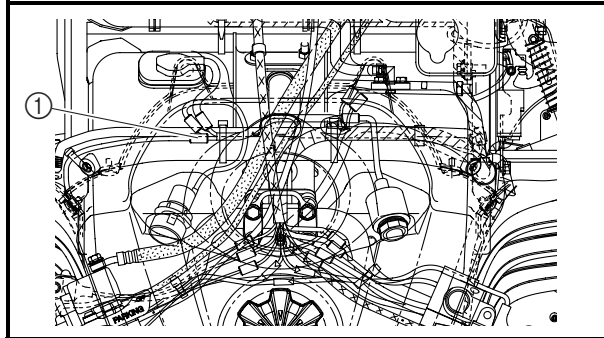


3. Measure:

- Fuel sender resistance (full ①)
 - Fuel sender resistance (empty ②)
- Out of specification → Replace.



Fuel sender resistance (full):
10 ~ 12 Ω at 20 °C (68 °F)
Fuel sender resistance (empty):
179 ~ 185 Ω at 20 °C (68 °F)



SPEED SENSOR

1. Inspect:

- Speed sensor

Inspection steps:

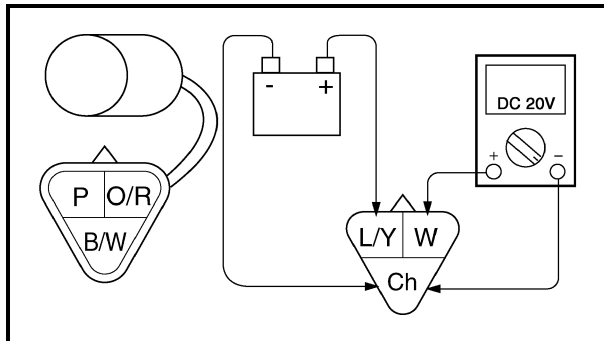
- Connect the pocket tester (DC 20 V) to the speed sensor coupler ① (wire harness side) as shown.

Positive tester probe → White

Negative tester probe → Chocolate

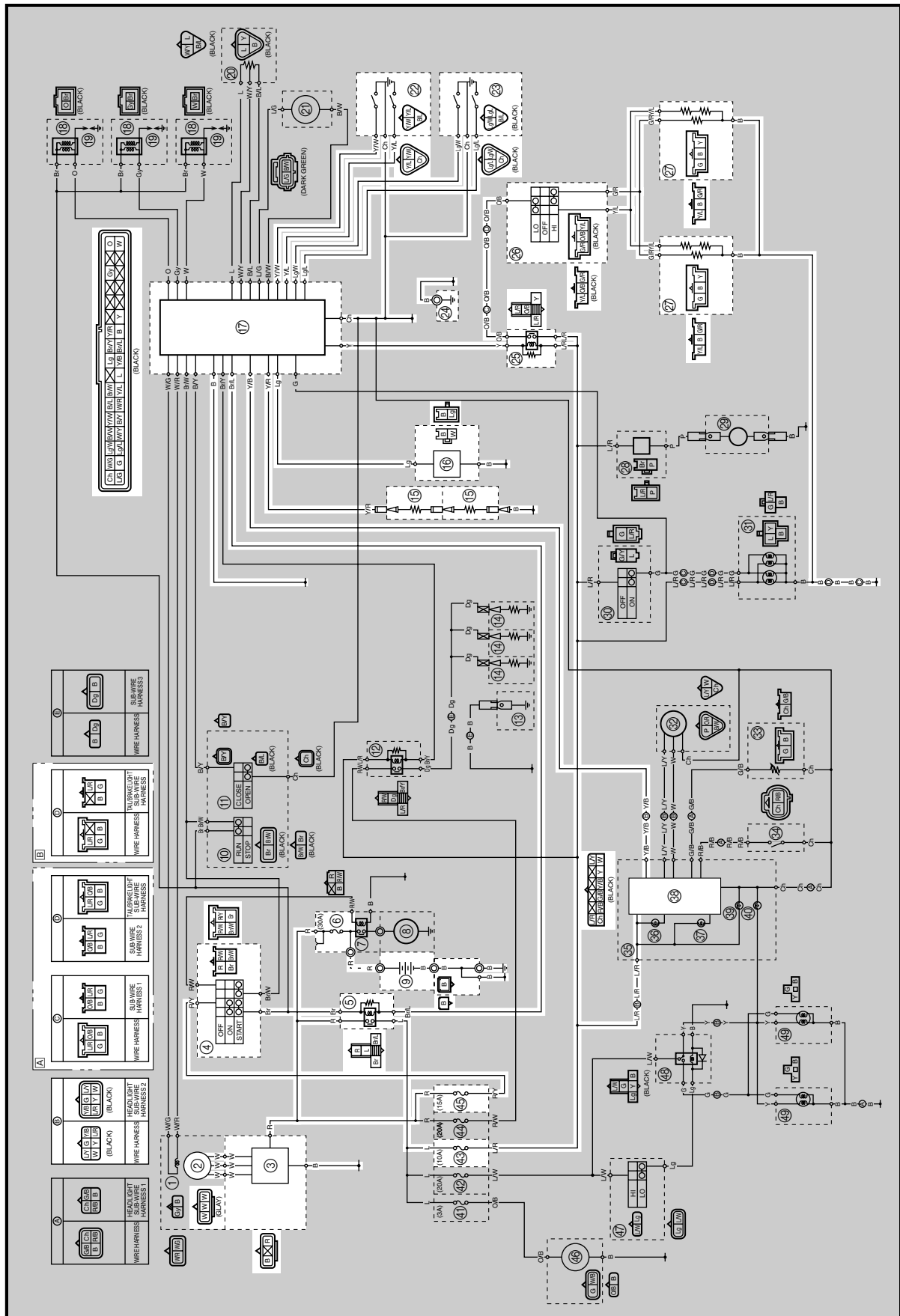
Positive battery terminal → Blue/Yellow

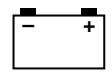
Negative battery terminal → Chocolate



- Elevate the track and slowly rotate it.
 - Measure the voltage (DC 5 V) of white and chocolate. With each full rotation of the track the voltage reading should cycle from 0.6 V to 4.8 V to 0.6 V to 4.8 V.
- Out of specification → Replace.

GRIP WARMER SYSTEM CIRCUIT DIAGRAM

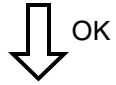




TROUBLESHOOTING

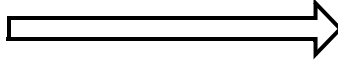
GRIP WARMER AND THUMB WARMER DO NOT OPERATE.

Check the main fuse, ignition fuse, and signal fuse.
Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

FAULTY



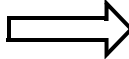
Replace the main fuse, ignition fuse, and/or signal fuse.

Check the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



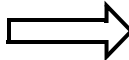
Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

Check the stator coil.
Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



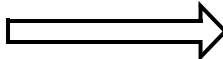
Replace the stator coil assembly.

Check the main switch.
Refer to "IGNITION SYSTEM".



OK

NO CONTINUITY



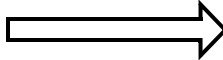
Replace the main switch.

Check the grip and thumb warmer.



OK

NO CONTINUITY



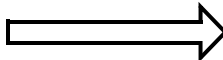
Replace the grip and/or thumb warmer.

Check the grip and thumb warmer adjustment switch.



CORRECT

NO CONTINUITY



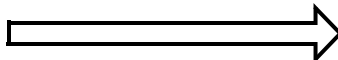
Replace the left handlebar switch and/or right handlebar switch.

Check the load control relay.
Refer to "IGNITION SYSTEM".



OK

FAULTY



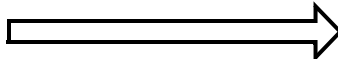
Replace the load control relay.

Check the grip warmer system's wiring.
Refer to "CIRCUIT DIAGRAM".



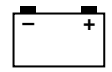
OK

FAULTY

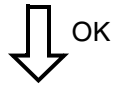


Properly connect or repair the grip warmer system's wiring.

Correct the connection and/or replace the rectifier/regulator and/or ignitor unit.

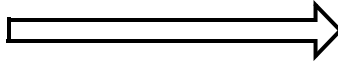
**PASSENGER GRIP WARMER DOES NOT OPERATE. (RST90/RST90TF)**

Check the main fuse, ignition fuse, and signal fuse.
Refer to "FUSE INSPECTION" in CHAPTER 2.



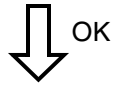
OK

FAULTY



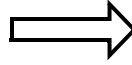
Replace the main fuse, ignition fuse, and/or signal fuse.

Check the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



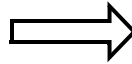
Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

Check the stator coil.
Refer to "CHARGING SYSTEM".



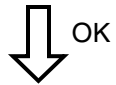
OK

OUT OF SPECIFICATION



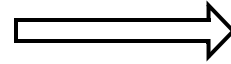
Replace the stator coil assembly.

Check the main switch.
Refer to "IGNITION SYSTEM".



OK

NO CONTINUITY



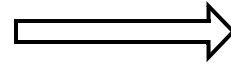
Replace the main switch.

Check the passenger grip warmers.



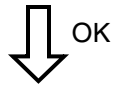
OK

NO CONTINUITY



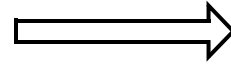
Replace the passenger grip warmer(s).

Check the passenger grip warmer switch.



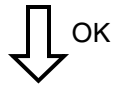
OK

NO CONTINUITY



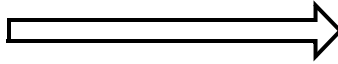
Replace the passenger grip warmer switch.

Check the passenger grip warmer relay.



OK

FAULTY



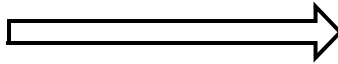
Replace the passenger grip warmer relay.

Check the load control relay.
Refer to "IGNITION SYSTEM".



OK

FAULTY



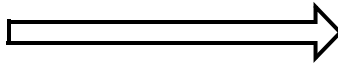
Replace the load control relay.

Check the grip warmer system's wiring.
Refer to "CIRCUIT DIAGRAM".



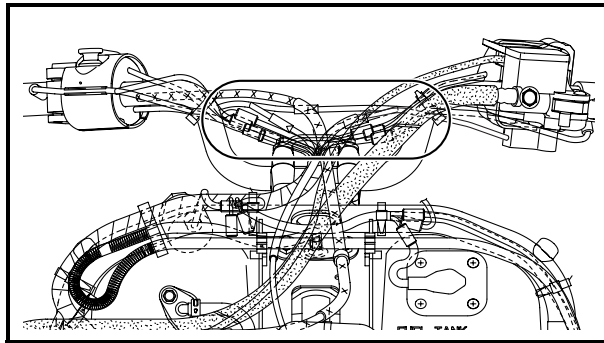
OK

FAULTY



Properly connect or repair the grip warmer system's wiring.

Correct the connection and/or replace the rectifier/
regulator and/or ignitor unit.



GRIP AND THUMB WARMER COIL

1. Disconnect:

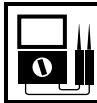
- Grip warmer leads
- Thumb warmer coupler

2. Connect:

- Pocket tester
(to the grip warmer coil leads and/or thumb warmer coupler)

3. Measure:

- Grip warmer resistance ①
 - Thumb warmer resistance ②
- Out of specification → Replace.

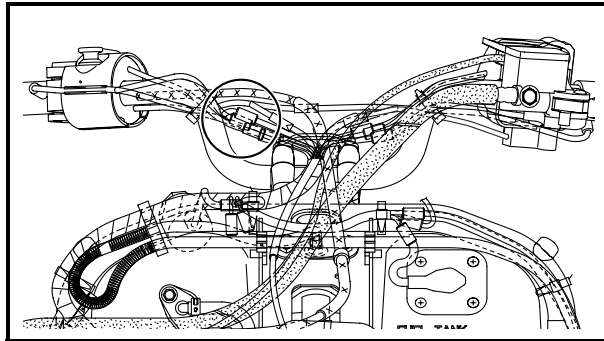
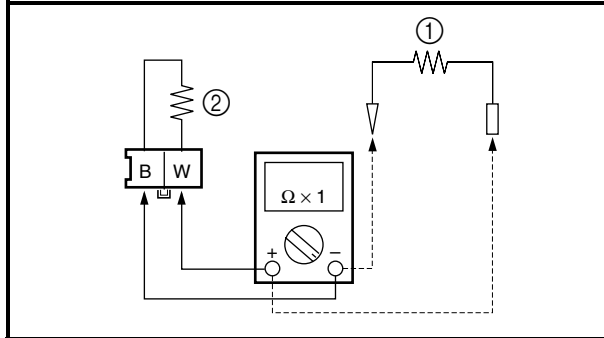


Grip warmer resistance:

1.53 ~ 1.87 Ω at 20 °C (68 °F)
(Black – Black)

Thumb warmer resistance:

37.0 ~ 45.2 Ω at 20 °C (68 °F)
(White – Black)



THUMB WARMER ADJUSTMENT SWITCH

1. Disconnect:

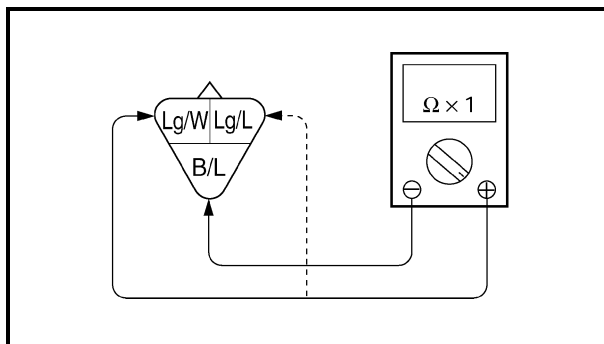
- Thumb warmer adjustment switch coupler

2. Connect:

- Pocket tester
(to the thumb warmer adjustment switch coupler)

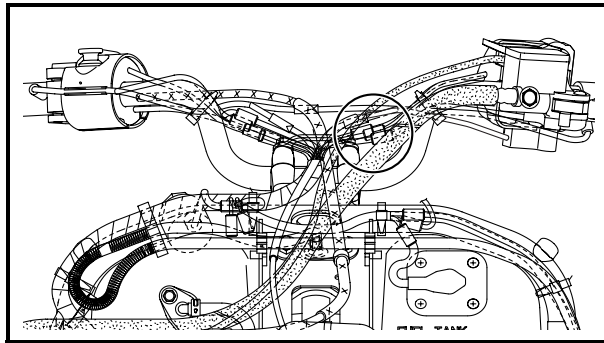
3. Check:

- Thumb warmer adjustment switch continuity
- Faulty → Replace the right handlebar switch.



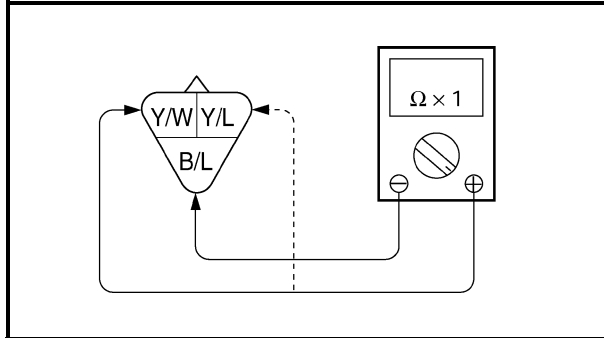
Switch position	Color code		
	Lg/W	B/L	Lg/L
HI			
OFF			
LO			

Continuity



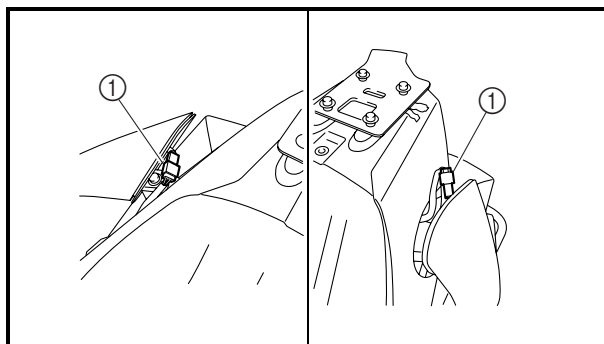
GRIP WARMER ADJUSTMENT SWITCH

1. Disconnect:
 - Grip warmer adjustment switch coupler
2. Connect:
 - Pocket tester
(to the grip warmer adjustment switch coupler)
3. Check:
 - Grip warmer adjustment switch continuity
Faulty → Replace the left handlebar switch.



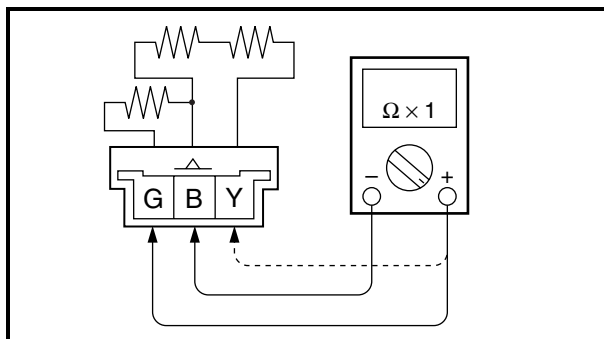
Switch position	Color code		
	Y/W	B/L	Y/L
HI			
OFF			
LO			

Continuity



PASSENGER GRIP WARMER (RST90/ RST90TF)

1. Disconnect:
 - Passenger grip warmer coupler ①
2. Connect:
 - Pocket tester
(to the passenger grip warmer coupler)
3. Measure:
 - Passenger grip warmer resistance
Out of specification → Replace.



Passenger grip warmer resistance

(high):

8.82 ~ 10.78 Ω

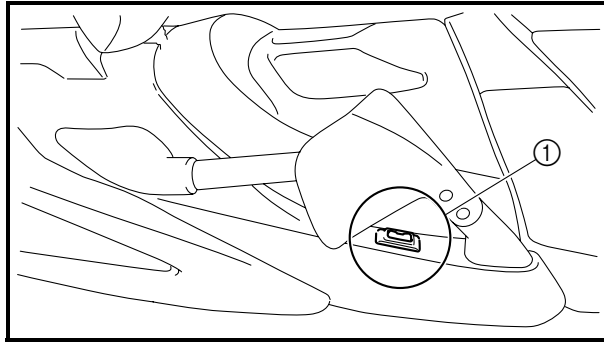
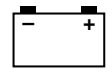
(Green – Black)

Passenger grip warmer resistance

(low):

14.67 ~ 17.93 Ω

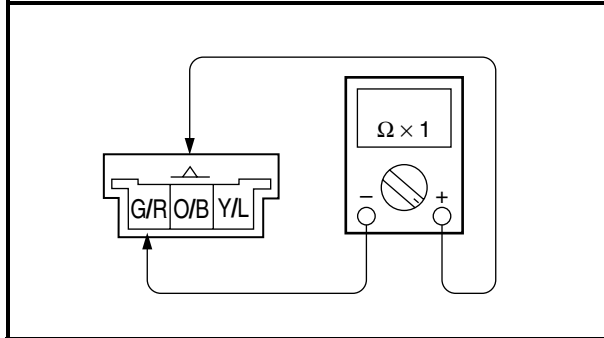
(Yellow – Black)



PASSENGER GRIP WARMER SWITCH (RST90/RST90TF)

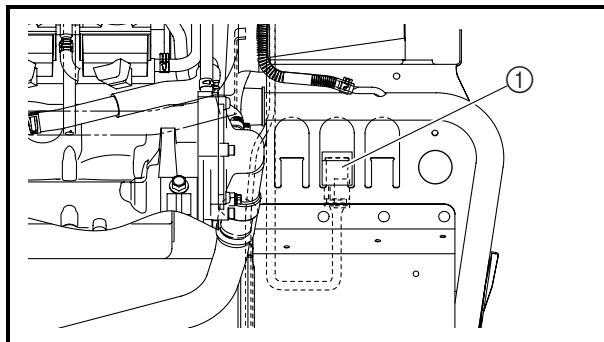
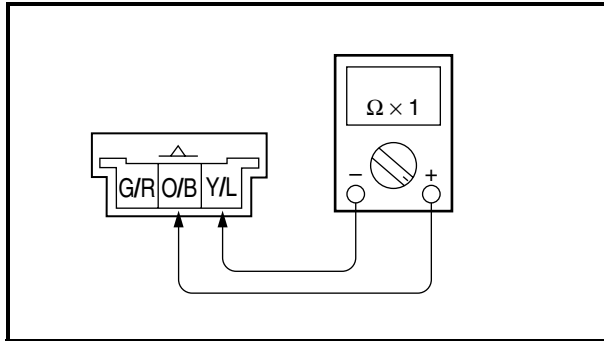
1. Disconnect:
 - Passenger grip warmer switch coupler ①
2. Connect:
 - Pocket tester
 - (to the passenger grip warmer switch coupler)

3. Check:
 - Passenger grip warmer switch continuity
 - Faulty → Replace.



Switch position	Color code		
	G/R	O/B	Y/L
LO		○	○
OFF			
HI	○	○	

○ — ○ Continuity



PASSENGER GRIP WARMER RELAY (RST90/RST90TF)

1. Inspect:
 - Passenger grip warmer relay ①

Inspection steps:

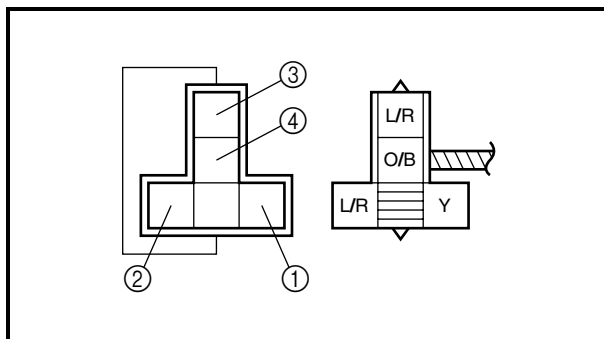
- Disconnect the passenger grip warmer relay from the coupler.
- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the passenger grip warmer relay terminals as shown.

Positive battery terminal → Blue/Red ①

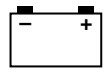
Negative battery terminal → Yellow ②

Positive tester probe → Blue/Red ③

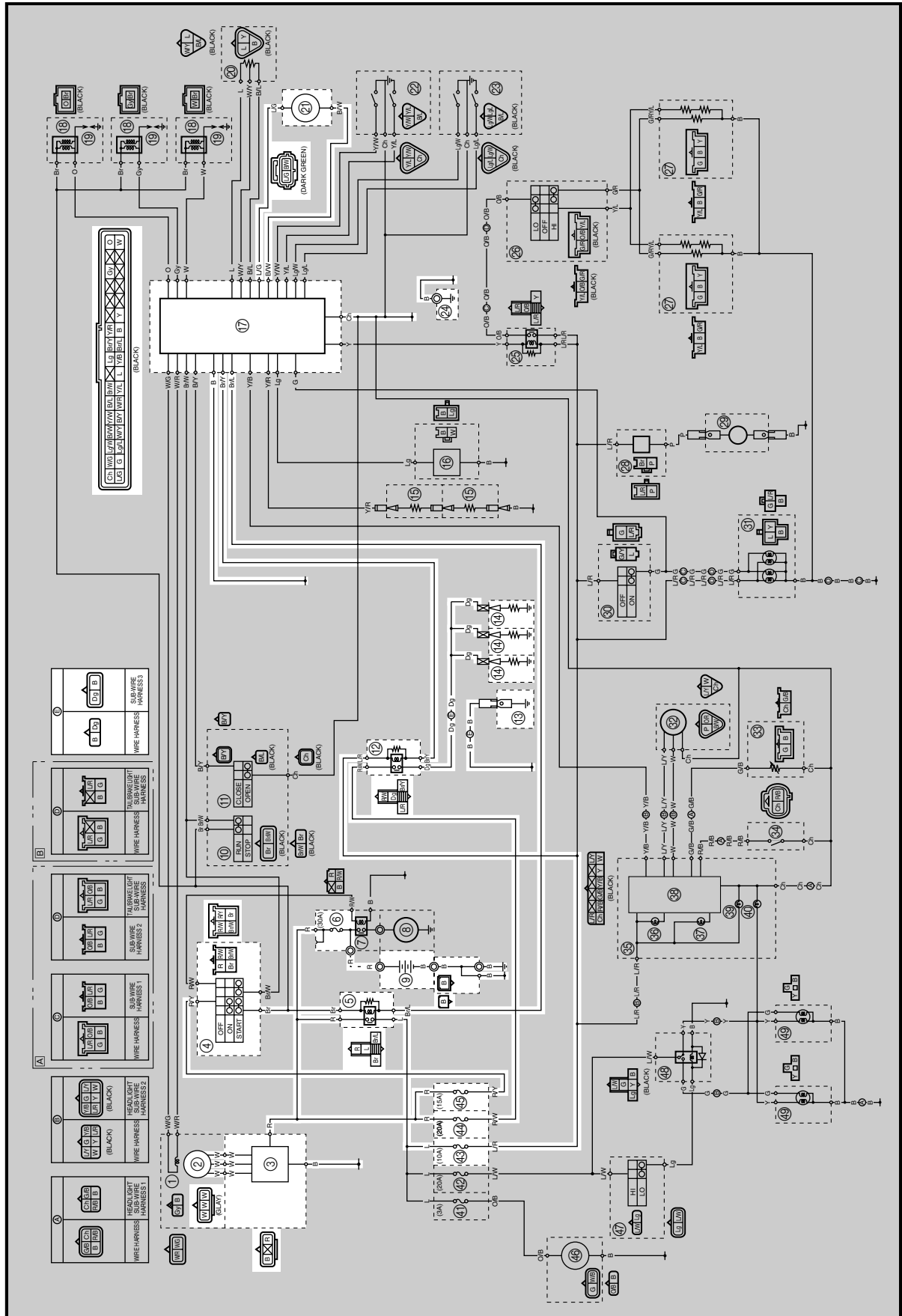
Negative tester probe → Orange/Black ④

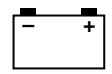


- If passenger grip warmer relay does not have continuity between the blue/red and orange/black terminals, replace it.



CARBURETOR HEATER SYSTEM CIRCUIT DIAGRAM



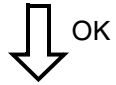


TROUBLESHOOTING

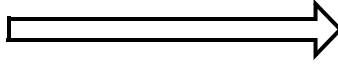
CARBURETOR HEATER DO NOT OPERATE.

Check the main fuse, signal fuse, carburetor heater fuse and ignition fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



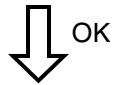
FAULTY



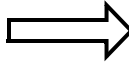
Replace the main fuse, signal fuse, carburetor heater fuse and/or ignition fuse.

Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



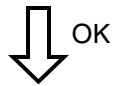
OUT OF SPECIFICATION



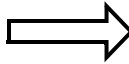
Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

Check the stator coil.

Refer to "CHARGING SYSTEM".



OUT OF SPECIFICATION



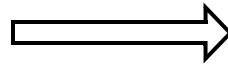
Replace the stator coil and pickup coil assembly.

Check the main switch.

Refer to "IGNITION SYSTEM".



NO CONTINUITY

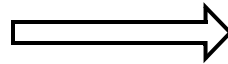


Replace the main switch.

Check the carburetor heater relay.



NO CONTINUITY



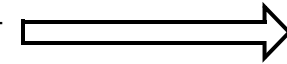
Replace the carburetor heater relay.

Check the carburetor heater.



CORRECT

INCORRECT



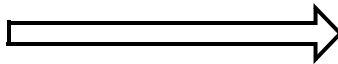
Replace the carburetor heater.

Check the coolant temperature sensor.

Refer to "SIGNAL SYSTEM".



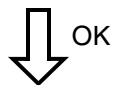
FAULTY



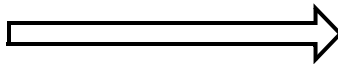
Replace the coolant temperature sensor.

Check the load control relay.

Refer to "IGNITION SYSTEM".



FAULTY



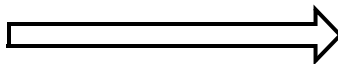
Replace the load control relay.

Check the carburetor heater system's wiring.

Refer to "CIRCUIT DIAGRAM".



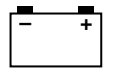
FAULTY

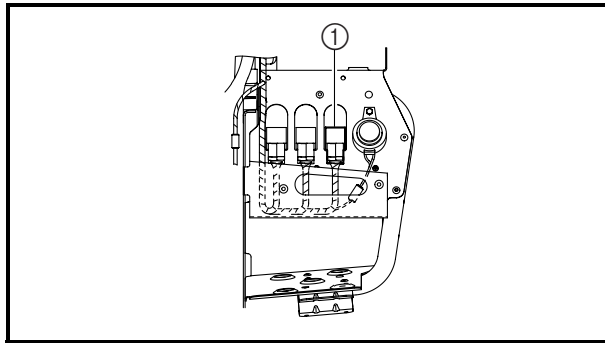
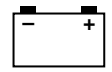


Properly connect or repair the carburetor heater system's wiring.

Correct the connection and/or replace the rectifier/regulator and/or the ignitor unit.

ELEC





CARBURETOR HEATER RELAY

1. Inspect:

- Carburetor heater relay ①

Inspection steps:

- Disconnect the carburetor heater relay from the coupler.
- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the carburetor heater relay terminals as shown.

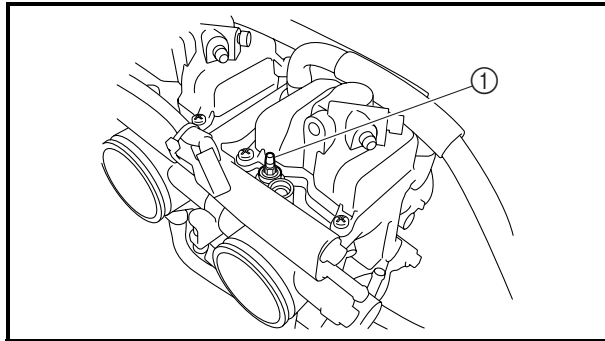
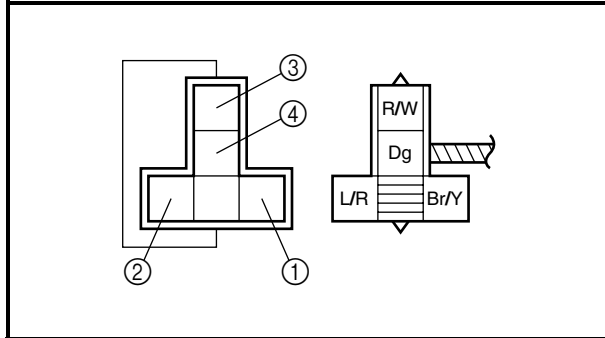
Positive battery terminal → Blue/Red ①

Negative battery terminal → Brown/Yellow ②

Positive tester probe → Red/White ③

Negative tester probe → Dark green ④

- If carburetor heater relay does not have continuity between the red/white and dark green terminals, replace it.



CARBURETOR HEATER

1. Remove:

- Carburetor heater ①

2. Connect:

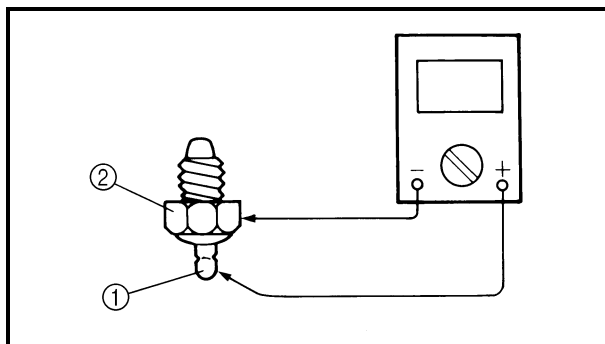
- Pocket tester

Positive tester probe → Heater terminal ①

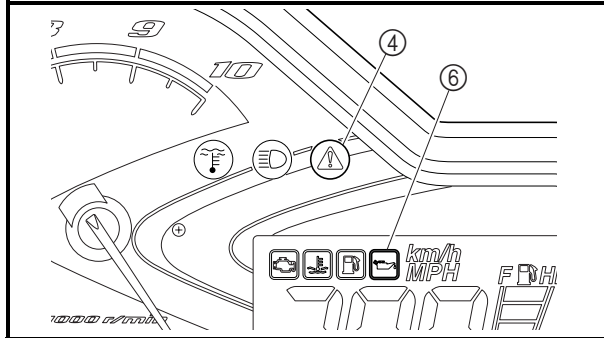
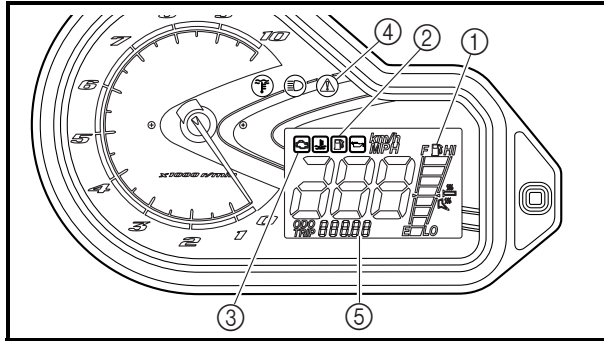
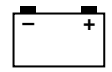
Negative tester probe → Heater body ②

3. Inspect:

- Carburetor heater resistance
Out of specification → Replace the carburetor heater.



Carburetor heater resistance:
6 ~ 10 Ω at 20 °C (68 °F)



SELF-DIAGNOSIS

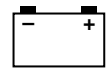
This model features a self-diagnosing system for following displays.

- ① Fuel meter
- ② Fuel level warning indicator
- ③ Self-diagnosis warning indicator
- ④ Warning light
- ⑤ DIAG code (odometer/tripmeter)

NOTE:

The oil level warning indicator ⑥ and the warning light ④ come on when the engine oil level is low. If the oil level warning indicator and the warning light come on, place the snowmobile on a level surface and allow it to idle for one minute. If the oil level warning indicator and the warning light go off, the engine oil level is sufficient, however it is getting low. Add engine oil as soon as possible.

If the oil level warning indicator and the warning light do not go off, check the engine oil level in the oil tank, and add engine oil if necessary.



SELF-DIAGNOSIS CODE

Item	Condition	DIAG code	Displayed
Fuel sender	Disconnected Short-circuit	—	*1: + + The warning light, fuel meter, and fuel level warning indicator flash.
T.P.S.	Disconnected	15	*2: + The warning light and self-diagnosis warning indicator flash. *3: 888.15 The self-diagnosis code flashes in the odometer/tripmeter display.
T.P.S.	Locked	16	
Coolant temperature sensor	Disconnected Short-circuit	21	
Grip warmer adjustment switch	Short-circuit	80	
Grip warmer	Disconnected Short-circuit	81	
Thumb warmer adjustment switch	Short-circuit	82	
Thumb warmer	Short-circuit	83	
Power source voltage	Incorrect	46	*3: 888.15 The self-diagnosis code flashes in the odometer/tripmeter display.
Speed sensor	Short-circuit	42	

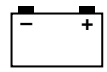


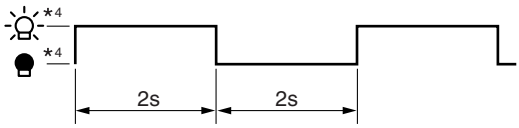
ON



OFF

s Time (second)



Item	Condition	DIAG code	Displayed
No signal are received from igniter	• Open or short circuit in wire. (Yellow/Black) • Malfunction in meter. • Malfunction in ignitor unit.	Er_1	 *4: Er_1 The self-diagnosis code flashes in the odometer/tripmeter display.
No signal are received from the igniter within the specified duratic	• Improper connection in headlight sub-wire harness. • Malfunction in meter. • Malfunction in ignitor unit.	Er_2	
Data from the igniter cannot be received correctly.	• Improper connection in headlight sub-wire harness. • Malfunction in meter. • Malfunction in ignitor unit.	Er_3	
No-registered data has been received from the meter.	• Improper connection in headlight sub-wire harness. • Malfunction in meter. • Malfunction in ignitor unit.	Er_4	



ON



OFF

s Time (second)



SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Model code number:	8ES1 (RS90 "USA/Canada") 8FJ1 (RS90R "USA/Canada") 8FJ2 (RS90R "Europe") 8FL1 (RSG90 "USA/Canada") 8FL2 (RSG90 "Europe") 8FK1 (RS90M "USA/Canada") 8FK2 (RS90M "Europe") 8ET1 (RST90 "USA/Canada") 8ET2 (RST90 "Europe") 8FM1 (RST90TF "Europe") 8FM2 (RST90TF "Canada")
Dimensions:	
Overall length	2,755 mm (108.5 in) (RS90/RS90R) 3,000 mm (118.1 in) (RSG90 "USA/Canada") 3,015 mm (RSG90 "Europe") 3,185 mm (125.4 in) (RS90M) 3,135 mm (123.4 in) (RST90 "USA") 3,195 mm (125.8 in) (RST90 "Canada/Europe") 3,210 mm (126.4 in) (RST90TF)
Overall width	1,225 mm (48.2 in) (RS90/RS90R/RSG90 "USA/Canada"/ RST90 "USA/Canada") 1,275 mm (50.2 in) (RSG90 "Europe"/RST90TF)
Overall height	1,165 mm (45.9 in) (RS90M) 1,215 mm (47.8 in) (RS90/RS90R/RSG90/RS90M) 1,280 mm (50.4 in) (RST90/RST90TF)
Weight:	
Dry weight	245 kg (540.1 lb) (RS90) 249 kg (548.9 lb) (RS90R) 261 kg (575.4 lb) (RSG90 "USA/Canada") 263 kg (579.8 lb) (RSG90 "Europe") 265 kg (584.2 lb) (RS90M) 284 kg (626.1 lb) (RST90 "USA") 286 kg (630.5 lb) (RST90 "Canada/Europe") 291 kg (641.5 lb) (RST90TF)
Minimum turning radius:	
Clockwise	4.1 m (13.5 ft) (RS90/RS90R) 4.0 m (13.1 ft) (RSG90/RS90M) 4.3 m (14.1 ft) (RST90) 4.4 m (14.4 ft) (RST90TF)
Counterclockwise	4.1 m (13.5 ft) (RS90/RS90R) 4.0 m (13.1 ft) (RSG90/RS90M) 4.3 m (14.1 ft) (RST90) 4.4 m (14.4 ft) (RST90TF)



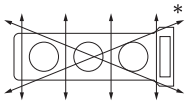
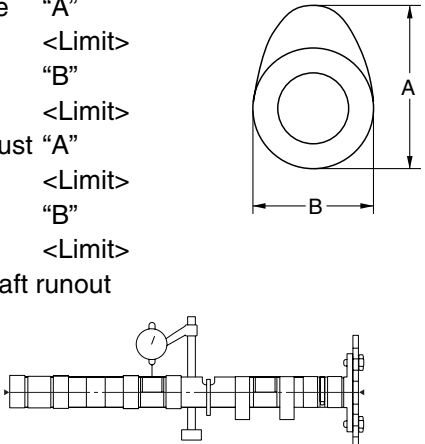
Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Engine: Engine type Cylinder type Displacement Bore × stroke Compression ratio Maximum hose power r/min Maximum torque r/min Vacuum pressure at engine idling speed Standard compression pressure (at sea level) Starting system	Liquid-cooled, 4-stroke, DOHC Backward-inclined parallel 3-cylinder 973 cm ³ (59.37 cu.in) 79.0 × 66.2 mm (3.11 × 2.61 in) 11.3 : 1 84.7 kw (115.2 PS)/8,500 r/min 101.6 Nm (10.4 kgf)/7,000 r/min 24.0 kPa (0.24 kg/cm ² , 3.41 psi) 1,450 kPa (14.5 kg/cm ² , 1,206 psi) at 400 r/min Electric starter
Lubrication system:	Dry sump
Engine oil: Type Oil capacity Periodic oil change With oil filter replacement Total amount	API SE, SF, SG or higher SAE 0W-30 2.8 L (2.5 Imp qt, 3.0 US qt) 3.0 L (2.6 Imp qt, 3.2 US qt) 3.7 L (3.3 Imp qt, 3.9 US qt)
Oil filter: Oil filter type	Cartridge (paper)
Drive chain housing oil: Type Capacity	Gear oil "GL-3" 75W or 80W 0.25 L (0.22 Imp qt, 0.26 US qt)
Coolant: Filler cap opening pressure Capacity	93.3 ~ 122.7 kPa (0.93 ~ 1.23 kg/cm ² , 13.2 ~ 17.5 psi) 4.8 L (4.22 Imp qt, 5.07 US qt) (RS90/RS90R/RSG90) 6.3 L (5.55 Imp qt, 6.66 US qt) (RS90M) 5.2 L (4.58 Imp qt, 5.50 US qt) (RST90 "USA/Canada"/ RST90TF "Canada") 5.4 L (4.75 Imp qt, 5.71 US qt) (RST90 "Europe"/RST90TF "Europe")
Fuel: Type Tank capacity	Regular unleaded gasoline Pump Octane $\frac{R + M}{2}$; 88 or higher (For USA/Canada) Research Octane; 93 or higher (For Europe) 38 L (8.36 Imp gal, 10.04 US gal)
Carburetors: Type/Quantity Manufacture	CVK40 × 3 KEIHIN
Spark plug: Type Manufacture Gap	NGK R CR8E NGK 0.7 ~ 0.8 mm (0.028 ~ 0.031 in)



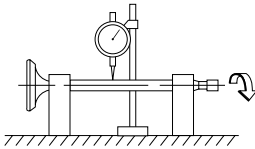
Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Transmission: Primary reduction system Primary reduction ratio Clutch type Secondary reduction system Secondary reduction ratio Reverse system	V-Belt 3.8 ~ 1 : 1 Automatic centrifugal engagement Chain 1.73 (38/22) (RS90/RS90R) 1.77 (39/22) (RSG90/RST90 "USA/Canada") 2.00 (40/20) (RS90M) 1.95 (39/20) (RST90 "Europe"/RST90TF) No (RS90/RS90M) Yes (RS90R/RSG90/RST90/RST90TF)
Chassis: Frame type Caster Ski stance (center to center)	Monocoque 23.0° 1,086 mm (42.8 in) (RS90/RS90R/RSG90/RST90/RST90TF) 980 mm (38.6 in) (RS90M)
Suspension: Front suspension type Rear suspension type	Double wishbone Slide rail suspension
Track: Track type Track width Length on ground Track deflection mm/100 N (10 kg, 22 lb)	Internal drive type 381.0 mm (15.00 in) 723.0 mm (28.46 in) (RS90/RS90R) 946.0 mm (37.24 in) (RSG90) 759.0 mm (29.88 in) (RS90M) 985.0 mm (38.78 in) (RST90) 1,074.0 mm (42.28 in) (RST90TF) 30 ~ 35 mm (1.18 ~ 1.38 in) (RS90/RS90R/RS90M/RST90/RST90TF) 25 ~ 30 mm (0.98 ~ 1.18 in) (RSG90)
Brake: Brake type Operation method	Caliper type disc brake Handlebar, left hand operated
Electrical: Ignition system Generator system	Transistorized coil ignition A.C. magneto
Headlight bulb type:	Halogen bulb
Bulb wattage × Quantity: Headlight Tail/Brake light Meter light High beam indicator light Information indicator light Low coolant temperature light	12 V, 60 W/55 W × 2 12 V, 5 W/21 W × 2 14 V, 50 mA × 6 14 V, 80 mA 14 V, 80 mA 14 V, 80 mA



MAINTENANCE SPECIFICATIONS ENGINE

Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Cylinder head: Volume (with spark plug) <Warpage limit> 	22.82 ~ 23.62 cm³ (1.39 ~ 1.44 cu.in) 0.10 mm (0.0039 in) * Lines indicate straight edge measurement.
Cylinder: Material Bore size <Taper limit> <Out of round>	Aluminum alloy with dispersion coating 79.000 ~ 79.010 mm (3.1102 ~ 3.1106 in) 0.050 mm (0.0020 in) 0.050 mm (0.0020 in)
Camshaft: Drive system Camshaft cap inside diameter Camshaft journal diameter Camshaft-journal-to-camshaft-cap clearance Camshaft dimensions Intake "A" <Limit> "B" <Limit> Exhaust "A" <Limit> "B" <Limit> Camshaft runout 	Chain drive (right) 24.500 ~ 24.521 mm (0.9646 ~ 0.9654 in) 24.459 ~ 24.472 mm (0.9630 ~ 0.9635 in) 0.028 ~ 0.062 mm (0.0011 ~ 0.0024 in) 33.75 ~ 33.85 mm (1.3287 ~ 1.3327 in) 33.65 mm (1.3248 in) 24.95 ~ 25.05 mm (0.9823 ~ 0.9862 in) 24.85 mm (0.9783 in) 33.75 ~ 33.85 mm (1.3287 ~ 1.3327 in) 33.65 mm (1.3248 in) 24.95 ~ 25.05 mm (0.9823 ~ 0.9862 in) 24.85 mm (0.9783 in) 0.03 mm (0.0012 in)
Timing chain: Model/Number of links Tensioning system	98XTRH2005/140 Automatic

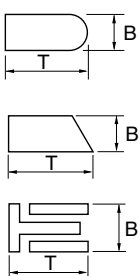
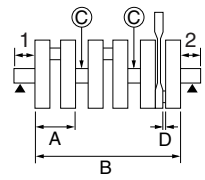


Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Valves, valve seats, valve guides:	
Valve clearance (cold)	
Intake	0.15 ~ 0.22 mm (0.0059 ~ 0.0087 in)
Exhaust	0.21 ~ 0.25 mm (0.0083 ~ 0.0098 in)
Valve dimensions	
Valve head diameter A	
Intake	29.9 ~ 30.1 mm (1.1771 ~ 1.1850 in)
Exhaust	25.9 ~ 26.1 mm (1.0197 ~ 1.0276 in)
Valve face width B	
Intake	1.90 ~ 2.62 mm (0.0748 ~ 0.1031 in)
Exhaust	1.90 ~ 2.62 mm (0.0748 ~ 0.1031 in)
Valve seat width C	
Intake	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)
Exhaust	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)
Valve margin thickness D	
Intake	0.8 ~ 1.2 mm (0.0315 ~ 0.0472 in)
Exhaust	0.5 ~ 0.9 mm (0.0197 ~ 0.0354 in)
Valve stem diameter	
Intake	4.975 ~ 4.990 mm (0.1959 ~ 0.1965 in)
<Limit>	4.945 mm (0.1947 in)
Exhaust	4.965 ~ 4.980 mm (0.1955 ~ 0.1961 in)
<Limit>	4.935 mm (0.1943 in)
Valve guide inside diameter	
Intake	5.000 ~ 5.012 mm (0.1969 ~ 0.1973 in)
<Limit>	5.05 mm (0.199 in)
Exhaust	5.000 ~ 5.012 mm (0.1969 ~ 0.1973 in)
<Limit>	5.05 mm (0.199 in)
Valve-stem-to-valve-guide clearance	
Intake	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)
<Limit>	0.08 mm (0.0031 in)
Exhaust	0.020 ~ 0.047 mm (0.0008 ~ 0.0019 in)
<Limit>	0.10 mm (0.0039 in)
Valve stem runout limit	0.01 mm (0.0004 in)
	
Valve seat width	
Intake	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
<Limit>	1.6 mm (0.0630 in)
Exhaust	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
<Limit>	1.6 mm (0.0630 in)



Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Valve spring: Free length Intake <Limit> Exhaust <Limit> Installed length (valve closed) Intake Exhaust Compressed spring force (installed) Intake Exhaust Spring tilt Intake Exhaust Winding direction (top view) Intake Exhaust	39.73 mm (1.56 in) 37.7 mm (1.48 in) 39.73 mm (1.56 in) 37.7 mm (1.48 in) 33.0 mm (1.30 in) 33.0 mm (1.30 in) 136 ~ 158 N (13.9 ~ 16.1 kg, 30.6 ~ 35.5 lb) 136 ~ 158 N (13.9 ~ 16.1 kg, 30.6 ~ 35.5 lb) 2.5°/1.7 mm (0.07 in) 2.5°/1.7 mm (0.07 in) Clockwise Clockwise
Valve lifter: Valve lifter outside diameter Intake <Limit> Exhaust <Limit> Valve lifter hole inside diameter Intake <Limit> Exhaust <Limit>	24.482 ~ 24.488 mm (0.9639 ~ 0.9641 in) 24.457 mm (0.9629 in) 24.482 ~ 24.488 mm (0.9639 ~ 0.9641 in) 24.457 mm (0.9629 in) 23.15 ~ 23.30 mm (0.9114 ~ 0.9173 in) 23.33 mm (0.9185 in) 23.15 ~ 23.30 mm (0.9114 ~ 0.9173 in) 23.33 mm (0.9185 in)
Piston: Piston size (D) Measuring point (H) Piston to-cylinder clearance <Limit> Piston pin bore off set Off-set direction Piston pin bore inside diameter	78.935 ~ 78.950 mm (3.1077 ~ 3.1083 in) 5.0 mm (0.20 in) 0.050 ~ 0.075 mm (0.0020 ~ 0.0030 in) 0.120 mm (0.0047 in) 0.5 mm (0.0197 in) Exhaust side 19.004 ~ 19.015 mm (0.7482 ~ 0.7486 in)
Piston pin: Piston pin outside diameter Piston pin length Piston pin to piston pin bore clearance <Limit>	18.991 ~ 19.000 mm (0.7477 ~ 0.7480 in) 52.9 ~ 53.0 mm (2.0827 ~ 2.0866 in) 0.004 ~ 0.024 mm (0.0002 ~ 0.0009 in) 0.074 mm (0.0029 in)



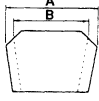
Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Piston ring: Sectional sketch Top ring Ring type Dimensions (B × T) 2nd ring Ring type Dimensions (B × T) Oil ring Dimensions (B × T) End gap (installed) Top ring 2nd ring Oil ring Side clearance (installed) Top ring 2nd ring	 Barrel 1.00 × 2.80 mm (0.039 × 0.110 in) Taper 1.00 × 2.90 mm (0.039 × 0.114 in) 2.00 × 2.50 mm (0.079 × 0.098 in) 0.35 ~ 0.45 mm (0.014 ~ 0.018 in) 0.75 ~ 0.85 mm (0.030 ~ 0.033 in) 0.20 ~ 0.60 mm (0.008 ~ 0.024 in) 0.030 ~ 0.070 mm (0.0012 ~ 0.0028 in) 0.020 ~ 0.060 mm (0.0008 ~ 0.0024 in)
Connecting rod: Crankshaft-pin-to-big-end-bearing clearance Bearing color code	0.033 ~ 0.050 mm (0.0013 ~ 0.0020 in) 0 = White-White 1 = Blue-Blue 2 = Black-Black 3 = Brown-Brown 4 = Green-Green 5 = Yellow-Yellow
Crankshaft:  Measuring point 1 Measuring point 2 Width A Width B Crankshaft runout C Big end side clearance D Crankshaft-journal-to-crankshaft-journal-bearing clearance Bearing color code	62.0 mm (2.44 in) 100.0 mm (3.94 in) 62.25 ~ 62.65 mm (2.451 ~ 2.467 in) 234.65 ~ 235.65 mm (9.24 ~ 9.28 in) 0.03 mm (0.0012 in) 0.160 ~ 0.262 mm (0.0063 ~ 0.0103 in) 0.027 ~ 0.045 mm (0.0011 ~ 0.0018 in) 2 = Black 3 = Brown 4 = Green 5 = Yellow 6 = Pink 7 = Red 8 = White
Carburetor: Type × quantity Manufacturer I.D. mark Main jet (M.J) Main air jet (M.A.J) Jet needle (J.N) Needle jet (N.J) Pilot jet (P.J) Pilot air jet (P.A.J) Pilot outlet (P.O)	CVK40 × 3 KEIHIN 8ES1 00 #148 #70 N425-BSJ00 W9554-26538#6 #45 #120 0.9



Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Bypass 1 (B.P.1)	0.8
(B.P.2)	0.8
(B.P.3)	0.8
(B.P.4)	0.8
(B.P.5)	0.8
Pilot screw (P.S)	2 turns out
Throttle valve (Th.V)	1020-B70-B0 ($\theta = 10^\circ$)
Valve seat size (V.S)	1.2
Starter jet (G.S)	#70
Float height (F.H)	16 mm (0.630 in)
Fuel level (below the line on the float chamber)	0.2 ~ 2.2 mm (0.008 ~ 0.087 in)
Throttle cable free play	2.0 ~ 3.0 mm (0.08 ~ 0.12 in)
Engine idle speed	1,300 ~ 1,500 r/min
Fuel pump:	
Type	Diaphragm
Manufacturer	8FA (MIKUNI)
Oil filter:	
Oil filter type	Cartridge (paper)
Bypass valve opening pressure	78 ~ 118 kPa (0.78 ~ 1.18 kg/cm ² , 11.1 ~ 16.8 psi)
Oil pump:	
Oil pump type	Trochoidal
Inner-rotor-to-outer-rotor-tip clearance	0.09 ~ 0.15 mm (0.004 ~ 0.006 in)
Outer-rotor-to-oil-pump-housing clearance	0.03 ~ 0.08 mm (0.001 ~ 0.003 in)
Relief valve operating pressure	440 ~ 560 kPa (4.4 ~ 5.6 kg/cm ² , 62.6 ~ 79.6 psi)
Oil pressure (hot)	45 kPa (0.45 kg/cm ² , 6.40 psi) at 1,400 r/min
Cooling system:	
Filler cap opening pressure	95 ~ 125 kPa (0.95 ~ 1.25 kg/cm ² 13.5 ~ 17.8 psi)
Water pump type	Single-suction centrifugal pump (Impeller type)
Reduction ratio	22/28 (0.786)
Coolant type	High quality silicate-free ethylene glycol antifreeze containing corrosion inhibitors
Coolant mixing ratio (coolant: water)	3 : 2 (60% : 40%)
Capacity	4.8 L (4.22 Imp qt, 5.07 US qt) (RS90/RS90R/RSG90) 6.3 L (5.55 Imp qt, 6.66 US qt) (RS90M) 5.2 L (4.58 Imp qt, 5.50 US qt) (RST90 "USA/Canada"/RST90TF "Canada") 5.4 L (4.75 Imp qt, 5.71 US qt) (RST90 "Europe"/RST90TF "Europe")
Max. impeller shaft tilt	0.15 mm (0.0059 in)
<Limit>	0.072 mm (0.0028 in)



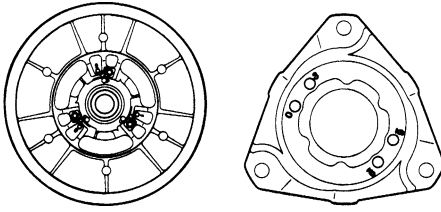
POWER TRAIN

Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Transmission: Type Range of ratio Engagement speed r/min Shift r/min Sheave distance Sheave offset Secondary sheave free play (clearance) Secondary sheave clearance V-belt height (standard)	V-belt automatic 3.8 ~ 1.0 : 1 3,300 ~ 3,700 r/min (RS90/RS90R) 3,400 ~ 3,800 r/min (RSG90) 3,800 ~ 4,200 r/min (RS90M) 3,000 ~ 3,400 r/min (RST90 "USA/Canada") 2,800 ~ 3,200 r/min (RST90 "Europe"/RST90TF) 8,250 ~ 8,750 r/min 267 ~ 270 mm (10.51 ~ 10.63 in) 13.5 ~ 16.5 mm (0.53 ~ 0.65 in) 1.0 ~ 2.0 (0.04 ~ 0.08 in) 35.0 ~ 35.8 mm (1.38 ~ 1.41 in) -0.5 ~ 1.5 mm (-0.02 ~ 0.06 in)
V-belt: Part number/Manufacturer Circumference Width "A" Wear limit "B"	8DN-17641-00/MITSUBOSHI 1,129 ~ 1,137 mm (44.4 ~ 44.8 in) 34.5 mm (1.36 in) 32.5 mm (1.28 in)
	
Primary sheave spring: Part number Color code Diameter Wire diameter Preload Spring rate Number of coils	90501-582L1 (RS90/RS90R) 90501-552L5 (RSG90) 90501-603L3 (RS90M) 90501-583L4 (RST90 "USA/Canada") 90501-582L7 (RST90 "Europe"/RST90TF) Yellow-Silver-Yellow (RS90/RS90R) Blue-Green-Blue (RSG90) Green-White-Green (RS90M) White-Silver-White (RST90 "USA/Canada") Yellow-Green-Yellow (RST90 "Europe"/RST90TF) 59.5 mm (2.34 in) 5.8 mm (0.228 in) (RS90/RS90R/RST90/RST90TF) 5.5 mm (0.217 in) (RSG90) 6.0 mm (0.236 in) (RS90M) 343 N (35.0 kg, 77.2 lb) (RS90/RS90R/RST90 "USA/Canada") 392 N (40.0 kg, 88.2 lb) (RSG90/RST90 "Europe"/RST90TF) 441 N (45.0 kg, 99.2 lb) (RS90M) 24.5 N/mm (2.50 kg/mm, 140 lb/in) (RS90/RS90R/RST90 "Europe"/RST90TF) 19.6 N/mm (2.00 kg/mm, 112 lb/in) (RSG90) 27.0 N/mm (2.75 kg/mm, 154 lb/in) (RS90M) 22.1 N/mm (2.25 kg/mm, 126 lb/in) (RST90 "USA/Canada") 4.92 (RS90/RS90R/RST90 "Europe"/RST90TF) 4.91 (RSG90) 5.08 (RS90M) 5.25 (RST90 "USA/Canada")

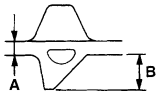


Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Free length	87.4 mm (3.44 in) (RS90/RS90R) 93.4 mm (3.68 in) (RSG90) 89.8 mm (3.54 in) (RS90M) 89.0 mm (3.50 in) (RST90 "USA/Canada") 89.4 mm (3.52 in) (RST90 "Europe"/RST90TF)
Set length	73.4 mm (2.89 in)
Primary sheave weight arm: Part number (with bush)	8ES-17605-00 (RS90/RS90R/RSG90/RST90 "USA/Canada") 8BU-17605-20 (RS90M) 8FA-17605-10 (RST90 "Europe"/RST90TF)
Weight (without bush and rivets)	54.63 g (1.928 oz) (RS90/RS90R/RSG90/RST90 "USA/Canada") 45.41 g (1.603 oz) (RS90M) 63.81 g (3.251 oz) (RST90 "Europe"/RST90TF)
Rivet: Outer Part number	90261-06034 (RS90/RS90R/RST90 "USA/Canada") 90261-06033 (RSG90/RST90 "Europe"/RST90TF) 90261-06028 (RS90M)
Material	Steel (RS90/RS90R/RSG90/RST90/RST90TF) Aluminum (RS90M)
Size	13.9 mm (0.547 in) (RS90/RS90R/RST90 "USA/Canada") 17.2 mm (0.677 in) (RSG90/RST90 "Europe"/RST90TF) 10.3 mm (0.406 in) (RS90M)
Quantity	3
Hole quantity	3
Inner Part number	None (RS90M) 90261-06034 (RS90/RS90R/RSG90) 90261-06033 (RST90/RST90TF)
Material	Steel
Size	13.9 mm (0.547 in) (RS90/RS90R/RSG90) 17.2 mm (0.677 in) (RST90/RST90TF)
Quantity	3
Hole quantity	3
None (outer and inner)	Nothing
Secondary sheave spring: Part number	90508-60012 (RS90/RS90R/RSG90/RS90M/RST90 "USA/Canada") 90508-60007 (RST90 "Europe"/RST90TF)
Color code	Pink (RS90/RS90R/RSG90/RS90M/RST90 "USA/Canada") White (RST90 "Europe"/RST90TF)
Outside diameter	69.5 mm (2.736 in)
Wire diameter	6.0 mm (0.236 in)

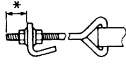
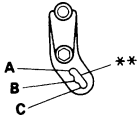


Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Hole position Sheave side-spring side (twist angle)  Spring rate Number of coils Free length Torque cam angle	3-3 (60°) (RS90/RS90R/RSG90/RST90 "USA/Canada") 1-6 (70°) (RS90M/RST90 "Europe"/RST90TF) 12.3 N/mm (1.26 kg/mm, 70.56 lb/in) (RS90/RS90R/RSG90/RS90M/RST90 "USA/Canada") 13.5 N/mm (1.37 kg/mm, 76.72 lb/in) (RST90 "Europe"/RST90TF) 5.53 (RS90/RS90R/RSG90/RS90M/RST90 "USA/Canada") 5.19 (RST90 "Europe"/RST90TF) 75 mm (2.95 in) 43° (RS90/RS90R/RSG90) 39° (RS90M/RST90 "Europe"/RST90TF) 41° (RST90 "USA/Canada")
Drive chain: Type Number of links Secondary reduction ratio Maximum 14 link drive chain section length <Limit>	Borg Warner Automotive 23RH303-68ASM (RS90/RS90R/RS90M/RST90TF) Borg Warner Automotive 23RH303-70ASM (RSG90/RST90) 68L (RS90/RS90R/RS90M/RST90 "Europe"/RST90TF) 70L (RSG90/RST90 "USA/Canada") 1.73 (38/22) (RS90/RS90R) 1.77 (39/22) (RSG90/RST90 "USA/Canada") 2.00 (40/20) (RS90M) 1.95 (39/20) (RST90 "Europe"/RST90TF) 133.35 mm (5.25 in) 137.35 mm (5.41 in)
Track: Part number Width Length Pitch Number of links	8FA-47110-00 (RS90/RS90R) 8FG-47110-00 (RSG90) 8EP-47110-00 (RS90M) 8ET-47110-00 (RST90) 8FM-47110-00 (RST90TF) 381 mm (15.0 in) 3,072 mm (120.96 in) (RS90/RS90R) 3,456 mm (136.08 in) (RSG90) 3,840 mm (151.20 in) (RS90M/RST90TF) 3,648 mm (143.64 in) (RST90) 64 mm (2.52 in) 48 (RS90/RS90R) 54 (RSG90) 60 (RS90M/RST90TF) 57 (RST90)



Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Thickness "A" Height "B"  Track deflection at 100 N (10 kg, 22 lb)	5.1 mm (0.20 in) (RS90/RS90R/RSG90/RST90/RST90TF) 5.8 mm (0.23 in) (RS90M) 31.8 mm (1.25 in) (RS90/RS90R/RSG90/RST90/RST90TF) 50.8 mm (2.00 in) (RS90M) 30 ~ 35 mm (1.18 ~ 1.38 in) (RS90/RS90R/RS90M/RST90/RST90TF) 25 ~ 30 mm (0.98 ~ 1.18 in) (RSG90)
Slide rail suspension (rear suspension):	
Front travel	228.6 mm (9.0 in) (RS90/RS90R) 221.0 mm (8.70 in) (RSG90) 195.6 mm (7.7 in) (RS90M)
Rear travel	210.8 mm (8.3 in) (RST90/RST90TF) 292.1 mm (11.50 in) (RS90/RS90R) 298.0 mm (11.73 in) (RSG90) 315.0 mm (12.40 in) (RS90M/RST90) 350.5 mm (13.80 in) (RST90TF)
Suspension spring rate	
Front	18.0 N/mm (1.84 kg/mm, 103.8 lb/in) (RS90/RS90R "USA/Canada") 20.6 N/mm (2.10 kg/mm, 117.6 lb/in) (RS90R "Europe") 27.4 N/mm (2.79 kg/mm, 156.2 lb/in) (RSG90 "USA/Canada") 39.2 N/mm (4.00 kg/mm, 224.0 lb/in) (RSG90 "Europe") 20.0 N/mm (2.04 kg/mm, 114.2 lb/in) (RS90M) 17.7 ~ 26.5 N/mm (1.80 ~ 2.70 kg/mm, 100.8 ~ 151.2 lb/in) (RST90) 19.6 ~ 39.2 N/mm (2.00 ~ 4.00 kg/mm, 112.0 ~ 224.0 lb/in) (RST90TF)
Rear	1,600 N · mm/deg (163.2 kg · mm/deg, 9,139 lb · in/deg) (RS90/RS90R) 1,900 N · mm/deg (193.7 kg · mm/deg, 10,847 lb · in/deg) (RS90M) 23.0 ~ 42.0 N/mm (2.35 ~ 4.28 kg/mm, 131.6 ~ 239.7 lb/in) (RSG90 "USA/Canada") 29.4 ~ 49.0 N/mm (3.00 ~ 5.00 kg/mm, 168.0 ~ 280.0 lb/in) (RSG90 "Europe") 2,500 N · mm/deg (254.9 kg · mm/deg, 14,274 lb · in/deg) (RST90 "USA/Canada") 3,000 N · mm/deg (305.9 kg · mm/deg, 17,130 lb · in/deg) (RST90 "Europe") 2,800 N · mm/deg (285.5 kg · mm/deg, 15,988 lb · in/deg) (RST90TF)
Suspension wire diameter	
Front	7.5 mm (0.295 in) (RS90/RS90R/RS90M) 7.8 mm (0.307 in) (RSG90 "USA/Canada"/RST90) 8.8 mm (0.346 in) (RSG90 "Europe") 8.0 mm (0.315 in) (RST90TF)
Rear	10.3 mm (0.406 in) (RS90/RS90R/RS90M) 11.2 mm (0.441 in) (RST90 "USA/Canada"/RST90TF) 11.5 mm (0.453 in) (RST90 "Europe") 10.6 mm (0.417 in) (RSG90 "USA/Canada") 11.4 mm (0.449 in) (RSG90 "Europe")



Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Suspension setting position: Hook setting length * (Standard) (Maximum) (Minimum) Full rate adjusting position **  	14.5 ~ 15.5 mm (0.571 ~ 0.610 in) (RSG90) 35 mm (1.37 in) (RSG90) 10 mm (0.40 in) (RSG90) B (RSG90)
Shock absorber: Damping force Front Extension Compression Rear Extension	590 N/0.3 m/s (60.2 kg/0.3 m/s, 132.7 lb/0.3 m/s) (RS90/RS90R) 420 N/0.3 m/s (42.8 kg/0.3 m/s, 94.4 lb/0.3 m/s) (RSG90 "USA/Canada") 910 N/0.3 m/s (92.8 kg/0.3 m/s, 204.6 lb/0.3 m/s) (RSG90 "Europe") 610 N/0.3 m/s (62.2 kg/0.3 m/s, 137.1 lb/0.3 m/s) (RS90M) 710 N/0.3 m/s (72.4 kg/0.3 m/s, 159.6 lb/0.3 m/s) (RST90) 560 N/0.3 m/s (57.1 kg/0.3 m/s, 125.9 lb/0.3 m/s) (RST90TF) 240 N/0.3 m/s (24.5 kg/0.3 m/s, 54.0 lb/0.3 m/s) (RS90/RS90R "USA/Canada") 190 N/0.3 m/s (19.4 kg/0.3 m/s, 42.8 lb/0.3 m/s) (RS90R "Europe") 1,470 N/0.3 m/s (149.9 kg/0.3 m/s, 330.5 lb/0.3 m/s) (RSG90 "USA/Canada") 1,800 N/0.3 m/s (183.5 kg/0.3 m/s, 404.5 lb/0.3 m/s) (RSG90 "Europe") 910 N/0.3 m/s (92.8 kg/0.3 m/s, 204.6 lb/0.3 m/s) (RS90M) 710 N/0.3 m/s (72.4 kg/0.3 m/s, 159.6 lb/0.3 m/s) (RST90) 960 N/0.3 m/s (97.9 kg/0.3 m/s, 215.8 lb/0.3 m/s) (RST90TF) 410 N/0.3 m/s (41.8 kg/0.3 m/s, 92.2 lb/0.3 m/s) (RS90/RS90R "USA/Canada") 960 N/0.3 m/s (97.9 kg/0.3 m/s, 215.8 lb/0.3 m/s) (RS90R "Europe") 1,170 N/0.3 m/s (119.3 kg/0.3 m/s, 263.0 lb/0.3 m/s) (RSG90 "USA/Canada") 2,050 N/0.3 m/s (209.0 kg/0.3 m/s, 460.8 lb/0.3 m/s) (RSG90 "Europe") 880 N/0.3 m/s (89.7 kg/0.3 m/s, 197.8 lb/0.3 m/s) (RS90M) 780 N/0.3 m/s (79.5 kg/0.3 m/s, 175.3 lb/0.3 m/s) (RST90 "USA/Canada") 1,290 N/0.3 m/s (131.5 kg/0.3 m/s, 289.9 lb/0.3 m/s) (RST90 "Europe") 1,340 N/0.3 m/s (136.6 kg/0.3 m/s, 301.4 lb/0.3 m/s) (RST90TF)



Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Compression	460 N/0.3 m/s (46.9 kg/0.3 m/s, 103.5 lb/0.3 m/s) (RS90/RS90R "USA/Canada") 710 N/0.3 m/s (72.4 kg/0.3 m/s, 159.6 lb/0.3 m/s) (RS90R "Europe") 930 N/0.3 m/s (94.8 kg/0.3 m/s, 209.0 lb/0.3 m/s) (RSG90 "USA/Canada") 1,230 N/0.3 m/s (125.4 kg/0.3 m/s, 276.5 lb/0.3 m/s) (RSG90 "Europe") 460 N/0.3 m/s (46.9 kg/0.3 m/s, 103.4 lb/0.3 m/s) (RS90M) 730 N/0.3 m/s (74.4 kg/0.3 m/s, 164.0 lb/0.3 m/s) (RST90 "USA/Canada") 1,870 N/0.3 m/s (190.7 kg/0.3 m/s, 420.8 lb/0.3 m/s) (RST90 "Europe") 1,540 N/0.3 m/s (157.0 kg/0.3 m/s, 364.1 lb/0.3 m/s) (RST90TF)
Slide runner: Thickness	18.3 mm (0.72 in) (RS90/RS90R/RS90M/RST90/RST90TF)
Wear limit	17.8 mm (0.70 in) (RSG90) 10.5 mm (0.413 in) (RS90/RS90R/RS90M/RST90/RST90TF) 10 mm (0.39 in) (RSG90)
Track sprocket wheel: Material	Ultra high molecular weight polyethylene
Number of teeth	9 T (RS90/RS90R/RSG90/RST90/RST90TF) 8 T (RS90M)
Rear guide wheel: Material	High molecular weight polyethylene with rubber
Outside diameter	178 mm (7.01 in)
Brake:	
Recommended brake fluid	DOT 4
Pad thickness	13 mm (0.51 in)
Pad wear limit	7.5 mm (0.30 in)
Pad to disk clearance	1.5 ~ 2.0 mm (0.059 ~ 0.079 in)
Parking brake cable distance	43.5 ~ 46.5 mm (1.713 ~ 1.831 in)
Disc outside diameter	220 mm (8.66 in)
Disc minimum thickness	5.0 mm (0.20 in)



CHASSIS

Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Frame: Frame material Seat height Luggage box location	Monocoque (Aluminum) 720 mm (28.3 in) (RS90/RS90R/RSG90/RS90M) 700 mm (27.6 in) (RST90/RST90TF) Front
Steering: Lock-to-lock angle (left) (right) Ski alignment Toe-out size Caster angle Ski stance (center to center)	29.0° (R ski) 34.5° (L ski) (RS90/RS90R/RSG90/RST90/RST90TF) 30.1° (R ski) 35.0° (L ski) (RS90M) 34.5° (R ski) 29.0° (L ski) (RS90/RS90R/RSG90/RST90/RST90TF) 35.0° (R ski) 30.1° (L ski) (RS90M) Toe-out 0 ~ 15 mm (0 ~ 0.59 in) 23° 1,086 mm (42.8 in) (RS90/RS90R/RSG90/RST90/RST90TF) 980 mm (38.6 in) (RS90M)
Ski: Ski material Length Width Ski runner material Ski cover Ski runner wear limit Plastic ski wear limit	Plastic 1,021.0 mm (40.20 in) (RS90/RS90R/RS90M) 1,020.0 mm (40.16 in) (RSG90 "USA/Canada"/RST90 "USA/Canada") 1,073.0 mm (42.24 in) (RSG90 "Europe"/RST90 "Europe"/RST90TF) 132.0 mm (5.20 in) (RS90/RS90R/RSG90 "USA/Canada"/RST90 "USA/Canada") 180.0 mm (7.09 in) (RSG90 "Europe"/RST90 "Europe"/RST90TF) 182.0 mm (7.17 in) (RS90M) Steel No 8 mm (0.31 in) 12 mm (0.47 in) (RS90/RS90R) 24 mm (0.95 in) (RS90M/RSG90/RST90/RST90TF)
Ski suspension (front suspension): Type Travel Spring type Spring rate Wire diameter	Independent wishbone 219.0 mm (8.62 in) (RS90/RS90R/RSG90/RST90/RST90TF) 175.0 mm (6.89 in) (RS90M) Coil spring 23 N/mm (2.35 kg/mm, 131.6 lb/in) (RS90/RS90R/RSG90) 21 N/mm (2.14 kg/mm, 119.8 lb/in) (RS90M) 22.6 N/mm (2.30 kg/mm, 128.8 lb/in) (RST90) 26.5 N/mm (2.70 kg/mm, 151.2 lb/in) (RST90TF) 8.2 mm (0.323 in) (RS90/RS90R/RSG90) 7.8 mm (0.307 in) (RS90M) 8.0 mm (0.315 in) (RST90) 8.8 mm (0.346 in) (RST90TF)



Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Shock absorber: Damping force Extension	1,400 N/0.3 m/s (142.8 kg/0.3 m/s, 315.1 lb/0.3 m/s) (RS90/RS90R/RSG90) 840 N/0.3 m/s (85.7 kg/0.3 m/s, 189.0 lb/0.3 m/s) (RS90M) 1,180 N/0.3 m/s (120.3 kg/0.3 m/s, 265.2 lb/0.3 m/s) (RST90/RST90TF)
Compression	570 N/0.3 m/s (58.1 kg/0.3 m/s, 128.1 lb/0.3 m/s) (RS90/ RS90R/RSG90/RS90M) 460 N/0.3 m/s (46.9 kg/0.3 m/s, 103.4 lb/0.3 m/s) (RST90/ RST90TF)



ELECTRICAL

Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
Voltage	12 V
Ignition system: Ignition timing (B.T.D.C.) Advanced type	5° at 1,400 r/min Digital type
Ignition coil: Model/Manufacturer Ignition spark gap Primary coil resistance Secondary coil resistance	F6T55873/MITSUBISHI 6.0 mm (0.24 in) 1.19 ~ 1.61 Ω at 20 °C (68 °F) 8.5 ~ 11.5 k Ω at 20 °C (68 °F)
Charging system: Type Nominal output	A.C. magneto 14 V/less than 35 A at 5,000 r/min
DC-C.D.I.: Magneto model/Manufacturer Standard Pickup coil resistance (color code) Stator coil resistance (color code) Ignitor unit model/Manufacturer	F074T38571/MITSUBISHI 14 V 30 A, 420 W at 5,000 r/min 189 ~ 231 Ω at 20 °C (68 °F) (Gray – Black) 0.22 ~ 0.26 Ω at 20 °C (68 °F) (White – White) J4T15871/MITSUBISHI (RS90/RS90R/RSG90/RS90M) J4T15872/MITSUBISHI (RST90/RST90TF)
Rectifier/regulator: Type Model/Manufacturer No load regulated voltage (DC) Capacity (DC) Withstand voltage	Short circuit type FH001/SHINDENGEN 14.1 ~ 14.9 V 35 A 40 V
Battery: Specific gravity Manufacturer Type Ten hour rate amperage	1.32 YUASA YTX20L-BS 12V-18Ah 18 A
Electric starter system: Type	Constant mesh type
Starter motor: Model/Manufacturer Output Armature coil resistance Continuity check Insulation check Brush Overall length <Wear limit> Spring pressure Commutator diameter <Wear limit> Mica undercut	8ES1/MORIC 12 V – 0.95 kW 0.008 ~ 0.010 Ω at 20 °C (68 °F) More than 100 k Ω at 20 °C (68 °F) 9.8 mm (0.39 in) 5.0 mm (0.20 in) 7.36 ~ 11.04 N (750 ~ 1,126 g, 26.5 ~ 39.7 oz) 28.5 mm (1.12 in) 27.5 mm (1.08 in) 1.5 mm (0.059 in)
Starter relay: Model/Manufacturer Amperage rating Coil resistance	MS5F-421/JIDECO 180 A 4.18 ~ 4.62 Ω at 20 °C (68 °F)



Model	RS90/RS90R/RSG90/RS90M/RST90/RST90TF
T.P.S. (throttle position sensor): Manufacturer Resistance	KEIHIN 4 ~ 6 kΩ at 20 °C (68 °F) (Blue – Black) 0 ~ 4 kΩ at 20 °C (68 °F) (Yellow – Black)
Oil level switch: Model/Manufacturer	8FA/ASTI
Fuel sender: Model/Manufacturer Sender resistance Full Empty	8FG/NIPPON SEIKI 10 ~ 12 Ω at 20 °C (68 °F) 179 ~ 185 Ω at 20 °C (68 °F)
Headlight relay: Model/Manufacturer Coil resistance	5DM/OMRON 94.5 ~ 115.5 Ω at 20 °C (68 °F)
Grip warmer: Heater resistance (left) (right)	1.53 ~ 1.87 Ω at 20 °C (68 °F) 1.53 ~ 1.87 Ω at 20 °C (68 °F)
Thumb warmer: Heater resistance	37.0 ~ 45.2 Ω at 20 °C (68 °F)
Passenger grip warmer: Heater resistance (high) Heater resistance (low)	8.82 ~ 10.78 Ω (Green – Black) (RST90/RST90TF) 14.67 ~ 17.93 Ω (Yellow – Black) (RST90/RST90TF)
Circuit breaker: Type Amperage for individual circuit Main fuse Headlight fuse Signal fuse Ignition fuse Carburetor heater fuse Auxiliary DC jack fuse Reserve fuse Reserve fuse Reserve fuse Reserve fuse Reserve fuse	Fuse 30 A × 1 20 A × 1 10 A × 1 15 A × 1 20 A × 1 3 A × 1 30 A × 1 20 A × 1 15 A × 1 10 A × 1 3 A × 1
Coolant temperature sensor: Model/Manufacturer Resistance Indicator light (ON) (OFF)	8CC/MITSUBISHI 5.21 ~ 6.37 kΩ at 0 °C (32 °F) 0.290 ~ 0.354 kΩ at 80 °C (176 °F) 0.170 ~ 0.208 kΩ at 100 °C (212 °F) 90 ~ 110 °C (194 ~ 230 °F) 85 ~ 105 °C (185 ~ 221 °F)
Speed sensor: Model/Manufacture	8EK/NIPPON SEIKI
Carburetor heater: Model/Manufacture Wattage Resistance	5FU/NIPPON THERMOSTAT 30 W 6 ~ 10 Ω at 20 °C (68 °F)



HIGH ALTITUDE SETTINGS

Temperature Altitude	−30 °C (−22 °F)		−10 °C (−14 °F)		10 °C (50 °F)		Idling speed (r/min)
0 ~ 200 m (0 ~ 700 ft)	MJ PJ	#150 #50	MJ PJ	#148 #48	MJ PJ	#148 #45	1,350
200 ~ 1,500 m (700 ~ 5,000 ft)	MJ PJ	#148 #48	MJ PJ	#148 #45	MJ PJ	#145 #45	1,350
1,500 ~ 3,000 m (5,000 ~ 10,000 ft)	MJ PJ	#148 #45	MJ PJ	#145 #45	MJ PJ	#145 #40	1,350

[Production spec] MJ#1, 2, 3: #148 PJ: #45 Pilot screw: 2 turns out



TIGHTENING TORQUE

ENGINE

Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Spark plug	13	1.3	9.4	Apply the engine oil.
Cylinder head bolt (M10 × 1.25)	See NOTE.*1			
Cylinder head bolt	12	1.2	8.7	
Camshaft cap and cylinder head	10	1.0	7.2	
Cylinder head cover	12	1.2	8.7	
Camshaft and camshaft sprocket	24	2.4	17	
Timing chain tensioner	10	1.0	7.2	
Timing chain tensioner cap	7	0.7	5.1	
Timing chain guide (exhaust and intake)	10	1.0	7.2	
Cylinder head water jacket	10	1.0	7.2	
Thermostat housing cover	10	1.0	7.2	Apply LOCTITE®
Coolant temperature sensor	23	2.3	17	
Hose band	2	0.2	1.4	
Water pump	12	1.2	8.7	
Coolant reservoir tank	10	1.0	7.2	
Carburetor coolant shut-off assembly	5	0.5	3.6	
Bleed bolt (cooling system)	13	1.3	9.4	
Oil cooler	10	1.0	7.2	
Engine mounting adjust bolt	7	0.7	5.1	
Engine mounting nut	65	6.5	47	
Engine mounting bracket	25	2.5	18	Apply LOCTITE®
Oil pan	10	1.0	7.2	
Oil pan drain bolt	10	1.0	7.2	
Oil filter cartridge	17	1.7	12	
Oil pump	12	1.2	8.7	
Oil pump drive chain guide	10	1.0	7.2	
Oil pump housing cover	3	0.3	2.2	
Oil pump driven gear	15	1.5	11	
Oil tank drain bolt	16	1.6	11	
Oil tank and frame (bolt)	10	1.0	7.2	
Oil tank and frame (nut)	19	1.9	14	Apply the engine oil.
Oil gallery bolt	20	2.0	14	
Oil cooler outlet pipe	10	1.0	7.2	
Check valve	10	1.0	7.2	
Exhaust pipe joint	25	2.5	18	
Muffler band	20	2.0	14	
Exhaust pipe	25	2.5	18	
Exhaust pipe joint band	9	0.9	6.5	
Muffler	16	1.6	11	
Muffler cover	11	1.1	8	
Muffler cover plate	11	1.1	8	
Muffler side cover	7	0.7	5.1	
Exhaust pipe joint cover	6	0.6	4.3	
Crankcase (M9 × 1.25)	See NOTE.*2			Apply the engine oil.
Crankcase (M8 × 1.25)	24	2.4	17	Apply the engine oil.
Crankcase (M6 × 1.0)	12	1.2	8.7	Apply the engine oil.



Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Primary sheave drive shaft assembly bolt	12	1.2	8.7	Apply LOCTITE® Apply the engine oil.
Connecting rod and cap	See NOTE.*3			
Balancer	35	3.5	25	
Balancer shaft bearing retainer	10	1.0	7.2	
A.C. magneto rotor	130	13	94	
A.C. magneto rotor cover bolt (M6 × 1.0) × 11	12	1.2	8.7	
A.C. magneto rotor cover bolt (M6 × 1.0) × 1	12	1.2	8.7	
Starter clutch	12	1.2	8.7	
Stator coil	10	1.0	7.2	
Pickup coil	6	0.6	4.3	
A.C. magneto lead holder	10	1.0	7.2	
Carburetor joint	10	1.0	7.2	
Air filter case joint clamp screw	3	0.3	2.2	
Starter motor	27	2.7	20	
Fuel pump	10	1.0	7.2	
Fuel pump stay	10	1.0	7.2	
Fuel tank	10	1.0	7.2	
Starter motor lead	7	0.7	5.1	
Throttle cable locknut	6	0.6	4.3	
Rectifier/regulator	8	0.8	5.8	
Ground earth lead (engine mounting bracket)	25	2.5	18	
Ground earth lead (Ignitor unit)	7	0.7	5.1	
Frame cross member (front)	23	2.3	17	
Frame cross member (side [front])	45	4.5	32	
Frame cross member (side [rear])	23	2.3	17	

NOTE:

- *1: Tighten the cylinder head bolts to 15 Nm (1.5 m · kg, 11 ft · lb) in the proper tightening sequence, loosen and retighten the cylinder head bolts to 15 Nm (1.5 m · kg, 11 ft · lb) in the proper tightening sequence, and then tighten the cylinder head bolts further to reach the specified angle 65 ~ 70° in the proper tightening sequence.
- *2: Tighten the crankcase bolts to 20 Nm (2.0 m · kg, 14 ft · lb) in the proper tightening sequence, loosen and retighten the crankcase bolts to 20 Nm (2.0 m · kg, 14 ft · lb) in the proper tightening sequence, and then tighten the crankcase bolts further to reach the specified angle 120° in the proper tightening sequence.
- *3: Tighten the connecting rod nuts to 20 Nm (2.0 m · kg, 14 ft · lb), and then tighten the connecting rod nuts further to reach the specified angle 120°.



POWER TRAIN

Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Primary sheave	See NOTE.			Left-hand thread. Apply LOCTITE®
Spider and sliding sheave	200	20	145	
Primary sheave cap and sliding sheave	14	1.4	10	Apply LOCTITE®
Roller and weight (primary sheave)	6	0.6	4.3	
Set bolt (primary sheave collar)	4	0.4	2.9	Apply LOCTITE®
Secondary sheave	64	6.4	46	
Stopper (secondary sheave)	7	0.7	5.1	
Spring seat (secondary sheave)	23	2.3	17	
Secondary sheave adjusting bolt	10	1.0	7.2	
Drive sprocket	90	9.0	65	
Drive chain adjusting locknut	25	2.5	18	
Drive chain housing and frame	48	4.8	35	
Drive chain housing cover, chain housing and frame	48	4.8	35	(Without reverse model) Apply LOCTITE®
Driven sprocket	48	4.8	35	
Drive chain housing oil drain bolt	16	1.6	12	Apply LOCTITE®
Drive chain housing cover	24	2.4	17	
Set bolt (secondary shaft)	6	0.6	4.3	Apply LOCTITE®
Secondary shaft (bearing collar nut)	55	5.5	40	
Shift lever assembly	23	2.3	17	(With reverse model)
Shift lever assembly and lever rod	10	1.0	7.2	(With reverse model)
Lever and drive chain housing cover	10	1.0	7.2	(With reverse model)
Lever rod and lever	10	1.0	7.2	(With reverse model)
Shift rod and lever	10	1.0	7.2	(With reverse model)
Drive chain housing shaft and shift rod	10	1.0	7.2	(With reverse model)
Reverse drive gear shaft	10	1.0	7.2	(With reverse model) Apply LOCTITE®
Reverse driven gear	55	5.5	40	(With reverse model) Apply LOCTITE®
Counter gear	10	1.0	7.2	(With reverse model) Apply LOCTITE®
Drive chain housing and brake caliper	48	4.8	35	
Brake caliper bleed screw	6	0.6	4.3	
Brake caliper retaining pin	18	1.8	13	
Brake hose union bolt (caliper side)	30	3.0	22	
Parking brake assembly and drive chain housing	10	1.0	7.2	
Lever and parking brake assembly	16	1.6	12	
Brake hose union bolt (brake master cylinder side)	30	3.0	22	
Parking brake cable and parking brake lever	10	1.0	7.2	
Parking brake cable locknut	6	0.6	4.3	
Brake master cylinder	10	1.0	7.2	
Brake master cylinder holder and parking brake lever	23	2.3	17	



Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Brake hose holder and coolant reservoir tank	7	0.7	5.1	
Slide rail suspension mounting bolt (M10)	72	7.2	52	(RS90/RS90R/RS90M/RST90/ RST90TF)
Slide rail suspension mounting bolt (M10)	72	7.2	52	(RSG90) Apply LOCTITE®
Stopper band	4	0.4	2.9	
Hook and front pivot arm	16	1.6	11	(RSG90)
Front suspension bracket and sliding frame	48	4.8	35	(RSG90) Apply grease*
Bracket bolt (rear)	30	3.0	22	(RSG90) Apply LOCTITE®
Shaft and sliding frame	60	6.0	43	(RS90/RS90R/RS90M/RST90/ RST90TF)
Shaft and sliding frame	72	7.2	52	(RSG90) Apply LOCTITE®
Shock absorber and front pivot arm	49	4.9	35	
Shock absorber and front suspension bracket	49	4.9	35	
Front pivot arm and connecting arm	110	11.0	80	(RS90/RS90R)
Front pivot arm and connecting arm	72	7.2	52	(RS90M/RST90/RST90TF)
Front pivot arm and sliding frame	60	6.0	43	
Front suspension bracket and connecting arm	72	7.2	52	(RS90/RS90R/RS90M/RST90/ RST90TF)
Front pivot arm and front pivot arm bracket	72	7.2	52	(RSG90)
Front pivot arm bracket and sliding frame	72	7.2	52	(RSG90)
Suspension wheel (front and center)	60	6.0	43	(RS90/RS90R/RS90M/RST90/ RST90TF)
Suspension wheel (front and center)	72	7.2	52	(RSG90)
Suspension wheel (rear)	80	8.0	58	(RST90TF)
Wheel bracket and sliding frame	60	6.0	43	(RS90/RS90R/RS90M/RST90/ RST90TF)
Wheel bracket and sliding frame	24	2.4	17	(RSG90)
Set bolt (wheel bracket)	6	0.6	4.3	(RS90/RS90R/RS90M/RST90/ RST90TF)
Set bolt (Collar)	9	0.9	6.5	(RS90/RS90R/RS90M/RST90/ RST90TF)
Anti-bottoming stopper	60	6.0	43	(RS90/RS90R)
Shock absorber and connecting arm	49	4.9	35	(RS90/RS90R)
Shock absorber and rear suspension bracket	49	4.9	35	(RSG90)
Pull rod and shock absorber and rear suspension bracket	49	4.9	35	(RS90M/RST90/RST90TF)
Rear suspension bracket and sliding frame	60	6.0	43	(RS90M/RST90/RST90TF)
Rear pivot arm and pull rod	49	4.9	35	(RSG90) Apply LOCTITE®
Rear pivot arm and pull rod	49	4.9	35	(RS90M/RST90/RST90TF)
Rear suspension bracket and pull rod	49	4.9	35	(RSG90) Apply LOCTITE®
Shock absorber and rear pivot arm	49	4.9	35	
Rear pivot arm and control rod stopper	60	6.0	43	(RS90/RS90R/RS90M/RST90/ RST90TF)
Rear pivot arm and rear pivot arm bracket	24	2.4	17	(RSG90)
Control rod and sliding frame	72	7.2	52	(RSG90)
Control rod bolt	32	3.2	23	(RSG90)
Control rod adjusting locknut	25	2.5	18	
Control rod shaft and sliding frame	72	7.2	52	(RS90/RS90R/RS90M/RST90/ RST90TF)
Rear pivot arm bracket	72	7.2	52	(RSG90) Apply LOCTITE®

TIGHTENING TORQUE

SPEC



Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Wheel bracket shaft and sliding frame	72	7.2	52	(RSG90) Apply LOCTITE®
2-up adjusting block	60	6.0	43	(RST90)
Pivot bracket and front sliding frame	64	6.4	46	(RST90TF)
Pivot bracket and rear sliding frame	34	3.4	24	(RST90TF)
Pivot bracket and spring hook	28	2.8	20	(RST90TF) Apply grease*
Rear axle	75	7.5	54	(RS90/RS90R/RS90M/RST90/RST90TF)
Rear axle	80	8.0	58	(RST90TF)
Set bolt (front axle)	9	0.9	6.5	Apply LOCTITE®
Speed sensor	20	2.0	14	
Bearing holder	20	2.0	14	
Gear unit (speed sensor)	40	4.0	29	

*: ESSO beacon 325 grease or Aeroshell grease #7A

NOTE:

Tightening steps:

1. Tighten the bolt to a torque at 120 Nm (12.0 m · kg, 85 ft · lb).
2. Loosen the bolt completely.
3. Retighten the bolt to a torque of 60 Nm (6.0 m · kg, 43 ft · lb).



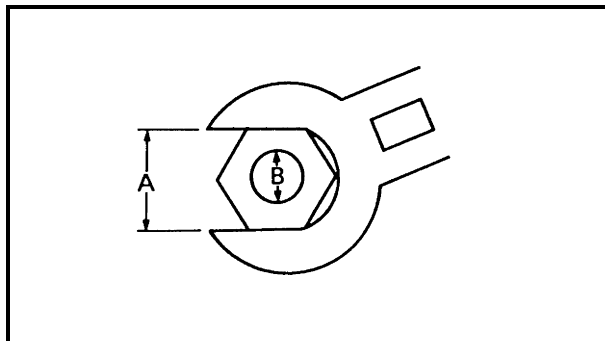
CHASSIS

Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Handlebar holder	15	1.5	11	Apply LOCTITE®
Steering column 1 (front)	23	2.3	17	
Steering column 1 (rear upper)	23	2.3	17	
Steering column 1 (rear lower)	35	3.5	25	
Steering column 2 (upper)	23	2.3	17	
Steering column 2 (lower)	23	2.3	17	
Steering column 2 and steering shaft	35	3.5	25	
Steering shaft end locknut	25	2.5	18	
Steering shaft and steering column 1	35	3.5	25	
Steering column 1 and relay rod	35	3.5	25	
Relay rod and relay arm	30	3.0	22	
Relay arm and idler arm	35	3.5	25	
Idler arm and tie rod	30	3.0	22	
Tie rod and steering arm	35	3.5	25	
Idler arm	67	6.7	49	Apply LOCTITE®
Tie rod end locknut	25	2.5	18	
Ski	48	4.8	35	(RST90 "USA/Canada")
Ski runner	19	1.9	14	
Ski column lower bracket	11	1.1	8	
Ski and ski handle (M8 × 55)	11	1.1	8	
Ski and ski handle (M8 × 100)	17	1.7	12	
Shock absorber (upper)	45	4.5	33	
Shock absorber (lower)	45	4.5	33	
Steering arm and ski column	35	3.5	25	
Upper arm and frame	37	3.7	27	
Upper arm and steering knuckle	40	4.0	29	
Lower arm and frame	37	3.7	27	
Lower arm and steering knuckle	65	6.5	47	
Stabilizer and stabilizer arm	11	1.1	8	
Stabilizer arm and connecting rod	34	3.4	25	
Connecting rod and lower arm	34	3.4	25	
Rear bumper cover	4	0.4	2.9	
Seat and muffler cover	7	0.7	5.1	
Tail brake light cover	7	0.7	5.1	
Side cover	7	0.7	5.1	
Carrier lock bracket	26	2.6	19	
Passenger grip warmer	26	2.6	19	
Tail/brake light assembly	10	1.0	7.2	
Battery bracket	18	1.8	13	
Main switch	4	0.4	2.9	
Shroud	13	1.3	9.4	

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

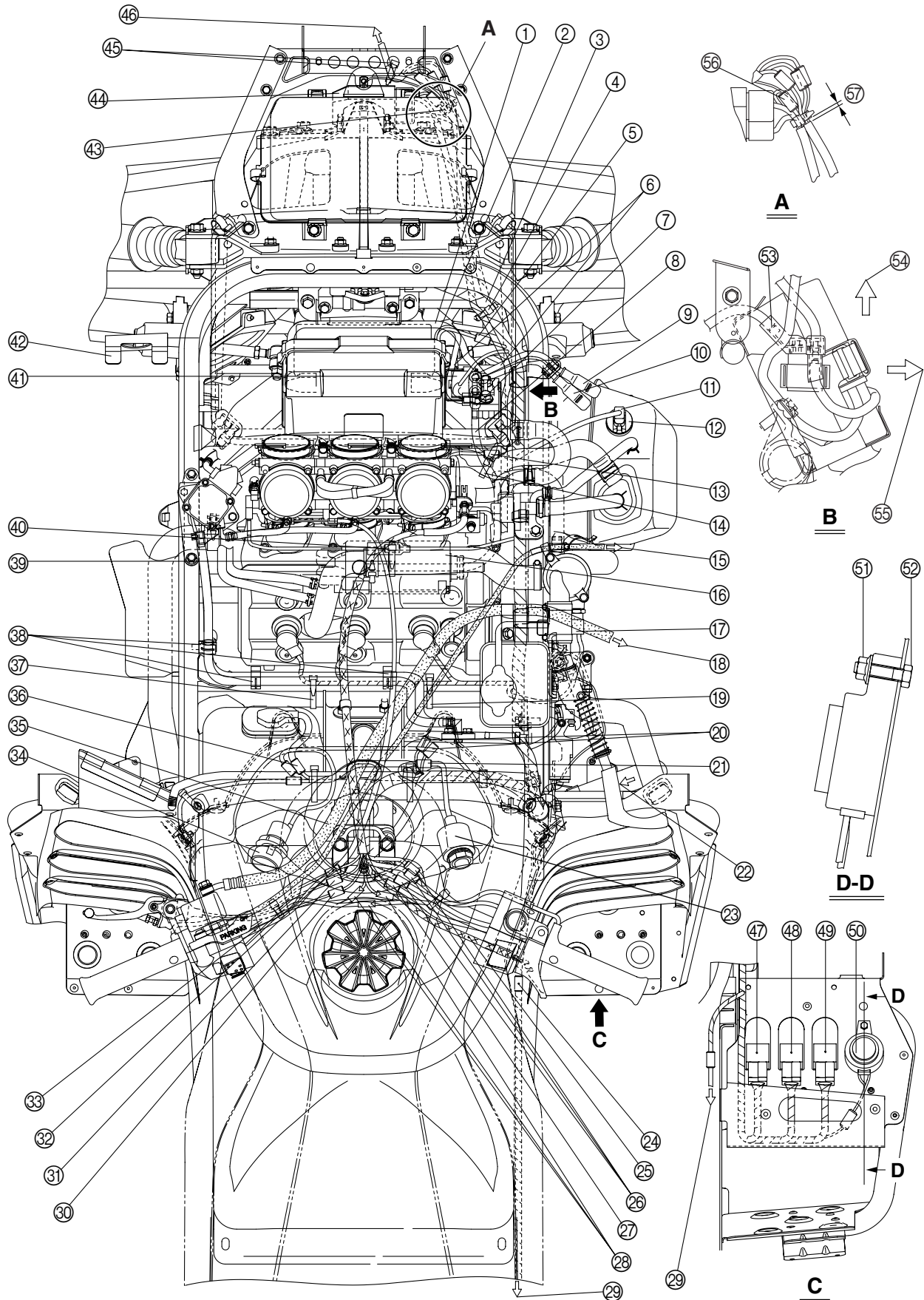


A: Distance across flats

B: Outside thread diameter

DEFINITION OF UNITS

Unit	Read	Definition	Measurement
mm	Millimeter	10^{-3} meter	Length
cm	Centimeter	10^{-2} meter	Length
kg	Kilogram	10^3 gram	Weight
N	Newton	$1 \text{ kg} \times \text{m/sec}^2$	Force
Nm	Newton meter	$\text{N} \times \text{m}$	Torque
m · kg	Meter kilogram	$\text{m} \times \text{kg}$	Torque
Pa	Pascal	N/m^2	Pressure
N/mm	Newtons per millimeter	N/mm	Spring rate
L	Liter	—	Volume or capacity
cm^3	Cubic centimeter	—	Volume or capacity
r/min	Rotations per minute	—	Engine speed





CABLE ROUTING

- ① Positive battery lead
- ② Negative battery lead
- ③ Wire harness
- ④ Fasten the A.C. magneto lead and wire harness with the plastic band.
- ⑤ Negative battery lead coupler
- ⑥ Route the negative battery leads under the starter relay.
- ⑦ Face the starter motor lead terminal towards the rear of the snowmobile.
- ⑧ Route the starter motor lead over the battery bracket.
- ⑨ Negative battery lead terminal
- ⑩ Positive battery lead terminal
- ⑪ Oil level switch lead coupler
- ⑫ Oil level gauge/dipstick
- ⑬ Carburetor heater coupler
- ⑭ Fasten the starter motor lead, oil cooler outlet hose, and oil tank inlet hose with the plastic band. Face the end of the plastic band towards the battery bracket.
- ⑮ To the parking brake
- ⑯ Starter motor
- ⑰ Coolant temperature sensor coupler
- ⑱ To the brake caliper
- ⑲ Fasten the ignition coil leads with the plastic band.
- ⑳ Joint coupler
- ㉑ Place the main switch lead coupler underneath the fuel tank cover.
- ㉒ To the heat exchanger
- ㉓ Main switch
- ㉔ Tail/brake light sub-wire harness coupler
- ㉕ Throttle cable

CHEMINEMENT DES CABLES

- ① Câble positif de batterie
- ② Câble négatif de batterie
- ③ Faisceau de fils
- ④ Attacher le fil d'alternateur et le faisceau de fils à l'aide d'une attache réutilisable.
- ⑤ Coupleur de câble négatif de batterie
- ⑥ Acheminer les câbles négatifs de la batterie sous le relais du démarreur.
- ⑦ Diriger la borne du fil du démarreur vers l'arrière de la motoneige.
- ⑧ Acheminer le fil du démarreur par-dessus le support de la batterie.
- ⑨ Borne du câble négatif de batterie
- ⑩ Borne du câble positif de batterie
- ⑪ Coupleur du fil du contacteur de niveau d'huile
- ⑫ Jauge de niveau d'huile
- ⑬ Coupleur de réchauffeur de carburateur
- ⑭ Attacher le fil du démarreur, le flexible de sortie du radiateur d'huile et le flexible d'arrivée du réservoir d'huile à l'aide d'un collier réutilisable. Diriger l'extrémité du collier réutilisable vers le support de la batterie.
- ⑮ Vers le frein de stationnement
- ⑯ Démarreur
- ⑰ Coupleur de capteur de température du liquide de refroidissement
- ⑱ Vers l'étrier de frein
- ⑲ Attacher les fils de la bobine d'allumage à l'aide d'une attache réutilisable.
- ㉑ Coupleur double
- ㉑ Placer le coupleur du fil du contacteur à clé sous le cache du réservoir de carburant.
- ㉒ Vers l'échangeur de chaleur
- ㉓ Contacteur à clé
- ㉔ Coupleur du faisceau de fils secondaire de feu arrière/stop
- ㉕ Câble d'accélération

KABELDRAGNINGSSCHEMA

- ① Positiv batteriledning
- ② Negativ batteriledning
- ③ Kabelstam
- ④ Fäst AC-magnetens ledning och kabelstammen med ett plastband.
- ⑤ Koppling, negativ batteriledning
- ⑥ Dra negativa batteriledningar under startreläet.
- ⑦ Ändpunkten på startmotorns ledning ska vara vänd mot snöskoterns bakdel.
- ⑧ Dra startmotorns ledning över batterifästet.
- ⑨ Ändpunkt på negativ batteriledning
- ⑩ Ändpunkt på positiv batteriledning
- ⑪ Koppling till oljenivåbrytarens ledning
- ⑫ Oljenivåmätare/oljesticka
- ⑬ Koppling, förvärmare
- ⑭ Fäst startmotorns ledning, oljekylarens utloppsslang, och oljetankens inloppsslang med ett plastband. Vänd ändan på plastbandet mot batterifästet.
- ⑮ Till parkeringsbromsen
- ⑯ Startmotor
- ⑰ Koppling, kylvätsketemperatursensor
- ⑱ Till bromsoket
- ⑲ Fäst tändspolens ledningar med ett plastband.
- ㉑ Skarvkoppling
- ㉑ Placera kopplingen på huvudströmbrytarens ledning under bränsletankens skydd.
- ㉒ Till värmeväxlaren.
- ㉓ Huvudströmbrytare
- ㉔ Koppling, bak/bromsljusets subkabelstam
- ㉕ Gasvajer

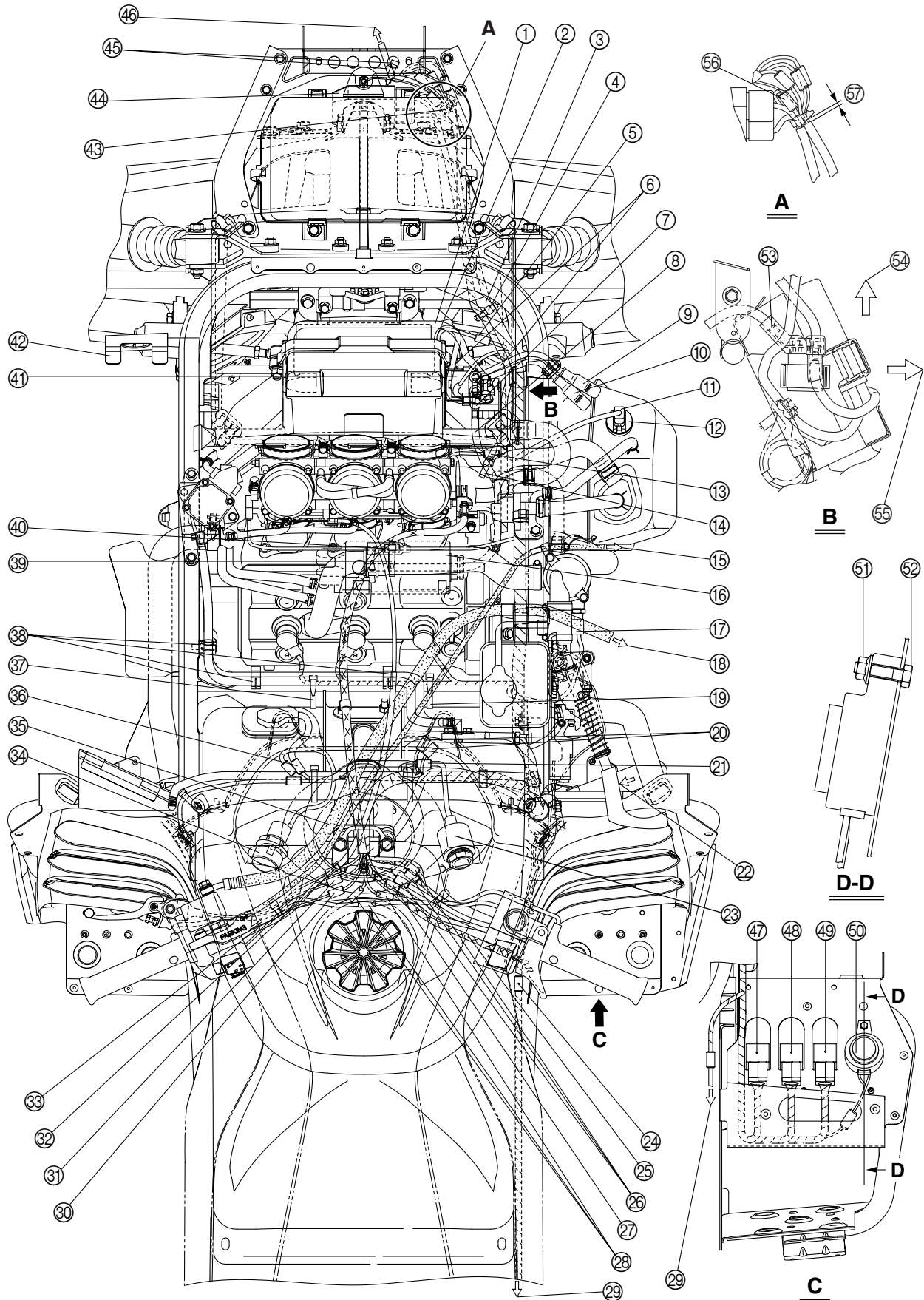




- ②⑥ Right handlebar switch lead couplers
- ②⑦ Thumb warmer adjustment switch lead coupler
- ②⑧ Grip warmer lead connectors
- ②⑨ To the tail/brake light
- ③① Headlight beam switch coupler
- ③① Grip warmer switch lead coupler
- ③② Brake light switch lead coupler
- ③③ Route the starter cable over the left handlebar switch lead.
- ③④ Auxiliary DC jack
- ③⑤ Brake hose
- ③⑥ Fuel sender lead coupler
- ③⑦ Fasten the ignition coil lead under the fuel hoses with the plastic band.
- ③⑧ Fasten the fuel hoses with the holders.
- ③⑨ Slide the boot completely over the throttle position sensor coupler, and then fasten the coupler to the coolant hose 8 with the plastic band.
- ④① Cover the throttle position sensor coupler and the throttle position sensor leads that are not covered by the protector with the boot.
- ④① Starter relay
- ④② Drive guard bracket
- ④③ Fasten the A.C. magneto lead and wire harness with the plastic band.
- ④④ Rectifier/regulator
- ④⑤ Fasten the headlight sub-wire harness at the white tape with the plastic band.

- ②⑥ Coupleurs de fils du combiné de contacteurs droit
- ②⑦ Coupleur du fil de contacteur de réglage du chauffe-pouce
- ②⑧ Connecteurs des fils de poignée chauffante
- ②⑨ Vers le feu arrière/stop
- ③① Coupleurs de contacteur d'éclairage
- ③① Coupleur du fil de contacteur de poignée chauffante
- ③② Coupleur de fil de contacteur de feu stop sur frein
- ③③ Acheminer le câble de starter par-dessus le fil du combiné de contacteurs gauche.
- ③④ Prise pour accessoire
- ③⑤ Flexible de frein
- ③⑥ Coupleur de fil du capteur de carburant
- ③⑦ Attacher le fil de la bobine d'allumage sous les flexibles de carburant à l'aide d'un collier réutilisable.
- ③⑧ Attacher les flexibles de carburant aux supports.
- ③⑨ Faire glisser tout à fait le manchon sur le coupleur du capteur de position de papillon des gaz, puis attacher le coupleur à la durite de liquide de refroidissement 8 à l'aide d'un collier réutilisable.
- ④① Couvrir du manchon le coupleur et les fils du capteur de position de papillon des gaz qui n'ont pas de cache de protection.
- ④① Relais du démarreur
- ④② Support du carter de protection
- ④③ Attacher le fil d'alternateur et le faisceau de fils à l'aide d'une attache réutilisable.
- ④④ Redresseur/régulateur
- ④⑤ Attacher le faisceau de fils secondaire de phare à l'aide d'un collier réutilisable à l'endroit repéré d'un adhésif blanc.

- ②⑥ Kopplingar, ledning till höger styrlångs omkopplare
- ②⑦ Koppling, ledning till omkopplare för tumvärmareinställning
- ②⑧ Kontaktdon, greppvärmarens ledning
- ②⑨ Till bak/bromsljus
- ③① Koppling, strålkastarljusets omkopplare
- ③① Koppling, ledning till greppvärmarens omkopplare
- ③② Koppling, ledning till bromsljusets omkopplare
- ③③ Dra startvärmaren ovan ledningen till vänster styrlångs omkopplare.
- ③④ Extra likströmsuttag (DC)
- ③⑤ Bromsslang
- ③⑥ Koppling, ledning till bränslemätare
- ③⑦ Fäst tändspolens ledning under bränsleslangarna med ett plastband.
- ③⑧ Fäst bränsleslangarna med hållarna.
- ③⑨ Skjut gummiskyddet helt över kopplingen till gasspjällets lägesavkännare, fäst sedan kopplingen på kylarslang 8 med ett plastband.
- ④① Använd gummiskyddet för att täcka över kopplingen till gasspjällets lägesavkännare och ledningar till gasspjällets lägesavkännare som inte är över täckta av skyddsdonet.
- ④① Startrelä
- ④② Fäste, drivremsskydd
- ④③ Fäst AC-magnetens ledning och kabelstammen med ett plastband.
- ④④ Likriktare/regulator
- ④⑤ Fäst strålkastarens sub-kabelstam vid den vita tejpens med ett plastband.

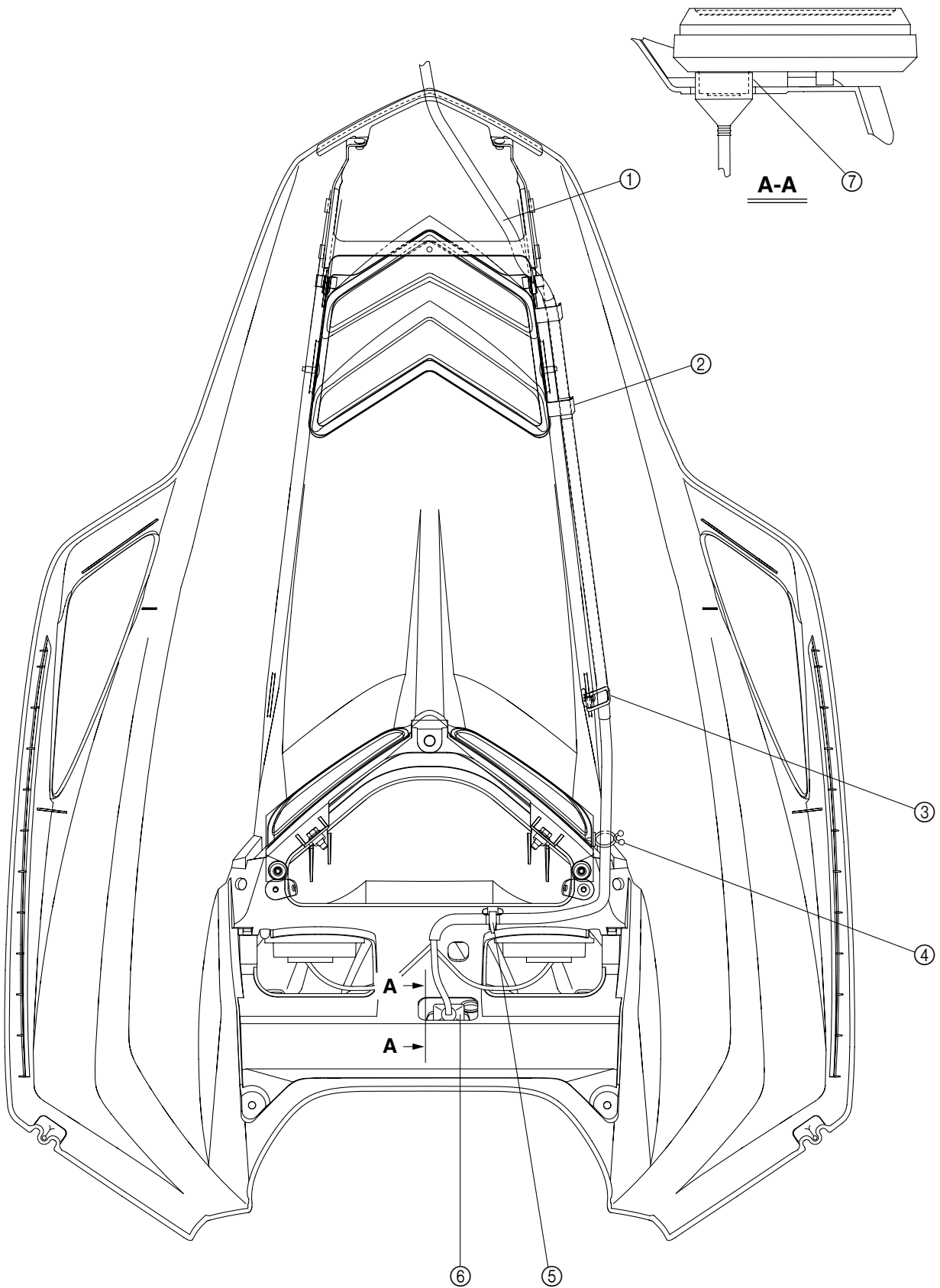




- ④6 To the headlights and meter assembly
- ④7 Load control relay
- ④8 Headlight relay
- ④9 Carburetor heater relay
- ⑤0 Back buzzer (RS90R/RSG90/RST90/RST90TF)
- ⑤1 Nut
- ⑤2 Bolt
- ⑤3 Install the starter motor lead terminal so that the terminal is bent upward.
- ⑤4 Up
- ⑤5 Front
- ⑤6 Pickup coil coupler
- ⑤7 The plastic band should be less than 20 mm (0.79 in) from the pickup coil coupler.

- ④6 Vers les phares et le tableau de bord
- ④7 Relais du contrôleur de charge
- ④8 Relais des phares
- ④9 Relais de réchauffeur de carburateur
- ⑤0 Avertisseur de marche arrière (RS90R/RSG90/RST90/RST90TF)
- ⑤1 Ecrou
- ⑤2 Boulon
- ⑤3 Monter la borne du fil de démarreur de sorte que son côté recourbé soit dirigé vers le haut.
- ⑤4 Haut
- ⑤5 Avant
- ⑤6 Coupleur de bobine de déclenchement
- ⑤7 Poser le collier réutilisable à moins de 20 mm (0,79 in) du coupleur de la bobine de déclenchement.

- ④6 Till strålkastarna och mätartavlan
- ④7 Driftrelä
- ④8 Strålkastarrelä
- ④9 Förvärmarens relä
- ⑤0 Backsummer (RS90R/RSG90/RST90/RST90TF)
- ⑤1 Mutter
- ⑤2 Bult
- ⑤3 Installera kontakten på startmotorns ledning så att kontakten är böjd uppåt.
- ⑤4 Upp
- ⑤5 Fram
- ⑤6 Koppling, upptagningsspole
- ⑤7 Plastbandet ska vara mindre än 20 mm (0,79 in) från upptagningsspolens koppling.

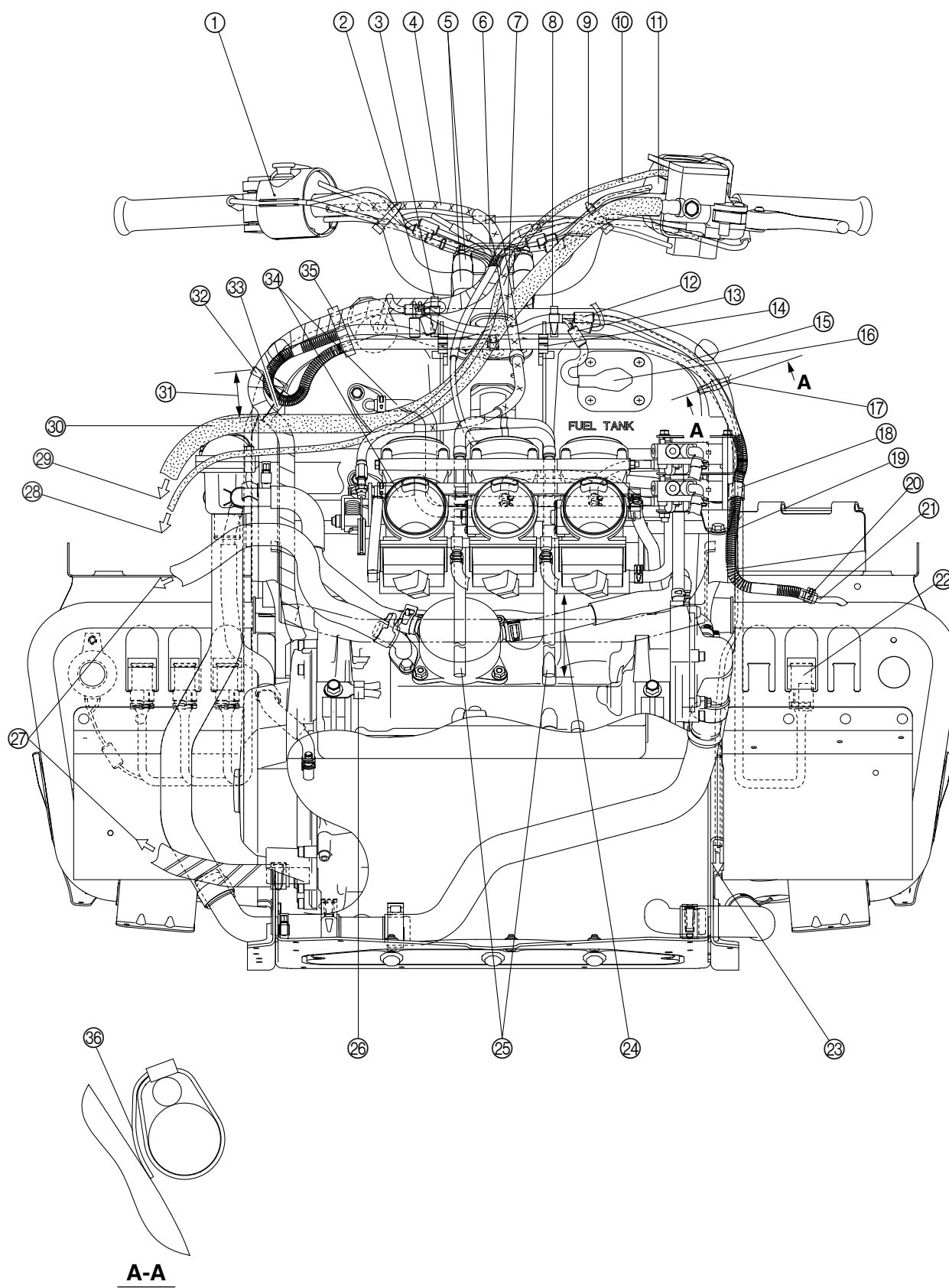




- ① Headlight sub-wire harness
- ② Fasten the headlight sub-wire harness at the white tape with the holder on the shroud.
- ③ Fasten the headlight sub-wire harness with the holder.
- ④ Fasten the headlight sub-wire harness with the clamp.
- ⑤ Fasten the headlight sub-wire harness at the white tape with the plastic band.
- ⑥ After connecting the meter assembly coupler, install the rubber cover securely.
- ⑦ Install the meter assembly coupler rubber cover until it contacts the meter assembly.

- ① Faisceau de fils secondaire des phares
- ② Attacher le faisceau de fils secondaire des phares à l'endroit repéré de ruban adhésif blanc au support du capot.
- ③ Attacher le faisceau de fils secondaire des phares au support.
- ④ Attacher le faisceau de fils secondaire des phares à l'aide d'une bride.
- ⑤ Attacher le faisceau de fils secondaire des phares à l'endroit repéré de ruban adhésif blanc à l'aide d'un collier réutilisable.
- ⑥ Après avoir branché le coupleur du tableau de bord, bien veiller à le couvrir correctement de son cache en caoutchouc.
- ⑦ Le cache en caoutchouc du coupleur du tableau de bord est monté correctement lorsqu'il touche le tableau de bord.

- ① Strålkastare, sub-kabelstam
- ② Fäst strålkastarens sub-kabelstam vid den vita tejpén med hållaren på huven.
- ③ Fäst strålkastarens sub-kabelstam med hållaren.
- ④ Fäst strålkastarens sub-kabelstam med en klämma.
- ⑤ Fäst strålkastarens sub-kabelstam vid den vita tejpén med ett plastband.
- ⑥ Efter anslutning av mätartavlans koppling, sätt på på gummiskyddet ordentligt.
- ⑦ Skjut gummiskyddet på mätartavlans koppling tills det kommer i kontakt med mätartavlans.

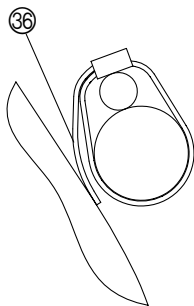
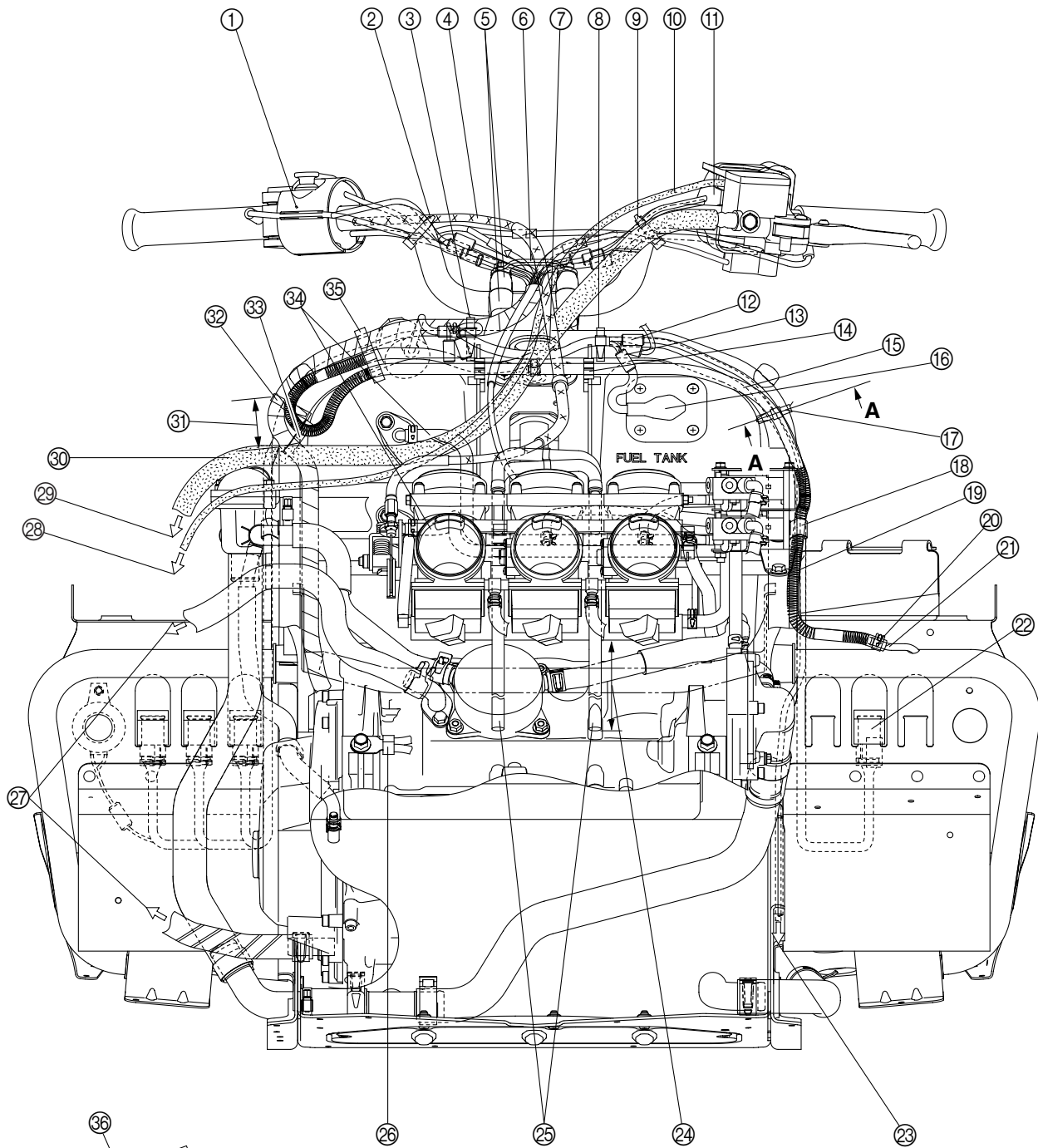




- ① Right handlebar switch
- ② Fasten the right handlebar switch lead, thumb warmer adjustment switch lead, thumb warmer lead, and grip warmer lead with the plastic band. Do not fasten the throttle cable.
- ③ Fasten the wire harness and main switch lead with the plastic band.
- ④ Throttle cable
- ⑤ Handlebar holder
- ⑥ Pass all of the leads and cables through the guide except the brake hose and parking brake cable.
- ⑦ Pass the brake hose and parking brake cable through the guide.
- ⑧ Fasten the fuel sender lead and speed sensor lead with the plastic band.
- ⑨ Fasten the brake light switch lead, headlight beam switch lead, grip warmer switch lead, and grip warmer lead with the plastic band.
- ⑩ Parking brake cable
- ⑪ Left handlebar switch
- ⑫ Speed sensor coupler
- ⑬ Fuel sender coupler
- ⑭ Fasten the fuel tank breather hose with the holder.
- ⑮ Route the fuel tank breather hose along the frame cross member.

- ① Combiné de contacteurs droit
- ② Attacher le fil du combiné de contacteurs droit, le fil du contacteur de réglage du chauffe-pouce, le fil du chauffe-pouce et le fil de la poignée chauffante à l'aide d'un collier réutilisable. Ne pas attacher le câble d'accélération.
- ③ Attacher le faisceau de fils et le fil de contacteur à clé à l'aide d'une attache réutilisable.
- ④ Câble d'accélération
- ⑤ Support de guidon
- ⑥ Faire passer tous les fils et les câbles par le guide, à l'exception du câble du frein de stationnement. Ne pas acheminer le flexible de frein.
- ⑦ Faire passer le flexible de frein et le câble de frein de stationnement par le guide.
- ⑧ Attacher le fil du capteur de carburant et le fil du capteur de vitesse à l'aide d'un collier réutilisable.
- ⑨ Attacher le fil du contacteur de feu stop, le fil du contacteur d'éclairage, le fil du contacteur de la poignée chauffante et le fil de la poignée chauffante à l'aide d'un collier réutilisable.
- ⑩ Câble de frein de stationnement
- ⑪ Combiné de contacteurs gauche
- ⑫ Coupleur de capteur de vitesse
- ⑬ Coupleur de capteur de carburant
- ⑭ Attacher la durite de mise à l'air de réservoir de carburant à l'aide du support.
- ⑮ Acheminer la durite de mise à l'air de réservoir de carburant le long de la traverse du cadre.

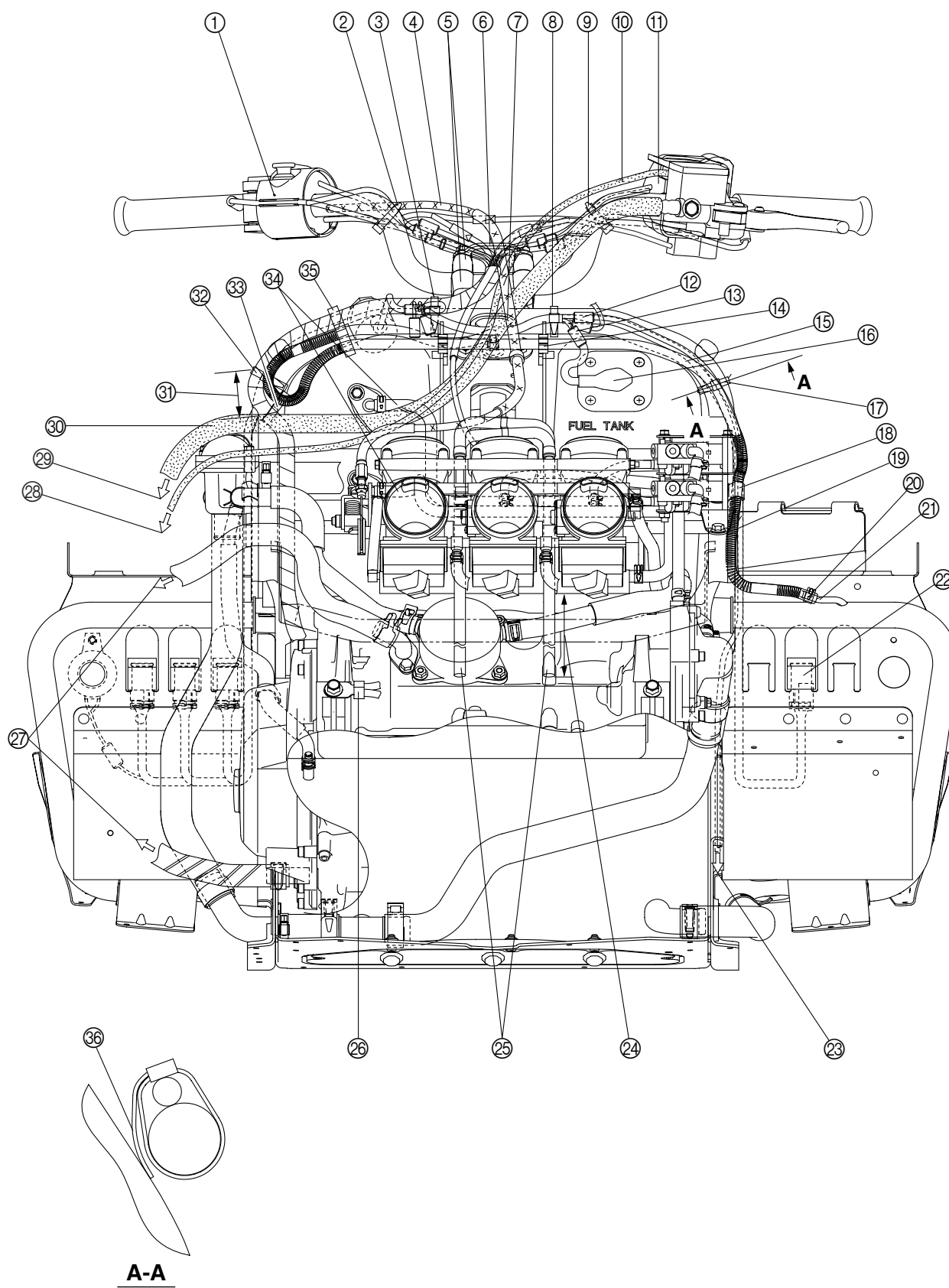
- ① Omkopplare, höger styrstång
- ② Fäst ledningen till höger styrsångs omkopplare, ledningen till omkopplaren för tumvärmarminställning, ledningen till tumvärmarmen, och ledning till greppvärmaren med ett plastband. Fäst inte gasväjaren.
- ③ Fäst kabelstammen och huvudströmbrytarens ledning med ett plastband.
- ④ Gasväjare
- ⑤ Hållare, styrstång
- ⑥ Dra alla ledningar och kablar genom kabelhållaren utom bromsslängen och parkeringsbromsvajern.
- ⑦ Dra bromsslängen och parkeringsbromsvajern genom kabelhållaren.
- ⑧ Fäst bränslematarens ledning och hastighetssensorns ledning med ett plastband.
- ⑨ Fäst ledningen till bromsljusets omkopplare, ledningen till strålkastarljusets omkopplare, ledningen till greppvärmarens omkopplare, och ledningen till greppvärmaren med ett plastband.
- ⑩ Parkeringsbromsväjä
- ⑪ Omkopplare, vänster styrsång
- ⑫ Koppling, hastighetssensor
- ⑬ Koppling, bränslematare
- ⑭ Fäst bränsletankens ventilations-slang med hållaren.
- ⑮ Dra bränsletankens ventilations-slang längs med ramtvärbalken.



A-A



- | | | |
|--|--|---|
| <p>⑩ Fuel sender terminal cover</p> <p>⑪ Fasten the speed sensor lead only. (RS90/RS90R/RSG90/RS90M)
Fasten the speed sensor lead and passenger grip warmer relay lead with the holder. (RST90/RST90TF)</p> <p>⑫ Fasten the hose protector of the fuel tank breather hose. (RS90/RS90R/RSG90/RS90M)
Fasten the fuel tank breather hose, speed sensor lead, and passenger grip warmer relay lead with the holder. Secure the frame cross member and the holder to the frame with the nut and bolt. (RST90/RST90TF)</p> <p>⑬ Hose protector</p> <p>⑭ Face the ends of the clamp upward.</p> <p>⑮ Install the fuel tank breather hose onto the breather pipe until it contacts the running board support.</p> <p>⑯ Install the passenger grip warmer relay on one of the three tabs. (RST90/RST90TF)</p> <p>⑰ To the speed sensor</p> <p>⑱ 60 ~ 70 mm (2.4 ~ 2.8 in)</p> <p>⑲ Route the float chamber air vent hoses behind the battery bracket.</p> <p>⑳ Ground leads</p> <p>㉑ To the oil tank</p> <p>㉒ To the parking brake</p> <p>㉓ To the brake caliper</p> <p>㉔ Brake hose</p> <p>㉕ Less than 50 mm (2.0 in)</p> | <p>⑩ Cache de la borne du capteur de carburant</p> <p>⑪ Attacher uniquement le fil du capteur de vitesse. (RS90/RS90R/RSG90/RS90M)
Attacher le fil du capteur de vitesse et le fil du relais de la poignée chauffante de passager à l'aide du support. (RST90/RST90TF)</p> <p>⑫ Attacher la protection de la durite de mise à l'air de réservoir de carburant. (RS90/RS90R/RSG90/RS90M)
Attacher la durite de mise à l'air de réservoir de carburant, le fil du capteur de vitesse et le fil du relais du chauffe-poignée de passager à l'aide du support. Fixer la traverse et le support au cadre à l'aide du boulon et de l'écrou. (RST90/RST90TF)</p> <p>⑬ Protection de durite</p> <p>⑭ Diriger les extrémités du collier à pince vers le haut.</p> <p>⑮ Monter la durite de mise à l'air de réservoir de carburant sur le tube reniflard de sorte qu'elle touche le support de la barre de frottement.</p> <p>⑯ Monter le relais de la poignée chauffante de passager sur une des trois languettes. (RST90/RST90TF)</p> <p>⑰ Vers le capteur de vitesse</p> <p>⑱ 60 ~ 70 mm (2,4 ~ 2,8 in)</p> <p>⑲ Acheminer les durites régulatrices de pression de la cuve par-derrière le support de la batterie.</p> <p>⑳ Fils de la masse</p> <p>㉑ Vers le réservoir d'huile</p> <p>㉒ Vers le frein de stationnement</p> <p>㉓ Vers l'étrier de frein</p> <p>㉔ Flexible de frein</p> <p>㉕ Moins de 50 mm (2,0 in)</p> | <p>⑩ Kontaktskydd, bränslematare</p> <p>⑪ Fäst endast ledningen till hastighetssensorn. (RS90/RS90R/RSG90/RS90M)
Fäst ledningen till hastighets-sensorn och ledningen till passagerarhandtagsvärmaren med hållaren. (RST90/RST90TF)</p> <p>⑫ Fäst slangskyddet som sitter på bränsletankens ventilations-slang. (RS90/RS90R/RSG90/RS90M)
Fäst bränsletankens ventilations-slang, ledningen till hastighets-sensorn, och ledningen till passagerarhandtagsvärmaren med hållaren. Skruva fast ramtvärbalken och hållaren i ramen med muttern och bulten. (RST90/RST90TF)</p> <p>⑬ Slangskydd</p> <p>⑭ Vänd klämmans ändar uppåt.</p> <p>⑮ Sätt på bränsletankens ventilationsslang på ventilationsröret tills den kommer i kontakt med fotbrädets stöd.</p> <p>⑯ Montera passagerarhandtagsvärmarens relä på en av de tre tabbarna. (RST90/RST90TF)</p> <p>⑰ Till hastighetssensorn</p> <p>⑱ 60 ~ 70 mm (2,4 ~ 2,8 in)</p> <p>⑲ Dra flottörhusets luftventilations-slang bakom batterifästet.</p> <p>⑳ Jordledningar</p> <p>㉑ Till oljetanken</p> <p>㉒ Till parkeringsbromsen</p> <p>㉓ Till bromsoket</p> <p>㉔ Bromsslang</p> <p>㉕ Mindre än 50 mm (2,0 in)</p> |
|--|--|---|

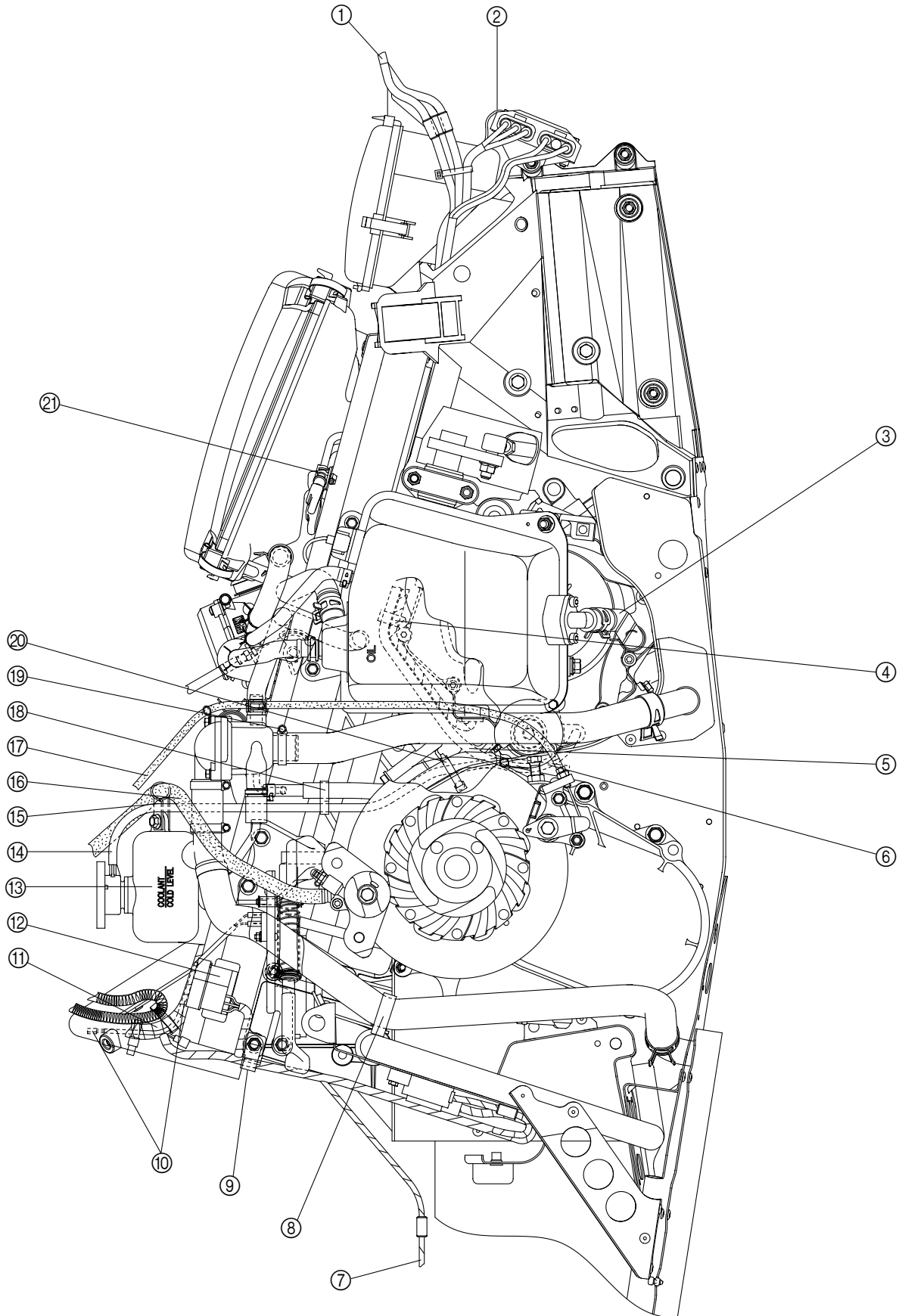




- ③② Fasten the wire harness with the plastic band. The buckle and the end of the plastic band should not be between the wire harness and the shroud.
- ③③ Fasten the wire harness and fuel tank breather hose together with the clip. The open ends of the clip should face inward.
- ③④ Fuel hoses
- ③⑤ Fasten the wire harness and fuel tank breather hose together with the clip. The open ends of the clip should face upward.
- ③⑥ Place the end of the plastic band between the frame cross member and fuel tank.

- ③② Attacher le faisceau de fils à l'aide d'une attache réutilisable. Ne pas placer la boucle et l'extrémité du collier entre le faisceau de fils et le capot.
- ③③ Attacher ensemble le faisceau de fils et la durite de mise à l'air de réservoir de carburant à l'aide d'un clip. Diriger les extrémités du clip vers l'intérieur.
- ③④ Flexibles de carburant
- ③⑤ Attacher ensemble le faisceau de fils et la durite de mise à l'air de réservoir de carburant à l'aide d'un clip. Diriger les extrémités du clip vers le haut.
- ③⑥ Diriger l'extrémité du collier réutilisable entre la traverse du cadre et le réservoir de carburant.

- ③② Fäst kabelstammen med ett plastband. Spännet och ändan på plastbandet ska inte ligga mellan kabelstammen och huven.
- ③③ Fäst ihop kabelstammen och bränsletankens ventilations-slang med en klämma. De öppna ändarna på klämman ska vara vända inåt.
- ③④ Bränsleslangar
- ③⑤ Fäst ihop kabelstammen och bränsletankens ventilations-slang med en klämma. De öppna ändarna på klämman ska vara vända uppåt.
- ③⑥ Placera ändan på plastbandet mellan ramtvärbalken och bränsletanken.

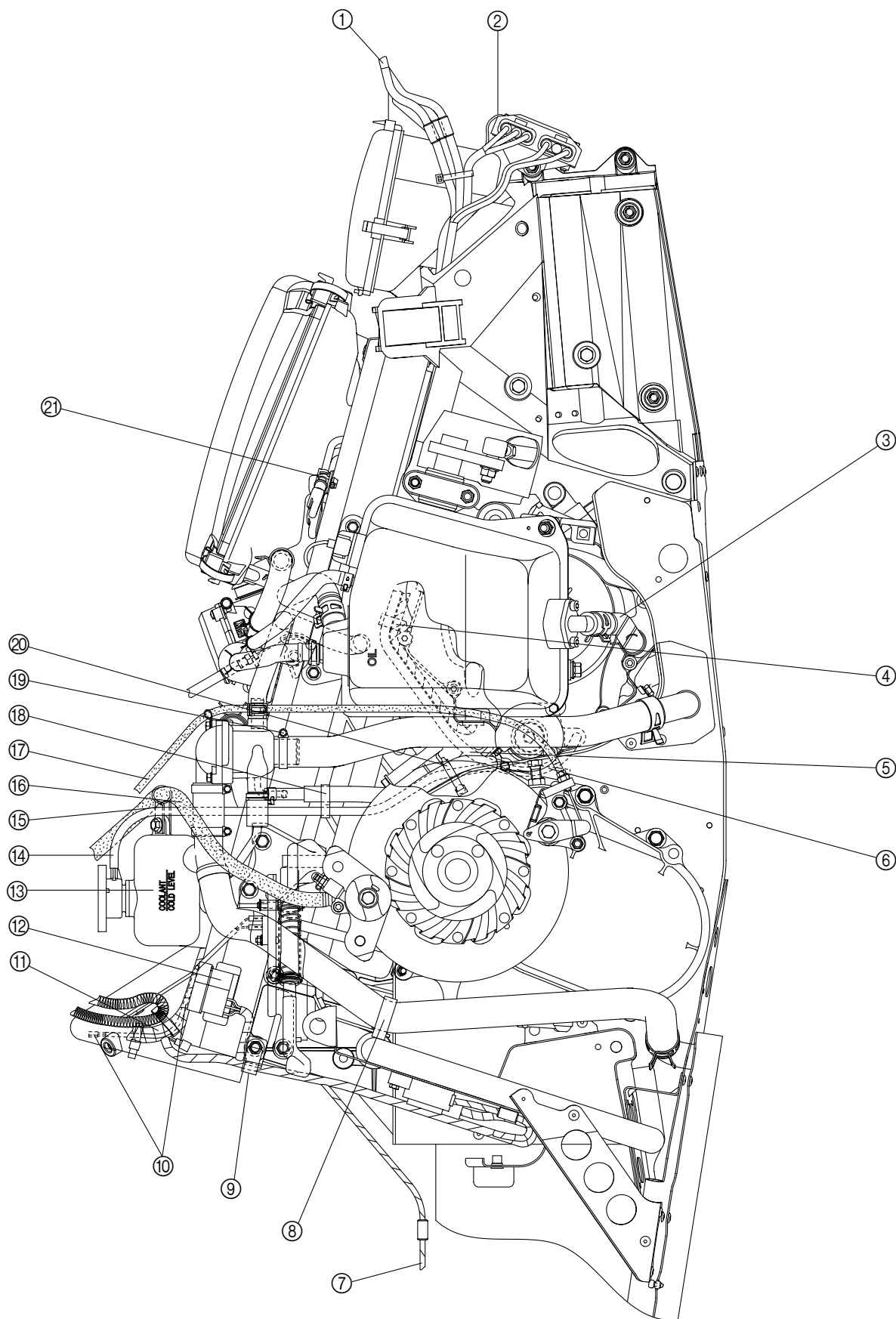




- ① Headlight sub-wire harness
- ② Install the ground lead terminal with the rectifier/regulator upper bolt.
- ③ Oil tank outlet hose
- ④ Fasten the starter motor lead and A.C. magneto lead with the holder.
- ⑤ Starter motor lead
- ⑥ Place the end of the coolant reservoir breather hose between the engine and the heat exchanger.
- ⑦ To the tail/brake light
- ⑧ Fasten the coolant hose 1 with the holder. Face the fastener outward.
- ⑨ Fasten the wire harness with the holder. Secure the frame cross member and the holder to the frame with the nut and bolt.
- ⑩ Connect the gear position switch lead to the gear position switch (reverse models) or fold the lead back (non-reverse models).
- ⑪ Wire harness
- ⑫ Fuse box
- ⑬ Coolant reservoir
- ⑭ Coolant reservoir breather hose
- ⑮ Fasten the brake hose with the hose holder.
- ⑯ Brake hose
- ⑰ Parking brake cable
- ⑱ Fasten the coolant reservoir breather hose and coolant hose 22 together with the clip.

- ① Faisceau de fils secondaire des phares
- ② Monter la borne de fil de masse à l'aide du boulon supérieur du redresseur/régulateur.
- ③ Flexible de sortie de réservoir d'huile
- ④ Attacher le fil du démarreur et le fil de l'alternateur au support.
- ⑤ Fil du démarreur
- ⑥ Placer l'extrémité de la durite de mise à l'air du vase d'expansion entre le moteur et l'échangeur de chaleur.
- ⑦ Vers le feu arrière/stop
- ⑧ Attacher la durite de liquide de refroidissement 1 au support. Diriger l'attache vers l'extérieur.
- ⑨ Attacher le faisceau de fils au support. Fixer la traverse et le support au cadre à l'aide de la vis et de l'écrou.
- ⑩ Brancher le fil du contacteur de position des pignons (pour les modèles à marche arrière) ou replier le fil (pour les modèles sans marche arrière).
- ⑪ Faisceau de fils
- ⑫ Boîte à fusibles
- ⑬ Vase d'expansion
- ⑭ Durite de mise à l'air du vase d'expansion
- ⑮ Attacher le flexible de frein au support de flexible de frein.
- ⑯ Flexible de frein
- ⑰ Câble de frein de stationnement
- ⑱ Attacher ensemble la durite de mise à l'air du vase d'expansion et la durite de liquide de refroidissement 22 à l'aide d'un clip.

- ① Strålkastarens sub-kabelstam
- ② Montera jordledningskontakten med likriktarens/regulatorns övre skruv.
- ③ Oljetankens utloppsslang
- ④ Fäst startmotorns ledning och AC-magnetens ledning med hållaren.
- ⑤ Startmotorns ledning
- ⑥ Placera ändan på kylvätskebehållarens ventilationsslang mellan motorn och värmeväxlaren.
- ⑦ Till bak/bromsljuset
- ⑧ Fäst kylarslang 1 med hållaren. Vänd fästansordningen utåt.
- ⑨ Fäst kabelstammen med hållaren. Skruva fast ramtvärbalken och hållaren i ramen med muttern och bulten.
- ⑩ Anslut växellägesomkopplarens ledning till växellägesomkopplaren (modeller med back) eller vik kabeln bakåt (modeller utan back).
- ⑪ Kabelstam
- ⑫ Säkringsdosa
- ⑬ Kylvätskebehållare
- ⑭ Kylvätskebehållarens ventilationsslang
- ⑮ Fäst bromsslangen med slanghållaren.
- ⑯ Bromsslang
- ⑰ Parkeringsbromsvajer
- ⑱ Fäst kylvätskebehållarens ventilationsslang och kylarslang 22 tillsammans med en klämma.

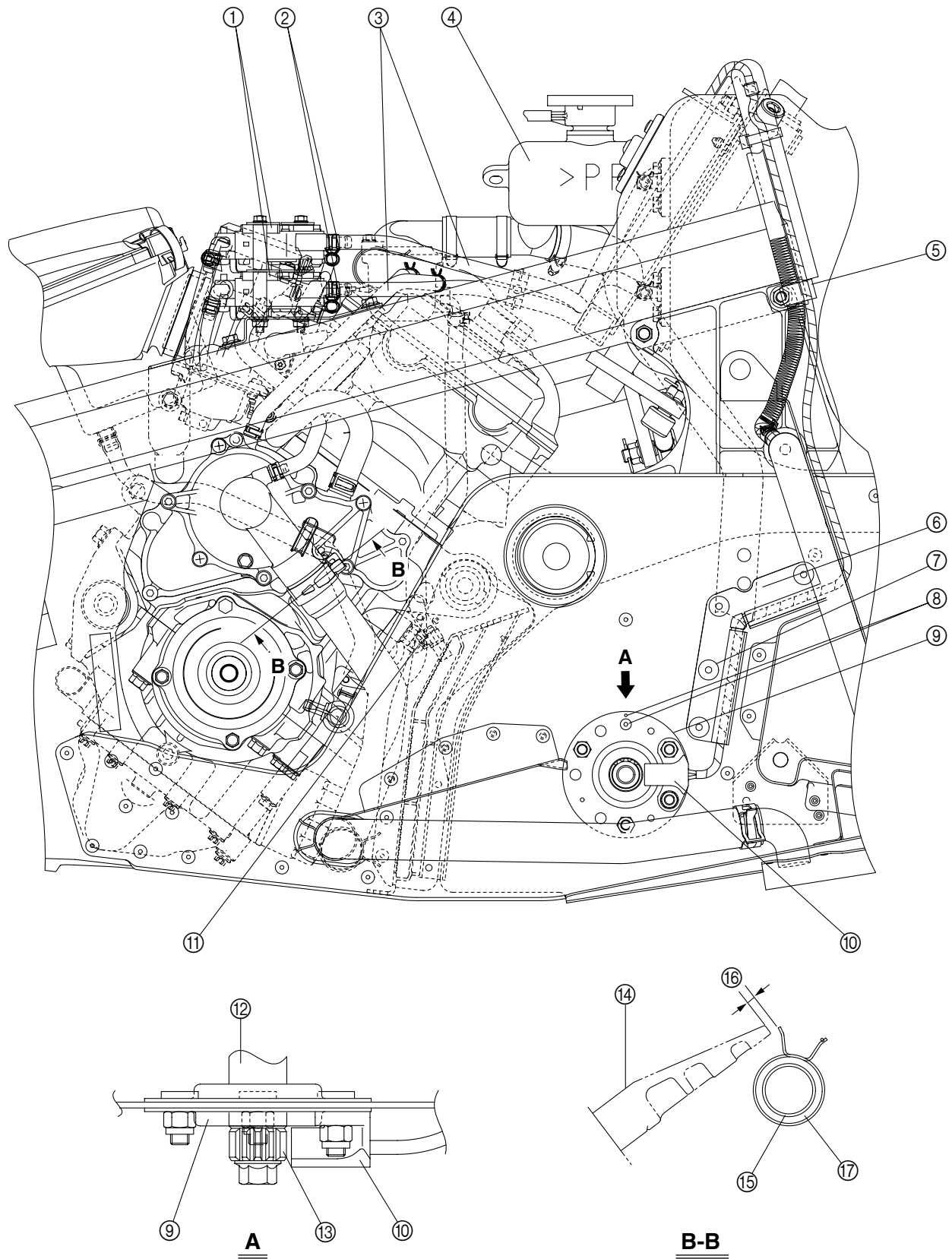




- ⑲ The fastener of the screw clamp should be towards the front of the snowmobile with the screw-head facing outward.
- ⑳ Fasten the coolant hose 22 at the white paint mark with the plastic band. Install the plastic band with the buckle facing outward and the end facing towards the front of the snowmobile.
- ㉑ Fasten the positive battery lead and negative battery lead with the holder.

- ⑲ Diriger l'attache du collier à vis vers l'avant de la motoneige et la tête de la vis vers l'extérieur.
- ⑳ Attacher la durite de liquide de refroidissement 22 à l'aide d'un collier réutilisable à l'endroit repéré en blanc. Diriger la boucle du collier réutilisable vers l'extérieur et l'extrémité du collier vers l'avant de la motoneige.
- ㉑ Attacher les câbles positif et négatif de batterie au support.

- ⑲ Fästanordningen på skruvkläman kan vara riktad mot snöskoters front med skruvhuvudet vänt utåt.
- ⑳ Fäst kylarslang 22 vid det vita färgmärket med ett plastband. Sätt på plastbandet med spännet vänt utåt och ändan vänd mot snöskoters front.
- ㉑ Fäst den positiva batteriledningen och negativa batteriledningen med hållaren.

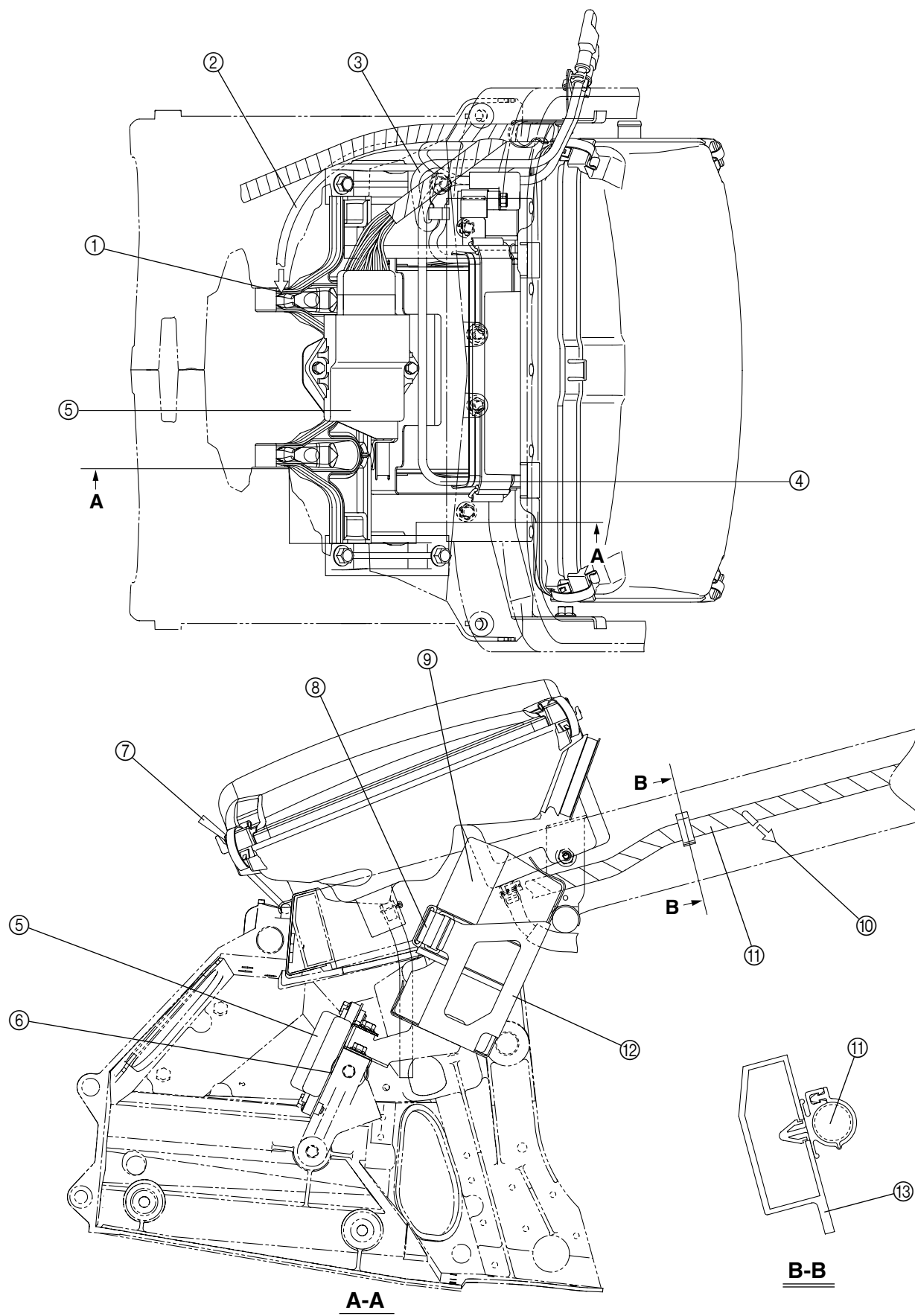




- ① Fuel pumps
- ② Face the ends of each clamp outward.
- ③ Fuel hoses
- ④ Coolant reservoir
- ⑤ Fasten the fuel tank breather hose and speed sensor lead with the holder. Secure the frame cross member and the holder to the frame with the nut and bolt.
- ⑥ Speed sensor lead holder
- ⑦ Rivet (qty: 4)
- ⑧ Align the punch mark on the bearing holder with the rivet.
- ⑨ Bearing holder
- ⑩ Speed sensor
- ⑪ Face the ends of the clamp downward.
- ⑫ Front axle
- ⑬ Gear unit
- ⑭ Primary sheave
- ⑮ Water pump
- ⑯ More than 5 mm (0.2 in)
- ⑰ Water pump inlet hose

- ① Pompes à carburant
- ② Diriger les extrémités des colliers à pince vers l'extérieur.
- ③ Flexibles de carburant
- ④ Vase d'expansion
- ⑤ Attacher la durite de mise à l'air du réservoir de carburant au support. Fixer la traverse et le support au cadre à l'aide de la vis et de l'écrou.
- ⑥ Support de fil de capteur de vitesse
- ⑦ Rivet (qté: 4)
- ⑧ Aligner le repère poinçonné sur le support de roulement et un rivet.
- ⑨ Support de roulement
- ⑩ Capteur de vitesse
- ⑪ Diriger les extrémités du collier à pince vers le bas.
- ⑫ Axe avant
- ⑬ Prise du compteur de vitesse
- ⑭ Poulie menante
- ⑮ Pompe à eau
- ⑯ Plus de 5 mm (0,2 in)
- ⑰ Flexible d'arrivée de pompe à eau

- ① Bränslepumpar
- ② Vänd ändarna på varje klämma utåt.
- ③ Bränsleslangar
- ④ Kylvätskebehållare
- ⑤ Fäst bränsletankens ventilations-slang och hastighetssensors ledning med hållaren. Skruva fast ramtvärbalken och hållaren i ramen med muttern och bulten.
- ⑥ Hållare för hastighetssensors ledning
- ⑦ Nit (antal: 4)
- ⑧ Rikta in stansmärket på kullagerhållaren mot niten.
- ⑨ Kullagerhållare
- ⑩ Hastighetssensor
- ⑪ Vänd ändarna på klämman neråt.
- ⑫ Framaxel
- ⑬ Kuggaggregat
- ⑭ Primärvariator
- ⑮ Vattenpump
- ⑯ Mer än 5 mm (0,2 in)
- ⑰ Vattenpumpens inloppsslang

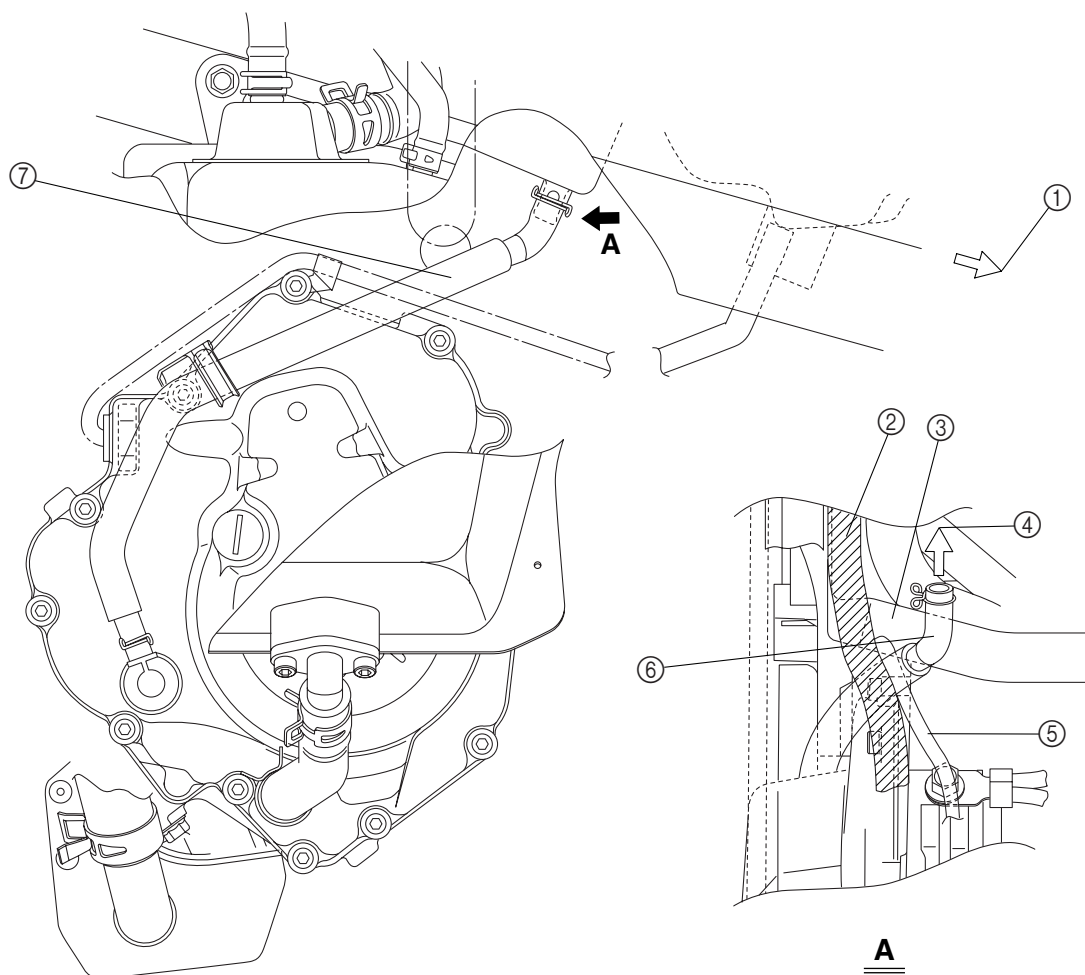




- ① To the rectifier/regulator
- ② A.C. magneto lead
- ③ Negative battery lead
- ④ Positive battery lead
- ⑤ Ignitor unit
- ⑥ Ignitor unit bracket
- ⑦ Air filter case latch
- ⑧ Battery band
- ⑨ Battery cover
- ⑩ To the carburetor
- ⑪ Wire harness
- ⑫ Battery bracket
- ⑬ Frame cross member

- ① Vers le redresseur/régulateur
- ② Fil d'alternateur
- ③ Câble négatif de batterie
- ④ Câble positif de batterie
- ⑤ Boîtier d'allumage
- ⑥ Support de boîtier d'allumage
- ⑦ Attache de boîtier de filtre à air
- ⑧ Sangle de batterie
- ⑨ Cache de batterie
- ⑩ Vers le carburateur
- ⑪ Faisceau de fils
- ⑫ Support de batterie
- ⑬ Traverse du cadre

- ① Till likriktaren/regulatorn
- ② AC-magnetens ledning
- ③ Negativ batteriledning
- ④ Positiv batteriledning
- ⑤ Tändarenhet
- ⑥ Fäste för tändarenhet
- ⑦ Luftfilterhusets regel
- ⑧ Batteriband
- ⑨ Batterilock
- ⑩ Till förgasaren
- ⑪ Kabelstam
- ⑫ Batterifäste
- ⑬ Ramtvärbalk

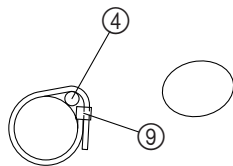
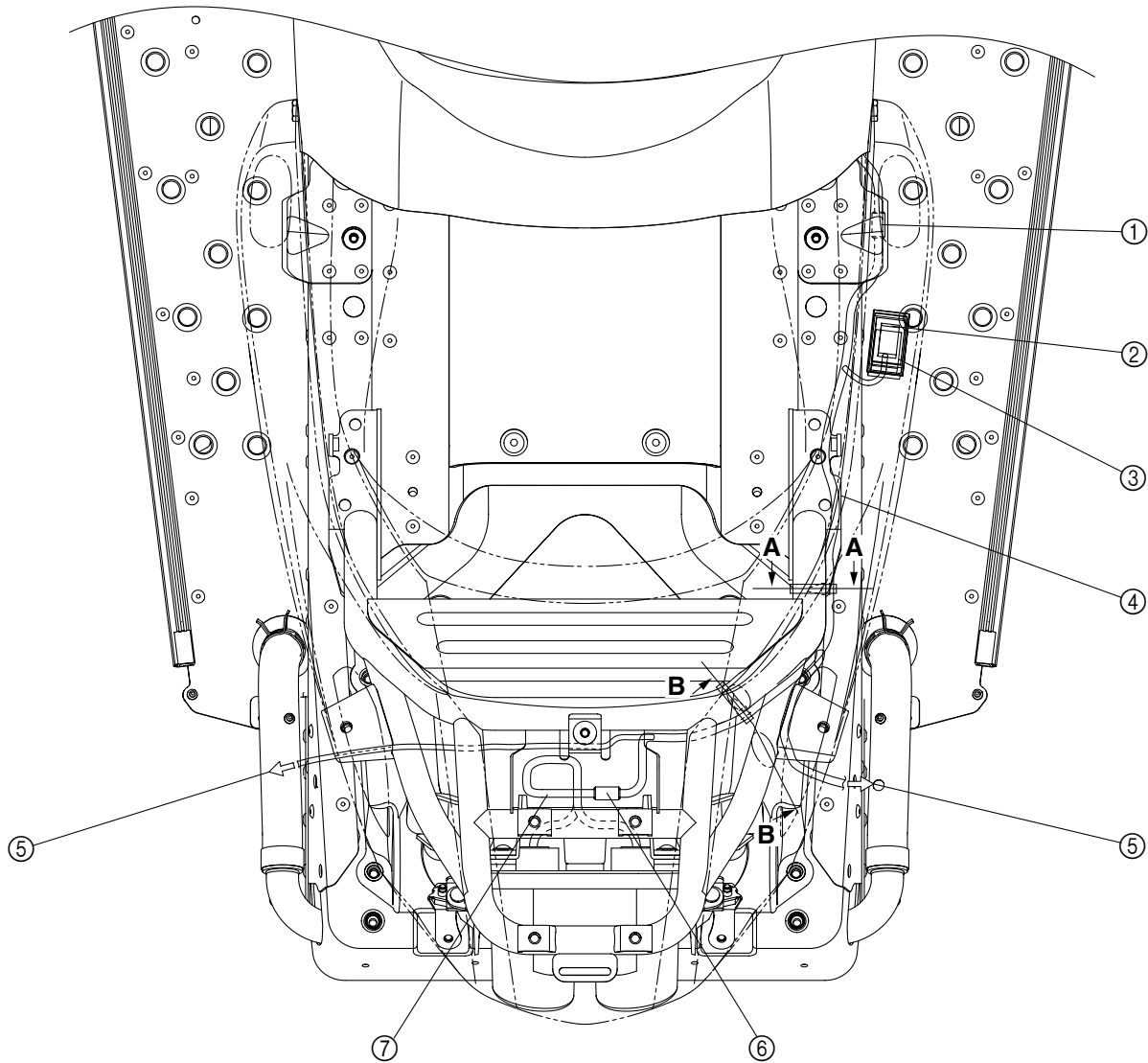
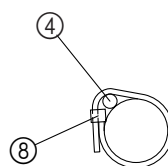




- ① Forward
- ② Wire harness
- ③ Battery bracket
- ④ To the air filter case
- ⑤ A.C. magneto lead
- ⑥ Route the crankcase breather hose between the wire harness and the A.C. magneto lead, and then under the battery bracket.
- ⑦ Crankcase breather hose

- ① Avant
- ② Faisceau de fils
- ③ Support de batterie
- ④ Vers le boîtier de filtre à air
- ⑤ Fil d'alternateur
- ⑥ Acheminer le reniflard du carter moteur entre le faisceau de fils et le fil d'alternateur, puis le faire passer sous le support de la batterie.
- ⑦ Reniflard du carter moteur

- ① Framåt
- ② Kabelstam
- ③ Batterifäste
- ④ Till luftfilterhuset
- ⑤ AC-magnetens ledning
- ⑥ Dra vevhusets ventilationsslang mellan kabelstammen och AC-magnetens ledning, och sedan under batterifästet.
- ⑦ Vevhusets ventilationsslang

**B-B****A-A**



RST90/RST90TF only

- ① Connect the wire harness coupler to the tail/brake light sub-wire harness coupler on the outside of the bracket.
- ② Passenger grip warmer switch
- ③ Connect the passenger grip warmer couplers under the passenger seat base. Be sure not to pinch the leads when connecting the couplers.
- ④ Tail/brake light sub-wire harness
- ⑤ To the passenger grip warmer
- ⑥ Tail/brake light coupler
- ⑦ Place the slack in the tail/brake light lead in the area shown.
- ⑧ Fasten the tail/brake light sub-wire harness at the white tape to the tail/brake light assembly support with the plastic band. The end of the plastic band should be between the support and the muffler cover and the buckle should be below the sub-wire harness as shown.
- ⑨ Fasten the tail/brake light sub-wire harness to the tail/brake light assembly support with the plastic band. The end of the plastic band should be facing inward and the buckle should be below the sub-wire harness as shown.

RST90/RST90TF uniquement

- ① Brancher le coupleur du faisceau de fils au coupleur du faisceau de fils secondaire du feu arrière/stop au côté extérieur du support.
- ② Contacteur de poignée chauffante du passager
- ③ Brancher les coupleurs de poignée chauffante de passager en dessous de la base de la selle du passager. Bien veiller à ne pas pincer les fils lors de la connexion des coupleurs.
- ④ Faisceau de fils secondaire de feu arrière/stop
- ⑤ Vers la poignée chauffante du passager
- ⑥ Coupleur de feu arrière/stop
- ⑦ Pousser le mou du fil du feu arrière/stop à l'endroit indiqué.
- ⑧ Attacher le faisceau de fils secondaire du feu arrière/stop au support du bloc de feu arrière/stop à l'endroit repéré de ruban adhésif blanc.
Placer l'extrémité du collier réutilisable entre le support et le cache du pot d'échappement et placer la boucle du collier sous le faisceau de fils secondaire, comme illustré.
- ⑨ Attacher le faisceau de fils secondaire du feu arrière/stop au support du bloc de feu arrière/stop à l'aide d'un collier réutilisable. Diriger l'extrémité du collier réutilisable vers l'intérieur et placer la boucle du collier sous le faisceau de fils secondaire, comme illustré.

Endast RST90/RST90TF

- ① Anslut kabelstammens kopplingen till kopplingen på bak/bromsljusets sub-kabelstam på utsidan av fästet.
- ② Omkopplare, passagerarhandtagsvärmare
- ③ Anslut passagerarhandtagsvärmarens koppling under passagerarsätets underrede. Se till att ledningarna inte kläms när kopplingarna ansluts.
- ④ Bak/bromsljusets sub-kabelstam
- ⑤ Till passagerarhandtagsvärmaren
- ⑥ Koppling, bak/bromsljus
- ⑦ Placera löst liggande ledning till bak/bromsljuset på anvisad plats.
- ⑧ Fäst bak/bromsljusets sub-kabelstam vid den vita tejpén på bak/bromsljusenhetens stöd med ett plastband. Ändan på plastbandet ska vara mellan stödet och ljuddämparskyddet och spännet ska vara under sub-kabelstammen så som visas.
- ⑨ Fäst bak/bromsljusets sub-kabelstam på bak/bromsljusenhetens stöd med ett plastband. Ändan på plastbandet ska vara vänt inåt och spännet ska vara under sub-kabelstammen så som visas.

WIRING DIAGRAM**COLOR CODE**

B Black
Br Brown
Ch Chocolate
Dg Dark green
G Green
Gy Gray
L Blue
Lg Light green
O Orange
P Pink
R Red
W White
Y Yellow
B/L Black/Blue
B/W Black/White
B/Y Black/Yellow
Br/L Brown/Blue
Br/W Brown/White
Br/Y Brown/Yellow
G/B Green/Black
G/R Green/Red
G/Y Green/Yellow
L/G Blue/Green
L/R Blue/Red
L/W Blue/White
L/Y Blue/Yellow
Lg/L Light green/Blue
Lg/W Light green/White
O/B Orange/Black
O/R Orange/Red
R/B Red/Black
R/W Red/White
R/Y Red/Yellow
W/B White/Black
W/G White/Green
W/R White/Red
W/Y White/Yellow
Y/B Yellow/Black
Y/L Yellow/Blue
Y/R Yellow/Red
Y/W Yellow/White

SCHEMA DE CABLAGE**CODE DE COULEUR**

B Noir
Br Brun
Ch Chocolat
Dg Vert foncé
G Vert
Gy Gris
L Bleu
Lg Vert clair
O Orange
P Rose
R Rouge
W Blanc
Y Jaune
B/L Noir/Bleu
B/W Noir/Blanc
B/Y Noir/Jaune
Br/L Brun/Bleu
Br/W Brun/Blanc
Br/Y Brun/Jaune
G/B Vert/Noir
G/R Vert/Rouge
G/Y Vert/Jaune
L/G Bleu/Vert
L/R Bleu/Rouge
L/W Bleu/Blanc
L/Y Bleu/Jaune
Lg/L Vert clair/Bleu
Lg/W Vert clair/Blanc
O/B Orange/Noir
O/R Orange/Rouge
R/B Rouge/Noir
R/W Rouge/Blanc
R/Y Rouge/Jaune
W/B Blanc/Noir
W/G Blanc/Vert
W/R Blanc/Rouge
W/Y Blanc/Jaune
Y/B Jaune/Noir
Y/L Jaune/Bleu
Y/R Jaune/Rouge
Y/W Jaune/Blanc

KOPPLINGSSCHEMA**FÄRGKODER**

B Svart
Br Brun
Ch Chokladbrun
Dg Mörkgrön
G Grön
Gy Grå
L Blå
Lg Ljus grön
O Orange
P Rosa
R Röd
W Vit
Y Gul
B/L Svart/blå
B/W Svart/vit
B/Y Svart/gul
Br/L Brun/blå
Br/W Brun/vit
Br/Y Brun/gul
G/B Grön/svart
G/R Grön/röd
G/Y Grön/gul
L/G Blå/grön
L/R Blå/röd
L/W Blå/vit
L/Y Blå/gul
Lg/L Ljus grön/blå
Lg/W Ljus grön/vit
O/B Orange/svart
O/R Orange/röd
R/B Röd/svart
R/W Röd/vit
R/Y Röd/gul
W/B Vit/svart
W/G Vit/grön
W/R Vit/röd
W/Y Vit/gul
Y/B Gul/svart
Y/L Gul/blå
Y/R Gul/röd
Y/W Gul/vit

- ① Pickup coil
- ② A.C. magneto
- ③ Rectifier/regulator
- ④ Main switch
- ⑤ Load control relay
- ⑥ Main fuse
- ⑦ Starter relay
- ⑧ Starter motor
- ⑨ Battery
- ⑩ Engine stop switch
- ⑪ Throttle switch
- ⑫ Carburetor heater relay
- ⑬ Carburetor ground
- ⑭ Carburetor heater
- ⑮ Grip warmer
- ⑯ Thumb warmer
- ⑰ Ignitor unit
- ⑱ Ignition coil
- ⑲ Spark plug
- ⑳ Throttle position sensor
- ㉑ Coolant temperature sensor
- ㉒ Grip warmer adjustment switch
- ㉓ Thumb warmer adjustment switch
- ㉔ Frame ground
- ㉕ Passenger grip warmer relay^{*1}
- ㉖ Passenger grip warmer switch^{*1}
- ㉗ Passenger grip warmer^{*1}
- ㉘ DC back buzzer^{*2}
- ㉙ Gear position switch^{*2}
- ㉚ Brake light switch
- ㉛ Tail/brake light
- ㉜ Speed sensor
- ㉝ Fuel sender
- ㉞ Oil level switch
- ㉟ Meter assembly
- ㊱ Warning light
- ㊲ Low coolant temperature indicator light
- ㊳ Multi-function meter
- ㊴ Meter light
- ㊵ High beam indicator light
- ㊶ Auxiliary DC jack fuse
- ㊷ Headlight fuse
- ㊸ Signal fuse
- ㊹ Carburetor heater fuse
- ㊺ Ignition fuse
- ㊻ Auxiliary DC jack^{*1}
- ㊼ Headlight beam switch
- ㊽ Headlight relay
- ㊾ Headlight

^{*1} (RST90/RST90TF)

^{*2} (RS90R/RSG90/RST90/RST90TF)

[A] RST90/RST90TF

[B] RS90/RS90R/RSG90/RS90M

- ① Bobine de déclenchement
- ② Magnéto CA
- ③ Redresseur/régulateur
- ④ Contacteur à clé
- ⑤ Relais du contrôleur de charge
- ⑥ Fusible principal
- ⑦ Relais du démarreur
- ⑧ Démarreur électrique
- ⑨ Batterie
- ⑩ Bouton de coupe-circuit du moteur
- ⑪ Contacteur des gaz
- ⑫ Relais de réchauffeur de carburateur
- ⑬ Masse du carburateur
- ⑭ Réchauffeur de carburateur
- ⑮ Chauffe-poignée
- ⑯ Chauffe-pouce
- ⑰ Boîtier d'allumage
- ⑱ Bobine d'allumage
- ⑲ Bougie
- ⑳ Capteur de position du papillon des gaz
- ㉑ Capteur de température du liquide de refroidissement
- ㉒ Contacteur de réglage de chauffe-poignées
- ㉓ Contacteur de réglage de chauffe-pouce
- ㉔ Masse du cadre
- ㉕ Relais de chauffe-poignées passager^{*1}
- ㉖ Contacteur du chauffe-poignée de passager^{*1}
- ㉗ Chauffe-poignée de passager^{*1}
- ㉘ Avertisseur sonore de marche arrière^{*2}
- ㉙ Commutateur de sélection de rapports^{*2}
- ㉚ Contacteur de feu stop
- ㉛ Feu arrière/stop
- ㉜ Capteur de vitesse
- ㉝ Capteur de carburant
- ㉞ Contacteur de niveau d'huile
- ㉟ Ensemble de compteurs
- ㊱ Témoin d'avertissement
- ㊲ Témoin de température basse de liquide de refroidissement
- ㊳ Compteur multi-fonctions
- ㊴ Eclairage des compteurs
- ㊵ Témoin du feu de route
- ㊶ Fusible de la prise pour accessoires
- ㊷ Fusible des phares
- ㊸ Fusible de signalisation
- ㊹ Fusible du réchauffeur de carburateur
- ㊺ Fusible d'allumage
- ㊻ Prise pour accessoire^{*1}
- ㊼ Commutateur de phare
- ㊽ Relais de phare
- ㊾ Phare

^{*1} (RST90/RST90TF)

^{*2} (RS90R/RSG90/RST90/RST90TF)

[A] RST90/RST90TF

[B] RS90/RS90R/RSG90/RS90M

- ① Upptagarspole
- ② AC-magnet
- ③ Likriktare/regulator
- ④ Startlås
- ⑤ Belastningskontrollrelä
- ⑥ Huvudsäkring
- ⑦ Startrelä
- ⑧ Startmotor
- ⑨ Batteri
- ⑩ Stoppknapp
- ⑪ Accelerationsomkopplare
- ⑫ Förgasarvärmarrelä
- ⑬ Förgasarjordning
- ⑭ Förgasarvärmare
- ⑮ Handtagsvärmare
- ⑯ Tumvärmare
- ⑰ Tändningsenhet
- ⑱ Tändspole
- ⑲ Tändstift
- ⑳ Trotteillägesgivare
- ㉑ Kylvätsketempersensur
- ㉒ Omkopplare för handtagsvärmarinställning
- ㉓ Omkopplare för tumvärmarinställning
- ㉔ Ramjordning
- ㉕ Relä för passagerarvärmare^{*1}
- ㉖ Omkopplare för passagerarvärmare^{*1}
- ㉗ Passagerarvärmare^{*1}
- ㉘ Likströmsbacksignal^{*2}
- ㉙ Växelomkopplare^{*2}
- ㉚ Bromsljusomkopplare
- ㉛ Bak/bromsljus
- ㉜ Hastighetssensor
- ㉝ Bränslemätare
- ㉞ Oljenivåomkopplare
- ㉟ Mätarsats
- ㊱ Varningslampa
- ㊲ Indikatorlampa för låg kylvätsketemperatur
- ㊳ Flerfunktionsmätare
- ㊴ Mätarljus
- ㊵ Helljusindikator
- ㊶ Säkring för extra likströmsuttag
- ㊷ Strålkastarsäkring
- ㊸ Signalsäkring
- ㊹ Förgasarvärmarens säkring
- ㊺ Tändningssäkring
- ㊻ Extra likströmsuttag^{*1}
- ㊼ Helljusomkopplare
- ㊽ Strålkastarrelä
- ㊾ Strålkastare

^{*1} (RST90/RST90TF)

^{*2} (RS90R/RSG90/RST90/RST90TF)

[A] RST90/RST90TF

[B] RS90/RS90R/RSG90/RS90M



PRINTED ON RECYCLED PAPER
INPRIME SUR PAPIER RECYCLE
TRYCKT PÅ ÅTERVUNNIT PAPPER

PRINTED IN JAPAN
2004.07-0.8×1 CR
(E,F,Sw)

WIRING DIAGRAM

RS90/RS90R/RS90M/RST90/RST90TF

WIRING DIARAM

KOPPLINGSSCHEMA FÖR

