



SERVICE MANUAL

**RX10H/RX10SH
RX10MH/RX10MSH
RX10RH/RX10RSH**

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.,

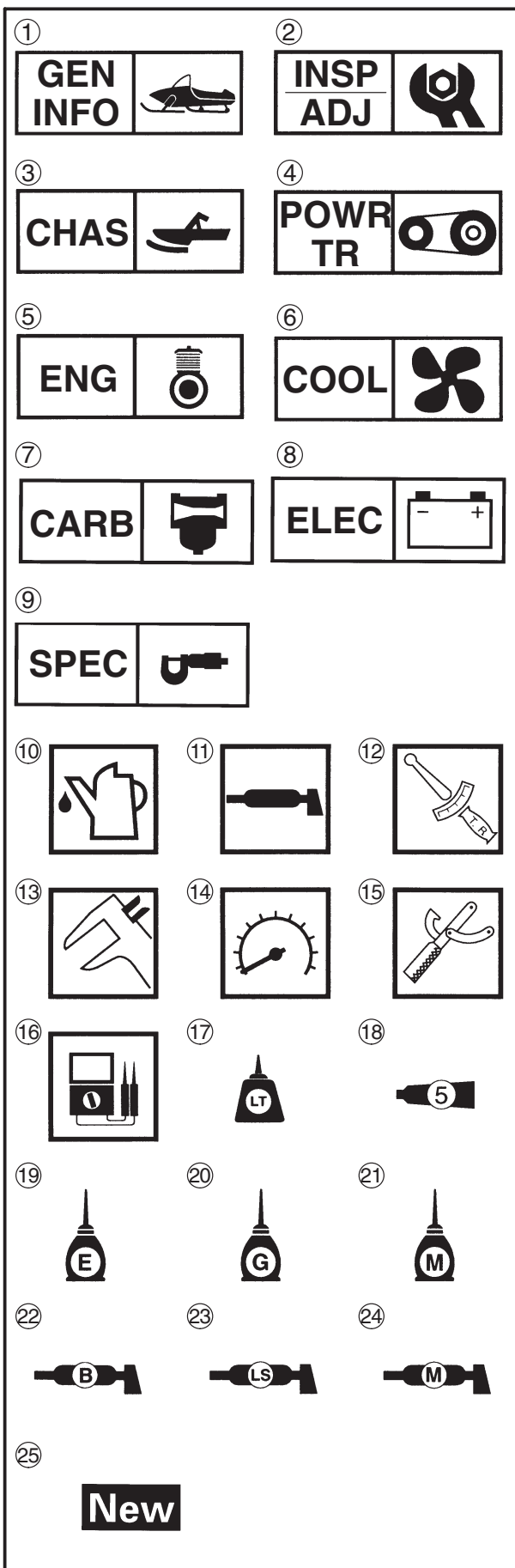
- Bearings
Pitting/damage → Replace.

EXPLODED DIAGRAM

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

**RX10H/RX10SH
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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 inspections and adjustments
- 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

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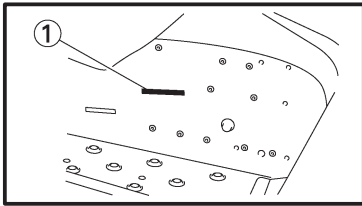
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GENERAL INFORMATION



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 left-hand side of the crankcase.

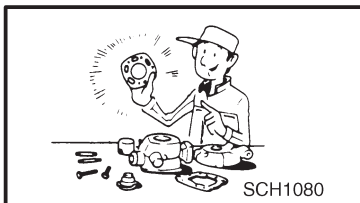
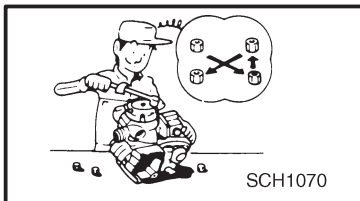
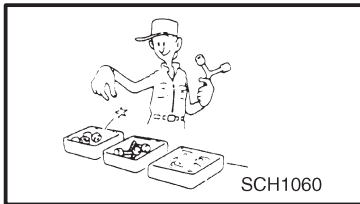
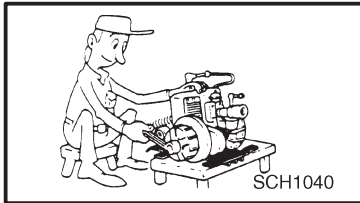
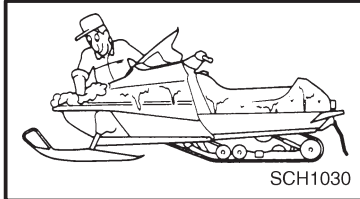
NOTE:

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 criss-cross pattern.

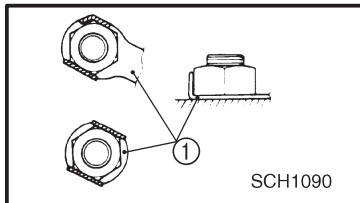
ALL REPLACEMENT PARTS

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



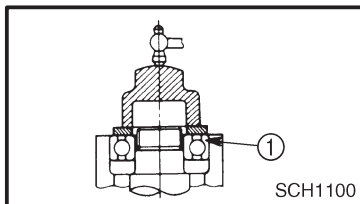
GASKETS, OIL SEALS, AND O-RINGS

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.



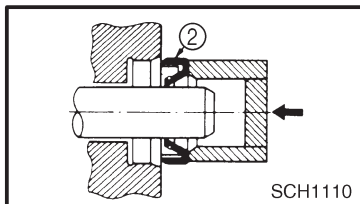
LOCK WASHERS/PLATES AND COTTER PINS

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.



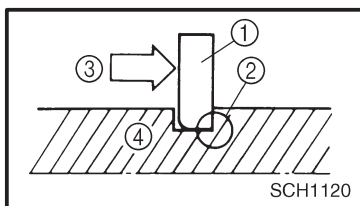
BEARINGS AND OIL SEALS

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.

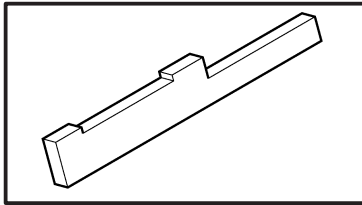


SPECIAL TOOLS

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:

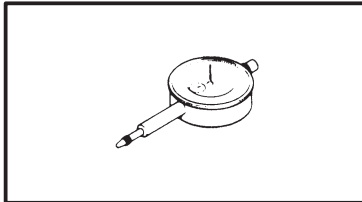
Be sure to use the correct part number when ordering the tool, since the part number may differ according to country.

**FOR TUNE UP**

- Sheave gauge

P/N: YS-42421-1 (15 mm offset) (for U.S.A./Canada)

This gauge is used to measure the sheave distance and for offset adjustment.

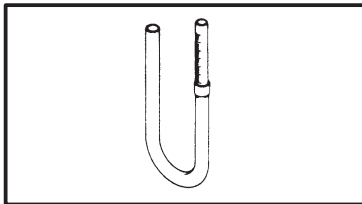


- Dial gauge

P/N: YU-03097 (for U.S.A./Canada)

90890-03097 (for Europe)

This gauge is used for run out measurement.

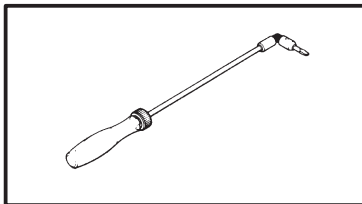


- Fuel level gauge

P/N: YM-01312-A (for U.S.A./Canada)

90890-01312 (for Europe)

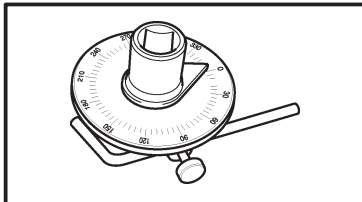
This gauge is used to measure the fuel level in the float chamber.



- Carburetor angle driver:

P/N: 90890-03173 (for Europe)

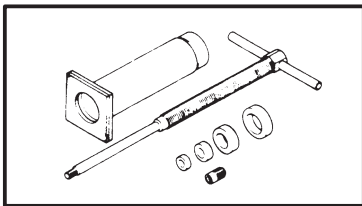
This tool is used to adjust the pilot screw when synchronizing the carburetor.



- Angle gauge:

Use goods on the market.

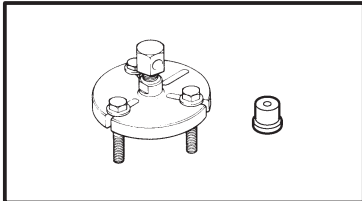
This tool is used to tightening the torque.



FOR ENGINE SERVICE

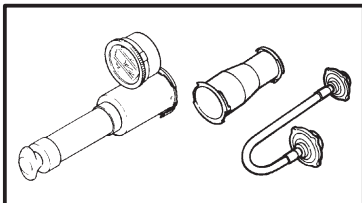
- Piston pin puller
P/N: YU-01304 (for U.S.A./Canada)
90890-01304 (for Europe)

This tool is used to remove the piston pin.



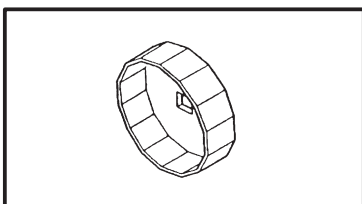
- Rotor holding puller, attachment
P/N: YU-33270 (for U.S.A./Canada)
90890-01362 (for Europe)
P/N: YM-33282
90890-04089

This tool is used to remove the magneto rotor.



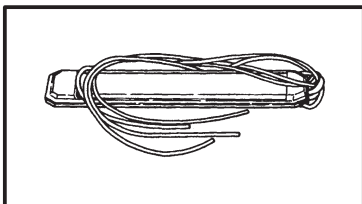
- Cooling system tester, adapter
P/N: YU-24460-01 (for U.S.A./Canada)
90890-01325 (for Europe)
P/N: YU-33984 (for U.S.A./Canada)
90890-01352 (for Europe)

This tester is used for checking the cooling system.



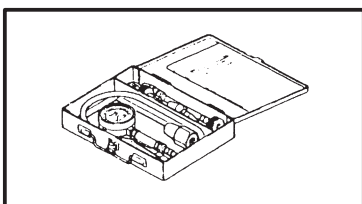
- Oil filter wrench
P/N: YU-38411 (for U.S.A./Canada)
90890-01426 (for Europe)

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



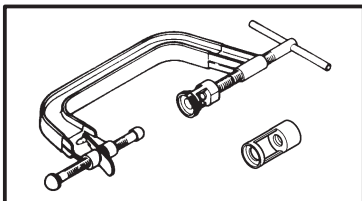
- Carburetor synchronizer
P/N: YU-8030 (for U.S.A./Canada)
90890-03094 (for Europe)

This guide is used to synchronize the carburetors.



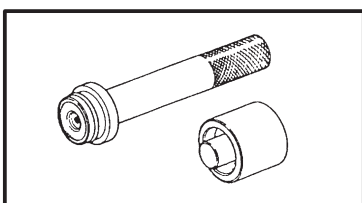
- Compression gauge set
P/N: YU-33223 (compression gage) (for U.S.A./Canada)
90890-03081 (for Europe)
P/N: YU-33223-3 (adapter) (for U.S.A./Canada) (for Europe)
90890-04136 (for Europe)

These tools are used to measure engine compression.



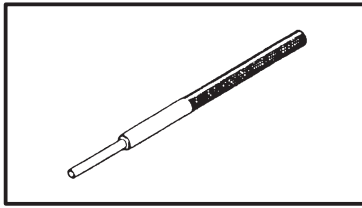
- Valve spring compressor set, quick release, attachment
P/N: YM-04019 (valve spring compressor) (for U.S.A./Canada)
90890-04019 (for Europe)
P/N: YM-4108, YM-4114 (attachment) (for U.S.A./Canada)
90890-04108, 90890-04114 (for Europe)

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



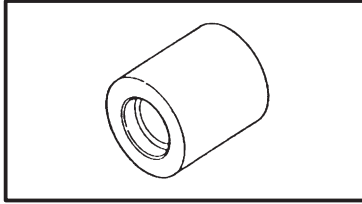
- 40 and 50 mm bearing driver.
Water pump seal installer.
P/N: YM-4058 (40 and 50 mm bearing driver) (for U.S.A./Canada)
90890-04058 (for Europe)
P/N: YM-33221 (water pump seal installer) (for U.S.A./Canada)
90890-04078 (for Europe)

These tools are used to install the water pump seal.



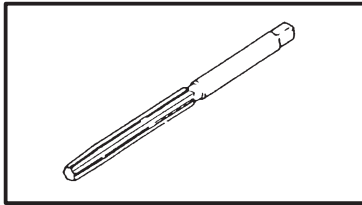
- Valve guide remover (ø4, ø4.5)
P/N: YM-04111 (ø4) (for U.S.A./Canada)
90890-04111 (for Europe)
P/N: YM-4116 (ø4.5) (for U.S.A./Canada)
90890-04116 (for Europe)

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



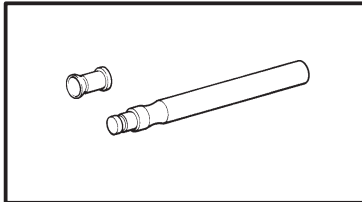
- Valve guide installer (ø4, ø4.5)
P/N: YM-04112 (ø4) (for U.S.A./Canada)
90890-04112 (for Europe)
P/N: YM-4117 (ø4.5) (for U.S.A./Canada)
90890-04117 (for Europe)

These tools are used to install the valve guides.



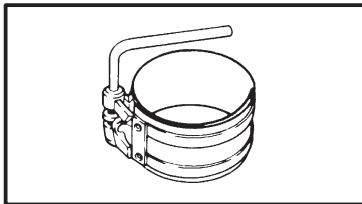
- Valve guide reamer (ø4, ø4.5)
P/N: YM-04113 (ø4) (for U.S.A./Canada)
90890-04113 (for Europe)
P/N: YM-4118 (ø4.5) (for U.S.A./Canada)
90890-04118 (for Europe)

These tools are used to rebore the new valve guides.



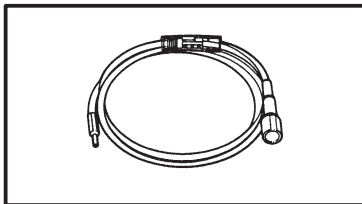
- Valve lapper
P/N: 90890-04101 (for Europe)

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



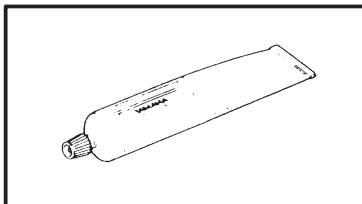
- Piston ring compressor
P/N: YM-8037 (for U.S.A./Canada)
90890-05158 (for Europe)

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



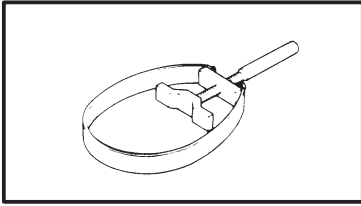
- Dynamic spark tester
P/N: YM-34487 (for U.S.A./Canada)
90890-06754 (for Europe)

This tool is used to check the ignition system component.



- Quick gasket[®]
P/N: ACC-1100-15-01 (for U.S.A./Canada)
90890-85505 (for Europe)

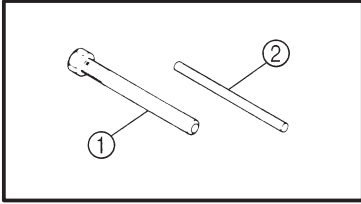
This bond is used to seal two mating surfaces (e.g., crankcase mating surfaces.)



FOR POWER TRAIN SERVICE

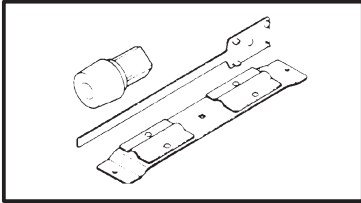
- Primary sheave holder
P/N: YS-01880 (for U.S.A./Canada)
90890-01701 (for Europe)

This tool is used to hold the primary sheave.



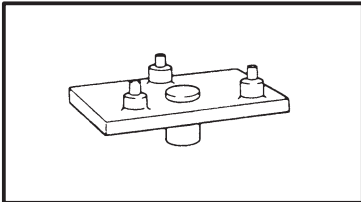
- Primary sheave puller (18 mm)
P/N: YS-01881-1 ①, YS-01882-1 ② (for U.S.A./Canada)
90890-01898 (for Europe)

This tool is used for removing the primary sheave.



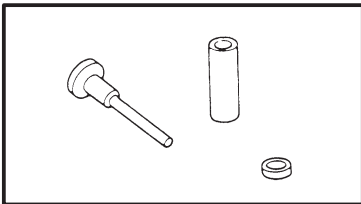
- Clutch spider separator
P/N: YS-28890-B (for U.S.A./Canada)
90890-01711 (for Europe)

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



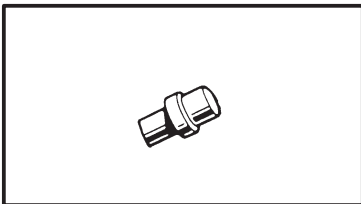
- Clutch separator adapter
P/N: YS-34480 (for U.S.A./Canada)
90890-01740 (for Europe)

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



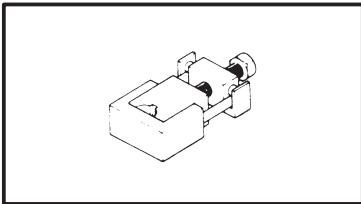
- YXR clutch bushing jig kit
P/N: YS-39752 (for U.S.A./Canada)

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



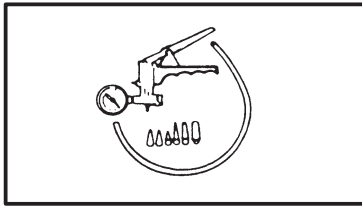
- Clutch bushing press
P/N: YS-42424 (for U.S.A./Canada)

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-A (for U.S.A./Canada)
90890-01721 (for Europe)

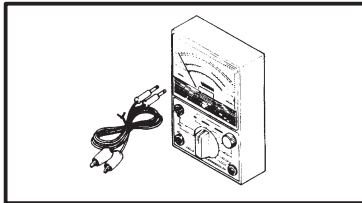
This tool is used for installing the track clip.



FOR CARBURETION SERVICE

- Mity vac
P/N: YB-35956 (for U.S.A./Canada)
90890-06756 (for Europe)

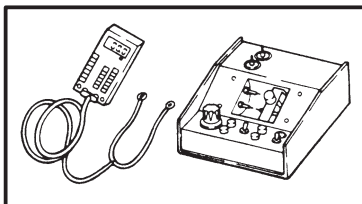
This tool is used to check the fuel pump.



FOR ELECTRICAL SERVICE

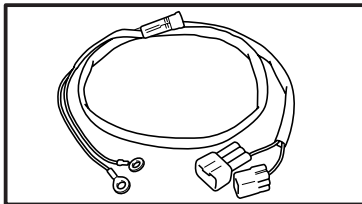
- Pocket tester
P/N: YU-03112 (for U.S.A./Canada)
90890-03112 (for Europe)

This instrument is necessary for checking the electrical components.



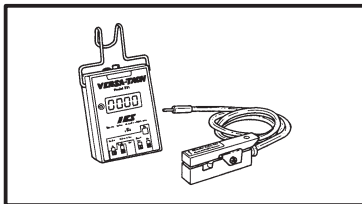
- Electro tester
P/N: YU-33260-A (for U.S.A./Canada)
90890-03021 (for Europe)

This instrument is invaluable for checking the electrical system.



- Speedometer unit test coupler.
P/N: YS-45686 (for U.S.A./Canada)
8EK-82507-09 (For Europe)

This tool is used for checking the speedometer unit.



- Inductive self-powered tachometer
P/N: YU-8036-B (for U.S.A./Canada)
90793-80009 (for Europe)

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 TABLE

Item	Remarks	Preoperation 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.			●
Valves	Check valve 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.			●
Carburetor	Check the 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.			●

PERIODIC MAINTENANCE TABLE

INSP
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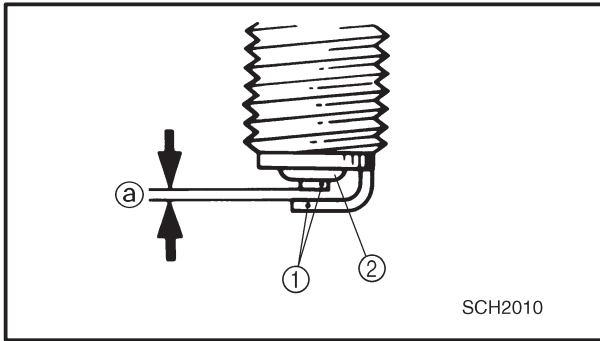


Item	Remarks	Preoperation check (Daily)	Initial 1 month or 800 km (500 mi) (40 hr)	Every
				Seasonally or 3,200 km (2,000 mi) (160 hr)
Brake and parking brake	Check operation and fluid leakage.	●		
	Adjust free play and/or replace pads if necessary.			●
	Repair brake fluid.	See note.		
Disc brake installation	Check for slight free play. Lubricate shaft with specified grease as required.			Every 1,600 km (1,000 mi)
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.	●		
	Repair if necessary.			●
Steering system	Check operation.	●		
	Adjust toe-out if necessary.			●
Lights	Check operation. Replace bulbs 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 and hooked.	●		
Fittings and fasteners	Check tightness. Replace 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 hoses every four years, or if cracked or damaged.

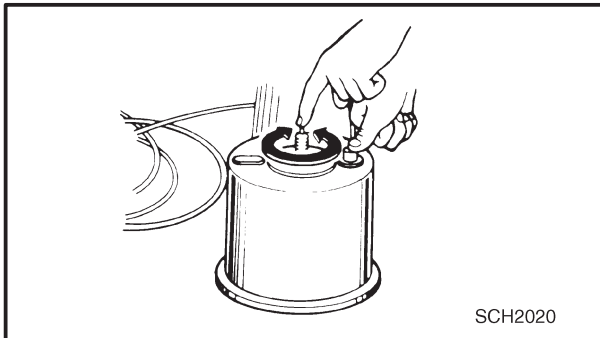


ENGINE SPARK PLUGS

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)

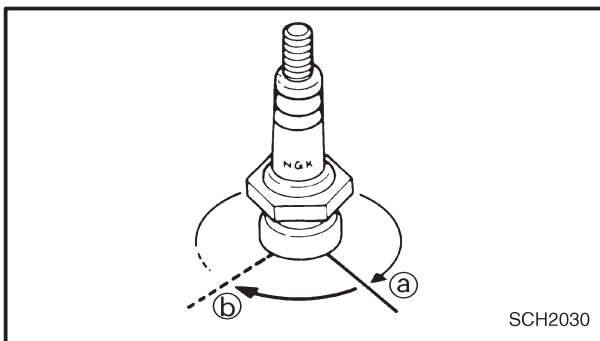


If necessary, clean the spark plugs with a spark plug cleaner.

Standard spark plug:

CR9E (NGK)

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



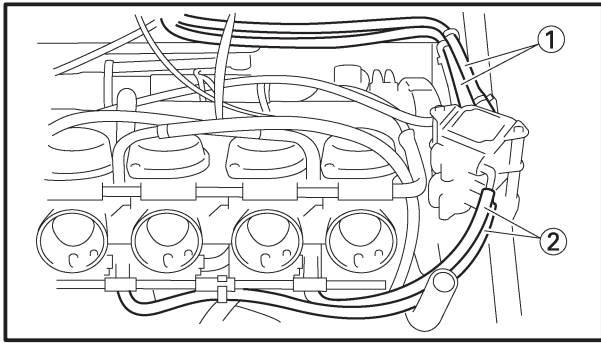
4. Install:
 - Spark plugs



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

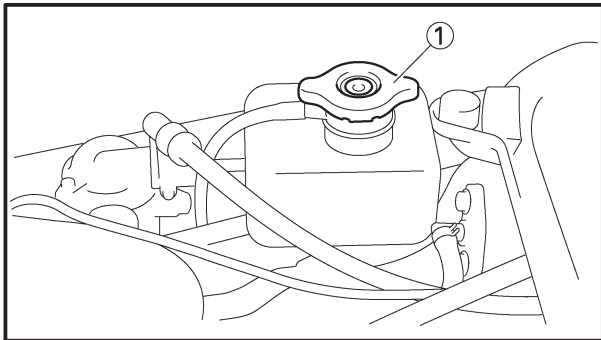
NOTE:

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



FUEL LINE INSPECTION

1. Remove:
 - Intake silencer
Refer to “CARBURETORS” in CHAPTER 7.
2. Inspect:
 - Fuel hoses ①
 - Fuel delivery hoses ②
Cracks/damage → Replace.
3. Install:
 - Intake silencer
Refer to “CARBURETORS” in CHAPTER 7.



COOLING SYSTEM

Coolant replacement

NOTE:

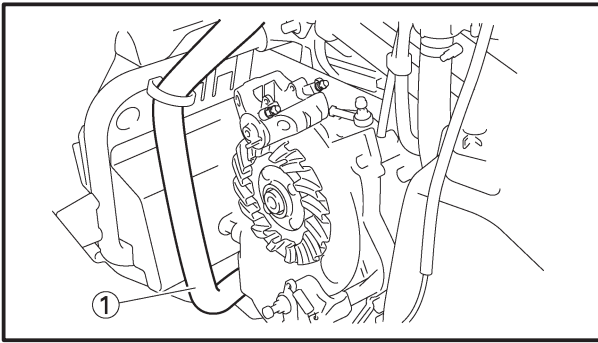
The coolant should be changed at least every season.

1. Place the machine on a level surface.
2. Remove:
 - Intake silencer
Refer to “CARBURETORS” in CHAPTER 7.
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.

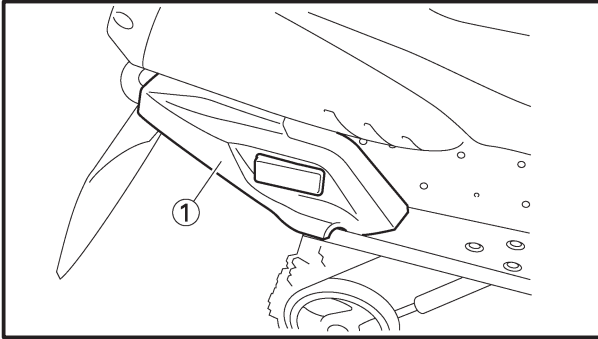
Slowly turn the cap counterclockwise until it stop. This allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning it counterclockwise to remove it.



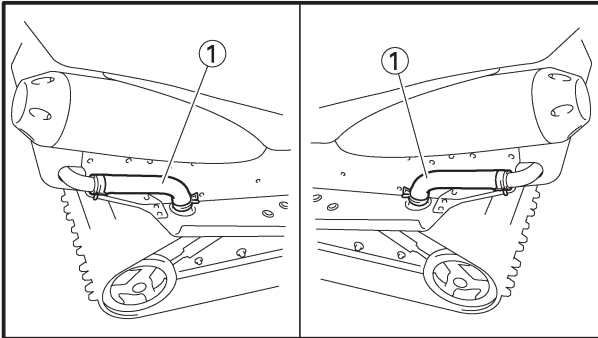
4. Place an open container under the coolant hose.
5. Disconnect:
 - Coolant hose ①
6. Drain the coolant.

NOTE:

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



7. Remove:
 - Rear cover ①



8. Disconnect:
 - Coolant hoses ①
9. Drain the coolant.

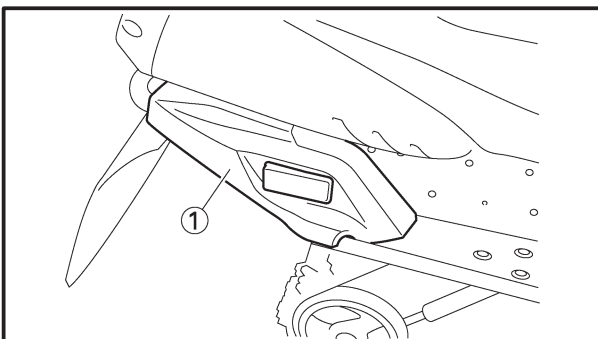
NOTE:

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

⚠ WARNING

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

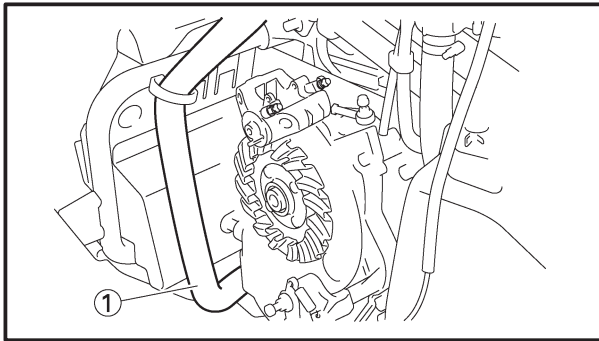
- If coolant is swallowed, induce vomiting immediately and get immediate medical attention.
- If coolant splashes in your eyes, thoroughly wash them with water and consult a doctor.
- If coolant splashes on your skin or clothes, quickly wash it away with soap and water.



10. Connect:
 - Coolant hoses
11. Install:
 - Rear cover ①



Bolt (rear cover):
3 Nm (0.3 m•kg, 2.2 ft•lb)



12. Install:
- Coolant hose ①

13. Install:
- Intake silencer
Refer to “CARBURETORS” in CHAPTER 7.
14. Fill:
- Cooling system

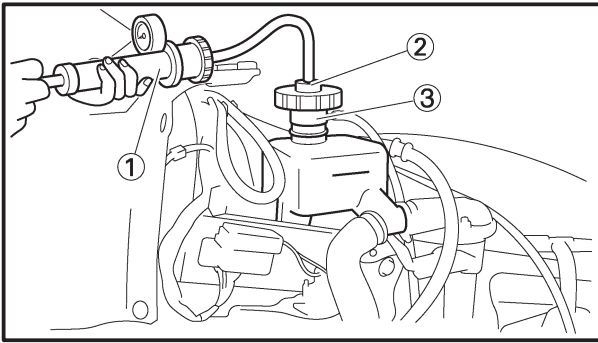


Recommended coolant:
High quality silicate-free
ethylene glycol antifreeze
containing corrosion inhibitors
Coolant mixing ratio
(coolant:water)
3:2 (60%:40%)
Total amount:
4.7 L (4.14 Imp qt, 4.97 US qt)

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.

15. Bleed the air from the cooling system.
16. 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

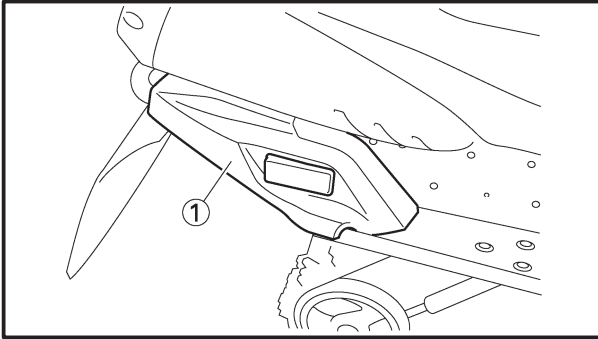
Adapter:

90890-01352, YU-24460-01

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

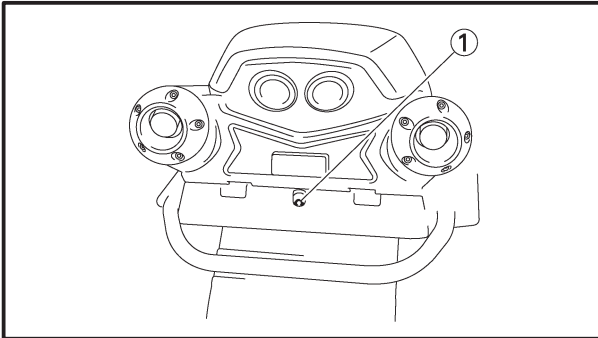
Air bleeding

1. Remove:
 - Rear 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).

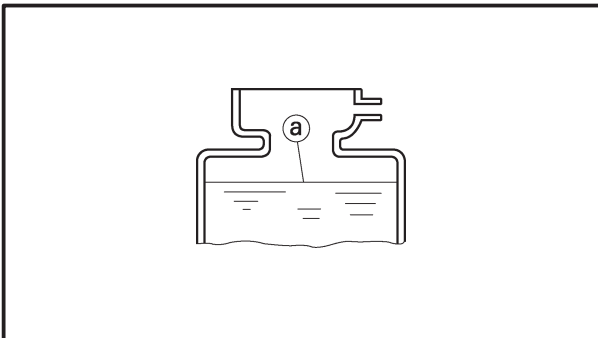


Bleed bolt:

13 Nm (1.3 m•kg, 9.4 ft•lb)

- Add coolant to the coolant cold level (a).
- Install the coolant filler cap.

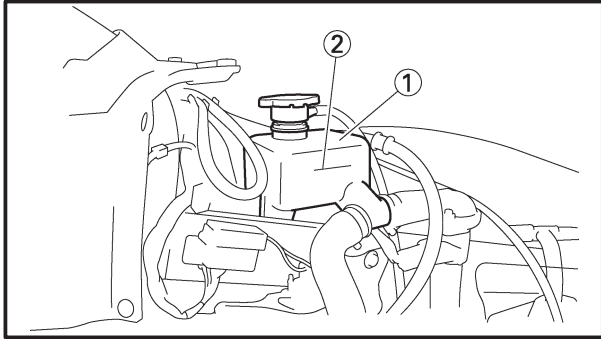
Apply and lock the parking brake. Start the engine and run it at approximately 2,500 ~ 3,000 r/min until the coolant circulates (approximately 3 ~ 5 minutes). The rear heat exchanger will be warm to the touch.



**⚠ WARNING**

To avoid severe injury or death:

- Make sure the machine is securely supported with a suitable stand.
- Do not exceed 3,000 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.
 - Add coolant to the specified level.
 - Pour coolant into the coolant reservoir ① until the coolant level reaches the “COLD LEVEL” level mark ②.
3. Install:
- Rear cover



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 top dead center (TDC) on the compression stroke.

1. Drain:
 - Coolant
2. Remove:
 - Cylinder head cover
Refer to "CYLINDER HEAD" in CHAPTER 5.
 - Timing plug
3. Measure:
 - Valve clearance
Out of specification → Adjust.



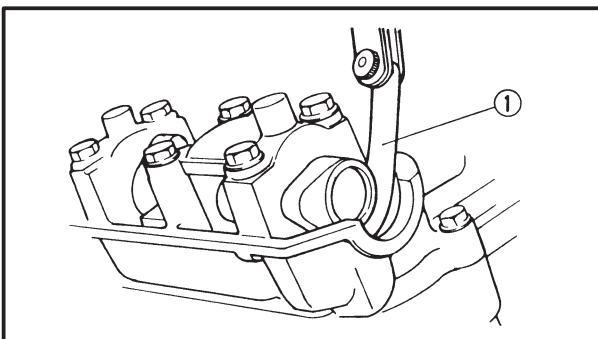
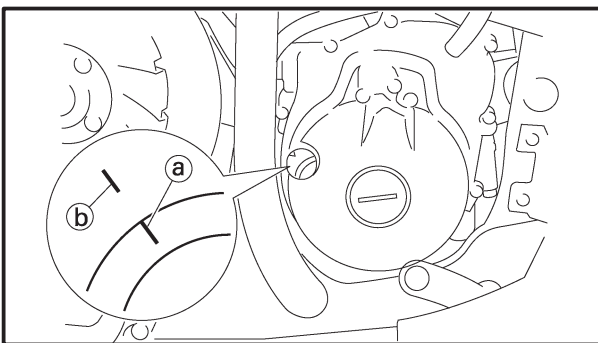
Valve clearance (cold)

Intake valve

0.11 ~ 0.20 mm
(0.0043 ~ 0.0079 in)

Exhaust valve

0.21 ~ 0.25 mm
(0.0083 ~ 0.0098 in)



Checking steps:

- Turn the crankshaft clockwise.
- When piston #4 is at TDC on the compression stroke, align the TDC mark (a) on the A.C. magneto rotor with the mark (b) on the A.C. magneto cover.
- Turn the crankshaft clockwise.

NOTE:

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

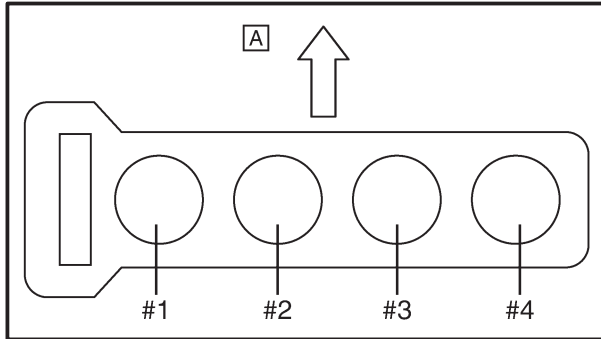
- Measure the valve clearance with a thickness gauge (1).



NOTE:

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

Valve clearance measuring sequence Cylinder #1 → #2 → #4 → #3



B →		0°	180°	360°	540°	720°
C	#1	D				
	#2		D			
	#3				D	
	#4			D		

A Front

For each cylinder, starting with cylinder #1 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

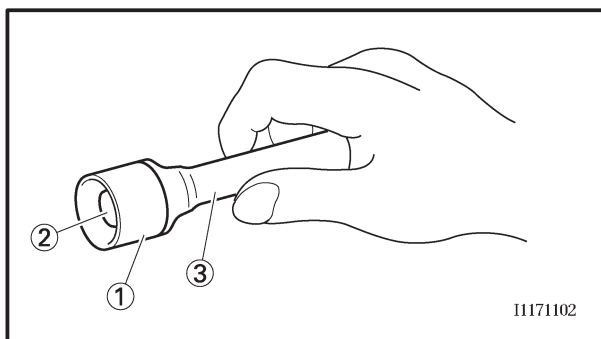
#2 Cylinder	180°
#4 Cylinder	360°
#3 Cylinder	540°

4. 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.



5. Adjust:

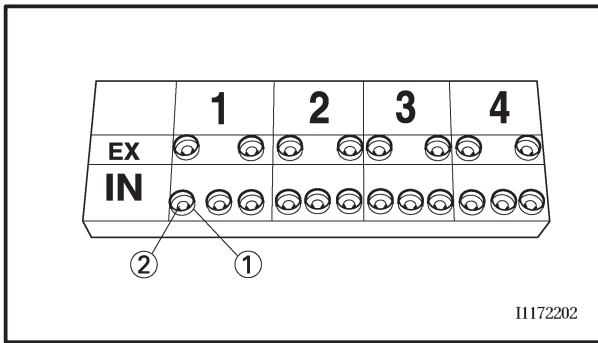
- Valve clearance

Adjustment steps:

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

VALVE CLEARANCE ADJUSTMENT

**INSP
ADJ**



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 ~ 0.095 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:

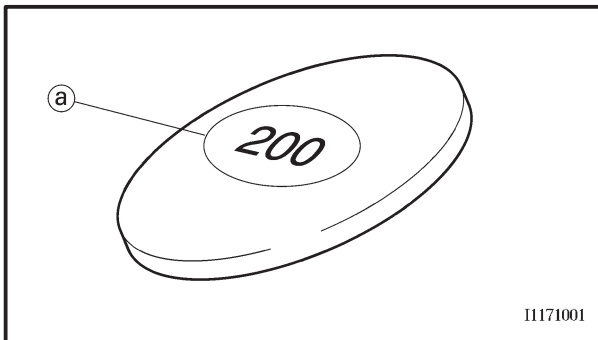
Original valve pad number = 148 (thickness = 1.48 mm (0.058 in))

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 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			
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	225	230	235	240
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	230	235	240	
0.08 ~ 0.10		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		
0.11 ~ 0.20	Specification																											
0.21 ~ 0.22	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240				
0.23 ~ 0.27	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	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	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	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240								
0.43 ~ 0.47	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240									
0.48 ~ 0.52	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240										
0.53 ~ 0.57	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240											
0.58 ~ 0.62	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240												
0.63 ~ 0.67	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240													
0.68 ~ 0.72	175	180	185	190	195	200	205	210	215	220	225	230	235	240														
0.73 ~ 0.77	180	185	190	195	200	205	210	215	220	225	230	235	240															
0.78 ~ 0.82	185	190	195	200	205	210	215	220	225	230	235	240																
0.83 ~ 0.87	190	195	200	205	210	215	220	225	230	235	240																	
0.88 ~ 0.92	195	200	205	210	215	220	225	230	235	240																		
0.93 ~ 0.97	200	205	210	215	220	225	230	235	240																			
0.98 ~ 1.02	205	210	215	220	225	230	235	240																				
1.03 ~ 1.07	210	215	220	225	230	235	240																					
1.08 ~ 1.12	215	220	225	230	235	240																						
1.13 ~ 1.17	220	225	230	235	240																							
1.18 ~ 1.22	225	230	235	240																								
1.23 ~ 1.27	230	235	240																									
1.28 ~ 1.32	235	240																										
1.33 ~ 1.37	240																											

EXAMPLE:

VALVE CLEARANCE: 0.11 ~ 0.20 mm
(0.0043 ~ 0.0079 in)

Installed is 150

Measured clearance is 0.25 mm (0.0098 in)

Replace 150 pad with 160 pad

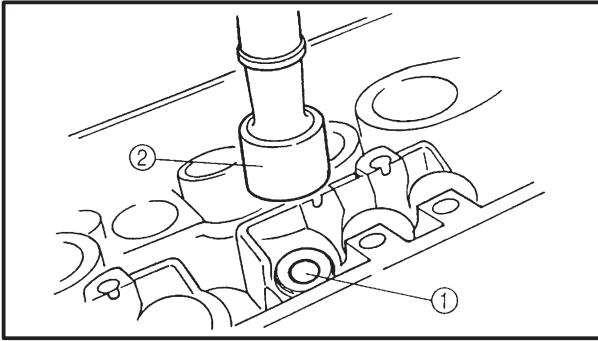
EXHAUST

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
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
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
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
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
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:

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 4.
- Lubricate the camshaft caps, camshaft lobes and camshaft journals.
- First, install the exhaust camshaft.
- 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.

6. Install:

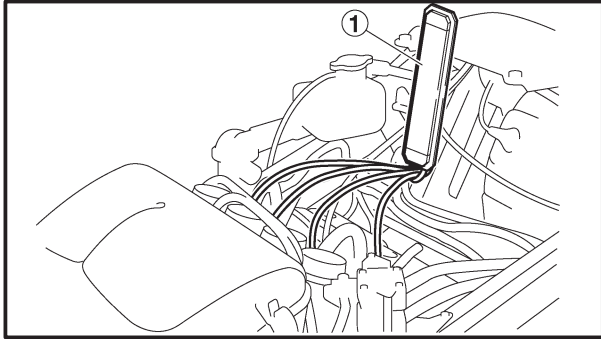
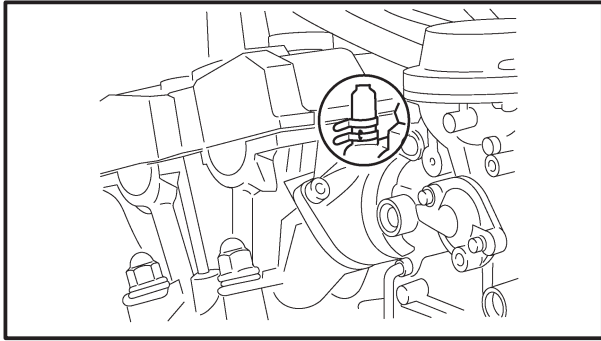
- Cylinder head cover
Refer to “CAMSHAFTS” in CHAPTER 5.

7. 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 idling speed should be properly adjusted and the ignition timing should be checked.

1. Remove:
 - Vacuum cap
2. Install:
 - Carburetor synchronizer ①
 - Engine tachometer (near the spark plug)



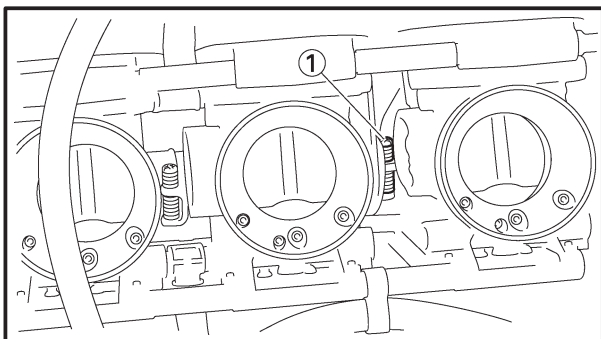
Carburetor synchronizer
90890-03094, YU-8030
Engine tachometer
90793-80009, YU-8036-B

3. Start the engine and let it warm up for several minutes.
4. Inspect:
 - Engine idle speed
Out of specification → Adjust.
Refer to “ENGINE IDLE SPEED ADJUSTMENT”.



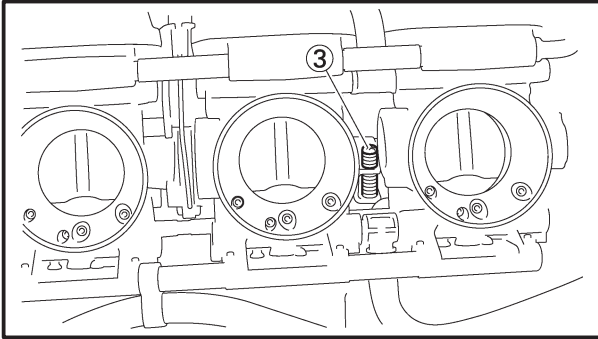
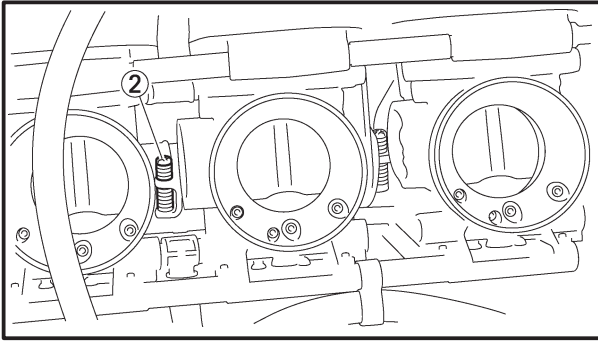
Engine idle speed:
 $1,350 \pm 100$ r/min
(1,250 ~ 1,450 r/min)

5. Adjust:
 - Carburetor synchronization



Adjustment steps:

- Synchronize carburetor #2 to carburetor #3 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 #4 to carburetor #3 by turning the synchronizing screw ② in either direction until both gauges read the same.
- Synchronize carburetor #2 to carburetor #1 by turning the synchronizing screw ③ in either direction until both gauges read the same.



**Vacuum pressure at engine
idling speed**
35 kPa (0.35 kg/cm², 4.98 psi)

NOTE:

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

6. Measure:

- Engine idle speed
Out of specification → Adjust.

7. 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)



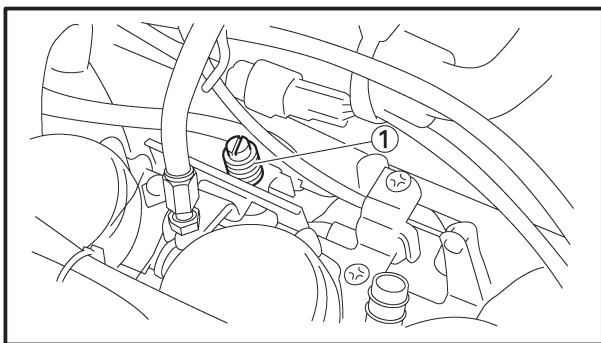
Engine tachometer
90793-80009, YU-8036-B

3. Measure:
 - Engine idle speed
Out of specification → Adjust.



Engine idle speed:
 $1,350 \pm 100$ r/min
(1,250 ~ 1,450 r/min)

4. Adjust:
 - Engine idle speed



- 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:

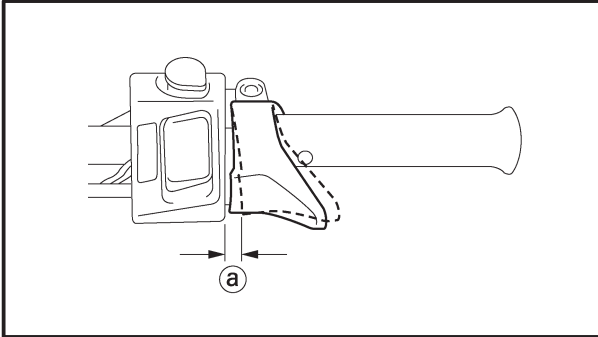
After adjusting the engine idle speed, the throttle cable free play should be adjusted.



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:

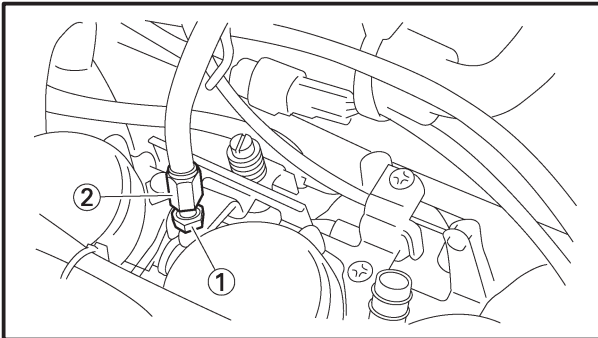
- Throttle cable free play ①
- Out of specification → Adjust.



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.

- 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.

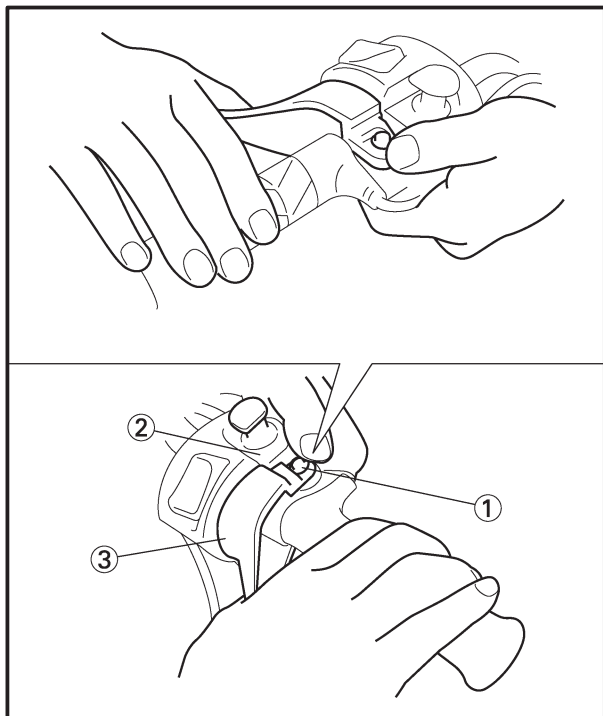


THROTTLE OVERRIDE SYSTEM (T.O.R.S.) CHECK

⚠ 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:

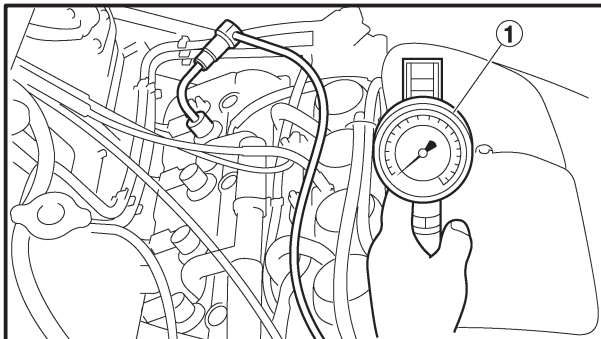
Insufficient compression pressure will result in a loss of performance.

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 set
90890-03081, YU-33223
Compression gauge adapter
90890-04136, YU-33223-3

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 spark plug 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 intake silencer and the engine could be damaged.

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 gauge coupler.

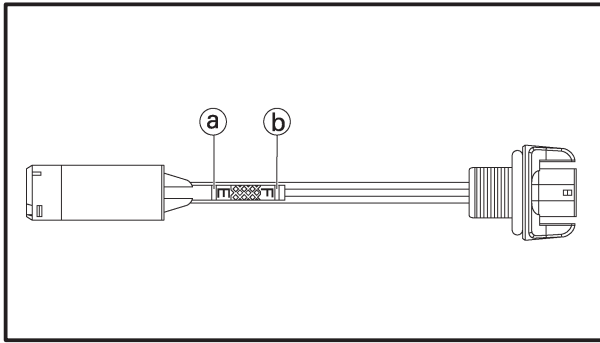
CAUTION:

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

- Remove the oil level gauge, wipe it clean, insert it back into the filler hole (without screwing it in), and then remove it again to check the oil level.

ENGINE OIL LEVEL INSPECTION

INSP
ADJ



- The engine oil level should be between the minimum level mark (a) and maximum level mark (b).

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 5W-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.
- Check the engine oil level again.

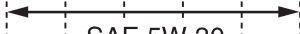
NOTE:

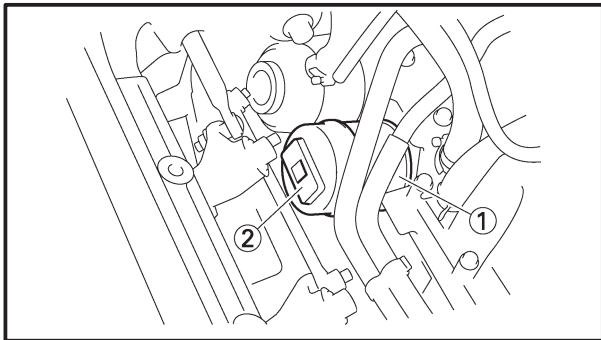
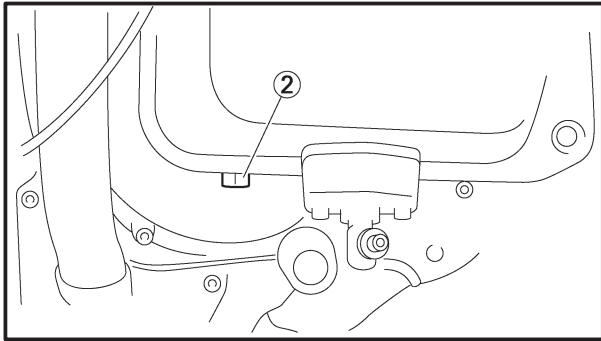
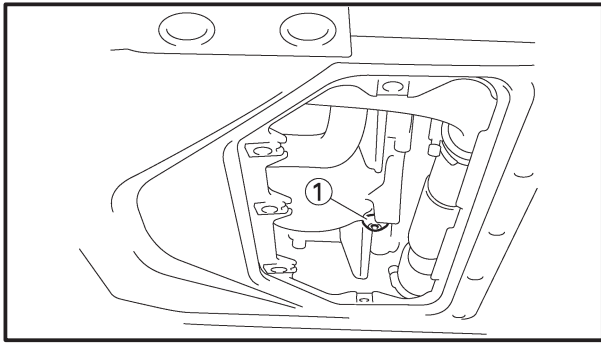
Before checking the engine oil level, wait a few minutes until the oil has settled.

CAUTION:

- Use only 4-stroke engine oil.
- In order to prevent starter clutch slippage, do not mix any chemical additives. Do not use oils with a diesel specification of "CD" or oils of a higher quality than specified. In addition, do not use oils labeled "ENERGY CONSERVING II" or higher.



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



ENGINE OIL REPLACEMENT

1. Start the engine, warm up for several minutes, and then turn it off.
2. Place a containers under the engine oil drain bolt and oil tank.
3. Remove:
 - Bottom panel
 - Right side cover
 - Oil level gauge coupler
 - Oil level gauge/dipstick
 - Cylinder head cap
 - Oil pan drain bolt ①
 - Oil tank drain bolt ②
4. Drain:
 - Engine oil (completely from the oil pan and oil tank)
5. If the oil filter cartridge is also to be replaced, perform the following procedure.

Replacement steps:

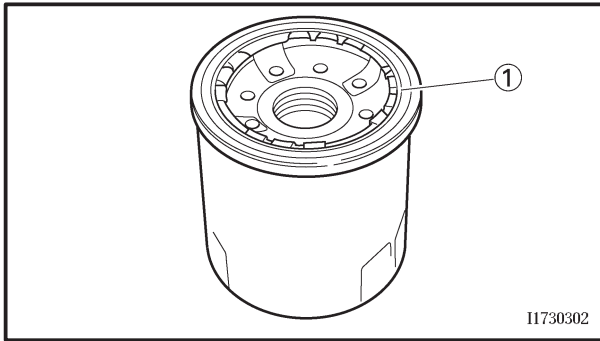
- a) Remove air box
- b) Remove battery
- c) Remove battery bracket
- d) Then remove oil filter
 - Remove the oil filter cartridge ① with an oil filter wrench ②.

NOTE:

When remove the oil filter cartridge, turn the handlebar to the left.



Oil filter wrench:
90890-01426, YU-38411



- 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)

6. Install:

- Drain bolts
(along with the new gaskets)



Drain bolt (oil tank):
16 Nm (1.6 m•kg, 12 ft•lb)
Drain bolt (oil pan):
30 Nm (3.0 m•kg, 22 ft•lb)

7. 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.



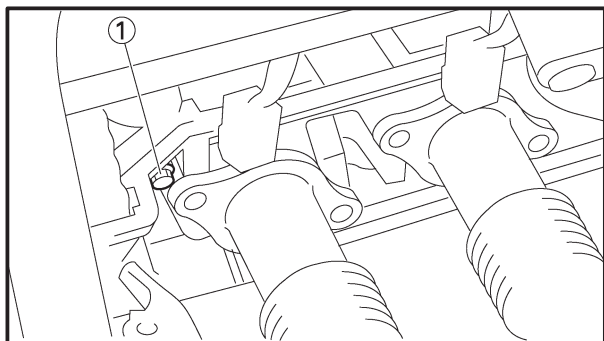
Quantity
Total amount
3.8 L (3.3 Imp qt, 4.0 US qt)
Periodic oil change
2.8 L (2.5 Imp qt, 3.0 US qt)
With oil filter replacement
3.0 L (2.6 Imp qt, 3.2 US qt)

8. Inspect:

- Engine and oil tank
(for engine oil leaks)

9. Inspect:

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



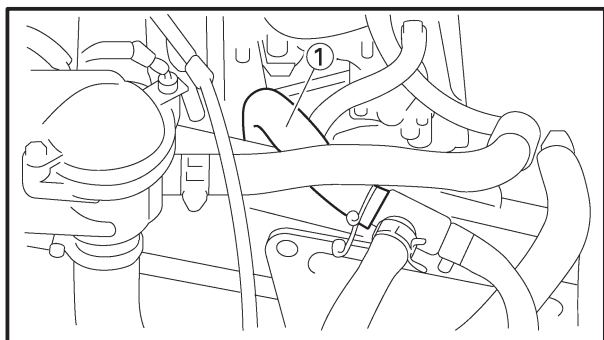
10. Inspect:
- Engine oil pressure

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
10 Nm (1.0 m•kg, 7.2 ft•lb)

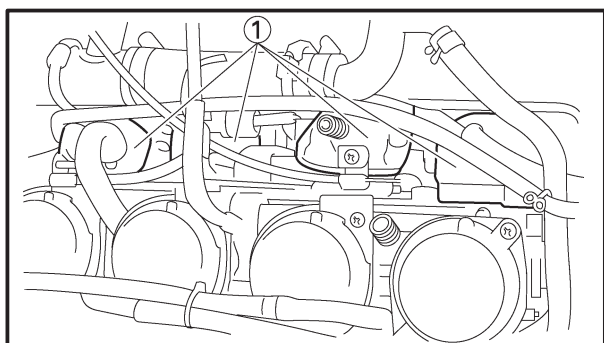


CRANKCASE BREATHER HOSE INSPECTION

1. Inspect:
- Crankcase breather hose ①
Cranks/damage → Replace.
Loosen connection → Connect properly.

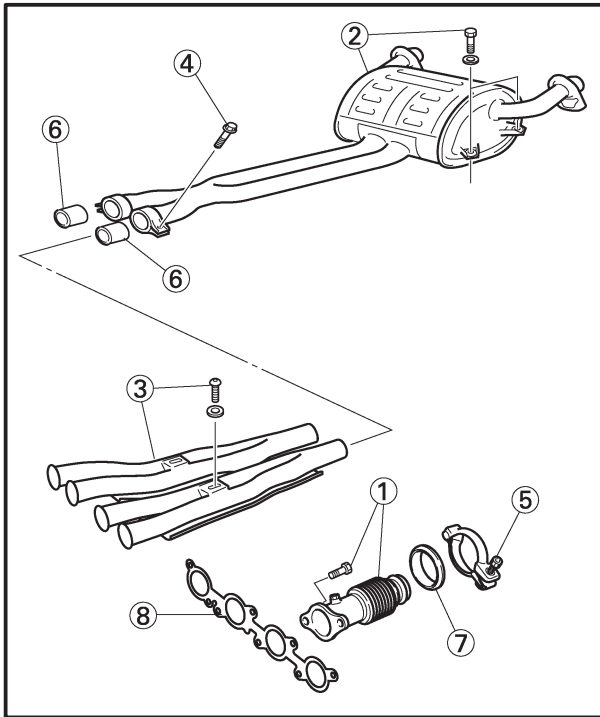
CAUTION:

Make sure that the crankcase breather hose is routed correctly.



CARBURETOR JOINTS INSPECTION

1. Remove:
- Silencer assembly
2. Inspect:
- Carburetor joints ①
Refer to “CARBURETORS” in CHAPTER 6.



EXHAUST SYSTEM INSPECTION

1. Remove:
 - Seat
 - Exhaust system
 - Refer to “EXHAUST PIPE AND MUFFLER” in CHAPTER 5.
2. Inspect:
 - Exhaust joint ①
 - Tightening torque

	Bolt (exhaust joint): 25 Nm (2.5 m•kg, 18 ft•lb)
--	---

- Muffler ②
- Tightening torque

	Bolt (muffler): 16 Nm (1.6 m•kg, 12 ft•lb)
--	---

- Exhaust pipe ③
- Tightening torque

	Bolt (exhaust pipe): 25 Nm (2.5 m•kg, 18 ft•lb)
--	--

- Muffler band ④
- Tightening torque

	Bolt (muffler band): 20 Nm (2.0 m•kg, 14 ft•lb)
--	--

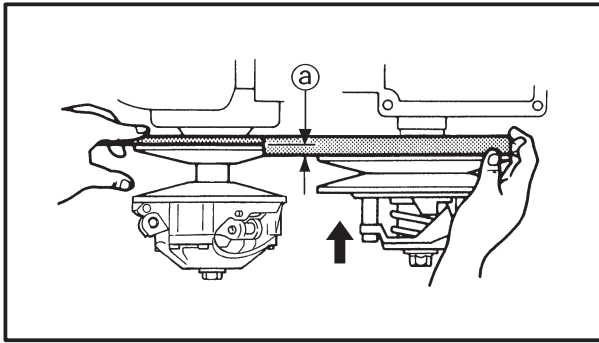
- Exhaust pipe band ⑤
- Tightening torque

	Bolt (exhaust pipe band): 9 Nm (0.9 m•kg, 6.5 ft•lb)
--	---

Cracks/damage → Replace.

- Gaskets ⑥
- Gaskets ⑦
- Gasket ⑧

Exhaust gas leaks→Replace.



POWER TRAIN SHEAVE OFFSET ADJUSTMENT

1. Measure:

- Sheave offset ①
Use the sheave gauge.
Out of specification → Adjust.



Sheave offset:

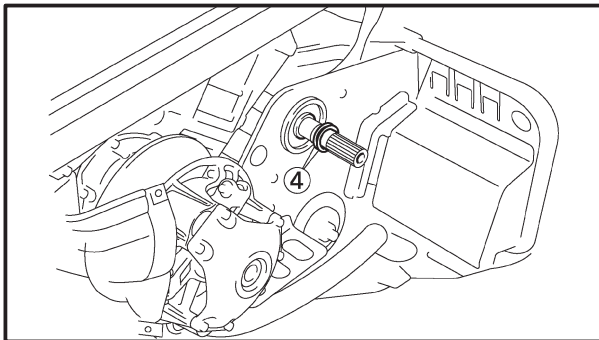
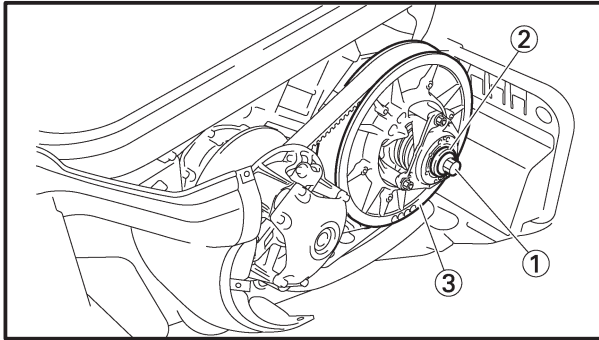
$15 \pm 1.5 \text{ mm}$ ($0.59 \pm 0.06 \text{ in}$)
(13.5 ~ 16.5 mm
(0.53 ~ 0.65 in))



Sheave gauge: YS-42421-1

NOTE:

Push the secondary sheave toward the inside of vehicle frame first and measure the sheave offset.



2. 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
90201-25526	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)

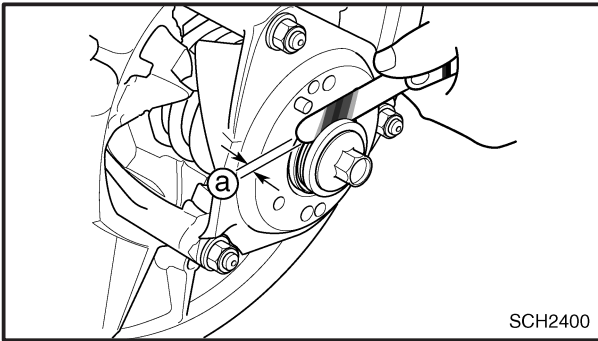
- Recheck the sheave offset. If out of specification, repeat the above steps.

NOTE:

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

SHEAVE OFFSET ADJUSTMENT/DRIVE V-BELT

INSP
ADJ



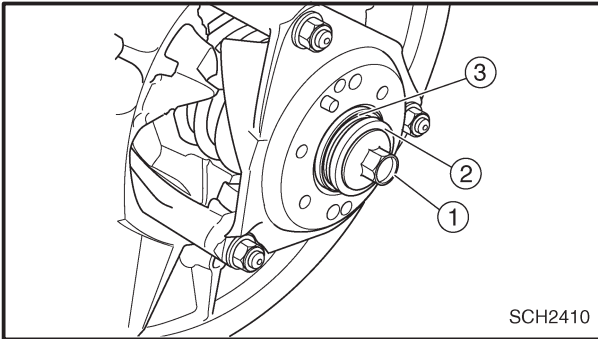
3. Measure:

- 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)



4. 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 removing 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)

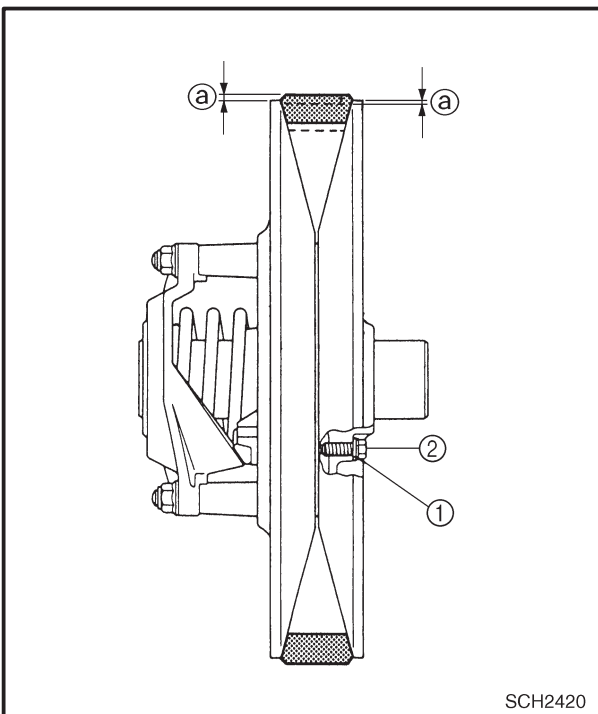
DRIVE V-BELT

⚠ 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 ①.

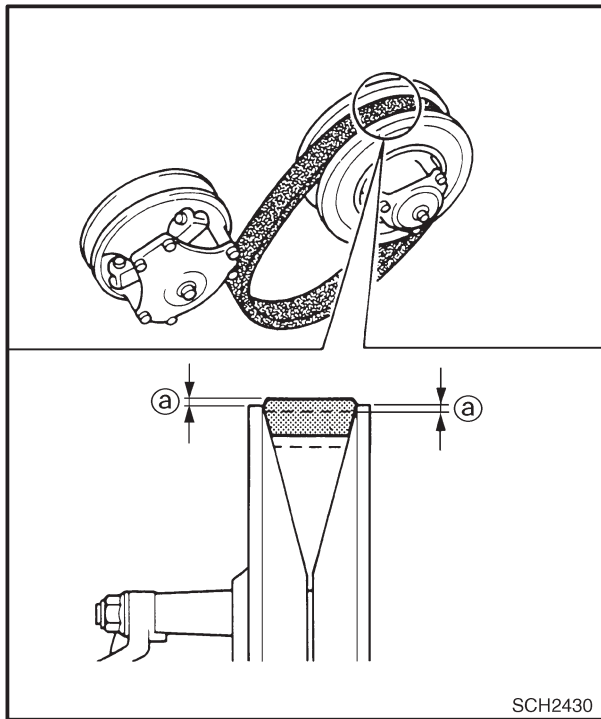
If the V-belt is not positioned correctly, the clutch engagement speed will be changed. The machine may move unexpectedly when the engine is started.

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)

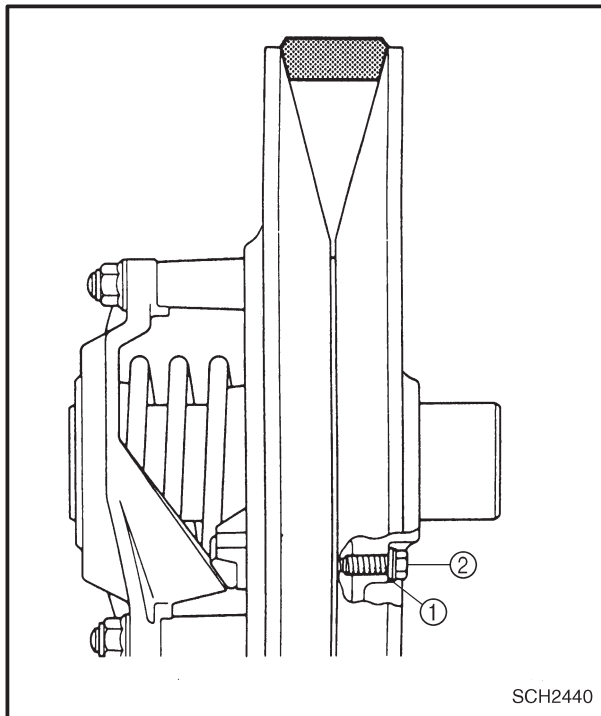
1. Measure:
 - V-belt position ①

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)

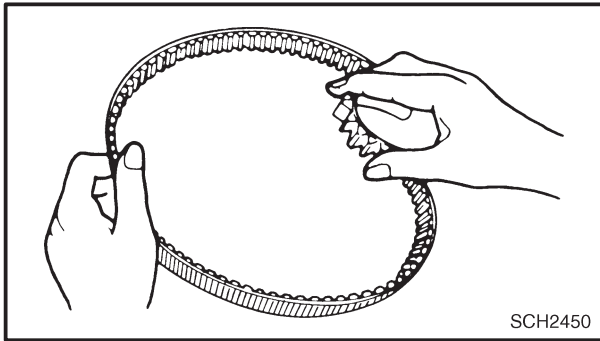
3. Tighten:
 - Adjusting bolt ②



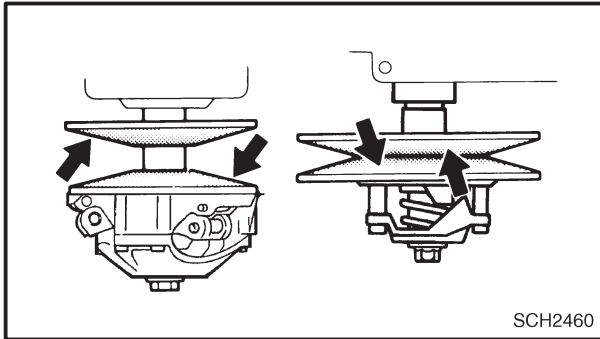
Adjusting bolt:
10 Nm (1.0 m•kg, 7.2 ft•lb)

DRIVE V-BELT/ENGAGEMENT SPEED CHECK

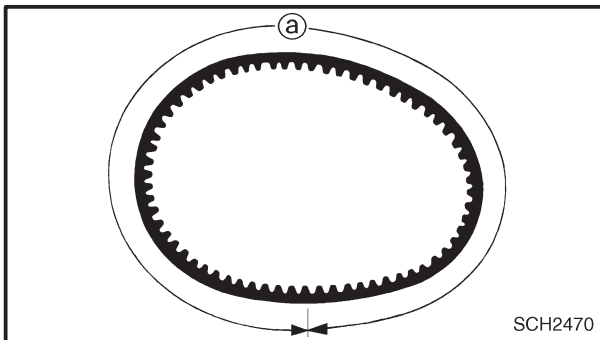
INSP
ADJ



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 (a)
 Out of specification → Replace.



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

ENGAGEMENT SPEED CHECK

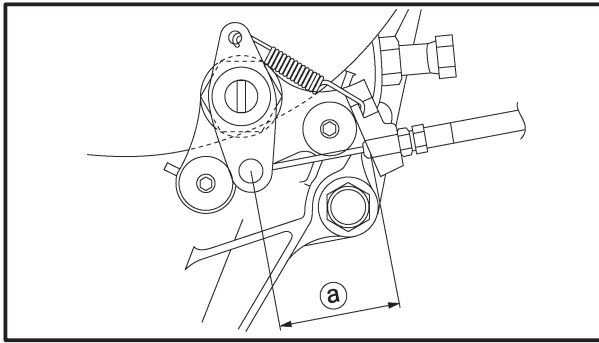
1. Place the machine on a level surface of hard-packed snow.
2. Inspect:
 - Clutch engagement speed

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:
 3,600 ± 200 r/min
 (RX10, RX10S, RX10R, RX10RS)
 4,200 ± 200 r/min
 (RX10M, RX10MS)



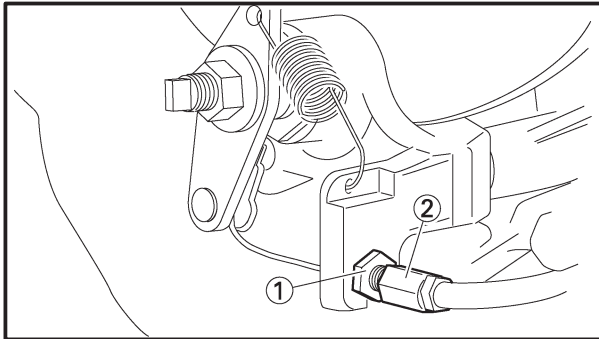
PARKING BRAKE ADJUSTMENT

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

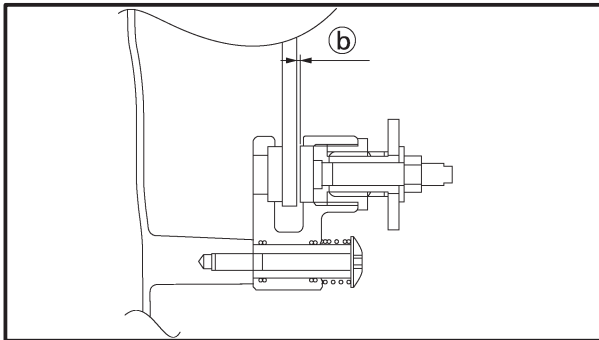
Adjustment steps:

- 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.

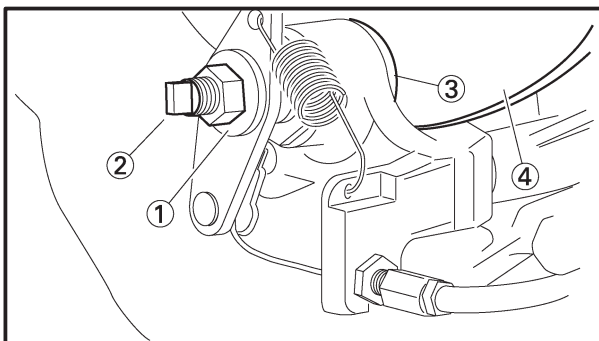


3. Measure:

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



Brake pad clearance:
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 to until the specified clearance between the brake pad (3) and brake disc (4) is obtained.
- Tighten the locknut.

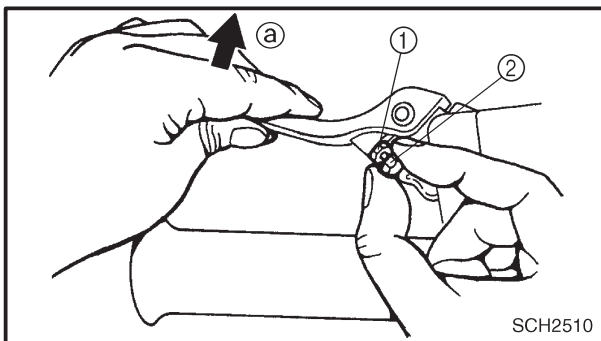
BRAKE LEVER ADJUSTMENT

1. Adjust:

- Brake lever position
(distance from the grip to the brake lever)

BRAKE LEVER ADJUSTMENT/ BRAKE FLUID LEVEL INSPECTION

INSP
ADJ

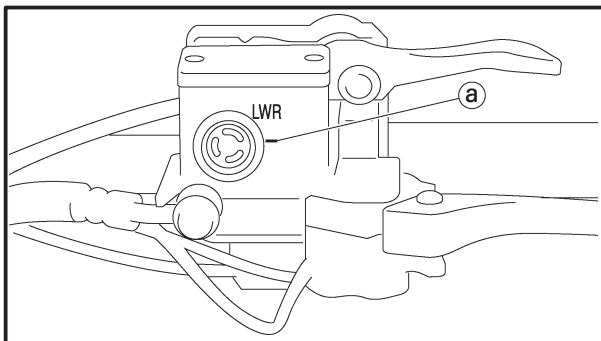


Adjustment steps:

- Loosen the locknut (1).
- While lightly pushing the brake lever in direction (a), turn the adjusting bolt (2) by fingers to set the brake lever to the desired position.
- Tighten the locknut securely after adjusting.



Locknut:
6 Nm (0.6 m•kg, 4.3 ft•lb)



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:

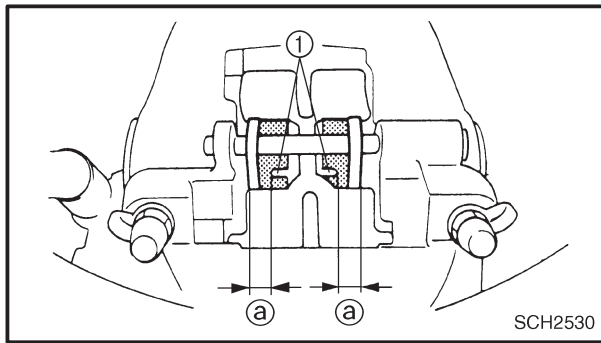
Brake fluid may corrode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

⚠ 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/BRAKE HOSE INSPECTION/ AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

INSP
ADJ



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 hoseCracks/damage/wear → Replace.
2. Check:
 - Fluid leakageApply 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:

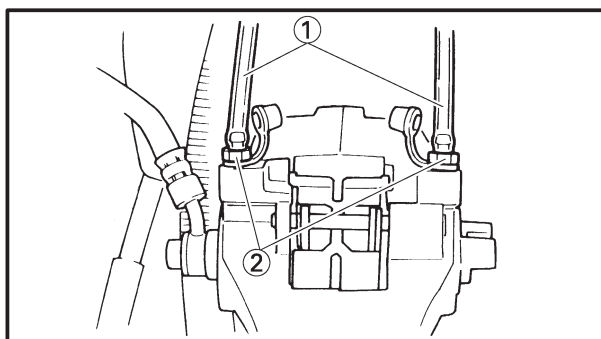
- The system has been disassembled.
- A brake hose is loosened or removed.
- The brake fluid has been very low.
- Brake operation is faulty.

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.





- a. Slowly apply the brake lever several times.
- b. Pull the lever in, then hold the lever in position.
- c. Loosen the bleed screws and allow the brake lever to travel towards its limit.
- d. Tighten the bleed screws when the brake lever limit has been reached, then release the lever.
 - Repeat steps (a) to (d) 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

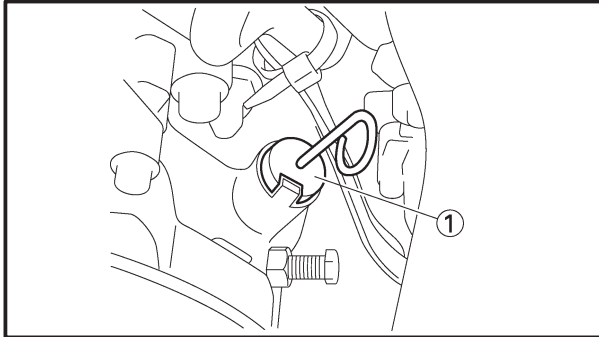
After bleeding the brake system, check the brake operation.



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:

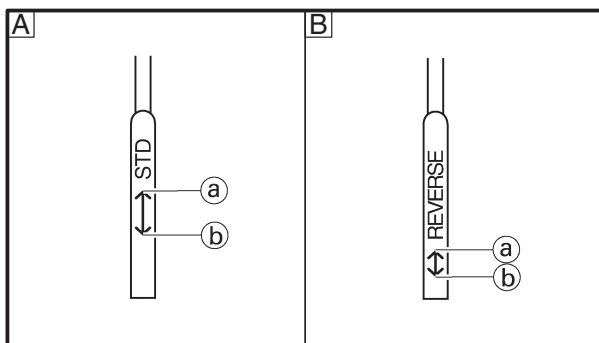
- Remove the dipstick ① and wipe it off with a clean rag.
Reinsert the dipstick.

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.

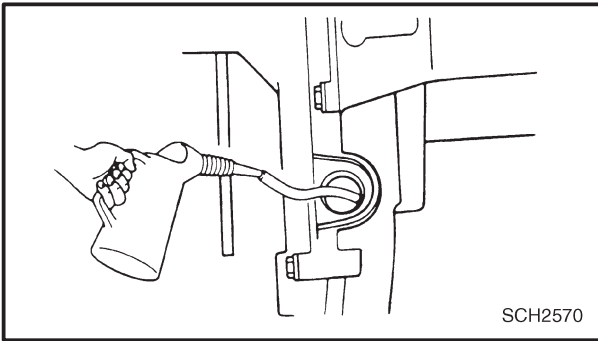
Be sure to:

- 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 ① and lower ② levels. If not, add oil to the upper level.

- A** For models without reverse transmissions
(RX10, RX10S, RX10M, RX10MS)
- B** For models with reverse transmissions
(RX10R, RX10RS)

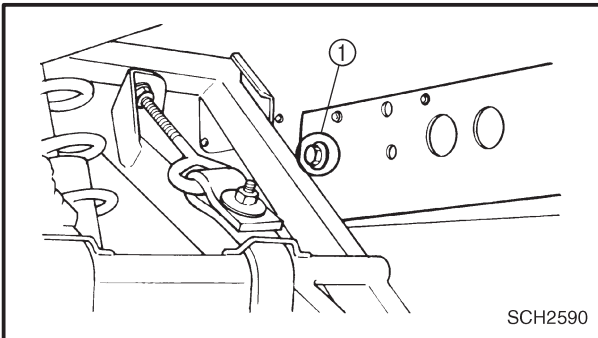
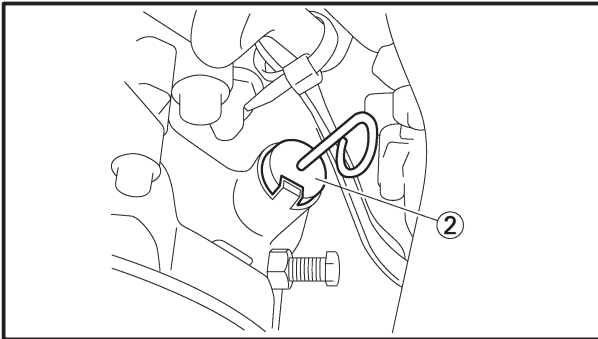


Recommended oil:
Gear oil API "GL-3"
SAE #75 or #80

CAUTION:

Make sure that no foreign material enters the gear case.

- Reinsert the dipstick ②.



Oil replacement

Oil replacement steps:

- Place the oil pan under the drain hole.
- Remove the oil drain bolt ① and drain the oil.

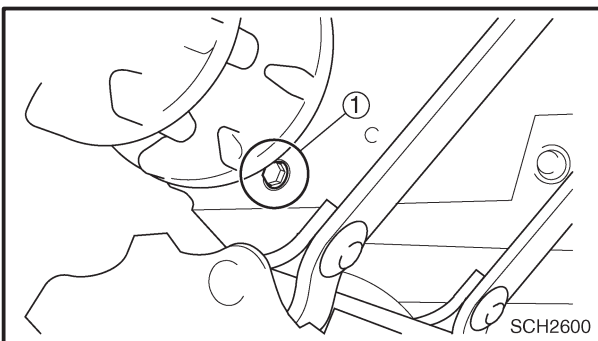
CAUTION:

Be sure to remove any oil from the heat protector.

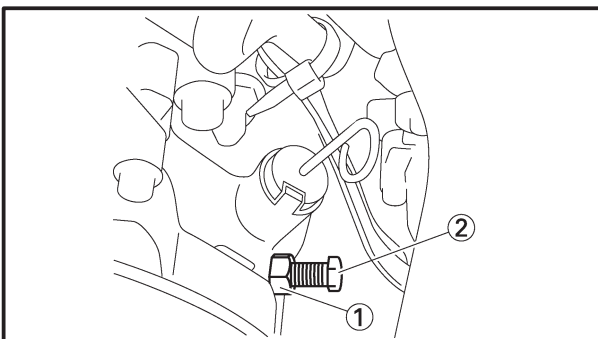
- Install the oil drain bolt ①.



Oil drain bolt:
16 Nm (1.6 m•kg, 12 ft•lb)



Recommended oil:
Gear oil API "GL-3"
SAE #75 or #80
Oil capacity:
0.25 L (8.8 Imp oz, 8.5 US oz)



Chain slack adjustment

- Adjust:
 - Drive chain slack

Adjustment steps:

- Loosen the locknut ①.
- Turn the adjusting bolt ② in until it is finger tight.
- Tighten the locknut.

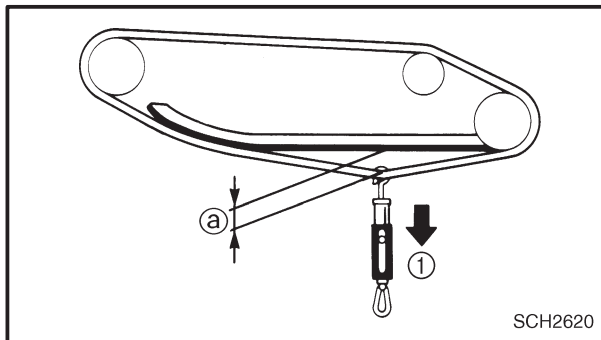


TRACK TENSION ADJUSTMENT

⚠ 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.

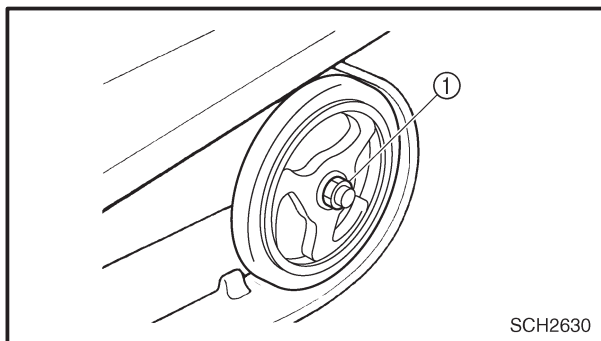


1. Lift the rear of the machine onto a suitable stand to raise the track off the ground.
2. Measure:
 - Track deflection (a)
Using a spring scale (1), pull down on the center of the track with 100 N (10 kg, 22 lb) of force.
Out of specification → Adjust.



Track deflection:

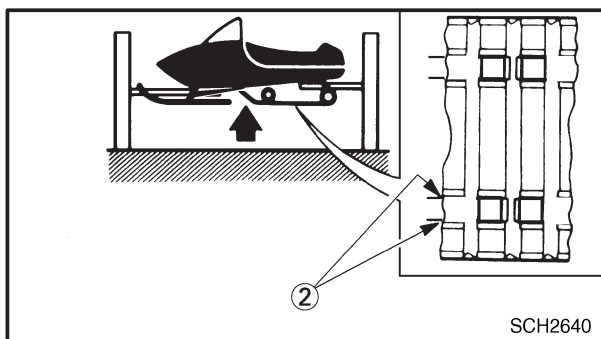
25 ~ 30 mm (0.98 ~ 1.18 in)



3. Adjust:
 - Track deflection

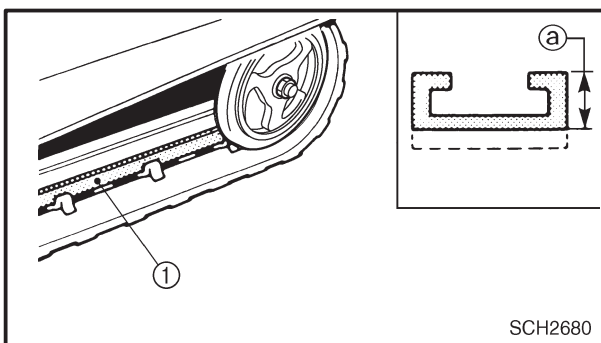
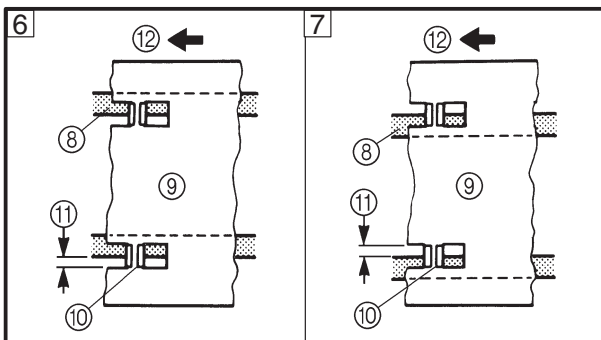
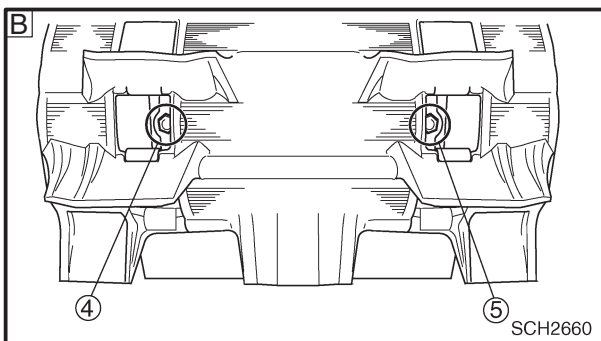
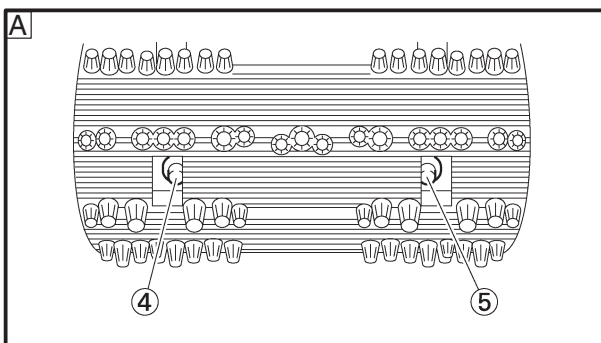
Adjustment steps:

- Place the machine onto a suitable stand to raise the track off of the ground.
 - Loosen the rear axle nut (1).
- a. Start the engine and rotate the track once or twice. Stop the engine.
 - b. Check the track alignment with the slide runner (2). If the alignment is incorrect, turn the left and right adjusters to adjust.



TRACK TENSION ADJUSTMENT/ SLIDE RUNNER INSPECTION

INSP
ADJ



Track alignment	6 Shifted to right	7 Shifted to left
4 Left adjuster	Turn out	Turn in
5 Right adjuster	Turn in	Turn out

- 8 Slide runner 9 Track
10 Track metal 11 Gap 12 Forward

A RX10, RX10S, RX10R, RX10RS

B RX10M, RX10MS

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

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

CAUTION:

The adjusters should be turned an equal amount.

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



Nut (rear axle):
75 Nm (7.5 m•kg, 54 ft•lb)

SLIDE RUNNER INSPECTION

- Inspect:
 - Slide runner 1
 - Cracks/damage/wear → Replace.
- Measure:
 - Slide runner thickness a
 - Out of specification → Replace.



Slide runner wear limit:
10 mm (0.39 in)

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 2-36 ~ 2-37 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.

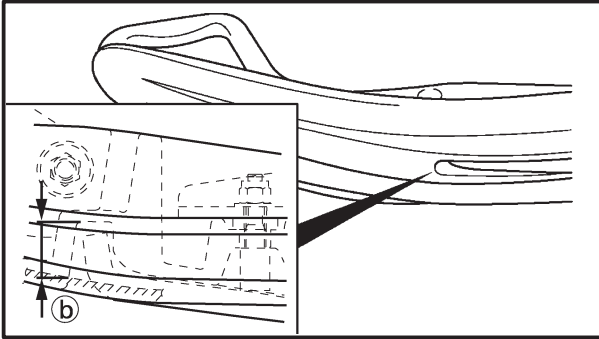
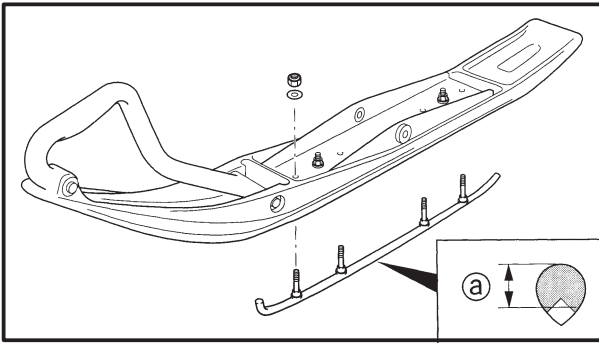
Off-trail riding

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 stud-ding.



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:

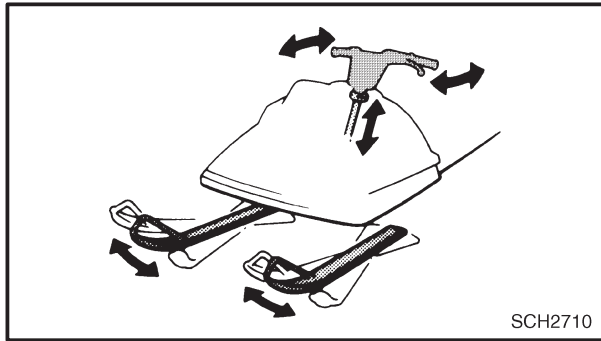
8 mm (0.31 in)

Plastic ski wear limit:

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

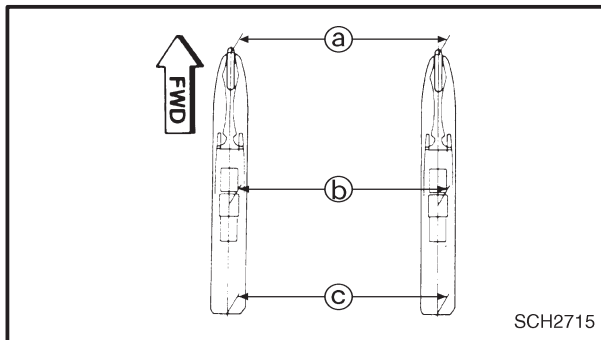
1. Check:

- 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. Check:

- 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)

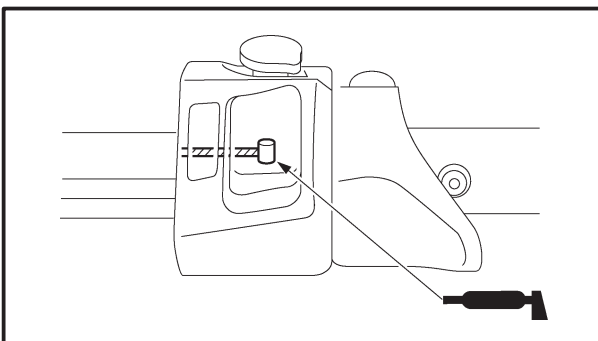
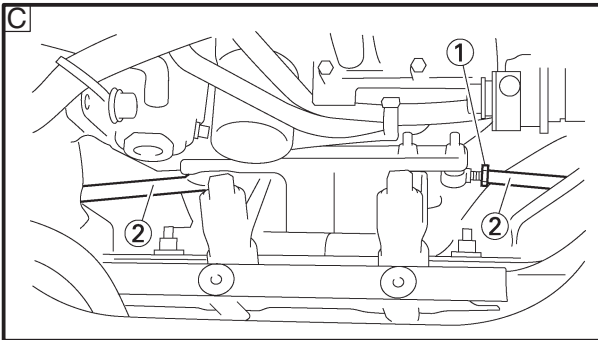
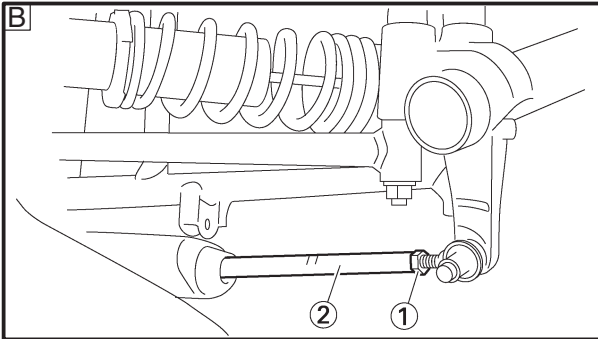
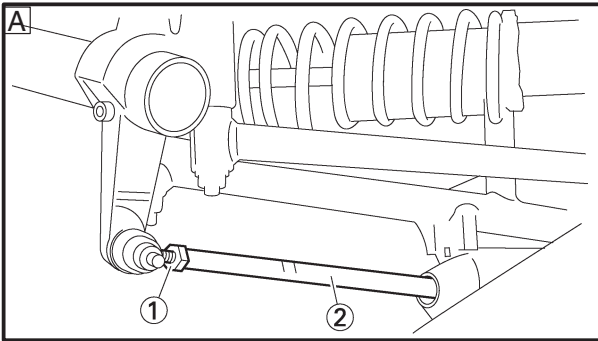
Ski stance (center to center):

RX10, RX10S, RX10R, RX10RS

1,068 mm (42.0 in)

RX10M, RX10MS

980 mm (38.6 in)



3. Adjust:
 - Ski toe-out

Adjustment steps:

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



Locknut (rod end):
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 rod ② can be rotated freely through the ball joint travel. If not, loosen the locknut ① and reposition the ball joint so that the tie rod ② can be rotated freely. Tighten the locknuts to specification.

- A Left side
- B Right side
- C 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.

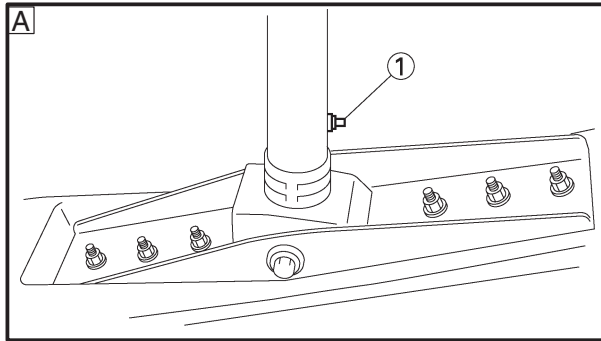


Recommended lubricant:
ESSO Beacon 325 Grease

⚠ 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.



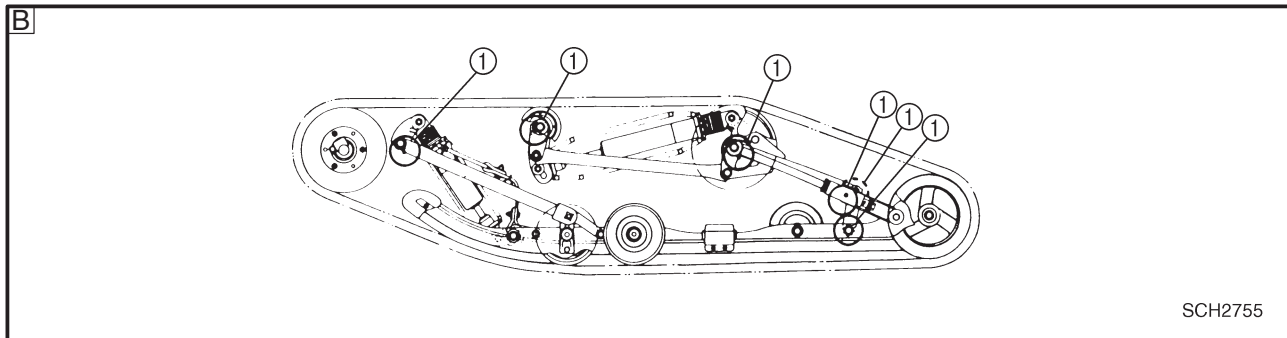
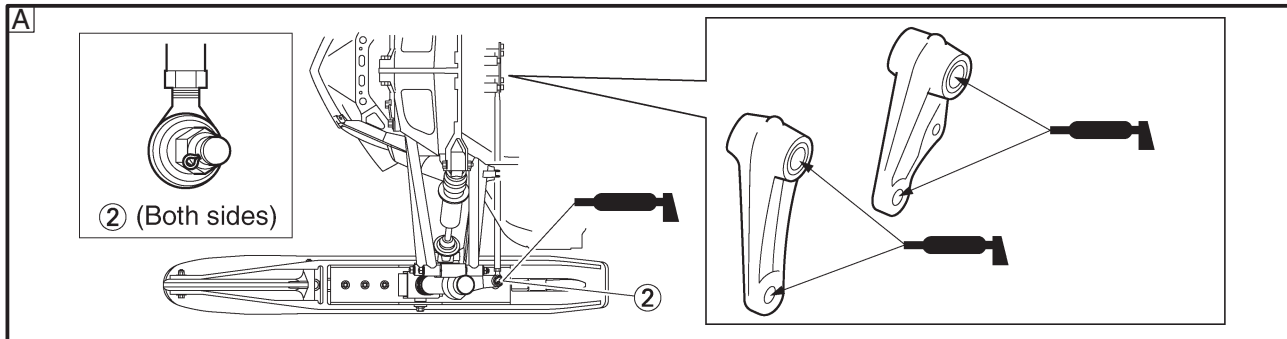
Front and rear suspension

1. Use a grease gun to inject grease into the nipples ①.

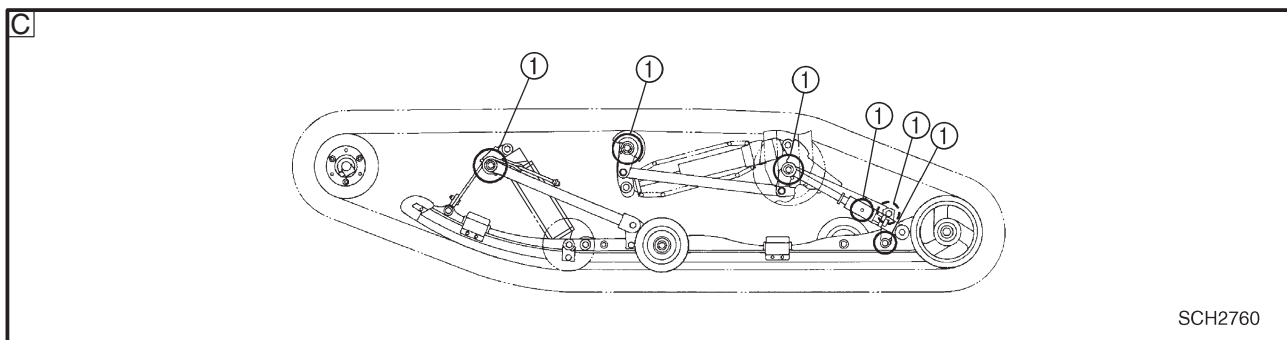


Recommended lubricant:
Esso Beacon 325 Grease or
Aeroshell Grease #7A

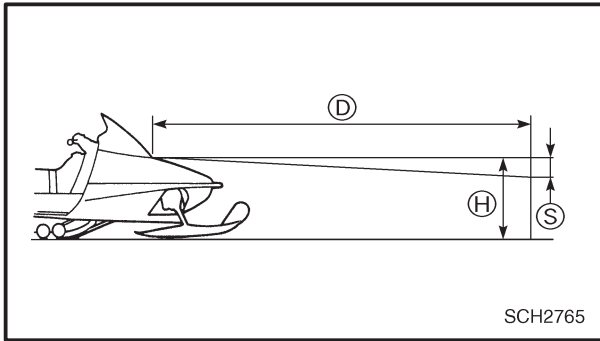
- A** Front
- B** Rear (RX10, RX10S, RX10R, RX10RS)
- C** Rear (RX10M, RX10MS)



SCH2755



SCH2760

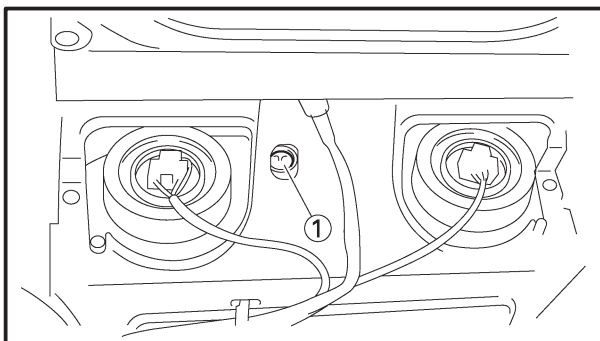


ELECTRICAL HEADLIGHT BEAM ADJUSTMENT

1. Place the machine on a level surface.
2. Place the machine in front of a wall at the recommended distance **D**. Refer to the table below.
3. Measure the distance **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 **S**).

D	3.0 m (10 ft)	7.6 m (25 ft)
S	26 mm (1.0 in)	66 mm (2.6 in)

D: Distance **S**: Set range



6. Adjust:
 - Headlight beam (vertically)

Vertical adjustment

Higher Turn the adjusting screw **1** clockwise.

Lower Turn the adjusting screw **1** counterclockwise.



EAS00178

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.

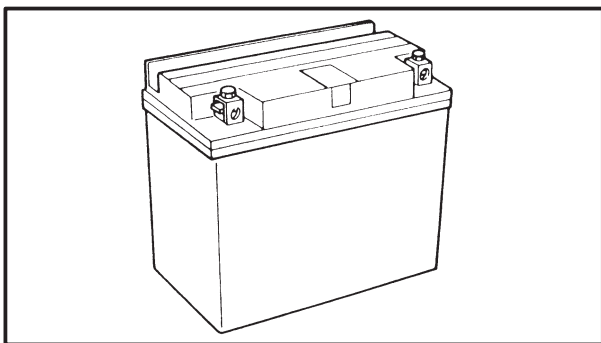
First aid in case of bodily contact:

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:

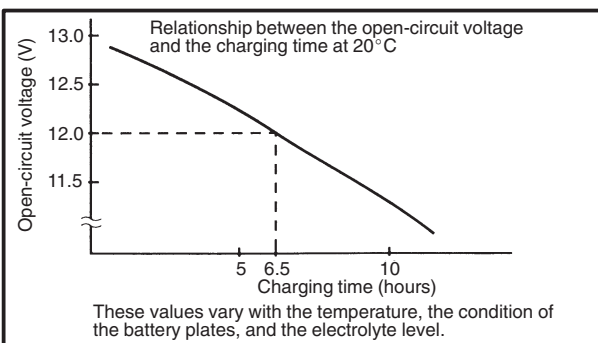
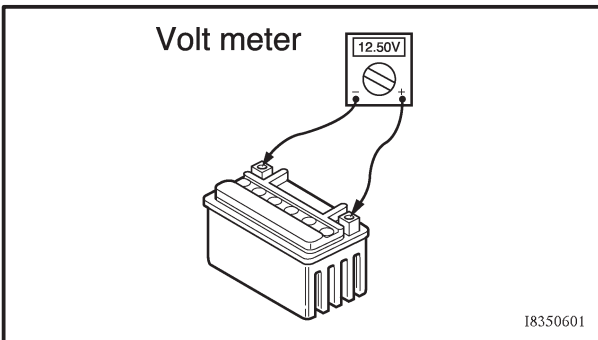
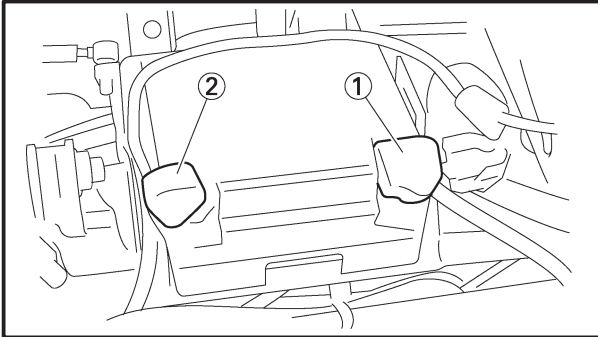
Since MF batteries are sealed, it is not possible to check the charge state of the battery by measuring the specific gravity of the electrolyte. Therefore, the charge of the battery has to be checked by measuring the voltage at the battery terminals.

1. Disconnect:

- Battery leads
(from the battery terminals)

CAUTION:

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



2. Remove:

- Battery

3. Inspect:

- Battery charge

Inspection steps:

- Connect a pocket tester to the battery terminals.

Tester positive lead → battery positive terminal
Tester negative lead → battery negative terminal

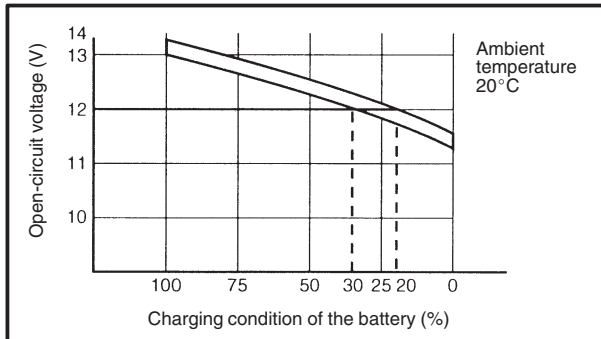
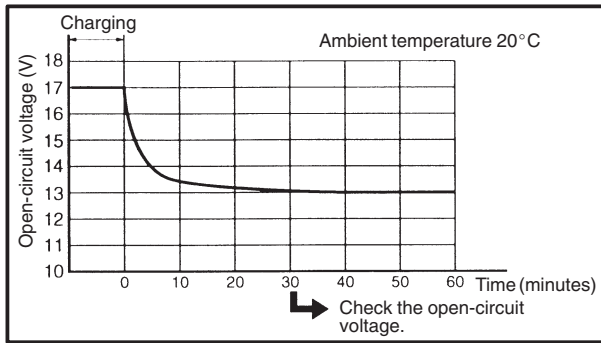
NOTE:

- 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%



4. Charge:

- battery
(refer to the appropriate charging method illustration)

⚠ WARNING

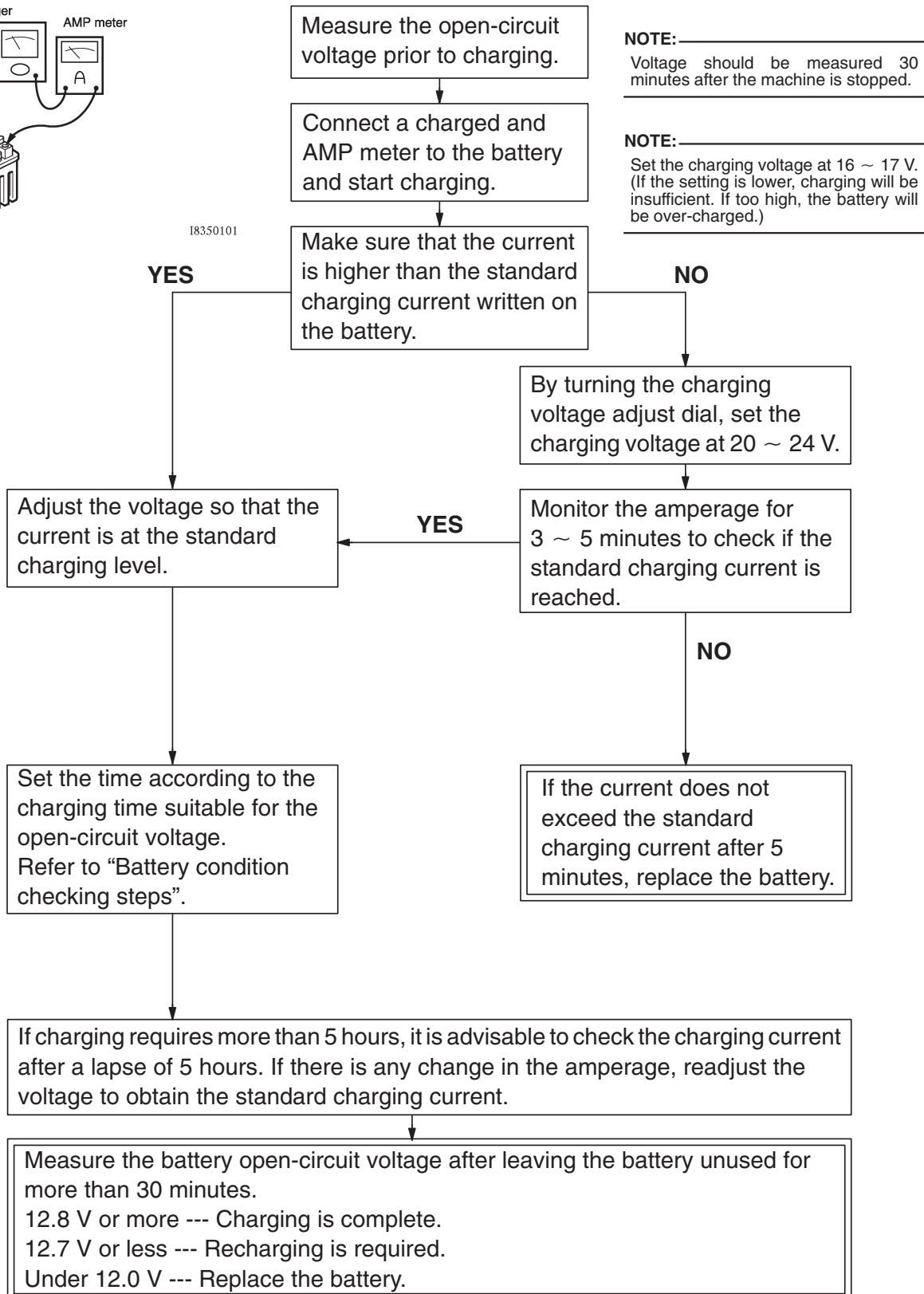
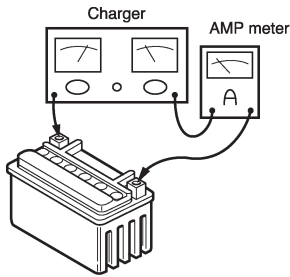
Do not quick charge a battery.

CAUTION:

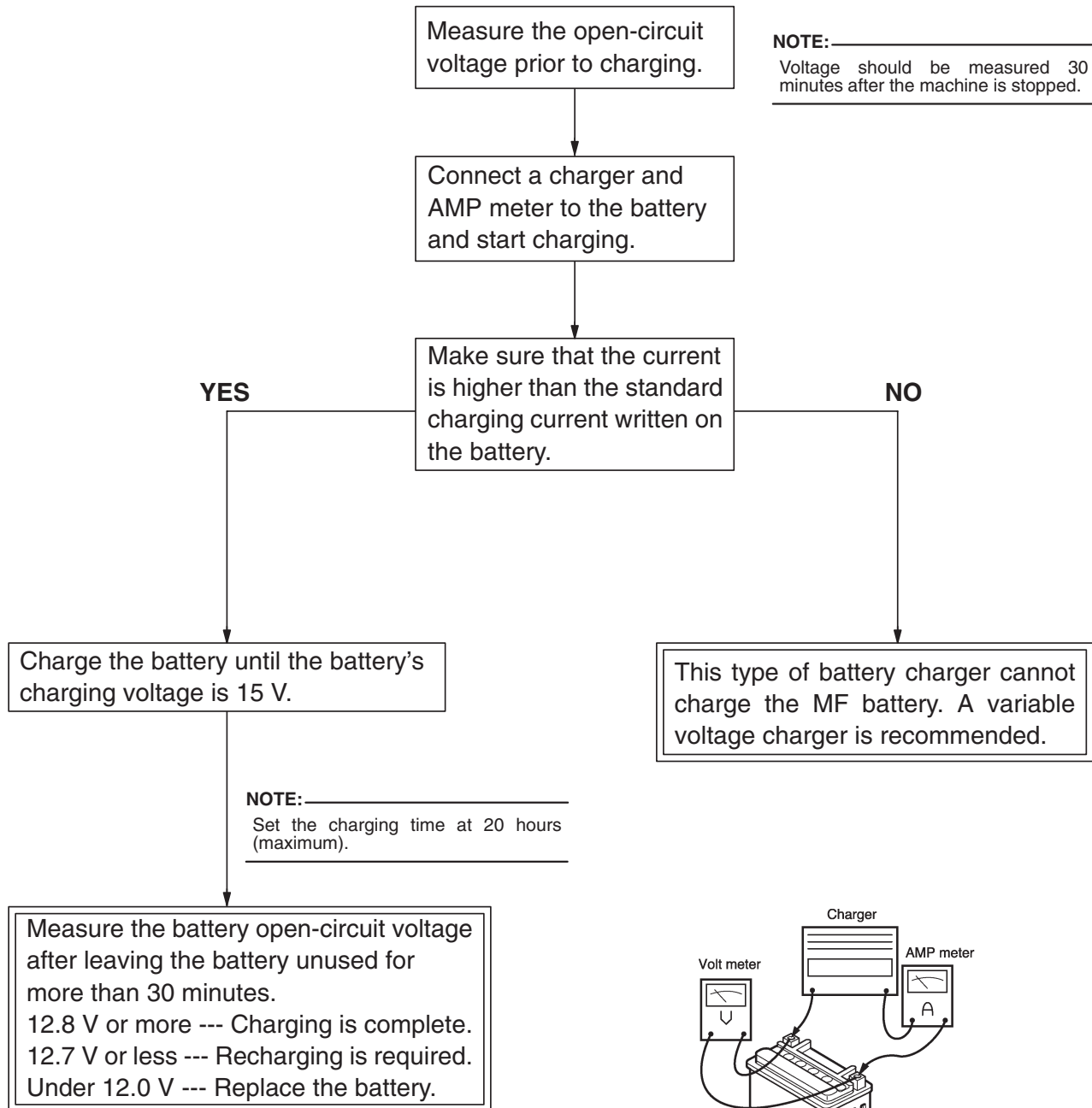
- Make sure that the battery vent is free of obstructions.
- Never remove the MF battery sealing caps.
- Do not use a high-rate battery charger. They force a high-amperage current into the battery quickly and can cause battery overheating and battery plate damage.
- If it is impossible to regulate the charging current on the battery charger, be careful not to overcharge the battery.
- When charging a battery, be sure to remove it from the motorcycle. (If charging has to be done with the battery mounted on the motorcycle, 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



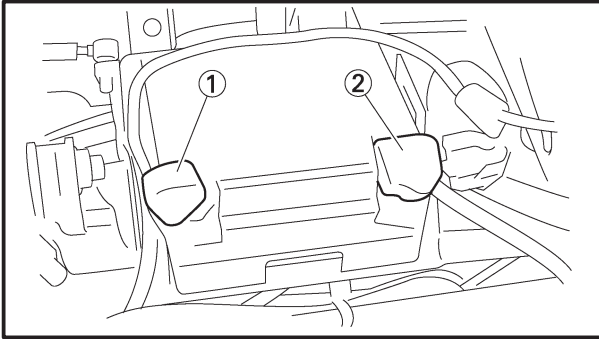
Charging method using a constant voltage charger



18350102



5. Install:
- Battery



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

CAUTION:

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

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



Recommended lubricant
Dielectric grease

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.

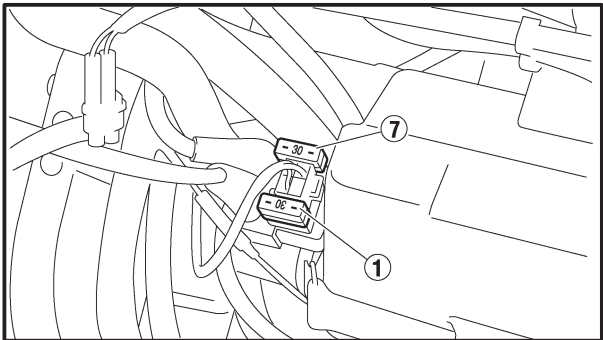
1. Inspect:
- Continuity

Inspection steps:

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

NOTE:

Set the pocket tester selector to “Ω × 1”.

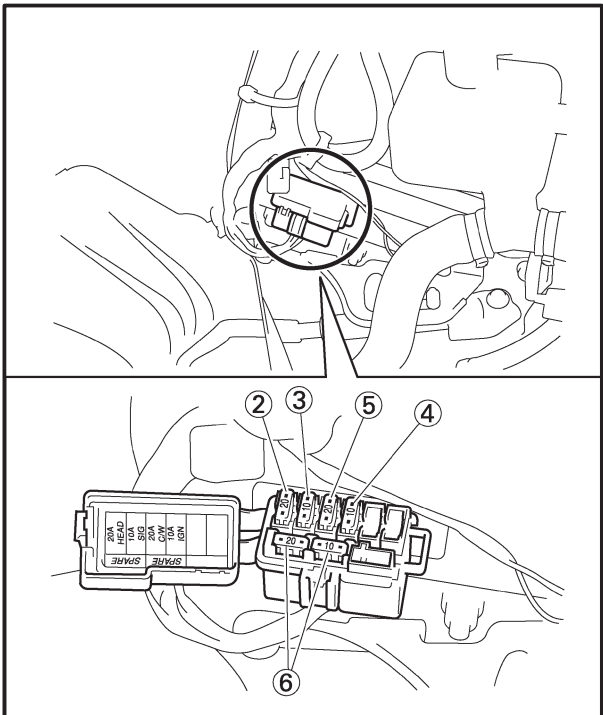


Pocket tester:
90890-03112, YU-03112

- If the pocket tester indicates “∞”, replace the fuse.
2. Replace:
- Blown fuse

Replacing steps:

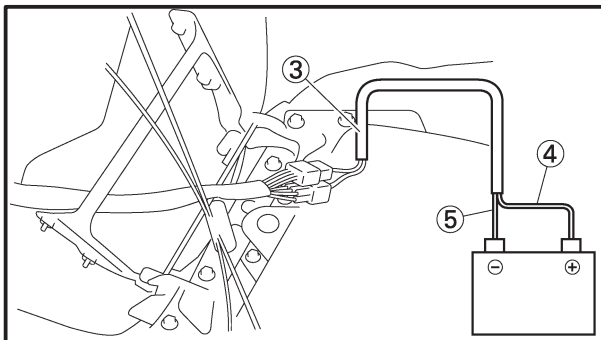
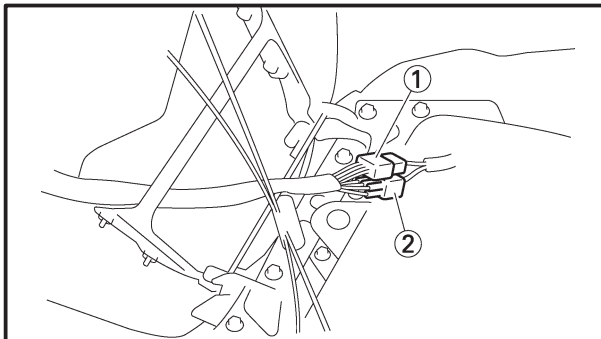
- Set the main switch to “OFF”.
- Install a new fuse of the correct amperage.
- Set the main switch to “ON” and verify if the electrical circuit is operational.
- If the fuse immediately blows again, check the electrical circuit.



Item	Amperage	Q'ty
① Main fuse	30 A	1
② “HEAD” fuse	20 A	1
③ “SIGNAL” fuse	10 A	1
④ “IGNITION” fuse	10 A	1
⑤ “CARBURETOR HEATER” fuse	20 A	1
⑥ Reserve fuse	20 A 10 A	1 1
⑦ 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:

- Remove the speedometer coupler ① and headlight coupler ②.
- Connect the speedometer unit test coupler ③ to the speedometer coupler and headlight coupler.
- Connect the speedometer unit test coupler leads as follows.

Speedometer unit test coupler lead (red) ④

→ **Battery (+) terminal**

Speedometer unit test coupler lead (black)

⑤ → **Battery (-) terminal**



**Speedometer unit test coupler:
8EK-82507-09, YS-45686**

- Check that the light and LCD in the speedometer light up.
- If the light does not light up. → Check the bulbs.
Refer to "BULB(S)" in CHAPTER 8.
- If the LCD is not indicated. → Replace the speedometer unit.



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
- Starter cable free play

Carburetor tuning data

1. Standard specifications

A Type	BSR37
B Manufacturer	MIKUNI
C I.D. Mark	8FA100
D Main jet (M.J.)	#135
E Pilot jet (P.J.)	#17.5
F Pilot screw (P.S.)	Approx 2 turns out
G Float height	11 ~ 15 mm (0.43 ~ 0.59 in)
H Idle speed	1,350 ± 100 r/min (1,250 ~ 1,450 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 intake silencer 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.

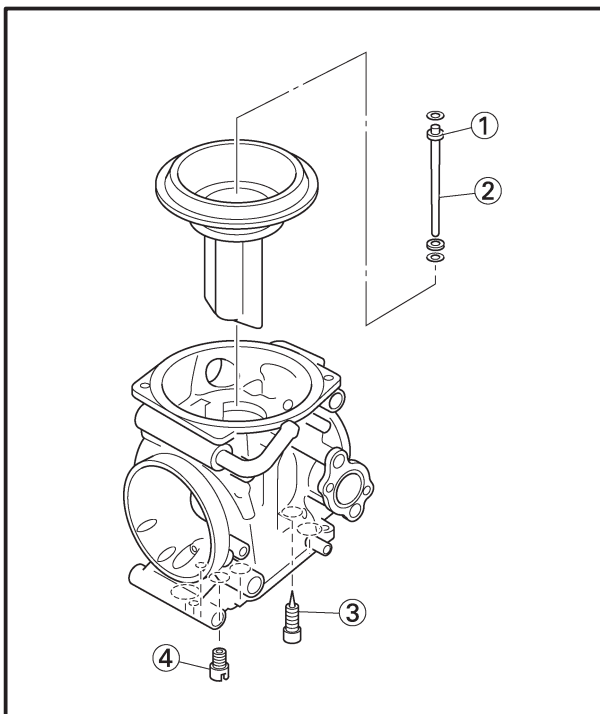
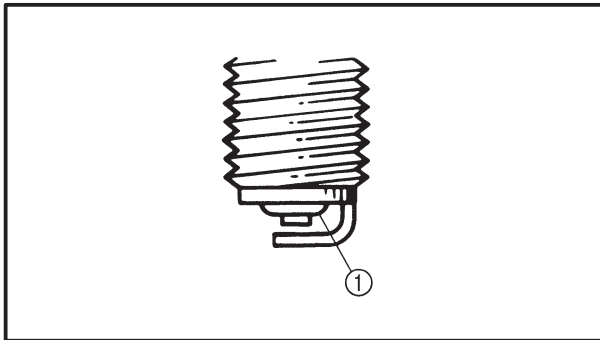
High altitude tuning

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

NOTE:

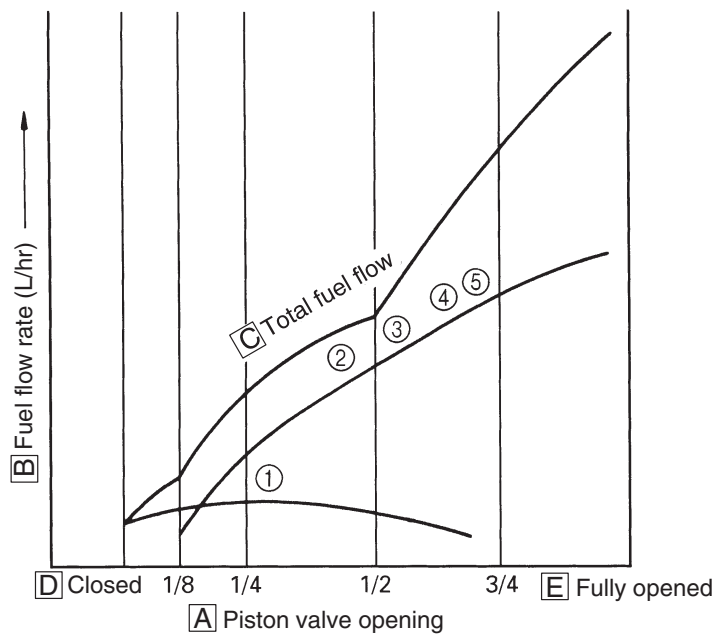
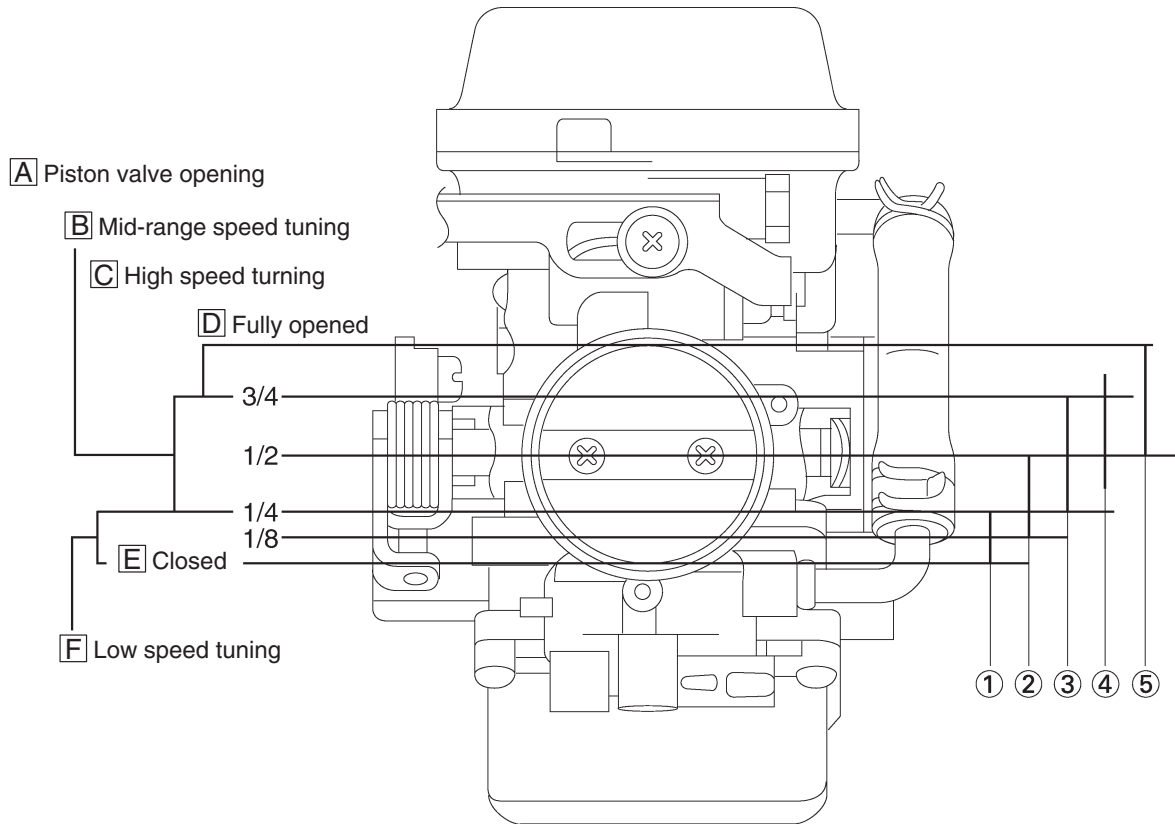
These jetting specifications are subject to change.

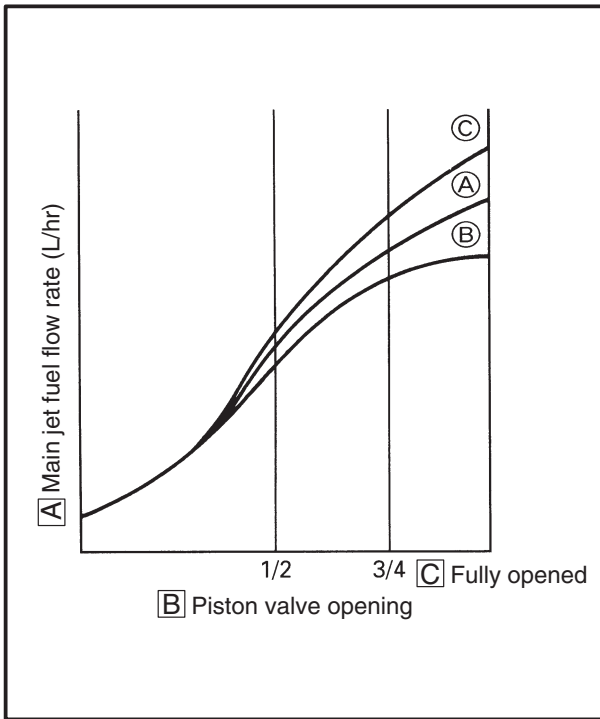
Consult the latest technical information from Yamaha to be sure you have the most up-to-date jetting specifications.



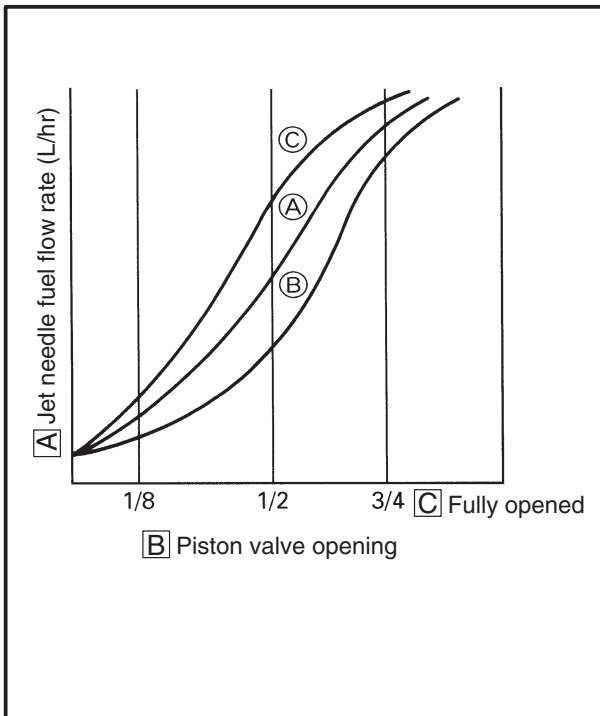
- ① Clip
- ② Jet needle
- ③ Pilot screw
- ④ Main jet

Guide for carburetion

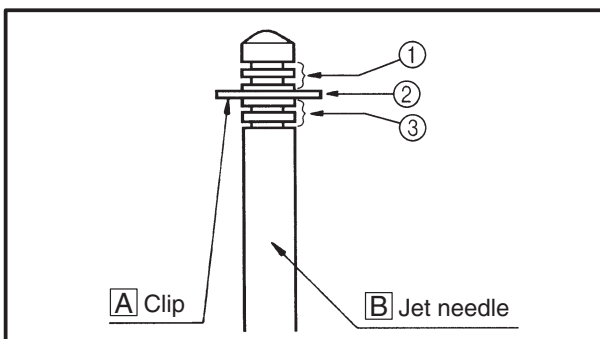




- (A) Standard main jet
- (B) Main jet whose diameter is 10% smaller than standard
- (C) Main jet whose diameter is 10% larger than standard

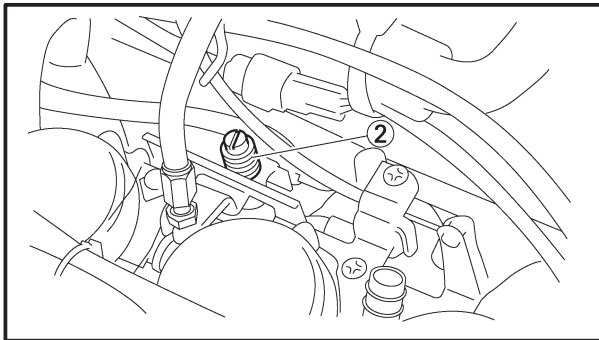
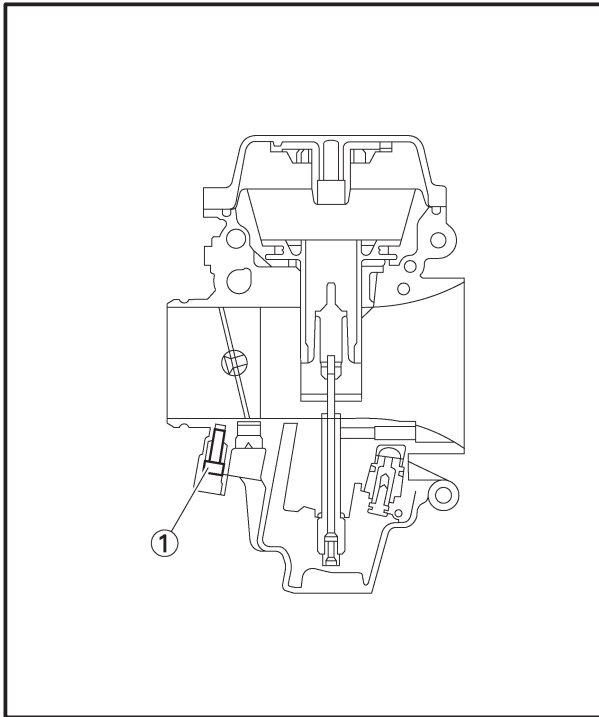


- (A) No. 2 position
- (B) No. 1 position
- (C) No. 3 position



CAUTION:

If the air silencer box 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 silencer box 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 silencer 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 mixture screw ① and throttle stop screw ②.

CAUTION:

Never run the engine without the air intake silencer installed. Severe engine damage may result.

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

Pilot screw ①:

Approx 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 mixture 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:
 $1,350 \pm 100$ r/min
 (1,250 ~ 1,450 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:

#17.5



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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.

CARBURETOR TUNING

INSP
ADJ



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	P	Pink
S	Silver	Y	Yellow

Specifications Model: RX10, RX10S, RX10R, RX10RS

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	1,350 ± 100 r/min	←	←	←	←
C	Engagement r/min	3,600 ± 200 r/min	←	←	←	←
D	Shift r/min	10,250 ± 250 r/min	←	←	←	←
E	Main jet	d Refer to "HIGH ALTITUDE SETTINGS" in "MAINTENANCE SPECIFICATIONS".				
F	Pilot jet*1					
G	Pilot screw					
H	Secondary reduction ratio (number of links)	38/24 (70 L)	←	38/23 (70 L)	38/22 (68 L)	←
I	Primary sheave spring	90501-582L1	←	90501-582L2	90501-602L3	←
J	Color	Y-S-Y	←	G-S-G	P-S-P	←
K	Free length	87.4 mm (3.44 in)	←	←	85.1 mm (3.35 in)	←
L	Preload	343 N (35 kg, 77 lb)	←	←	←	←
M	Spring rate	24.5 N/mm (2.50 kg/mm, 140 lb/in)	←	27 N/mm (2.75 kg/mm, 154 lb/in)	29.4 Nm (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	60 mm (2.36 in)	←	←	←	←
P	Weight (ID)	8FA-17605-00 (8FA00)	←	←	←	←
Q	Weight rivet	OUT	Steel 17.2 with-hole	Steel 13.3	Steel 13.3 with-hole	Aluminum 13.3 with-hole
		IN	Steel 17.2	Steel 13.3	Steel 13.3 with-hole	Steel 13.3 with-hole
R	Weight bushing	Duralon	←	←	←	←
S	Roller outer dia.	15.0 mm (0.59 in)	←	←	←	←
T	Roller bushing	Duralon	←	←	←	←
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) 1211 kg•mm/rad	←	←	←	←
Z	Wire diameter	6.0 mm (0.236 in)	←	←	←	←
a	Outside diameter	69.5 mm (2.736 in)	←	←	←	←
b	Sec. torque cam angle	51 – 43°	←	←	←	←
c	Sec. clutch shim	1.0 mm (0.04 in)	←	←	←	←

NOTE:

*1: 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.



S	Silver	O	Orange
W	White		

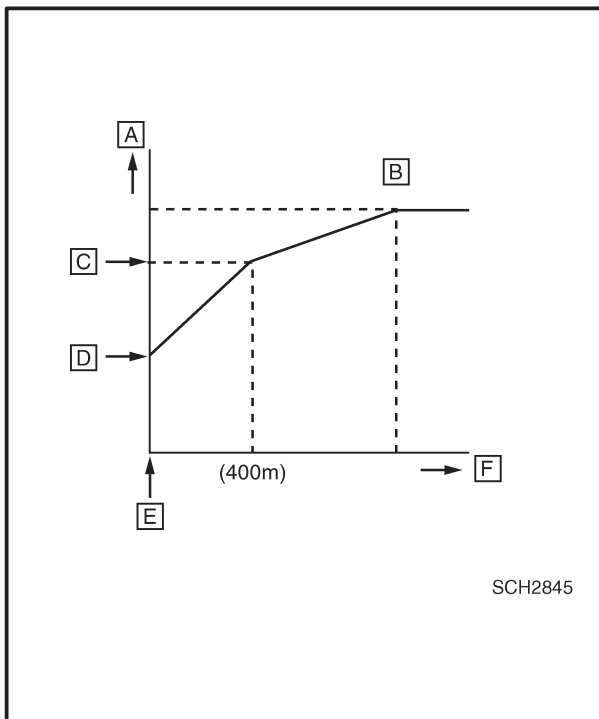
Specifications Model: RX10M, RX10MS

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		1,350 ± 100 r/min	←	←	←	←
C Engagement r/min		4,200 ± 200 r/min	←	←	←	←
D Shift r/min		10,250 ± 250 r/min	←	←	←	←
E Main jet		d Refer to “HIGH ALTITUDE SETTINGS” in ”MAINTENANCE SPECIFICATIONS”.				
F Pilot jet* ¹						
G Pilot screw						
H Secondary reduction ratio (number of links)		40/23 (70 L)	←	40/22 (70 L)	40/21 (70 L)	←
I Primary sheave spring		90501-624L8	←	←	←	←
J Color		O-S-O	←	←	←	←
K Free length		84.2 mm(3.32 in)	←	←	←	←
L Preload		343 N (35 kg, 77 lb)	←	←	←	←
M Spring rate		31.9 N/mm (3.25 kg/mm, 182 lb/in)	←	←	←	←
N Wire diameter		6.2 mm (0.244 in)	←	←	←	←
O Outside diameter		60 mm (2.36 in)	←	←	←	←
P Weight (ID)		8FA-17605-00 (8FA00)	←	←	←	←
Q Weight rivet	OUT	Steel 17.2 with-hole	Steel 13.3	Steel 13.3 with-hole	Aluminum 13.3 with-hole	None
	IN	Steel 17.2	Steel 13.3 with-hole	Aluminum 13.3 with-hole	Aluminum 13.3 with hole	None
R Weight bushing		Duralon	←	←	←	←
S Roller outer dia.		16.5 mm (0.65 in)	←	←	←	←
T Roller bushing		Duralon	←	←	←	←
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) 1290 kg•mm/rad	←	←	←	←
Z Wire diameter		6 mm (0.236 in)	←	←	←	←
a Outside diameter		69.5 mm (2.736 in)	←	←	←	←
b Sec. torque cam angle		45°	←	←	←	←
c Sec. clutch shim		1.0 mm (0.04 in)	←	←	←	←

NOTE:

*1: 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.



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	20 teeth	8FA-17682-00	
	21 teeth	8FA-17682-10	RX10M, RX10MS
	22 teeth	8FA-17682-20	
	23 teeth	8FA-17682-30	
	24 teeth	8FA-17682-40	RX10, RX10S, RX10R, RX10RS
[F] Driven sprocket	37 teeth	8DW-47587-70	
	38 teeth	8DW-47587-80	RX10, RX10S
	38 teeth	8FB-47587-80	RX10R, RX10RS
	39 teeth	8DW-47587-90	
	39 teeth	8FB-47587-90	
	40 teeth	8DW-47587-00	RX10M, RX10MS
[G] Chain	68 links	94890-09068	
	70 links	94890-09070	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS

② Gear ratio

[A] Drive gear [B] Driven gear	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	1.95 68 links	1.86 68 links	1.77 70 links	1.70 70 links	1.63 70 links
40 teeth	2.00 68 links	1.91 70 links	1.82 70 links	1.74 70 links	1.67 70 links

③ Secondary sheave spring

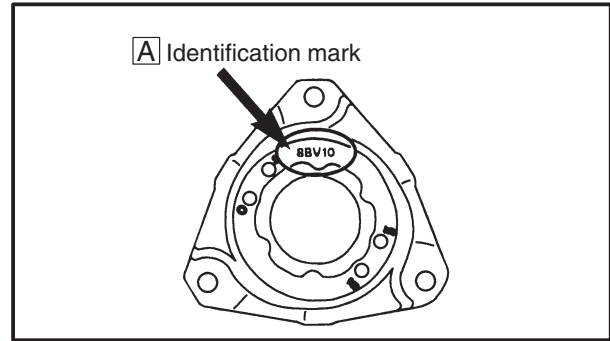
[A] Part no.	[B] Spring rate N•mm/rad (kg•mm/rad)	[C] Preload N/mm (kg/mm) (lb/in)	[D] Color	[E] Wire gauge mm (in)	[F] No. of coils	[G] Free length mm (in)	[H] Outside diameter mm (in)	[I] Standard
90508-500B1	6003 (613)	6.2 (0.63), 35.28	Brown	5.0 (0.196)	5.19	75 (2.95)	69.5 (2.736)	
90508-536A9	7147 (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)	10.21 (1.04), 58.24	Silver	5.5 (0.217)	4.86	75 (2.95)	69.5 (2.736)	
90508-60012	11876 (1211)	12.32 (1.256), 70.34	Pink	6.0 (0.236)	5.53	75 (2.95)	69.5 (2.736)	RX10, RX10S, RX10R, RX10RS
90508-60007	12654 (1290)	13.45 (1.372) 76.84	White	6.0 (0.236)	5.19	75 (2.95)	69.5 (2.736)	RX10M, RX10MS


④ Secondary spring twist angle

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



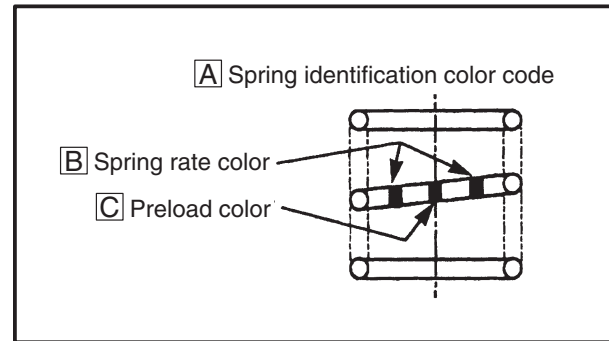
⑤ Torque cam (secondary spring seat)



[B] Effects	[C] Part no.	[D] Cam angle	[E] Identification mark	[F] Standard
[G] Quicker upshifting during acceleration  [H] Quicker backshifting under load	8FA-17604-00	51-43°	8BVFA	RX10, RX10S, RX10R, RX10RS
	8BV-17604-71	47°	8BV71	
	8BV-17604-51	45°	8BV51	RX10M, RX10MS
	8BV-17604-31	43°	8BV31	
	8BV-17604-11	41°	8BV11	
	8BV-17604-91	39°	8BV91	



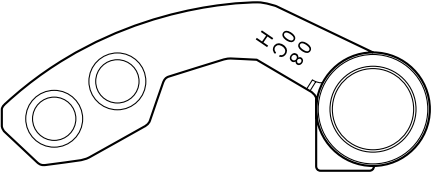
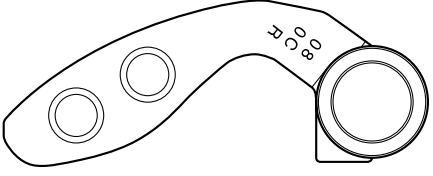
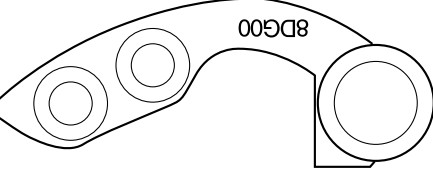
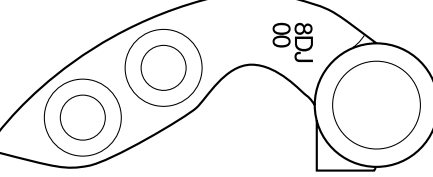
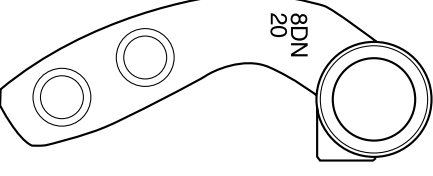
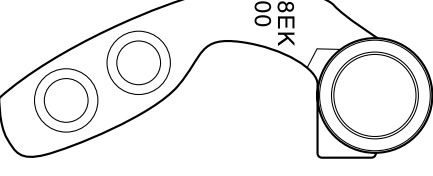
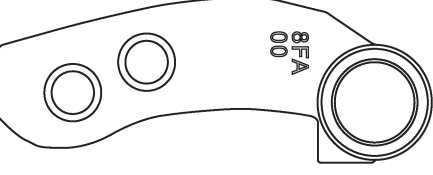
⑥ Primary spring



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 (0.216)	60 (2.36)	4.91	88.4 (3.48)	
90501-551L9	19.6 (2.00)	343 (35)	Blue-Silver-Blue	5.5 (0.216)	60 (2.36)	4.91	90.9 (3.58)	
90501-552L5	19.6 (2.00)	392 (40)	Blue-Green-Blue	5.5 (0.216)	60 (2.36)	4.91	93.4 (3.68)	
90501-581L5	24.5 (2.50)	294 (30)	Yellow-Pink-Yellow	5.8 (0.228)	60 (2.36)	4.92	85.4 (3.36)	
90501-581L6	27 (2.75)	294 (30)	Green-Pink-Green	5.8 (0.228)	60 (2.36)	4.66	84.3 (3.32)	
90501-582L1	24.5 (2.50)	343 (35)	Yellow-Silver-Yellow	5.8 (0.228)	60 (2.36)	4.92	87.4 (3.44)	RX10, RX10S, RX10R, RX10RS
90501-582L2	27 (2.75)	343 (35)	Green-Silver-Green	5.8 (0.228)	60 (2.36)	4.66	86.1 (3.39)	
90501-582L6	22.1 (2.25)	392 (40)	White-Green-White	5.8 (0.228)	60 (2.36)	5.25	91.2 (3.59)	
90501-582L7	24.5 (2.50)	392 (40)	Yellow-Green-Yellow	5.8 (0.228)	60 (2.36)	4.92	89.4 (3.52)	
90501-583L0	19.6 (2.00)	441 (45)	Blue-White-Blue	5.8 (0.228)	60 (2.36)	5.65	95.9 (3.78)	
90501-583L1	22.1 (2.25)	441 (45)	White-White-White	5.8 (0.228)	60 (2.36)	5.25	93.4 (3.68)	
90501-583L4	22.1 (2.25)	343 (35)	White-Silver-White	5.8 (0.228)	60 (2.36)	5.25	89.0 (3.50)	
90501-583L5	22.1 (2.25)	294 (30)	White-Pink-White	5.8 (0.228)	60 (2.36)	5.25	86.7 (3.41)	
90501-601L7	29.4 (3.00)	294 (30)	Pink-Pink-Pink	6.0 (0.236)	60 (2.36)	4.82	83.4 (3.28)	
90501-601L8	31.9 (3.25)	294 (30)	Orange-Pink-Orange	6.0 (0.236)	60 (2.36)	4.60	82.6 (3.25)	
90501-602L3	29.4 (3.00)	343 (35)	Pink-Silver-Pink	6.0 (0.236)	60 (2.36)	4.82	85.1 (3.35)	
90501-602L8	27.0 (2.75)	392 (40)	Green-Green-Green	6.0 (0.236)	60 (2.36)	5.08	87.9 (3.46)	
90501-602L9	29.4 (3.00)	392 (40)	Pink-Green-Pink	6.0 (0.236)	60 (2.36)	4.82	86.7 (3.41)	
90501-603L2	24.5 (2.50)	441 (45)	Yellow-White-Yellow	6.0 (0.236)	60 (2.36)	5.39	91.4 (3.60)	
90501-603L3	27.0 (2.75)	441 (45)	Green-White-Green	6.0 (0.236)	60 (2.36)	5.08	89.8 (3.54)	
90501-624L8	31.9 (3.25)	343 (35)	Orange-Silver-Orange	6.2 (0.244)	60 (2.36)	5.00	84.2 (3.32)	RX10M, RX10MS



⑦ Clutch weight

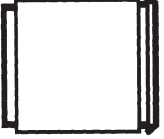
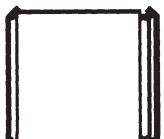
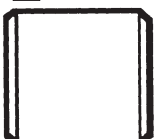
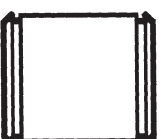

A Parts no.	B Weight g (oz) without bush and rivets	C Shape & ID mark	D Standard
8CH-17605-10	35.32 (1.247)		
8CR-17605-10	38.09 (1.345)		
8DG-17605-00	34.26 (1.209)		
8DJ-17605-00	37.77 (1.333)		
8DN-17605-20	42.09 (1.486)		
8EK-17605-00	39.00 (1.376)		
8FA-17605-00	69.43 (2.449)		RX10, RX10S, RX10M, RX10MS, RX10R, RX10RS



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: RX10, RX10S, RX10R, RX10RS	<div>G Increased Force</div> <div>H Decreased Force</div>
90269-06006	Steel	17.2 (0.677)	3.6 (0.127) with hole	OUT: RX10, RX10S, RX10R, RX10RS	
90261-06034	Steel	13.9 (0.548)	3.6 (0.127)		
90261-06019	Steel	13.3 (0.524)	3.1 (0.109)		
90261-06017	Steel	11.3 (0.445)	2.7 (0.095)		
90266-06002	Steel	13.3 (0.524)	2.4 (0.085) with hole		
90261-06015	Steel	10.3 (0.406)	2.4 (0.085)		
90261-06028	Aluminum	10.3 (0.406)	0.8 (0.028)		
90266-06001	Aluminum	13.3 (0.524)	0.8 (0.028) with hole		
None				RX10M, RX10MS	

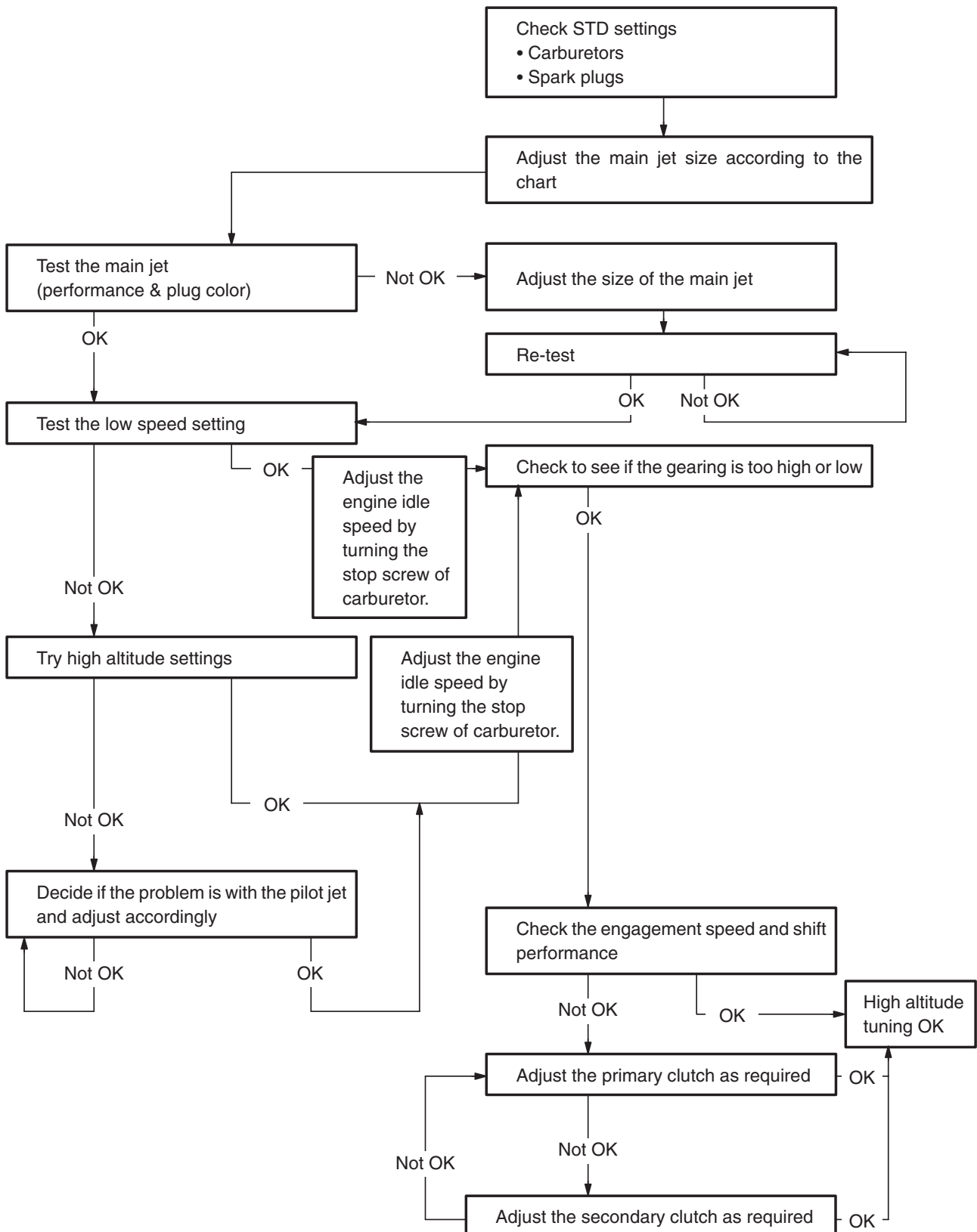
⑨ Rollers

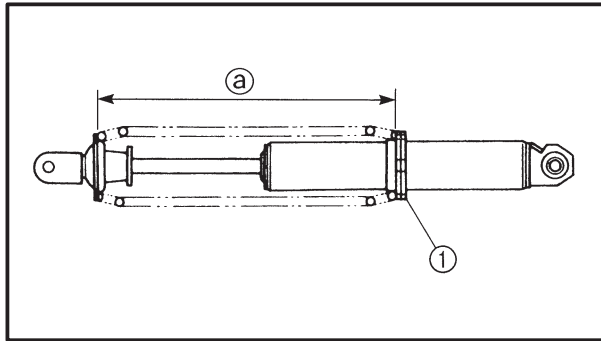
I.D. 9 mm (0.354 in)					
A Roller with bushing part number	B Outside diameter mm (in)	C Bushing type (P/N)	D Identification mark (Width)	E Standard	F Effects
8CR-17624-00	14.5 (0.57)	Duralon	G Grooved & Machined  (14.6 mm)		<div>L Increased force</div> <div>M Decreased force</div>
		90380-09245			
8CR-17624-10	15.0 (0.59)	Duralon	H Grooved  (14.6 mm)	RX10, RX10S, RX10R, RX10RS	
		90380-09245			
8CR-17624-20	15.6 (0.61)	Duralon	I No Mark  (14.6 mm)		
		90380-09245			
8CR-17624-30	16.0 (0.63)	Duralon	J Grooved & Grooved  (14.6 mm)		
		90380-09245			
8CR-17624-40	16.5 (0.65)	Duralon	K Machined  (14.6 mm)	RX10M, RX10MS	
		90380-09245			



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.

RX10, RX10S, RX10R, RX10RS

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ←		→ Softer
Length ①	Min.		Max.
	250 mm (9.84 in)	258 mm (10.16 in)	260 mm (10.24 in)

RX10M, RX10MS

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ←		→ Softer
Length ①	Min.		Max.
	213 mm (8.39 in)	223 mm (8.78 in)	226 mm (8.90 in)

CAUTION:

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

⚠ 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.

REAR SUSPENSION
Stopper band

1. Adjust:
- Stopper band tension

CAUTION: _____

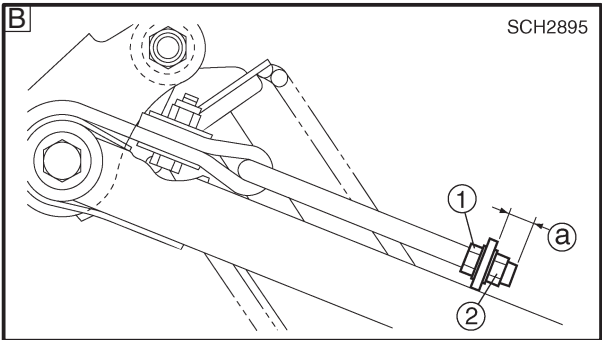
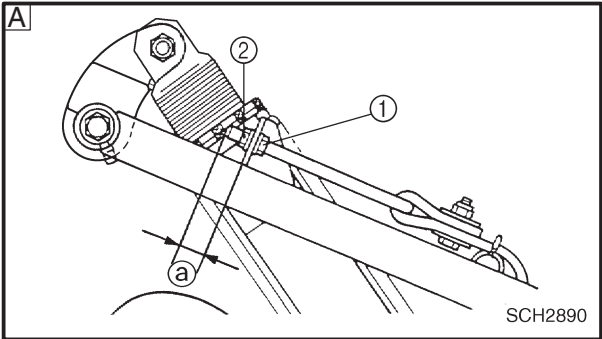
Make sure the left and right sides of the rear suspension stopper band are adjusted evenly.

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 ①	RX10, RX10S, RX10R, RX10RS: 25 ± 0.5 mm (0.98 ± 0.02 in)	
	RX10M, RX10MS: 10 ± 0.5 mm (0.39 ± 0.02 in)	
	Longer (Maximum)	Shorter (Minimum)
Effects	More weight on skis; Less weight transfer	Less weight on skis; More weight transfer

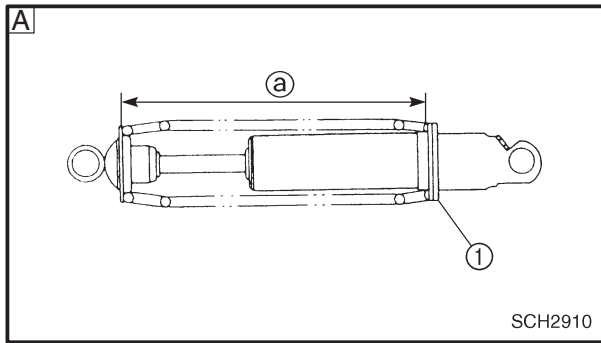
- Tighten the locknut.



Locknut:
16 Nm (1.6 m•kg, 12 ft•lb)

A RX10, RX10S, RX10R, RX10RS

B RX10M, RX10MS



Spring preload (RX10, RX10S, RX10R, RX10RS)

1. Adjust:

- Spring preload

Adjustment step:

- Turn the spring seat ① in or out.

Front **A**

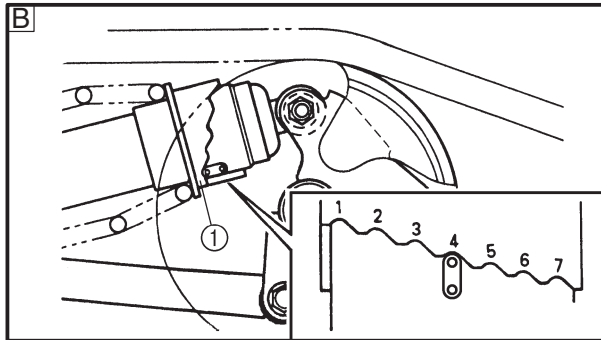
Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ←		→ Softer
Length ①	Min.		Max.
	180 mm (7.09 in)	190 mm (7.48 in)	190 mm (7.48 in)

⚠ WARNING

This shock absorber contains highly pressurized nitrogen gas.

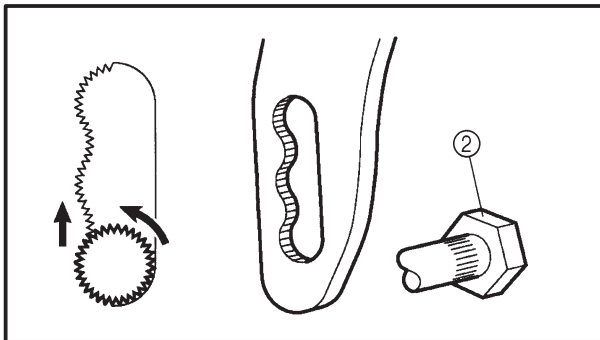
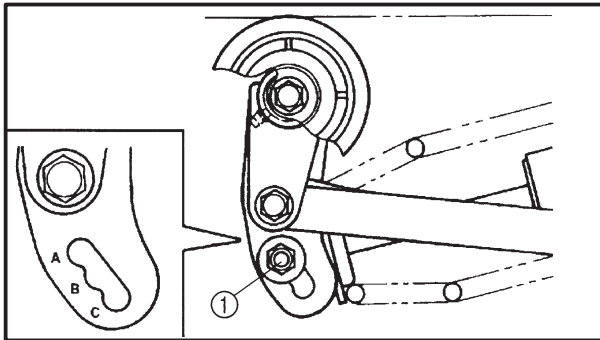
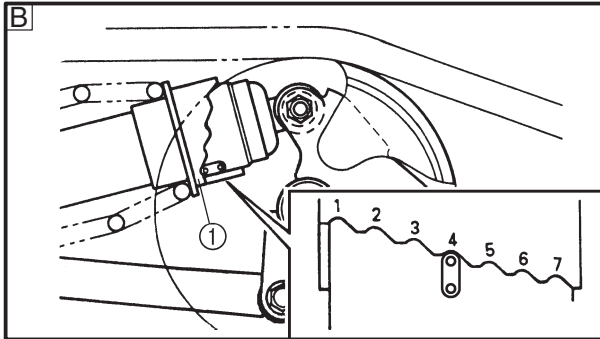
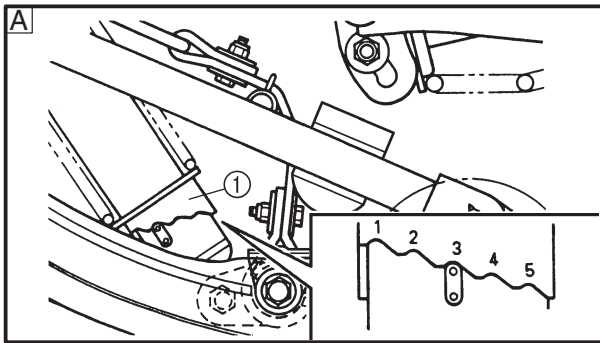
Do not tamper with or attempt to open the shock absorber assembly.

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



- Turn the adjusting ring ① to the proper position.

Spring adjuster position	1	2	3	4	5	6	7
Preload	Softer ← → Harder						
<input type="checkbox"/> Rear Standard	4						



Spring preload (RX10M, RX10MS)

- Adjust:
 - Spring preload

Adjustment steps:

- Turn the adjusting ring (1) to the proper position.

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

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

Rear suspension full rate

- Adjust:
 - Full rate adjuster

Adjustment steps:

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

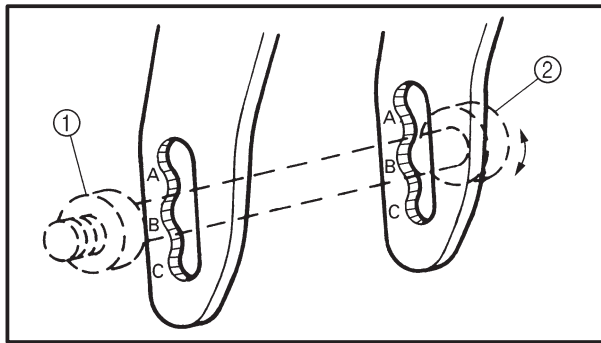
NOTE:

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

- Loosen the 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).



Nut (shock absorber):
49 Nm (4.9 m•kg, 35 ft•lb)

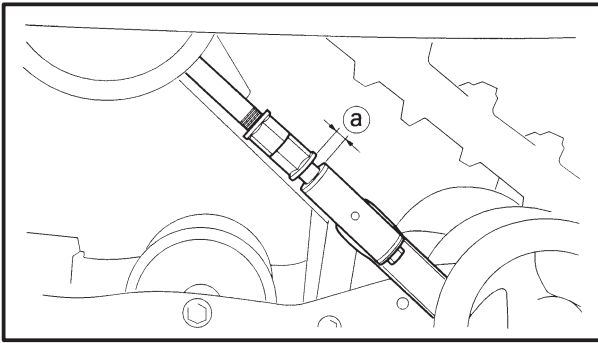
CAUTION:

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. Adjust:
 - Control rod stroke (a)

CAUTION:

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

Adjustment steps:

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

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

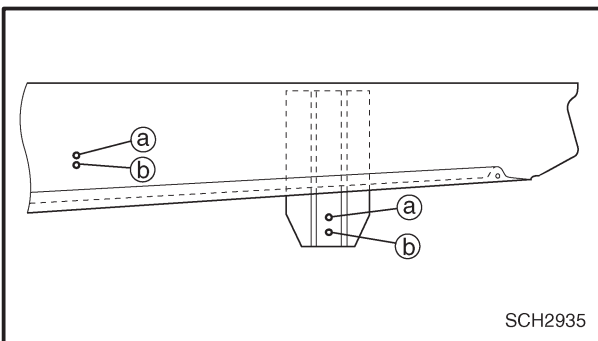
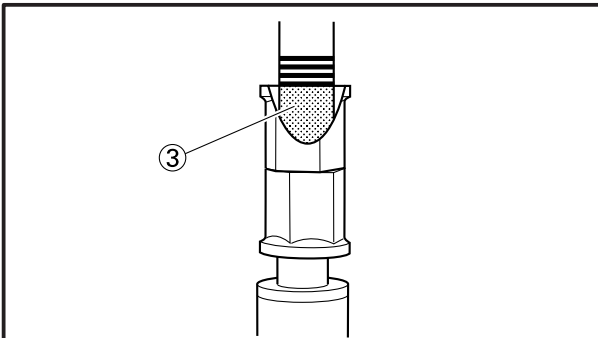
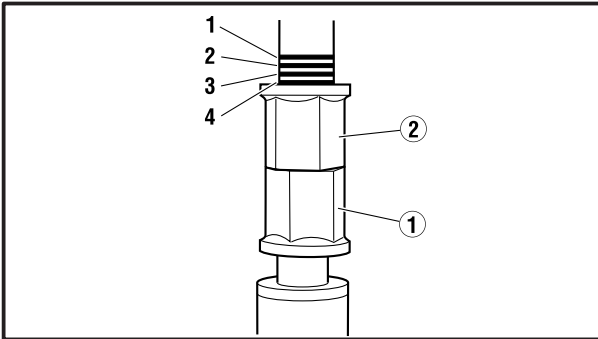
! WARNING

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)



Rear suspension position (RX10M, RX10MS)

1. Adjust:
 - Rear suspension position

NOTE:

Select the rear suspension position according to the snow conditions: (a) standard; (b) deep new snow.



Bolt (slide rail suspension):
72 Nm (7.2 m•kg, 52 ft•lb)

SCH2935



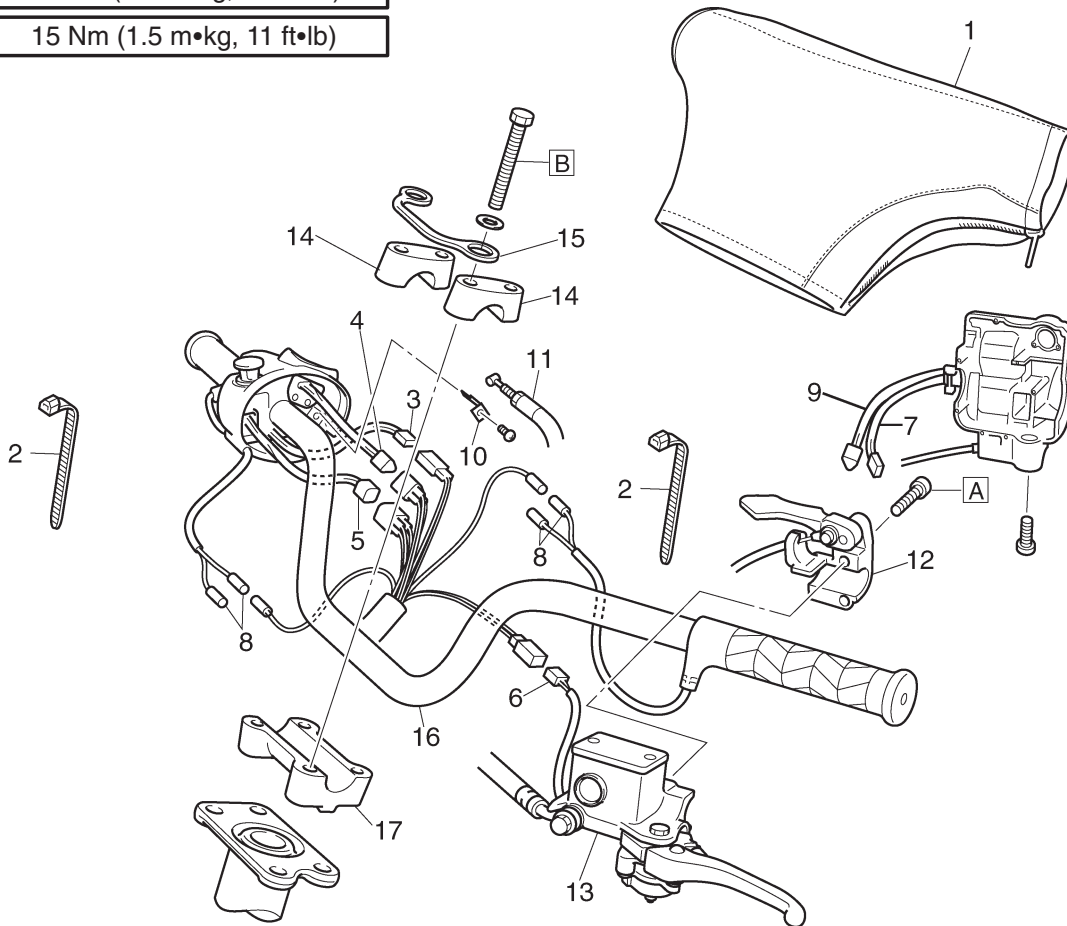
CHASSIS

STEERING

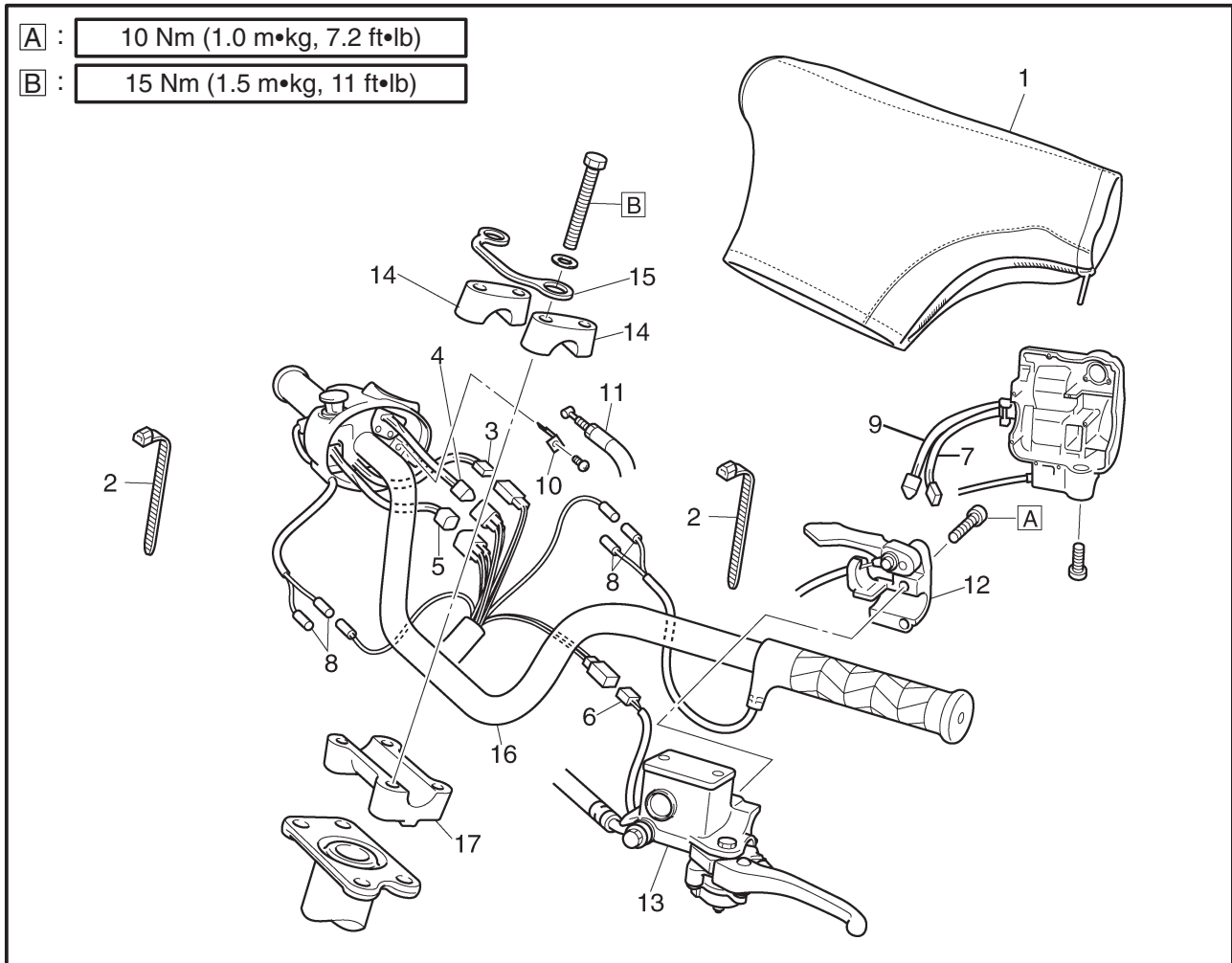
RX10, RX10S, RX10R, RX10RS

[A] : 10 Nm (1.0 m•kg, 7.2 ft•lb)

[B] : 15 Nm (1.5 m•kg, 11 ft•lb)



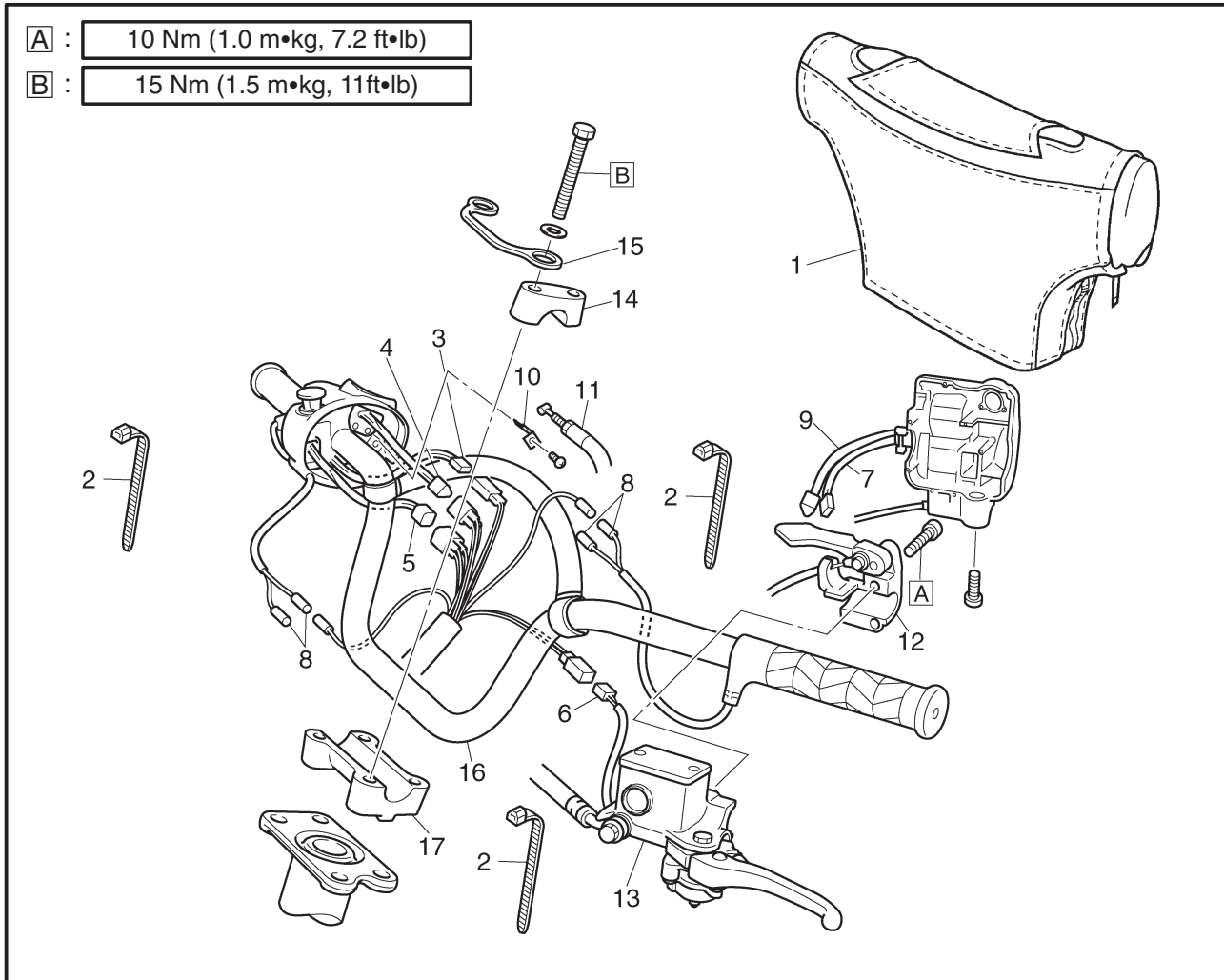
Order	Job name/Part name	Q'ty	Remarks
	Handlebar removal		Remove the parts in the order listed below.
1	Handlebar cover	1	
2	Plastic band	2	
3	Thumb warmer lead coupler	1	Disconnect.
4	Thumb warmer switch lead coupler	1	Disconnect.
5	Engine stop switch coupler	1	Disconnect.
6	Brake switch coupler	1	Disconnect.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



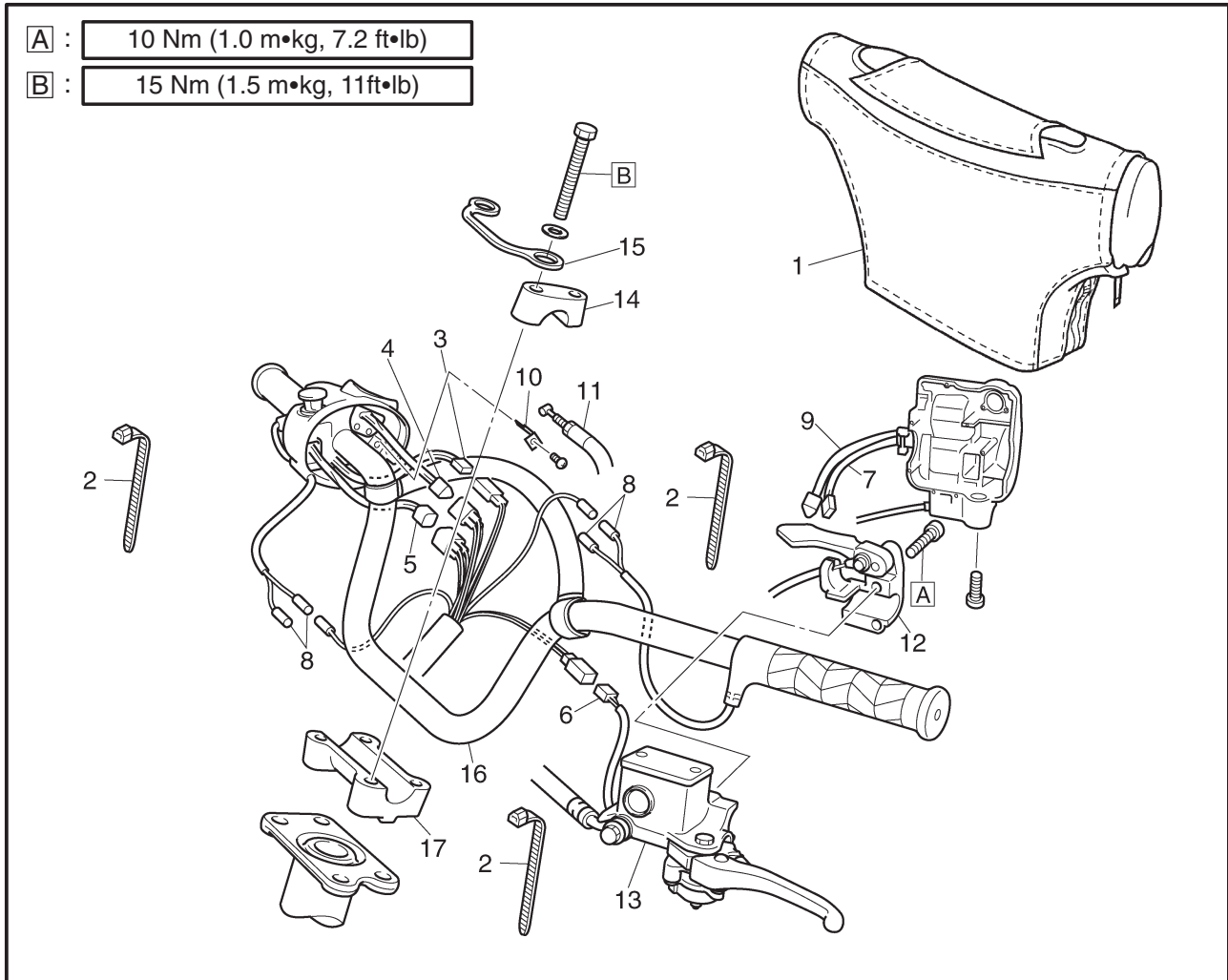
Order	Job name/Part name	Q'ty	Remarks
13	Master cylinder assembly	1	NOTE: _____ After installing all parts, refer to "CABLE ROUTING" in CHAPTER 9, to check the cable, lead and hose routings. _____ For installation, reverse the removal procedure.
14	Handlebar holder (upper)	2	
15	Cable holder	1	
16	Handlebar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



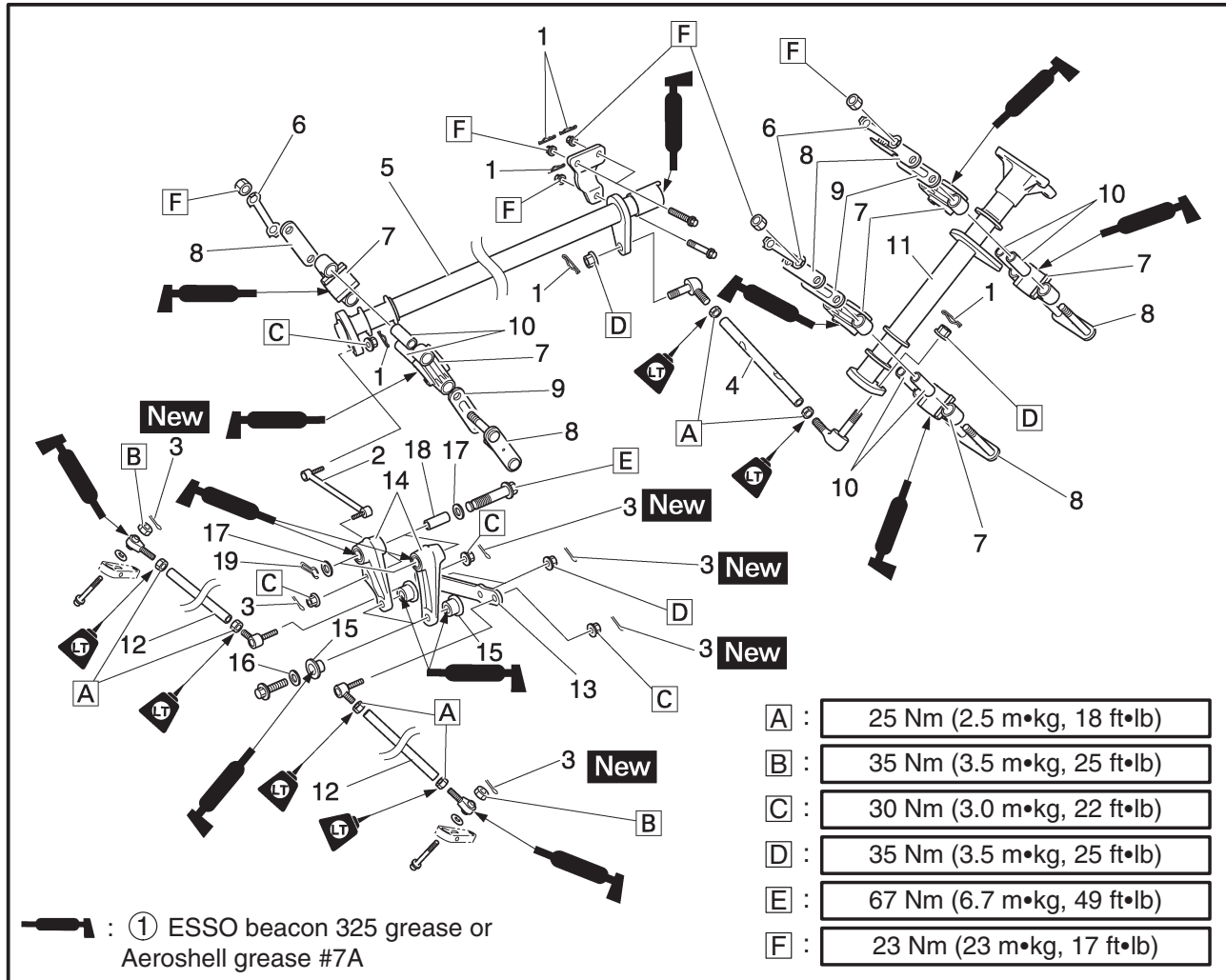
RX10M, RX10MS



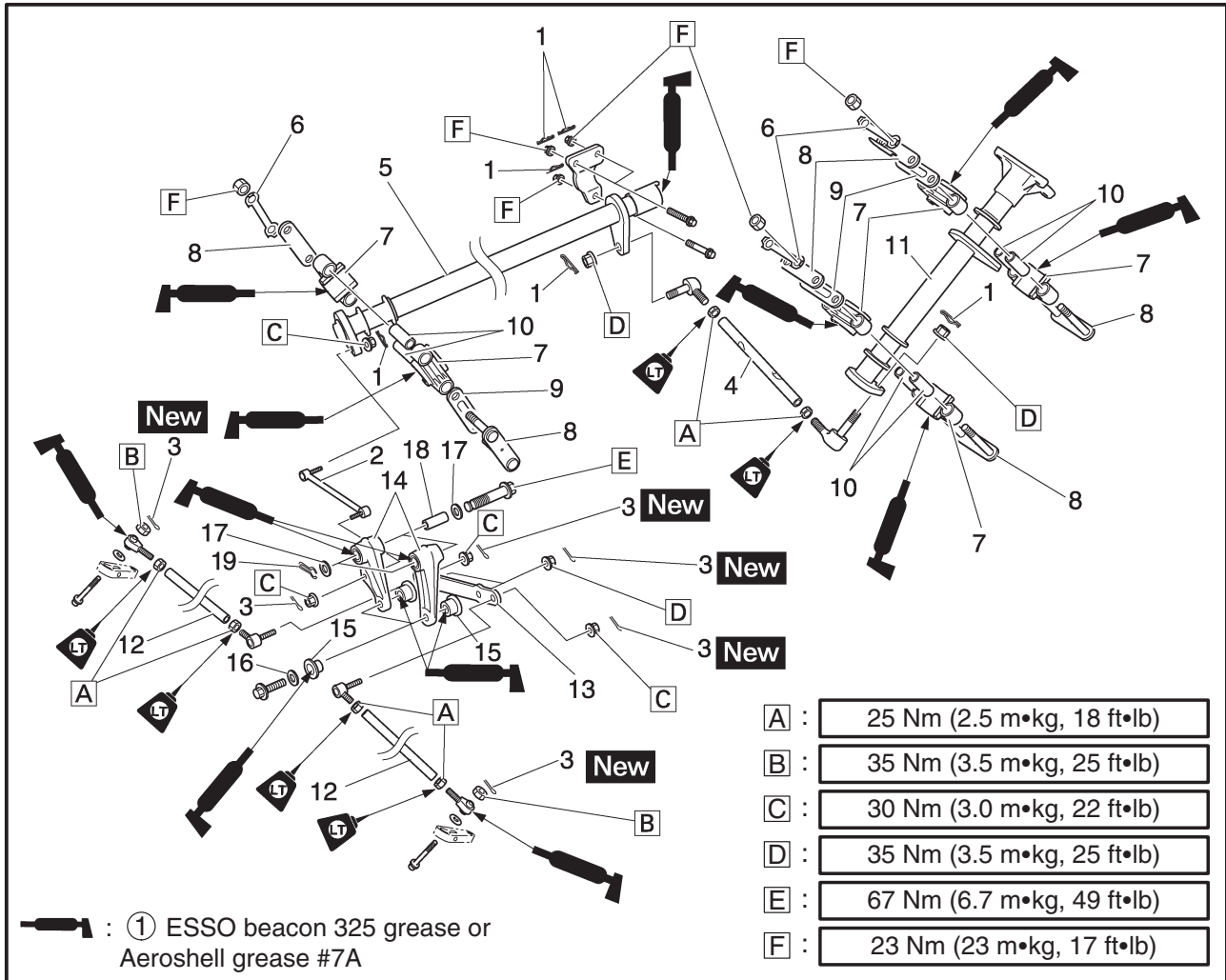
Order	Job name/Part name	Q'ty	Remarks
	Handlebar removal		Remove the parts in the order listed below.
1	Handlebar cover	1	
2	Plastic band	3	
3	Thumb warmer lead coupler	1	Disconnect.
4	Thumb warmer switch lead coupler	1	Disconnect.
5	Engine stop switch coupler	1	Disconnect.
6	Brake switch coupler	1	Disconnect.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



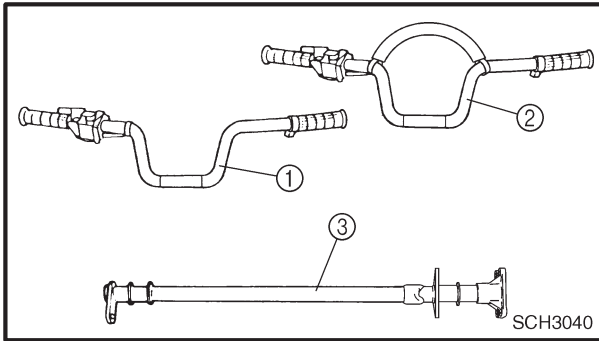
Order	Job name/Part name	Q'ty	Remarks
13	Master cylinder assembly	1	NOTE: _____ After installing all parts, refer to "CABLE ROUTING" in CHAPTER 9, to check the cable, lead and hose routings. _____ For installation, reverse the removal procedure.
14	Handlebar holder (upper)	2	
15	Cable holder	1	
16	Handlebar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



Order	Job name/Part name	Q'ty	Remarks
	Steering column and tie rod removal		Remove the parts in the order listed below.
	Handlebar		
1	Clip	6	
2	Relay rod	1	
3	Cotter pin	7	
4	Steering shaft	1	
5	Steering column 1	1	
6	Lock plate	3	
7	Bearing	6	
8	Bearing holder	6	
9	Plate	4	
10	Collar	6	
11	Steering column 2	1	
12	Tie rod	2	
13	Idler arm	1	
14	Relay arm	2	
15	Bushing	4	
16	Washer	2	



Order	Job name/Part name	Q'ty	Remarks
17	Washer	4	For installation, reverse the removal procedure.
18	Collar	2	
19	Clip	2	

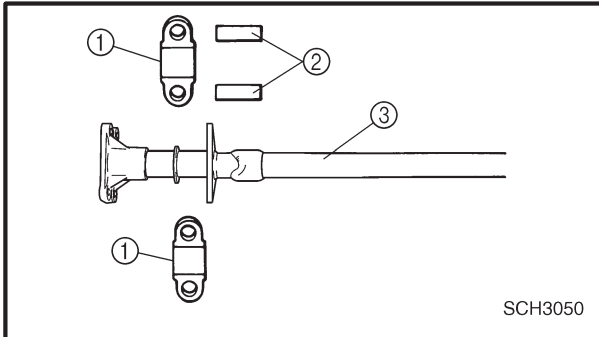
**INSPECTION**

1. Inspect:

- Handlebar ① (RX10, RX10S, RX10R, RX10RS)
- Handlebar ② (RX10M, RX10MS)
- Steering column ③
Bends/cracks/damage → Replace.

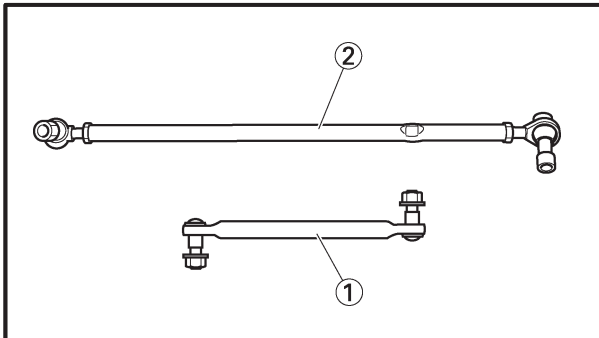
⚠ WARNING

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 ③ (bearing contact surfaces)
Scratches/wear/damage → Replace.

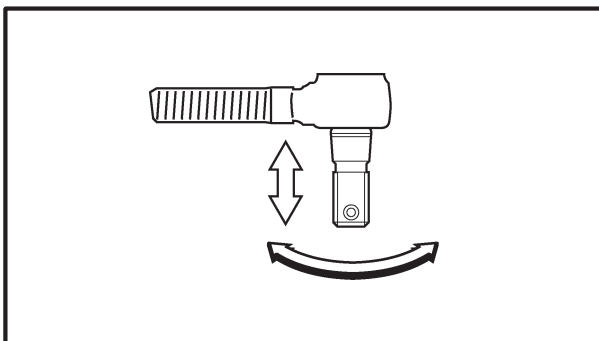


3. Inspect:

- Relay rod ①
- Tie rod ②
Bends/cracks/damage → Replace.

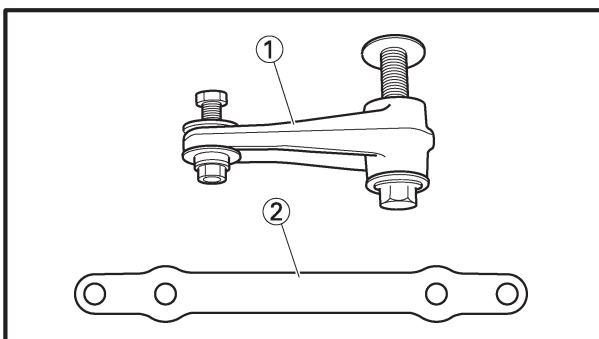
⚠ WARNING

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



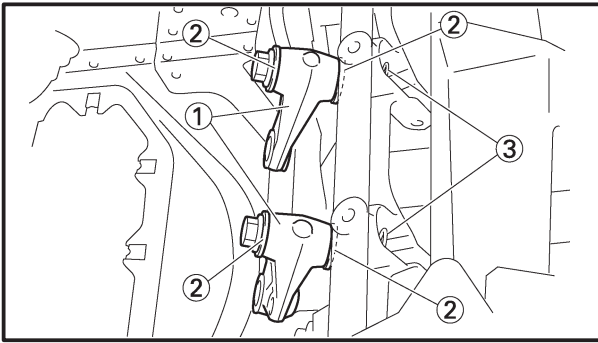
4. Check:

- Rod end movement
Rod end free play exists → Replace the rod end.
Rod end turns roughly → Replace the rod end.



5. Inspect:

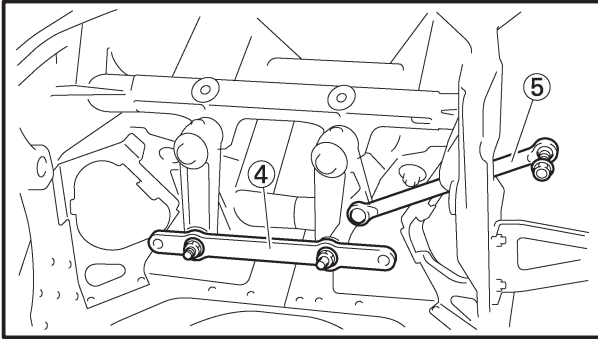
- Relay arm ①
- Idler arm ②
Cracks/damage → Replace.

**INSTALLATION****1. Install:**

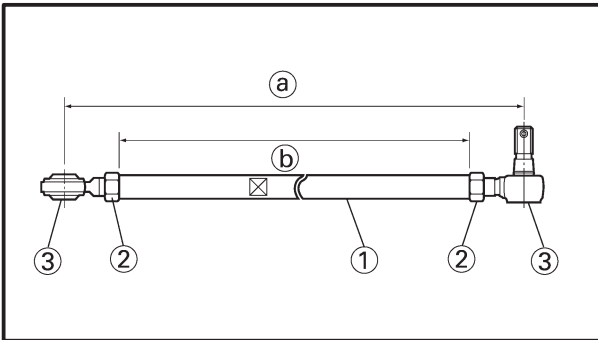
- Relay arms ①
- Bushings ②
- Washers ②

**Bolt (relay arm):****67 Nm (6.7 m•kg, 49 ft•lb)**

- Clips ③

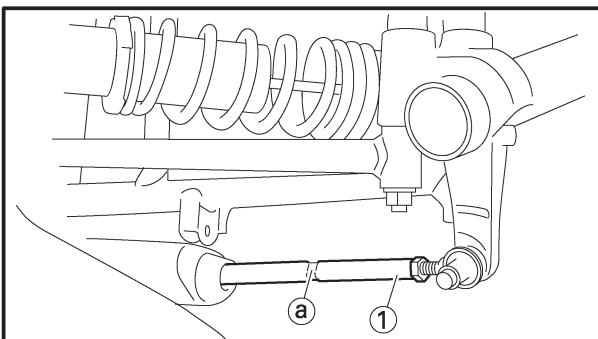
**2. Install:**

- Idler arm ④
- Bushings ④
- Washers ④
- Relay rod ⑤

**Nut (idler arm):****35 Nm (3.5 m•kg, 25 ft•lb)****Nut (relay rod):****30 Nm (3.0 m•kg, 22 ft•lb)****3. Install:**

- Tie rod ①
- Locknuts ②
- Joints ③

[A] Tie rod part number	[B] Set length (a)	[C] Tie rod length (b)
8FA-23831-00 (RX10, RX10S, RX10R, RX10RS)	418.0 mm (16.4567 in)	355.0 mm (13.9764 in)
8EP-23831-00 (RX10M, RX10MS)	374.0 mm (14.7244 in)	311.0 mm (12.2441 in)

**4. Install:**

- Tie rods ①

NOTE:

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

**CAUTION:**

Always use new cotter pins.

**Locknut (rod end):**

25 Nm (2.5 m•kg, 18 ft•lb)

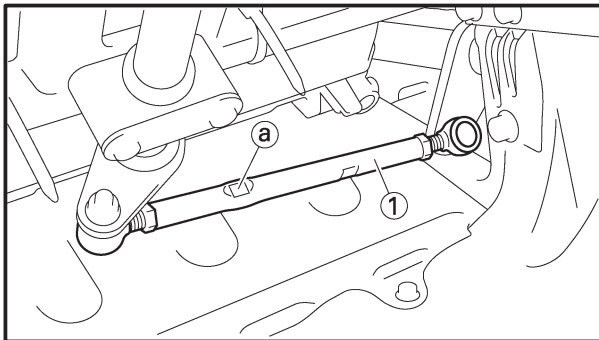
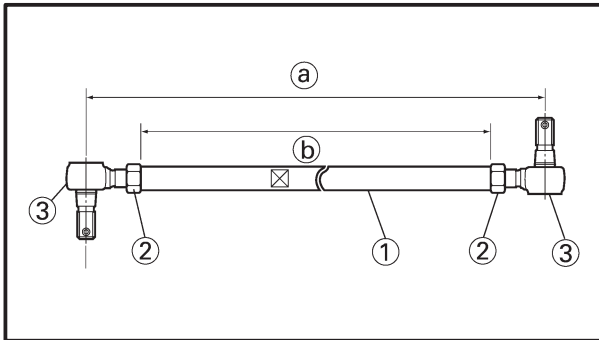
LOCTITE®

Nut (tie rod-idler arm):

30 Nm (3.0 m•kg, 22 ft•lb)

Nut (tie rod-steering arm):

35 Nm (3.5 m•kg, 25 ft•lb)

**5. 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)	170.0 mm (6.6929 in)

NOTE:

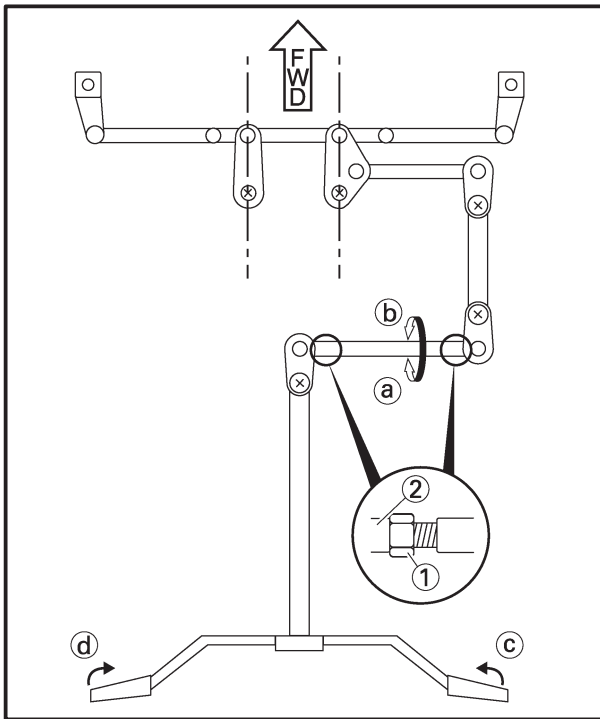
Make sure that the end of the steering shaft with the indentation (a) is connected to the steering clumn.

CAUTION:

Always use new cotter pins.

**Nut (steering shaft):**

35 Nm (3.5 m•kg, 25 ft•lb)



6. 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.
- Loosen the locknuts (steering shaft) ①.
- Hold the handlebar straight.
- Adjust the steering shaft ② 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 ①

Turning the handlebar in direction ③

Turning the steering shaft in direction ②

Turning the handlebar in direction ④

- Tighten the locknuts (Steering shaft) ①.



Loknut (steering shaft):
25 Nm (2.5 m•kg, 18 ft•lb)
LOCTITE®

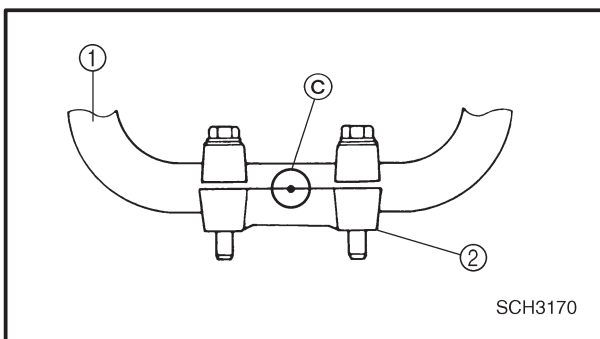
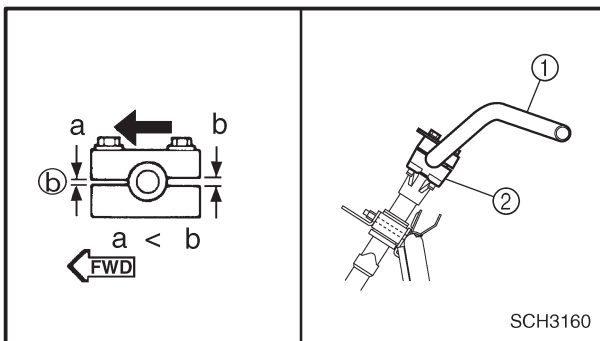
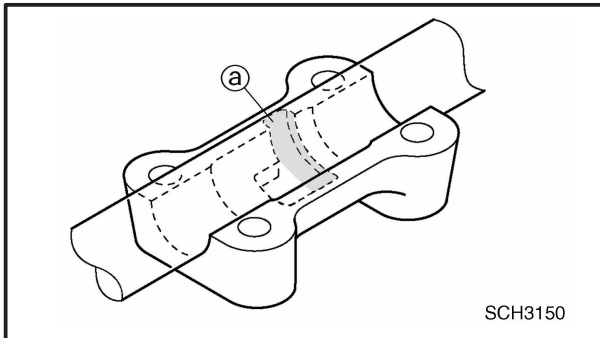
7. Install:
- Handlebar

CAUTION:

- Be sure the projection on the handlebar is not installed into the area ① shown.
- Be sure the side of the holder with the small gap ② 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 ③ on the handlebar ① between the lower handlebar holders ②.



Bolt (handlebar holder):
15 Nm (1.5 m•kg, 11 ft•lb)






SKI

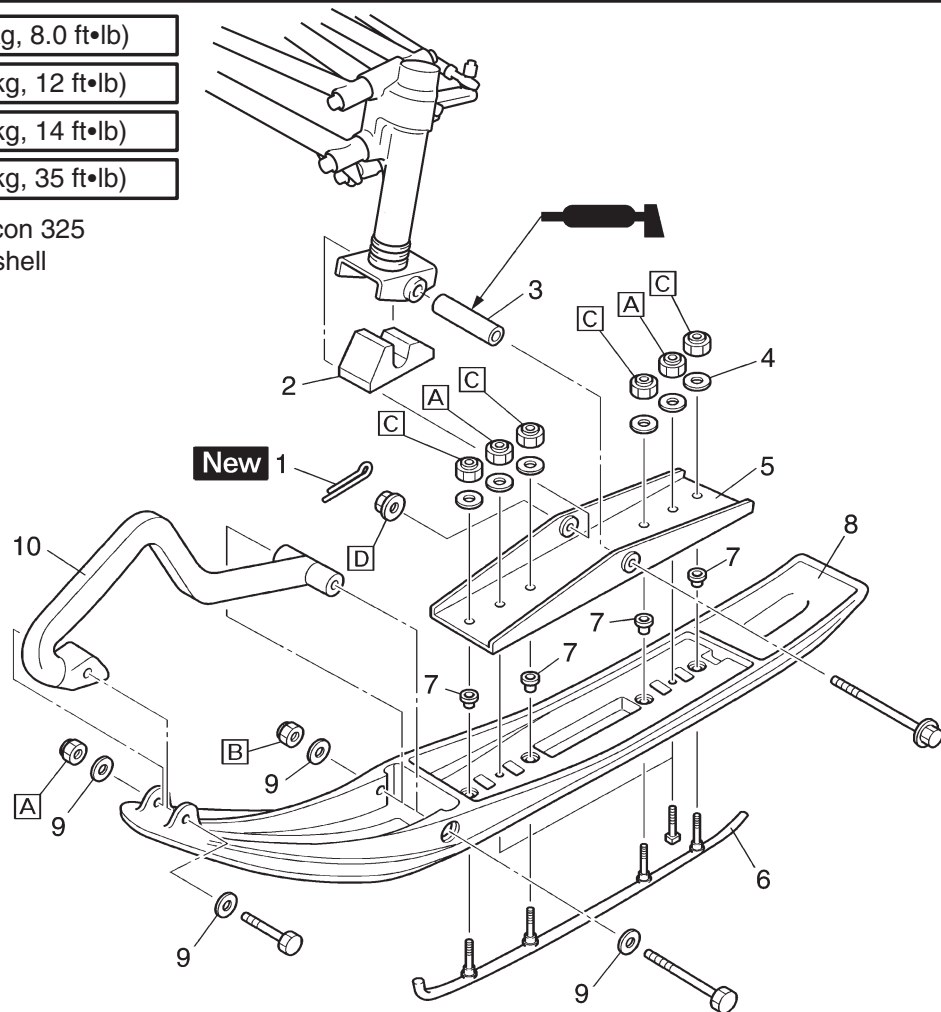
A : 11 Nm (1.1 m•kg, 8.0 ft•lb)

B : 17 Nm (1.7 m•kg, 12 ft•lb)

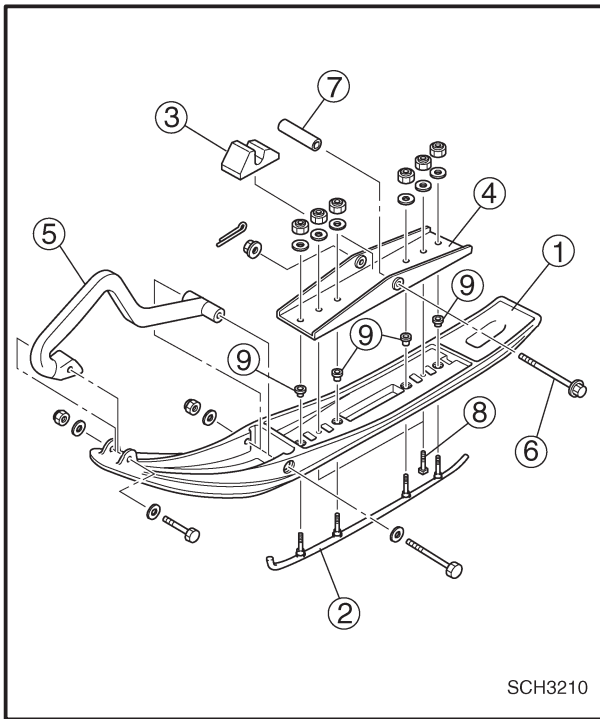
C : 19 Nm (1.9 m•kg, 14 ft•lb)

D : 48 Nm (4.8 m•kg, 35 ft•lb)

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



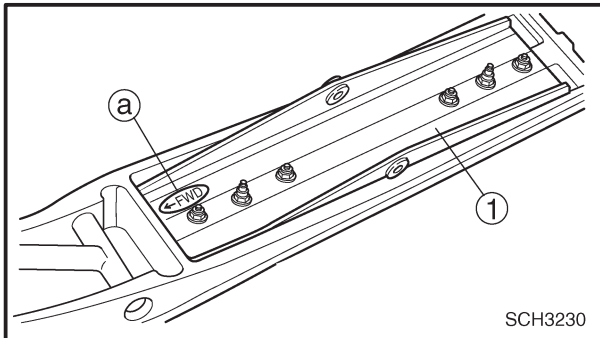
Order	Job name/Part name	Q'ty	Remarks
	Ski removal		Remove the parts in the order listed below.
1	Cotter pin	1	
2	Ski stopper	1	
3	Collar	1	
4	Washer	6	
5	Ski column lower bracket	1	
6	Ski runner	1	
7	Collar	2	
8	Ski	1	
9	Washer	4	
10	Ski handle	1	
			For installation, reverse the removal procedure.



INSPECTION

1. Inspect:

- Ski ①
- Ski runner ②
- Ski stopper ③
- Ski column lower bracket ④
- Ski handle ⑤
- Wear/cracks/damage → Replace.
- Mounting bolt ⑥
- Collar ⑦
- Bolts ⑧
- Collars ⑨
- Wear/damage → Replace.



INSTALLATION

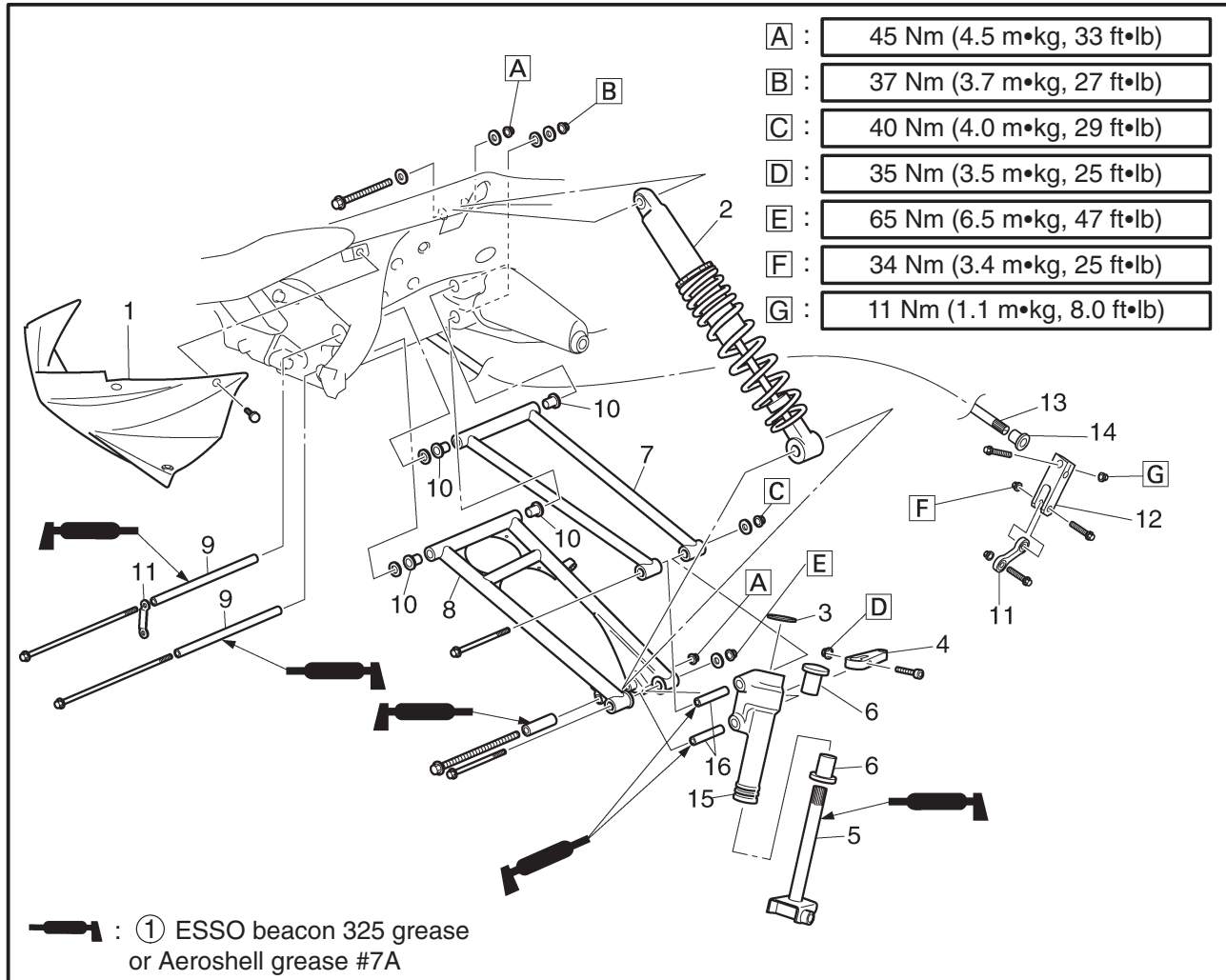
1. Install:

- Ski column lower bracket ①

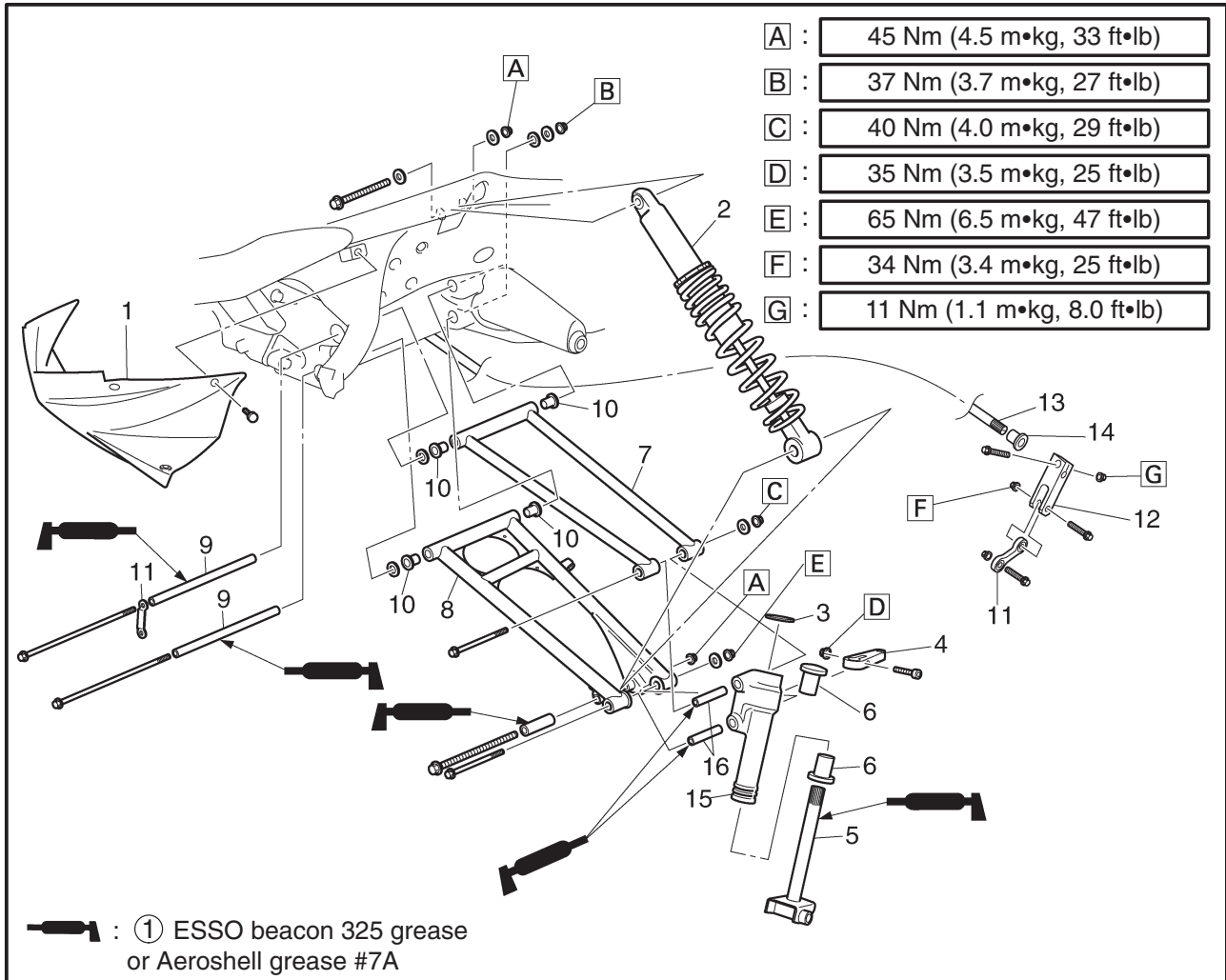
NOTE:

Be sure to install the ski column lower bracket with the arrow mark ① 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	Cap	1	
4	Steering arm	1	
5	Ski column	1	
6	Bushing	1	
7	Upper arm	1	
8	Lower arm	1	
9	Collar	2	
10	Bushing	4	
11	Connecting rod	1	
12	Stabilizer arm	1	



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

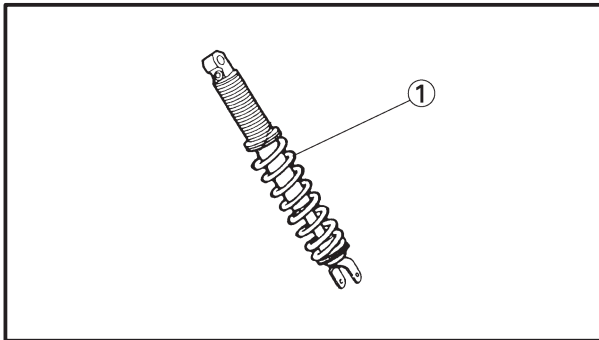


HANDLING NOTES

⚠ WARNING

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.

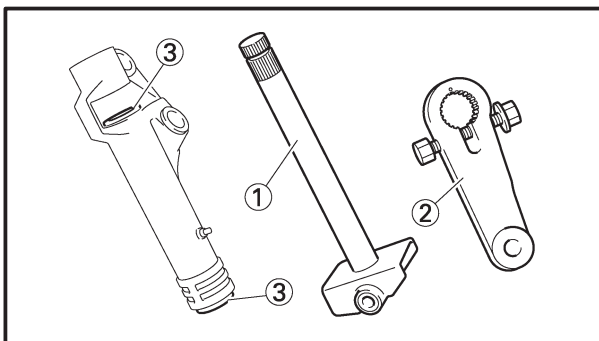
- Do not tamper or attempt to open the gas chamber.
- Do not subject the shock absorber to flames or any other source of high heat. This may cause the unit to explode due to excessive gas pressure.
- Do not deform or damage the gas chamber in any way. Gas chamber damage will result in poor damping performance.



INSPECTION

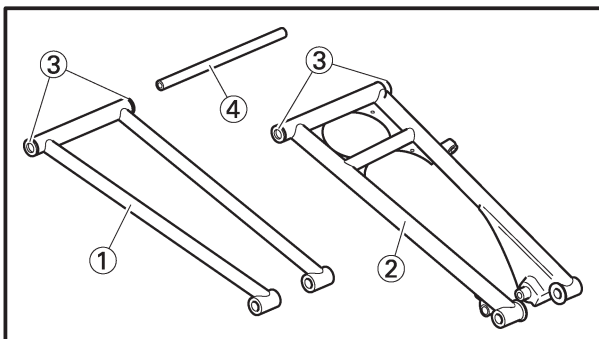
1. Inspect:

- Shock absorber (1)
Oil (gas) leaks/bends/damage → Replace.



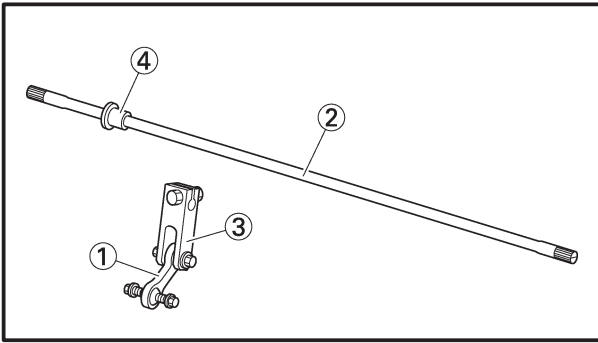
2. Inspect:

- Ski column (1)
- Steering arm (2)
Cracks/bends/damage → Replace.
- Bushing (3)
Wear/scratches/damage → Replace.



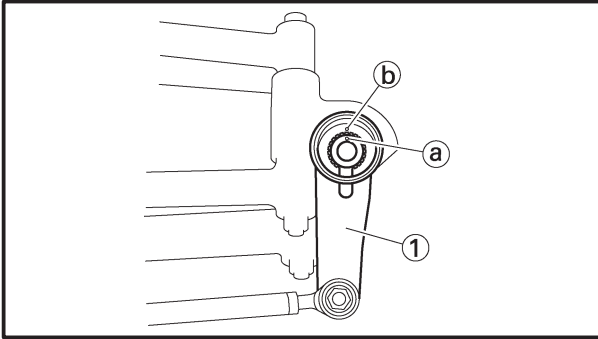
3. Inspect:

- Upper arm (1)
- Lower arm (2)
Cracks/bends/damage → Replace.
- Bushing (3)
- Collar (4)
Wear/scratches/damage → Replace.



4. Inspect:

- Connecting rod ①
- Stabilizer ②
- Stabilizer arm ③
- Cracks/bends/damage → Replace.
- Bushing ④
- Wear/scratches/damage → Replace.



INSTALLATION

1. Install:

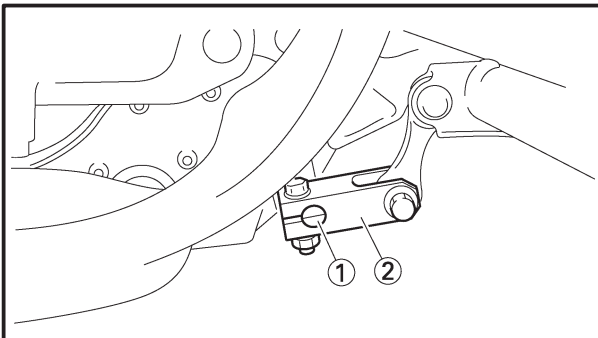
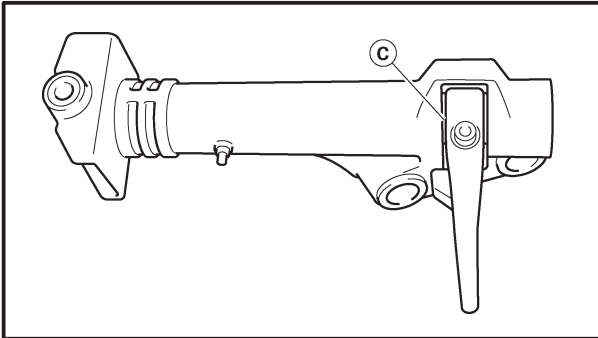
- Steering arm ①

NOTE:

- Align the punch mark (a) on the ski column with the punch mark (b) on the steering arm.
- Install sections (c) without any gaps.



Nut (steering arm):
35 Nm (3.5 m•kg, 25 ft•lb)



2. Install:

- Stabilizer ①
- Stabilizer arm ②

NOTE:

Install so that the angle shift between the right side stabilizer arm and the left stabilizer arm can be within 6°.



Nut (stabilizer arm):
11 Nm (1.1m•kg, 8.0 ft•lb)



Ski alignment

NOTE:

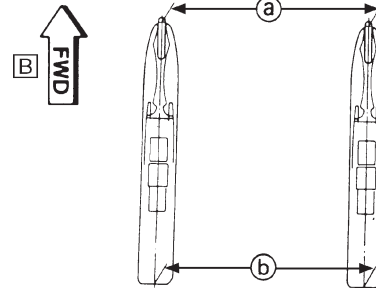
Be sure to verify the spring preload setting and the ski spindle camber before adjusting the ski toe out since either of those adjustments may affect the ski toe out setting.

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

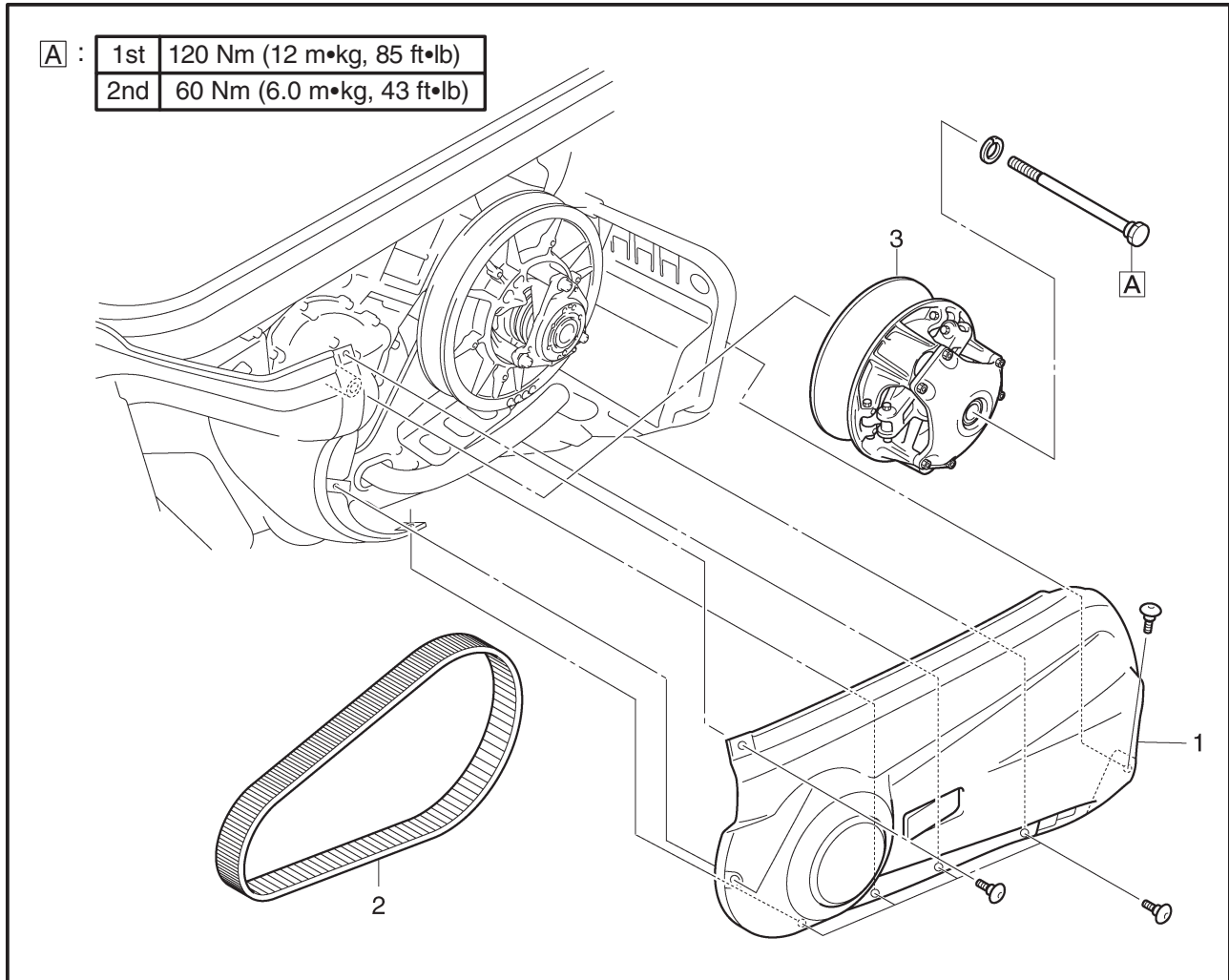
A Ski toe out:
0 ~ 15 mm (0 ~ 0.59 in)

a - **b** = Toe out

Refer to “STEERING SYSTEM” in CHAPTER 2.



SCH3380

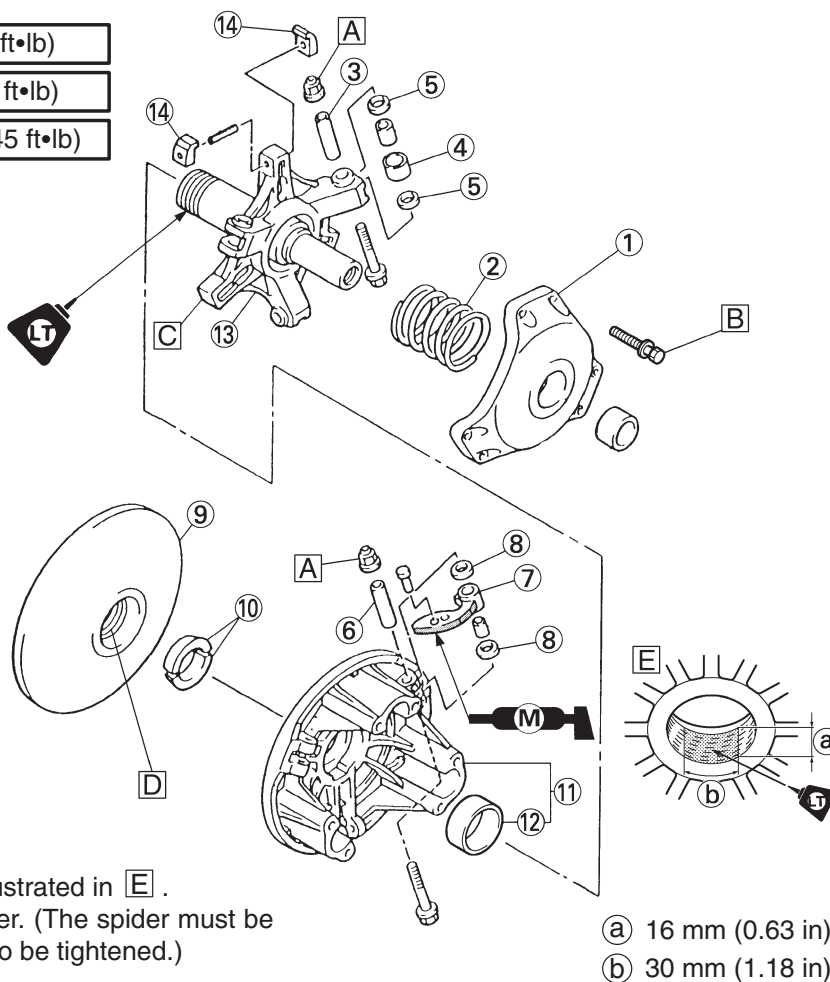
POWER TRAIN**PRIMARY SHEAVE AND DRIVE V-BELT**

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

PRIMARY SHEAVE AND DRIVE V-BELT



- A : 6 Nm (0.6 m•kg, 4.3 ft•lb)
 B : 14 Nm (1.4 m•kg, 10 ft•lb)
 C : 200 Nm (20.0 m•kg, 145 ft•lb)



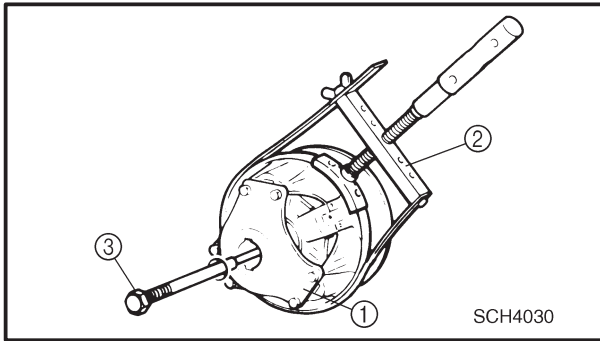
- D : Clean the threads.
 Apply LOCTITE648 as illustrated in E .
 And then tighten the spider. (The spider must be
 turned counterclockwise to be tightened.)

- a 16 mm (0.63 in)
 b 30 mm (1.18 in)

4

Order	Job name/Part name	Q'ty	Remarks
	Primary sheave disassembly		Disassemble 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	1	
⑪	Sliding sheave	1	
⑫	Bushing	1	
⑬	Spider	1	Left-handed thread.
⑭	Slider	6	For assembly, reverse the disassembly procedure.

PRIMARY SHEAVE AND DRIVE V-BELT



REMOVAL

1. Remove:
 - Primary sheave assembly ①

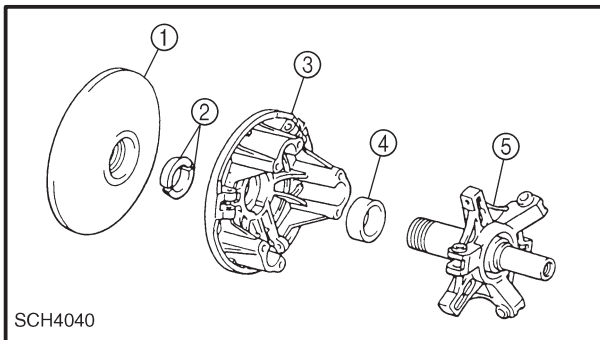
NOTE:

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



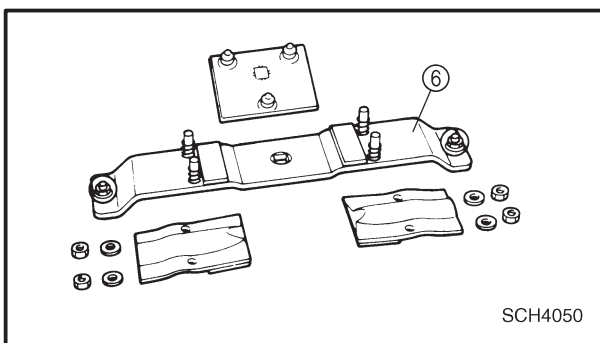
Primary sheave holder:
90890-01701, YS-01880

Primary sheave puller:
90890-01898
YS-01881-1, YS-01882-1



DISASSEMBLY

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



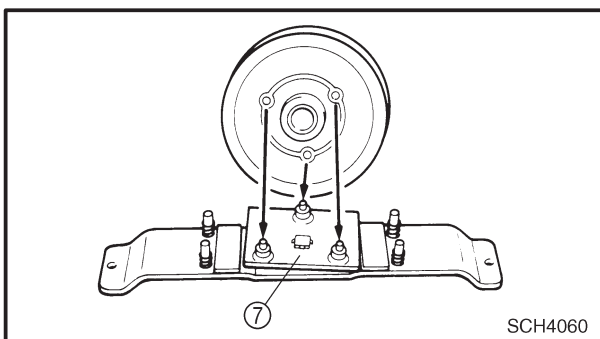
Removal steps:

- 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.

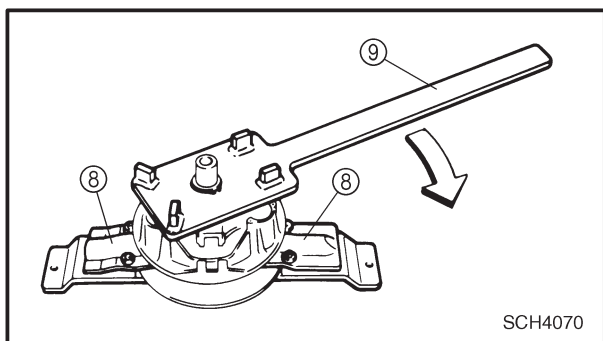


Clutch spider separator:
90890-01711, YS-28890-B

Clutch separator adapter:
90890-01740, YS-34480



PRIMARY SHEAVE AND DRIVE V-BELT



- 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.



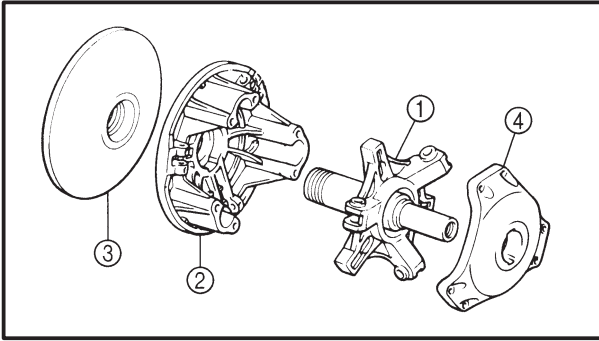
**Clutch spider separator
(bar wrench):**

90890-01711, YS-28890-B

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.

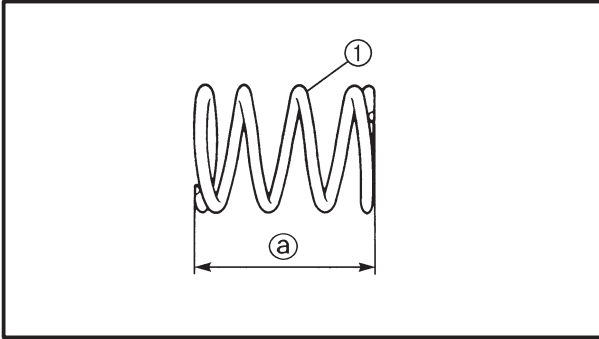
- Remove the fixed sheave, fixed sheave stopper, and sliding sheave from the spider.



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:

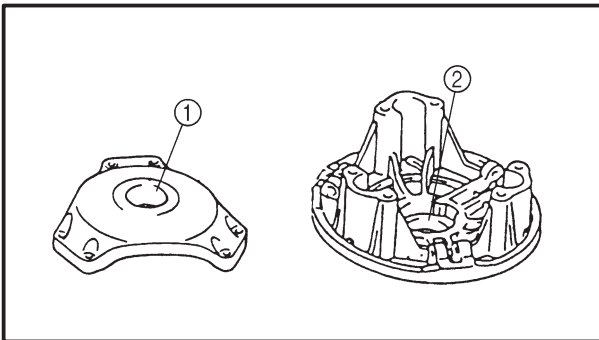
- Primary sheave spring free length ①
- Out of specification → Replace the primary sheave spring.



Primary sheave spring free length:
RX10, RX10S, RX10R, RX10RS:
 87.4 mm (3.44 in)
RX10M, RX10MS:
 84.2 mm (3.32 in)

NOTE:

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



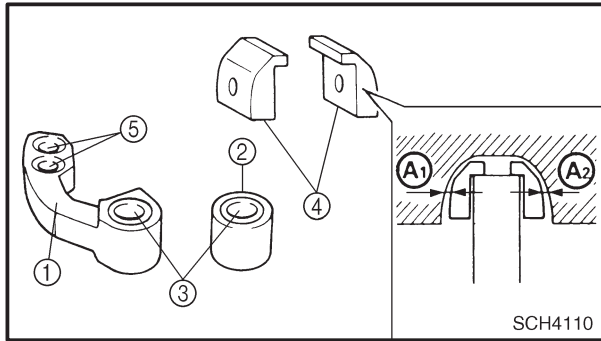
4. Inspect:

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



Clutch bushing press:
YS-42424

PRIMARY SHEAVE AND DRIVE V-BELT



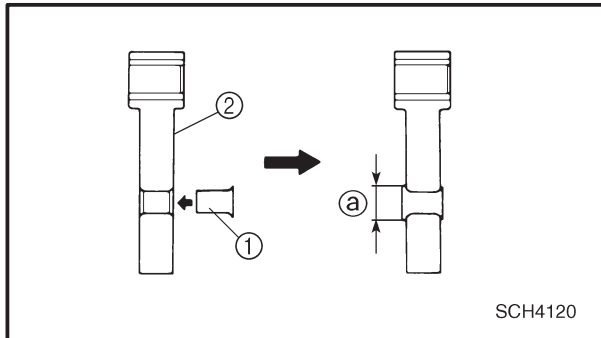
5. Inspect:

- Weight ①
- Roller ②
- Bushing ③
- Slider ④
- Rivet ⑤
- Collar

Wear/scratches/damage → Replace.

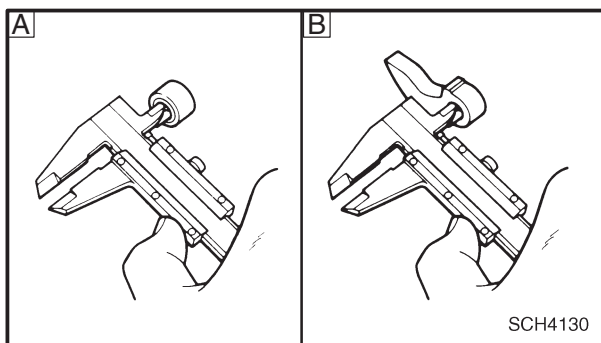


Slider inside clearance $A_1 + A_2$:
Min. 0 mm (0 in)
Max. 0.3 mm (0.0118 in)



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:

A Roller

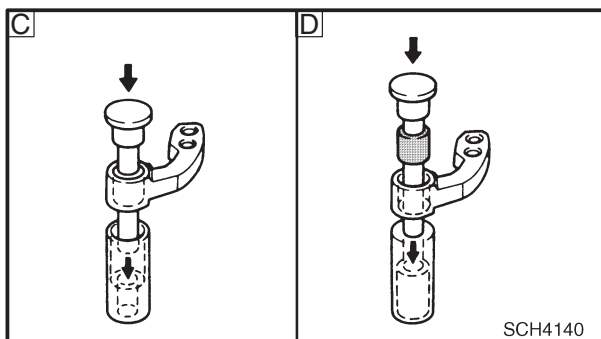
New: 9.077 mm (0.357 in)

Wear limit: 9.3 mm (0.366 in)

B Weight

New: 8.077 mm (0.318 in)

Wear limit: 8.3 mm (0.327 in)



NOTE:

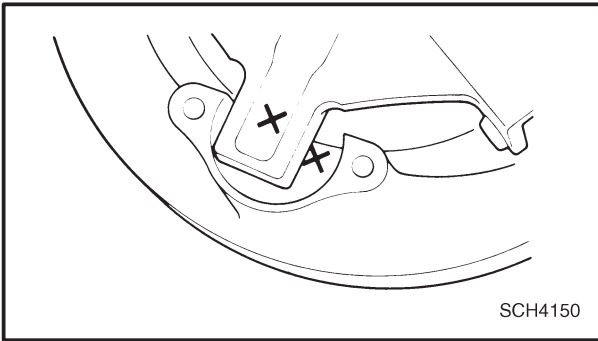
When replacing the weight and roller bushings, use the YXR clutch bushing jig kit.



YXR clutch bushing jig kit:
YS-39752

- C Removing
- D Installing

PRIMARY SHEAVE AND DRIVE V-BELT

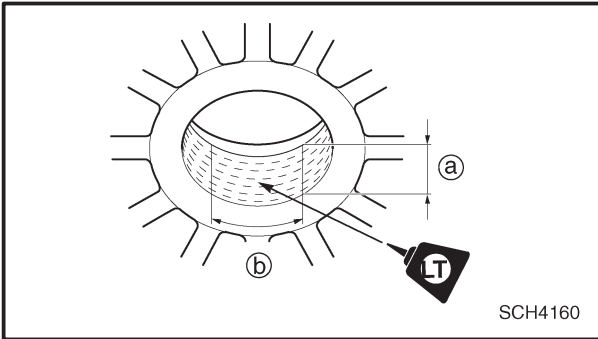


ASSEMBLY

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)

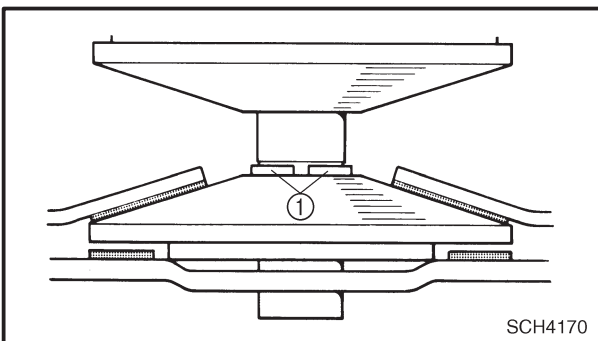
NOTE:

- Clean the threads.
- Apply LOCTITE648 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.

- ① 16 mm (0.63 in)
- ② 30 mm (1.18 in)



3. Install:
 - Fixed sheave stoppers ①

NOTE:

Stopper tapered portion should face fixed sheave.

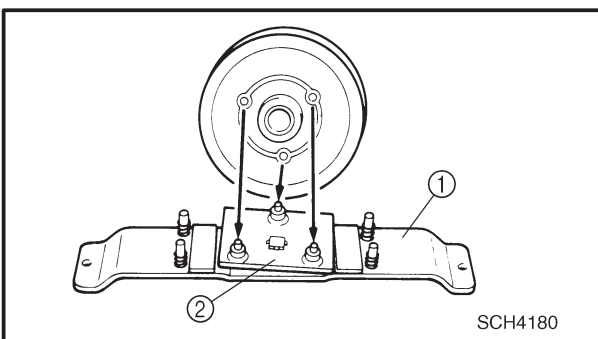
4. Tighten:
 - Spider

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.



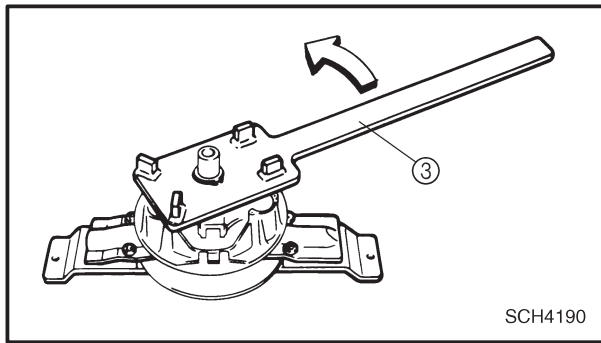
Clutch spider separator:
90890-01711, YS-28890-B



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.



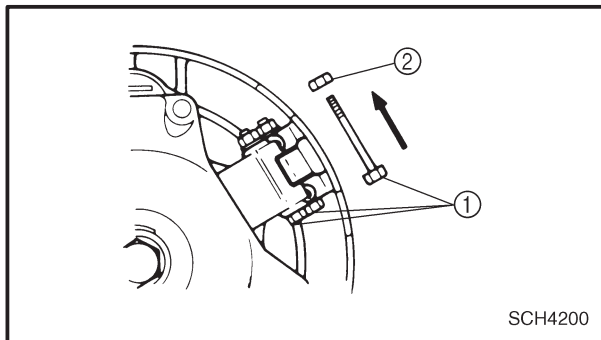
Spider:
200 Nm (20 m•kg, 145 ft•lb)

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:

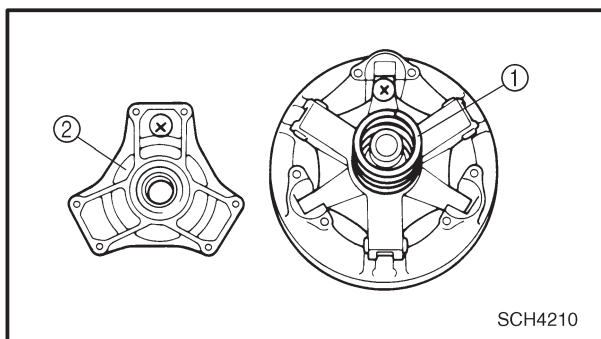
- Weight
- Bolts ①
- Nuts ②



Nut:
6 Nm (0.6 m•kg, 4.3 ft•lb)

NOTE:

To maintain the primary sheave balance, the bolts ② must be installed with their threaded portions pointing in a counterclockwise direction, as illustrated.



6. Install:

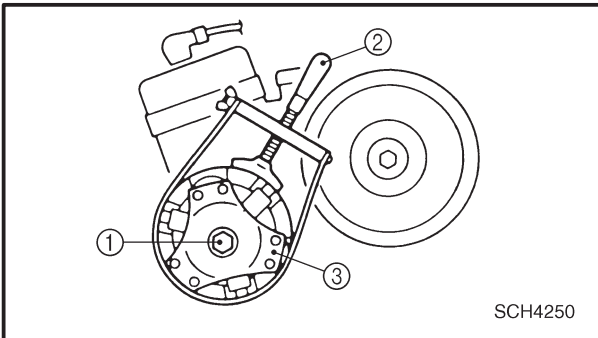
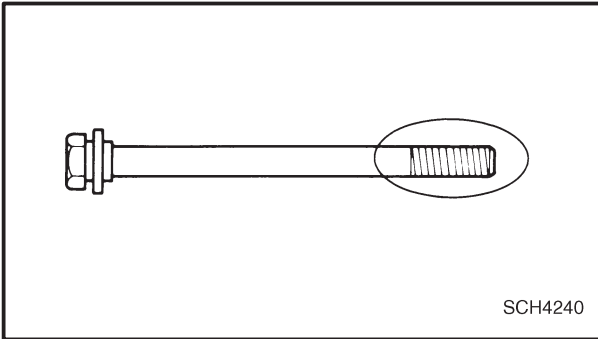
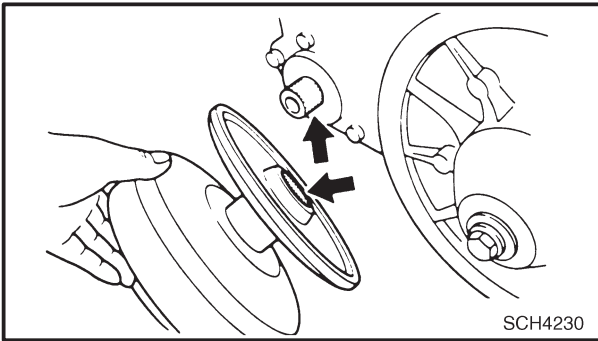
- Primary sheave spring ①
- Primary sheave cap ②

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 or an equivalent grease (to threads of primary sheave bolt)

3. Tighten:
 - Bolt (primary sheave) ①

Tightening steps:

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



Primary sheave holder:
90890-01701, YS-01880



Bolt (primary sheave):
(1st)
120 Nm (12 m•kg, 85 ft•lb)

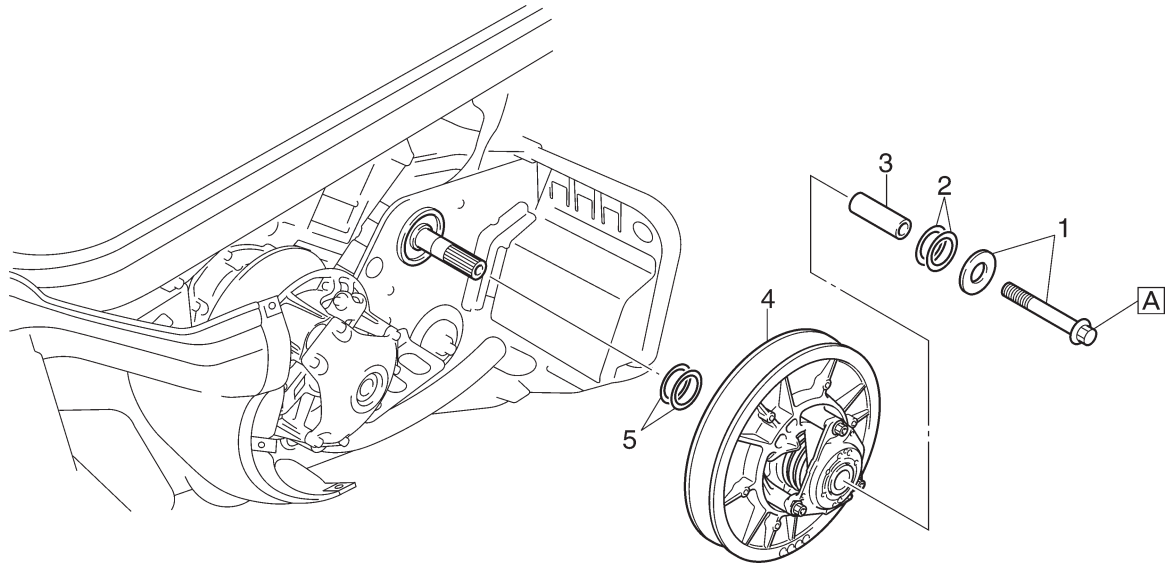
- Loosen the bolt (primary sheave) completely.
- Retighten the bolt (primary sheave) to specification.



Bolt (primary sheave):
(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)


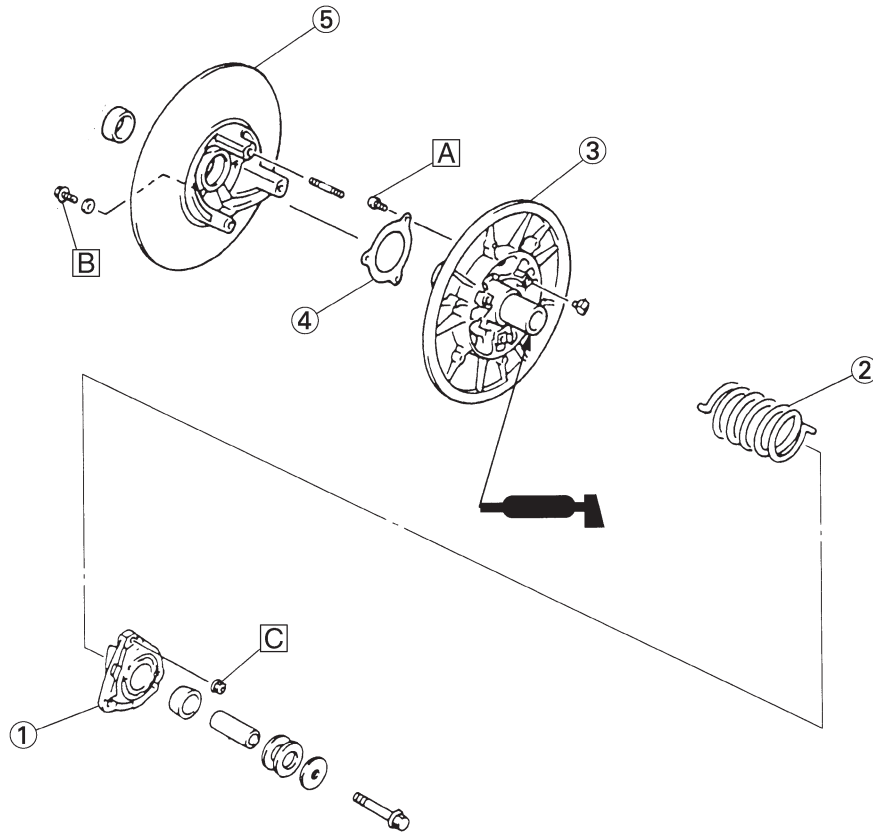
Order	Job name/Part name	Q'ty	Remarks
	Secondary sheave removal		
	Left side cover		Remove the parts in the order listed below. Refer to "PRIMARY SHEAVE AND V-BELT".
1	V-belt	1	
	Washer and bolt		Refer to "SHEAVE OFFSET ADJUSTMENT" in CHAPTER 2.
2	Shim	—	
3	Collar	1	
4	Secondary sheave assembly	1	
5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

- 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)



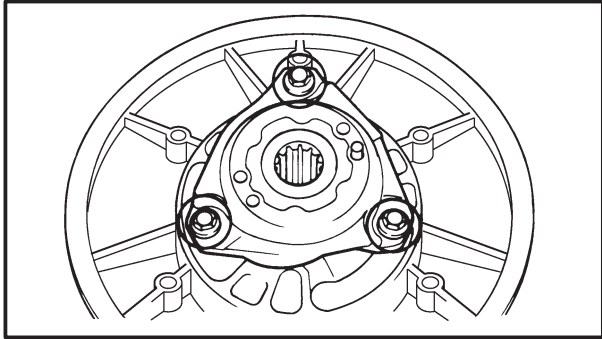
: ① ESSO beacon 325 grease or Aeroshell grease #7A

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.

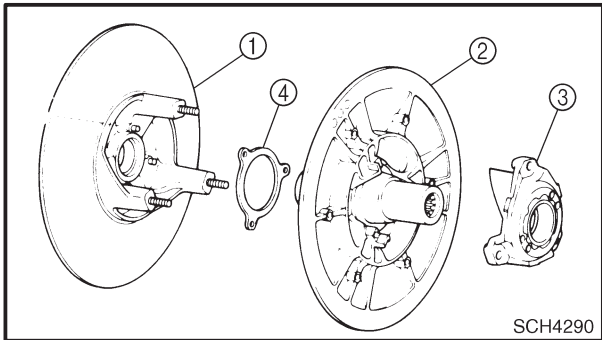
DISASSEMBLY

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 nuts (spring seat).
- Do not attempt this procedure unless you have the proper tools and understand the instructions thoroughly.

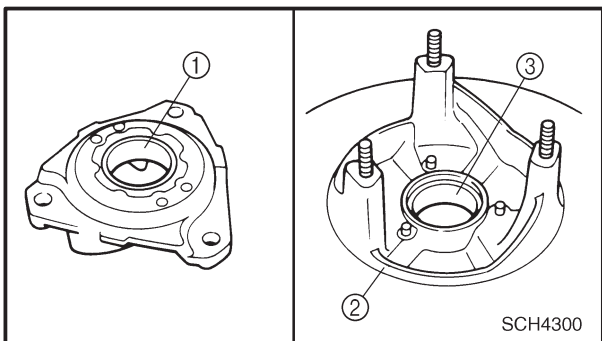


1. Remove:
 - Nuts (spring seat)

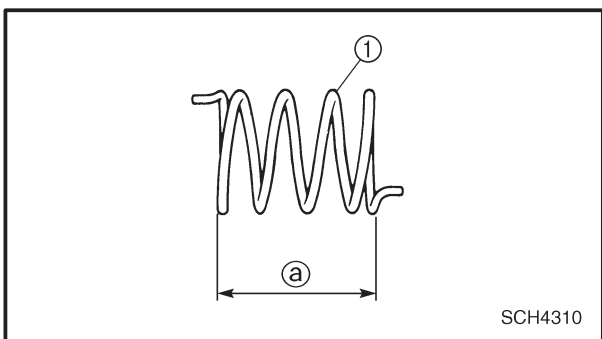



INSPECTION

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.



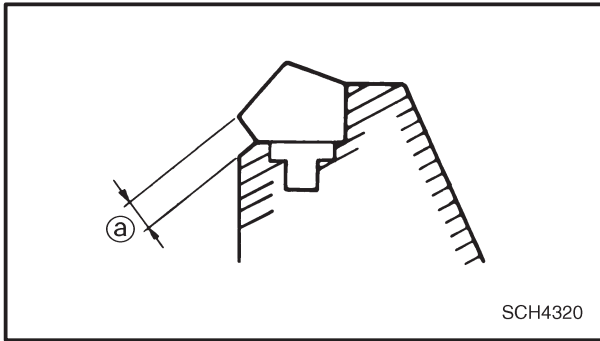
3. Inspect:
 - Secondary sheave spring ①
Cracks/damage → Replace.
4. Measure:
 - Secondary sheave spring free length ①
Below specification → Replace the secondary sheave spring.





Free length:
75 mm (2.95 in)

SECONDARY SHEAVE



5. Measure:

- Ramp shoe thickness ①
- Out of specification → Replace the ramp shoe.



Wear limit:
1.0 mm (0.04 in)

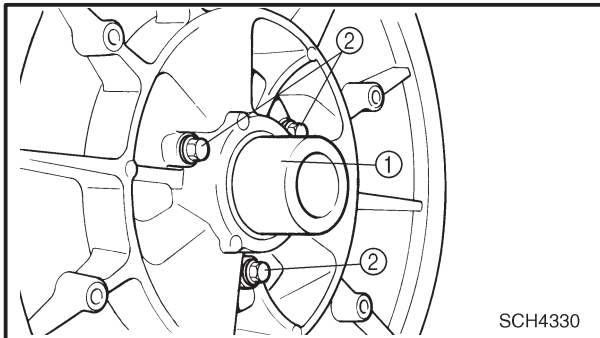
ASSEMBLY

1. Install:

- Stopper
- Sliding sheave



Screw (stopper):
7 Nm (0.7 m•kg, 5.1 ft•lb)

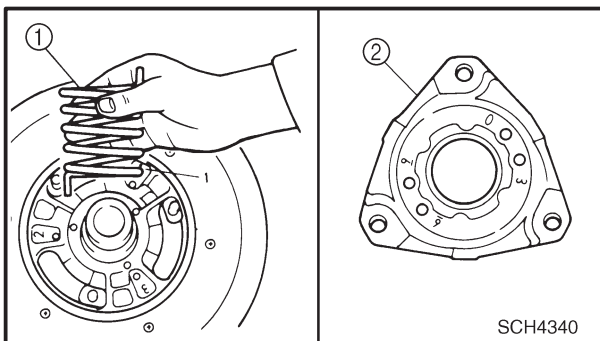


2. Install:

- 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:

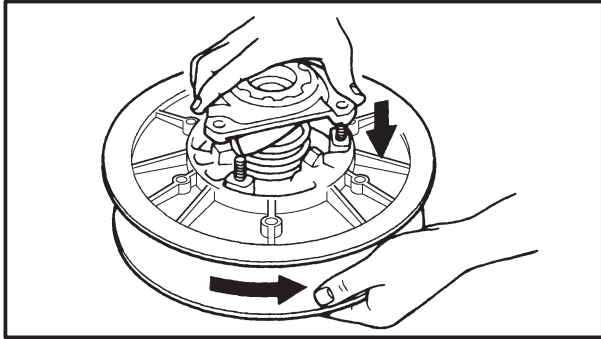
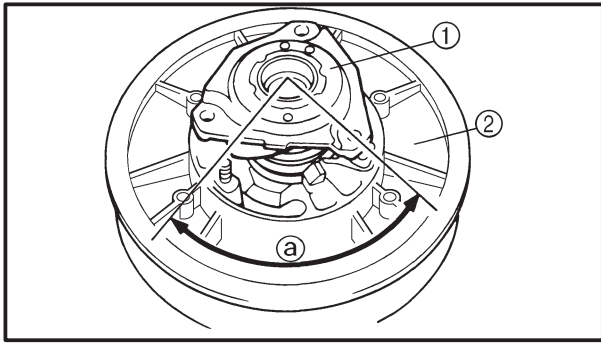
Hook the end of the secondary sheave spring into the spring holes in the fixed sheave. Hook the other end of the spring into the holes in the spring seat.

Standard spring position:

3-3 (RX10, RX10S, RX10R, RX10RS)

1-6 (RX10M, RX10MS)

SECONDARY SHEAVE



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.

$$\textcircled{a} = (\text{sheave hole number} + \text{spring seat hole number}) \times 10$$



Twist angle:

60° (RX10, RX10S, RX10R, RX10RS)

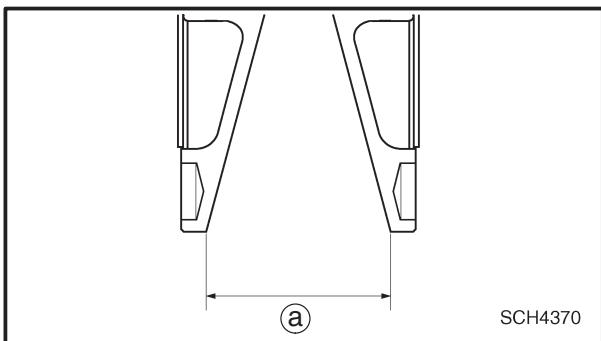
70° (RX10M, RX10MS)

- 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.



Nut (spring seat):

23 Nm (2.3 m•kg, 17 ft•lb)



SCH4370

4. Measure:

- Secondary sheave clearance ③
Out of specification → Adjust.



Secondary sheave clearance:

35.0 ~ 35.8 mm

(1.38 ~ 1.41 in)

5. Calculate:

- Shim thickness

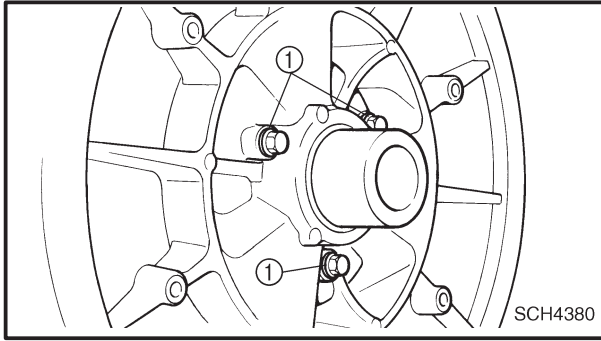
NOTE:

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

SECONDARY SHEAVE



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

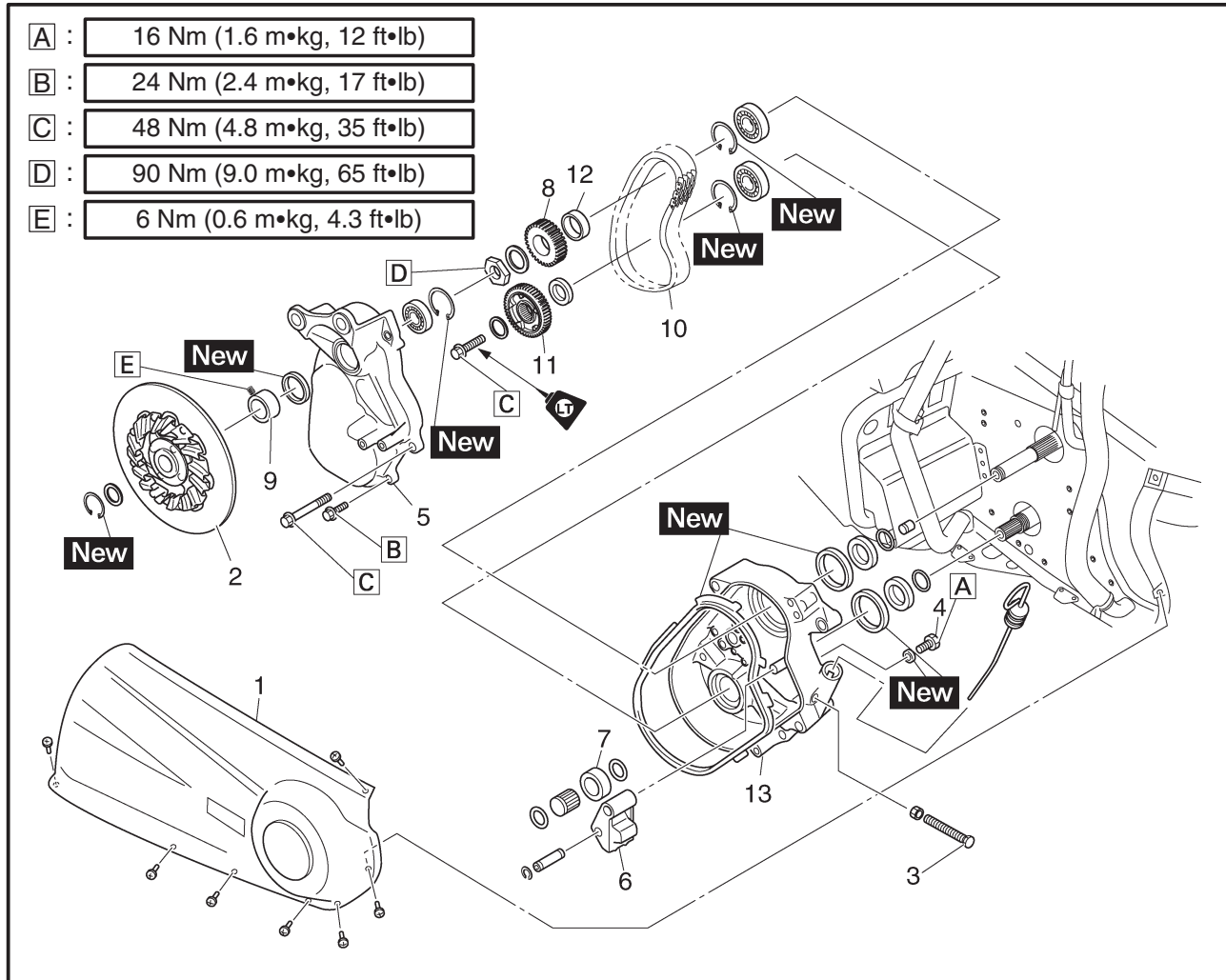
2. Tighten:



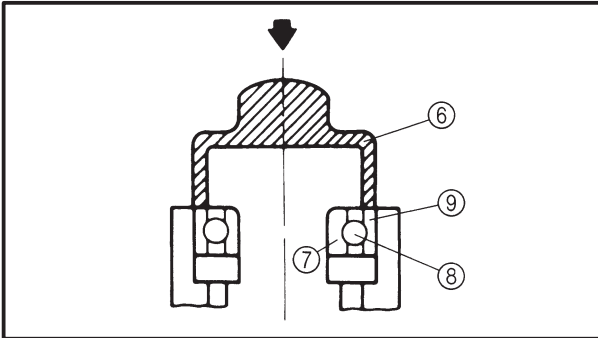
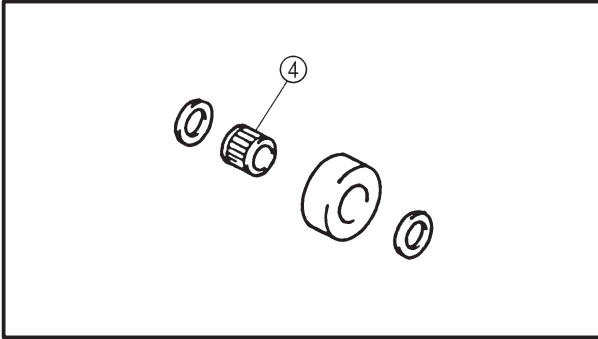
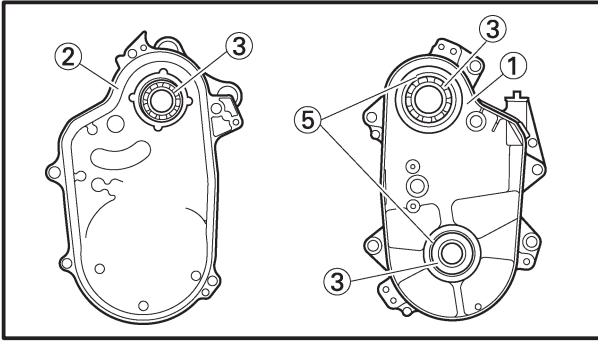
Secondary sheave bolt:
64 Nm (6.4 m•kg, 46 ft•lb)

3. Adjust:
 - V-belt position
Refer to “DRIVE V-BELT” in CHAPTER 2.
 - Sheave offset
 - Secondary sheave free play (clearance)
Refer to “SHEAVE DISTANCE AND OFF-SET ADJUSTMENT” in CHAPTER 2.

DRIVE CHAIN HOUSING WITHOUT REVERSE MODEL



Order	Job name/Part name	Q'ty	Remarks
	Drive chain housing removal		Remove the parts in the order listed below. Refer to "BRAKE". Refer to "BRAKE".
1	Right side cover	1	
2	Brake disc	1	
3	Chain tension adjuster	1	Loosen. Drain.
4	Drain bolt	1	
5	Drive chain housing cover	1	
6	Chain tensioner	1	
7	Roller	1	
8	Drive sprocket	1	
9	Collar	1	
10	Drive chain	1	
11	Driven sprocket	1	
12	Collar	1	
13	Drive chain housing	1	
			For installation, reverse the removal procedure.



INSPECTION

1. Inspect:

- Drive chain housing ①
- Drive chain housing cover ②
- Cracks/damage → Replace.
- Oil seals (drive chain housing)
- 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).
- 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:

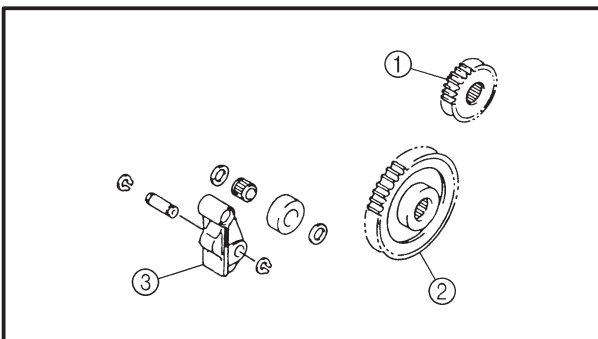
Do not strike the inner race ⑦ or ball bearings ⑧.

Contact only the outer race ⑨.

- Install a new circlip (drive chain housing).

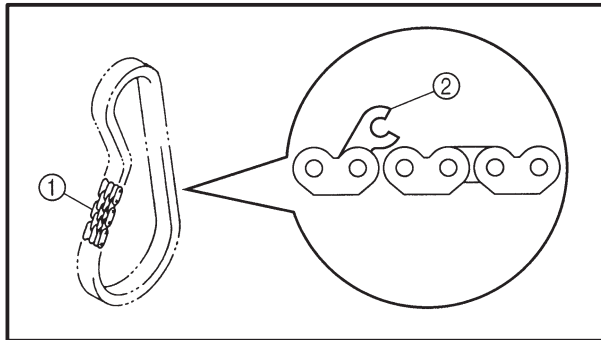
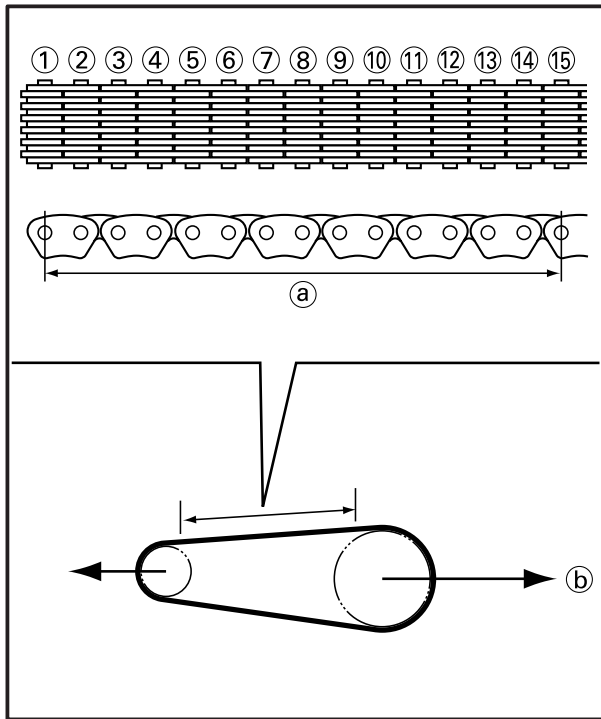
CAUTION:

Always use new circlips.



2. Inspect:

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



3. Measure:

- 14 link section (a) of the drive chain
Using a spring scale, pull on the drive chain with 36 kg (80 lb) of force (b).
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)

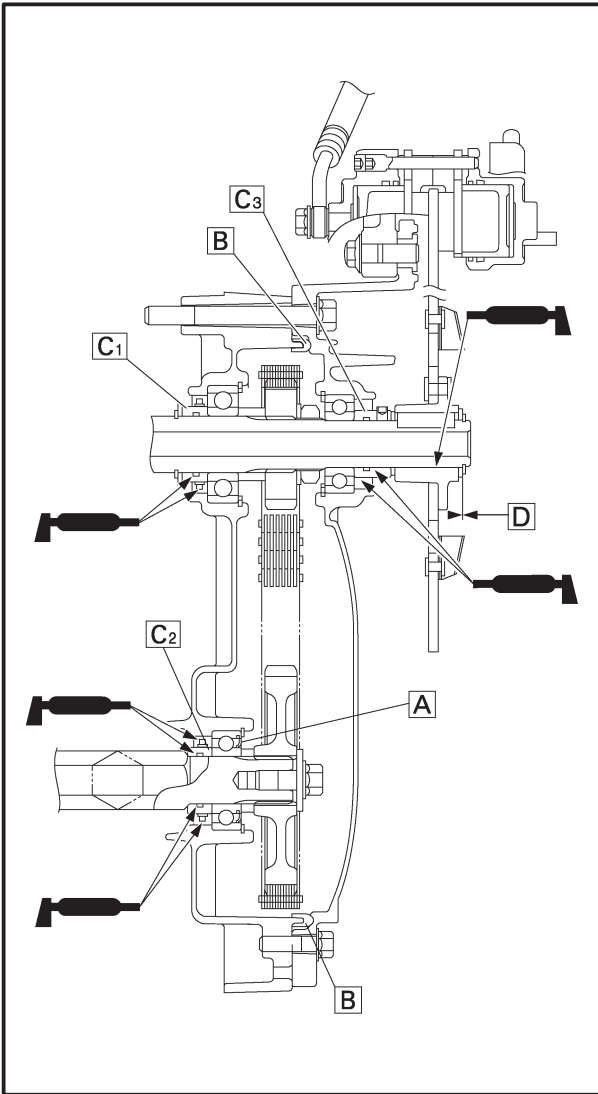
NOTE:

- 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.



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 ~ 0.6 mm (0.008 ~ 0.024 in)

 : ESSO beacon 325 grease or Aeroshell grease #7A

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

2. Fill:

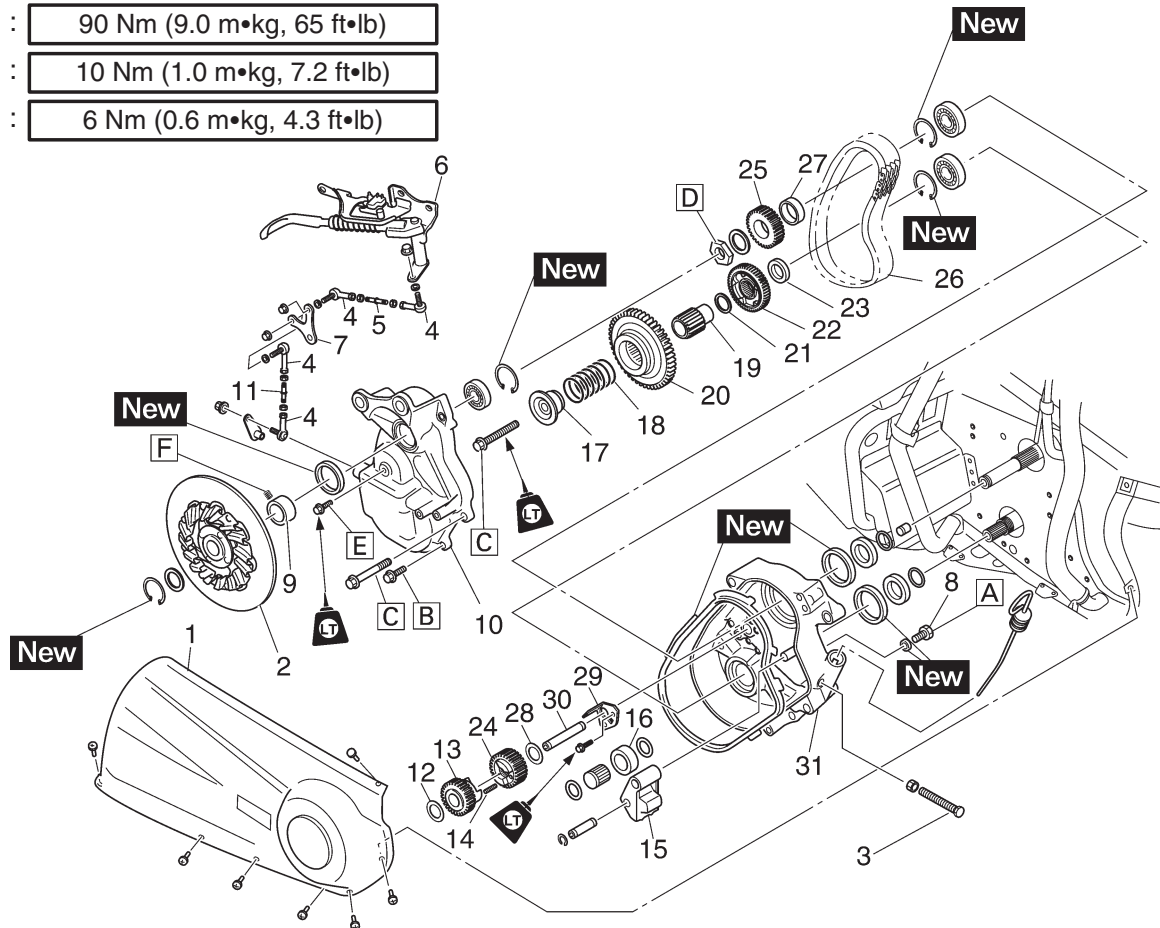
- Drive chain housing oil
Refer to "DRIVE CHAIN" in CHAPTER 2.

3. Adjust:

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

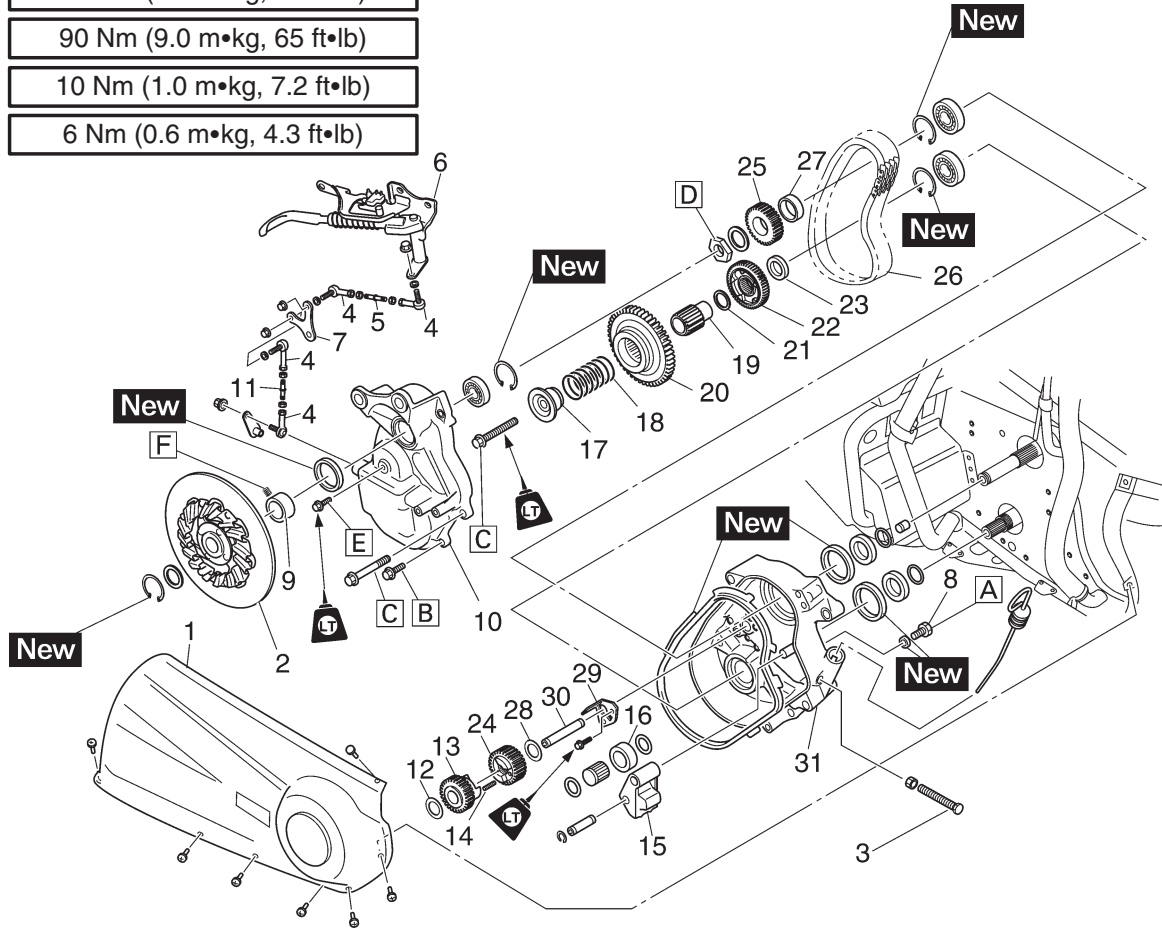
WITH REVERSE MODEL

- A :** 16 Nm (1.6 m•kg, 12 ft•lb)
B : 24 Nm (2.4 m•kg, 17 ft•lb)
C : 48 Nm (4.8 m•kg, 35 ft•lb)
D : 90 Nm (9.0 m•kg, 65 ft•lb)
E : 10 Nm (1.0 m•kg, 7.2 ft•lb)
F : 6 Nm (0.6 m•kg, 4.3 ft•lb)

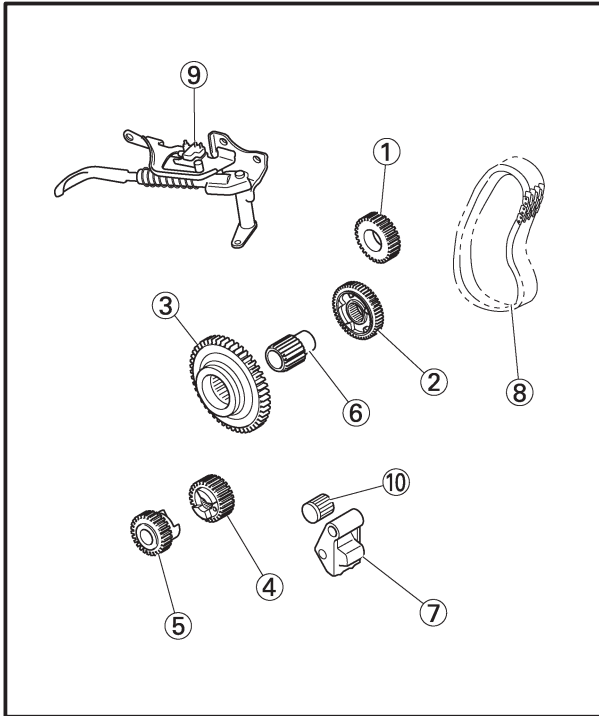
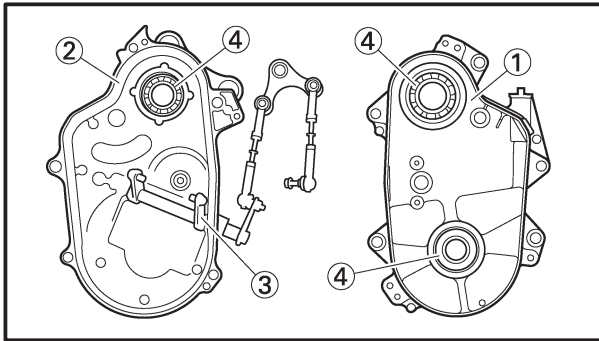


Order	Job name/Part name	Q'ty	Remarks
	Drive chain housing removal		
	Brake caliper		Remove the parts in the order listed below.
	Parking brake		Refer to "BRAKE".
1	Right side cover	1	Refer to "BRAKE".
2	Brake disc	1	
3	Chain tension adjuster	1	Loosen.
4	Joint	4	
5	Shift rod	1	
6	Shift lever assembly	1	Disconnect the gear position switch leads.
7	Lever	1	
8	Drain bolt	1	Drain.
9	Collar	1	
10	Drive chain housing cover	1	
11	Lever rod	1	
12	Washer	1	
13	Counter gear	1	
14	Spring	1	

- A :** 16 Nm (1.6 m•kg, 12 ft•lb)
B : 24 Nm (2.4 m•kg, 17 ft•lb)
C : 48 Nm (4.8 m•kg, 35 ft•lb)
D : 90 Nm (9.0 m•kg, 65 ft•lb)
E : 10 Nm (1.0 m•kg, 7.2 ft•lb)
F : 6 Nm (0.6 m•kg, 4.3 ft•lb)



Order	Job name/Part name	Q'ty	Remarks
15	Chain tensioner	1	For installation, reverse the removal procedure.
16	Roller	1	
17	Collar	1	
18	Spring	1	
19	Journal	1	
20	Reverse driven gear	1	
21	Washer	1	
22	Forward driven sprocket	1	
23	Collar	1	
24	Reverse drive gear	1	
25	Drive sprocket	1	
26	Drive chain	1	
27	Collar	1	
28	Washer	1	
29	Plate	1	
30	Shaft	1	
31	Drive chain housing	1	



INSPECTION

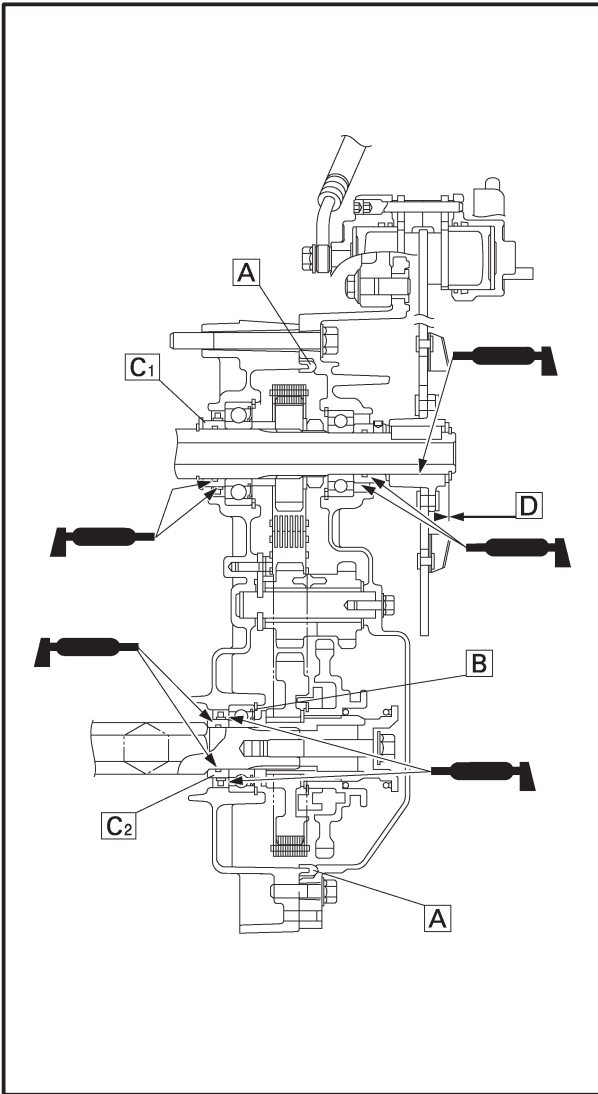
1. Inspect:

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

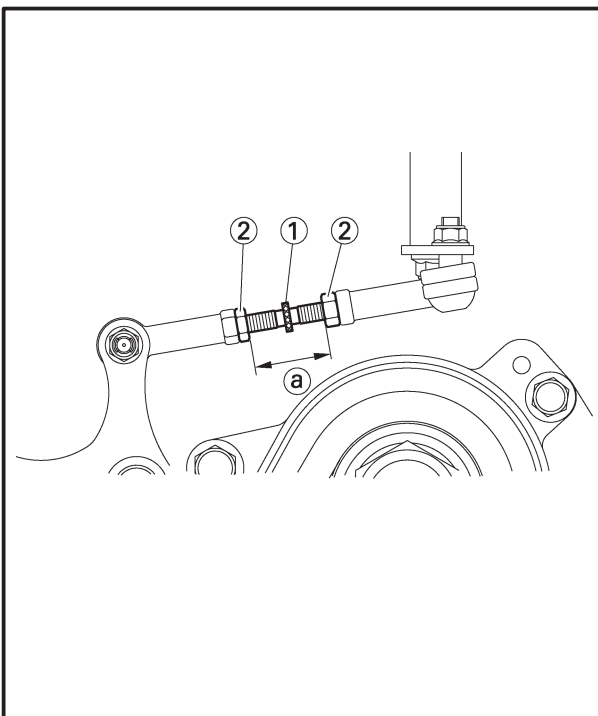
B Make sure that the bearing seals face towards the drive chain as shown.

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

D 0.2 ~ 0.6 mm (0.008 ~ 0.024 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

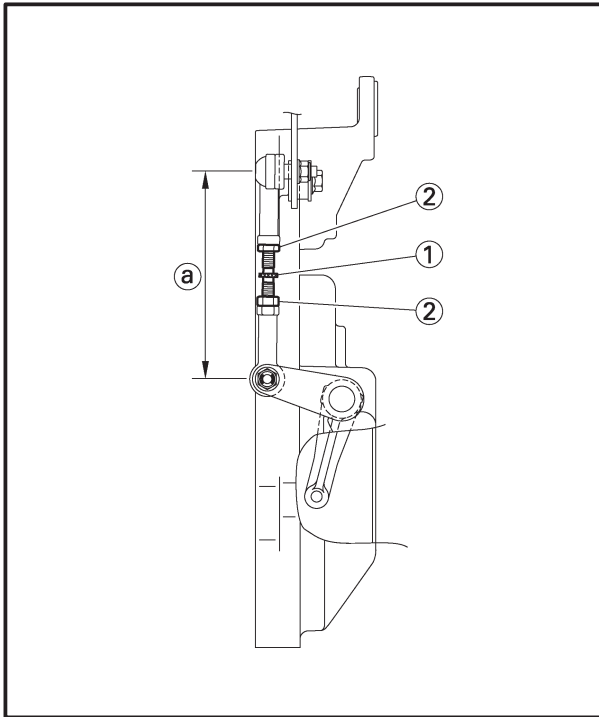
Adjustment steps:

- 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.

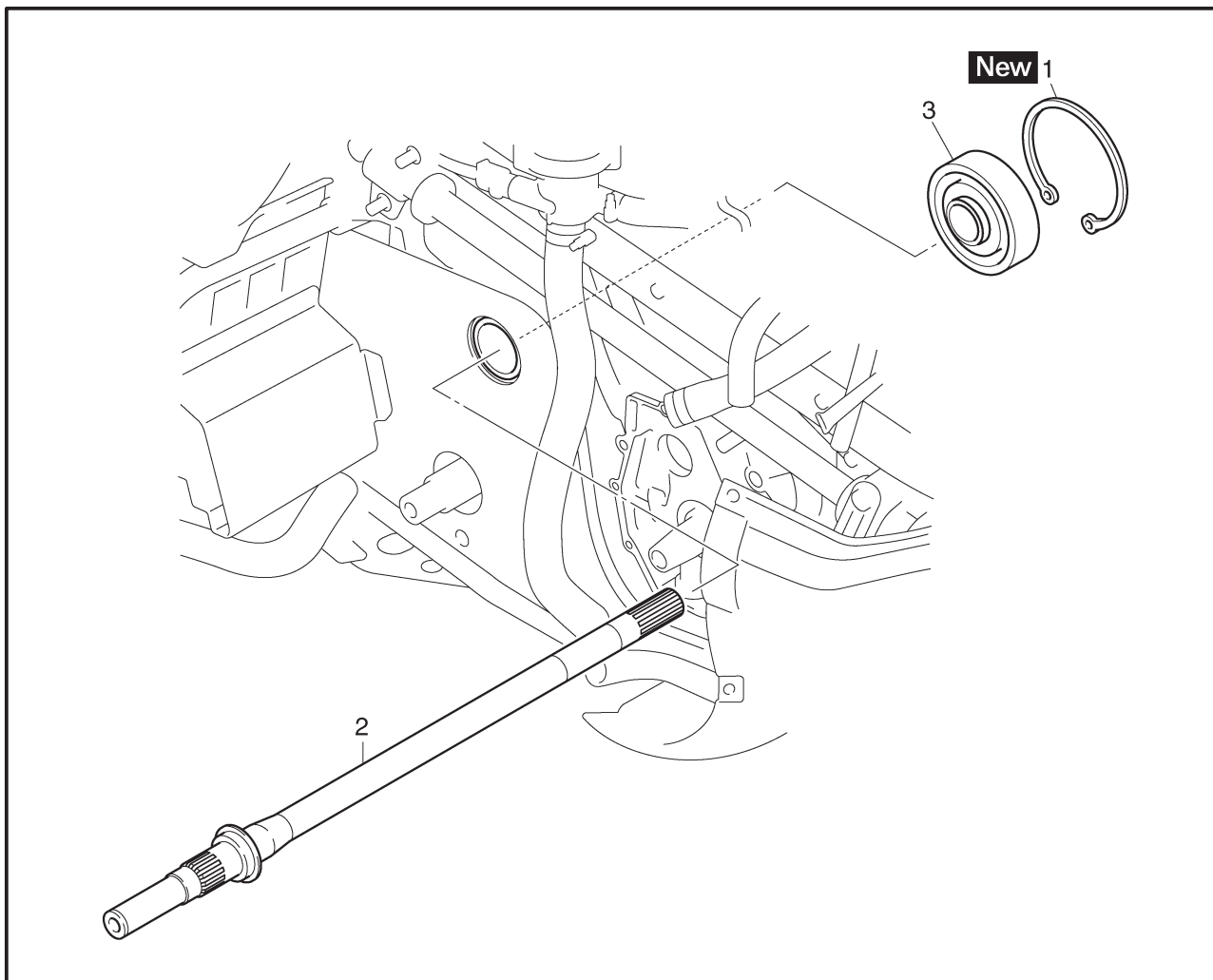


4. Install:
 - Shift rod ①
5. Adjust:
 - Shift rod length ②

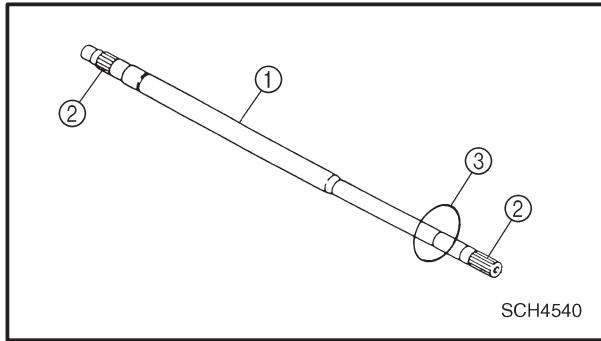
Adjustment steps:

- 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 1/4 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.

SECONDARYSHAFT



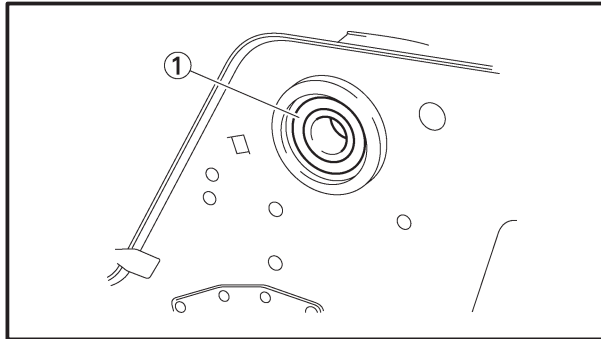
Order	Job name/Part name	Q'ty	Remarks
	Secondaryshaft removal		
1	Secondary sheave	1	Remove the parts in the order listed below. Refer to "SECONDARY SHEAVE". Refer to "DRIVE CHAIN HOUSING".
2	Drive chain housing	1	
3	Circlip	1	
	Secondaryshaft		
	Bearing	1	
			For installation, reverse the removal procedure.



INSPECTION

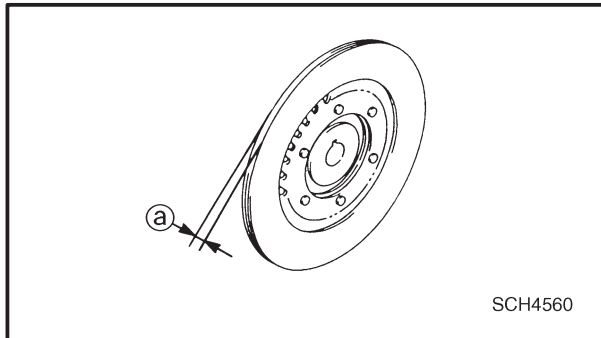
1. Inspect:

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



2. Inspect:

- Bearing ①
Pitting/damage → Replace.



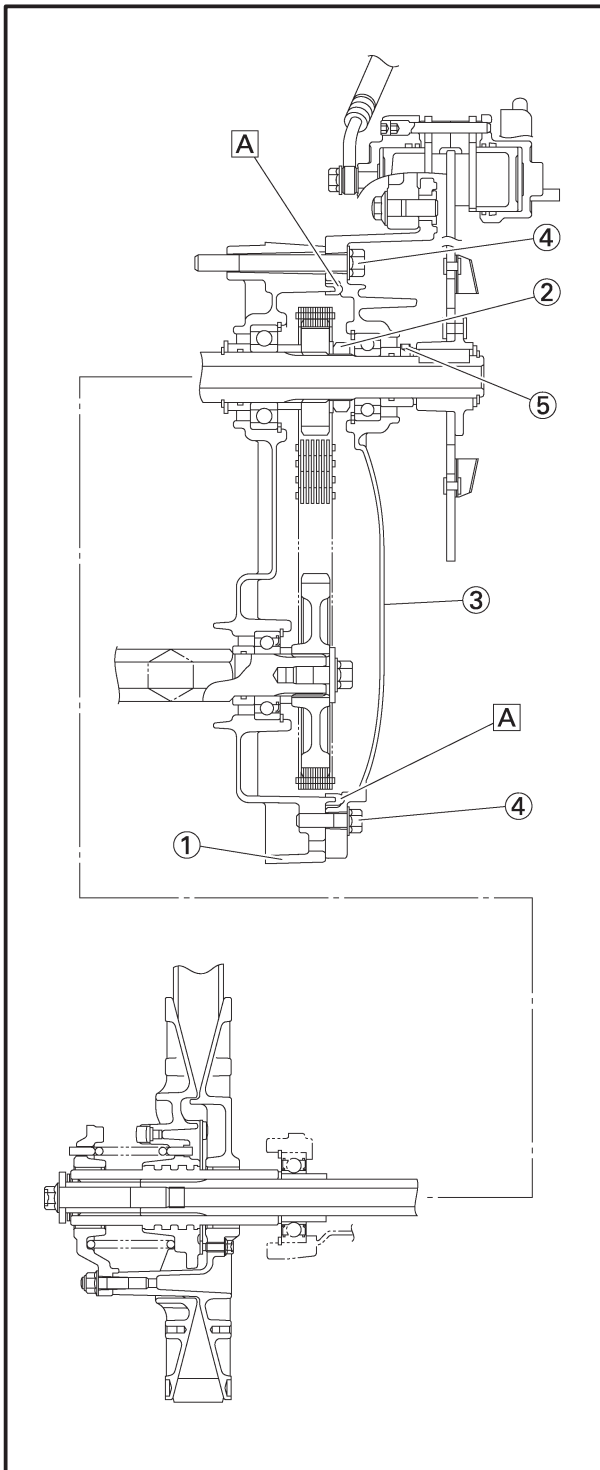
3. Measure:

- Brake disc thickness ①
Out of specification → Replace.



**Minimum thickness:
4.5 mm (0.18 in)**

Measuring point: 1 ~ 3 mm (0.04 ~ 0.12 in)
from the edge of the brake disc.



SECONDARYSHAFT AND DRIVE CHAIN HOUSING INSTALLATION

1. Install:

- Secondaryshaft
- Drive chain housing

Installation steps:

- Install the secondaryshaft.
- Install the drive chain housing ①.
- Tighten the bolts.



Bolt (drive chain housing):
48 Nm (4.8 m•kg, 35 ft•lb)

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



Nut (secondaryshaft):
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 these are no gaps.

- Tighten the bolts ④.



Bolt (drive chain housing cover):
24 Nm (2.4 m•kg, 17 ft•lb)

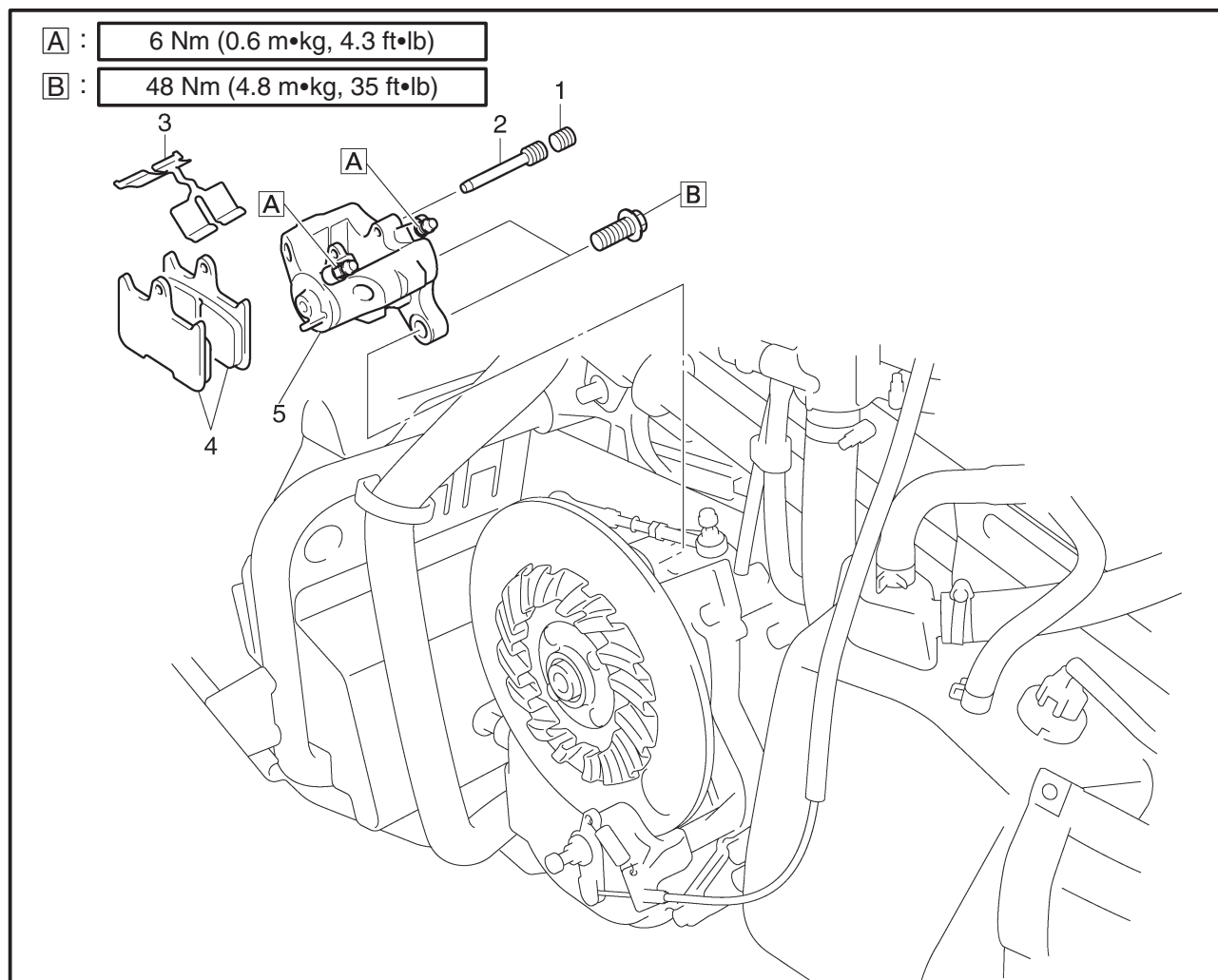
- Install the spacer.
- Tighten the set screw ⑤.



Set screw (spacer):
6 Nm (0.6 m•kg, 4.3 ft•lb)

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

BRAKE



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

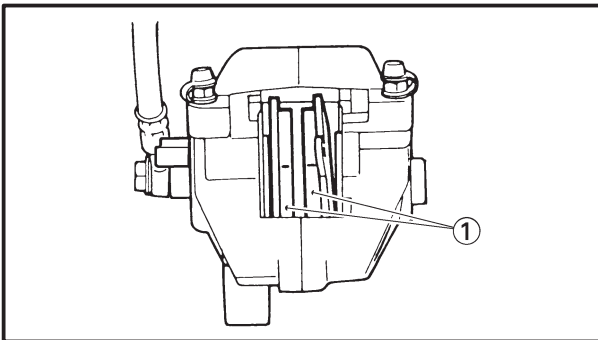
CAUTION:

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.

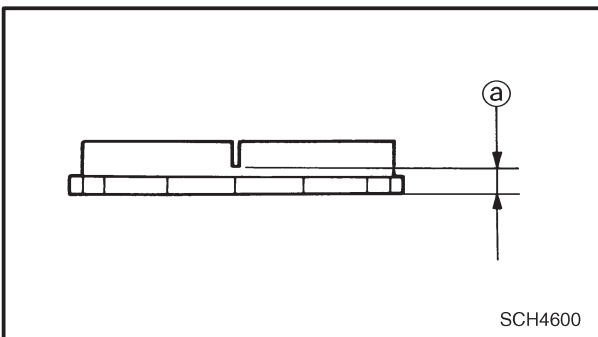


1. Remove:

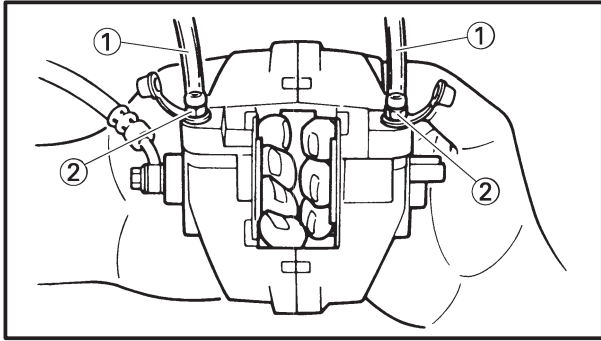
- Brake pads ①

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 (a).



Wear limit:
7.5 mm (0.30 in)



2. Install:

- Brake pads
- Pad spring

Installation steps:

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

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

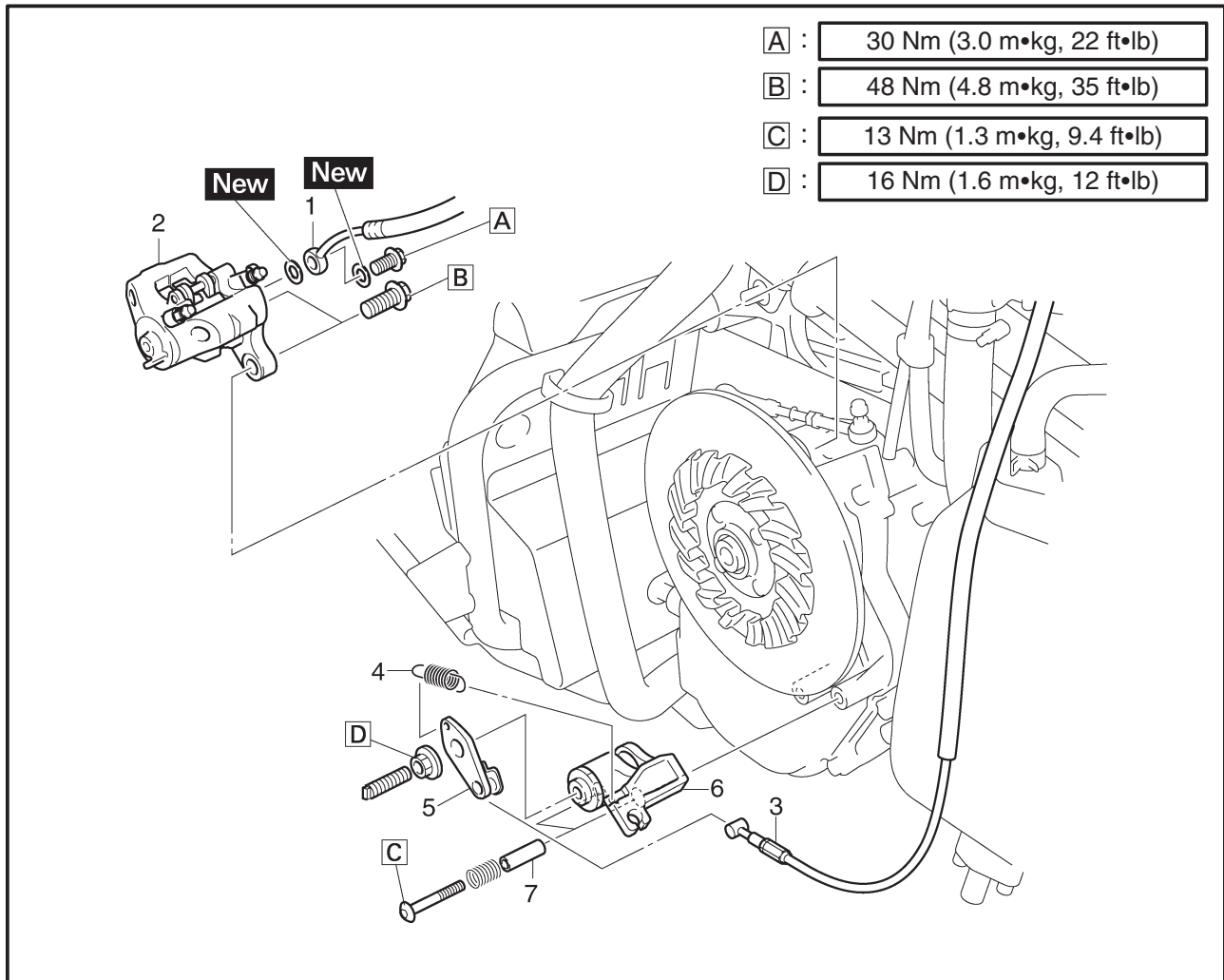
- Install the brake pads and pad spring.

3. Inspect:

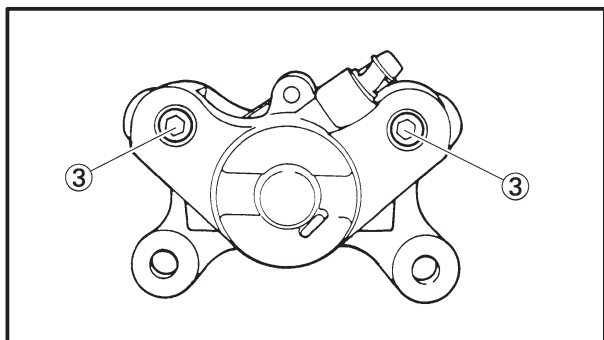
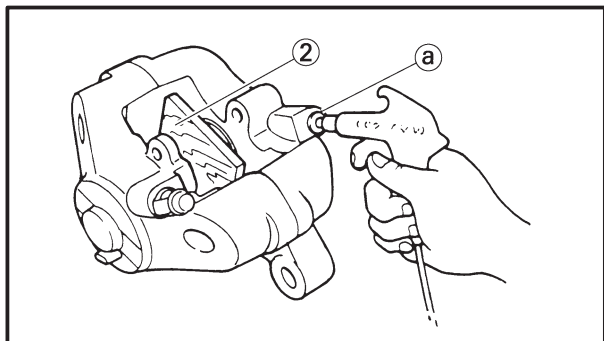
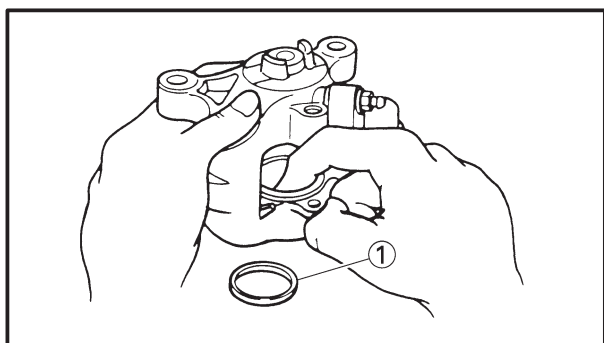
- Brake fluid level
Refer to “BRAKE FLUID LEVEL INSPECTION” in CHAPTER 2.

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	Lever	1	
6	Parking brake assembly	1	
7	Collar	1	
			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

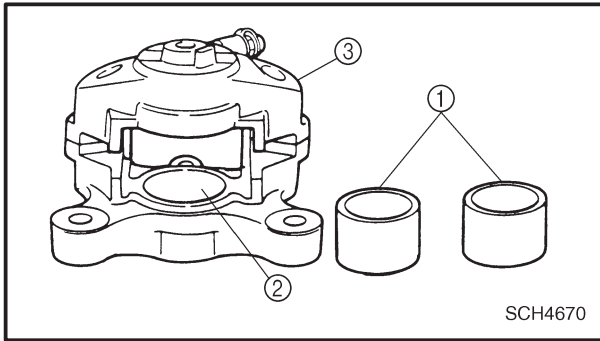
- Never try to pry out the pistons.
- Do not loosen the retaining pin ③.

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

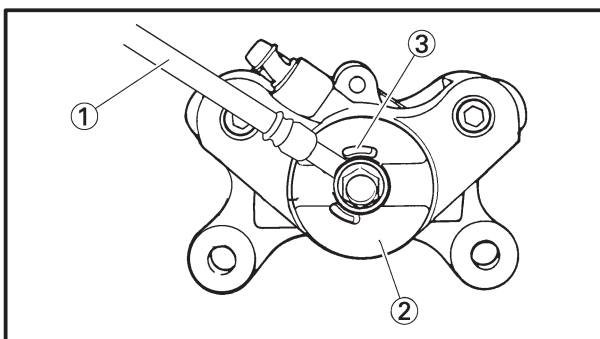
⚠ WARNING

- 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

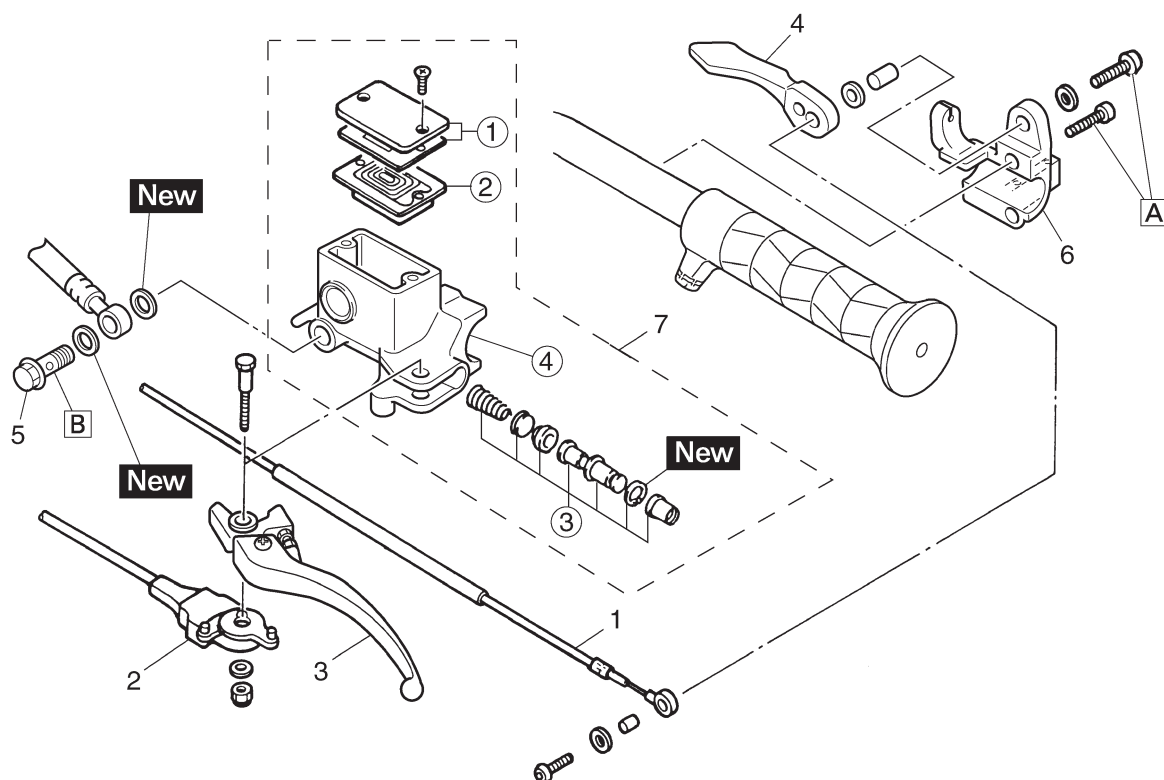
1. Install:

- Brake hose ①

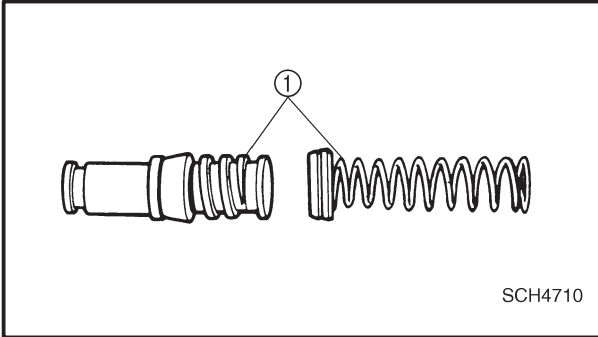
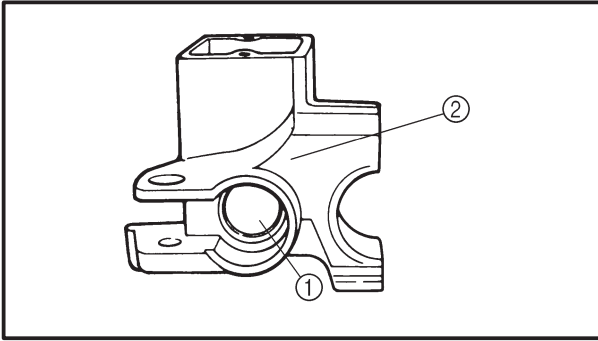
CAUTION:

When installing the brake hose ① onto the brake caliper ②, make sure that the brake pipe touches the projection ③ on the brake caliper.

A : 10 Nm (1.0 m•kg, 7.2 ft•lb)

B : 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.
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		Disassemble 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

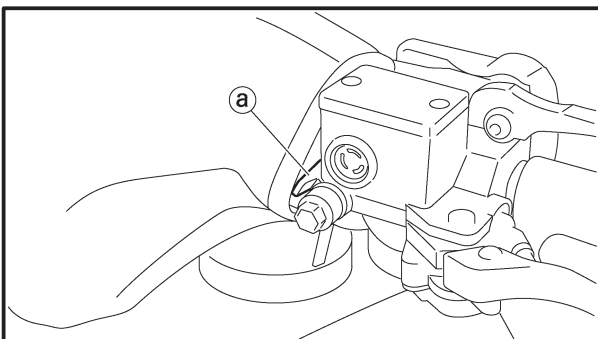
⚠ WARNING

- 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. Connect:

- Brake hose

NOTE:

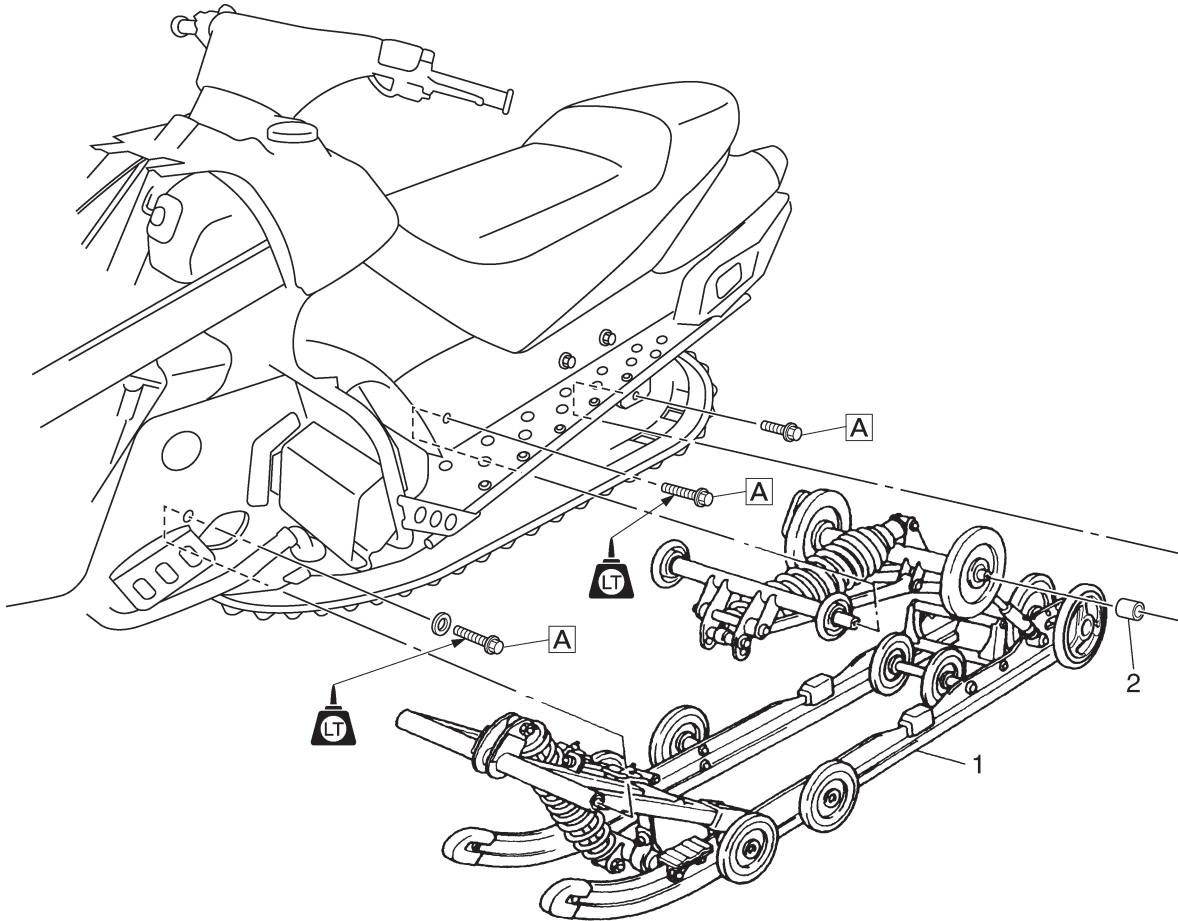
When installing the brake hose onto the brake master cylinder, make sure that the brake pipe touches the projection ① as shown.



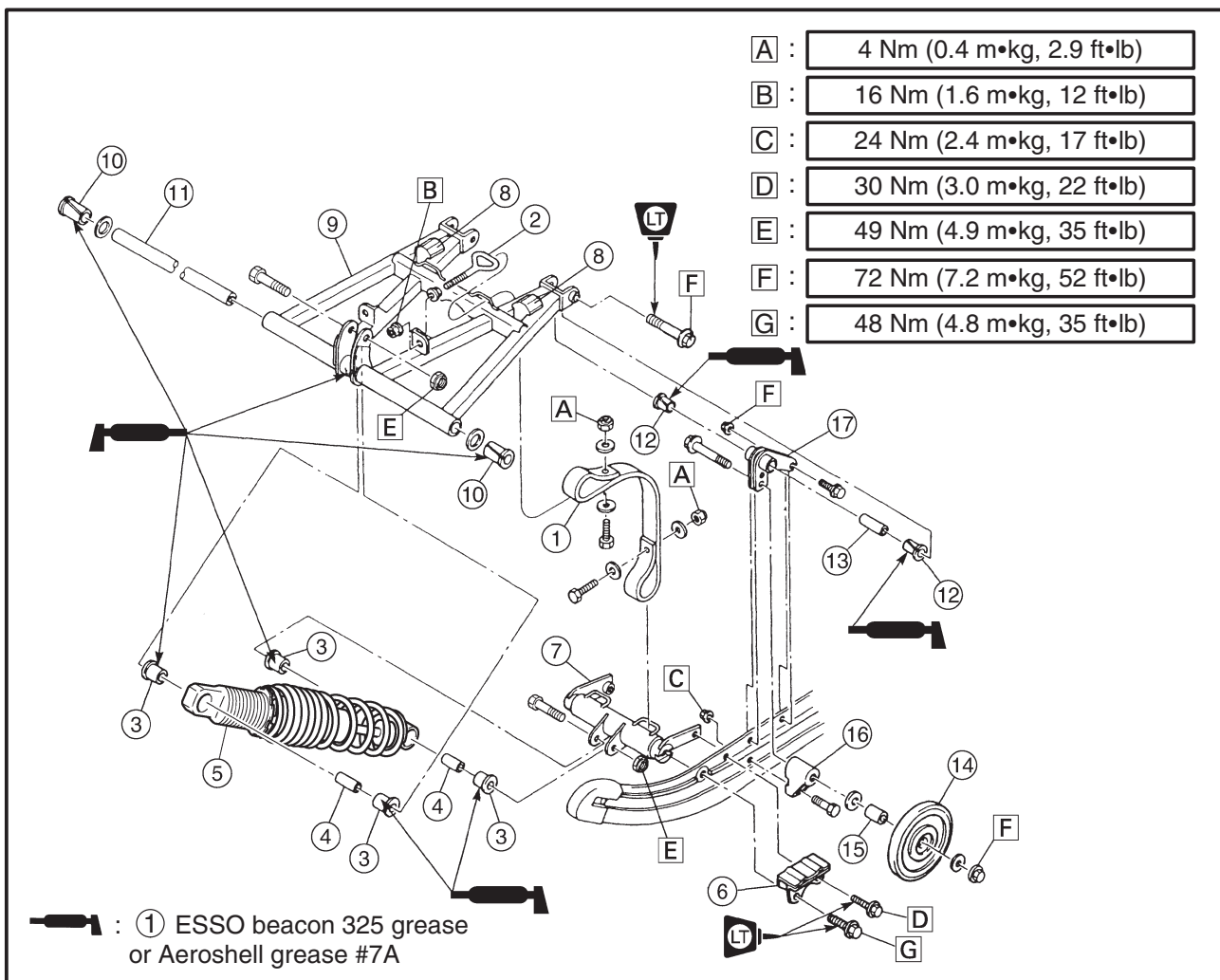
**Union bolt (brake hose):
30 Nm (3.0 m•kg, 22 ft•lb)**

SLIDE RAIL SUSPENSION

RX10, RX10S, RX10R, RX10RS

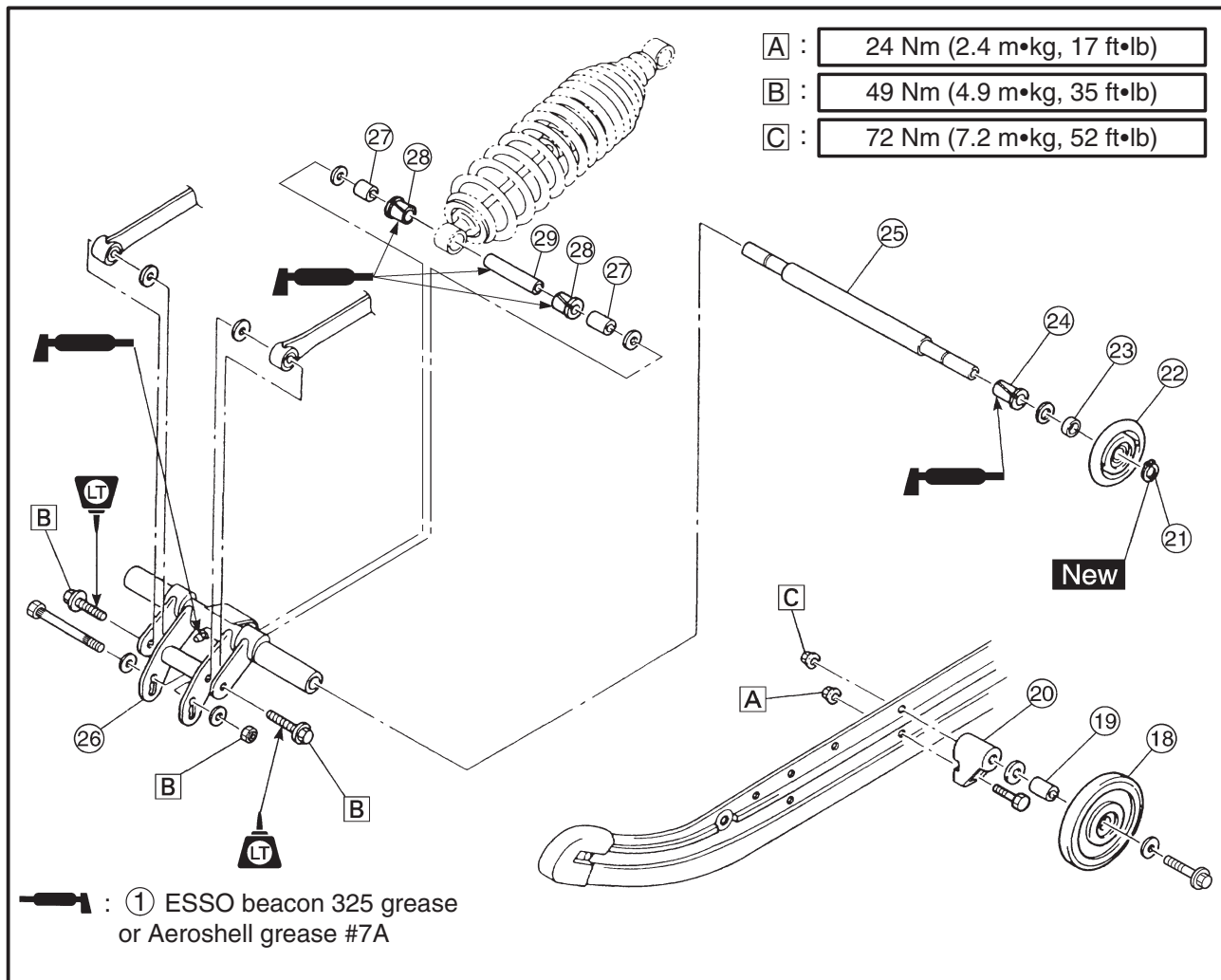
A : 72 Nm (7.2 m•kg, 52 ft•lb)


Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension removal		
	Rear axle nut		Remove the parts in the order listed below.
	Tension adjuster		Loosen.
	Left side cover		Loosen.
			Refer to "PRIMARY SHEAVE AND DRIVE VELT".
1	Slide rail suspension	1	
2	Collar	2	
			For installation, reverse the removal procedure.



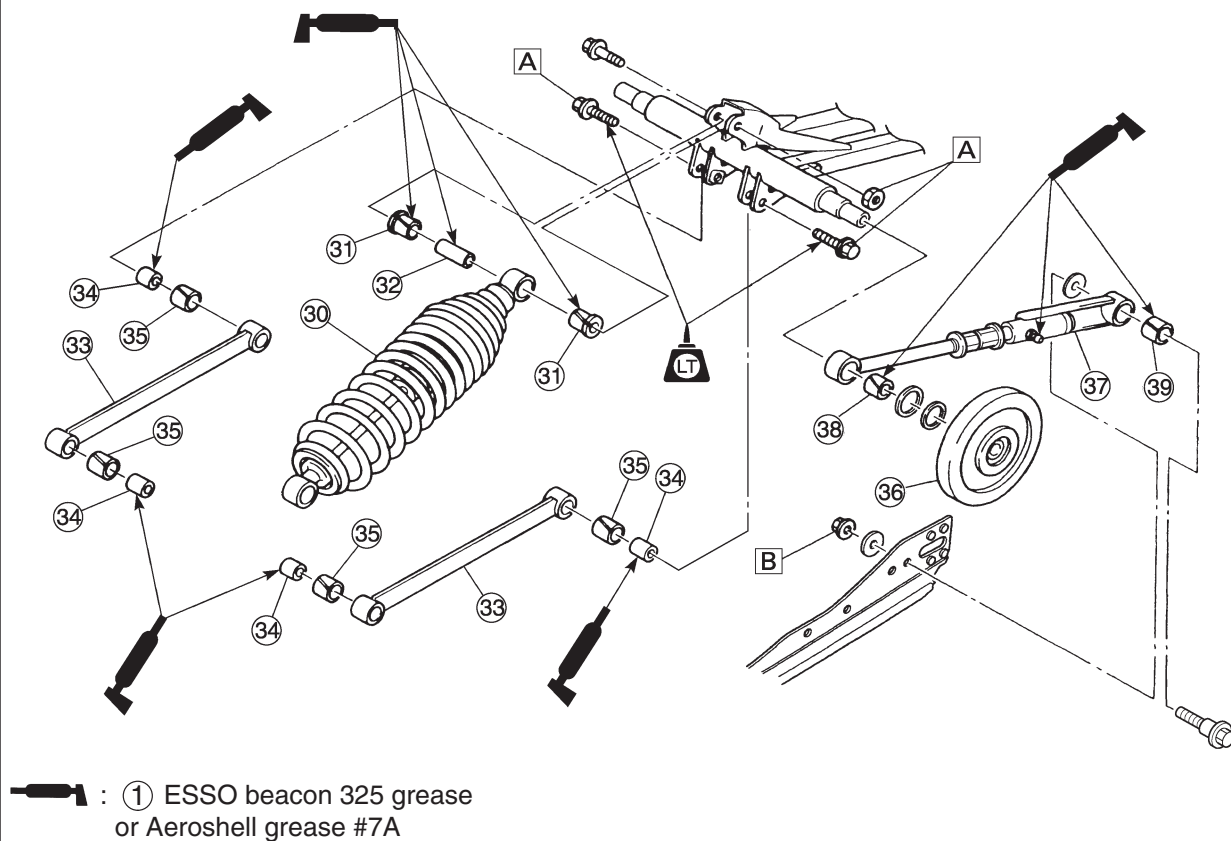
Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension disassembly		Remove the parts in the order listed below.
①	Stopper band	2	
②	Hook	2	
③	Bushing	4	
④	Collar	2	
⑤	Front shock absorber	1	
⑥	Bracket	2	
⑦	Front suspension bracket	1	
⑧	Rubber damper	2	
⑨	Front pivot arm	1	
⑩	Bushing	2	
⑪	Shaft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

SLIDE RAIL SUSPENSION



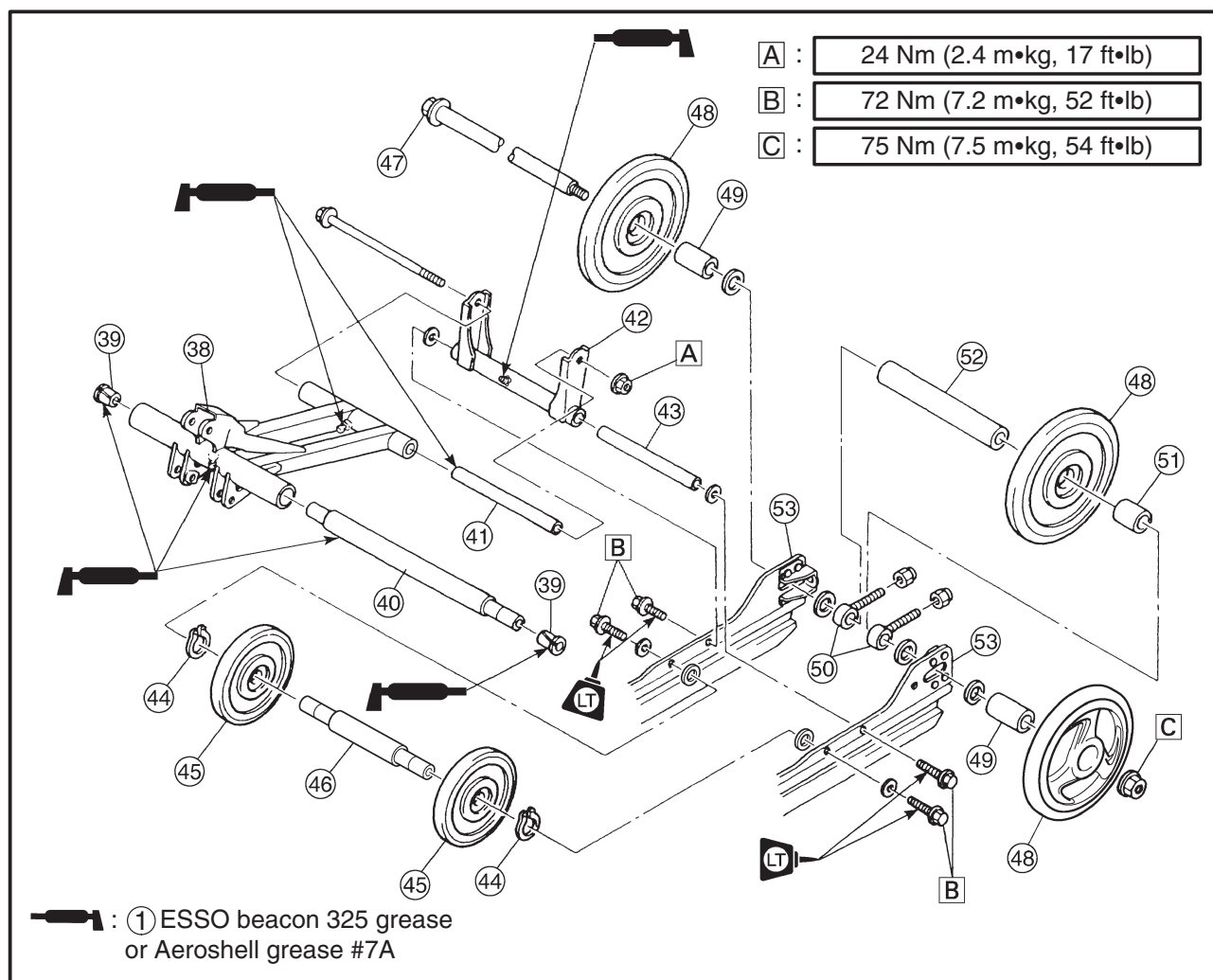
Order	Job name/Part name	Q'ty	Remarks
⑱	Suspension wheel	2	
⑲	Collar	2	
⑳	Wheel bracket	2	
㉑	Circlip	2	
㉒	Suspension wheel	2	
㉓	Collar	2	
㉔	Bushing	2	
㉕	Shaft	1	
㉖	Rear suspension bracket	1	
㉗	Spacer	2	
㉘	Bushing	2	
㉙	Collar	1	

A : 49 Nm (4.9 m•kg, 35 ft•lb)

B : 72 Nm (7.2 m•kg, 52 ft•lb)


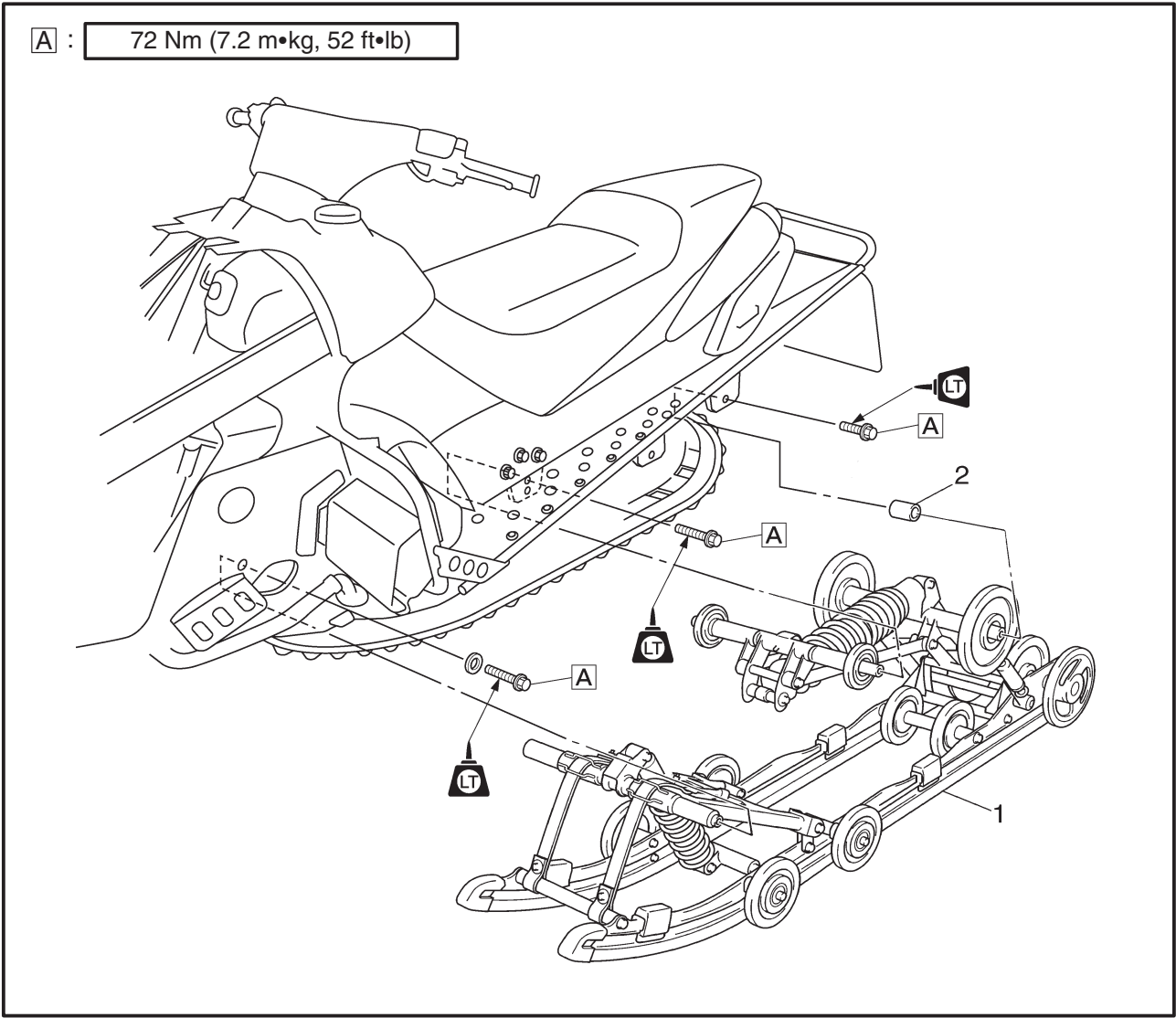
Order	Job name/Part name	Q'ty	Remarks
③①	Rear shock absorber	1	
③①	Bushing	2	
③②	Collar	1	
③③	Pull rod	2	
③④	Collar	4	
③⑤	Bushing	4	
③⑥	Guide wheel	2	
③⑦	Control rod assembly	2	
③⑧	Bushing	2	
③⑨	Bushing	2	

SLIDE RAIL SUSPENSION



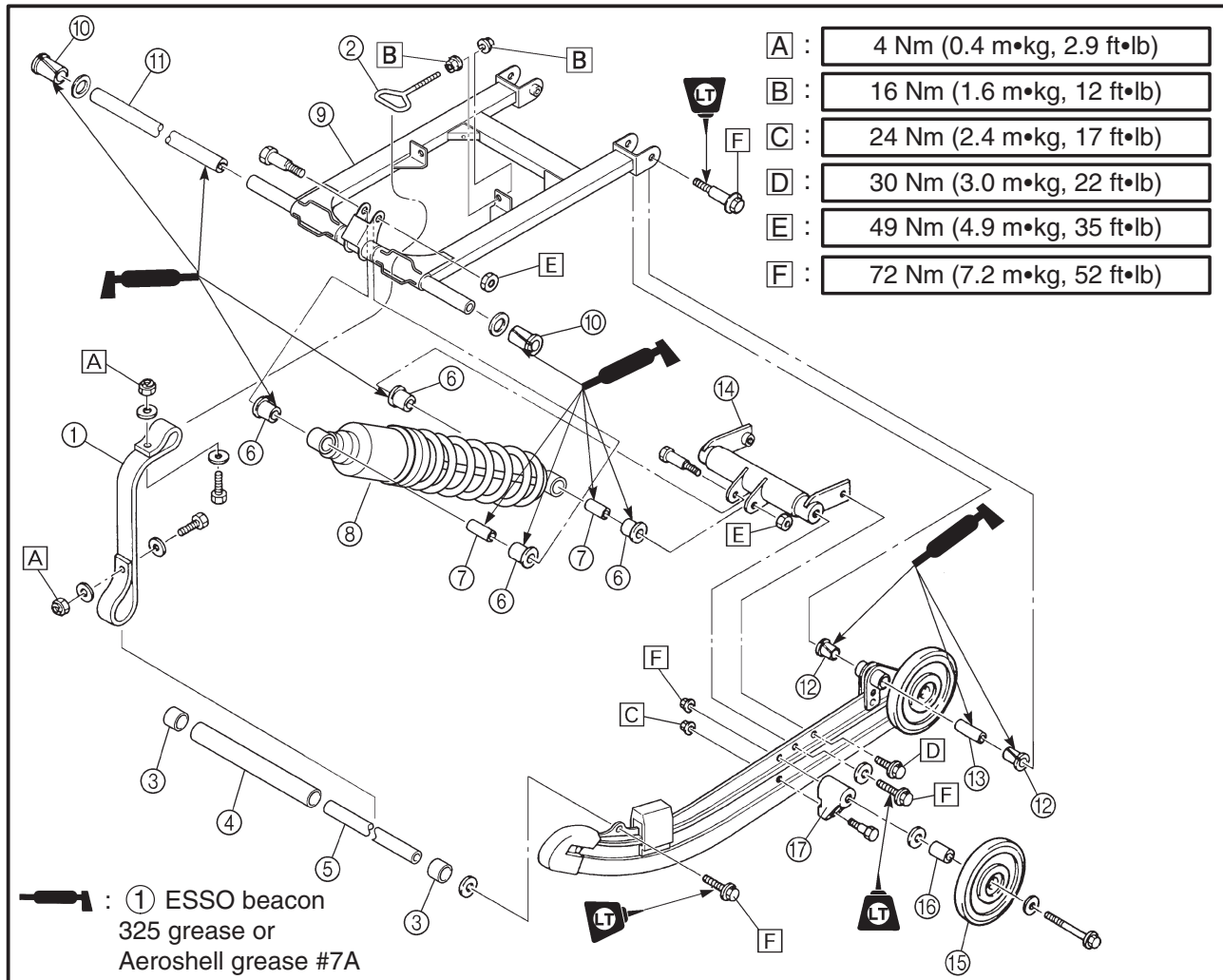
Order	Job name/Part name	Q'ty	Remarks
③⑧	Rear pivot arm	1	For assembly, reverse the disassembly procedure.
③⑨	Bushing	2	
④①	Shaft	1	
④②	Rear pivot arm bracket	1	
④③	Shaft	1	
④④	Circlip	2	
④⑤	Suspension wheel	2	
④⑥	Wheel bracket shaft	1	
④⑦	Rear axle	1	
④⑧	Guide wheel	3	
④⑨	Collar	2	
⑤①	Tension adjuster	2	
⑤②	Collar	1	
⑤③	Collar	1	
⑤④	Sliding frame	2	

RX10M, RX10MS



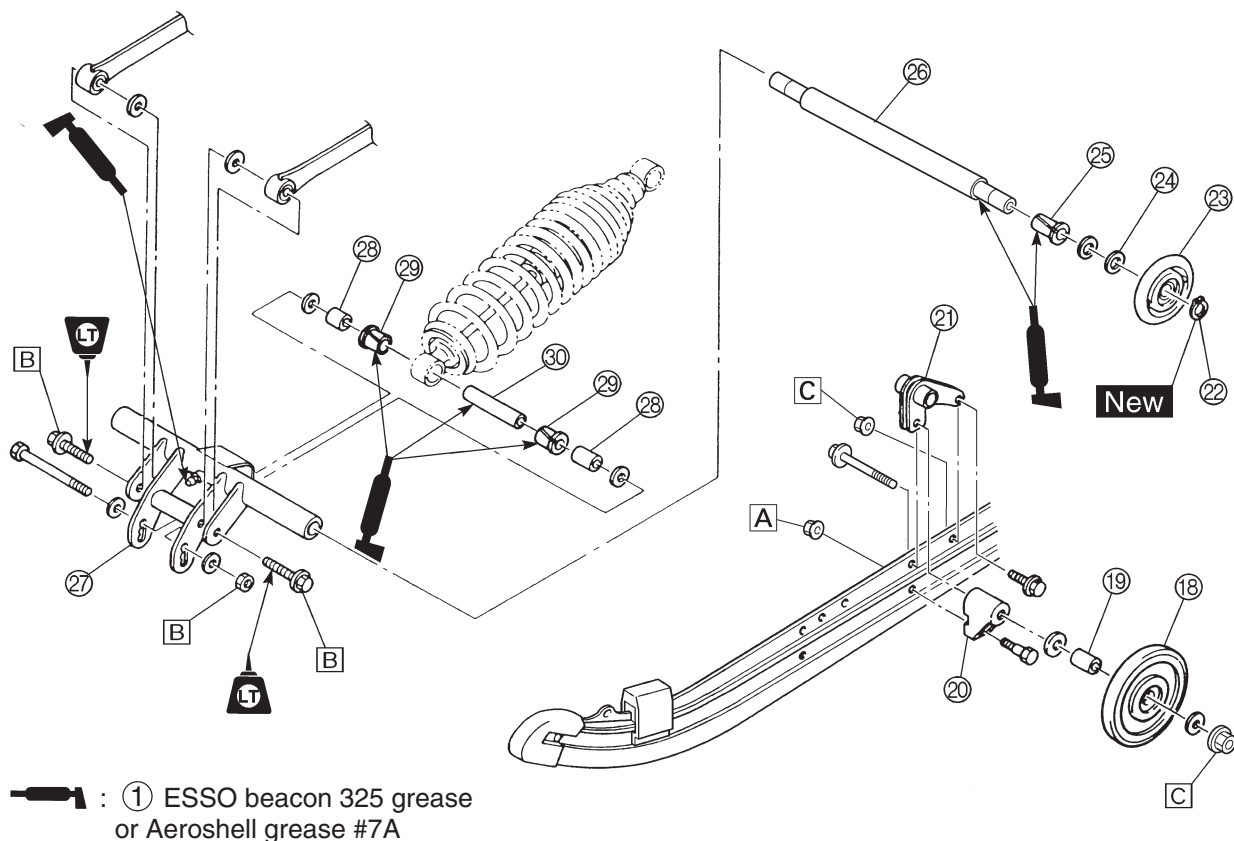
Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension removal		
	Rear axle nut		Remove the parts in the order listed below.
	Tension adjuster		Loosen.
	Left side cover		Loosen.
			Refer to "PRIMARY SHEAVE AND DRIVE VELT".
1	Slide rail suspension	1	
2	Collar	2	
			For installation, reverse the removal procedure.

SLIDE RAIL SUSPENSION



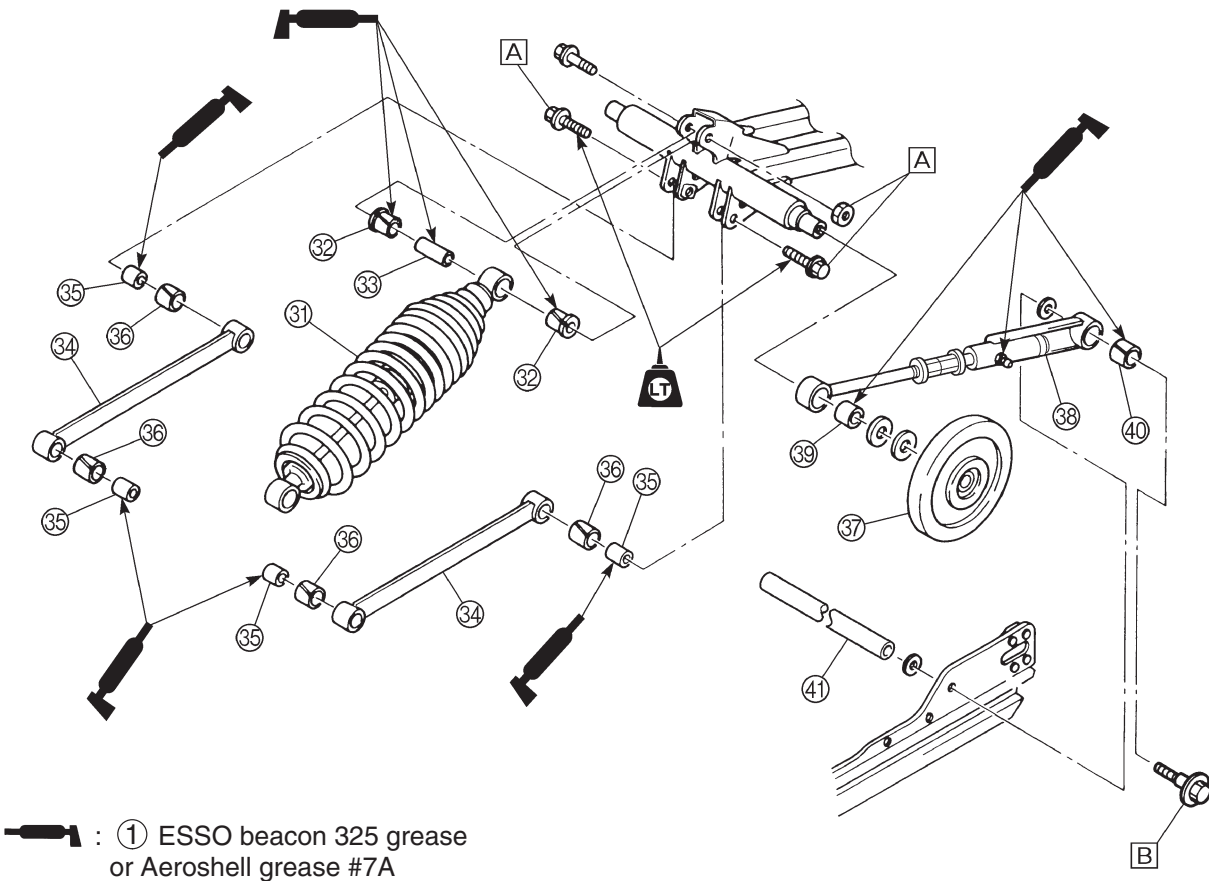
Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension disassembly		Remove the parts in the order listed below.
①	Stopper band	2	
②	Hook	2	
③	Rubber collar	2	
④	Rubber collar	1	
⑤	Shaft	1	
⑥	Bushing	4	
⑦	Collar	2	
⑧	Front shock absorber	1	
⑨	Front pivot arm	1	
⑩	Bushing	2	
⑪	Collar	1	
⑫	Bushing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

- A : 24 Nm (2.4 m•kg, 17 ft•lb)
- B : 49 Nm (4.9 m•kg, 35 ft•lb)
- C : 72 Nm (7.2 m•kg, 52 ft•lb)



Order	Job name/Part name	Q'ty	Remarks
⑱	Suspension wheel	2	
⑲	Collar	2	
⑳	Wheel bracket	2	
㉑	Front pivot arm bracket	2	
㉒	Circlip	2	
㉓	Suspension wheel	2	
㉔	Collar	2	
㉕	Bushing	2	
㉖	Collar	1	
㉗	Rear suspension bracket	1	
㉘	Spacer	2	
㉙	Bushing	2	
㉚	Collar	1	

- A** : 49 Nm (4.9 m•kg, 35 ft•lb)
B : 72 Nm (7.2 m•kg, 52 ft•lb)

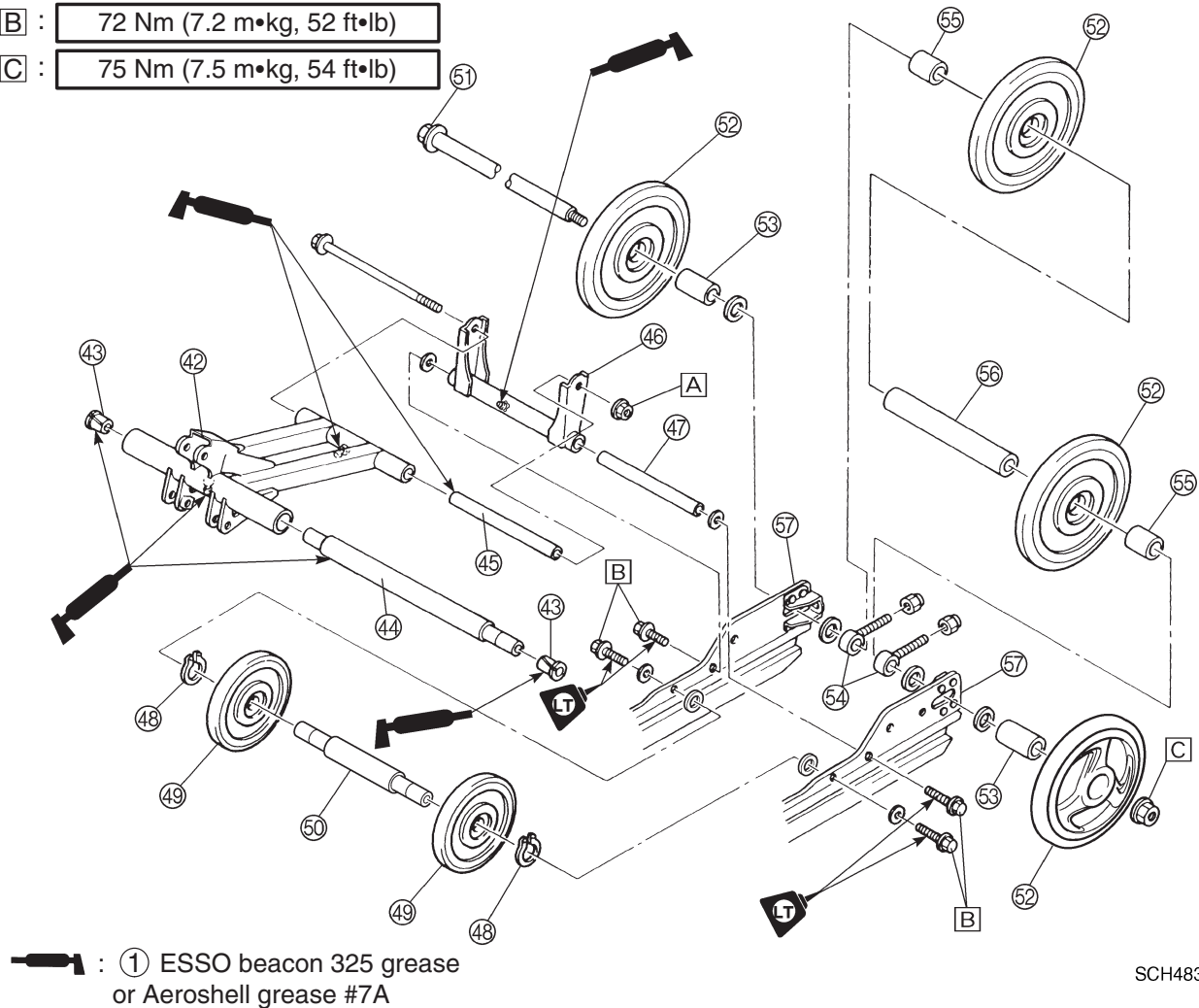


Order	Job name/Part name	Q'ty	Remarks
③①	Rear shock absorber	1	
③②	Bushing	2	
③③	Collar	1	
③④	Pull rod	2	
③⑤	Collar	4	
③⑥	Bushing	4	
③⑦	Guide wheel	2	
③⑧	Control rod assembly	2	
③⑨	Bushing	2	
④①	Bushing	2	
④①	Shaft	1	

SLIDE RAIL SUSPENSION

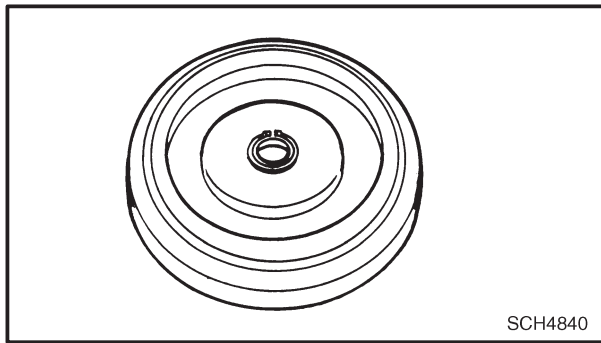


- A : 24 Nm (2.4 m•kg, 17 ft•lb)
 B : 72 Nm (7.2 m•kg, 52 ft•lb)
 C : 75 Nm (7.5 m•kg, 54 ft•lb)



SCH4830

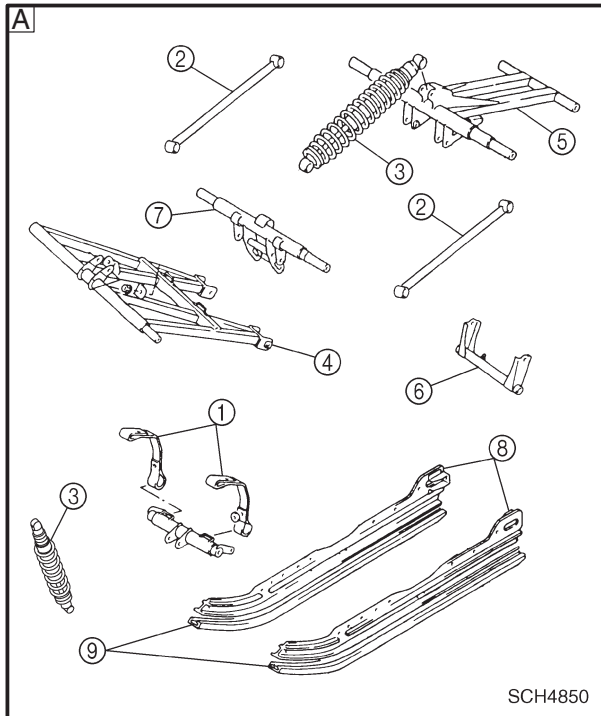
Order	Job name/Part name	Q'ty	Remarks
④②	Rear pivot arm	1	For assembly, reverse the disassembly procedure.
④③	Bushing	2	
④④	Collar	1	
④⑤	Collar	1	
④⑥	Rear pivot arm bracket	1	
④⑦	Collar	1	
④⑧	Circlip	2	
④⑨	Suspension wheel	2	
⑤①	Wheel bracket shaft	1	
⑤②	Guide wheel	4	
⑤③	Collar	2	
⑤④	Tension adjuster	2	
⑤⑤	Collar	2	
⑤⑥	Collar	1	
⑤⑦	Sliding frame	2	



INSPECTION

1. Inspect:

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

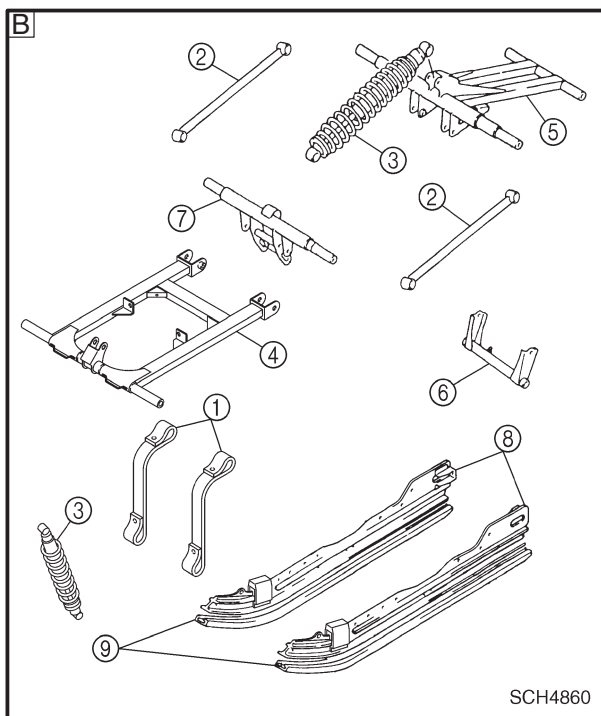


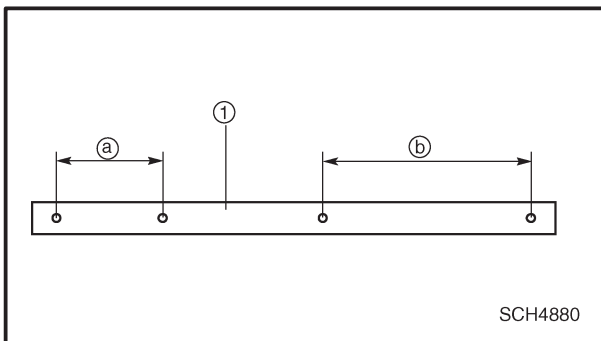
2. Inspect:

- 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
- Sliding frame ⑧
- Cracks/damage → Replace.
- Slide runner ⑨
- Wear/damage → Replace.

A RX10, RX10S, RX10R, RX10RS

B RX10M, RX10MS





ASSEMBLY

1. Install:
 - Stopper band ①

NOTE:

- For RX10, RX10S, RX10R, RX10RS:
Install the stopper band with ① toward the hook and ② toward the front suspension bracket.
- For RX10M, RX10MS:
Install the stopper band with ① toward the hook and ② toward the shaft.

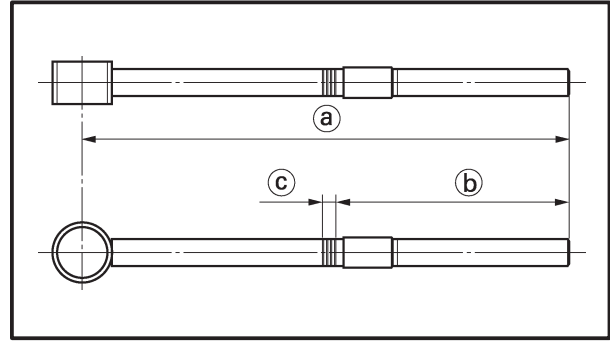


Nut (stopper band):
4 Nm (0.4 m•kg, 2.9 ft•lb)

INSTALLATION

1. Adjust:
 - Slide rail suspension position
Refer to “REAR SUSPENSION” in CHAPTER 2.

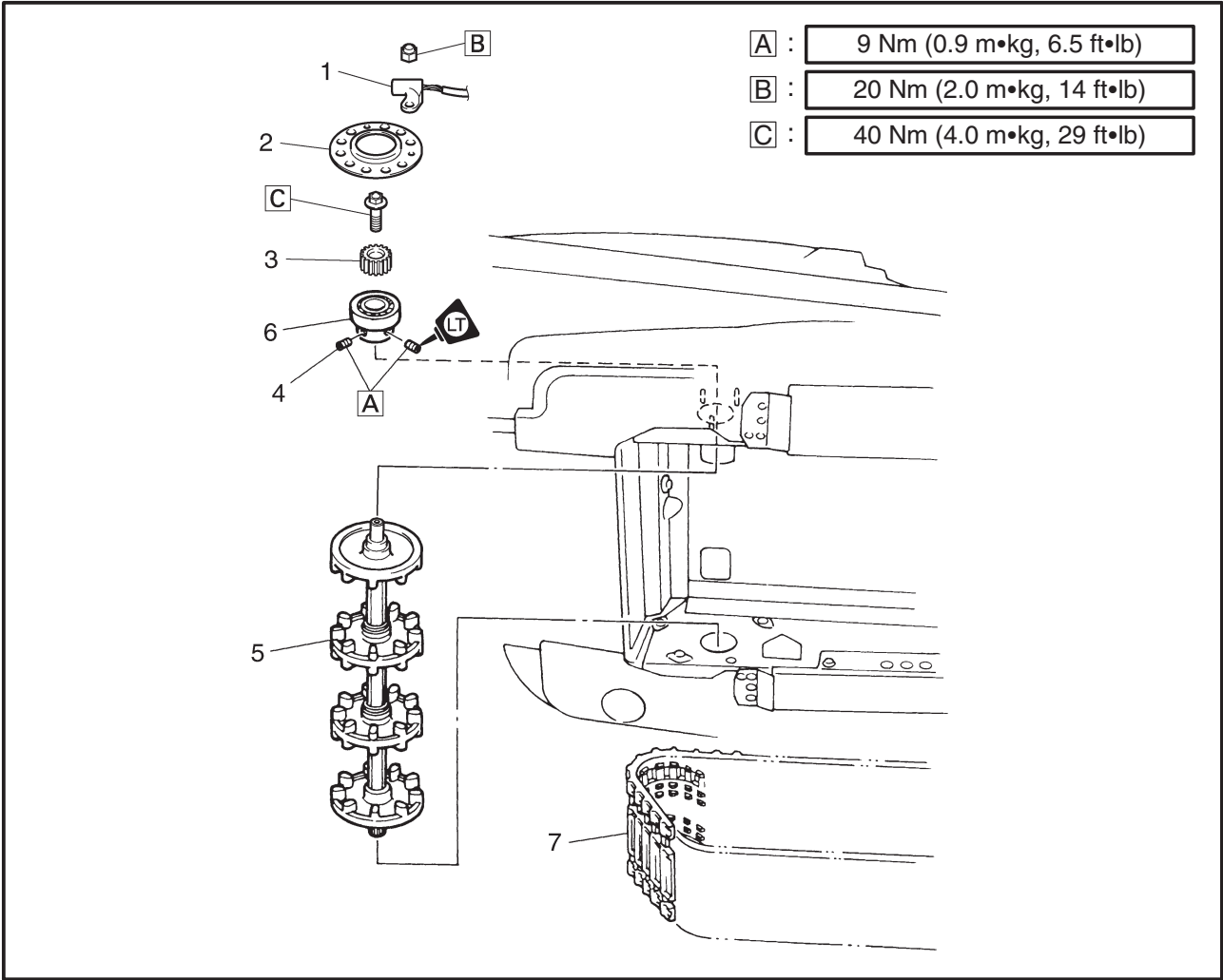
Control rod parts number



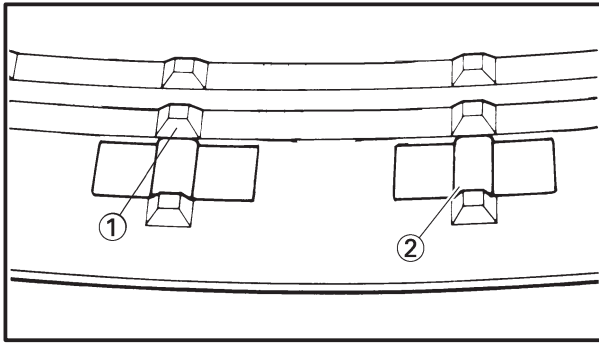
[A] Control rod 1	[B] Length (a) mm (in)	[C] Length (b) mm (in)	[D] Length (c) mm (in)
RX10, RX10S, RX10R, RX10RS	301.0 (11.85)	155.5 (6.12)	$2.5P \times 3 = 7.5$ $(0.098P \times 3 = 0.295)$
RX10M, RX10MS	257.5 (10.14)	165.0 (6.50)	

[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
8FA-4745A-00 (RX10, RX10S, RX10R, RX10RS)	8CR-4745B-00	90202-16229 2.5 (0.098)	90202-16232 10.0 (0.394)
8EP-4745A-00 (RX10M, RX10MS)		90202-16229 2.5 (0.098)	90202-16230 5.0 (0.197)

FRONT AXLE AND TRACK



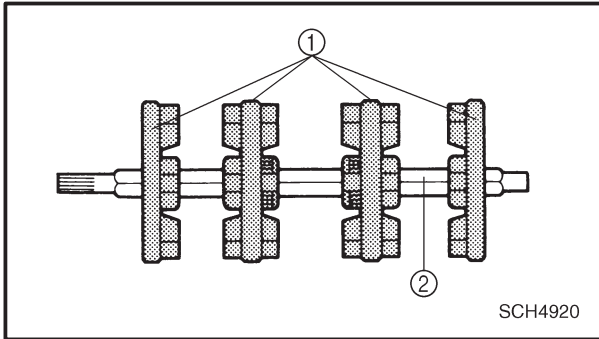
Order	Job name/Part name	Q'ty	Remarks
	Front axle and track removal		
	Drive chain housing		Remove the parts in the order listed below.
	Slide rail suspension		Refer to "DRIVE CHAIN HOUSING".
	Secondary sheave		Refer to "SLIDE RAIL SUSPENSION".
1	Speed sensor	1	Refer to "SECONDARY SHEAVE".
2	Bearing 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

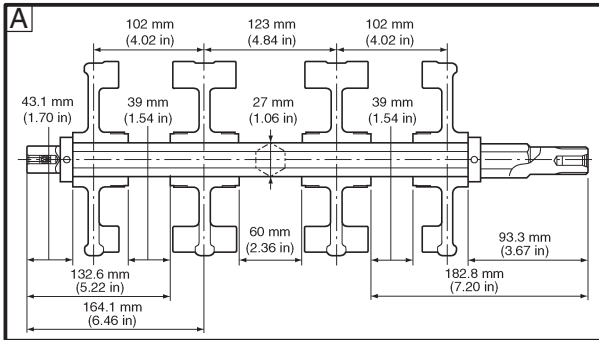
1. Inspect:

- 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.



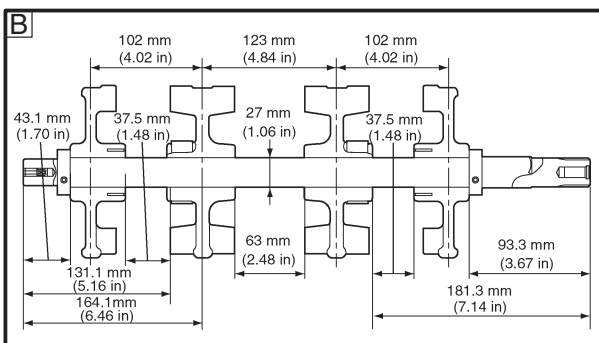
INSTALLATION

1. Install:

- Sprocket wheels
- Guide wheels

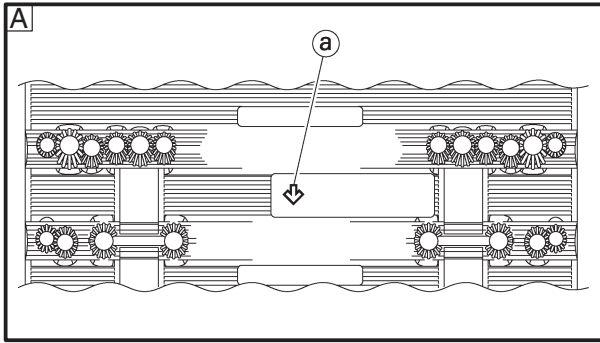
NOTE:

- 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 RX10, RX10S, RX10R, RX10RS

B RX10M, RX10MS



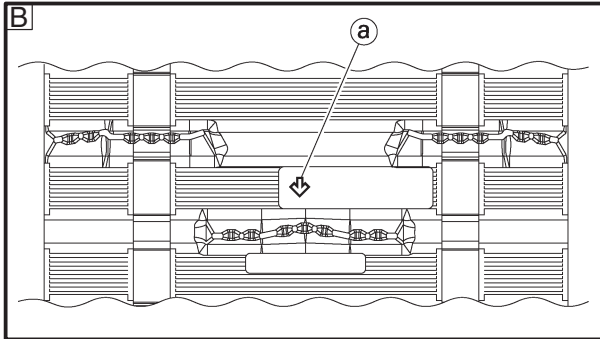
2. Place the track in the chassis.

NOTE:

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

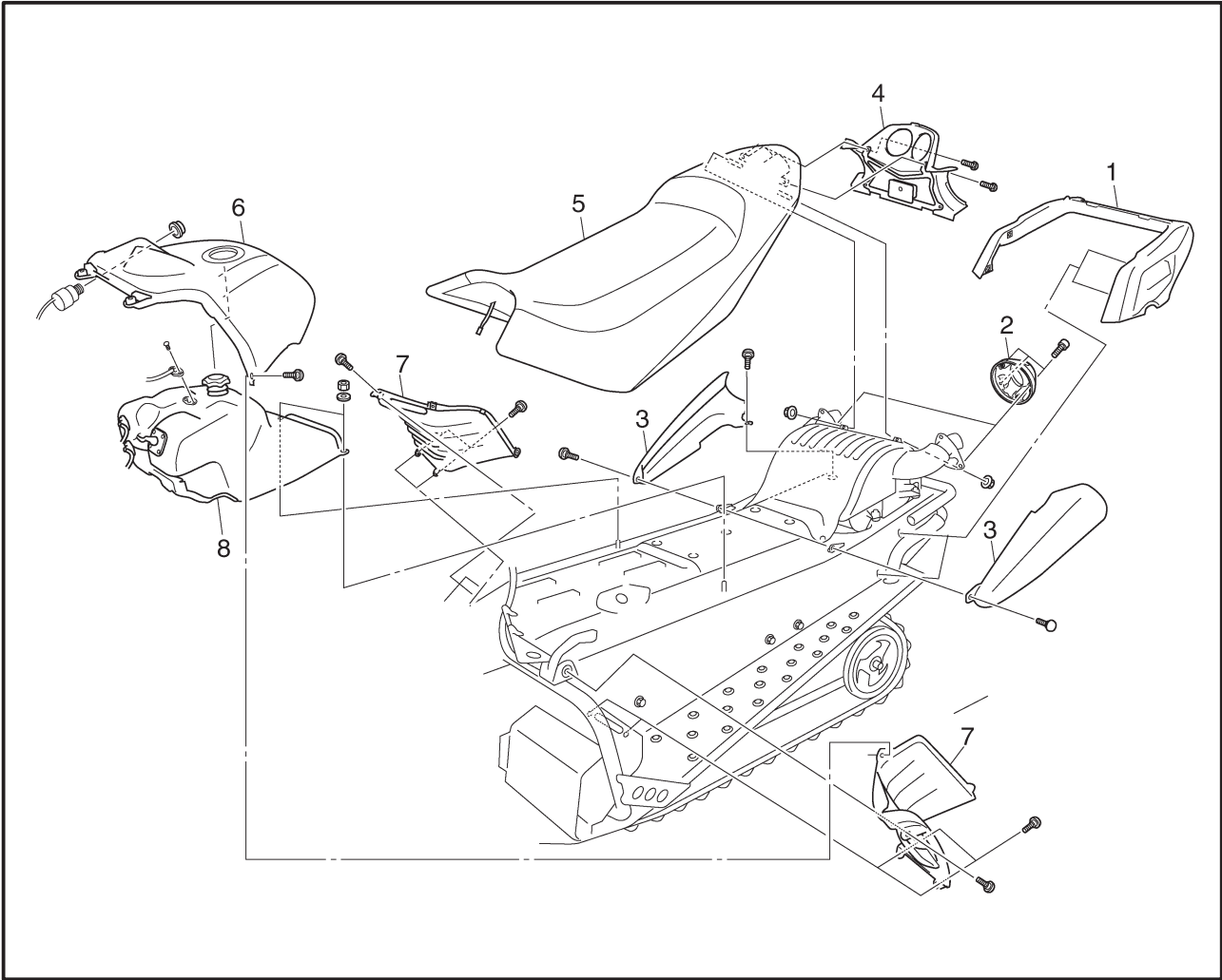
A RX10, RX10S, RX10R, RX10RS

B RX10M, RX10MS



ENGINE

SEAT AND FUEL TANK

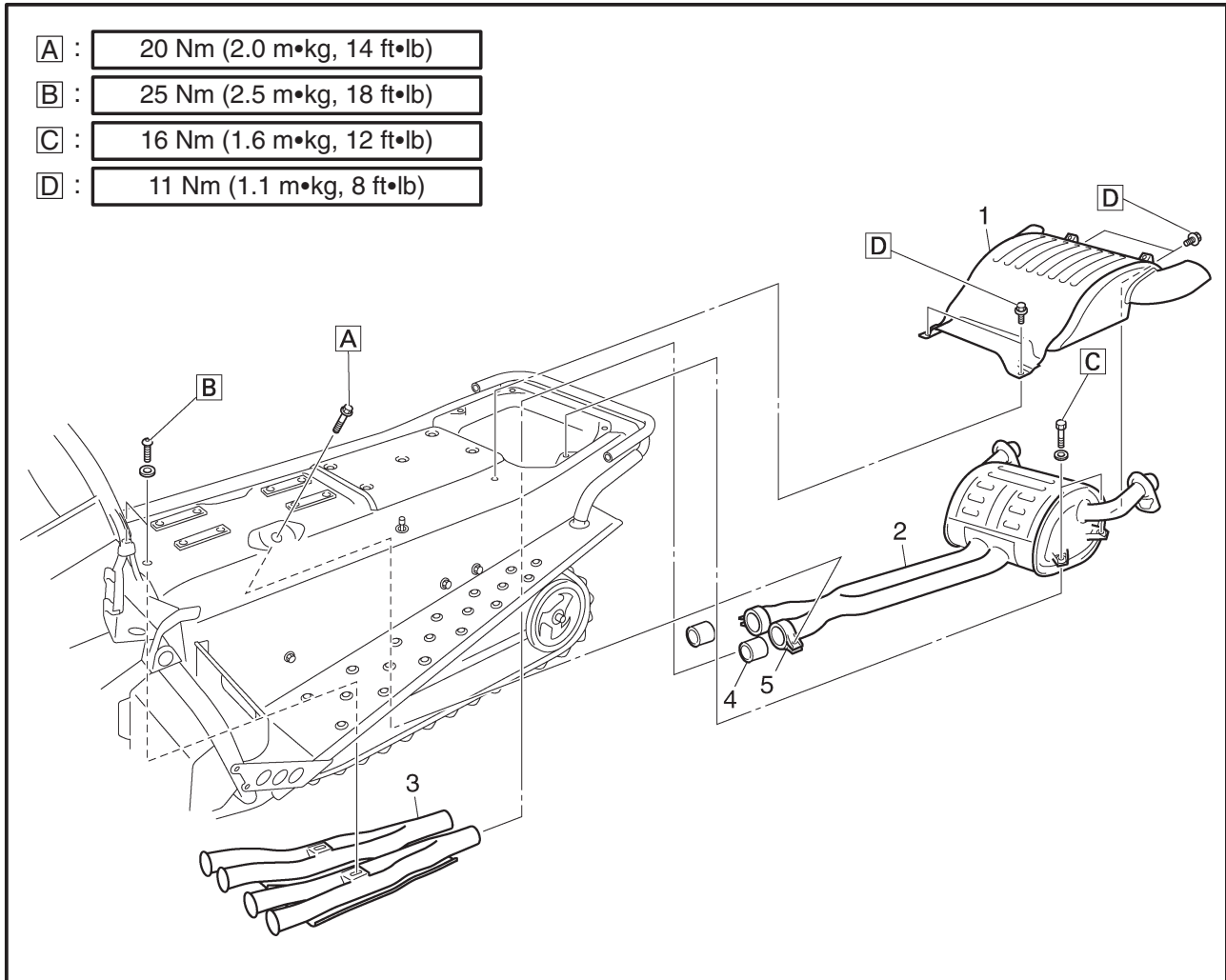


5

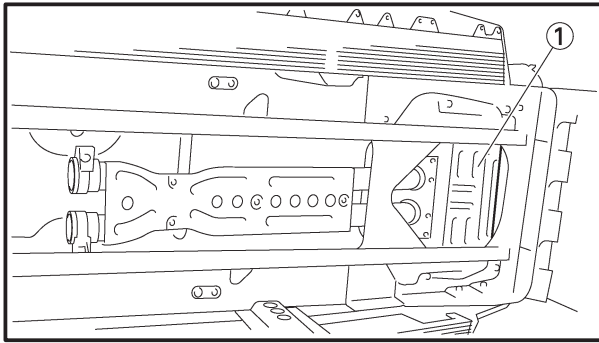
Order	Job name/Part name	Q'ty	Remarks
	Seat and fuel tank removal		
1	Rear cover	1	Remove the parts in the order listed below.
2	Muffler end pipe	2	
3	Muffler side cover	2	
4	Tail/brake light cover	1	
5	Seat	1	
6	Fuel tank cover	1	
7	Side cover	2	
8	Fuel tank	1	
			For installation, reverse the removal procedure.



EXHAUST PIPE AND MUFFLER



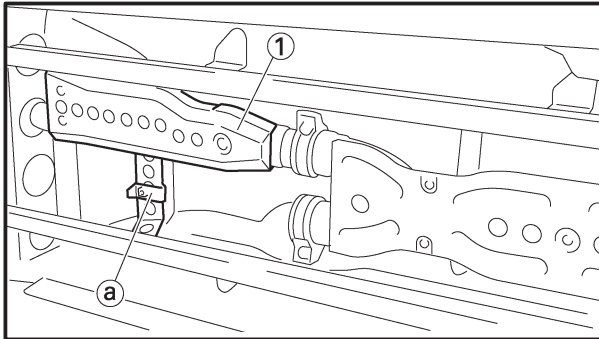
Order	Job name/Part name	Q'ty	Remarks
	Exhaust pipe and muffler removal		
	Slide rail suspension		Remove the parts in the order listed below. Refer to "SLIDE RAIL SUSPENSION" in CHAPTER 4.
	Front axle assembly		Refer to "FRONT AXLE AND TRACK" in CHAPTER 4.
	Track		Refer to "SEAT AND FUEL TANK".
	Seat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



INSTALLATION

1. Install:

- Muffler ①

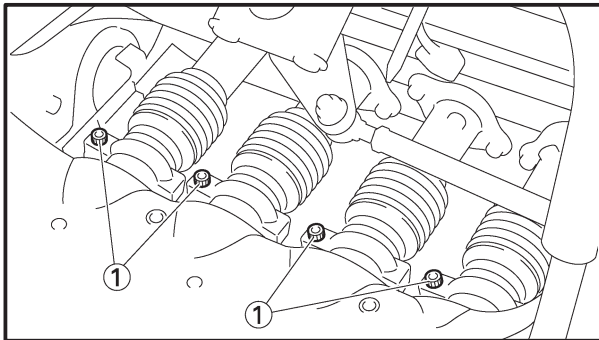


2. Install:

- Exhaust pipe ①

NOTE:

Hang the exhaust pipe to the frame (a).



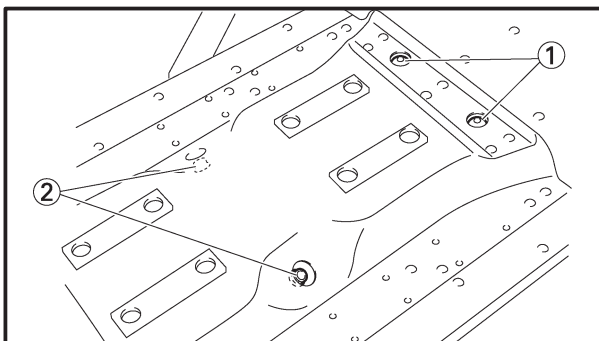
3. Tighten:

- Exhaust pipe bolts ①



Bolt (band):

9 Nm (0.9 m•kg, 7 ft•lb)



4. Tighten:

- Exhaust pipe bolts ①
- Muffler band bolts ②

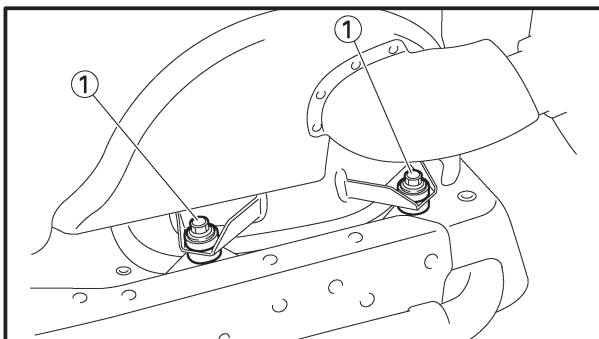


Bolt (exhaust pipe):

25 Nm (2.5 m•kg, 18 ft•lb)

Bolt (muffler band):

20 Nm (2.0 m•kg, 14 ft•lb)



5. Tighten:

- Muffler bolt ①

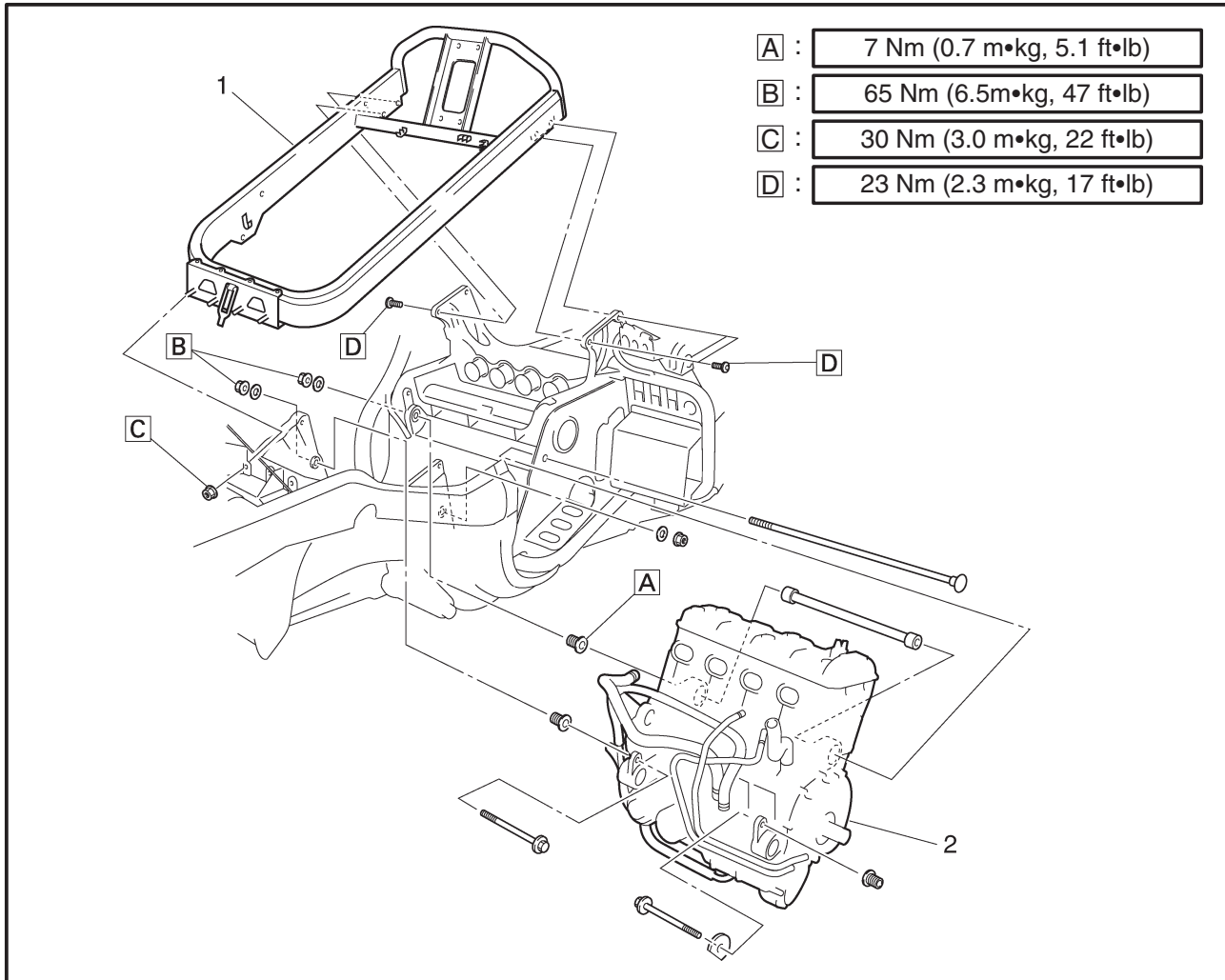


Bolt (muffler):

16 Nm (1.6 m•kg, 12 ft•lb)



ENGINE ASSEMBLY



Order	Job name/Part name	Q'ty	Remarks
	Engine assembly removal		Remove the parts in the order listed below.
	Intake silencer		Refer to "CARBURETORS" in CHAPTER 7.
	Fuel pump		Refer to "PRIMARY SHEAVE AND DRIVE V-BELT" in CHAPTER 4.
	Carburetor assembly		Drain.
	Primary sheave		Refer to "COOLING SYSTEM" in CHAPTER 2.
	Coolant		Refer to "SEAT AND FUEL TANK".
	Fuel tank		Refer to "STEERING" in CHAPTER 3.
	Relay rod		Refer to "A.C. MAGNETO AND STARTER CLUTCH".
	Oil tank		
1	Frame cross member	1	
2	Engine assembly	1	For installation, reverse the removal procedure.

**INSPECTION**

1. Inspect:

- Engine mounting adjust bolts
Cracks/damage → Replace.

INSTALLATION**NOTE:**

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

1. Install:

- Engine mounting adjust bolts
- Engine
- Engine mounting bolts and nuts

NOTE:

- Use the pivot shaft wrench to tighten the engine mounting adjust bolts.

Installation steps:

- Tighten the rear engine mounting adjust bolt.



Bolt (engine mounting adjust):
7 Nm (0.7 m•kg, 5.1 ft•lb)

- Tighten the rear engine mounting nut.



Nut (engine mounting):
65 Nm (6.5 m•kg, 47 ft•lb)

- Tighten the front right and left engine mounting adjust bolts until they come to contact with the engine damper. At this time, do not apply torque to the engine mounting adjust bolts.
- Tighten the front right and left engine mounting nuts.



Nut (engine mounting):
65 Nm (6.5 m•kg, 47 ft•lb)

2. Fill:

- Coolant
Refer to “COOLING SYSTEM” in CHAPTER 2.

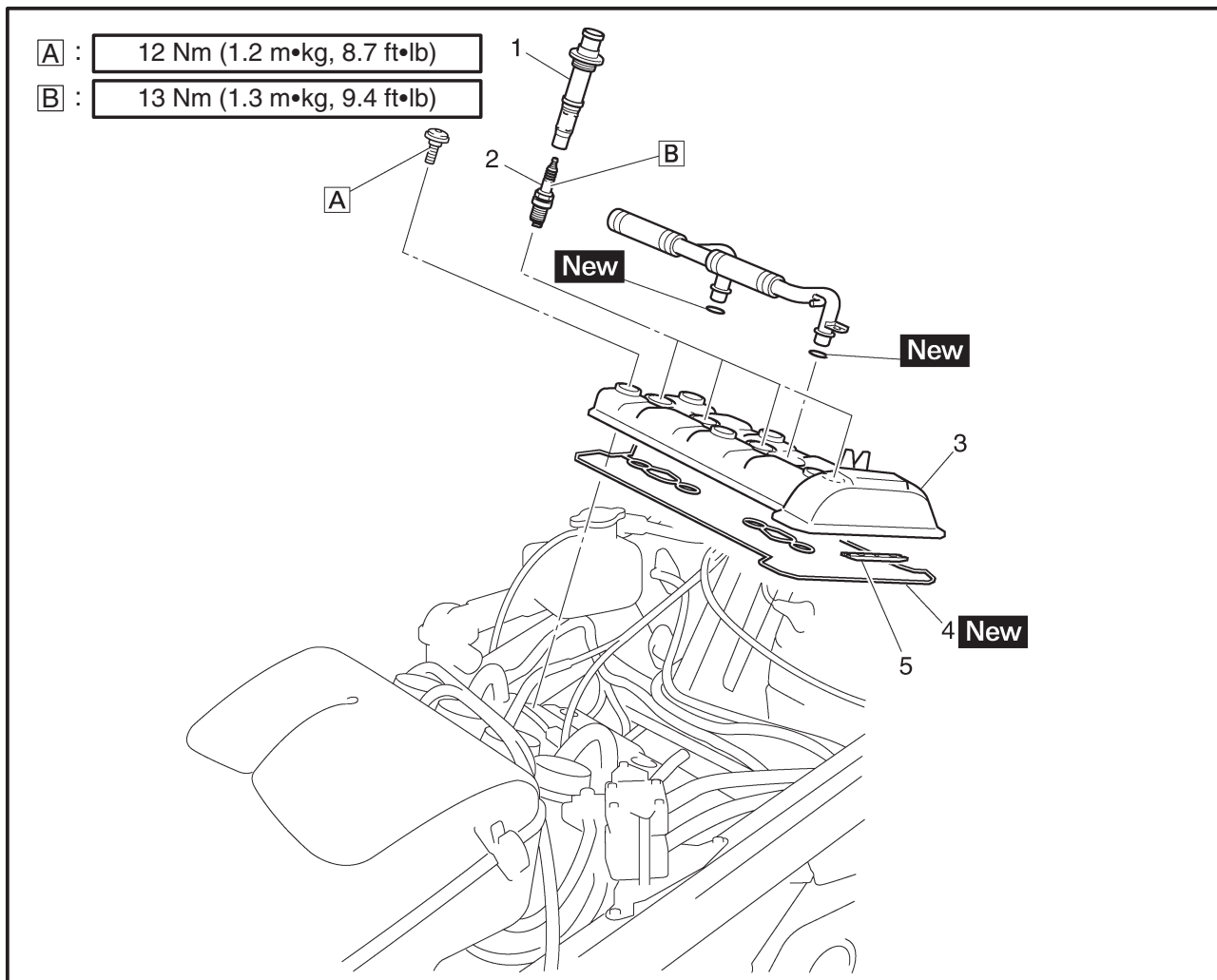
3. Fill:

- Engine oil
Refer to “ENGINE OIL REPLACEMENT” in CHAPTER 2.



CAMSHAFTS

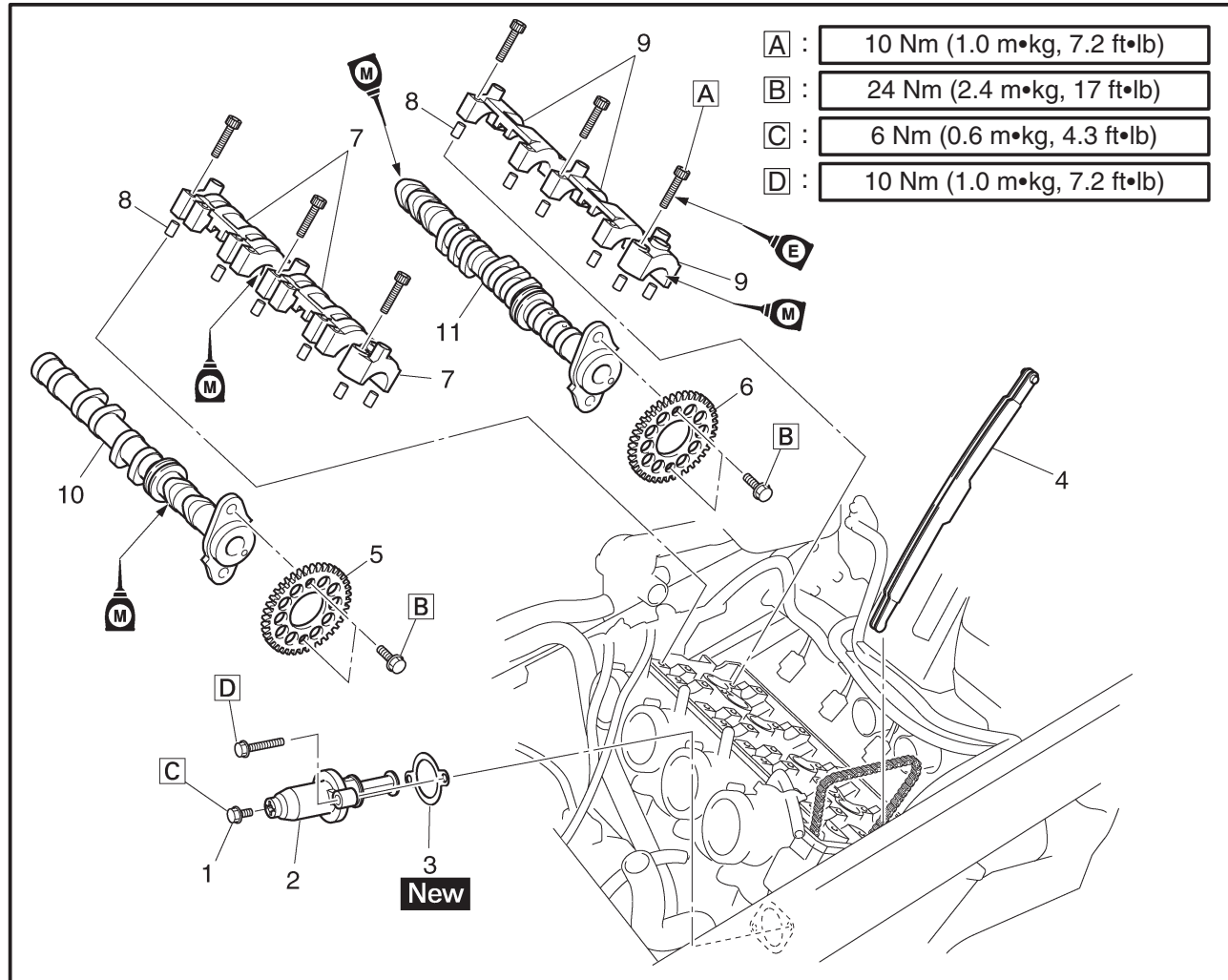
CYLINDER HEAD COVER



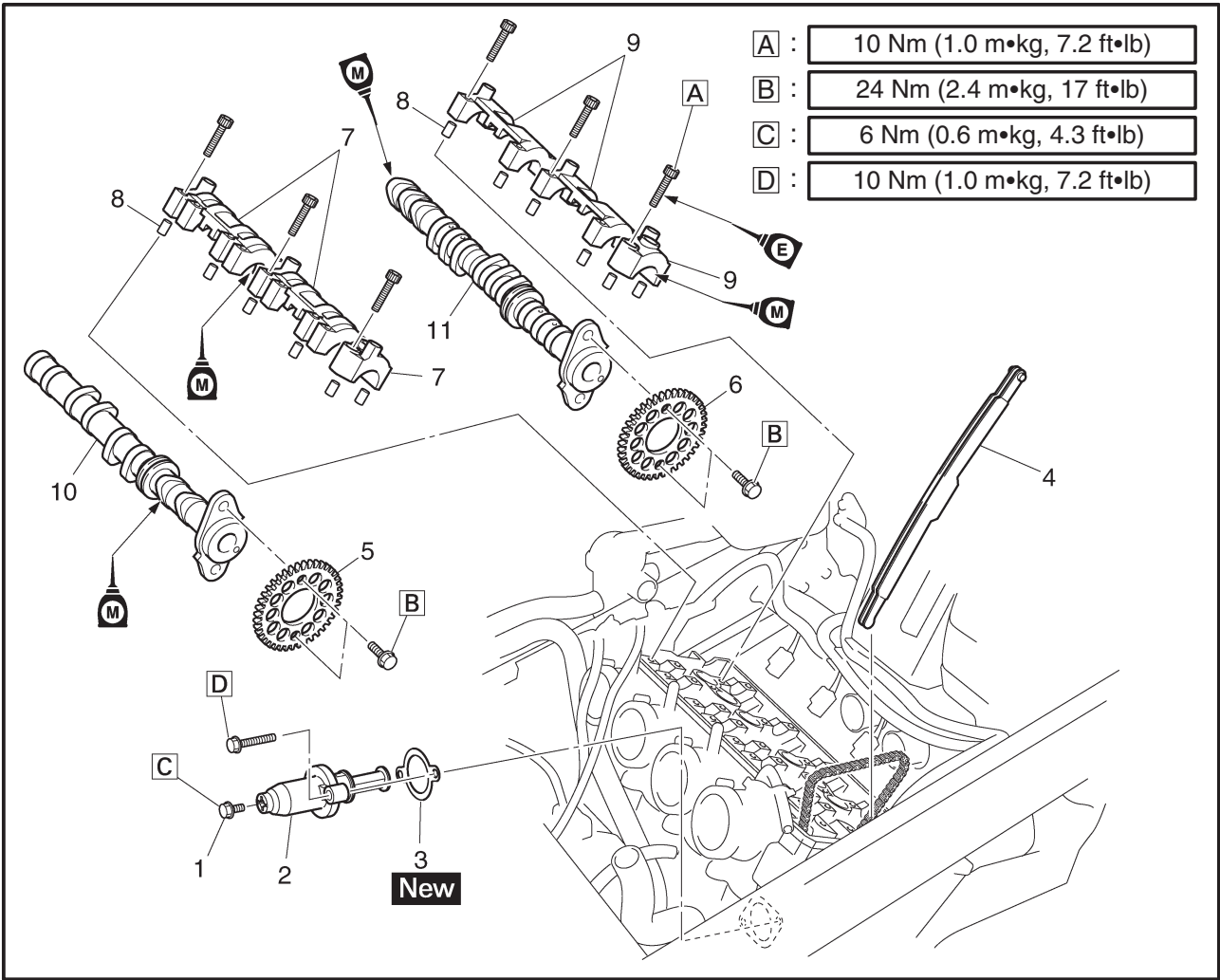
Order	Job name/Part name	Q'ty	Remarks
	Cylinder head cover removal		
	Coolant		Remove the parts in the order listed below.
	Coolant hose and pipe		Drain.
			Refer to "HEAT EXCHANGER" in CHAPTER 6.
1	Ignition coil	4	
2	Spark plug	4	
3	Cylinder head cover	1	
4	Cylinder head cover gasket	1	
5	Timing chain guide (top side)	1	
			For installation, reverse the removal procedure.



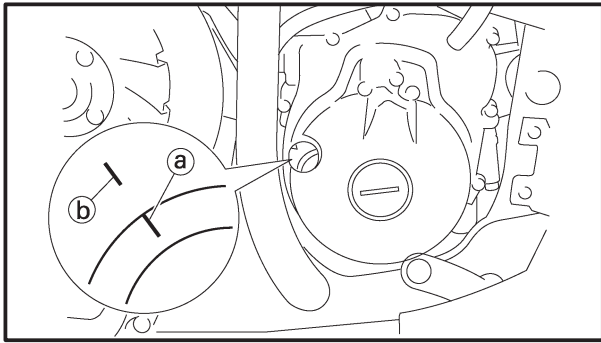
CAMSHAFTS



Order	Job name/Part name	Q'ty	Remarks
	Camshaft removal		
	Oil tank		Remove the parts in the order listed below. Refer to "A.C. MAGNETO AND STARTER CLUTCH".
1	Timing chain tensioner cap bolt	1	
2	Timing chain tensioner	1	
3	Timing chain tensioner gasket	1	
4	Timing chain guide (exhaust side)	1	
5	Intake camshaft sprocket	1	
6	Exhaust camshaft sprocket	1	NOTE: _____
7	Intake camshaft cap	3	During removal, the dowel pins may still be connected to the camshaft caps.
8	Dowel pin	12	
9	Exhaust camshaft cap	3	



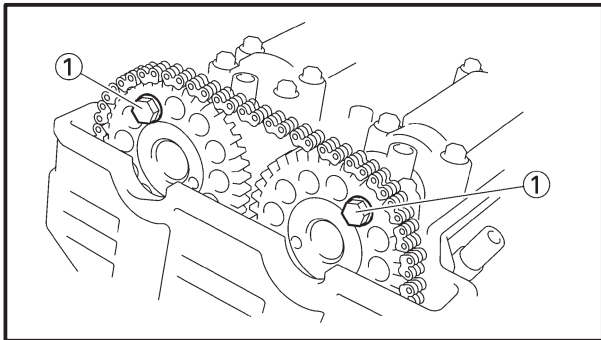
Order	Job name/Part name	Q'ty	Remarks
10	Intake camshaft	1	For installation, reverse the removal procedure.
11	Exhaust camshaft	1	

**REMOVAL**

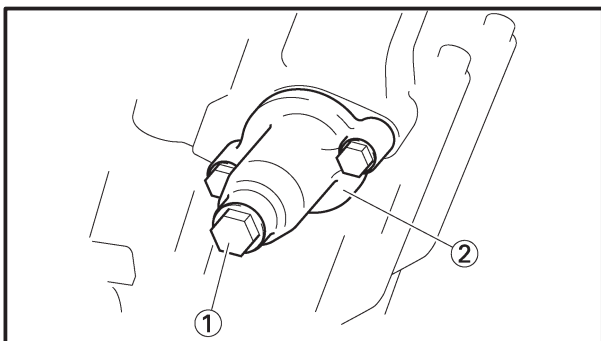
1. Remove:
 - Timing plug
2. Align:
 - "I" mark (a) on the A.C. magneto rotor (with the stationary pointer (b) on the A.C. magneto cover)

NOTE:

- Turn the crankshaft clockwise.
- When piston #4 is at TDC on the compression stroke, align the "I" mark (a) with the stationary pointer (b) on the A.C. magneto rotor.
- TDC on the compression stroke can be found when the camshaft lobes are turned away from each other.

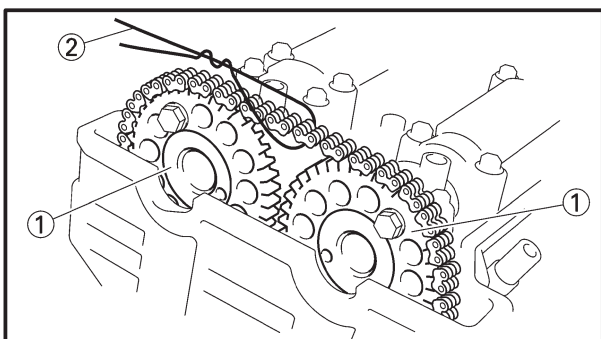


3. Loosen:
 - Camshaft sprocket bolts (1)



4. Loosen:
 - Timing chain tensioner cap bolt (1)

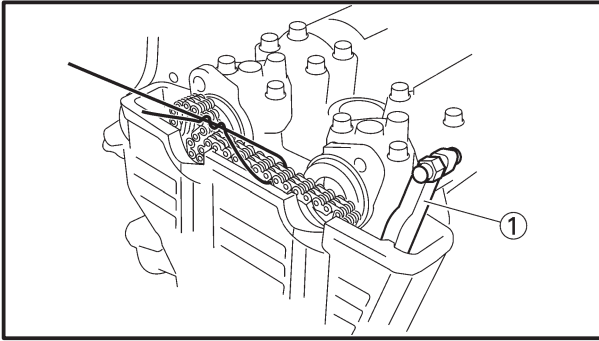
5. Remove:
 - Timing chain tensioner (2)
 - Gasket



6. Remove:
 - Camshaft sprockets (1)

NOTE:

To prevent the timing chain from falling into the crankcase, fasten it with a wire (2).

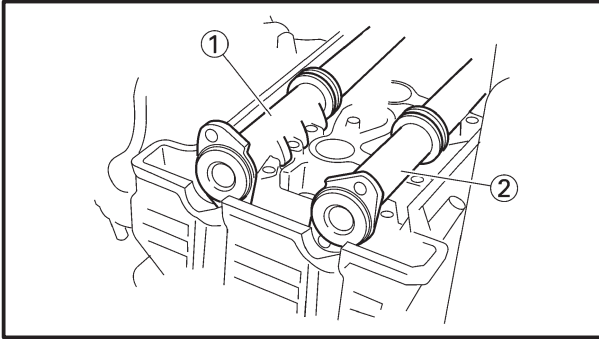


7. Remove:

- Timing chain guide (exhaust side) ①
- Camshaft caps
- Dowel pins

CAUTION:

To prevent damage to the cylinder head, camshafts or camshafts caps, loosen the camshaft cap bolts in stages and in a criss-cross pattern, working from the outside in.



8. Remove:

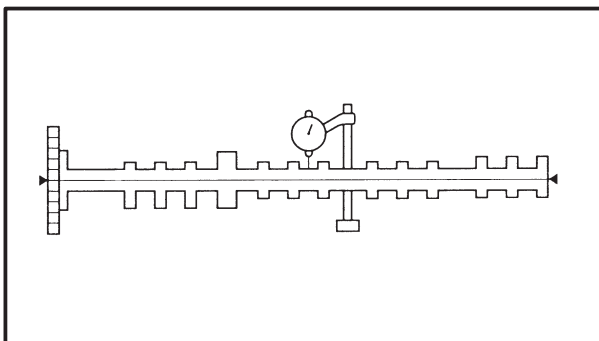
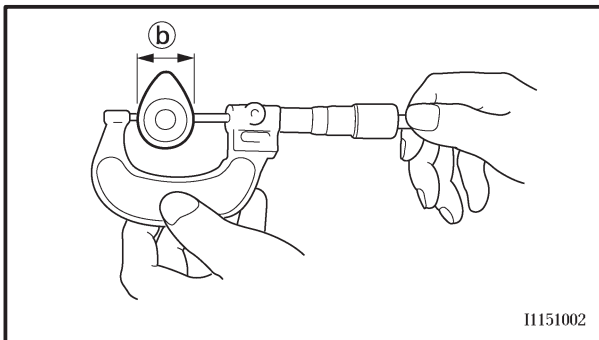
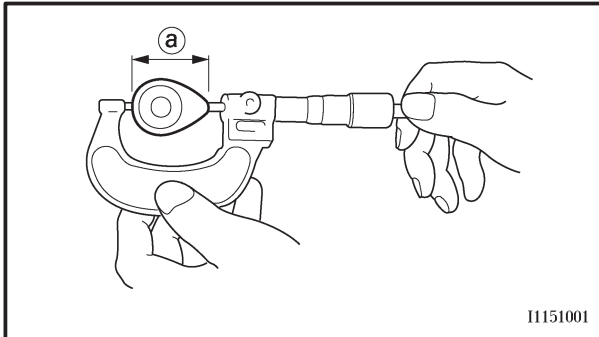
- Intake camshaft ①
- Exhaust camshaft ②



INSPECTION

1. Inspect:

- Camshaft lobes
Blue discoloration/pitting/scratches → Replace the camshaft.



2. Measure:

- Camshaft lobe dimensions (a) and (b)
Out of specification → Replace the camshaft.

**Camshaft dimensions:****Intake:**

<Limit>: (a) 32.40 mm (1.2756 in)
(b) 24.85 mm (0.9783 in)

Exhaust:

<Limit>: (a) 32.85 mm (1.2933 in)
(b) 24.85 mm (0.9783 in)

3. Measure:

- Camshaft runout
Out of specification → Replace.

**Camshaft runout:**

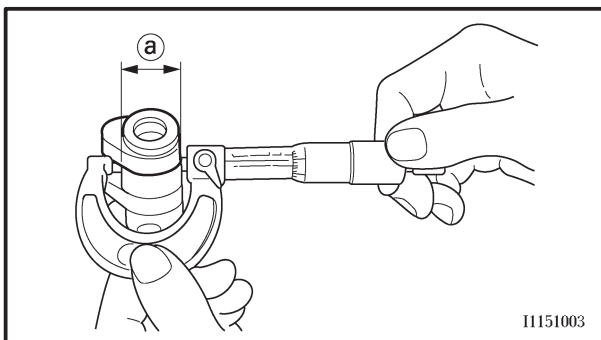
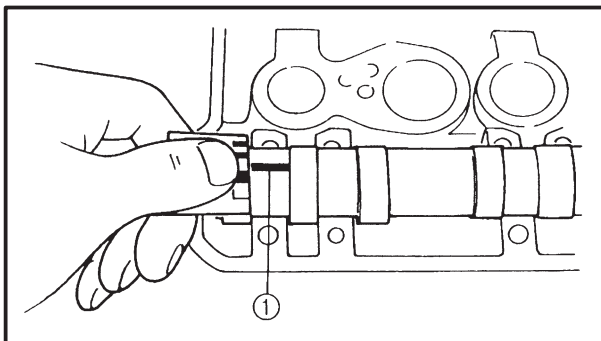
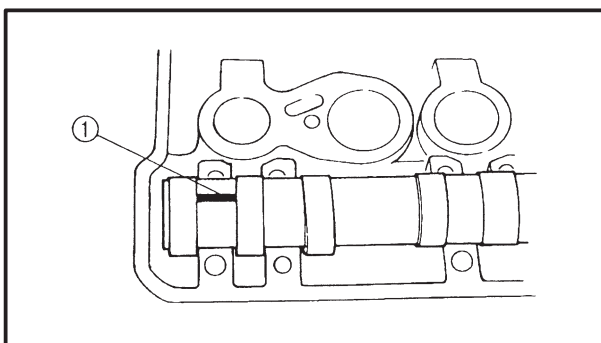
0.03 mm (0.0012 in)

4. Measure:

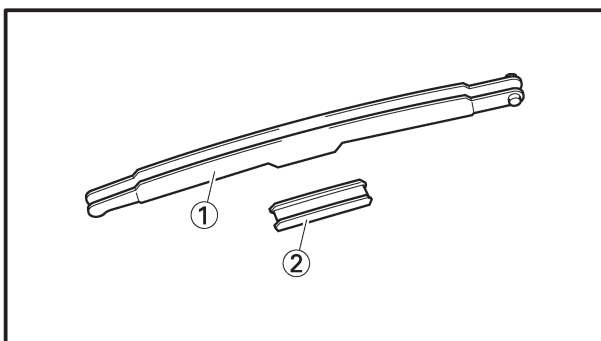
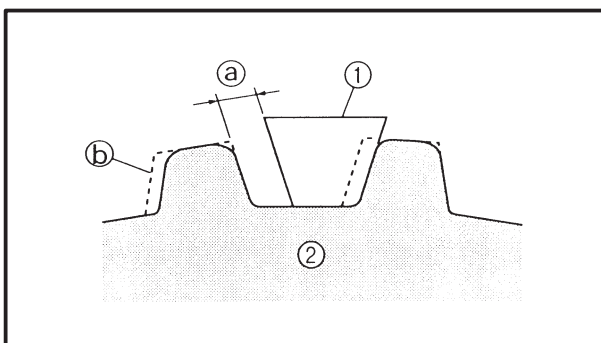
- Camshaft-journal-to-camshaft-cap clearance
Out of specification → Measure the camshaft journal diameter.

**Camshaft-journal-to-camshaft-cap clearance:**

0.028 ~ 0.062 mm
(0.0011 ~ 0.0024 in)



11151003

**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.
- 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®.



Bolt (camshaft cap):
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 (a)
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

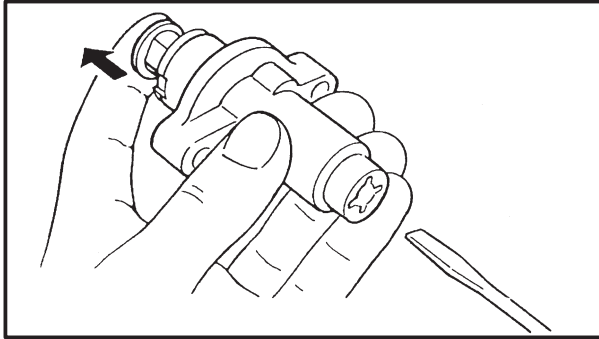
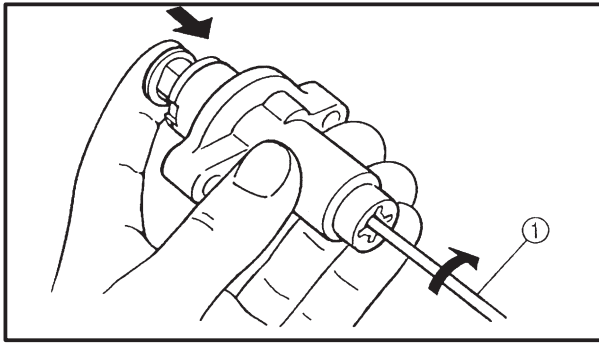
(b) Correct

(1) Timing chain roller

(2) Camshaft sprocket

7. Inspect:

- Timing chain guide (exhaust side (1) and top side (2))
Damage/wear → Replace the timing drain guide.



8. Inspect:

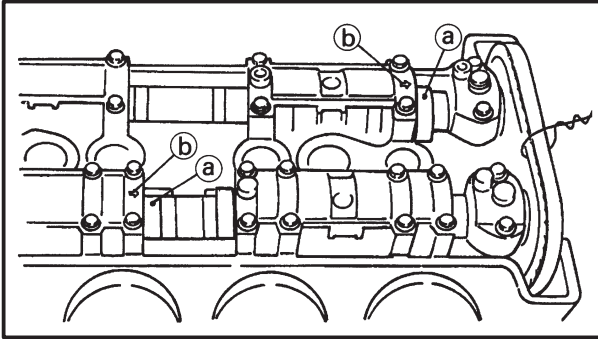
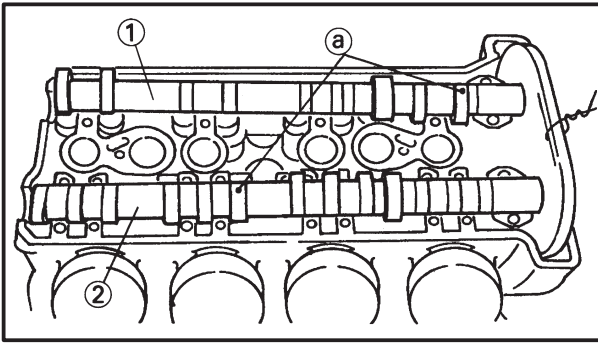
- Timing chain tensioner
Cracks/damage → Replace.

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 ①
- Intake camshaft ②

NOTE:

Install the camshafts with the punch mark (a) facing up.

2. Install:

- Dowel pins
- Intake camshaft caps
- Exhaust camshaft caps

NOTE:

Make sure that the punch marks (a) on the camshafts are aligned with the arrow marks (b) on the camshaft caps.

Out of alignment → Reinstall.

3. Install:

- Camshaft cap bolts

**Bolt (camshaft cap):**

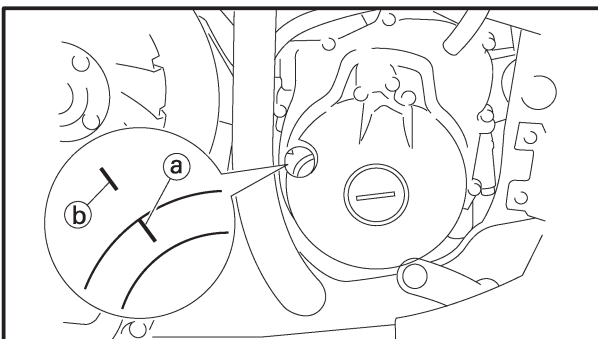
10 Nm (1.0 m•kg, 7.2 ft•lb)

NOTE:

Tighten the camshaft cap bolts in stages and in a crisscross pattern, working from the inner caps out.

CAUTION:

The camshaft cap bolts must be tightened evenly or damage to the cylinder head, camshaft caps, and camshafts will result.



4. Install:

- Intake camshaft sprocket
- Exhaust camshaft sprocket

Installation steps:

- Turn the crankshaft clockwise
- When piston #4 is at TDC on the compression stroke, align the "I" mark (a) with the stationary pointer (b) on the A.C. magneto rotor.



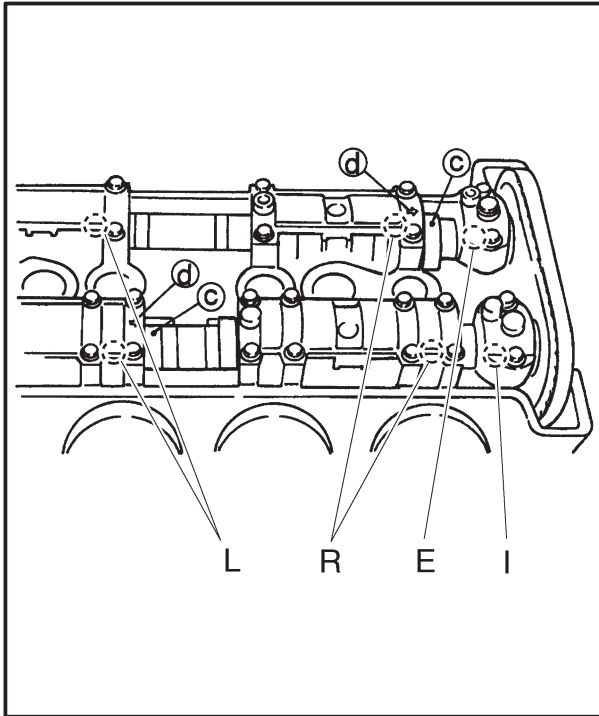
- Place the timing chain onto both camshaft sprockets and then install the camshaft sprockets onto the camshafts.

NOTE:

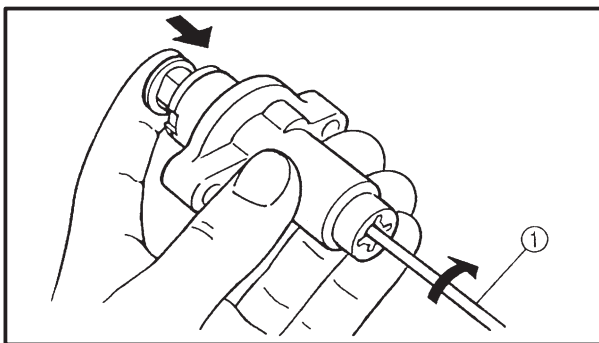
When installing the camshaft sprockets, start with the exhaust camshaft and be sure to keep the timing chain as tight as possible on the exhaust side.

CAUTION:

Do not turn the crankshaft when installing the camshaft to avoid damage or improper valve timing.



- Turn both camshafts opposite each other so that the punch marks ③ in the camshaft are aligned with the arrow marks ④ in the camshaft caps as shown.
- While holding the camshafts, temporarily tighten the camshaft sprocket bolts.

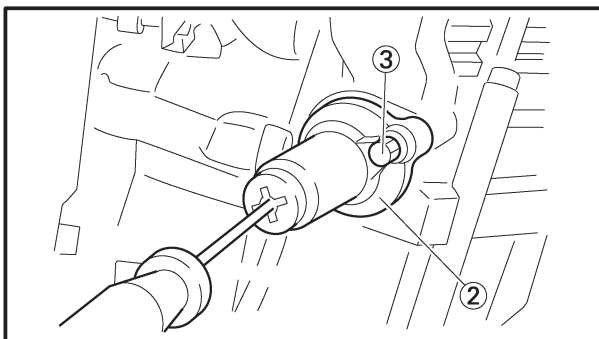


5. Install:

- 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.



- 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.



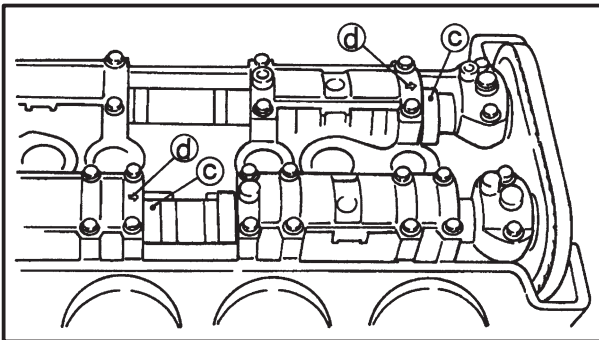
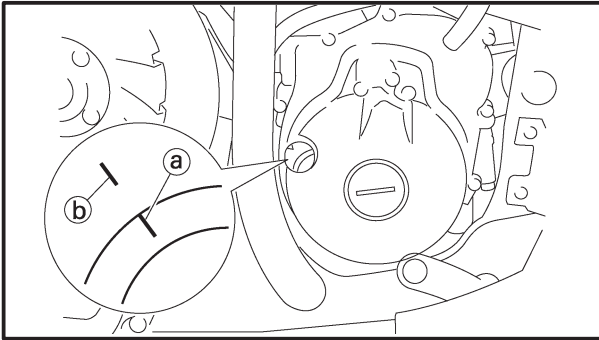
Bolt (timing chain tensioner):
10 Nm (1.0 m•kg, 7.2 ft•lb)

- Remove the screwdriver, make sure that the timing chain tensioner rod releases, and then tighten the cap bolt to the specified torque.



Bolt (cap):
6 Nm (0.6 m•kg, 4.3 ft•lb)

- Turn the crankshaft
(several turns clockwise)



6. Inspect:

Inspection steps:

- “I” mark ①
Make sure that the “I” mark on the A.C. magneto rotor is aligned with the stationery pointer ② on the A.C. magneto rotor cover.

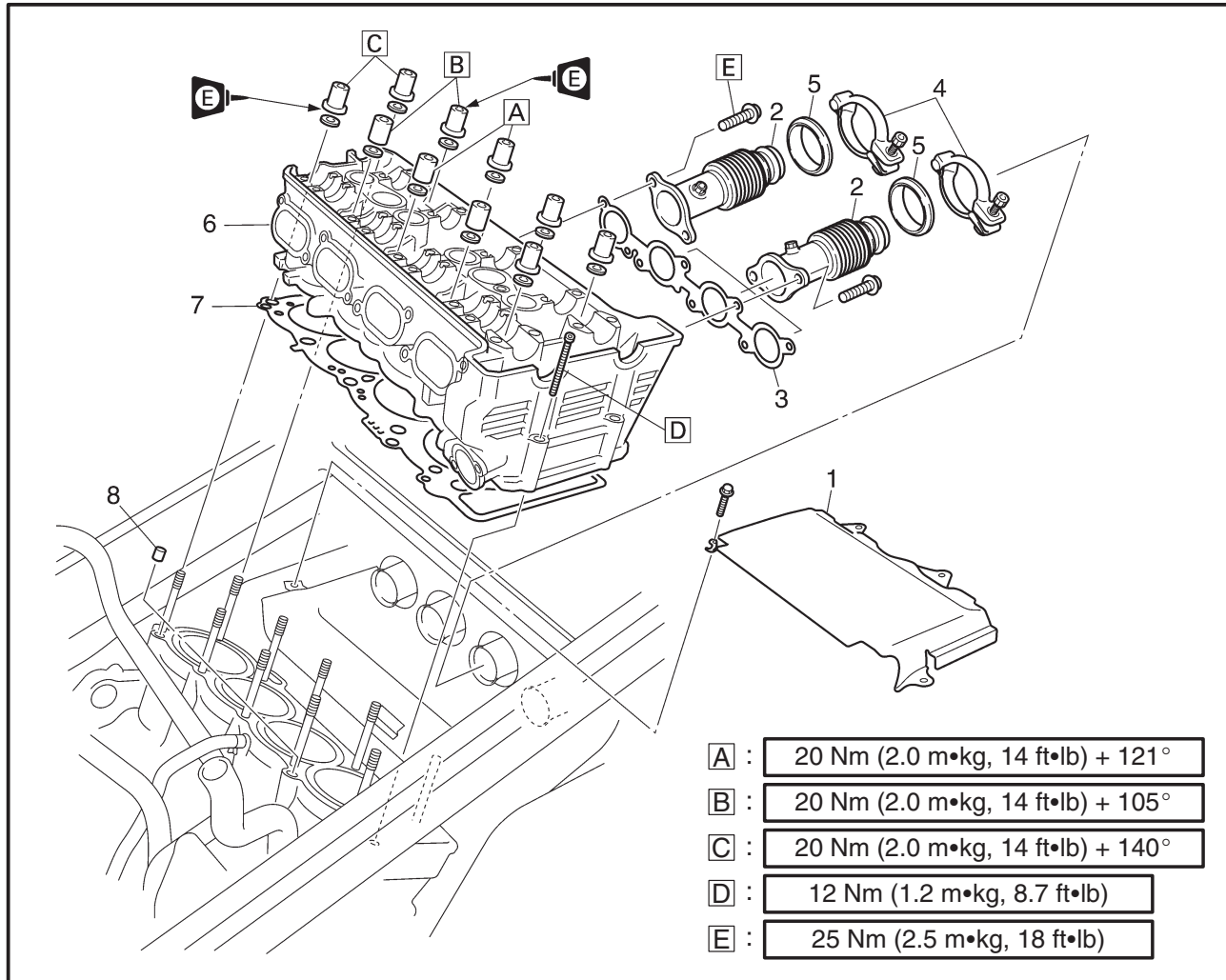
- Camshaft punch marks ③
Make sure that the punch marks ③ on the camshaft are aligned with the arrow mark ④ on the camshaft caps.
Out of alignment → Adjust.
Refer to the installation steps above.

7. Measure:

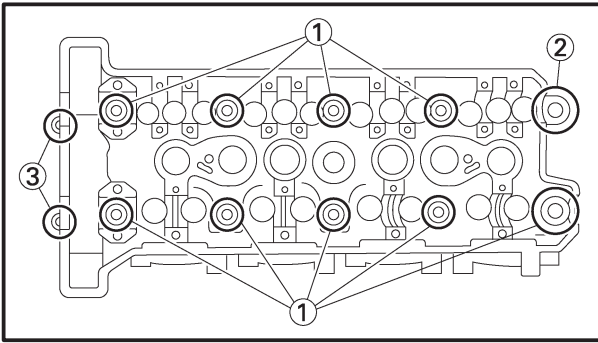
- Valve clearance
Out of specification → Adjust.



CYLINDER HEAD



Order	Job name/Part name	Q'ty	Remarks
	Cylinder head removal		
	Seat and fuel tank		Remove the parts in the order listed below.
	Intake and exhaust camshafts		Refer to "SEAT AND FUEL TANK".
1	Cover	1	Refer to "CAMSHAFTS".
2	Exhaust joint pipe	4	
3	Exhaust joint pipe gasket	1	
4	Band	4	
5	Gasket	4	
6	Cylinder head	1	
7	Cylinder head gasket	1	
8	Dowel pin	2	
			For installation, reverse the removal procedure.

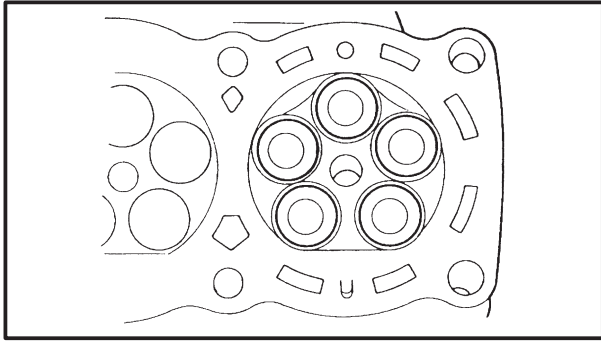
**REMOVAL**

1. Remove:

- Cylinder head nuts ①
- Cylinder head cap nut ②
- Cylinder head bolts ③

NOTE:

- Loosen the nuts in the proper sequence as shown.
- Loosen each nut 1/2 of a turn at a time. After all of the nuts are fully loosened, remove them.

**INSPECTION**

1. Eliminate:

- Carbon deposits
(from the combustion chambers)
Use the rounded scraper.

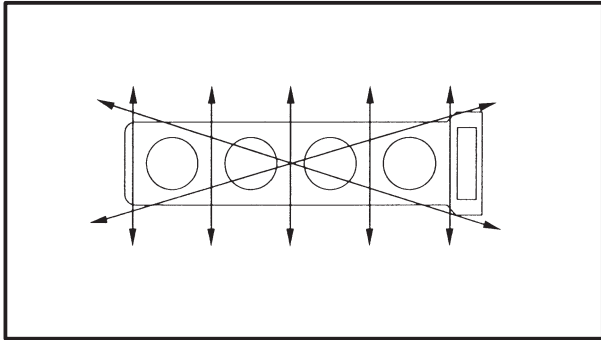
NOTE:

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

- Spark plug threads
- Valve seats

2. Inspect:

- Cylinder head
Damage/scratches → Replace.
- Cylinder head water jacket
Mineral deposits/rust → Eliminate.

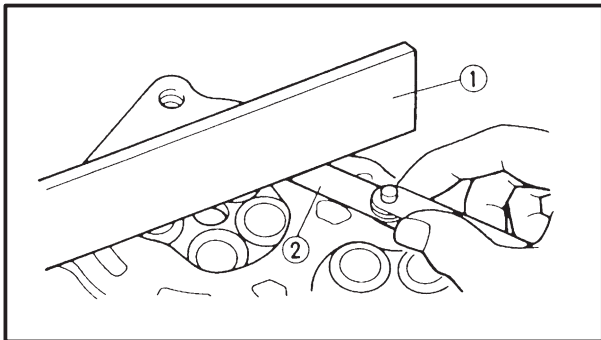


3. Measure:

- Cylinder head warpage
Out of specification → Resurface the cylinder head.



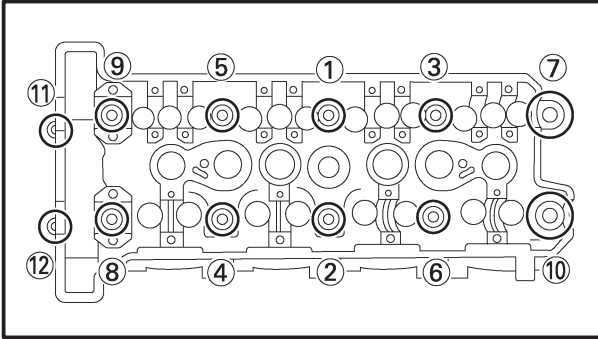
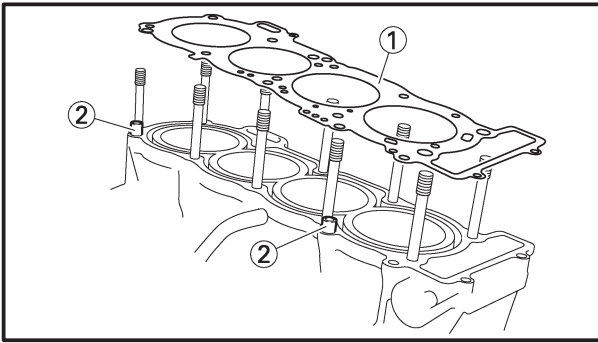
Warpage limit:
0.1 mm (0.004 in)

**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:**

- Gasket (cylinder head) **New** ①
- Dowel pins ②
- Cylinder head

NOTE:

Pass the timing chain through the timing chain cavity.

2. Tighten:

- Cylinder head nuts ① ~ ⑩
- Cylinder head bolts ⑪, ⑫

NOTE:

- First, tighten the nuts ① ~ ⑩ to approximately 20 Nm (2.0 m•kg, 15 ft•lb) with a torque wrench.
- Retighten the nuts to specification torque.

Tightening steps:

- Tighten the nuts ①, ②

**Nut (cylinder head):**

1st 20 Nm (2.0 m•kg, 14 ft•lb)
2nd 121°

- Tighten the nuts ③ ~ ⑥, ⑧, ⑨

**Nut (cylinder head):**

1st 20 Nm (2.0 m•kg, 14 ft•lb)
2nd 105°

- Tighten the nuts ⑦, ⑩

**Nut (cylinder head):**

1st 20 Nm (2.0 m•kg, 14 ft•lb)
2nd 140°

- Cylinder head bolts ⑪, ⑫

**Bolt (cylinder head):**

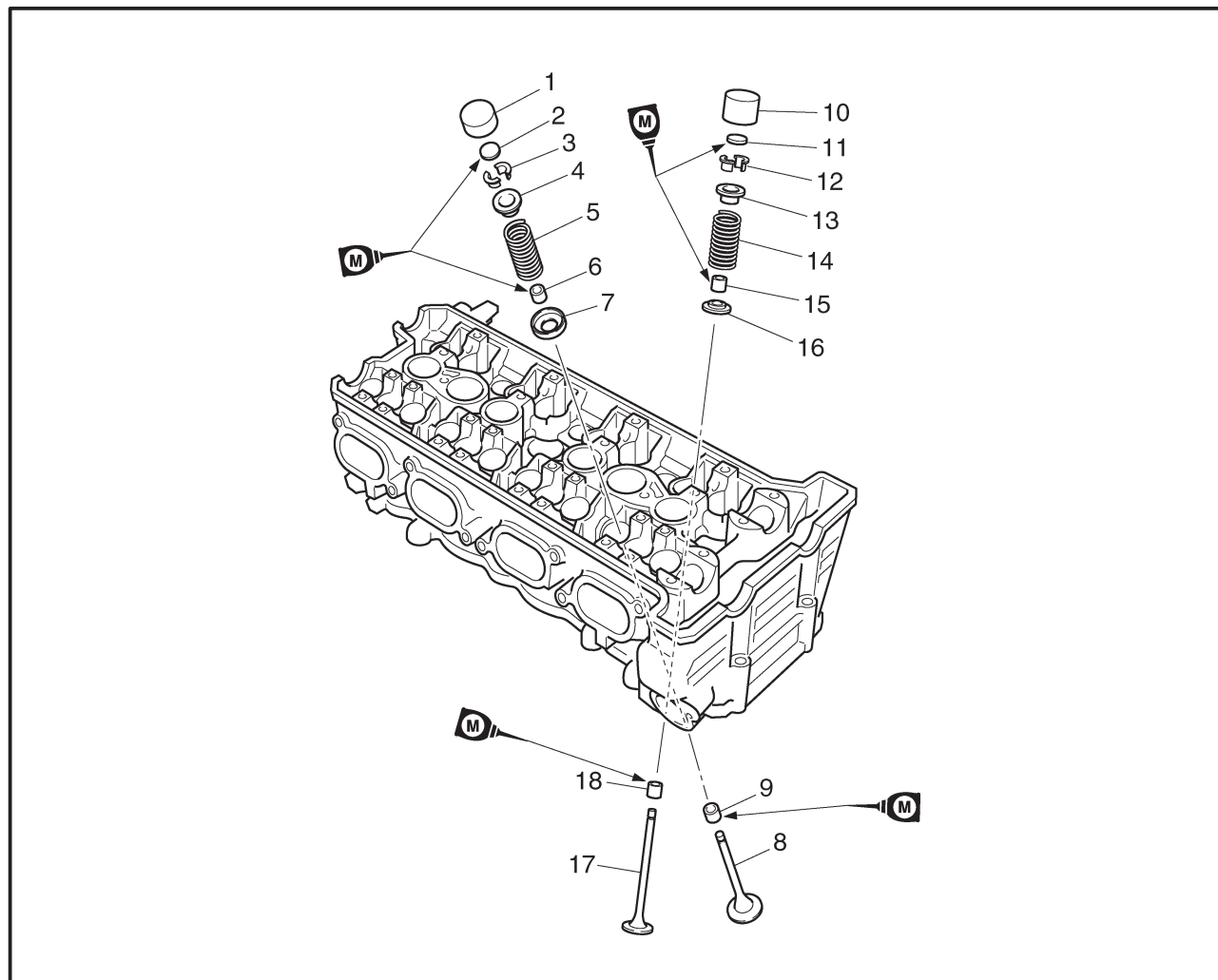
12 Nm (1.2 m•kg, 8.7 ft•lb)

NOTE:

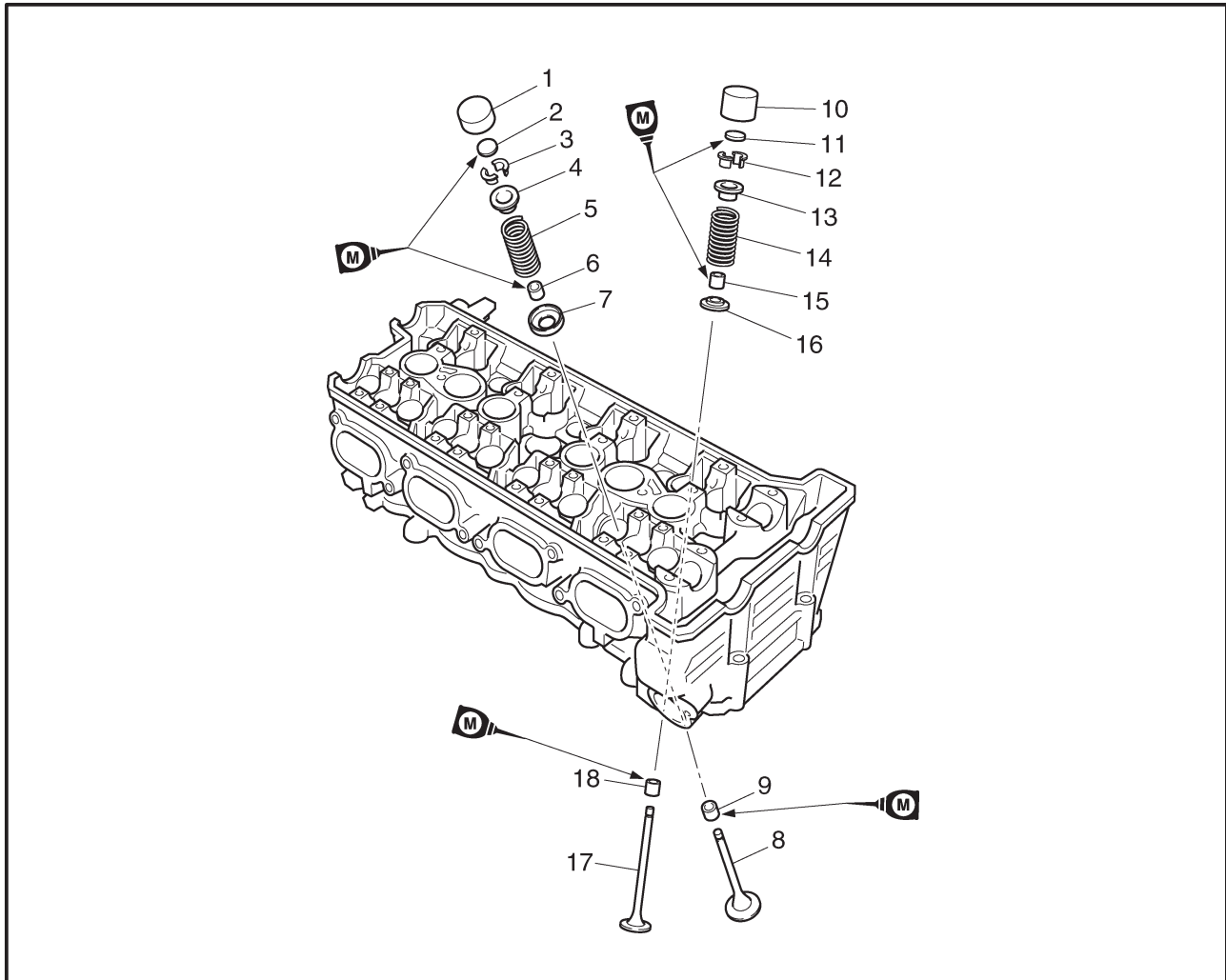
- Apply engine oil onto the threads of the cylinder head nuts.
- Tighten the cylinder head nuts in the proper tightening sequence as shown and torque them in two stages.



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	Intake valve lifter	12	
2	Intake valve pad	12	
3	Intake valve cotter	24	
4	Intake valve retainer	12	
5	Intake valve spring	12	
6	Intake valve stem seal	12	
7	Intake valve spring seat	12	
8	Intake valve	12	
9	Intake valve guide	12	
10	Exhaust valve lifter	8	
11	Exhaust valve pad	8	
12	Exhaust valve cotter	16	
13	Exhaust valve retainer	8	



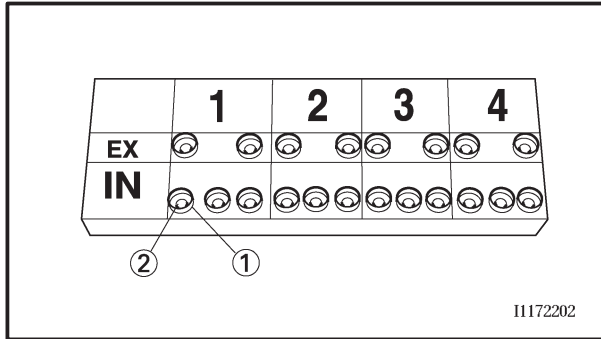
Order	Job name/Part name	Q'ty	Remarks
14	Exhaust valve spring	8	For installation, reverse the removal procedure.
15	Exhaust valve stem seal	8	
16	Exhaust valve spring seat	8	
17	Exhaust valve	8	
18	Exhaust valve guide	8	



REMOVAL

NOTE:

Before removing the internal parts of the cylinder head (e.g., valves, valve springs, valve seats), make sure that the valves properly seal.

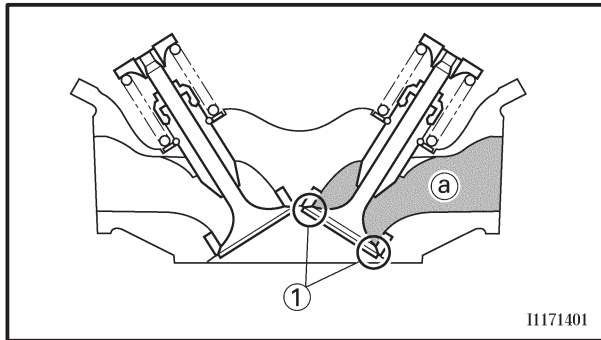


1. Remove:

- 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:

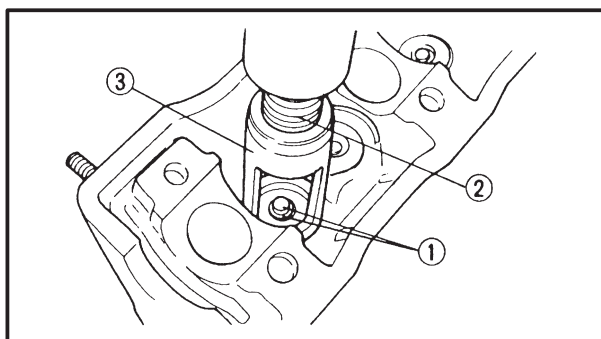
- Valve sealing
Leakage at the valve seat → Inspect the valve face, valve seat, and valve seat width.

Inspection steps:

- Pour a clean solvent (a) 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:

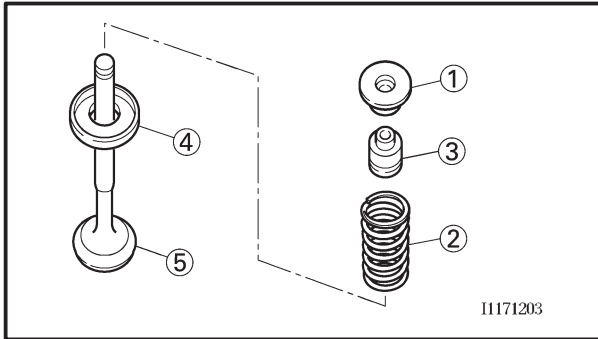
- Valve cotteners ①

NOTE:

Remove the valve cotteners by compressing the valve spring with the valve spring compressor ② and attachment ③.



Valve spring compressor
90890-04019, YM-04019
Valve spring compressor attachment
Intake valve
90890-04114, YM-4114
Exhaust valve
90890-04108, YM-4108

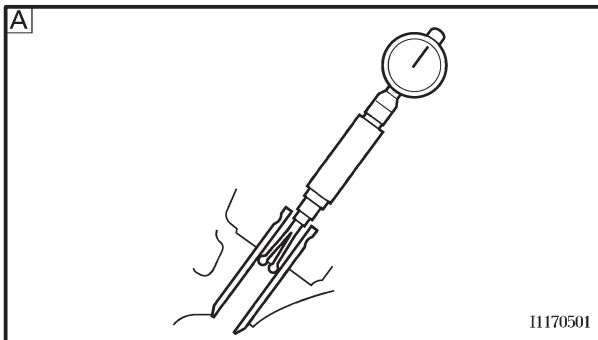


4. Remove:

- Valve retainer ①
- Valve spring ②
- Stem seal ③
- Valve spring seat ④
- Valve ⑤

NOTE:

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



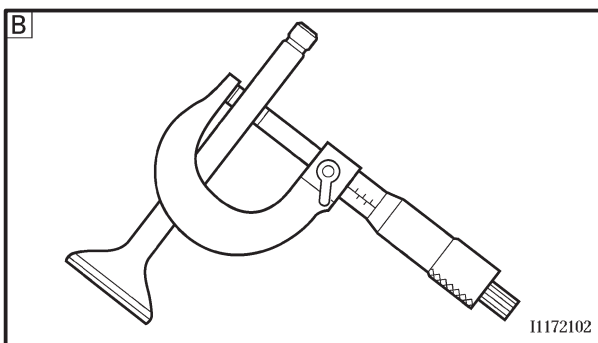
INSPECTION

1. Measure:

- Valve-stem-to-valve-guide clearance

Valve-stem-to-valve-guide clearance =
Valve guide inside diameter [A] –
Valve stem diameter [B]

Out of specification → Replace the valve guide.



Valve-stem-to-valve-guide clearance:

Intake

0.010 ~ 0.037 mm
(0.0004 ~ 0.0015 in)

Exhaust

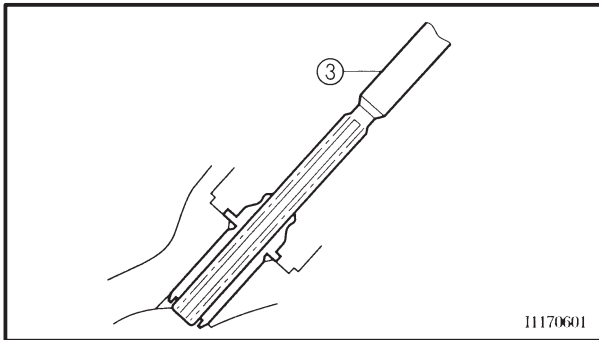
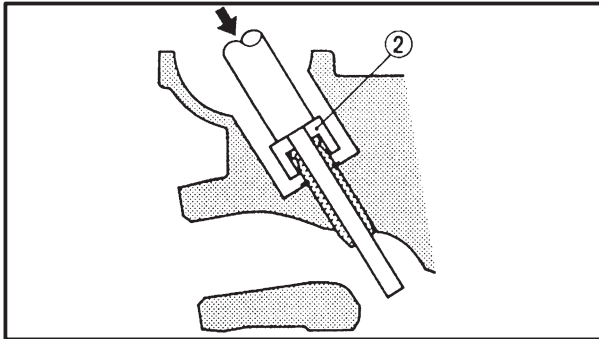
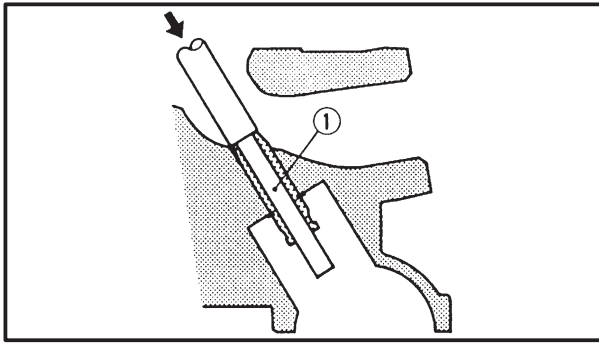
0.025 ~ 0.052 mm
(0.0010 ~ 0.0020 in)

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 in an oven.



Replacement steps:

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

NOTE:

After replacing the valve guide, reface the valve seat.



Valve guide remover:

Intake (ø4)

90890-04111, YM-04111

Exhaust (ø4.5)

90890-04116, YM-04116

Valve guide installer:

Intake (ø4)

90890-04112, YM-04112

Exhaust (ø4.5)

90890-04117, YM-04117

Valve guide reamer:

Intake

90890-04113, YM-04113

Exhaust

90890-04118, YM-04118

3. Eliminate:

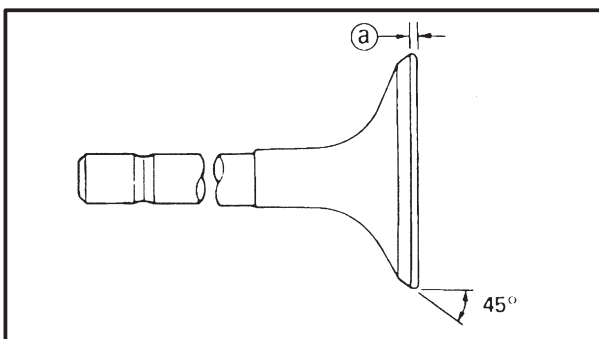
- Carbon deposits
(from the valve face and valve seat)

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:

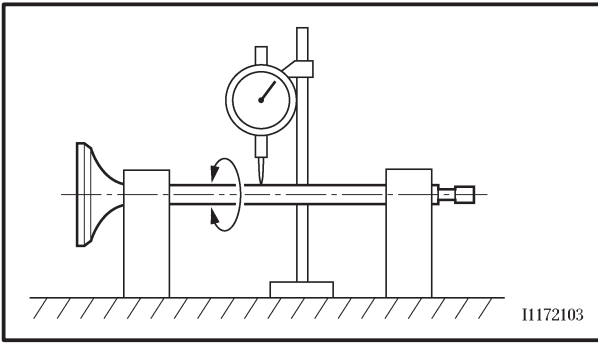
- Valve margin thickness (a)
Out of specification → Replace the valve.



Valve margin thickness:

0.5 ~ 0.9 mm

(0.020 ~ 0.035 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.



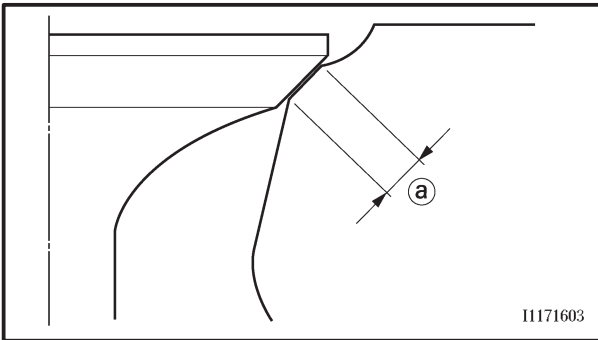
Valve stem runout:
0.01 mm (0.0004 in)

7. Eliminate:

- Carbon deposits
(from the valve face and valve seat)

8. Inspect:

- Valve seat
Pitting/wear → Replace the cylinder head.

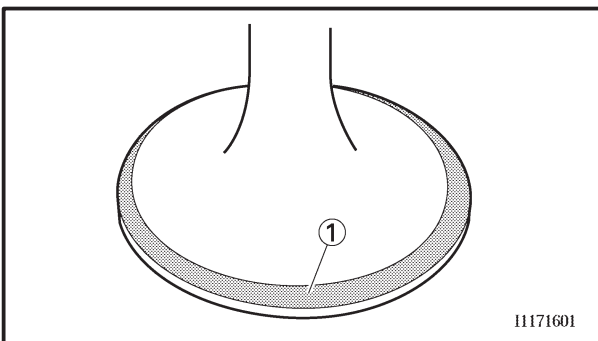


9. Measure:

- Valve seat width (a)
Out of specification → Replace the cylinder head.



Valve seat width:
Intake: 0.9 ~ 1.1 mm
(0.035 ~ 0.043 in)
Exhaust: 0.9 ~ 1.1 mm
(0.035 ~ 0.043 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 pattern.
- Measure the valve seat width.

NOTE:

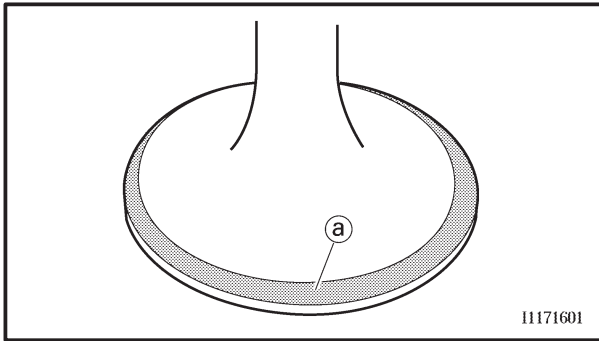
Where the valve seat and valve face contacted one another, the blueing will have been removed.

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.

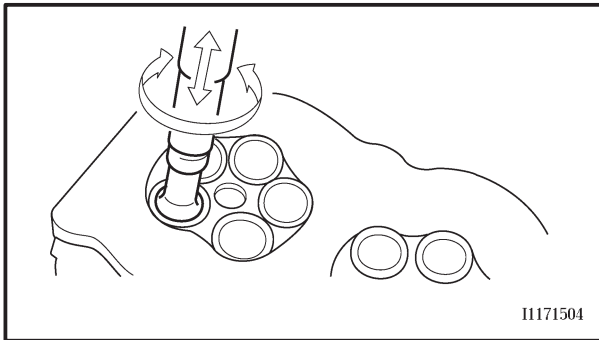
CAUTION:

Do not let the lapping compound enter the gap between the valve stem and the valve guide.

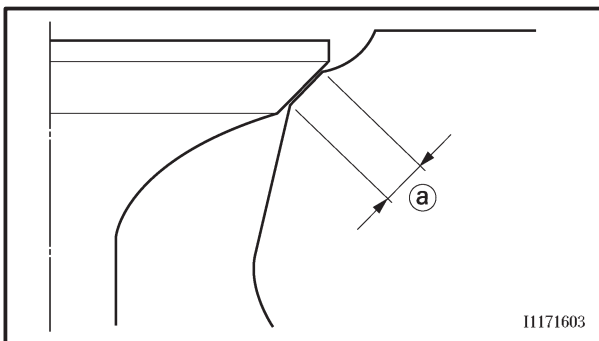
- Apply molybdenum disulfide oil onto the valve stem.
- Install the valve into the cylinder head.
- Turn the valve until the valve face and valve seat are evenly polished, then clean off all of the lapping compound.

NOTE:

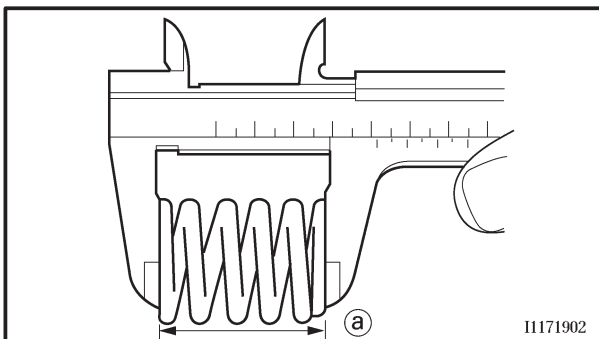
For the best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hand.



- 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) 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 (a) 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.



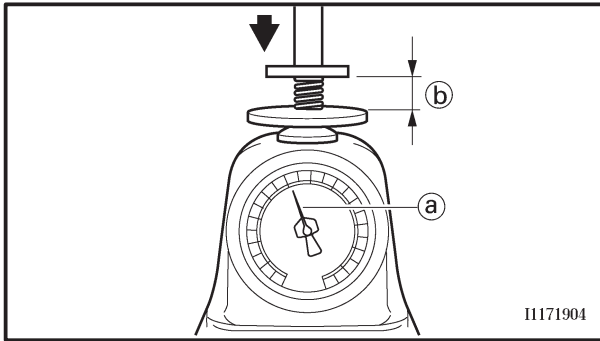
Free length (valve spring):

Intake

38.90 mm (1.53 in)

Exhaust

40.67 mm (1.60 in)



12. Measure:

- Compressed spring force (a)
Out of specification → Replace the valve spring.

(b) Installed length



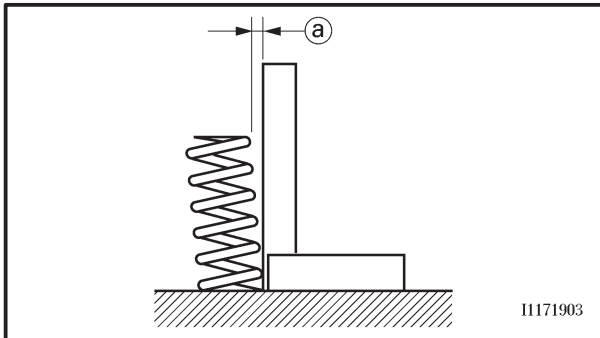
Compressed spring force:

Intake

82 ~ 96 N at 34.5 mm
(8.2 ~ 9.6 kg at 34.5 mm,
18.1 ~ 21.2 lb at 1.36 in)

Exhaust

110 ~ 126 N at 35.0 mm
(11.0 ~ 12.6 kg at 35.0 mm,
24.3 ~ 27.8 lb at 1.38 in)



13. Measure:

- Valve spring tilt (a)
Out of specification → Replace the valve spring.



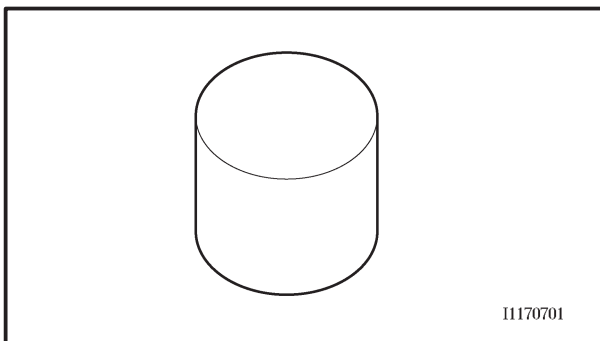
Spring tilt:

Intake

2.5° / 1.7 mm (0.067 in)

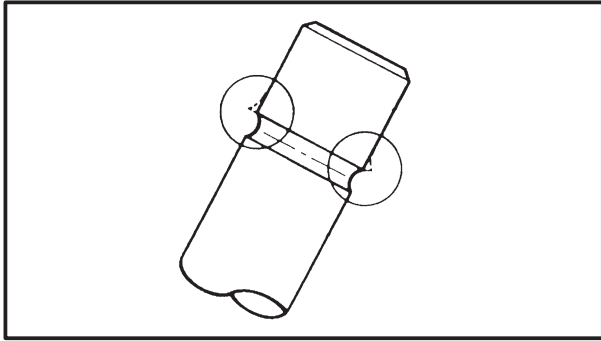
Exhaust

2.5° / 1.8 mm (0.071 in)



14. Inspect:

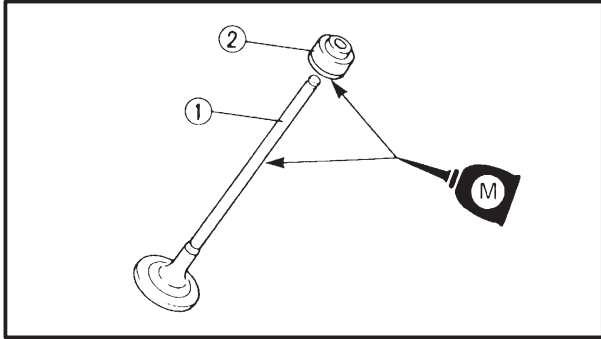
- Valve lifter
Damage/scratches → Replace the valve lifters and cylinder head.



INSTALLATION

1. Deburr:

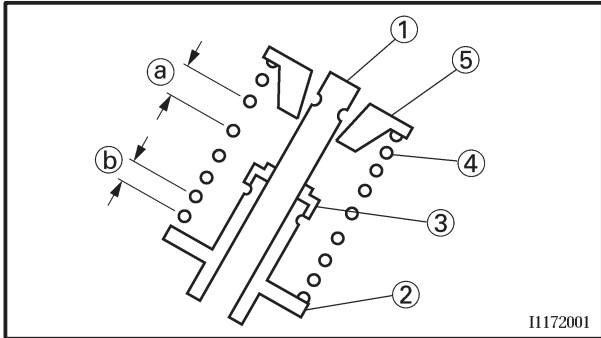
- Valve stem end
(with an oil stone)



2. Lubricate:

- Valve stem ①
- Valve stem seal ②
(with the recommended lubricant)

	Recommended lubricant Molybdenum disulfide oil
--	---



3. Install:

- Valve ①
- Lower spring seat ②
- Oil seal ③
- Valve spring ④
- Upper spring seat ⑤
(into the cylinder head)

NOTE:

Install the valve spring with the larger pitch (a) facing up.

Smaller pitch (b)

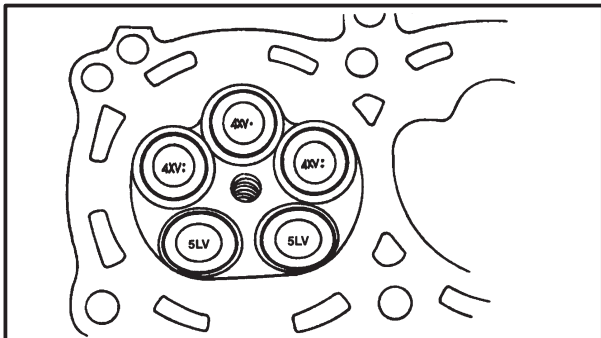
NOTE:

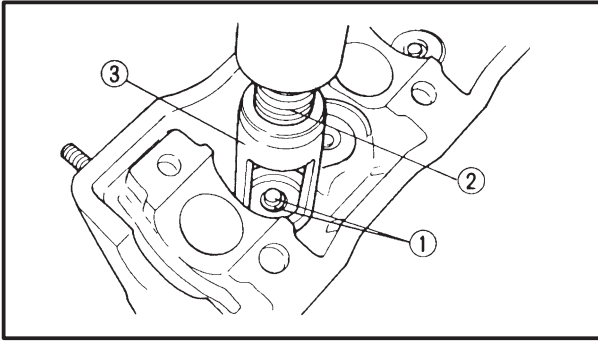
Make sure that each valve is installed in its original place. Refer to the following embossed marks.

Right and left intake valve(-s): "4XV:"

Middle intake valve(-s): "4XV."

Exhaust valve(-s): "5LV"





4. Install:

- Valve cotteners ①

NOTE:

Install the valve cotteners by compressing the valve spring with the valve spring compressor ② and attachment ③.



Valve spring compressor:

90890-04019, YM-04019

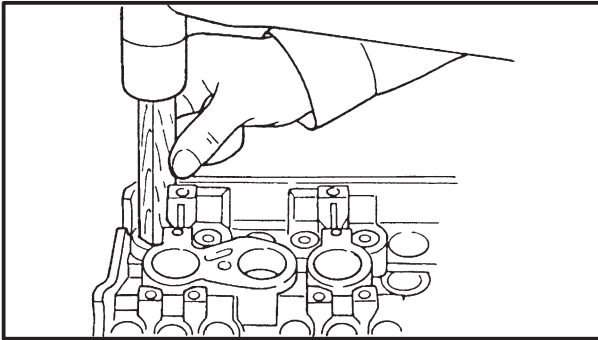
Attachment:

Intake valve

90890-04114, YM-4114

Exhaust valve

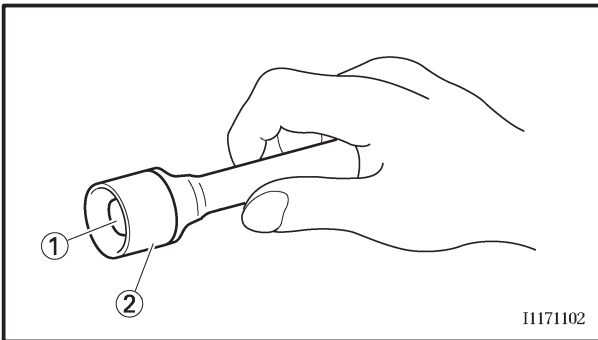
90890-04108, YM-4108



5. To secure the valve cotteners 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. Install:

- Valve pad ①
- Valve lifter ②

NOTE:

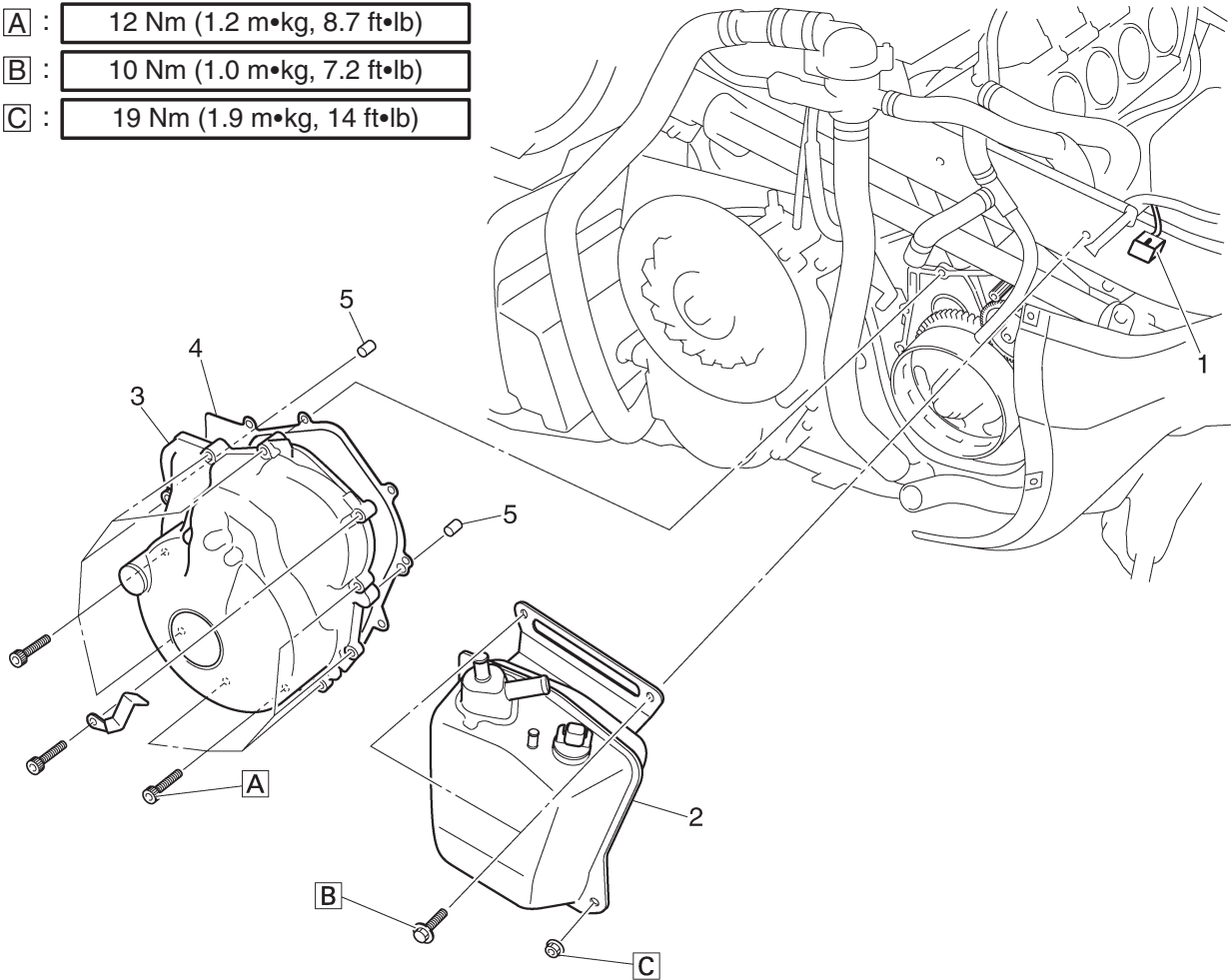
- Apply molybdenum disulfide oil onto the valve lifter and valve pad.
- The valve lifter must move smoothly when rotated with a finger.
- Each valve lifter and valve pad must be reinstalled in its original position.



A.C. MAGNETO AND STARTER CLUTCH

A.C. MAGNETO ROTOR COVER

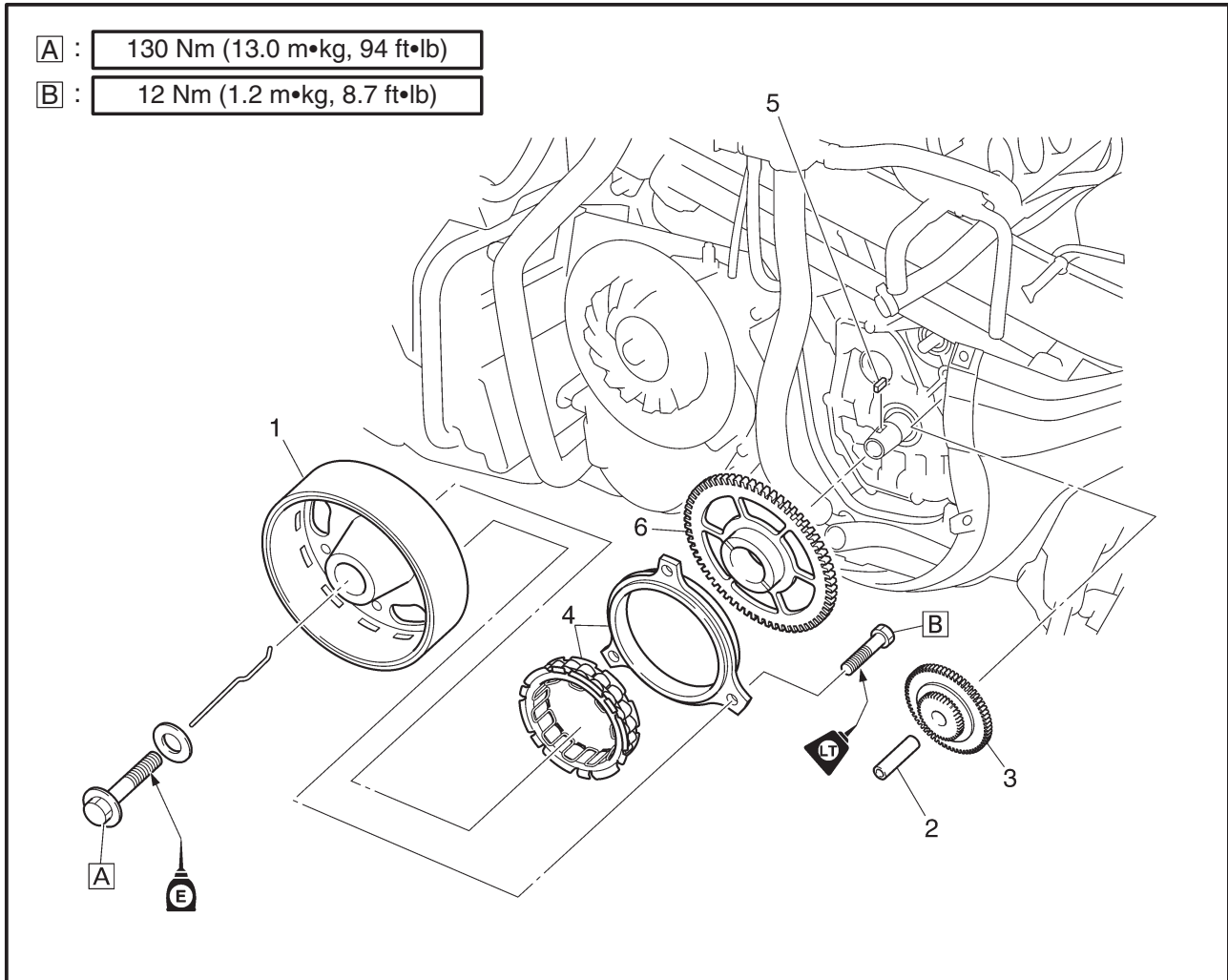
- A : 12 Nm (1.2 m•kg, 8.7 ft•lb)
 B : 10 Nm (1.0 m•kg, 7.2 ft•lb)
 C : 19 Nm (1.9 m•kg, 14 ft•lb)



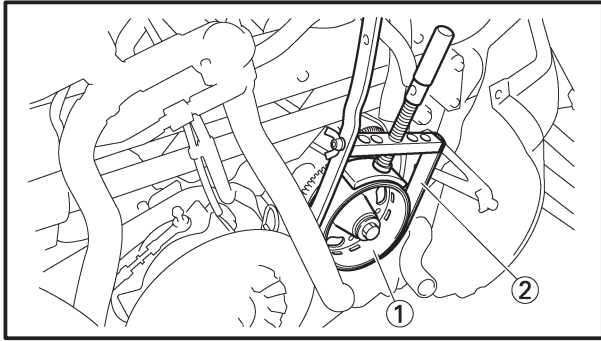
Order	Job name/Part name	Q'ty	Remarks
	A.C. magneto rotor cover removal		
	Right side cover		Remove the parts in the order listed below. Refer to "DRIVE CHAIN HOUSING" in CHAPTER 4.
	Engine oil		Drain. Refer to "ENGINE OIL REPLACEMENT" in CHAPTER 2.
1	Oil level switch coupler	1	Disconnect.
2	Oil tank	1	
3	A.C. magneto rotor cover	1	
4	Gasket	1	
5	Dowel pin	2	
			For installation, reverse the removal procedure.



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.
1	A.C. magneto rotor	1	
2	Idle gear shaft	1	
3	Starter motor idle gear	1	
4	Starter clutch	1	
5	Woodruff key	1	
6	Starter clutch gear	1	
			For installation, reverse the removal procedure.



REMOVAL

1. Remove:

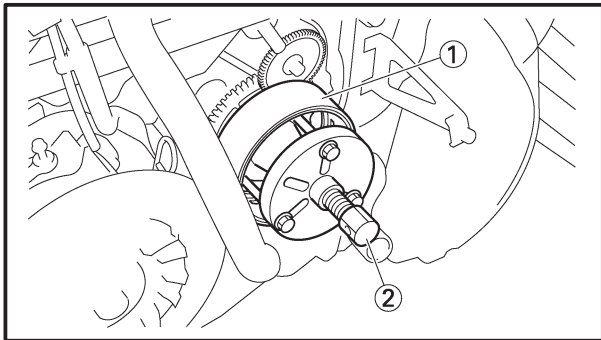
- A.C. magneto rotor bolt
- Washer

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



2. Remove:

- A.C. magneto rotor ①
(with the rotor holding puller ② and rotor holding puller attachment)
- Woodruff key

CAUTION:

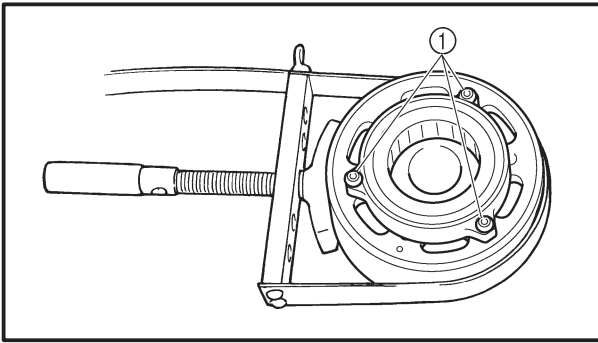
To protect the end of the crankshaft, place an appropriate sized socket between the rotor holding puller set's center bolt and the crankshaft.

NOTE:

Make sure the rotor holding puller is centered over the A.C. magneto rotor.



Rotor holding puller:
90890-01362, YU-33270
Flywheel puller attachment
90890-04089, YM-33282



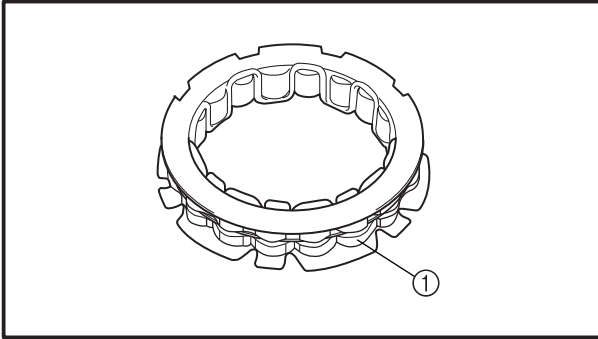
3. Remove:
 - Starter clutch

NOTE:

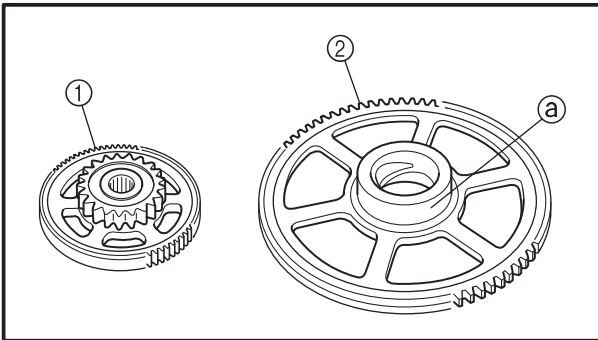
- While holding the magneto rotor with the sheave holder, remove the starter clutch bolt (1).
- Do not allow the sheave holder to touch the projection on the magneto rotor.



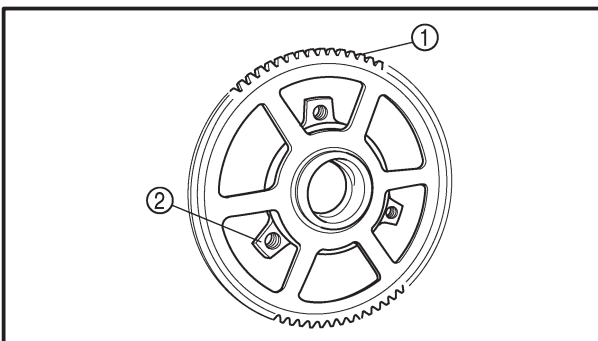
Sheave holder
90890-01701, YS-01880



4. Inspect:
 - Starter clutch rollers (1)
Damage/wear → Replace.



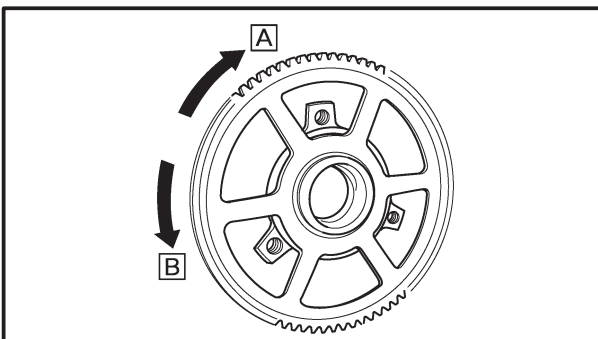
5. Inspect:
 - Starter clutch idle gear (1)
 - Starter clutch gear (2)
Burns/chips/roughness/wear → Replace the defective part(s).
 - Starter clutch gear's contacting surfaces (a)
Damage/pitting/wear → Replace the starter clutch gear.



6. Inspection:
 - Starter clutch operation

Installation steps:

- Install the starter clutch gear (1) onto the starter clutch (2) 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.





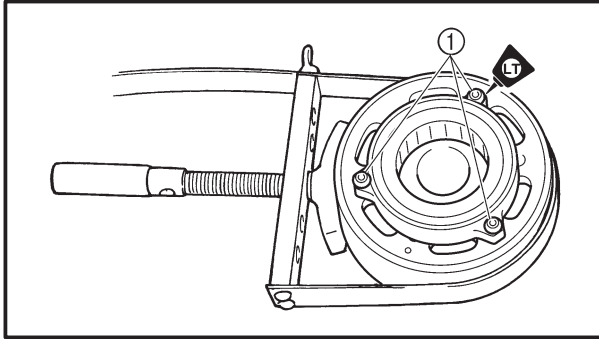
INSTALLATION

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:

- Bolts ①



Bolt (starter clutch):

12 Nm (1.2 m•kg, 8.7 ft•lb)

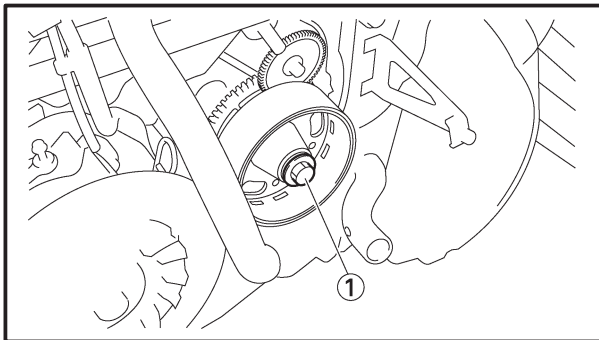
LOCTITE®

3. Install:

- Woodruff key
- Magneto rotor
- Washer
- 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:

- Bolt ①

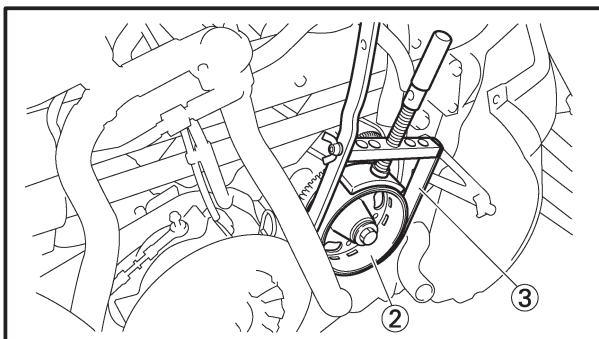


Bolt (A.C. magneto rotor):

130 Nm (13.0 m•kg, 94.0 ft•lb)

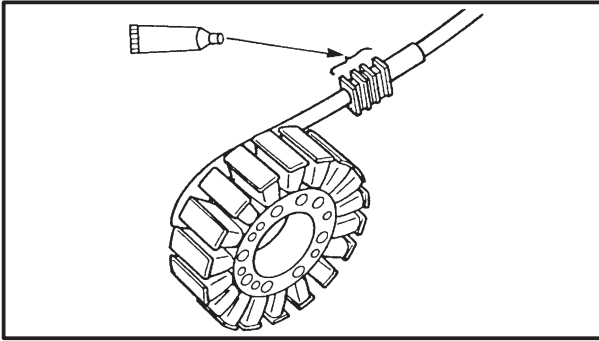
NOTE:

- 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



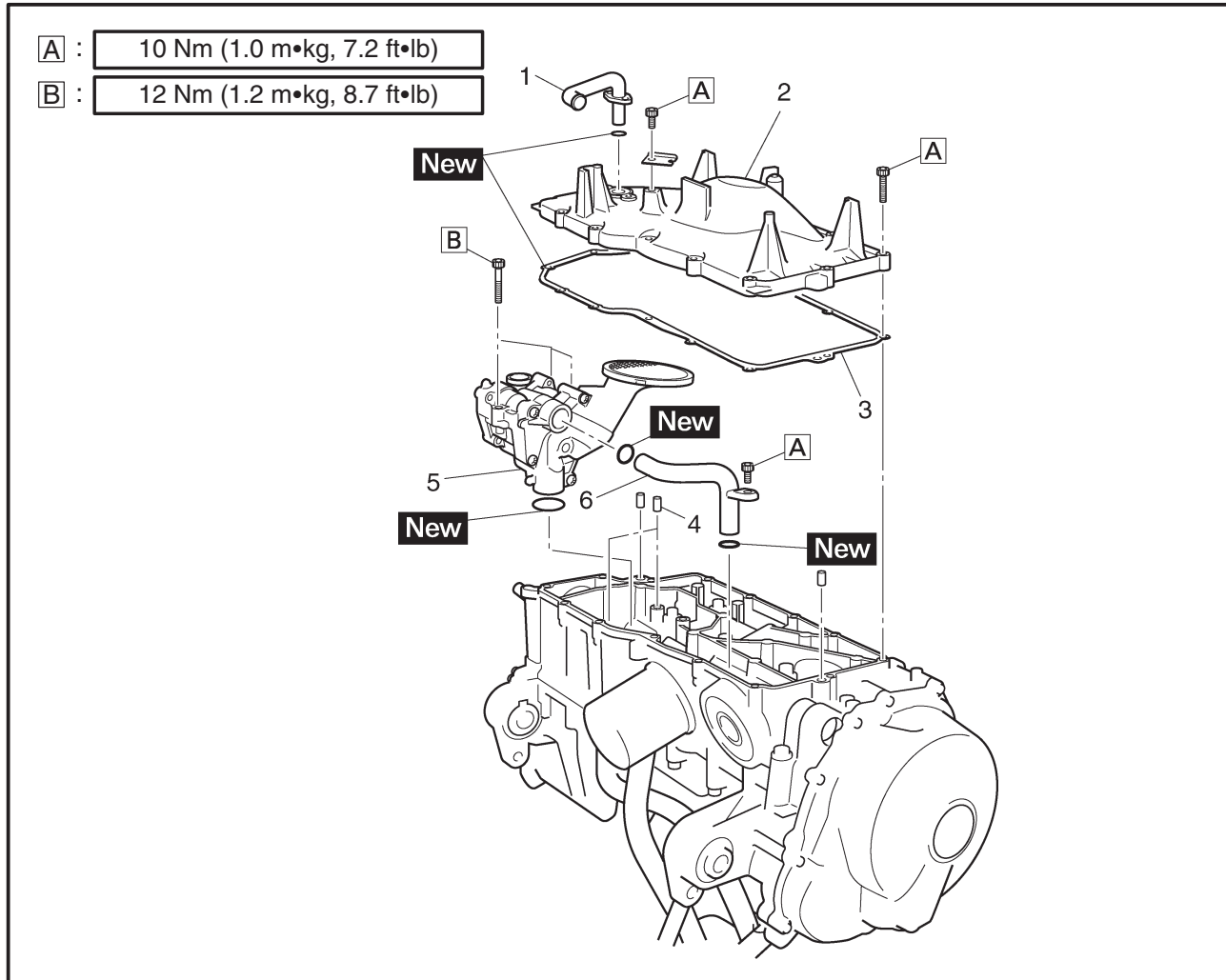
5. Apply:
- Sealant
(onto the stator coil assembly lead grommet)



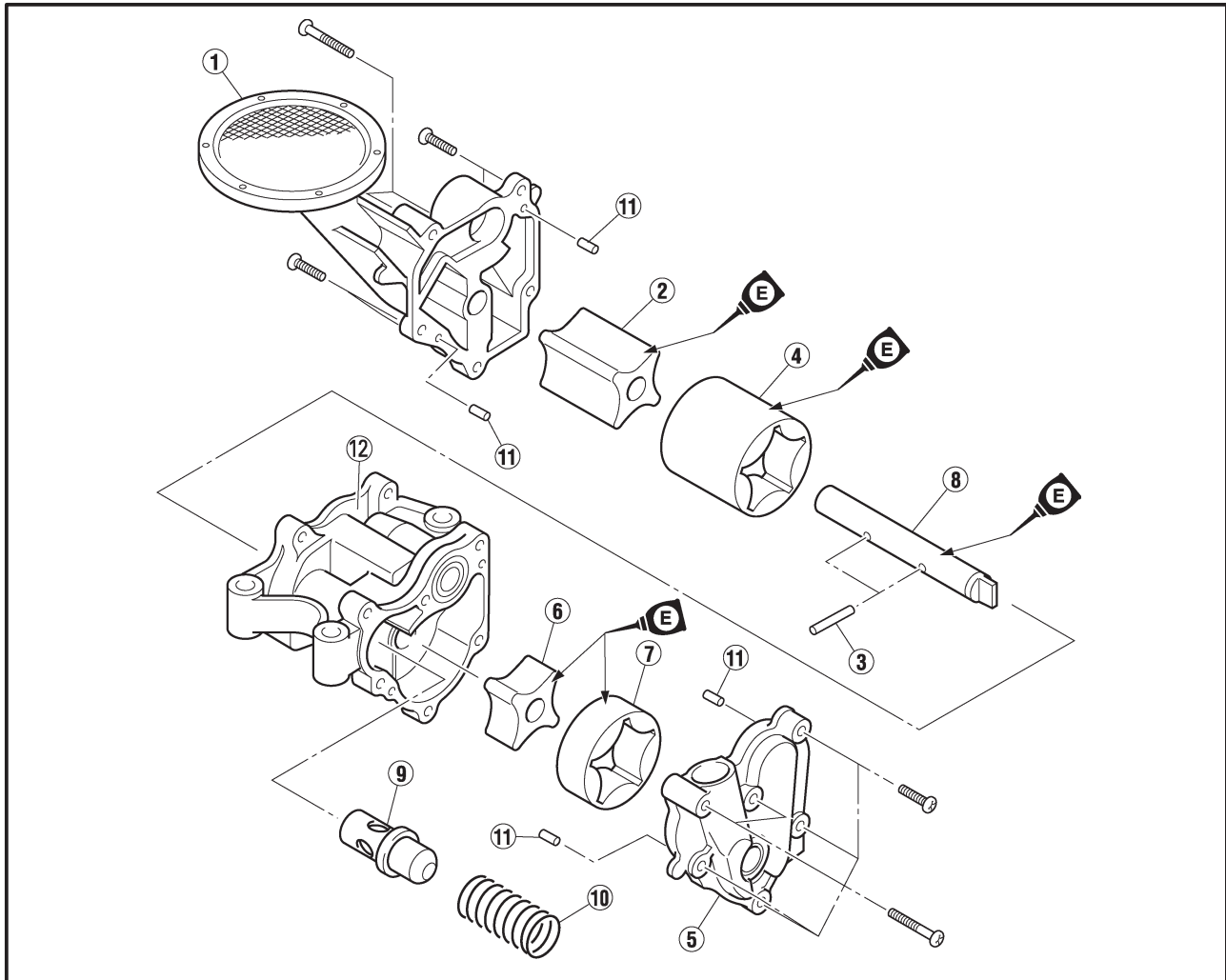
Yamaha bond No. 1215
90890-85505
Quick gasket[®]
ACC-1100-15-01



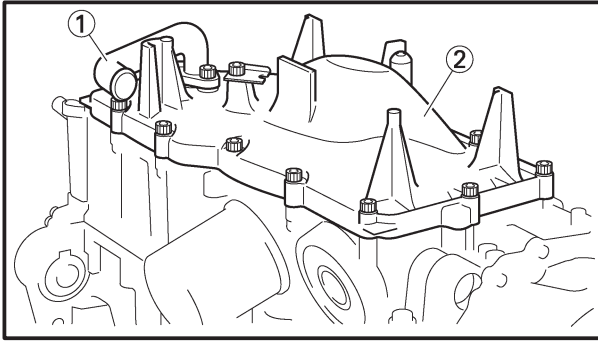
OIL PAN AND OIL PUMP



Order	Job name/Part name	Q'ty	Remarks
	Oil pan and oil pump removal		
	Engine		Remove the parts in the order listed below.
	Water pump		Refer to "ENGINE ASSEMBLY".
1	Oil pipe	1	Refer to "WATER PUMP" in CHAPTER 6.
2	Oil pan	1	
3	Gasket	1	
4	Dowel pin	4	
5	Oil pump assembly	1	
6	Oil pipe	1	
			For installation, reverse the removal procedure.



Order	Job name/Part name	Q'ty	Remarks
	Oil pump disassembly		Disassemble the parts in the order listed below.
①	Oil pump cover 1	1	
②	Oil pump inner rotor 1	1	
③	Pin	2	
④	Oil pump outer rotor 1	1	
⑤	Oil pump cover 2	1	
⑥	Oil pump inner rotor 2	1	
⑦	Oil pump outer rotor 2	1	
⑧	Oil pump shaft	1	
⑨	Valve	1	
⑩	Spring	1	
⑪	Pin	4	
⑫	Oil pump housing	1	
			For assembly, reverse the disassembly procedure.

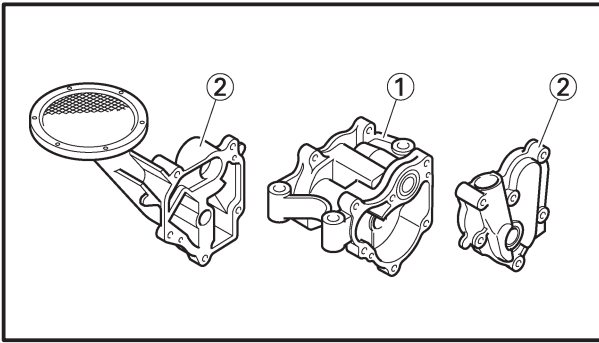
**REMOVAL**

1. Remove:

- Pipe ①
- Oil pan ②
- Oil pump

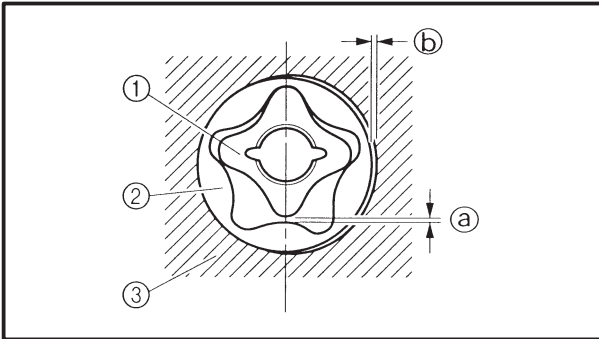
NOTE:

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.

**INSPECTION****1. Inspection:**

- 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)

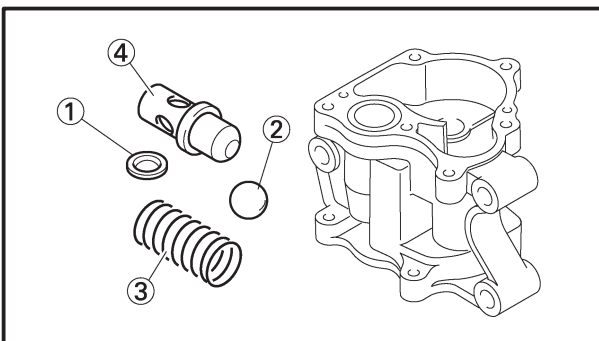
Out of specifications → Replace oil pump assembly.

**Inner-rotor-to-outer-rotor-tip clearance:**

0.09 ~ 0.15 mm
(0.004 ~ 0.006 in)

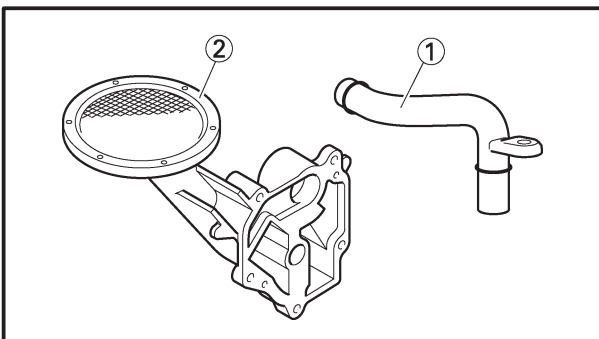
Outer-rotor-to-oil-pump-housing clearance:

0.03 ~ 0.08 mm
(0.001 ~ 0.003 in)

**3. Inspect:**

- Check ball seat ①
- Check ball ②
- Spring ③
- Valve ④

Damage/wear → Replace the defective part (-s).

**4. Inspect:**

- Pipe ①
- Oil strainer ②

Damage → Replace.

Obstruction → Wash and blow out with compressed air.

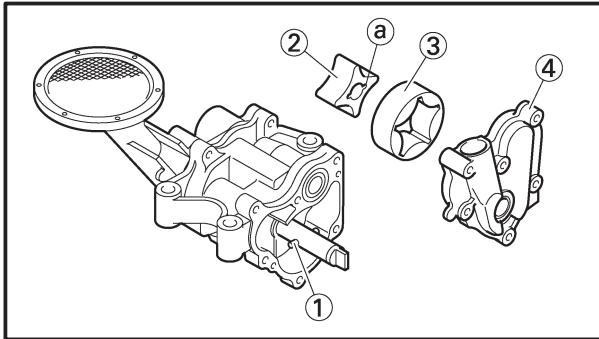
Contaminants → Clean with engine oil.

**INSTALLATION**

1. Lubricate:
 - Inner rotor
 - Outer rotor
 - Oil pump shaft
(with the recommended lubricant)



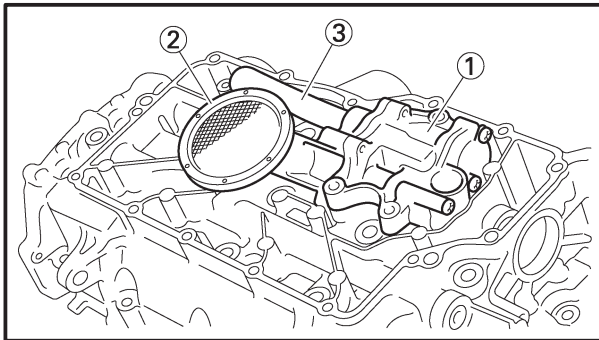
Recommended lubricant
Engine oil



2. Install:
 - Pin ①
 - Inner rotor ②
 - Outer rotor ③
 - Housing ④

NOTE:

When installing the inner rotor, align the pin ① in the oil pump shaft with the groove (a) on the inner rotor ②.



3. Inspect:
 - Oil pump operation
Unsmooth operation → Replace.
4. Install:
 - Oil pump assembly ①
 - Oil strainer ②
 - Pipe ③

5. Install:
 - Dowel pin
 - Gasket
 - Oil pan
6. Tighten:
 - Oil pan bolts



Bolt (oil pan):
10 Nm (1.0 m•kg, 7.2 ft•lb)

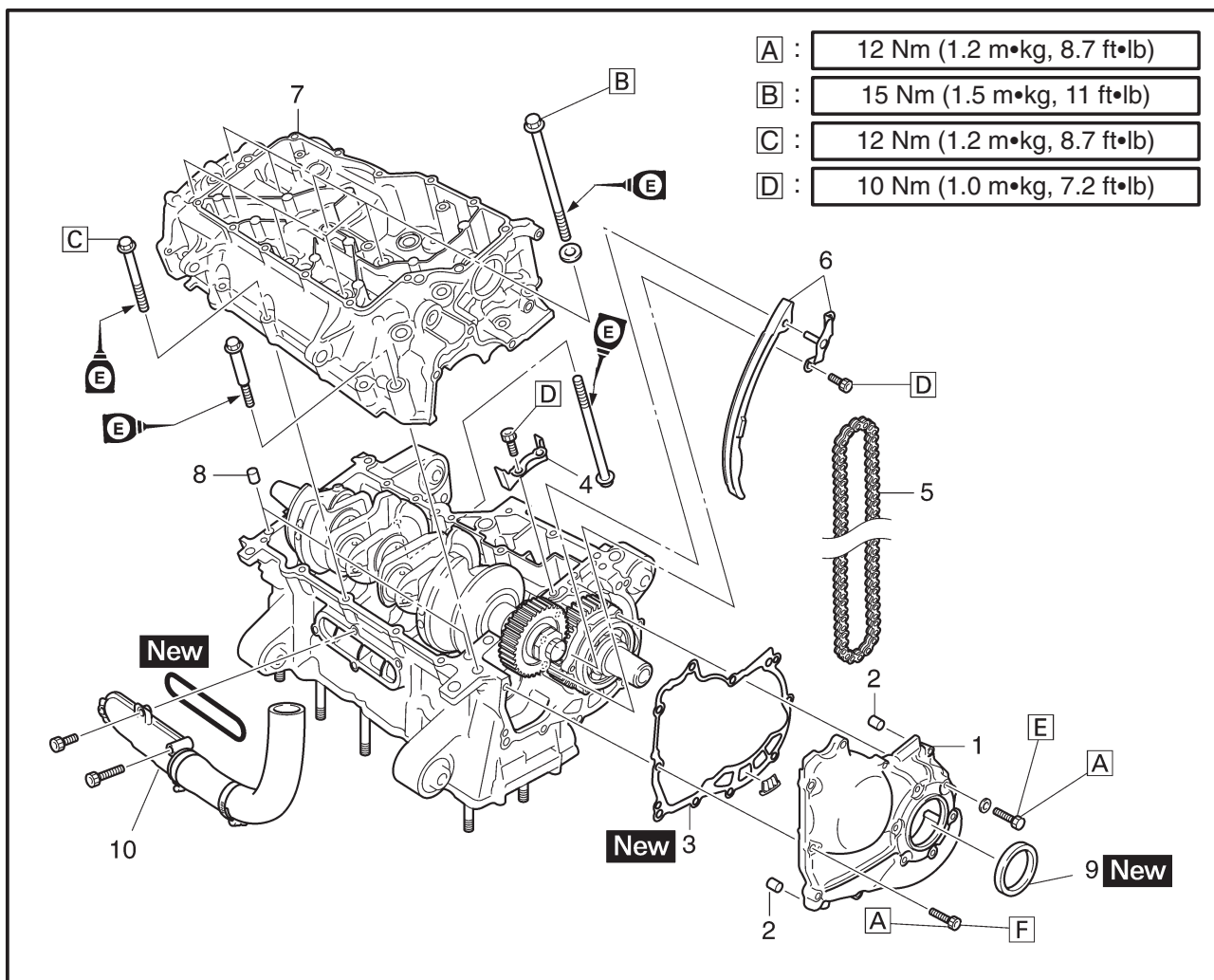
NOTE:

Tighten the oil pan bolts in stages and in a criss-cross pattern.



CRANKCASE

CRANKCASE

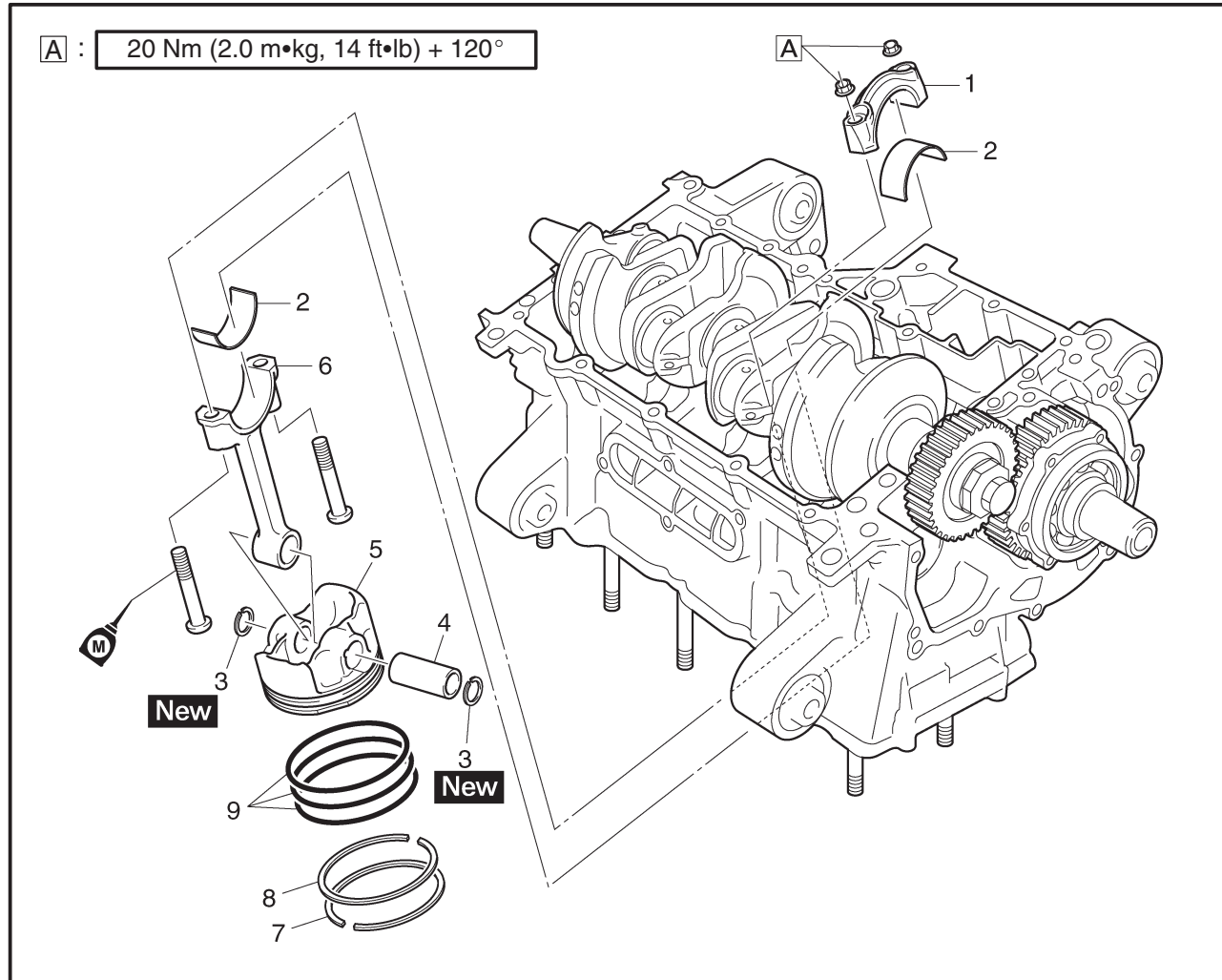


E Tighten these bolts first. **F** Tighten these bolts second.

Order	Job name/Part name	Q'ty	Remarks
	Crankcase removal		
1	Countershaft cover	1	Remove the parts in the order listed below.
2	Dowel pin	2	
3	Gasket	1	
4	Oil pump drive chain guide	1	
5	Timing chain	1	
6	Timing chain guide (intake side)	1	
7	Lower crankcase	1	
8	Dowel pin	2	
9	Counter shaft oil seal	1	
10	Cover	1	For installation, reverse the removal procedure.



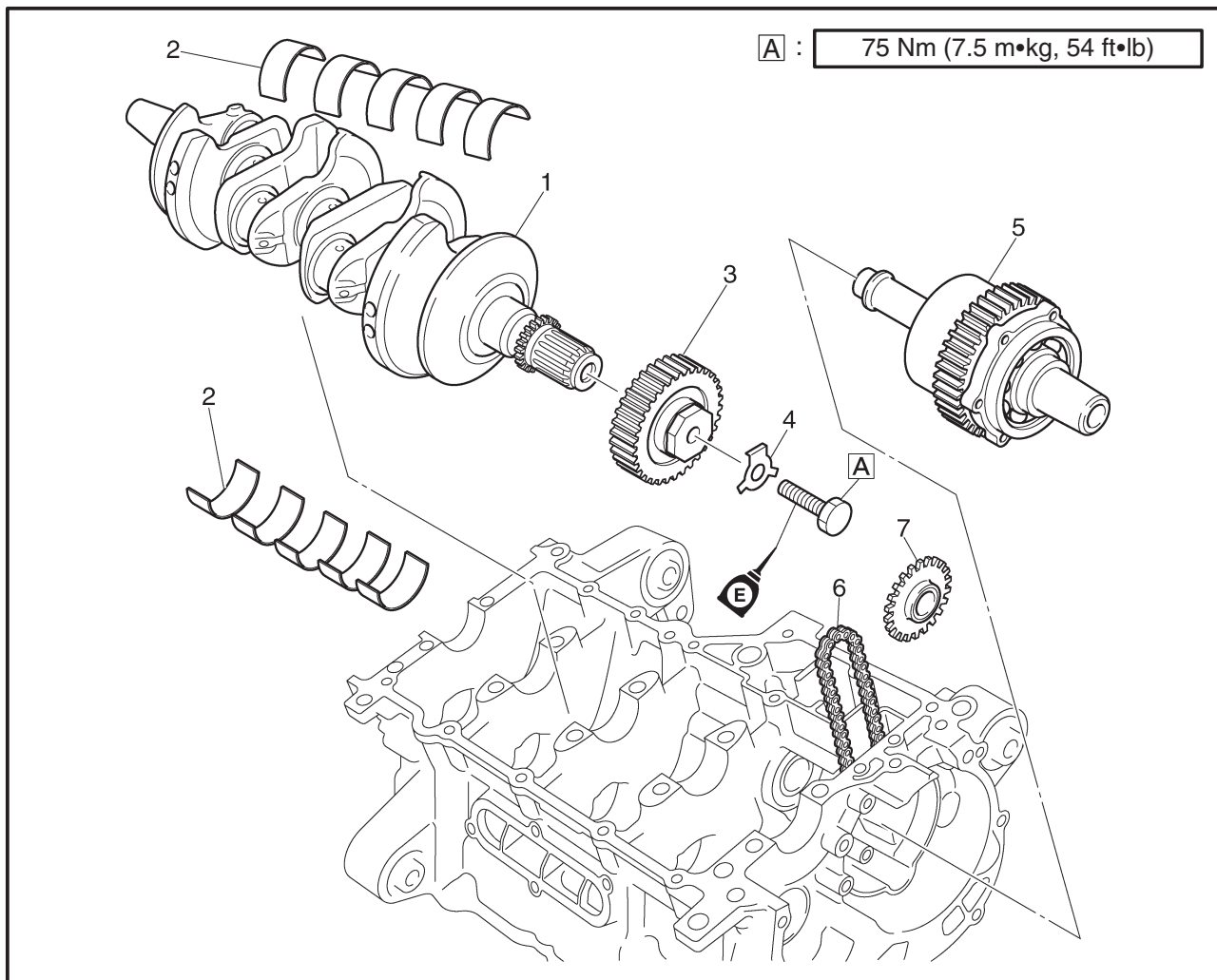
CONNECTING RODS AND PISTONS



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	4	
2	Big end bearing	8	
3	Piston pin clip	8	
4	Piston pin	4	
5	Piston	4	
6	Connecting rod	4	
7	Top ring	4	
8	2nd ring	4	
9	Oil ring	4	
			For installation, reverse the removal procedure.

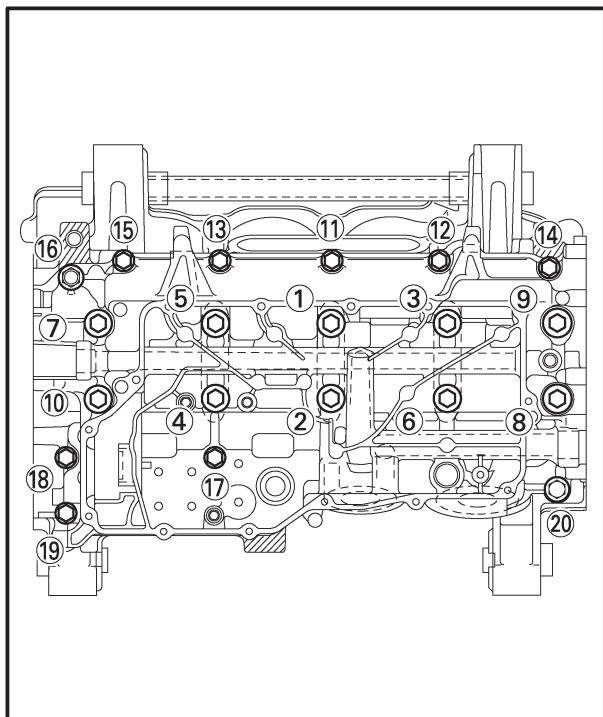


CRANKSHAFT AND COUNTER SHAFT



A This bolt has a left-hand thread.

Order	Job name/Part name	Q'ty	Remarks
	Crankshaft and counter shaft removal		Remove the parts in the order listed below.
1	Crankshaft	1	
2	Crankshaft journal bearing	10	
3	Drive gear	1	
4	Lock plate	1	
5	Counter shaft assembly	1	
6	Oil pump drive chain	1	
7	Oil pump driven gear	1	
			For installation, reverse the removal procedure.

**REMOVAL**

1. Remove:
 - Crankcase bolts

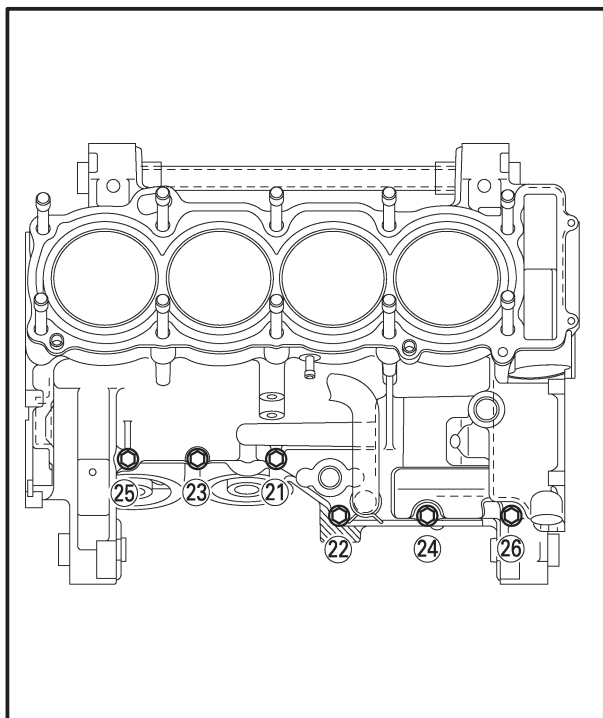
NOTE:

- Place the engine upside down.
- 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.
- Loosen the bolts in decreasing numerical order (refer to the numbers in the illustration).
- The numbers embossed on the crankcase indicate the crankcase tightening sequence.

2. Remove:
 - Lower crankcase

CAUTION:

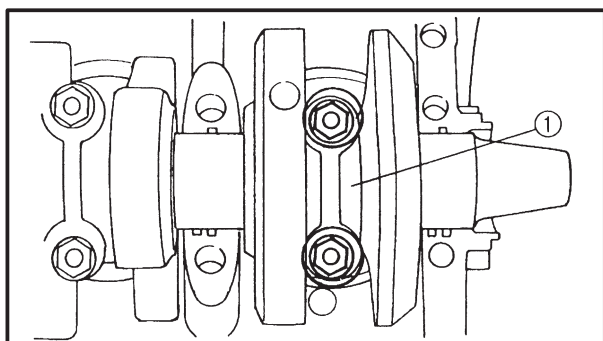
Tap on one side of the crankcase with a soft-face hammer. Tap only on reinforced portions of the crankcase, not on the crankcase mating surfaces. Work slowly and carefully and make sure that the crankcase halves separate evenly.



3. Remove:
 - Dowel pins
 - Crankshaft journal bearing

NOTE:

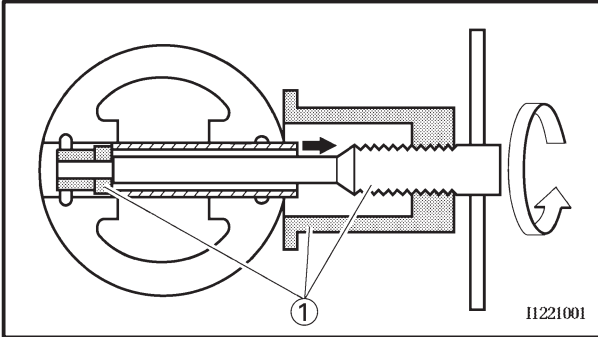
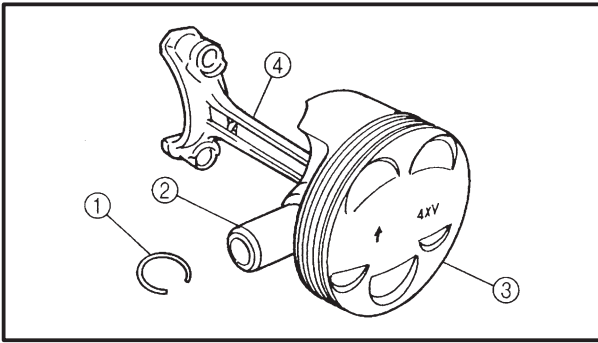
Identify the position of each crankshaft journal lower bearing so that it can be reinstalled in its original place.



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:

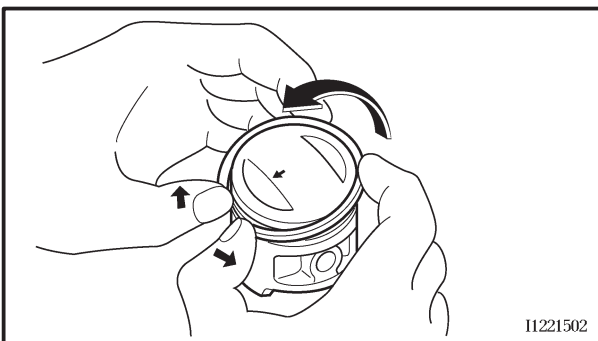
Do not use a hammer to drive the piston pin out.

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 (1).

**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.

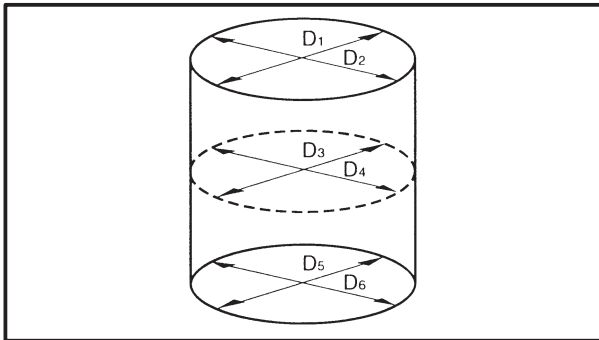
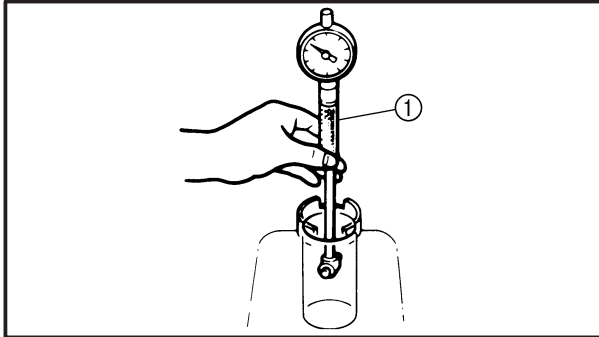


INSPECTION

1. Inspect:

- Piston wall and 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.

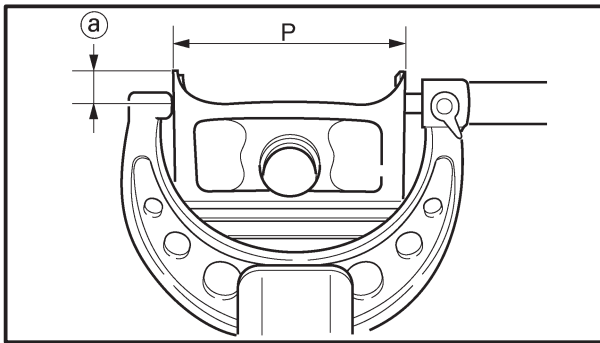
NOTE:

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”	74.000 ~ 74.010 mm (2.9134 ~ 2.9138 in)
Wear limit	74.06 mm (2.9157 in)
Taper limit “T”	0.05 mm (0.0020 in)
Out of round “R”	0.05 mm (0.0020 in)

“C” = maximum of D ₁ ~ 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.

(a) 5 mm (0.20 in) from the bottom edge of the piston.



Piston size (standard) (P):

73.955 ~ 73.970 mm

(2.9116 ~ 2.9122 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”



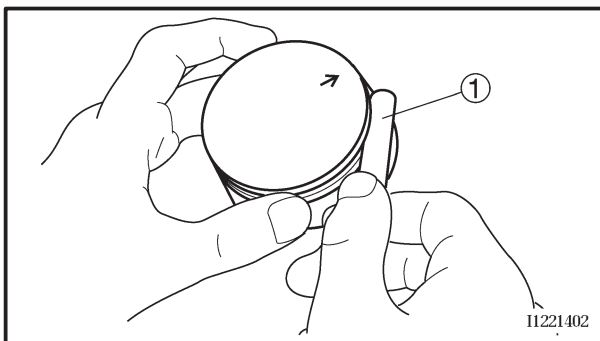
Piston-to-cylinder clearance:

0.030 ~ 0.055 mm

(0.0012 ~ 0.0022 in)

<Limit>: 0.12 mm (0.0047 in)

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



3. Measure:

- Side clearance (piston rings)
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

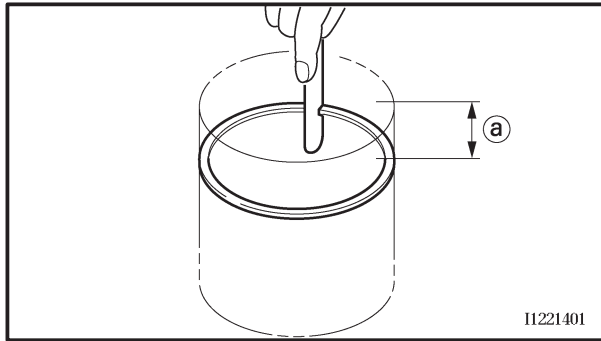
0.030 ~ 0.065 mm

(0.0012 ~ 0.0026 in)

2nd ring

0.020 ~ 0.055 mm

(0.0008 ~ 0.0022 in)



4. Install:
 - Piston ring
(into the cylinder)

NOTE: _____
Level the piston ring in the cylinder with the piston crown.

① 5 mm (0.20 in)

5. Measure:
 - End gap (piston rings)
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

0.32 ~ 0.44 mm
(0.010 ~ 0.020 in)

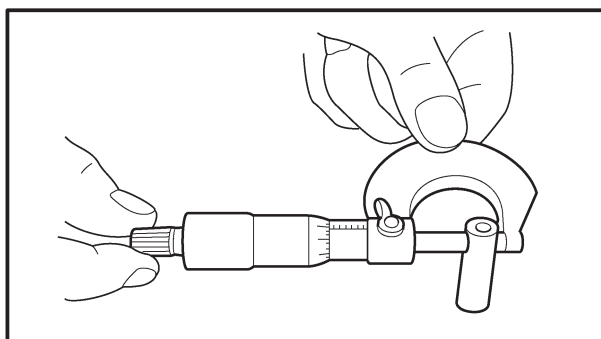
2nd ring

0.43 ~ 0.58 mm
(0.017 ~ 0.023 in)

Oil ring

0.10 ~ 0.35 mm
(0.004 ~ 0.014 in)

6. Inspect:
 - Piston pin
Blue discoloration/grooves → Replace the piston pin and then check the lubrication system.

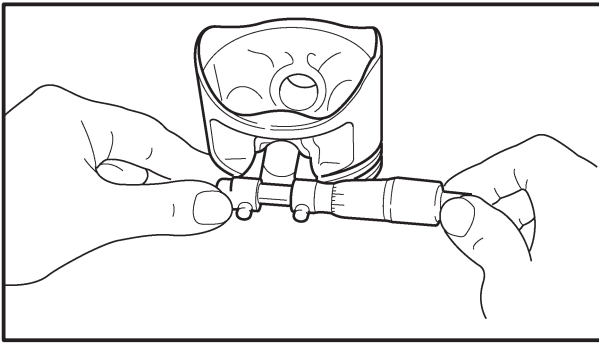


7. Measure:
 - Outside diameter (piston pin)
Out of specification → Replace the piston pin.



Piston pin outside diameter:

16.991 ~ 17.000 mm
(0.6689 ~ 0.6693 in)



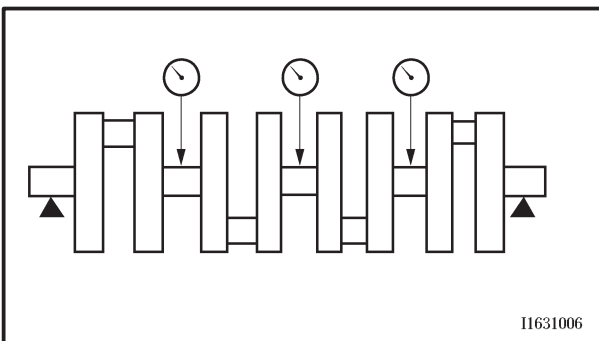
8. Measure:

- Piston pin bore inside diameter
Out of specification → Replace the piston.

**Piston pin bore inside diameter:****17.002 ~ 17.013 mm****(0.6694 ~ 0.6698 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****0.002 ~ 0.022 mm****(0.00008 ~ 0.0009 in)****<Limit>: 0.072 mm (0.0028 in)**

10. Measure:

- 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:

0.004 ~ 0.028 mm

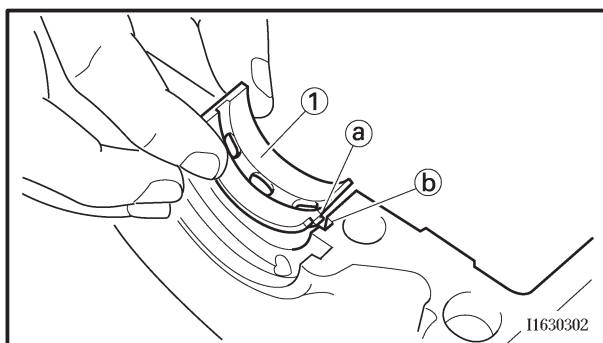
(0.0002 ~ 0.0011 in)

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.

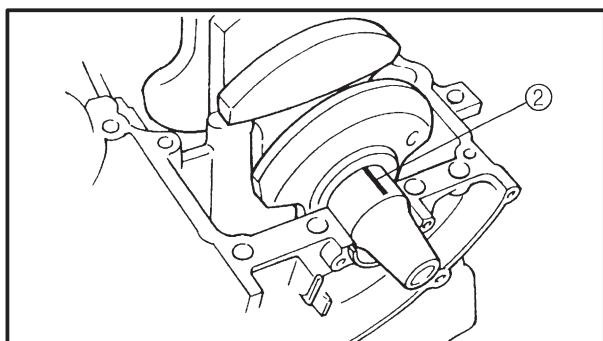
- Clean the crankshaft journal bearings, crankshaft journals, and bearing portions of the crankcase.
- Place the upper crankcase upside down on a bench.



- Install the crankshaft journal upper bearings ① and the crankshaft into the upper crankcase.

NOTE:

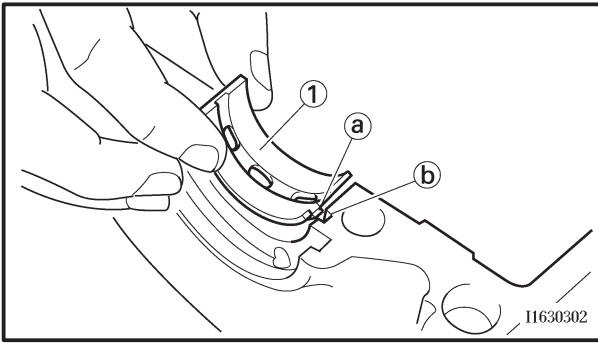
Align the projections (a) of the crankshaft journal upper bearings with the notches (b) in the crankcase.



- Put a piece of Plastigauge® (2) on each crankshaft journal.

NOTE:

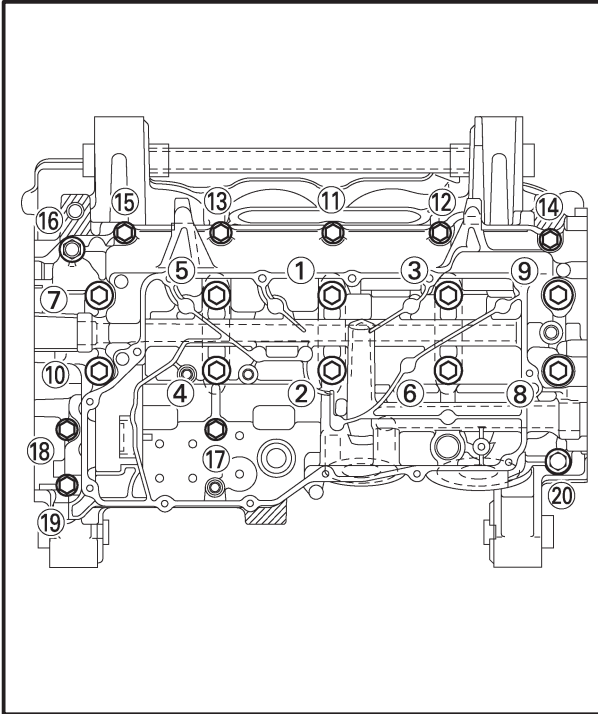
Do not put the Plastigauge® over the oil hole in the crankshaft journal.



- Install the crankshaft journal lower bearings ① into the lower crankcase and assemble the crankcase halves.

NOTE:

- Align the projections ② of the crankshaft journal lower bearings with the notches ③ in the crankcase.
- Do not move the crankshaft until the clearance measurement has been completed.



Crankcase bolt:

Bolt ① ~ ⑩

1st: 15 Nm

(1.5 m•kg, 11 ft•lb)

2nd: 15 Nm

(1.5 m•kg, 11 ft•lb) +

45 ~ 50°

Bolt ⑪ ~ ⑲

12Nm (1.2 m•kg, 8.7 ft•lb)

M9 × 105 mm bolts: ① ~ ⑩

M8 × 65 mm bolts: ⑱, ⑲

M5 × 90 mm bolts: ⑲

M5 × 80 mm bolts: ⑲

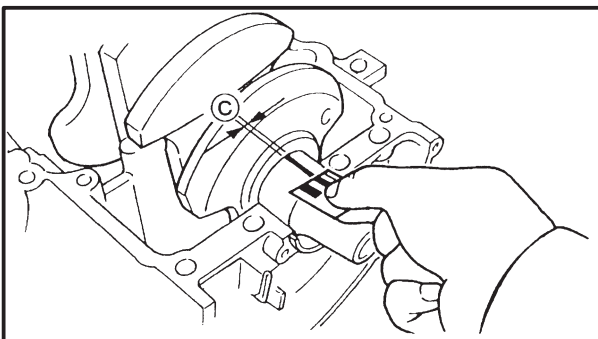
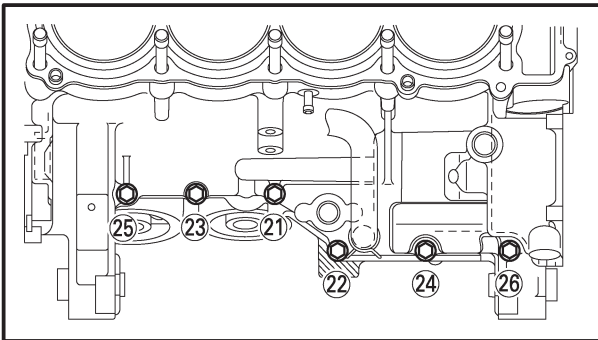
M5 × 55 mm bolts: ⑪ ~ ⑮

M5 × 45 mm bolts: ⑱, ⑲, ⑲ ~ ⑳

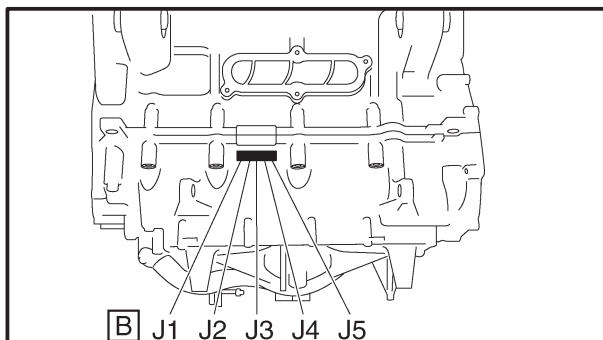
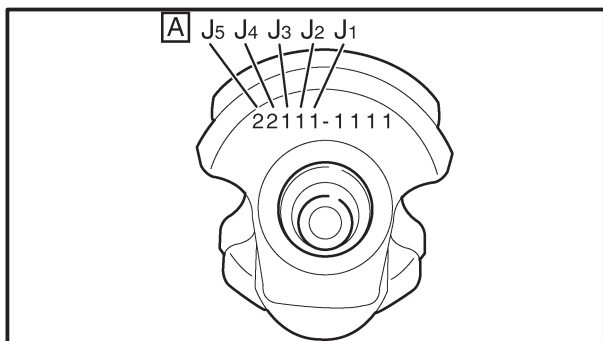
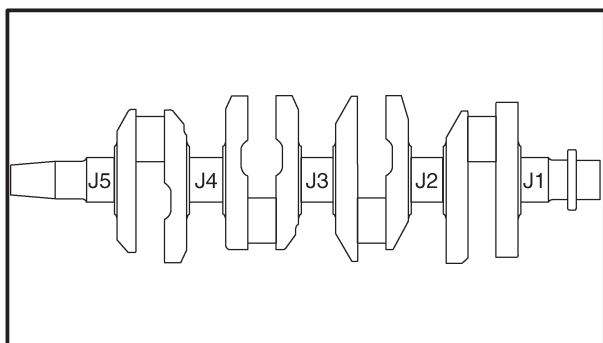
M5 × 25 mm bolts: ⑲

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 ~ J5)

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 ~ J5” refer to the bearings shown in the crankshaft illustration.
- If “J1 ~ J5” 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:

$$\text{J1 (crankcase)} - \text{J1 (crankshaft web)} \\ - 2 = 6 - 2 - 2 = 2 \text{ (black)}$$

CRANKSHAFT JOURNAL BEARING COLOR CODE

-1	Violet
0	White
1	Blue
2	Black
3	Brown

14. Measure:

- Crankshaft-pin-to-big-end-bearing clearance
Out of specification → Replace the big end bearings.



Crankshaft-pin-to-big-end-bearing clearance:

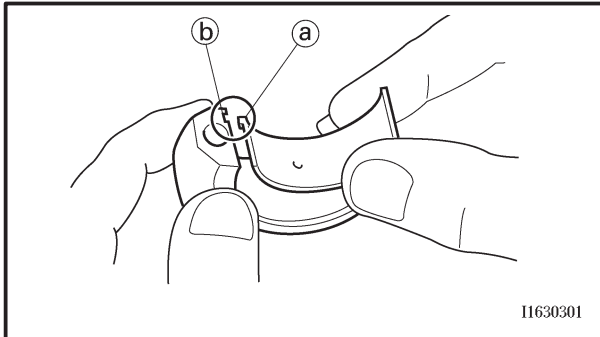
$$0.016 \sim 0.040 \text{ mm} \\ (0.0006 \sim 0.0016 \text{ in})$$



Measurement steps:

CAUTION:

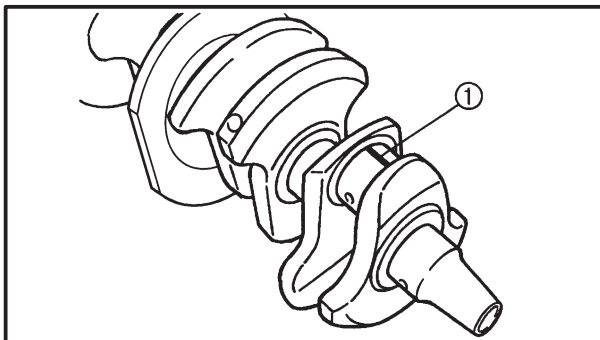
Do not interchange the big end bearings and connecting rods. To obtain the correct crankshaft-pin-to-big-end-bearing clearance and prevent engine damage, the big end bearings must be installed in their original positions.



- 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:

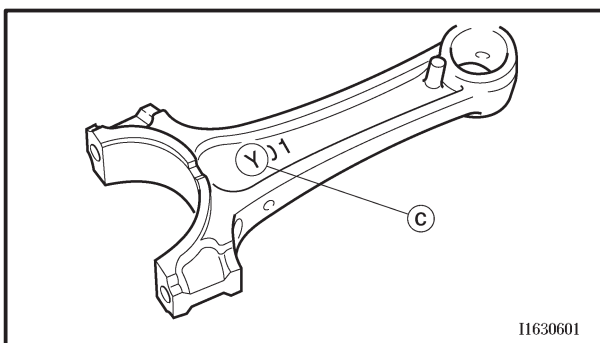
Align the projections (a) on the big end bearings with the notches (b) in the connecting rod and connecting rod cap.



- Put a piece of Plastigauge® (1) on the crankshaft pin.
- Assemble the connecting rod halves.

NOTE:

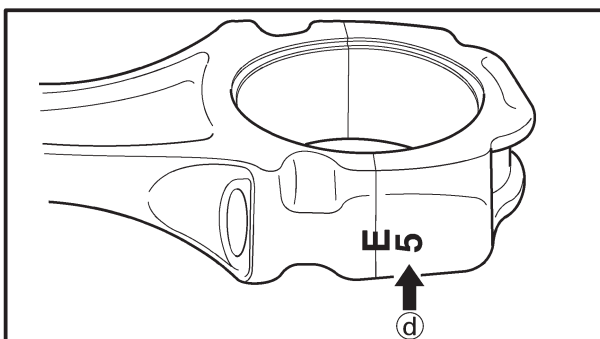
- Do not move the connecting rod or crankshaft until the clearance measurement has been completed.
- Apply molybdenum disulfide grease onto the bolts, threads, and nut seats.
- Make sure that the “Y” mark (c) on the connecting rod faces towards the left side of the crankshaft.
- Make sure that the characters (d) on both the connecting rod and connecting rod cap are aligned.

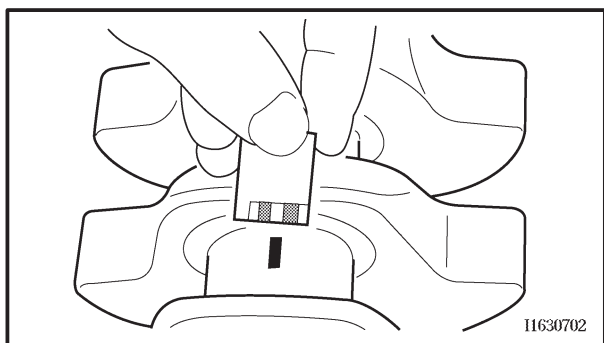
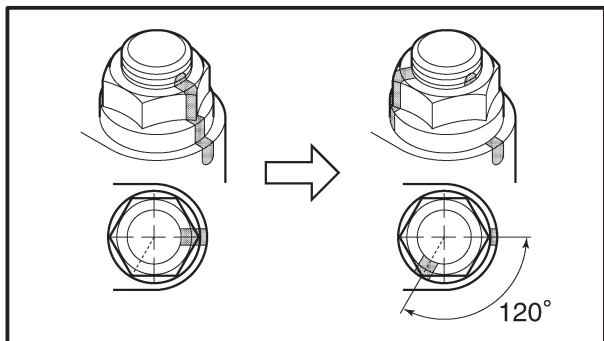
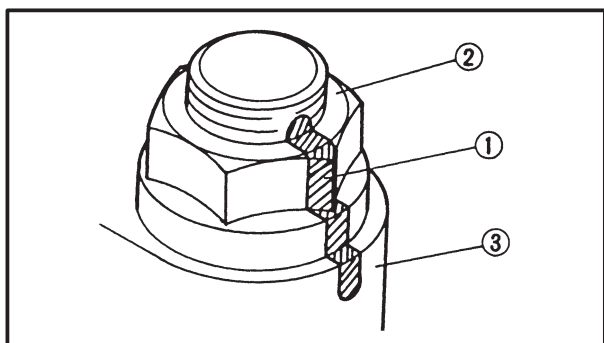


- Tighten the connecting rod nuts.

**Nut (connecting rod):**

20 Nm (2.0 m•kg, 14 ft•lb)+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 (1) on the corner of the connecting rod nut (2) and the connecting rod (3).
- Tighten the 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.

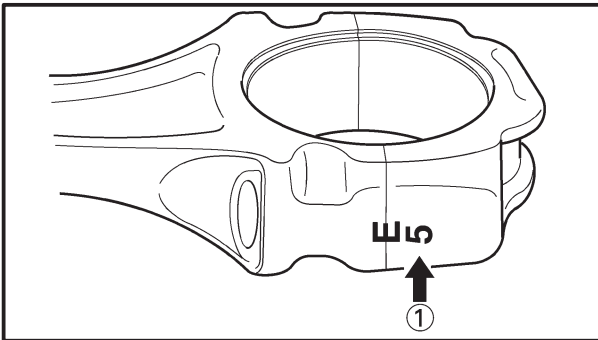
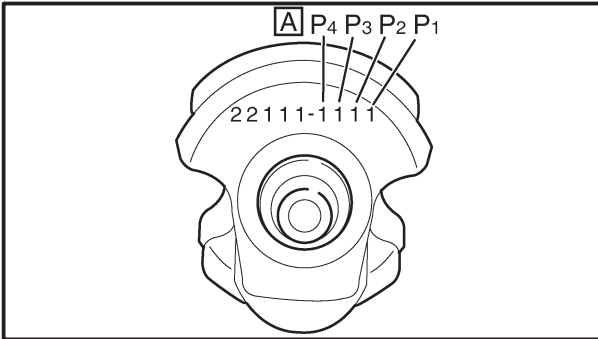
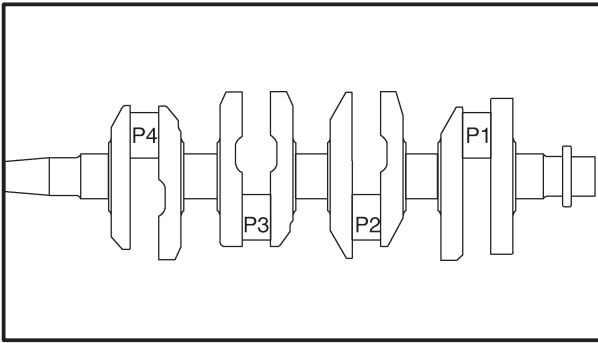
CAUTION:

- 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 on the crankshaft pin.
If the clearance is out of specification, select replacement big end bearings.



15. Select:

- Big end bearings ($P_1 \sim P_4$)

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” ~ “P4” 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”:

$$\begin{aligned} & \text{“P}_1\text{” (connecting rod) – “P}_1\text{”} \\ & \text{(crankshaft) – 2 =} \\ & 5 - 1 - 2 = 2 \text{ (Black)} \end{aligned}$$

BIG END BEARING COLOR CODE

-1	Violet
0	White
1	Blue
2	Black
3	Brown

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

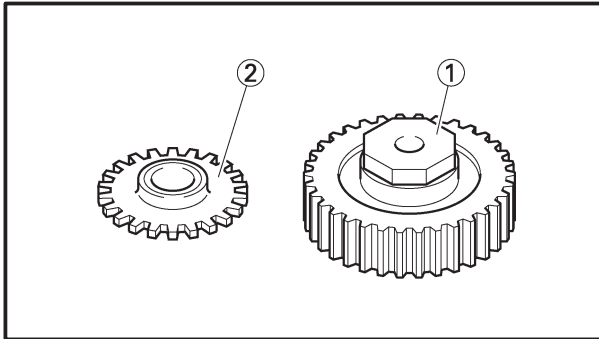
Clean and lubricate the bearings, then rotate the inner race with your finger.

Rough movement → Replace.

18. Inspect:

- Oil seals

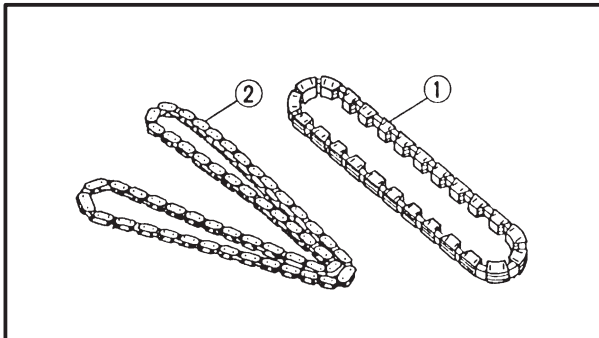
Damage/wear → Replace.



19. Inspect:

- Primary drive gear ①
- Oil pump driven gear ②

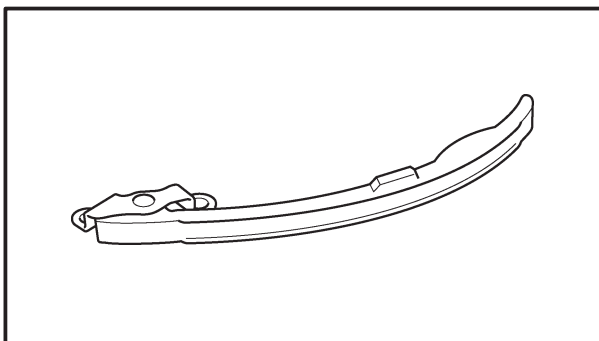
Cracks/damage/wear → Replace the defective part(-s).



20. Inspect:

- Timing chain ①
- Oil pump drive chain ②

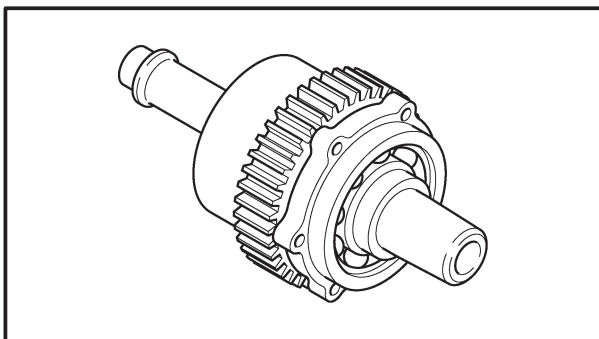
Damage/stiffness → Replace the chain and sprocket as a set.



21. Inspect:

- Timing chain guide (intake side)

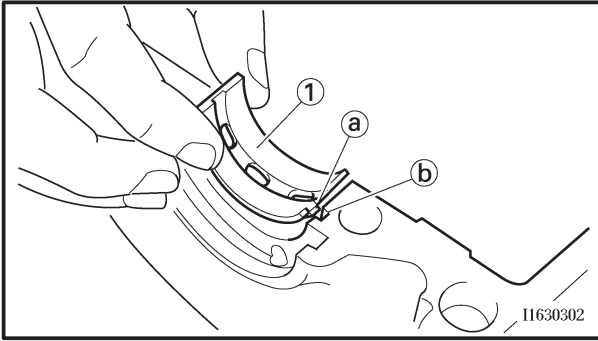
Damage/wear → Replace the timing chain guide.



22. Inspect:

- Counter shaft assembly

Damage → Replace.



INSTALLATION

1. Install:

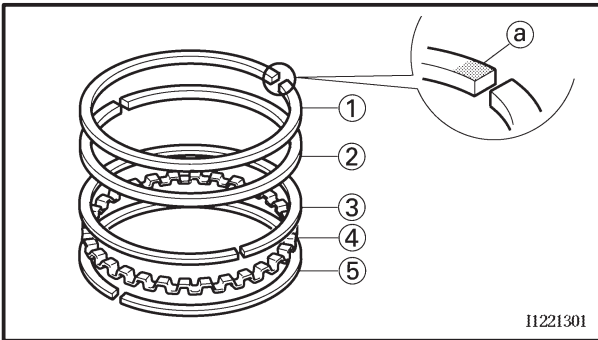
- Crankshaft journal bearing ①
(into the upper crankcase)

NOTE:

- Align the projections (a) on the crankshaft journal upper bearings with the notches (b) in the crankcase.
- Be sure to install each crankshaft journal upper bearing in its original place.

2. Install:

- Crankshaft

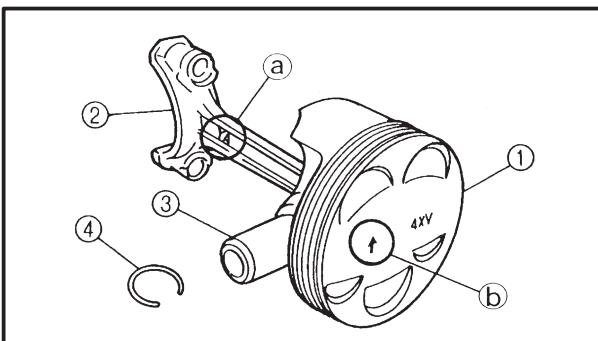


3. Install:

- 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 (a) face up.



4. 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 (a) on the connecting rod faces left when the arrow mark (b) 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 #4).

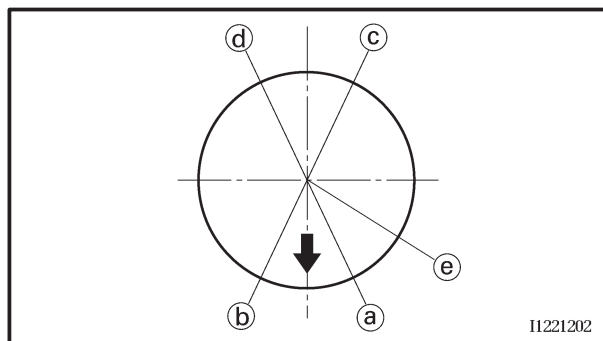


5. Lubricate:

- Piston
- Piston rings
- Cylinder
- Crankshaft pins
- Big end bearings
(with the recommended lubricant)



**Recommended lubricant
Engine oil**



6. Offset:

- Piston ring end gaps

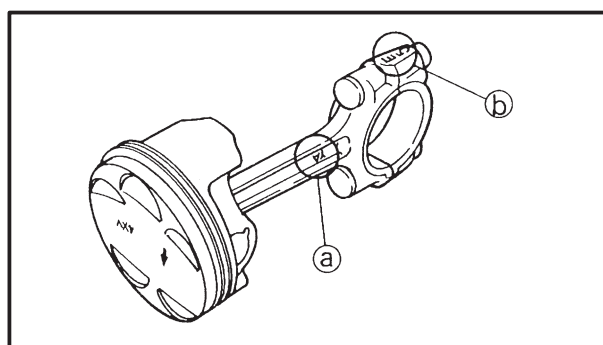
- Ⓐ Top ring
- Ⓑ Lower oil ring rail
- Ⓒ Upper oil ring rail
- Ⓓ 2nd ring
- Ⓔ Oil ring expander

7. Install:

- Big end bearings
- Connecting rod assembly
(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 one hand, install the connecting rod assembly into the cylinder with the other hand.
- Make sure that the “Y” marks Ⓐ on the connecting rods face towards the right side of the crankshaft.
- Make sure that the characters Ⓑ on both the connecting rod and connecting rod cap are aligned.

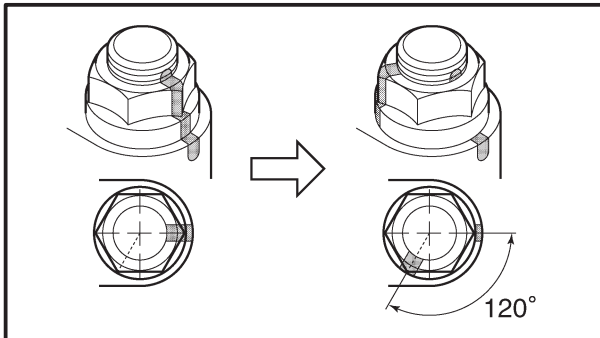
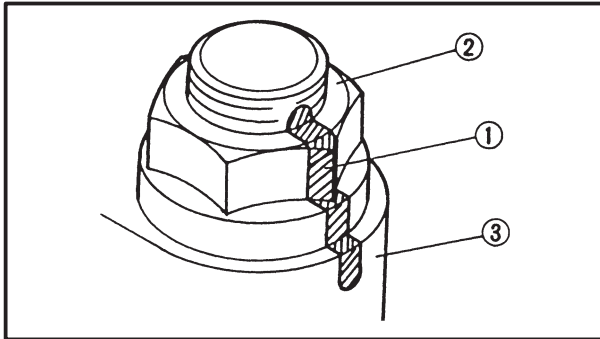




8. Align:
 - Bolt heads
(with the connecting rod caps)
9. Tighten:
 - Connecting rod nuts



Nut (connecting rod):
 20 Nm (2.0 m•kg, 14 ft•lb)+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 ① on the corner of the connecting rod nut ② and the connecting rod ③.
- Tighten the 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°.

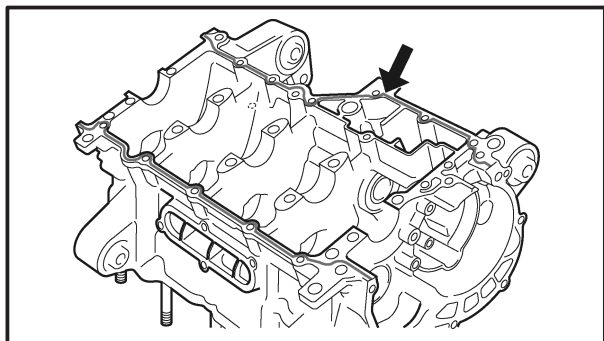


10. Lubricate:

- Crankshaft journal bearings
(with the recommended lubricant)



Recommended lubricant
Engine oil



11. Apply:

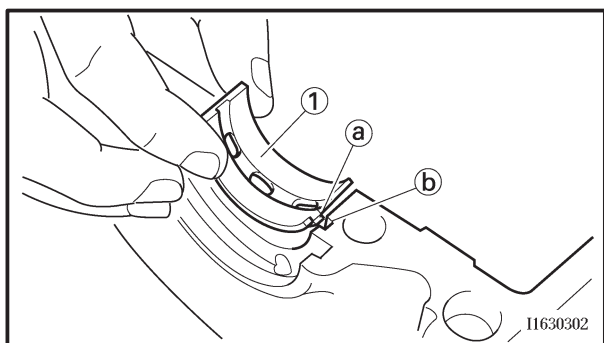
- Sealant
(onto the crankcase mating surfaces)



Yamaha bond No. 1215
90890-85505, ACC-1100-15-01

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 of the crankshaft journal bearings.

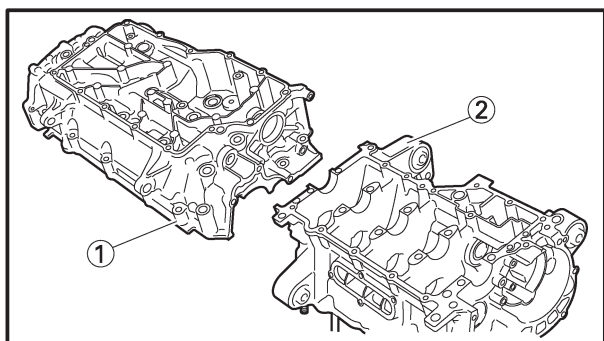


12. Install:

- Crankcase journal bearings ①
(into the lower crankcase)

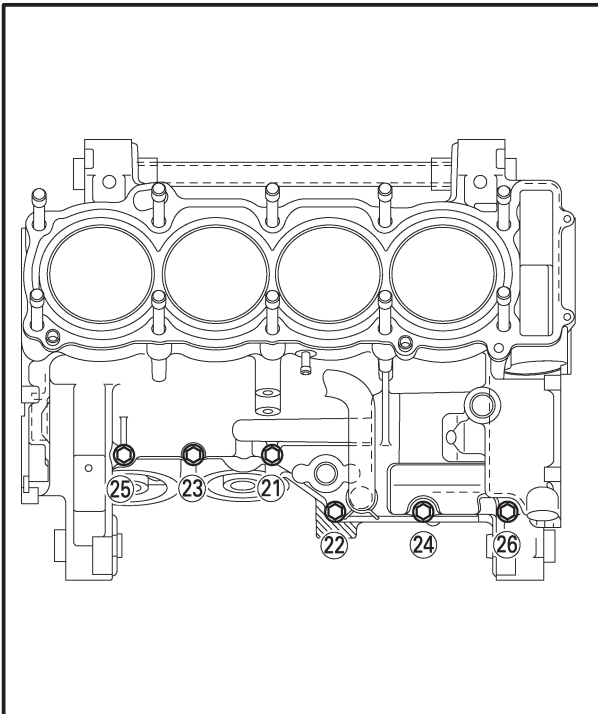
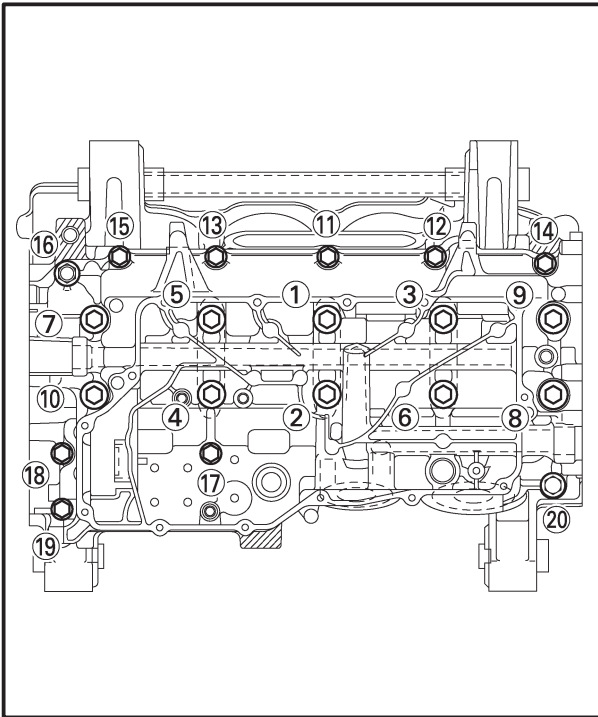
NOTE:

- 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.



13. Install:

- Lower crankcase ①
(onto the upper crankcase ②)



14. Install:

- Crankcase bolts

NOTE:

- Lubricate the bolt threads with engine oil.
- Tighten the bolts in increasing numerical order.
- Install washers on bolts ① ~ ⑩.



Crankcase bolt

Bolt ① ~ ⑩

1st: 15 Nm

(1.5 m•kg, 11 ft•lb)

2nd: 15 Nm

(1.5 m•kg, 11 ft•lb) +

45 ~ 50°

Bolt ⑪ ~ ⑳

12 Nm (1.2 m•kg, 8.7 ft•lb)

M9 × 105 mm bolts: ① ~ ⑩

M8 × 65 mm bolts: ⑯, ⑳

M5 × 90 mm bolts: ㉔

M5 × 80 mm bolts: ㉕

M5 × 55 mm bolts: ⑪ ~ ⑮

M5 × 45 mm bolts: ⑰, ⑱, ㉑ ~ ㉔

M5 × 25 mm bolts: ⑱

15. Install:

- Counter shaft assembly
- Timing chain
- Oil pump drive chain

16. Install:

- Gasket
- Counter shaft cover
- Bolts



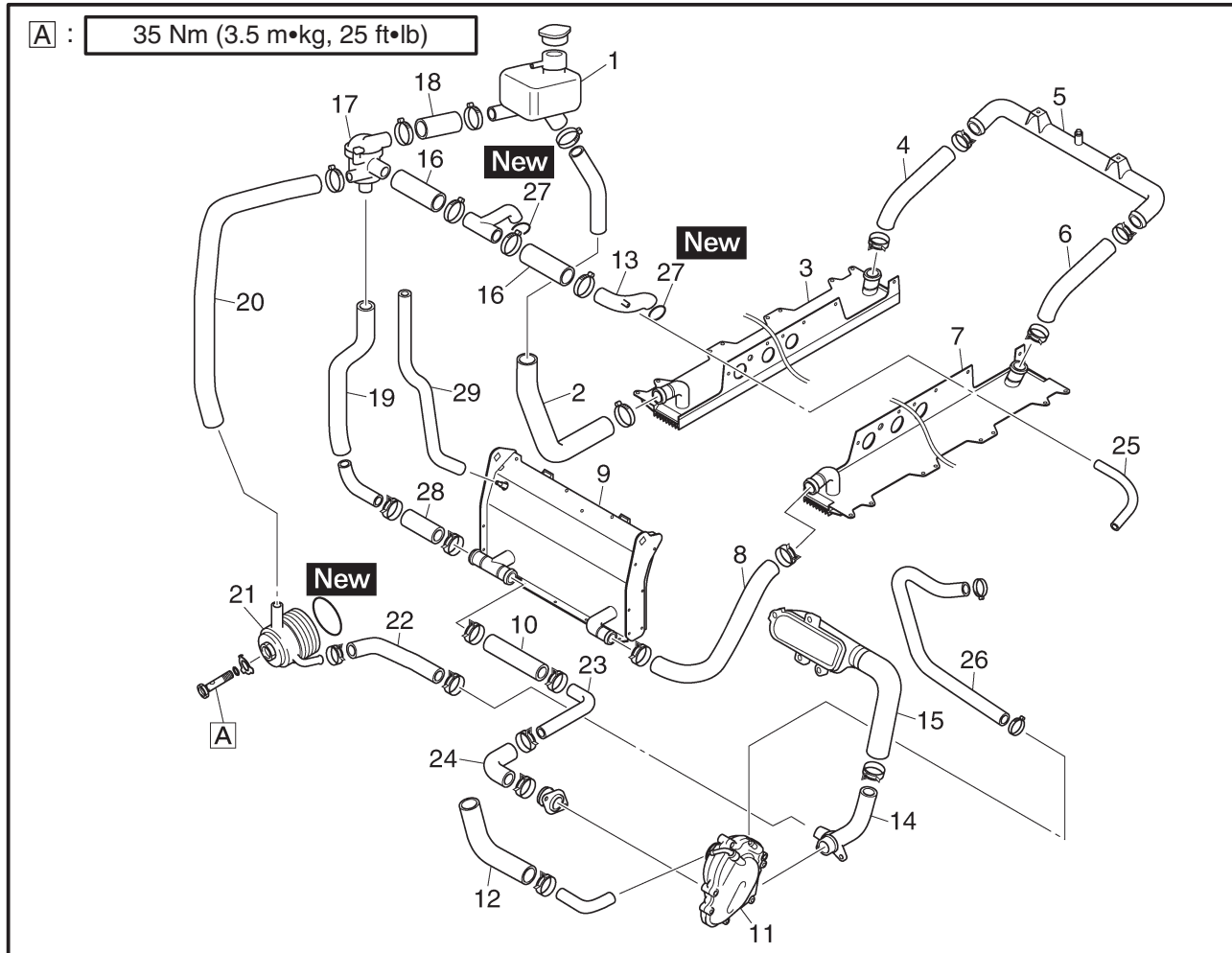
Bolts (countershaft cover):

12 Nm (1.2 m•kg, 8.7 ft•lb)



COOLING SYSTEM

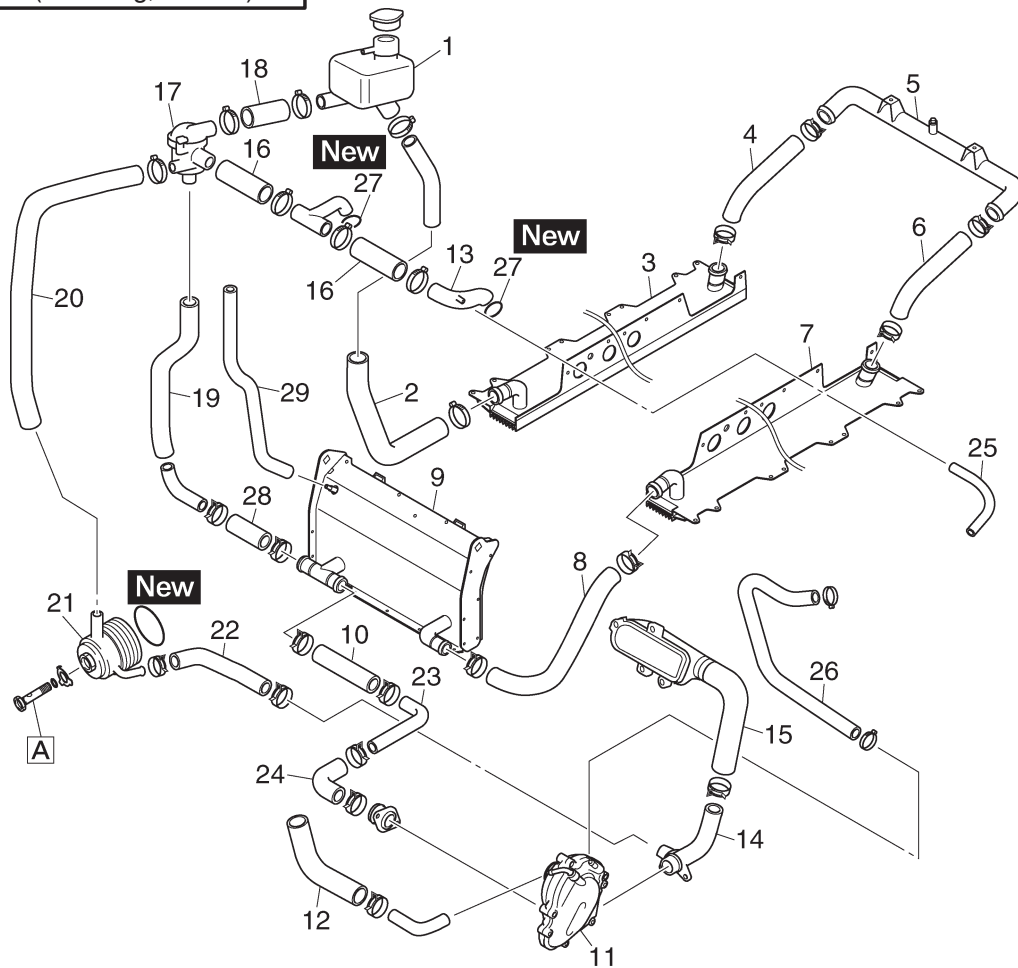
HEAT EXCHANGER



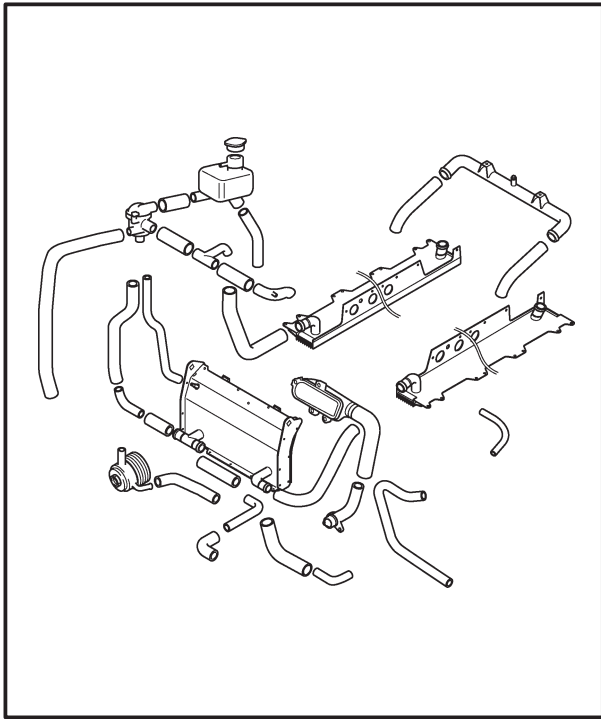
Order	Job name/Part name	Q'ty	Remarks
	Heat exchanger removal		Remove the parts in the order listed below. Drain. Refer to "COOLING SYSTEM" in CHAPTER 2. Refer to "PRIMARY SHEAVE AND DRIVE V-VELT" in CHAPTER 4.
	Coolant		
	Primary sheave assembly		
1	Coolant reservoir tank	1	
2	Coolant hose 1	1	
3	Heat 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	Heat exchanger (front)	1	
10	Coolant hose 5	1	
11	Water pump assembly	1	
12	Coolant hose 6	1	
13	Coolant pipe 1	1	



A : 35 Nm (3.5 m•kg, 25 ft•lb)



Order	Job name/Part name	Q'ty	Remarks
14	Coolant pipe 2	1	For installation, reverse the removal procedure.
15	Coolant hose 7	1	
16	Coolant hose 8	2	
17	Thermostat assembly	1	
18	Coolant hose 9	1	
19	Coolant hose 10	1	
20	Oil cooler outlet hose	1	
21	Oil cooler	1	
22	Oil cooler inlet hose	1	
23	Pipe 3	1	
24	Water pump hose	1	
25	Carburetor heater hose	1	
26	Heat exchanger hose	1	
27	O-ring	1	
28	Coolant hose 11	1	
29	Coolant hose 12	1	

**INSPECTION**

1. Inspect:

- Coolant hoses
- Heat exchangers
- Oil cooler
- Coolant pipes
- Cracks/damage → Replace.

2. Measure:

- Filler cap opening pressure
Cap opens with a pressure below the specified pressure → Replace.

**Filler cap opening pressure:**

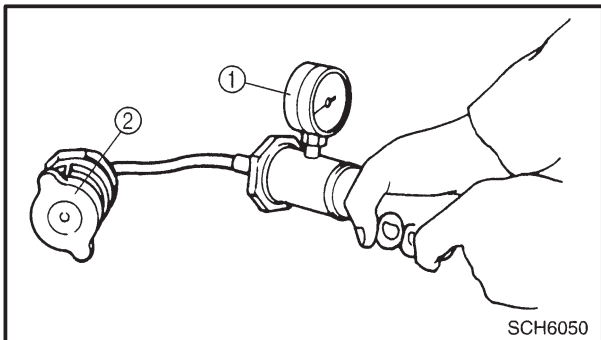
95 ~ 125 kPa

(0.95 ~ 1.25 kg/cm²,

14 ~ 18 psi)

Measurement steps:

- Attach the cooling system tester ① to the coolant filler cap ②.



SCH6050

**Cooling system tester:**

90890-01325, YU-24460-01

Adapter:

90890-01352, YU-33984

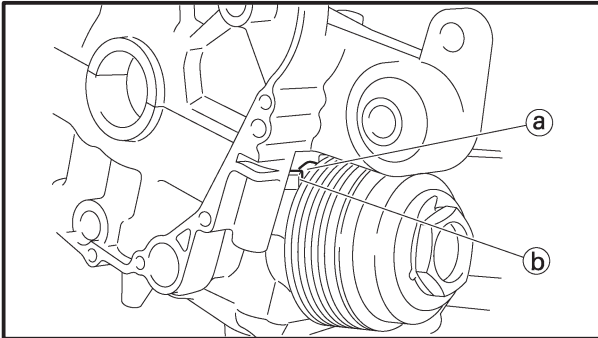
- Apply the specified pressure for 10 seconds and make sure there is no pressure drop.

**INSTALLATION**

1. Install:
 - Heat exchangersUse the rivet gun.
2. Install:
 - O-ring
 - Oil cooler
 - Lock washer
 - Bolt (oil cooler bolt)



Bolt (oil cooler):
35 Nm (3.5 m•kg, 25 ft•lb)

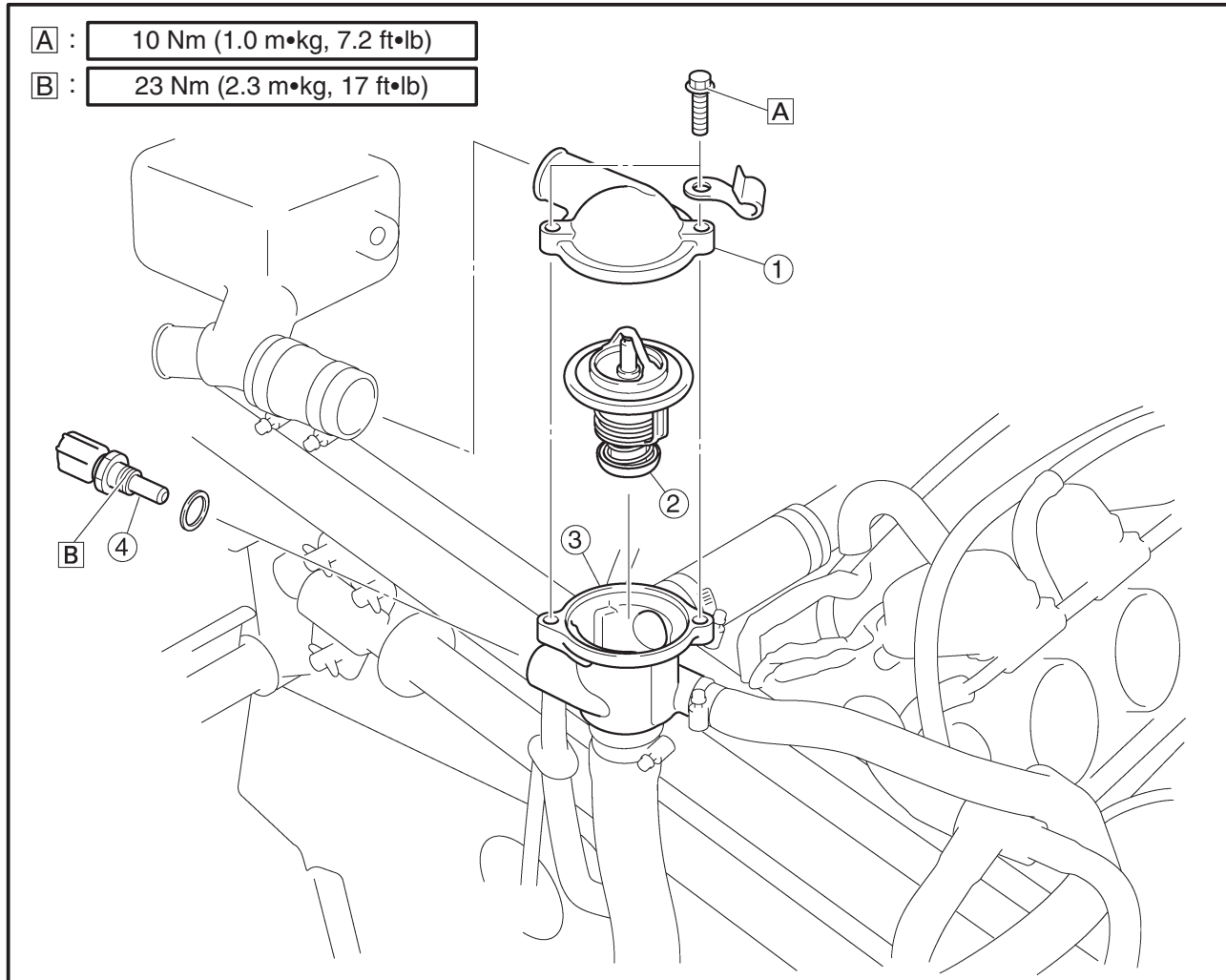
**NOTE:** _____

- Before installing the oil cooler, lubricate the oil cooler bolt and O-ring with a thin coat of engine oil.
- Make sure the O-ring is positioned properly.
- Align the projection (a) on the oil cooler with the slot (b) in the crankcase.

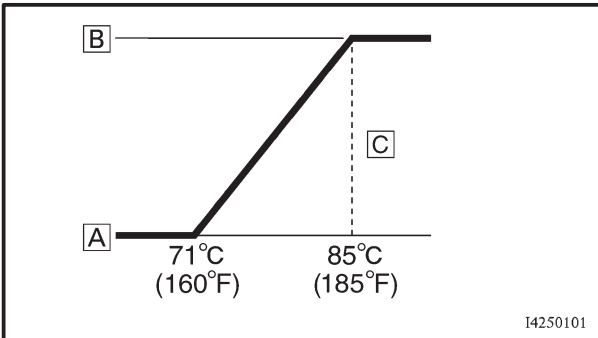
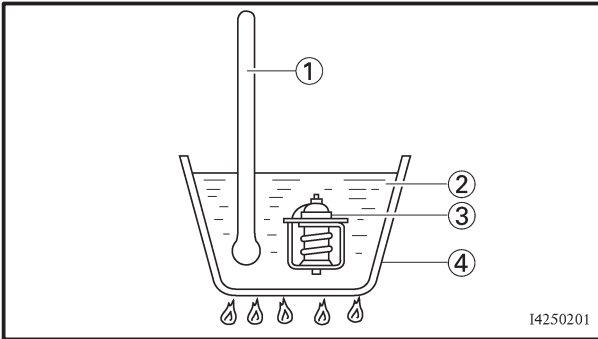
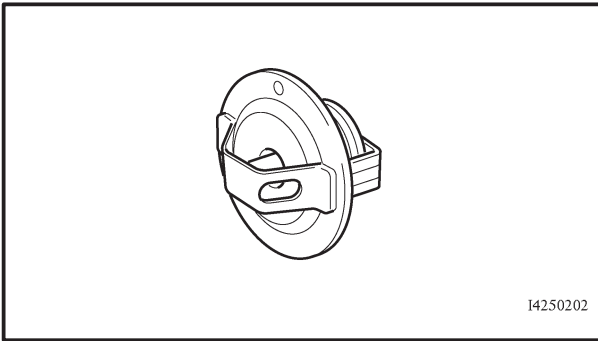
-
- Bend the lock washer tab along a flat side of the bolt.



THERMOSTAT



Order	Job name/Part name	Q'ty	Remarks
	Thermostat disassembly		Disassemble the parts in the order listed below.
①	Thermostat housing cover	1	
②	Thermostat	1	
③	Thermostat housing	1	
④	Water temperature sensor	1	For assembly, reverse the disassembly procedure.

**INSPECTION**

1. Inspect:

- Thermostat

Does not open at 71 ~ 85°C (160 ~ 185°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

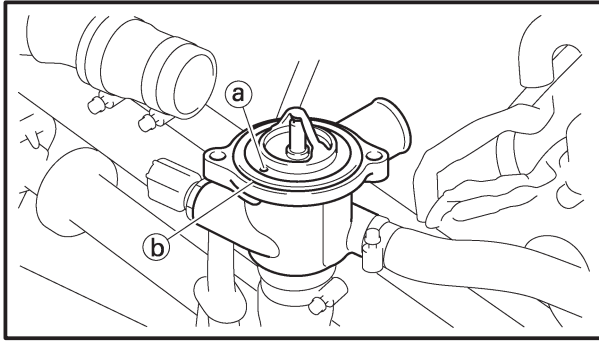
C More than 7 mm (0.276 in)

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:

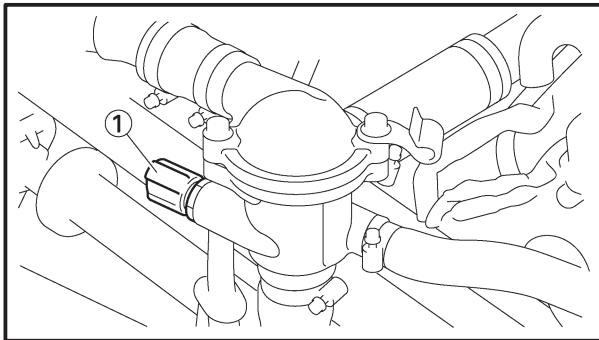
Install the thermostat with its breather hole (a) aligned with the this place (b) on the thermostat housing.

2. Install:

- Thermostat cover
- Bolts
(thermostat housing)



Bolt (thermostat housing):
10 Nm (1.0 m•kg, 7.2 ft•lb)



3. Install:

- Water temperature sensor (1)
(to the thermostat housing)



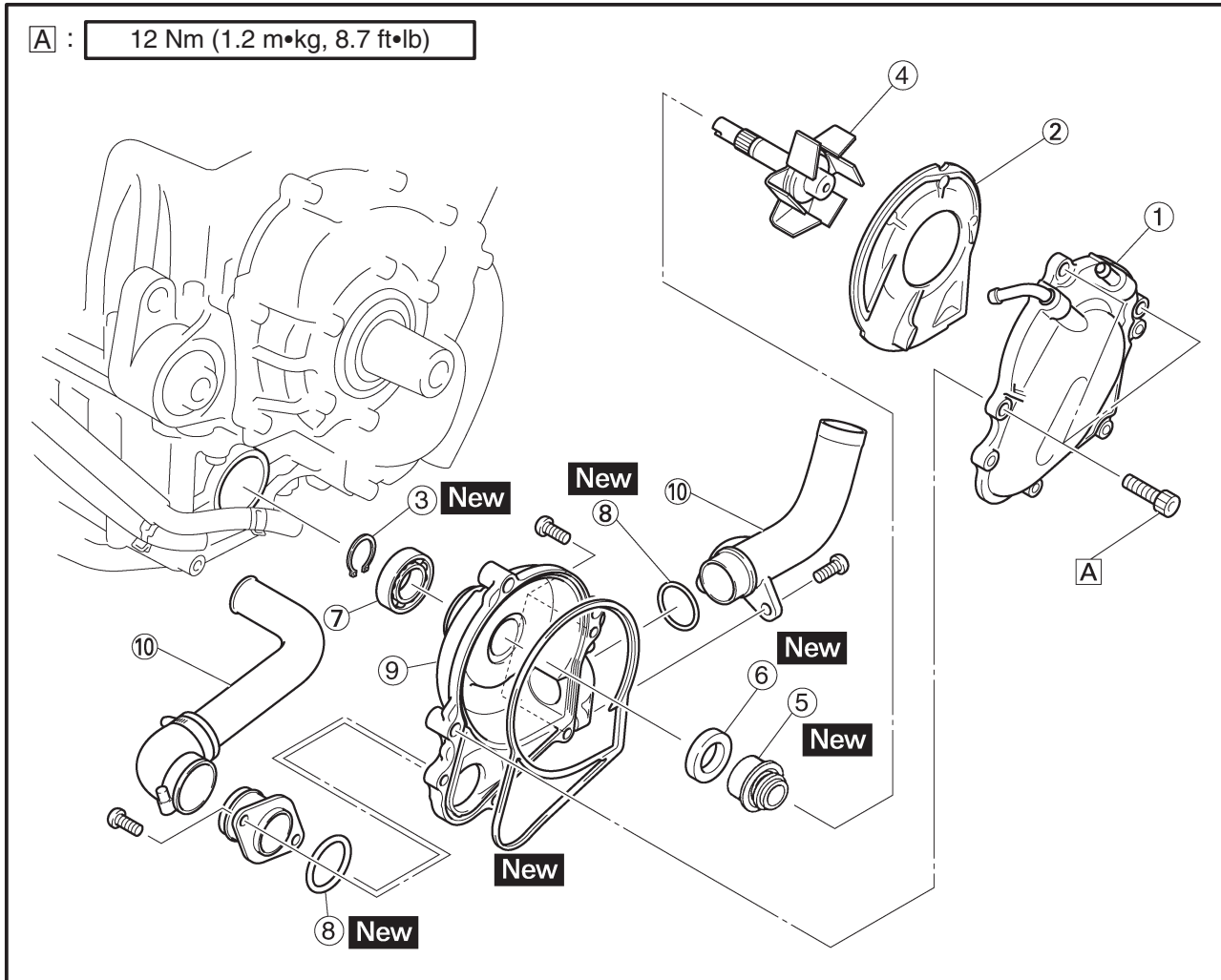
Water temperature sensor
23 Nm (2.3 m•kg, 17 ft•lb)

CAUTION:

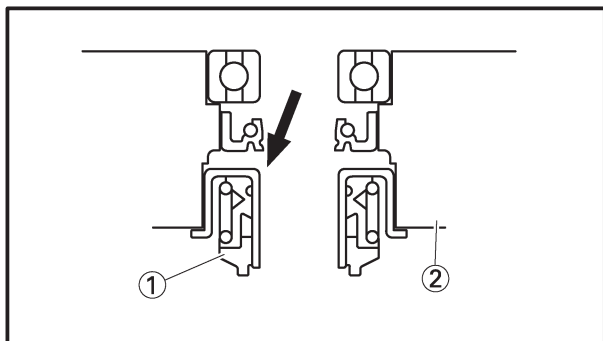
Use extreme care when handling the water temperature sensor. Replace any part that was dropped or subjected to a strong impact.



WATER PUMP



Order	Job name/Part name	Q'ty	Remarks
	Water pump disassembly		Disassembly the parts in the order listed below. Refer to "OIL PAN AND OIL PUMP".
①	Oil pan	1	
②	Water pump cover	1	
③	Plate	1	
④	Circlip	1	
⑤	Impeller shaft	1	
⑥	Water pump seal	1	
⑦	Oil seal	1	
⑧	Bearing	1	
⑨	O-ring	2	
⑩	Water pump housing	1	
	Pipe	2	
			For assembly, reverse the disassembly procedure.



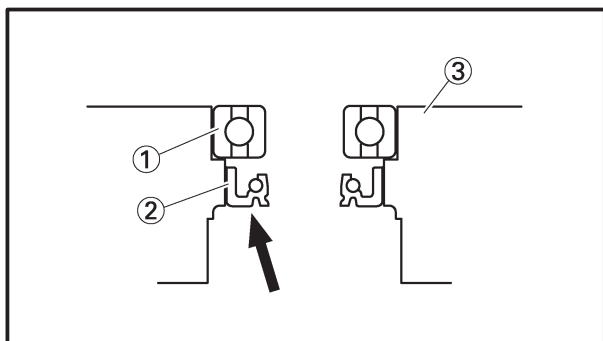
DISASSEMBLY

1. Remove:

- Impeller
- Water pump seal ①

NOTE:

Remove the water pump seal ① from the inside of the water pump housing ②.

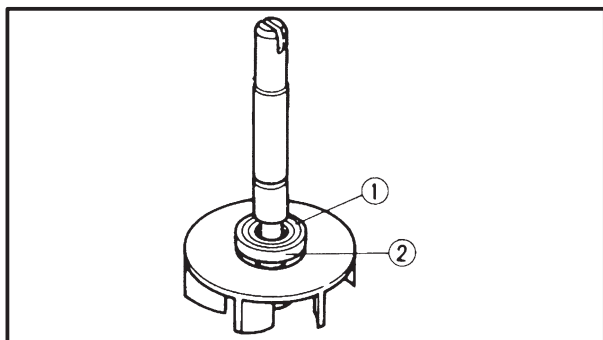


2. Remove:

- Bearing ①
- Oil seal ②

NOTE:

Remove the bearing ① and oil seal ② from the inside of the water pump housing ③.

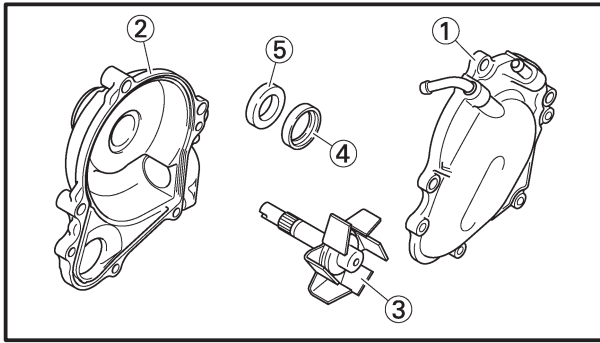


3. Remove:

- Rubber damper holder ①
- Rubber damper ②
(from the impeller, with a thin, flat-head screwdriver)

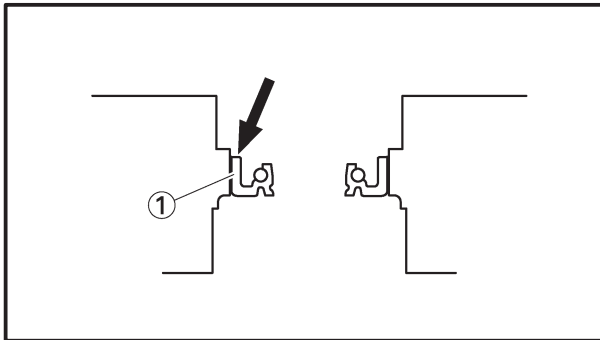
NOTE:

Do not scratch the impeller shaft.



INSPECTION

1. Inspect:
 - Water pump housing cover ①
 - Water pump housing ②
 - Impeller ③
 - Rubber damper ④
 - Rubber damper holder ⑤
 - Water pump seal
 - Oil seal
 - Cracks/damage/wear → Replace.
2. Inspect:
 - Bearing
 - Rough movement → Replace.



ASSEMBLY

1. Install:
 - Oil seal **New** ①
 - (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

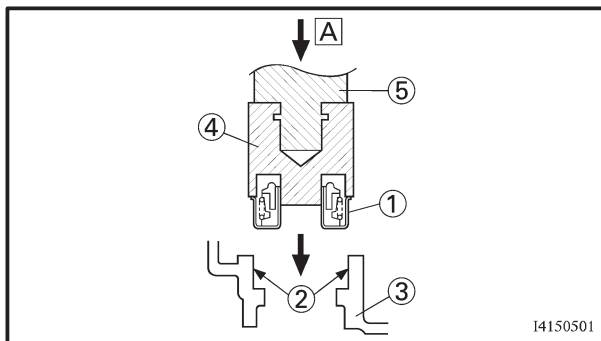
NOTE: _____

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 water pump seal installers ④ ⑤.
- Before installing the water pump seal, apply Yamaha bond No.1215 ② to the water pump housing ③.



Water pump seal installer:

90890-04078, YM-33221

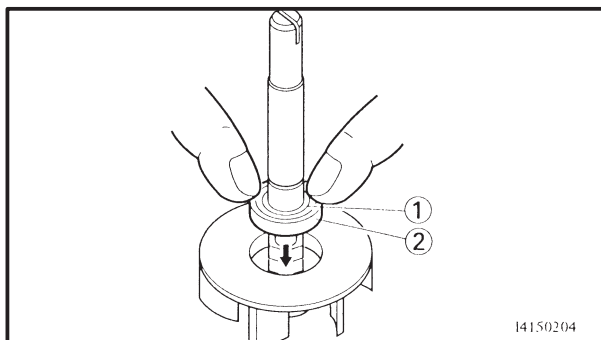
40 and 50 mm Bearing driver:

90890-04058, YM-4058

Yamaha bond No.1215

90890-85505, ACC-11001-05-01

A Push down

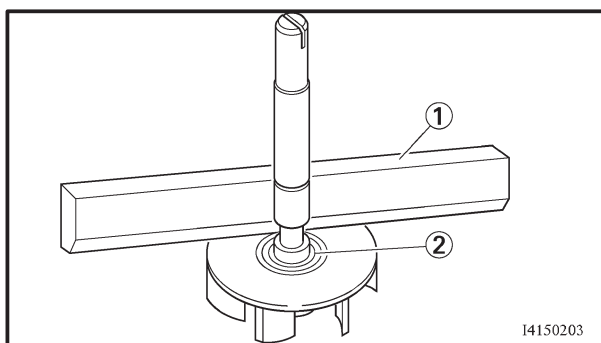


4. Install:

- 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)

<Limit>: 0.072 mm (0.0028 in)

① Straightedge

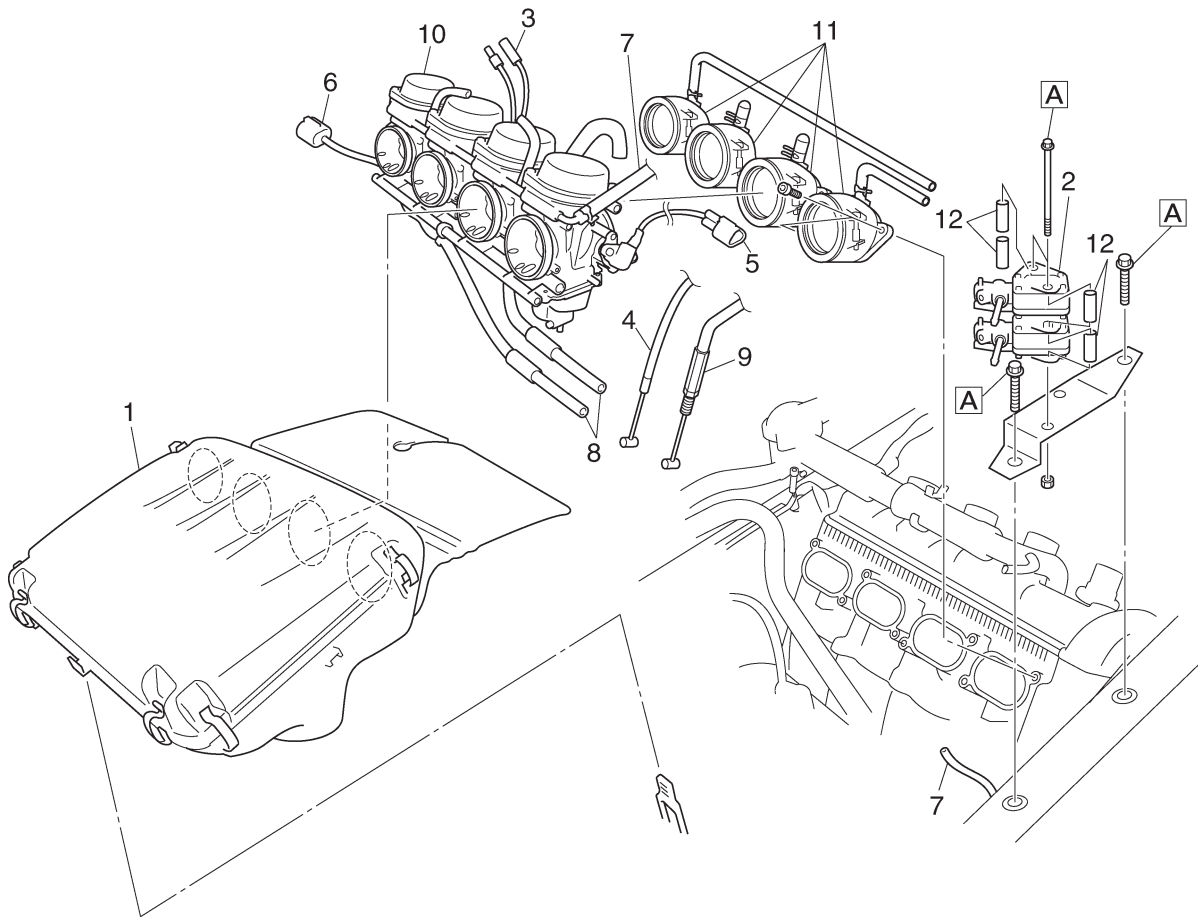
② Impeller



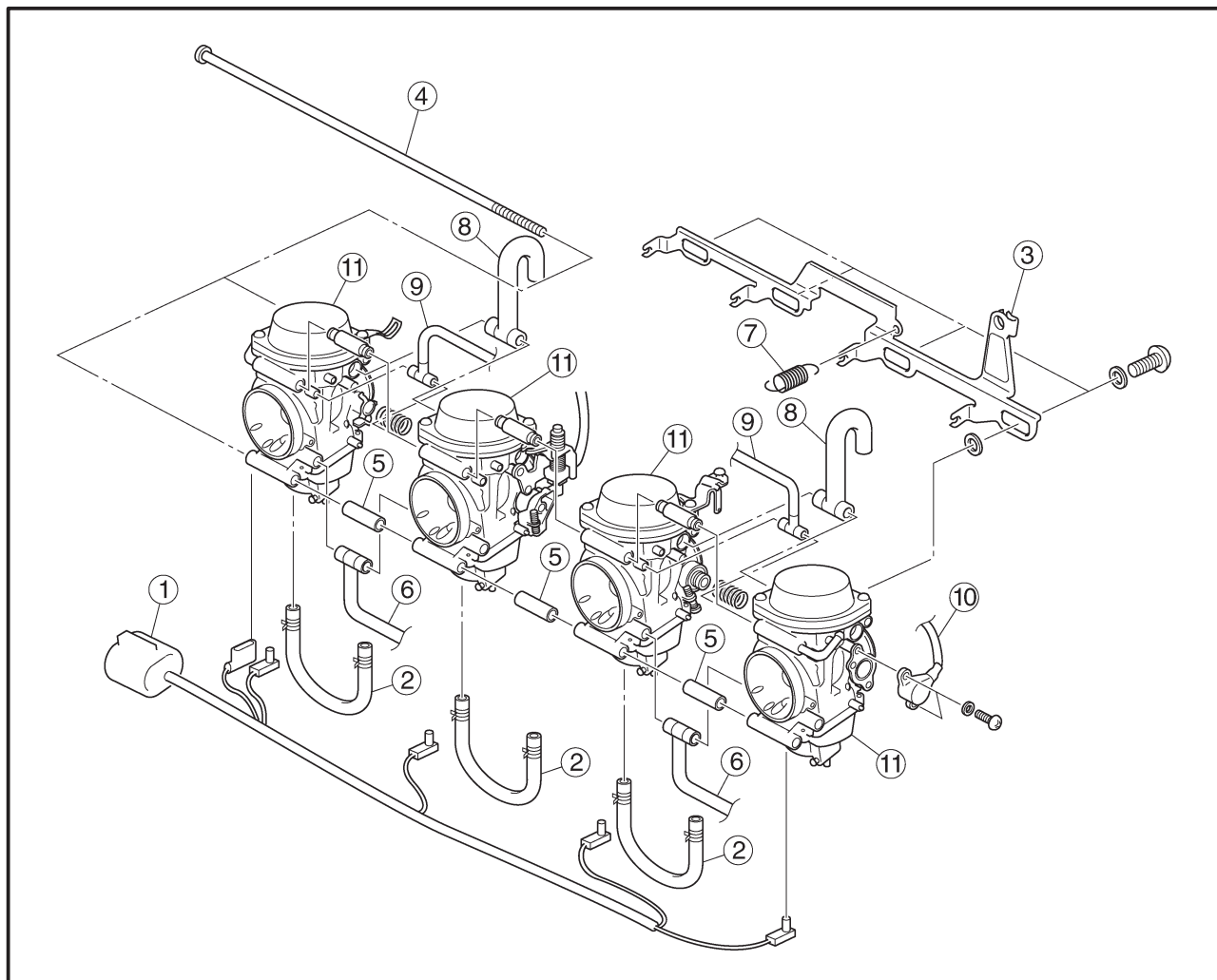
CARBURETION

CARBURETORS

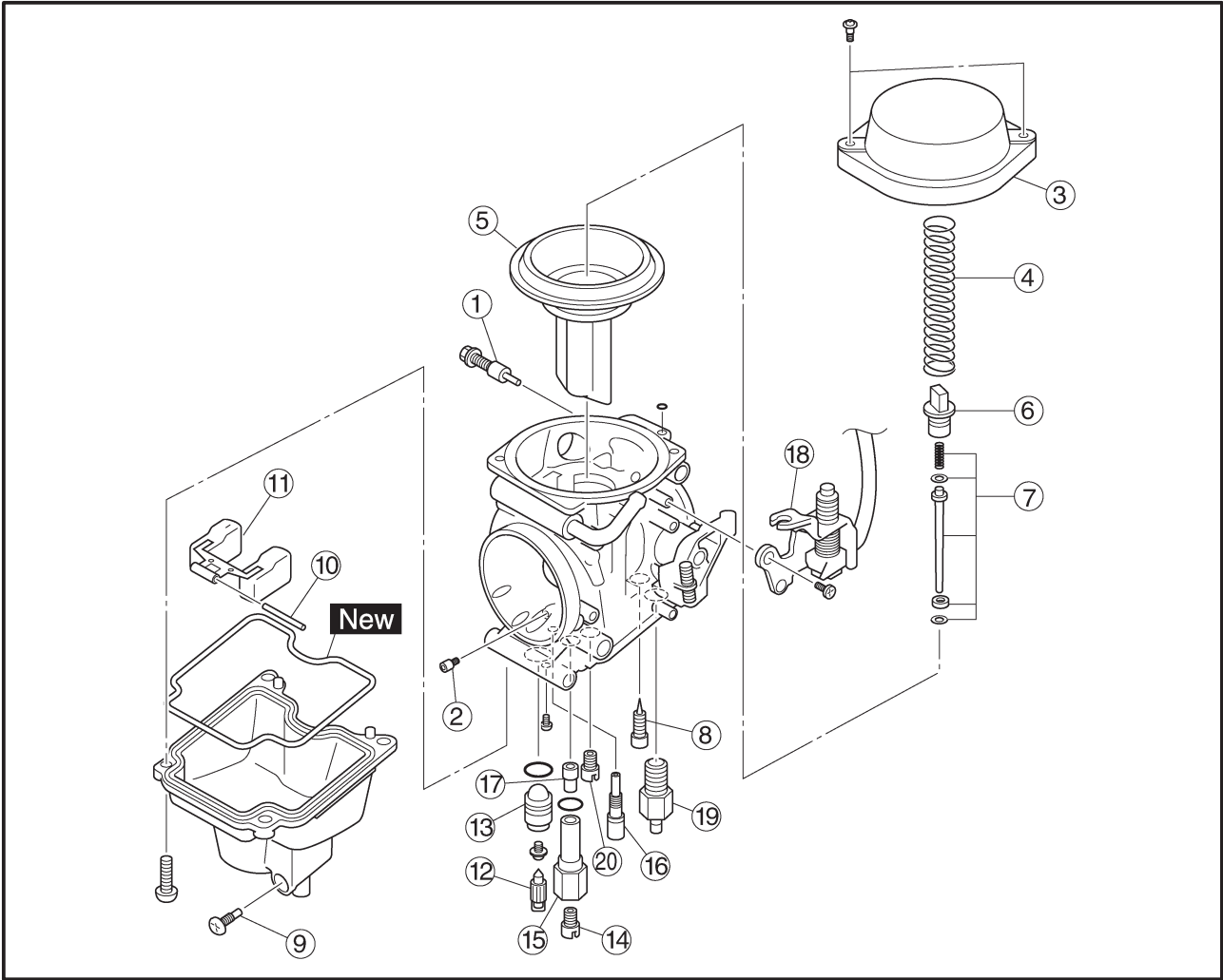
A : 10 Nm (1.0 m•kg, 7.2 ft•lb)



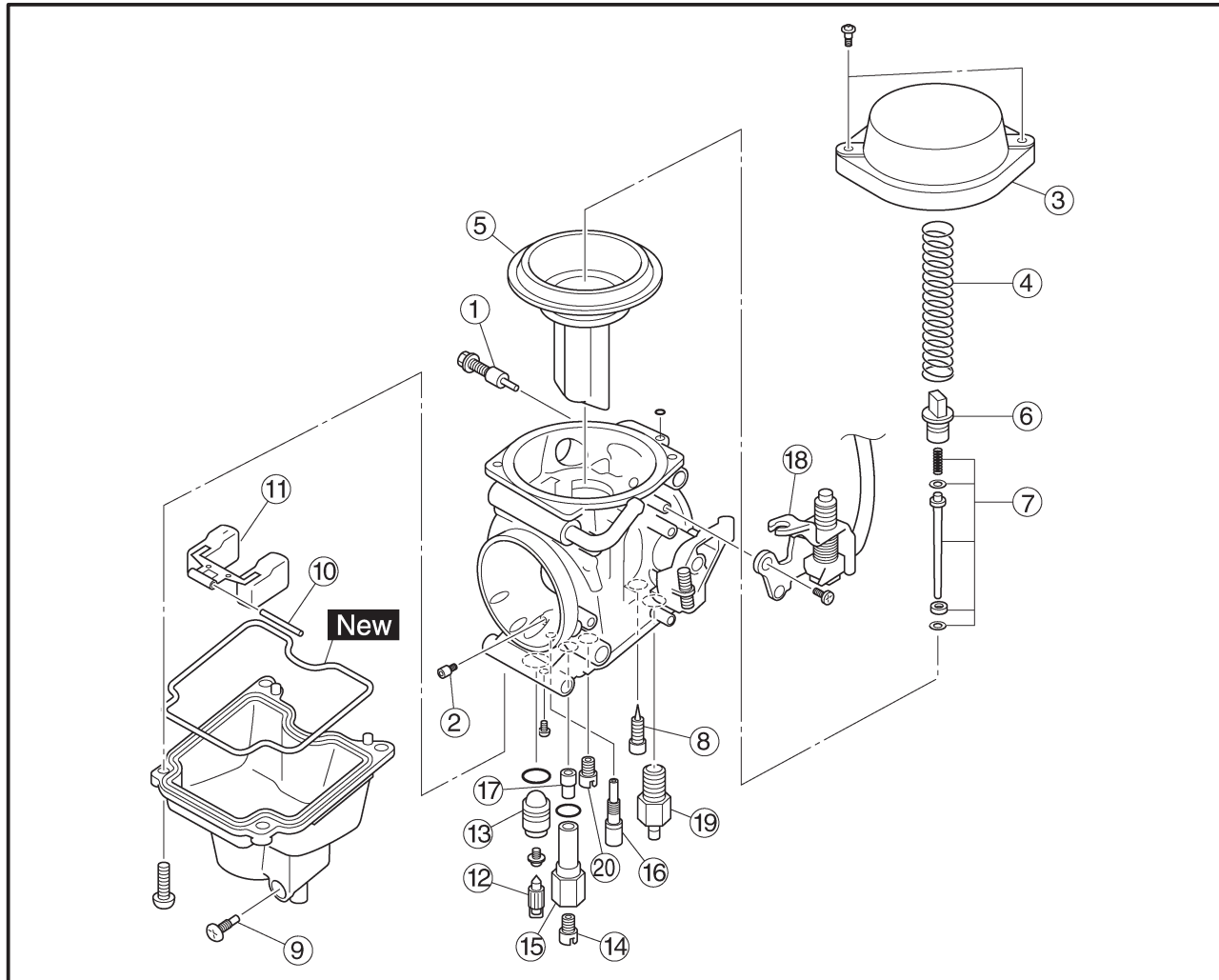
Order	Job name/Part name	Q'ty	Remarks
	Carburetors removal		Remove the parts in the order listed below.
1	Intake silencer	1	
2	Fuel pump	1	
3	Carburetor switch (T.O.R.S.) lead	2	Disconnect.
4	Starter cable	1	
5	Throttle position sensor coupler	1	Disconnect.
6	Carburetor heater lead	1	Disconnect.
7	Carburetor heating hose	2	
8	Fuel hose	2	
9	Throttle cable	1	
10	Carburetor assembly	1	
11	Caburetor joint	4	
12	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	Carburetor heater harness	1	
②	Carburetor heating hose	3	
③	Starter plunger link	1	
④	Connecting bolt	2	
⑤	Spacer	3	
⑥	Fuel inlet pipe	2	
⑦	Spring	1	
⑧	Vacuum chamber air vent hose	2	
⑨	Float chamber air vent hose	2	
⑩	Throttle position sensor	1	
⑪	Carburetor	4	For installation, reverse the removal procedure.



Order	Job name/Part name	Q'ty	Remarks
	Carburetor disassembly		Disassemble the parts in the order listed below. NOTE: _____ The following procedure applies to all of the carburetors. _____
①	Starter plunger	1	
②	Pilot air jet	1	
③	Vacuum chamber cover	1	
④	Piston valve spring	1	
⑤	Piston valve	1	
⑥	Jet needle holder	1	
⑦	Jet needle kit	1	
⑧	Pilot screw	1	
⑨	Fuel drain bolt	1	
⑩	Float pin	1	



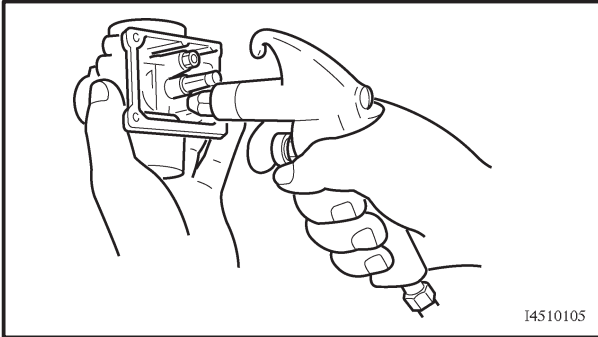
Order	Job name/Part name	Q'ty	Remarks
⑪	Float	1	For assembly, reverse the disassembly procedure.
⑫	Needle valve	1	
⑬	Needle valve seat	1	
⑭	Main jet	1	
⑮	Main jet holder	1	
⑯	Pilot jet	1	
⑰	Needle jet	1	
⑱	Carburetor switch (T.O.R.S.)	1	
⑲	Carburetor heater	1	
⑳	Starter jet	1	



INSPECTION

1. Inspect:

- Carburetor body
 - Float chamber
 - Jet housing
- Cracks/damage → Replace.

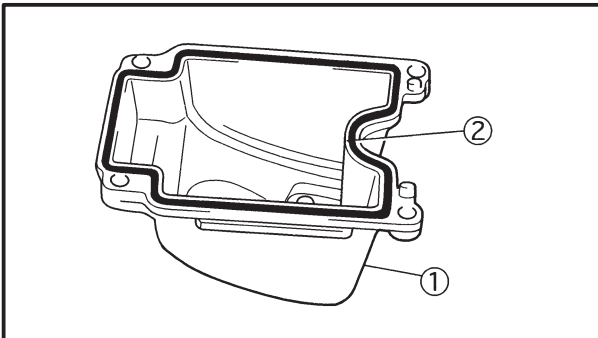


2. Inspect:

- Fuel passages
- Obstruction → Clean.

NOTE:

- Use a petroleum based solvent for cleaning.
- Blow out all passage and jets with compressed air.

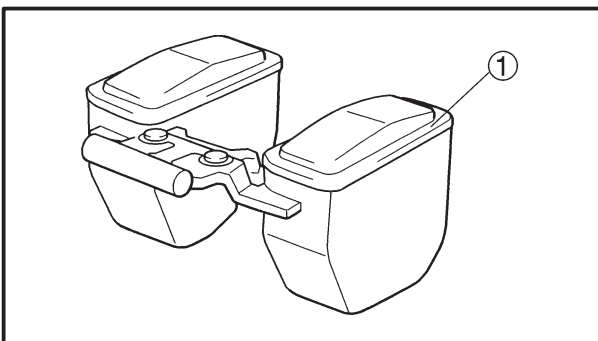


3. Inspect:

- Float chamber body ①

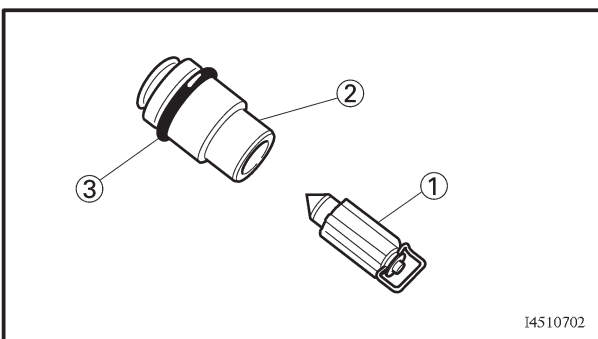
4. Inspect:

- Float chamber rubber gasket ②
- Cracks/damage/wear → Replace.



5. Inspect:

- Float ①
- Damage → Replace.

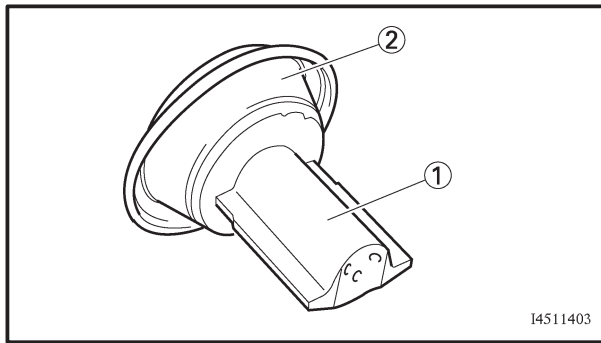


6. Inspect:

- Needle valve ①
 - Needle valve seat ②
- Damage/obstruction/wear → Replace the needle valve, needle valve seat and O-ring as a set.

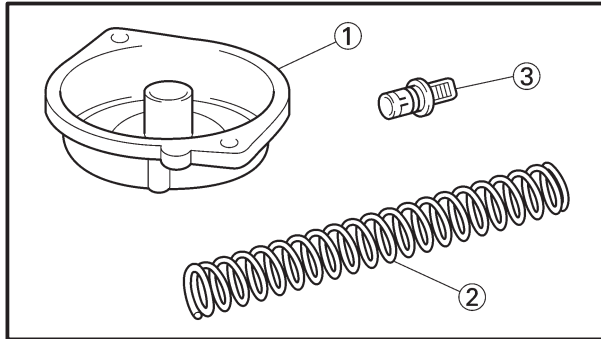
7. Inspect:

- O-ring ③
- Damage/wear → Replace the needle valve, needle valve seat and O-ring as a set.



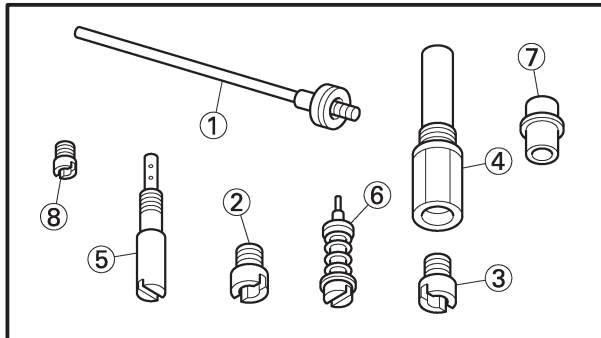
8. Inspect:

- Piston valve ①
Damage/scratches/wear → Replace.
- Rubber diaphragm ②
Cracks/tears → Replace.



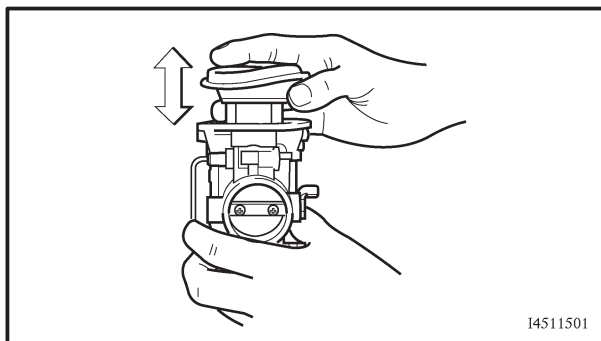
9. Inspect:

- Vacuum chamber cover ①
- Piston valve spring ②
- Jet needle holder ③
Cracks/damage → Replace.



10. Inspect:

- Jet needle kit ①
- Starter jet ②
- Main jet ③
- Main jet holder ④
- Pilot jet ⑤
- Pilot screw ⑥
- Needle jet ⑦
- Pilot air jet ⑧
Bends/damage/wear → Replace.
Obstruction → Clean.
Blow out the jets with compressed air.



11. Inspect:

- Piston valve movement
Insert the piston valve into the carburetor body and move it up and down.
Tightness → Replace the piston valve.

12. Inspect:

- Fuel feed pipes
- Hose joint
Cracks/damage → Replace.
Obstruction → Clean.
Blow out the pipes with compressed air.

13. Inspect:

- Fuel feed hoses
- Fuel hoses
Cracks/damage/wear → Replace.
Obstruction → Clean.
Blow out the hoses with compressed air.



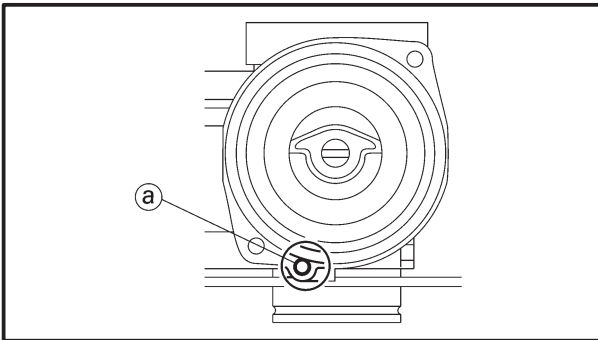
ASSEMBLY

NOTE:

- Before assembling the carburetors, wash all of the parts in a petroleum based solvent.
- Always use a new gasket and O-rings.

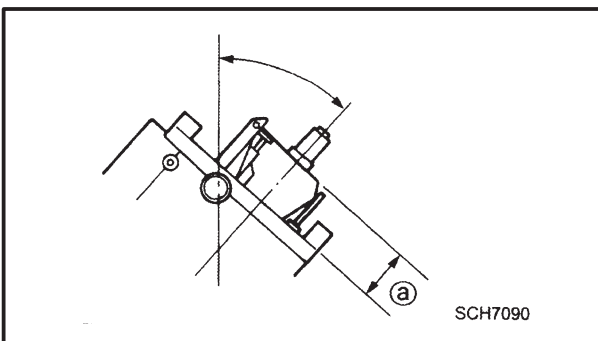
1. Install:

- Jet needle kit
- Needle jet
- Pilot jet
- Main jet



2. Inspect:

- Piston valve
- Piston valve spring
- Vacuum chamber cover
- O-ring (a)



3. Measure:

- Float height (a)
- Out of specification → Adjust.



Float height:

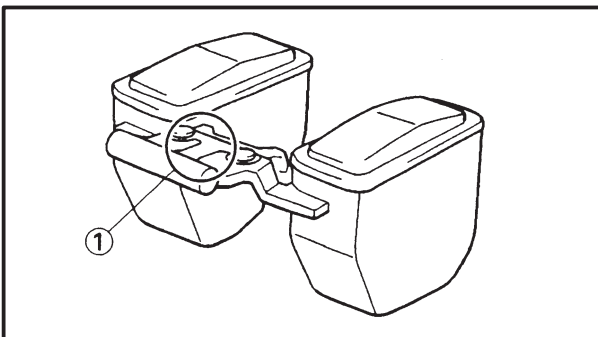
11 ~ 15 mm (0.43 ~ 0.59 in)

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 be 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 “SYNCHRONIZING THE CARBURETORS” in CHAPTER 2.

2. Adjust:

- Engine idling speed

**Engine idle speed:**

$1,350 \pm 100$ r/min

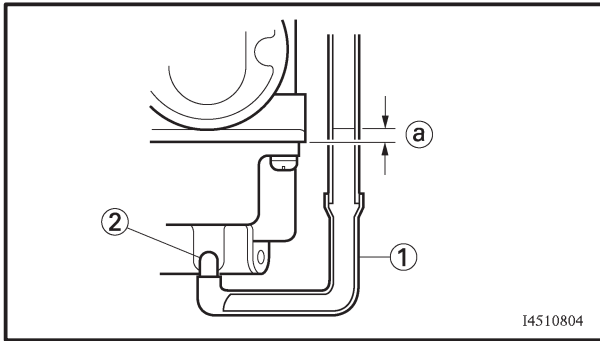
(1,250 ~ 1,450 r/min)

Refer to “ENGINE IDLE SPEED ADJUSTMENT” in CHAPTER 2.

3. Adjust:

- Throttle cable free play

Refer to “THROTTLE CABLE FREE PLAY” in CHAPTER 2.



FUEL LEVEL ADJUSTMENT

1. Measure:

- Fuel level ①
- Out of specification → Adjust.



Fuel level (below the line on the float chamber):
3.0 ~ 4.0 mm (0.118 ~ 0.157 in)

Measurement steps:

- Install the fuel level gauge ① to the fuel drain pipe ②.

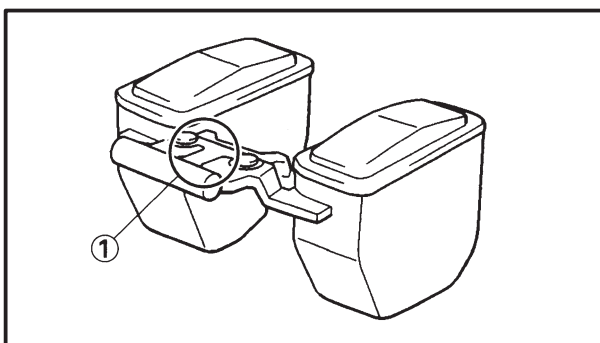
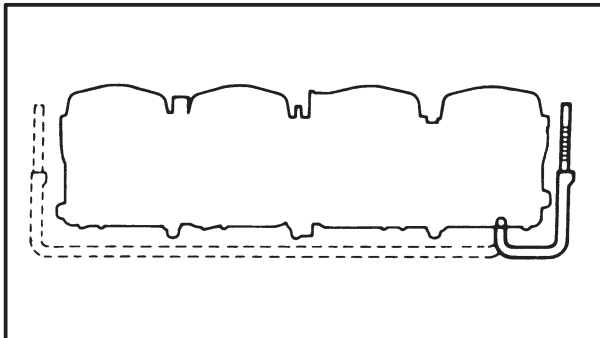


Fuel level gauge
90890-01312, YU-01312-A

- Loosen the fuel drain screw.
- 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:

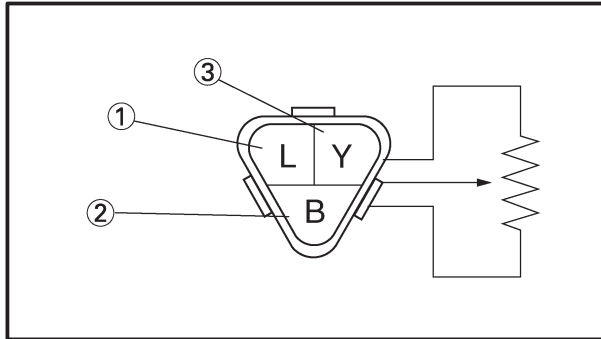
- Remove the carburetor assembly.
- Inspect the needle valve seat and needle valve.
- If either is worn, replace them as a set.
- If both are fine, adjust the float height by bending the float tang ① or the float.
- Recheck the fuel level.



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 throttle position sensor coupler.
- Connect the pocket tester ($\Omega \times 1k$) to the throttle position sensor coupler.

Tester (–) lead → **Blue terminal ①**

Tester (+) lead → **Black terminal 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.

Tester (–) lead → **Yellow ③**

Tester (+) lead → **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.

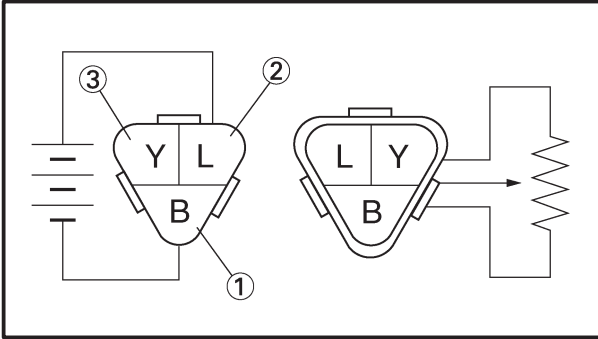


2. Adjust:

- Throttle position sensor position

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 (-) → ①

Dry cells (+) → ②

- Connect the digital multimeter to the test coupler.

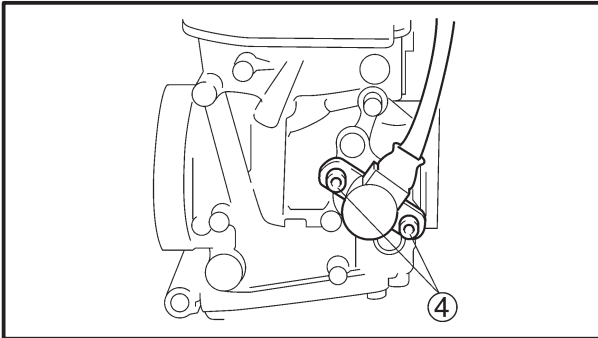
Digital multimeter (-) lead → ①

Digital multimeter (+) lead → ③

- Measure the voltage ①.

NOTE:

When measuring the voltage ① be sure that the test coupler is connected to the throttle position sensor.



- Calculate the specified voltage ②.

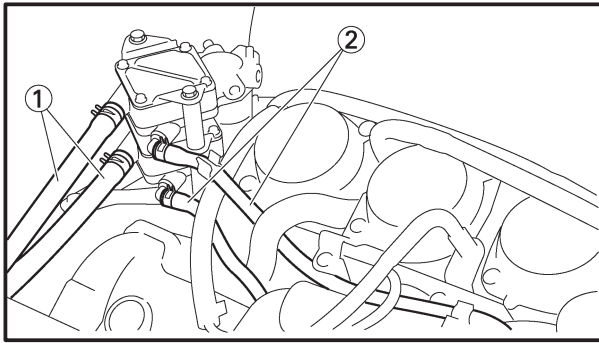
Specified voltage ② = Voltage ① × (0.136)

- Loosen the throttle position sensor bolts ④.
- Connect the digital multimeter to the test coupler

Digital multimeter (-) lead → ①

Digital multimeter (+) lead → ③

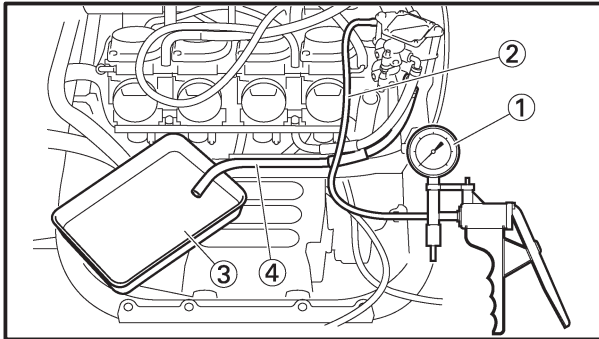
- Adjust the throttle position sensor position to obtain the specified voltage ②.
- Tighten the throttle position sensor bolts ④.
- Disconnect the test coupler and connect the throttle position sensor coupler.



INSPECTION

1. Inspect:

- Fuel hose ①
 - Vacuum hose ②
- Clogs/damage → Replace.



2. Inspect:

- Fuel pump operation.

Inspection steps:

- Connect the Mity vac ① to the vacuum hose ②.



Mity vac:

90890-06756, YB-35956

- Place a container ③ under the end of the fuel hoses ④.
- Operate the Mity vac ① while checking that fuel flows from the fuel hoses 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

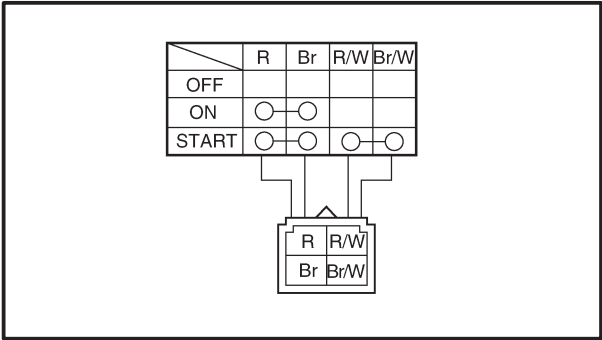
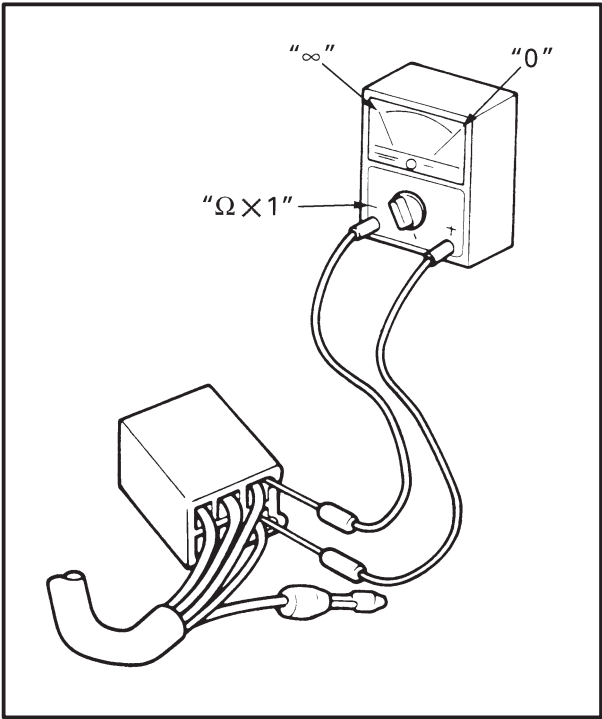
Use a pocket tester to check the terminals for continuity. If the continuity is faulty at any point, replace the switch.



Pocket tester:
90890-03112, YU-03112

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 “× 1” Ω range.
- When checking the switch turn it on and off a few times.



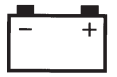
INSPECTING A SWITCH SHOWN IN THE
MANUAL

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.

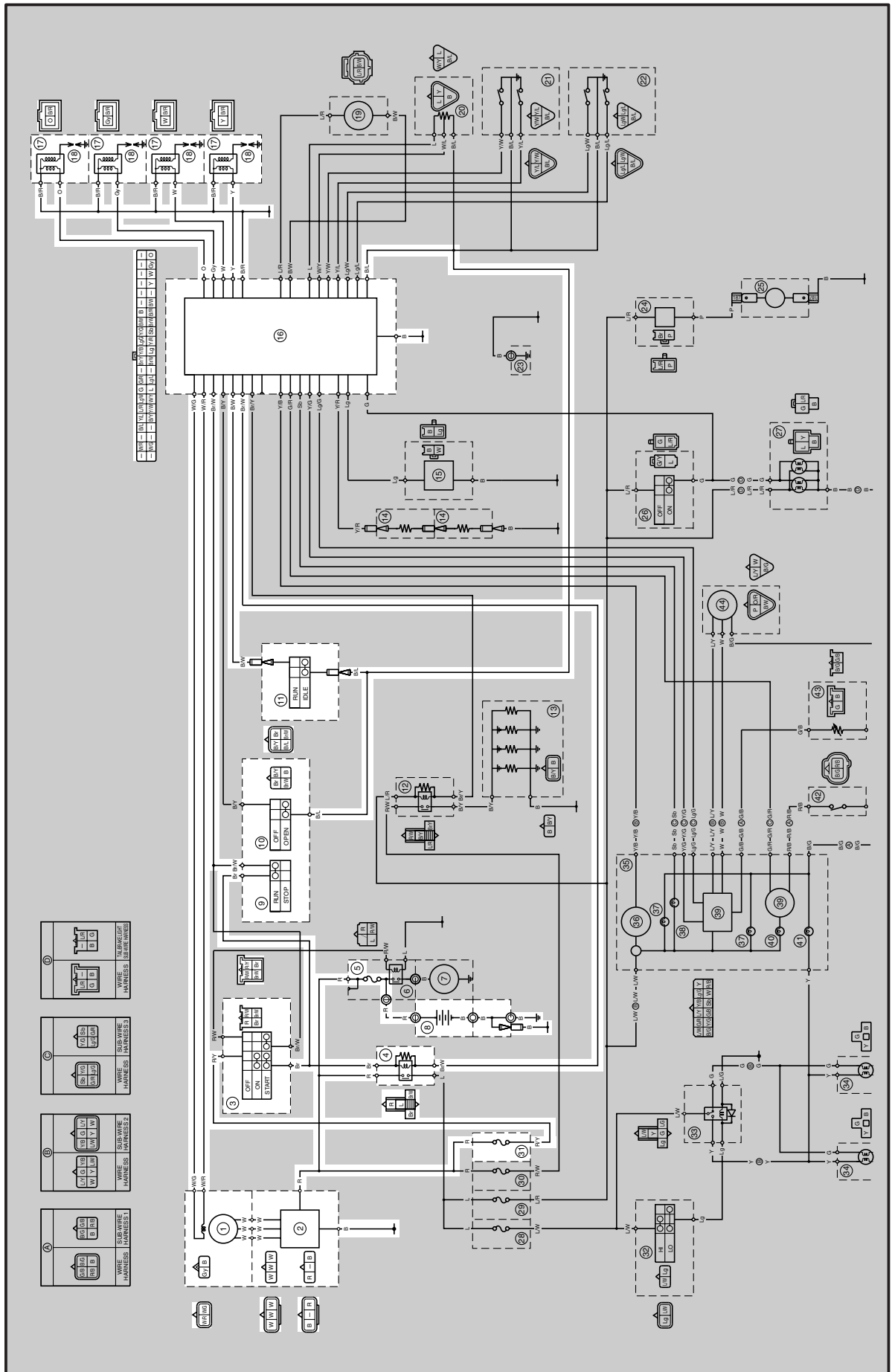
This chart shows the switch positions in the column and the switch lead colors in the top row. For each switch position, “○—○” indicates the terminals with continuity.

The example chart shows that:

- ① There is continuity between the “Red and Brown” leads when the switch is set to “ON”.
- ② There is continuity between the “Red/White and Brown/White” leads when the switch is set to “START”.



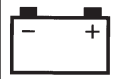
IGNITION SYSTEM CIRCUIT DIAGRAM





IGNITION SYSTEM CIRCUIT DIAGRAM

- ① A.C. magneto
- ② Rectifier/regulator
- ③ Main switch
- ④ Main relay
- ⑤ Fuse (MAIN)
- ⑧ Battery
- ⑨ Engine stop switch
- ⑩ Throttle switch
- ⑪ Carburetor switch
- ⑫ CDI unit
- ⑬ ignition coil
- ⑭ Spark plug
- ⑮ Fuse (IGNITION)



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 CHARGING" in CHAPTER 2.

Check the stator coil and pickup coil.



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

Check the spark plug gap.



OK

OUT OF SPECIFICATION



Repair or replace the spark plug.

Check the ignition coil resistance.



OK

OUT OF SPECIFICATION



Replace the ignition coil.

Check the engine stop switch, throttle switch, carburetor switch and main switch.



OK

FAULTY



Replace the handlebar switch (right), carburetor switch, and/or main switch.

Check the main relay.



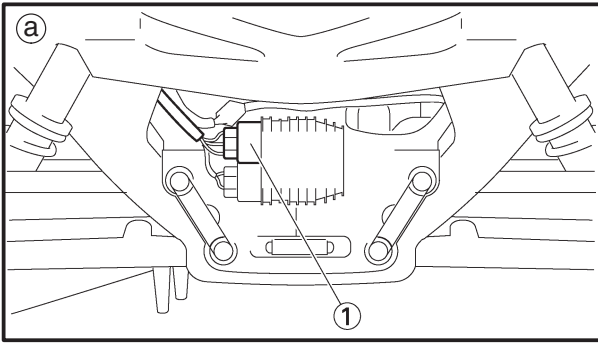
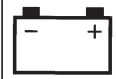
OK

FAULTY



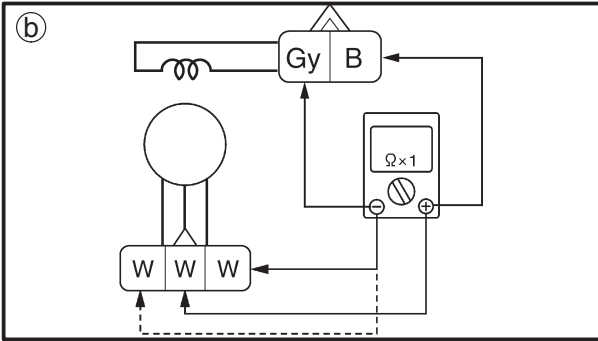
Replace the main relay.

Correct the connection and/or replace the rectifier/regulator and/or the CDI unit.



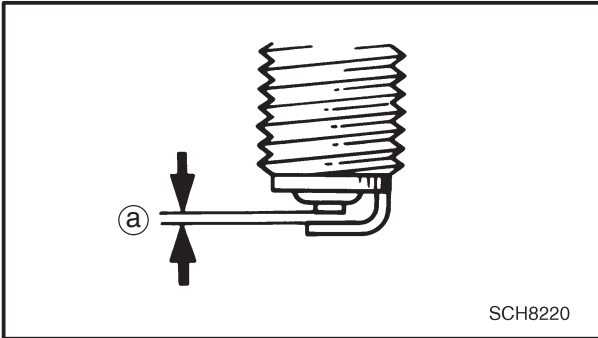
A.C. MAGNETO

1. Disconnect:
 - A.C. magneto coupler ①
 2. Connect:
 - Pocket tester
(to the A.C. magneto coupler)
 3. Measure:
 - Stator coil resistance ②/pickup coil resistance ③
- Out of specification → Replace.



Pickup coil resistance:
(Gray – Black)
189 ~ 231 Ω at 20°C (68°F)

Stator coil resistance:
(White – White)
0.19 ~ 0.24 Ω at 20°C (68°F)



SPARK PLUG

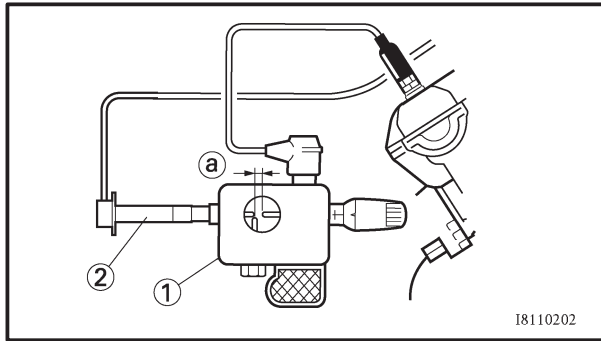
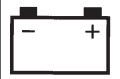
1. Remove:
 - Spark plugs
2. Measure:
 - Spark plug gap ④

Standard spark plug:
CR9E (NGK)



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

SCH8220



IGNITION SPARK GAP

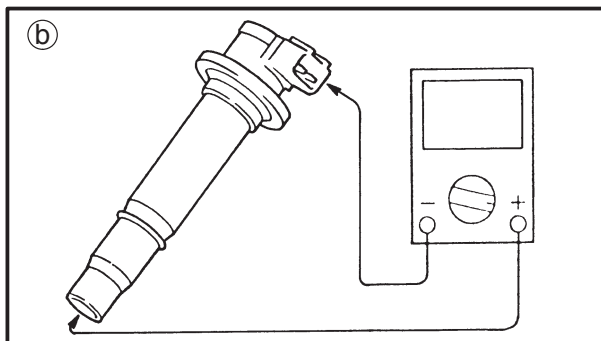
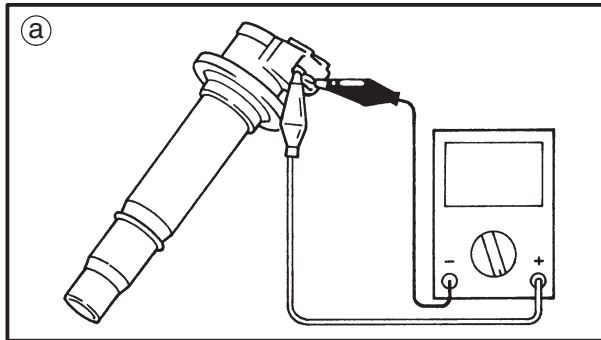
1. Remove:
 - Ignition coil
2. Measure:
 - Ignition spark gap
 Out of specification → Replace the ignition coil

Measurement steps:

- Disconnect the ignition coil (2) from the spark plug.
- Connect the dynamic spark tester (1).
- Set the main switch to "ON".
- Measure the ignition spark gap (a).



Spark gap:
6 mm (0.24 in)

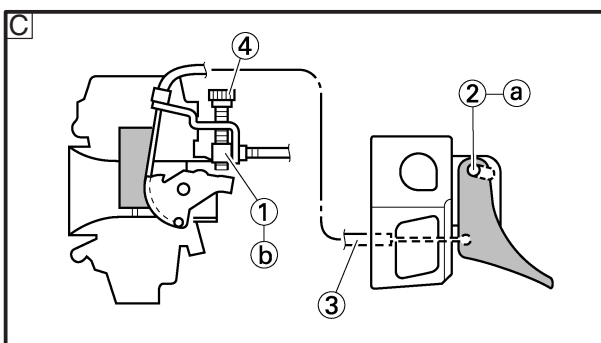
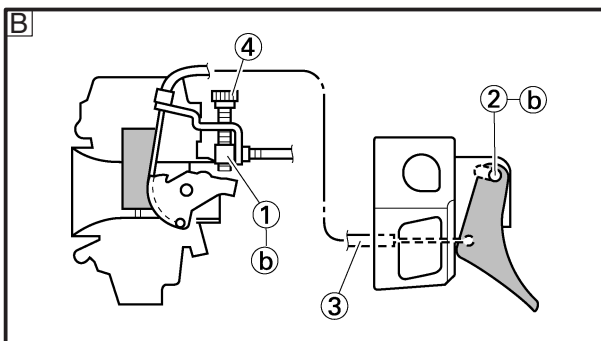
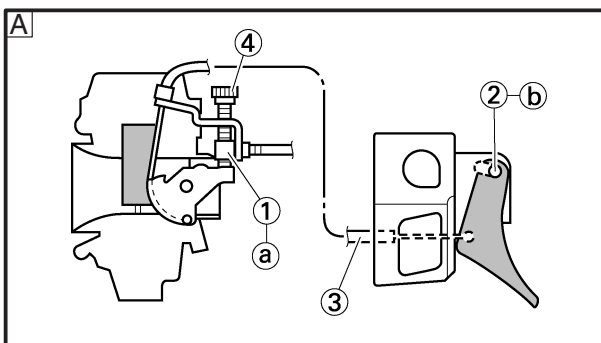


IGNITION COIL

1. Disconnect:
 - Ignition coil lead
2. Connect:
 - Pocket tester
3. Measure:
 - Primary coil resistance (a)
 - Secondary coil resistance (b)
 Out of specification → Replace.



Primary coil resistance:
0.16 ~ 0.22 Ω at 20°C (68°F)
Secondary coil resistance:
5.0 ~ 6.8 k Ω at 20°C (68°F)



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.

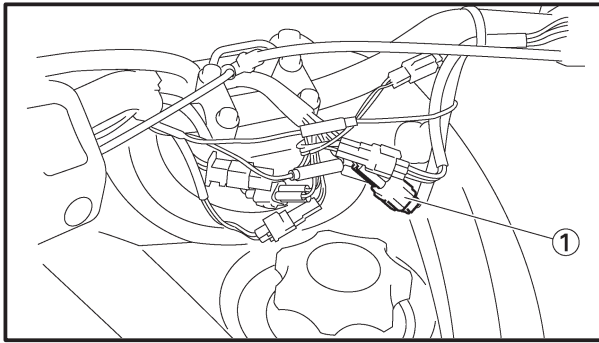
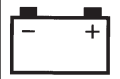
T.O.R.S. is designed to interrupt the ignition and keep the engine revolutions between 2,800 and 3,000 r/min if the carburetor fails to return to idle when the lever is released.

⚠ 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 spark plug cap. Otherwise, T.O.R.S. will not work properly.

Status	A Idling or starting	B Running	C Trouble
Switch			
Throttle switch	OFF	ON	OFF
Carburetor switch	ON	OFF	OFF
Engine	Running	Running	T.O.R.S. operating

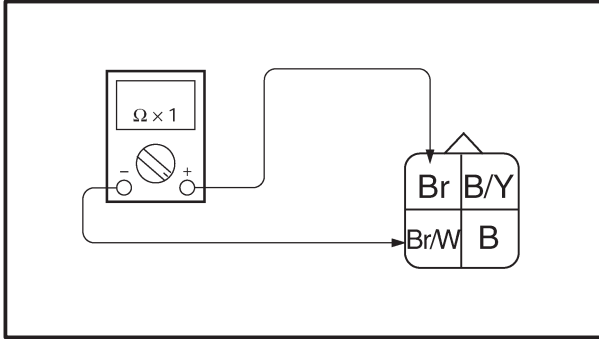
- ① Carburetor switch
- ② Throttle switch
- ③ Throttle cable
- ④ Throttle stop screw
- a ON
- b OFF



HANDLEBAR SWITCH (RIGHT)

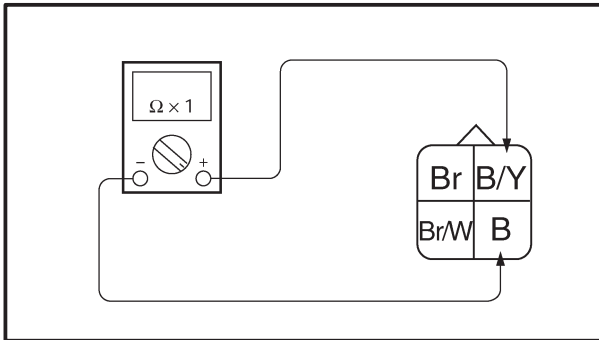
Engine stop switch and throttle switch

1. Disconnect:
 - Handlebar switch (right) coupler ①
2. Connect:
 - Pocket tester



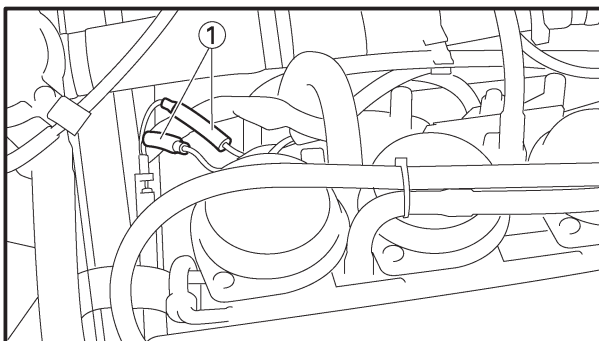
3. Inspect:
 - Engine stop switch continuity
Faulty → Replace the handlebar switch (right).

Switch position	Continuity
RUN (pulled out)	Yes
OFF (pushed in)	No



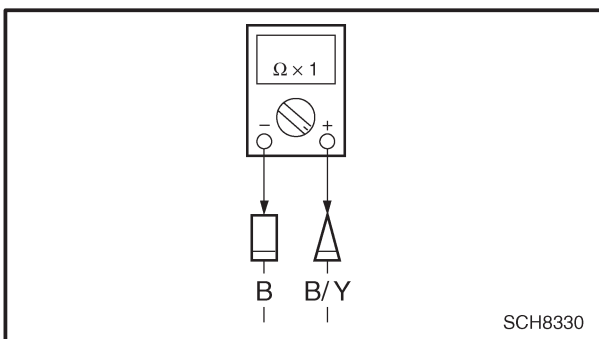
4. Inspect:
 - Throttle switch continuity
Faulty → Replace the handlebar switch (right).

Throttle switch position	Continuity
Throttle lever is operated.	Yes
Throttle lever is not operated.	No



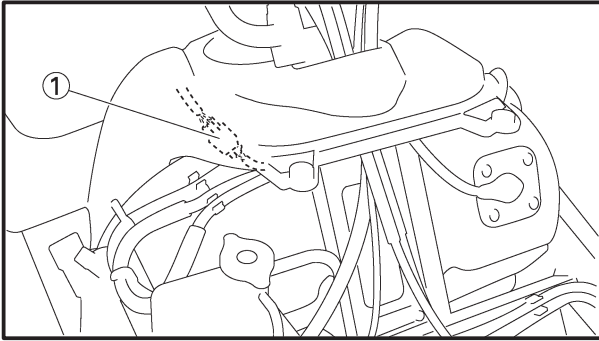
CARBURETOR SWITCH

1. Disconnect:
 - Carburetor switch lead ①
2. Connect:
 - Pocket tester
3. Inspect:
 - Carburetor switch continuity
Faulty → Replace.



Carburetor switch position	Continuity
Throttle lever is operated.	No
Throttle lever is not operated.	Yes

SCH8330



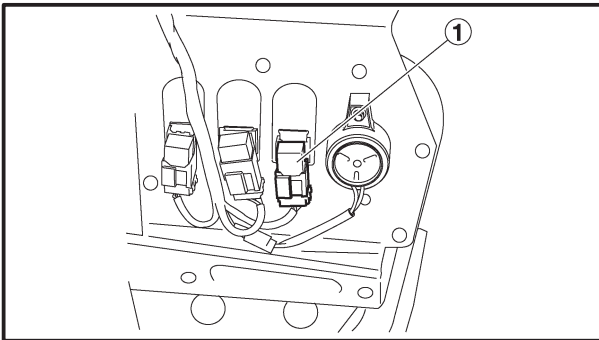
MAIN SWITCH

1. Disconnect:
 - Main switch coupler ①
2. Connect:
 - Pocket tester
3. Inspect:
 - Main switch continuity
 Faulty → Replace.

Switch position	Continuity
OFF	Yes
ON	No

Switch position	Color code			
	Br	R/Y	Br/W	R/W
OFF				
ON	○ — ○			
START	○ — ○		○ — ○	

○ — ○ Continuity



MAIN RELAY

1. Inspect:
 - Main relay ①

Inspection steps:

- Disconnect the main relay from the coupler.
- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the main relay terminals as shown.

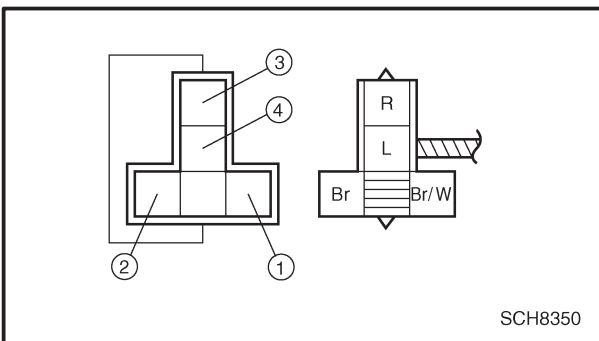
Positive battery terminal → Brown ①

Negative battery terminal → Brown/White ②

Positive tester probe → Red ③

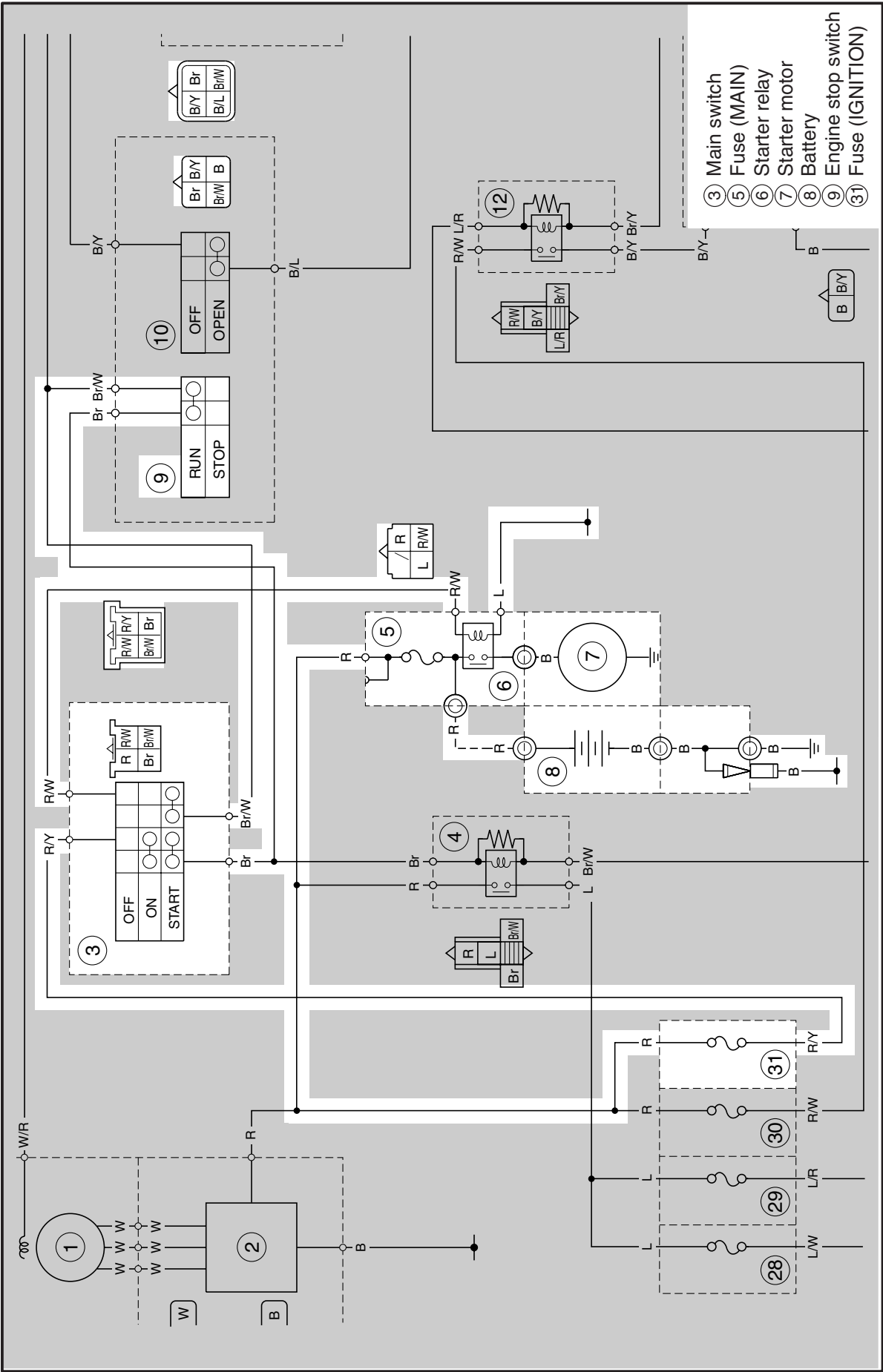
Negative tester probe → Blue ④

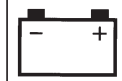
- If main relay does not have continuity between the red and blue terminals, replace it.



SCH8350

ELECTRICAL STARTING SYSTEM
CIRCUIT DIAGRAM





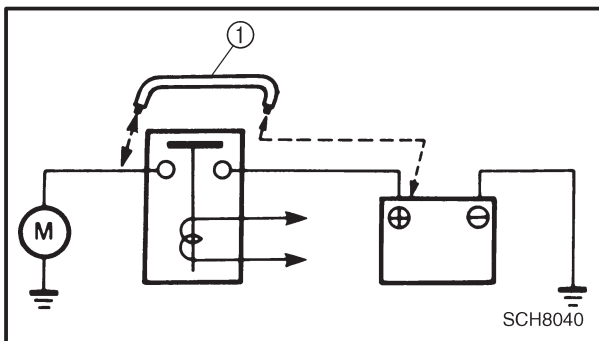
TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

⚠ WARNING

Before starter motor operation, push the engine stop switch to “OFF”.

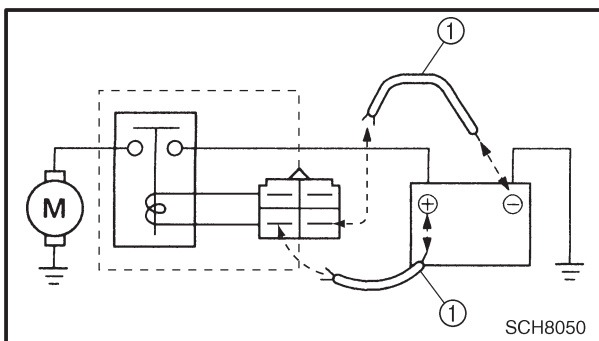
1. Connect:
 - Starter relay terminals (battery side and starter motor side)



- ① Jumper lead
2. Check:
 - Starter motor operation



3. Disconnect:
 - Starter relay coupler
4. Connect:
 - Starter relay coupler terminals



- ① Jumper lead
5. Inspect:
 - 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

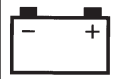
A wire for the jumper lead ① must have the equivalent capacity as that of the battery lead or more, otherwise it may cause the jumper lead to be burned.

This check is likely to produce sparks, so be sure that no flammable gas or fluid is in the vicinity.

NO



Replace the starter relay.



Check the main fuse and ignition fuse.
Refer to "FUSE INSPECTION" in CHAPTER 2.



Check the main switch.



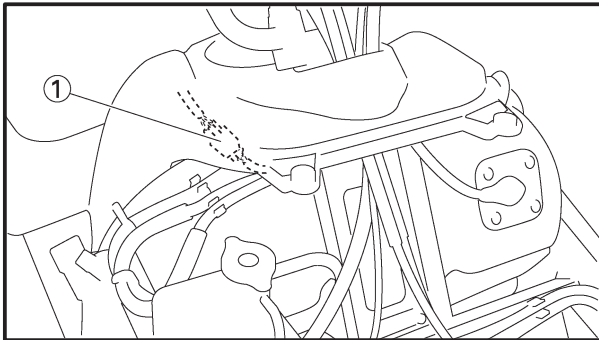
Correct the connection.

FAULTY

Replace the main fuse and/or ignition fuse.

FAULTY

Replace the main switch.



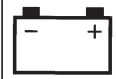
MAIN SWITCH

1. Disconnect:
 - Main switch coupler ①
2. Connect:
 - Pocket tester
3. Inspect:
 - Main switch continuity
 Faulty → Replace.

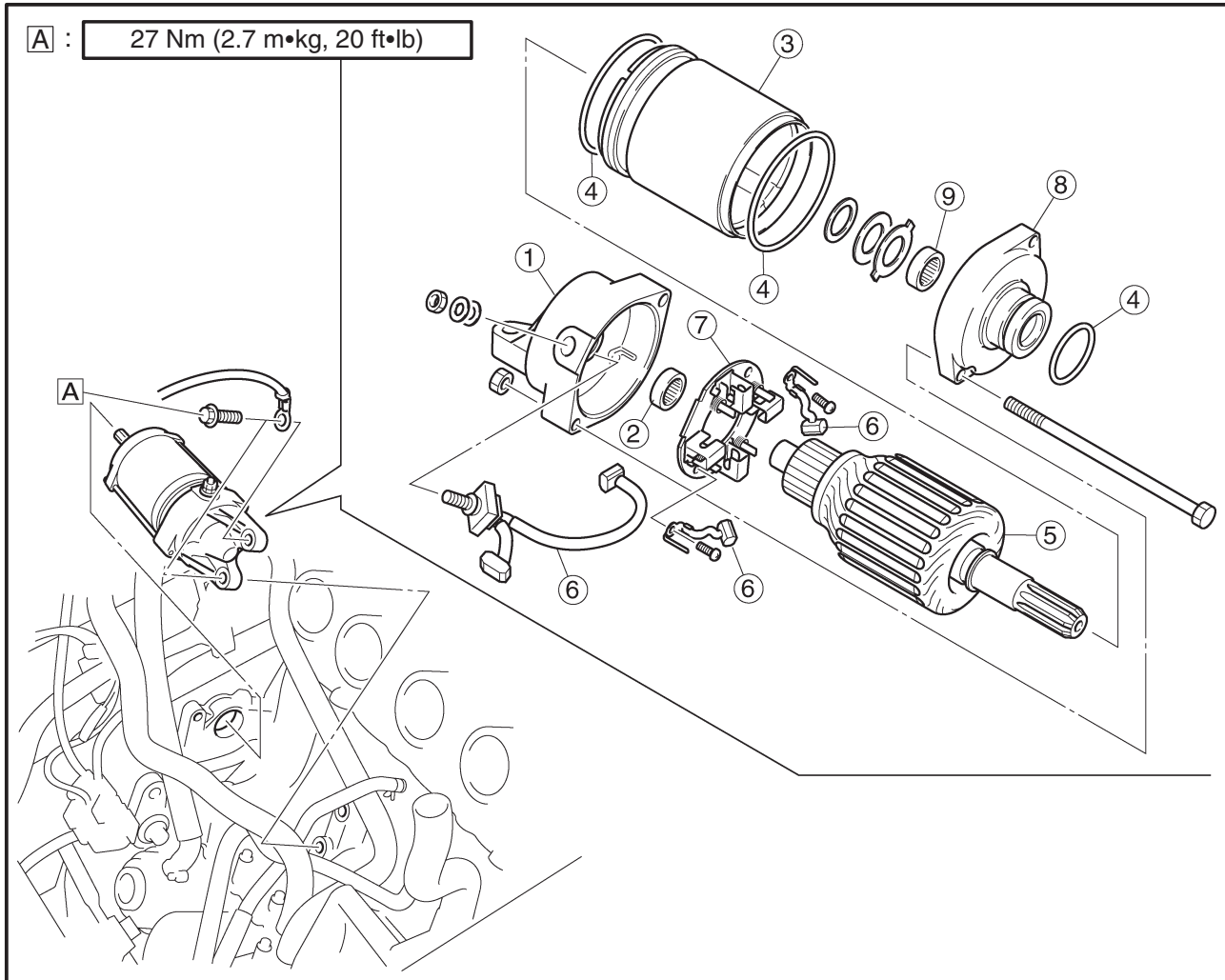
Switch position	Continuity
OFF	Yes
ON	No

Switch position	Color code			
	Br	R/Y	Br/W	R/W
OFF				
ON	○—○	○—○		
START	○—○	○—○	○—○	○—○

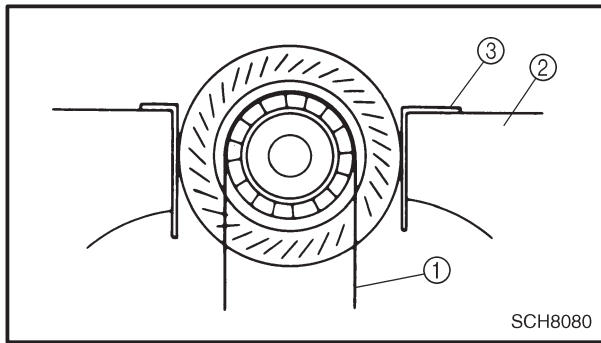
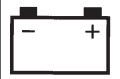
○—○ Continuity



STARTER MOTOR



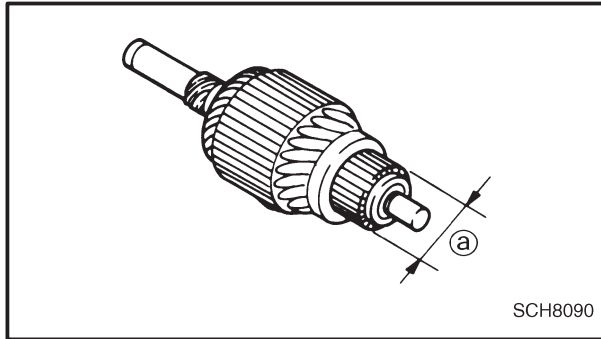
Order	Job name/Part name	Q'ty	Remarks
	Starter motor disassembly		
	Starter motor removal		Disassemble the parts in the order listed below. Refer to "ENGINE REMOVAL" in CHAPTER 5.
①	Rear bracket	1	
②	Bearing	1	
③	Starter motor yoke	1	
④	O-ring	3	
⑤	Armature assembly	1	
⑥	Brush	3	
⑦	Brush holder	1	
⑧	Starter motor front cover	1	
⑨	Bearing	1	
			For assembly, reverse the disassembly procedure.

**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:

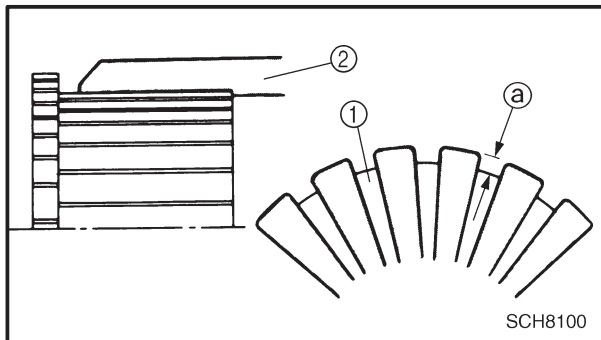
Lightly grip the armature with a vise.

**2. Measure:**

- Commutator (diameter)
Measure the diameter ① of the commutator at points where the brush comes in contact.
Out of specification → Replace the starter motor.



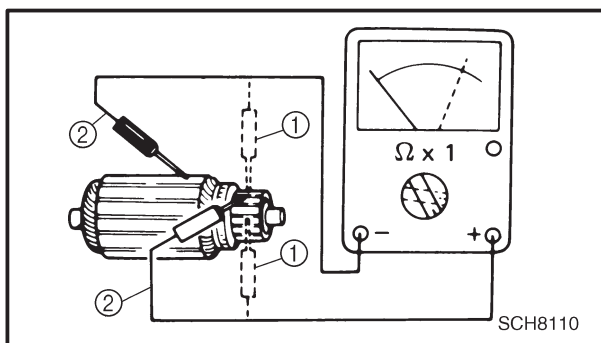
Commutator wear limit:
27.5 mm (1.08 in)

**3. Measure:**

- Mica (insulation depth) ①
(between commutator segments)
Out of specification → Scrape mica to proper limits ①.
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.

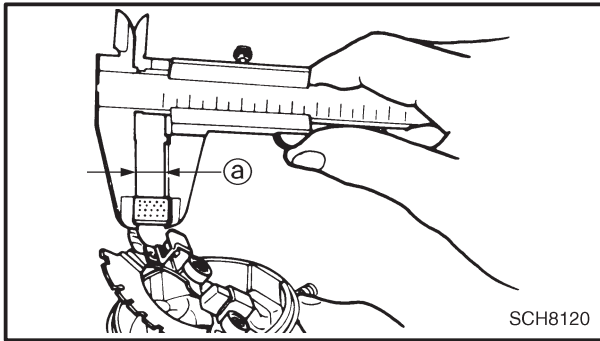
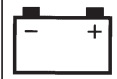
Inspection steps:

- 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 (a)

Out of specification → Replace the starter motor.



Brush wear limit:
5 mm (0.20 in)

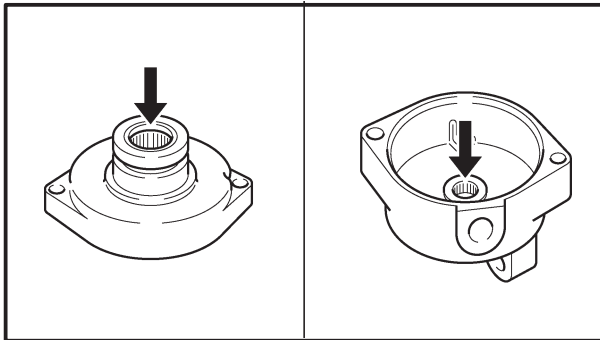
6. Measure:

- Brush spring pressure

Fatigue/out of specification → Replace as a set.



Brush spring pressure:
7.36 ~ 11.04 N
(736 ~ 1,104 g, 26.0 ~ 38.9 oz)

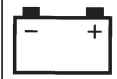
**Assembly**

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. Make sure the front bracket and rear bracket cover are fitted with O-rings.
3. When installing the rear bracket assembly, take care not to scratch the brushes.
4. Install:
 - Securing bolts (starter motor)

[illegible]



TROUBLESHOOTING

BATTERY IS NOT CHARGED.

1. Connect:
 - Pocket tester
(to the battery terminals)
2. Measure:
 - Battery voltage



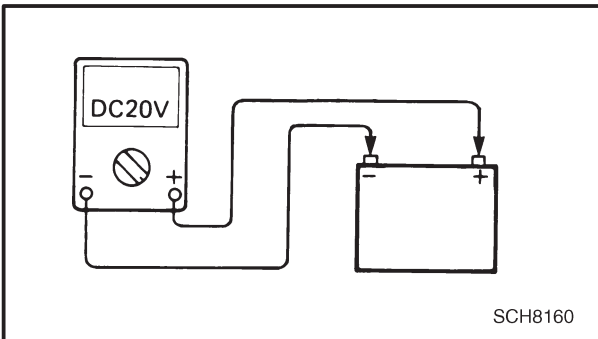
Battery voltage:
more than 12 V at 20°C (68°F)



3. Start the engine and accelerate to 5,000 r/min.
4. Measure:
 - Charging voltage



Charging voltage:
14 V/5,000 r/min



⚠ WARNING

Be sure the V-belt is removed.

CAUTION:

Never disconnect battery cables while generator is operating, otherwise, the rectifier/regulator will be damaged.



Correct connector.

OUT OF SPECIFICATIONS

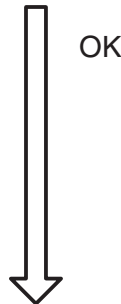


- Check the battery.
- Replace and/or charge the battery.
Refer to “BATTERY INSPECTION” in CHAPTER 2.

OUT OF SPECIFICATION

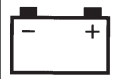


- Check the main fuse.
Refer to “FUSE INSPECTION” in CHAPTER 2.
- Check the starter coil.



Replace the main fuse, rectifier/regulator and/or the starter coil assembly.

Replace the rectifier/regulator.

**BATTERY****Inspection**

1. Inspect:

- Battery condition

Refer to “BATTERY INSPECTION” in CHAPTER 2.

Battery Storage

The battery should be stored if the vehicle is not going to be used for a long period.

1. Remove:

- Battery

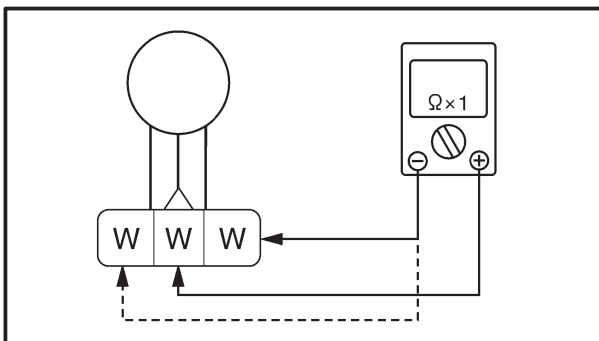
WARNING

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.

**STATOR COIL**

1. Measure:

- Stator coil resistance

Out of specification → Replace stator coil assembly.

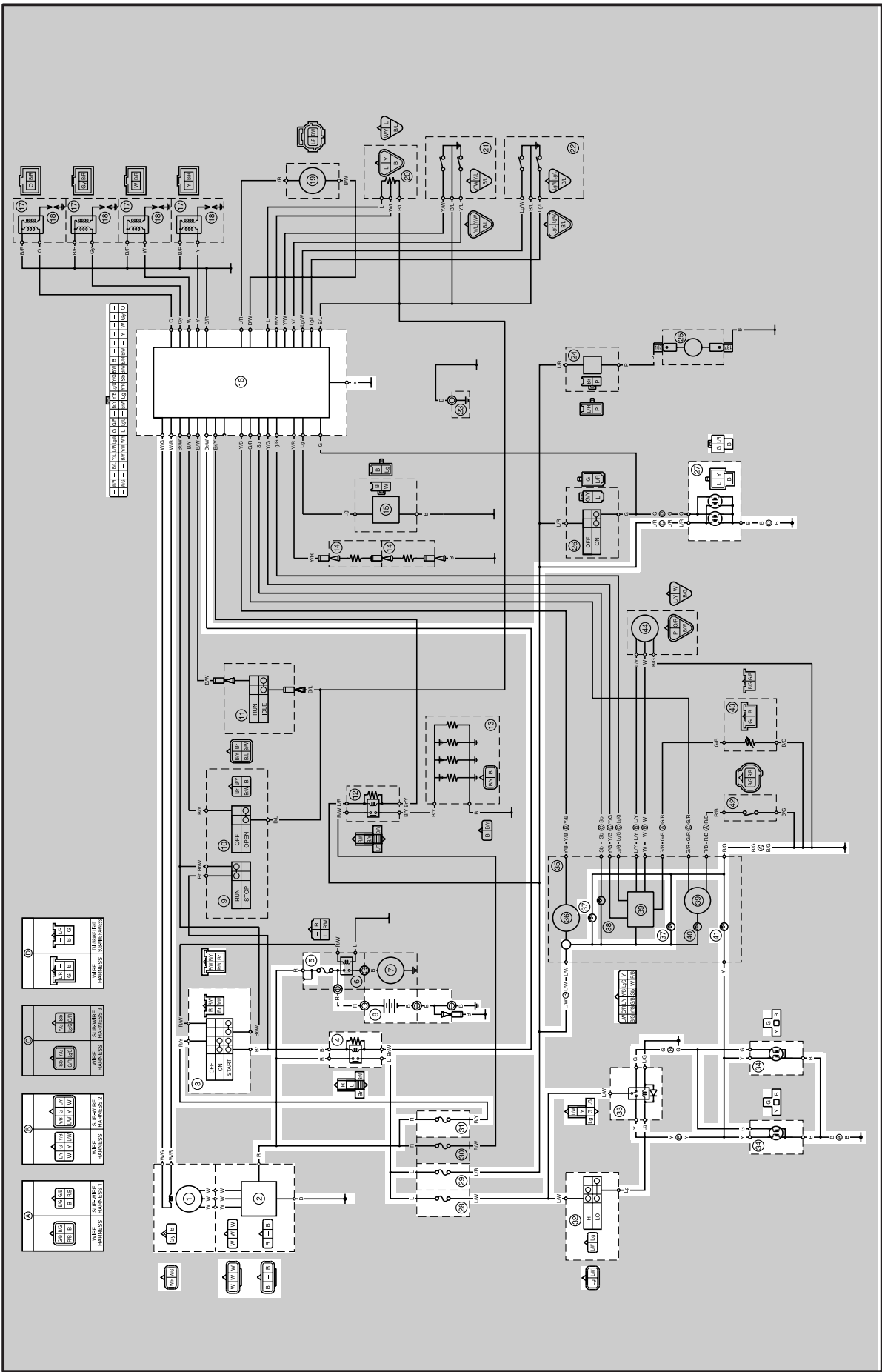
**Stator coil resistance:**

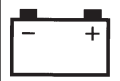
(White – White)

0.19 ~ 0.24 at 20°C (68°F)



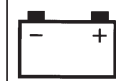
LIGHTING SYSTEM
CIRCUIT DIAGRAM





LIGHTING SYSTEM CIRCUIT DIAGRAM

- ① A.C. magneto
- ② Rectifier/regulator
- ③ Main switch
- ④ Main relay
- ⑤ Fuse (MAIN)
- ⑧ Battery
- ⑯ CDI unit
- ⑳ Tail/brake light
- ㉔ Fuse (HEADLIGHT)
- ㉕ Fuse (SIGNAL)
- ㉗ Fuse (IGNITION)
- ㉘ Headlight beam switch
- ㉙ Headlight relay
- ㉚ Headlight
- ㉞ Meter light
- ㉟ Hi beam indicator light



TROUBLESHOOTING

HEADLIGHT AND/OR METER LIGHT DO NOT COME ON.

Check the 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 and pickup coil.



OK

OUT OF SPECIFICATION



Replace the stator coil and pickup coil assembly.

Check the main switch.

Refer to "IGNITION SYSTEM".



OK

FAULTY



Replace the main switch.

Check the headlight beam switch.



OK

FAULTY



Replace the headlight beam switch.

Check the headlight relay.



OK

FAULTY



Replace the headlight relay.

Check the main relay.

Refer to "IGNITION SYSTEM".



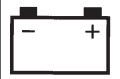
OK

FAULTY



Replace the main relay.

Correct the connection and/or
replace the rectifier/regulator
and/or the CDI unit.

**TAIL LIGHT DOES NOT COME ON.**

Check the tail/brake light bulb(s).



OK

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.



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 and pickup coil.



OK

OUT OF SPECIFICATION



Replace the stator coil and pickup coil assembly.

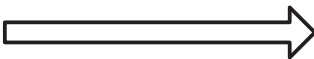
Check the main switch.

Refer to "IGNITION SYSTEM".



OK

FAULTY



Replace the main switch.

Check the main relay.

Refer to "IGNITION SYSTEM"



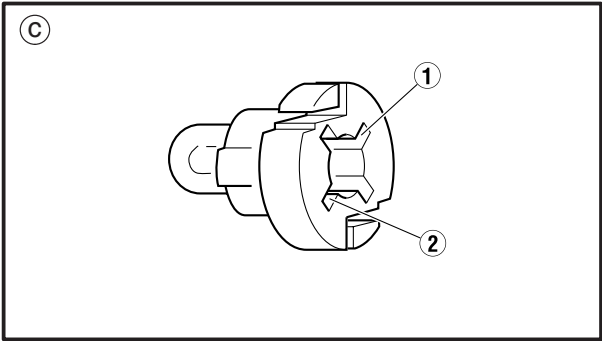
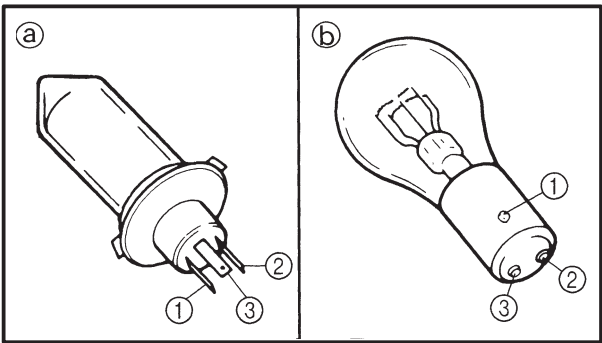
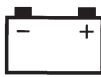
OK

FAULTY



Replace the main relay.

Correct the connection and/or
replace the rectifier/regulator
and/or the CDI unit.



BULB(S)

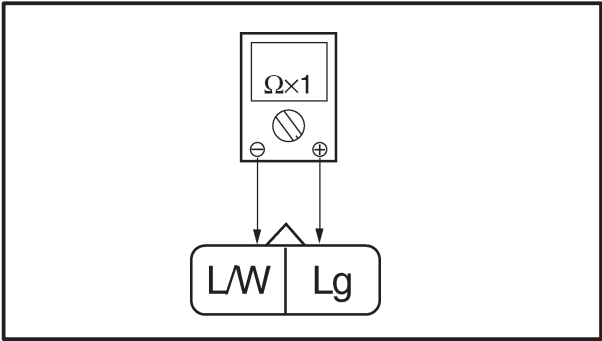
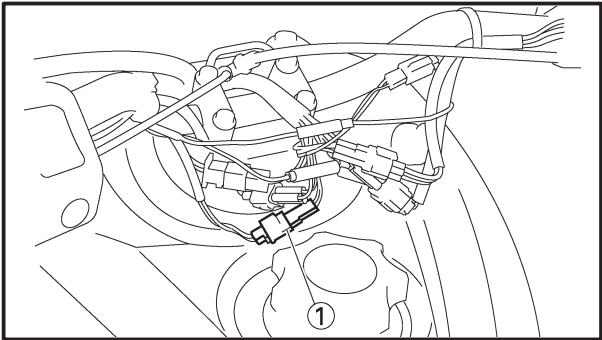
1. Remove:
 - Headlight bulb (a)
 - Tail/brake light bulb (b)
 - Meter light bulb (c)
2. Connect:
 - Pocket tester
(to the bulb terminals)

! 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. Inspect:
 - Bulb(s)

Terminal	Continuity
① - ②	Yes
① - ③	Yes

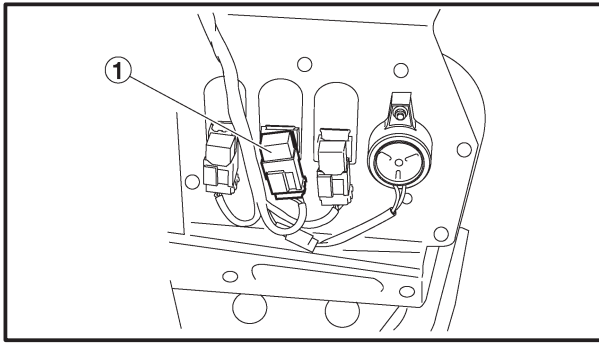
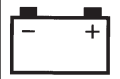


HEADLIGHT BEAM SWITCH

1. Disconnect:
 - Headlight beam switch coupler (1)
2. Connect:
 - Pocket tester
(to the headlight beam switch coupler)

3. Inspect:
 - Headlight beam switch continuity
Faulty → Replace.

Switch position	Continuity
HI	Yes
LO	No



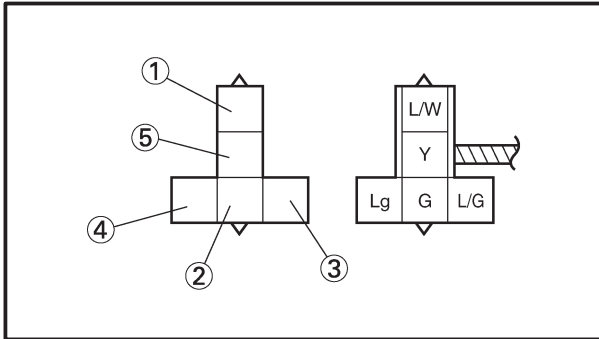
HEADLIGHT RELAY

1. Inspect:

- Headlight relay (black coupler) ①

Inspection steps:

- Disconnect the headlight relay from the coupler.
- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the headlight relay terminals as shown.



Low beam

Positive tester probe → Blue/White ①

Negative tester probe → Green ②

High beam

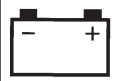
Positive battery terminal → Light green ③

Negative battery terminal → Blue/green ④

Positive tester probe → Blue/White ①

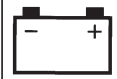
Negative tester probe → Yellow ⑤

- If headlight relay does not have continuity between the blue/white and yellow terminals, replace it.



SIGNAL SYSTEM CIRCUIT DIAGRAM

- ① A.C. magneto
- ② Rectifier/regulator
- ③ Main switch
- ④ Main relay
- ⑤ Fuse (MAIN)
- ⑧ Battery
- ⑯ CDI unit
- ⑲ Water temperature sensor
- ⑳ Back buzzer
- ㉕ Gear position switch
- ㉖ Brake light switch
- ㉗ Tail/brake light
- ㉙ Fuse (SIGNAL)
- ㉛ Fuse (IGNITION)
- ㉞ Water temperature indicator light
- ㉟ Multi-function meter
- ㊱ Warning light
- ㊲ Oil level switch
- ㊳ Fuel sender
- ㊴ Speedosensor



TROUBLESHOOTING

BRAKE LIGHT DOES NOT COME ON.

Check the tail/brake light bulb(s).
Refer to "LIGHTING SYSTEM".

↓ OK NO CONTINUITY → Replace the tail/brake light bulbs.

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 stator coil and pickup coil.

↓ OK OUT OF SPECIFICATION → Replace the stator coil and pickup coil assembly.

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 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 main relay.
Refer to "IGNITION SYSTEM".

↓ OK FAULTY → Replace the main relay.

Correct the connection and/or
replace the rectifier/regulator
and/or the CDI unit.

**WATER TEMPERATURE INDICATOR LIGHT DOES NOT COME ON.**

Check the water temperature indicator 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 stator coil and pickup coil.



OK

OUT OF SPECIFICATION



Replace the stator coil and pickup coil assembly.

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.

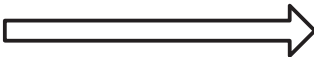
Check the main switch.

Refer to "IGNITION SYSTEM".



OK

FAULTY



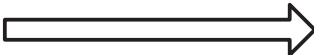
Replace the main switch.

Check the water temperature sensor.



OK

FAULTY



Replace the water temperature sensor.

Check the main relay.

Refer to "IGNITION SYSTEM".



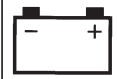
OK

FAULTY



Replace the main relay.

Correct the connection and/or
replace the meter assembly
and/or the rectifier/regulator
and/or the CDI unit.

**FUEL METER AND/OR WARNING LIGHT DO 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 and pickup coil.

↓ OK OUT OF SPECIFICATION → Replace the stator coil and pickup 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 main relay.
Refer to "IGNITION SYSTEM".

↓ OK FAULTY → Replace the main relay.

Correct the connection and/or
replace the meter assembly
and/or the rectifier/regulator
and/or the CDI unit.

**ENGINE OIL INDICATOR LIGHT 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 and pickup coil.

↓ OK OUT OF SPECIFICATION → Replace the stator coil and pickup coil assembly

Check the main switch.
Refer to "IGNITION SYSTEM".

↓ OK FAULTY → Replace the main switch.

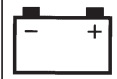
Check the oil level switch.

↓ OK FAULTY → Replace the oil level switch.

Check the main relay.
Refer to "IGNITION SYSTEM".

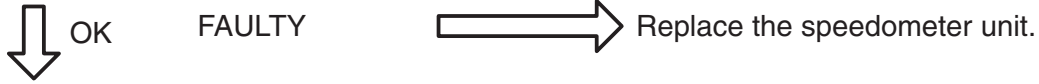
↓ OK FAULTY → Replace the main relay.

Correct the connection and/or
replace the meter assembly
and/or the rectifier/regulator
and/or the CDI unit.

**SPEEDOMETER DO NOT OPERATE.**

Check the speedometer unit.

Refer to "SPEEDOMETER UNIT INSPECTION" in CHAPTER 2.



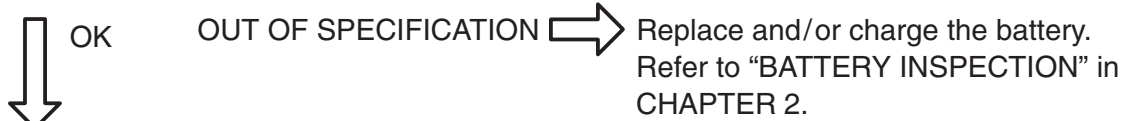
Check the main fuse, ignition fuse and signal fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



Check the stator coil and pickup coil.



Check the main switch.

Refer to "IGNITION SYSTEM".



Check the speedosensor.



Check the main relay.

Refer to "IGNITION SYSTEM".



Correct the connection and/or
replace the meter assembly
and/or the rectifier/regulator
and/or the CDI unit.

**BACK BUZZER DOES NOT SOUND. (RX10R, RX10RS)**

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 and pickup coil



OK

OUT OF SPECIFICATION



Replace the stator coil and pickup coil assembly.

Check the main switch.

Refer to "IGNITION SYSTEM".



OK

FAULTY



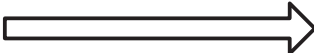
Replace the main switch.

Check the gear position switch.



OK

FAULTY



Replace the gear position switch.

Check the back buzzer.



OK

DOES NOT SOUND



Replace the back buzzer.

Check the main relay.

Refer to "IGNITION SYSTEM".



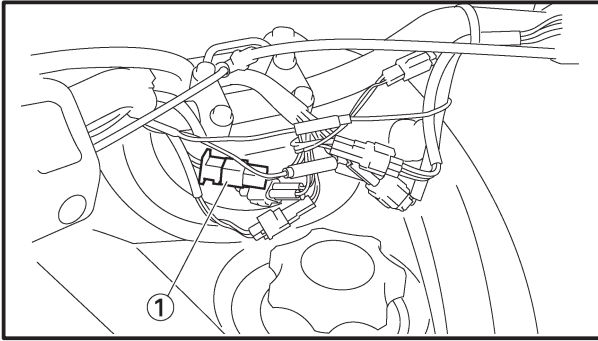
OK

FAULTY



Replace the main relay.

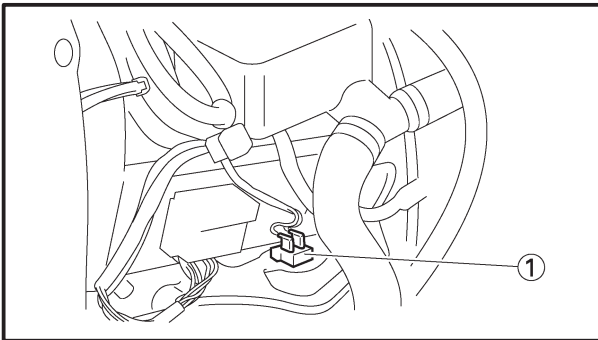
Correct the connection and/or
replace the rectifier/regulator
and/or the CDI unit.



BRAKE LIGHT SWITCH

1. Disconnect:
 - Brake light switch coupler ①
2. Inspect:
 - Brake light switch continuity
 Faulty → Replace.

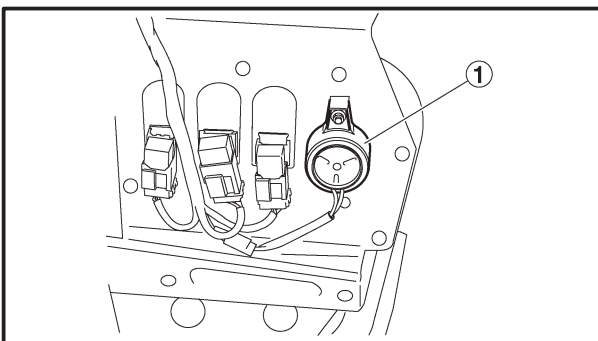
Switch position	Continuity
Brake lever operates	Yes
Brake lever does not operate	No



GEAR POSITION SWITCH (RX10R, RX10RS)

1. Inspect:
 - Gear position switch ① continuity
 Faulty → Replace.

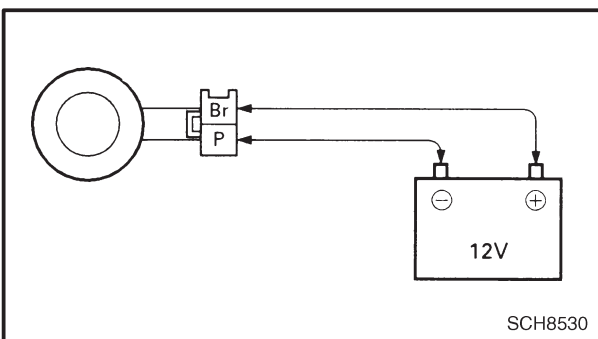
Shift lever position	Continuity
FORWARD	No
REVERSE	Yes



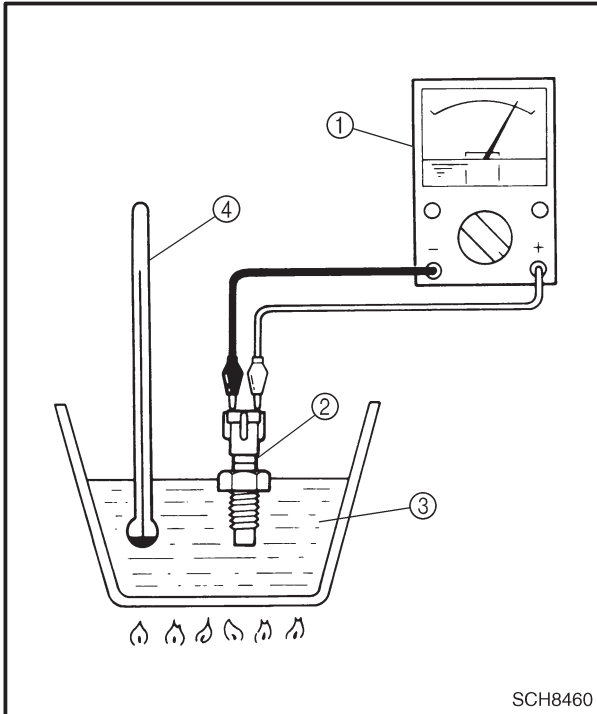
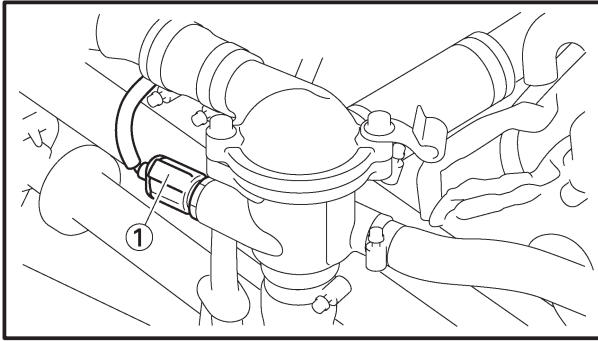
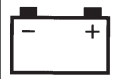
BACK BUZZER (RX10R, RX10RS)

1. Disconnect:
 - Back buzzer coupler ①

2. Connect:
 - Battery
3. Inspect:
 - Back buzzer
 Does not sound → Replace.



SCH8530



SCH8460

WATER TEMPERATURE SENSOR

1. Disconnect the water temperature sensor coupler ① and remove the water temperature sensor.

CAUTION:

Handle the water 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 water temperature sensor)

NOTE:

Set the tester selector to the " $\Omega \times 1$ " position.

3. Immerse the water temperature sensor ② in coolant ③ and check the water temperature sensor operation.



Water temperature sensor resistance:

5.2 ~ 6.4 k Ω at 0°C (34°F)
 0.300 ~ 0.364 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 (248.5°F) or more.

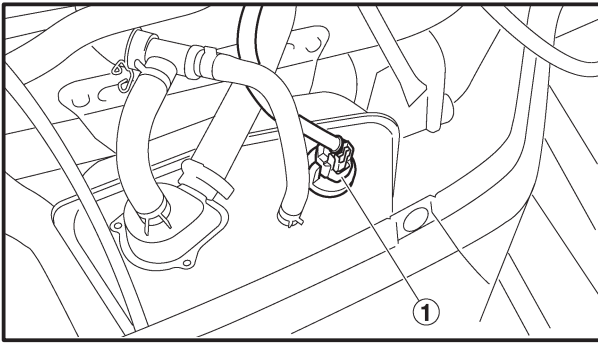
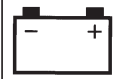
4. If the water temperature sensor operation is defective, replace it.
5. Install the water temperature sensor and connect the water temperature sensor lead.



Water temperature sensor:
 23 Nm (2.3 m•kg, 17 ft•lb)

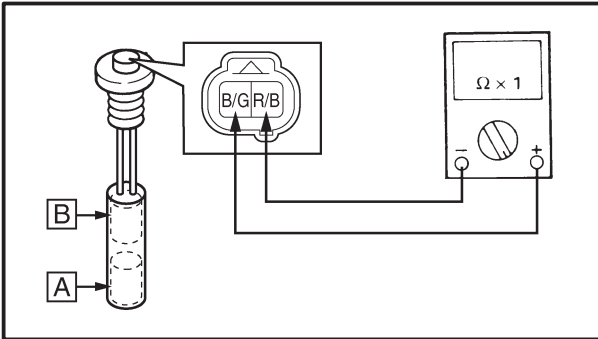
CAUTION:

Do not overtighten the water temperature sensor.



ENGINE OIL LEVEL SWITCH

- Remove:
 - Oil level gauge ①

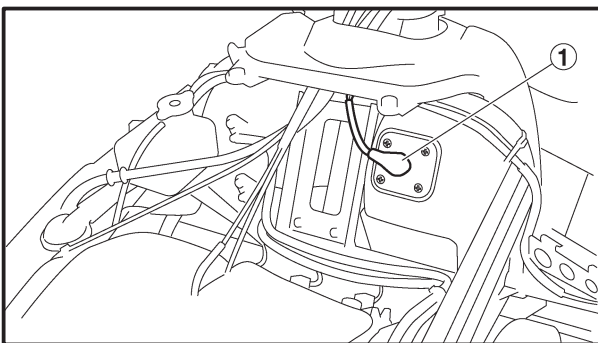


- Connect:
 - Pocket tester (to the oil level switch coupler)
- Inspect:
 - Oil level switch continuity
 Faulty → Replace.

Switch position		Good condition	Bad condition		
A	Down position	○	×	×	○
B	Up position	×	○	×	○

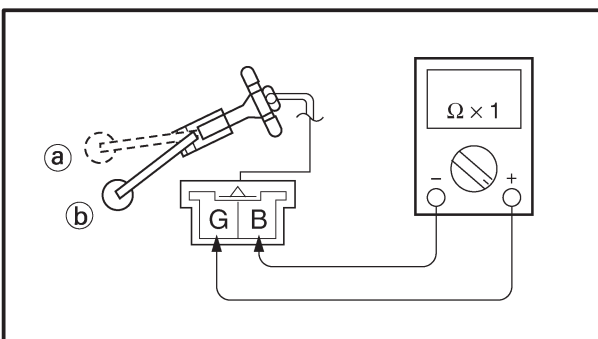
○ : Continuity

× : No continuity



FUEL SENDER

- Remove:
 - Intake silencer
 - Refer to “FUEL PUMP” in CHAPTER 7.
 - Fuel sender ① (from the fuel tank)
- Connect:
 - Pocket tester (to the fuel sender coupler)

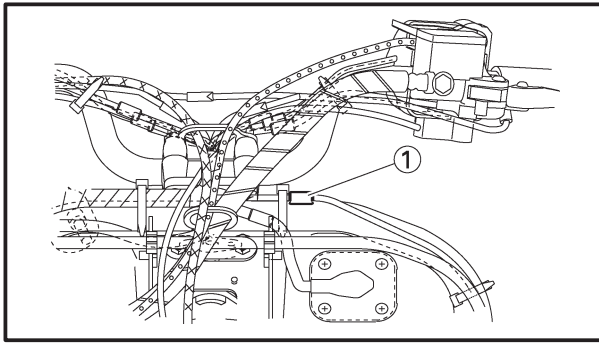
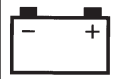


- Measure:
 - Full ①
 - Empty ②
 - Fuel sender resistance
 Out of specification → Replace.



Fuel sender resistance (full):
4 ~ 10 at 20°C (68°F)

Fuel sender resistance (empty):
90 ~ 100 at 20°C (68°F)



SPEED SENSOR

1. Inspect:

- Speed sensor

Inspection steps:

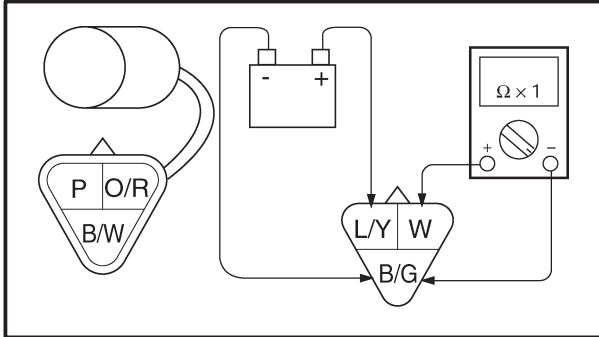
- Connect the pocket tester (DC 20 V) to the speed sensor coupler ① (wire harness side) as shown.

Positive tester probe → White

Negative tester probe → Black/Green

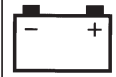
Positive battery terminal → Blue/Yellow

Negative battery terminal → Black/Green

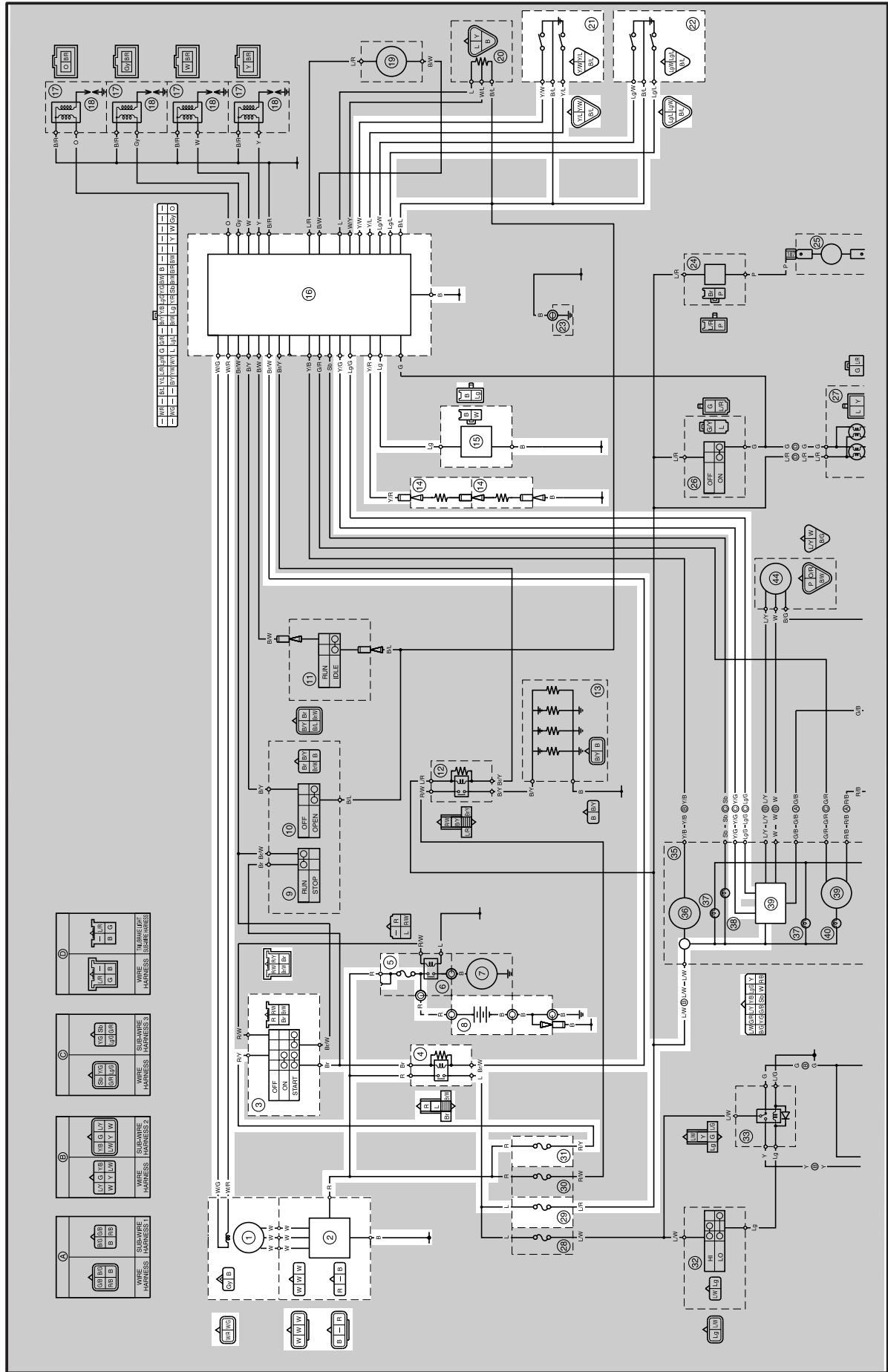


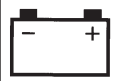
- Elevate the track and slowly rotate it.
- Measure the voltage (DC 5 V) of white and black/green. With each full rotation of the track the voltage reading should cycle from 0.6 V to 4.8 V to 0.6 V to 4.8 V.

Out of specification → Replace.



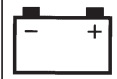
GRIP WARMER SYSTEM CIRCUIT DIAGRAM





GRIP WARMER SYSTEM CIRCUIT DIAGRAM

- ① A.C. magneto
- ② Rectifier/regulator
- ③ Main switch
- ④ Main relay
- ⑤ Fuse (MAIN)
- ⑧ Battery
- ⑭ Grip warmer
- ⑮ Thumb warmer
- ⑯ CDI unit
- ⑰ Grip warmer switch
- ⑱ Thumb warmer switch
- ⑳ Fuse (SIGNAL)
- ㉑ Fuse (IGNITION)
- ㉓ Multi-function meter



TROUBLESHOOTING

GRIP WARMER AND THUMB WARMER DO NOT OPERATE.

Check the main fuse and signal fuse.

Refer to “FUSE INSPECTION” in CHAPTER 2.



OK

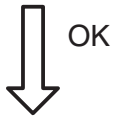
FAULTY



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 stator coil and pickup coil.



OK

OUT OF SPECIFICATION



Replace the stator coil and pickup 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 warmer switch and thumb warmer switch



CORRECT

INCORRECT



Replace the left handlebar switch and/or right handlebar switch.

Check the main relay.

Refer to “IGNITION SYSTEM”.



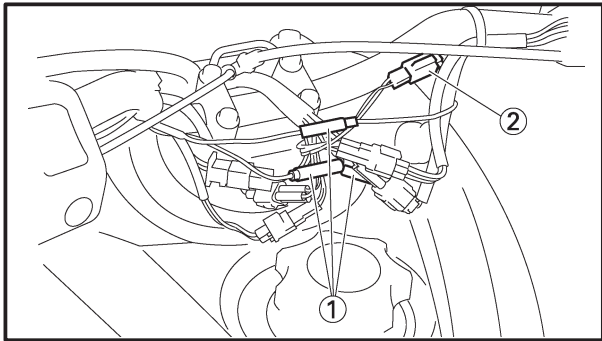
OK

FAULTY



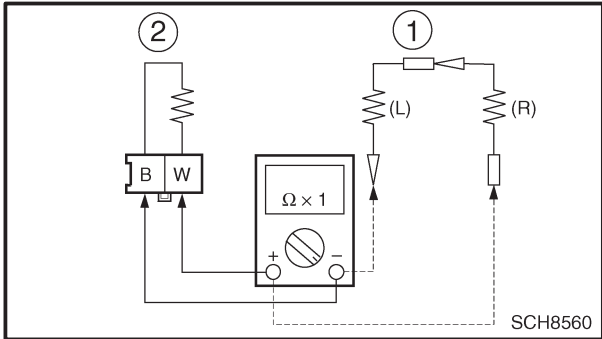
Replace the main switch.

Correct the connection and/or replace the rectifier/regulator and/or the CDI unit.

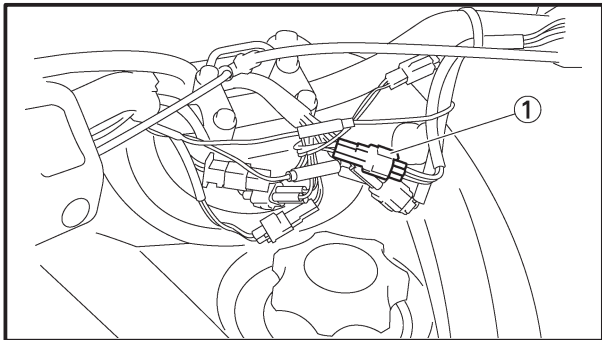


GRIP AND THUMB WARMER COIL

1. Disconnect:
 - Grip warmer leads ①
 - Thumb warmer coupler ②
2. Connect:
 - Pocket tester
(to the grip warmer coil leads and/or thumb warmer coil leads)

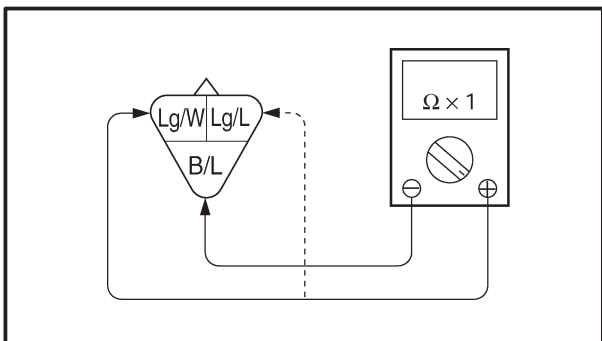


3. Inspect:
 - Grip warmer ① continuity
 - Thumb warmer ② continuity
 No continuity → Replace both grips together or separately and/or the handlebar switch.



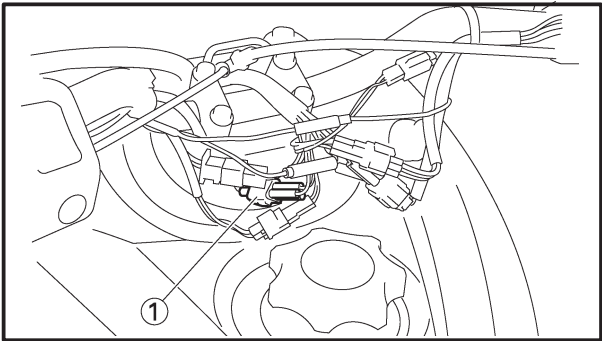
THUMB WARMER SWITCH

1. Disconnect:
 - Thumb warmer switch coupler ①
2. Connect:
 - Pocket tester
(to the switch coupler)



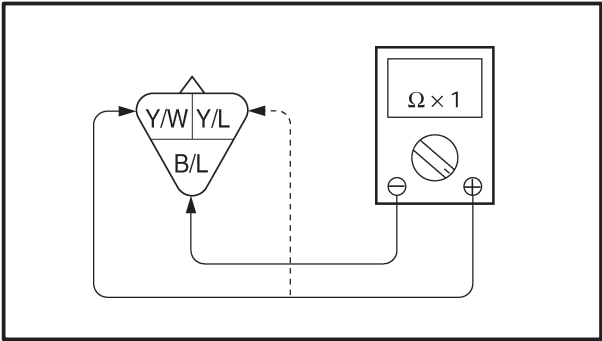
3. Inspect:
 - Thumb warmer switch continuity
 Switch is operated.
 Faulty → Replace the handlebar switch (right).

Thumb warmer switch position	Continuity
Switch is operated.	Yes
Switch is not operated.	No



GRIP WARMER SWITCH

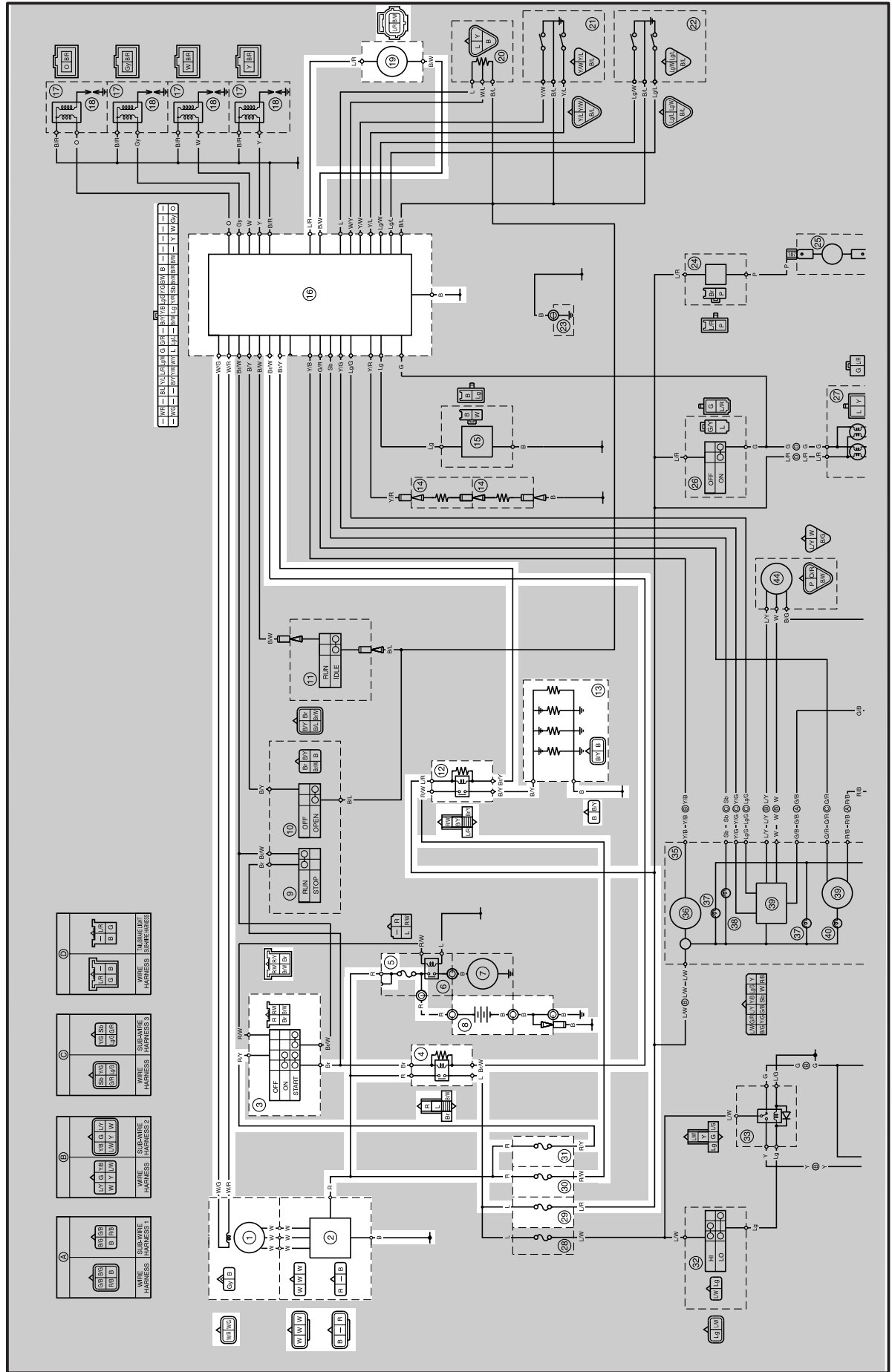
1. Disconnect:
 - Grip warmer switch coupler ①
2. Connect:
 - Pocket tester (to the switch coupler)
3. Inspect:
 - Grip warmer switch continuitySwitch is operated.
Faulty → Replace the handlebar switch (left).

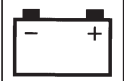


Grip warmer switch position	Continuity
Switch is operated.	Yes
Switch is not operated.	No



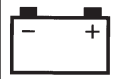
CARBURETOR HEATER SYSTEM CIRCUIT DIAGRAM





CARBURETOR HEATER SYSTEM CIRCUIT DIAGRAM

- ① A.C. magneto
- ② Rectifier/regulator
- ③ Main switch
- ④ Main relay
- ⑤ Fuse (MAIN)
- ⑧ Battery
- ⑫ Carburetor heater relay
- ⑬ Carburetor heater
- ⑯ CDI unit
- ⑰ Water temperature sensor
- ⑳ Fuse (SIGNAL)
- ㉓ Fuse (CARBURETOR HEATER)
- ㉔ Fuse (IGNITION)



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.



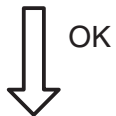
FAULTY



Replace the main fuse and/or signal fuse,
and/or 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 and pickup coil.



OUT OF SPECIFICATION



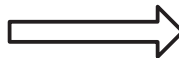
Replace the stator coil and pickup
coil assembly.

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 water temperature sensor.

Refer to "SIGNAL SYSTEM".



FAULTY



Replace the water temperature sensor.

Check the main relay.

Refer to "IGNITION SYSTEM".

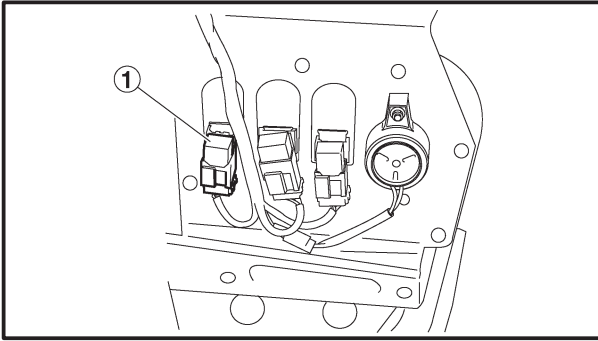
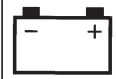


FAULTY



Replace the main relay.

Correct the connection and/or
replace the rectifier/regulator
and/or the CDI unit.



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.

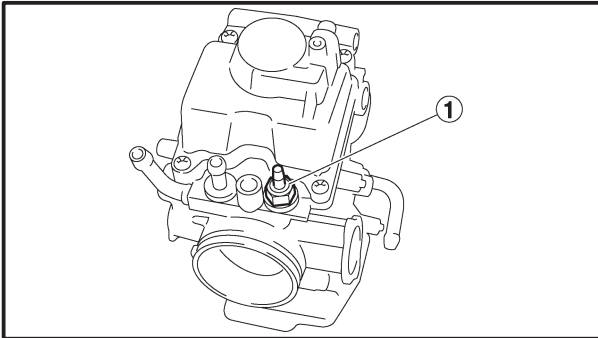
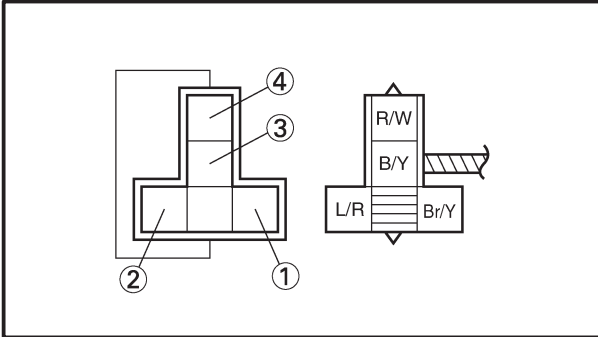
Positive battery terminal → Blue/Red (1)

Negative battery terminal → Brown/Yellow (2)

Positive tester probe → Black/Yellow (3)

Negative tester probe → Red/White (4)

- If carburetor heater relay does not have continuity between the black/yellow and red/white terminals, replace it.



CARBURETOR HEATER

1. Remove:

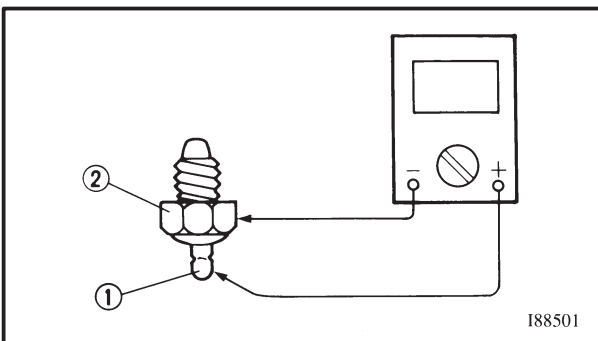
- Carburetor heater (1)

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



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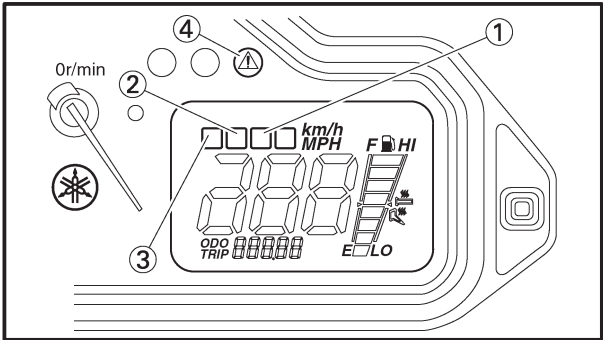


Carburetor heater resistance:

6 ~ 10 Ω at 20°C (68°F)

SELF-DIAGNOSIS

This model features a self-diagnosing system for following displays.



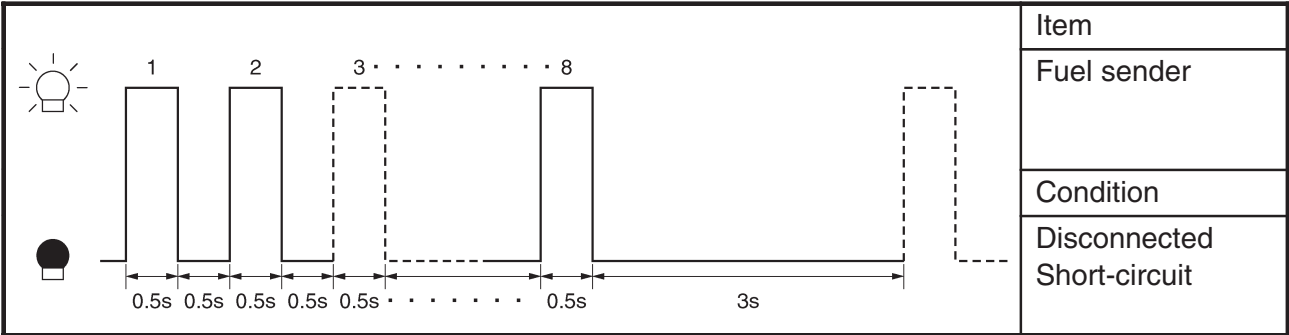
- 1. Fuel meter, fuel level warning indicator ① and the warning light ④
- 2. Coolant temperature warning light ② and the warning light ④
- 3. Self-diagnosis warning indicator ③ and the warning light ④



NOTE: The oil level warning indicator and the warning light 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.

1. FUEL METER, FUEL LEVEL WARNING INDICATOR AND THE WARNING LIGHT

The fuel meter, fuel level warning indicator and the warning light faults are displayed as follows

- Fuel sender



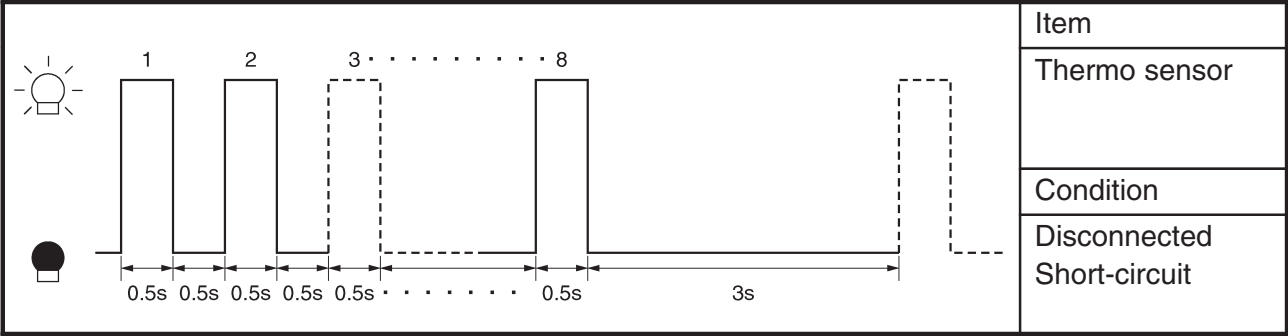
-  ON Warning light ON
-  OFF Warning light OFF

s Time (second)

2. COOLANT TEMPERATURE WARNING LIGHT AND THE WARNING LIGHT

The coolant temperature warning light and the warning light faults are displayed as follows

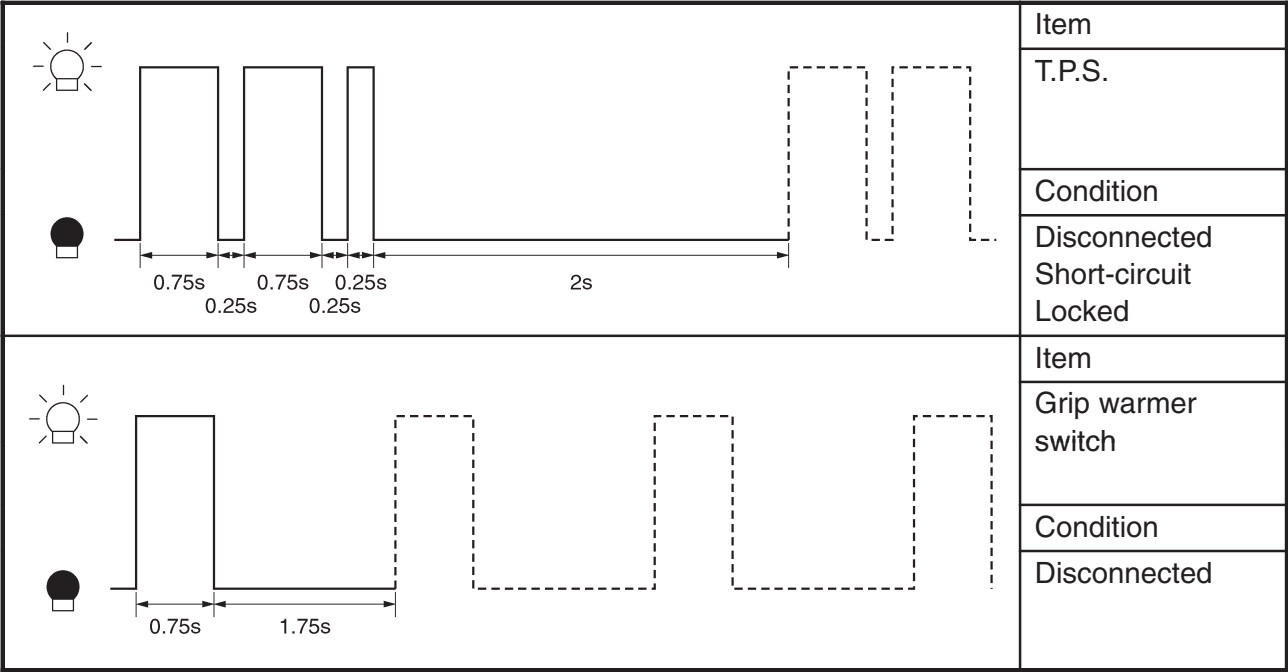
- Thermo sensor





3. SELF-DIAGNOSIS WARNING INDICATOR AND THE WARNING LIGHT

The self-diagnosis warning indicator and the warning light faults are displayed as follows

- Throttle position sensor (T.P.S.)
- Variable resistor (grip and thumb warmer)
- Grip and thumb warmer
- Voltage











-  ON Warning light ON
-  OFF Warning light OFF

s Time (second)

SELF-DIAGNOSIS

ELEC



  	Item
	Grip warmer
	Condition
  	Item
	Thumb warmer switch
	Condition
  	Item
	Thumb warmer
	Condition
  	Item
	Voltage
	Condition
	Wrong



ON Warning light ON



OFF Warning light OFF

s Time (second)



SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS
Model code number:	8FA1 (RX10 for U.S.A/Canada) 8EU1 (RX10S for U.S.A/Canada) 8ER1 (RX10R for U.S.A/Canada) 8EW1 (RX10RS for U.S.A/Canada) 8EP1 (RX10M for U.S.A/Canada) 8EV1 (RX10MS for U.S.A/Canada) 8FA2 (RX10 for Europe) 8ER2 (RX10R for Europe) 8EW2 (RX10RS for Europe) 8EP2 (RX10M for Europe)
Dimensions:	
Overall length	2,755 mm (108.5 in) (RX10, RX10S, RX10R, RX10RS)
Overall width	3,185 mm (125.4 in) (RX10M, RX10MS)
Overall height	1,210 mm (47.6 in) (RX10, RX10S, RX10R, RX10RS) 1,115 mm (43.9 in) (RX10M, RX10MS)
Weight:	
Dry weight	253 kg (557.9 lb) (RX10, RX10S) 256 kg (564.5 lb) (RX10R, RX10RS) 267 kg (588.7 lb) (RX10M, RX10MS)
Minimum turning radius:	
Clockwise	3.9 m (12.8 ft) (RX10, RX10S, RX10R, RX10RS) 4.3 m (14.1 ft) (RX10M, RX10MS)
Counterclockwise	3.9 m (12.8 ft) (RX10, RX10S, RX10R, RX10RS) 4.3 m (14.1 ft) (RX10M, RX10MS)
Engine:	
Engine type	Liquid-cooled, 4-stroke, DOHC
Cylinder type	Backward-inclined parallel 4-cylinder
Displacement	998 cm ³ (60.9 cu.in)
Bore × stroke	74 × 58 mm (2.91 × 2.28 in)
Compression ratio	11.8
Maximum hose power	r/min 10,250 r/min
Maximum torque	r/min 7,500 r/min
Standard compression pressure (at sea level)	1,450 kPa (14.5 kg/cm ² , 206 psi) at 400 r/min
Starting system	Electric starter
Lubrication system:	Dry sump
Engine oil:	
Type	API SE, SF, SG or higher SAE5W-30
Oil capacity	
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)
Total amount	3.8 L (3.3 Imp qt, 4.0 US qt)

GENERAL SPECIFICATIONS

SPEC



Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS
Oil filter: Oil filter type	Cartridge (paper)
Drive chain housing oil: Type Capacity	Gear oil API "GL-3" SAE#75 or #80 0.25 L (8.8 Imp oz, 8.5 US oz)
Coolant: Capacity	4.7 L (4.1 Imp qt, 5.0 US qt)
Fuel: Type Tank capacity	Regular unleaded gasoline (Pump Octane $\frac{R+M}{2}$; 88 or higher) Research Octane; 93 or higher (for Europe) 38 L (8.4 Imp gal, 10.0 US gal)
Carburetors: Type/Quantity Manufacture	BSR37 \times 4 MIKUNI
Spark plug: Type Manufacture Gap	CR9E NGK 0.7 ~ 0.8 mm (0.028 ~ 0.031 in)
Primary reduction: Primary reduction system Primary reduction ratio	Spur gear 1.19 (37/31)
Transmission: Primary reduction system Primary reduction ratio Clutch type Secondary reduction system Secondary reduction ratio Reverse system	V-Belt 3.8 : 1 ~ 1 : 1 Automatic centrifugal engagement Chain 1.58 (38/24) (RX10, RX10S, RX10R, RX10RS) 1.90 (40/21) (RX10M, RX10MS) No (RX10, RX10S, RX10M, RX10MS) Yes (RX10R, RX10RS)
Chassis: Frame type Caster Ski stance (center to center)	Monocoque 23° 1,068 mm (42.0 in) (RX10, RX10S, RX10R, RX10RS) 980 mm (38.6 in) (RX10M, RX10MS)
Suspension: Front suspension type Rear suspension type	Independent double wishbone suspension Slide rail suspension

GENERAL SPECIFICATIONS

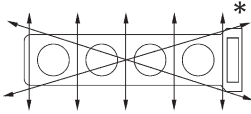
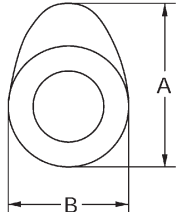
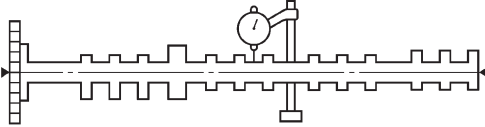
SPEC



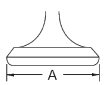
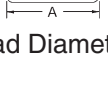




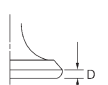

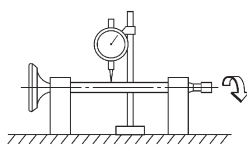
Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS
Track: Track type Track width Length on ground Track deflection mm/ 100 N (10 kg, 22 lb)	Internal drive type 381 mm (15.0 in) 752 mm (29.6 in) (RX10, RX10S, RX10R, RX10RS) 1,071 mm (42.2 in) (RX10M, RX10MS) 25 ~ 30 mm (0.98 ~ 1.18 in)
Brake: Brake type Operation method	Caliper type disc brake handlebar, left hand operated
Electrical: Ignition system Generator system	DC-CDI/MITSUBISHI A.C. magneto
Bulb wattage × Quantity: Headlight Tail/Brake light Meter light High beam indicator light Information indicator 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



MAINTENANCE SPECIFICATIONS ENGINE

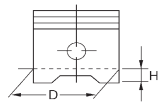
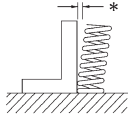
Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS
<p>Cylinder head:</p> <p>Volume (with spark plug) <Warpage limit></p> 	<p>13.45 ~ 14.00 cm³ (0.82 ~ 0.85 cu. in) 0.1 mm (0.004 in)</p> <p>* Lines indicate straight edge measurement.</p>
<p>Cylinder:</p> <p>Material Bore size <Taper limit> <Out of round> <Wear limit></p>	<p>Aluminum alloy with dispersion coating 74.000 ~ 74.010 mm (2.9134 ~ 2.9138 in) 0.05 mm (0.002 in) 0.05 mm (0.002 in) 74.06 mm (2.9157 in)</p>
<p>Camshaft:</p> <p>Drive system Camshaft cap inside diameter Camshaft journal diameter Camshaft-journal-to-camshaft-cap clearance</p> <p>Camshaft dimensions</p> <p>Intake "A" <Limit> "B" <Limit></p> <p>Exhaust "A" <Limit> "B" <Limit></p>  <p>Camshaft runout</p> 	<p>Chain drive (left) 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)</p> <p>32.50 ~ 32.60 mm (1.2795 ~ 1.2835 in) 32.40 mm (1.2756 in) 24.95 ~ 25.05 mm (0.9823 ~ 0.9862 in) 24.85 mm (0.9783 in) 32.95 ~ 33.05 mm (1.2972 ~ 1.3012 in) 32.85 mm (1.2933 in) 24.95 ~ 25.05 mm (0.9823 ~ 0.9862 in) 24.85 mm (0.9783 in)</p> <p>0.03 mm (0.0012 in)</p>
<p>Timing chain:</p> <p>Model/number of links Tensioning system</p>	<p>RH2015/130 Automatic</p>
<p>Valves, valve seats, valve guides:</p> <p>Valve clearance (cold) Intake Exhaust</p>	<p>0.11 ~ 0.20 mm (0.0043 ~ 0.0079 in) 0.21 ~ 0.25 mm (0.0083 ~ 0.0098 in)</p>




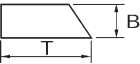
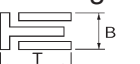
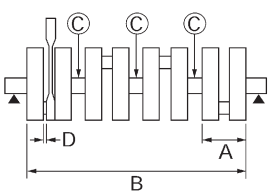
Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS	
Valve dimensions:		
Valve head diameter A		
Intake		22.9 ~ 23.1 mm (0.9016 ~ 0.9094 in)
Exhaust		24.4 ~ 24.6 mm (0.9606 ~ 0.9685 in)
	Head Diameter	
Valve face width B		
Intake		1.76 ~ 2.90 mm (0.0693 ~ 0.1142 in)
Exhaust		1.76 ~ 2.90 mm (0.0693 ~ 0.1142 in)
	Face Width	
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)
	Seat Width	
Valve margin thickness D		
Intake		0.5 ~ 0.9 mm (0.020 ~ 0.035 in)
Exhaust		0.5 ~ 0.9 mm (0.020 ~ 0.035 in)
	Margin Thickness	
Valve stem diameter		
Intake		3.975 ~ 3.900 mm (0.1565 ~ 0.1535 in)
<Limit>		3.945 mm (0.1553 in)
Exhaust		4.460 ~ 4.475 mm (0.1756 ~ 0.1762 in)
<Limit>		4.43 mm (0.1744 in)
Valve guide inside diameter		
Intake		4.000 ~ 4.012 mm (0.1575 ~ 0.1580 in)
<Limit>		4.05 mm (0.1594 in)
Exhaust		4.500 ~ 4.512 mm (0.1772 ~ 0.1776 in)
<Limit>		4.55 mm (0.1791 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		0.025 ~ 0.052 mm (0.0010 ~ 0.0020 in)
<Limit>		0.10 mm (0.0039 in)
Valve stem runout limit		0.01 mm (0.0004 in)
		
Valve seal width		
Intake		0.9 ~ 1.1 mm (0.035 ~ 0.043 in)
Exhaust		0.9 ~ 1.1 mm (0.035 ~ 0.043 in)



Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS
Valve spring: Free length Intake Exhaust Installed length (valve closed) Intake Exhaust Compressed spring force (installed) Intake Exhaust Spring tilt Intake Exhaust Winding direction (top view) Intake Exhaust	38.90 mm (1.53 in) 40.67 mm (1.60 in) 34.50 mm (1.36 in) 35.00 mm (1.38 in) 82 ~ 96 N (8.2 ~ 9.6 kg, 18.1 ~ 21.2 lb) 110 ~ 126 N (11.0 ~ 12.6 kg, 24.3 ~ 27.8 lb) 2.5°/1.7 mm (0.067 in) 2.5°/1.8 mm (0.071 in) Clockwise Clockwise
Valve lifter: Valve lifter outside diameter Intake <Limit> Exhaust <Limit> Valve lifter hole inside diameter Intake <Limit> Exhaust <Limit>	27.978 ~ 28.002 mm (1.1015 ~ 1.1024 in) 27.958 mm (1.1007 in) 27.978 ~ 28.002 mm (1.1015 ~ 1.1024 in) 27.958 mm (1.1007 in) 27.996 ~ 28.020 mm (1.1022 ~ 1.1031 in) 28.05 mm (1.1043 in) 27.996 ~ 28.020 mm (1.1022 ~ 1.1031 in) 28.05 mm (1.1043 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	73.955 ~ 73.970 mm (2.9116 ~ 2.9122 in) 5 mm (0.20 in) 0.030 ~ 0.055 mm (0.0012 ~ 0.0022 in) 0.12 mm (0.0047 in) 0.5 mm (0.0197 in) Intake side 17.002 ~ 17.013 mm (0.6694 ~ 0.6698 in)





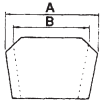
Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS
Piston pin: Piston pin outside diameter Piston pin length Piston pin to piston pin bore clearance <Limit>	16.991 ~ 17.000 mm (0.6689 ~ 0.6693 in) 51.4 ~ 51.5 mm (2.0236 ~ 2.0276 in) 0.002 ~ 0.022 mm (0.00008 ~ 0.0009 in) 0.072 mm (0.0028 in)
Piston ring: 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 0.90 × 2.75 mm (0.035 × 0.108 in) Taper 0.8 × 2.8 mm (0.031 × 0.110 in) 1.5 × 2.6 mm (0.059 × 0.101 in) 0.32 ~ 0.44 mm (0.010 ~ 0.020 in) 0.43 ~ 0.58 mm (0.017 ~ 0.023 in) 0.10 ~ 0.35 mm (0.004 ~ 0.0014 in) 0.030 ~ 0.065 mm (0.0012 ~ 0.0026 in) 0.020 ~ 0.055 mm (0.0008 ~ 0.0022 in)
Connecting rod: Crankshaft-pin-to-big-end-bearing clearance Bearing color code	0.016 ~ 0.040 mm (0.0006 ~ 0.0016 in) -1 = Violet 0 = White 1 = Blue 2 = Black 3 = Brown
Crankshaft:  Width A Width B Crankshaft runout C Big end side clearance D Crankshaft-journal-to-crankshaft-journal-bearing clearance Bearing color code	52.40 ~ 57.25 mm (2.063 ~ 2.254 in) 300.75 ~ 302.65 mm (11.84 ~ 11.92 in) 0.03 mm (0.0012 in) 0.160 ~ 0.262 mm (0.006 ~ 0.010 in) 0.004 ~ 0.028 mm (0.0002 ~ 0.0011 in) -1 = Violet 0 = White 1 = Blue 2 = Black 3 = Brown



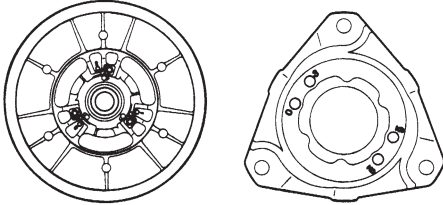
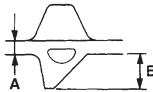
Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS
Carburetor:	
Type/Quantity	BSR37/4
Manufacturer	MIKUNI
I.D. mark	8FA100
Main jet (M.J)	#135
Main air jet (M.A.J)	#120
Jet needle (J.N)	Ab-3
Needle jet (N.J)	P4M
Pilot jet (P.J)	#17.5
Pilot air jet (P.A.J.1)	#85
(P.A.J.2)	#125
Pilot outlet (P.O)	1.0
Bypass 1 (B.P.1)	0.8
(B.P.2)	0.8
(B.P.3)	0.8
Pilot screw (P.S)	Approx 2
Throttle valve (Th.V)	#115
Valve seat size (V.S)	1.5
Starter jet (G.S)	#95
Float height (F.H)	11 ~ 15 mm (0.43 ~ 0.59 in)
Fuel level (below the line on the float chamber)	3.0 ~ 4.0 mm (1.118 ~ 0.157 in)
Engine idle speed	1,350 ± 100 r/min (1,250 ~ 1,450 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)
Max. impeller shaft tilt	0.15 mm (0.0059 in)
<Limit>	0.072 mm (0.0028 in)
Relief valve operating pressure	430 ~ 550 kPa (4.3 ~ 5.5 kg/cm ² , 61.2 ~ 78.2 psi)
Oil pressure (hot)	50 kPa (0.5 kg/cm ² , 7.1 psi) at 1,450 r/min
Cooling system:	
Filler cap opening pressure	95 ~ 125 kPa (0.95 ~ 1.25 kg/cm ² , 14 ~ 18 psi)
Water pump type	Single-suction centrifugal pump (Impeller type)
Reduction ratio	37/31 × 23/18 (1.525)
Coolant type	High quality silicate-free ethylene glycol antifreeze containing corrosion inhibitors
Coolant mixing ratio (coolant: water)	3 : 2 (60% : 40%)
Capacity	4.7 L (4.14 Imp qt, 4.97 US qt)



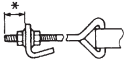
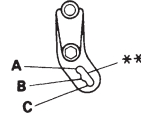
POWER TRAIN

Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS
Transmission: Type Range of ratio Engagement speed r/min Shift r/min Sheave distance Sheave offset	V-belt automatic 3.8 ~ 1.0 : 1 3,600 ± 200 r/min (3,400 ~ 3,800 r/min) (RX10, RX10S, RX10R, RX10RS) 4,200 ± 200 r/min (4,000 ~ 4,400 r/min) (RX10M, RX10MS) 10,250 ± 250 r/min (10,000 ~ 10,500 r/min) 268.5 mm (10.57 in) (267 ~ 270 mm (10.51 ~ 10.63 in)) 15 mm (0.59 in) (13.5 ~ 16.5 mm (0.53 ~ 0.65 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 Free length Set length	90501-582L1 (RX10, RX10S, RX10R, RX10RS) 90501-624L8 (RX10M, RX10MS) Yellow – Silver – Yellow (RX10, RX10S, RX10R, RX10RS) Orange – Silver – Orange (RX10M, RX10MS) 60 mm (2.36 in) 5.8 mm (0.228 in) (RX10, RX10S, RX10R, RX10RS) 6.2 mm (0.244 in) (RX10M, RX10MS) 343 N (35 kg, 77 lb) 24.5 N/mm (2.50 kg/mm, 140 lb/in) (RX10, RX10S, RX10R, RX10RS) 31.9 N/mm (3.25 kg/mm, 182 lb/in) (RX10M, RX10MS) 4.92 (RX10, RX10S, RX10R, RX10RS) 5.00 (RX10M, RX10MS) 87.4 mm (3.44 in) (RX10, RX10S, RX10R, RX10RS) 84.2 mm (3.32 in) (RX10M, RX10MS) 73.4 mm (2.89 in)
Primary sheave weight arm: Part number (with bush) Weight (without bush and rivets)	8FA-17605-00 69.43 g (2.449 oz)
Rivet: Outer Part number Material Size Quantity Hole quantity Inner Part number Material Size Quantity Hole quantity None (outer and inner)	None (RX10M, RX10MS) 90269-06006 (RX10, RX10S, RX10R, RX10RS) Steel (RX10, RX10S, RX10R, RX10RS) 17.2 mm (0.677 in) (RX10, RX10S, RX10R, RX10RS) 3 (RX10, RX10S, RX10R, RX10RS) 3 None (RX10M, RX10MS) 90261-06033 (RX10, RX10S, RX10R, RX10RS) Steel (RX10, RX10S, RX10R, RX10RS) 17.2 mm (0.677 in) (RX10, RX10S, RX10R, RX10RS) 3 (RX10, RX10S, RX10R, RX10RS) 3 RX10M, RX10MS



Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS
Secondary sheave spring: Part number Color code Outside diameter Wire diameter Hole position Sheave side-spring side (twist angle) 	90508-60012 (RX10, RX10S, RX10R, RX10RS) 90508-60007 (RX10M, RX10MS) PINK (RX10, RX10S, RX10R, RX10RS) White (RX10M, RX10MS) 69.5 mm (2.736 in) 6 mm (0.236 in) 3-3 (60°) (RX10, RX10S, RX10R, RX10RS) 1-6 (70°) (RX10M, RX10MS)
Spring rate Number of coils Free length Torque cam angle	12.32 N/mm (1.256 kg/mm, 70.34 lb/in) (RX10, RX10S, RX10R, RX10RS) 13.45 N/mm (1.372 kg/mm, 76.84 lb/in) (RX10M, RX10MS) 5.53 (RX10, RX10S, RX10R, RX10RS) 5.19 (RX10M, RX10MS) 75 mm (2.95 in) 51-43° (RX10, RX10S, RX10R, RX10RS) 45° (RX10M, RX10MS)
Drive chain: Type Number of links Secondary reduction ratio	Borg Warner Automotive 23RH303-70ASM 70L 38/24 (1.58) (RX10, RX10S, RX10R, RX10RS) 40/21 (1.90) (RX10M, RX10MS)
Track: Part number Width Length Pitch Number of links Thickness "A" Height "B" 	8DY-47110-00 (RX10, RX10S, RX10R, RX10RS for U.S.A./Canada) 8ER-47110-00 (RX10, RX10R, RX10RS for EUR) 8EP-47110-00 (RX10M, RX10MS) 381 mm (15.0 in) 3,072 mm (120.9 in) (RX10, RX10S, RX10R, RX10RS) 3,840 mm (151.2 in) (RX10M, RX10MS) 64 mm (2.52 in) 48 (RX10, RX10S, RX10R, RX10RS) 60 (RX10M, RX10MS) 5.1 mm (0.20 in) (RX10, RX10S, RX10R, RX10RS) 5.8 mm (0.23 in) (RX10M, RX10MS) 25.4 mm (1.00 in) (RX10, RX10S, RX10R, RX10RS for U.S.A./Canada) 31.8 mm (1.25 in) (RX10, RX10R, RX10RS for EUR) 50.8 mm (2.00 in) (RX10M, RX10MS) 25 ~ 30 mm (0.98 ~ 1.18 in)
Track deflection at 100 N (10 kg, 22 lb)	25 ~ 30 mm (0.98 ~ 1.18 in)



Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS
Slide rail suspension (Rear suspension): Center travel Rear travel Suspension spring rate Front Rear Suspension wire diameter Front Rear	221 mm (8.70 in) (RX10, RX10S, RX10R, RX10RS) 188 mm (7.40 in) (RX10M, RX10MS) 298 mm (11.73 in) (RX10, RX10S, RX10R, RX10RS) 237 mm (9.33 in) (RX10M, RX10MS) 28 – 50 N/mm (2.8 – 5.0 kg/mm, 157 – 280 lb/in) (RX10, RX10S, RX10R, RX10RS) 44.1 N/mm (4.4 kg/mm, 247 lb/in) (RX10M, RX10MS) 34.3 – 52 N/mm (3.4 – 5.2 kg/mm, 192 – 291 lb/in) (RX10, RX10S, RX10R, RX10RS) 17.7 – 39.2 N/mm (1.8 – 3.9 kg/mm, 99 – 220 lb/in) (RX10M, RX10MS) 8.8 mm (0.347 in) (RX10, RX10S, RX10R, RX10RS) 9.5 mm (0.374 in) (RX10M, RX10MS) 11.8 mm (0.465 in) (RX10, RX10S, RX10R, RX10RS) 10.5 mm (0.413 in) (RX10M, RX10MS)
Suspension setting position: Hook setting length *(Standard)  (Maximum) (Minimum) Full rate adjusting position ** 	25 ± 0.5 mm (0.98 ± 0.02 in) (RX10, RX10S, RX10R, RX10RS) 10 ± 0.5 mm (0.39 ± 0.02 in) (RX10M, RX10MS) 35 mm (1.37 in) 10 mm (0.40 in) B
Shock absorber: Damping force Front Extension Compression Rear Extension Compression	910 N/0.3 m/s (91 kg/0.3 m/s, 201 lb/0.3 m/s) (RX10, RX10S, RX10R, RX10RS) 540 N/0.3 m/s (54 kg/0.3 m/s, 119 lb/0.3 m/s) (RX10M, RX10MS) 2,280 N/0.3 m/s (228 kg/0.3 m/s, 503 lb/0.3 m/s) (RX10, RX10S, RX10R, RX10RS) 1,820 N/0.3 m/s (182 kg/0.3 m/s, 401 lb/0.3 m/s) (RX10M, RX10MS) 2,090 N/0.3 m/s (209 kg/0.3 m/s, 461 lb/0.3 m/s) (RX10, RX10S, RX10R, RX10RS) 1,340 N/0.3 m/s (134 kg/0.3 m/s, 295 lb/0.3 m/s) (RX10M, RX10MS) 470 N/0.3 m/s (47 kg/0.3 m/s, 104 lb/0.3 m/s) (RX10, RX10S, RX10R, RX10RS) 970 N/0.3 m/s (97 kg/0.3 m/s, 214 lb/0.3 m/s) (RX10M, RX10MS)

MAINTENANCE SPECIFICATIONS**SPEC**

Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS
Slide runner: Thickness Wear limit	17.8 mm (0.70 in) 10 mm (0.39 in)
Track sprocket wheel: Material Number of teeth	High molecular weight polyethylene 9 T (RX10, RX10S, RX10R, RX10RS) 8 T (RX10M, RX10MS)
Rear guide wheel: Material Outside diameter	High molecular weight polyethylene with rubber 178 mm (7.01 in)
Brake: Pad thickness Pad wear limit Pad to disk clearance Disc outside diameter Disc minimum thickness	13 mm (0.51 in) 7.5 mm (0.30 in) 0.025 ~ 0.115 mm (0.001 ~ 0.005 in) 220 mm (8.66 in) 4.5 mm (0.18 in)



CHASSIS

Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS
Frame: Frame material Seat height Luggage box location	Aluminum 738 mm (29.1 in) Front
Steering: Lock-to-lock angle (left) (right) Ski alignment Toe-out size Caster angle	30.0° (R ski) 34.7° (L ski) 34.7° (R ski) 30.0° (L ski) Toe-out 0 ~ 15 mm (0 ~ 0.59 in) 23°
Ski: Ski material Length Width	Plastic 1,020 mm (40.2 in) 132.0 mm (5.20 in)
Ski suspension (Front suspension): Type Travel Spring type Spring rate Wire diameter	Double wishbone system 221 mm (8.70 in) (RX10, RX10S, RX10R, RX10RS) 175 mm (6.89 in) (RX10M, RX10MS) Coil spring 19 – 30 N/mm (1.9 – 3.0 kg/mm, 106 – 168 lb/in) (RX10, RX10S, RX10R, RX10RS) 25 N/mm (2.5 kg/mm, 140 lb/in) (RX10M, RX10MS) 8.5 mm (0.335 in) (RX10, RX10S, RX10R, RX10RS) 8.0 mm (0.315 in) (RX10M, RX10MS)
Shock absorber: damping force Extension Compression	2,090 N/0.3 m/s (209 kg/0.3 m/s, 461 lb/0.3 m/s) (RX10, RX10S, RX10R, RX10RS) 1,950 N/0.3 m/s, (195 kg/0.3 m/s, 430 lb/0.3 m/s) (RX10M, RX10MS) 610 N/0.3 m/s (61 kg /0.3 m/s, 135 lb/0.3 m/s) (RX10, RX10S, RX10R, RX10RS) 600 N/0.3 m/s (60 kg/0.3 m/s, 132 lb/0.3 m/s) (RX10M, RX10MS)



ELECTRICAL

Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS
Voltage	12 V
Ignition system: Ignition timing (B.T.D.C.) Advanced type	5° at 1,450 r/min Digital type
Ignition coil: Model/Manufacturer Primary coil resistance Secondary coil resistance	F6T54973/MITSUBISHI 0.16 ~ 0.22 Ω at 20°C (68°F) 5.0 ~ 6.8 kΩ at 20°C (68°F)
Charging system: Type Nominal output	AC magneto 14 V/21 A at 5,000 r/min
DC-CDI: Magneto model/Manufacturer Standard Pickup coil resistance (color code) Stator coil resistance (color code) CDI unit model/Manufacturer	F4T47371/MITSUBISHI 14 V 30 A, 420 W at 5,000 r/min 189 ~ 231 Ω at 20°C (68°F) (Gray – Black) 0.19 ~ 0.24 Ω at 20°C (68°F) (White – White) F8T39371/MITSUBISHI
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 Manufacture Type Ten hour rate amperage	1.32 GS 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	8FA1/MORIC 12 V – 0.95 kW 0.008 ~ 0.010 Ω at 20°C (68°F) More than 100 kΩ at 20°C (68°F) 9.8 mm (0.39 in) 5 mm (0.20 in) 7.36 ~ 11.04 N (736 ~ 1,104 g, 26.0 ~ 38.9 oz) 28.5 mm (1.12 in) 27.5 mm (1.08 in) 1.5 mm (0.059 in)

MAINTENANCE SPECIFICATIONS

SPEC



Model	RX10, RX10S, RX10R, RX10RS, RX10M, RX10MS	
Starter relay:		
Model/Manufacturer	MS5F-441/JIDECO	
Amperage rating	180 A	
Coil resistance	4.2 ~ 4.6 Ω at 20°C (68°F)	
T.P.S. (throttle position sensor):		
Model/Manufacturer	TS67/02-1C/MIKUNI	
Resistance	4 ~ 6 K Ω at 20°C (68°F) (Blue – Black) 0 ~ 4 K Ω at 20°C (68°F) (Yellow – Black)	
Oil level switch:		
Model/Manufacturer	8FA/ASTI	
Fuel sender:		
Model/Manufacturer	8FA/NIPPON SEIKI	
Sender resistance	Full	4 ~ 10 Ω at 20°C (68°F)
	Empty	90 ~ 100 Ω at 20°C (68°F)
Headlight relay:		
Model/Manufacturer	5DM/OMRON	
Coil resistance	95 ~ 116 Ω at 20°C (68°F)	
Grip warmer:		
Heater resistance	(left)	1.53 ~ 1.87 Ω at 20°C (68°F)
	(right)	1.53 ~ 1.87 Ω at 20°C (68°F)
Thumb warmer:		
Heater resistance	37.0 ~ 45.2 Ω at 20°C (68°F)	
Circuit breaker:		
Type	Fuse	
Amperage for individual circuit		
Main fuse	30 A × 1	
Headlight fuse	20 A × 1	
Signal fuse	10 A × 1	
Ignition fuse	10 A × 1	
Carburetor heater fuse	20 A × 1	
Reserve fuse	30 A × 1	
Reserve fuse	20 A × 1	
Reserve fuse	10 A × 1	
Water temperature sensor:		
Model/Manufacturer	8CC/MITSUBISHI	
Resistance	5.2 ~ 6.4 k Ω at 0°C (34°F) 0.300 ~ 0.364 k Ω at 80°C (176°F) 0.170 ~ 0.208 k Ω at 100°C (212°F)	
Indicator light	(ON)	90 ~ 110°C (194 ~ 230°F)
	(OFF)	85 ~ 105°C (185 ~ 221°F)
Speed sensor:		
Model/Manufacture	8EK/NIPPON SEIKI	
Carburetor heater:		
Model/Manufacture	5FU/NIPPON THERMOSTAT	
Wattage	30 W	
Resistance	6 ~ 10 Ω at 20°C (68°F)	

**HIGH ALTITUDE SETTINGS**

RX10, RX10S, RX10R, RX10RS

Altitude \ Temperature	-40°C (-40°F)		-20°C (-4°F)		0°C (32°F)		16°C (60°F)	Idling speed (r/min)
	MJ	PS	MJ	PS	MJ	PS		
0 ~ 200 m (0 ~ 670 ft)	MJ	#140 STD	MJ	#137.5 STD	MJ	#135 STD		1350
200 ~ 1000 m (~ 1700 ft)	MJ	#137.5 STD	MJ	#135 STD	MJ	#132.5 STD		1350
1000 ~ 2000 m (~ 6700 ft)	MJ	#135 3/4	MJ	#132.5 3/4	MJ	#130 3/4		1350
2000 ~ 3000 m (~ 10000 ft)	MJ	#132.5 1+1/4	MJ	#130 1+1/4	MJ	#127.5 1+1/4		1400

[Production spec] MJ#1, 2, 3, 4:#135 PS:Approx 2 #:Main jet number PS:Pilot screw turns in

HIGH ALTITUDE SETTINGS

RX10M, RX10MS

Altitude \ Temperature	-40°C (-40°F)		-20°C (-4°F)		0°C (32°F)		16°C (60°F)	Idling speed (r/min)
	MJ	PS	MJ	PS	MJ	PS		
0 ~ 200 m (0 ~ 670 ft)	MJ	#140 STD	MJ	#137.5 STD	MJ	#135 STD		1350
200 ~ 1000 m (~ 1700 ft)	MJ	#137.5 STD	MJ	#135 STD	MJ	#132.5 STD		1350
1000 ~ 2000 m (~ 6700 ft)	MJ	#135 3/4	MJ	#132.5 3/4	MJ	#130 3/4		1350
2000 ~ 3000 m (~ 10000 ft)	MJ	#132.5 1+1/4	MJ	#130 1+1/4	MJ	#127.5 1+1/4		1400

[Production spec] MJ#1, 2, 3, 4:#135 PS:Approx 2 #:Main jet number PS:Pilot screw turns in



TIGHTENING TORQUE

ENGINE

Parts to be tightened	Tightening torque			Remarks
	Nm	m•kg	ft•lb	
Spark plug	13	1.3	9.4	Left-hand thread.
Cylinder head nut (M10 × 1.25) × 2	20 + 121°	2.0 + 121°	14 + 121°	
Cylinder head nut (M10 × 1.25) × 6	20 + 105°	2.0 + 105°	14 + 105°	
Cylinder head nut × 2	20 + 140°	2.0 + 140°	14 + 140°	
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	
Connecting rod and cap	20 + 120°	2.0 + 120°	14 + 120°	
A.C. magneto rotor	130	13.0	94	
Crankshaft and drive gear	75	7.5	54	
Primary reduction gear bearing housing	12	1.2	8.7	
Timing chain tensioner	10	1.0	7.2	
Thermostat housing	10	1.0	7.2	
Water temperature sensor	23	2.3	17	
Timing chain tensioner cap	6	0.6	4.3	
Camshaft and camshaft sprocket	24	2.4	17	
Hose band	2	0.2	1.4	
Water pump	12	1.2	8.7	
Coolant reservoir tank	7	0.7	5.0	
Pipe	10	1.0	7.2	
Oil cooler	35	3.5	25	
Oil pan	10	1.0	7.2	
Engine mounting adjust bolt	7	0.7	5.1	
Engine mounting nut	65	6.5	47	
Countershaft cover	12	1.2	8.7	See NOTE.
Oil pan drain bolt	30	3.0	22	
Oil filter union bolt	70	7.0	51	
Oil filter	17	1.7	12	
Oil pump	12	1.2	8.7	
Oil pump drive chain guide	10	1.0	7.2	
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	
Oil gallery bolt	10	1.0	7.2	
Exhaust joint	25	2.5	18	
Muffler band	9	0.9	6.5	
Exhaust pipe	25	2.5	18	
Exhaust sampling bolt	10	1.0	7.2	
Muffler	16	1.6	11	
Exhaust cover	6	0.6	4.3	
Muffler band	20	2.0	14	
Muffler protector	11	1.1	8.0	
Cylinder head stud bolt	10	1.0	7.2	
Crankcase (M9 × 1.5) (1st)	15	1.5	11	
(2nd)	15+ 45~50°	1.5+ 45~50°	11+ 45~50°	
Crankcase (M6 × 1.0)	12	1.2	8.7	Apply LOCTITE® Apply LOCTITE®
Countershaft cover	12	1.2	8.7	
A.C. magneto rotor cover	12	1.2	8.7	
Starter clutch	12	1.2	8.7	
Stator coil	10	1.0	7.2	
Starter motor	27	2.7	20	
Pickup coil	6	0.6	4.3	

TIGHTENING TORQUE**SPEC**

Parts to be tightened	Tightening torque			Remarks
	Nm	m•kg	ft•lb	
Fuel pump	10	1.0	7.2	
Fuel pump stay	10	1.0	7.2	

NOTE:

1. First, tighten the bolt to approximately 15 Nm (1.5 m•kg, 11 ft•lb) with a torque wrench, then loosen the bolt completely.
2. Retighten the bolt to 15 Nm (1.5 m•kg, 11 ft•lb), and tighten another 45 ~ 50° with a angle gauge.



POWER TRAIN

Parts to be tightened	Tightening torque			Remarks
	Nm	m•kg	ft•lb	
Primary sheave (1st)	120	12	85	Tighten the bolt in two stages. See NOTE. Left-hand thread. Apply LOCTITE®
(2nd)	60	6.0	43	
Spider and sliding sheave	200	20.0	145	
Primary sheave cap and sliding sheave	14	1.4	10	Apply LOCTITE®
Roller and weight (primary sheave)	6	0.6	4.3	
Secondary sheave	64	6.4	46	
Stopper (secondary sheave)	7	0.7	5.1	
Spring seat (secondary sheave)	23	2.3	17	
Bolt (secondary sheave clearance)	10	1.0	7.2	
Drive sprocket	90	9.0	65	
Locknut chain tensioner	24	2.4	17	
Chain housing and frame	48	4.8	35	
Driven sprocket	48	4.8	35	
Drain bolt (drive chain housing)	16	1.6	12	
Chain housing cover	24	2.4	17	
Shift lever assembly	10	1.0	7.2	
Lever and drive chain housing cover	10	1.0	7.2	
Shaft (reverse drive gear)	10	1.0	7.2	(RX10R, RX10RS) (RX10R, RX10RS) Apply LOCTITE® (RX10R, RX10RS) Apply LOCTITE®
Reverse driven gear	48	4.8	35	
Counter gear	10	1.0	7.2	
Spacer set screw	6	0.6	4.3	
Chain housing and brake caliper	48	4.8	35	Apply LOCTITE®
Bleed screw (brake caliper)	6	0.6	4.3	
Brake hose union bolt (caliper side)	30	3.0	22	
Brake hose union bolt (brake master cylinder side)	30	3.0	22	
Bearing set screw (Secondary shaft)	8	0.8	5.8	
Parking brake	13	1.3	9.4	
Stopper band	4	0.4	2.9	
Hook and front pivot arm	16	1.6	12	
Wheel bracket and sliding frame	24	2.4	17	
Bracket bolt (front)	72	7.2	52	
Bracket bolt (rear)	30	3.0	22	Apply LOCTITE® Apply LOCTITE® Apply LOCTITE® Apply LOCTITE® Apply LOCTITE® Apply LOCTITE® Apply LOCTITE® Apply LOCTITE® Apply LOCTITE® Apply LOCTITE®
Front pivot arm and front pivot arm bracket	72	7.2	52	
Front pivot arm bracket and sliding frame	72	7.2	52	
Suspension wheel	72	7.2	52	
Rear axle	75	7.5	54	
Slide rail suspension mounting bolt (M10)	72	7.2	52	
Rear pivot arm and bracket	24	2.4	17	
Shock absorber and rear pivot arm	49	4.9	35	
Rear pivot arm and rod	49	4.9	35	
Rear suspension bracket and rod	49	4.9	35	
Shock absorber and rear suspension bracket	49	4.9	35	Apply LOCTITE® Apply LOCTITE® Apply LOCTITE® Apply LOCTITE® Apply LOCTITE®
Control rod and sliding frame	72	7.2	52	
Shock absorber and front pivot arm	49	4.9	35	
Shock absorber and front suspension bracket	49	4.9	35	
Rear pivot arm bracket	72	7.2	52	
Rear bracket and suspension wheel	72	7.2	52	

TIGHTENING TORQUE

SPEC

Parts be tightened	Tightening torque			Remarks
	Nm	m•kg	ft•lb	
Wheel bracket shaft and sliding frame	72	7.2	52	Apply LOCTITE®
Set bolt (front axle)	9	0.9	6.5	
Speed sensor	20	2.0	14	
Gear unit (speed sensor)	40	4.0	29	

NOTE:

Tightening steps:

1. Tighten the bolt to a torque at 155 Nm (15.5 m•kg, 112 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

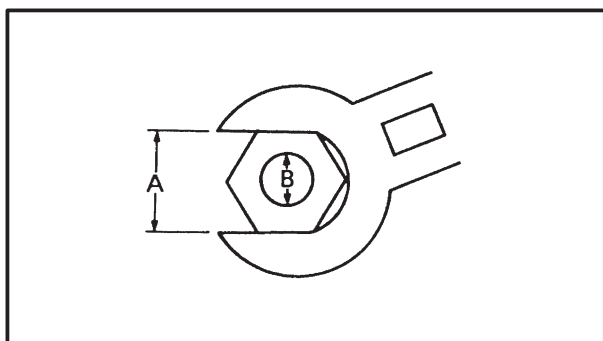
Parts to be tightened	Tightening torque			Remarks
	Nm	m•kg	ft•lb	
Handlebar holder	15	1.5	11	
Steering column				
Upper	23	2.3	17	
Lower	23	2.3	17	
Steering column 2 and steering shaft	35	3.5	25	
Steering shaft and steering column 1	35	3.5	25	
Steering column 1 and relay rod	30	3.0	22	
Relay rod and 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	
Locknut (relay rod/tie rod)	25	2.5	18	
Ski	48	4.8	35	
Ski runner	19	1.9	14	
Ski column lower bracket	11	1.1	8.0	
Ski and ski handle	11	1.1	8.0	
Shock absorber (upper)	45	4.5	33	
Shock absorber (lower)	45	4.5	33	
Steering arm locknut	35	3.5	25	
Upper arm and frame	37	3.7	27	
Upper arm and knuckle	40	4.0	29	
Lower arm and frame	37	3.7	27	
Lower arm and knuckle	65	6.5	47	
Stabilizer bar and stabilizer arm	11	1.1	8.0	
Stabilizer arm and connecting rod	34	3.4	25	
Connecting rod and lower arm	34	3.4	25	
Frame cross member (front side)	30	3.0	22	
(rear side)	23	2.3	17	
Master cylinder assembly	10	1.0	7.2	
Brake lever adjuster locknut	6	0.6	4.3	
Rear cover	3	0.3	2.2	
Seat and frame	5	0.5	3.6	
Shroud	3	0.3	2.2	



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

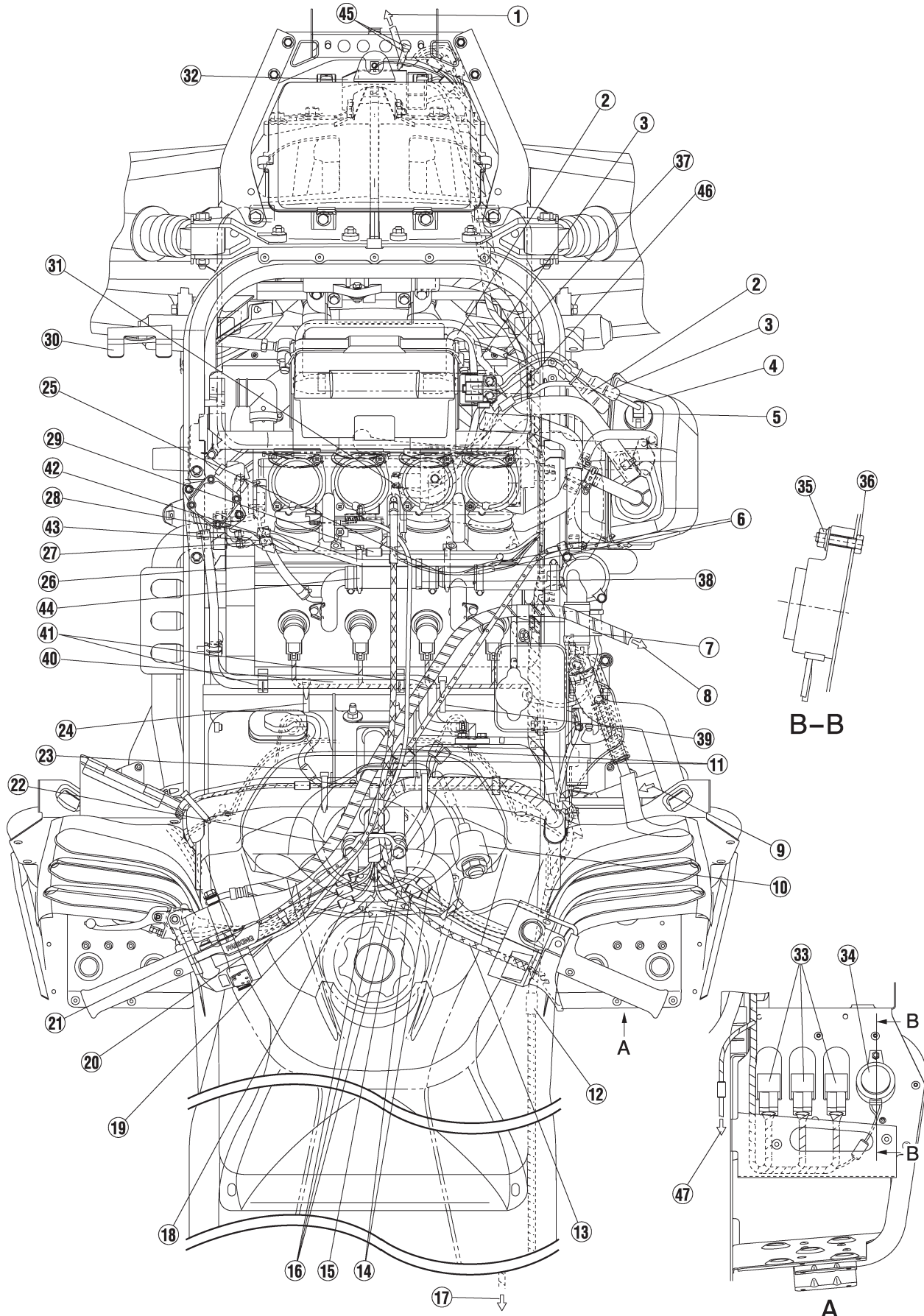


A: Distance across flats

B: Outside thread diameter

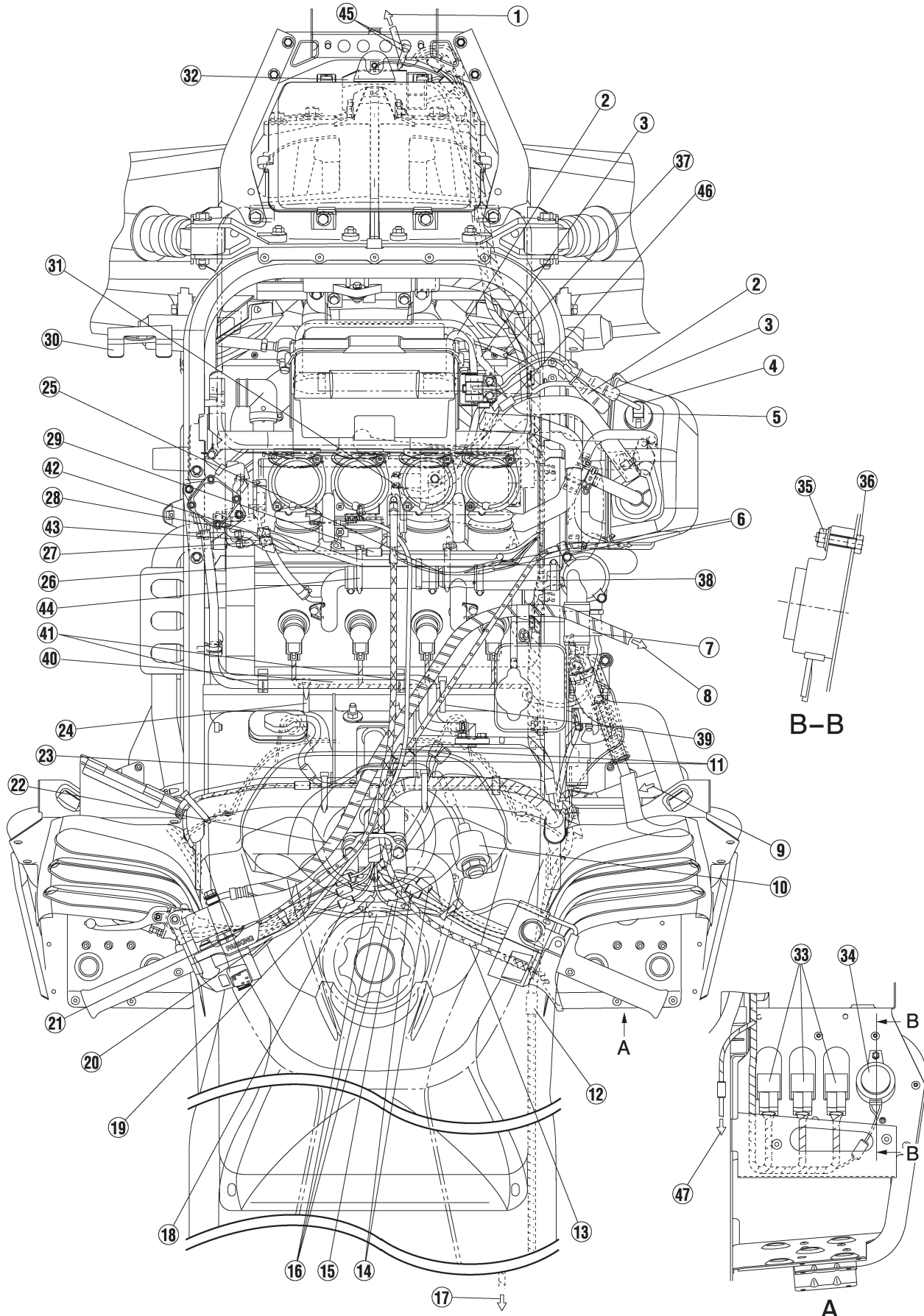
DEFINITION OF UNITS

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	—	
r/min	Rotations per minute	—	Engine speed



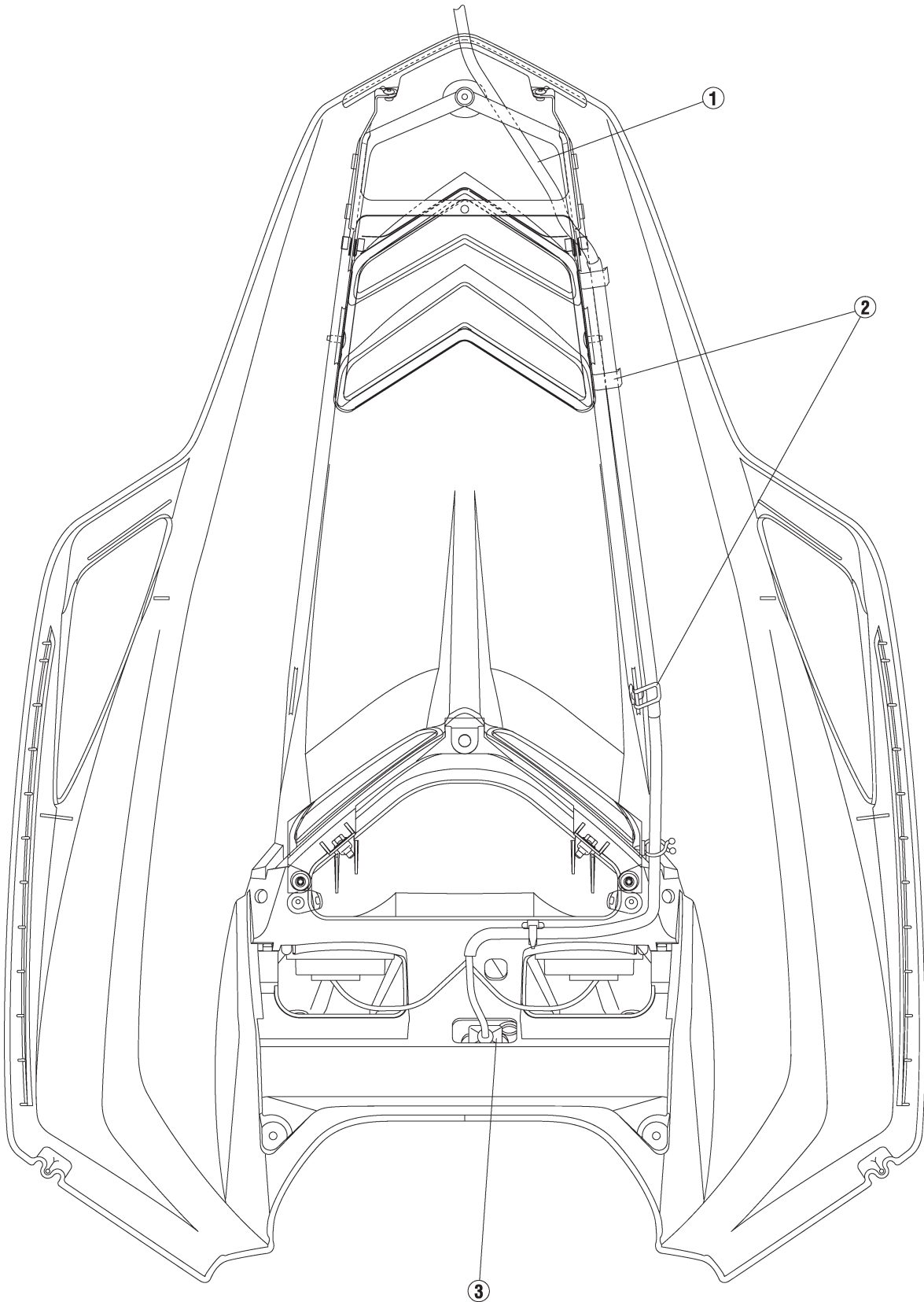


- ① To the headlight and meter assembly
- ② Battery negative lead
- ③ Battery positive lead
- ④ Oil level switch lead coupler
- ⑤ Oil level switch
- ⑥ Carburetor switch lead connector
- ⑦ Coolant temperature sensor lead coupler
- ⑧ To the brake caliper
- ⑨ To the heat exchanger
- ⑩ Main switch
- ⑪ Joint connector
- ⑫ Tail/brake light lead coupler
- ⑬ Throttle cable
- ⑭ Right handlebar switch lead coupler
- ⑮ Thumb warmer switch lead coupler
- ⑯ Grip warmer switch lead connector
- ⑰ To the tail/brake light
- ⑱ Hi/Lo switch lead coupler
- ⑲ Left handlebar switch lead coupler
- ⑳ Starter cable
- ㉑ Brake light switch lead coupler
- ㉒ Brake hose
- ㉓ Fuel sender lead coupler
- ㉔ Clamp it with the lower fuel hose
- ㉕ Clamp the throttle position sensor
- ㉖ Route the coolant hose between the upper fuel hose and the lower fuel hose
- ㉗ Route it under the coolant hose
- ㉘ Route it with the coolant hose
- ㉙ Throttle position sensor lead coupler
- ㉚ Drive guard bracket



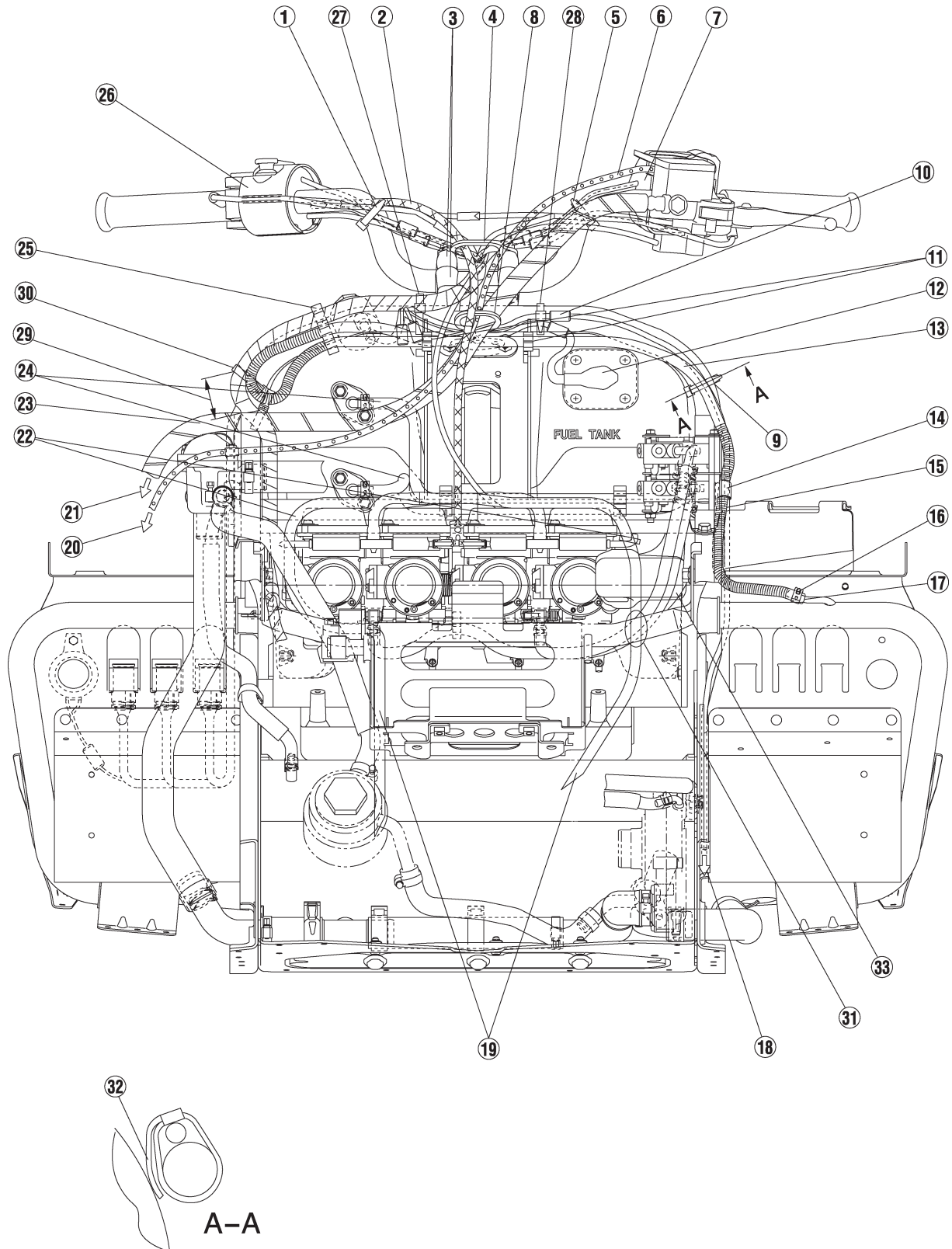


- ③① Connect the battery negative lead to the starter motor mounting bolt
- ③② Voltage regulator
- ③③ Relay
- ③④ Back buzzer (RX10R, RX10RS)
- ③⑤ Nut
- ③⑥ Bolt
- ③⑦ Battery negative lead
- ③⑧ Clamp the vacuum hose to the coolant hose
- ③⑨ Clamp the ignition coil lead to the frame
- ④⑩ Route the fuel hose under the clamp
- ④① Clamp the fuel hose
- ④② Clamp the coolant hose and vacuum hose 2
- ④③ Clamp the coolant hose and vacuum hose
- ④④ Clamp the throttle position sensor
- ④⑤ Clamp the headlight sub-harness
- ④⑥ Carburetor heater lead coupler
- ④⑦ To the tail/brake light



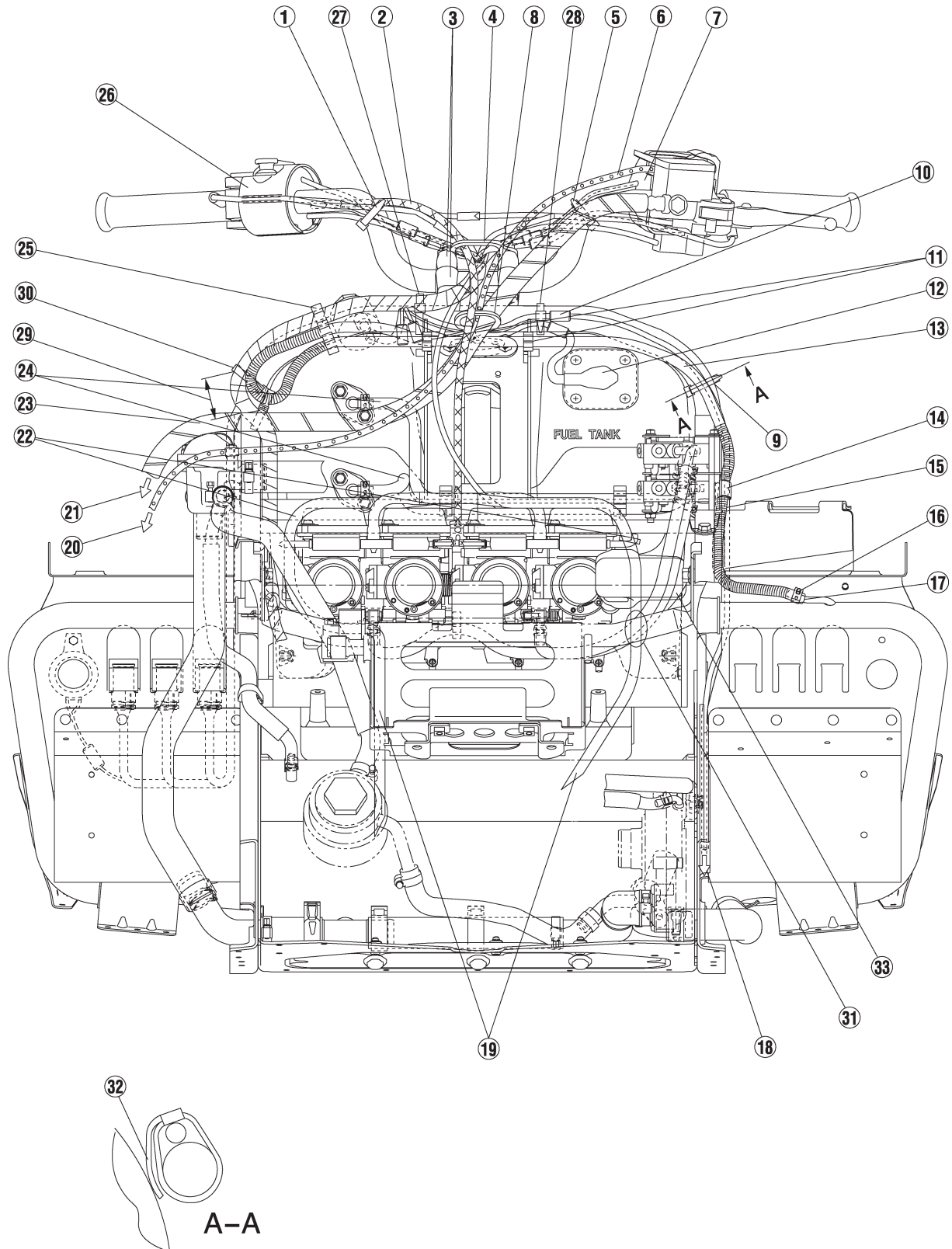


- ① Headlight wire harness
- ② Align it with the positioning tape of the headlight wire harness
- ③ Meter coupler (Securety fit in the rubber cover)



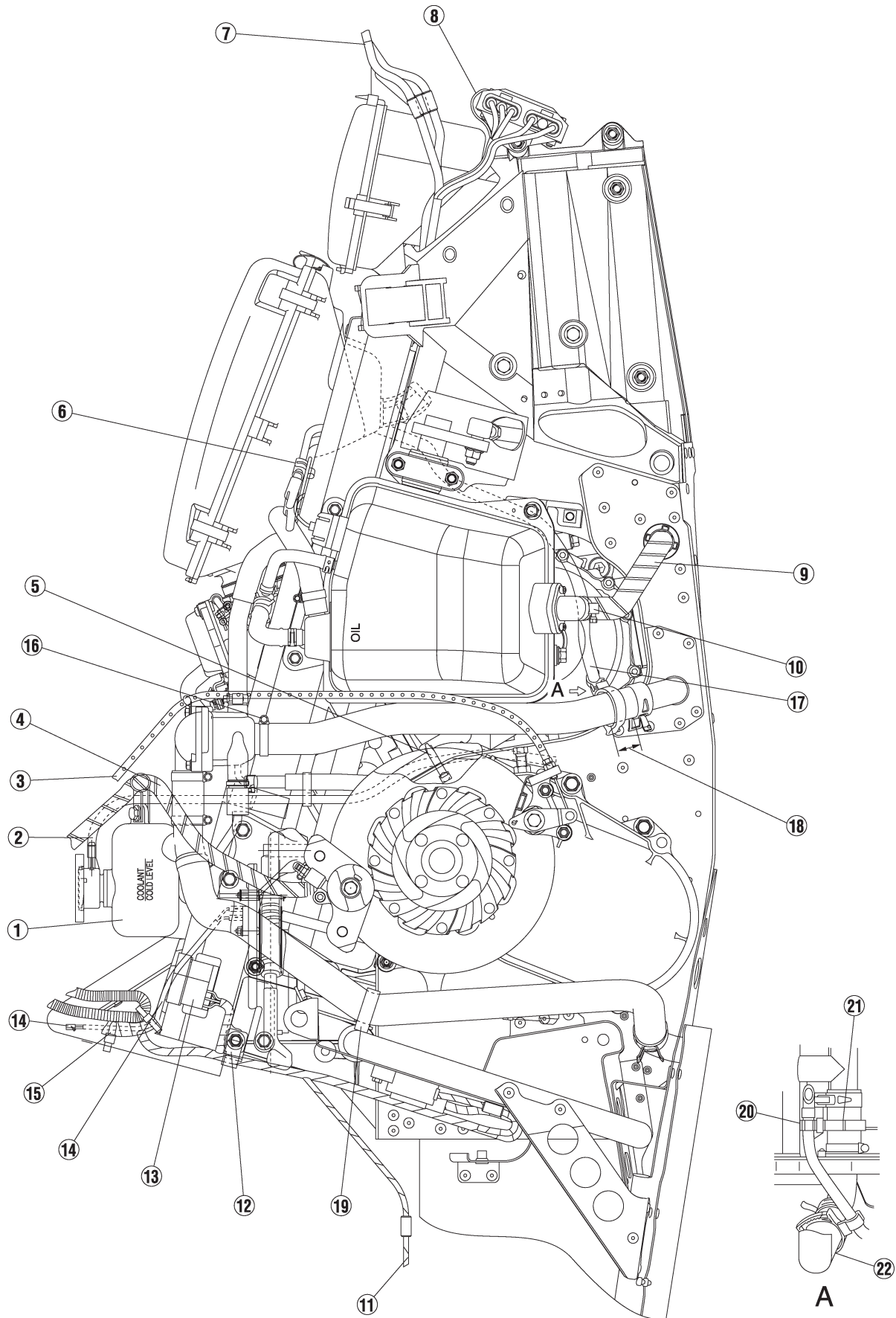


- ① Do not clamp the throttle cable
- ② Throttle cable
- ③ Handlebar holder
- ④ All leads and cables except brake hose and parking brake cable
- ⑤ Clamp the tail/brake light lead, headlight beam switch lead and grip warmer lead
- ⑥ Parking brake cable
- ⑦ Left handlebar switch
- ⑧ Brake hose and parking brake cable through lower loop
- ⑨ Clamp the speed sensor lead only
- ⑩ Speed sensor coupler
- ⑪ Clamp the fuel tank breather hose
- ⑫ Fuel sender lead cover
- ⑬ Route the fuel breather hose along the steering gate
- ⑭ Clamp the compression spring section of the fuel breather hose
- ⑮ Compression spring
- ⑯ Point the clip position to the upward
- ⑰ Insert the fuel breather hose until it contacts the pipe
- ⑱ To the speed sensor
- ⑲ Carburetor air vent hoses
- ⑳ To the parking brake
- ㉑ To the brake caliper
- ㉒ Carburetor air vent hose
- ㉓ Brake hose
- ㉔ Fuel hose
- ㉕ Clamp the wire harness and fuel breather hose from the lower side



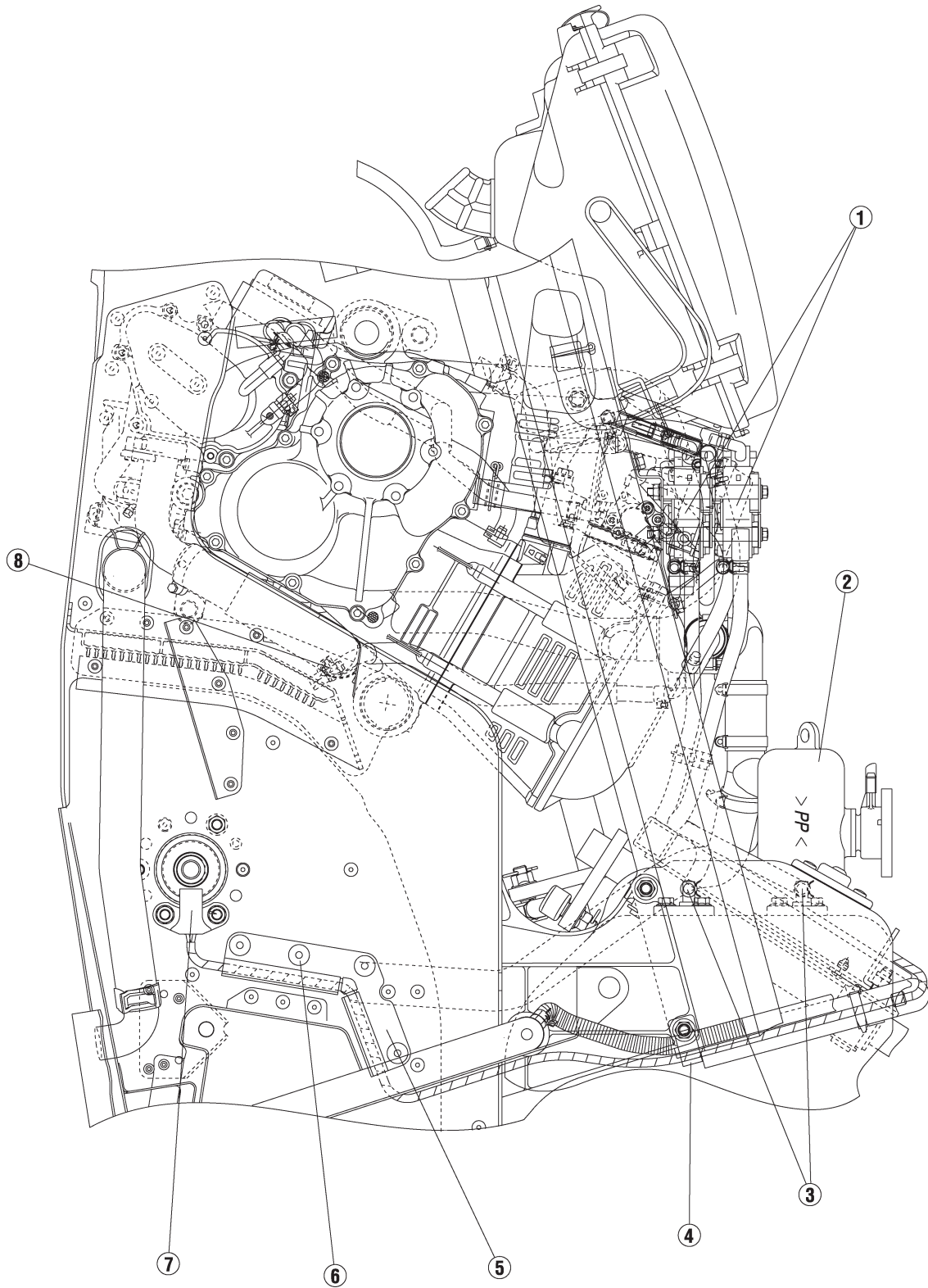


- ②⑥ Right handlebar switch
- ②⑦ Clamp the wire harness only
- ②⑧ Clamp the fuel sender head
and speed sensor lead
- ②⑨ Less than 50 mm (2.0 in)
- ③⑩ Clamp the wire harness
- ③① Route the carburetor air vent
hose under the fuel hose
- ③② Push into the end of clamp be-
tween frame and fuel tank
- ③③ Breather tank



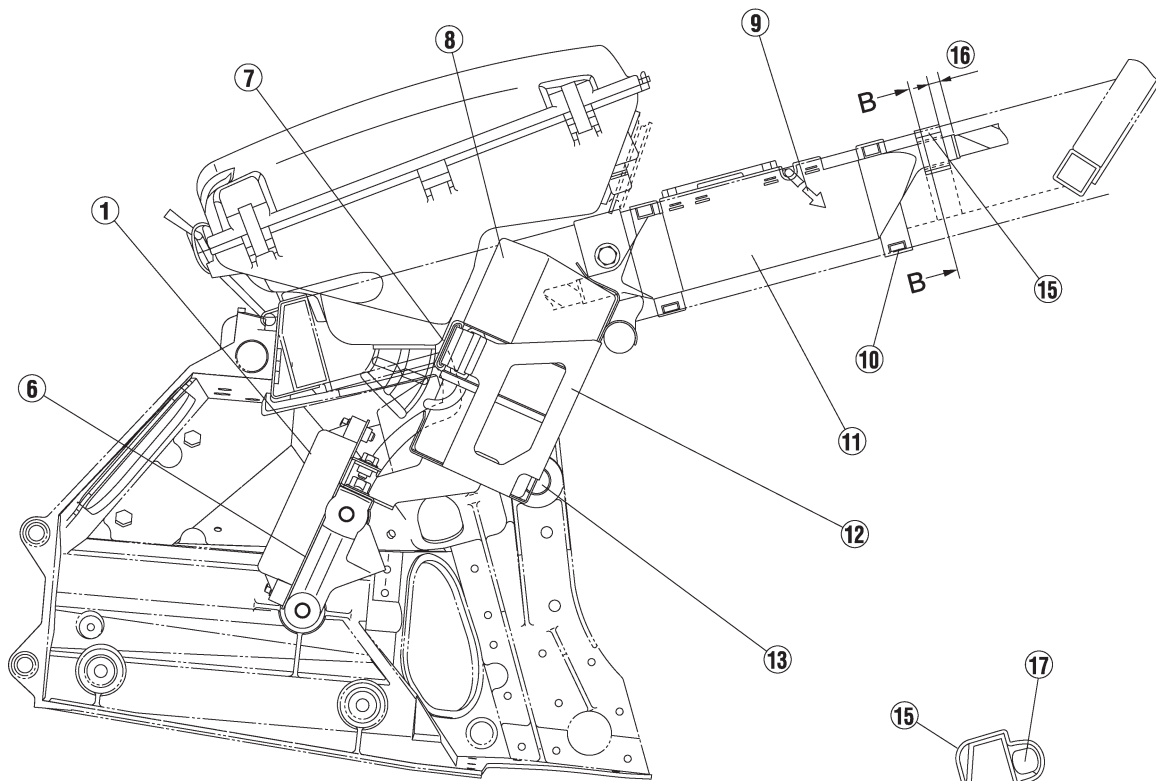
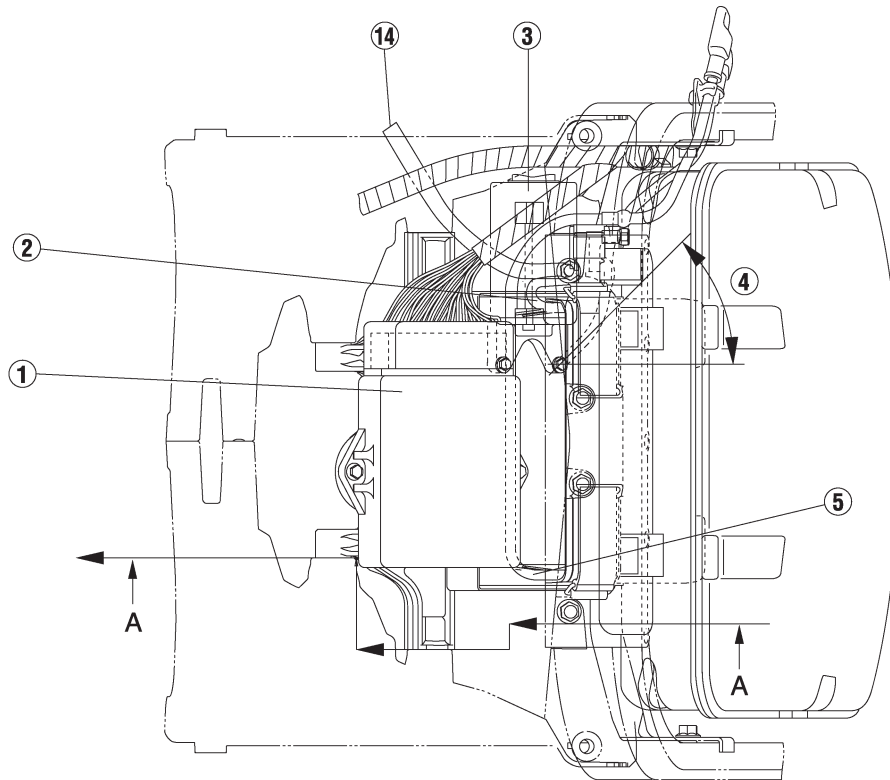


- ① Coolant reservoir tank
- ② Reservoir tank hose
- ③ Parking brake cable
- ④ Brake hose
- ⑤ Clamp the hose at the white paint position. Point the clamp position to the front outside
- ⑥ Clamp the battery positive lead
- ⑦ Headlight lead
- ⑧ Tighten the frame ground and voltage regulator upper bolt together
- ⑨ Engine oil tank hose
- ⑩ Point the clamp tightening direction to the downward
- ⑪ to the tail/brake light
- ⑫ Tighten the frame cross member and frame together
- ⑬ Fuse box
- ⑭ Route the gear position switch lead to the reverse gear if the reverse function is equipped, or fold it back and secure it if the reverse function is not provided
- ⑮ Wire harness
- ⑯ Point the clamp position to the front outside
- ⑰ Drain hose
- ⑱ Less than 30 mm (1.2 in)
- ⑲ Clamp the coolant hose
- ⑳ Clamp it at the white paint position
- ㉑ Point the clamp position to the downward
- ㉒ Point the clamp position to the inside





- ① Fuel pump
- ② Coolant reservoir tank
- ③ Point the pawl of clip to the upward
- ④ Clamp the fuel tank breather and speed sensor lead. Tighten the frame cross member and frame together
- ⑤ Wire harness clamp
- ⑥ Rivets
- ⑦ Speed sensor
- ⑧ Point the pawl of clip to the downward



A-A

B-B



- ① CDI unit
- ② Battery negative lead
- ③ Starter motor
- ④ Position the negative lead on the engine at 45°
- ⑤ Battery positive lead
- ⑥ CDI unit bracket
- ⑦ Battery band
- ⑧ Battery cover
- ⑨ To the carburetor
- ⑩ Equip it with the frame cross member
- ⑪ Wire harness holder
- ⑫ Battery bracket
- ⑬ Battery seat
- ⑭ Air box drain hose
- ⑮ Plate cover
- ⑯ 0 ~ 5 mm (0.20 in)
- ⑰ Wire harness
- ⑱ Frame cross member

- ① A.C. magneto
- ② Rectifier/regulator
- ③ Main switch
- ④ Main relay
- ⑤ Fuse (MAIN)
- ⑥ Starter relay
- ⑦ Starter motor
- ⑧ Battery
- ⑨ Engine stop switch
- ⑩ Throttle switch
- ⑪ Carburetor switch
- ⑫ Carburetor heater relay
- ⑬ Carburetor heater
- ⑭ Grip warmer
- ⑮ Thumb warmer
- ⑯ CDI unit
- ⑰ Ignition coil
- ⑱ Spark plug
- ⑲ Water temperature sensor
- ⑳ Throttle position sensor
- ㉑ Grip warmer switch
- ㉒ Thumb warmer switch
- ㉓ Body ground
- ㉔ Back buzzer (RX10R, RX10RS)
- ㉕ Gear position switch (RX10R, RX10RS)
- ㉖ Brake light switch
- ㉗ Tail/brake light
- ㉘ Fuse (HEADLIGHT)
- ㉙ Fuse (SIGNAL)
- ㉚ Fuse (CARBURETOR HEATER)
- ㉛ Fuse (IGNITION)
- ㉜ Headlight beam switch
- ㉝ Headlight relay
- ㉞ Headlight
- ㉟ Meter assembly
- ㊱ Tachometer
- ㊲ Meter light
- ㊳ Water temperature indicator light
- ㊴ Multi-function meter
- ㊵ Warning light
- ㊶ Hi beam indicator light
- ㊷ Oil level switch
- ㊸ Fuel sender
- ㊹ Speed sensor

COLOR CODE

B	Black	G / Y . . .	Green / Yellow
Br	Brown	L / G . . .	Blue / Green
G	Green	L / R . . .	Blue / Red
Gy	Gray	L / W . . .	Blue / White
L	Blue	L / Y . . .	Blue / Yellow
Lg	Light green	Lg / G . .	Light green / Green
O	Orange		
P	Pink	Lg / L . . .	Light green / Blue
R	Red	Lg / W . .	Light green / White
Sb	Sky blue	O / R . . .	Orange / Red
W	White	R / B . . .	Red / Black
Y	Yellow	R / W . . .	Red / White
B / G . . .	Black / Green	R / Y . . .	Red / Yellow
B / L . . .	Black / Blue	W / G . . .	white / Green
B / R . . .	Black / Red	W / R . . .	White / Red
B / W . . .	Black / White	W / Y . . .	White / Yellow
B / Y . . .	Black / Yellow	Y / B . . .	Yellow / Black
Br / W . .	Brown / White	Y / G . . .	Yellow / Green
Br / Y . . .	Brown / Yellow	Y / L . . .	Yellow / Blue
G / B . . .	Green / Black	Y / R . . .	Yellow / Red
G / R . . .	Green / Red	Y / W . . .	Yellow / White



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