

Yamaha Service Manual

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SERVICE MANUAL

PZ50W
PZ50GTW
PZ50FXW
PZ50MW
PZ50VTW
PZ50MPW

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

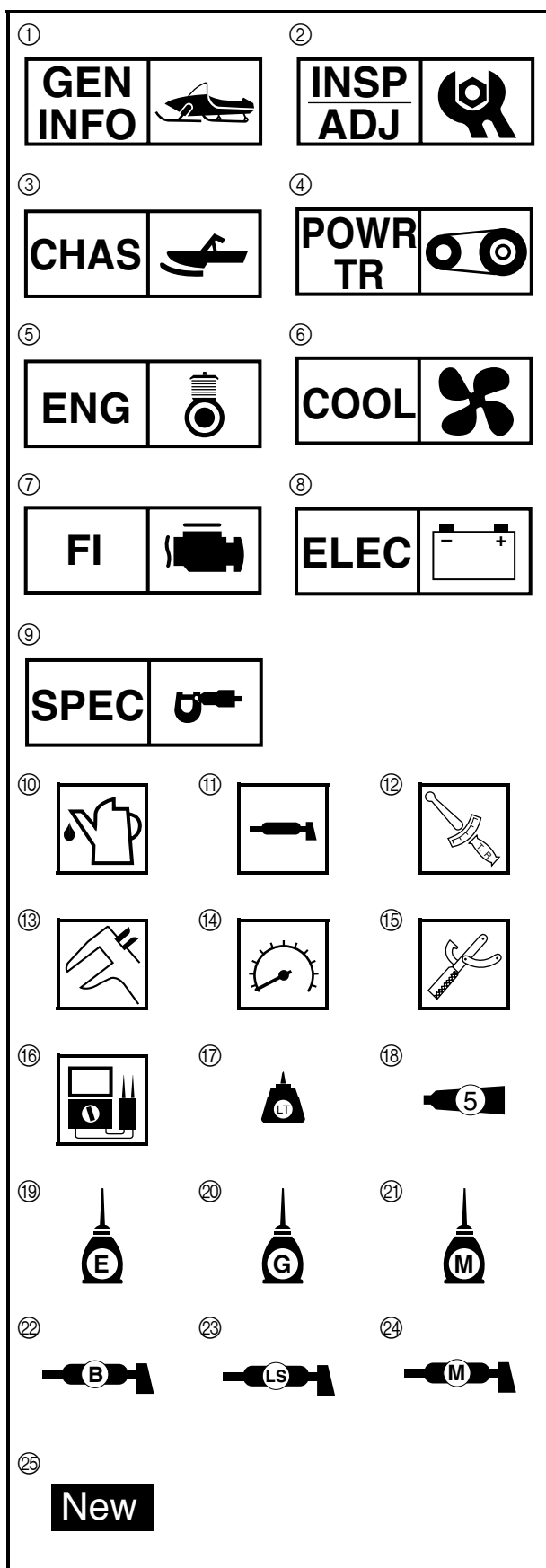
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all inspection, repair, assembly, and disassembly operations. In this revised 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.

**PZ50W, PZ50GTW, PZ50FXW, PZ50MW,
PZ50VTW, PZ50MPW
SERVICE MANUAL
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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 inspection and adjustment
- ③ Chassis
- ④ Power train
- ⑤ Engine
- ⑥ Cooling system
- ⑦ Fuel injection system
- 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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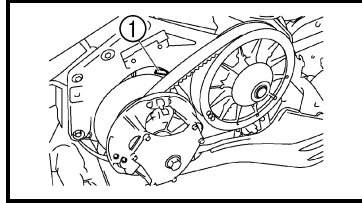
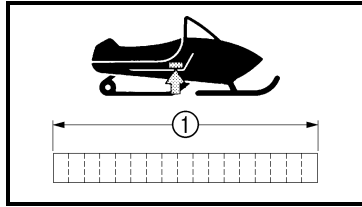
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GENERAL INFORMATION

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

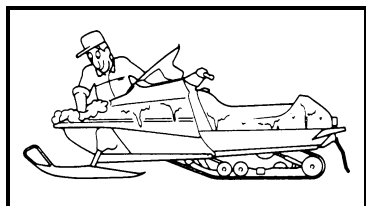
The engine serial number ① is located on the left-hand side of the crankcase.

NOTE:

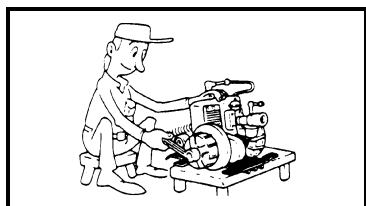
Designs and specifications are subject to change without notice.

IMPORTANT INFORMATION

PREPARATION FOR REMOVAL AND DISASSEMBLY



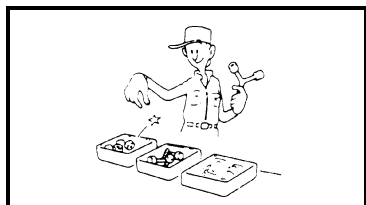
1. Remove all dirt, mud, dust, and foreign material before removal and disassembly.
While cleaning, take care to protect the electrical parts, such as relays, switches, motor, resistors, controllers, etc., from high pressure water splashes.



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

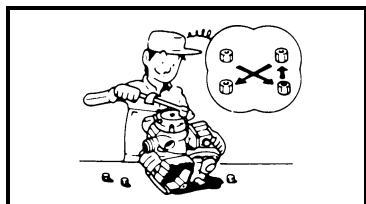


3. When disassembling the machine, keep mated parts together. This includes gears, cylinders, pistons, and other parts that have been "mated" through normal wear. Mated parts must be reused or replaced as an assembly.

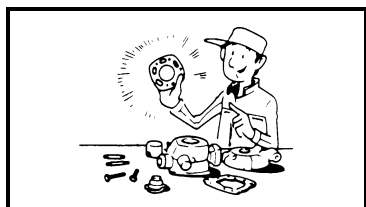


4. During disassembly of the machine, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help ensure that all parts are reinstalled correctly.

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 crisscross pattern.

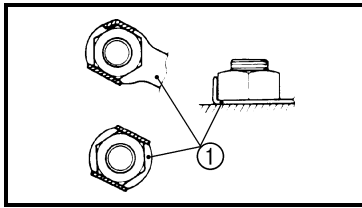


ALL REPLACEMENT PARTS

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

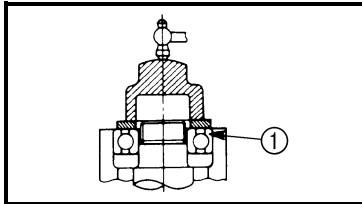
GASKETS, OIL SEALS, AND O-RINGS

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



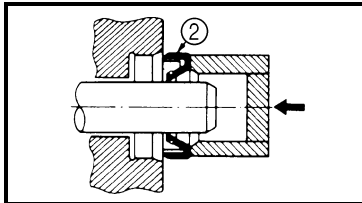
LOCK WASHERS/PLATES AND COTTER PINS

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



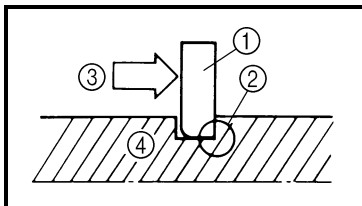
BEARINGS AND OIL SEALS

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



CAUTION:

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



CIRCLIPS

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

④ Shaft

LOCTITE®

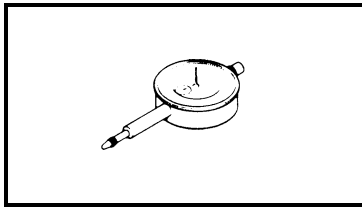
After installing fasteners that have LOCTITE® applied, wait 24 hours before using the machine. This will give the LOCTITE® time to dry properly.

SPECIAL TOOLS

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

NOTE:

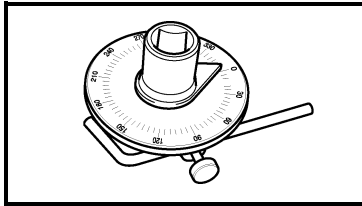
- Be sure to use the correct part number when ordering the tool, since the part number may differ according to country.
- For USA and Canada, use part number starting with "YB-", "YM-", "YU-" or "YS-".
- For others, use part number starting with "90890-".



FOR TUNE UP

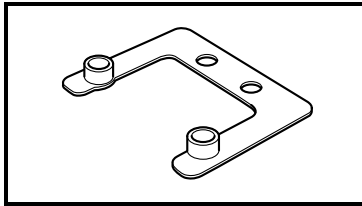
- Dial gauge
P/N: YU-03097
90890-03097

This gauge is used for run out measurement.



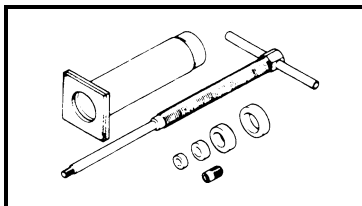
- Angle gauge
Use goods on the market.

This tool is used to tightening the torque.



- Steering linkage alignment plate
P/N: YS-01515
90890-01515

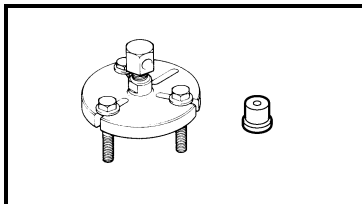
Locks steering relay arm and pivot arm shaft in place while adjusting the steering linkage for front-end alignment.



FOR ENGINE SERVICE

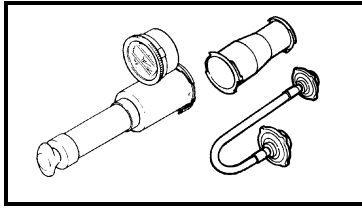
- Piston pin puller
P/N: YU-01304
90890-01304

This tool is used to remove the piston pin.



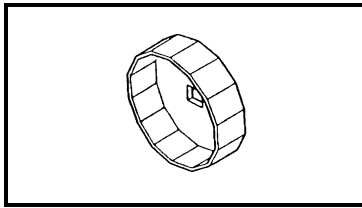
- Rotor holding puller
P/N: YU-33270-B
90890-01362
- Flywheel puller attachment
P/N: YM-33282
90890-04089

These tools are used to remove the magneto rotor.



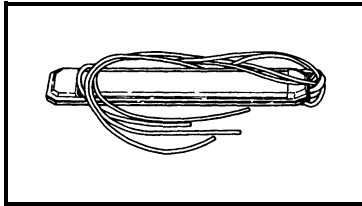
- Cooling system tester
P/N: YU-24460-01
90890-01325
- Adapter
P/N: YU-33984
90890-01352

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



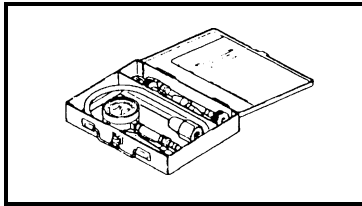
- Oil filter wrench
P/N: YM-01469
90890-01469

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



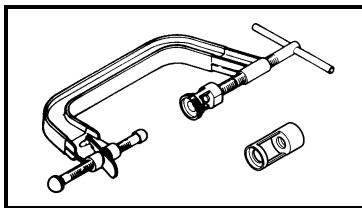
- Vacuum gauge
P/N: YU-44456
90890-03094

This guide is used to synchronize the carburetors.



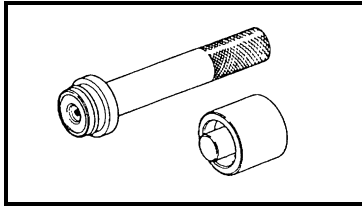
- Compression gauge
P/N: YU-33223 (compression gage)
90890-03081

These tools are used to measure engine compression.



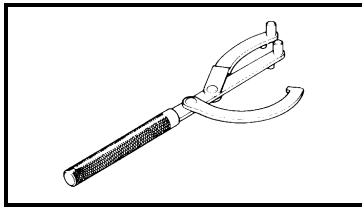
- Valve spring compressor
P/N: YM-04019
90890-04019
- Valve spring compressor attachment
P/N: YM-04108
90890-04108
- P/N: YM-04114
90890-04114

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



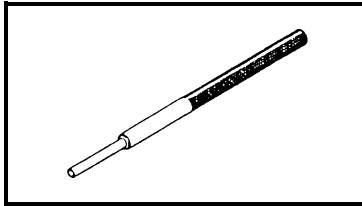
- 40 and 50 mm bearing driver
P/N: YM-04058
90890-04058
- Mechanical seal installer
P/N: YM-04145
90890-04145

These tools are used to install the water pump seal.



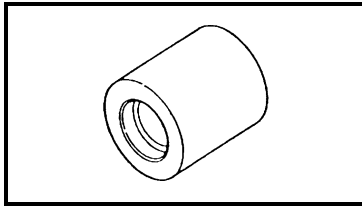
- Rotor holding tool
P/N: YU-01235
90890-01235

This tool is used to hold the camshaft sprocket.



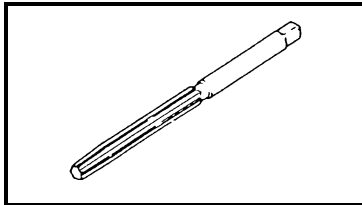
- Valve guide remover (ø4)
P/N: YM-04111
90890-04111

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



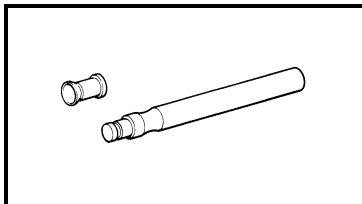
- Valve guide installer (ø4)
P/N: YM-04112
90890-04112

This tool is used to install the valve guides.



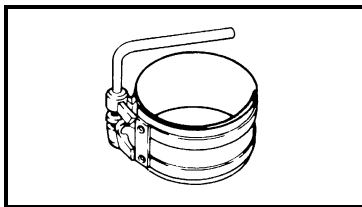
- Valve guide reamer (ø4)
P/N: YM-04113
90890-04113

This tool is used to rebores the new valve guides.



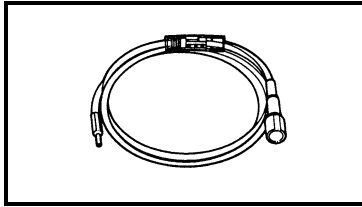
- Valve lapper
P/N: 90890-04101

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



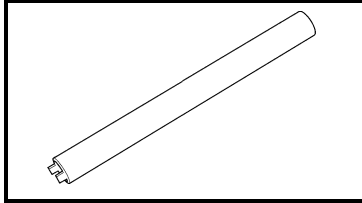
- Piston ring compressor
P/N: YM-08037
90890-05158

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



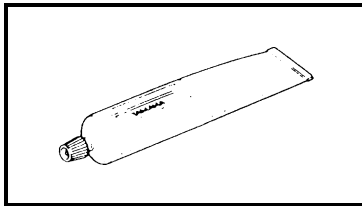
- Dynamic spark tester
P/N: YM-34487
- Ignition checker
P/N: 90890-06754

This tool is used to check the ignition system component.



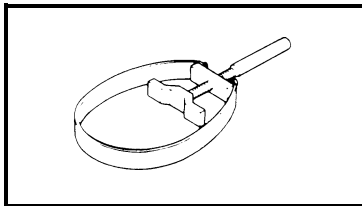
- Engine mount spacer wrench
P/N: YS-01516
90890-01516

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



- Yamaha bond No. 1215
P/N: 90890-85505
(Three Bond No.1215®)

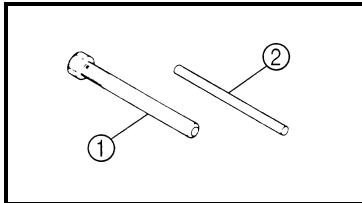
This bond is used to seal two mating surfaces (e.g., crankcase mating surfaces.)



FOR POWER TRAIN SERVICE

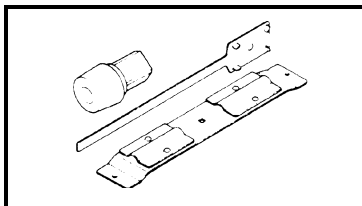
- Sheave holder
P/N: YS-01880-A
90890-01701

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



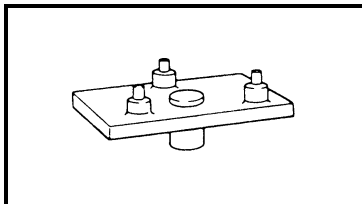
- Primary sheave puller (18 mm)
P/N: YS-01881-A ①, YS-01881-1 ②
90890-01898

This tool is used for removing the primary sheave.



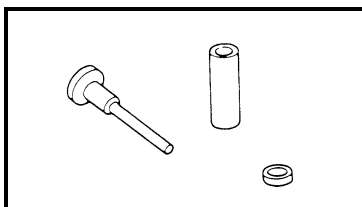
- Clutch spider separator
P/N: YS-28890-C
90890-01711

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



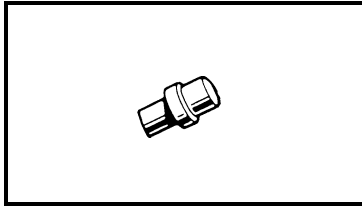
- Clutch separator adapter
P/N: YS-34480
90890-01740

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



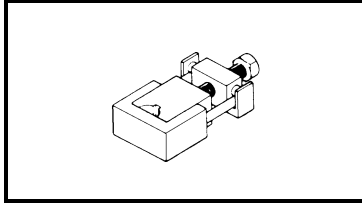
- YXR clutch bushing jig kit
P/N: YS-39752

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



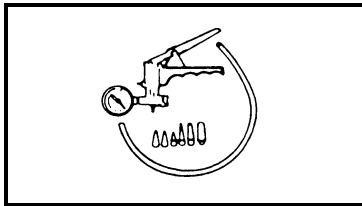
- Clutch bushing press
P/N: YS-42424

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



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

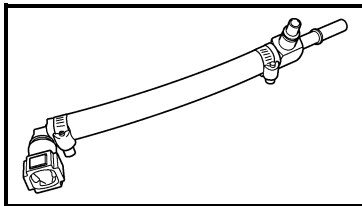
This tool is used for installing the track clip.



FOR FUEL INJECTION SERVICE

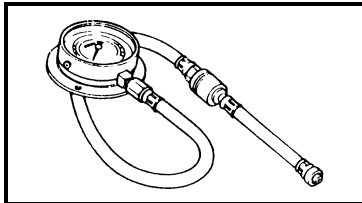
- Mity vac
P/N: YS-42423
90890-06756

This tool is used to measure the vacuum pressure.



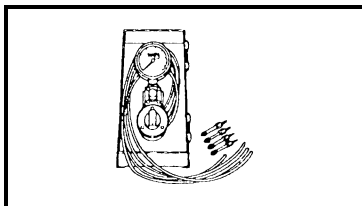
- Fuel pressure adapter
P/N: YM-03176
90890-03176

This tool is needed to measure fuel pressure.



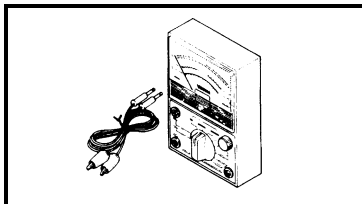
- Pressure gauge
P/N: YU-03153
90890-03153

This tool is used to measure fuel pressure.



- Vacuum gauge
P/N: YU-08030
90890-03094

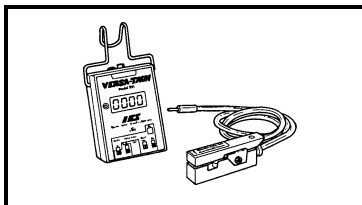
This guide is used to synchronize the throttle bodies.



FOR ELECTRICAL SERVICE

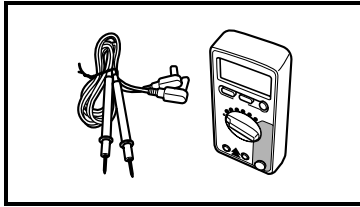
- Pocket tester
P/N: YU-03112-C
90890-03112

This instrument is necessary for checking the electrical components.



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

This tool is used to check engine speed.



- Digital circuit tester
P/N: YU-A1927
90890-03174

This instrument is necessary for checking the electrical componenets.

PERIODIC INSPECTION AND ADJUSTMENT

INTRODUCTION

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

PERIODIC MAINTENANCE CHART FOR THE EMISSION CONTROL SYSTEM

Item	Remarks	Pre-operation check (Daily)	Initial 1 month or 800 km (500 mi) (40 hr)	Every
				Seasonally or 4,000 km (2,500 mi) (200 hr)
Spark plugs	Check condition. Adjust gap and clean. Replace if necessary.			●
* Valve clearance	Check clearance. Adjust clearance when engine is cold.	Every 40,000 km (25,000 mi)		
* Crankcase breather system	Check breather hose for cracks or damage. Replace if necessary.			●
* Fuel filter	Check condition. Replace if necessary.			●
* Fuel line	Check fuel hose for cracks or damage. Replace if necessary.			●
* Idle speed	Check and adjust engine idle speed.		●	●
* Fuel injection	Adjust synchronization.		●	●
* Exhaust system	Check for leakage. Tighten or replace gasket if necessary.			●

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

GENERAL MAINTENANCE AND LUBRICATION CHART



GENERAL MAINTENANCE AND LUBRICATION CHART

Item	Remarks	Pre-operation check (Daily)	Initial 1 month or 800 km (500 mi) (40 hr)	Every
				Seasonally or 4,000 km (2,500 mi) (200 hr)
Engine oil	Check oil level.	●		
	* Replace.		●	●
* Engine oil filter cartridge	Replace.		●	Every 20,000 km (12,000 mi)
Fuel	Check fuel level.	●		
Engine coolant	Check coolant level.	●		
	* Air bleed the cooling system if necessary.			●
Throttle lever (handlebar side)	Check operation. * Repair if necessary.	●		
Throttle override system (T.O.R.S.)	Check operation. * Repair if necessary.	●		
Engine stop switch	Check operation. * Repair if necessary.	●		
Drive guard	Check for cracks, bends or damage. * Replace if necessary.	●		
V-belt	Check for wear and damage. Replace if necessary.	●		
Drive track and idler wheels	Check deflection, and for wear and damage. * Adjust/replace if necessary.	●		
Slide runners	Check for wear and damage.	●		
	* Replace if necessary.			●
Brake and parking brake	Check operation and fluid leakage.	●		
	* Adjust free play and/or replace pads if necessary.			●
	* Replace brake fluid.	See NOTE on page 2-3.		
* 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.	●		
	* Replace if necessary.			●
Steering system	Check operation.	●		
	* Adjust toe-out if necessary.			●
Strap (PZ50M)	Check for damage. * Replace if necessary.	●		
Lights	Check operation. Replace bulbs if necessary.	●		
* Battery	Check condition. Charge if necessary.			●
* Primary and secondary clutches	Check engagement and shift speed. Adjust if necessary.			●
	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.	Whenever operating elevation is changed.		
	Lubricate with specified grease.			●
	* Steering column bearing			●
	* Ski and front suspension			●

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

GENERAL MAINTENANCE AND LUBRICATION CHART



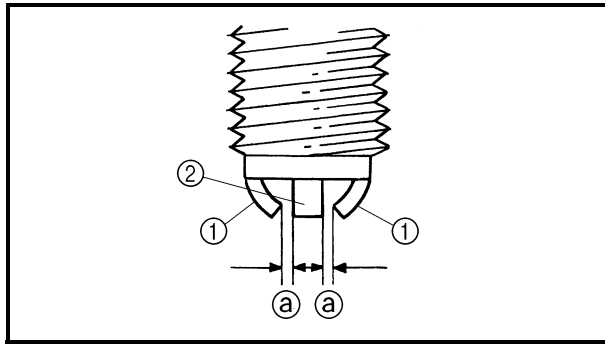
Item	Remarks	Pre-operation check (Daily)	Initial 1 month or 800 km (500 mi) (40 hr)	Every
				Seasonally or 4,000 km (2,500 mi) (200 hr)
* Suspension component	Lubricate with specified grease.			●
* Parking brake cable end and lever end/throttle cable end	Lubricate with specified grease.			●
	Check cable damage. Replace if necessary.			●
Shroud and covers	Make sure that the shroud and covers are securely fastened.	●		
Fittings and fasteners	Check tightness.	●		
	* Repair if necessary.			
Tool kit and recommended equipment	Check for proper placement.	●		

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

NOTE:

Brake system:

- After disassembling the master cylinder or caliper cylinder, always change the brake fluid. Regularly check the brake fluid level and add fluid if necessary.
- Replace the oil seals of the master cylinder and caliper cylinder every two years.
- Replace the brake hose every four years, or if cracked or damaged.



ENGINE SPARK PLUGS

1. Remove:

- Fuel tank

Refer to “SEAT AND FUEL TANK” in CHAPTER 5. (PZ50/PZ50GT/PZ50FX/PZ50M)

Refer to “RIDER SEAT AND FUEL TANK” in CHAPTER 5. (PZ50VT/PZ50MP)

2. Remove:

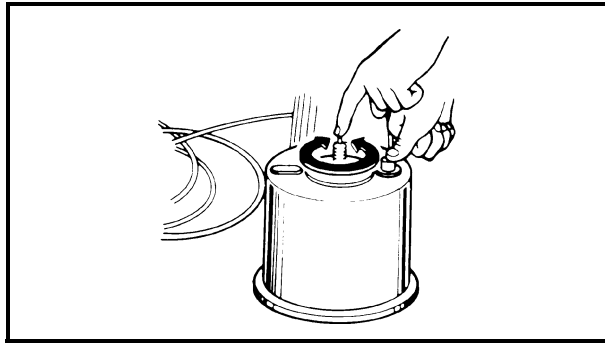
- Spark plug caps
- Spark plugs

3. Inspect:

- Electrodes ①
Damage/wear → Replace the spark plug.
- Insulator color ②
Abnormal color → Replace the spark plug
Normal color is medium-to-light tan.

4. Measure:

- Spark plug gap (a)
Out of specification → Regap.
Use a wire thickness gauge.



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

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

Standard spark plug:
NGK R CR9EKB (NGK)

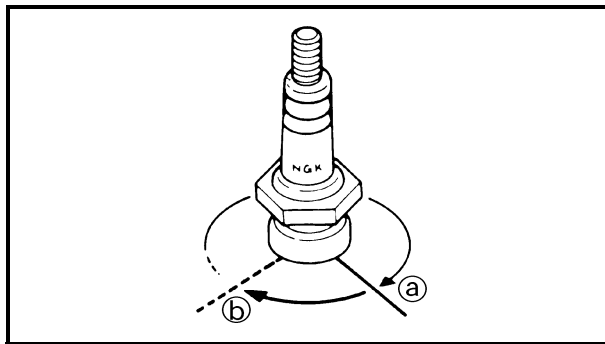
Before installing a spark plug, clean the gasket surface and spark plug surface.

5. Install:

- Spark plugs

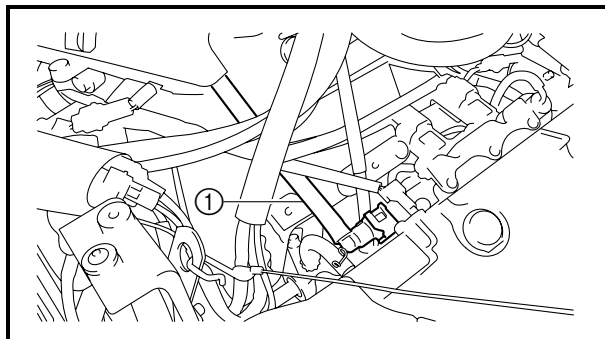


Spark plug:
13 Nm (1.3 m · kg, 9.4 ft · lb)



NOTE:

Finger-tighten (a) the spark plug before torquing (b) it to specification.



FUEL LINE INSPECTION

1. Remove:

- Headlight assembly (PZ50/PZ50GT/PZ50FX/PZ50M)

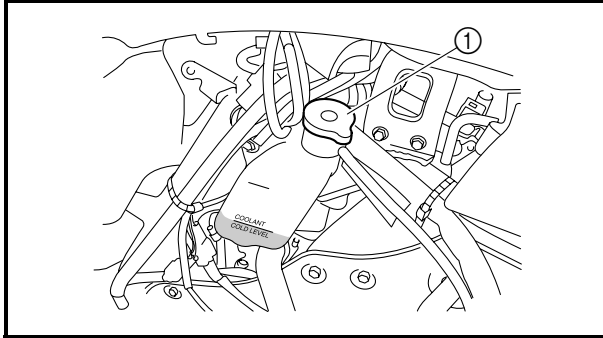
Refer to “COWLINGS” in CHAPTER 3.

2. Inspect:

- Fuel hose ①
- Fuel return hose
- Cracks/damage → Replace.

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

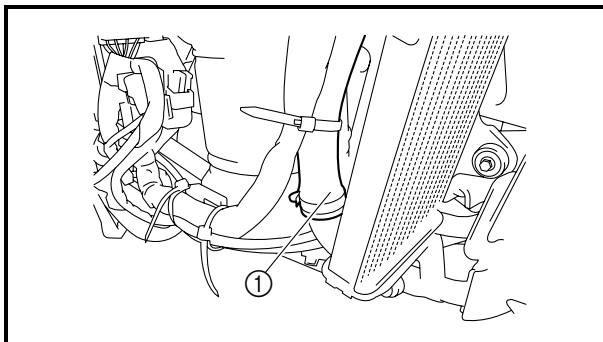
The coolant should be changed at least every season.



1. Place the machine on a level surface.
2. Remove:
 - Right side panel
 - Right side coverRefer to “COWLINGS” in CHAPTER 3.
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 radiator outlet hose 1.
5. Disconnect:
 - Radiator outlet hose 1 ①
6. Drain the coolant.

NOTE:

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

⚠ 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.

7. Connect:
 - Radiator outlet hose 1
8. Fill:
 - Cooling system

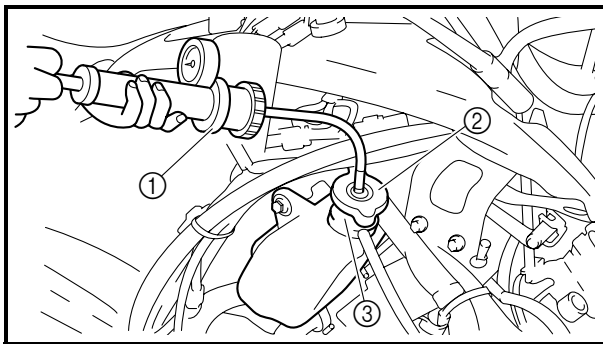


Recommended coolant:
 High quality silicate-free ethylene glycol antifreeze containing corrosion inhibitors
Coolant mixing ratio (coolant:water):
 3:2 (60%:40%)
Total amount:
 PZ50/PZ50GT/PZ50FX/PZ50M
 3.6 L (3.17 Imp qt, 3.81 US qt)
 PZ50VT/PZ50MP
 3.7 L (3.26 Imp qt, 3.91 US qt)

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.

9. Bleed the air from the cooling system.



10. Inspect:
 - Cooling system
 Decrease of pressure (leaks) → Repair as required.

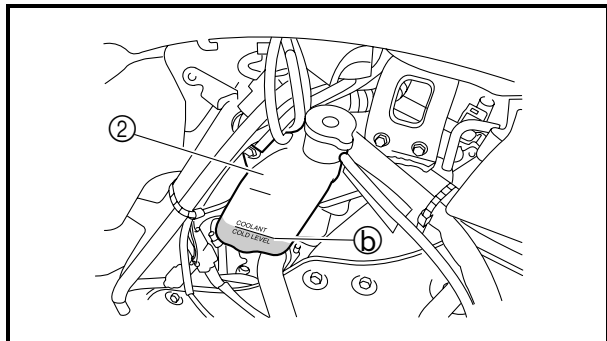
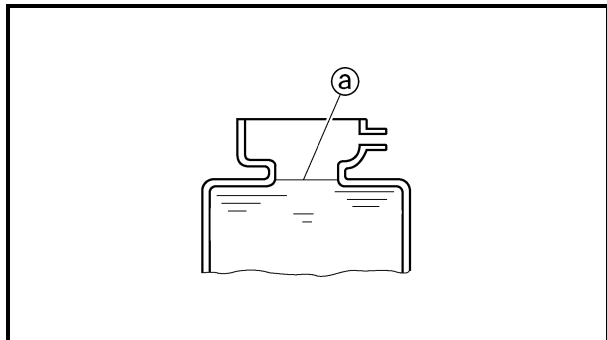
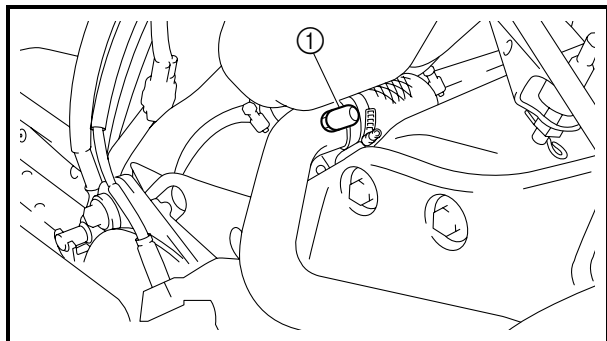
Inspection steps:

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



Cooling system tester:
 90890-01325, YU-24460-01
Adapter:
 90890-01352, YU-33984

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



Air bleeding steps:

- Remove the cap ① on the radiator outlet pipe 1.
- While slowly adding coolant to the coolant filler, drain the coolant until no more air bubbles appear.
- Install the cap ①.
- Add coolant to the full level ①.
- Install the coolant filler cap.

Apply and lock the parking brake. Start the engine and run it at approximately 1,700 ~ 3,500 r/min until the coolant circulates (approximately 3 ~ 5 minutes). The 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 3,500 r/min. Drive line damage and excessive V-belt wear could occur, or the machine could unexpectedly move forward if the clutch engages.
- Operate the engine only in a well-ventilated area.

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

VALVE CLEARANCE ADJUSTMENT

NOTE:

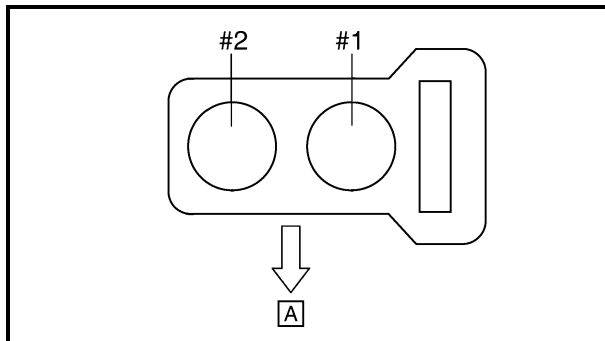
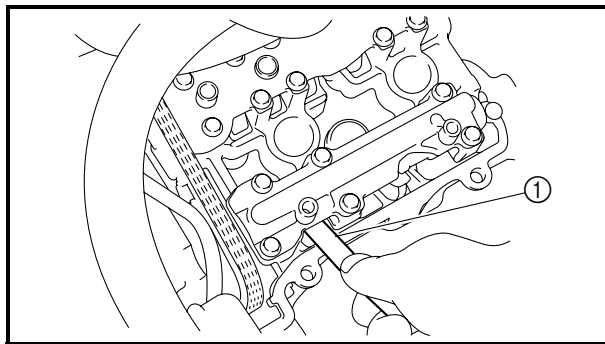
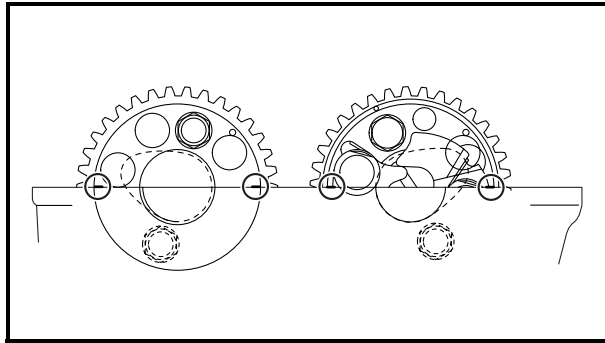
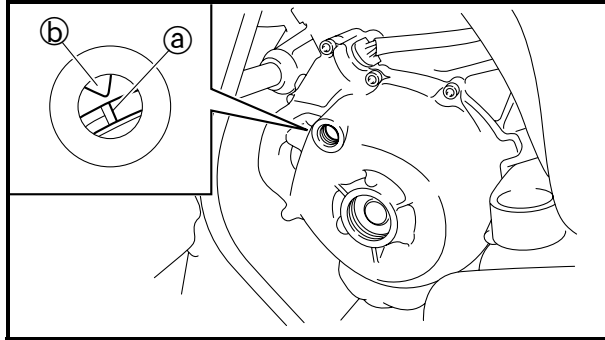
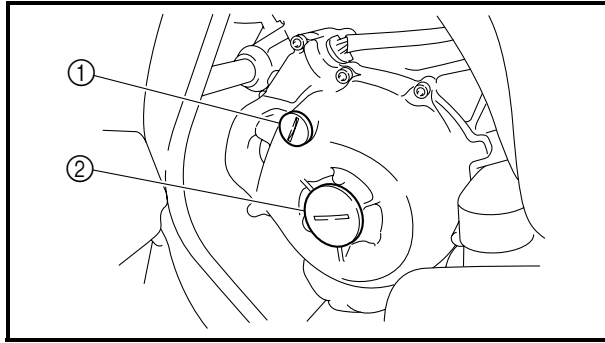
- Valve clearance adjustment should be made on a cold engine, at room temperature.
- When the valve clearance is to be measured or adjusted, the piston must be at the top dead center (TDC) on the compression stroke.

1. Drain:

- Engine oil
Refer to “ENGINE OIL REPLACEMENT”.

2. Remove:

- Fuel tank
Refer to “SEAT AND FUEL TANK” in CHAPTER 5. (PZ50/PZ50GT/PZ50FX/PZ50M)
Refer to “RIDER SEAT AND FUEL TANK” in CHAPTER 5. (PZ50VT/PZ50MP)
- Oil tank
Refer to “A.C. MAGNETO ROTOR AND STARTER CLUTCH” in CHAPTER 5.



3. Remove:

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

4. 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 counterclockwise.
- When piston #1 is at TDC on the compression stroke, align the TDC mark ① on the A.C. magneto rotor with the mark ② on the A.C. magneto cover.

NOTE:

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

- Measure the valve clearance with a thickness gauge ①.

NOTE:

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

Valve clearance measuring sequence

Cylinder #1 → #2

- Turn the crankshaft 180° counterclockwise and check the valve clearance of piston #2.

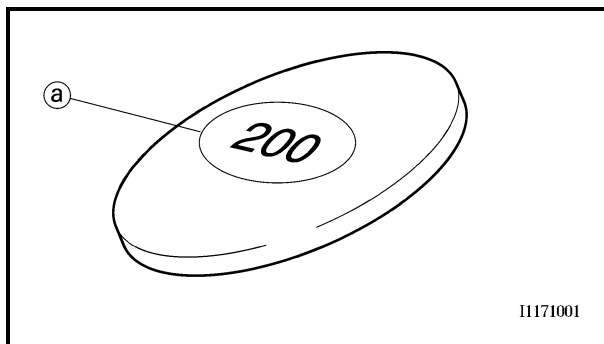
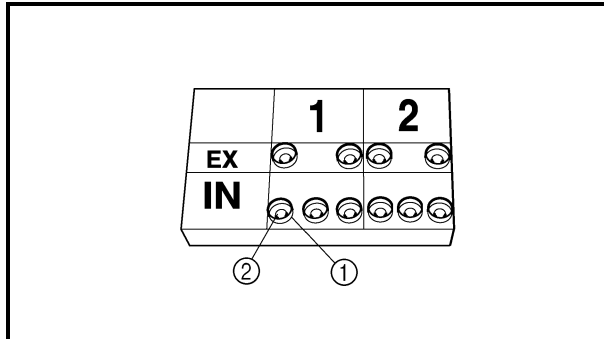
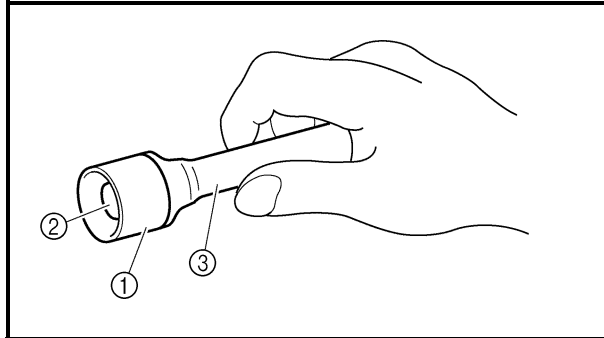
Ⓐ Front

5. 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.



11171001

6. Adjust:

- Valve clearance

Adjustment steps:

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

NOTE:

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

- Select the proper valve pad from the following table.

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

NOTE:

- The thickness ② 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:

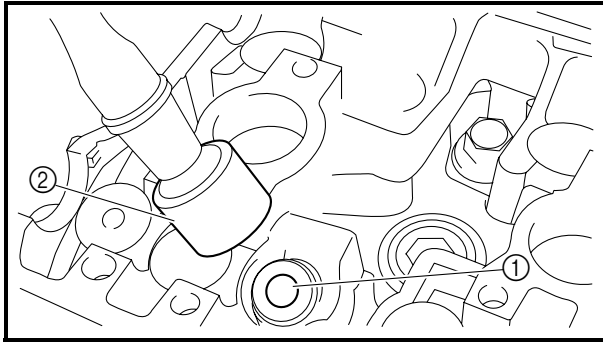
Original valve pad number = 148 (thickness = 1.48 mm (0.058 in))

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.



- 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:
9 Nm (0.9 m · kg, 6.5 ft · lb)

NOTE:

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

7. Install:

- Crankshaft end accessing screw
- Timing mark accessing screw

8. Install:

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

9. Install:

- All removed parts

NOTE:

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

THROTTLE BODY SYNCHRONIZATION

NOTE:

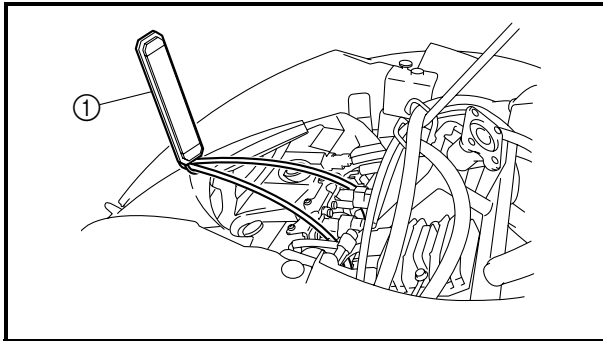
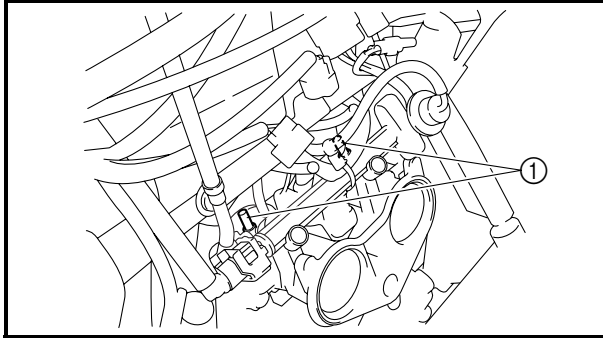
Prior to synchronizing the throttle bodies, the valve clearance and the engine idle speed should be properly adjusted.

1. Remove:

- Headlight assembly (PZ50/PZ50GT/PZ50FX/PZ50M)
- Air filter case assembly
Refer to “COWLINGS” in CHAPTER 3.

2. Remove:

- Vacuum cap ①



3. Install:

- Vacuum gauge ①

	Vacuum gauge: 90890-03094, YU-44456
--	--

4. Install:

- Air filter case
Refer to “COWLINGS” in CHAPTER 3.

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

6. Inspect:

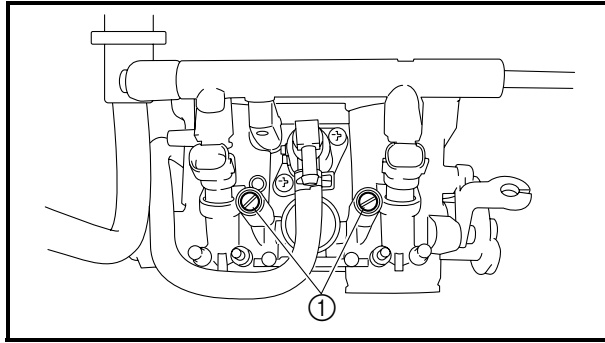
- Engine idle speed
Out of specification → Adjust.
Refer to “ENGINE IDLE SPEED ADJUSTMENT”.

	Engine idle speed: 1,700 ~ 1,900 r/min
---	---

7. Adjust:

- Throttle body synchronization

THROTTLE BODY SYNCHRONIZATION/ ENGINE IDLE SPEED ADJUSTMENT



Adjustment steps:

- Synchronize throttle body #1 and throttle body #2 by turning the synchronizing screws 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.



Vacuum pressure at engine idling speed:

20.27 ~ 22.93 kPa

(0.20 ~ 0.23 kg/cm², 2.88 ~ 3.26 psi)

NOTE:

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

8. Measure:

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

9. Stop the engine and remove the measuring equipment.

10. 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 throttle body 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. Measure:

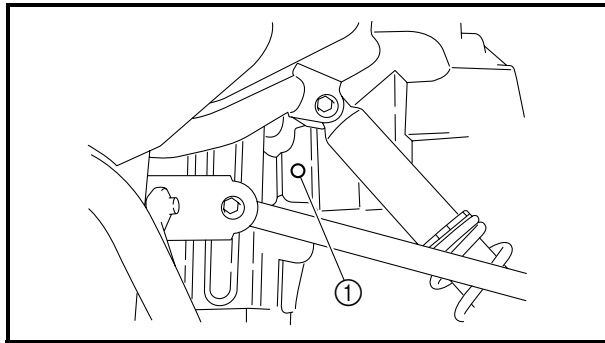
- Engine idle speed
Out of specification → Adjust.



Engine idle speed:

1,700 ~ 1,900 r/min

ENGINE IDLE SPEED ADJUSTMENT/ THROTTLE CABLE FREE PLAY ADJUSTMENT



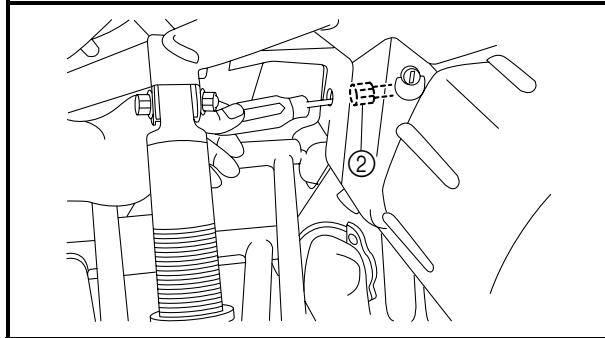
3. Adjust:
- Engine idle speed

Adjustment steps:

- Remove the rubber cap ①.
- Turn the idle adjusting screw ② in or out until the specified engine idle speed is obtained.

Turning in → Idle speed is increased.

Turning out → Idle speed is decreased.



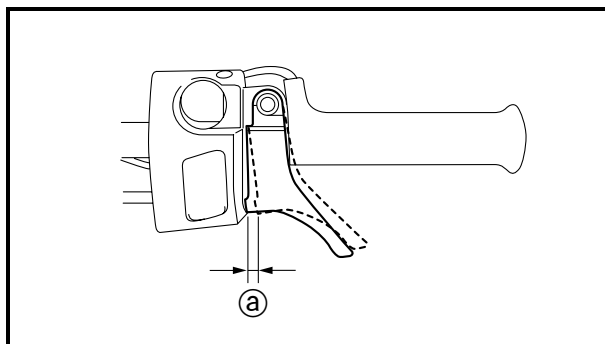
NOTE:

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

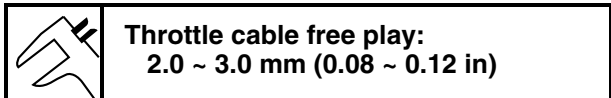
THROTTLE CABLE FREE PLAY ADJUSTMENT

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.



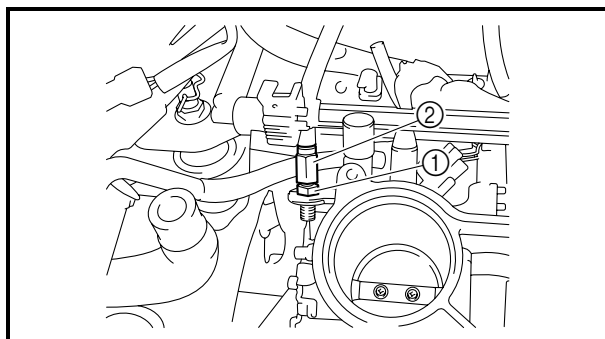
2. Adjust:
- Throttle cable free play

Throttle body side adjustment steps:

- Remove the air filter case.
Refer to "COWLINGS" in CHAPTER 3.
- Loosen the locknut ①.
- Turn the adjusting nut ② in or out until the specified free play is obtained.

Turning in → Free play is increased.

Turning out → Free play is decreased.



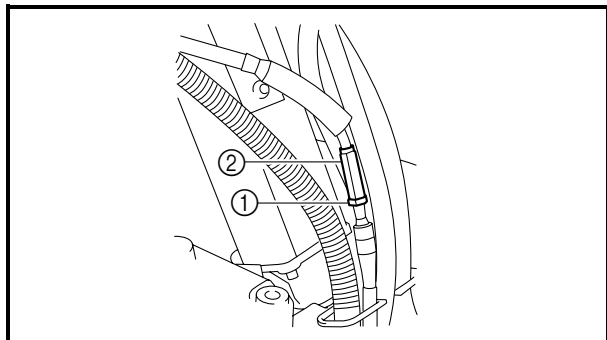
THROTTLE CABLE FREE PLAY ADJUSTMENT/ THROTTLE OVERRIDE SYSTEM (T.O.R.S.) CHECK



- Tighten the locknut.

NOTE:

If the specified throttle cable free play cannot be obtained on the throttle body side of the cable, use the adjusting nut on the handlebar side. (PZ50/PZ50GT/PZ50FX/PZ50M)



Handlebar side adjustment steps:

(PZ50/PZ50GT/PZ50FX/PZ50M)

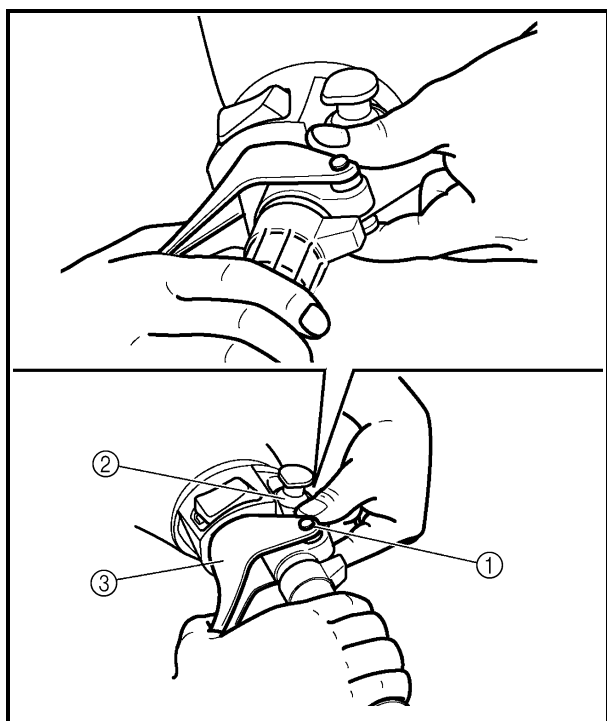
- Loosen the locknut ①.
- Turn the adjusting nut ② in or out until the specified free play is obtained.

Turning in → Free play is increased.

Turning out → Free play is decreased.

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:

- Fuel tank

Refer to “SEAT AND FUEL TANK” in CHAPTER 5. (PZ50/PZ50GT/PZ50FX/PZ50M)

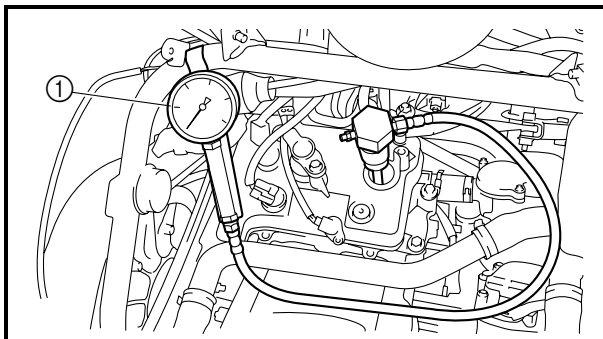
Refer to “RIDER SEAT AND FUEL TANK” in CHAPTER 5. (PZ50VT/PZ50MP)

4. 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.



5. Install:

- Compression gauge ①



Compression gauge:
90890-03081, YU-33223

6. 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 “START”.
- With the throttle wide open, crank the engine until the reading on the compression gauge stabilizes.

⚠ WARNING

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

NOTE:

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

7. Install:

- Spark plug



Spark plug:

13 Nm (1.3 m · kg, 9.4 ft · lb)

ENGINE OIL LEVEL INSPECTION

1. Inspect:

- Engine oil level

CAUTION:

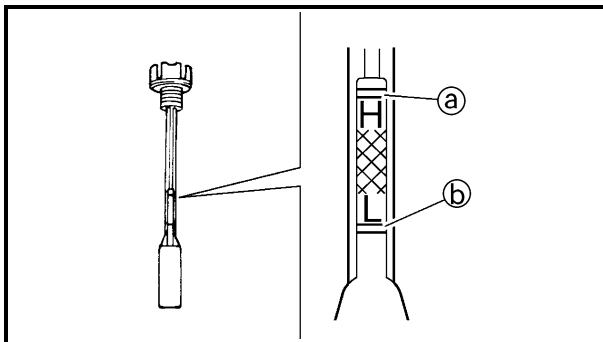
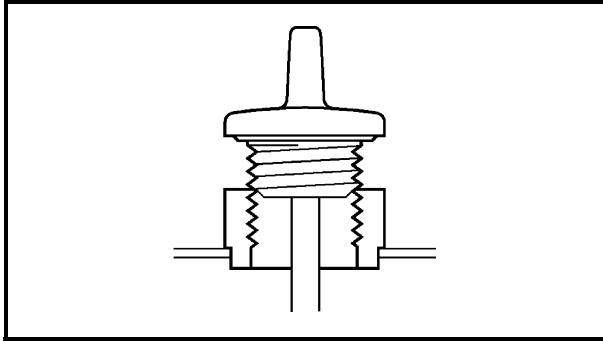
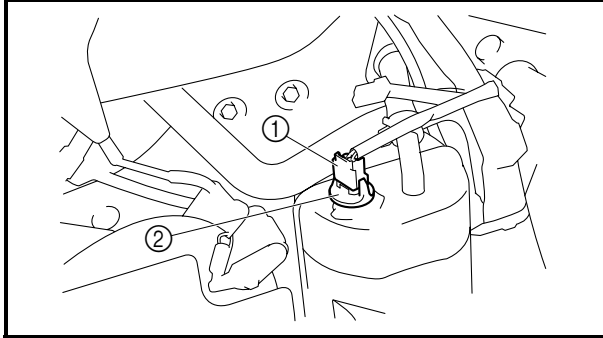
Do not run the engine with too much or not enough oil in the oil tank. Oil could flow into the air filter and the engine could be damaged.

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.
- Remove the right side cover.
Refer to "COWLINGS" in CHAPTER 3.
- Disconnect the oil level switch coupler ①.

CAUTION:

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



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

SAE 0W-30

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

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

CAUTION:

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



Recommended oil:

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

API standard:

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

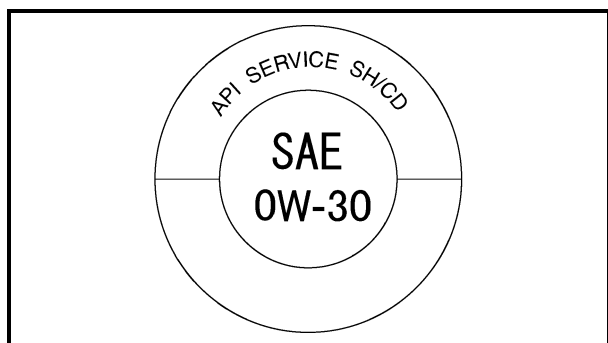
CAUTION:

Do not allow foreign materials to enter the crankcase.

NOTE:

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

ENGINE OIL LEVEL INSPECTION/ ENGINE OIL REPLACEMENT



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

NOTE:

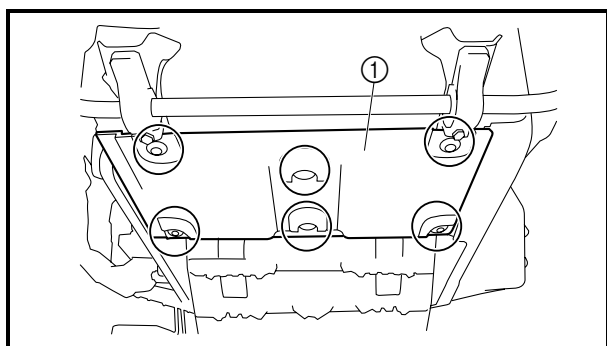
Before checking the engine oil level, wait a few minutes until the oil has settled.

CAUTION:

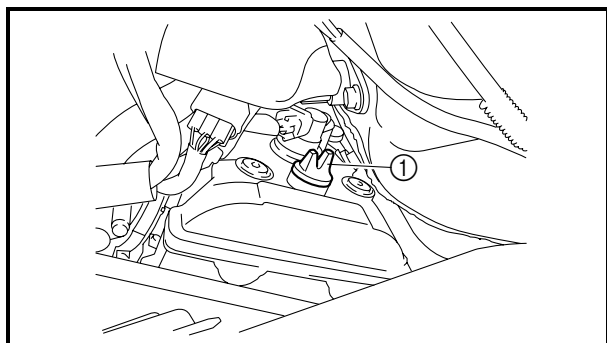
- Use only 4-stroke engine oil.
- Engine oil also lubricates the starter clutch. In order to prevent clutch slippage, do not mix any chemical additives with the oil or use oils of a higher grade than "CD". In addition, do not use oils labeled "ENERGY CONSERVING II" or higher.

ENGINE OIL REPLACEMENT

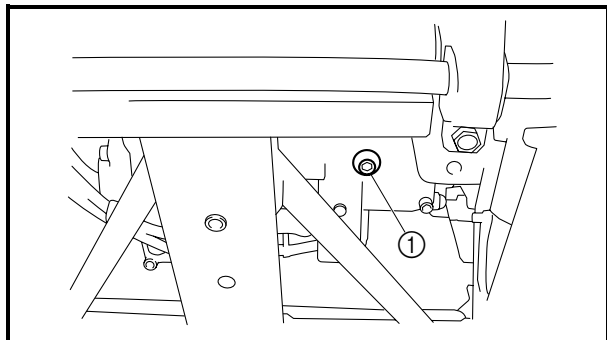
1. Place the snowmobile on a level surface and apply the parking brake.
2. Start the engine, warm up for several minutes, and then turn it off.
3. Place a containers under the engine oil pan and oil tank.



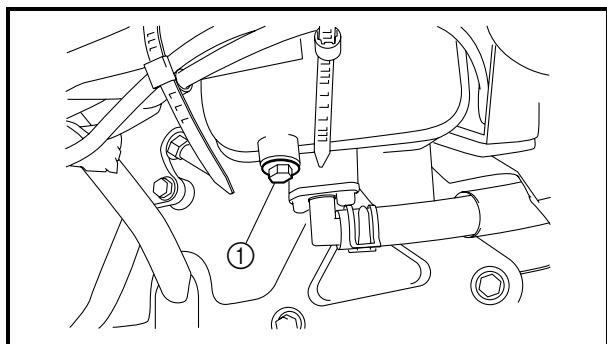
4. Remove:
 - Bottom panel ①
5. Remove:
 - Left side panel
 - Right side cover
 - Right lower coverRefer to "COWLINGS" in CHAPTER 3.
6. Disconnect:
 - Oil level gauge couplerRefer to "ENGINE OIL LEVEL INSPECTION".
7. Remove:
 - Oil level gauge/dipstickRefer to "ENGINE OIL LEVEL INSPECTION".



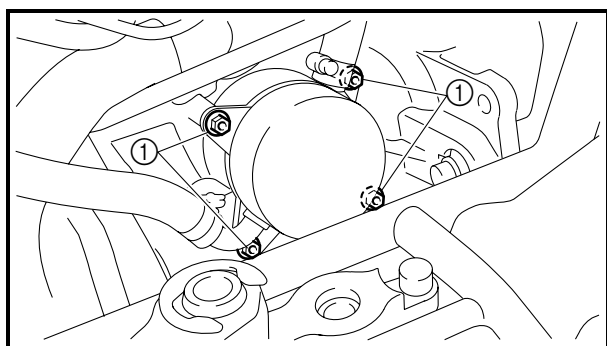
8. Remove:
- Cylinder head cap ①



9. Remove:
- Oil pan engine oil drain bolt ①



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

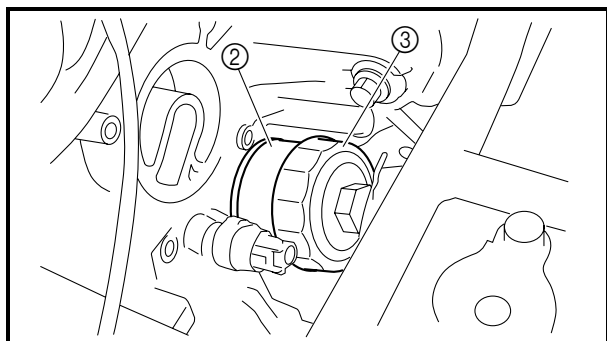


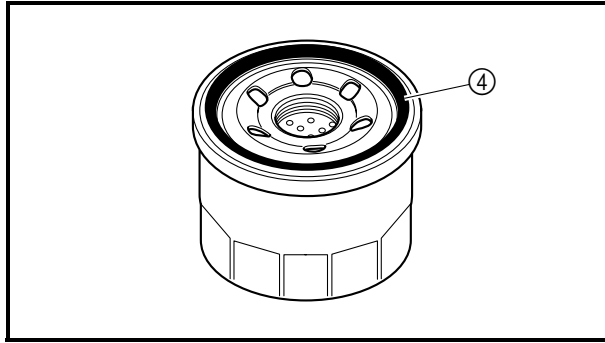
Replacement steps:

- Remove the air filter case.
Refer to “COWLINGS” in CHAPTER 3.
- Remove the oil filter bolts ①.
- Remove the oil filter cartridge ② with an oil filter wrench ③.



Oil filter wrench:
90890-01469, YM-01469





- Apply a thin coat of engine oil onto the O-ring ④ of the new oil filter cartridge.

CAUTION:

Make sure that the O-ring ④ 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)

- Tighten the oil cooler bolts to specification.



Oil cooler bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)
LOCTITE®

13. Install:

- Drain bolts
(along with the new gaskets)



Oil tank engine oil drain bolt:
16 Nm (1.6 m · kg, 11 ft · lb)
Oil pan engine oil drain bolt:
30 Nm (3.0 m · kg, 22 ft · lb)

14. Fill:

- Engine oil
(with the specified amount of the recommended engine oil)
Add 1.5 L (1.3 Imp qt, 1.6 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.



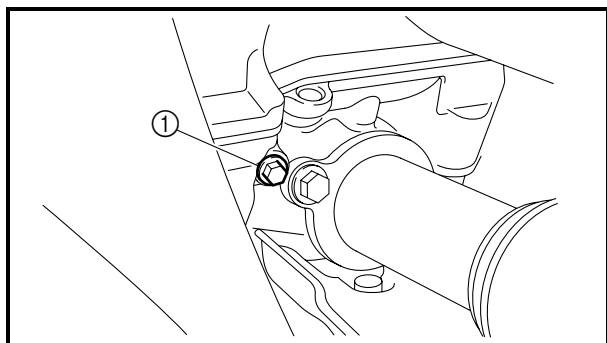
Quantity:
Total amount:
3.00 L (2.64 Imp qt, 3.17 US qt)
Periodic oil change:
2.45 L (2.16 Imp qt, 2.59 US qt)
With oil filter replacement:
2.63 L (2.31 Imp qt, 2.78 US qt)

15. Inspect:

- Engine and oil tank
(for engine oil leaks)

16. Inspect:

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



17. Inspect:

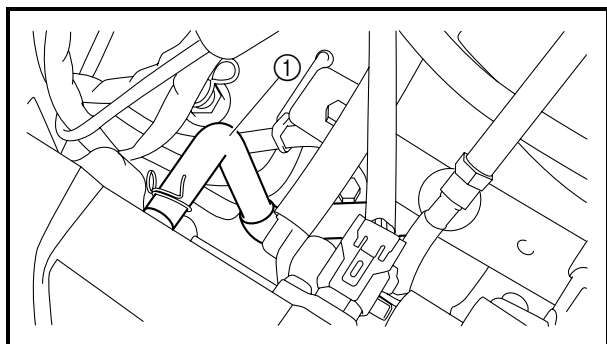
- Engine oil pressure

Inspection steps:

- Remove the exhaust pipe joint upper cover.
Refer to “EXHAUST PIPE AND MUFFLER” in CHAPTER 5.
- Slightly loosen the oil gallery bolt ①.
- Install the fuel tank.
Refer to “SEAT AND FUEL TANK” in CHAPTER 5. (PZ50/PZ50GT/PZ50FX/PZ50M)
Refer to “RIDER SEAT AND FUEL TANK” in CHAPTER 5. (PZ50VT/PZ50MP)
- Start the engine and keep it idling until engine oil starts to seep from the oil check 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 check bolt to specification.



Oil check bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)



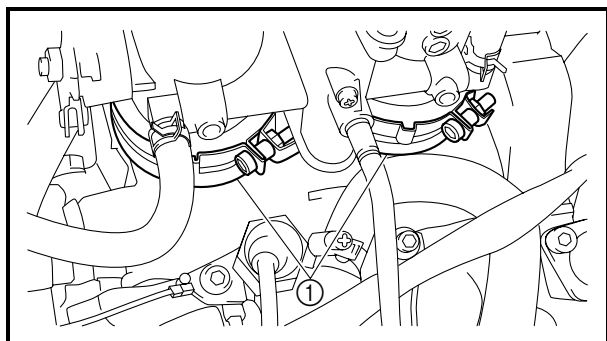
CYLINDER HEAD BREATHER HOSE INSPECTION

1. Inspect:

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

CAUTION:

Make sure that the cylinder head breather hose is routed correctly.



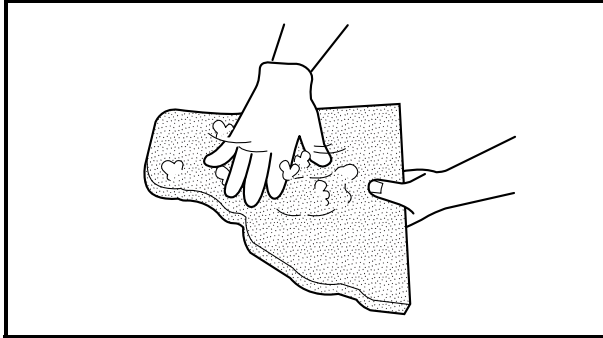
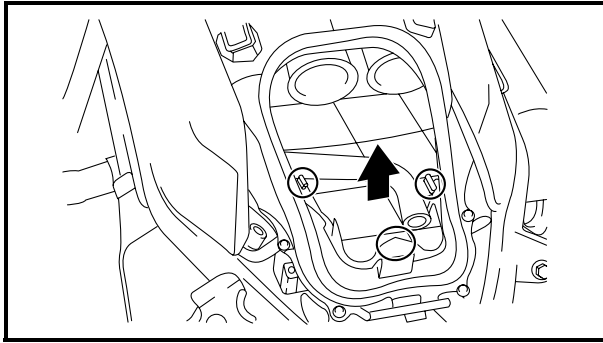
THROTTLE BODY JOINTS INSPECTION

1. Remove:

- Air filter case
Refer to “COWLINGS” in CHAPTER 3.

2. Inspect:

- Throttle body joints ①
Cracks/damage → Replace.
Refer to “THROTTLE BODY” in CHAPTER 7.



CHECKING THE AIR FILTER ELEMENT

1. Remove:

- Air filter case cover

Refer to “COWLINGS” in CHAPTER 3.

2. Lift up the air filter element frame and remove the air filter element.

3. Clean:

- Air filter element

NOTE: _____

Remove the snow.

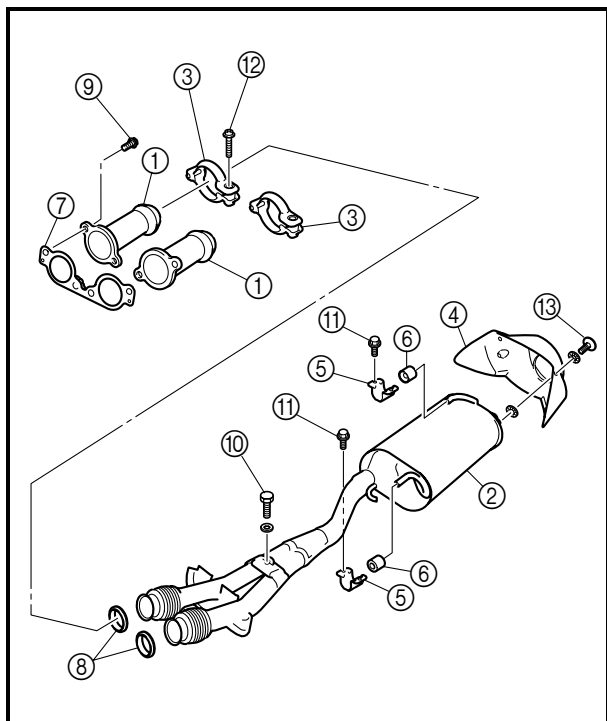
4. Inspect:

- Air filter element

Damage/clogs → Replace.

5. Install:

- Air filter element
- Air filter case cover



EXHAUST SYSTEM INSPECTION

1. Remove:

- Fuel tank

Refer to "SEAT AND FUEL TANK" in CHAPTER 5. (PZ50/PZ50GT/PZ50FX/PZ50M)

Refer to "RIDER SEAT AND FUEL TANK" in CHAPTER 5. (PZ50VT/PZ50MP)

2. Inspect:

- Exhaust pipe joints ①
- Exhaust pipe/muffler assembly ②
- Exhaust pipe bands ③
- Muffler end cover ④ (PZ50/PZ50GT/PZ50FX/PZ50M)
- Muffler damper holder ⑤
- Muffler damper ⑥
- Cracks/damage → Replace.
- Gasket ⑦
- Gaskets ⑧
- Exhaust gas leaks → Replace.

3. Inspect:

- Tightening torque



Exhaust pipe joint bolt ⑨:
25 Nm (2.5 m · kg, 18 ft · lb)

Exhaust pipe/muffler bolt ⑩:
33 Nm (3.3 m · kg, 24 ft · lb)

Muffler damper holder bolt ⑪:
10 Nm (1.0 m · kg, 7.2 ft · lb)

Exhaust pipe band bolt ⑫:
18 Nm (1.8 m · kg, 13 ft · lb)

Muffler end cover bolt ⑬:
10 Nm (1.0 m · kg, 7.2 ft · lb)
LOCTITE®

4. Install:

- Fuel tank

Refer to "SEAT AND FUEL TANK" in CHAPTER 5. (PZ50/PZ50GT/PZ50FX/PZ50M)

Refer to "RIDER SEAT AND FUEL TANK" in CHAPTER 5. (PZ50VT/PZ50MP)

POWER TRAIN**SHEAVE OFFSET ADJUSTMENT**

1. Remove:

- Left side panel
- Left side cover

Refer to “COWLINGS” in CHAPTER 3.

2. Remove:

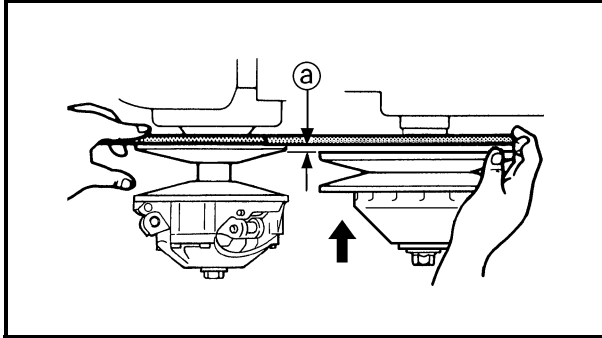
- Drive V-belt

3. Measure:

- Sheave offset ①

Use a straightedge that is approximately 470 mm (18.5 in) long, 20 mm (0.79 in) wide, and 4 mm (0.16 in) thick.

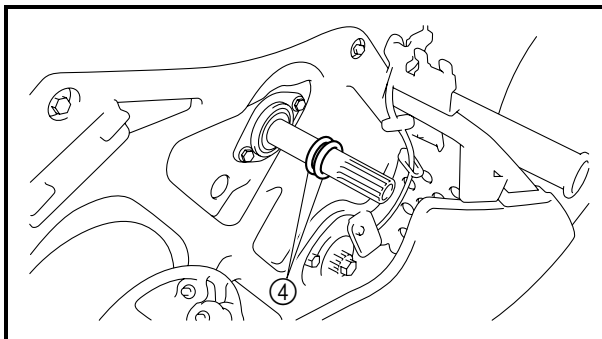
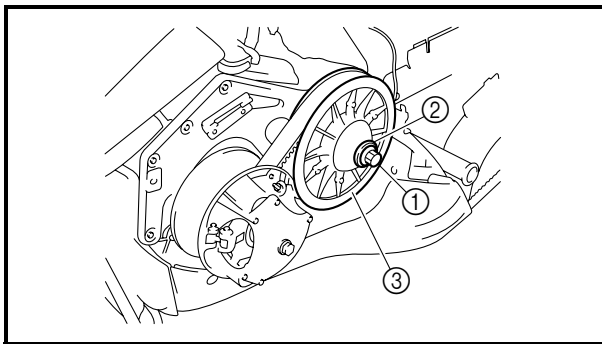
Out of specification → Adjust.

**Sheave offset:**

14.5 ~ 17.5 mm (0.57 ~ 0.69 in)

NOTE:

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



4. Adjust:

- Sheave offset

Adjustment steps:

- Apply the brake to lock the secondary sheave.
- Remove the secondary sheave bolt ①, washer ②, shim(s) (left), and secondary sheave ③.
- Install the appropriate shim(s) (right) ④ from the following table so that the sheave offset is within specification.

Shim size	
Part number	Thickness
90201-252F1	0.5 mm (0.02 in)
90201-25527	1.0 mm (0.04 in)

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

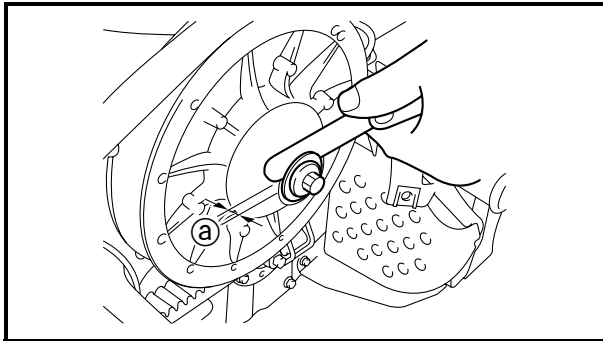


Secondary sheave bolt:
60 Nm (6.0 m · kg, 43 ft · lb)

- 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.

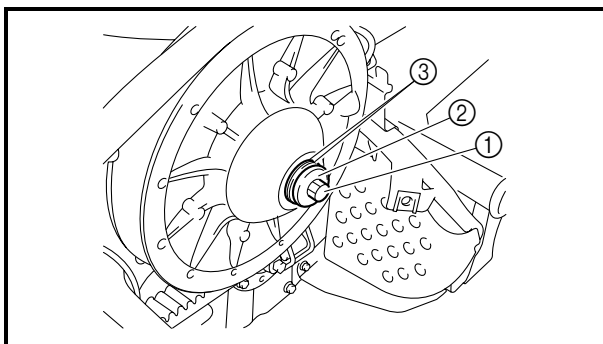


5. Measure:

- 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)



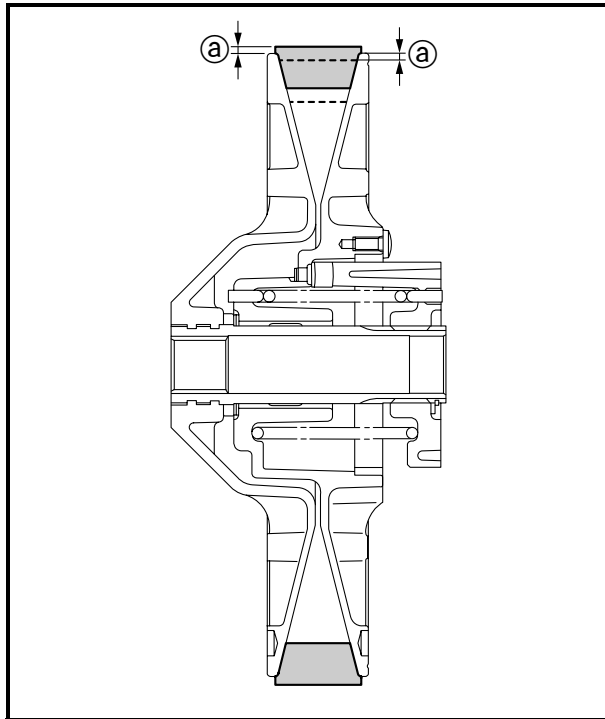
6. Adjust:

- Secondary sheave free play (clearance)

Adjustment steps:

- Apply the brake to lock the secondary sheave.
- Remove the secondary sheave bolt ① and washer ②.
- Install the appropriate shim(s) (left) ③ from the following table so that the secondary sheave free play is within specification.

Shim size	
Part number	Thickness
90201-252F1	0.5 mm (0.02 in)
90201-25527	1.0 mm (0.04 in)



DRIVE V-BELT

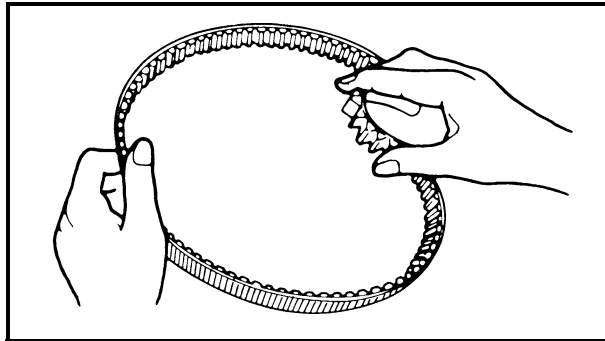
⚠ WARNING

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.

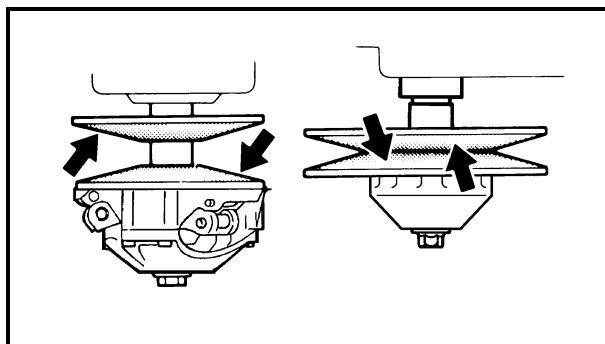


New belt width:
34.1 mm (1.34 in)
Belt wear limit width:
32.5 mm (1.28 in)



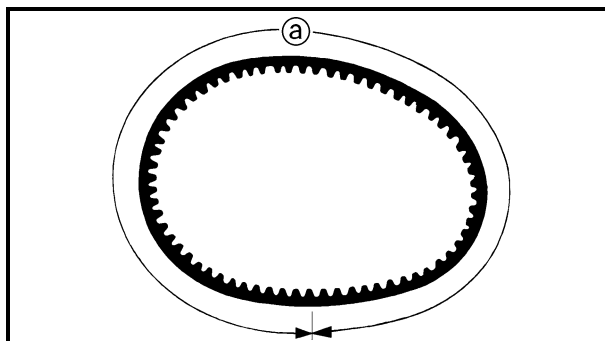
1. Inspect:

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



2. 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.



3. Measure:

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



V-belt circumference:
1,132 ~ 1,138 mm (44.6 ~ 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.

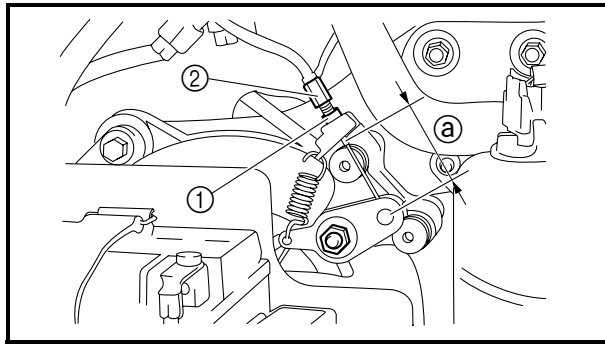
Engagement speed:
PZ50/PZ50GT/PZ50FX:
3,700 ~ 4,100 r/min
PZ50M “USA/Canada”:
4,100 ~ 4,500 r/min
PZ50M “Europe”:
3,900 ~ 4,300 r/min
PZ50VT “USA/Canada”:
3,300 ~ 3,700 r/min
PZ50VT “Europe”/PZ50MP:
2,900 ~ 3,300 r/min

PARKING BRAKE ADJUSTMENT

1. Remove:
 - Right side cover
Refer to “COWLINGS” in CHAPTER 3.
2. Measure:
 - Parking brake cable distance
Out of specification → Adjust.

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

PARKING BRAKE ADJUSTMENT/ BRAKE FLUID LEVEL INSPECTION



3. Adjust:
- Parking brake cable

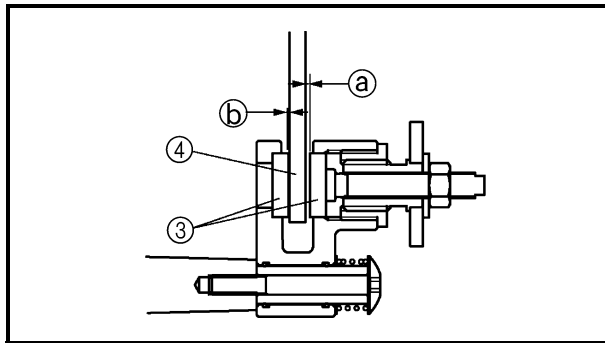
Adjustment steps:

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

Turning in → Distance ② is increased.

Turning out → Distance ② is decreased.

- Tighten the locknut.



4. Measure:
- Brake pad clearance (② + ③)
Out of specification → Adjust.

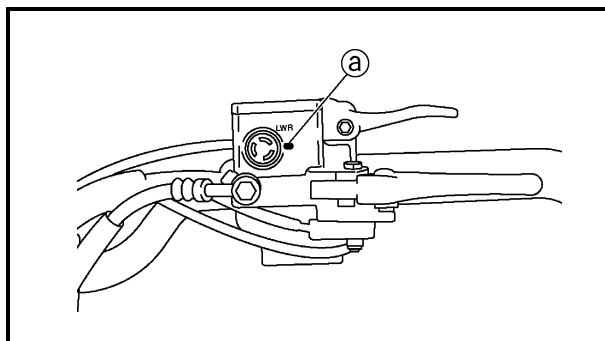
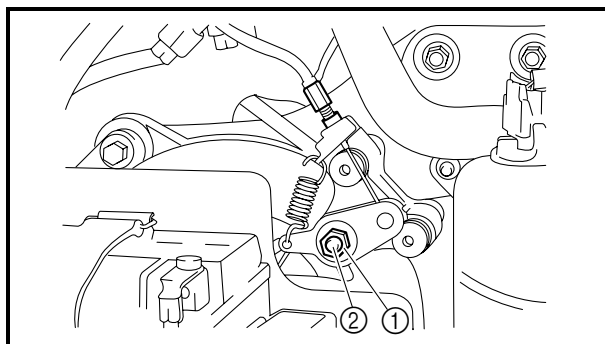


Brake pad clearance (② + ③):
1.5 ~ 2.0 mm (0.059 ~ 0.079 in)

5. Adjust:
- Brake pad clearance

Adjustment steps:

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



BRAKE FLUID LEVEL INSPECTION

1. Place the machine on a level surface.
2. Check:
 - Fluid level
Fluid level is under the lower level line ② →
Fill to the proper level.



Recommended brake fluid:
DOT 4



NOTE: _____

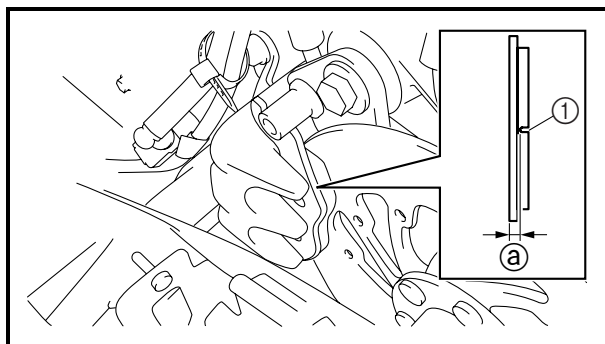
For a correct reading of the brake fluid level, make sure that the top of the handlebar brake master cylinder reservoir is horizontal.

CAUTION: _____

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

⚠ WARNING _____

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



BRAKE PAD INSPECTION

1. Remove:

- Right side cover

Refer to “COWLINGS” in CHAPTER 3.

2. Apply the brake lever.

3. Inspect:

- Brake pad wear ①

Wear indicator ① nearly contacts the brake disc → Replace as a set.



Wear limit:
4.7 mm (0.19 in)



BRAKE HOSE INSPECTION

1. Inspect:
 - Brake hose
Cracks/damage/wear → Replace.
2. Check:
 - Fluid leakage
Apply the brake lever several times.
Fluid leakage → Replace the defective parts.

AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

⚠ WARNING

Bleed the brake system in the following cases:

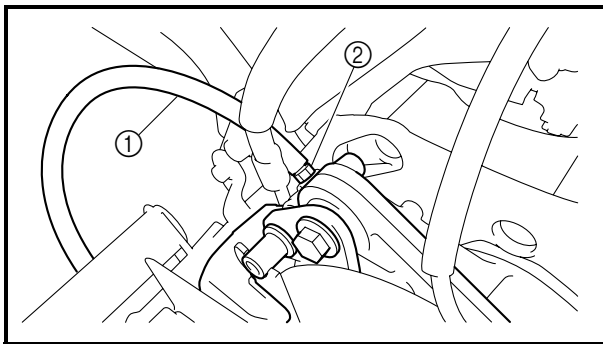
- The system has been disassembled.
- A brake hose is loosened or removed.
- The brake fluid has been very low.
- Brake operation is faulty.

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

1. Remove:
 - Right side cover
Refer to “COWLINGS” in CHAPTER 3.
2. Bleed:
 - Brake system

Air bleeding steps:

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



j. Tighten the bleed screw.



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

NOTE:

If bleeding is difficult, it may be necessary to let the brake fluid settle for a few hours.

Repeat the bleeding procedure when the tiny bubbles in the system have disappeared.

k. Add brake fluid to the proper level.

Refer to “BRAKE FLUID LEVEL INSPECTION”.

⚠ WARNING

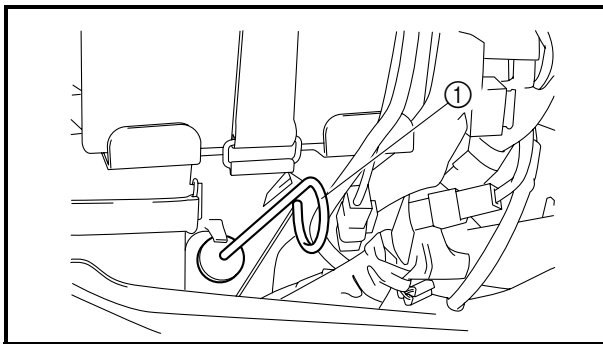
After bleeding the brake system, check the brake operation.

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. Remove:

- Right side cover

Refer to “COWLINGS” in CHAPTER 3.

2. Place the machine on a level surface.

3. Check:

- Oil level

Checking steps:

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

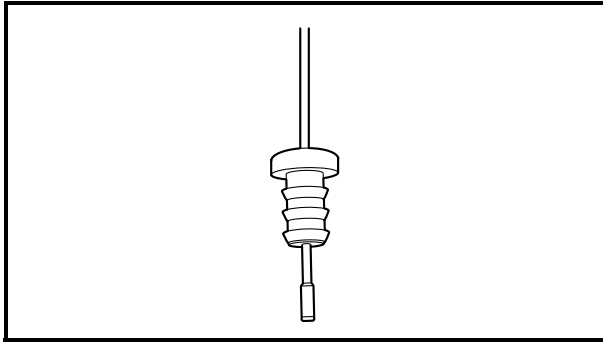
Then put the dipstick in the hole.

CAUTION:

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

Be sure to:

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



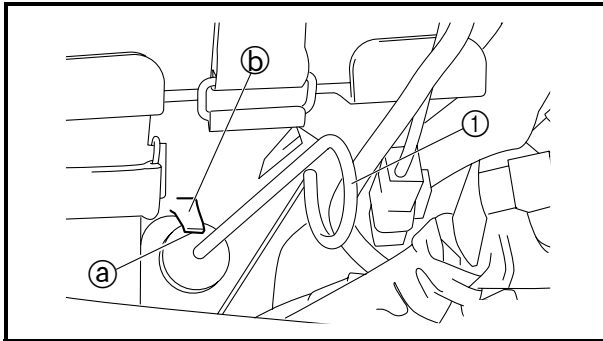
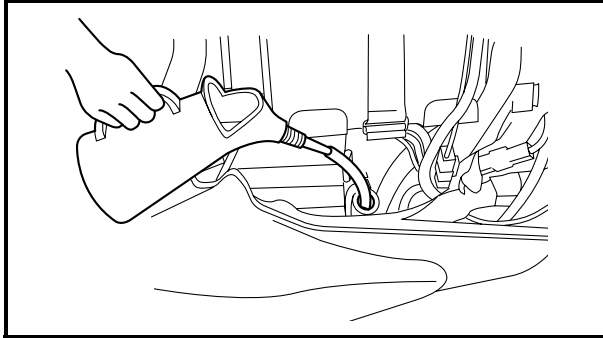
- Remove the dipstick and check that the oil reaches the bottom of the dipstick. If the oil does not reach the bottom of the dipstick, add sufficient oil to raise it to the correct level.



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

CAUTION:

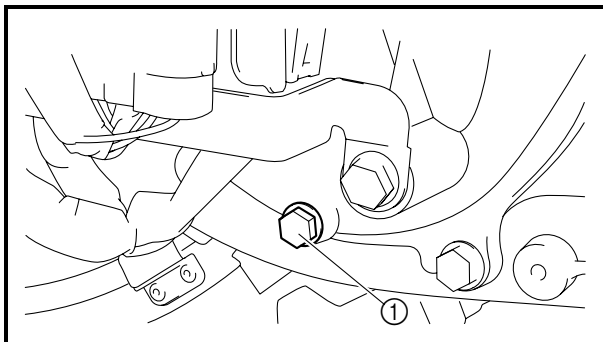
Make sure that no foreign material enters the drive chain housing.



- Reinstall the dipstick ①.

NOTE:

Align the notch (a) of the dipstick handle with the projection (b) of the drive chain housing.



Oil replacement

Oil replacement steps:

- Place the oil pan under the drain hole.
- Remove the right lower cover.
Refer to "COWLINGS" in CHAPTER 3.
- Remove the oil drain bolt (along with the gasket) ① and drain the oil.

CAUTION:

Be sure to remove any oil from the heat protector.

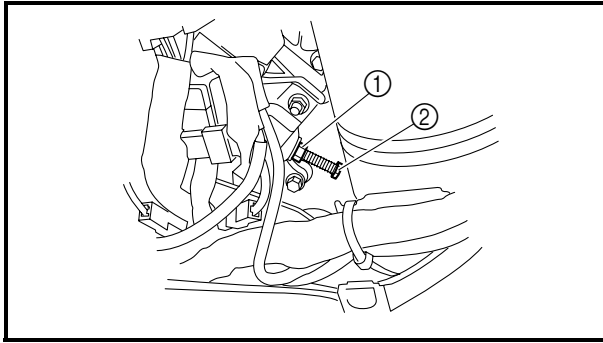
- Install the new gasket and oil drain bolt ①.



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



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



Chain slack adjustment

1. Adjust:
 - Drive chain slack

Adjustment steps:

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



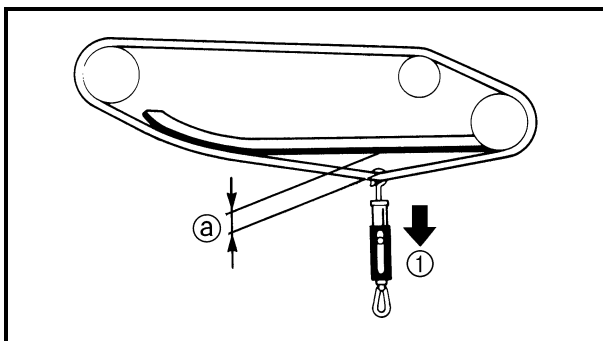
Drive chain adjusting locknut:
25 Nm (2.5 m · kg, 18 ft · lb)

TRACK TENSION ADJUSTMENT

⚠ WARNING

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

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



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

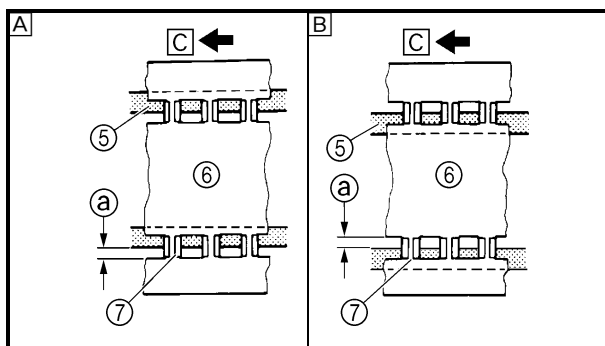
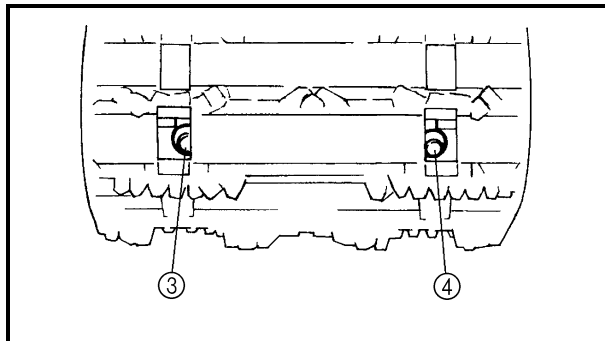
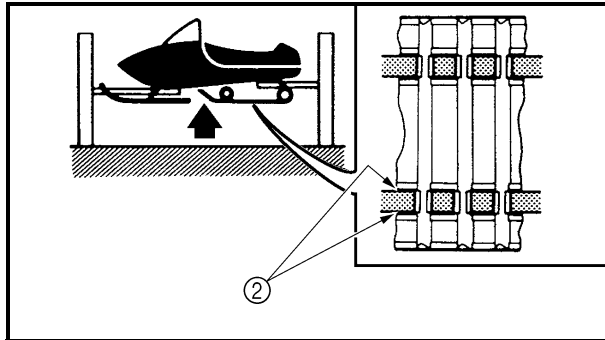
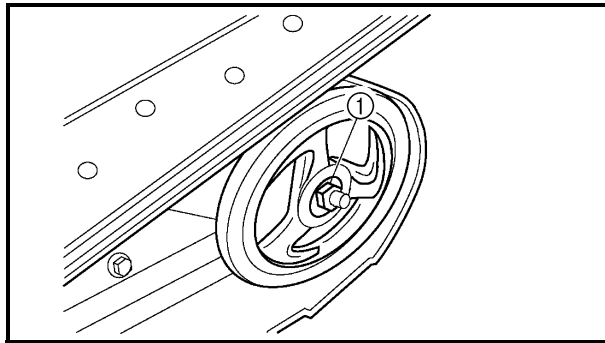
- Track deflection ①

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

Out of specification → Adjust.



Track deflection:
30 ~ 35 mm (1.18 ~ 1.38 in)



3. Adjust:
- Track deflection

Adjustment steps:

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

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

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

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

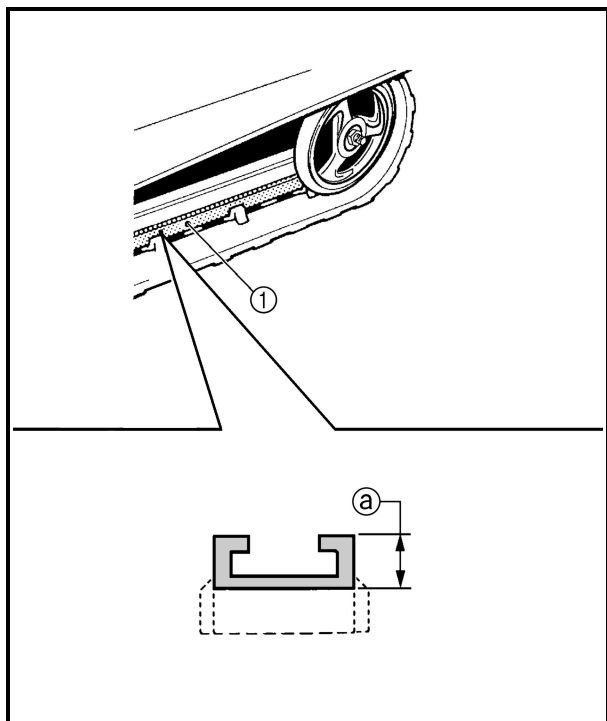
Track deflection	More than specified	Less than specified
③ Left adjuster	Turn in	Turn out
④ Right adjuster	Turn in	Turn out

CAUTION:

The adjusters should be turned an equal amount.

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

	Rear axle nut: 75 Nm (7.5 m · kg, 54 ft · lb)
--	--



SLIDE RUNNER INSPECTION

1. Inspect:
 - Slide runner ①
Cracks/damage/wear → Replace.
2. Measure:
 - Slide runner wear limit ②
Out of specification → Replace.



**Slide runner wear limit:
10.5 mm (0.41 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 2-35 ~ 2-36 for adjustment procedures.) A loose track can slip (ratchet), derail or catch on suspension parts causing severe damage. Do not overtighten the drive track, otherwise it may increase the friction between the track and the slide runners, resulting in the rapid wear of both components. Also, this may put an excessive load on the suspension components, resulting in component failure.

Marginal snow

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

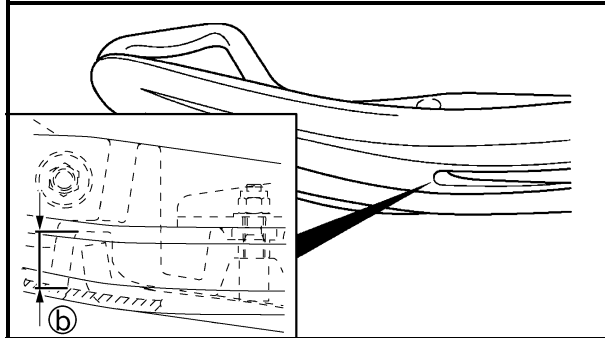
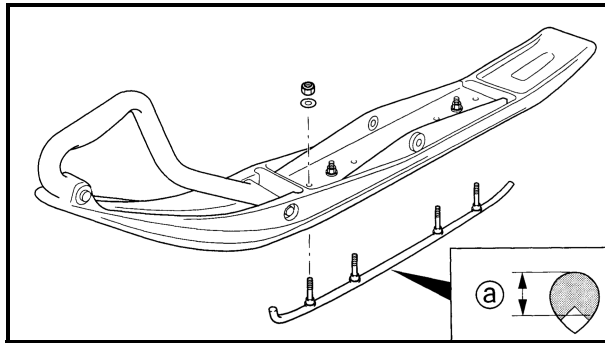
Off-trail riding

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

Studded track

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

Yamaha does not recommend track studding.



CHASSIS

SKI/SKI RUNNER

1. Inspect:

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



Ski runner wear limit:
6 mm (0.24 in)

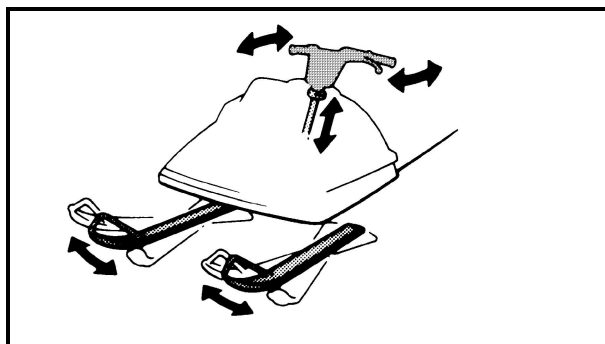
Plastic ski wear limit:
PZ50/PZ50GT/PZ50FX/PZ50VT
"USA/Canada":

13 mm (0.51 in)

PZ50M/PZ50VT "Europe"/PZ50MP:
24 mm (0.95 in)

CAUTION:

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

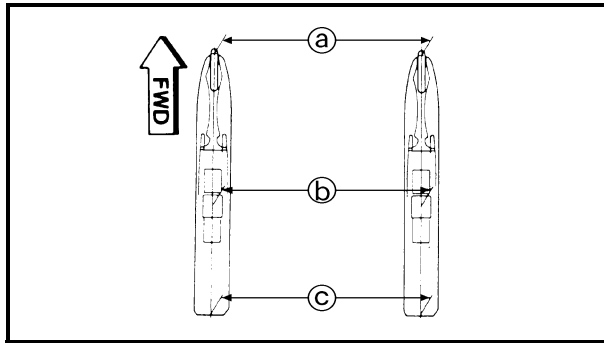


STEERING SYSTEM

Free play check

1. Check:

- Steering system free play
Move the handlebar up and down and back and forth.
Turn the handlebar slightly to the right and left.
Excessive free play → Check that the handlebar, tie rod ends and relay rod ends are installed securely in position. If free play still exists, check the steering bearing, front suspension links and ski mounting area for wear. Replace if necessary.



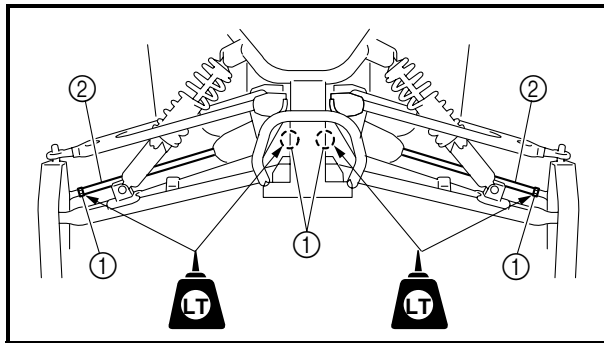
Toe-out adjustment

1. Place the machine on a level surface.
 2. Measure:
 - Ski toe-out (a – c)
 - Ski stance b
- Point the skis forward.
Out of specification → Adjust.



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

Ski stance (center to center):
PZ50/PZ50GT/PZ50FX/PZ50VT/
PZ50MP:
1,080 mm (42.5 in)
PZ50M:
980 mm (38.6 in)



3. Adjust:
 - Ski toe-out

Adjustment steps:

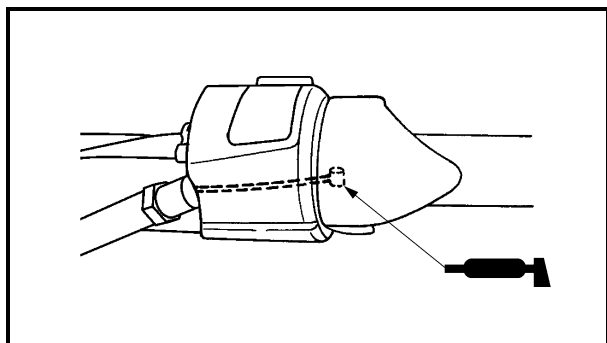
- Remove the air filter case assembly.
Refer to “COWLINGS” in CHAPTER 3.
- Loosen the locknuts (tie-rods) ①.
- Turn the tie rods ② in or out until the specified toe-out is obtained.
- Tighten the locknuts (tie-rods) ①.



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

CAUTION:

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



LUBRICATION

Brake lever, throttle lever and throttle cable end

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



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

WARNING

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

Do not grease the throttle cables.

They could freeze and cause a loss of control.

Rear suspension

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



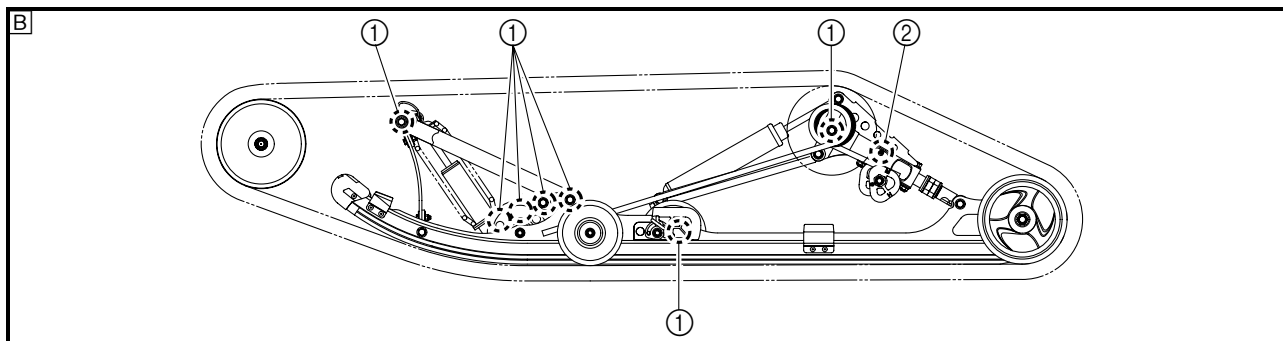
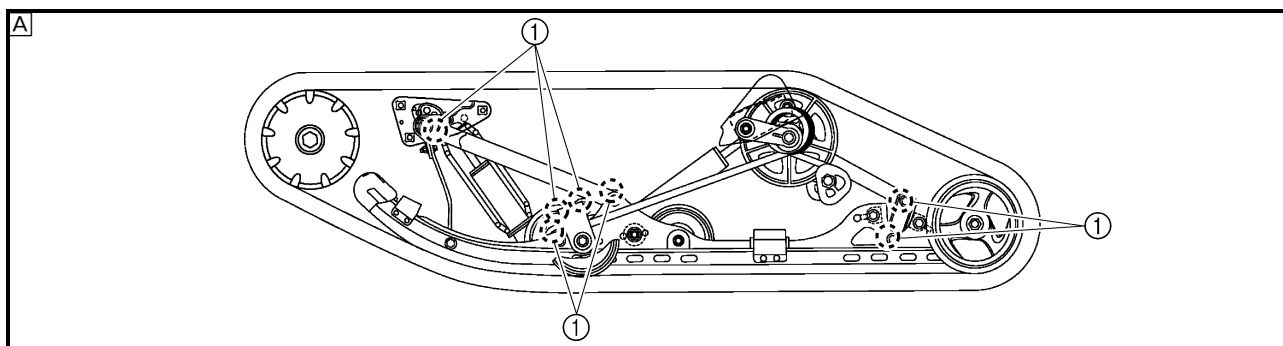
Recommended lubricant:
ESSO Beacon 325 Grease or
Aeroshell Grease #7A

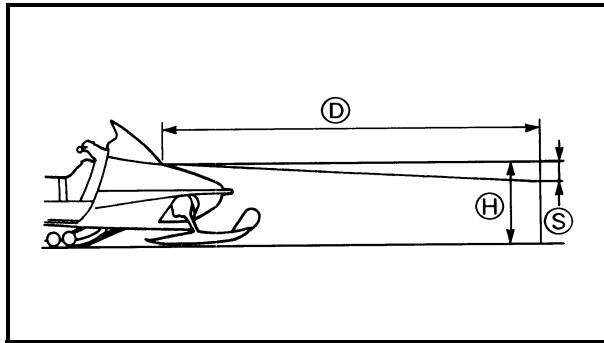
A PZ50/PZ50GT/PZ50FX/PZ50M

B PZ50VT/PZ50MP

① Nipple

② Nipple (both sides)





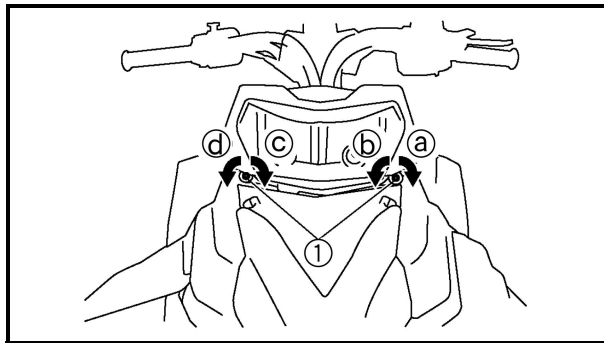
ELECTRICAL

HEADLIGHT BEAM ADJUSTMENT

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

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

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



6. Adjust:
 - Headlight beam

Adjustment steps:

- Turn the headlight beam adjuster $\textcircled{1}$ in or out to adjust the headlight beams.

Headlight beam movement:

- $\textcircled{a}$ Down and to the left
- $\textcircled{b}$ Up and to the right
- $\textcircled{c}$ Down and to the right
- $\textcircled{d}$ Up and to the left



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.

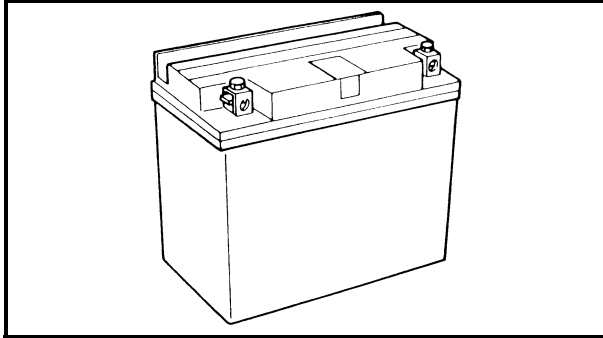
First aid in case of bodily contact:

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:

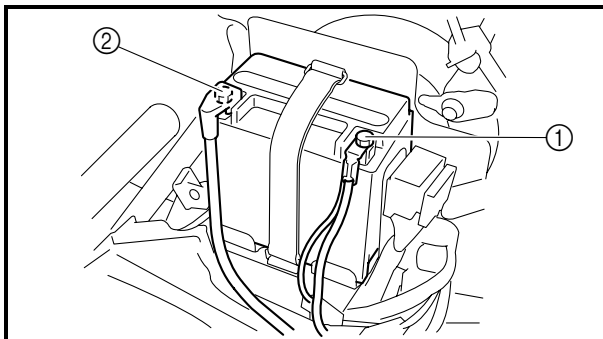
- This is a sealed battery. Never remove the sealing caps because the balance between cells will not be maintained and battery performance will deteriorate.
- Charging time, charging amperage and charging voltage for a MF battery are different from those of conventional batteries. The MF battery should 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. Remove:

- Right side cover
Refer to "COWLINGS" in CHAPTER 3.



2. Disconnect:

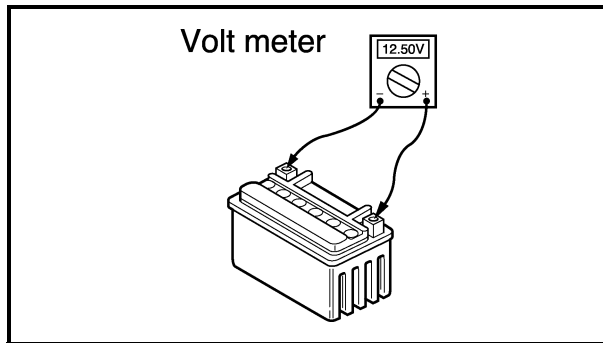
- Battery leads
(from the battery terminals)

CAUTION:

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

3. Remove:

- Battery



4. Inspect:

- Battery charge

Inspection steps:

- Connect a pocket tester to the battery terminals.

Positive tester probe →

positive battery terminal

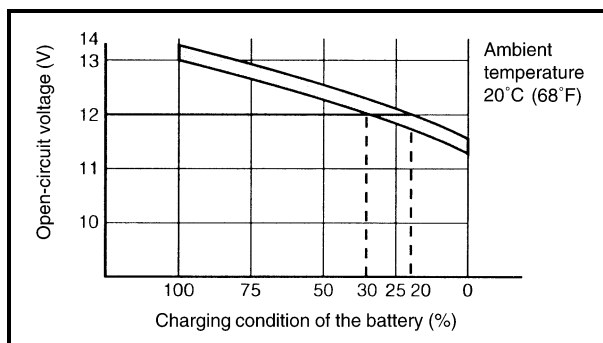
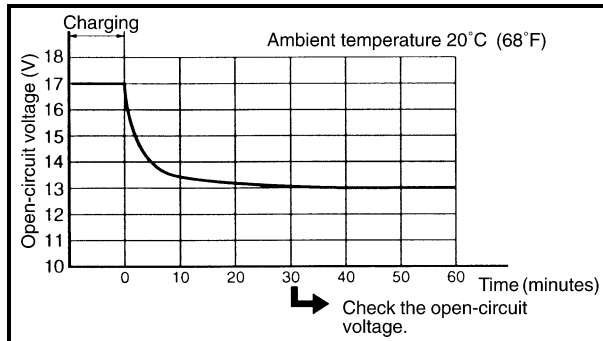
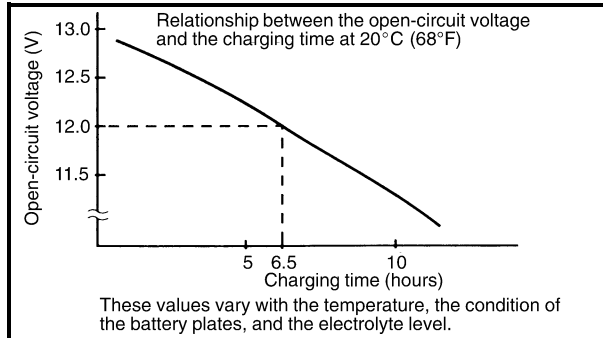
Negative tester probe →

negative battery terminal

NOTE:

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

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



Example

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

5. Charge:

- Battery

(refer to the appropriate charging method illustration)

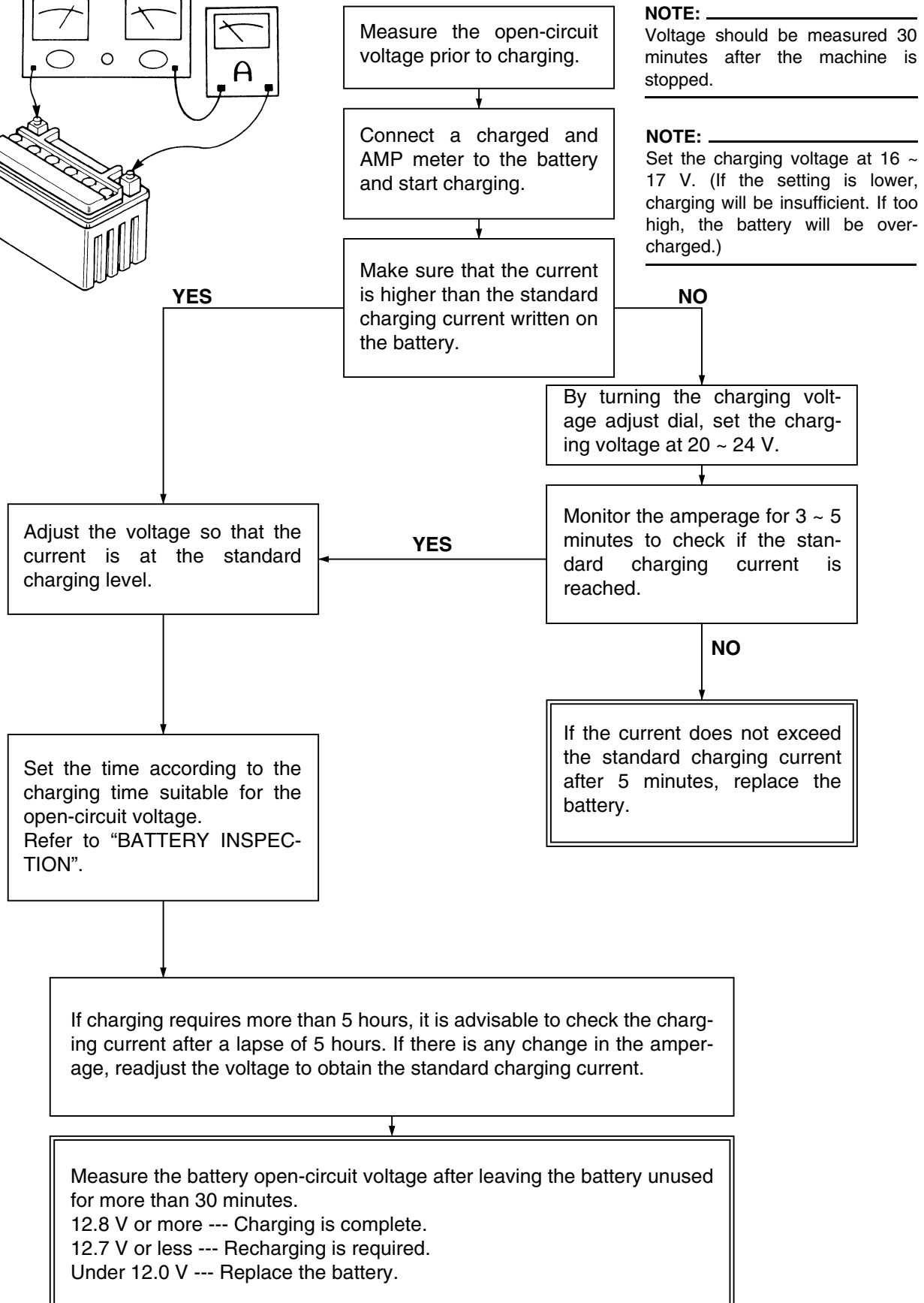
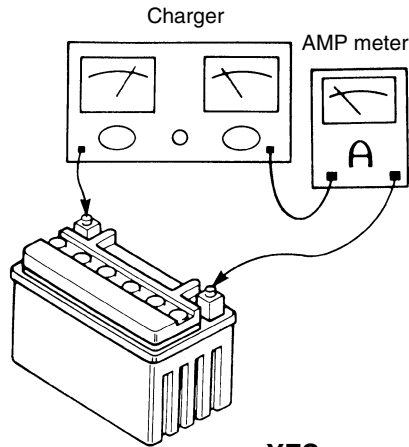
** WARNING**

Do not quick charge a battery.

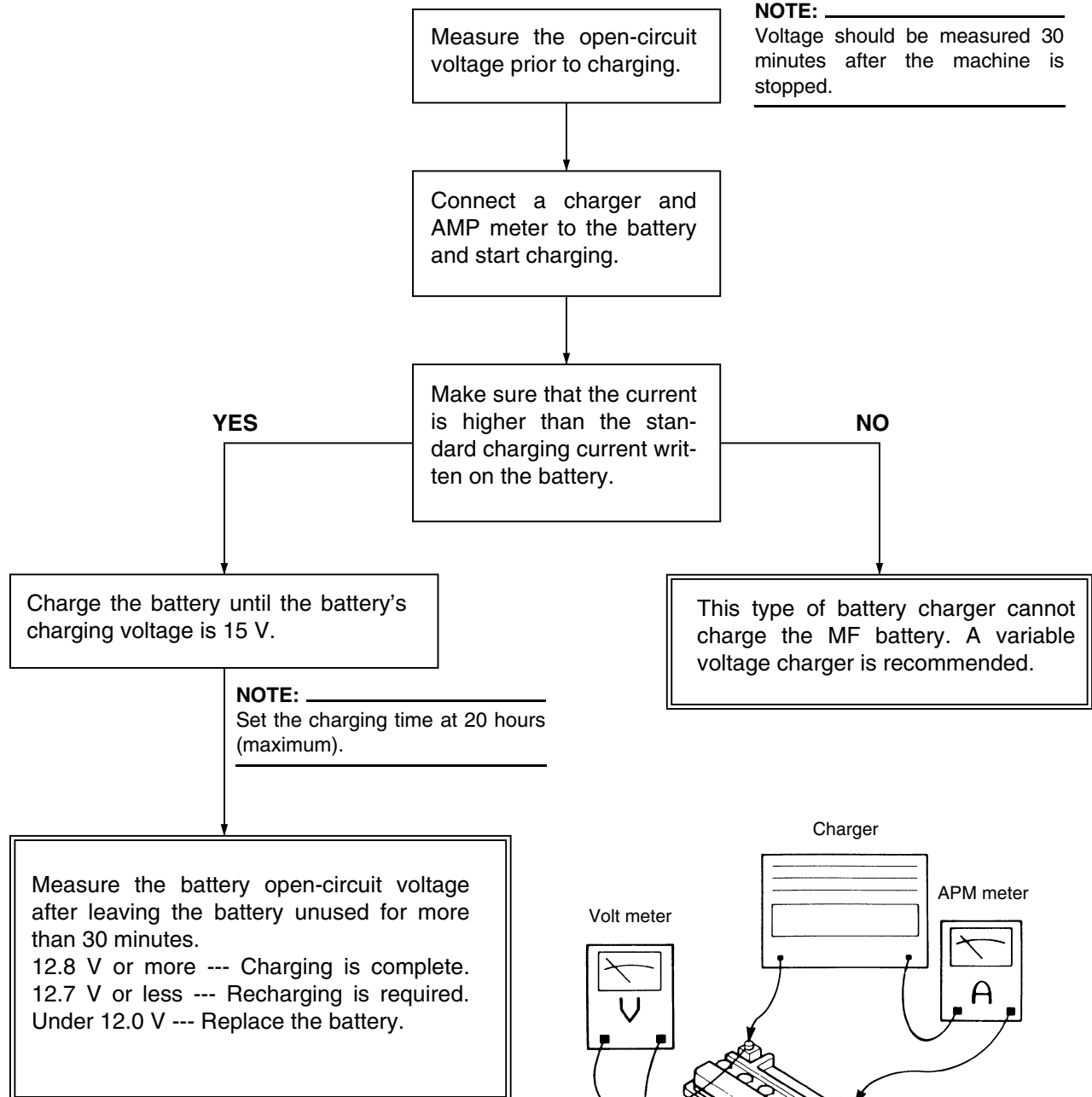
CAUTION:

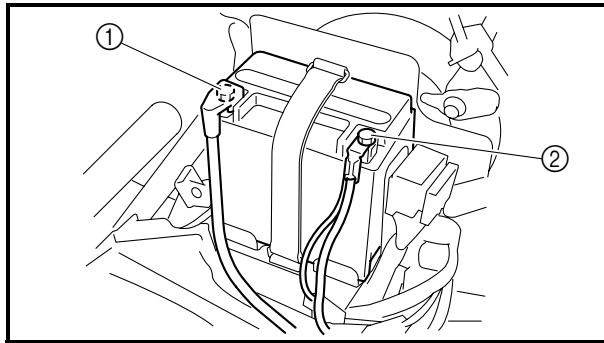
- Make sure that the battery vent is free of obstructions.
 - Never remove the MF battery sealing caps.
 - Do not use a high-rate battery charger. They force a high-amperage current into the battery quickly and can cause battery overheating and battery plate damage.
 - If it is impossible to regulate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

Charging method using a variable voltage charger



Charging method using a constant voltage charger





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

CAUTION:

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

8. Check:
 - Battery terminals
Dirt → Clean with a wire brush.
Loose connection → Connect properly.
9. 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. Remove:
 - Right side cover
Refer to “COWLINGS” in CHAPTER 3.
2. Inspect:
 - Continuity

Inspection steps:

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

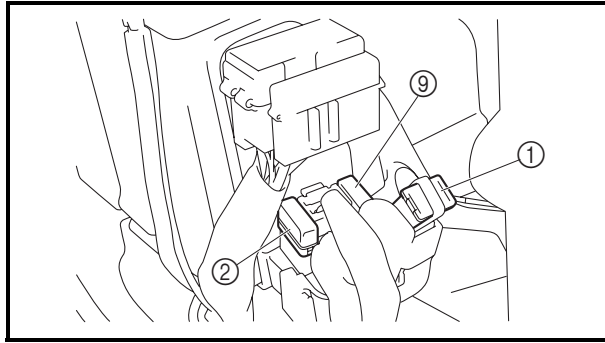
NOTE:

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



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

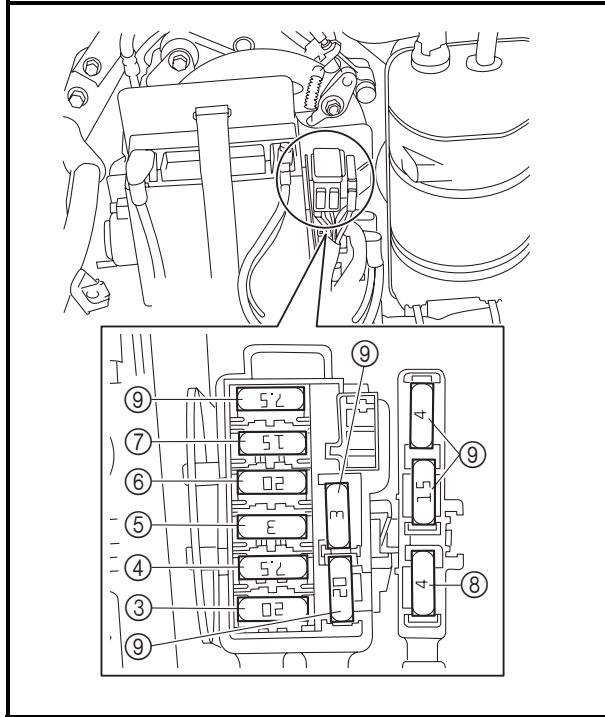
- If the pocket tester indicates “ ∞ ”, replace the fuse.



3. 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	40 A	1
② Fuel injection system fuse	10 A	1
③ Headlight fuse	20 A	1
④ Signal fuse	7.5 A	1
⑤ Auxiliary DC jack fuse* ¹	3 A	1
⑥ Ignition fuse	20 A	1
⑦ Radiator fan motor fuse* ¹	15 A	1
⑧ Gear motor fuse* ¹	4 A	1
⑨ Reserve fuse	20 A	1
	15 A* ¹	1
	10 A	1
	7.5 A	1
	4 A* ¹	1
	3 A* ¹	1

*1: PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP

⚠ 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.

TUNING**CLUTCH****High altitude**

L	Blue	P	Pink
R	Red		

Specifications Model: PZ50/PZ50FX

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	1,800 ± 100 r/min	←	←	←	←
C Engagement r/min	Approx. 3,900 r/min	←	←	←	Approx. 4,000 r/min
D Shift r/min	Approx. 11,300 r/min	←	←	←	←
E Secondary reduction ratio (number of links)	18/41 (80 L)	←	←	17/41 (80 L)	←
F Primary sheave spring	90501-606G9	←	←	←	←
G Color	P-L-P	←	←	←	←
H Free length	72.1 mm (2.84 in)	←	←	←	←
I Preload	196 N (20 kg, 44 lb)	←	←	←	←
J Spring rate	29.4 N/mm (3.0 kg/mm, 168 lb/in)	←	←	←	←
K Wire diameter	6.0 mm (0.236 in)	←	←	←	←
L Outside diameter	60.0 mm (2.36 in)	←	←	←	←
M Weight (ID)	8GC-17605-00 (8GC00)	←	←	←	←
N Weight rivet	Steel 13.3 (OUT) Steel 10.3 (CENTER) Steel 10.3 (IN)	Steel 10.3 (OUT) Steel 10.3 (CENTER) Steel 10.3 (IN)	Steel 10.3 (OUT) Steel 10.3 (CENTER) Aluminum 10.3 (IN)	Steel 10.3 (OUT) Aluminum 10.3 (CENTER) Aluminum 10.3 (IN)	Aluminum 10.3 (OUT) Aluminum 10.3 (CENTER) None (IN)
O Weight bushing	VESPEL TP-8549	←	←	←	←
P Roller outer dia.	15.6 mm (0.614 in)	←	←	←	←
Q Roller bushing	VESPEL TP-8549	←	←	←	←
R Pri. clutch shim	None	←	←	←	←
S Secondary sheave spring	90508-55007	←	←	←	←
T Color	R	←	←	←	←
U Free length	85 mm (3.35 in)	←	←	←	←
V Preload rate	45° (A-1) 931 kg·mm/rad	←	←	←	←
W Wire diameter	5.5 mm (0.217 in)	←	←	←	←
X Outside diameter	66.0 mm (2.60 in)	←	←	←	←
Y Sec. torque cam angle	39°	←	←	←	←
Z Sec. clutch shim	1.0 mm (0.039 in) × 2	←	←	←	←

L	Blue	P	Pink
R	Red		

Specifications Model: PZ50GT

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	1,800 ± 100 r/min	←	←	←	←
C Engagement r/min	Approx. 3,900 r/min	←	←	←	Approx. 4,000 r/min
D Shift r/min	Approx. 11,300 r/min	←	←	←	←
E Secondary reduction ratio (number of links)	20/41 (80 L)	←	19/41 (80 L)	18/41 (80 L)	←
F Primary sheave spring	90501-606G9	←	←	←	←
G Color	P-L-P	←	←	←	←
H Free length	72.1 mm (2.84 in)	←	←	←	←
I Preload	196 N (20 kg, 44 lb)	←	←	←	←
J Spring rate	29.4 N/mm (3.0 kg/mm, 168 lb/in)	←	←	←	←
K Wire diameter	6.0 mm (0.236 in)	←	←	←	←
L Outside diameter	60.0 mm (2.36 in)	←	←	←	←
M Weight (ID)	8GC-17605-00 (8GC00)	←	←	←	←
N Weight rivet	Steel 13.3 (OUT) Steel 10.3 (CENTER) Steel 10.3 (IN)	Steel 10.3 (OUT) Steel 10.3 (CENTER) Steel 10.3 (IN)	Steel 10.3 (OUT) Steel 10.3 (CENTER) Aluminum 10.3 (IN)	Steel 10.3 (OUT) Aluminum 10.3 (CENTER) Aluminum 10.3 (IN)	Aluminum 10.3 (OUT) Aluminum 10.3 (CENTER) None (IN)
O Weight bushing	VESPEL TP-8549	←	←	←	←
P Roller outer dia.	15.6 mm (0.614 in)	←	←	←	←
Q Roller bushing	VESPEL TP-8549	←	←	←	←
R Pri. clutch shim	None	←	←	←	←
S Secondary sheave spring	90508-55007	←	←	←	←
T Color	R	←	←	←	←
U Free length	85 mm (3.35 in)	←	←	←	←
V Preload rate	45° (A-1) 931 kg-mm/rad	←	←	←	←
W Wire diameter	5.5 mm (0.217 in)	←	←	←	←
X Outside diameter	66.0 mm (2.60 in)	←	←	←	←
Y Sec. torque cam angle	39°	←	←	←	←
Z Sec. clutch shim	1.0 mm (0.039 in) × 2	←	←	←	←

G	Green	R	Red
Y	Yellow		

Specifications Model: PZ50M

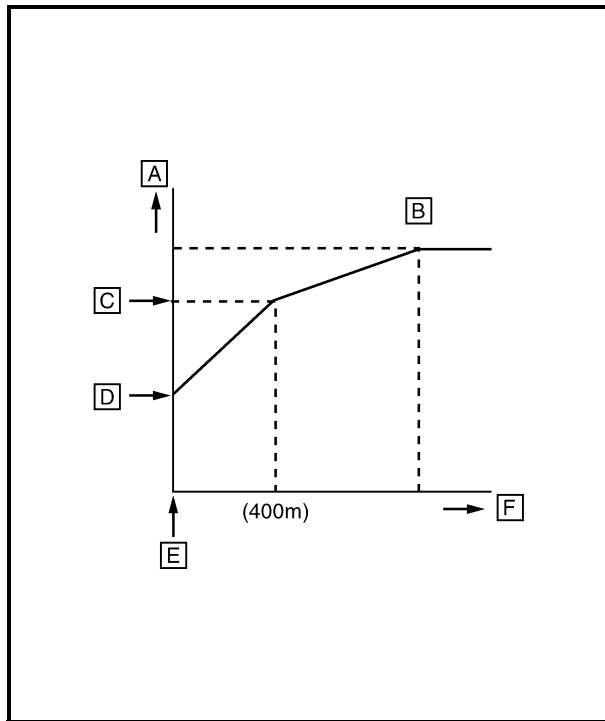
	~ 800 m (~ 2,500 ft)	600 ~ 1,400 m (2,000 ~ 4,500 ft)	1,200 ~ 2,000 m (4,000 ~ 6,500 ft)	1,800 ~ 2,600 m (6,000 ~ 8,500 ft)	2,400 ~ 3,000 m (8,000 ~ 10,000 ft)
A Elevation					
B Engine idle speed	1,800 ± 100 r/min	←	←	←	←
C Engagement r/min	Approx. 4,100 r/min	←	←	Approx. 4,300 r/min	←
D Shift r/min	Approx. 11,300 r/min	←	←	←	←
E Secondary reduction ratio (number of links)	19/41 (80 L)	←	18/41 (80 L)	17/41 (80 L)	←
F Primary sheave spring	90501-605G7	←	←	←	←
G Color	G-Y-G	←	←	←	←
H Free length	74.1 mm (2.92 in)	←	←	←	←
I Preload	245 N (25 kg, 55 lb)	←	←	←	←
J Spring rate	27.0 N/mm (2.75 kg/mm, 154 lb/in)	←	←	←	←
K Wire diameter	6.0 mm (0.236 in)	←	←	←	←
L Outside diameter	60.0 mm (2.36 in)	←	←	←	←
M Weight (ID)	8DN-17605-30 (8DN10)	←	←	←	←
N Weight rivet	Steel 13.9 (OUT) Steel 13.9 (IN)	Steel 13.3 (OUT) Steel 13.9 (IN)	Steel 13.3 (OUT) Steel 13.3 (IN)	Steel 10.3 (OUT) Steel 10.3 (IN)	Steel 10.3 (OUT) None (IN)
O Weight bushing	VESPEL TP-8549	←	←	←	←
P Roller outer dia.	15.0 mm (0.591 in)	←	←	←	←
Q Roller bushing	VESPEL TP-8549	←	←	←	←
R Pri. clutch shim	None	←	←	←	←
S Secondary sheave spring	90508-55007	←	←	←	←
T Color	R	←	←	←	←
U Free length	85 mm (3.35 in)	←	←	←	←
V Preload rate	55° (B-1) 931 kg·mm/rad	←	←	←	←
W Wire diameter	5.5 mm (0.217 mm)	←	←	←	←
X Outside diameter	66.0 mm (2.60 in)	←	←	←	←
Y Sec. torque cam angle	37°	←	←	←	←
Z Sec. clutch shim	1.0 mm (0.039 in) × 2	←	←	←	←

Specifications Model: PZ50VT “USA/Canada”

	~ 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)
A Elevation					
B Engine idle speed	1,800 ± 100 r/min	←	←	←	←
C Engagement r/min	Approx. 3,500 r/min	←	←	←	Approx. 3,700 r/min
D Shift r/min	Approx. 11,300 r/min	←	←	←	←
E Secondary reduction ratio (number of links)	19/45 (82 L)	←	18/45 (82 L)	17/45 (82 L)	←
F Primary sheave spring	90501-556G7	←	←	←	←
G Color	Y-L-Y	←	←	←	←
H Free length	73.4 mm (2.89 in)	←	←	←	←
I Preload	196 N (20 kg, 44 lb)	←	←	←	←
J Spring rate	24.5 N/mm (2.5 kg/mm, 140 lb/in)	←	←	←	←
K Wire diameter	5.5 mm (0.217 in)	←	←	←	←
L Outside diameter	60.0 mm (2.36 in)	←	←	←	←
M Weight (ID)	8GC-17605-00 (8GC00)	←	←	←	←
N Weight rivet	Steel 17.2 (OUT) Steel 17.2 (CENTER) Steel 13.9 (IN)	Steel 17.2 (OUT) Steel 13.9 (CENTER) Steel 13.9 (IN)	Steel 13.9 (OUT) Steel 13.9 (CENTER) Steel 13.3 (IN)	Steel 13.3 (OUT) Steel 13.3 (CENTER) Steel 10.3 (IN)	Steel 10.3 (OUT) Steel 10.3 (CENTER) Aluminum 10.3 (IN)
O Weight bushing	VESPEL TP-8549	←	←	←	←
P Roller outer dia.	14.5 mm (0.571 in)	←	←	←	←
Q Roller bushing	VESPEL TP-8549	←	←	←	←
R Pri. clutch shim	None	←	←	←	←
S Secondary sheave spring	90508-58007	←	←	←	←
T Color	L	←	←	←	←
U Free length	85 mm (3.35 in)	←	←	←	←
V Preload rate	50° (A-1) 1,030 kg-mm/rad	←	←	←	←
W Wire diameter	5.8 mm (0.228 in)	←	←	←	←
X Outside diameter	66.0 mm (2.60 in)	←	←	←	←
Y Sec. torque cam angle	37°	←	←	←	←
Z Sec. clutch shim	1.0 mm (0.039 in) × 2	←	←	←	←

Specifications Model: PZ50VT “Europe”/PZ50MP

	~ 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)
A Elevation					
B Engine idle speed	1,800 ± 100 r/min	←	←	←	←
C Engagement r/min	Approx. 3,100 r/min	←	←	←	Approx. 3,200 r/min
D Shift r/min	Approx. 11,300 r/min	←	←	←	←
E Secondary reduction ratio (number of links)	18/45 (82 L)	←	←	17/45 (82 L)	←
F Primary sheave spring	90501-526G4	←	←	←	←
G Color	L-Go-L	←	←	←	←
H Free length	72.9 mm (2.87 in)	←	←	←	←
I Preload	147 N (15 kg, 33 lb)	←	←	←	←
J Spring rate	19.6 N/mm (2.0 kg/mm, 112 lb/in)	←	←	←	←
K Wire diameter	5.2 mm (0.205 in)	←	←	←	←
L Outside diameter	60.0 mm (2.36 in)	←	←	←	←
M Weight (ID)	8GC-17605-00 (8GC00)	←	←	←	←
N Weight rivet	Steel 17.2 (OUT) Steel 17.2 (CENTER) Steel 17.2 (IN)	Steel 17.2 (OUT) Steel 13.9 (CENTER) Steel 13.9 (IN)	Steel 13.9 (OUT) Steel 13.9 (CENTER) Steel 13.3 (IN)	Steel 13.3 (OUT) Steel 13.3 (CENTER) Steel 10.3 (IN)	Steel 10.3 (OUT) Steel 10.3 (CENTER) Aluminum 10.3 (IN)
O Weight bushing	VESPEL TP-8549	←	←	←	←
P Roller outer dia.	14.5 mm (0.571 in)	←	←	←	←
Q Roller bushing	VESPEL TP-8549	←	←	←	←
R Pri. clutch shim	None	←	←	←	←
S Secondary sheave spring	90508-58007	←	←	←	←
T Color	L	←	←	←	←
U Free length	85 mm (3.35 in)	←	←	←	←
V Preload rate	50° (A-1) 1,030 kg-mm/rad	←	←	←	←
W Wire diameter	5.8 mm (0.228 in)	←	←	←	←
X Outside diameter	66.0 mm (2.60 in)	←	←	←	←
Y Sec. torque cam angle	37°	←	←	←	←
Z Sec. clutch shim	1.0 mm (0.039 in) × 2	←	←	←	←



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	17 teeth	8GC-17682-70	PZ50M "USA/Canada"
	18 teeth	8GC-17682-80	PZ50/PZ50FX/ PZ50VT "Europe"/PZ50MP
	19 teeth	8GC-17682-90	PZ50M "Europe"/ PZ50VT "USA/Canada"
	20 teeth	8GC-17682-00	PZ50GT
F Driven sprocket	40 teeth	8GC-47587-00	
	41 teeth	8GC-47587-10	PZ50/PZ50GT/PZ50FX/PZ50M
	45 teeth	8GC-47587-50	PZ50VT/PZ50MP
	46 teeth	8GC-47587-60	
G Chain	80 links	94591-63080	PZ50/PZ50GT/PZ50FX/PZ50M
	82 links	94591-63082	PZ50VT/PZ50MP

② Gear ratio

A Drive gear \ B Driven gear	17 teeth	18 teeth	19 teeth	20 teeth
40 teeth			2.11 80 links	2.00 80 links
41 teeth	2.41 80 links	2.28 80 links	2.16 80 links	2.05 80 links
45 teeth	2.65 82 links	2.50 82 links	2.37 82 links	2.25 82 links
46 teeth	2.71 82 links	2.56 82 links	2.42 82 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
90508-50571	7071 (721)	8.7 (0.89, 49.84)	Pink	5.0 (0.197)	4.74	85 (3.35)	65 (2.559)	
90508-50746	7071 (721)	8.7 (0.89, 49.84)	White	5.0 (0.197)	4.74	93.5 (3.68)	65 (2.559)	
90508-55012	8125 (829)	9.0 (0.92, 51.52)	Brown	5.5 (0.217)	5.99	85 (3.35)	66 (2.598)	
90508-55007	9131 (931)	10.6 (1.08, 60.48)	Red	5.5 (0.217)	5.33	85 (3.35)	66 (2.598)	PZ50/PZ50GT/ PZ50FX/PZ50M
90508-58007	10098 (1030)	11.3 (1.16, 64.96)	Blue	5.8 (0.228)	5.99	85 (3.35)	66 (2.598)	PZ50VT/PZ50MP
90508-60015	11603 (1183)	13.1 (1.34, 75.04)	Yellow	6.0 (0.236)	5.99	85 (3.35)	66 (2.598)	

④ Secondary spring twist angle

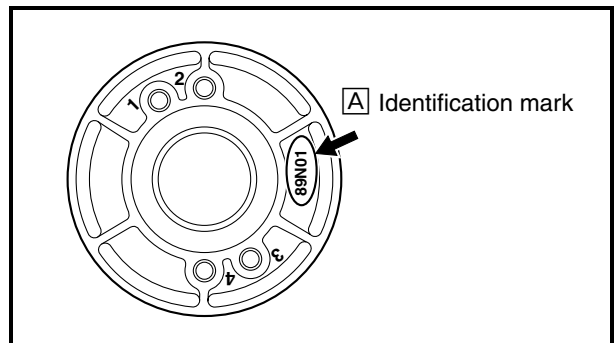
90508-55007 (Red)

Ⓐ Seat Ⓑ Sheave	1	2	3	4
C	35°	65°	95°	5°
A	45°	75°	105°	15°
B	55°	85°	115°	25°

90508-55012 (Brown)/90508-58007 (Blue)/90508-60015 (Yellow)

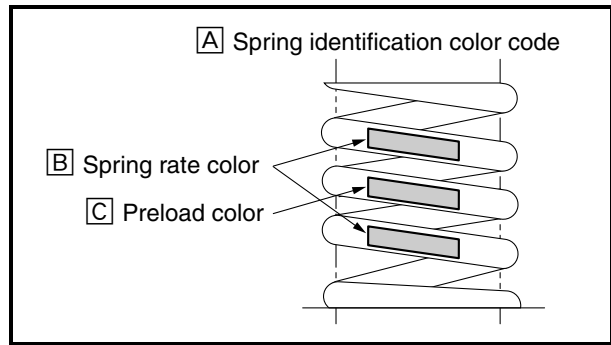
Ⓐ Seat Ⓑ Sheave	1	2	3	4
C	40°	70°	100°	10°
A	50°	80°	110°	20°
B	60°	90°	120°	30°

⑤ Torque cam (secondary spring seat)



Ⓑ Effects	Ⓒ Part no.	Ⓓ Cam angle	Ⓔ Identification mark	Ⓕ Standard
Ⓖ Quicker upshifting during acceleration ↕ Ⓗ Quicker backshifting under load	89N-17684-01	42°	89N-01	
	88R-17684-03	39°	88R-03	PZ50/PZ50GT/ PZ50FX
	8AT-17684-01	37°	8AT-01	PZ50M/PZ50VT/ PZ50MP

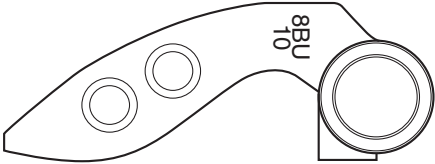
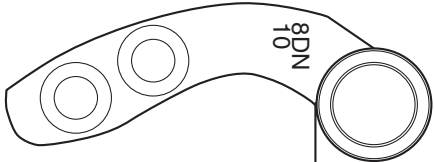
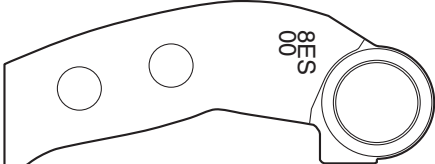
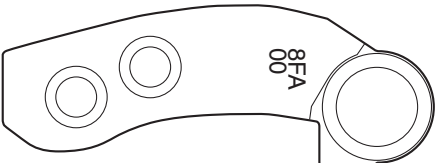
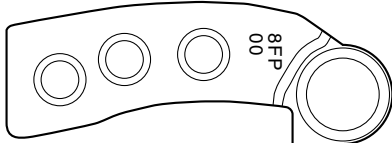
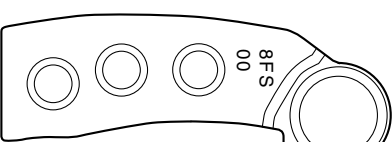
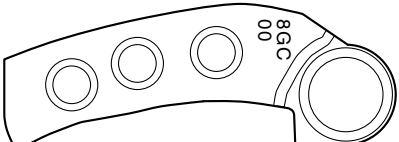
⑥ Primary spring



D Parts No.	E Spring rate N/mm (kg/mm)	F Preload N/mm (kg)	G Color	H Wire gauge mm (in)	I Outside diameter mm (in)	J No. of coils	K Free length mm (in)	L Standard
90501-481J1	9.8 (1.0)	196 (20)	Silver-Blue-Silver	4.8 (0.189)	60 (2.362)	5.16	85.4 (3.362)	
90501-487G8	14.7 (1.5)	147 (15)	Gold	4.8 (0.189)	60 (2.362)	4.19	75.4 (2.969)	
90501-507G2	14.7 (1.5)	196 (20)	Gold-Blue-Gold	5.0 (0.197)	60 (2.362)	4.61	78.7 (3.098)	
90501-507G7	17.2 (1.75)	147 (15)	Red-Gold-Red	5.0 (0.197)	60 (2.362)	4.24	74.0 (2.913)	
90501-521J6	14.7 (1.5)	294 (30)	Gold-Pink-Gold	5.2 (0.205)	60 (2.362)	5.09	85.4 (3.362)	
90501-524G4	17.2 (1.75)	245 (25)	Red-Yellow-Red	5.2 (0.205)	60 (2.362)	4.64	79.7 (3.138)	
90501-524G5	14.7 (1.5)	245 (25)	Gold-Yellow-Gold	5.2 (0.205)	60 (2.362)	5.08	82.1 (3.232)	
90501-525J8	19.6 (2.0)	294 (30)	Blue-Pink-Blue	5.2 (0.205)	58.4 (2.299)	4.43	80.4 (3.165)	
90501-526G4	19.6 (2.0)	147 (15)	Blue-Gold-Blue	5.2 (0.205)	60 (2.362)	4.32	72.9 (2.870)	PZ50VT "Europe"/ PZ50MP
90501-526J9	17.2 (1.75)	294 (30)	Red-Pink-Red	5.2 (0.205)	58.4 (2.299)	4.77	82.5 (3.248)	
90501-527G1	17.2 (1.75)	196 (20)	Red-Blue-Red	5.2 (0.205)	60 (2.362)	4.65	76.8 (3.024)	
90501-550J8	22.1 (2.25)	294 (30)	White-Pink-White	5.5 (0.217)	60 (2.362)	4.62	78.7 (3.098)	
90501-553G0	19.6 (2.0)	245 (25)	Blue-Yellow-Blue	5.5 (0.217)	59.3 (2.335)	5.10	78.0 (3.071)	
90501-553G6	22.1 (2.25)	245 (25)	White-Yellow-White	5.5 (0.217)	59.3 (2.335)	4.61	76.5 (3.012)	
90501-555J9	22.1 (2.25)	343 (35)	White-Silver-White	5.5 (0.217)	59.0 (2.323)	4.66	81.0 (3.189)	
90501-556G5	22.1 (2.25)	196 (20)	White-Blue-White	5.5 (0.217)	60 (2.362)	4.62	74.3 (2.925)	
90501-556G6	19.6 (2.0)	196 (20)	Blue	5.5 (0.217)	60 (2.362)	4.95	75.4 (2.969)	
90501-556G7	24.5 (2.5)	196 (20)	Yellow-Blue-Yellow	5.5 (0.217)	60 (2.362)	4.36	73.4 (2.890)	PZ50VT "USA/Can- ada"
90501-557G5	24.5 (2.5)	147 (15)	Yellow-Gold-Yellow	5.5 (0.217)	60 (2.362)	4.36	71.4 (2.811)	
90501-557G6	22.1 (2.25)	147 (15)	White-Gold-White	5.5 (0.217)	60 (2.362)	4.62	72.1 (2.839)	
90501-581J7	24.5 (2.5)	245 (25)	Yellow	5.8 (0.228)	60 (2.362)	4.96	75.4 (2.969)	
90501-582J1	24.5 (2.5)	294 (30)	Yellow-Pink-Yellow	5.8 (0.228)	60 (2.362)	4.96	77.4 (3.047)	
90501-585J3	27.0 (2.75)	294 (30)	Green-Pink-Green	5.8 (0.228)	59.6 (2.346)	4.64	76.3 (3.004)	
90501-586J0	24.5 (2.5)	343 (35)	Yellow-Silver-Yellow	5.8 (0.228)	59.6 (2.346)	4.91	79.4 (3.126)	
90501-602J0	29.4 (3.0)	294 (30)	Pink	6.0 (0.236)	60 (2.362)	4.74	75.4 (2.969)	
90501-604G0	29.4 (3.0)	235 (24)	Pink-Yellow-Pink	6.0 (0.236)	60 (2.362)	4.80	73.3 (2.886)	
90501-605G7	26.9 (2.74)	235 (24)	Green-Yellow-Green	6.0 (0.236)	60 (2.362)	5.00	74.1 (2.917)	PZ50M
90501-605J5	31.9 (3.25)	294 (30)	Orange-Pink-Orange	6.0 (0.236)	60 (2.362)	4.53	74.6 (2.937)	
90501-606G9	29.4 (3.0)	196 (20)	Pink-Blue-Pink	6.0 (0.236)	60 (2.362)	4.86	72.1 (2.839)	PZ50/PZ50GT/ PZ50FX
90501-607G0	27.0 (2.75)	196 (20)	Green-Blue-Green	6.0 (0.236)	60 (2.362)	5.12	72.7 (2.862)	
90501-607G3	29.4 (3.0)	147 (15)	Pink-Gold-Pink	6.0 (0.236)	60 (2.362)	4.86	70.4 (2.772)	
90501-607G4	27.0 (2.75)	147 (15)	Green-Gold-Green	6.0 (0.236)	60 (2.362)	5.12	70.9 (2.791)	



⑦ Clutch weight

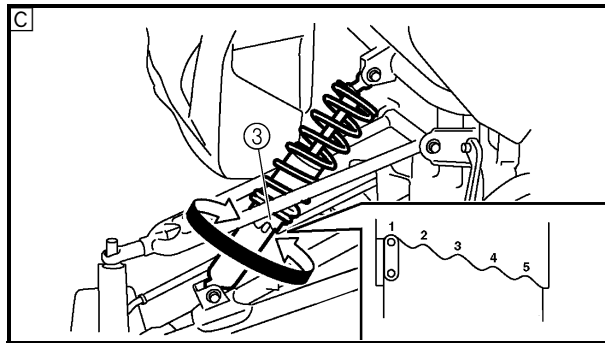
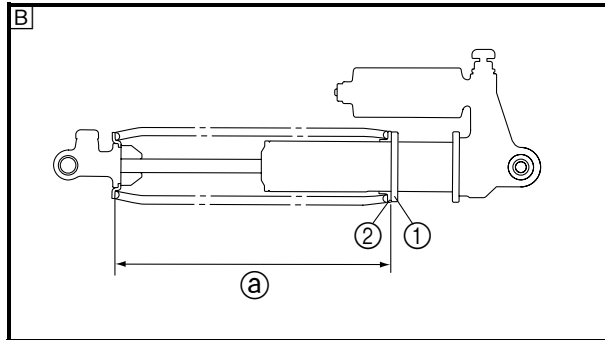
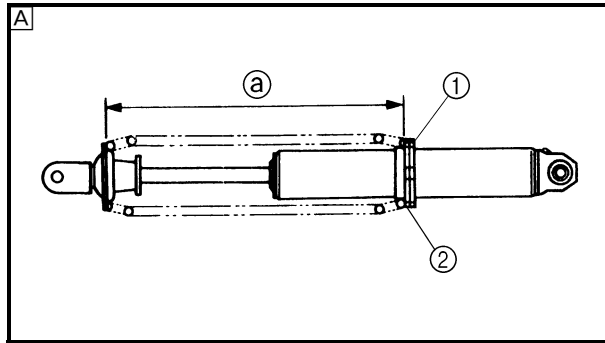
[A] Parts No.	[B] Weight g (oz) without bush and rivets	[C] Shape & ID mark	[D] Standard
8BU-17605-20	45.41 (1.603)		
8DN-17605-30	39.76 (1.404)		PZ50M
8ES-17605-00	54.63 (1.928)		
8FA-17605-10	63.81 (2.251)		
8FN-17605-00	75.28 (2.657)		
8FP-17605-00	67.81 (2.394)		
8FS-17605-00	65.52 (2.313)		
8GC-17605-00	47.28 (1.669)		PZ50/PZ50GT/ PZ50FX/PZ50VT/ PZ50MP

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: PZ50VT "Europe"/PZ50MP CENTER, OUT: PZ50VT/ PZ50MP	G Increased force H Decreased force
90261-06034	Steel	13.9 (0.547)	3.6 (0.127)	IN: PZ50M "Europe"/PZ50VT "USA/Canada" OUT: PZ50M "Europe"	
90261-06019	Steel	13.3 (0.524)	3.1 (0.109)	OUT: PZ50/PZ50GT/PZ50FX	
90261-06015	Steel	10.3 (0.406)	2.44 (0.086)	IN, CENTER: PZ50/PZ50GT/ PZ50FX OUT: PZ50M "USA/Canada"	
90261-06028	Aluminum	10.3 (0.406)	0.85 (0.030)		
None				IN: PZ50M "USA/Canada"	H Decreased force

⑨ Rollers

I.D. 9 mm (0.354 in)					
A Roller with bush- ing part number	B Outside diameter mm (in)	C Bushing type (P/N)	D Identification mark (Width)	E Standard	F Effects
8FG-17624-00	14.5 (0.57)	VESPEL TP-8549 90386-09001	G Grooved & Machined (14.6 mm)	PZ50VT/PZ50MP	L Increased force M Decreased force
8FG-17624-10	15.0 (0.59)	VESPEL TP-8549 90386-09001	H Grooved (14.6 mm)	PZ50M	
8FG-17624-20	15.6 (0.61)	VESPEL TP-8549 90386-09001	I No Mark (14.6 mm)	PZ50/PZ50GT/ PZ50FX	
8FG-17624-30	16.0 (0.63)	VESPEL TP-8549 90386-09001	J Grooved & Grooved (14.6 mm)		
8FG-17624-40	16.5 (0.65)	VESPEL TP-8549 90386-09001	K Machined (14.6 mm)		



FRONT SUSPENSION

Spring preload

1. Adjust:

- Spring preload

Adjustment steps:

- Loosen the locknut ①.
- Turn the spring seat ② in or out.

PZ50GT/PZ50MP

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
Length ②	Min.		Max.
	205 mm (8.07 in)	215 mm (8.46 in)	215 mm (8.46 in)

PZ50VT “Europe”

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
Length ②	Min.		Max.
	190 mm (7.48 in)	200 mm (7.87 in)	200 mm (7.87 in)

PZ50FX

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
Length ②	Min.		Max.
	231.6 mm (9.12 in)	241.6 mm (9.51 in)	241.6 mm (9.51 in)

- Turn the adjusting ring ③ to the proper position.

PZ50/PZ50M/PZ50VT “USA/Canada”

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

A PZ50GT/PZ50MP/PZ50VT “Europe”

B PZ50FX

C PZ50/PZ50M/PZ50VT “USA/Canada”

CAUTION:

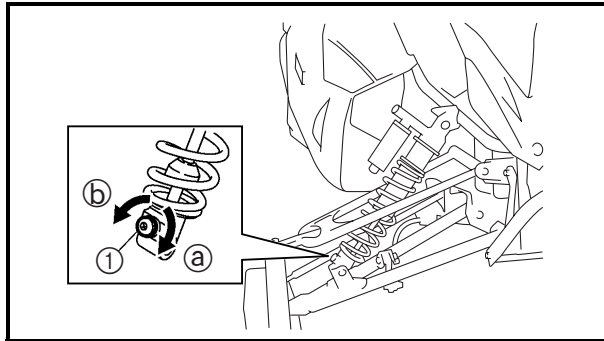
Be sure that the left and right spring preload are the same.

⚠ WARNING

These shock absorber contain highly pressurized nitrogen gas.

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

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



Rebound damping force adjustment (PZ50FX)

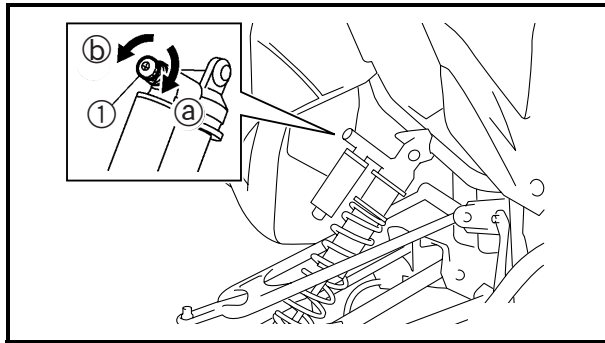
The rebound damping force can be adjusted by turning the adjuster ①.

Adjuster position	20 clicks out	12 clicks out	3 clicks out
	Minimum	Standard	Maximum
	Turns out (b)* ← → Turns in (a)		
Rebound damping force	Soft ← → Hard		

* With the adjuster fully turned lightly in direction (a)

CAUTION:

- Do not continue to turn the adjuster in direction (a) after it stops. The shock absorber can be damaged and rebound damping force adjustments cannot be made.
- Do not turn the adjuster in direction (b) more than 20 clicks. Even if the adjuster is continually turned after 20 clicks, there will be no change in the rebound damping force.
- Be sure to stop the adjuster at a position where there is a click.



Compression damping force adjustment (PZ50FX)

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

	12 clicks out	7 clicks out	2 clicks out
Adjuster position	Minimum	Standard	Maximum
	Turns out (b)* ← → Turns in (a)		
Compression damping force	Soft ← → Hard		

* With the adjuster fully turned lightly in direction (a)

CAUTION:

- Do not continue to turn the adjuster in direction (a) after it stops. The shock absorber can be damaged and compression damping force adjustments cannot be made.
- Do not turn the adjuster in direction (b) more than 12 clicks. Even if the adjuster is continually turned after 12 clicks, there will be no change in the compression damping force.
- Be sure to stop the adjuster at a position where there is a click.

REAR SUSPENSION

Stopper band

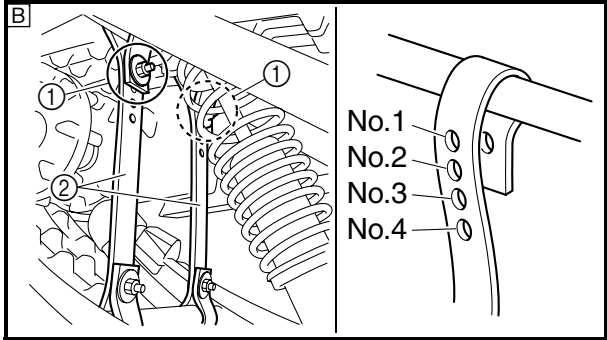
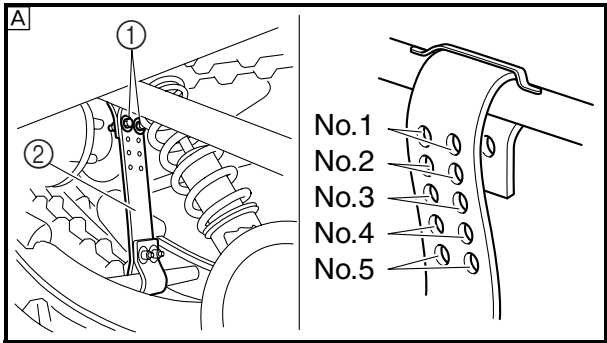
- Adjust:
 - Stopper band length

CAUTION:

Make sure the left and right rear suspension stopper bands are adjusted evenly. (PZ50VT, PZ50MP)

NOTE:

This adjustment affects the handling characteristics of the machine.



Adjustment steps:

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

Standard setting:

- No. 1 hole (PZ50/PZ50MP)**
- No. 2 holes (PZ50FX)**
- No. 3 holes (PZ50GT/PZ50M)**
- No. 4 holes (PZ50VT)**

- Tighten the stopper band nuts.



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

- A** PZ50/PZ50GT/PZ50FX/PZ50M
- B** PZ50VT/PZ50MP

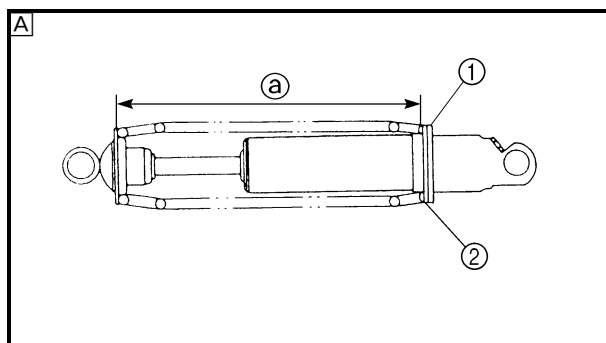
Choosing other settings:

CAUTION:

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

A : No. 5 hole B : No. 4 hole (shortest)	No. 1 hole (longest)
More weight on skis: • Heavy steering/oversteer • More maneuverability Favors: hardpack snow, ice, smooth trails, tight turns	Less weight on skis: • Light steering/understeer • Better acceleration and speed Favors: deep snow, straight line acceleration, top speed

- A** PZ50/PZ50GT/PZ50FX/PZ50M
- B** PZ50VT/PZ50MP



Spring preload

1. Adjust:

- Spring preload

Adjustment step:

Front side

- Loosen the locknut ①.
- Turn the spring seat ② in or out.

PZ50GT “Europe”

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
Length ②	Min.		Max.
	175 mm (6.89 in)	185 mm (7.28 in)	185 mm (7.28 in)

PZ50FX

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
Length ②	Min.		Max.
	180 mm (7.09 in)	190 mm (7.48 in)	190 mm (7.48 in)

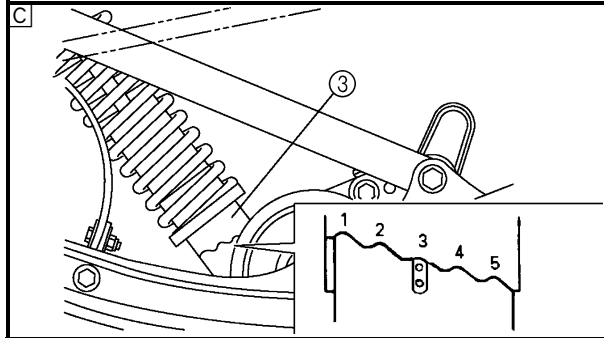
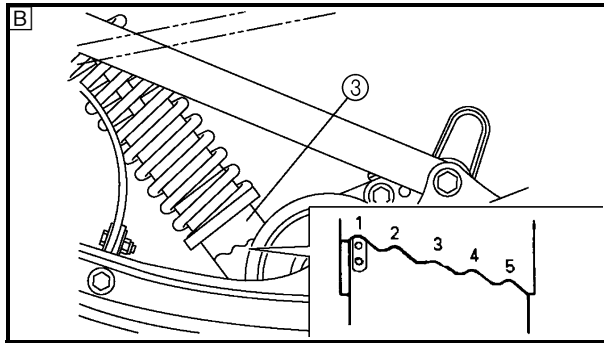
PZ50VT “Europe”

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
Length ②	Min.		Max.
	182 mm (7.17 in)	192 mm (7.56 in)	192 mm (7.56 in)

PZ50MP

Spring seat distance	Standard		
	Shorter ←		→ Longer
Preload	Harder ← → Softer		
Length ②	Min.		Max.
	194 mm (7.64 in)	204 mm (8.03 in)	205 mm (8.07 in)

A PZ50GT “Europe”/PZ50FX/PZ50VT “Europe”/
PZ50MP



- Turn the adjusting ring ③ to the proper position.

PZ50/PZ50GT "USA/Canada"/PZ50M

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

PZ50VT "USA/Canada"

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

⚠ WARNING

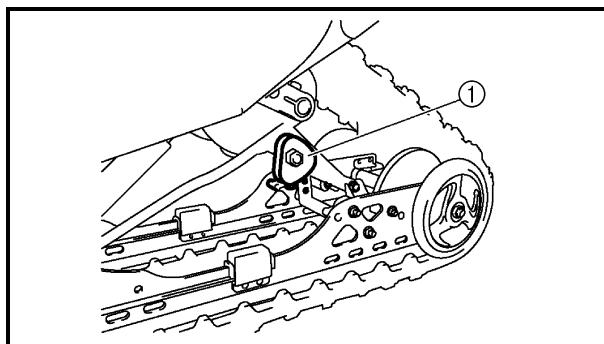
This shock absorber contains highly pressurized nitrogen gas.

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.

ⓑ PZ50/PZ50GT "USA/Canada"/PZ50M

ⓒ PZ50VT "USA/Canada"



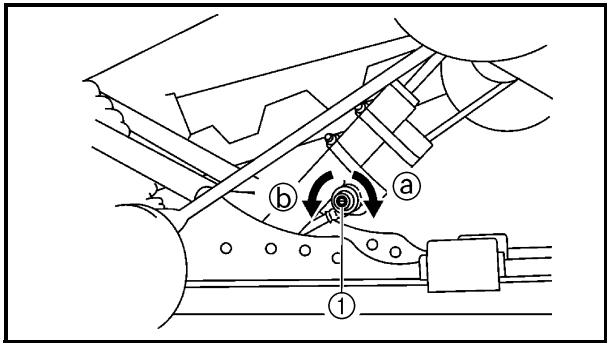
Rear side

- Turn the adjuster ① to proper position.

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

⚠ WARNING

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



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

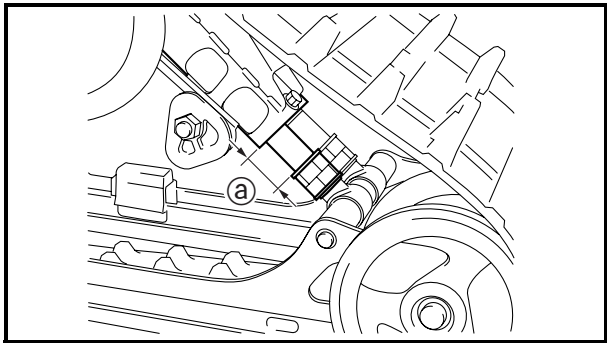
PZ50FX

Adjuster position	20 clicks out	11 clicks out	1 click out
	Minimum	Standard	Maximum
	Turns out ⑥* ← → Turns in ⑤		
Damping force	Soft ← → Hard		

* With the adjuster fully turned lightly in direction ⑤

CAUTION:

- Do not continue to turn the adjuster in direction ⑤ after it stops. The shock absorber can be damaged and damping force adjustments cannot be made.
- Do not turn the adjuster in direction ⑥ more than 20 clicks. Even if the adjuster is continually turned after 20 clicks, there will be no change in the damping force.
- Be sure to stop the adjuster at a position where there is a click.



Control rod (PZ50VT/PZ50MP)

1. Adjust:
- Control rod stroke ①

CAUTION:

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

Adjustment steps:

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

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

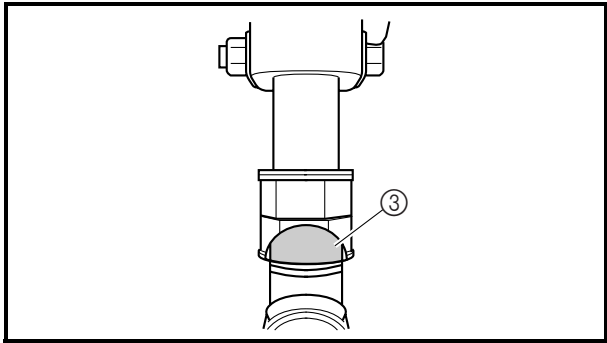
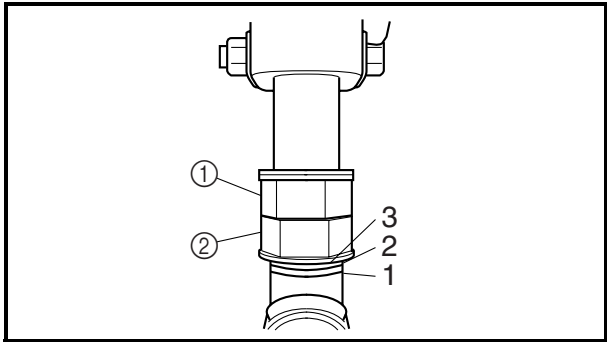
⚠ WARNING

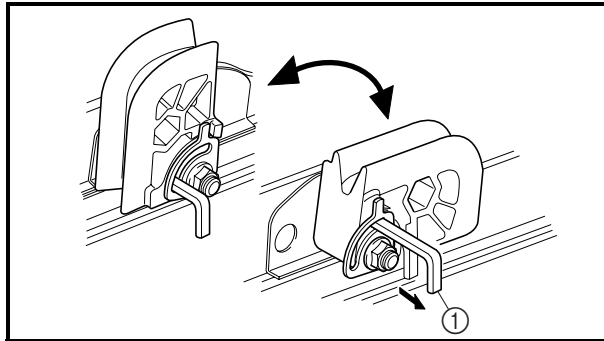
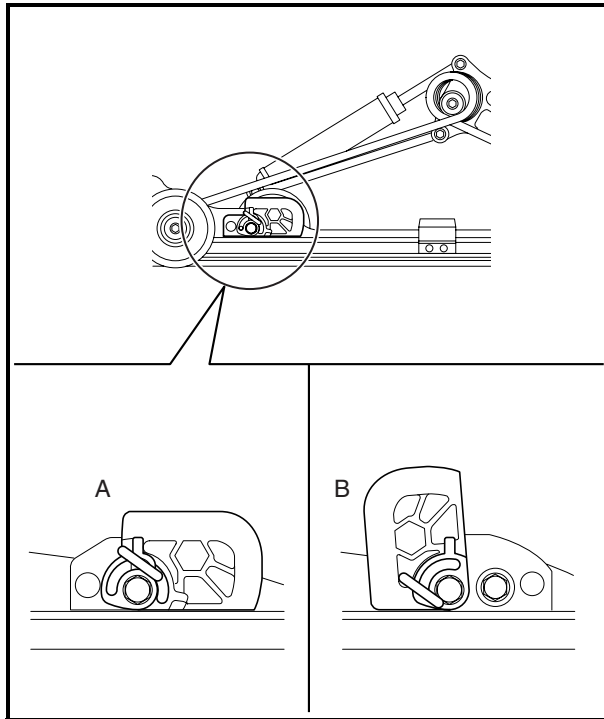
Never adjust the control rods beyond the maximum range indicated on the rods with red paint ③.

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



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





2-up adjusting block (PZ50VT/PZ50MP)

1. Position:

- 2-up adjusting blocks

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

NOTE:

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

Positioning steps:

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

NOTE:

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

CAUTION:

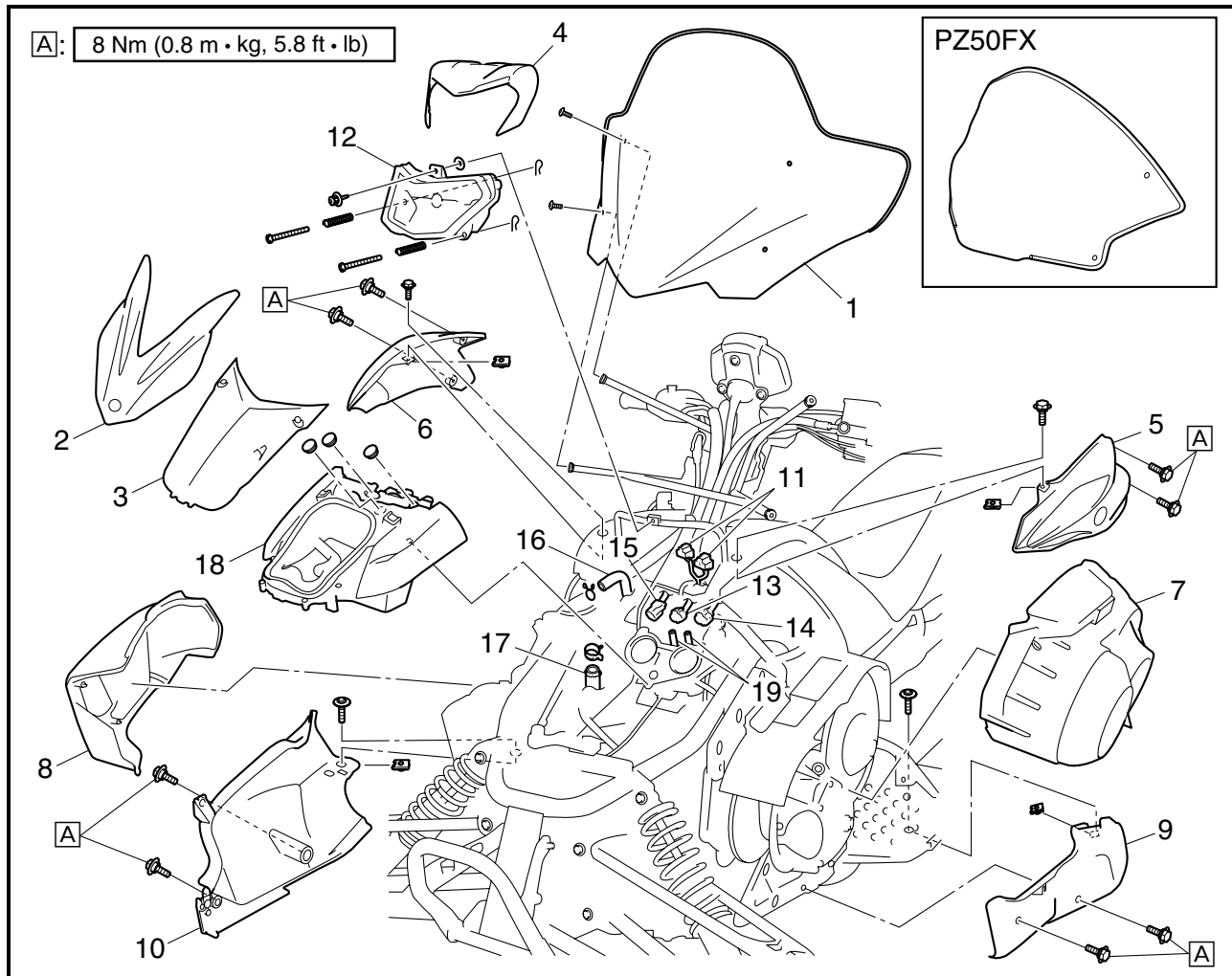
Make sure that the 2-up adjusting blocks are in the same position on both sides of the machine.



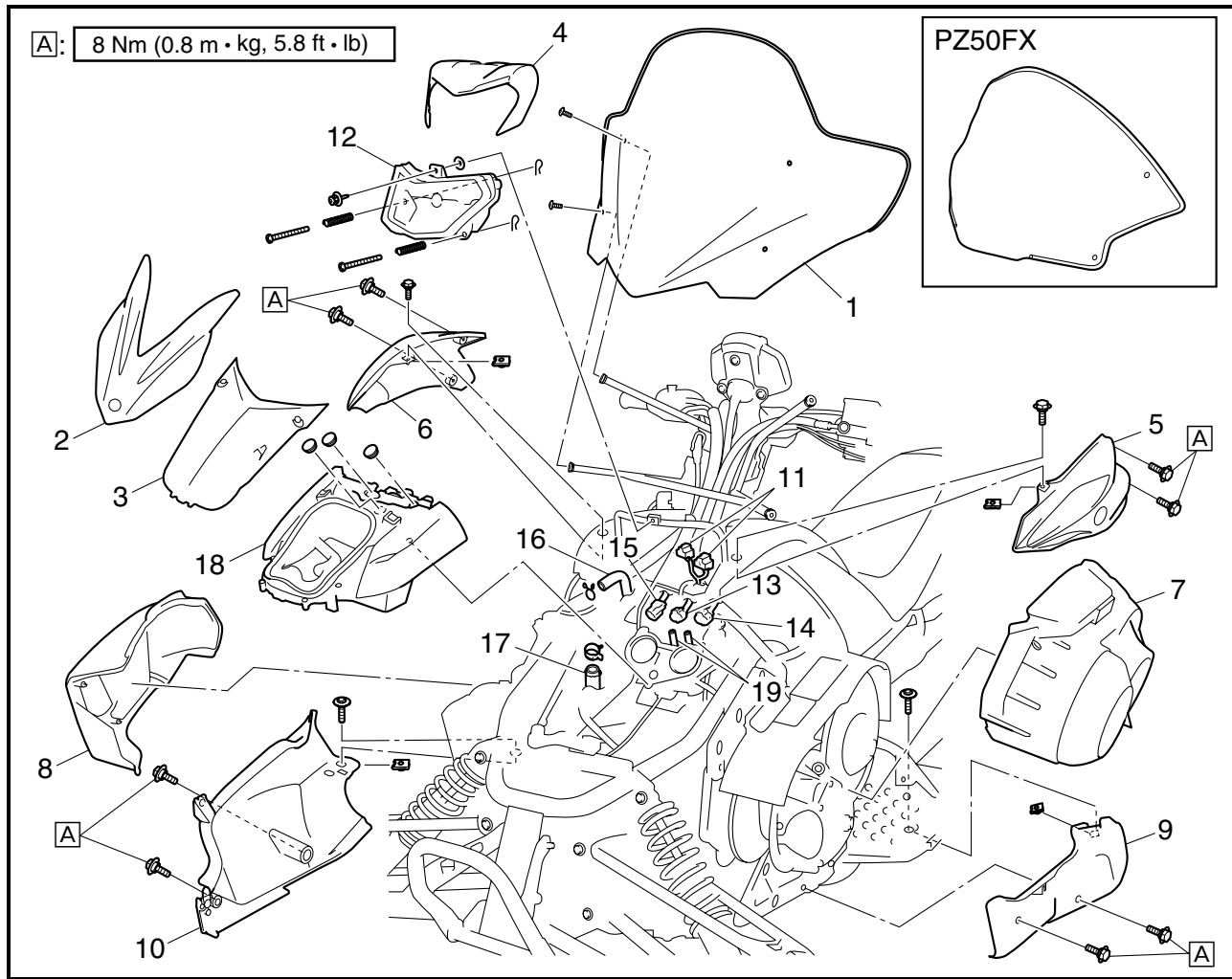
CHASSIS

COWLINGS

PZ50/PZ50GT/PZ50FX/PZ50M



Order	Job name/Part name	Q'ty	Remarks
	Cowling removal		
1	Windshield	1	Remove the parts in the order listed below. PZ50GT
2	Front panel	1	
3	Air filter case cover	1	
4	Headlight cover	1	
5	Left side panel	1	
6	Right side panel	1	
7	Left side cover	1	
8	Right side cover	1	
9	Left lower cover	1	
10	Right lower cover	1	
11	Headlight coupler	2	
12	Headlight assembly	1	
13	Cylinder-#2 intake air pressure sensor coupler	1	
			Disconnect.

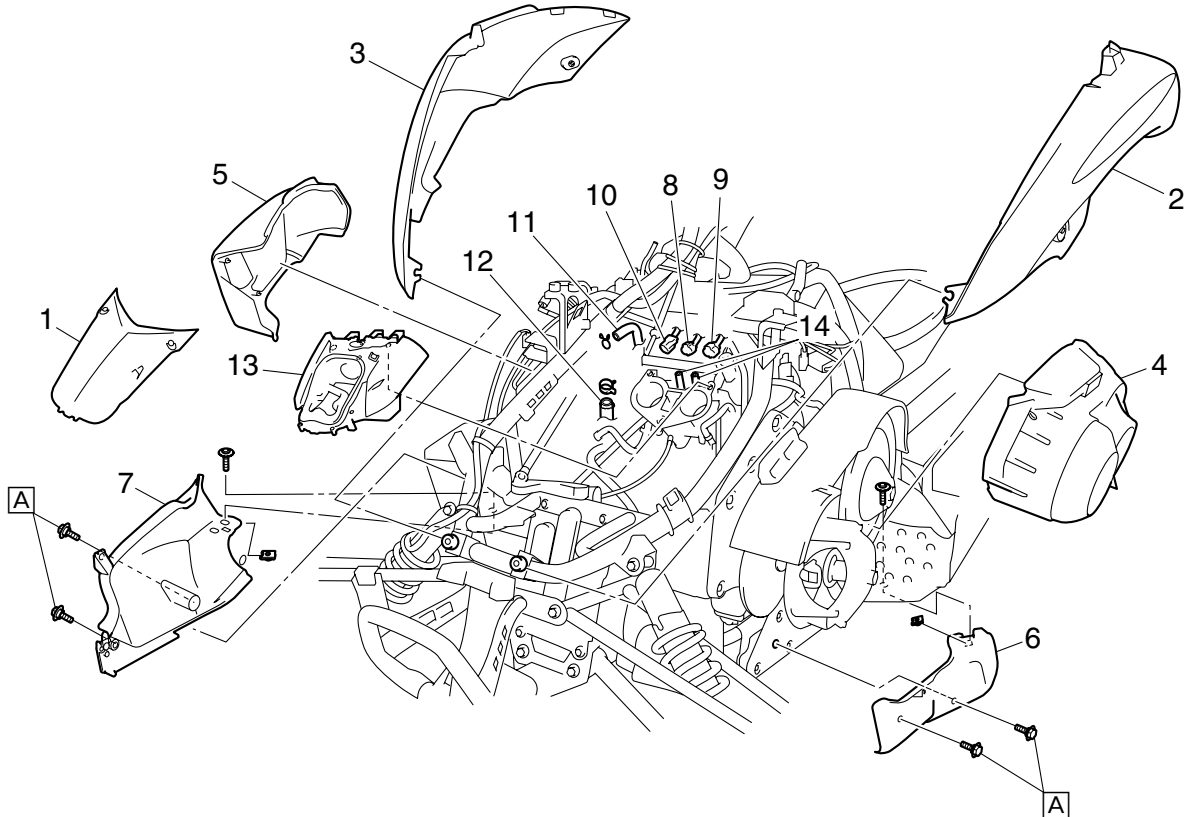

3

Order	Job name/Part name	Q'ty	Remarks
14	Cylinder-#1 intake air pressure sensor coupler	1	Disconnect.
15	Intake air temperature sensor coupler	1	Disconnect.
16	Cylinder head breather hose	1	Disconnect.
17	Oil tank breather hose	1	Disconnect.
18	Air filter case assembly	1	
19	Intake air pressure sensor hose	2	
			For installation, reverse the removal procedure.



PZ50VT/PZ50MP

A: 8 Nm (0.8 m • kg, 5.8 ft • lb)

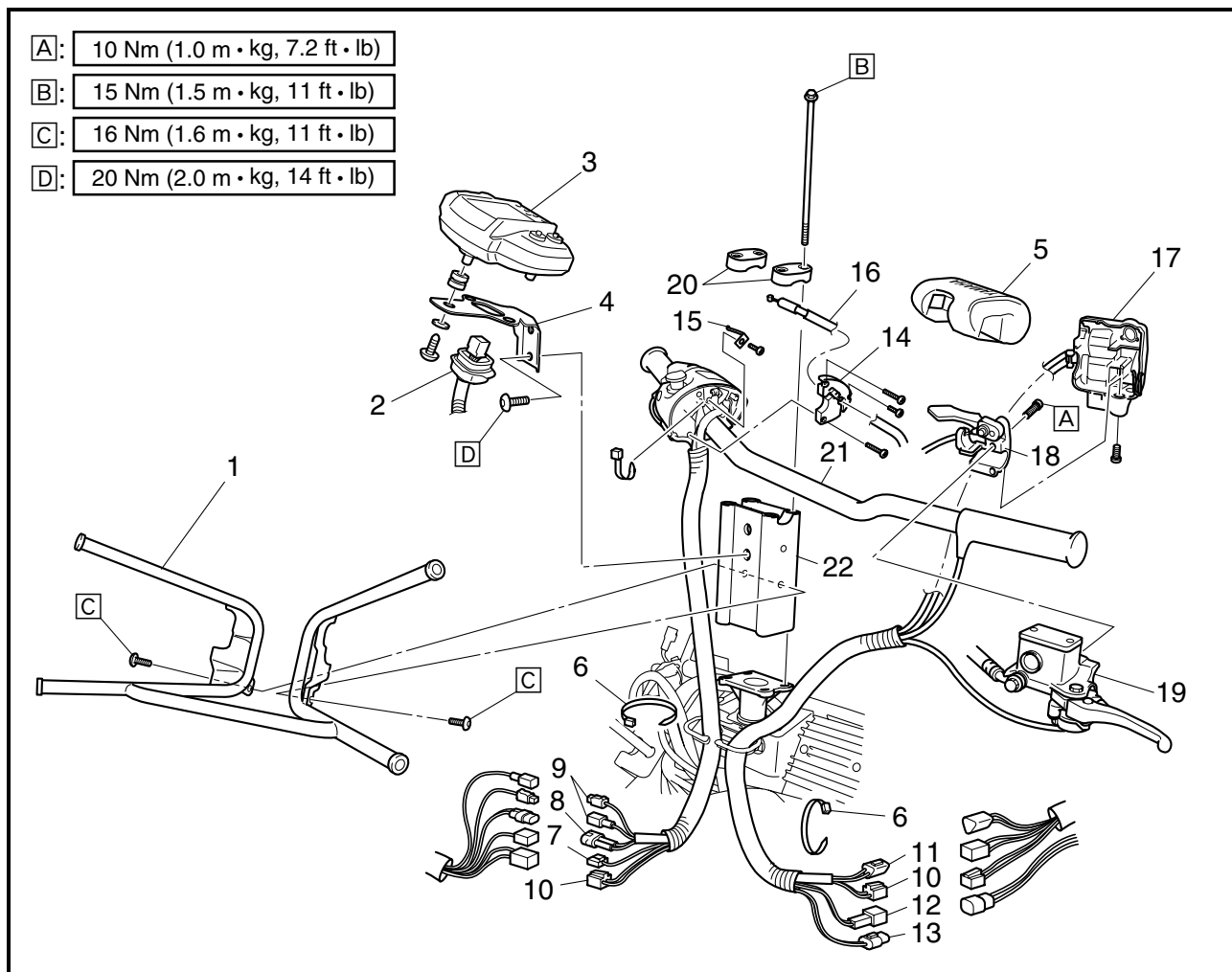


Order	Job name/Part name	Q'ty	Remarks
	Cowling removal		Remove the parts in the order listed below.
1	Air filter case cover	1	
2	Left side panel	1	
3	Right side panel	1	
4	Left side cover	1	
5	Right side cover	1	
6	Left lower cover	1	
7	Right lower cover	1	
8	Cylinder-#2 intake air pressure sensor coupler	1	Disconnect.
9	Cylinder-#1 intake air pressure sensor coupler	1	Disconnect.
10	Intake air temperature sensor coupler	1	Disconnect.
11	Cylinder head breather hose	1	Disconnect.
12	Oil tank breather hose	1	Disconnect.
13	Air filter case assembly	1	
14	Intake air pressure sensor hose	2	Disconnect.
			For installation, reverse the removal procedure.



STEERING

PZ50/PZ50GT/PZ50FX/PZ50M



Order	Job name/Part name	Q'ty	Remarks
	Handlebar removal		Remove the parts in the order listed below.
	Windshield/left side panel/right side panel		Refer to "COWLINGS".
1	Windshield bracket	1	PZ50GT/PZ50FX/PZ50M
2	Multi-function meter coupler	1	
3	Multi-function meter	1	
4	Multi-function meter bracket	1	
5	Steering pad	1	PZ50GT/PZ50FX/PZ50M
6	Plastic band	2	
7	Thumb warmer lead coupler	1	Disconnect.
8	Engine stop switch coupler	1	Disconnect.
9	Throttle switch coupler	2	Disconnect.
10	Grip warmer lead connector	2	Disconnect.
11	Grip thumb warmer adjustment switch lead coupler	1	Disconnect.
12	Brake light switch coupler	1	Disconnect.
13	Headlight beam switch coupler	1	Disconnect.

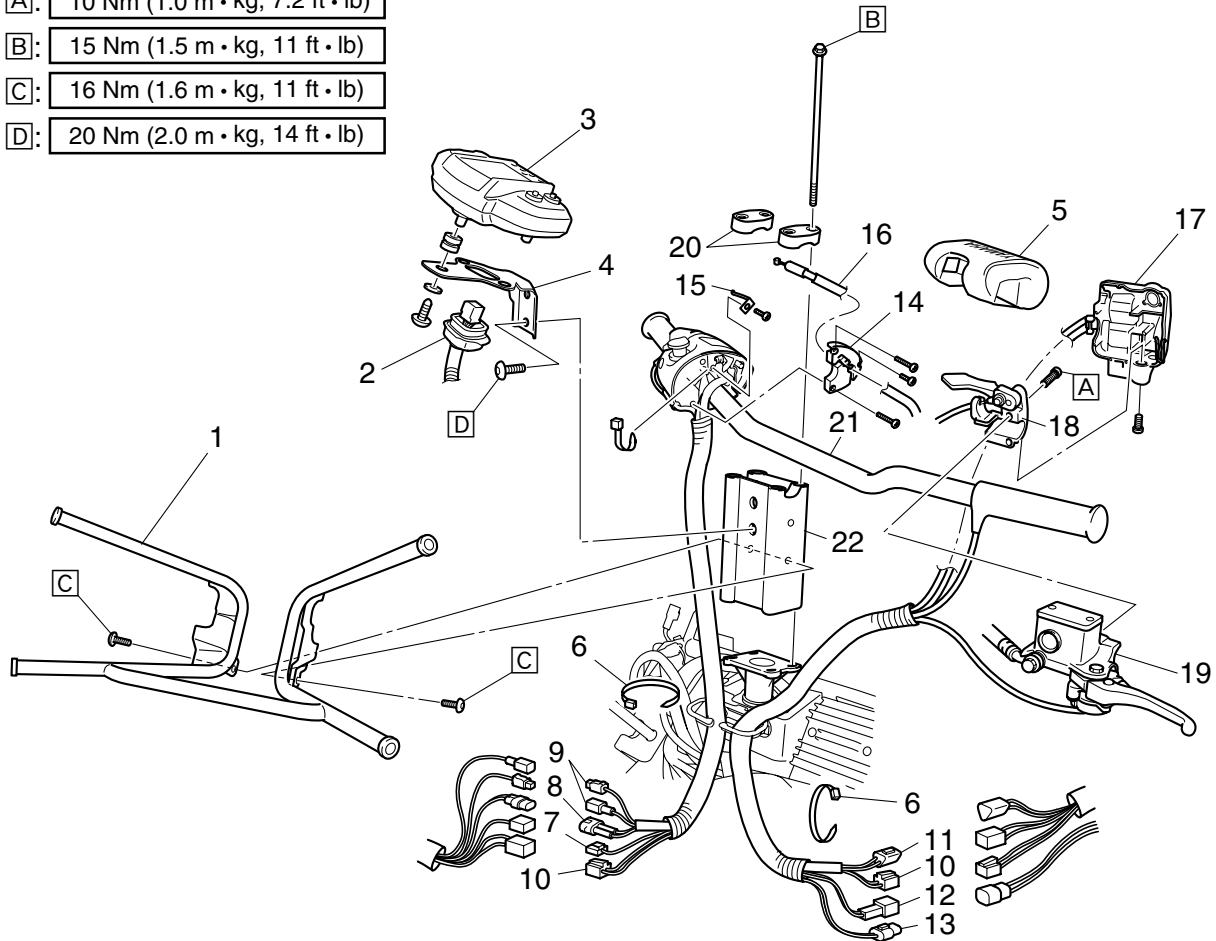


[A]: 10 Nm (1.0 m • kg, 7.2 ft • lb)

[B]: 15 Nm (1.5 m • kg, 11 ft • lb)

[C]: 16 Nm (1.6 m • kg, 11 ft • lb)

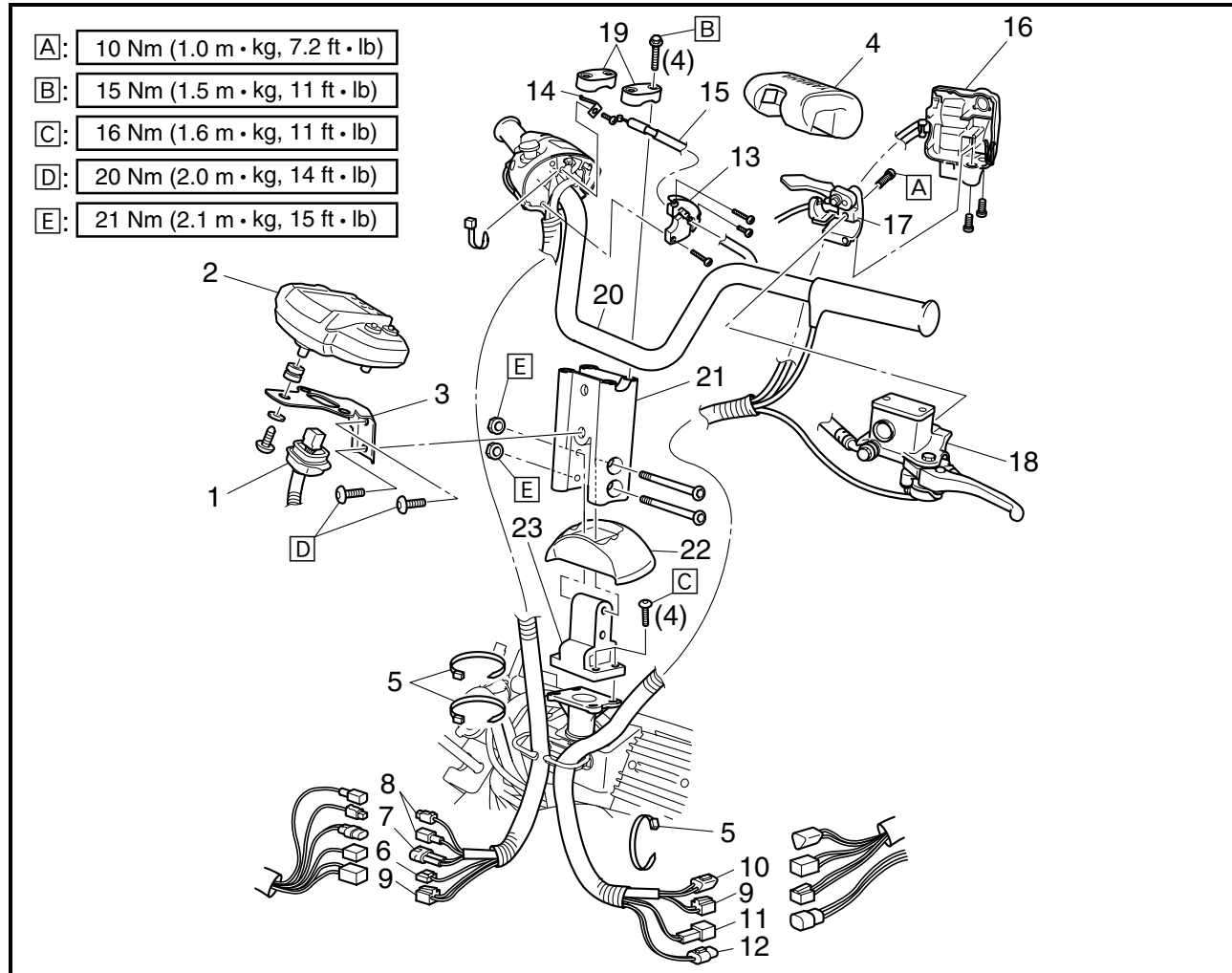
[D]: 20 Nm (2.0 m • kg, 14 ft • lb)



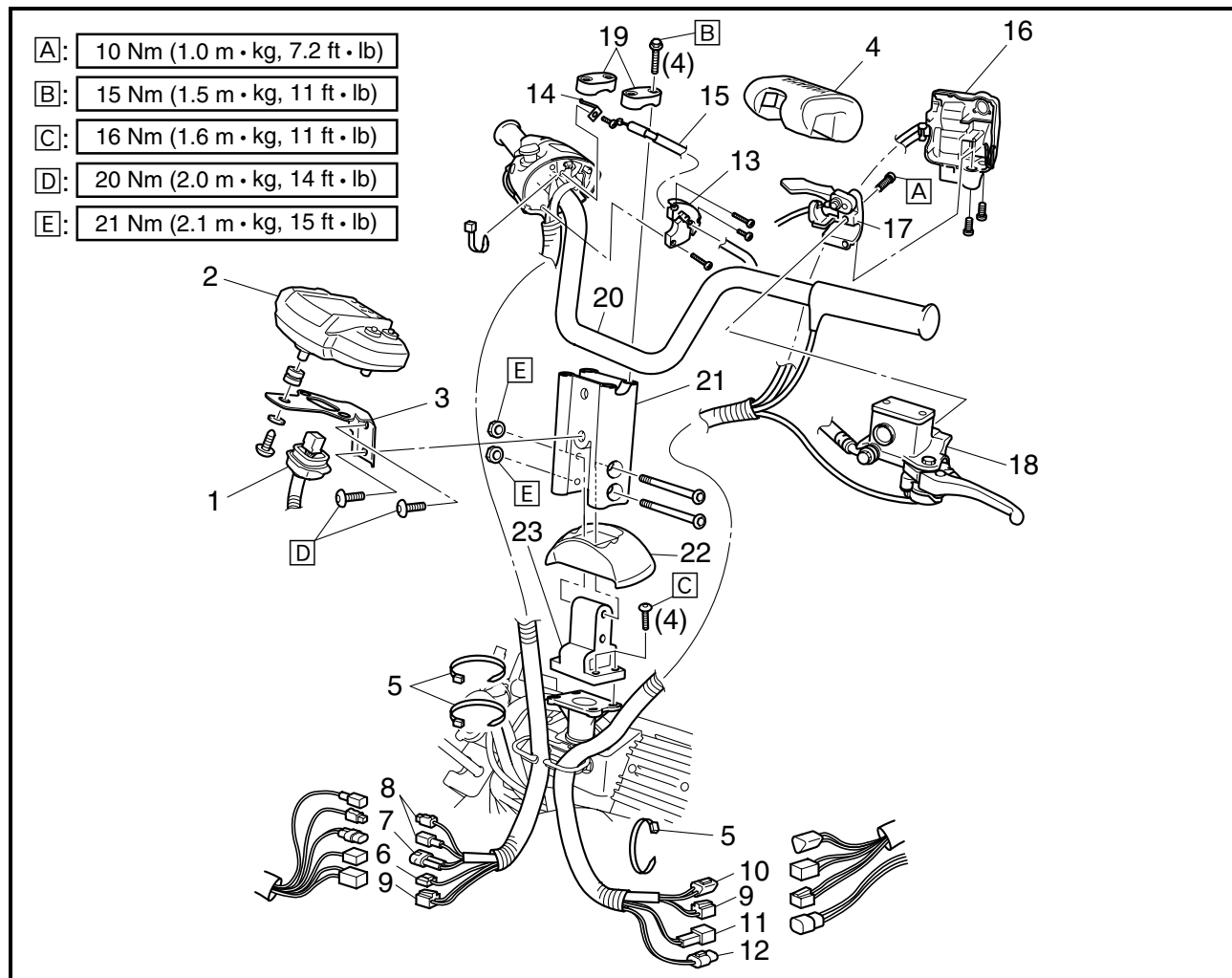
Order	Job name/Part name	Q'ty	Remarks
14	Right handlebar switch cover	1	NOTE: _____ After installing all parts, refer to "CABLE ROUTING" in CHAPTER 9, to check the cable and lead routings. _____ For installation, reverse the removal procedure.
15	Throttle cable holder	1	
16	Throttle cable	1	
17	Left handlebar switch	1	
18	Brake master cylinder holder	1	
19	Master cylinder assembly	1	
20	Handlebar holder	2	
21	Handlebar	1	
22	Steering joint	1	



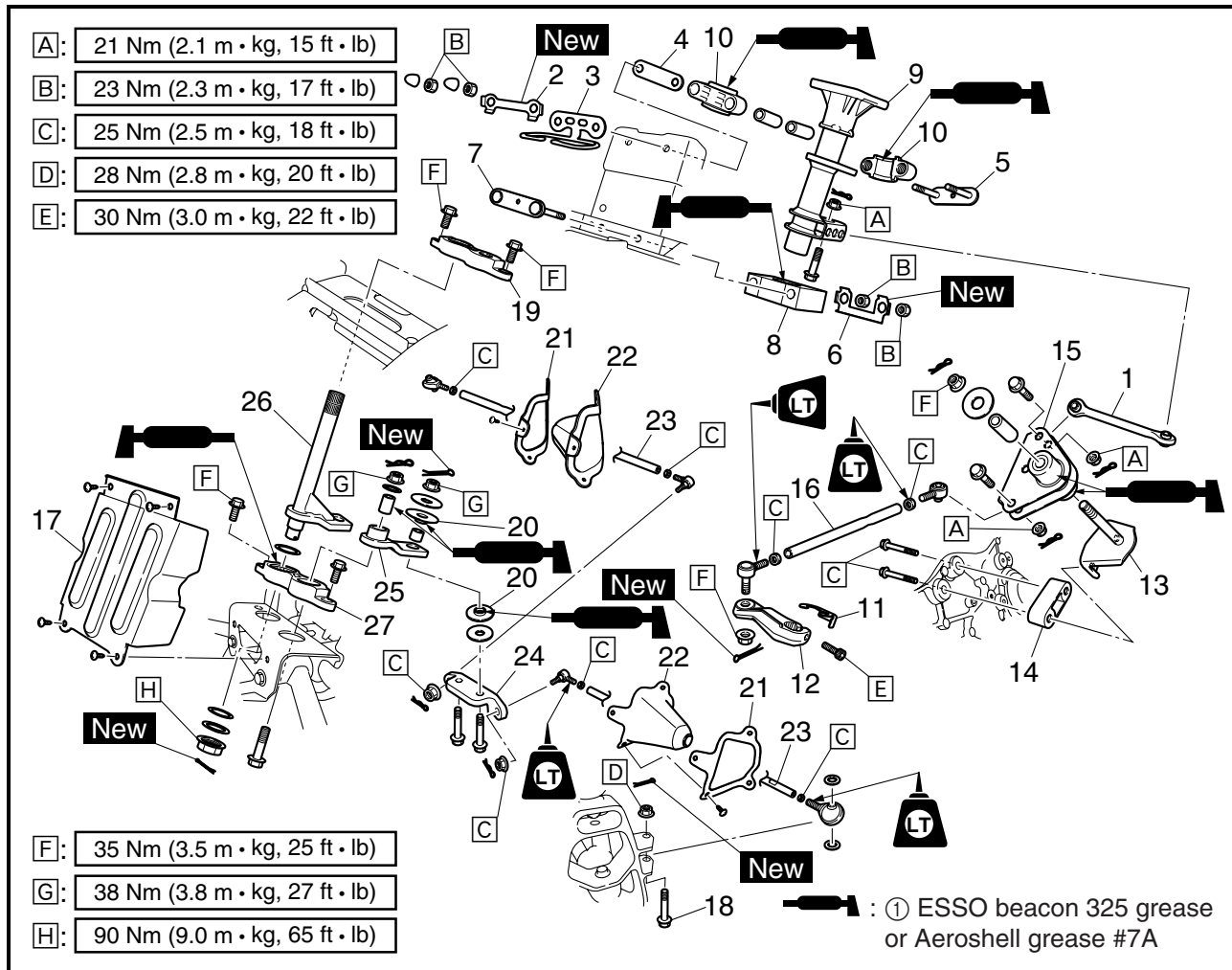
PZ50VT/PZ50MP



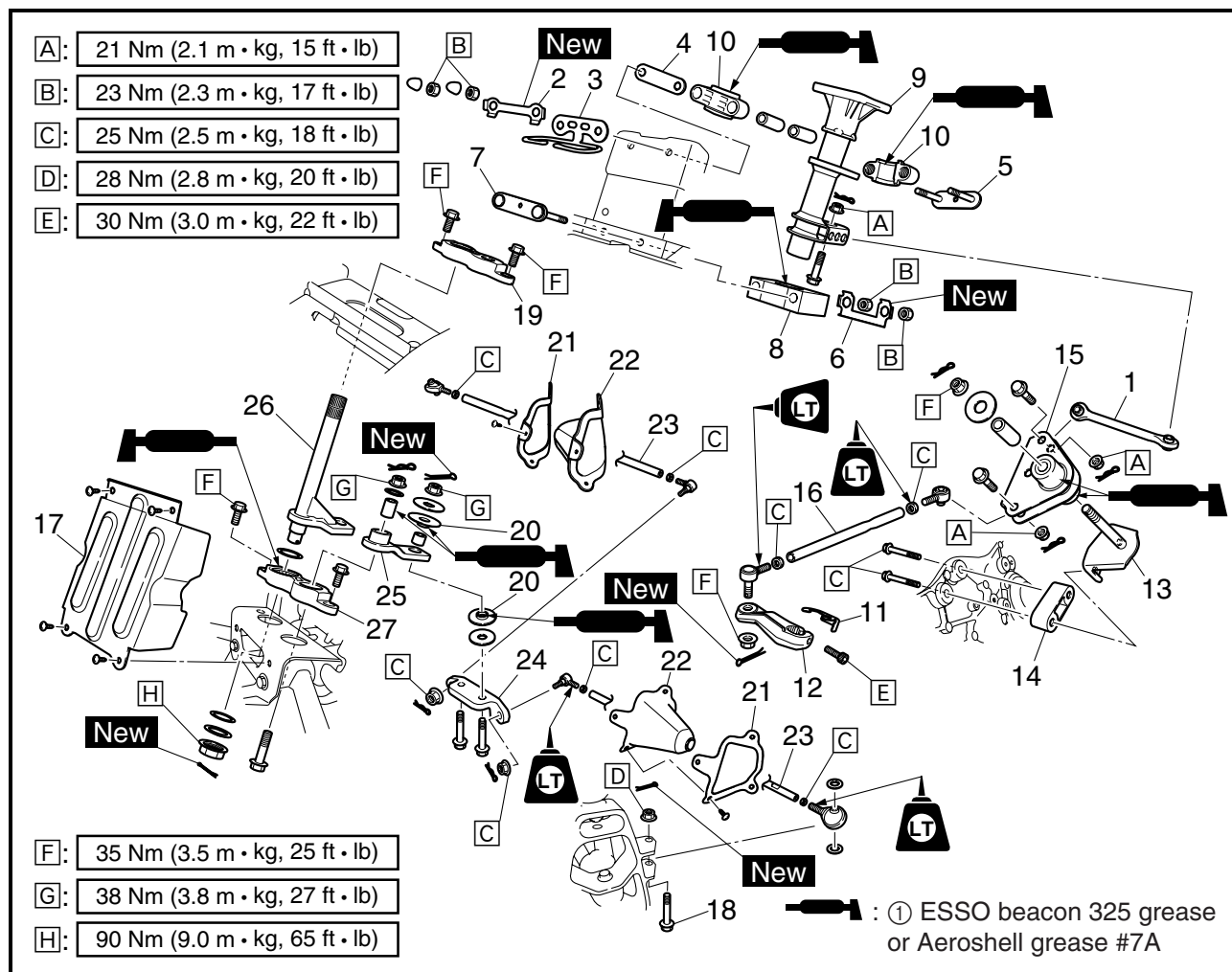
Order	Job name/Part name	Q'ty	Remarks
	Handlebar removal		Remove the parts in the order listed below. Refer to "COWLINGS".
1	Multi-function meter coupler	1	
2	Multi-function meter	1	
3	Multi-function meter bracket	1	
4	Steering pad	1	PZ50GT/PZ50FX/PZ50M
5	Plastic band	3	
6	Thumb warmer lead coupler	1	Disconnect.
7	Engine stop switch coupler	1	Disconnect.
8	Throttle switch coupler	2	Disconnect.
9	Grip warmer lead connector	2	Disconnect.
10	Grip thumb warmer adjustment switch lead coupler	1	Disconnect.
11	Brake light switch coupler	1	Disconnect.
12	Headlight beam switch coupler	1	Disconnect.
13	Right handlebar switch cover	1	



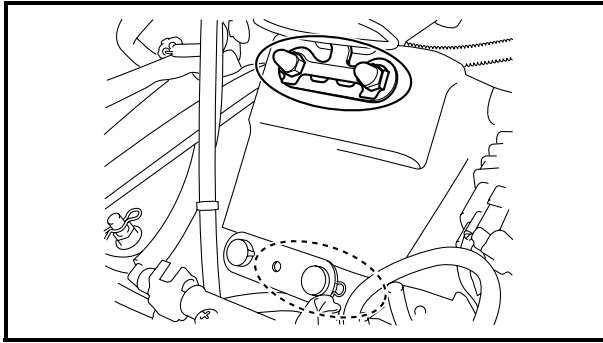
Order	Job name/Part name	Q'ty	Remarks
14	Throttle cable holder	1	NOTE: _____ After installing all parts, refer to "CABLE ROUTING" in CHAPTER 9, to check the cable and lead routings.
15	Throttle cable	1	
16	Left handlebar switch	1	
17	Brake master cylinder holder	1	
18	Master cylinder assembly	1	
19	Handlebar holder	2	
20	Handlebar	1	
21	Steering joint	1	For installation, reverse the removal procedure.
22	Steering joint bracket cover	1	
23	Steering joint bracket	1	



Order	Job name/Part name	Q'ty	Remarks
	Steering column and tie rod removal		Remove the parts in the order listed below. Refer to "COWLINGS".
	Air filter case		Refer to "SEAT AND FUEL TANK" in CHAPTER 5. (PZ50/PZ50GT/PZ50FX/PZ50M)
	Fuel tank		Refer to "RIDER SEAT AND FUEL TANK" in CHAPTER 5. (PZ50VT/PZ50MP)
1	Relay rod	1	
2	Lock washer	1	
3	Cable holder	1	
4	Plate	1	
5	Bearing holder	1	
6	Lock washer	1	
7	Bearing holder	1	
8	Bearing	1	
9	Steering column	1	
10	Bearing	1	
11	Circlip	1	
12	Steering arm	1	
13	Steering control arm bracket	1	
14	Spacer	1	PZ50VT/PZ50MT



Order	Job name/Part name	Q'ty	Remarks
15	Steering control arm	1	For installation, reverse the removal procedure.
16	Steering shaft	1	
17	Pivot arm cover	1	
18	Tie rod end bolt	2	
19	Pivot arm bracket 1	1	
20	Bushing	4	
21	Dust boots holder	2	
22	Dust boots	2	
23	Tie rod	2	
24	Idler arm	1	
25	Relay arm	1	
26	Pivot arm shaft	1	
27	Pivot arm bracket 2	1	



REMOVAL

1. Straighten the lock washer tabs.

INSPECTION

1. Inspect:
 - Handlebar
 - Steering column
Bends/cracks/damage → Replace.

WARNING

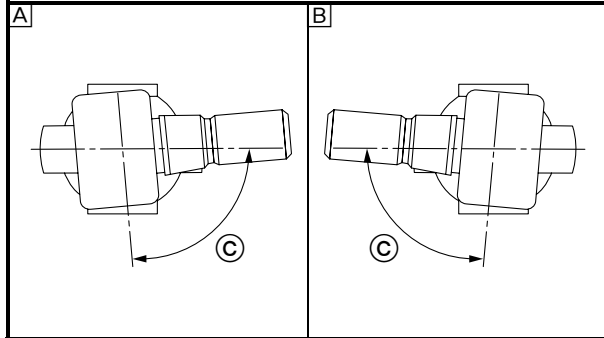
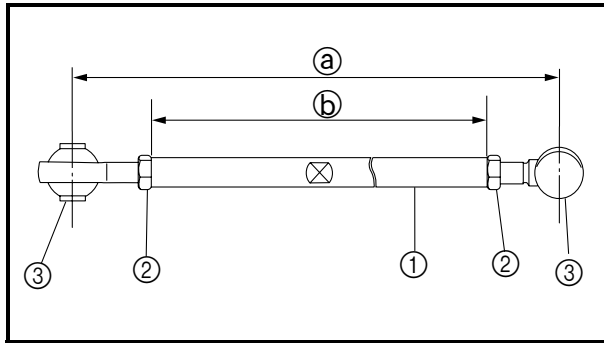
Do not attempt to straighten a bent column. This may dangerously weaken the column.

2. Inspect:
 - Bearings (steering column)
 - Collars
 - Bearings (pivot arm brackets)
Wear/damage → Replace.
 - Steering column
(bearing contact surfaces)
Scratches/wear/damage → Replace.
3. Inspect:
 - Relay rod
 - Tie rods
 - Steering shaft
Bends/cracks/damage → Replace.

WARNING

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

4. Check:
 - Rod end movement
Rod end free play exists → Replace the rod end.
Rod end turns roughly → Replace the rod end.
5. Inspect:
 - Right relay arm
 - Left relay arm
 - Idler arm
Cracks/damage → Replace.
 - Bearings
Wear/damage → Replace.



INSTALLATION

1. Install:

- Tie rod (1)
- Locknuts (2)
- Joints (3)

[A] Tie rod part number	[B] Set length (a)	[C] Tie rod length (b)
8GC-23830-00 (PZ50/PZ50GT/ PZ50FX/ PZ50VT/ PZ50MP)	504.7 mm (19.87 in)	433.2 mm (17.06 in)
8GP-23830-00 (PZ50M)	464.9 mm (18.30 in)	393.4 mm (15.49 in)

2. Check:

- Tie rod angle (C)



Tie rod angle:
85°

CAUTION:

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

- [A] Left side
- [B] Right side

3. Install:

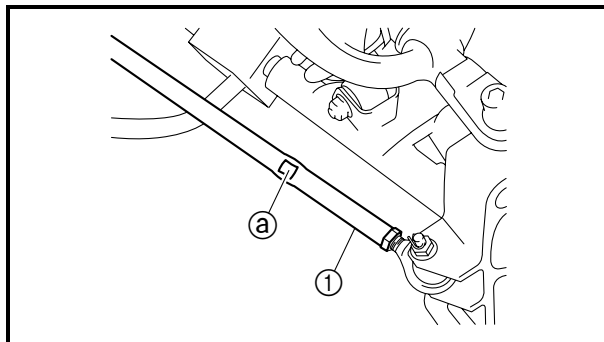
- Tie rods (1)

NOTE:

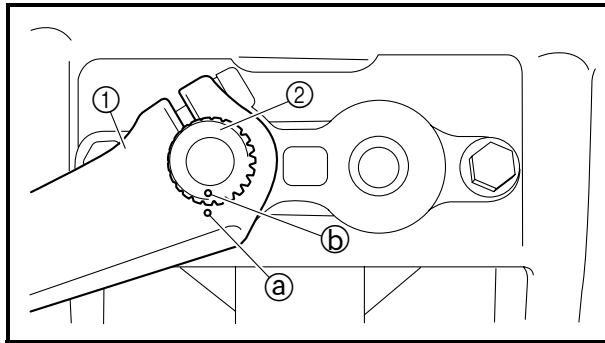
Make sure that the indentation (a) on the tie rod faces out.

CAUTION:

Always use new cotter pins.



Tie rod end locknut:
25 Nm (2.5 m · kg, 18 ft · lb)
LOCTITE®
Tie rod-idler arm nut:
25 Nm (2.5 m · kg, 18 ft · lb)
Tie rod-steering knuckle nut:
28 Nm (2.8 m · kg, 20 ft · lb)

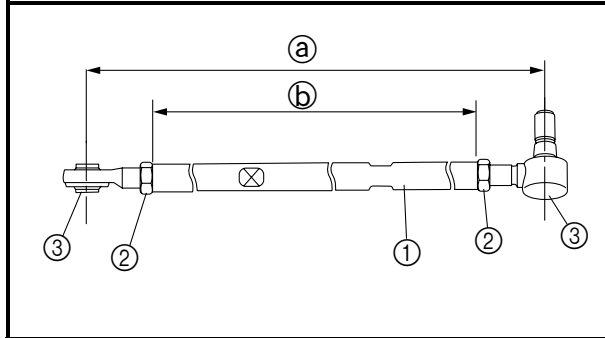


4. Install:

- Steering arm ①

NOTE:

Align the punch mark (a) on the steering arm ① with the punch mark (b) on the pivot arm shaft ②.



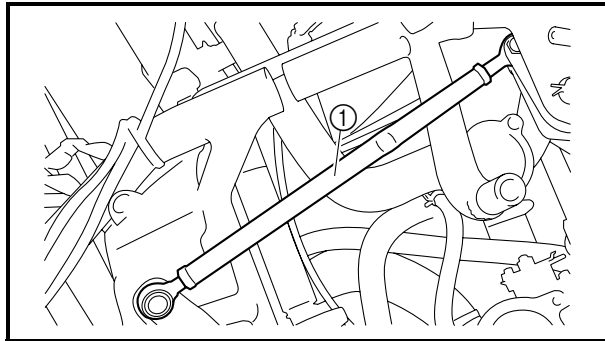
5. Install:

- Steering shaft ①
- Locknuts ②
- Joints ③

A Steering shaft part number	B Set length (a)	C Shaft length (b)
8GC-23820-00	311.3 mm (12.26 in)	244.3 mm (9.62 in)

CAUTION:

Always use new cotter pin.



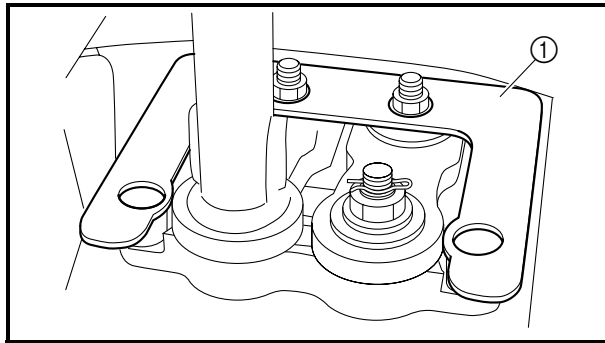
Steering shaft and steering control arm nut:

21 Nm (2.1 m · kg, 15 ft · lb)

Steering shaft and steering arm nut:

35 Nm (3.5 m · kg, 25 ft · lb)

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



7. Adjust:

- Skis

Adjustment steps:

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



Steering linkage alignment plate:
90890-01515, YS-01515

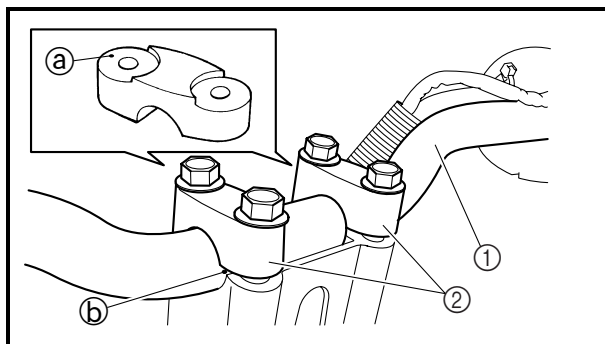
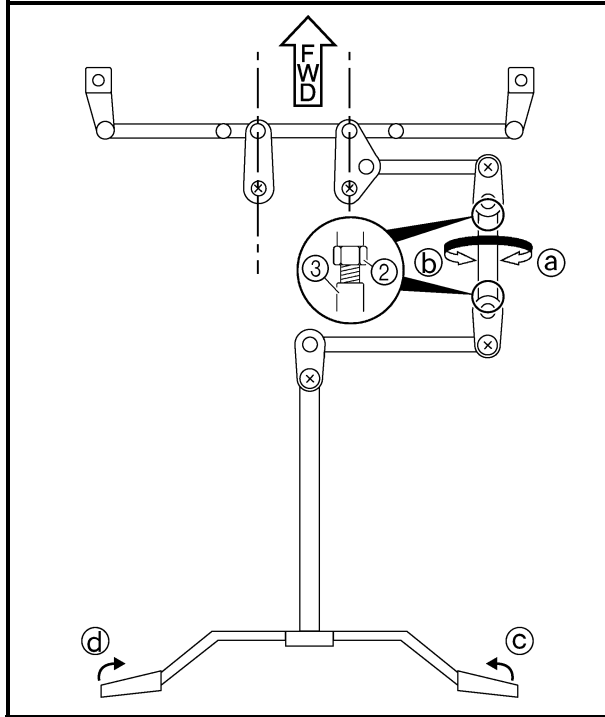
- Loosen the locknuts (steering shaft) ②.
- Hold the handlebar straight.
- Adjust the steering shaft ③ by turning so that the pivot arm shaft and relay arm point right under.
- Adjust each angle of right and left skis by turning the tie rod respectively.

Turning the steering shaft in direction ③	Turning the handlebar in direction ③
Turning the steering shaft in direction ④	Turning the handlebar in direction ④

- Tighten the locknuts (steering shaft) ②.



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



8. Install:

- Handlebar ①
- Handlebar holders ②

CAUTION:

First, tighten the bolts on the front side of the handlebar holder, and then on the rear side.

NOTE:

- The handlebar holders should be installed with the punch marks ④ facing forward.
- Align the match mark ③ on the handlebar with the upper surface of the steering joint.



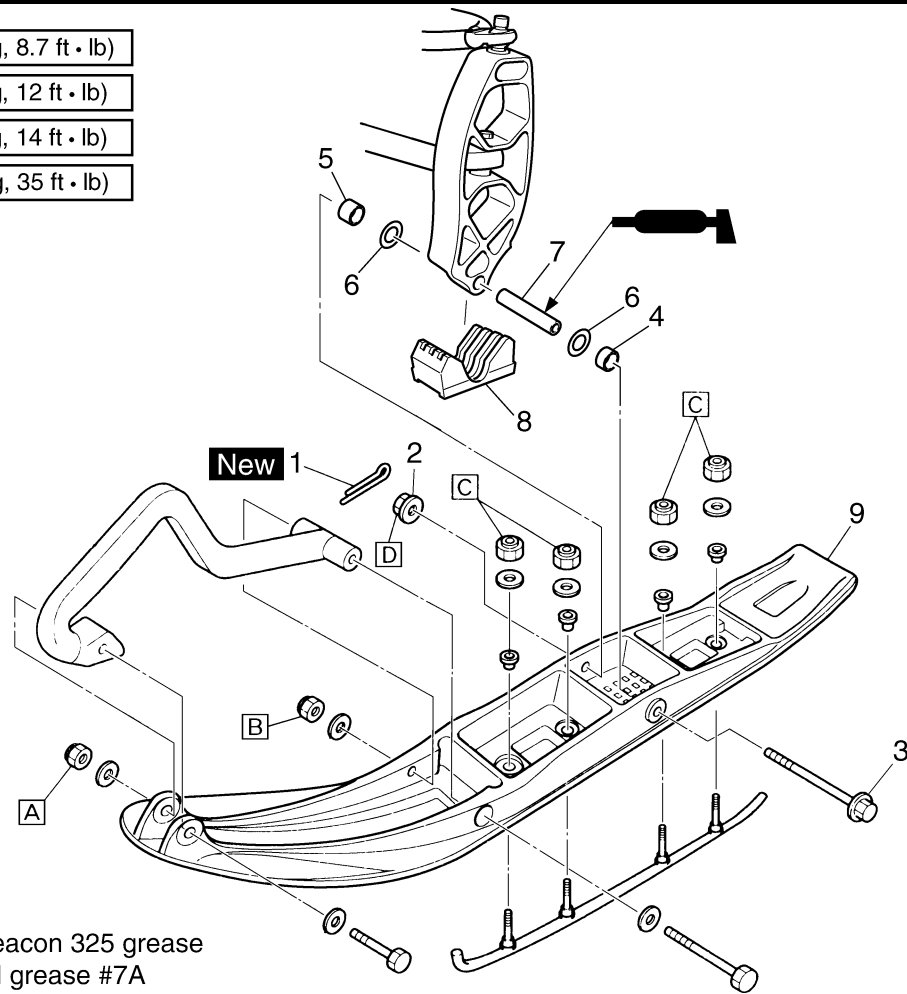
Handlebar holder bolt:
15 Nm (1.5 m · kg, 11 ft · lb)



SKI

PZ50/PZ50GT/PZ50FX/PZ50VT "USA/Canada"

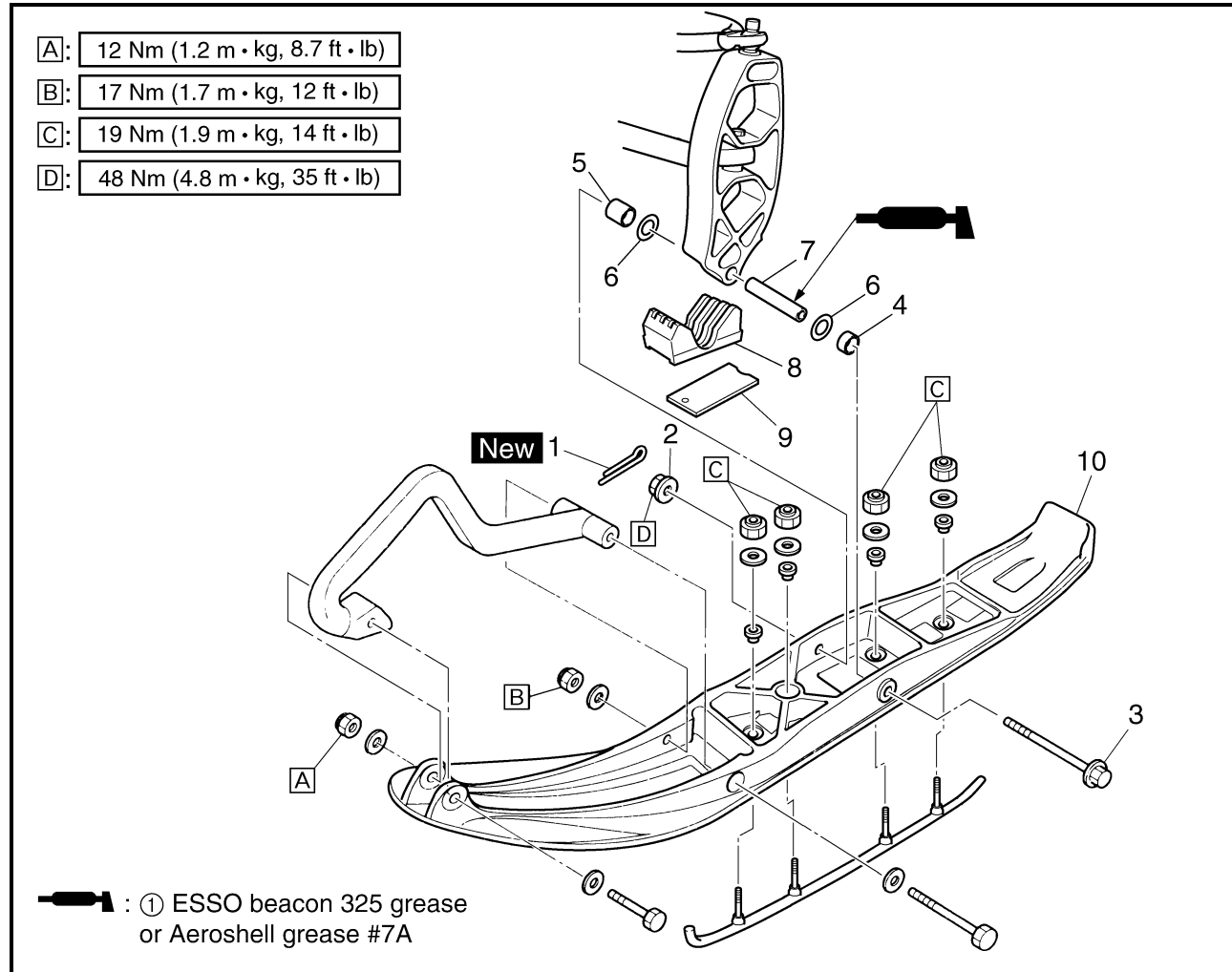
- [A]: 12 Nm (1.2 m • kg, 8.7 ft • lb)
 [B]: 17 Nm (1.7 m • kg, 12 ft • lb)
 [C]: 19 Nm (1.9 m • kg, 14 ft • lb)
 [D]: 48 Nm (4.8 m • kg, 35 ft • lb)



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



PZ50VT "Europe"/PZ50MP

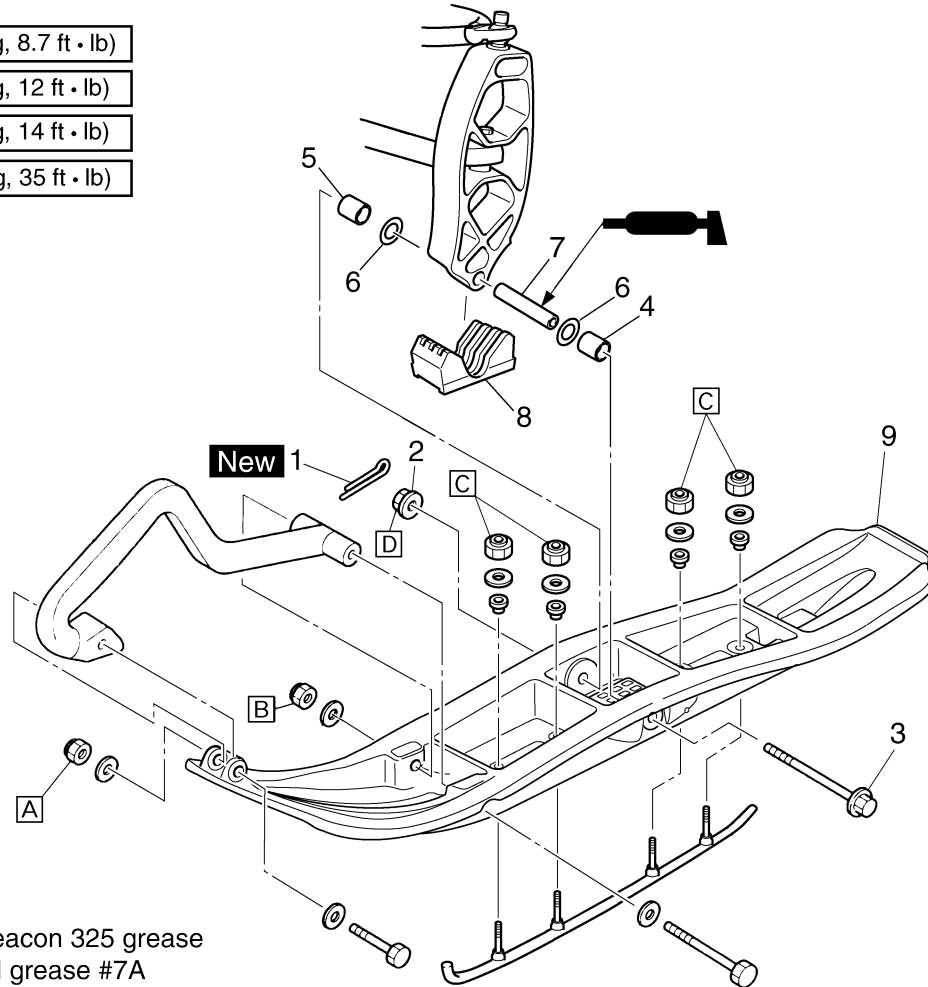


Order	Job name/Part name	Q'ty	Remarks
	Ski removal		Remove the parts in the order listed below.
1	Cotter pin	1	
2	Nut	1	
3	Bolt	1	
4	Collar	1	
5	Collar	1	
6	Washer	2	
7	Collar	1	
8	Ski stopper	1	
9	Ski stopper plate	1	
10	Ski	1	
			For installation, reverse the removal procedure.



PZ50M

- [A]: 12 Nm (1.2 m • kg, 8.7 ft • lb)
 [B]: 17 Nm (1.7 m • kg, 12 ft • lb)
 [C]: 19 Nm (1.9 m • kg, 14 ft • lb)
 [D]: 48 Nm (4.8 m • kg, 35 ft • lb)



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

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



INSPECTION

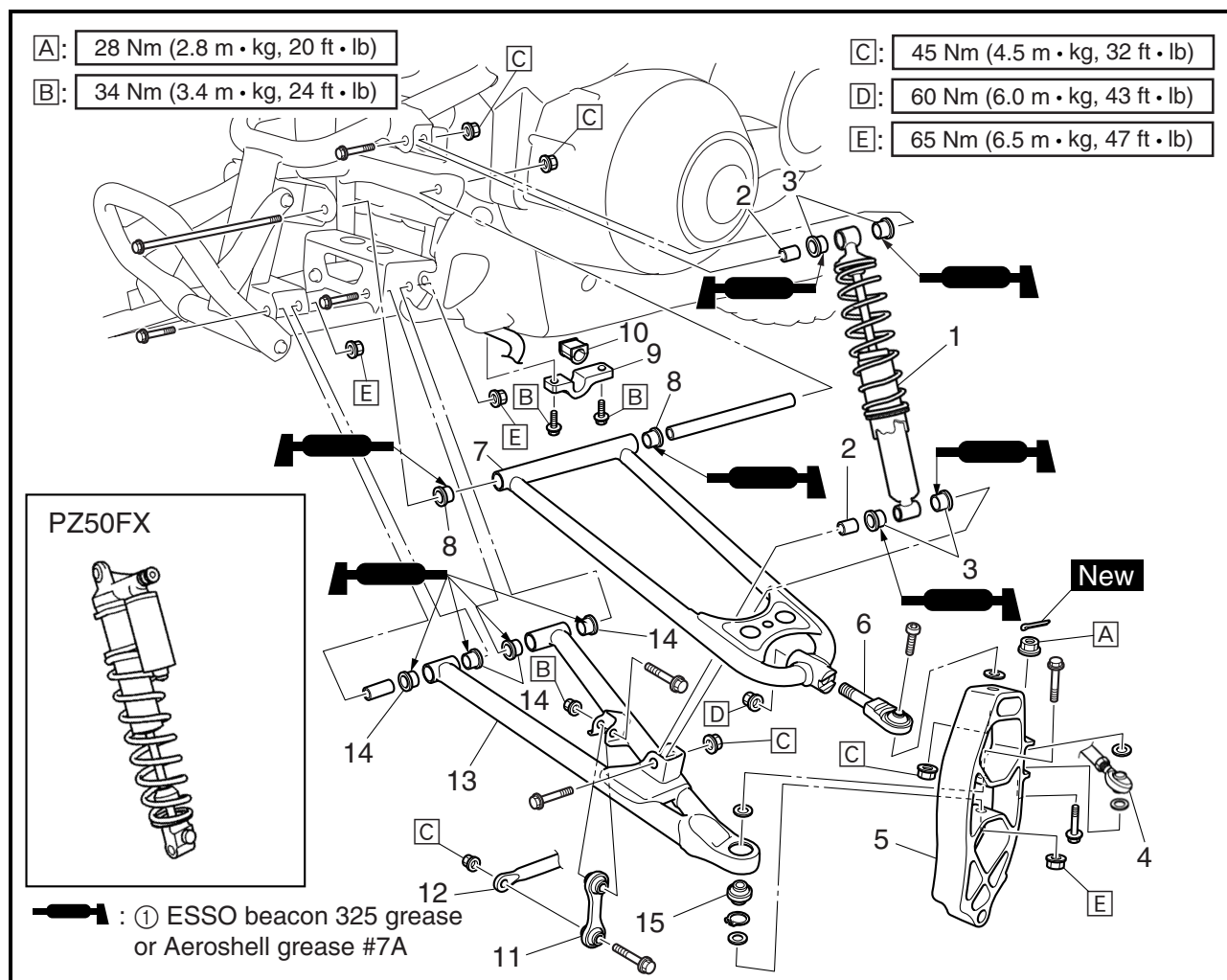
1. Inspect:

- Ski
- Ski runner
- Ski stopper
- Ski stopper plate (PZ50VT “Europe”/
PZ50MP)
- Ski handle
Wear/cracks/damage → Replace.
- Mounting bolt
- Collar
- Collars
Wear/damage → Replace.

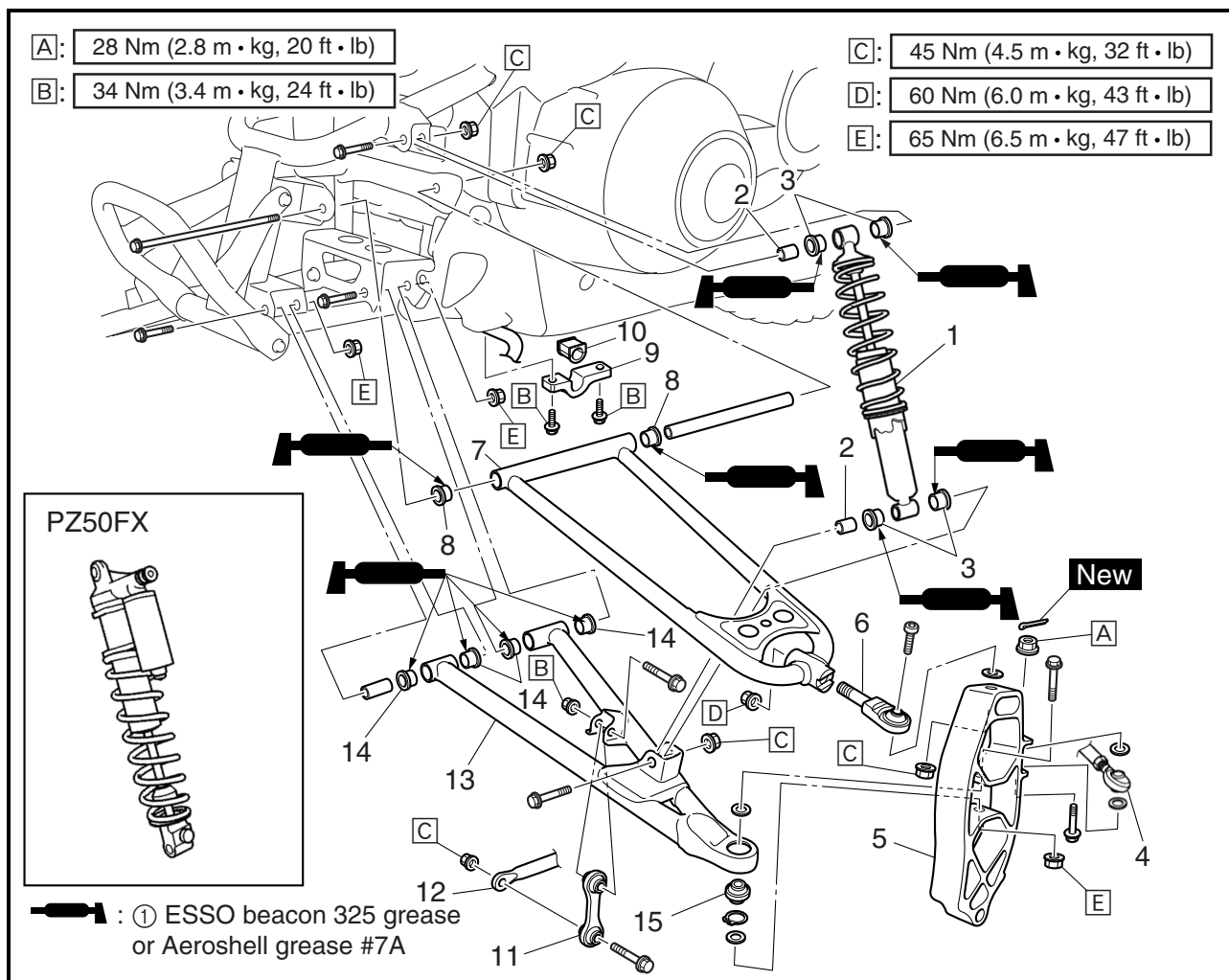


FRONT SUSPENSION

PZ50/PZ50FX/PZ50M



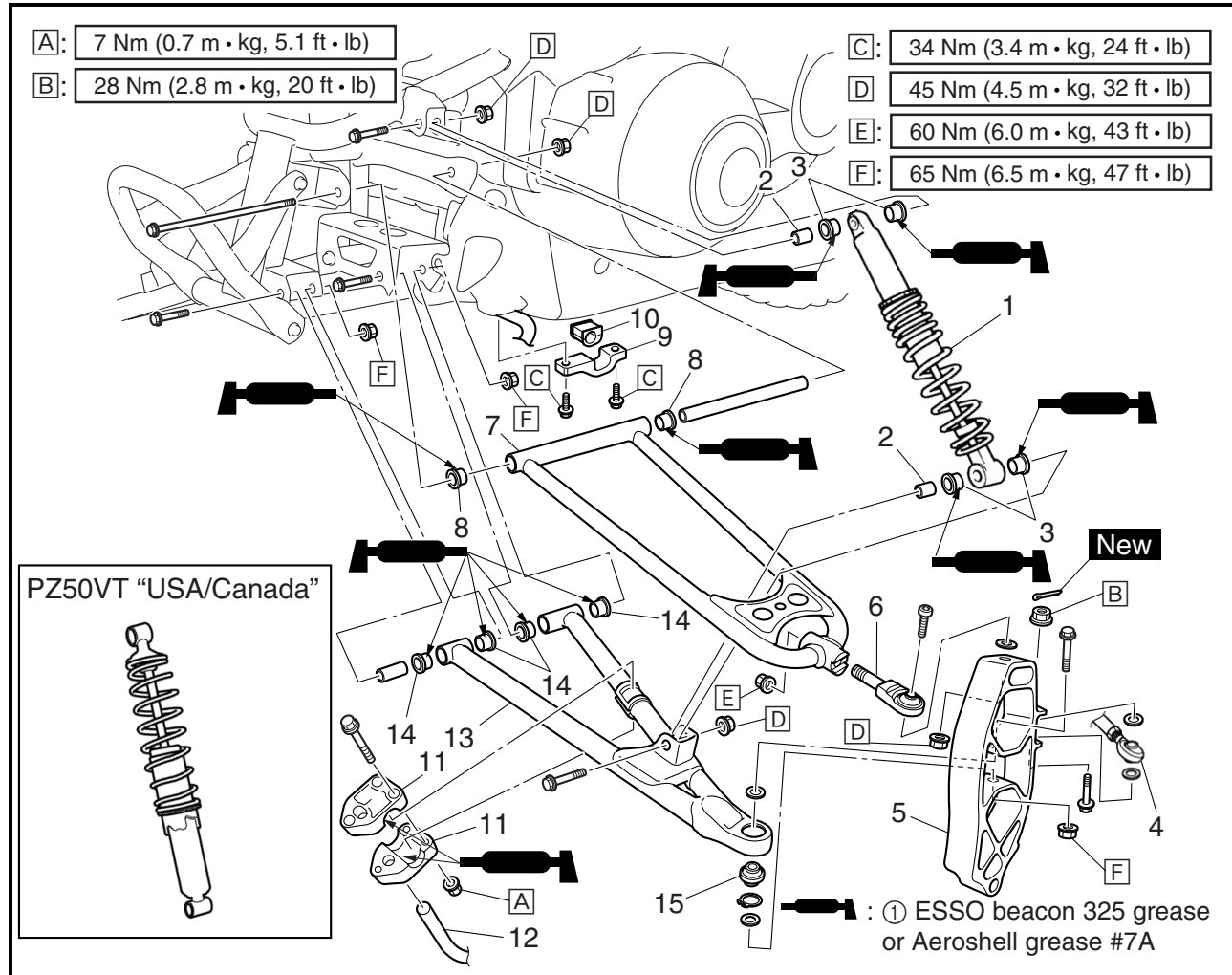
Order	Job name/Part name	Q'ty	Remarks
	Front suspension removal		
	Air filter case cover		Remove the parts in the order listed below.
	Pivot arm cover		Refer to "COWLINGS".
	Ski		Refer to "STEERING".
			Refer to "SKI".
1	Shock absorber	1	
2	Collar	2	PZ50/PZ50M
3	Bushing	4	PZ50/PZ50M
4	Tie rod	1	Disconnect.
5	Steering knuckle	1	
6	Upper arm ball joint	1	
7	Upper arm	1	
8	Bushing	2	
9	Stabilizer holder	1	
10	Bushing	1	



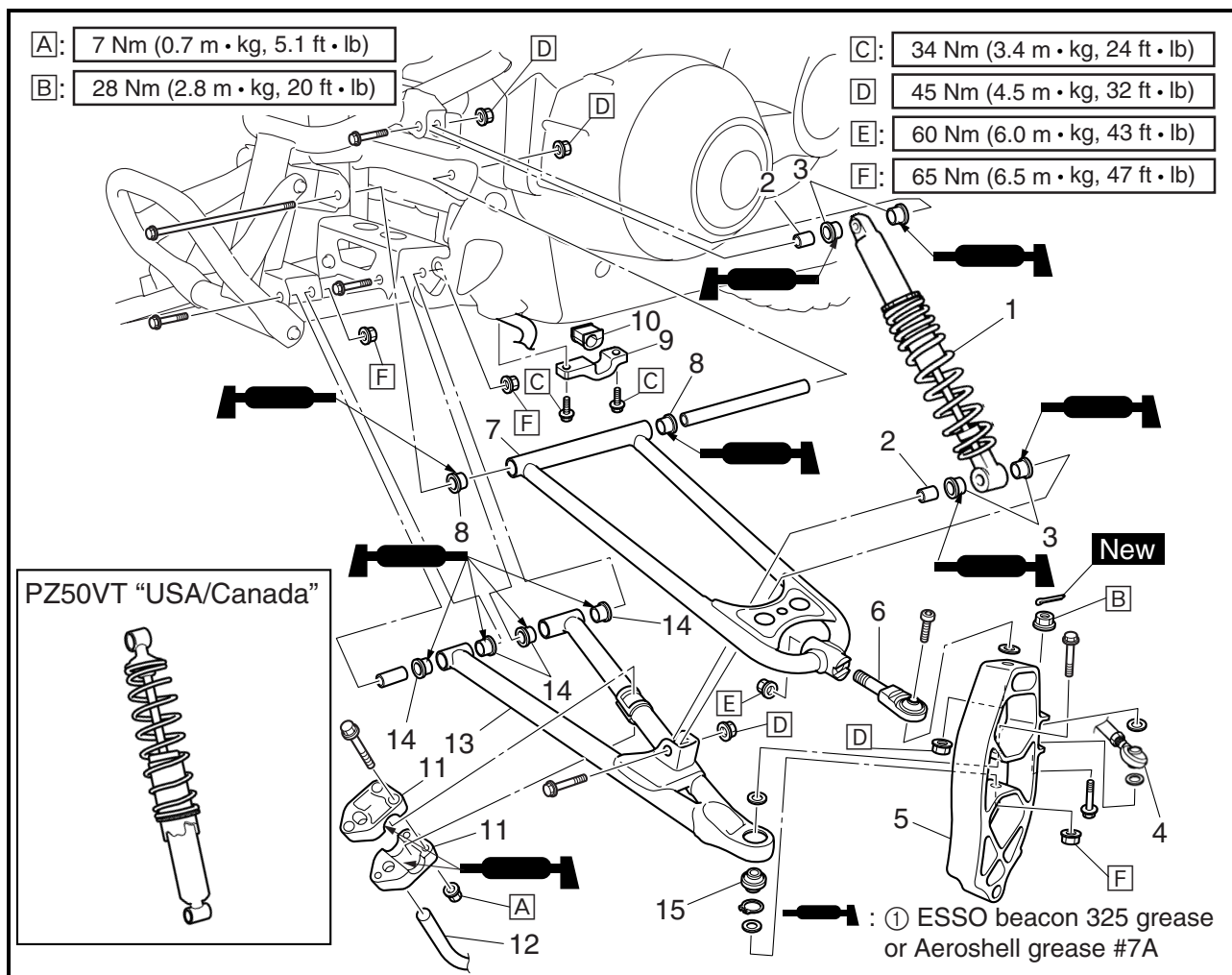
Order	Job name/Part name	Q'ty	Remarks
11	Stabilizer joint	1	For installation, reverse the removal procedure.
12	Stabilizer	1	
13	Lower arm	1	
14	Bushing	4	
15	Lower arm ball joint	1	



PZ50GT/PZ50VT/PZ50MP



Order	Job name/Part name	Q'ty	Remarks
	Front suspension removal		
	Air filter case cover		Remove the parts in the order listed below.
	Pivot arm cover		Refer to "COWLINGS".
	Ski		Refer to "STEERING".
1	Shock absorber	1	Refer to "SKI".
2	Collar	2	
3	Bushing	4	
4	Tie rod	1	Disconnect.
5	Steering knuckle	1	
6	Upper arm ball joint	1	
7	Upper arm	1	
8	Bushing	2	
9	Stabilizer holder	1	
10	Bushing	1	



Order	Job name/Part name	Q'ty	Remarks
11	Stabilizer bracket	2	For installation, reverse the removal procedure.
12	Stabilizer	1	
13	Lower arm	1	
14	Bushing	4	
15	Lower arm ball joint	1	



HANDLING NOTES** WARNING****PZ50GT/PZ50FX/PZ50VT “Europe”/PZ50MP**

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
Oil (gas) leaks/bends/damage → Replace.
- Bushings
Wear/scratches/damage → Replace.

2. Inspect:

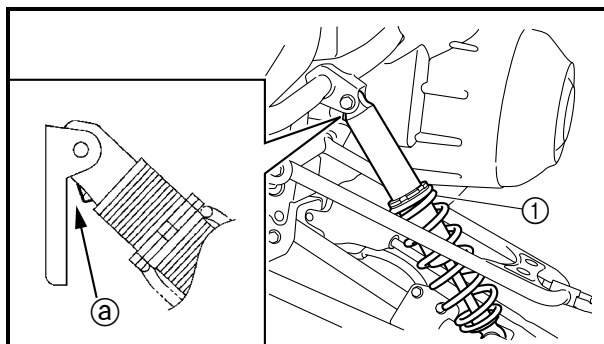
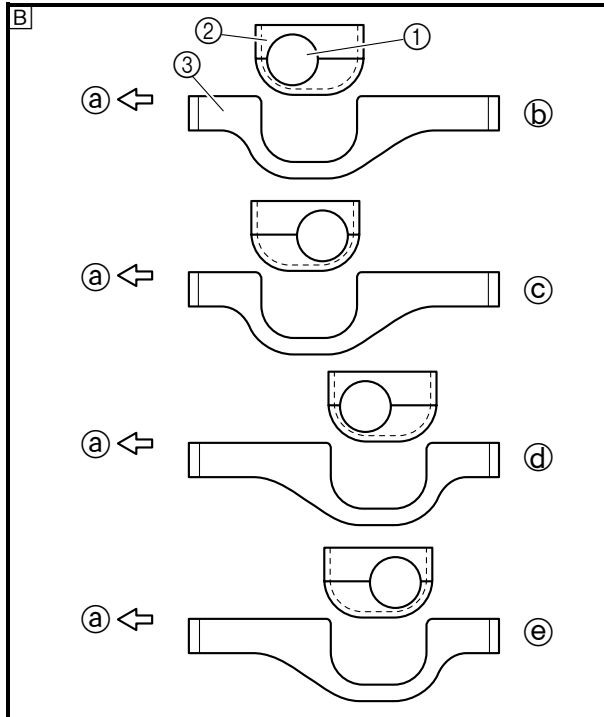
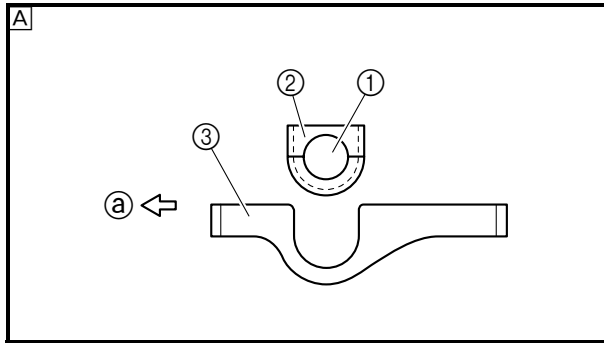
- Steering knuckle
Cracks/bends/damage → Replace.

3. Inspect:

- Upper arms
- Lower arms
Cracks/bends/damage → Replace.
- Bushings
Wear/scratches/damage → Replace.
- Upper ball joints
- Lower ball joints
Damage/pitting → Replace.

4. Inspect:

- Stabilizer
Cracks/bends/damage → Replace.
- Bushings
Wear/scratches/damage → Replace.



INSTALLATION

1. Install:

- Stabilizer ①
- Bushing ②
- Stabilizer holder ③

CAUTION:

Always install the stabilizers, bushings, and stabilizer holders in the same positions on both sides of the snowmobile, otherwise poor handling and loss of stability may result. (PZ50GT/PZ50VT/PZ50MP)

NOTE:

- Install the stabilizer holder in the direction shown in the illustration. (PZ50/PZ50FX/PZ50M)
- The stabilizer force can be adjusted by changing the installation positions of the stabilizer, bushing, and stabilizer holder. (PZ50GT/PZ50VT/PZ50MP)

A PZ50/PZ50FX/PZ50M

B PZ50GT/PZ50VT/PZ50MP

a Forward

b Very hard

c Hard

d Medium

e Soft

Stabilizer, bushing, and stabilizer holder standard installation positions:

d (PZ50GT)

b (PZ50VT/PZ50MP)

2. Install:

- Shock absorber ① (PZ50GT/PZ50VT "Europe"/PZ50MP)

NOTE:

Install the shock absorber with the charging valve **a** facing inward.



Ski alignment

NOTE:

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

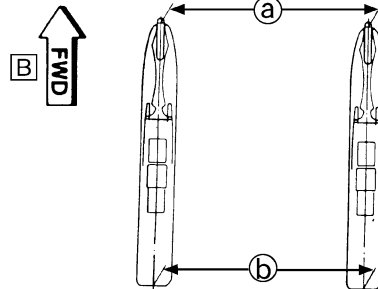
Point the skis straight forward and measure the amount of ski toe-out.

A Ski toe-out:

0 ~ 15 mm (0 ~ 0.59 in)

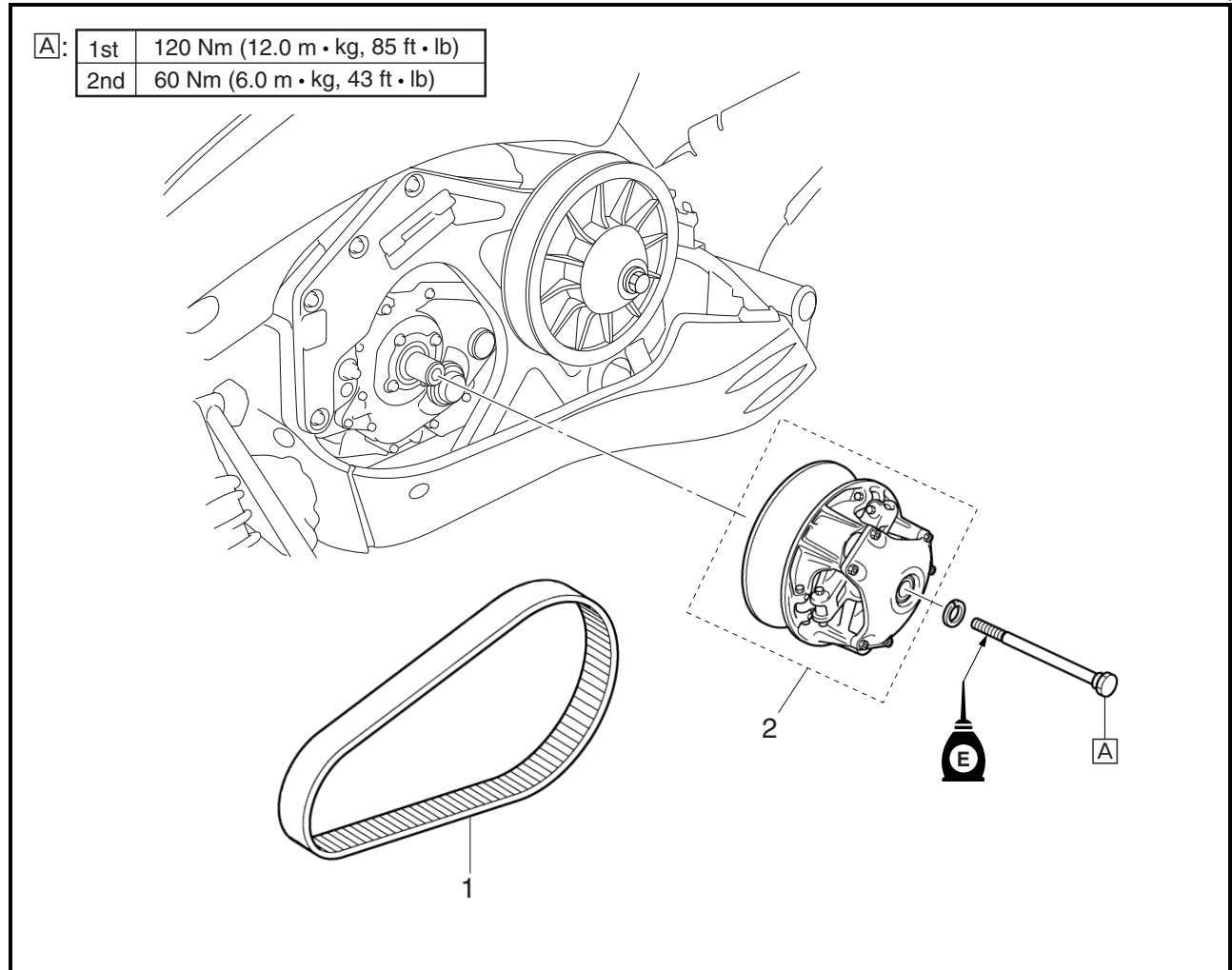
a – **b** = Toe-out

Refer to “STEERING SYSTEM” in CHAPTER 2.



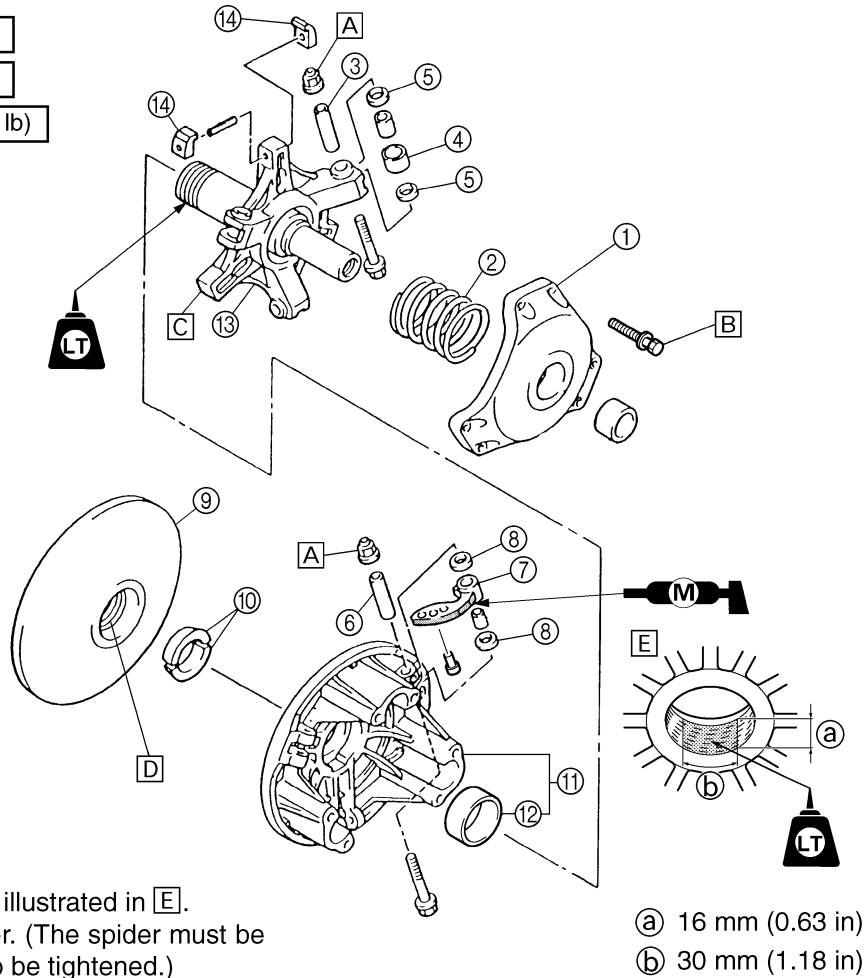
POWER TRAIN

PRIMARY SHEAVE AND DRIVE V-BELT

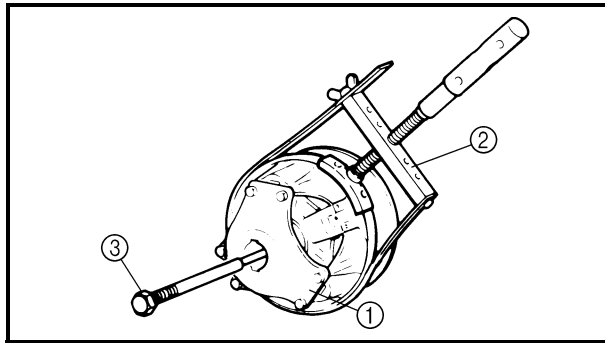


Order	Job name/Part name	Q'ty	Remarks
	Primary sheave removal		
	Left side cover		Remove the parts in the order listed below. Refer to "COWLINGS" in CHAPTER 3.
1	V-belt	1	
2	Primary sheave assembly	1	For installation, reverse the removal procedure.

- [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)



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



REMOVAL

1. Remove:

- Primary sheave assembly ①

NOTE:

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

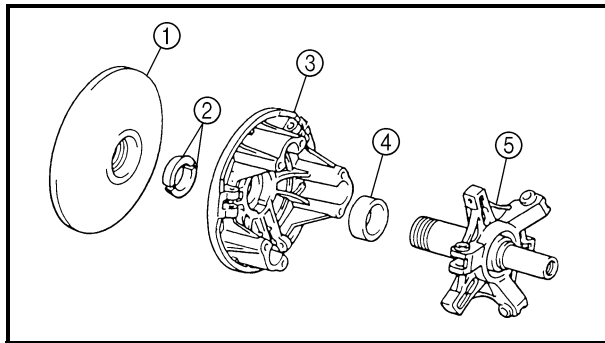


Sheave holder:

90890-01701, YS-01880-A

Primary sheave puller:

90890-01898, YS-01881-A,
YS-01881-1



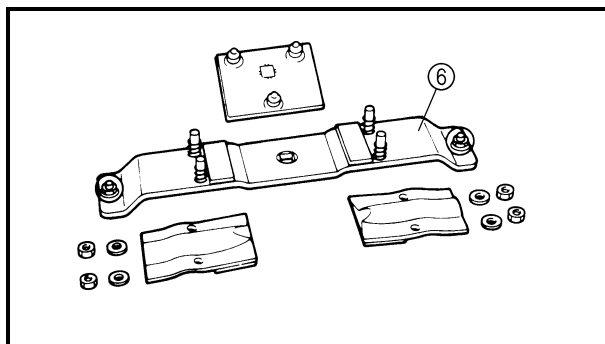
DISASSEMBLY

1. Remove:

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

Removal steps:

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

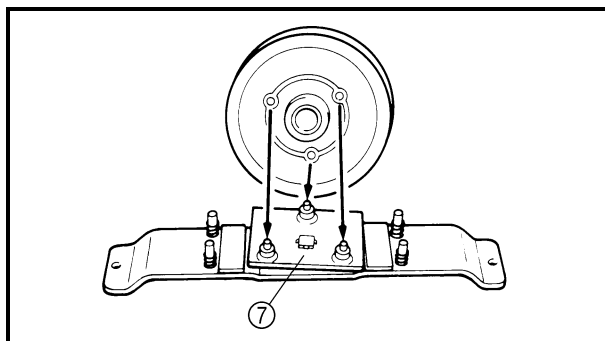


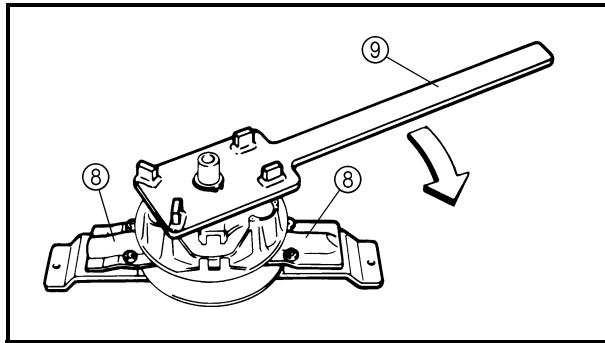
Clutch spider separator:

90890-01711, YS-28890-C

Clutch separator adapter:

90890-01740, YS-34480





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

NOTE:

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

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



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

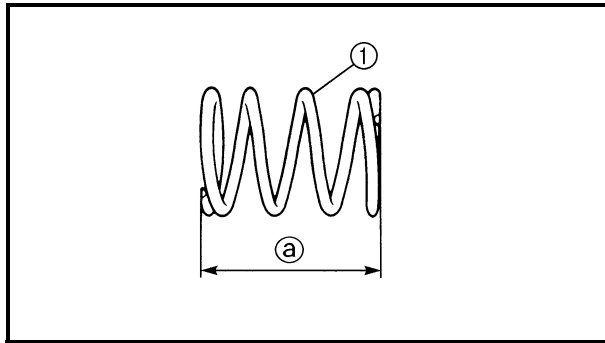
CAUTION:

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

INSPECTION

1. Inspect:

- Spider
 - Sliding sheave
 - Fixed sheave
 - Primary sheave cap
- Cracks/damage → Replace.



2. Inspect:

- Primary sheave spring ①
Cracks/damage → Replace.

3. Measure:

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



Primary sheave spring (standard) free length:

PZ50/PZ50GT/PZ50FX:

72.1 mm (2.84 in)

PZ50M:

74.1 mm (2.92 in)

PZ50VT "USA/Canada":

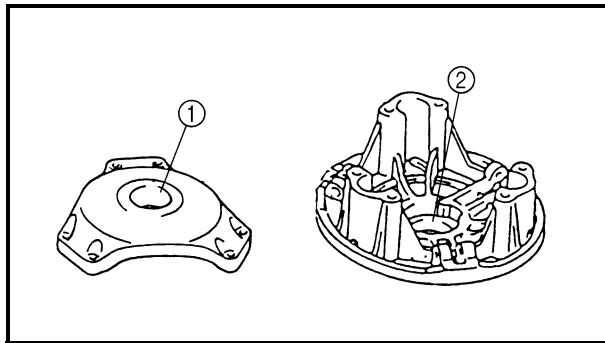
73.4 mm (2.89 in)

PZ50VT "Europe"/PZ50MP:

72.9 mm (2.87 in)

NOTE:

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

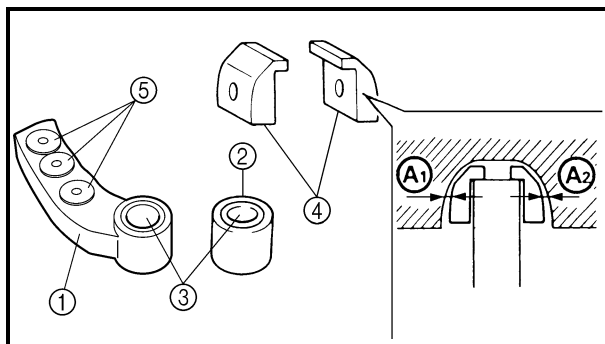


4. Inspect:

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



Clutch bushing press: YS-42424

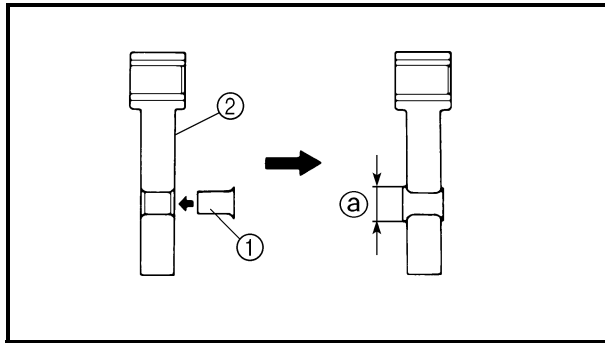


5. Inspect:

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

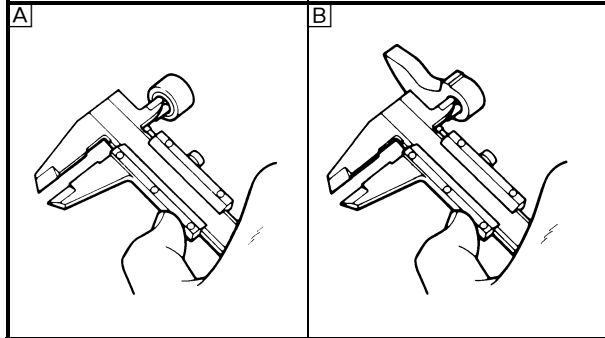


Slider inside clearance ① + ② :
Min. 0 mm (0 in)
Max. 0.3 mm (0.0118 in)



Rivet replacement steps:

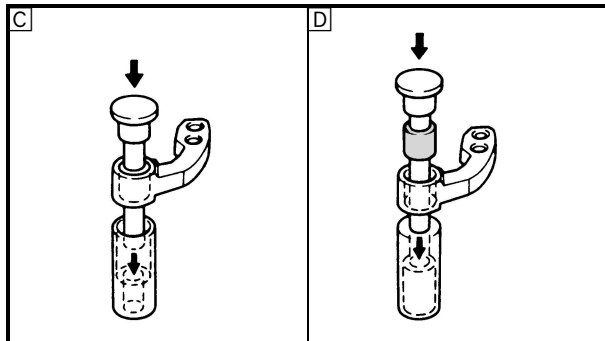
- Remove old rivet with the appropriate drill.
- Insert the rivet ① from the ID mark ② side.
- Press or peen the rivet head so that the diameter (a) of the rivet head measures 8.2 mm (0.32 in) or larger.



6. Measure:

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

	Bushing inside diameter: Roller [A]: New: 9.077 mm (0.357 in) Wear limit: 9.3 mm (0.366 in) Weight [B]: New: 8.077 mm (0.318 in) Wear limit: 8.3 mm (0.327 in)
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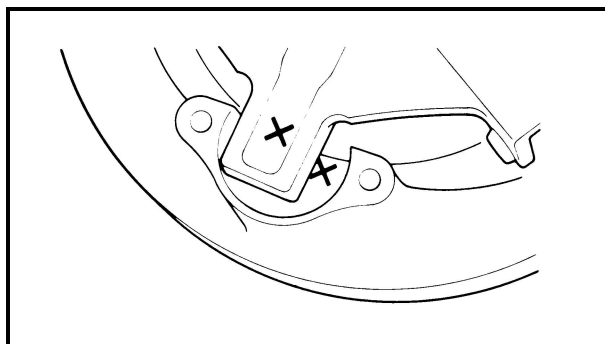


NOTE:

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

	YXR clutch bushing jig kit: YS-39752
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- ☐ C Removing
☐ D Installing



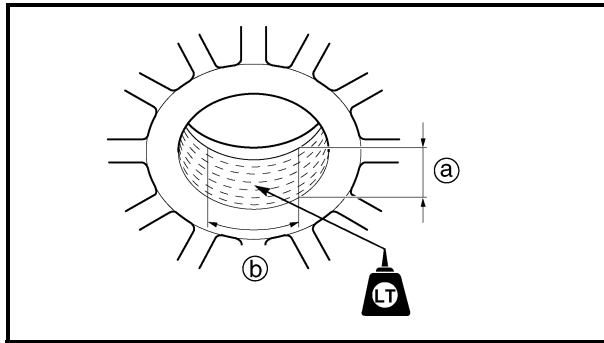
ASSEMBLY

1. Install:

- Sliding sheave
 (onto the spider)

NOTE:

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



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

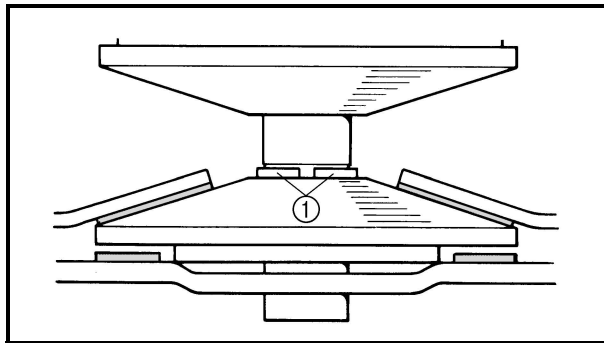
NOTE:

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

CAUTION:

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

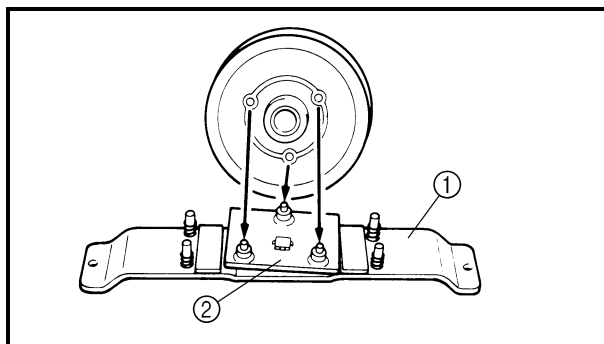
- Ⓐ 16 mm (0.63 in)
- Ⓑ 30 mm (1.18 in)



3. Install:
- Fixed sheave stoppers ①

NOTE:

Stopper tapered portion should face fixed sheave.



4. Tighten:
- Spider

Tightening steps:

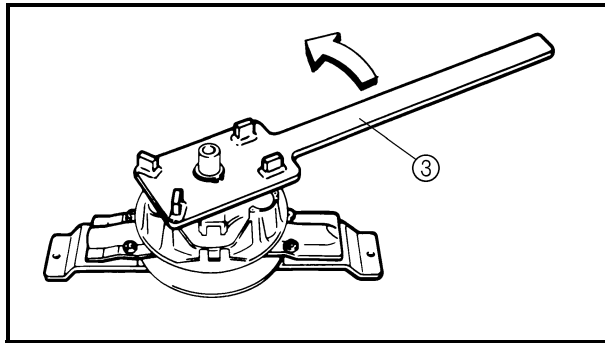
- Finger-tighten the spider until it is stopped by the fixed sheave stopper.
- Hold the fixed sheave with the clutch spider separator ①.

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

NOTE:

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

PRIMARY SHEAVE AND DRIVE V-BELT



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



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

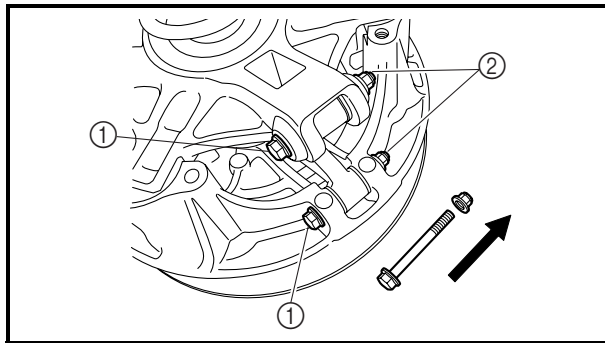
CAUTION:

The spider has a left-handed thread.



WARNING

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



5. Install:

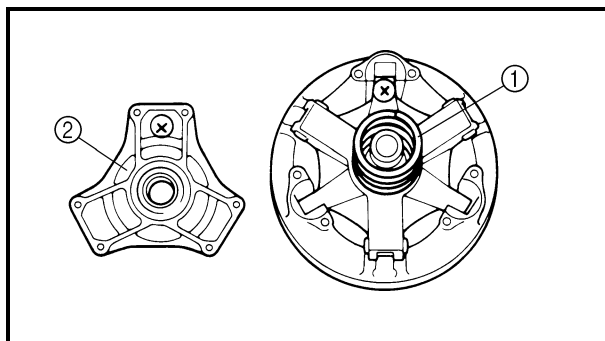
- Weight
- Bolts ①
- Nuts ②



Nut:
6 Nm (0.6 m · kg, 4.3 ft · lb)

NOTE:

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



6. Install:

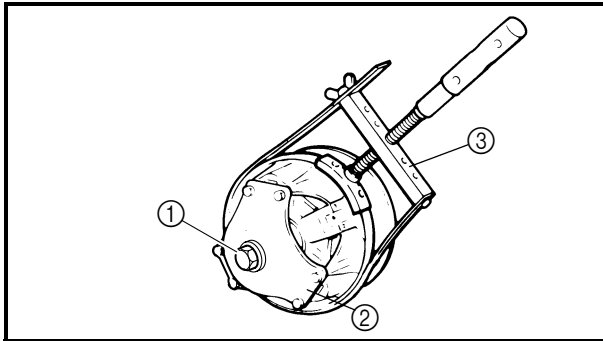
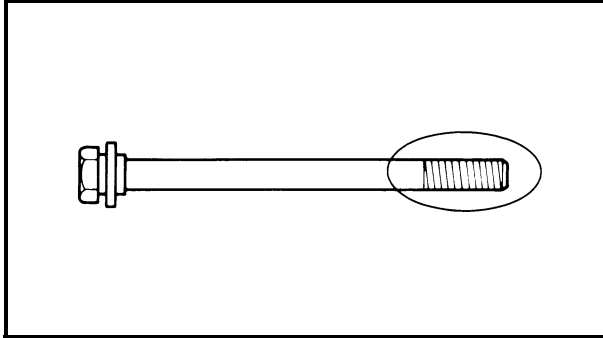
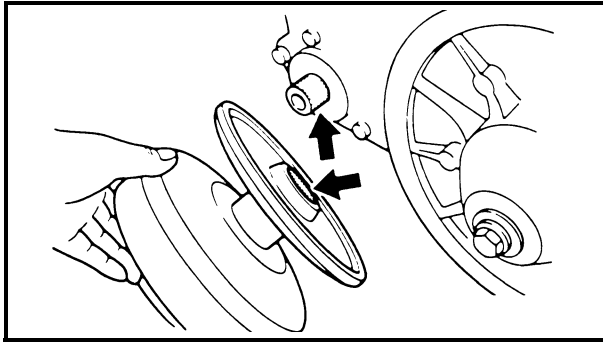
- Primary sheave spring ①
- Primary sheave cap ②

NOTE:

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



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



INSTALLATION

1. Install:
 - Primary sheave assembly

CAUTION:

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

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

3. Tighten:
 - Primary sheave bolt ①

Tightening steps:

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



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



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

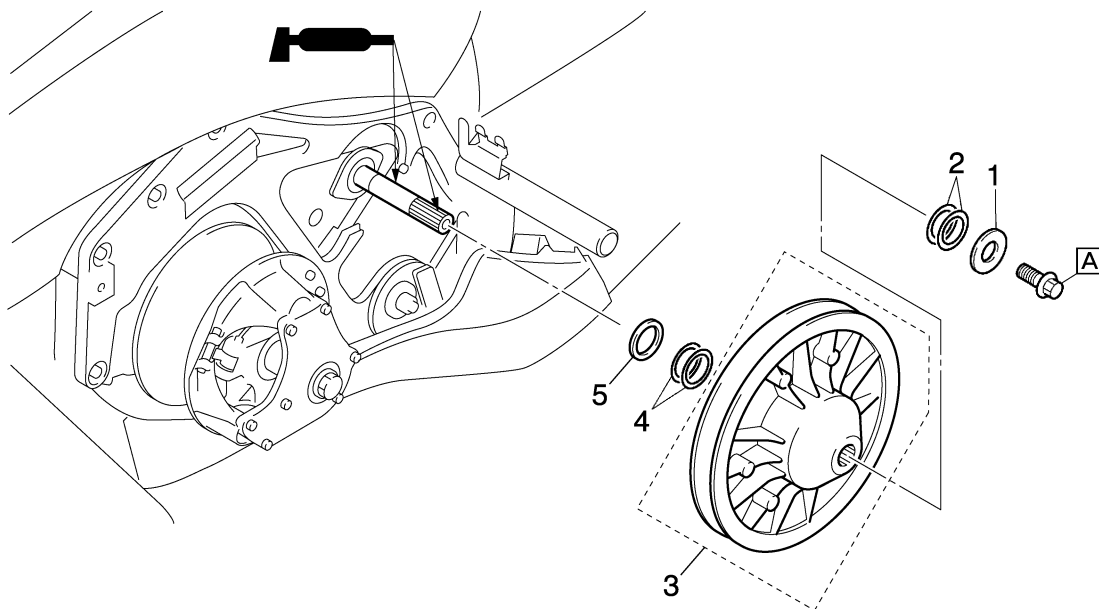
- Loosen the primary sheave bolt completely.
- Retighten the primary sheave bolt to specification.



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

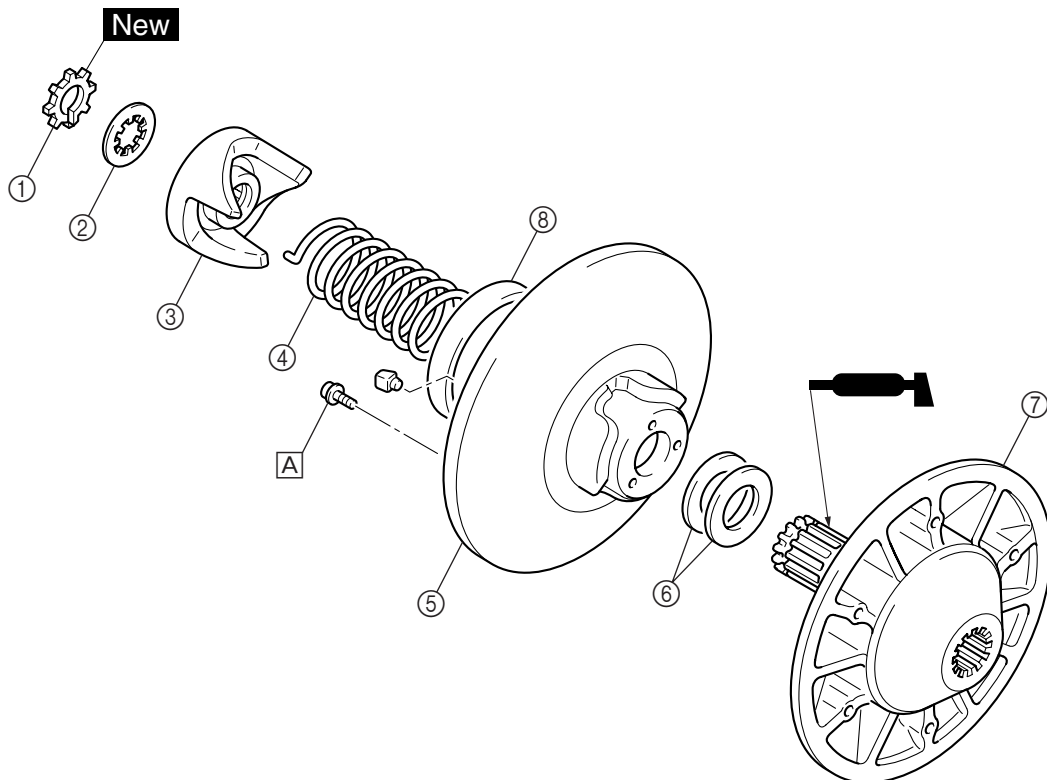
4. Adjust:
 - V-belt position
Refer to “DRIVE V-BELT” in CHAPTER 2.
 - Sheave offset
 - Secondary sheave free play (clearance)
Refer to “SHEAVE OFFSET ADJUSTMENT” in CHAPTER 2.

SECONDARY SHEAVE

A: 60 Nm (6.0 m • kg, 43 ft • lb)

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

Order	Job name/Part name	Q'ty	Remarks
	Secondary sheave removal		Remove the parts in the order listed below. NOTE: _____ Apply the brake to lock the secondary sheave.
	V-belt		Refer to "PRIMARY SHEAVE AND DRIVE V-BELT".
1	Washer	1	
2	Shim (left)	—	Refer to "SHEAVE OFFSET ADJUSTMENT" in CHAPTER 2.
3	Secondary sheave assembly	1	
4	Shim (right)	—	Refer to "SHEAVE OFFSET ADJUSTMENT" in CHAPTER 2.
5	Washer	1	For installation, reverse the removal procedure.

A: 7 Nm (0.7 m • kg, 5.1 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	Circlip	1	
②	Washer	1	
③	Spring seat	1	
④	Secondary sheave spring	1	
⑤	Sliding sheave	1	
⑥	Washer	2	
⑦	Fixed sheave	1	
⑧	Bushing	1	
			For assembly, reverse the disassembly procedure.

DISASSEMBLY

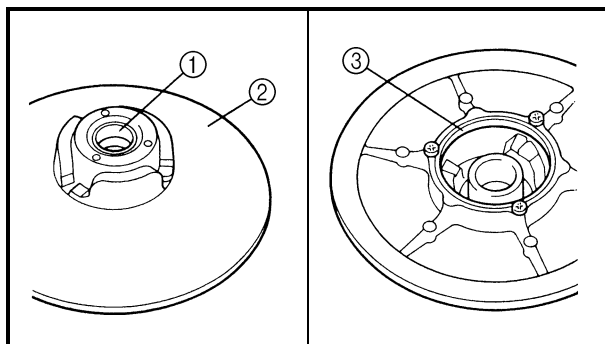
WARNING

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

INSPECTION

1. Inspect:

- Sliding sheave
- Fixed sheave
- Spring seat
Cracks/damage → Replace.



2. Inspect:

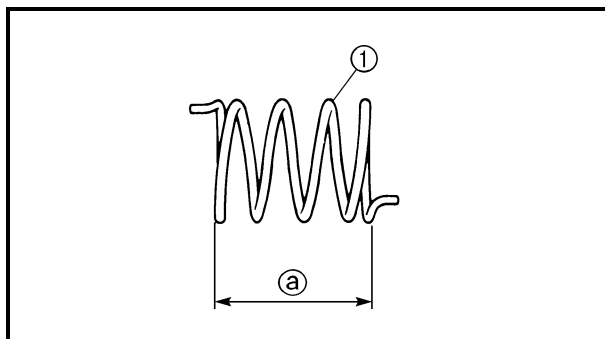
- Bushing ①
- Sliding sheave (V-belt contact surface) ②
Scratches/wear/damage → Replace.
- Sliding bushing ③
Unsymmetrical wear/damage → Replace.

3. Inspect:

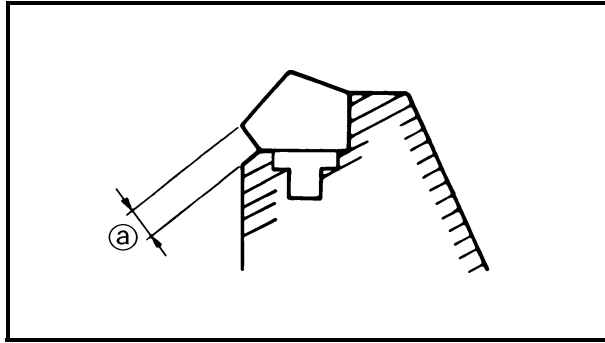
- Secondary sheave spring ①
Cracks/damage → Replace.

4. Measure:

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



**Secondary sheave spring (standard)
free length:
85 mm (3.35 in)**



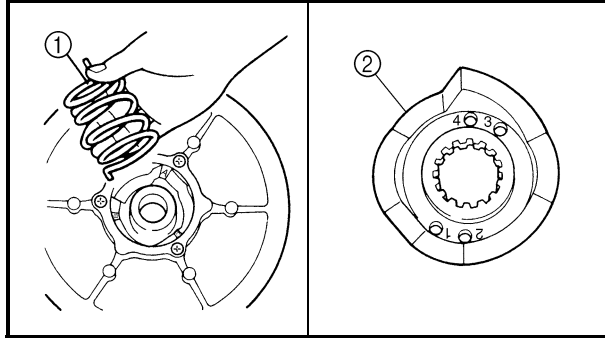
5. Measure:

- Ramp shoe thickness (a)

Out of specification → Replace the ramp shoe.



Wear limit:
1.0 mm (0.04 in)



ASSEMBLY

1. Install:

- Secondary sheave spring (1)
- Spring seat (2)

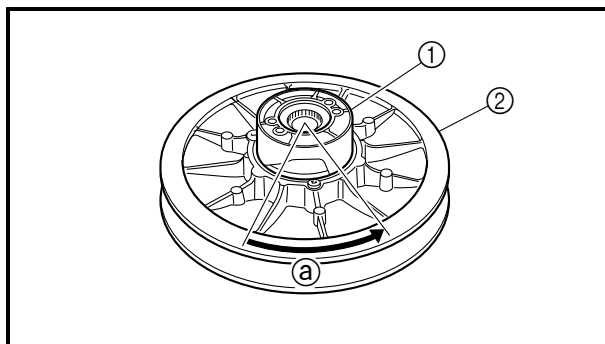
NOTE:

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

Standard spring position:

A-1 (PZ50/PZ50GT/PZ50FX/PZ50VT/PZ50MP)

B-1 (PZ50M)

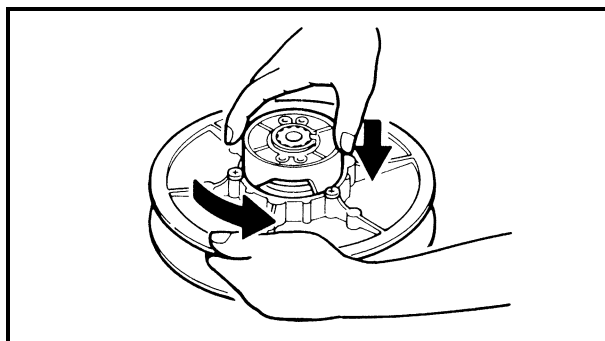


Installation steps:

CAUTION:

- Always use a new circlip.
- Turn in the screw for the sheave compressor so that the spring seat splines engage with the fixed sheave splines.

- Hold the spring seat (1) and turn the sliding sheave (2) counterclockwise to the specified twist angle (a).



Twist angle:
45° (PZ50/PZ50GT/PZ50FX)
55° (PZ50M)
50° (PZ50VT/PZ50MP)

- Push down on the spring seat until the bolts come through the holes.
- While pushing down on the spring seat, install the washer and circlip.

INSTALLATION

1. Lubricate:

- Splines (fixed sheave)



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

2. Tighten:

- Secondary sheave bolt



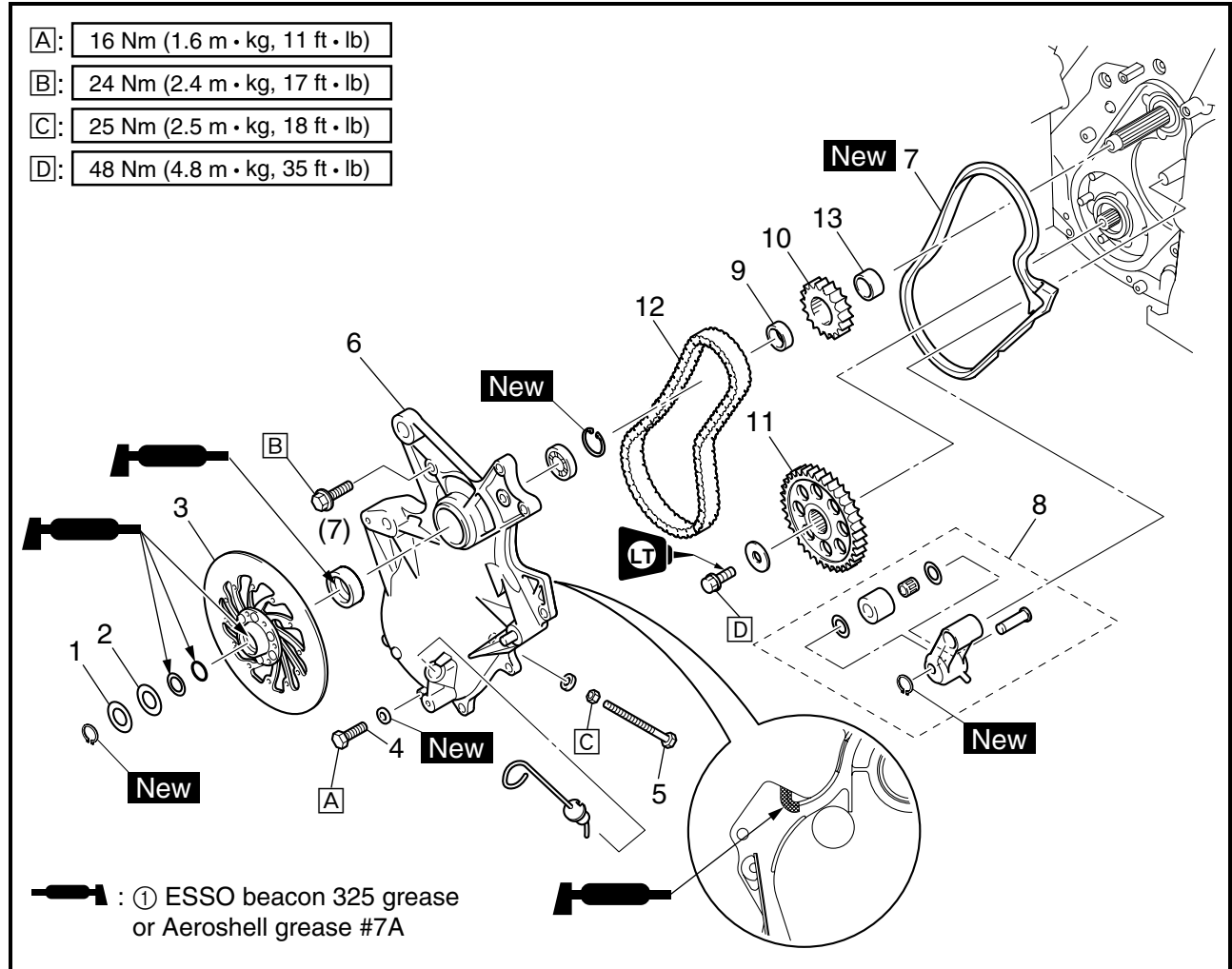
Secondary sheave bolt:
60 Nm (6.0 m · kg, 43 ft · lb)

3. Adjust:

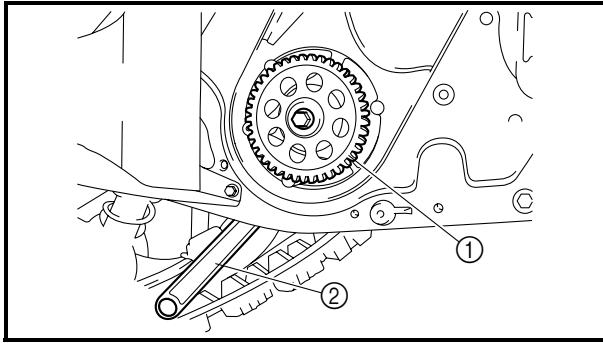
- Sheave offset
- Secondary sheave free play (clearance)

Refer to “SHEAVE OFFSET ADJUSTMENT”
in CHAPTER 2.

DRIVE CHAIN



Order	Job name/Part name	Q'ty	Remarks
	Drive chain housing removal		Remove the parts in the order listed below. Refer to "BRAKE".
1	Shim	—	t = 0.5
2	Shim	—	t = 1.0
3	Brake disc	1	
4	Drain bolt	1	Drain.
5	Chain tension adjusting bolt	1	Loosen.
6	Drive chain cover	1	
7	Rubber seal	1	
8	Chain tensioner assembly	1	
9	Spacer	1	
10	Drive sprocket	1	
11	Driven sprocket	1	
12	Drive chain	1	
13	Spacer	1	
			For installation, reverse the removal procedure.



REMOVAL

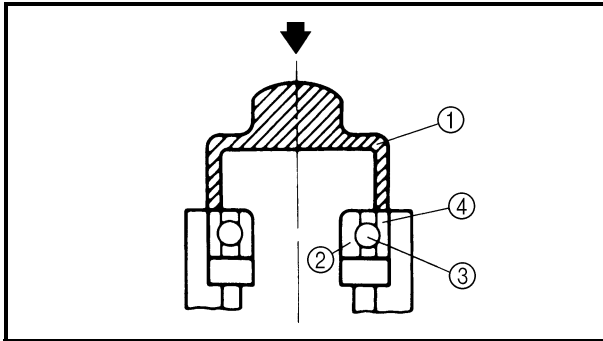
1. Remove:
 - Driven sprocket ①

NOTE:

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

INSPECTION

1. Inspect:
 - Drive chain cover
Cracks/damage → Replace.
 - Oil seals (drive chain cover)
Wear/damage → Replace.
 - Bearings
Pitting/damage → Replace.



Replacement steps:

- Remove the circlip (drive chain cover).
- Remove the bearing using a general bearing puller.
- Install the new bearing.

NOTE:

Use a socket ① that is the same size as the outside diameter of the bearing race.

CAUTION:

Do not strike the inner race ② or ball bearings ③.

Contact only the outer race ④.

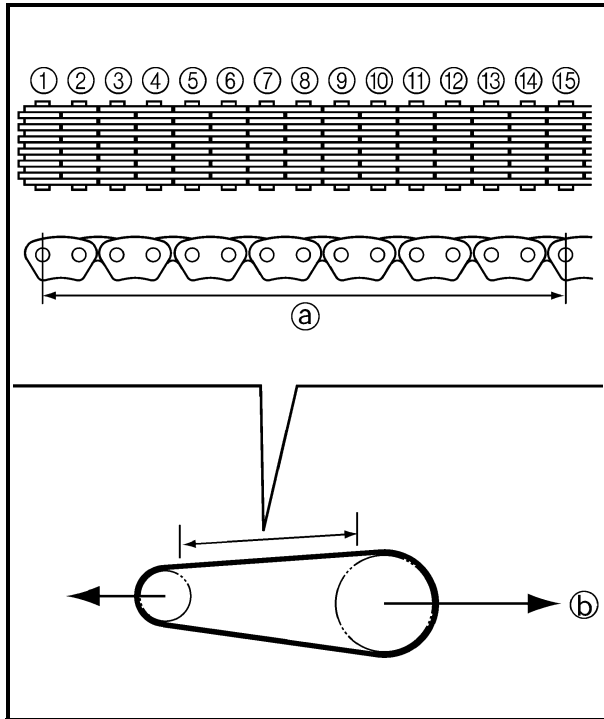
- Install a new circlip (drive chain cover).

CAUTION:

Always use new circlips.

2. Inspect:

- Drive sprocket
- Driven sprocket
- Chain tensioner
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:

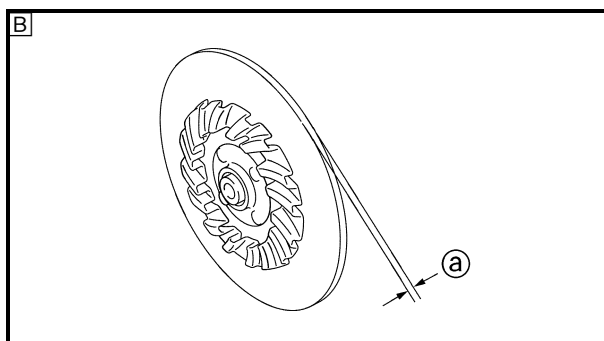
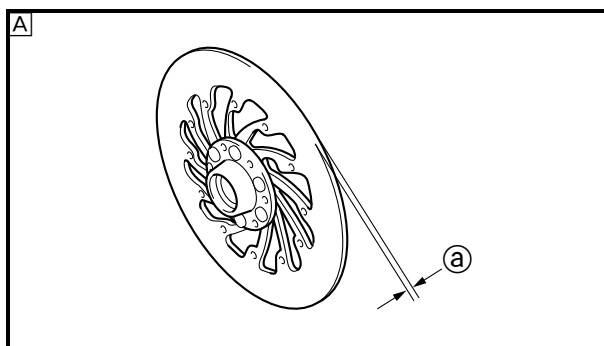
- Measure the length between drive chain pin ① and ⑮ as shown.
- Perform this measurement at two or three different places.

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

4. Inspect:

- Drive chain

Stiffness → Clean and lubricate or replace.



5. Measure:

- Brake disc thickness (a)

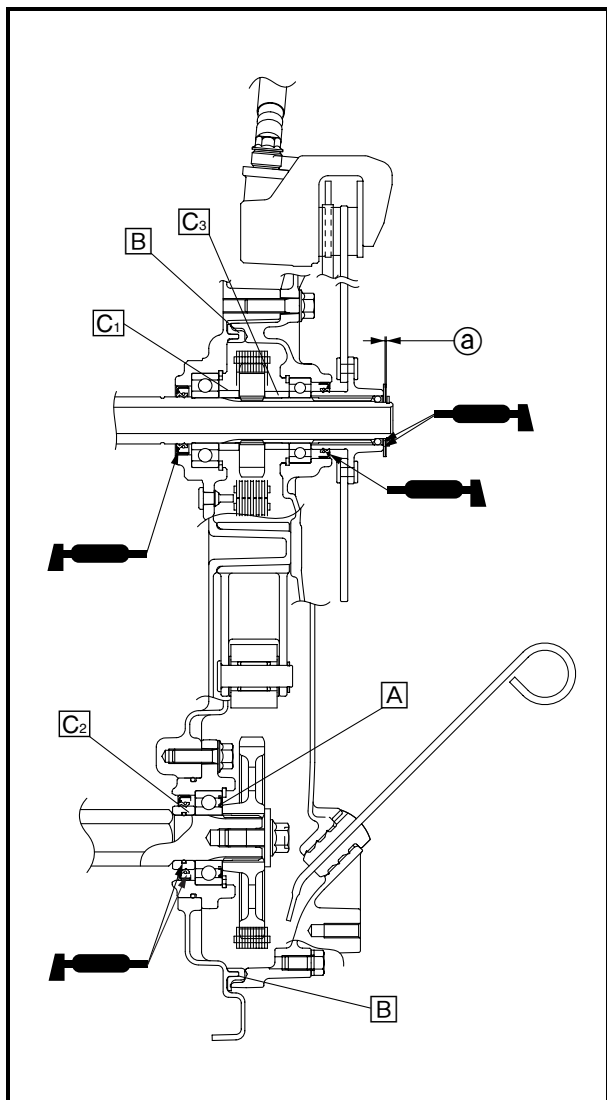
Measure the brake disc thickness 1 ~ 3 mm (0.04 ~ 0.12 in) from the edge of the brake disc.

Out of specification → Replace.



Minimum thickness:
3.5 mm (0.14 in)

- ▣ PZ50/PZ50GT/PZ50FX
- ▣ PZ50M/PZ50VT/PZ50MP



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 secondary shaft will stick.

a 0.2 ~ 0.7 mm (0.008 ~ 0.028 in)

 : ESSO beacon 325 grease or Aeroshell grease #7A

For the secondary shaft and drive chain installation, refer to "SECONDARY SHAFT".

2. Fill:

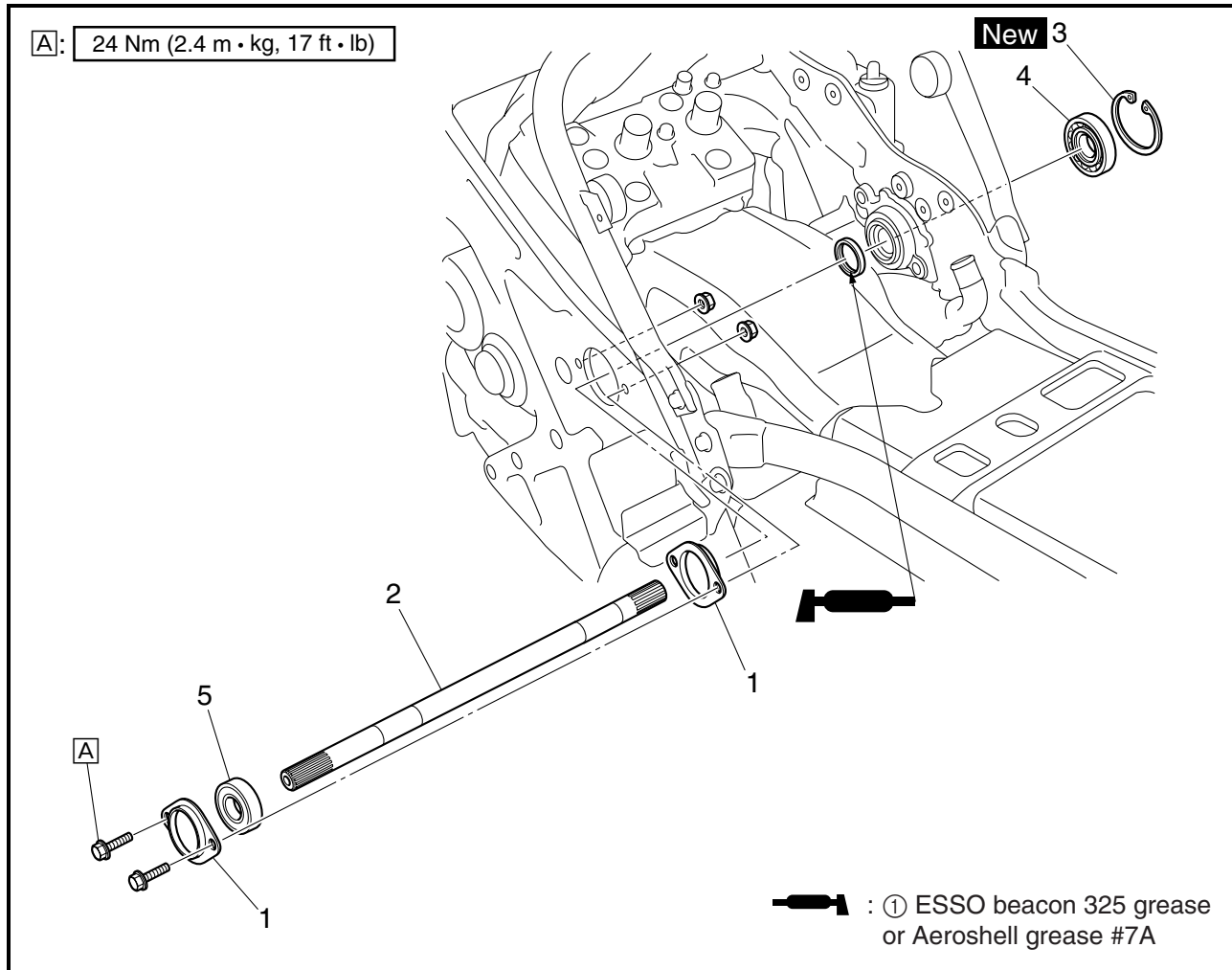
- Drive chain housing oil
Refer to "DRIVE CHAIN" in CHAPTER 2.

3. Adjust:

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

SECONDARY SHAFT

PZ50

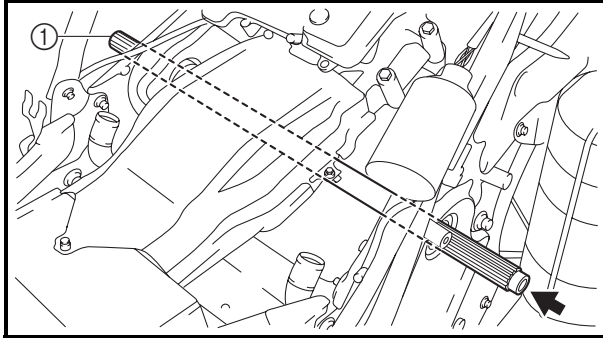


Order	Job name/Part name	Q'ty	Remarks
	Secondary shaft removal		
	Secondary sheave assembly		Remove the parts in the order listed below.
	Drive chain		Refer to "SECONDARY SHEAVE".
			Refer to "DRIVE CHAIN".
1	Bearing holder	2	
2	Secondary shaft	1	
3	Circlip	1	
4	Bearing	1	
5	Bearing	1	
			For installation,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

REMOVAL

1. Remove:

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

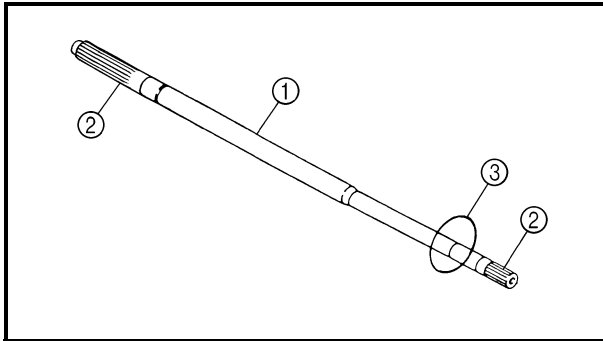


2. Remove:

- Bearing housing
- Secondary shaft ①

NOTE:

Remove the secondary shaft ① from the right side of the machine.



INSPECTION

1. Inspect:

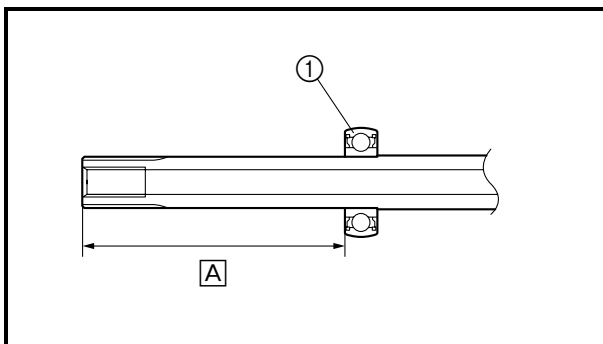
- Secondary shaft ①
Scratches (excessive)/damage → Replace.
- Splines ②
Wear/damage → Replace the secondary shaft.
- Bearing contact surface ③
Scratches/wear/damage → Replace the secondary shaft.

2. Inspect:

- Bearing ①
Pitting/damage → Replace.

NOTE:

When reassembling the bearing, press the bearing onto the secondary shaft as shown.



A 124.9 ~125.1 mm (4.92 ~ 4.93 in)

INSTALLATION

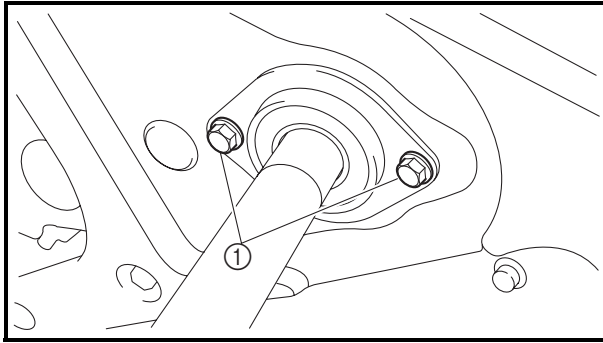
1. Install:

- Secondary shaft

2. Install

- Drive chain parts
Refer to "DRIVE CHAIN".

SECONDARY SHAFT



3. Tighten:

- Bearing holder bolts ①



Bearing holder bolt:
24 Nm (2.4 m · kg, 17 ft · lb)

4. Check:

- Secondary shaft stiffness

CAUTION:

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

SECONDARY SHAFT AND DRIVE CHAIN INSTALLATION

1. Install:

- Secondary shaft
- Drive chain parts

Installation steps:

- Install the secondary shaft.
- Install the drive chain parts.
- Install the drive chain, drive sprocket and driven sprocket.
- Tighten the bolt ①.



Driven sprocket bolt:
48 Nm (4.8 m · kg, 35 ft · lb)
LOCTITE®

- Install the drive chain cover ②.

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

- Tighten the bolts ③.



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

NOTE:

Tighten the drive chain cover bolts in proper tightening sequence as shown.

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

2. Measure:

- Brake disc clearance ④
- Out of the specification → Adjust.



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

3. Adjust:

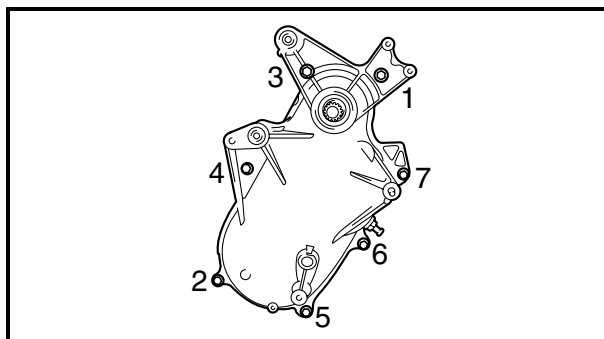
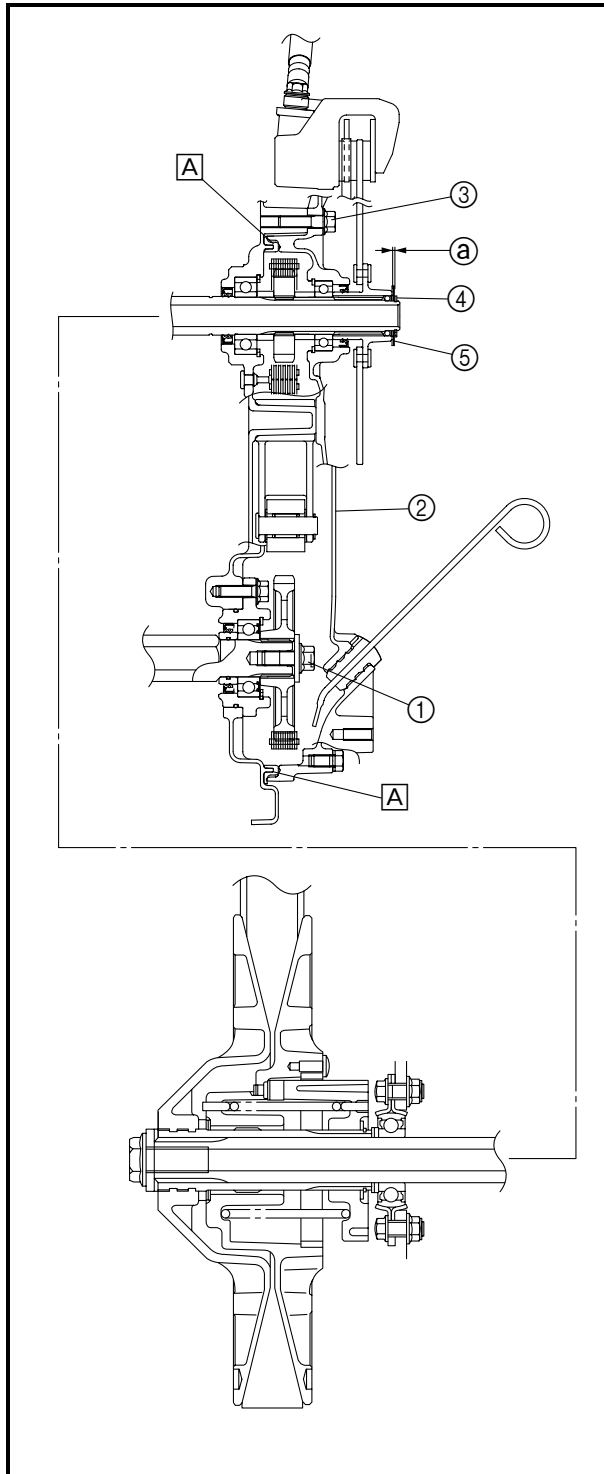
- Brake disc clearance

Adjustment steps:

- Remove the circlip ④.
- Adjust the brake disc clearance by adding or removing shim(s) ⑤.

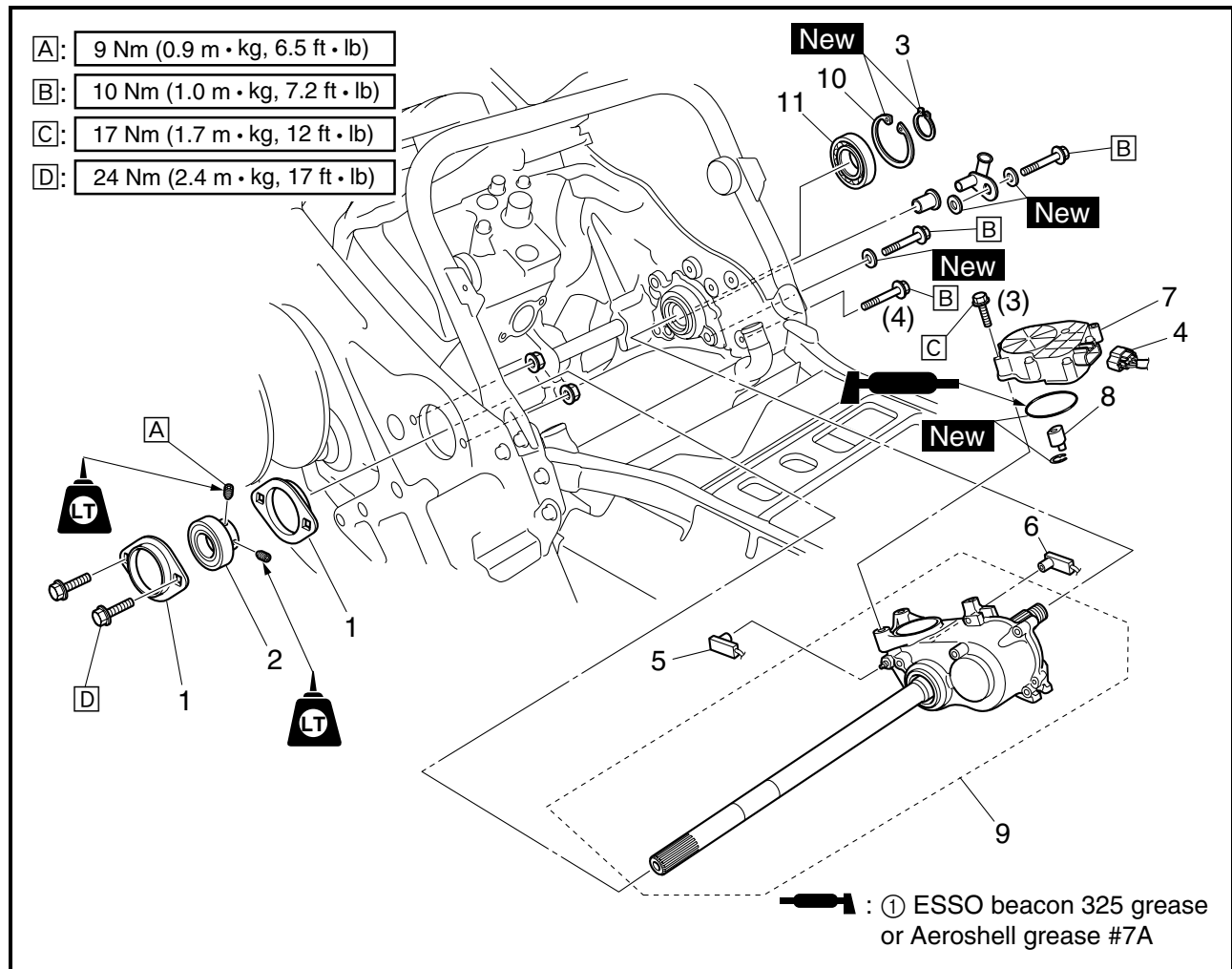
Shim size	
Part number	Thickness
90201-203F0	0.5 mm (0.02 in)
90201-20021	1.0 mm (0.04 in)

- Install the new circlip.



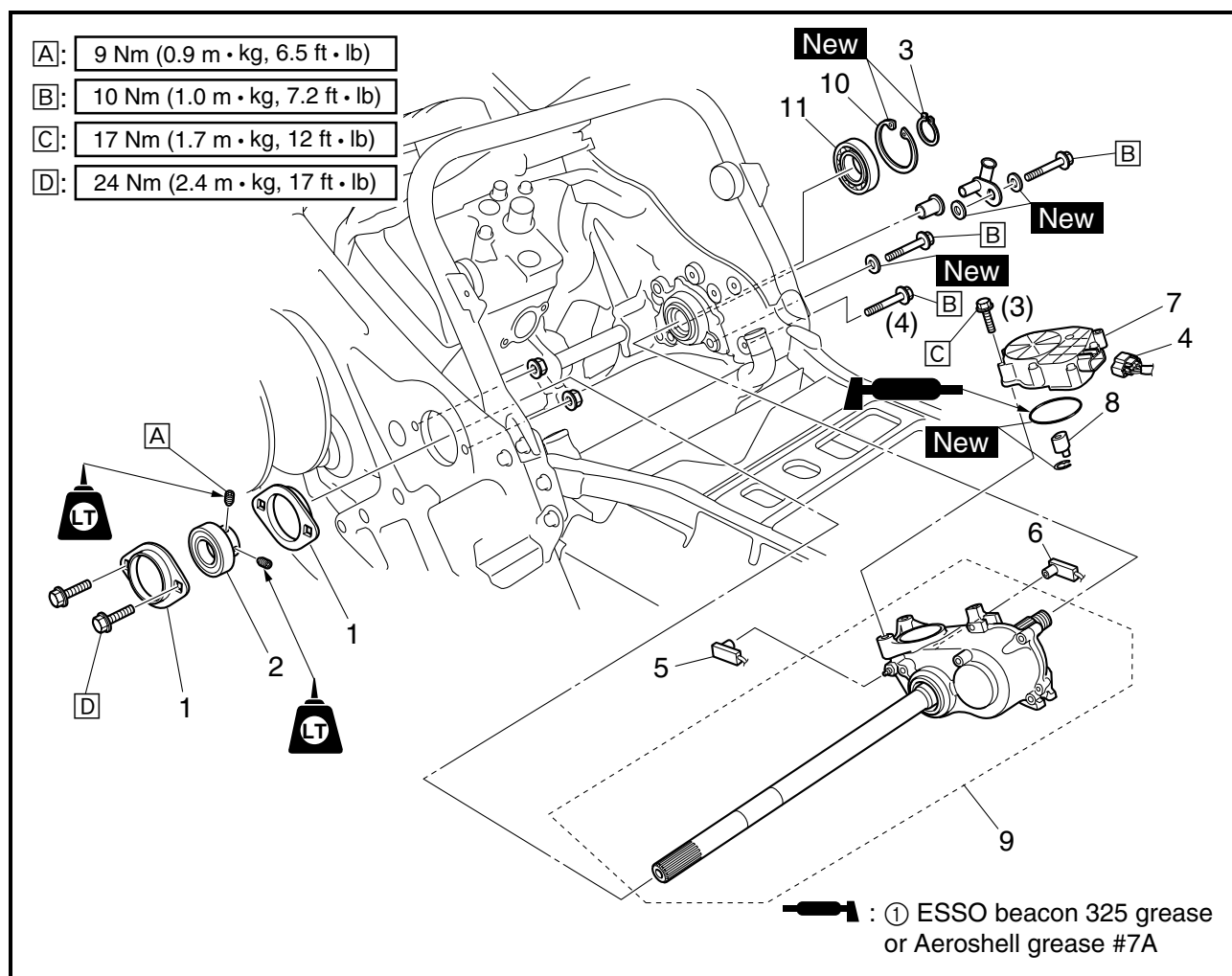
SECONDARY SHAFT AND REVERSE GEAR CASE

PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP



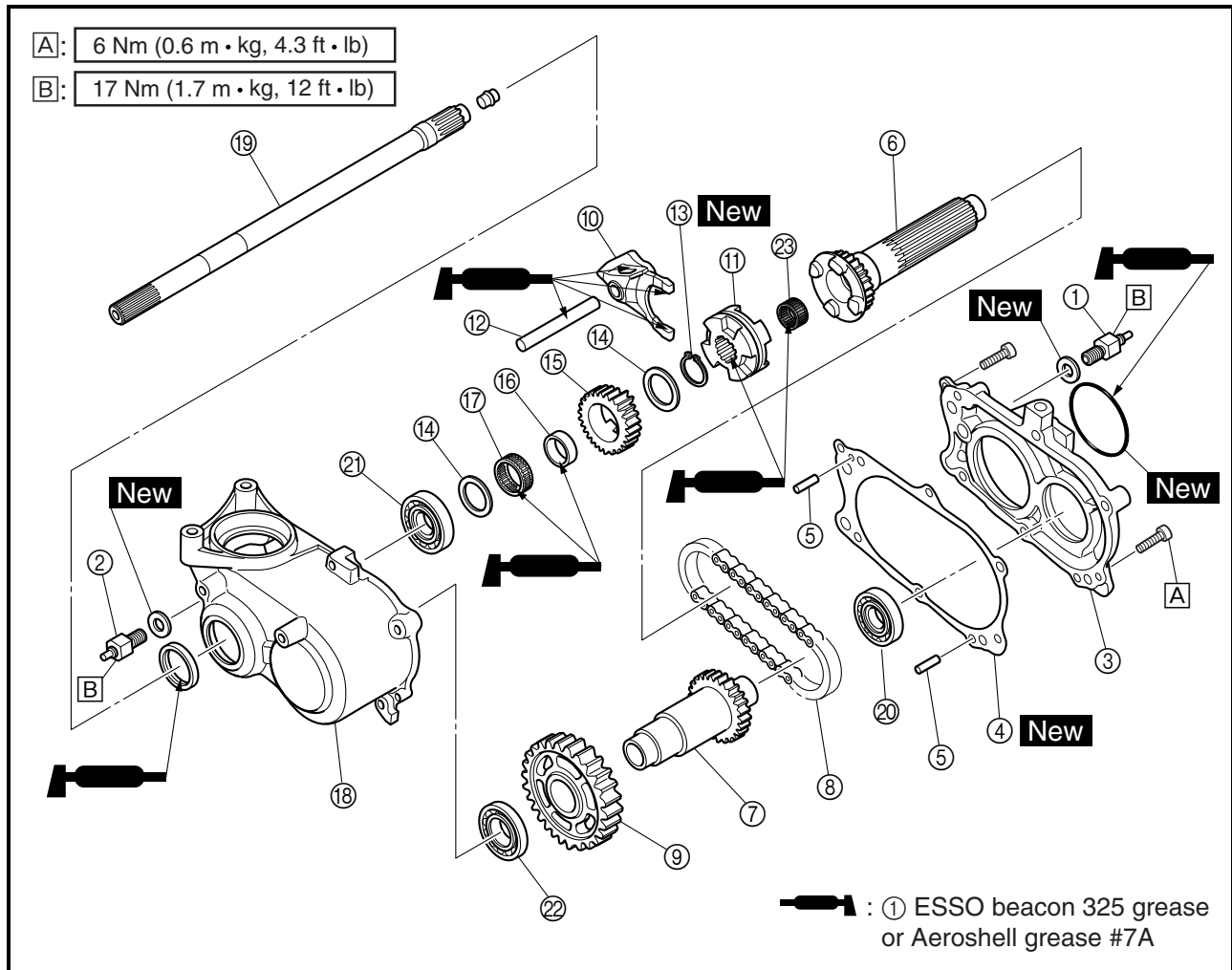
Order	Job name/Part name	Q'ty	Remarks
	Secondary shaft and reverse gear case removal		Remove the parts in the order listed below.
	Secondary sheave assembly		Refer to "SECONDARY SHEAVE".
	Drive chain		Refer to "DRIVE CHAIN".
	Fuel tank		Refer to "SEAT AND FUEL TANK" in CHAPTER 5. (PZ50GT/PZ50FX/PZ50M) Refer to "RIDER SEAT AND FUEL TANK" in CHAPTER 5. (PZ50VT/PZ50MP)
	Coolant reservoir/radiator outlet pipe 2		Refer to "RADIATOR AND HEAT EXCHANGER" in CHAPTER 6.
	Exhaust pipe joint lower cover		Refer to "EXHAUST PIPE AND MUFFLER" in CHAPTER 5.
1	Bearing holder	2	
2	Bearing	1	
3	Circlip	1	
4	Gear motor coupler	1	Disconnect.
5	Reverse position switch connector	1	Disconnect.

SECONDARY SHAFT AND REVERSE GEAR CASE



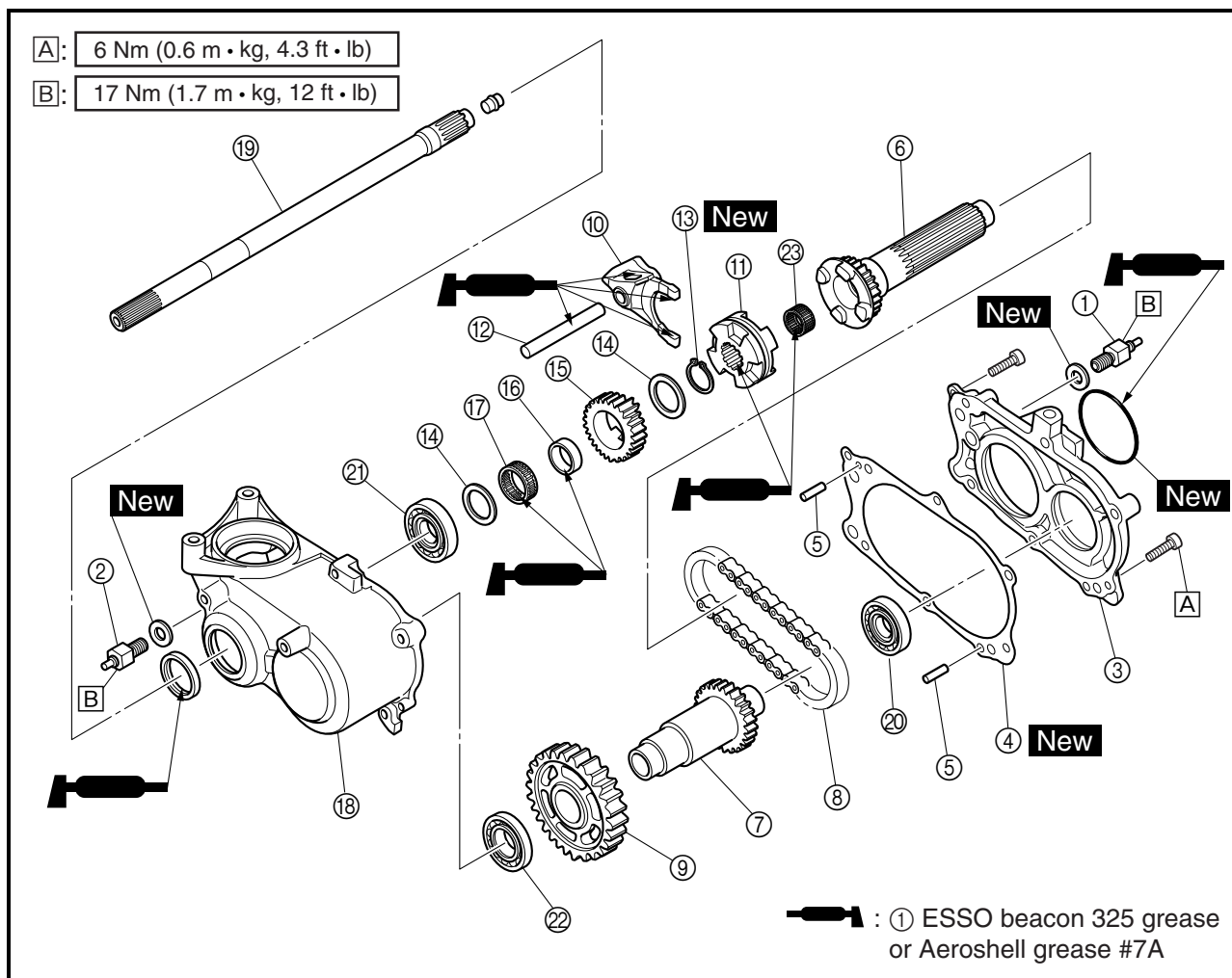
Order	Job name/Part name	Q'ty	Remarks
6	Drive position switch connector	1	Disconnect.
7	Gear motor	1	
8	Shift arm	1	
9	Secondary shaft assembly	1	
10	Circlip	1	
11	Bearing	1	
			For installation, reverse the removal procedure.

SECONDARY SHAFT AND REVERSE GEAR CASE



Order	Job name/Part name	Q'ty	Remarks
	Secondary shaft and reverse gear case disassembly		Remove the parts in the order listed below.
①	Drive position switch	1	
②	Reverse position switch	1	
③	Right reverse gear case	1	
④	Gasket	1	
⑤	Dowel pin	2	
⑥	Middle shaft	1	
⑦	Counter axle	1	
⑧	Chain	1	
⑨	Reverse driven gear	1	
⑩	Shift fork	1	
⑪	Dog gear	1	
⑫	Shift fork guide bar	1	
⑬	Circlip	1	
⑭	Washer	2	
⑮	Reverse drive gear	1	

SECONDARY SHAFT AND REVERSE GEAR CASE



Order	Job name/Part name	Q'ty	Remarks
①⑥	Collar	1	For assembly, reverse the disassembly procedure.
①⑦	Bearing	1	
①⑧	Left reverse gear case	1	
①⑨	Secondary shaft	1	
②⑦	Bearing	1	
②①	Bearing	1	
②②	Bearing	1	
②③	Bearing	1	

REMOVAL

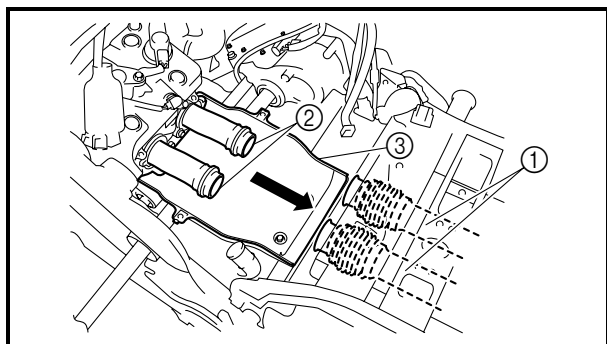
1. Check that the gear motor is in the drive position.

NOTE:

Before removing the gear motor from the reverse gear case, make sure that the drive position indicator light on the speedometer unit is on.

2. Remove:

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

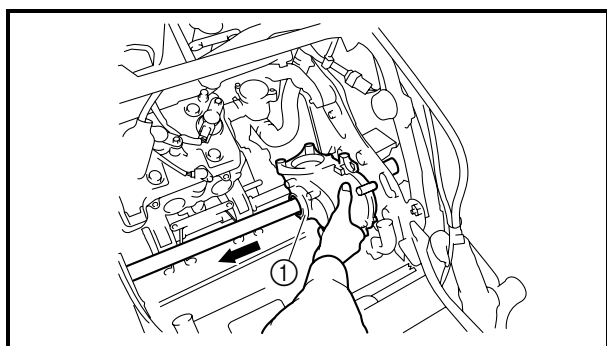


3. Remove:

- Exhaust pipe/muffler assembly ①
- Exhaust pipe joint upper cover
- Exhaust pipe joints ②
- Exhaust pipe joint lower cover ③

NOTE:

Slide the exhaust pipe/muffler assembly rearward as shown in the illustration.

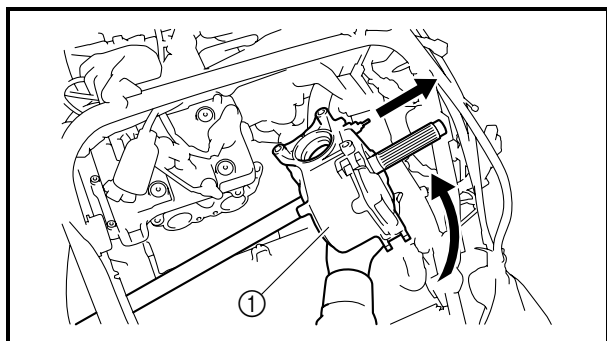


4. Remove:

- Secondary shaft assembly ①

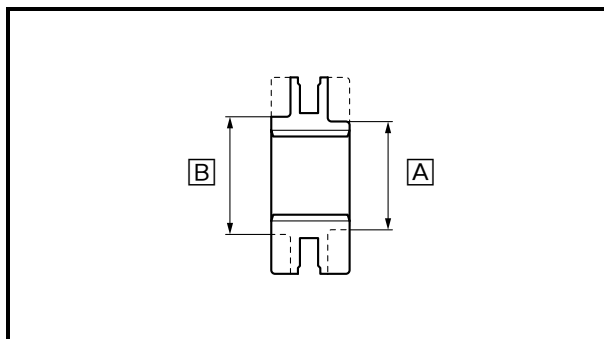
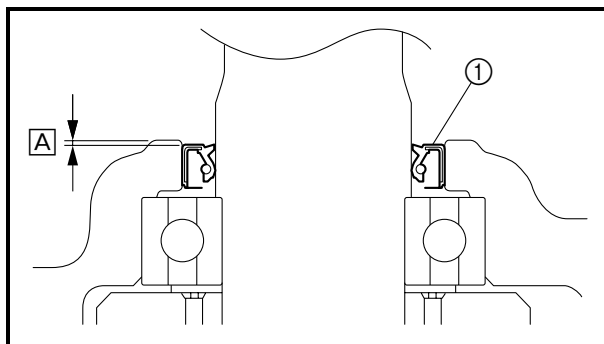
Removal steps:

- Slide the secondary shaft assembly to the left until the right end of the assembly is past the frame.
- Lift up the right end of the secondary shaft assembly, and then pull it outward to remove.



INSPECTION

1. Inspect:
 - Secondary shaft
Scratches (excessive)/damage → Replace.
 - Splines
Wear/damage → Replace the secondary shaft.
 - Bearing contact surface
Scratches/wear/damage → Replace the secondary shaft.
Refer to “SECONDARY SHAFT”.
2. Inspect:
 - Right reverse gear case
 - Left reverse gear case
 - Shift fork
Pitting/wear/damage → Replace.
 - Oil seal
Wear/damage → Replace.
 - Bearings
Pitting/damage → Replace.
3. Inspect:
 - Reverse driven gear
 - Reverse drive gear
 - Counter axle
 - Middle shaft
 - Dog gear
Pitting/wear/damage → Replace.
 - Chain
Wear/damage → Replace.
Shift → Clean or replace.



ASSEMBLY

1. Install:
 - Oil seal ①

NOTE:

Press the oil seal onto the left reverse gear case as shown.

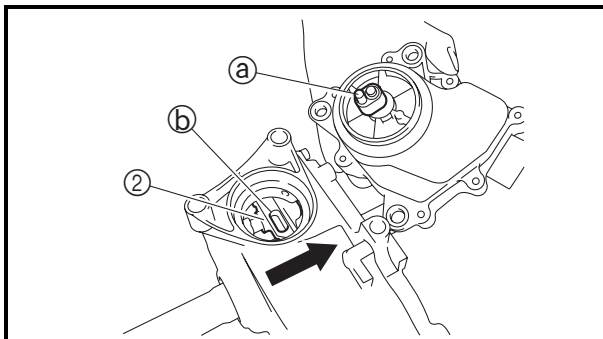
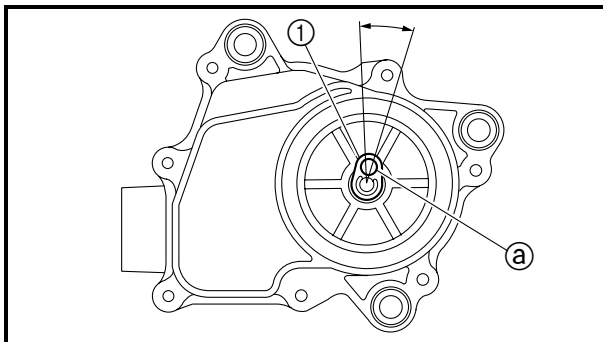
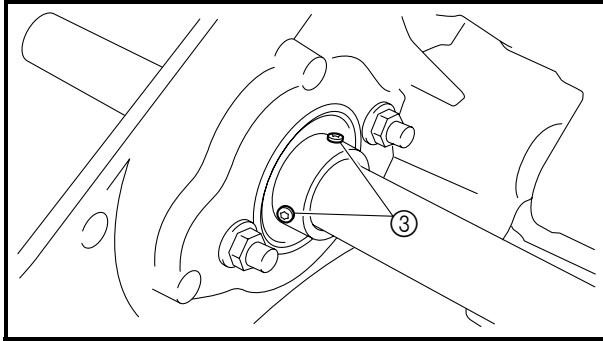
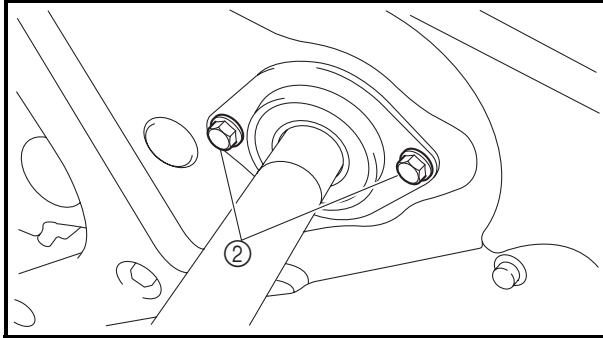
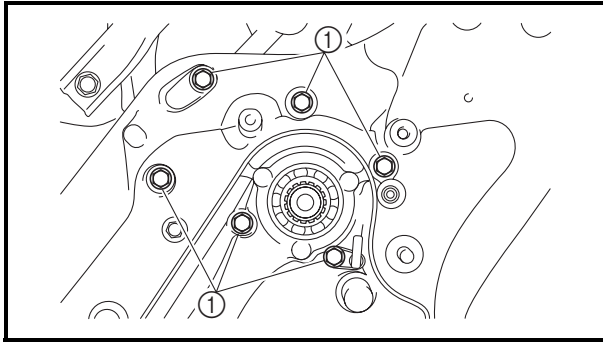
A 0.5 ~ 1.5 mm (0.02 ~ 0.06 in)

2. Install:
 - Dog gear ①

NOTE:

Install the dog gear with its side **A** toward the middle shaft.

A 30 mm (1.18 in)
B 33 mm (1.30 in)



INSTALLATION

1. Install:

- Secondary shaft assembly

Installation steps:

- Install the secondary shaft assembly.
- Install the secondary shaft assembly bolts ①.
- Install the bearing holder bolts ②.
- Tighten the secondary shaft assembly bolts ①.



Secondary shaft assembly bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)

- Tighten the bearing holder bolts ②.



Bearing holder bolt:
24 Nm (2.4 m · kg, 17 ft · lb)

- Tighten the set bolts ③.



Set bolt (secondary shaft):
9 Nm (0.9 m · kg, 6.5 ft · lb)
LOCTITE®

2. Install:

- Shift arm
- Gear motor

Installation steps:

- Check that the gear motor is in the drive position.
Refer to "GEAR MOTOR" in CHAPTER 8.
- Install the shift arm ① onto the gear motor, making sure that the center of the projection a on the shift arm is within the range shown in the illustration.
- Slide the shift fork ② toward the middle shaft, making sure to fit the projection a on the shift arm into the slot b in the shift fork.
- After installing the shift arm and gear motor, turn the secondary shaft by hand and check that the middle shaft turns in the same direction.



3. Install:

- Drive chain parts
Refer to "DRIVE CHAIN".

4. Check:

- Secondary shaft stiffness

CAUTION:

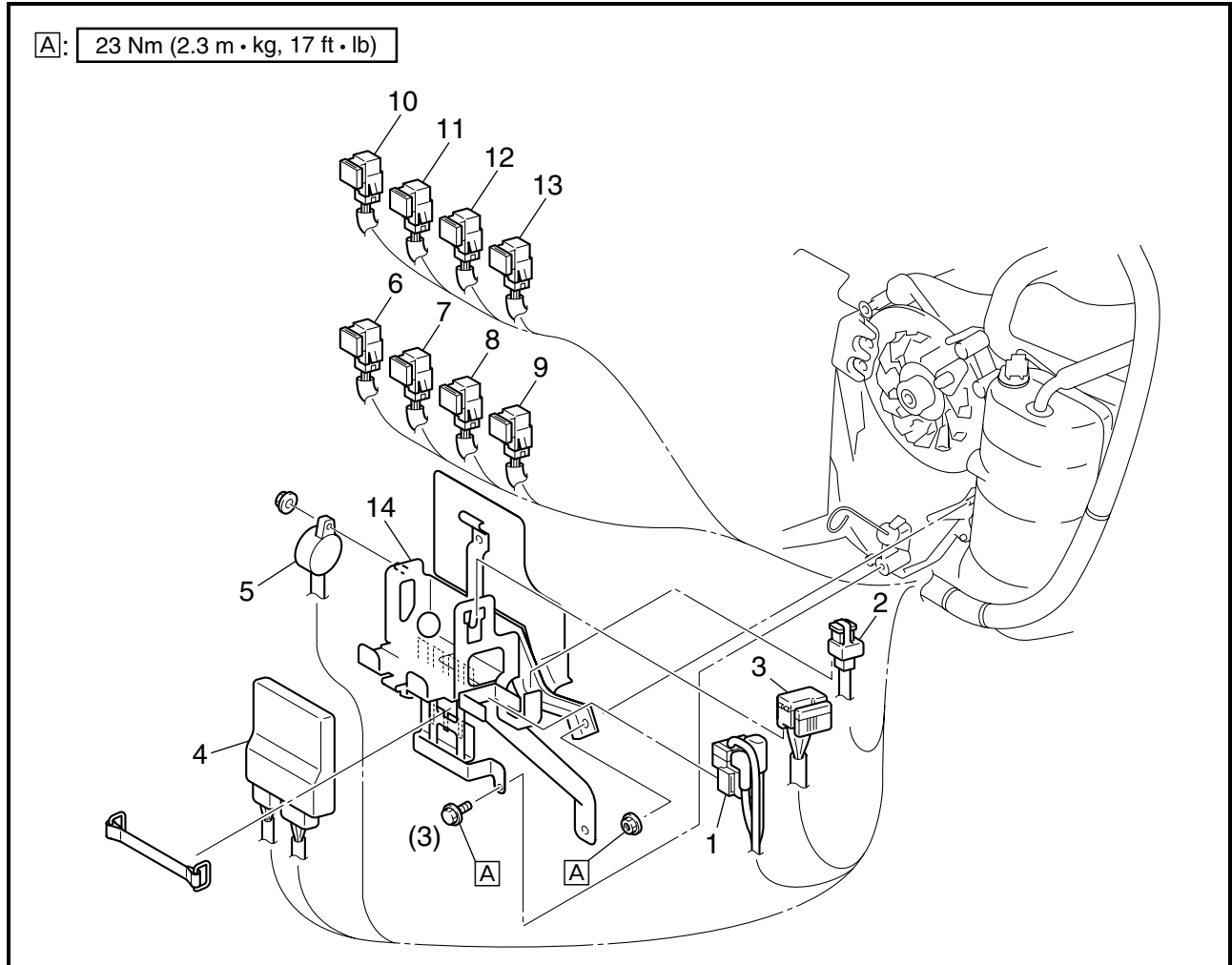
When the secondary shaft is operated in periodic motion, and if its movement is heavy, install it again correctly.

SECONDARY SHAFT AND DRIVE CHAIN INSTALLATION

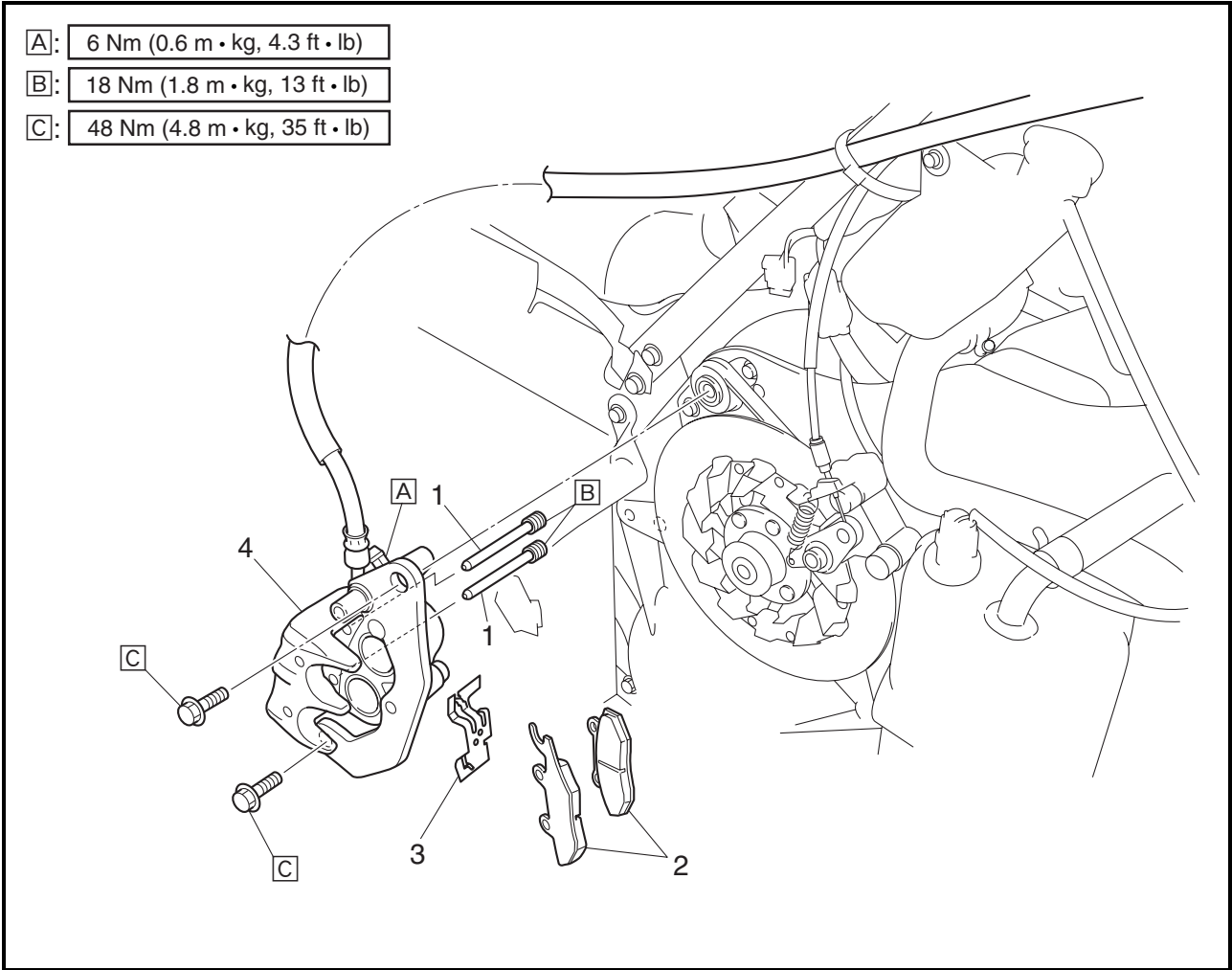
1. Install:

- Secondary shaft
- Drive chain parts
Refer to "SECONDARY SHAFT".

BRAKE



Order	Job name/Part name	Q'ty	Remarks
	Battery bracket removal		
	Battery		Remove the parts in the order listed below. Refer to "BATTERY INSPECTION" in CHAPTER 2.
1	Starter relay	1	
2	Main fuse	1	
3	Fuse box	1	
4	ECU (engine control unit)	1	
5	DC back buzzer	1	PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
6	Gear motor relay 1	1	PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
7	Gear motor relay 2	1	PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
8	Gear motor relay 3	1	PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
9	Passenger grip warmer relay	1	PZ50VT/PZ50MP
10	Headlight relay	1	
11	Load control relay	1	
12	Fuel injection system relay	1	
13	Radiator fan motor relay	1	PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
14	Battery bracket	1	
			For installation, reverse the removal procedure.



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

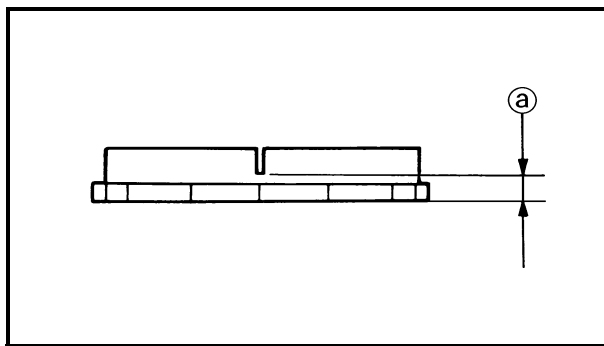
CAUTION:

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:

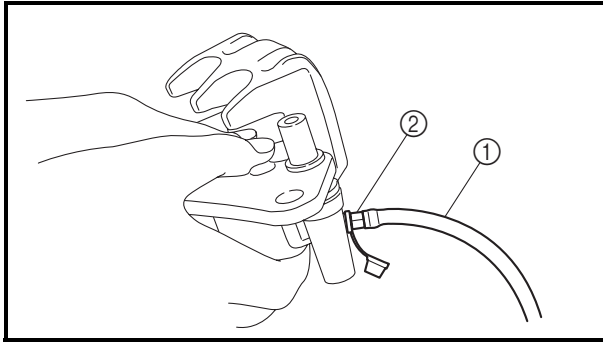
- Brake pads

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 when the brake pads are replaced.
- Replace the pads as a set if either one is found to be worn to the wear limit ①.



Wear limit:
4.7 mm (0.19 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 screws 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)

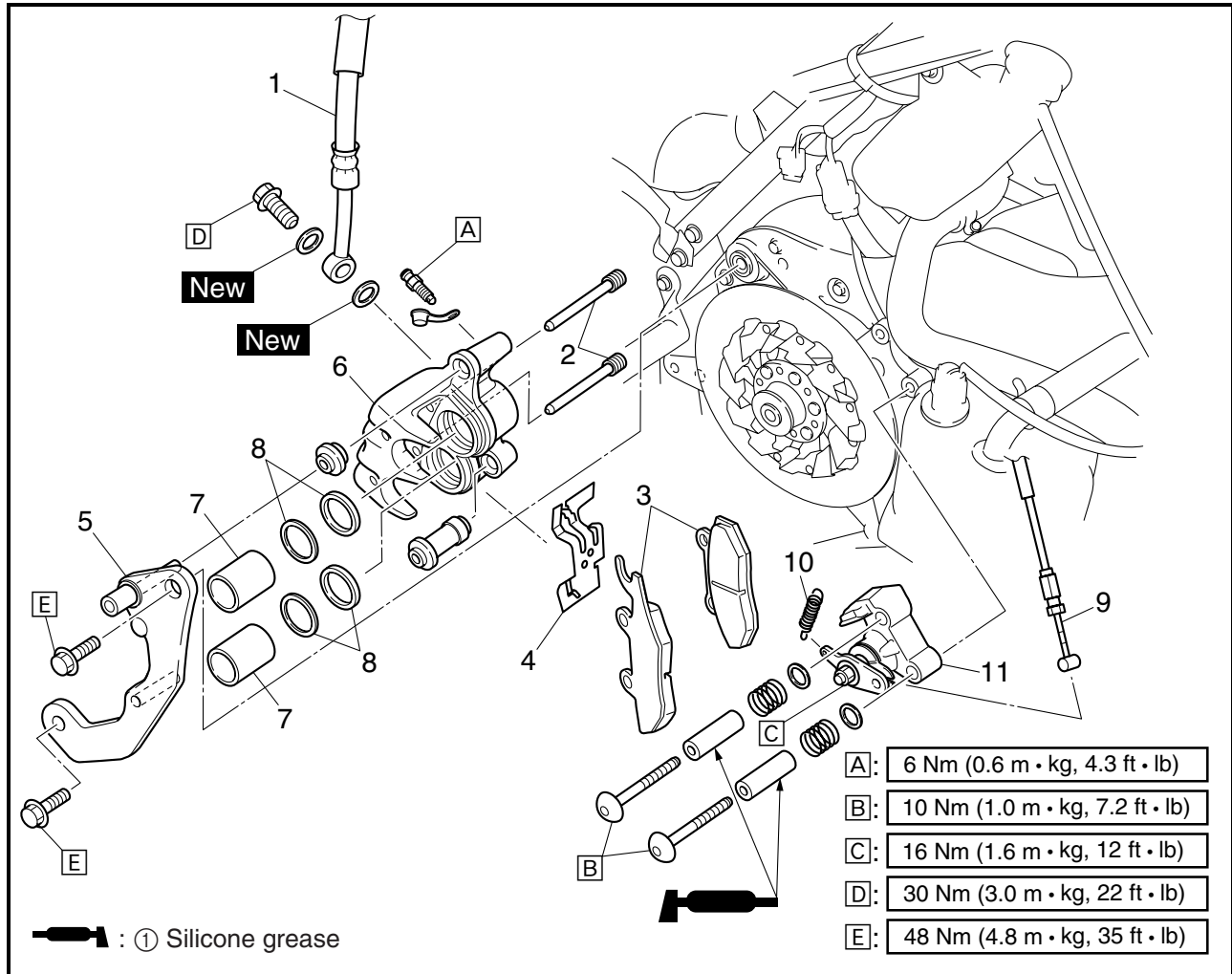
- Install the brake pads and pad spring.

3. Check:

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

4. Check:

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



Order	Job name/Part name	Q'ty	Remarks
	Brake caliper and parking brake removal		Remove the parts in the order listed below.
	Brake fluid		Drain.
1	Brake hose	1	
2	Retaining pin	2	
3	Brake pad	2	
4	Pad spring	1	
5	Brake caliper bracket	1	
6	Brake caliper	1	
7	Brake caliper piston	2	
8	Brake caliper piston seal	4	
9	Parking brake cable	1	
10	Spring	1	
11	Parking brake assembly	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:

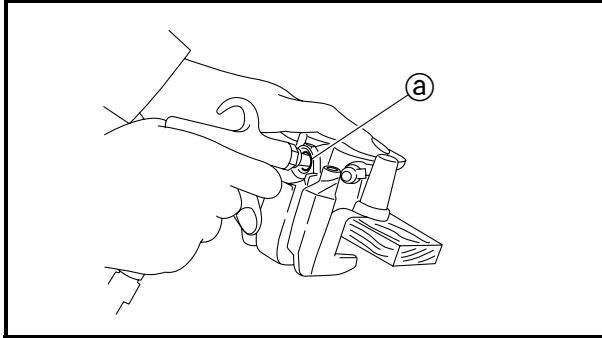
- Pistons
- Piston seals

Removal steps:

- Using a wood of piece, lock the piston.
- Blow compressed air into the hose joint opening (a) to force out the pistons from the caliper body.

⚠ WARNING

Never try to pry out the pistons.

**BRAKE CALIPER INSPECTION AND REPAIR**

Recommended brake component replacement schedule	
Brake pads	As required
Piston seals	Every two years
Brake hose	Every four 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
Scratches/rust/wear → Replace the caliper assembly.
- Caliper cylinder
Wear/scratches → Replace the caliper assembly.
- Caliper body
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

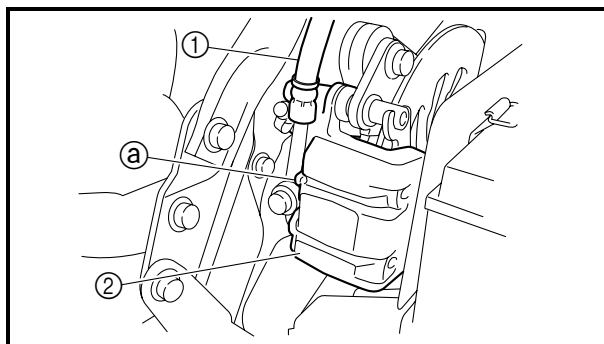
⚠ WARNING

- 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 whenever a caliper is disassembled.



BRAKE CALIPER INSTALLATION

1. Install:

- Brake hose ①

CAUTION:

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

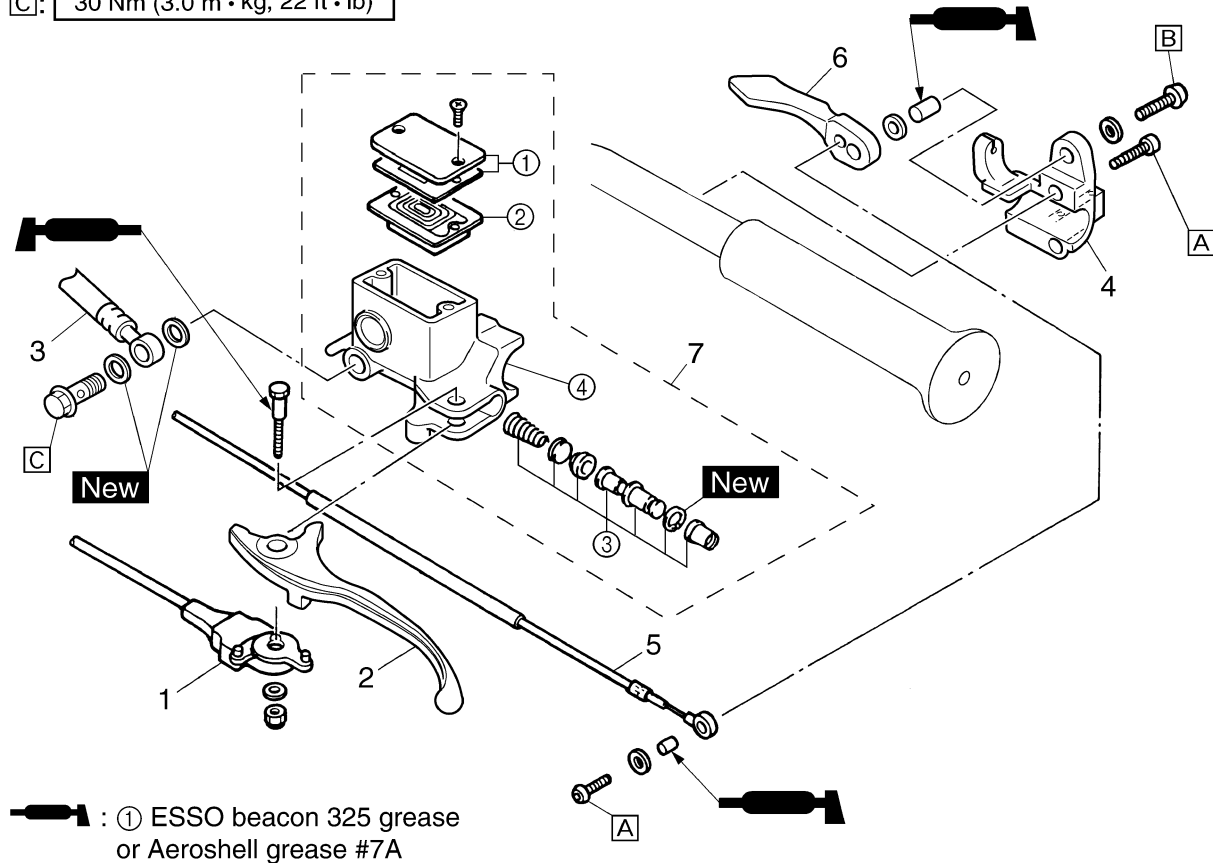


Union bolt (brake hose):
30 Nm (3.0 m · kg, 22 ft · lb)

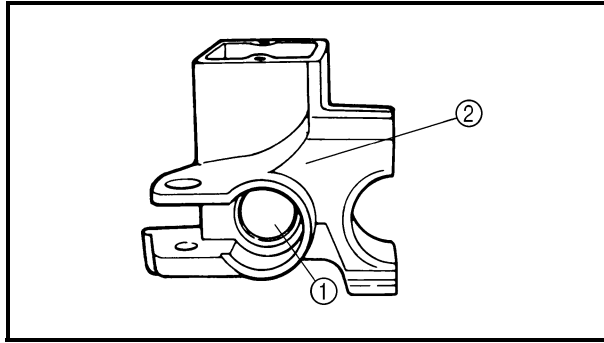
[A]: 10 Nm (1.0 m • kg, 7.2 ft • lb)

[B]: 23 Nm (2.3 m • kg, 17 ft • lb)

[C]: 30 Nm (3.0 m • kg, 22 ft • lb)



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



INSPECTION

1. Inspect:

- Master cylinder ①
Wear/scratches → Replace the master cylinder assembly.
- Master cylinder body ②
Cracks/damage → Replace.
- Oil delivery passage (master cylinder body)
Blow out with compressed air.

2. Inspect:

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

BRAKE MASTER CYLINDER ASSEMBLY

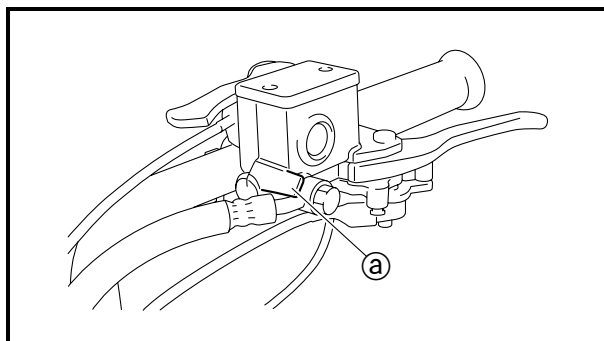
WARNING

- All internal parts should be cleaned only with new brake fluid.
- Internal parts should be lubricated with brake fluid when installed.



Recommended brake fluid:
DOT 4

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



INSTALLATION

1. Install:

- Brake hose

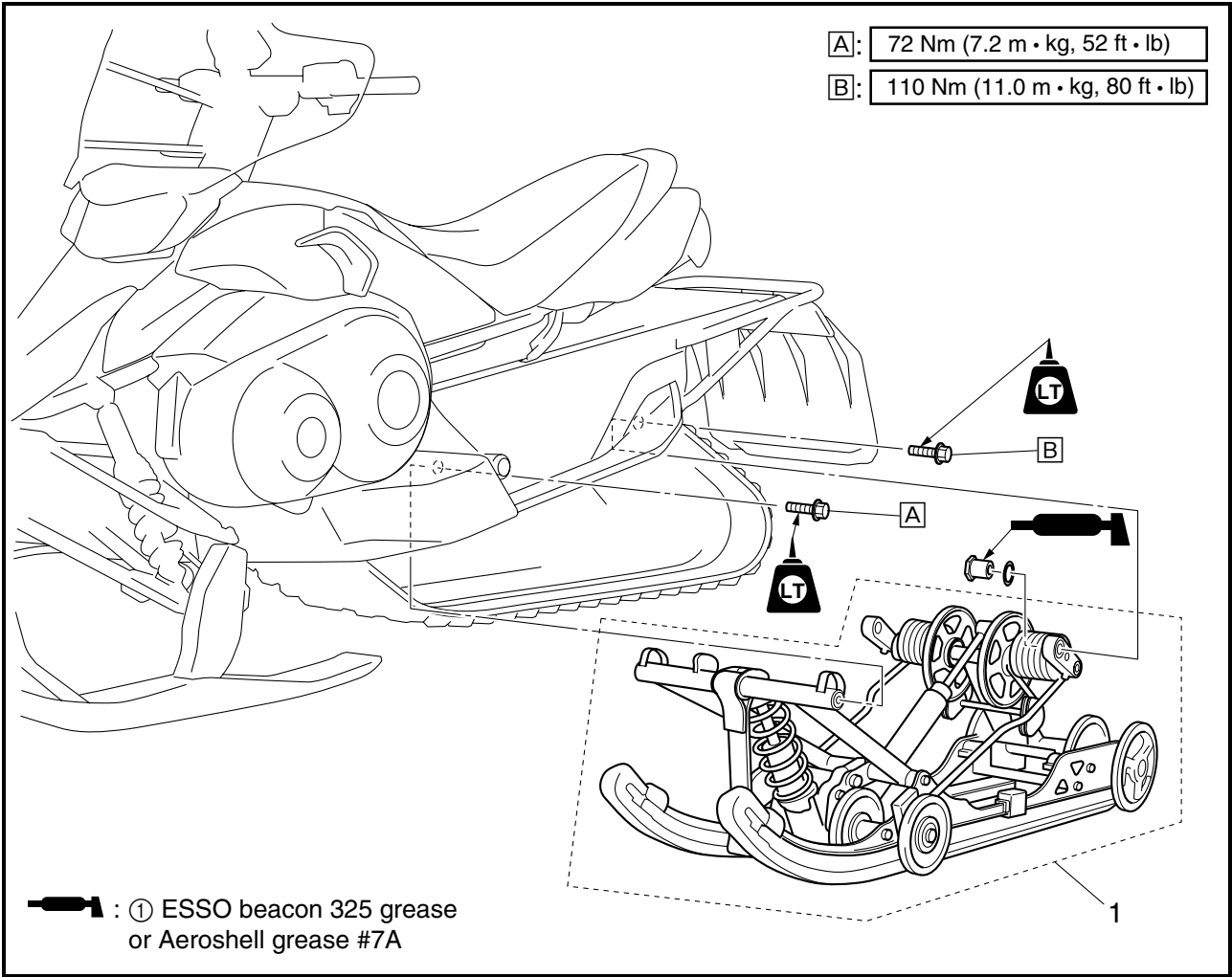
CAUTION:

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

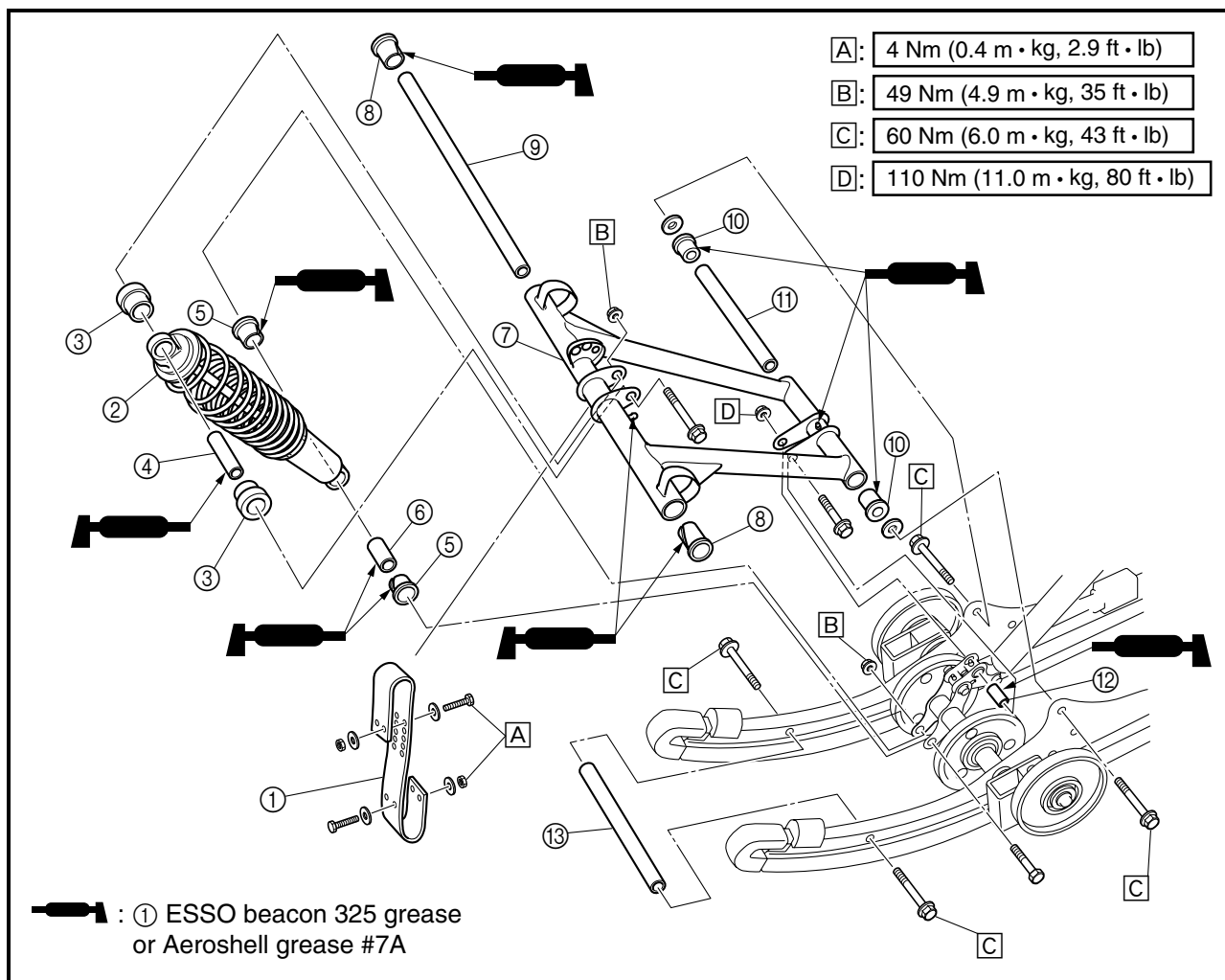


Union bolt (brake hose):
30 Nm (3.0 m · kg, 22 ft · lb)

SLIDE RAIL SUSPENSION
PZ50/PZ50GT/PZ50FX/PZ50M

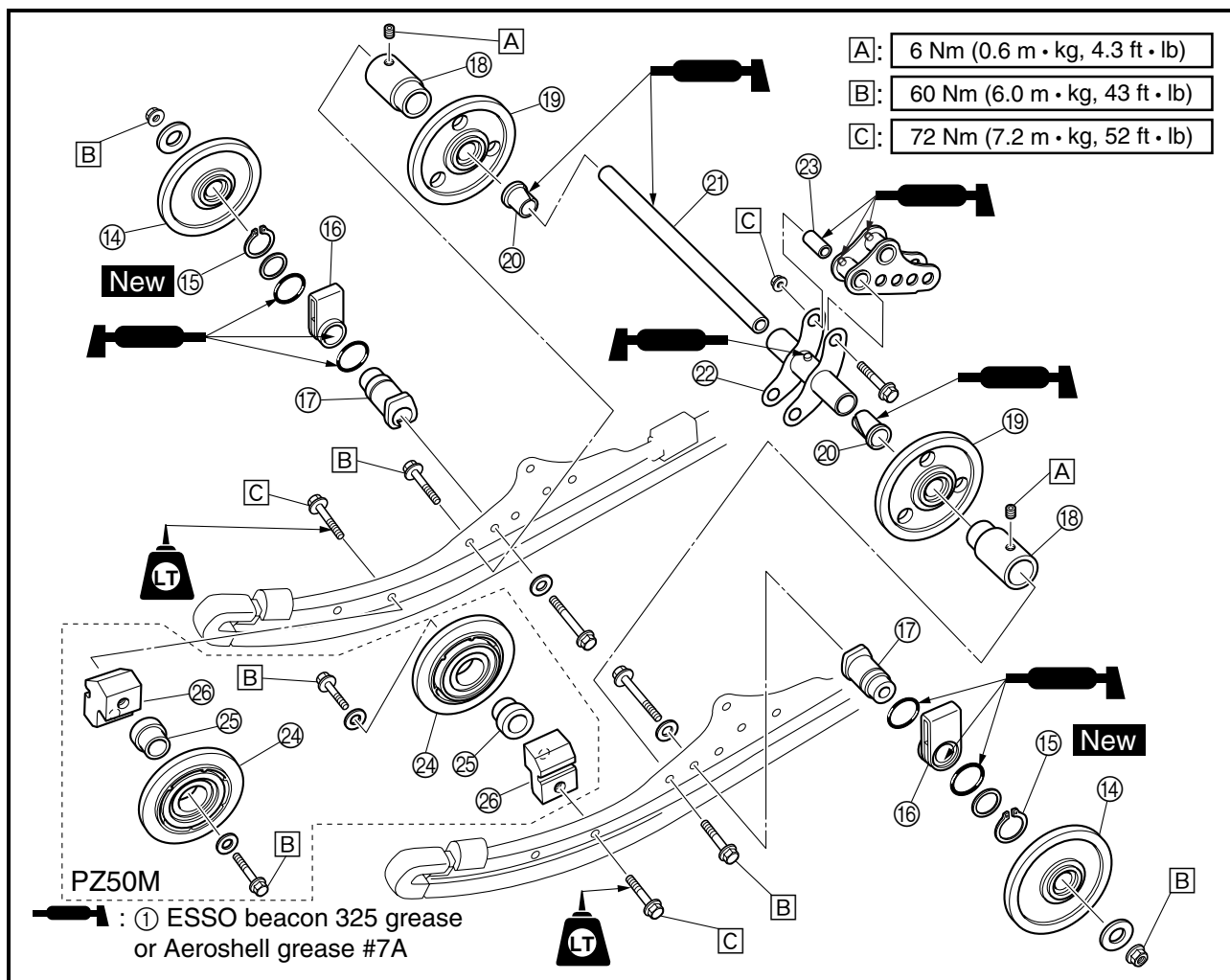


Order	Job name/Part name	Q'ty	Remarks
1	Slide rail suspension removal Rear axle nut Tension adjuster Slide rail suspension	1	Remove the parts in the order listed below. Loosen. Loosen. For installation, reverse the removal procedure.

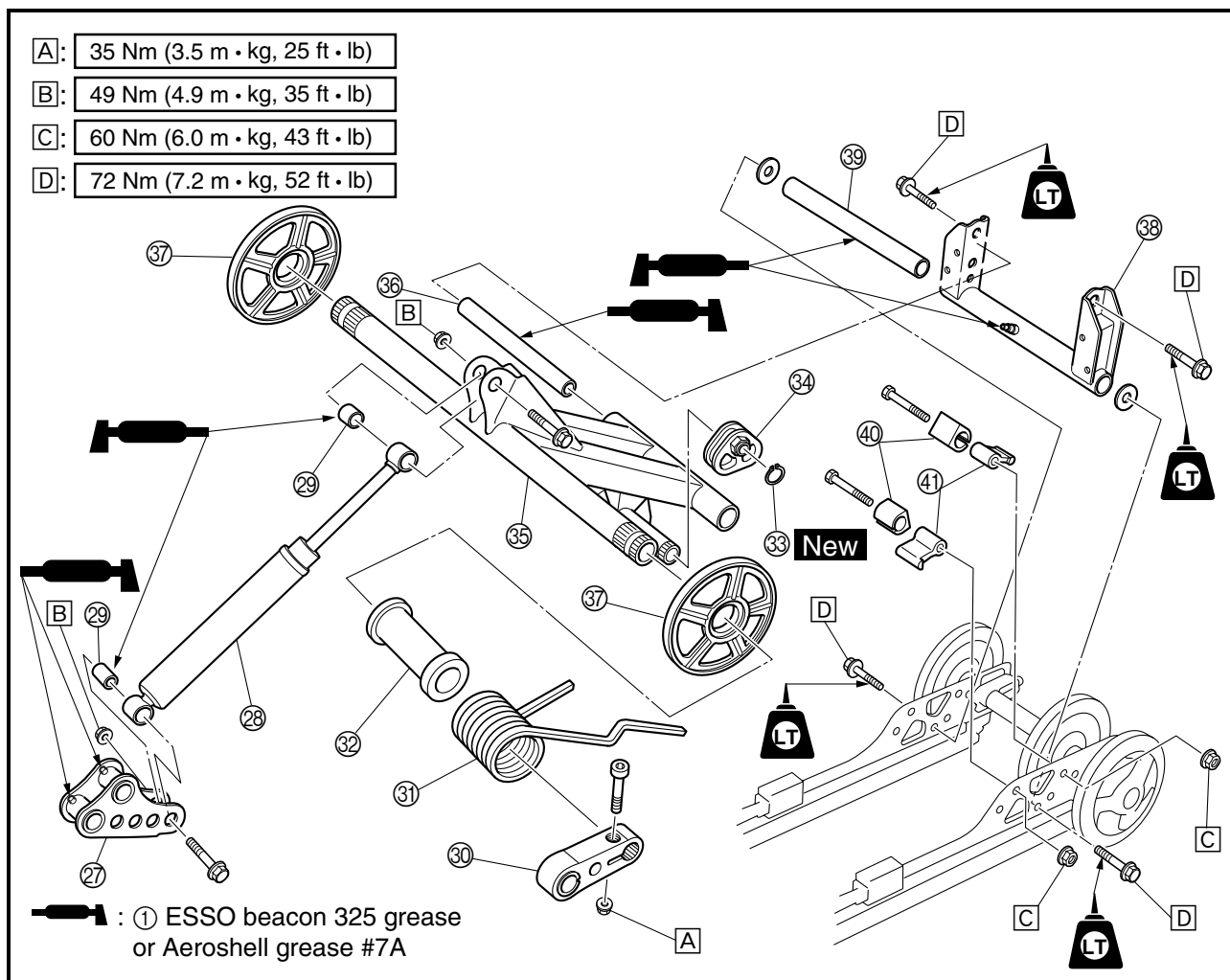


Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension disassembly		Remove the parts in the order listed below.
①	Stopper band	1	
②	Front shock absorber	1	
③	Bushing	2	
④	Collar	1	
⑤	Bushing	2	
⑥	Collar	1	
⑦	Front pivot arm	1	
⑧	Bushing	2	
⑨	Shaft	1	
⑩	Collar	2	
⑪	Shaft	1	
⑫	Collar	1	
⑬	Shaft	1	

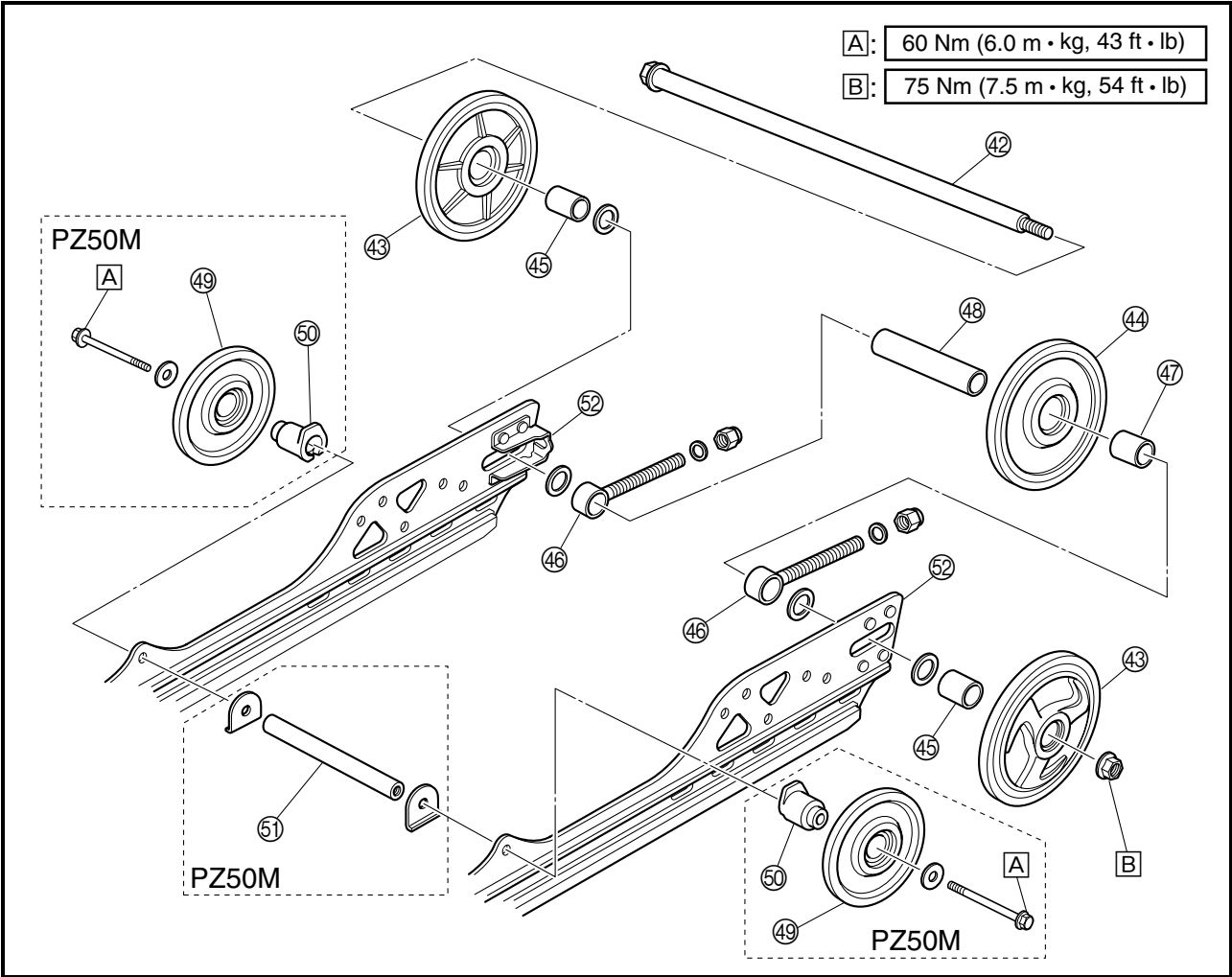
SLIDE RAIL SUSPENSION



Order	Job name/Part name	Q'ty	Remarks
⑭	Suspension wheel	2	NOTE: _____ Apply grease to the inner surface of each spring end guide.
⑮	Circlip	2	
⑯	Spring end guide	2	
⑰	Spring end guide bracket	2	
⑱	Wheel bracket	2	
⑲	Suspension wheel	2	
⑳	Bushing	2	
㉑	Shaft	1	
㉒	Front suspension bracket	1	
㉓	Collar	1	
㉔	Suspension wheel	2	
㉕	Collar	2	
㉖	Wheel bracket	2	

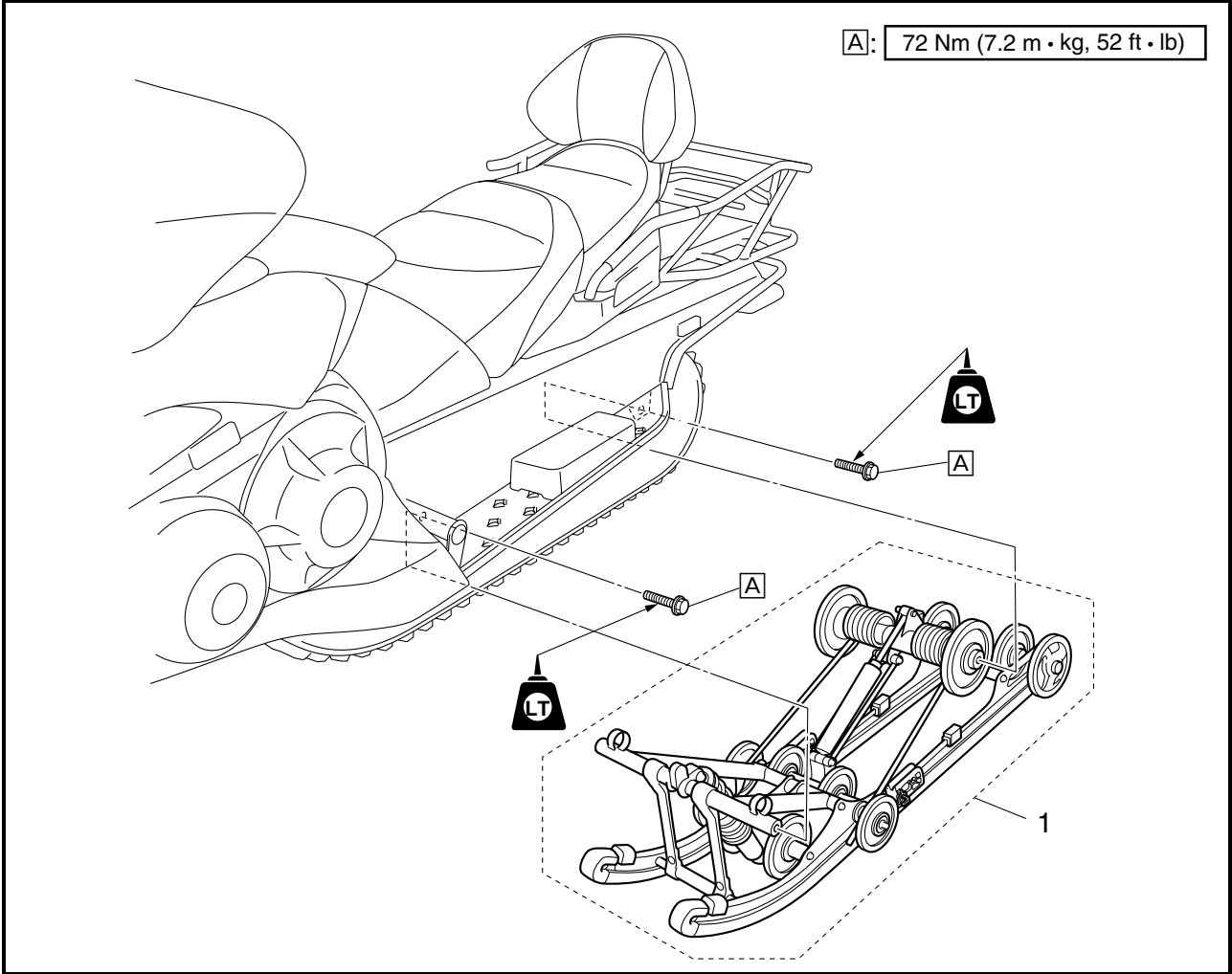


Order	Job name/Part name	Q'ty	Remarks
②7	Connecting arm	1	
②8	Rear shock absorber	1	
②9	Collar	2	
③0	Rear pivot arm joint	2	
③1	Torsion spring	2	
③2	Rear pivot arm protector	2	
③3	Circlip	2	
③4	Adjuster	2	
③5	Rear pivot arm	1	
③6	Shaft	1	
③7	Guide wheel	2	
③8	Rear pivot arm bracket	1	
③9	Shaft	1	
④0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

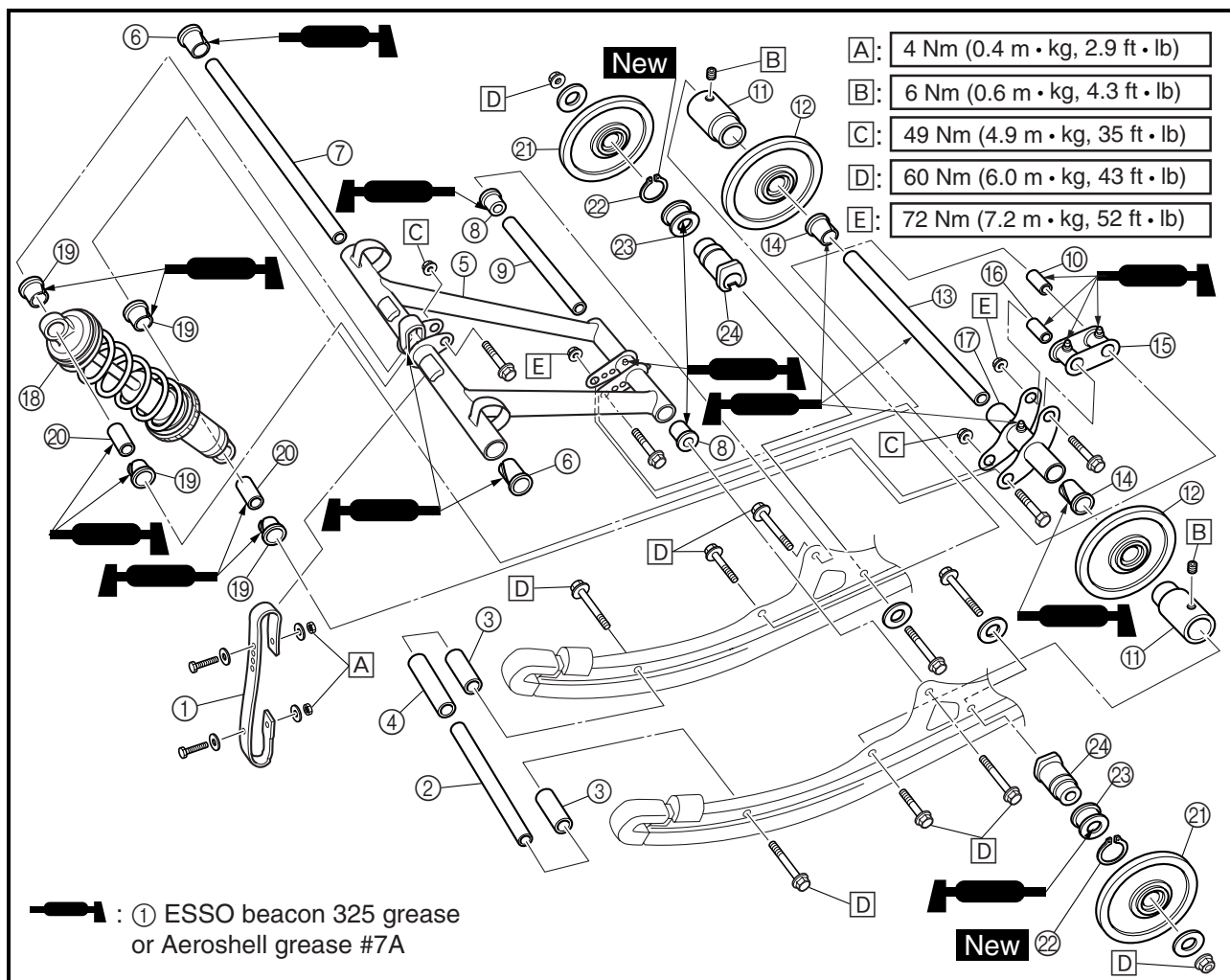


Order	Job name/Part name	Q'ty	Remarks
④②	Rear axle	1	For assembly, reverse the disassembly procedure.
④③	Guide wheel	2	
④④	Guide wheel	1	
④⑤	Collar	2	
④⑥	Tension adjuster	2	
④⑦	Collar	1	
④⑧	Collar	1	
④⑨	Suspension wheel	2	
⑤①	Wheel bracket	2	
⑤②	Sliding frame	2	

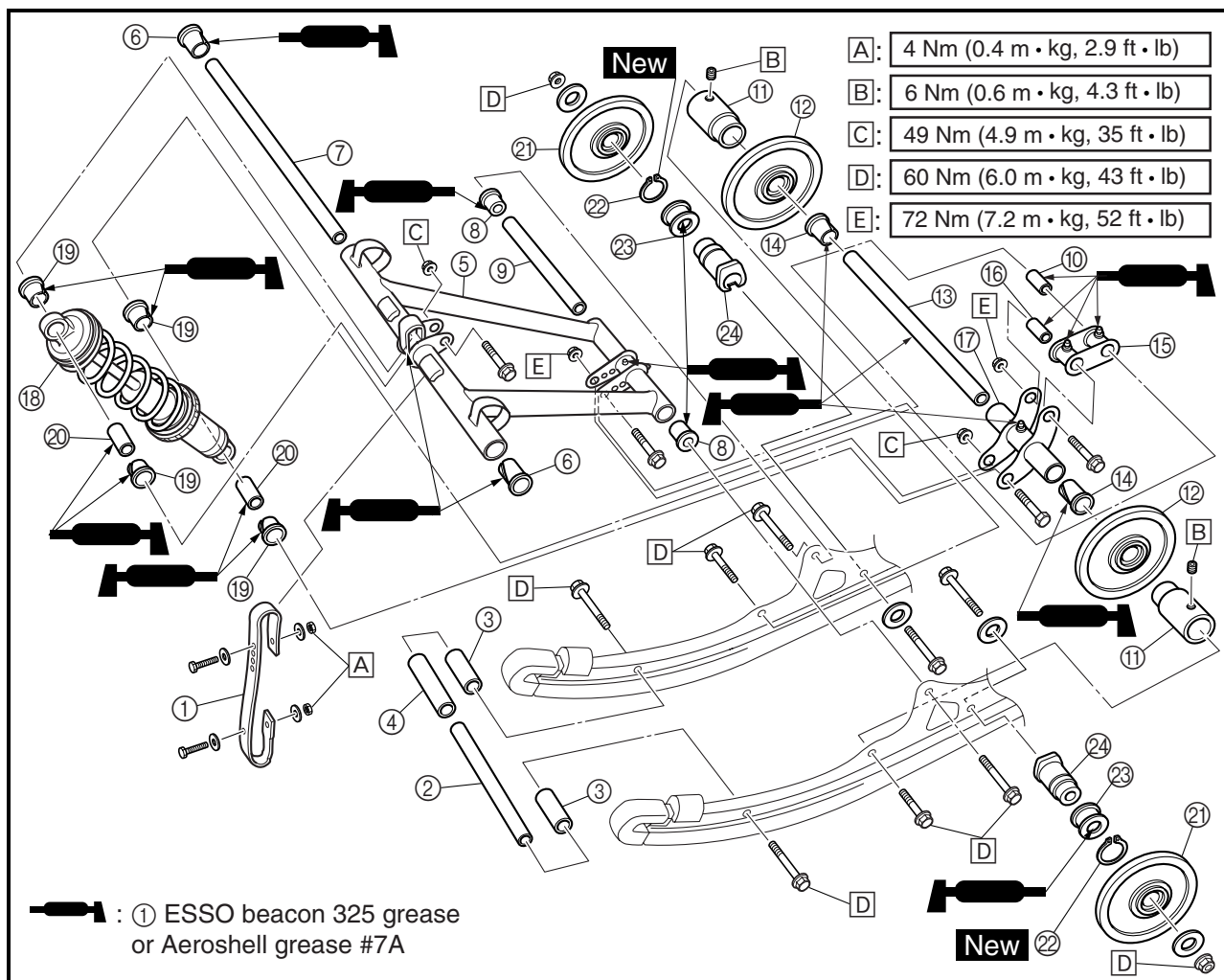
PZ50VT/PZ50MP



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



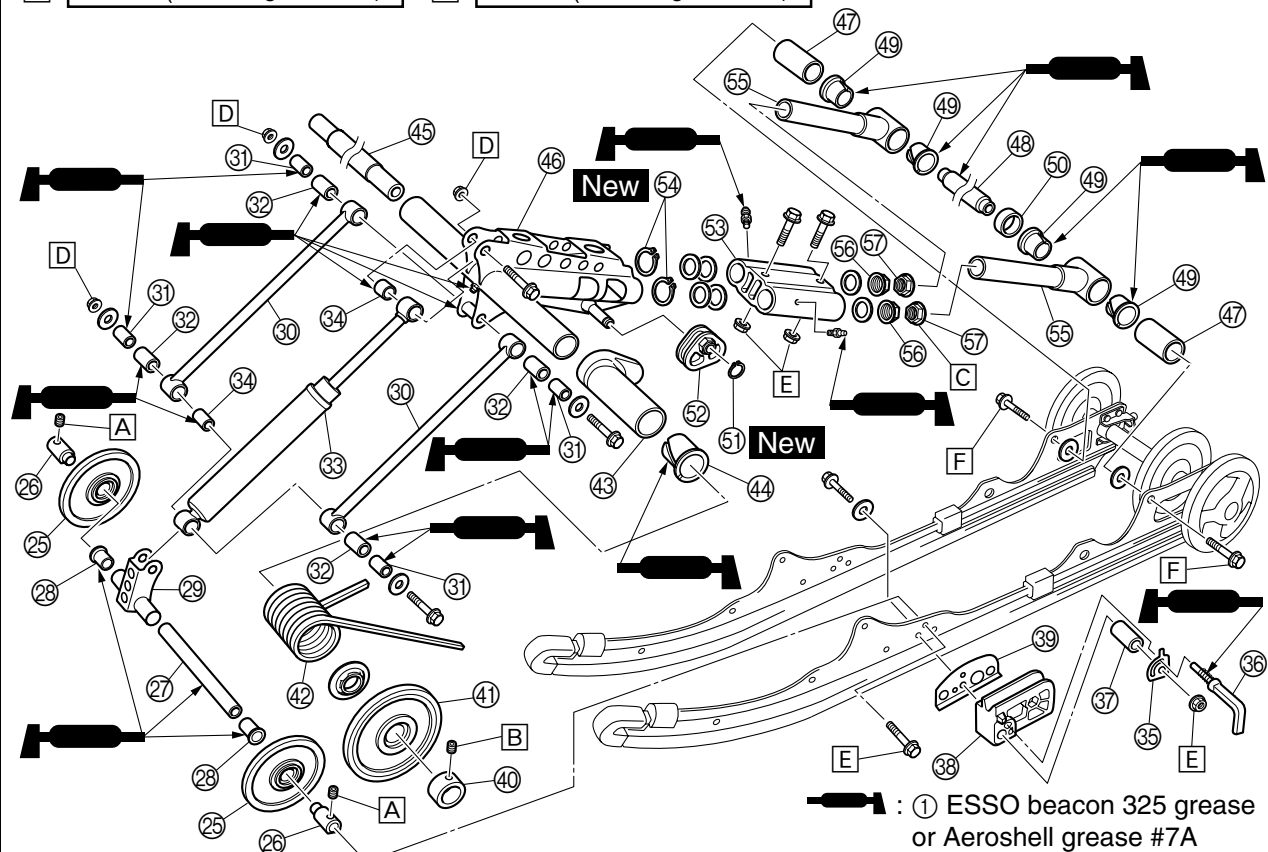
Order	Job name/Part name	Q'ty	Remarks
	Slide rail suspension disassembly		Remove the parts in the order listed below.
①	Stopper band	2	
②	Shaft	1	
③	Collar	2	
④	Collar	1	
⑤	Front pivot arm	1	
⑥	Bushing	2	
⑦	Shaft	1	
⑧	Collar	2	
⑨	Shaft	1	
⑩	Collar	1	
⑪	Wheel bracket	2	
⑫	Suspension wheel	2	
⑬	Shaft	1	



Order	Job name/Part name	Q'ty	Remarks
⑭	Bushing	2	NOTE: _____ Apply grease to the inner surface of each spring end guide. _____
⑮	Connecting arm	1	
⑯	Collar	1	
⑰	Front suspension bracket	1	
⑱	Front shock absorber	1	
⑲	Bushing	4	
⑳	Collar	2	
㉑	Suspension wheel	2	
㉒	Circlip	2	
㉓	Spring end guide	2	
㉔	Spring end guide bracket	2	

- A: 6 Nm (0.6 m • kg, 4.3 ft • lb)
B: 9 Nm (0.9 m • kg, 6.5 ft • lb)
C: 25 Nm (2.5 m • kg, 18 ft • lb)

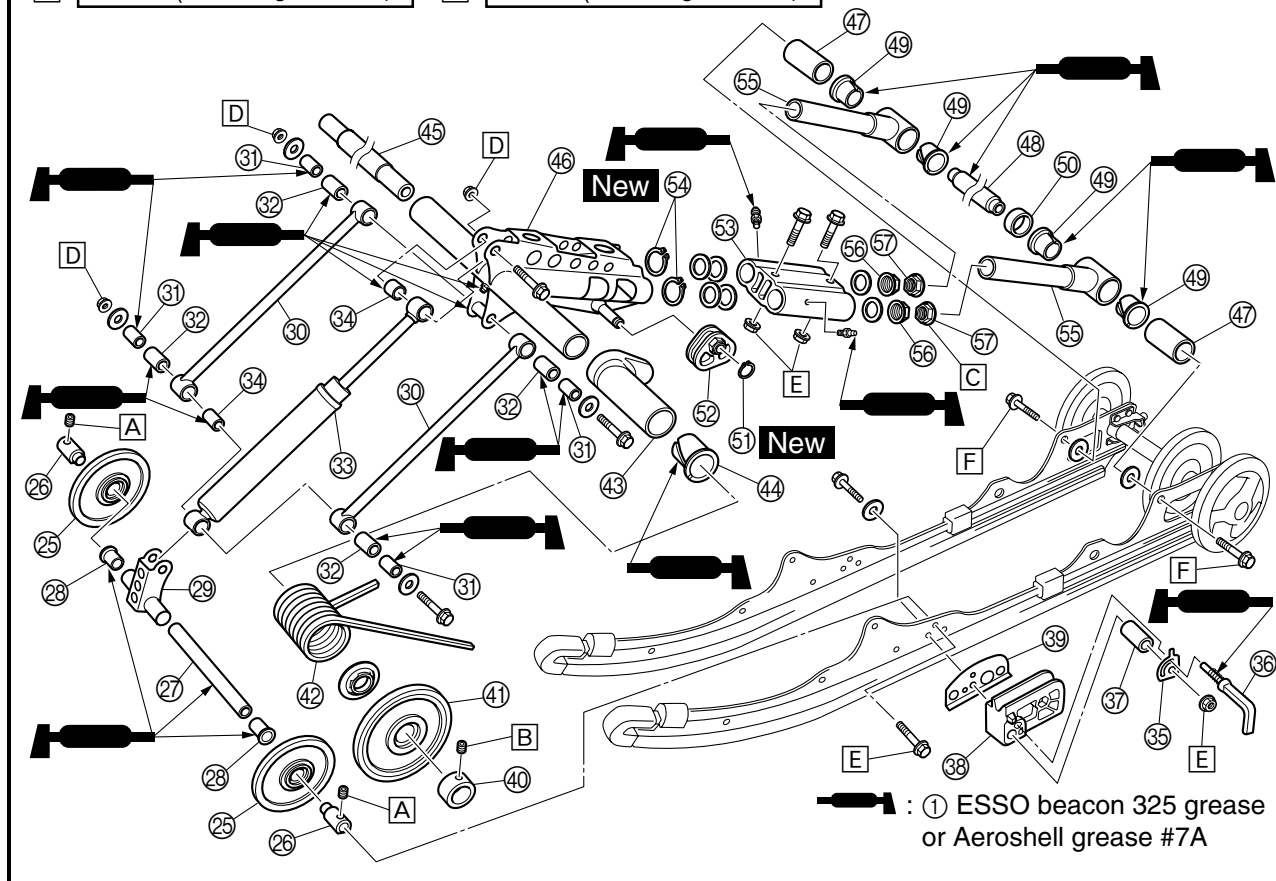
- D: 49 Nm (4.9 m • kg, 35 ft • lb)
E: 60 Nm (6.0 m • kg, 43 ft • lb)
F: 72 Nm (7.2 m • kg, 52 ft • lb)



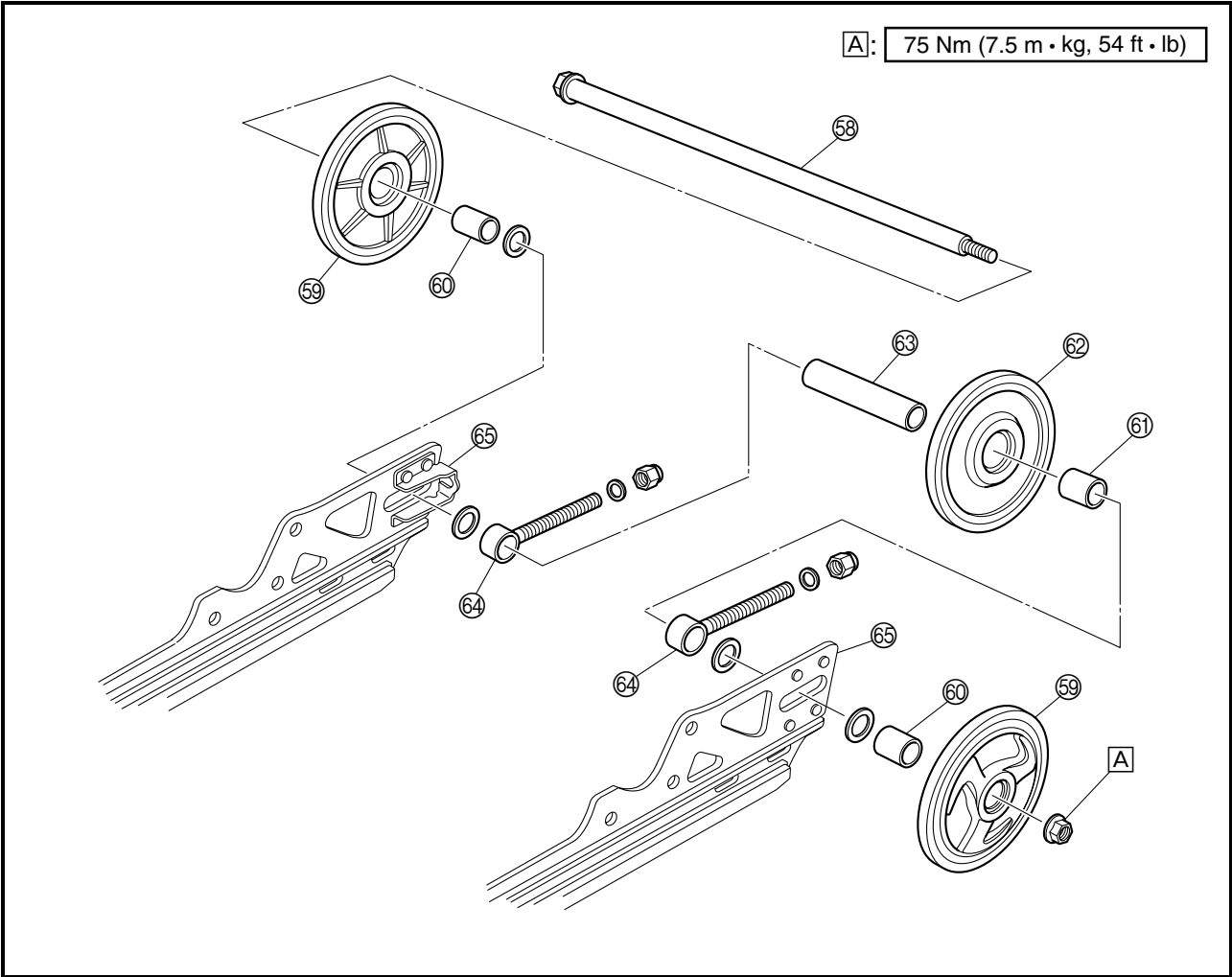
Order	Job name/Part name	Q'ty	Remarks
25	Suspension wheel	2	
26	Wheel bracket	2	
27	Shaft	1	
28	Bushing	2	
29	Rear suspension bracket	1	
30	Pull rod	2	
31	Collar	4	
32	Bushing	4	
33	Rear shock absorber	1	
34	Collar	2	
35	Lock lever guide plate	2	
36	Lock lever	2	
37	Collar	2	
38	2-up adjusting block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

A:	6 Nm (0.6 m • kg, 4.3 ft • lb)
B:	9 Nm (0.9 m • kg, 6.5 ft • lb)
C:	25 Nm (2.5 m • kg, 18 ft • lb)

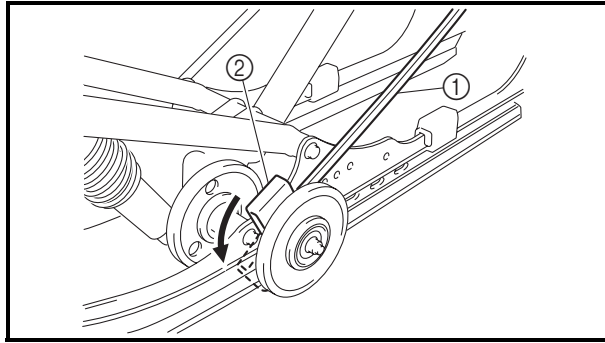
D:	49 Nm (4.9 m • kg, 35 ft • lb)
E:	60 Nm (6.0 m • kg, 43 ft • lb)
F:	72 Nm (7.2 m • kg, 52 ft • lb)



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



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

**REMOVAL**

1. Unhook the torsion spring ①
(PZ50/PZ50GT/PZ50FX/PZ50M)

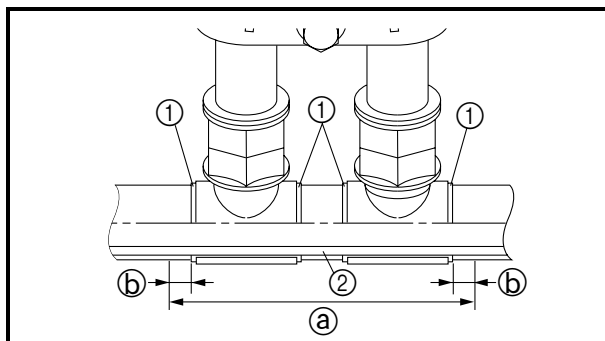
NOTE:

For PZ50/PZ50GT/PZ50FX/PZ50M

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

INSPECTION

1. Inspect:
 - Suspension wheel
 - Guide wheel
Cracks/damage → Replace.
 - Wheel bearing
Wheel turns roughly → Replace.
2. Inspect:
 - Stopper band
Frayed/damage → Replace.
 - Pull rod (PZ50VT/PZ50MP)
Bends/damage → Replace.
 - Shock absorber
Oil leaks/damage → Replace.
 - Bushings
Wear/cracks/damage → Replace.
 - Front pivot arm
 - Rear pivot arm
 - Rear pivot arm bracket
(PZ50/PZ50GT/PZ50FX/PZ50M)
 - Suspension wheel bracket
 - Front suspension bracket
 - Rear suspension bracket
 - Connecting arm
 - Connecting arm
 - Rear pivot arm joint
 - Sliding frame
Cracks/damage → Replace.
 - Slide runner
Wear/damage → Replace.

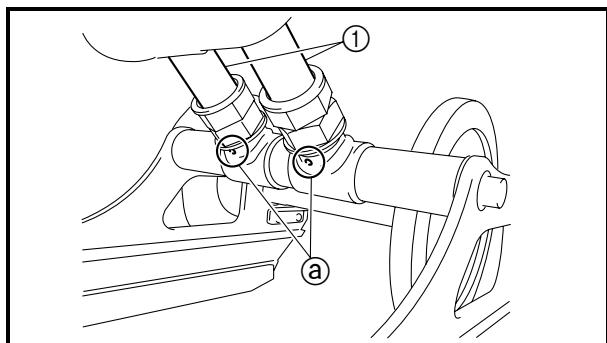
**ASSEMBLY**

1. Apply:
 - ESSO beacon 325 grease or Aeroshell grease #7A (PZ50VT/PZ50MP)

NOTE:

Apply grease to the bushings ① and the shaft ② in the area ③ shown in the illustration.

③ 5 ~ 15 mm (0.20 ~ 0.59 in)

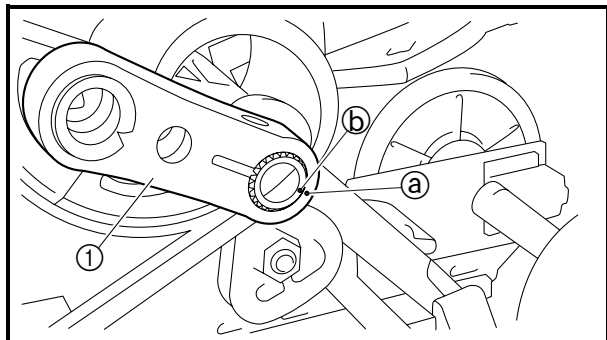


2. Install:

- Control rods ① (PZ50VT/PZ50MP)

NOTE:

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

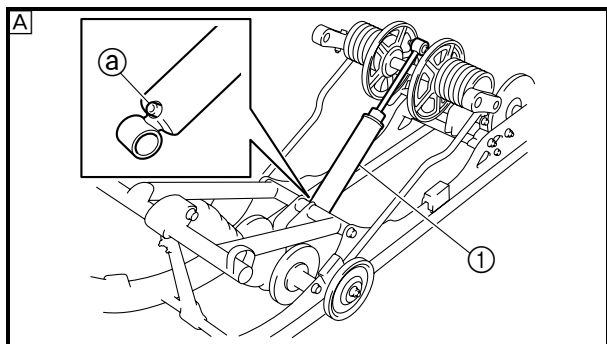


3. Install:

- Rear pivot arm joint ① (PZ50/PZ50GT/PZ50FX/PZ50M)

NOTE:

Align the punch mark (a) in the rear pivot arm joint with the punch mark (b) in the rear pivot arm.



4. Install:

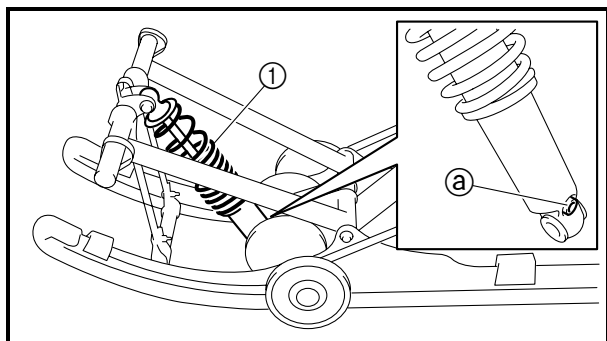
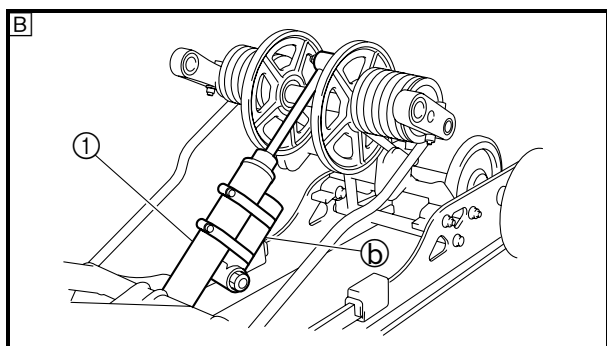
- Rear shock absorber ① (PZ50GT/PZ50FX/PZ50M)

NOTE:

- For PZ50GT/PZ50M:
Install the rear shock absorber with the charging valve (a) facing upward. If the shock absorber is not equipped with a charging valve, install it with the label facing downward.
- For PZ50FX
Install the rear shock absorber with its gas cylinder (b) facing downward.

A PZ50GT/PZ50M

B PZ50FX

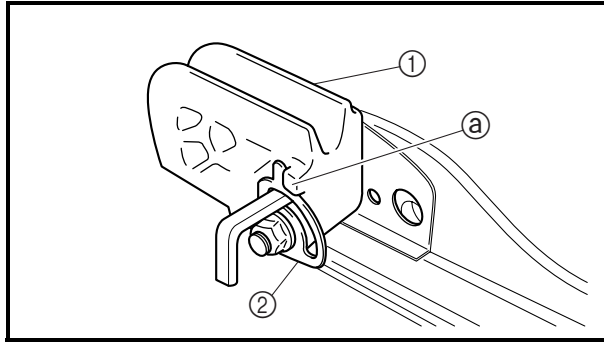


5. Install:

- Front shock absorber ① (PZ50GT/PZ50FX)

NOTE:

Install the front shock absorber with the charging valve (a) facing upward. If the shock absorber is not equipped with a charging valve, install it with the label facing downward.

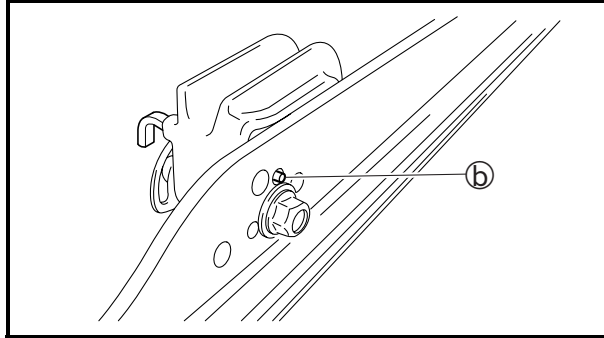


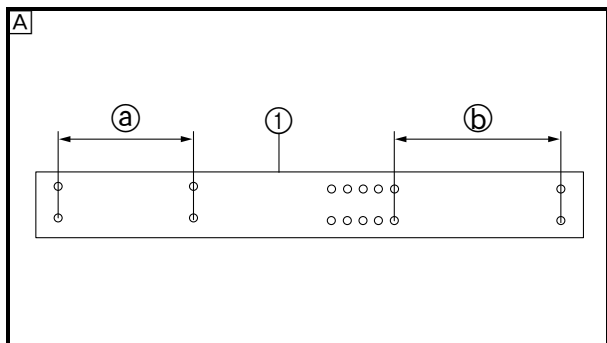
6. Install:

- 2-up adjusting block ① (PZ50VT/PZ50MP)

NOTE:

Install the lock lever guide plate ② as shown in the illustration so that the projection on the plate contacts the projection ① on the 2-up adjusting block. Make sure that the 2-up adjusting block is locked in place and the end ③ of the lock lever is sticking out from the sliding frame.





7. Install:

- Stopper band ①

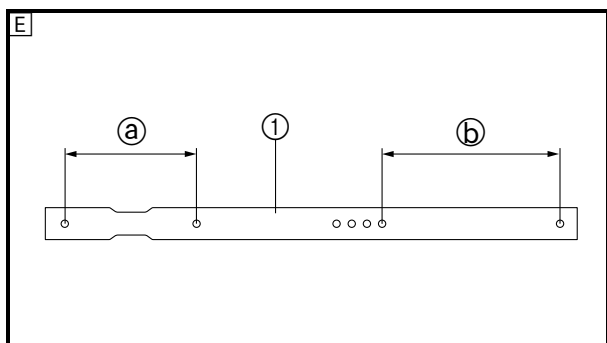
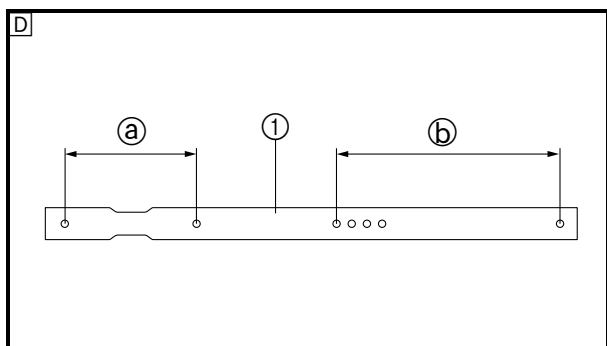
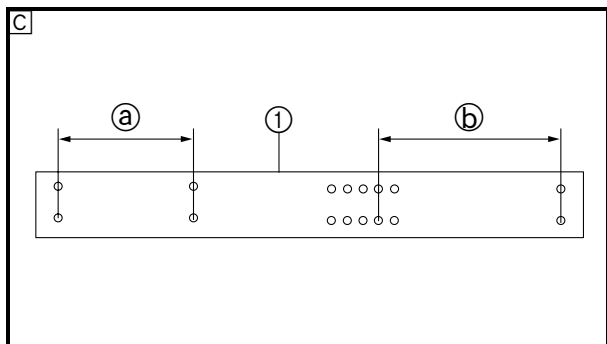
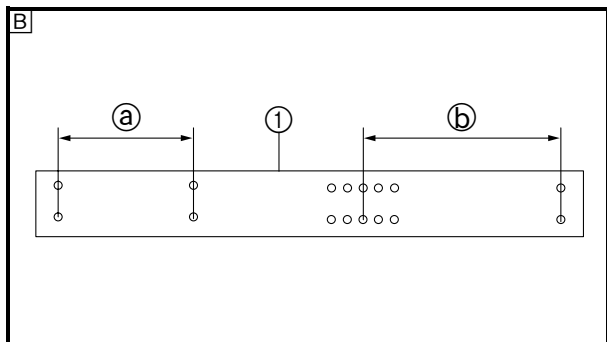
NOTE:

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

- A** PZ50
- B** PZ50GT/PZ50M
- C** PZ50FX
- D** PZ50VT
- E** PZ50MP



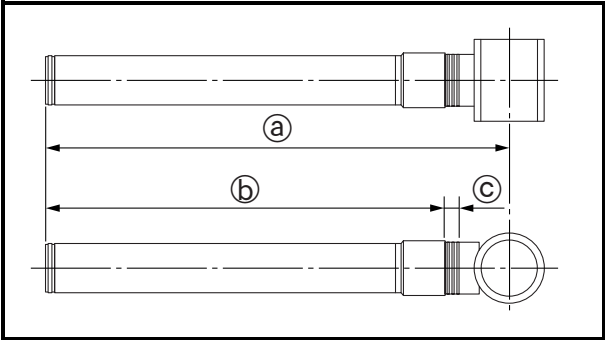
Stopper band nut:
4 Nm (0.4 m · kg, 2.9 ft · lb)



INSTALLATION

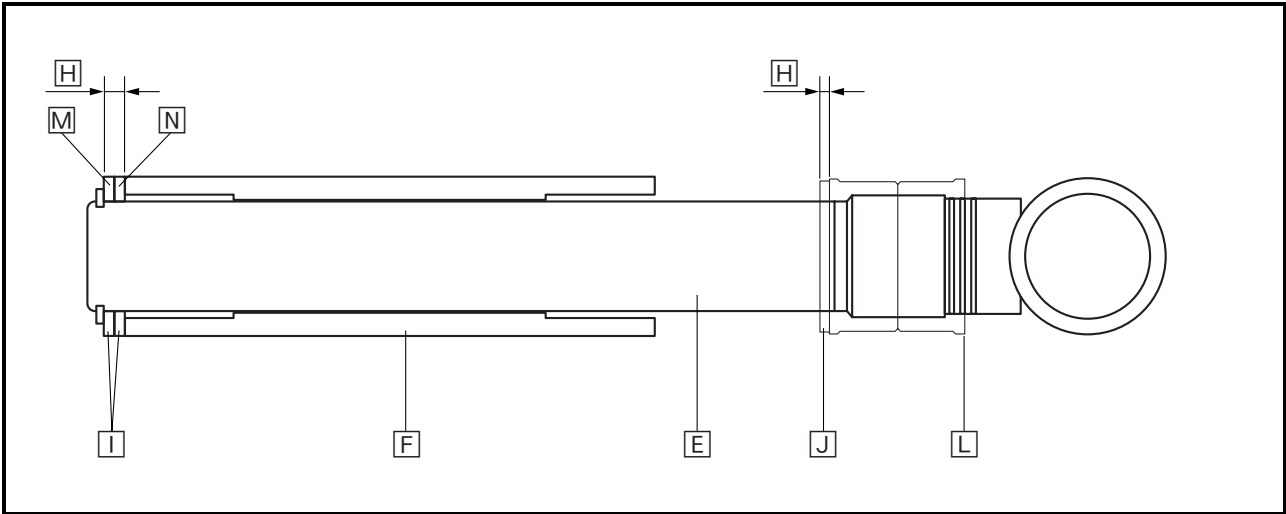
1. Adjust:
- Track tension
- Refer to “TRACK TENSION ADJUSTMENT”
in CHAPTER 2.

Control rod part numbers (PZ50VT/PZ50MP)



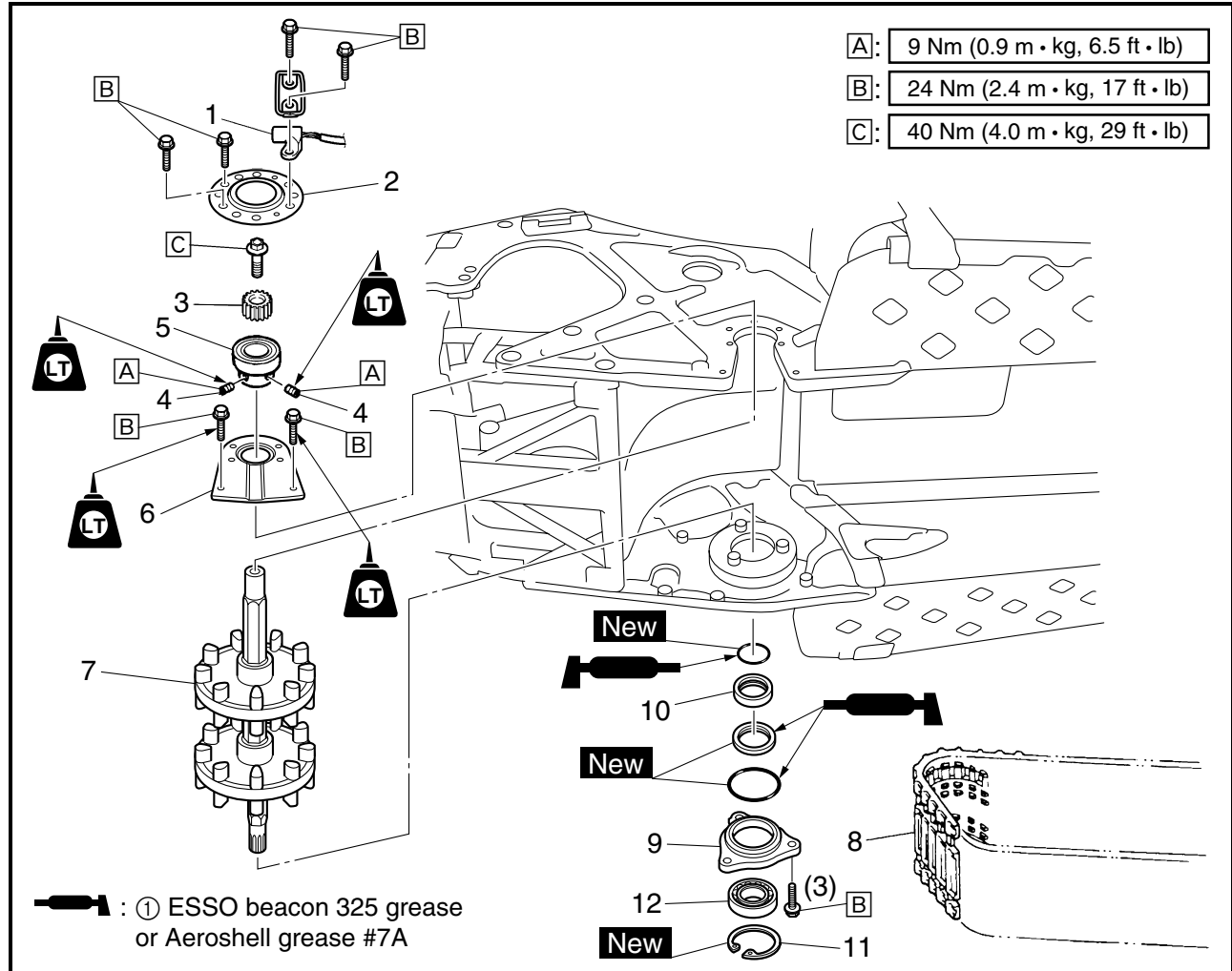
Ⓐ Control rod 1	Ⓑ Length Ⓐ mm (in)	Ⓒ Length Ⓑ mm (in)	Ⓓ Length Ⓒ mm (in)
PZ50VT/PZ50MP	242.3 (9.54)	188.7 (7.43)	$2.5P \times 2 = 5$ $(0.098P \times 2 = 0.197)$

Ⓔ Control rod 1 part numbers	Ⓕ Control rod stopper part numbers	Ⓖ Washer part numbers Ⓗ Washer thickness mm (in)			
		Ⓘ Upper	Ⓚ Q'ty	Ⓣ Lower	Ⓚ Q'ty
8ET-4745A-00 (PZ50VT/PZ50MP)	8ES-4745D-00	90202-25001 2.0 (0.079)	1	90202-25002 4.0 (0.157)	1
		90201-24015 2.0 (0.079)	1		

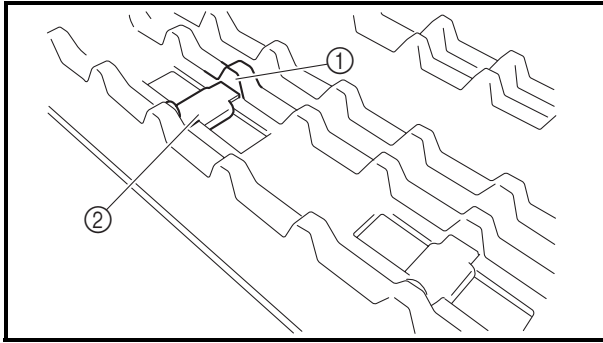


L Standard position M Metal washer(s) N Plastic washer(s)

FRONT AXLE AND TRACK



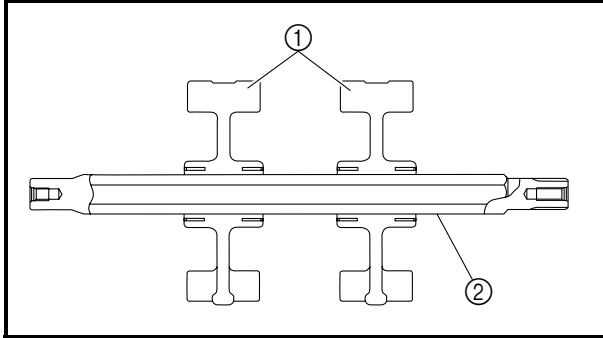
Order	Job name/Part name	Q'ty	Remarks
	Front axle and track removal		
	Drive chain		Remove the parts in the order listed below. Refer to "DRIVE CHAIN".
	Slide rail suspension		Refer to "SLIDE RAIL SUSPENSION".
	Secondary sheave		Refer to "SECONDARY SHEAVE".
1	Speed sensor	1	
2	Bearing holder	1	
3	Gear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



INSPECTION

1. Inspect:

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

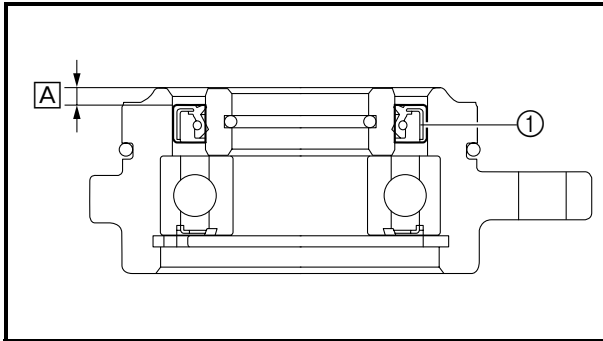


2. Inspect:

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

3. Inspect:

- Bearing
- Pitting/damage → Replace.



INSTALLATION

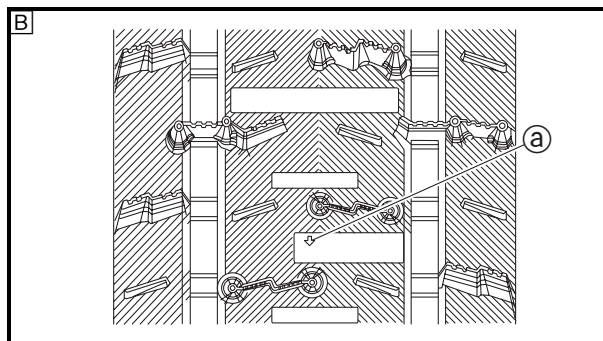
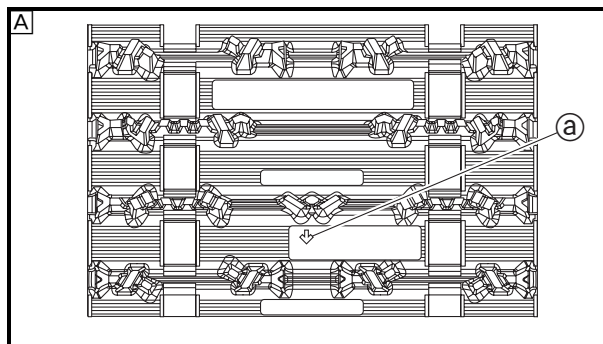
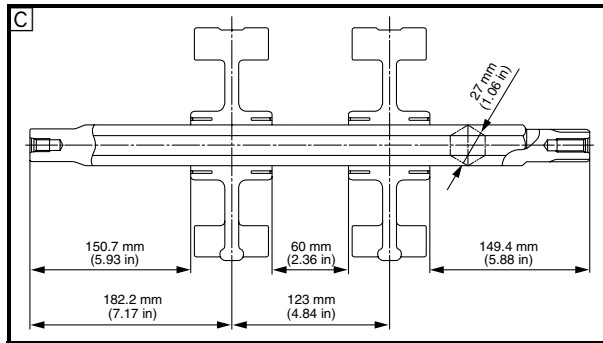
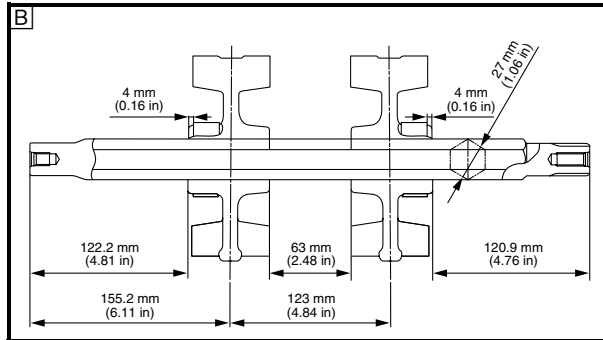
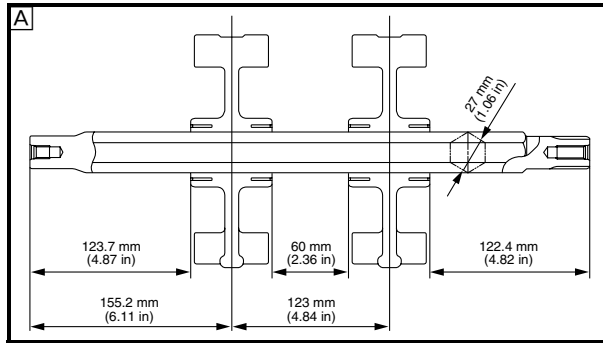
1. Install:

- Oil seal ①

NOTE:

Press the oil seal onto the bearing housing as shown.

A 2.5 ~ 3.5 mm (0.10 ~ 0.14 in)



2. 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 PZ50/PZ50GT/PZ50FX

B PZ50M

C PZ50VT/PZ50MP

3. Place the track in the chassis.

NOTE:

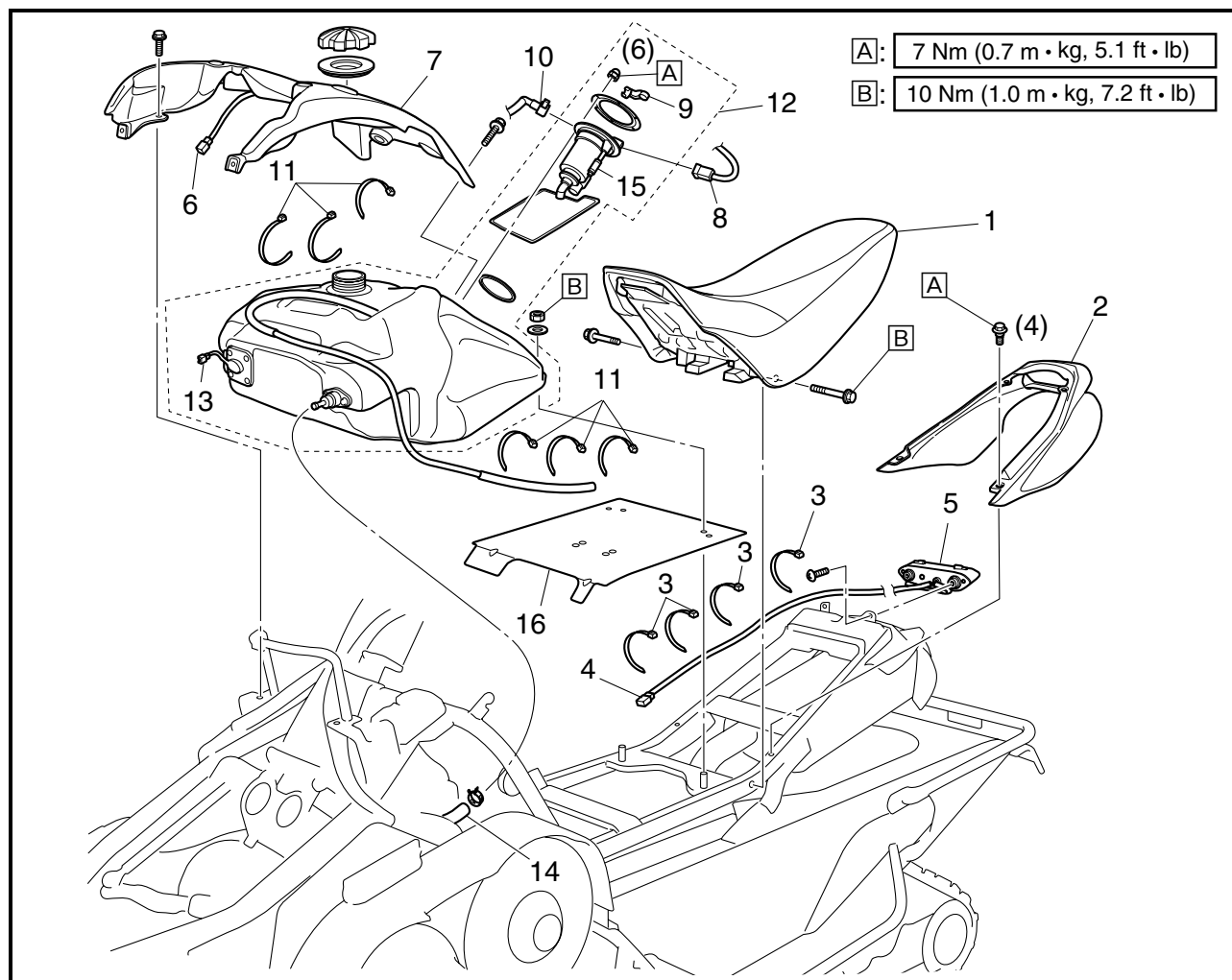
For track with a direction of rotation mark (a):
Install the track with the mark pointing in the direction of track rotation.

A PZ50/PZ50GT/PZ50FX/PZ50VT/PZ50MP

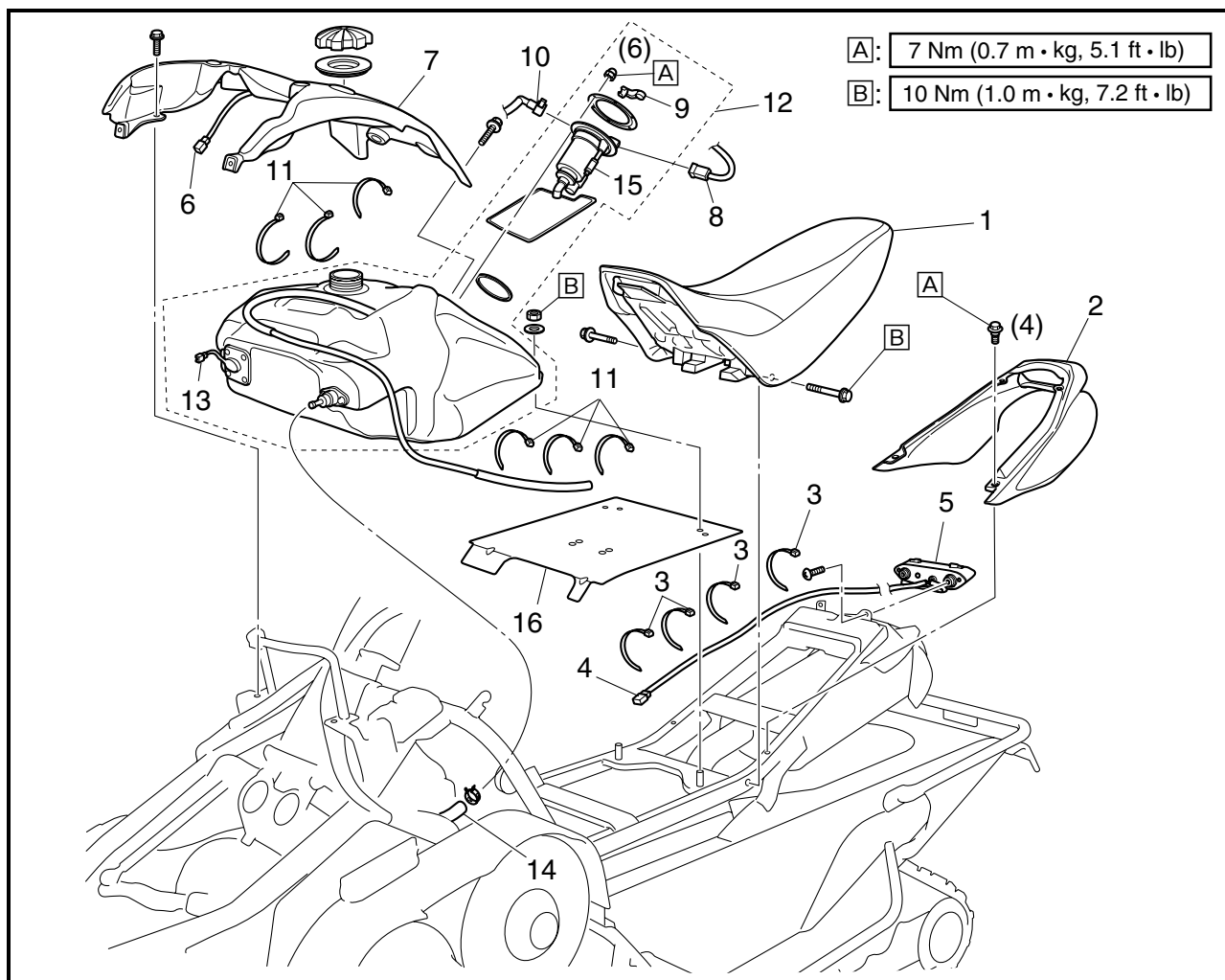
B PZ50M



ENGINE

SEAT AND FUEL TANK
PZ50/PZ50GT/PZ50FX/PZ50M


Order	Job name/Part name	Q'ty	Remarks
	Seat and fuel tank removal		Remove the parts in the order listed below.
1	Seat	1	
2	Rear cover	1	
3	Plastic band	4	
4	Tail/brake light coupler	1	Disconnect.
5	Tail/brake light assembly	1	
6	Main switch coupler	1	Disconnect.
7	Fuel tank cover	1	
8	Fuel pump coupler	1	Disconnect.
9	Fuel hose connector holder	1	
10	Fuel hose	1	Disconnect.



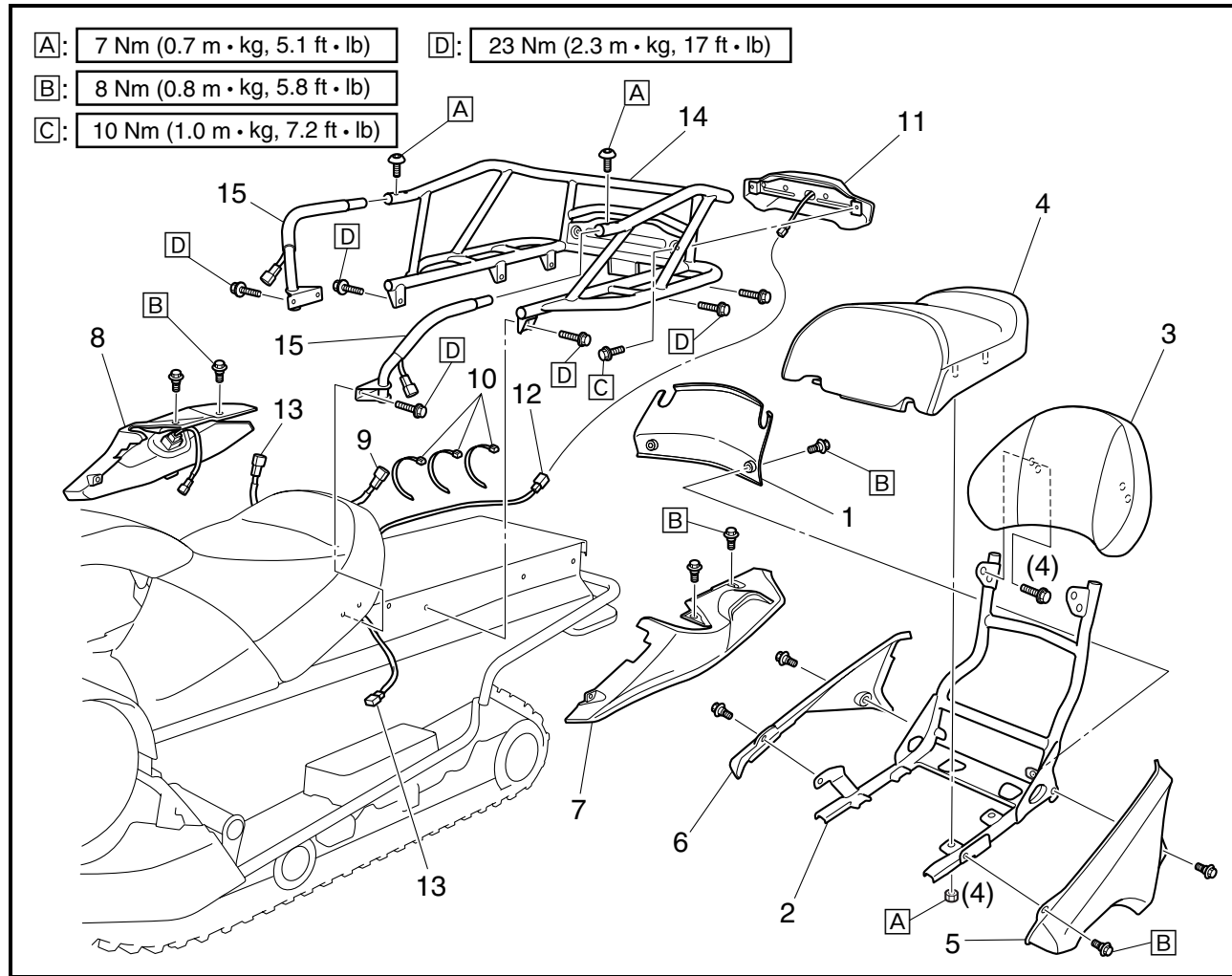
5

Order	Job name/Part name	Q'ty	Remarks
11	Plastic band	6	
12	Fuel tank assembly	1	
13	Fuel sender coupler	1	Disconnect.
14	Fuel hose	2	Disconnect.
15	Fuel pump	1	
16	Fuel tank lower plate	1	
For installation, reverse the removal procedure.			

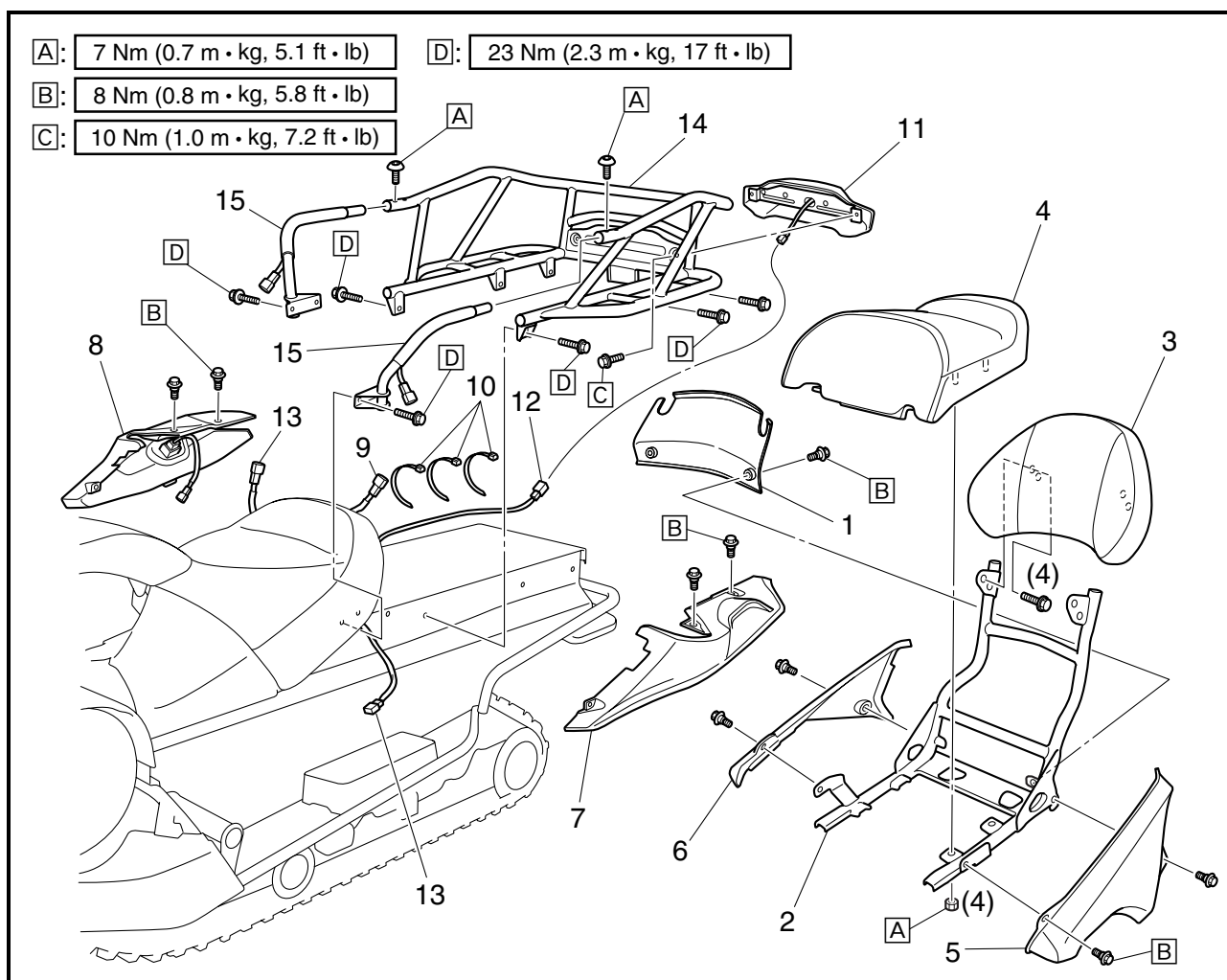


BACKREST AND PASSENGER SEAT

PZ50VT/PZ50MP



Order	Job name/Part name	Q'ty	Remarks
	Backrest and passenger seat removal		Remove the parts in the order listed below.
1	Rear cover	1	
2	Passenger seat bracket	1	
3	Backrest	1	
4	Passenger seat	1	
5	Left side rear cover	1	
6	Right side rear cover	1	
7	Left side rear lower cover	1	
8	Right side rear lower cover	1	
9	Passenger grip warmer switch coupler	1	Disconnect.
10	Plastic band	3	

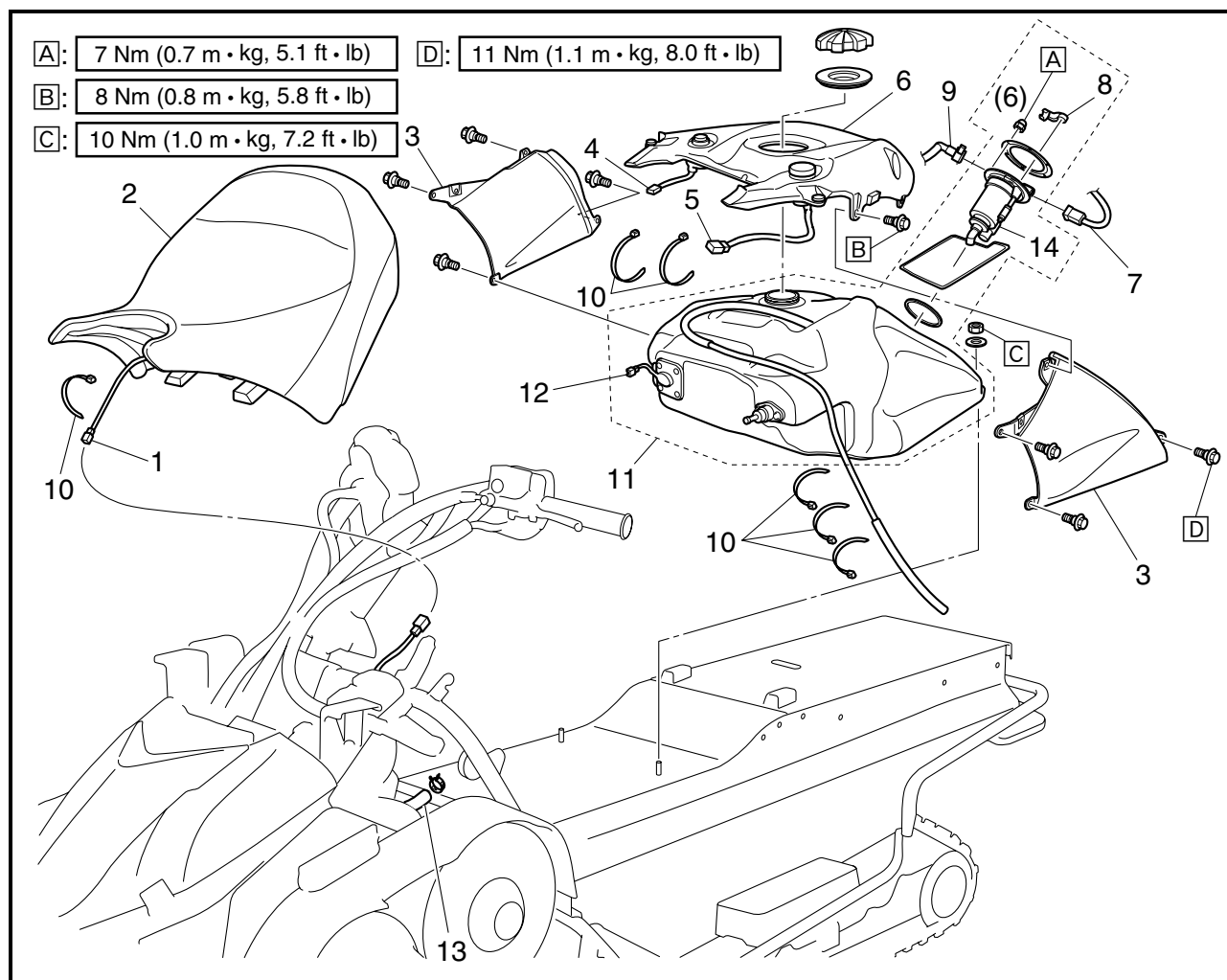


Order	Job name/Part name	Q'ty	Remarks
11	Tail/brake light assembly	1	
12	Tail/brake light switch coupler	1	Disconnect.
13	Passenger grip warmer coupler	2	Disconnect.
14	Rear carrier	1	
15	Passenger grip warmer	2	
For installation, reverse the removal procedure.			

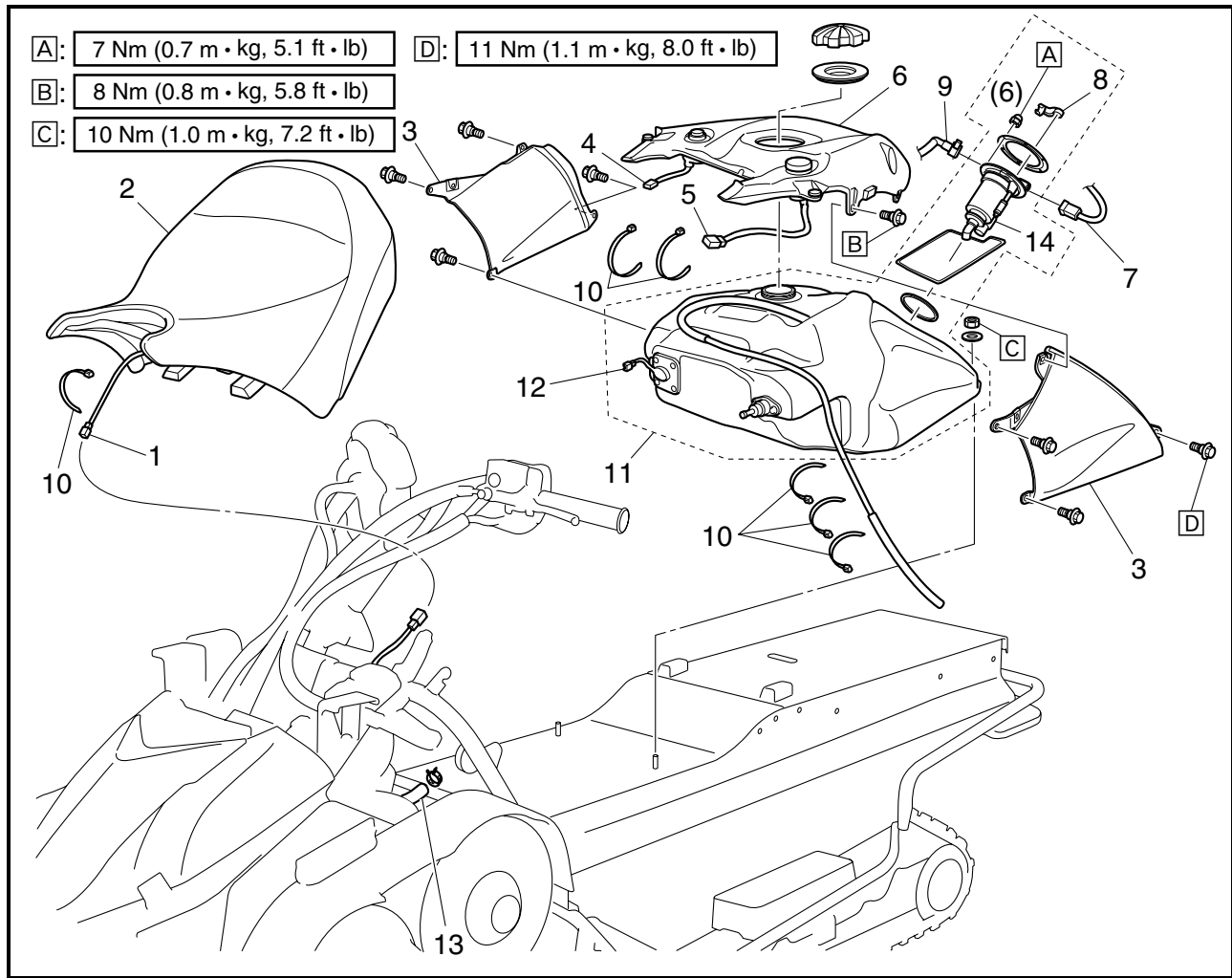


RIDER SEAT AND FUEL TANK

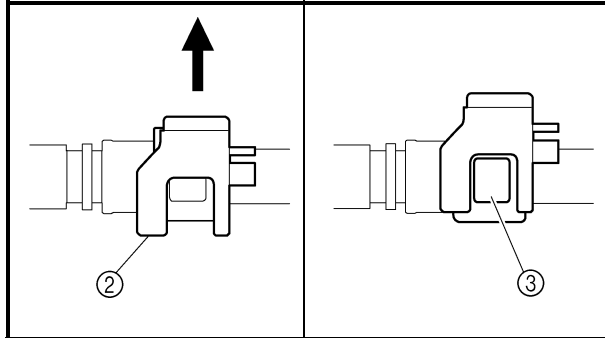
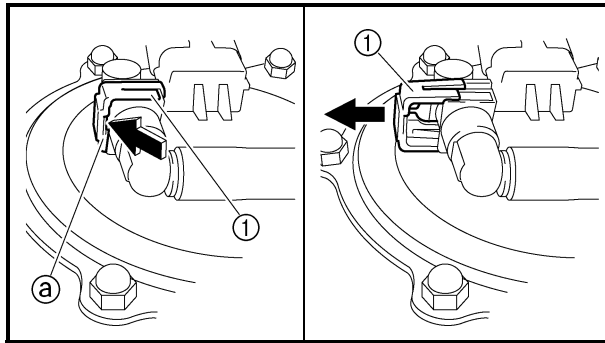
PZ50VT/PZ50MP



Order	Job name/Part name	Q'ty	Remarks
	Rider seat and fuel tank removal		Remove the parts in the order listed below. Refer to "BACKREST AND PASSENGER SEAT".
	Passenger seat		
1	Sub-wire harness 3 coupler	1	Disconnect.
2	Rider seat	1	
3	Side cover	2	
4	Main switch coupler	1	Disconnect.
5	Auxiliary DC jack coupler	1	Disconnect.
6	Fuel tank cover	1	
7	Fuel pump coupler	1	Disconnect.
8	Fuel hose connector holder	1	
9	Fuel hose	1	Disconnect.
10	Plastic band	6	



Order	Job name/Part name	Q'ty	Remarks
11	Fuel tank assembly	1	
12	Fuel sender coupler	1	Disconnect.
13	Fuel return hose	2	Disconnect.
14	Fuel pump	1	
For installation, reverse the removal procedure.			

**REMOVAL**

1. Extract the fuel in the fuel tank through the fuel tank cap with a pump.
2. Remove:
 - Fuel hose connector holder
 - Fuel hose

CAUTION:

- **Be sure to disconnect the fuel hose by hand. Do not forcefully disconnect the hose with tools.**
- **Although the fuel has been removed from the fuel tank be careful when removing the fuel hose, since there may be fuel remaining in it.**

NOTE:

- When removing the fuel hose from the fuel pump, remove the fuel hose connector holder first, and next, insert a slotted head screwdriver etc. in the slot part ① of the fuel hose connector cover ②, then slide the screwdriver in the direction of the arrow, and remove the fuel hose.
- To remove the fuel hose from the throttle body, slide the fuel hose connector cover ② on the end of the hose in direction of the arrow shown, press the two buttons ③ on the sides of the connector, and then remove the hose.
- Before removing the hose, place a few rags in the area under where it will be removed.

3. Remove:

- Fuel tank

NOTE:

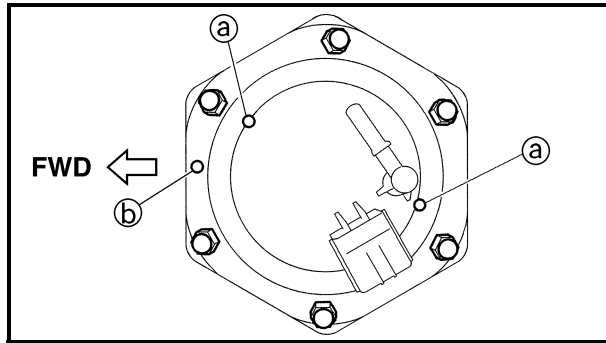
Do not set the fuel tank down on the installation surface of the fuel pump. Be sure to lean the fuel tank against a wall or like.

4. Remove:

- Fuel pump bracket
- Fuel pump
- Fuel pump gasket

CAUTION:

- **Do not drop the fuel pump or give it a strong shock.**
- **Do not touch the base section of the fuel sender.**



INSTALLATION

1. Install:

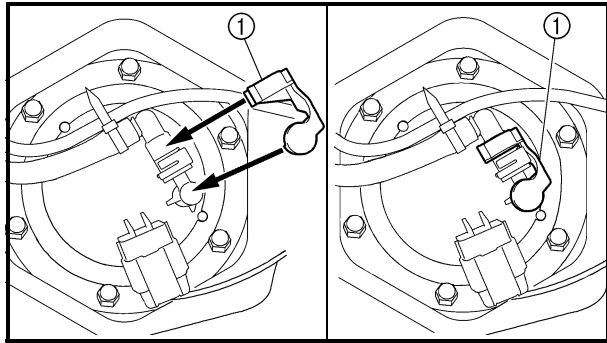
- Fuel pump gasket **New**
- Fuel pump
- Fuel pump bracket



Fuel pump nut:
7 Nm (0.7 m · kg, 5.1 ft · lb)

NOTE:

- Do not damage the installation surface of the fuel tank when installing the fuel pump.
- Always use a new fuel pump gasket.
- Install the fuel pump bracket by aligning the projection ① on the fuel pump with the projection ② on the fuel tank.
- Tighten the bolts to the specified torque in the proper tightening sequence as shown.
- Install the fuel pump in the direction shown in the illustration.



2. Install:

- Fuel hose
- Fuel hose holder
- Fuel pump coupler

CAUTION:

When installing the fuel hose, make sure that it is securely connected, and that the fuel hose holder is in the correct position, otherwise the fuel hose will not be properly installed.

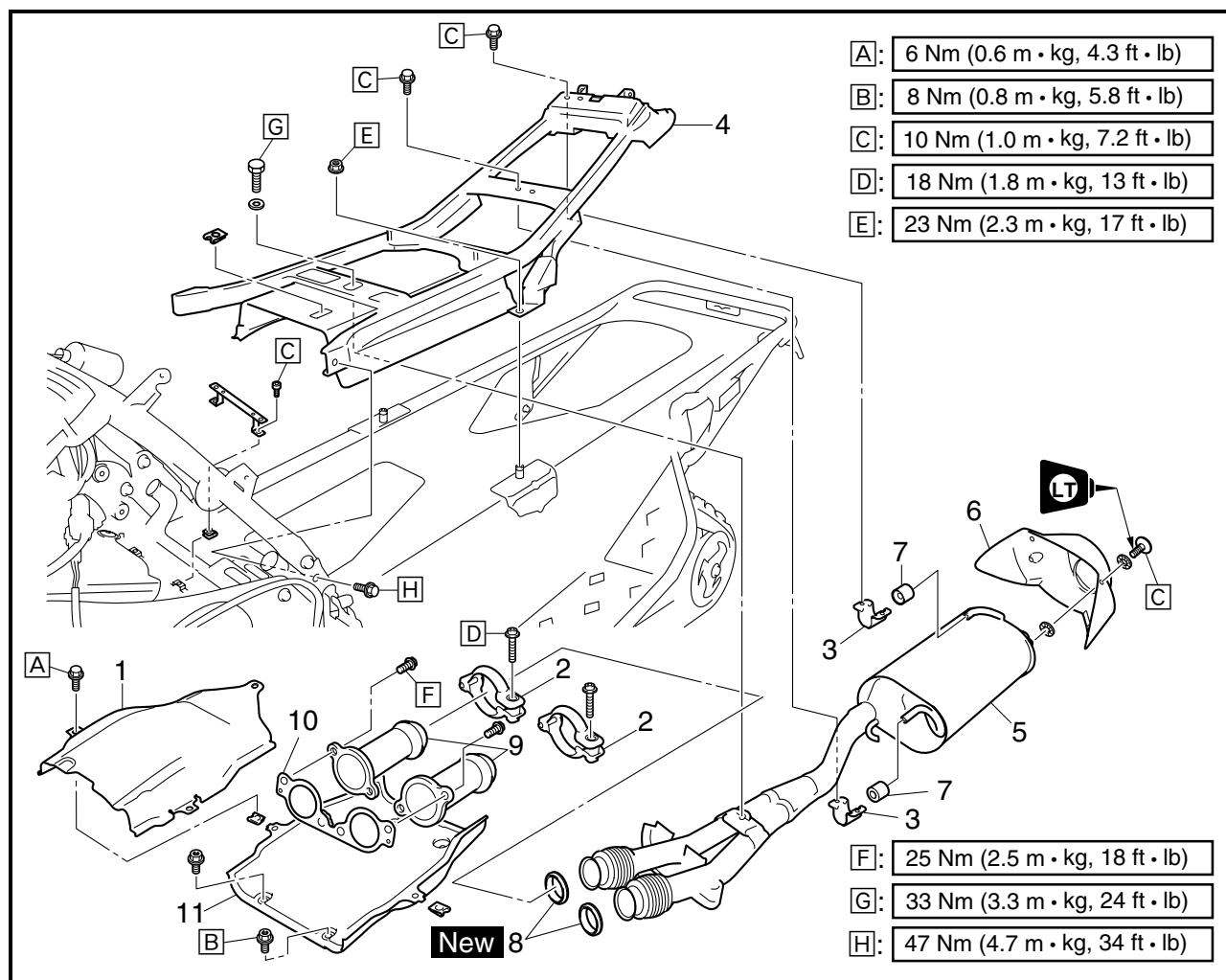
NOTE:

Install the fuel hose connector cover ① securely onto the fuel tank until a distinct “click” is heard, and then make sure that it does not come loose.



EXHAUST PIPE AND MUFFLER

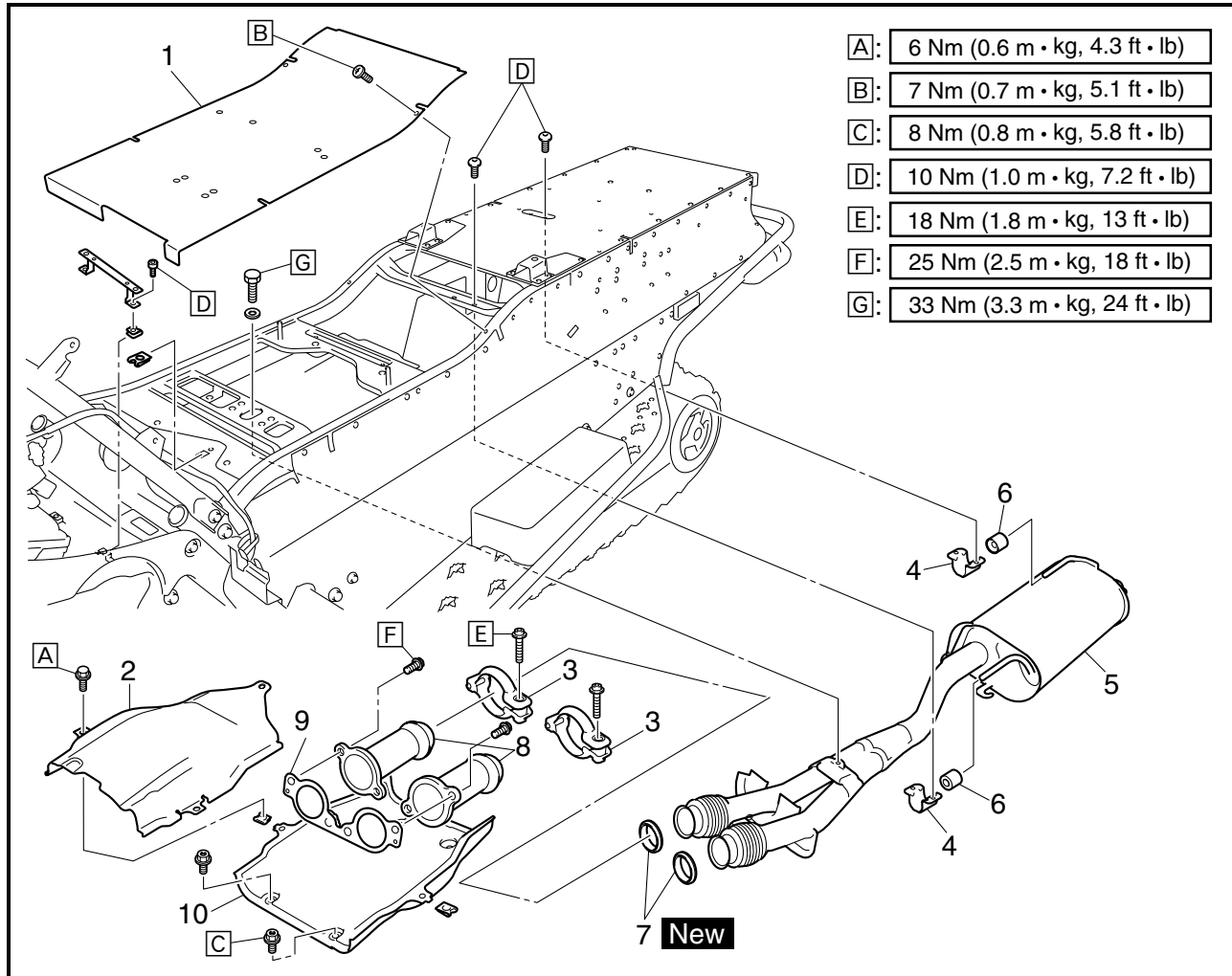
PZ50/PZ50GT/PZ50FX/PZ50M



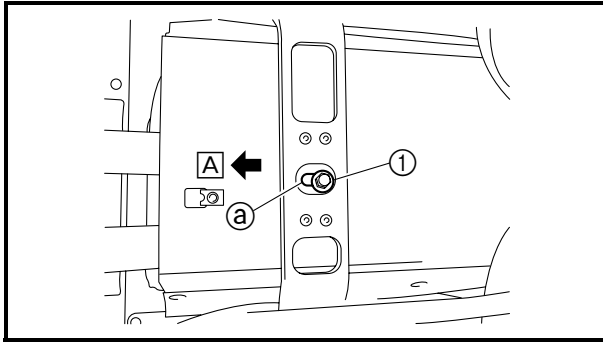
Order	Job name/Part name	Q'ty	Remarks
	Exhaust pipe and muffler removal		
	Fuel tank		Remove the parts in the order listed below.
	Radiator outlet pipe 2		Refer to "SEAT AND FUEL TANK".
			Refer to "RADIATOR AND HEAT EXCHANGER" in CHAPTER 6.
1	Exhaust pipe joint upper cover	1	
2	Exhaust pipe band	2	
3	Muffler damper holder	2	
4	Seat rail assembly	1	
5	Exhaust pipe/muffler assembly	1	
6	Muffler end cover	1	
7	Muffler damper	1	
8	Gasket	2	
9	Exhaust pipe joint	2	
10	Gasket	1	
11	Exhaust pipe joint lower cover	1	
			For installation, reverse the removal procedure.



PZ50VT/PZ50MP



Order	Job name/Part name	Q'ty	Remarks
	Exhaust pipe and muffler removal		
	Fuel tank		Remove the parts in the order listed below. Refer to "RIDER SEAT AND FUEL TANK".
	Radiator outlet pipe 2		Refer to "RADIATOR AND HEAT EXCHANGER" in CHAPTER 6.
	Slide rail suspension		Refer to "SLIDE RAIL SUSPENSION" in CHAPTER 4.
1	Sub frame panel	1	
2	Exhaust pipe joint upper cover	1	
3	Exhaust pipe band	2	
4	Muffler damper holder	2	
5	Exhaust pipe/muffler assembly	1	
6	Muffler damper	1	
7	Gasket	2	
8	Exhaust pipe joint	2	
9	Gasket	1	
10	Exhaust pipe joint lower cover	1	
			For installation, reverse the removal procedure.

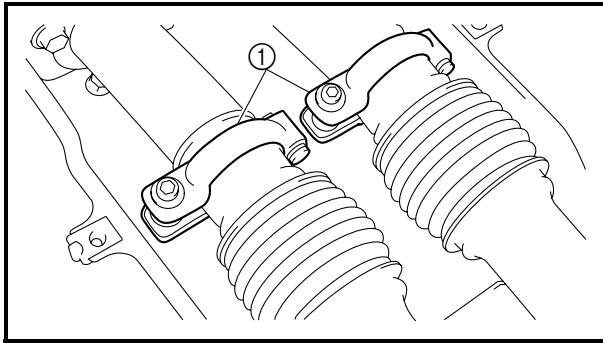
**INSTALLATION**

1. Install:
 - Muffler damper holder (temporarily)
2. Install:
 - Exhaust pipe/muffler assembly

NOTE:

Position the exhaust pipe bolt ① at the rear of the hole ④ in the seat rail assembly, and then finger tighten it.

A Forward



3. Install:
 - Exhaust pipe band ①



Exhaust pipe band bolt:
18 Nm (1.8 m · kg, 13 ft · lb)

4. Tighten:
 - Exhaust pipe bolt



Exhaust pipe bolt:
33 Nm (3.3 m · kg, 24 ft · lb)

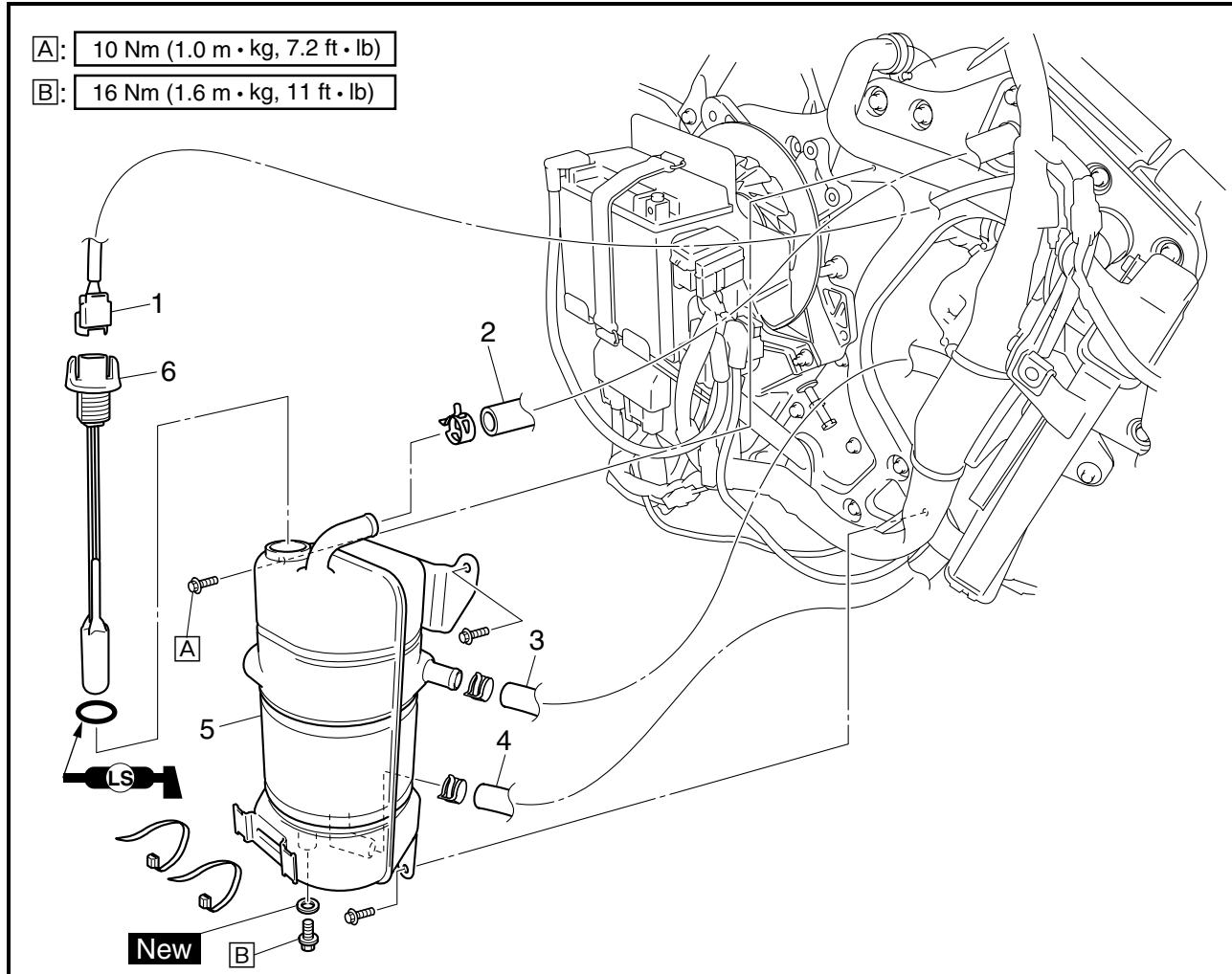
5. Tighten:
 - Muffler damper holder bolts



Muffler damper holder bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)



OIL TANK



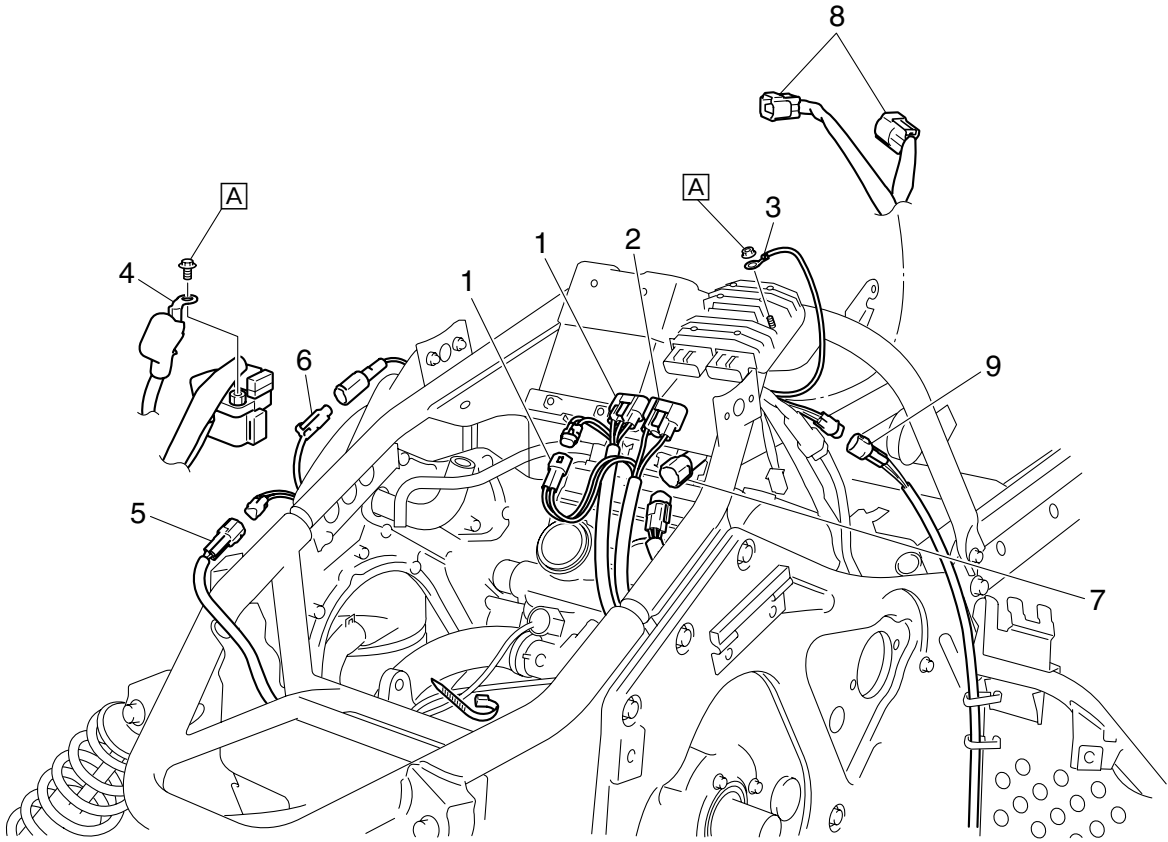
Order	Job name/Part name	Q'ty	Remarks
	Oil tank removal		
	Right side panel		Remove the parts in the order listed below.
	Engine oil		Refer to "COWLINGS" in CHAPTER 3.
			Drain.
			Refer to "ENGINE OIL REPLACEMENT" in CHAPTER 2.
1	Oil level switch coupler	1	Disconnect.
2	Oil tank breather hose	1	Disconnect.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



ENGINE ASSEMBLY

HOSE AND LEADS

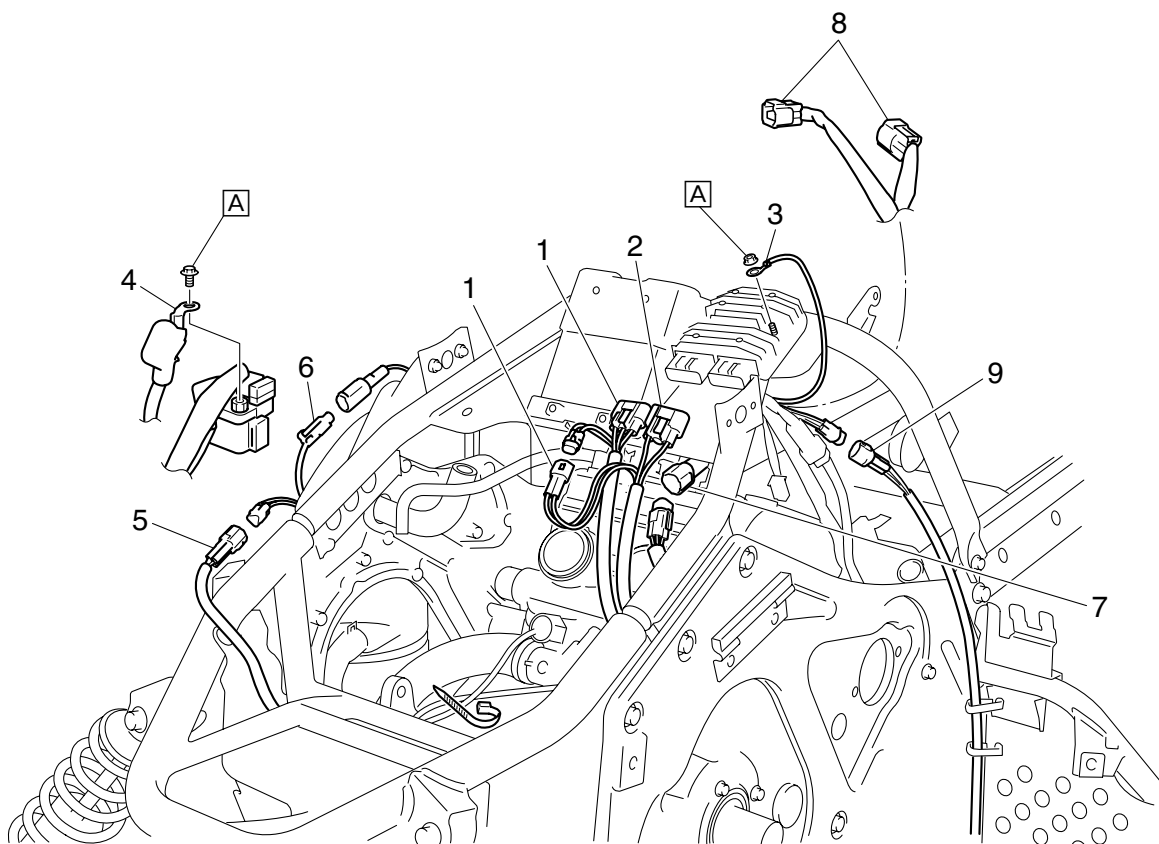
[A]: 7 Nm (0.7 m • kg, 5.1 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Hose and leads removal		Remove the parts in the order listed below.
	Coolant		Drain. Refer to "COOLING SYSTEM" in CHAPTER 2.
	Engine oil		Drain. Refer to "ENGINE OIL REPLACEMENT" in CHAPTER 2.
	Throttle body		Refer to "THROTTLE BODY" in CHAPTER 7.
	Primary sheave		Refer to "PRIMARY SHEAVE AND DRIVE V-BELT" in CHAPTER 4.
	Brake disc		Refer to "DRIVE CHAIN" in CHAPTER 4.
	Radiator/coolant reservoir/thermostat		Refer to "RADIATOR AND HEAT EXCHANGER" in CHAPTER 6.
	Handlebar/steering shaft		Refer to "STEERING" in CHAPTER 3.
	Oil tank inlet hose/oil tank outlet hose		Refer to "OIL TANK".
	Fuel tank		Refer to "SEAT AND FUEL TANK".



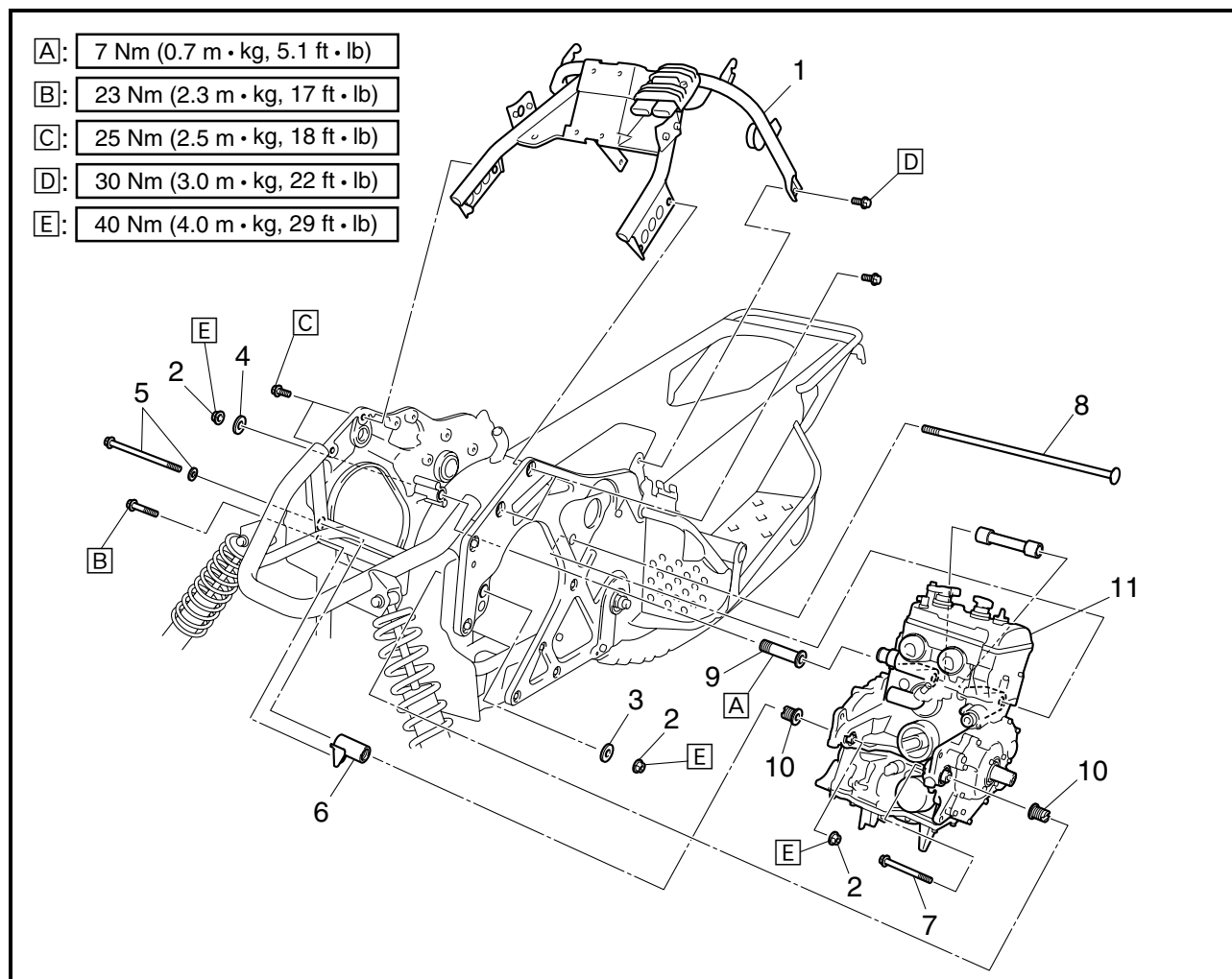
[A]: 7 Nm (0.7 m • kg, 5.1 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Exhaust pipe/muffler assembly		Refer to "EXHAUST PIPE AND MUFFLER".
	Water pump		Refer to "WATER PUMP" in CHAPTER 6.
	Battery		Refer to "BATTERY INSPECTION" in CHAPTER 2.
1	A.C. magneto lead coupler	2	Disconnect.
2	Rectifier/regulator lead coupler	1	Disconnect.
3	Frame ground lead	1	Disconnect.
4	Starter motor lead	1	Disconnect.
5	Knock sensor coupler	1	Disconnect.
6	Sub-wire harness 2 coupler	1	Disconnect.
7	Cam position sensor coupler	1	Disconnect.
8	Ignition coil coupler	3	Disconnect.
9	Speed sensor lead coupler	1	Disconnect.
			For installation, reverse the removal procedure.



ENGINE ASSEMBLY



Order	Job name/Part name	Q'ty	Remarks
	Engine assembly removal		Remove the parts in the order listed below.
1	Frame rear cross member	1	
2	Nut	3	
3	Washer	1	
4	Washer	1	
5	Front engine right mounting bolt/washer	1/1	
6	Engine mounting bracket	1	
7	Front engine left mounting bolt	1	
8	Rear engine mounting bolt	1	
9	Rear engine mounting bolt spacer	1	
10	Front engine mounting bolt spacer	2	
11	Engine assembly	1	
			For installation, reverse the removal procedure.

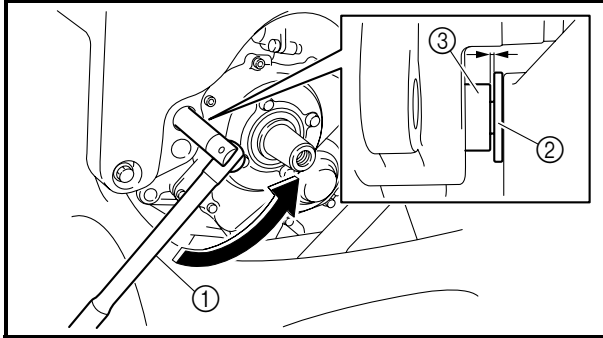
**REMOVAL**

1. Remove:

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

NOTE: _____

Do not remove the engine mounting bolts.



2. Remove:

- Engine assembly

Removal steps:

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



Engine mount spacer wrench:
90890-01516, YS-01516

- Remove the engine mounting bolts and engine mounting bracket.
- Remove the rear engine mounting bolt spacer, and then remove the engine assembly.

INSTALLATION**NOTE:** _____

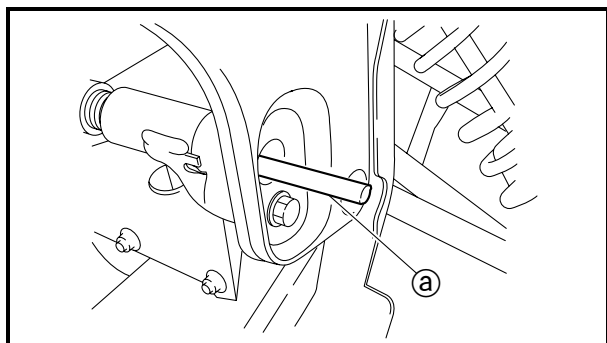
After installing all parts, refer to "CABLE ROUTING" in CHAPTER 9, to check the cable, lead and hose routing.

1. Install:

- Engine assembly

NOTE: _____

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

**Installation steps:**

- Install the engine mounting bolt spacer (front left side).
- Install the engine assembly, and then install the rear engine mounting bolt spacer.
- Install the rear engine mounting bolt and front engine left mounting bolt.
- Install the engine mounting bolt spacer (front right side) to the engine mounting bracket.
- Install the engine mounting bracket, and then insert a rod **a** into the bracket hole to align the engine assembly with the bracket. Use a 10 mm (0.39 in) diameter rod that is approximately 130 mm (5.12 in) long.
- Install the engine mount spacer wrench ①.



Engine mount spacer wrench:
90890-01516, YS-01516

- Tighten the rear engine mounting bolt spacer.



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

- Tighten the rear engine mounting nut.



Rear engine mounting nut:
40 Nm (4.0 m · kg, 29 ft · lb)

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

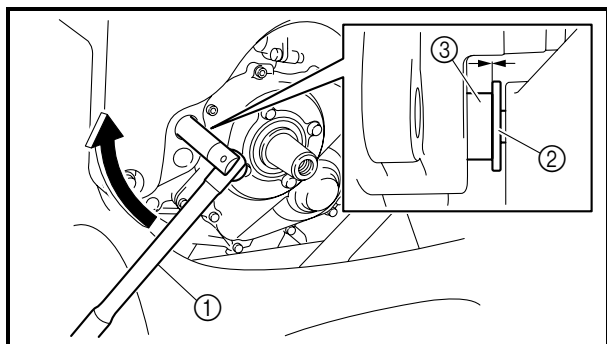
NOTE:

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

- Remove the rod from the engine mounting bracket, and then install the front engine right mounting bolt.
- Install the washers and nuts and then, tighten the front engine mounting nuts (right and left).



Front engine mounting nut:
40 Nm (4.0 m · kg, 29 ft · lb)

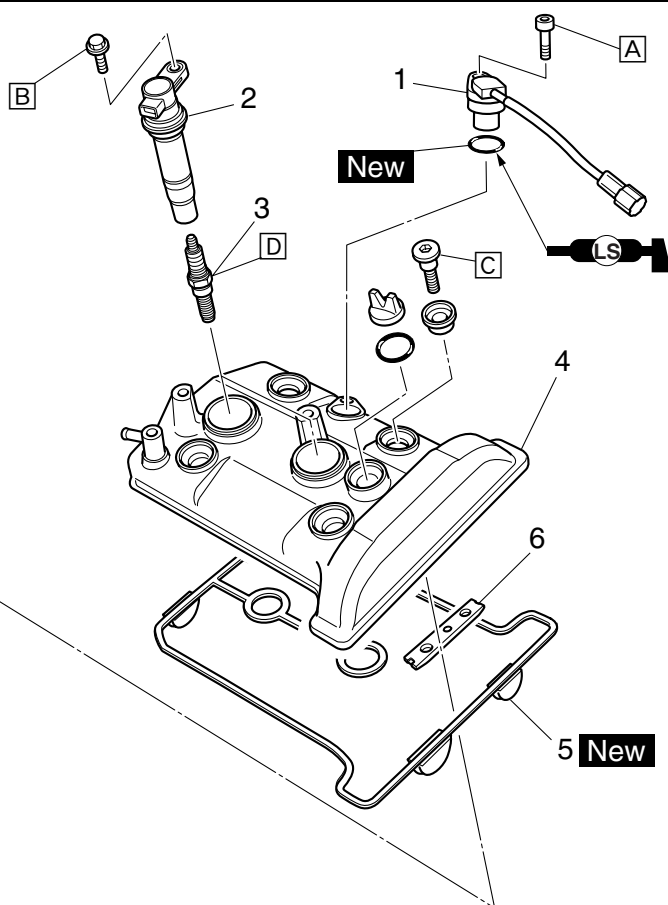
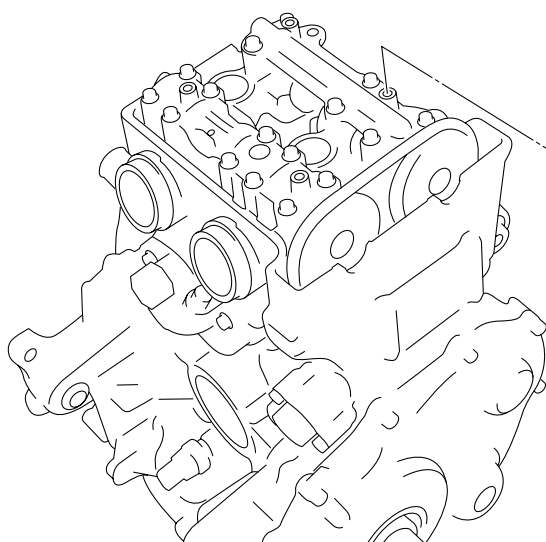




CAMSHAFTS

CYLINDER HEAD COVER

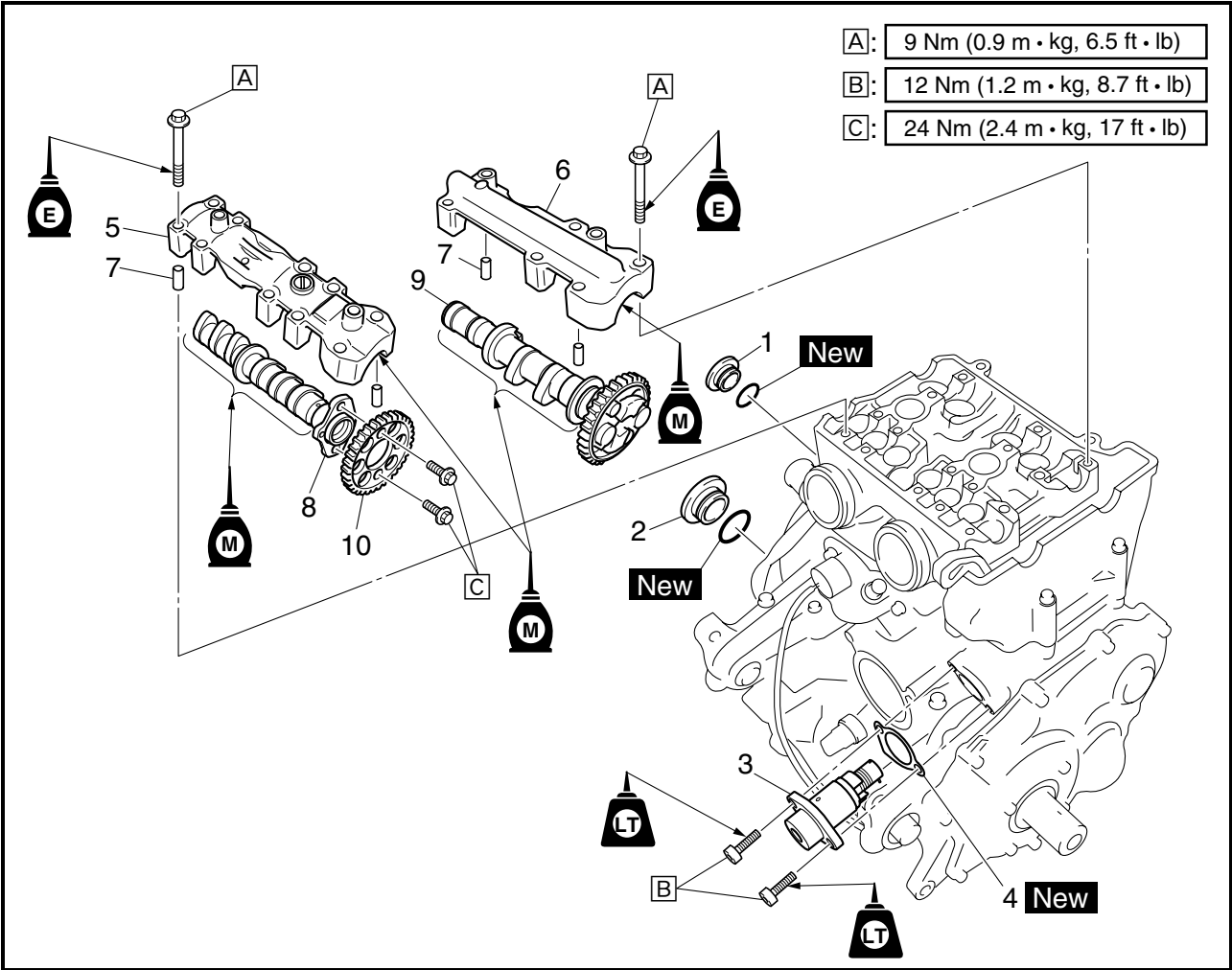
- [A]: 8 Nm (0.8 m • kg, 5.8 ft • lb)
 [B]: 10 Nm (1.0 m • kg, 7.2 ft • lb)
 [C]: 12 Nm (1.2 m • kg, 8.7 ft • lb)
 [D]: 13 Nm (1.3 m • kg, 9.4 ft • lb)



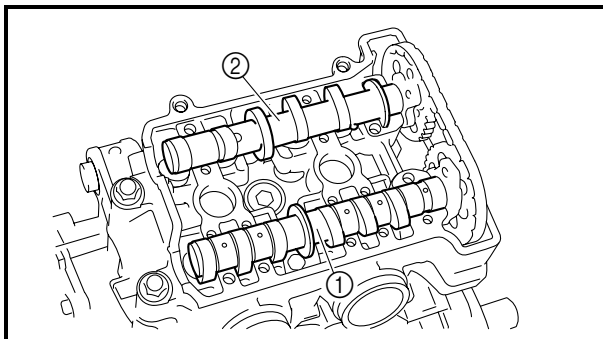
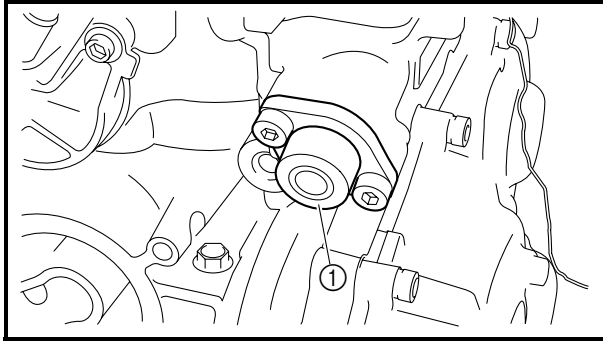
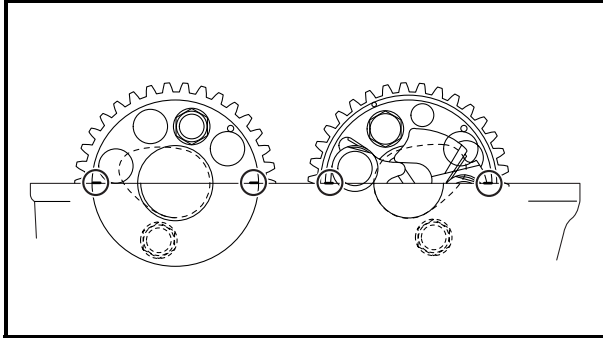
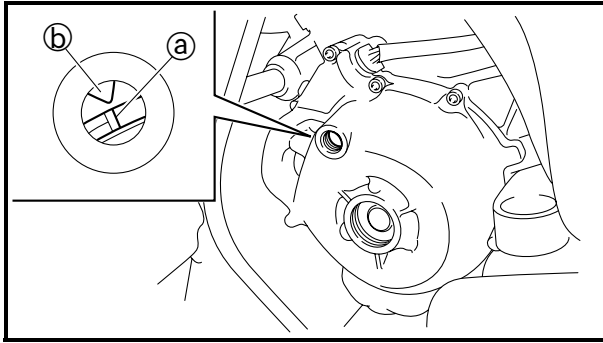
Order	Job name/Part name	Q'ty	Remarks
	Cylinder head cover removal Fuel tank		Remove the parts in the order listed below. Refer to "SEAT AND FUEL TANK". (PZ50/ PZ50GT/PZ50FX/PZ50M) Refer to "RIDER SEAT AND FUEL TANK". (PZ50VT/PZ50MP)
1	Cylinder identification sensor	1	
2	Ignition coil	3	
3	Spark plug	3	
4	Cylinder head cover	1	
5	Cylinder head cover gasket	1	
6	Timing chain guide (top side)	1	
			For installation, reverse the removal procedure.



CAMSHAFTS



Order	Job name/Part name	Q'ty	Remarks
	Camshaft removal		
	Engine		Remove the parts in the order listed below. Refer to "ENGINE ASSEMBLY".
1	Timing accessing screw	1	
2	Crankshaft end accessing screw	1	
3	Timing chain tensioner	1	
4	Timing chain tensioner gasket	1	
5	Intake camshaft cap	3	NOTE: During removal, the dowel pins may still be connected to the camshaft caps.
6	Exhaust camshaft cap	3	
7	Dowel pin	4	
8	Intake camshaft	1	
9	Exhaust camshaft assembly	1	
10	Intake camshaft sprocket	1	
			For installation, reverse the removal procedure.



REMOVAL

1. Remove:

- Timing accessing screw
- Crankshaft end accessing screw

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 counterclockwise.
- When piston #1 is at TDC on the compression stroke, align the TDC mark (a) on the A.C. magneto rotor with the stationary pointer (b) on the A.C. magneto cover.
- TDC on the compression stroke can be found when the camshaft lobes are turned away from each other.

3. Remove:

- Timing chain tensioner (1)
- Gasket

4. Remove:

- Camshaft caps
- Dowel pins

CAUTION:

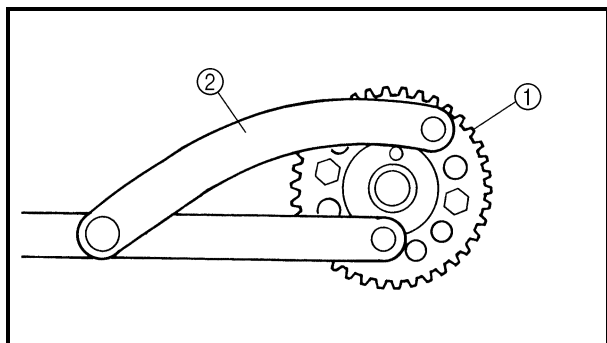
To prevent damage to the cylinder head, camshafts or camshaft caps, loosen the camshaft cap bolts in stages and in a crisscross pattern, working from the outside in.

5. Remove:

- Intake camshaft (1) (with camshaft sprocket)
- Exhaust camshaft (2)

NOTE:

To prevent the timing chain from falling into the crankcase, fasten it with a wire (3).



6. Remove:

- Intake camshaft sprocket ①
(Use the special tool ②)

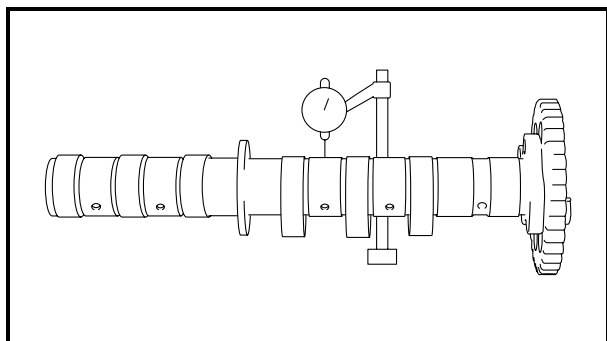
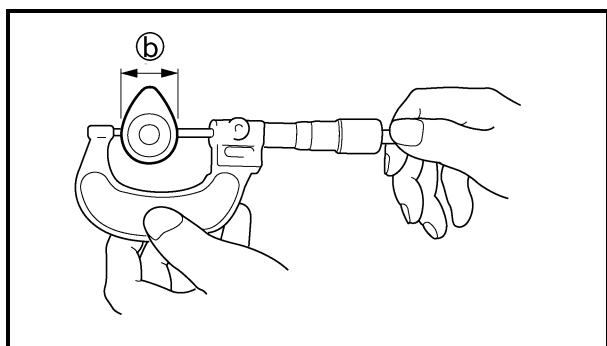
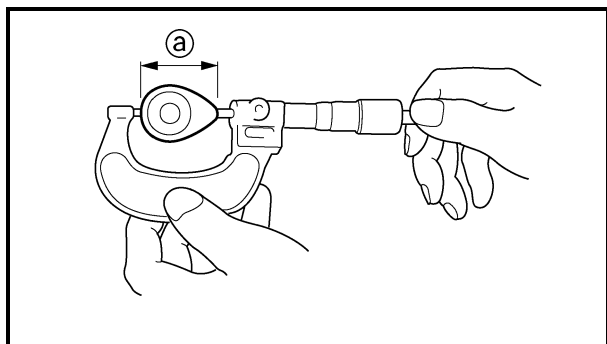


Rotor holding tool:
90890-01235, YU-01235

INSPECTION

1. Inspect:

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



2. Measure:

- Camshaft lobe dimensions ① and ②
Out of specification → Replace the camshaft.

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

<Limit>

① 30.350 mm (1.1949 in)

② 22.510 mm (0.8862 in)

Exhaust:

<Limit>

① 30.600 mm (1.2047 in)

② 22.493 mm (0.8856 in)

3. Measure:

- Camshaft runout
Out of specification → Replace.



Camshaft runout:
0.03 mm (0.0012 in)



4. Measure:

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

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

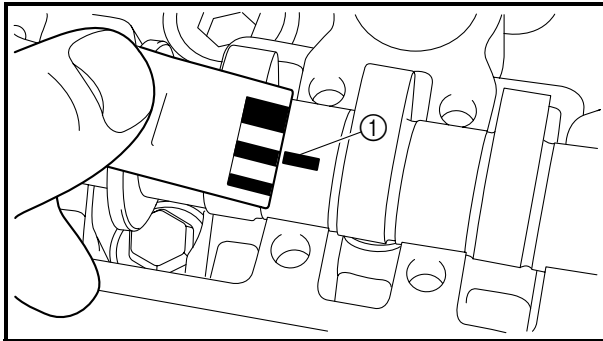
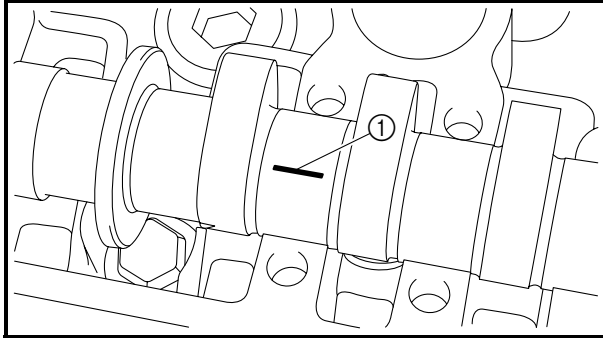
0.028 ~ 0.062 mm
(0.0011 ~ 0.0024 in)

Measurement steps:

- Install the camshaft into the cylinder head (without the dowel pins and camshaft caps).
- Position a strip of Plastigauge® ① onto the camshaft journal as shown.
- Install the dowel pins and camshaft caps.

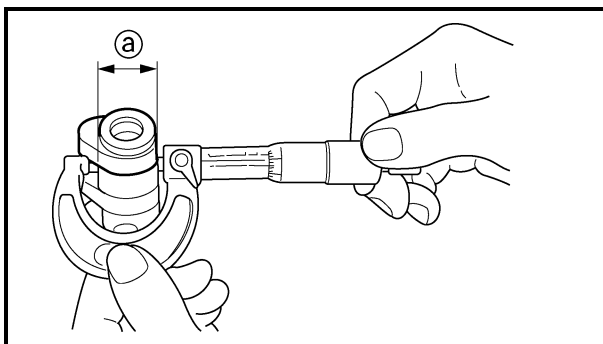
NOTE:

- Tighten the camshaft cap bolts in stages and in a crisscross pattern, working from the inner caps out.
- Do not turn the camshaft when measuring the camshaft journal-to-camshaft cap clearance with the Plastigauge®.

**Camshaft cap bolt:**

9 Nm (0.9 m · kg, 6.5 ft · lb)

- Remove the camshaft caps and then measure the width of the Plastigauge® ①.



5. Measure:

- Camshaft journal diameter ②
Out of specification → Replace the camshaft.
Within specification → Replace the cylinder head and the camshaft caps as a set.

**Camshaft journal diameter:**

21.959 ~ 21.972 mm
(0.8645 ~ 0.8650 in)

6. Inspect:

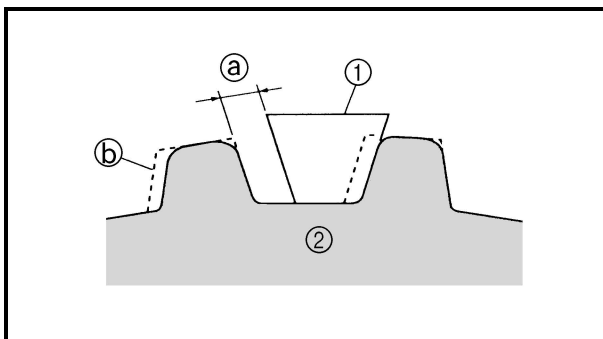
- Camshaft sprocket
More than 1/4 tooth ③ wear → Replace the camshaft sprockets and the timing chain as a set.

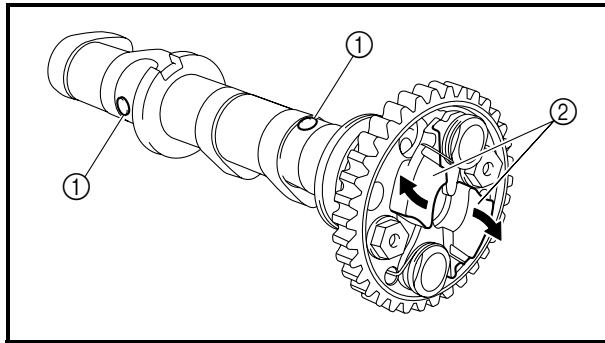
③ 1/4 tooth

④ Correct

① Timing chain roller

② Camshaft sprocket





7. Inspect:

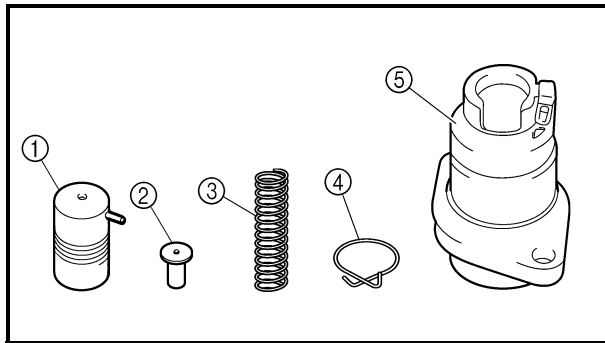
- Decompression system

Inspection steps:

- Check that the decompressor lever pins ① projects from the camshaft.
- Check that the decompressor cams ② moves smoothly.

8. Inspect:

- Timing chain guide (top side)
Damage/wear → Replace the timing chain guide.



9. Remove:

- Timing chain tensioner rod ①
- Timing chain tensioner spring seat ②
- Timing chain tensioner spring ③
- Timing chain tensioner housing ⑤

NOTE:

Squeeze the timing chain tensioner clip ④, and then remove the timing chain tensioner springs and timing chain tensioner rod.

10. Inspect:

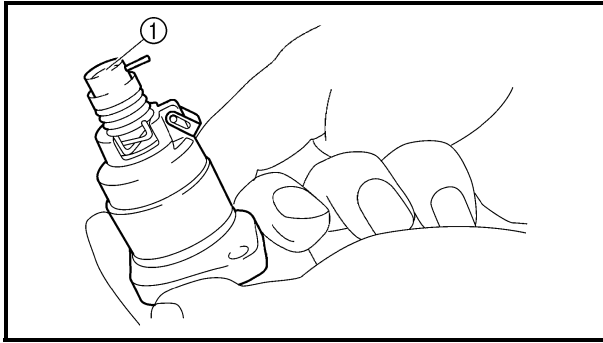
- Timing chain tensioner housing
- Timing chain tensioner rod
- Timing chain tensioner spring seat
- Timing chain tensioner spring
Damage/wear → Replace the as a set.

11. Assemble:

- Timing chain tensioner spring
- Timing chain tensioner spring seat
- Timing chain tensioner rod

NOTE:

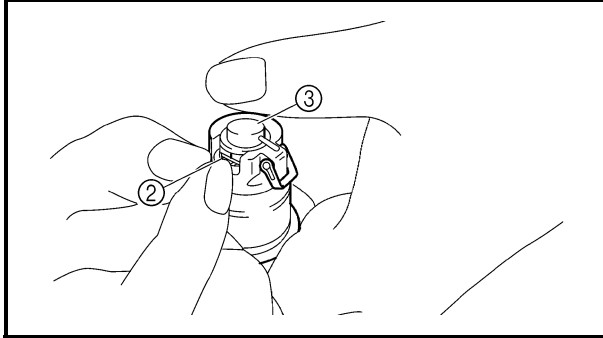
Prior to installing the timing chain tensioner rod, drain the engine oil from the timing chain tensioner housing.

**Assembly steps:**

- Install the timing chain tensioner spring, timing chain tensioner spring seat, and timing chain tensioner rod ①.
- Squeeze the timing chain tensioner clip ②, and then push the timing chain tensioner rod ③ into the timing chain tensioner housing.

NOTE:

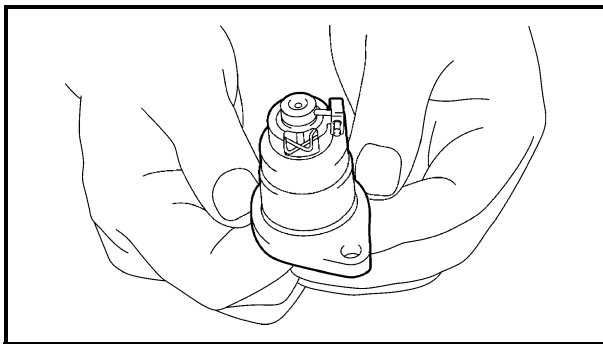
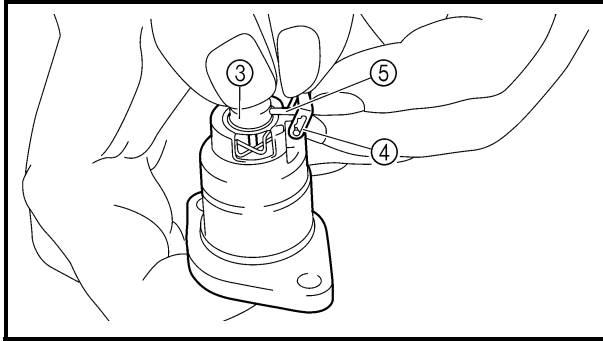
Do not release the timing chain tensioner clip while pushing the rod into the housing, otherwise the rod may be ejected.



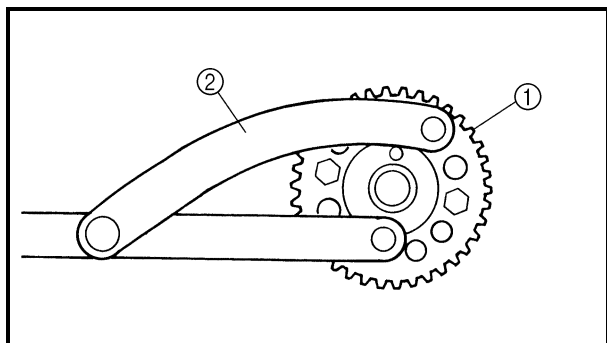
- Hook the clip ④ to the timing chain tensioner rod ③.

NOTE:

Hook the timing chain tensioner rod pin ⑤ to the center of the clip ④. After the installation, check that the clip ④ can come off by its own weight by pushing the timing chain tensioner rod ③ at the position of installation.

**12. Inspect:**

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



INSTALLATION

1. Install:

- Intake camshaft sprocket ①
(with the special tool ②)

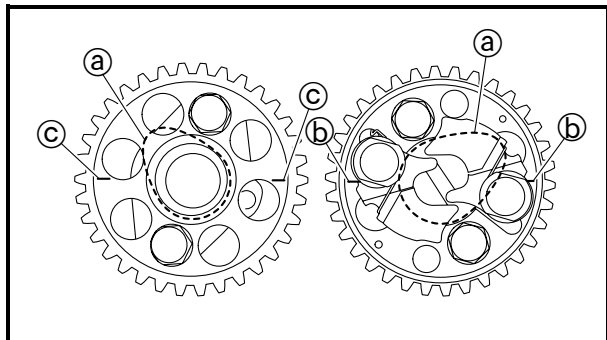


Rotor holding tool:
90890-01235, YU-01235

- Camshaft sprocket bolts



Camshaft sprocket bolt:
24 Nm (2.4 m · kg, 17 ft · lb)



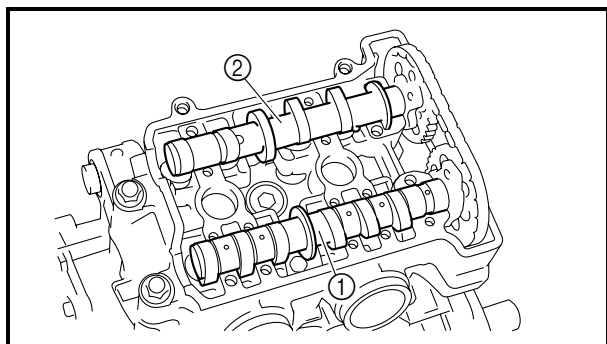
NOTE:

Make sure that the position to the cylinder #1 cam (a) and marks (b) and (c) on the camshaft sprockets are in the position shown in the illustration.

(b): Exhaust side “—”

(c): Intake side “—”

(d): Cylinder #1 - cam



2. Install:

- Exhaust camshaft ①
- Intake camshaft ②
(with the camshaft sprocket)

Installation steps:

- Turn the crankshaft counterclockwise.
- When piston #1 is at TDC on the compression stroke, align the TDC mark (a) on the A.C. magneto rotor with the stationary pointer (b) on the A.C. magneto cover.
- Install the timing chain onto both camshaft sprockets, and then install the camshafts.

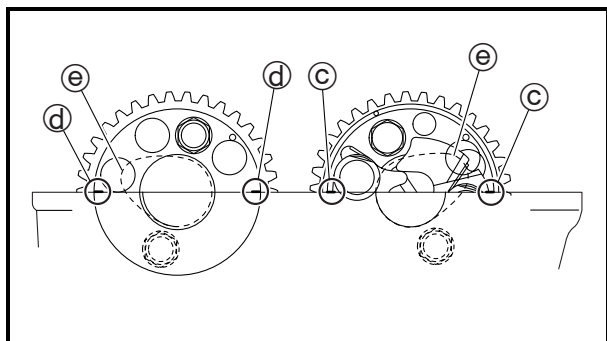
NOTE:

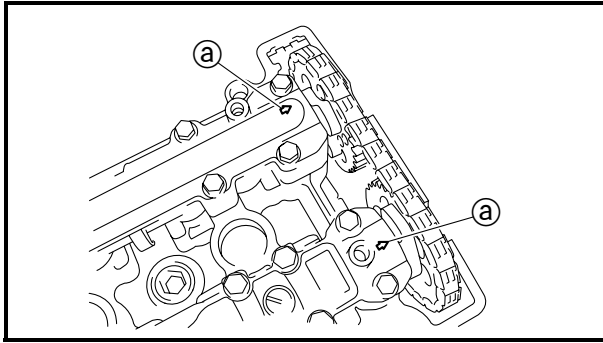
- When installing the timing chain, start with the exhaust camshaft and be sure to keep the timing chain as tight as possible on the exhaust side.
- Make sure the marks (d) and (e) on the timing chain sprockets are parallel with the edge of the cylinder head.

(c): Exhaust side “—”

(d): Intake side “—”

(e): Cylinder #1 - cam





3. Install:

- Dowel pins
- Intake camshaft cap
- Exhaust camshaft cap

NOTE:

Install the camshaft caps with the arrow mark ① pointing towards the right side of the engine.

4. Install:

- Camshaft cap bolts



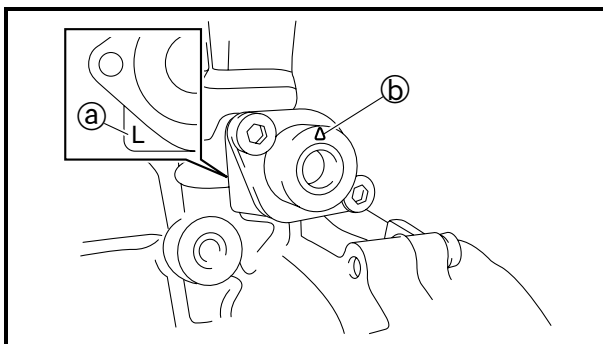
Camshaft cap bolt:
9 Nm (0.9 m · kg, 6.5 ft · lb)

NOTE:

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

CAUTION:

- Lubricate the camshaft cap bolts with the engine oil.
- The camshaft cap bolts must be tightened evenly or damage to the cylinder head, camshaft caps, and camshafts will result.
- Do not turn the crankshaft when installing the camshaft to avoid damage or improper valve timing.



5. Install:

- Timing chain tensioner gasket ① **New**
- Timing chain tensioner ②



Timing chain tensioner bolt:
12 Nm (1.2 m · kg, 8.7 ft · lb)

NOTE:

- Be sure to install the timing chain tensioner gasket so that its section with the "L" mark ① is protruding from the lower left side of the timing chain tensioner.
- The arrow mark ② on the timing chain tensioner should face up.

6. Turn:

- Crankshaft
(several turns counterclockwise)

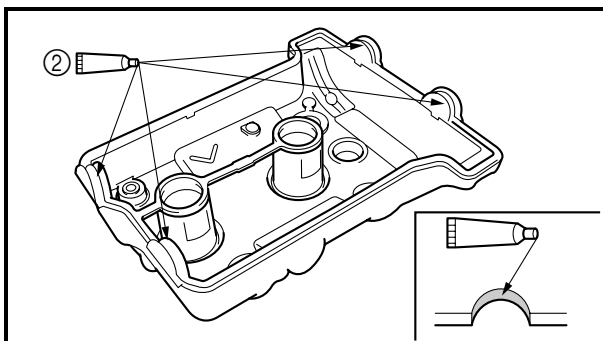
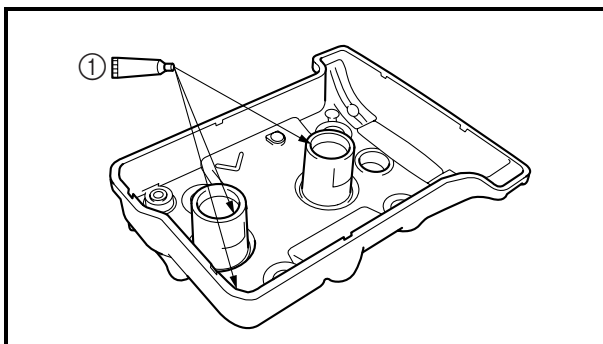
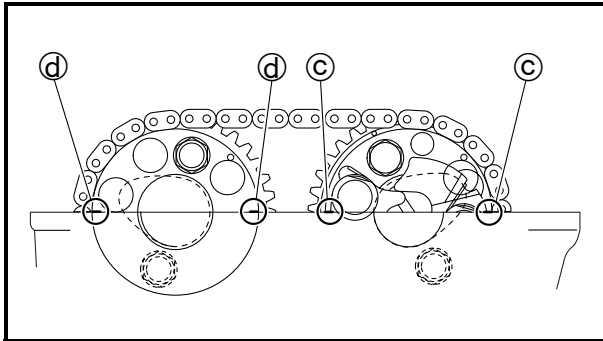
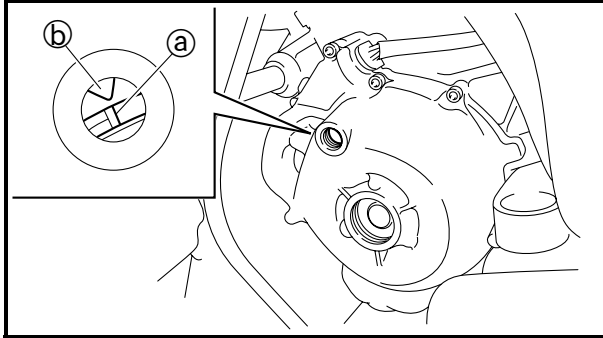


7. Inspect:

- Timing chain
- Check that the timing chain is taut. If the chain is slack, reinstall the timing chain tensioner.

NOTE:

If the engine is not disassembled, start the engine and check for any abnormal noise. If any abnormal noise is heard, reinstall the timing chain tensioner.



8. Turn:

- Crankshaft
(several turns counterclockwise)

9. Inspect:

- "I" mark (a)
Make sure the "I" mark (a) on the A.C. magneto rotor is aligned with the stationary pointer (b) on the A.C. magneto cover.
- Timing chain sprocket marks (c) and (d)
Make sure the marks (c) and (d) on the timing chain sprockets are parallel with the edge of the cylinder head.
Out of alignment → Adjust.
Refer to the installation steps above.

10. Measure:

- Valve clearance
Out of specification → Adjust.
Refer to "VALVE CLEARANCE ADJUSTMENT" in CHAPTER 2.

11. Install

- Cylinder head cover gasket **New**
- Cylinder head cover



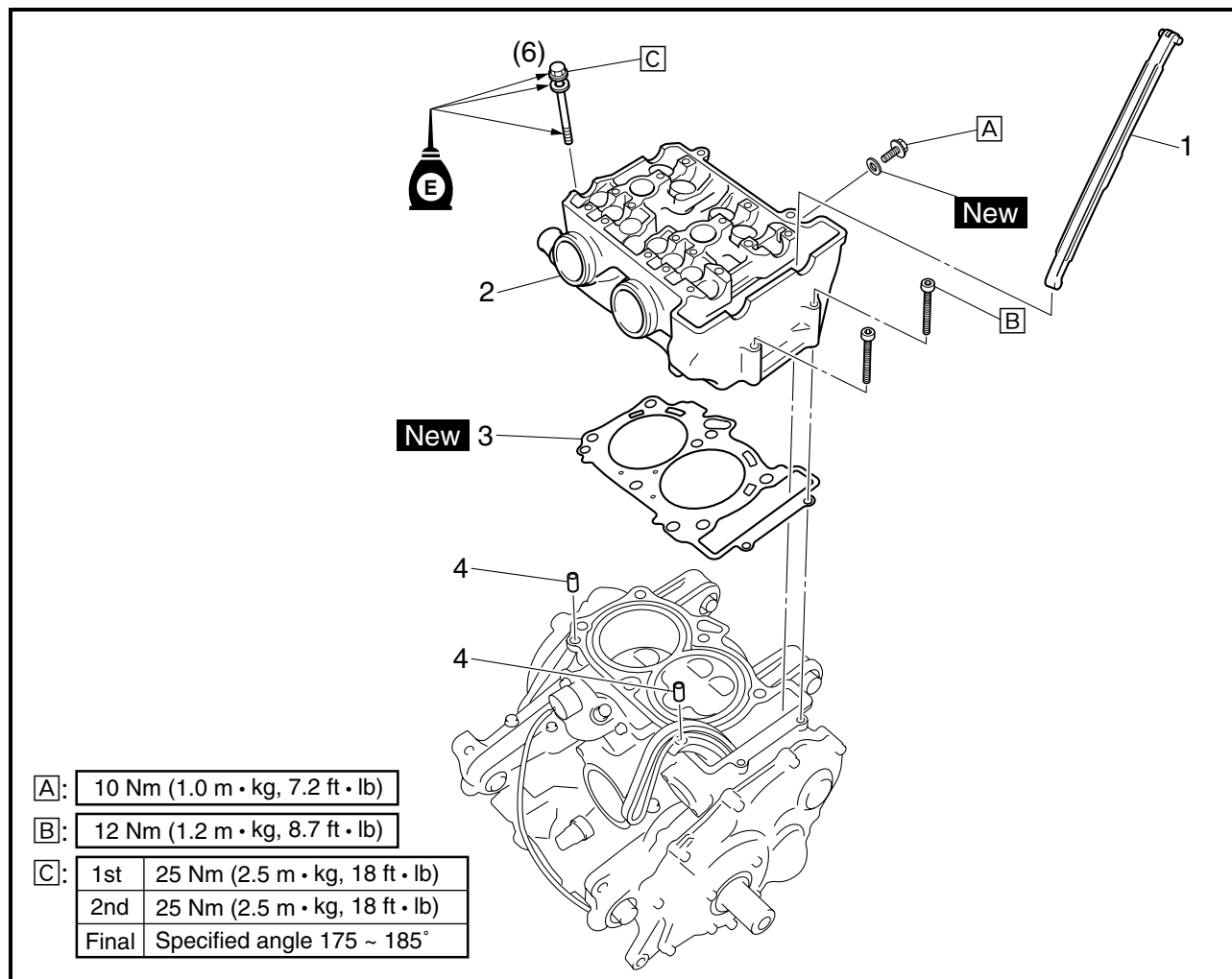
Cylinder head cover bolt:
12 Nm (1.2 m · kg, 8.7 ft · lb)

NOTE:

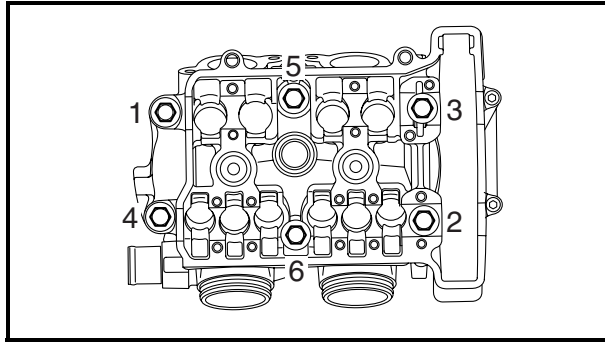
- Apply bond TB1541 (1) onto the mating surfaces of the cylinder head cover and cylinder head cover gasket.
- Apply Yamaha bond No. 1215 (2) onto the mating surfaces of the cylinder head cover gasket and cylinder head.
- Tighten the cylinder head cover bolts stages and in a crisscross pattern.



CYLINDER HEAD



Order	Job name/Part name	Q'ty	Remarks
	Cylinder head removal		
	Engine		Remove the parts in the order listed below.
	Camshafts		Refer to "ENGINE ASSEMBLY".
1	Timing chain guide (exhaust side)	1	Refer to "CAMSHAFTS".
2	Cylinder head	1	
3	Cylinder head gasket	1	
4	Dowel pin	2	
			For installation, reverse the removal procedure.

**REMOVAL**

1. Remove:

- Cylinder head bolts

NOTE:

Loosen each bolt 1/2 of a turn at a time. After all of the bolt are fully loosened, remove them.

INSPECTION

1. Eliminate:

- Combustion chamber carbon deposits (with a rounded scraper)

NOTE:

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

- spark plug bore threads
- valve seats

2. Inspect:

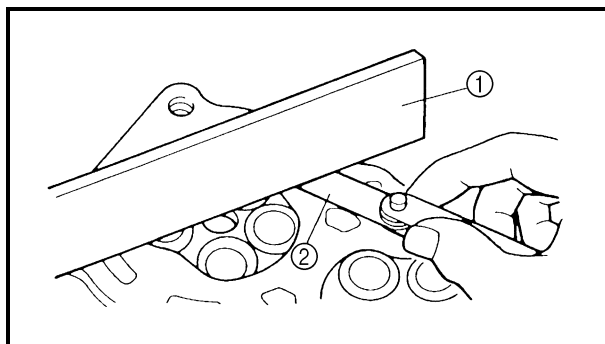
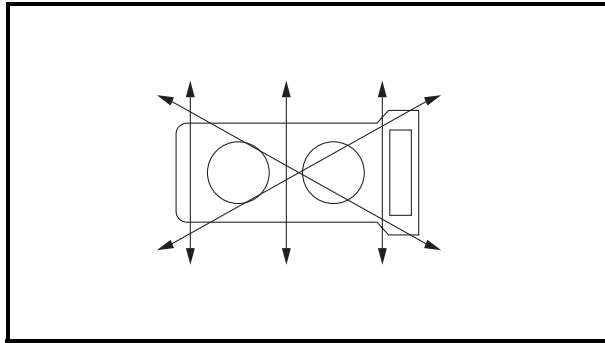
- Timing chain guide (exhaust side)
Damage/wear → Replace the timing chain guide.

3. Inspect:

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

4. Measure:

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



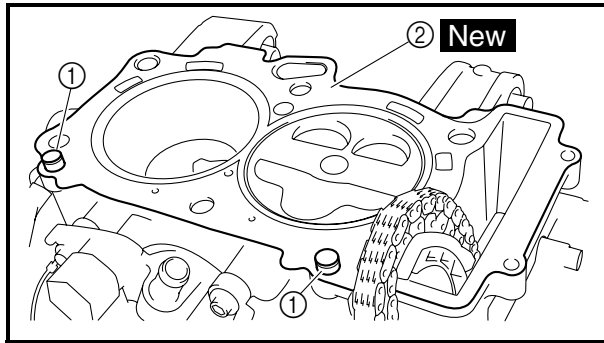
Maximum cylinder head warpage:
0.10 mm (0.0039 in)

Measurement steps:

- Place a straightedge ① and a thickness gauge ② across the cylinder head.
- Measure the warpage.
- If the limit is exceeded, resurface the cylinder head as follows.
- Place a 400 ~ 600 grit wet sandpaper on the surface plate and resurface the cylinder head using a figure-eight sanding pattern.

NOTE:

To ensure an even surface, rotate the cylinder head several times.

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

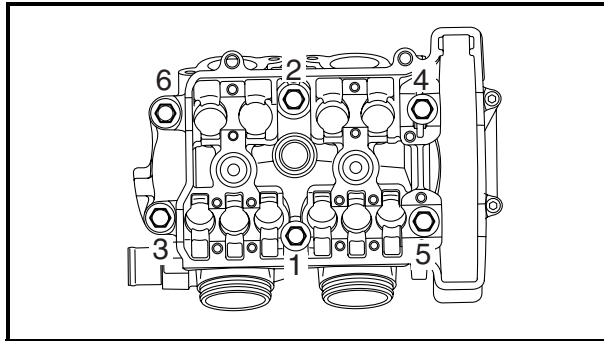
- Dowel pins ①
- Gasket ② **New**

2. Install:

- Cylinder head

NOTE:

Pass the timing chain through the timing chain cavity.

**3. Tighten:**

- Cylinder head bolts (M10)

NOTE:

The tightening procedure of the cylinder head bolts is angle controlled, therefore tighten the bolts using the following procedure.

Tightening steps:

- Lubricate the cylinder head bolts and washers with engine oil.
- Install the washers and cylinder head bolts.
- Tighten the cylinder head bolts in the proper tightening sequence as shown.

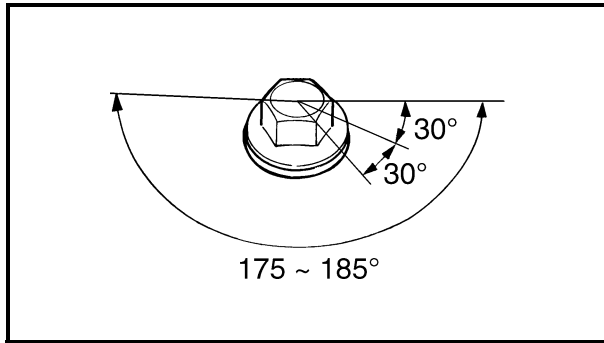
**Cylinder head bolt (M10):****1st:**

25 Nm (2.5 m · kg, 18 ft · lb)

- Loosen and retighten the cylinder head bolts in the proper tightening sequence as shown.

**Cylinder head bolt (M10):****2nd:**

25 Nm (2.5 m · kg, 18 ft · lb)



- Tighten the cylinder head bolts further to reach the specified angle 180° in the proper tightening sequence as shown.



Cylinder head bolt (M10):

Final:

Specified angle $175 \sim 185^\circ$

⚠ WARNING

When the bolts are tightened more than the specified angle, do not loosen the bolt and then retighten it.

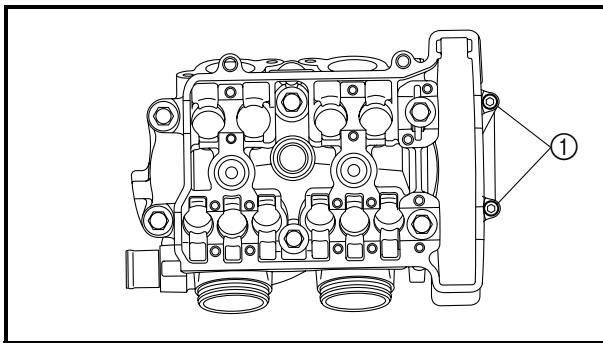
Replace the bolt with a new one and perform the procedure again.

CAUTION:

- Do not use a torque wrench to tighten the bolt to the specified angle.
- Tighten the bolt until it is at the specified angle.

NOTE:

When using a hexagonal bolt, note that the angle from one corner to another is 60° .



4. Tighten:

- Cylinder head bolts (M6) ①

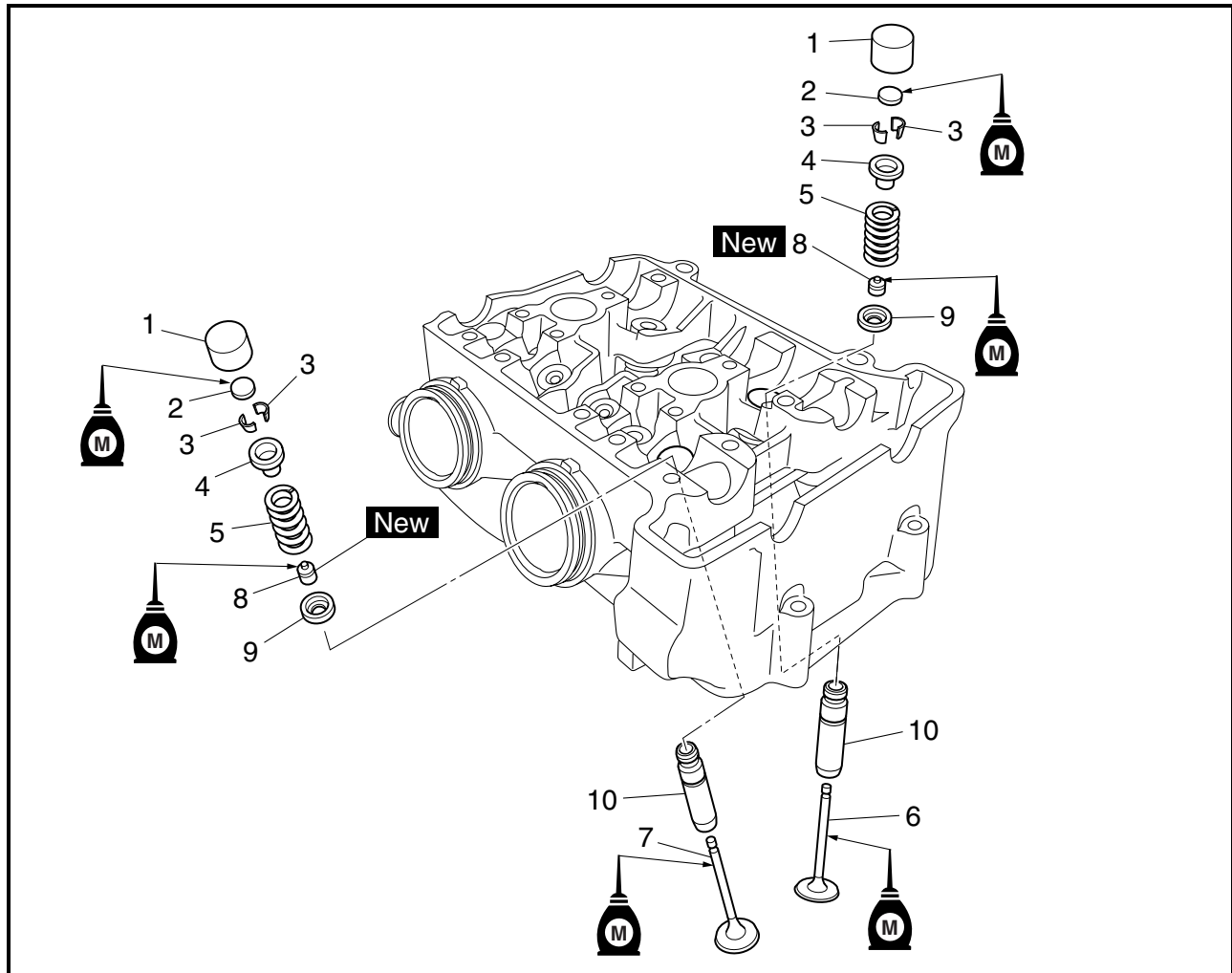


Cylinder head bolt:

12 Nm (1.2 m · kg, 8.7 ft · lb)



VALVES AND VALVE SPRINGS



Order	Job name/Part name	Q'ty	Remarks
	Valves and valve springs removal		
	Cylinder head		Remove the parts in the order listed below. Refer to "CYLINDER HEAD".
1	Valve lifter	10	
2	Valve pad	10	
3	Valve cotter	20	
4	Upper spring seat	10	
5	Valve spring	10	
6	Exhaust valve	4	
7	Intake valve	6	
8	Oil seal	10	
9	Lower spring seat	10	
10	Valve guide	10	
			For installation, reverse the removal procedure.

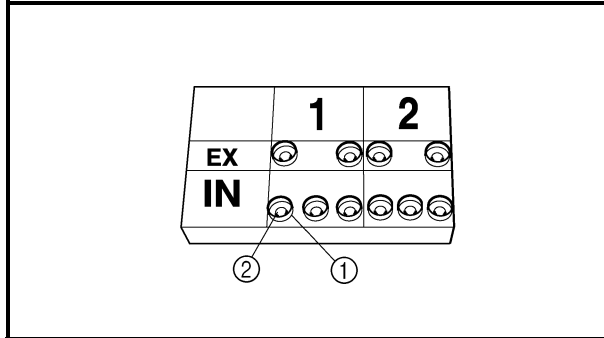


REMOVAL

The following procedure applies to all of the valves and related components.

NOTE:

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

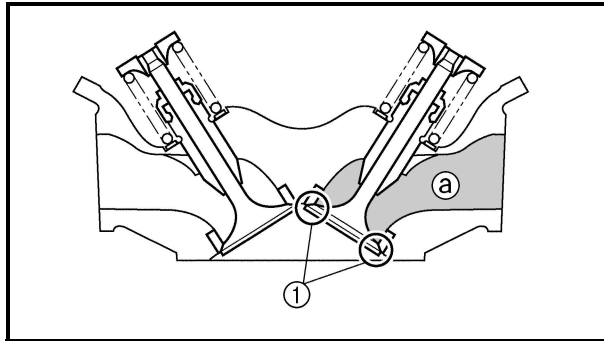


1. Remove:

- Valve lifter ①
- Valve pad ②

NOTE:

Make a note of the position of each valve lifter and valve pad so that they can be reinstalled in their original place.



2. Inspect:

- Valve (for leakage)
Leakage at the valve seat → Check the valve face, valve seat, and valve seat width.

Inspection steps:

- Pour a clean solvent ① into the intake and exhaust ports.
- Check that the valves properly seal.

NOTE:

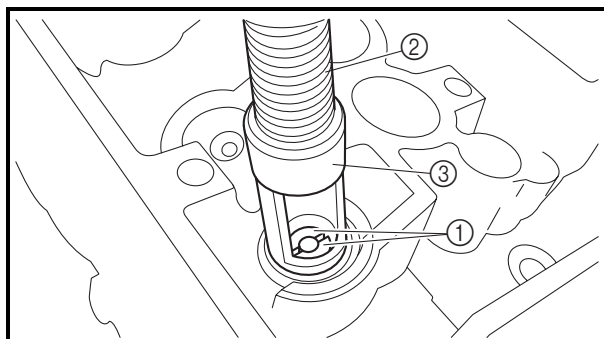
There should be no leakage at the valve seat ①.

3. Remove:

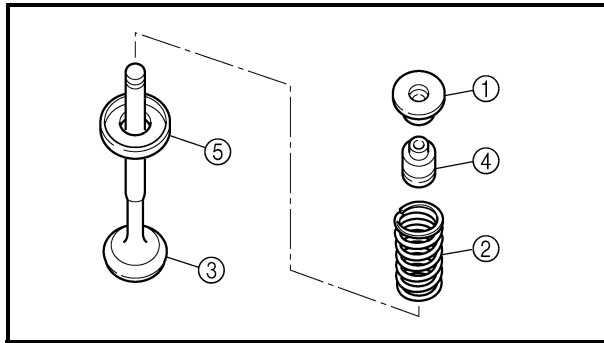
- Valve cotters ①

NOTE:

Remove the valve cotters 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-04114
Exhaust valve:
90890-04108, YM-04108



4. Remove:

- Upper spring seat ①
- Valve spring ②
- Valve ③
- Valve stem seal ④
- Lower spring seat ⑤

NOTE:

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

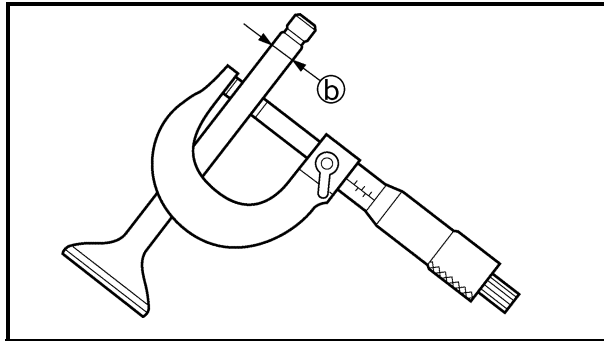
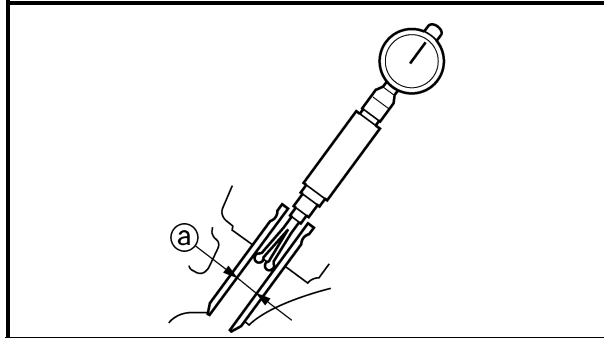
INSPECTION

1. Measure:

- Valve-stem-to-valve-guide clearance

Valve-stem-to-valve-guide clearance =
Valve guide inside diameter ① –
Valve stem diameter ②

Out of specification → Replace the valve guide.



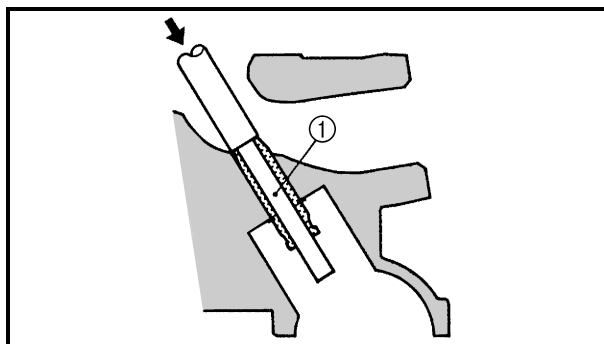
Valve-stem-to-valve-guide clearance:

Intake:

0.010 ~ 0.037 mm
 (0.0004 ~ 0.0015 in)
 <Limit>: 0.08 mm (0.0031 in)

Exhaust:

0.025 ~ 0.052 mm
 (0.0010 ~ 0.0020 in)
 <Limit>: 0.10 mm (0.0039 in)



2. Replace:

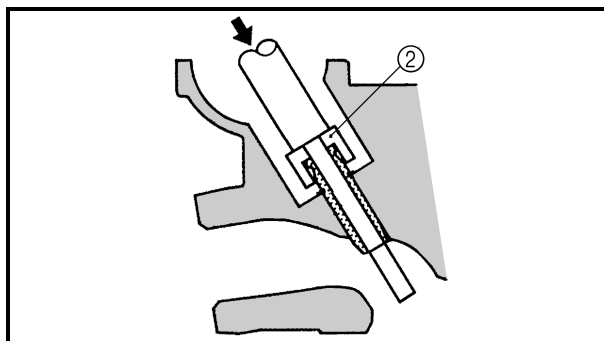
- Valve guide

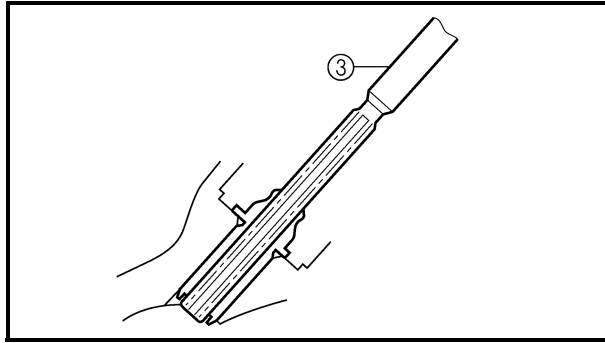
NOTE:

To ease valve guide removal and installation, and to maintain the correct fit, heat the cylinder head to 100 °C (212 °F) in an oven.

Replacement steps:

- Remove the valve guide with the valve guide remover ①.
- Install the new valve guide with the valve guide installer ② and valve guide remover ①.





- After installing the valve guide, bore the valve guide with the valve guide reamer ③ to obtain the proper valve-stem-to-valve-guide clearance.

NOTE:

After replacing the valve guide, reface the valve seat.



Valve guide remover (ø4):

90890-04111, YM-04111

Valve guide installer (ø4):

90890-04112, YM-04112

Valve guide reamer (ø4):

90890-04113, YM-04113

3. Eliminate:

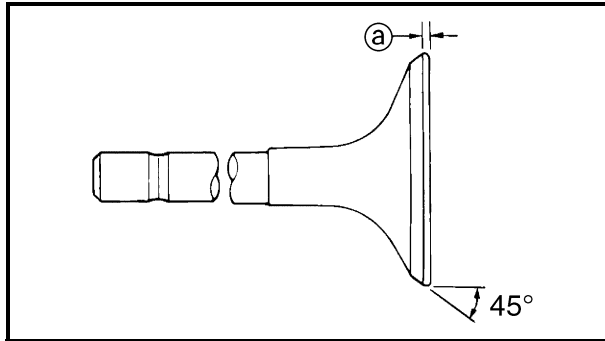
- Carbon deposits
(from the valve face and valve seat)

4. Inspect:

- Valve face
Pitting/wear → Grind the valve face.
- Valve stem end
Mushroom shape or diameter larger than the body of the valve stem → Replace the valve.

5. Measure:

- Valve margin thickness ①
Out of specification → Replace the valve.



Valve margin thickness:

Intake:

0.5 ~ 0.9 mm (0.0197 ~ 0.0354 in)

Exhaust:

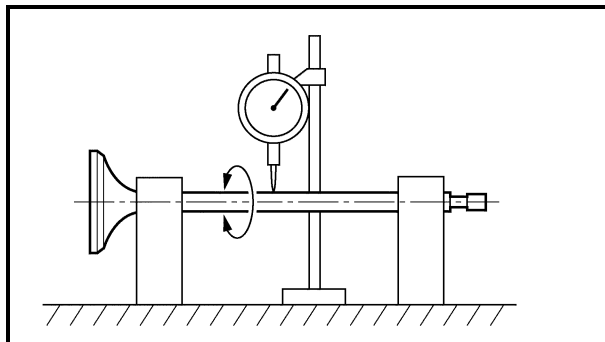
0.5 ~ 0.9 mm (0.0197 ~ 0.0354 in)

6. Measure:

- Valve stem runout
Out of specification → Replace the valve.

NOTE:

- When installing a new valve, always replace the valve guide.
- If the valve is removed or replaced, always replace the oil seal.



Valve stem runout:

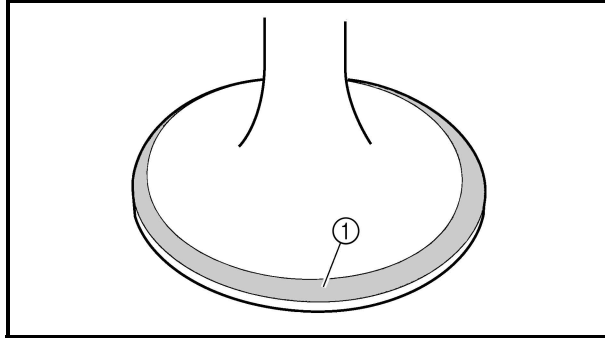
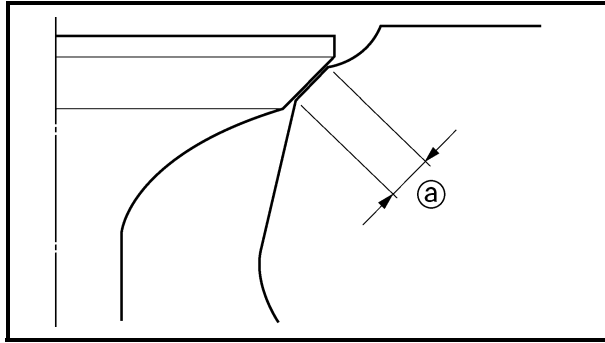
0.01 mm (0.0004 in)

7. Eliminate:

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

8. Inspect:

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



9. Measure:

- Valve seat width (a)

Out of specification → Replace the cylinder head.

**Valve seat width:****Intake:**

0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)

<Limit>: 1.6 mm (0.0630 in)

Exhaust:

1.2 ~ 1.4 mm (0.0472 ~ 0.0551 in)

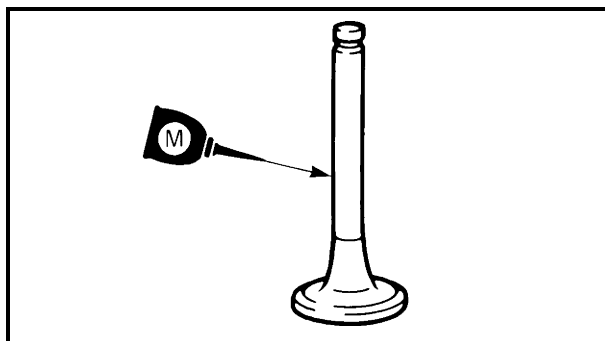
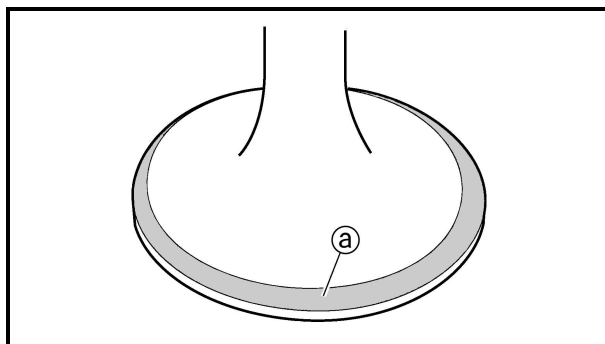
<Limit>: 1.9 mm (0.0748 in)

Measurement steps:

- Apply Mechanic's blueing dye (Dykem) (1) onto the valve face.
- Install the valve into the cylinder head.
- Press the valve through the valve guide and onto the valve seat to make a clear impression.
- Measure the valve seat width.

NOTE:

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



10. Lap:

- Valve face
- Valve seat

NOTE:

After replacing the cylinder head or replacing the valve and valve guide, the valve seat and valve face should be lapped.

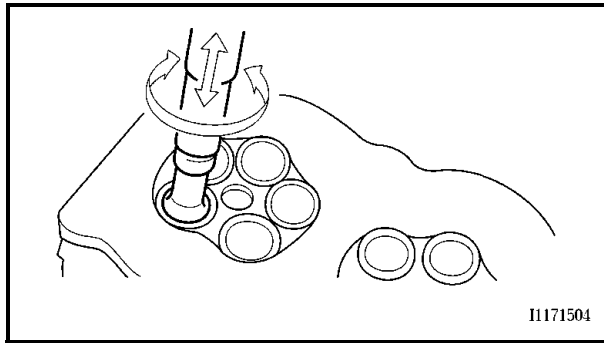
Lapping steps:

- Apply a coarse lapping compound (a) to the valve face.

CAUTION:

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

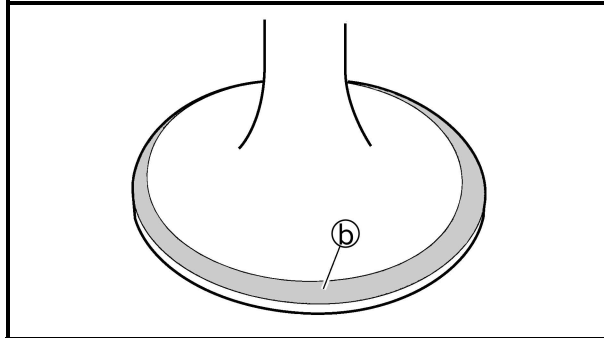
- Apply molybdenum disulfide oil onto the valve stem.



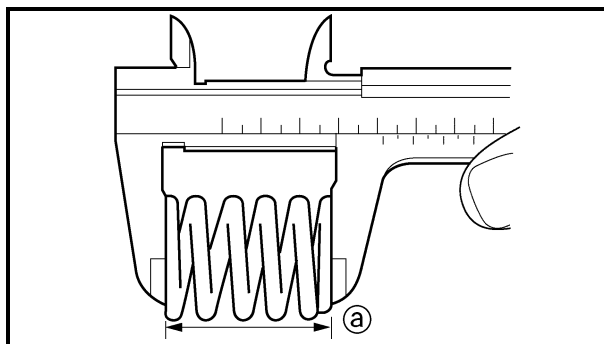
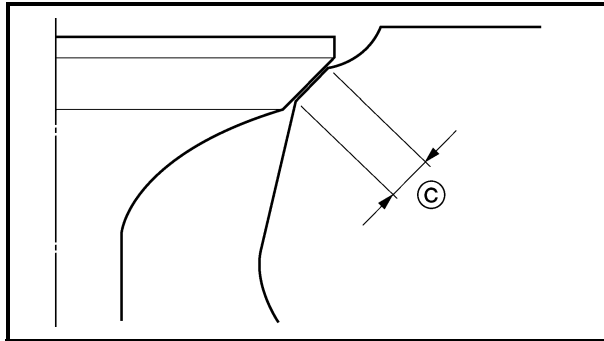
- Install the valve into the cylinder head.
- Turn the valve until the valve face and valve seat are evenly polished, then clean off all of the lapping compound.

NOTE:

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



- Apply a fine lapping compound to the valve face and repeat the above steps.
- After every lapping procedure, be sure to clean off all of the lapping compound from the valve face and valve seat.
- Apply Mechanic's blueing dye (Dykem) **b** onto the valve face.
- Install the valve into the cylinder head.
- Press the valve through the valve guide and onto the valve seat to make a clear impression.
- Measure the valve seat width **c** again. If the valve seat width is out of specification, reface and lap the valve seat.

**11. Measure:**

- Valve spring free length **a**
Out of specification → Replace the valve spring.

**Valve spring free length:****Intake:**

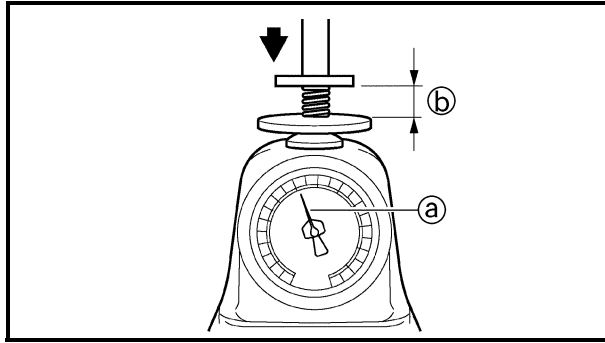
36.51 mm (1.44 in)

<Limit>: 34.68 mm (1.37 in)

Exhaust:

37.92 mm (1.49 in)

<Limit>: 36.02 mm (1.42 in)



12. Measure:

- Compressed valve spring force ①
Out of specification → Replace the valve spring.

② Installed length



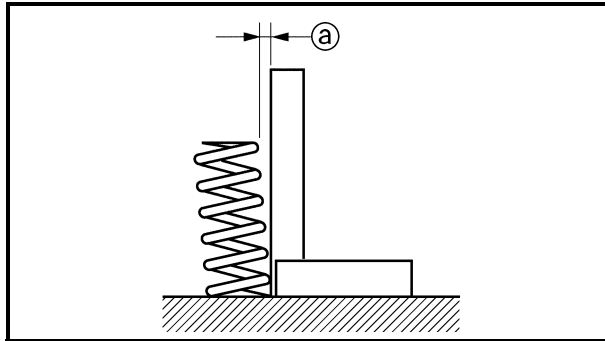
Compressed valve spring force (installed):

Intake:

120.7 ~ 138.9 N at 30.13 mm
(12.3 ~ 14.2 kg at 30.13 mm,
27.1 ~ 31.2 lb at 1.19 in)

Exhaust:

150.6 ~ 173.2 N at 30.50 mm
(15.4 ~ 17.7 kg at 30.50 mm,
33.9 ~ 38.9 lb at 1.20 in)



13. Measure:

- Valve spring tilt ①
Out of specification → Replace the valve spring.



Maximum valve spring tilt:

Intake:

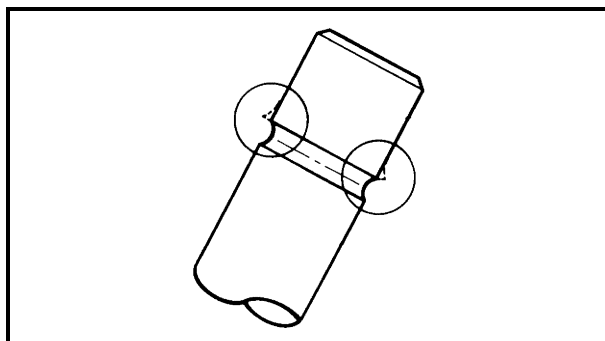
2.5°/1.6 mm (0.06 in)

Exhaust:

2.5°/1.7 mm (0.07 in)

14. Inspect:

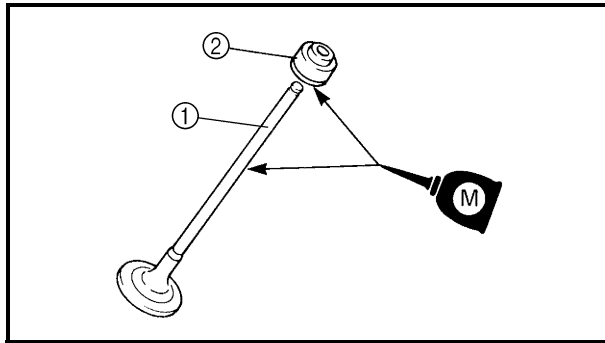
- Valve lifter
Damage/scratches → Replace the valve lifters and cylinder head.



INSTALLATION

1. Deburr:

- Valve stem end
(with an oil stone)

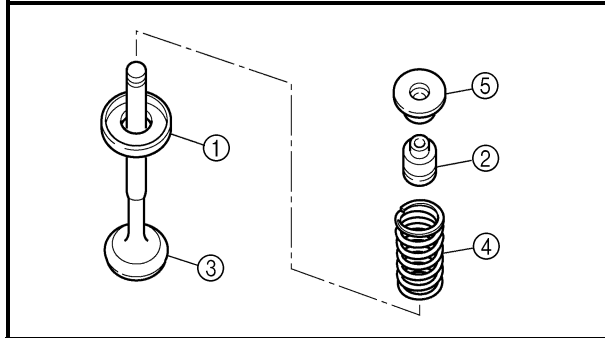


2. Lubricate:

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



Recommended lubricant:
Molybdenum disulfide oil



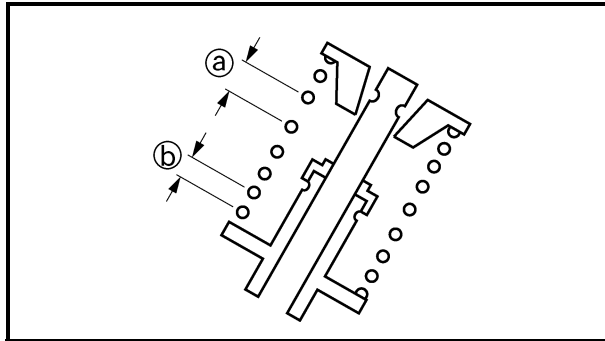
3. Install:

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

NOTE:

- Make sure each valve is installed in its original place.
- Install the valve spring with the larger pitch ④ facing up.

⑥ Smaller pitch

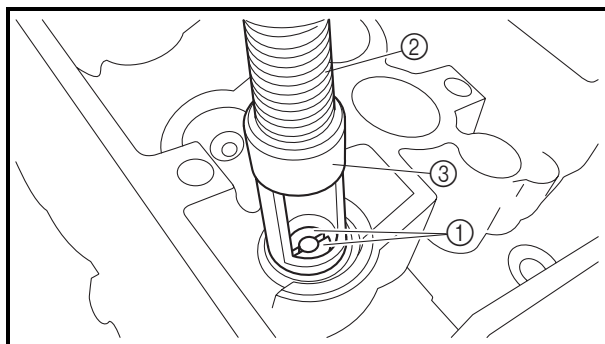


4. Install:

- Valve cotteners ①

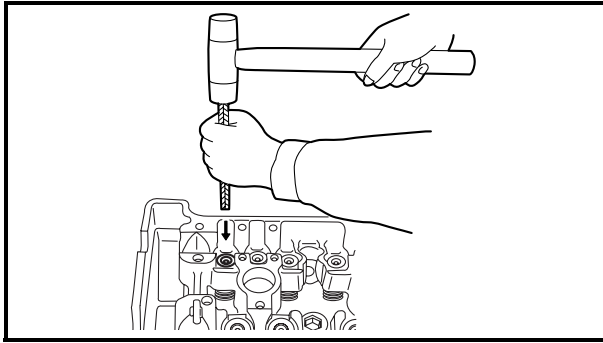
NOTE:

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
Valve spring compressor attachment:

Intake valve:
90890-04114, YM-04114
Exhaust valve:
90890-04108, YM-04108



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. Lubricate:

- Valve pad
 - Valve lifter
- (with the recommended lubricant)



Recommended lubricant:
Molybdenum disulfide oil

7. Install:

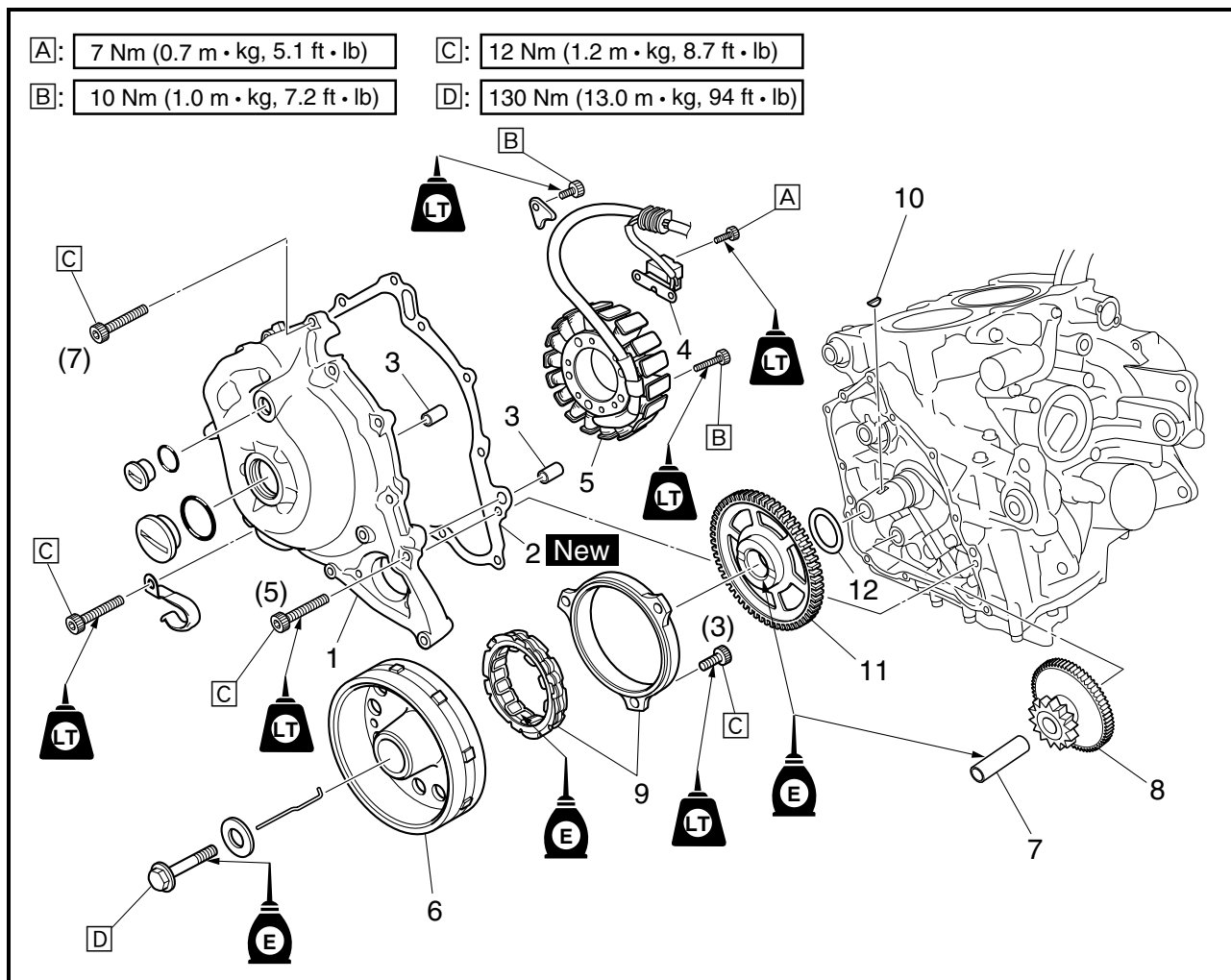
- Valve pad
- Valve lifter

NOTE:

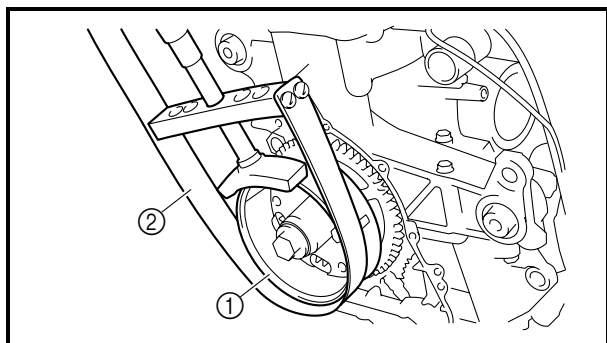
- The valve lifter must move smoothly when rotated with a finger.
- Each valve lifter and valve pad must be reinstalled in its original position.



A.C. MAGNETO ROTOR AND STARTER CLUTCH



Order	Job name/Part name	Q'ty	Remarks
	A.C. magneto rotor and starter clutch removal		Remove the parts in the order listed below.
	Engine assembly		Refer to "ENGINE ASSEMBLY".
1	A.C. magneto cover	1	
2	Gasket	1	
3	Dowel pin	2	
4	Pickup coil	1	
5	Stator coil	1	
6	A.C. magneto rotor	1	
7	Idle gear shaft	1	
8	Starter clutch idle gear	1	
9	Starter clutch	1	
10	Woodruff key	1	
11	Starter clutch gear	1	
12	Washer	1	
			For installation, reverse the removal procedure.



REMOVAL

1. Remove:

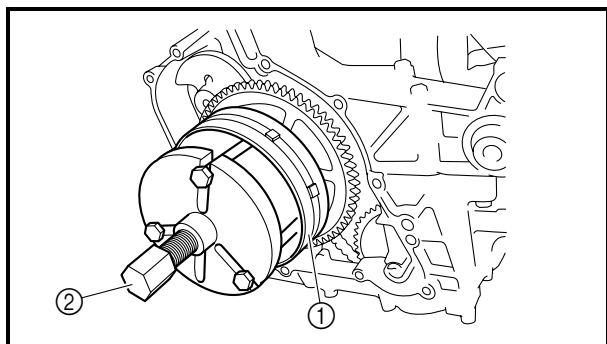
- A.C. magneto rotor bolt
- Washer

NOTE:

- While holding the A.C. magneto rotor ① with the sheave holder ②, loosen the magneto rotor bolt.
- Do not allow the sheave holder to touch the projection on the A.C. magneto rotor.



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



2. Remove:

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

CAUTION:

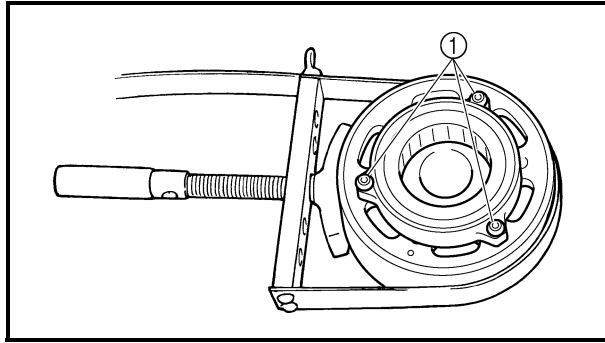
To protect the end of the crankshaft, place an appropriate sized socket between the rotor holding puller set's center bolt and the crankshaft.

NOTE:

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



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



3. Remove:

- Starter clutch

NOTE:

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



Sheave holder:

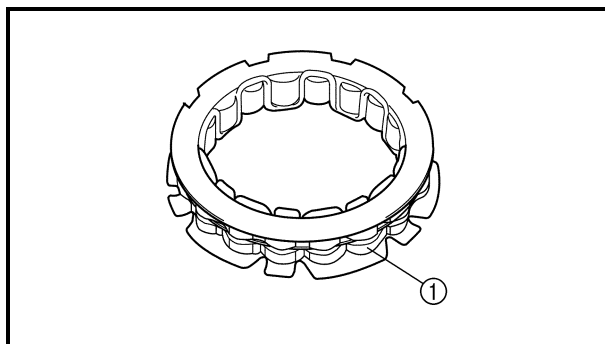
90890-01701, YS-01880-A

INSPECTION

1. Inspect:

- Stator coil
- Pickup coil

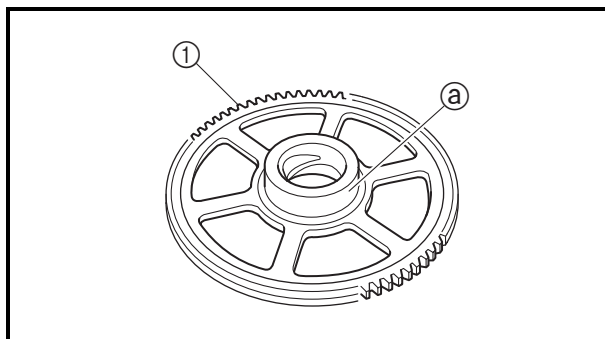
Damage → Replace the pickup coil/stator assembly.



2. Inspect:

- Starter clutch rollers ①

Damage/wear → Replace.

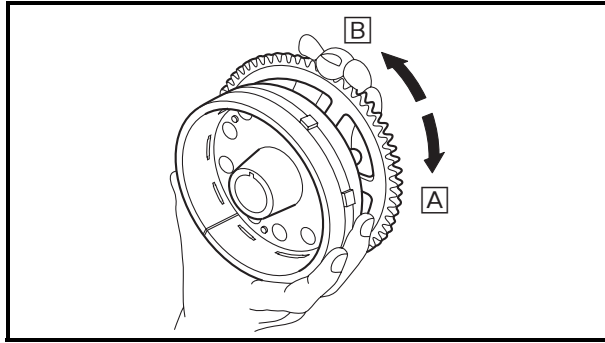


3. Inspect:

- Starter clutch idle gear
- Starter clutch gear ①

Burrs/chips/roughness/wear → Replace the defective part(s).

- Starter clutch gear's contacting surfaces @
Damage/pitting/wear → Replace the starter clutch gear.



4. Inspect:

- Starter clutch operation

Installation steps:

- Install the starter clutch gear onto the starter clutch and hold the starter clutch.
- When turning the starter clutch gear clockwise [A], the starter clutch and the starter clutch gear should engage, otherwise the starter clutch is faulty and must be replaced.
- When turning the starter clutch gear counter-clockwise [B], it should turn freely, otherwise the starter clutch is faulty and must be replaced.

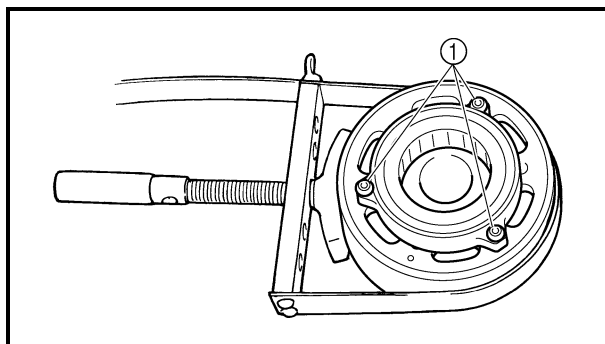
INSTALLATION

1. Install:

- Starter clutch

NOTE:

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



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

2. Tighten:

- Starter clutch bolts ①



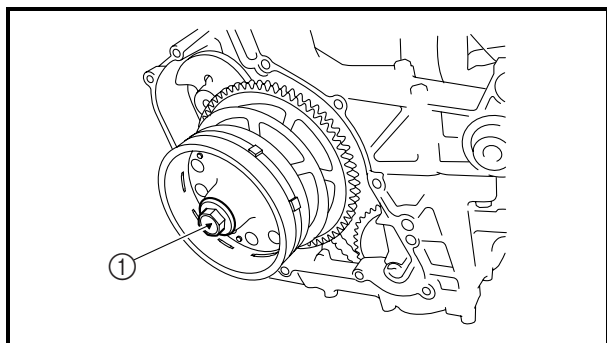
Starter clutch bolt:
12 Nm (1.2 m · kg, 8.7 ft · lb)
LOCTITE®

3. Install:

- Woodruff key
- A.C. magneto rotor
- Washer
- A.C. magneto rotor bolt

NOTE:

- Clean the tapered portion of the crankshaft and the magneto rotor hub.
- When installing the magneto rotor, make sure the woodruff key is properly seated in the key-way of the crankshaft.



4. Tighten:

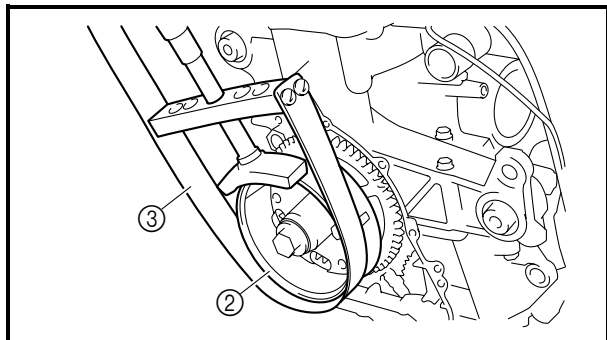
- A.C. magneto rotor bolt ①



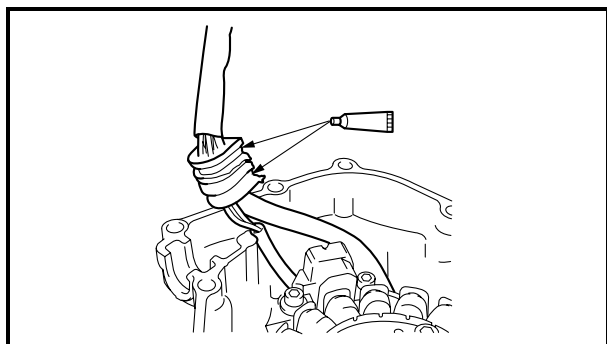
A.C. magneto rotor bolt:
130 Nm (13.0 m · kg, 94 ft · lb)

NOTE:

- Lubricate the A.C. magneto rotor bolt and washer with engine oil.
- While holding the A.C. magneto rotor ② with the sheave holder ③, tighten the magneto rotor bolt.
- Do not allow the sheave holder to touch the projection on the magneto rotor.



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

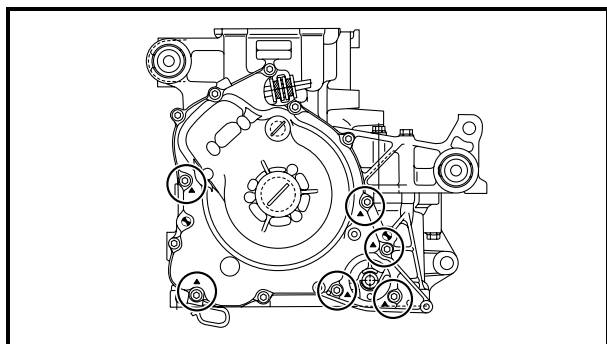


5. Apply:

- Sealant
(onto the A.C. magneto lead grommet)



Yamaha bond No. 1215:
90890-85505
(Three Bond No.1215®)



6. Tighten:

- A.C. magneto cover bolt



A.C. magneto cover bolt:
12 Nm (1.2 m · kg, 8.7 ft · lb)
LOCTITE®

NOTE:

Apply LOCTITE® to the bolts (black) indicated by the “▲” marks on the A.C. magneto cover.

The diagram shows an exploded view of a generator assembly. Key components include:

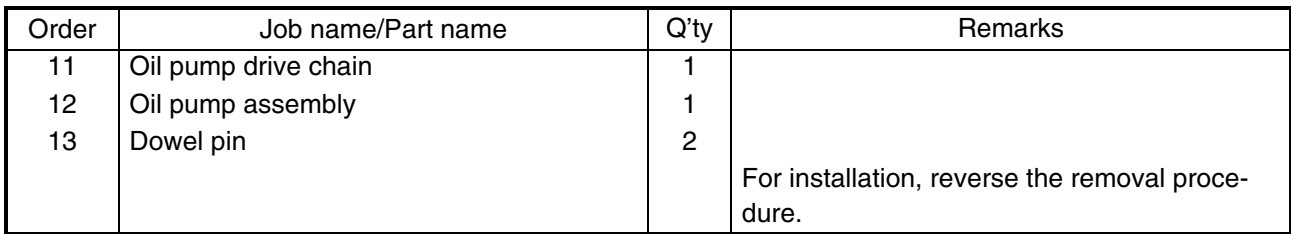
- 1**: Drive shaft
- 2**: Pulley
- 3**: Drive pin
- 4**: Pulley nut
- 5**: Generator housing (top)
- 6**: Generator housing (bottom)
- 7**: Generator housing (side)
- 8**: Generator housing (front)
- 9**: Generator housing (rear)
- 10**: Generator housing (left)
- 11**: Generator housing (right)
- 12**: Generator housing (top cover)
- 13**: Generator housing (bottom cover)

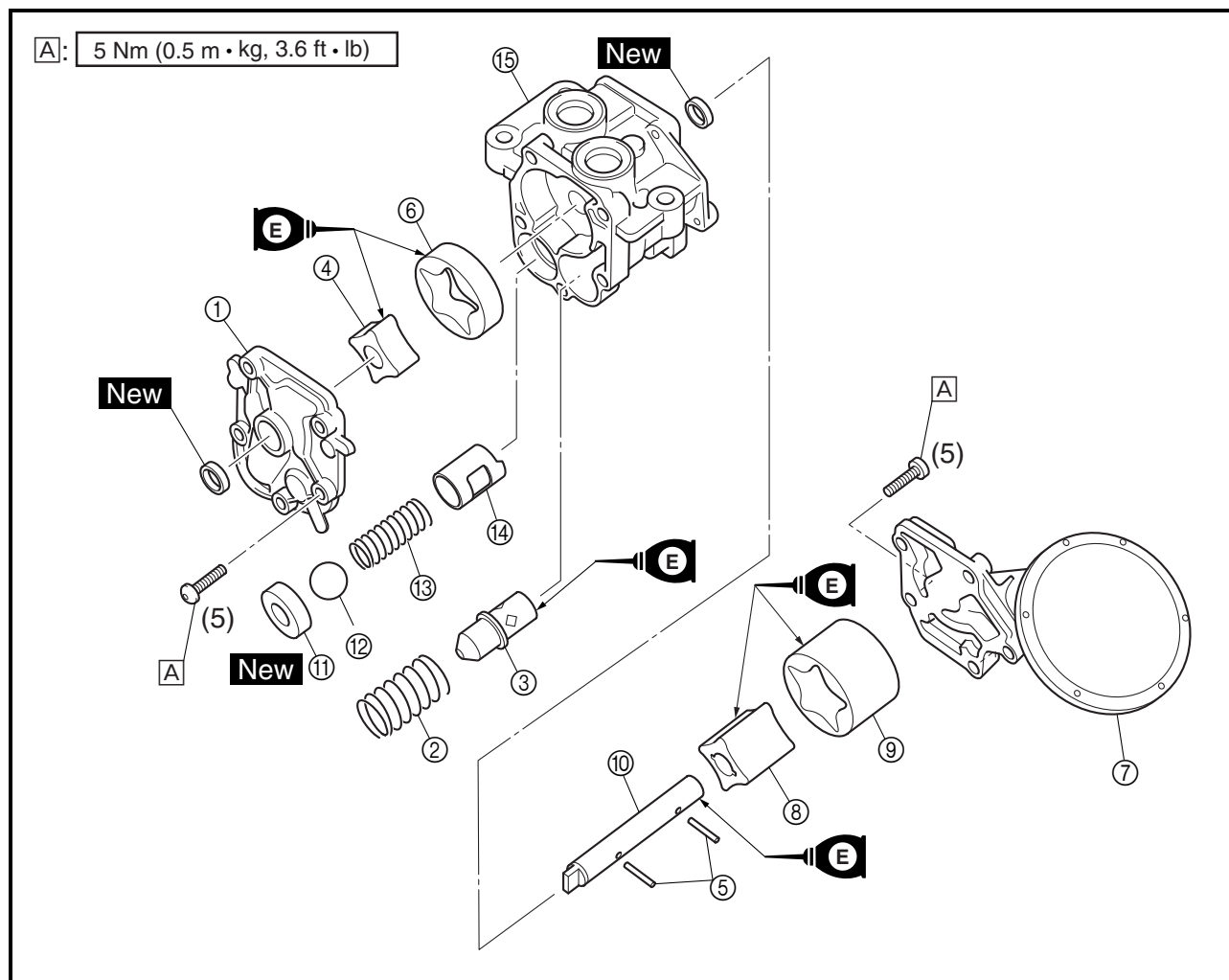
 Torque specifications are provided for various bolts and nuts:

- A**: 10 Nm (1.0 m • kg, 7.2 ft • lb)
- B**: 12 Nm (1.2 m • kg, 8.7 ft • lb)
- C**: 15 Nm (1.5 m • kg, 11 ft • lb)
- D**: 17 Nm (1.7 m • kg, 12 ft • lb)
- E**: 30 Nm (3.0 m • kg, 22 ft • lb)

 The diagram also includes a note about the use of ESO beacon 325 grease or Aeroshell grease #7A for lubrication.

Order	Job name/Part name	Q'ty	Remarks
	Oil pan and oil pump removal		Remove the parts in the order listed below.
	Engine		Refer to "ENGINE ASSEMBLY".
	Starter clutch gear		Refer to "A.C. MAGNETO ROTOR AND STARTER CLUTCH".
1	Oil tank inlet hose	1	
2	Oil tank outlet hose	1	
3	Oil pressure switch	1	
4	Oil filter cartridge	1	
5	Oil pan	1	
6	Gasket	1	
7	Dowel pin	2	
8	Oil pump drive chain guide	1	
9	Oil pump driven sprocket shaft	1	
10	Oil pump driven sprocket	1	





Order	Job name/Part name	Q'ty	Remarks
	Oil pump disassembly		Remove the parts in the order listed below.
①	Oil pump housing cover 1	1	
②	Spring	1	
③	Relief valve	1	
④	Oil pump inner rotor 1	1	
⑤	Pin	2	
⑥	Oil pump outer rotor 1	1	
⑦	Oil pump housing cover 2	1	
⑧	Oil pump inner rotor 2	2	
⑨	Oil pump outer rotor 2	2	
⑩	Oil pump shaft	1	
⑪	Check ball seat	1	
⑫	Check ball	1	
⑬	Spring	1	
⑭	Spacer	1	
⑮	Oil pump housing	1	
			For assembly, reverse the disassembly procedure.

**REMOVAL**

1. Remove:
 - Oil pan

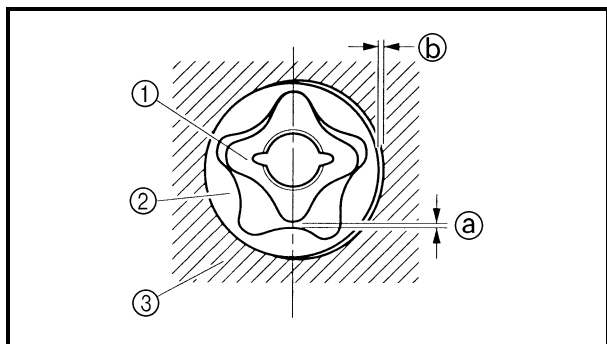
NOTE:

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. Inspect:
 - Oil pump housing
 - Oil pump cover

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.



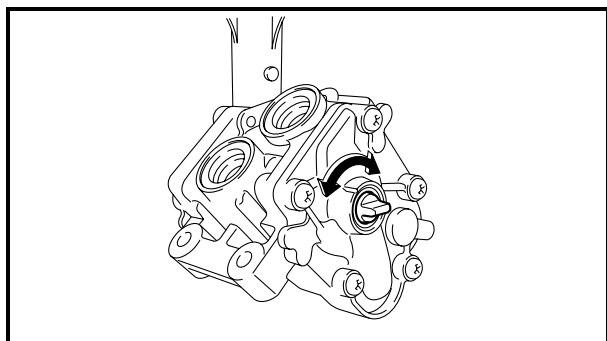
Inner-rotor-to-outer-rotor-tip clearance:

Less than 0.12 mm (0.005 in)

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

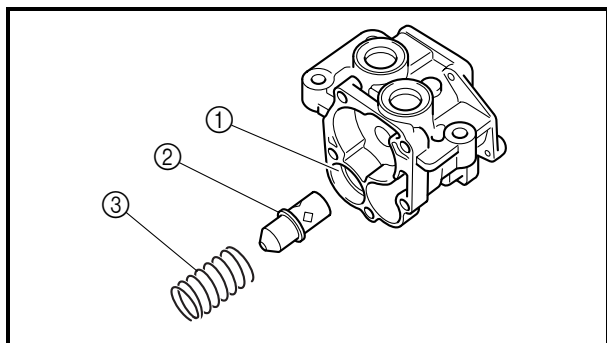
Oil pump outer rotor:

0.09 ~ 0.15 mm (0.004 ~ 0.006 in)



3. Inspect:

- Oil pump operation
- Rough movement → Repeat steps (1) and (2) or replace the defective part(s).



4. Inspect:

- Relief valve body ①
- Relief valve ②
- Spring ③

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

5. Inspect:

- Oil pump driven sprocket

Cracks/damage/wear → Replace.

6. inspect:

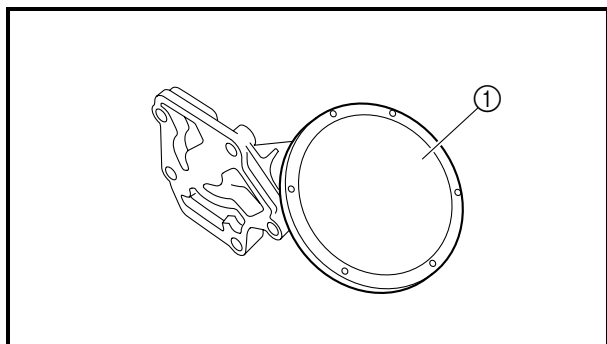
- Oil pump drive chain

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

7. Inspect:

- Check ball seat
- Check ball
- Spring
- Spacer

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



8. Inspect:

- Oil strainer ①

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)

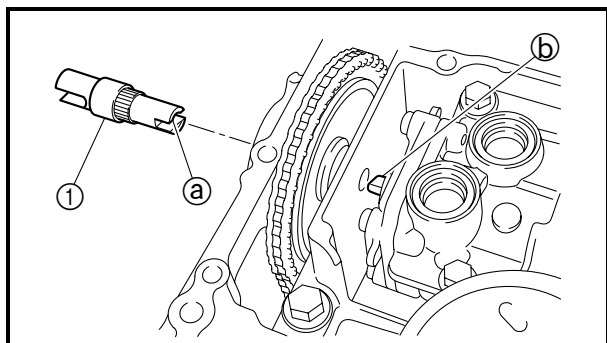


Recommended lubricant:
Engine oil

2. Inspect:

- Oil pump operation

Unsmooth operation → Replace.



3. Install:

- Oil pump driven sprocket shaft ①

NOTE:

Align the slit ① on the oil pump driven sprocket shaft with the projection ② on the oil pump shaft.

4. Install:

- Dowel pins
- Gasket **New**
- Oil pan
- Oil pan bolts



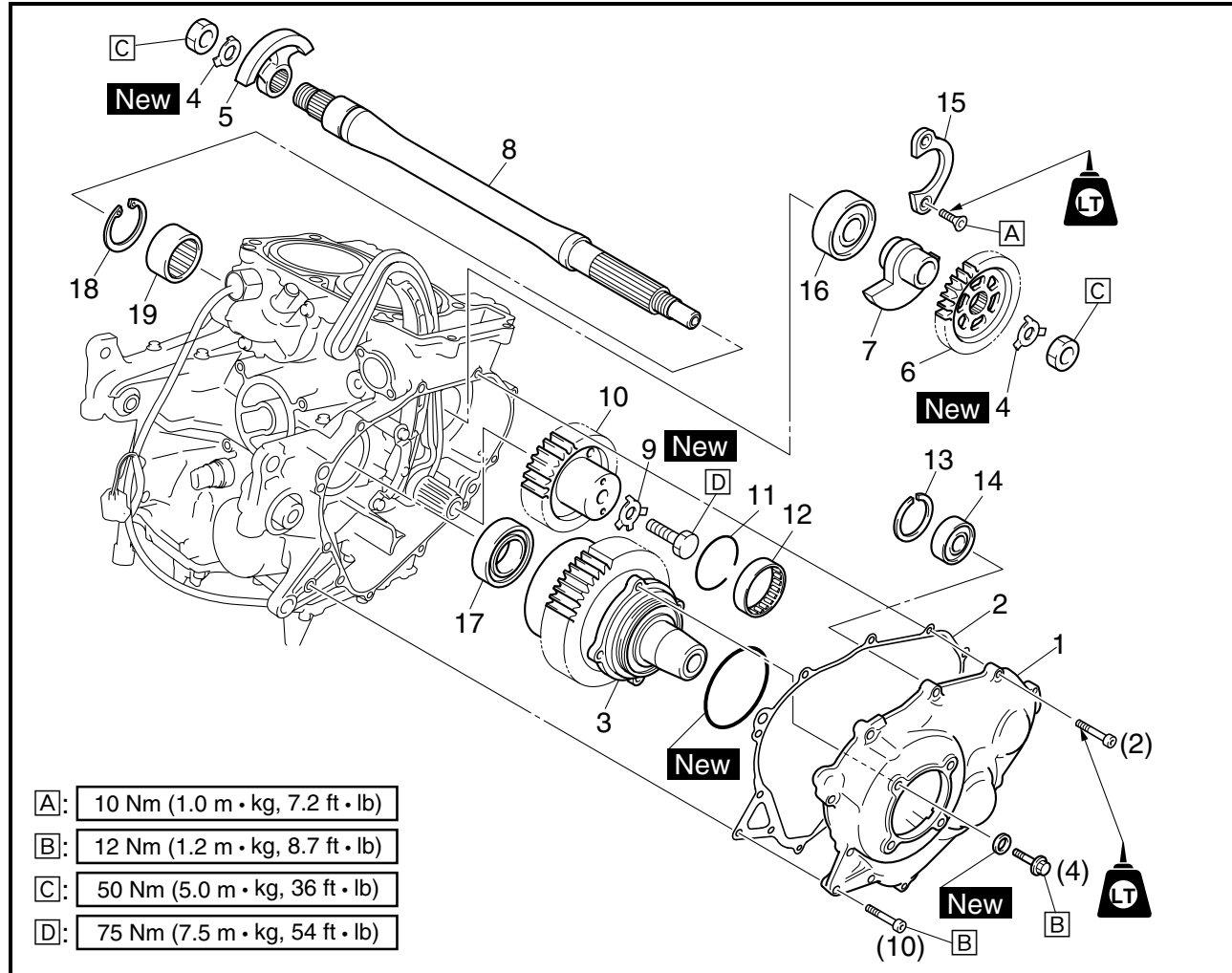
Oil pan bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)

NOTE:

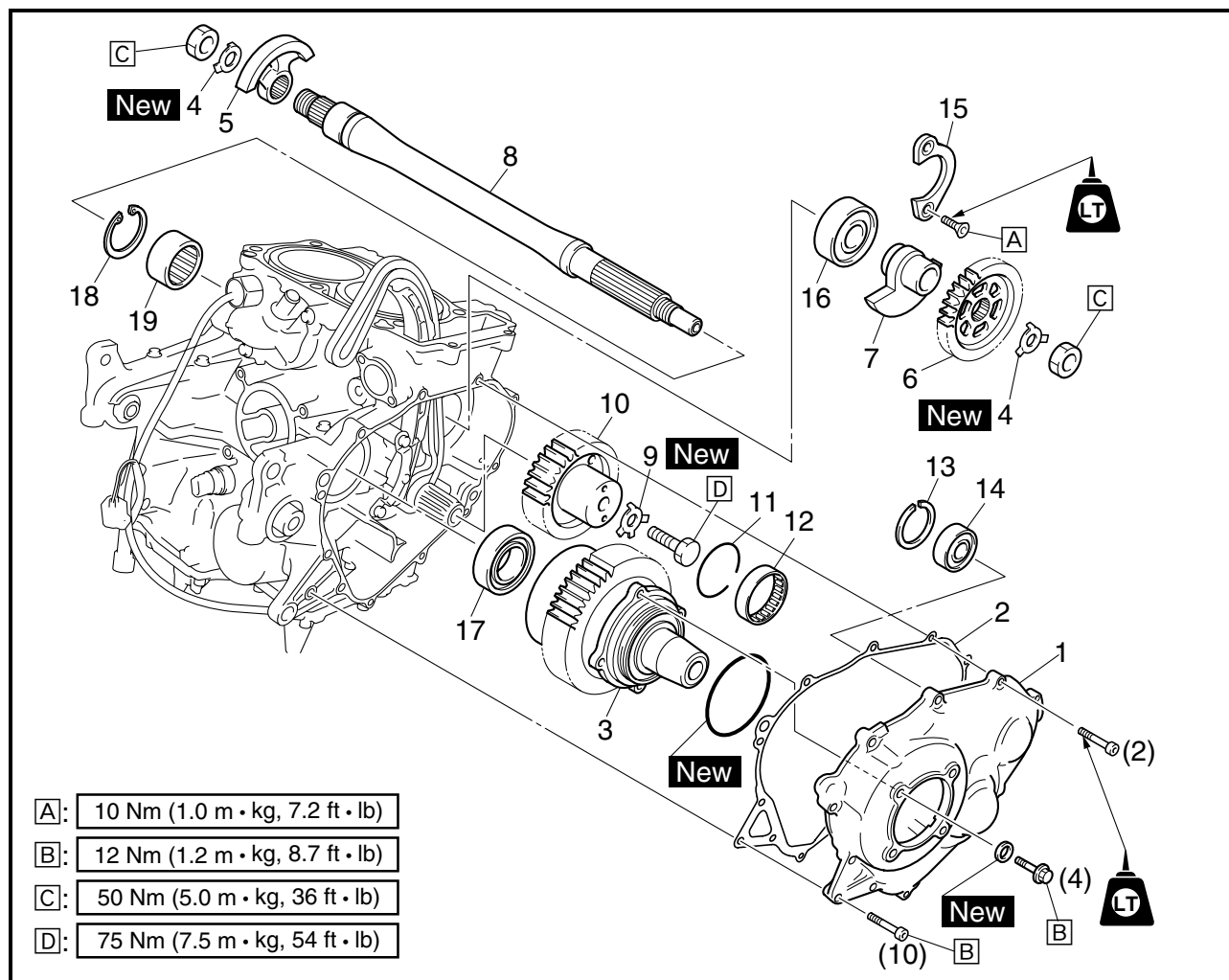
Tighten the oil pan bolts in stages and in a criss-cross pattern.



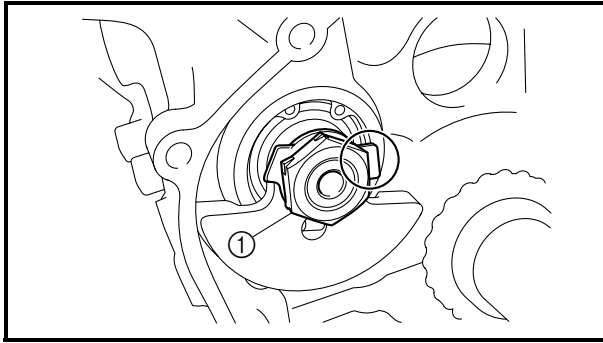
BALANCER



Order	Job name/Part name	Q'ty	Remarks
	Balancer shaft removal		Remove the parts in the order listed below.
	Engine		Refer to "ENGINE ASSEMBLY".
	Cylinder head		Refer to "CYLINDER HEAD".
	A.C. magneto rotor/starter clutch gear		Refer to "A.C. MAGNETO ROTOR AND STARTER CLUTCH".
1	Primary sheave drive shaft cover	1	
2	Gasket	1	
3	Primary sheave drive shaft assembly	1	
4	Lock washer	2	
5	Right balancer weight	1	
6	Balancer shaft driven gear	1	
7	Left balancer weight	1	
8	Balancer shaft	1	
9	Lock washer	1	
10	Balancer shaft drive gear	1	



Order	Job name/Part name	Q'ty	Remarks
11	Circlip	1	For installation, reverse the removal procedure.
12	Bearing	1	
13	Circlip	1	
14	Bearing	1	
15	Bearing retainer	1	
16	Bearing	1	
17	Bearing	1	
18	Circlip	1	
19	Bearing	1	

**REMOVAL**

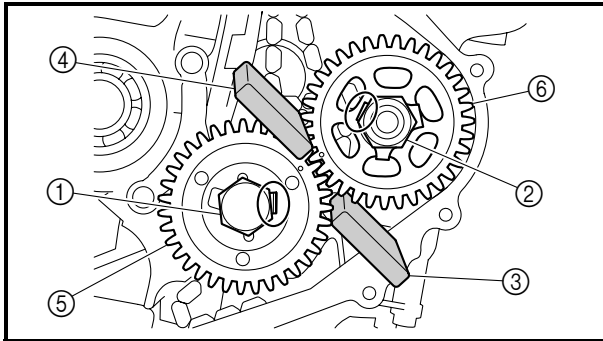
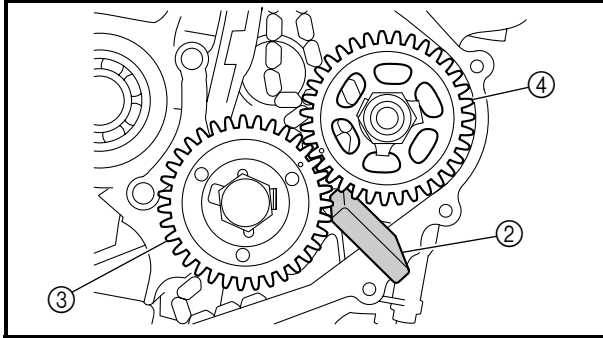
1. Straighten the lock washer tab.
2. Loosen:
 - Right balancer weight nut ①

CAUTION:

The right balancer weight nut has left-handed threads. To loosen the nut, turn it clockwise.

NOTE:

Place an aluminum plate ② between the teeth of the balancer shaft drive gear ③ and balancer shaft driven gear ④.



3. Straighten the lock washer tabs.

4. Loosen:

- Balancer shaft drive gear bolt ①
- Balancer shaft driven gear nut ②

CAUTION:

The balancer shaft drive gear bolt and balancer shaft driven gear nut has left-handed threads. To loosen the bolt and nut, turn it clockwise.

NOTE:

Place an aluminum plate ③ or ④ between the teeth of the balancer shaft drive gear ⑤ and balancer shaft driven gear ⑥.



INSPECTION

1. Inspect:

- Bearings

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

Rough movement → Replace.

2. Inspect:

- Balancer shaft drive gear
 - Balancer shaft driven gear
- Damage/wear → Replace.

3. Inspect:

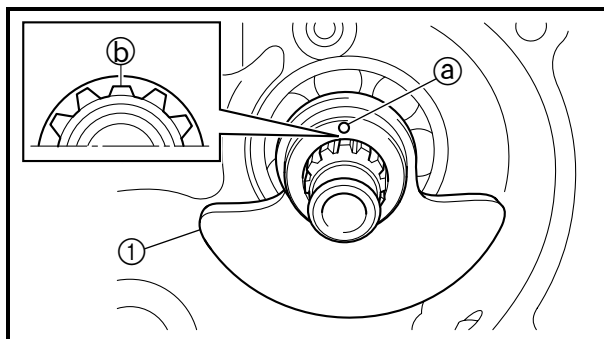
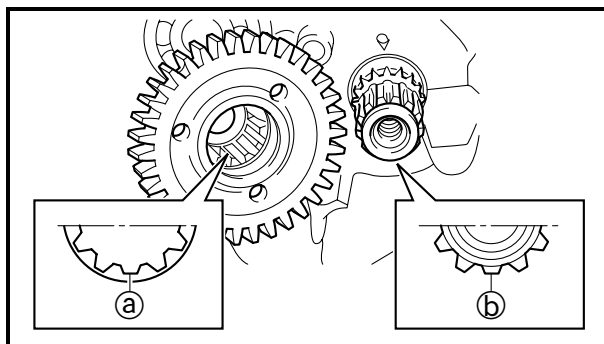
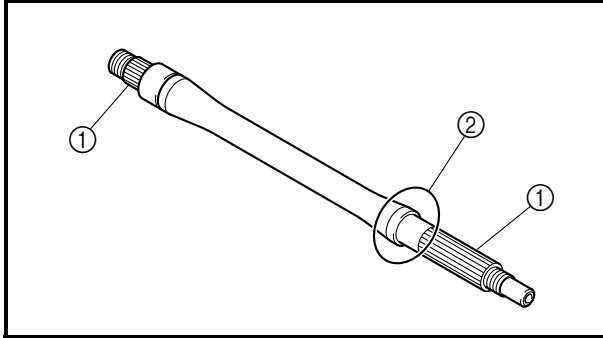
- Balancer weight
- Cracks/damage/wear → Replace.

4. Inspect:

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

5. Inspect:

- Primary sheave drive shaft assembly
- Damage → Replace.



INSTALLATION

1. Install:

- Balancer shaft drive gear
- Lock washer
- Balancer shaft drive gear bolt

NOTE:

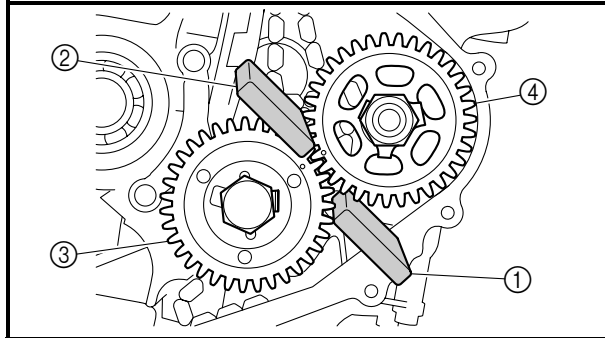
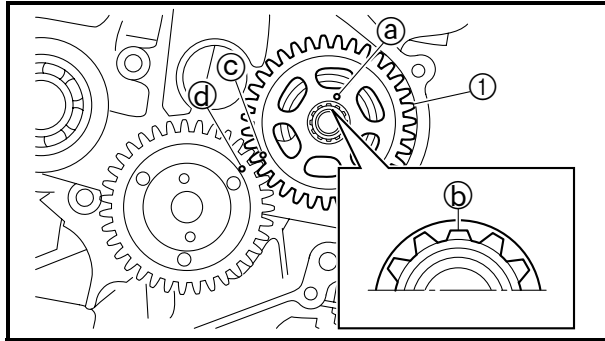
Align the shallow groove (a) in the balancer shaft drive gear with the low spline (b) of the crankshaft.

2. Install:

- Left balancer weight ①

NOTE:

Align the punch mark (a) on the left balancer weight with the shorter spline (b) on the balancer shaft end.



3. Install:

- Balancer shaft driven gear ①
- Lock washers
- Balancer shaft driven gear nut
- Right balancer weight nut
- Balancer shaft drive gear bolt

NOTE:

- Align the punch mark (a) on the balancer shaft driven gear with the shorter spline (b) on the balancer shaft end.
- Align the punch mark (c) on the balancer shaft driven gear with the punch mark (d) on the balancer shaft drive gear.

4. Tighten:

- Balancer shaft driven gear nut
- Right balancer weight nut
- Balancer shaft drive gear bolt

**Right balancer weight nut:**

50 Nm (5.0 m · kg, 36 ft · lb)

Balancer shaft driven gear nut:

50 Nm (5.0 m · kg, 36 ft · lb)

Balancer shaft drive gear bolt:

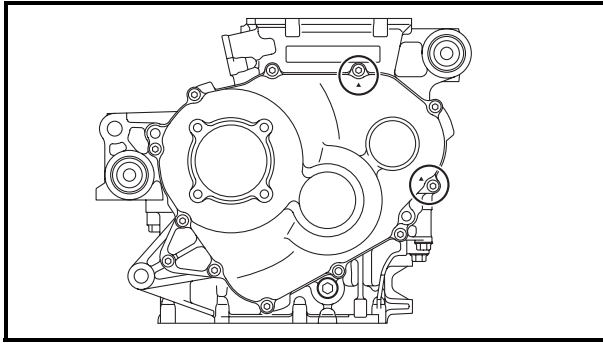
75 Nm (7.5 m · kg, 54 ft · lb)

CAUTION:

The right balancer weight nut, balancer shaft driven gear nut, and balancer shaft drive gear bolt has left-handed threads. Turn the retainer counterclockwise to tighten it.

NOTE:

Place an aluminum plate ① or ② between the teeth of the balancer shaft drive gear ③ and balancer shaft driven gear ④.



5. Tighten:

- Primary sheave drive shaft cover bolt



Primary sheave drive shaft cover bolt:

12 Nm (1.2 m · kg, 8.7 ft · lb)

LOCTITE®

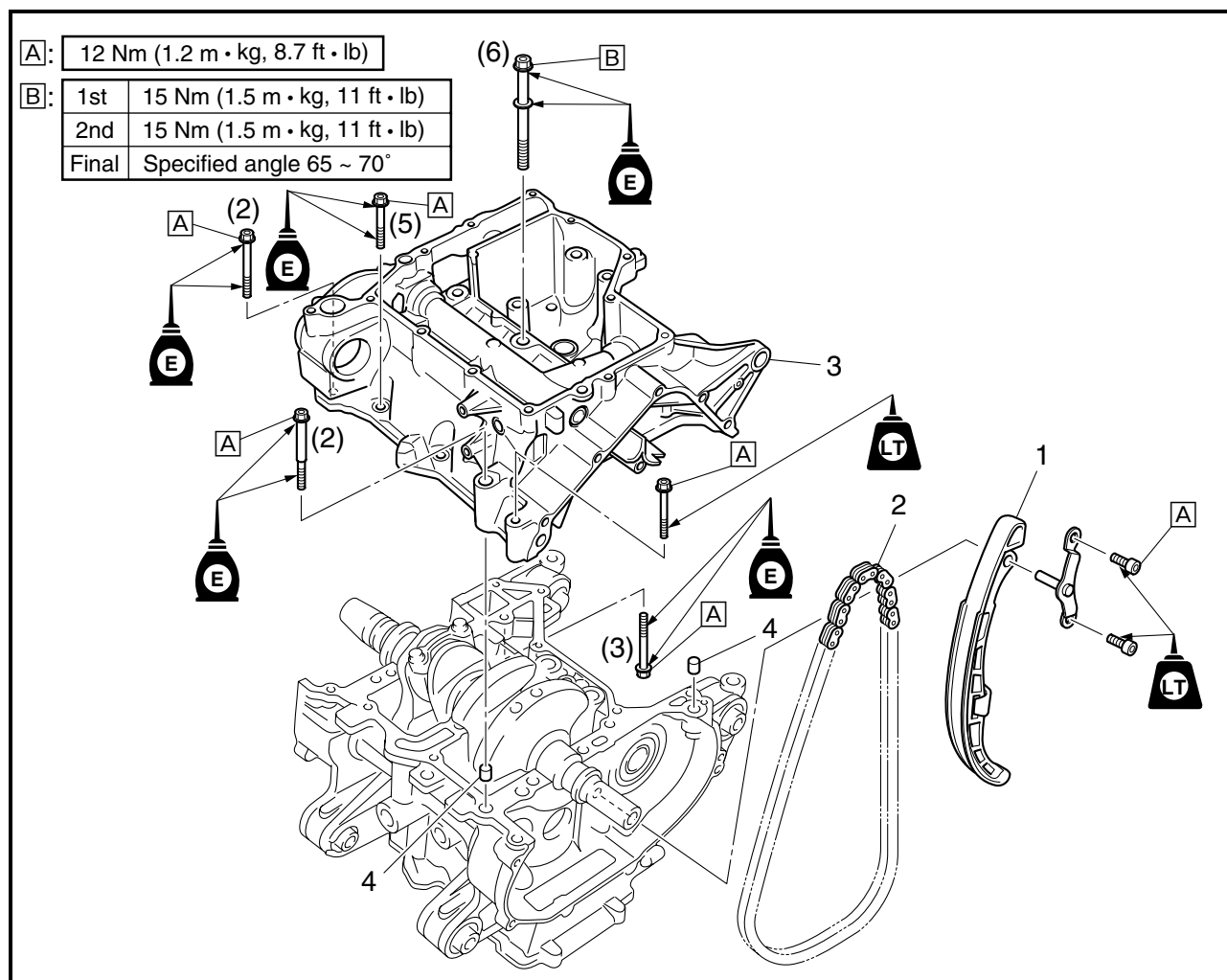
NOTE:

Apply LOCTITE® to the bolts (black) indicated by the “▲” marks on the primary sheave drive shaft cover.



CRANKCASE

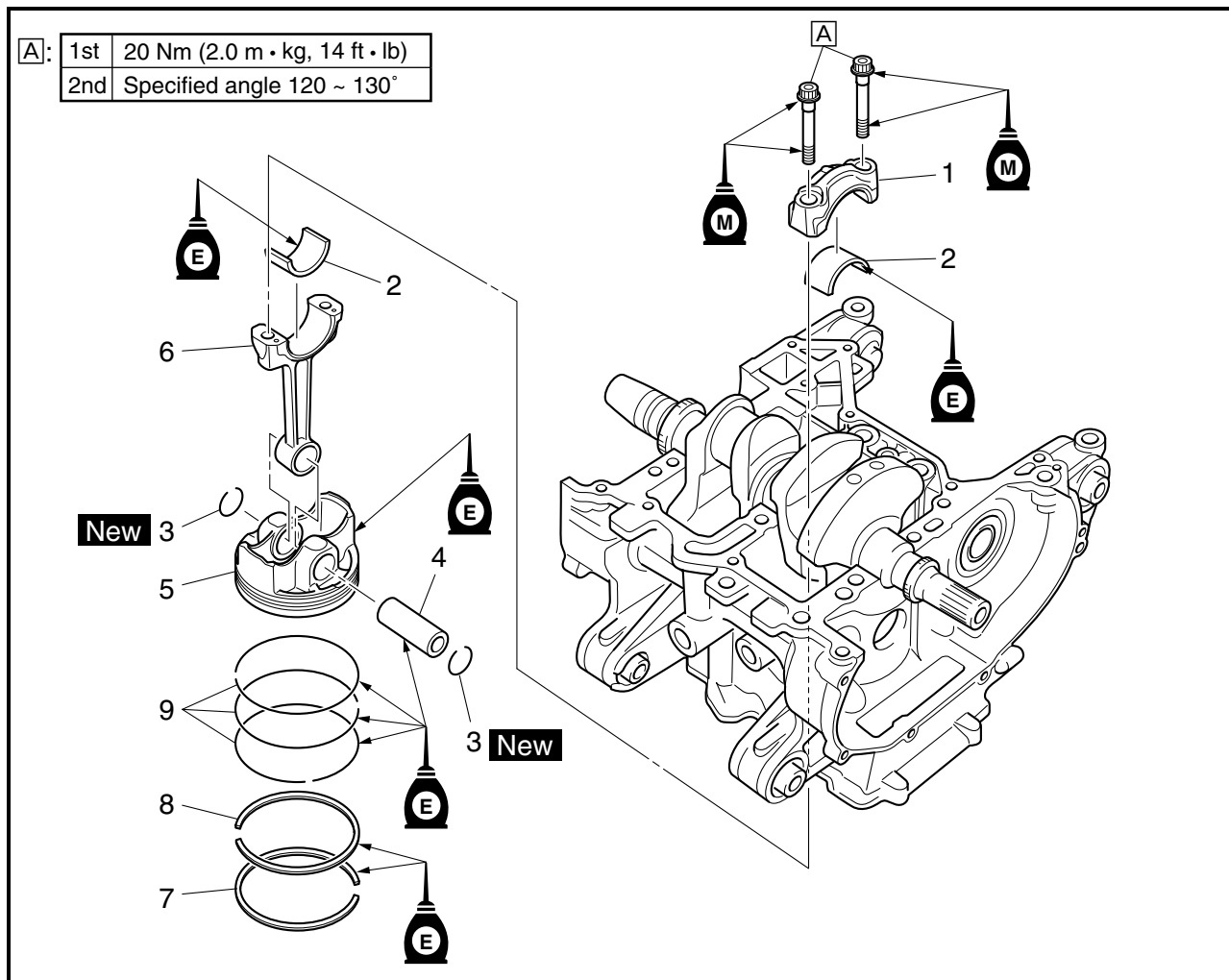
CRANKCASE



Order	Job name/Part name	Q'ty	Remarks
	Crankcase removal		Remove the parts in the order listed below.
	Engine		Refer to "ENGINE ASSEMBLY".
	Cylinder head		Refer to "CYLINDER HEAD".
	A.C. magneto rotor/starter clutch gear		Refer to "A.C. MAGNETO ROTOR AND STARTER CLUTCH".
	Oil pump		Refer to "OIL PAN AND OIL PUMP".
	Balancer shaft		Refer to "BALANCER".
	Starter motor		Refer to "STARTER MOTOR" in CHAPTER 8.
1	Timing chain guide (intake side)	1	
2	Timing chain	1	
3	Lower crankcase	1	
4	Dowel pin	2	
			For installation, reverse the removal procedure.



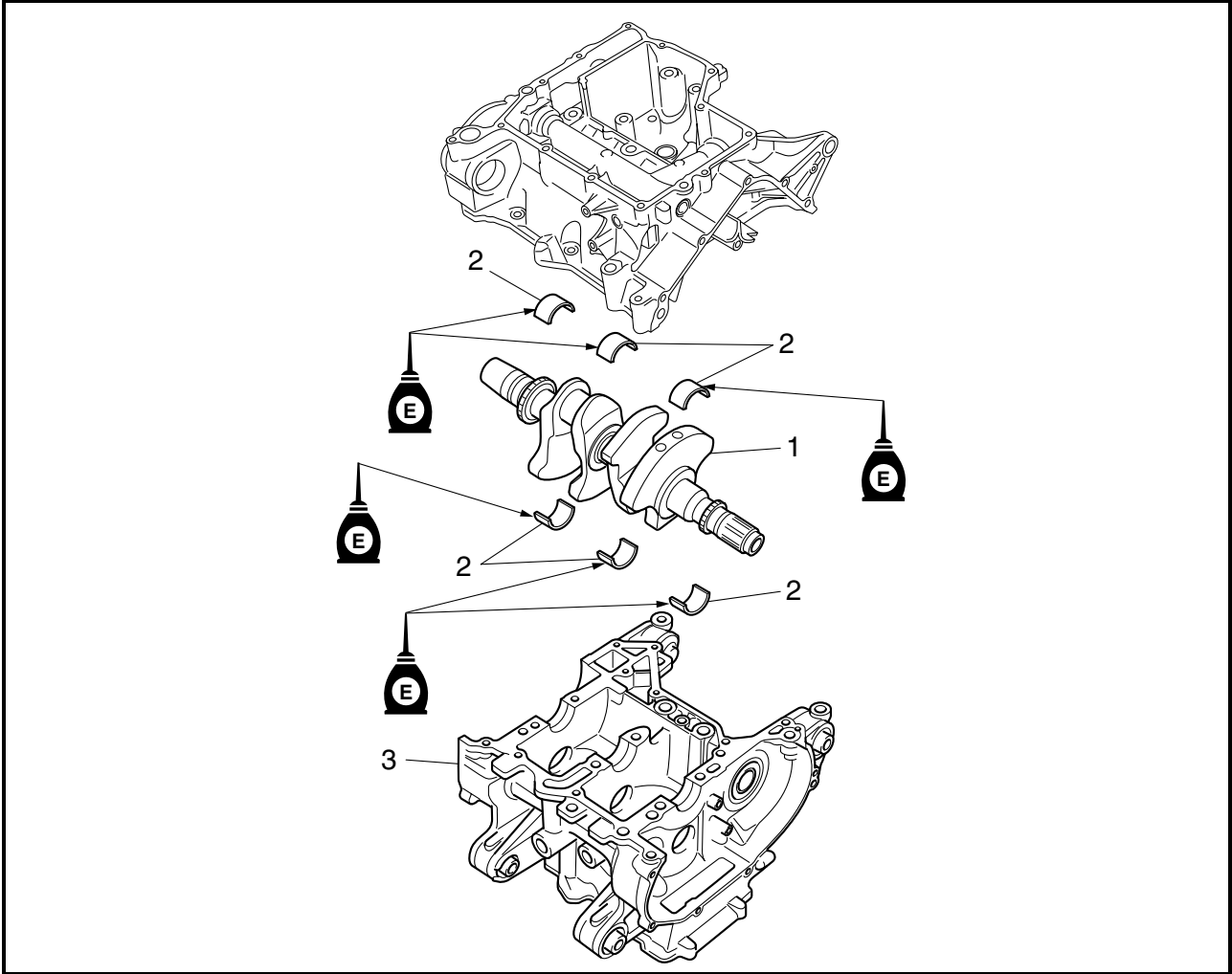
CONNECTING RODS AND PISTONS



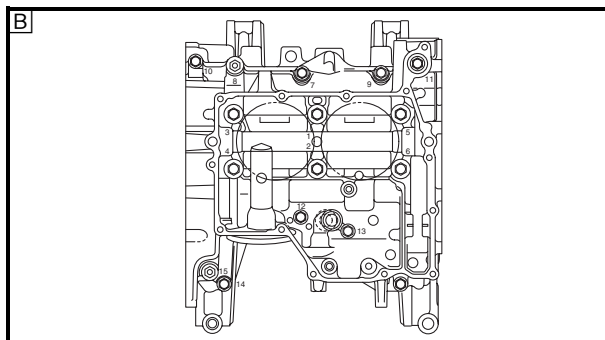
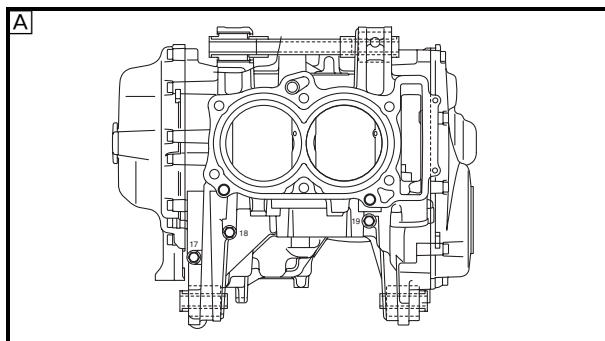
Order	Job name/Part name	Q'ty	Remarks
	Connecting rods and pistons removal		Remove the parts in the order listed below.
1	Connecting rod cap	2	
2	Big end bearing	4	
3	Piston pin clip	4	
4	Piston pin	2	
5	Piston	2	
6	Connecting rod	2	
7	Top ring	2	
8	2nd ring	2	
9	Oil ring	2	
			For installation, reverse the removal procedure.



CRANKSHAFT



Order	Job name/Part name	Q'ty	Remarks
	Crankshaft removal		
1	Crankshaft	1	Remove the parts in the order listed below.
2	Crankshaft journal bearing	6	
3	Upper crankcase	1	
			For installation, reverse the removal procedure.

**REMOVAL**

1. Remove:

- Crankcase bolts

NOTE:

- Loosen the bolts in decreasing numerical order of the embossed numbers on the crankcase.
- Loosen each bolt 1/4 of a turn at a time. After all of the bolts are fully loosened, remove them.

A Cylinder head side

B Oil pan side

2. Remove:

- Lower crankcase

CAUTION:

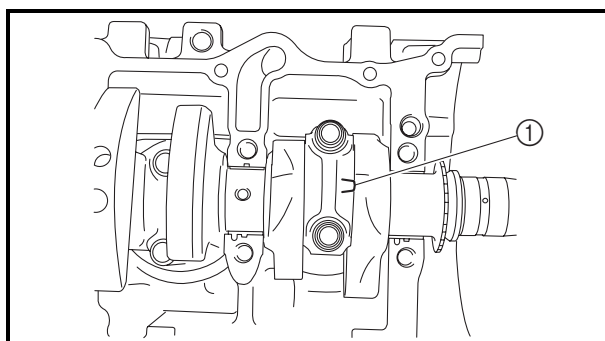
Tap on one side of the crankcase with a soft-face hammer. Tap only on reinforced portions of the crankcase, not on the crankcase mating surfaces. Work slowly and carefully and make sure that the crankcase halves separate evenly.

3. Remove:

- Dowel pins
- Crankshaft journal bearing

NOTE:

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

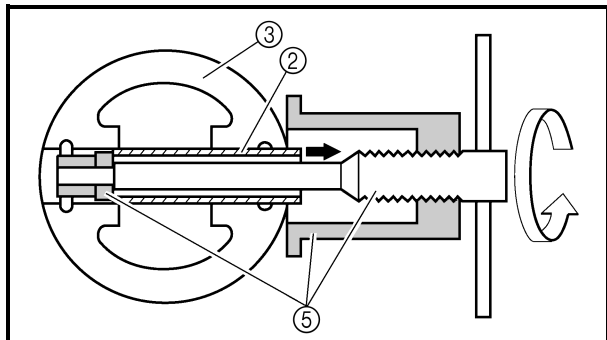
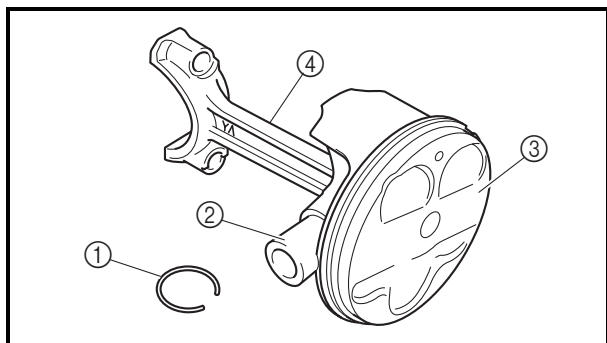


4. Remove:

- Connecting rod cap ①
- Big end bearing

NOTE:

Identify the position of each big end bearing so that it can be reinstalled in its original place.



5. Remove:

- Piston pin clips ①
- Piston pin ②
- Piston ③
- Connecting rod ④

CAUTION:

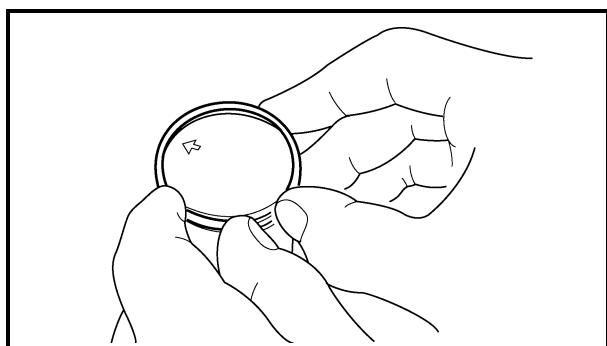
Do not use a hammer to drive the piston pin out.

NOTE:

- For reference during installation, put identification marks on the piston crown.
- Before removing the piston pin, deburr the piston pin clip's groove and the piston's pin bore area. If both areas are deburred and the piston pin is still difficult to remove, remove it with the piston pin puller ⑤.



Piston pin puller:
90890-01304, YU-01304



6. Remove:

- Top ring
- 2nd ring
- Oil ring

NOTE:

When removing a piston ring, open the end gap with your fingers and lift the other side of the ring over the piston crown.

7. Remove:

- Crankshaft
- Crankshaft journal bearing

NOTE:

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

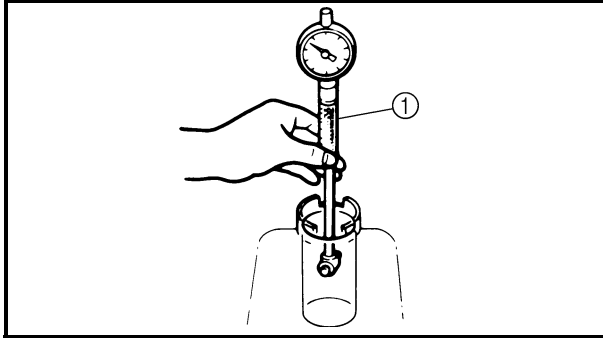


INSPECTION

1. Inspect:

- Piston wall
- Cylinder wall

Vertical scratches → Rebore or replace the cylinder, and replace the piston and piston rings as a set.



2. Measure:

- Piston-to-cylinder clearance

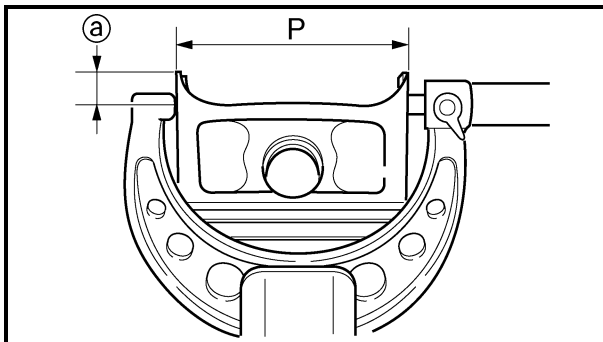
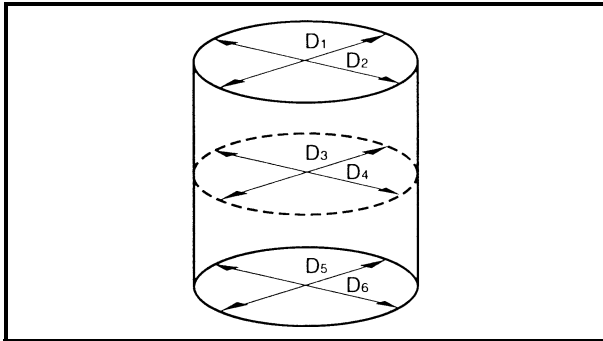
Measurement steps:

1st step:

- Measure cylinder bore "C" with the cylinder bore gauge ①.

NOTE:

Measure cylinder bore "C" by taking side-to-side and front-to-back measurements of the cylinder. Then, find the average of the measurements.



Cylinder bore "C"	77.000 ~ 77.010 mm (3.0315 ~ 3.0319 in)
Taper limit "T"	0.050 mm (0.0020 in)
Out of round "R"	0.050 mm (0.0020 in)

"C" = maximum of $D_1 \sim D_6$

"T" = maximum of D_1 or D_2 – maximum of D_5 or D_6

"R" = maximum of D_1, D_3 or D_5 – maximum of D_2, D_4 or D_6

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

2nd step:

- Measure piston skirt diameter "P" with the micrometer.

① 11.0 mm (0.43 in) from the bottom edge of the piston.



Piston size (standard) (P):
76.955 ~ 76.970 mm
(3.0297 ~ 3.0303 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”



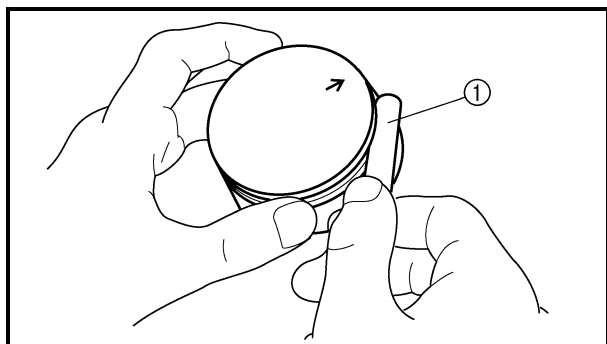
Piston-to-cylinder clearance:

0.030 ~ 0.055 mm

(0.0012 ~ 0.0022 in)

<Limit>: 0.120 mm (0.0047 in)

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



3. Measure:

- Piston ring side clearance

Use the thickness gauge ①.

Out of specification → Replace the piston and piston rings as a set.

NOTE:

Eliminate the carbon deposits from the piston ring grooves and rings before measuring the side clearance.



Piston rings side clearance:

Top ring:

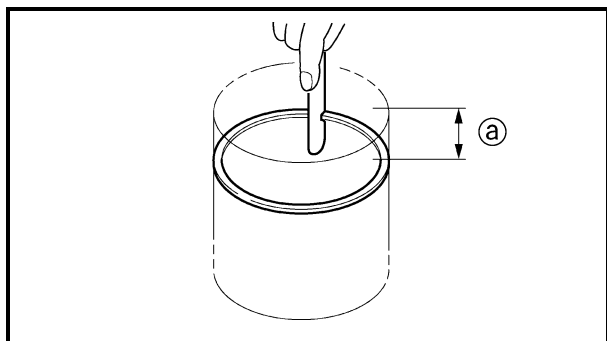
0.030 ~ 0.065 mm

(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 5.0 mm (0.20 in)



5. Measure:

- Piston ring end gap

Out of specification → Replace the piston rings as a set.

NOTE:

The oil ring expander spacer's end gap cannot be measured. If the oil ring rail's gap is excessive, replace all three piston rings.

**Piston ring end gap:****Top ring:**

0.15 ~ 0.25 mm (0.006 ~ 0.010 in)

2nd ring:

0.30 ~ 0.45 mm (0.012 ~ 0.018 in)

Oil ring:

0.10 ~ 0.40 mm (0.004 ~ 0.016 in)

6. Inspect:

- Piston pin

Blue discoloration/grooves → Replace the piston pin and then check the lubrication system.

7. Measure:

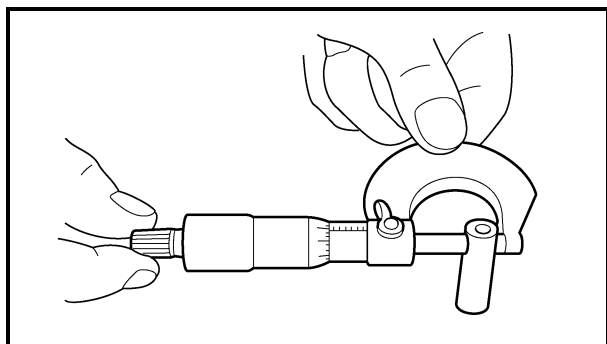
- Piston pin outside diameter

Out of specification → Replace the piston pin.

**Piston pin outside diameter:**

16.991 ~ 17.000 mm

(0.6689 ~ 0.6693 in)



8. Measure:

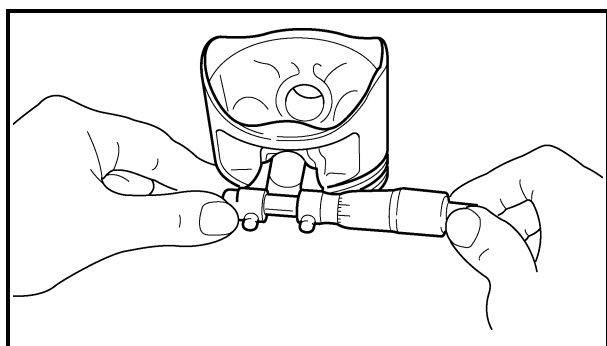
- Piston pin bore inside diameter

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

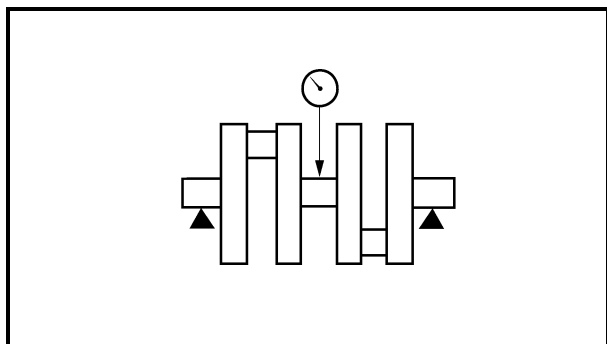


Piston pin to piston pin bore clearance:

0.002 ~ 0.022 mm

(0.0001 ~ 0.0009 in)

<Limit>: 0.072 mm (0.0028 in)



10. Measure:

- Crankshaft runout
Use the V-blocks and a dial gauge.
Out of specification → Replace the crankshaft.



Dial gauge:

90890-03097, YU-03097



Crankshaft runout:

0.03 mm (0.0012 in)

11. Inspect:

- Crankshaft journal surfaces
- Crankshaft pin surfaces
- Bearing surfaces
Scratches/wear → Replace the crankshaft.



12. Measure:

- Crankshaft-journal-to-crankshaft-journal-bearing clearance

Out of specification → Replace the crankshaft journal bearings.



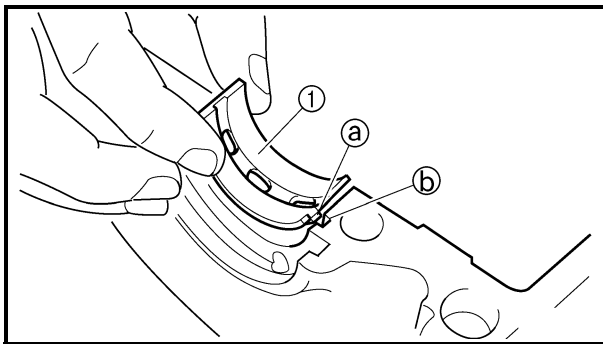
Crankshaft-journal-to-crankshaft-journal-bearing clearance:
 0.020 ~ 0.044 mm
 (0.0008 ~ 0.0017 in)

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.

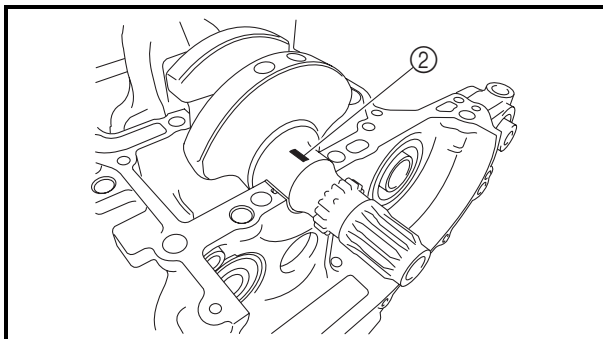
- Clean the crankshaft journal bearings, crankshaft journals, and bearing portions of the crankcase.
- Place the upper crankcase upside down on a bench.



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

NOTE:

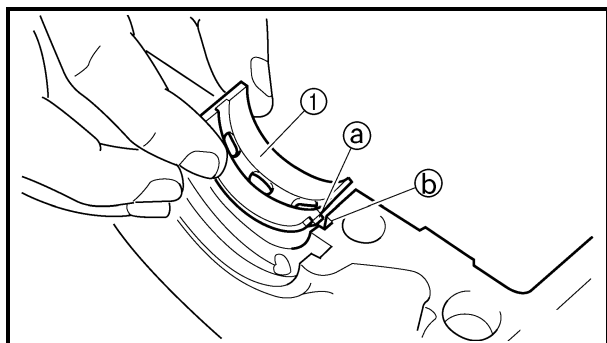
Align the projections (a) of the crankshaft journal upper bearings with the notches (b) in the crankcase.



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

NOTE:

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

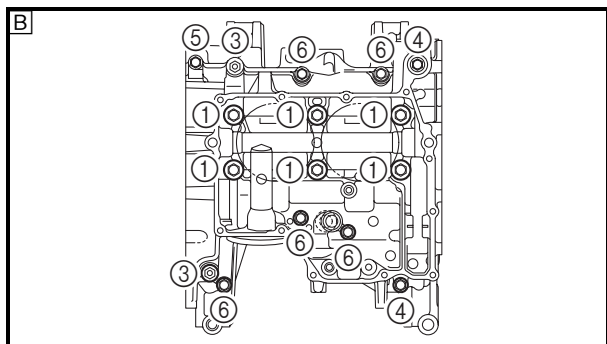
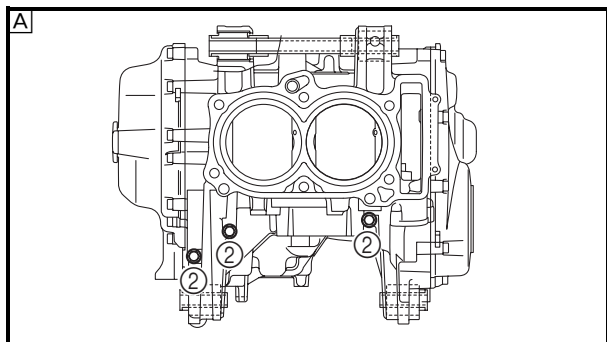


- Install the crankshaft journal lower bearings ① into the lower crankcase and assemble the crankcase halves.

NOTE:

- Align the projections ① of the crankshaft journal lower bearings with the notches ② in the crankcase.
- Do not move the crankshaft until the clearance measurement has been completed.

- Tighten the bolts in the order of the embossed numbers on the crankcase.

**Crankcase bolt:****Bolt ①:**

1st: 15 Nm (1.5 m · kg, 11 ft · lb)

2nd: 15 Nm (1.5 m · kg, 11 ft · lb)

Final: Specified angle 65 ~ 70°

Bolt ② ~ ⑥:

12 Nm (1.2 m · kg, 8.7 ft · lb)

A Cylinder head side

B Oil pan side

M9 × 105 mm bolts: ①

M6 × 70 mm bolts: ②

M6 × 65 mm bolts: ③

M6 × 50 mm bolts: ④

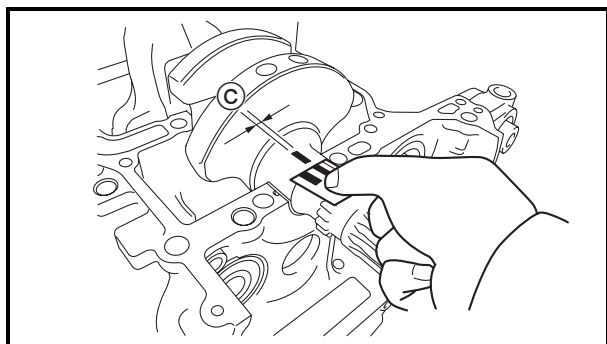
M6 × 50 mm bolt: ⑤ (with LOCTITE®)

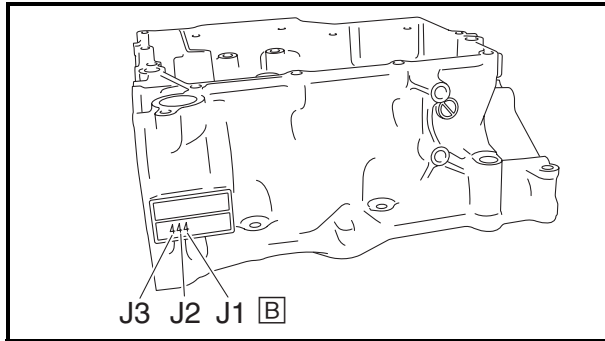
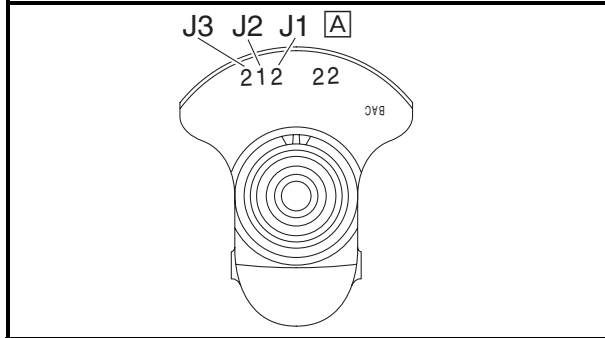
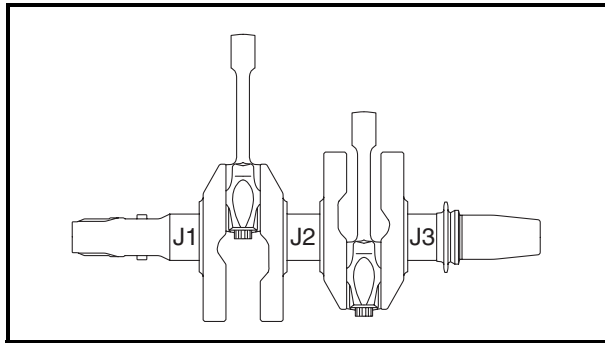
M6 × 35 mm bolts: ⑥

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 ~ J3)

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 ~ J3” refer to the bearings shown in the crankshaft illustration.
- If “J1 ~ J3” 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 “4” and “2” respectively, then the bearing size for “J1” is:

Bearing size for J1:

$$\text{J1 (crankcase)} - \text{J1 (crankshaft web)} \\ - 1 = 4 - 2 - 1 = 1 \text{ (blue)}$$

CRANKSHAFT JOURNAL BEARING COLOR CODE

0	white
1	blue
2	black
3	brown
4	green

14. Measure:

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

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

0.034 ~ 0.058 mm
(0.0013 ~ 0.0023 in)



Measurement steps:

CAUTION:

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

- Clean the big end bearings, crankshaft pins, and bearing portions of the connecting rods.
- Install the big end upper bearing into the connecting rod and the big end lower bearing into the connecting rod cap.

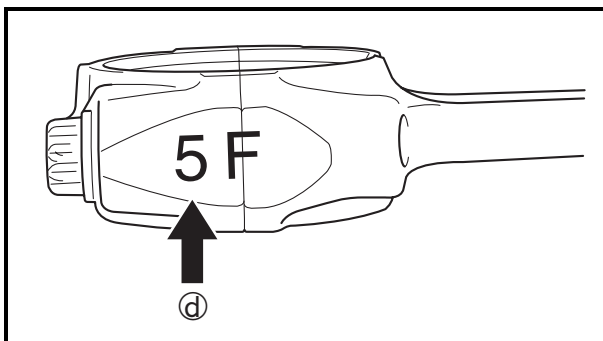
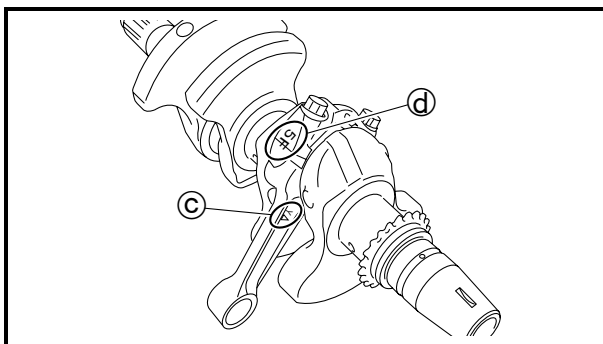
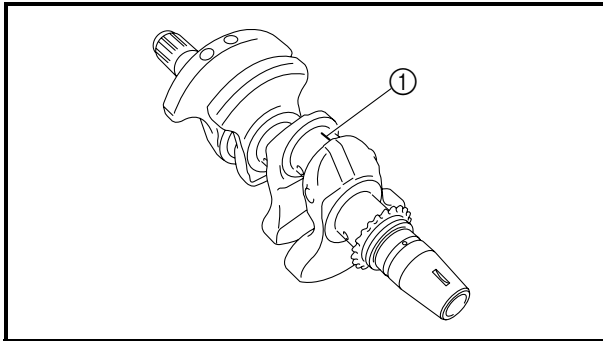
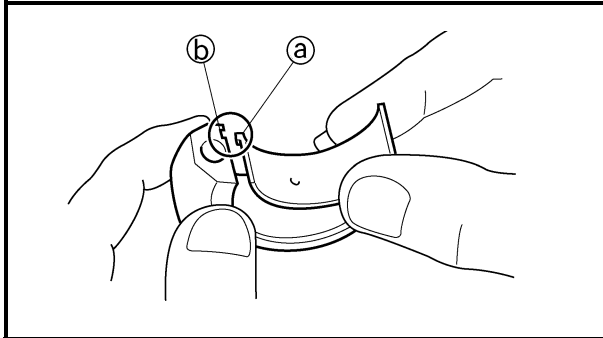
NOTE:

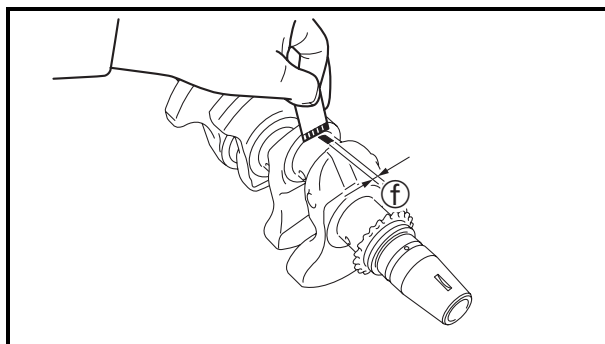
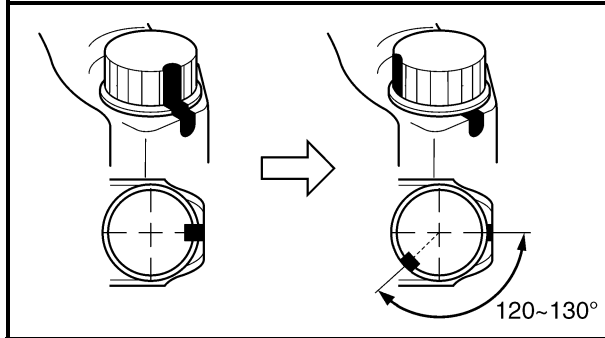
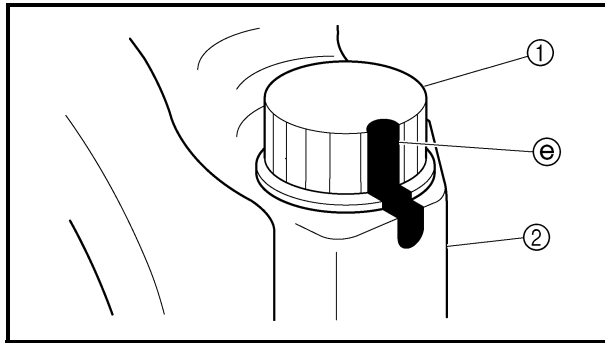
Align the projections ③ on the big end bearings with the notches ② in the connecting rod and connecting rod cap.

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

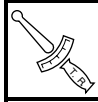
NOTE:

- Do not move the connecting rod or crankshaft until the clearance measurement has been completed.
- Apply molybdenum disulfide grease onto the bolts, threads, and nut seats.
- Make sure that the “Y” mark ④ on the connecting rod faces towards the right side of the crankshaft.
- Make sure that the characters ⑤ on both the connecting rod and connecting rod cap are aligned.





- Tighten the connecting rod bolts.


Connecting rod bolt:
1st: 20 Nm (2.0 m · kg, 14 ft · lb)
Final: Specified angle 120 ~ 130°

- Replace the connecting rod bolts with new ones.

CAUTION:

Tighten the connecting rod bolts using the plastic-region tightening angle method. Always install new bolts.

Tightening steps:

- Clean the connecting rod bolts.
- Tighten the connecting rod bolts.
- Put a mark 'e' on the corner of the connecting rod bolt ① and the connecting rod ②.
- Tighten the connecting rod bolt further to reach the specified angle (120 ~ 130°).

⚠ WARNING

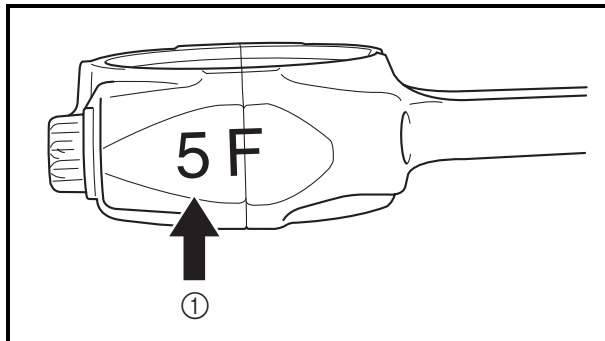
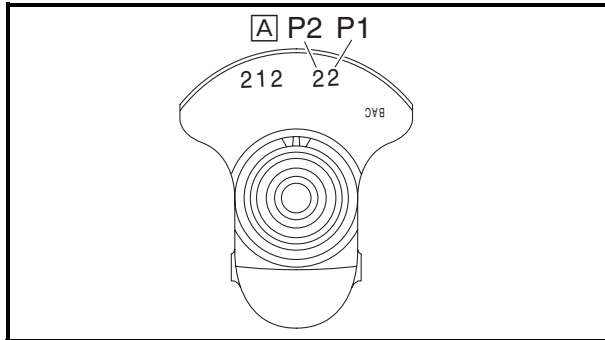
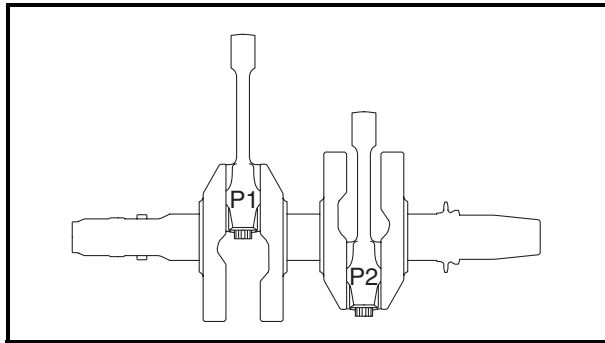
When the bolt is tightened more than the specified angle, do not loosen the bolt and then retighten it.

Replace the bolt with a new one and perform the procedure again.

CAUTION:

- **Do not use a torque wrench to tighten the bolt to the specified angle.**
- **Tighten the bolt until it is at the specified angles.**

- Remove the connecting rod and big end bearings.
- Measure the compressed Plastigauge® width 'f' on the crankshaft pin.
If the clearance is out of specification, select replacement big end bearings.



15. Select:

- Big end bearings (P1 ~ P2)

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” ~ “P2” 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 “2” respectively, then the bearing size for “P1” is:

Bearing size for “P1”:

“P 1” (connecting rod) – “P1” (crankshaft web) – 1 = 5 – 2 – 1 = 2 (black)

BIG END BEARING COLOR CODE

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:

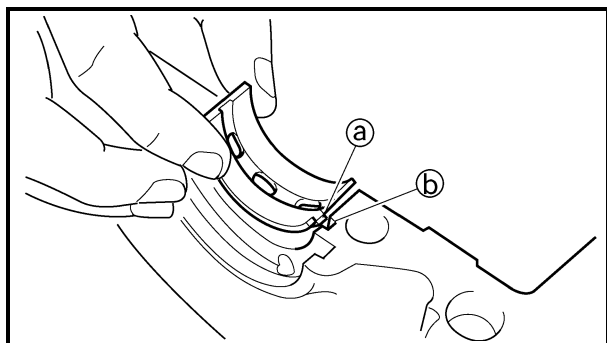
- Timing chain

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

19. Inspect:

- Timing chain guide (intake side)

Damage/wear → Replace the timing chain guide.



INSTALLATION

1. Install:

- Crankshaft journal upper bearing (into the upper crankcase)
- Crankshaft journal lower bearing (into the lower crankcase)

NOTE:

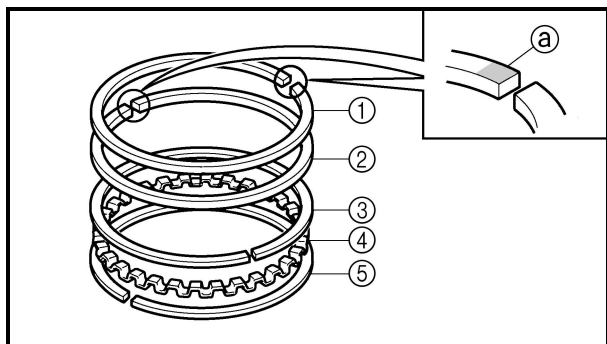
- Align the projections ① on the crankshaft journal bearings with the notches ② in the crankcase.
- Be sure to install each crankshaft journal bearing in its original place.

2. Lubricate:

- Crankshaft pins
- Connecting rod inner surface (with the recommended lubricant)



Recommended lubricant:
Engine oil

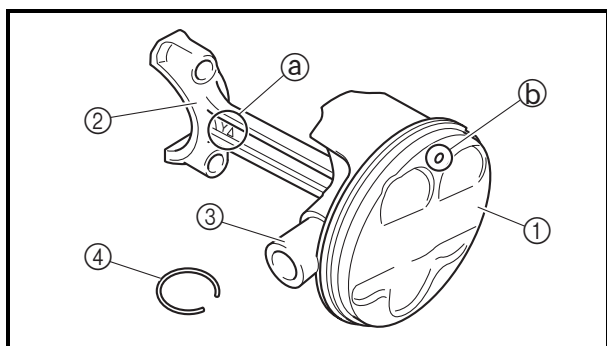


3. Install:

- 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 ① face up.

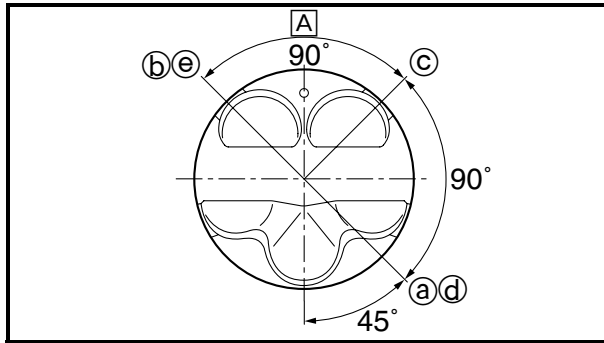


4. Install:

- 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 ① on the connecting rod faces left when the punch mark ② on the piston is pointing up. Refer to the illustration.
- Reinstall each piston into its original cylinder (numbering order starting from the left: #1 to #3).



5. Offset:

- Piston ring end gaps

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

6. Lubricate:

- Piston
- Piston rings
- Cylinder



Recommended lubricant:
Engine oil

7. Lubricate:

- Bolt threads
 - Nut seats
- (with the recommended lubricant)



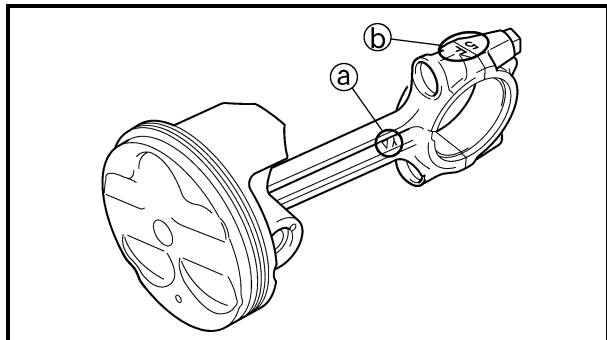
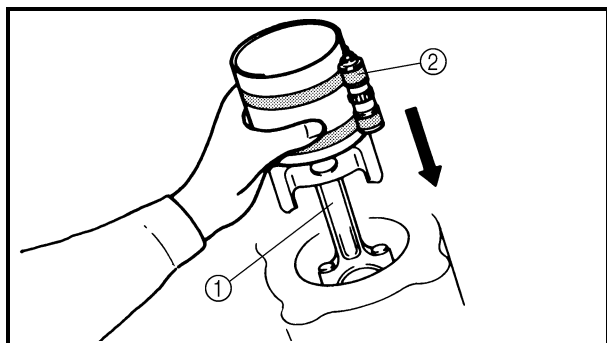
Recommended lubricant:
Molybdenum disulfide grease

8. Lubricate:

- Crankshaft pins
 - Big end bearings
 - Connecting rod inner surface
- (with the recommended lubricant)



Recommended lubricant:
Engine oil



9. Install:

- Big end bearings
- Connecting rod assembly ①
(into the cylinder and onto the crankshaft pin).
- Connecting rod cap
(onto the connecting rod)

NOTE:

- Align the projections on the big end bearings with the notches in the connecting rods and connecting rod caps.
- Be sure to reinstall each big end bearing in its original place.
- While compressing the piston rings with piston ring compressor ②, install the connecting rod assembly into the cylinder with the other hand.
- Make sure that the “Y” marks ① on the connecting rods face towards the A.C. magneto.
- Make sure that the characters ② on both the connecting rod and connecting rod cap are aligned.



Piston ring compressor:
90890-05158, YM-08037

10. Align:

- Bolt heads
(with the connecting rod caps)



11. Tighten:

- Connecting rod bolts

**Connecting rod bolt:**

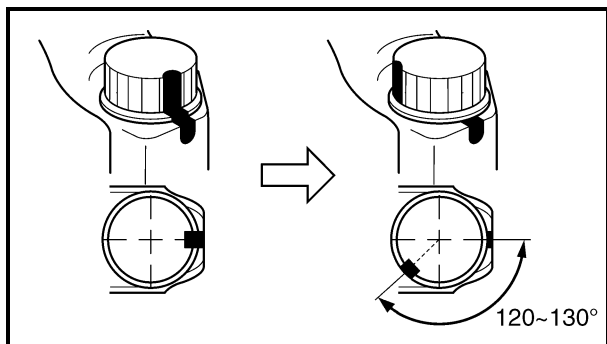
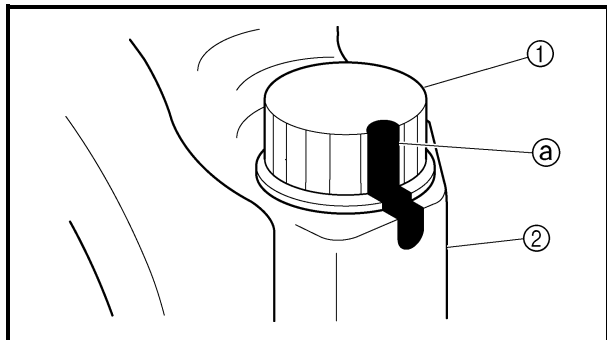
1st: 20 Nm (2.0 m · kg, 14 ft · lb)

Final: Specified angle 120 ~ 130°

- Replace the connecting rod bolts with new ones.

CAUTION:

Tighten the connecting rod bolts using the plastic-region tightening angle method. Always install new bolts.

**⚠ WARNING**

When the bolt is tightened more than the specified angle, do not loosen the bolt and then retighten it.

Replace the bolt with a new one and perform the procedure again.

CAUTION:

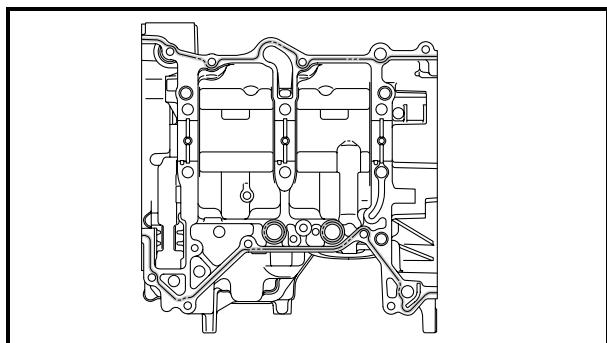
- Do not use a torque wrench to tighten the bolt to the specified angle.
- Tighten the bolt until it is at the specified angles.

12. Lubricate:

- Crankshaft journal bearings
(with the recommended lubricant)



Recommended lubricant:
Engine oil



13. Apply:

- Sealant
(onto the crankcase mating surfaces)



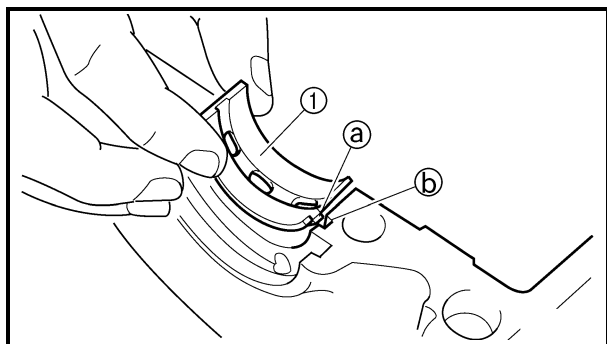
Yamaha bond No. 1215:
90890-85505
(Three Bond No.1215®)

NOTE:

Do not allow any sealant to come into contact with the oil gallery or crankshaft journal bearings. Do not apply sealant to within 2 ~ 3 mm (0.08 ~ 0.12 in) of the crankshaft journal bearings.

14. Install:

- Dowel pins



15. Install:

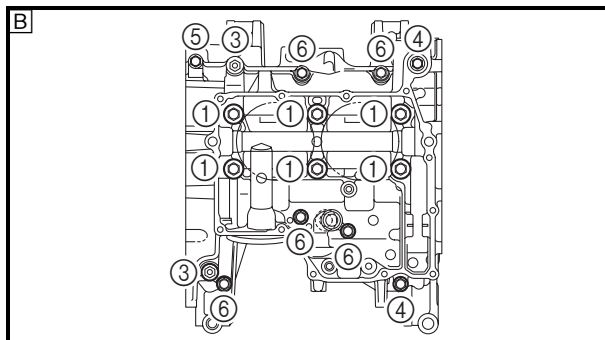
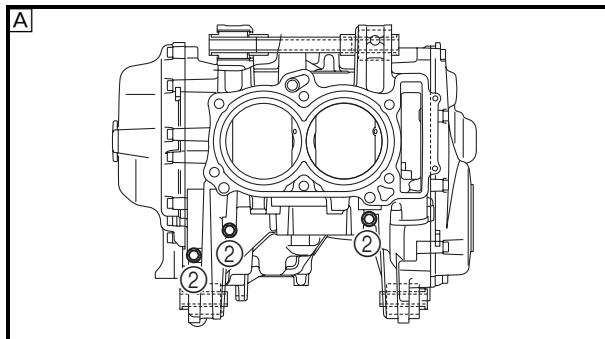
- Crankshaft journal bearings ①
(into the lower crankcase)

NOTE:

- Align the projections (a) on the crankshaft journal lower bearings with the notches (b) in the crankcase.
- Install each crankshaft journal lower bearing in its original place.

16. Install:

- Lower crankcase
(onto the upper crankcase)



17. Install:

- Crankcase bolts

NOTE:

- Lubricate the bolt threads with engine oil.
- Tighten the bolts in the order of the embossed numbers on the crankcase.



Crankcase bolt:

Bolt ①:

1st: 15 Nm (1.5 m · kg, 11 ft · lb)

2nd: 15 Nm (1.5 m · kg, 11 ft · lb)

Final: Specified angle 65° ~ 70°

Bolt ② ~ ⑥:

12 Nm (1.2 m · kg, 8.7 ft · lb)

Ⓐ Cylinder head side

Ⓑ Oil pan side

M9 × 105 mm bolts: ①

M6 × 70 mm bolts: ②

M6 × 65 mm bolts: ③

M6 × 50 mm bolts: ④

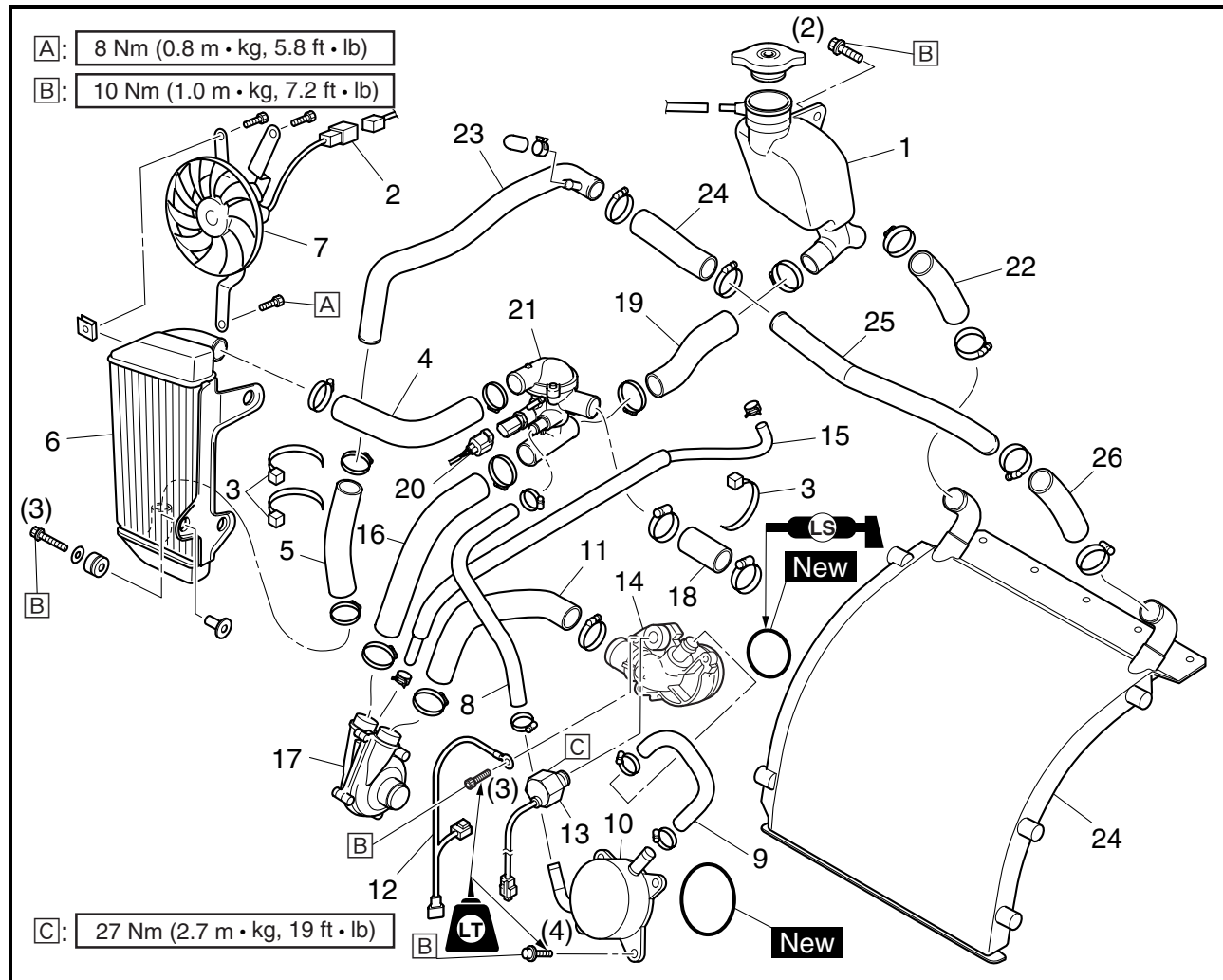
M6 × 50 mm bolt: ⑤ (with LOCTITE®)

M6 × 35 mm bolts: ⑥

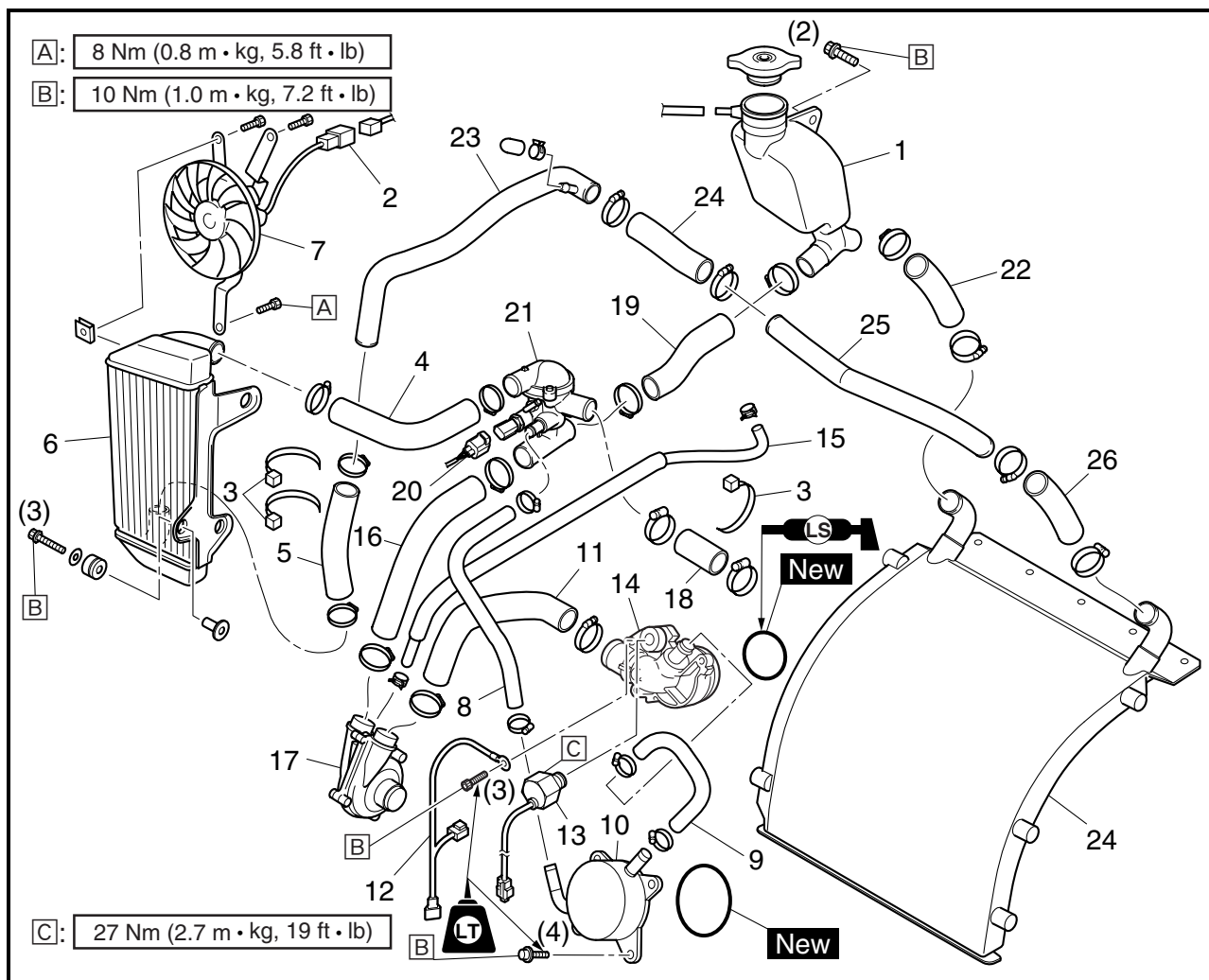
NOTE:

Lubricate the crankcase bolt threads with engine oil.

RADIATOR AND HEAT EXCHANGER



Order	Job name/Part name	Q'ty	Remarks
	Radiator and heat exchanger removal		Remove the parts in the order listed below.
	Coolant		Drain. Refer to "COOLING SYSTEM" in CHAPTER 2.
	Engine assembly		Refer to "ENGINE ASSEMBLY" in CHAPTER 5.
1	Coolant reservoir	1	
2	Radiator fan motor coupler	1	Disconnect. PZ50M/PZ50VT/PZ50MP
3	Plastic band	3	
4	Radiator inlet hose	1	
5	Radiator outlet hose 1	1	
6	Radiator assembly	1	
7	Radiator fan motor	1	PZ50M/PZ50VT/PZ50MP
8	Oil cooler outlet hose	1	
9	Oil cooler inlet hose	1	
10	Oil cooler	1	

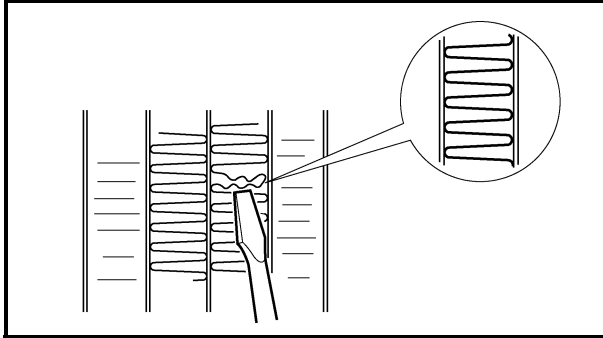


Order	Job name/Part name	Q'ty	Remarks
11	Water pump outlet hose	1	Disconnect.
12	Sub-wire harness	1	
13	Knock sensor	1	
14	Water jacket joint	1	
15	Throttle body outlet hose	1	
16	Water pump inlet hose	1	
17	Water pump assembly	1	
18	Engine outlet hose	1	
19	Coolant reservoir inlet hose	1	
20	Coolant temperature connector	1	
21	Thermostat assembly	1	For installation, reverse the removal procedure.
22	Coolant reservoir inlet hose	1	
23	Radiator outlet pipe 1	1	
24	Radiator outlet hose 2	1	
25	Radiator outlet pipe 2	1	
26	Radiator outlet hose 3	1	
27	Heat exchanger	1	

INSPECTION

1. Inspect:

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



2. Check:

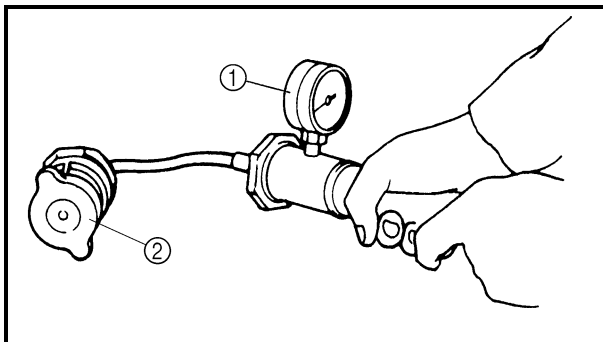
- Radiator fins
- Obstruction → Clean.
Apply compressed air to the rear of the radiator.
Damage → Repair or replace.

NOTE:

Straighten any flattened fins with a thin, flat-head screwdriver.

3. Check:

- Radiator fan (PZ50VT/PZ50MP)
- Damage → Replace.
Malfunction → Check and repair.



4. Measure:

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



Filler cap opening pressure:
93.3 ~ 122.7 kPa
(0.93 ~ 1.23 kg/cm², 13.2 ~ 17.5 psi)

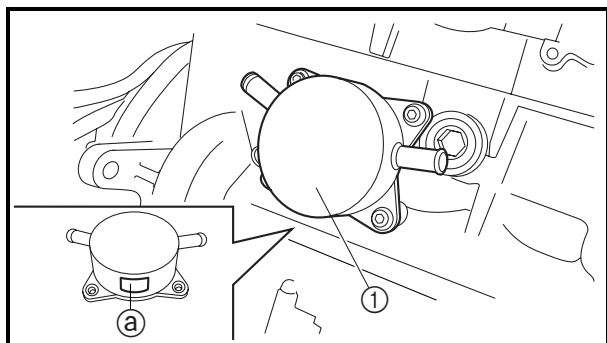
Measurement steps:

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



Cooling system tester:
90890-01325, YU-24460-01
Adapter:
90890-01352, YU-33984

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



INSTALLATION

1. Install:
 - Heat exchanger
 - Use the rivet gun.
2. Install:
 - O-ring
 - Oil cooler ①



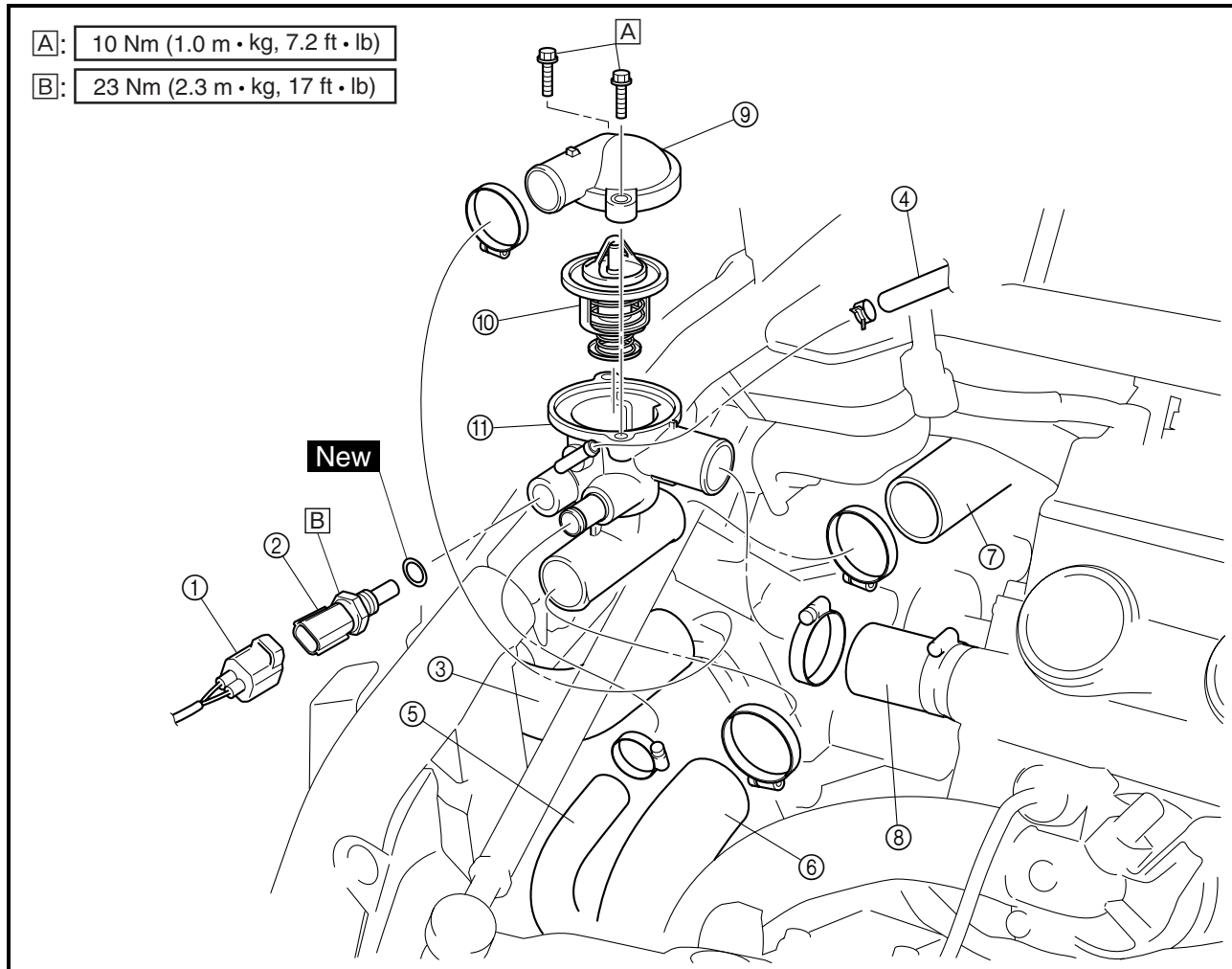
Oil cooler bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)
LOCTITE®

NOTE:

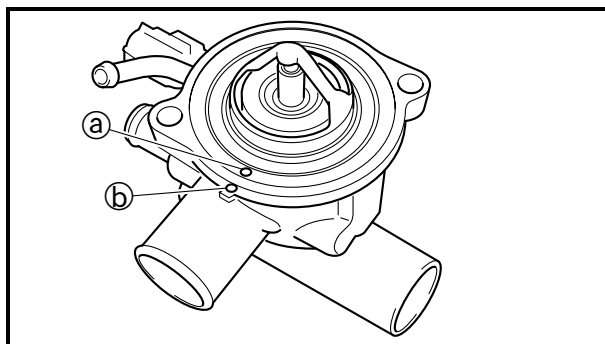
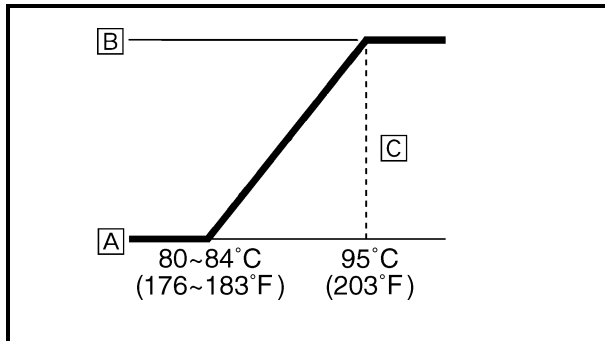
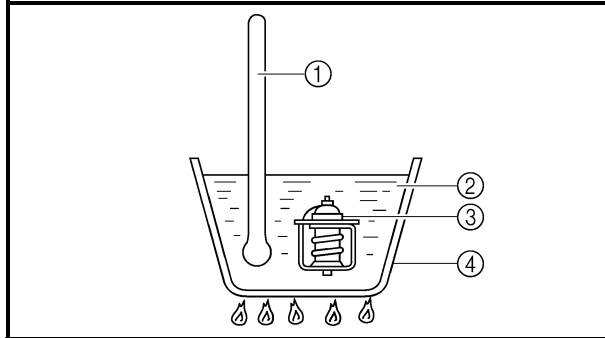
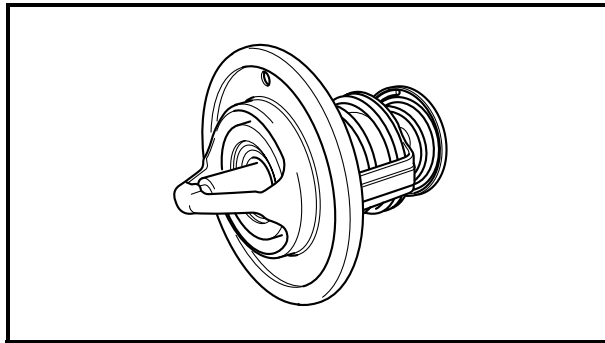
Install the oil cooler with the manufacturer's mark
 Ⓐ facing down.



THERMOSTAT



Order	Job name/Part name	Q'ty	Remarks
	Thermostat disassembly		Remove the parts in the order listed below.
①	Coolant temperature sensor coupler	1	Disconnect.
②	Coolant temperature sensor	1	
③	Radiator inlet hose	1	Disconnect.
④	Throttle body heater inlet hose	1	Disconnect.
⑤	Oil cooler outlet hose	1	Disconnect.
⑥	Water pump inlet hose	1	Disconnect.
⑦	Coolant reservoir outlet hose	1	Disconnect.
⑧	Engine outlet hose	1	Disconnect.
⑨	Thermostat housing cover	1	
⑩	Thermostat	1	
⑪	Thermostat housing	1	
			For assembly, reverse the disassembly procedure.



INSPECTION

1. Inspect:

- Thermostat

Does not open at 80 ~ 84 °C (176 ~ 183 °F)

→ Replace.

Inspection steps:

- Suspend the thermostat in a container filled with water.
- Slowly heat the water.
Place a thermometer in the water.
- While stirring the water, observe the thermostat and thermometer's indicated temperature.

① Thermometer

② Water

③ Thermostat

④ Container

[A] Fully closed

[B] Fully open

[C] More than 7 mm (0.28 in)

NOTE:

If the accuracy of the thermostat is in doubt, replace it. A faulty thermostat could cause serious overheating or overcooling.

2. Inspect:

- Thermostat housing cover
- Thermostat housing
Cracks/damage → Replace.

INSTALLATION

1. Install:

- Thermostat
(into the thermostat housing)

NOTE:

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

2. Install:

- Thermostat housing cover
- Thermostat housing cover bolts



Thermostat housing cover bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)



3. Install:

- Coolant temperature sensor
(to the thermostat housing)



Coolant temperature sensor:
23 Nm (2.3 m · kg, 17 ft · lb)

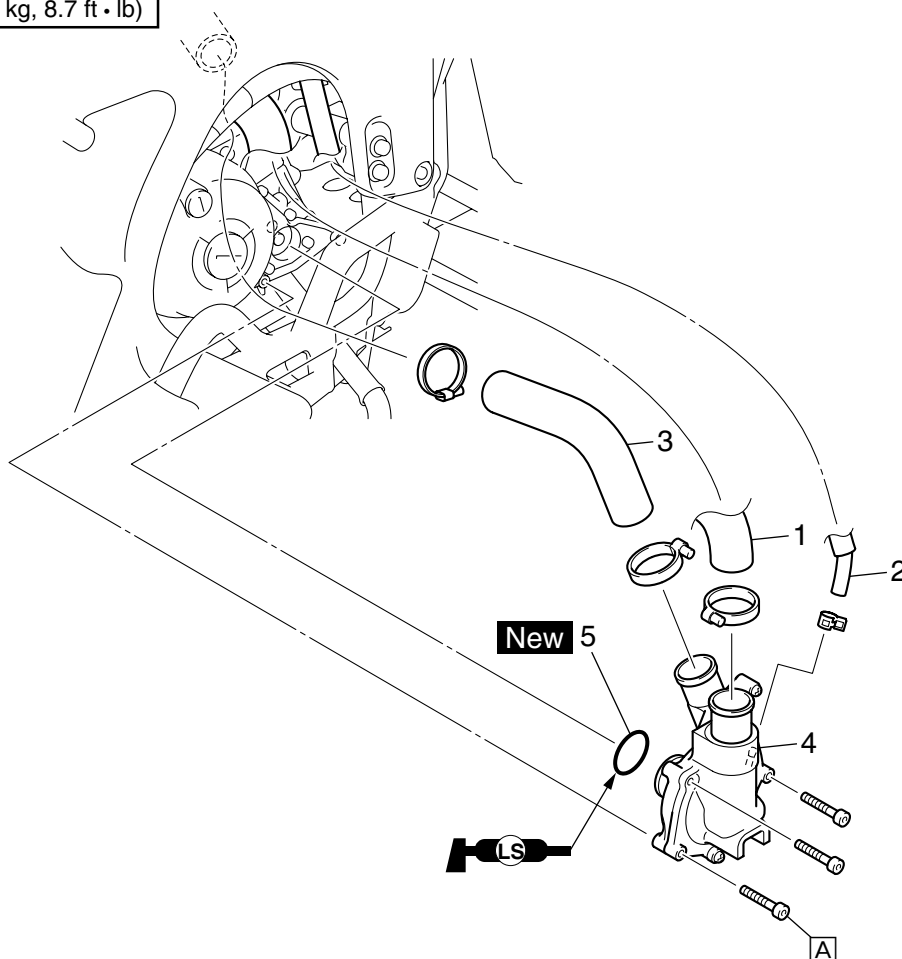
CAUTION:

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

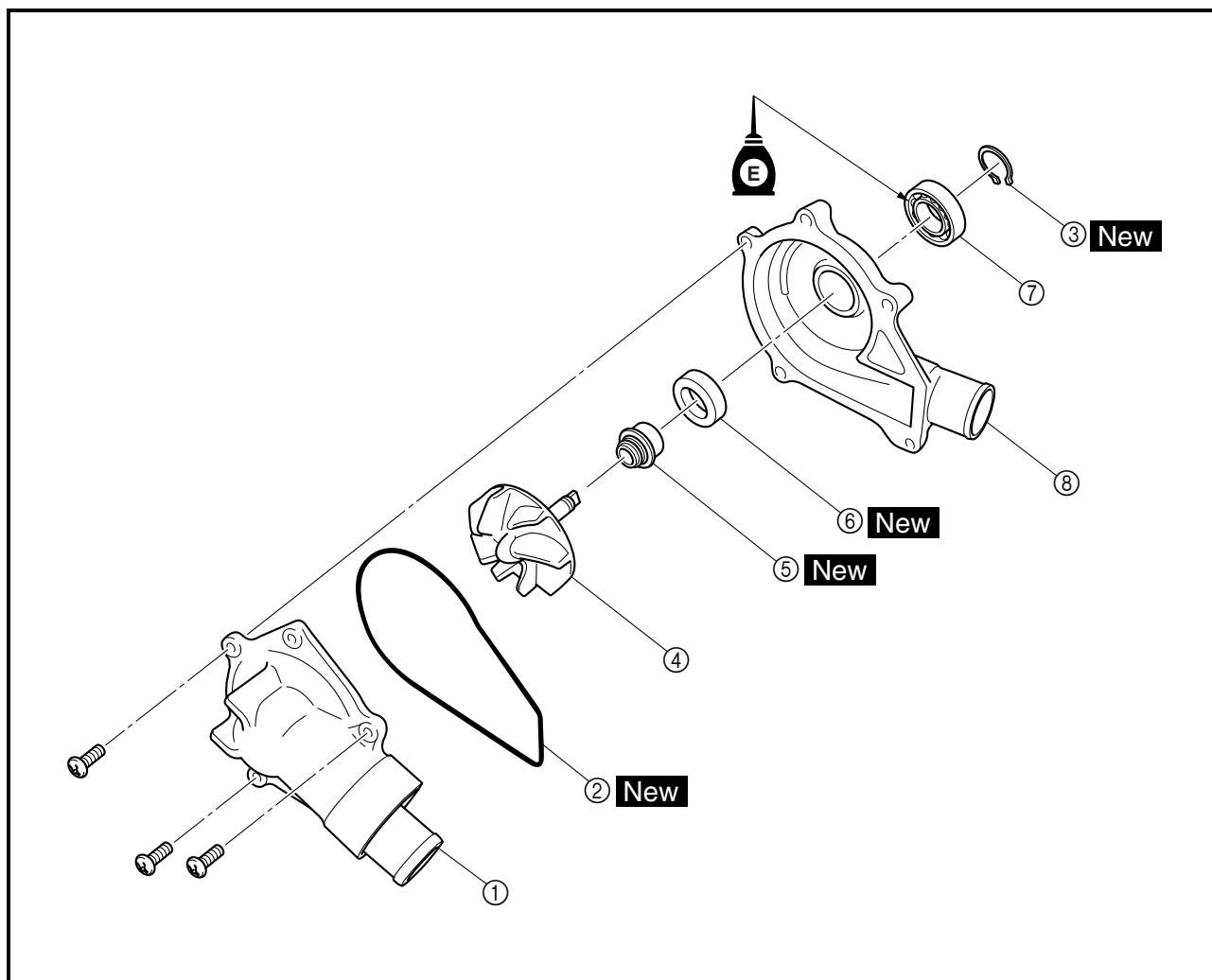


WATER PUMP

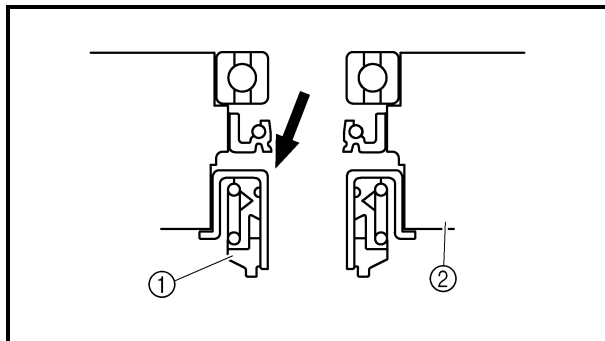
[A]: 12 Nm (1.2 m • kg, 8.7 ft • lb)



Order	Job name/Part name	Q'ty	Remarks
	Water pump removal		Remove the parts in the order listed.
	Oil tank		Refer to "OIL TANK" in CHAPTER 5.
	Radiator		Refer to "RADIATOR AND HEAT EXCHANGER".
1	Water pump inlet hose	1	Disconnect.
2	Throttle body outlet hose	1	Disconnect.
3	Water pump outlet hose	1	Disconnect.
4	Water pump assembly	1	
5	O-ring	1	
			For installation, reverse the removal procedure.



Order	Job name/Part name	Q'ty	Remarks
	Water pump disassembly		Remove the parts in the order listed below.
①	Water pump housing cover	1	
②	Gasket	1	
③	Circlip	2	
④	Impeller shaft assembly	1	
⑤	Water pump seal	1	
⑥	Oil seal	1	
⑦	Bearing	1	
⑧	Water pump housing	1	
			For assembly, reverse the disassembly procedure.



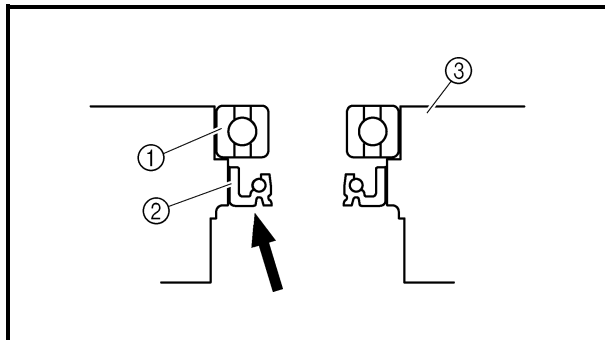
DISASSEMBLY

1. Remove:

- Impeller
- Water pump seal ①

NOTE:

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

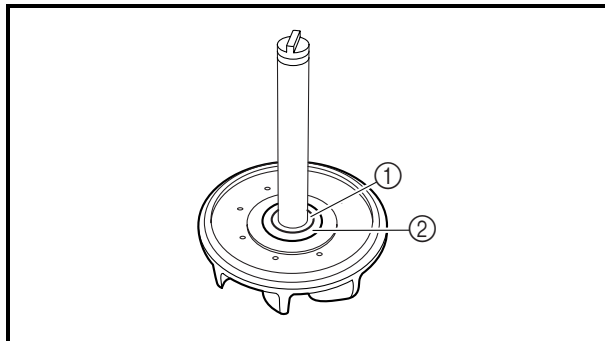


2. Remove:

- 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.

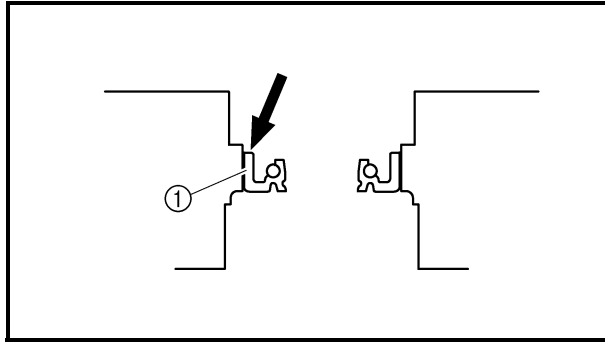
INSPECTION

1. Inspect:

- Water pump housing cover
 - Water pump housing
 - Impeller
 - Rubber damper
 - Rubber damper holder
 - Water pump seal
 - Oil seal
- Cracks/damage/wear → Replace.

2. Inspect:

- Bearing
- Rough movement → Replace.



ASSEMBLY

1. Install:

- Oil seal ① **New**
(to the water pump housing)

NOTE:

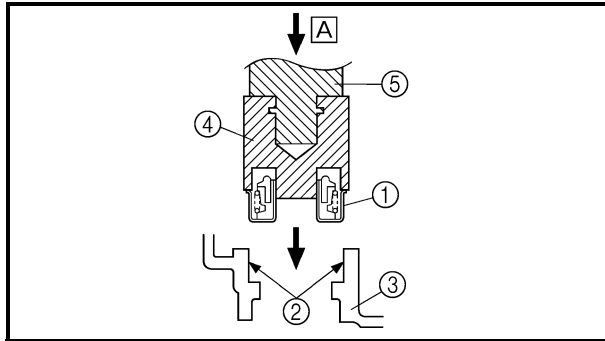
- Before installing the oil seal, apply tap water or coolant onto its outer surface.
- Install the oil seal with a socket that matches its outside diameter.

2. Install:

- Bearing

NOTE:

Install the bearing with a socket that matches its outside diameter.



3. Install:

- Water pump seal **New**

CAUTION:

Never apply oil or grease onto the water pump seal surface.

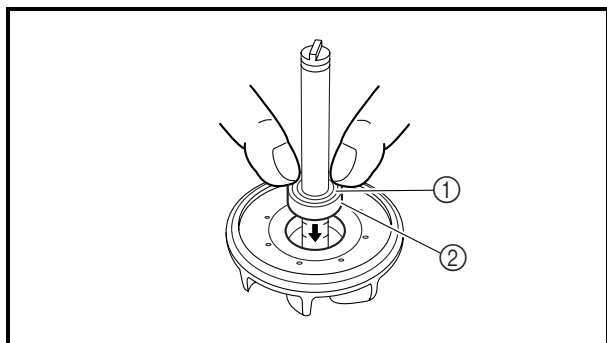
NOTE:

- Install the water pump seal ① with the mechanical seal installer ④ and 40 and 50 mm bearing driver ⑤.
- Before installing the water pump seal, apply Yamaha bond No.1215 ② to the water pump housing ③.



Mechanical seal installer:
90890-04145, YM-04145
40 and 50 mm bearing driver:
90890-04058, YM-04058
Yamaha bond No. 1215:
90890-85505
(Three Bond No.1215®)

A Push down

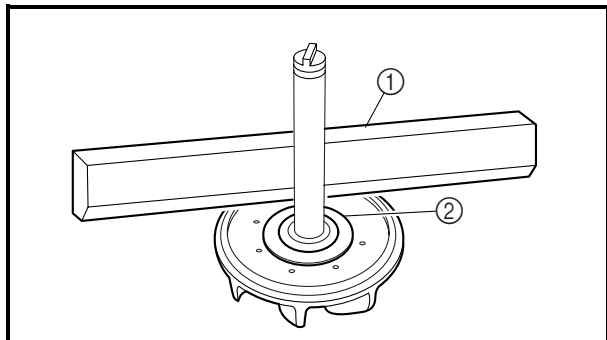


4. Install:

- Rubber damper holder ①
- Rubber damper ②

NOTE:

Before installing the rubber damper, apply tap water or coolant onto its outer surface.



5. Measure:

- Impeller shaft tilt
Out of specification → Repeat steps (4) and (5).

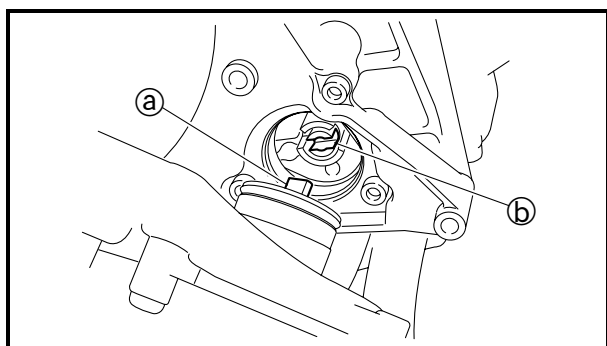
CAUTION:

Make sure the rubber damper and rubber damper holder are flush with the impeller.



Max. impeller shaft tilt:
0.15 mm (0.0059 in)

- ① Straightedge
- ② Impeller



INSTALLATION

1. Install:

- Water pump

NOTE:

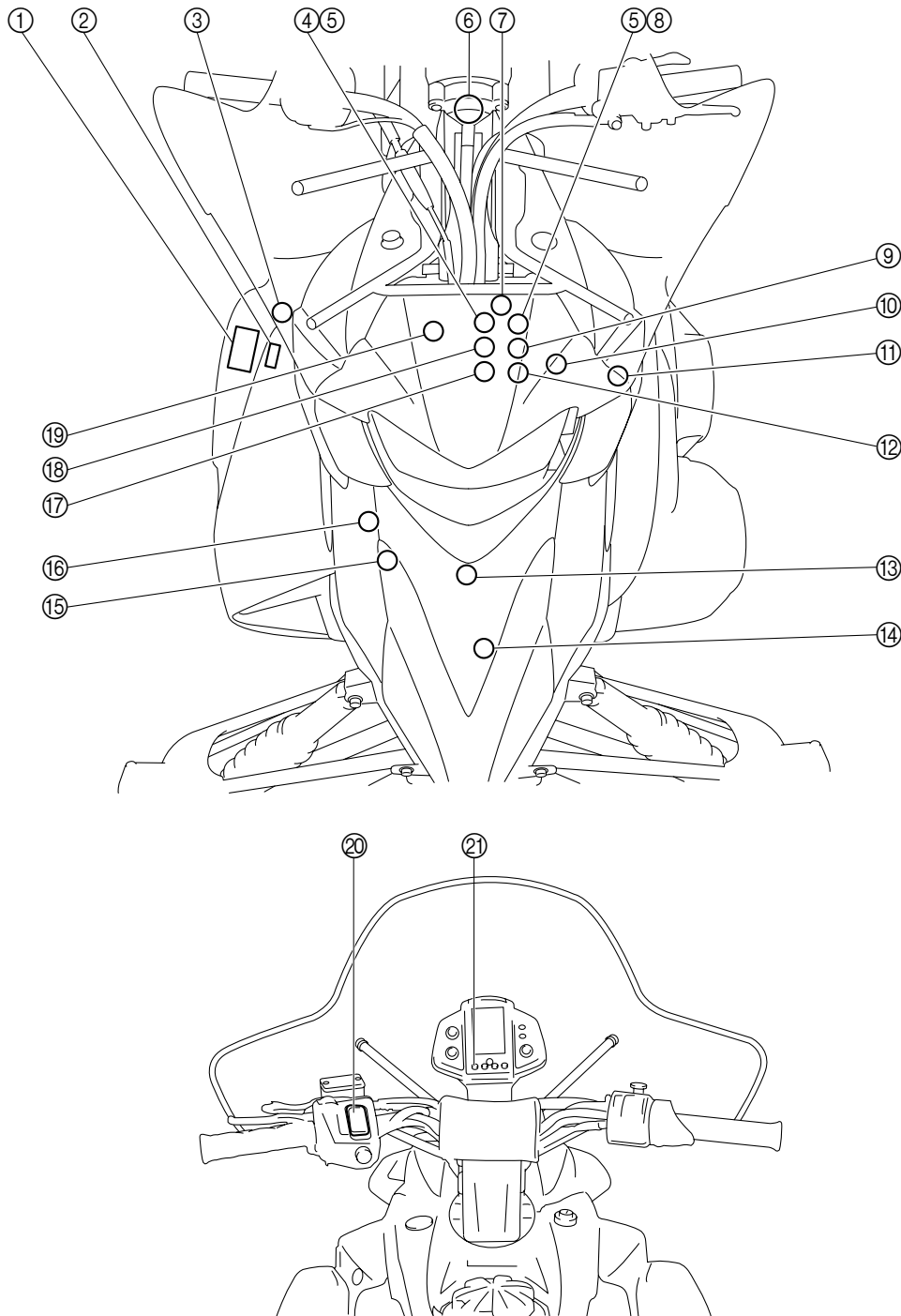
Align the projection (a) on the impeller shaft assembly with the slot in the driven gear shaft (b).



FUEL INJECTION SYSTEM

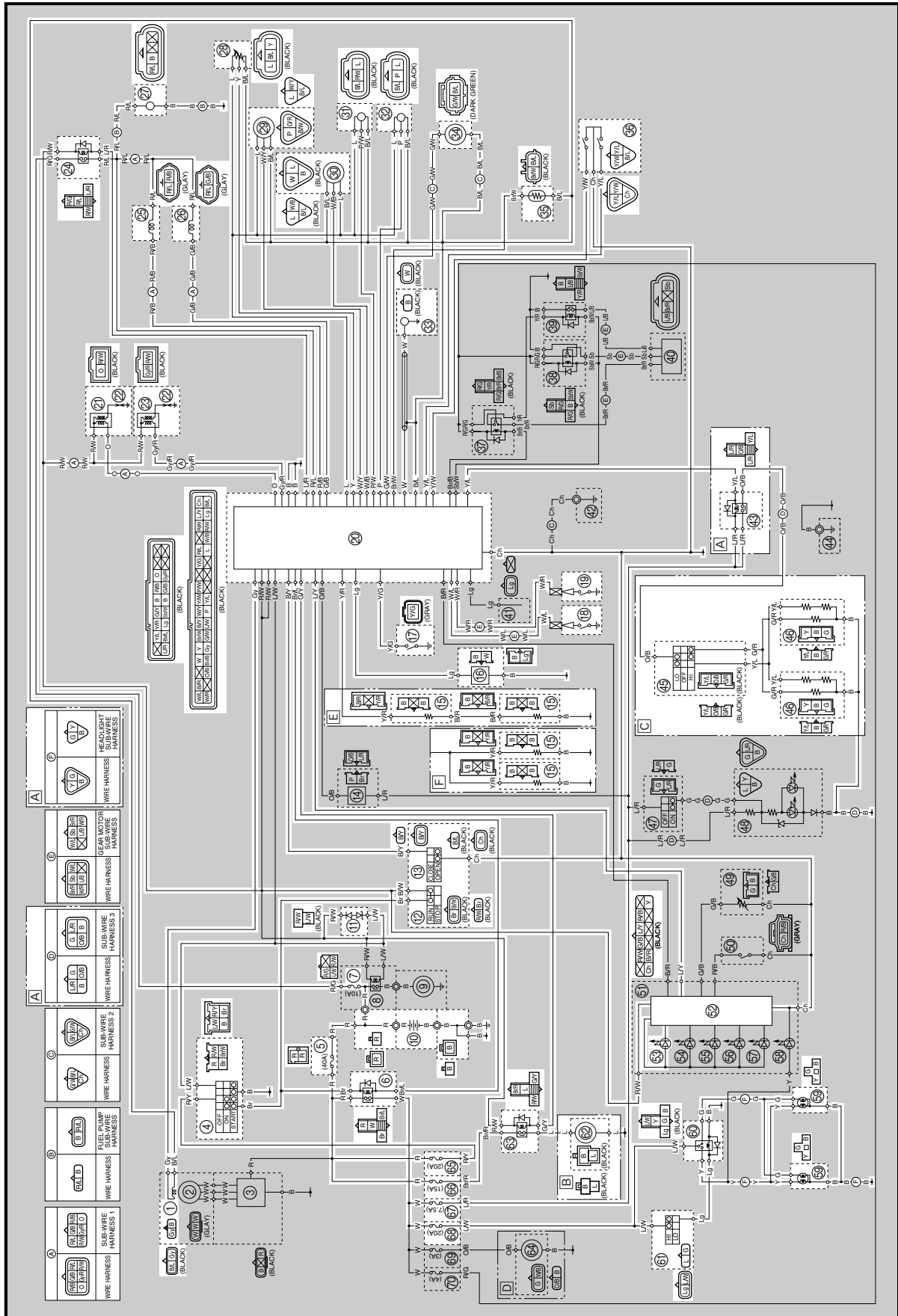
FUEL INJECTION SYSTEM

- | | | | |
|-------------------------------|--|--|---------------------------------------|
| ① Battery | ⑦ Cylinder identification sensor | ⑭ Oil pressure switch | ⑲ Intake air temperature sensor |
| ② ECU (engine control unit) | ⑧ Cylinder-#1 ignition coil | ⑮ Coolant temperature sensor | ⑳ Grip/thumb warmer adjustment switch |
| ③ Fuel injection system relay | ⑨ Cylinder-#1 intake air pressure sensor | ⑯ Crankshaft position sensor | ㉑ Warning light |
| ④ Cylinder-#2 ignition coil | ⑩ Throttle position sensor | ⑰ Injector #2 | |
| ⑤ Spark plug | ⑪ Speed sensor | ⑱ Cylinder-#2 intake air pressure sensor | |
| ⑥ Fuel pump | ⑫ Injector #1 | | |
| | ⑬ Knock sensor | | |





WIRING DIAGRAM





- ① Crankshaft position sensor
- ④ Main switch
- ⑤ Main fuse
- ⑥ Load control relay
- ⑦ Fuel injection system fuse
- ⑩ Battery
- ⑪ Diode
- ⑫ Engine stop switch
- ⑬ Throttle switch
- ⑮ Grip warmer
- ⑯ Thumb warmer
- ⑰ Oil pressure switch
- ⑱ Drive position switch *1
- ⑲ Reverse position switch *1
- ⑳ ECU (engine control unit)
- ㉑ Cylinder-#1 ignition coil
- ㉒ Spark plug
- ㉓ Cylinder-#2 ignition coil
- ㉔ Fuel injection system relay
- ㉕ Injector #1
- ㉖ Injector #2
- ㉗ Fuel pump
- ㉘ Throttle position sensor
- ㉙ Speed sensor
- ㉚ Cylinder identification sensor
- ㉛ Cylinder-#1 intake air pressure sensor
- ㉜ Cylinder-#2 intake air pressure sensor
- ㉝ Knock sensor
- ㉞ Coolant temperature sensor
- ㉟ Intake air temperature sensor
- ㊱ Grip/thumb warmer adjustment switch
- ㊲ Passenger grip warmer relay
- ㊳ Passenger grip warmer switch
- ㊴ Passenger grip warmer
- ㊵ Multi-function meter
- ㊶ Warning light
- ㊷ Headlight
- ㊸ Headlight relay
- ㊹ Headlight beam switch
- ㊺ Radiator fan motor
- ㊻ Radiator fan motor relay *1
- ㊼ Ignition fuse
- ㊽ Radiator fan motor fuse *1
- ㊾ Signal fuse
- ㊿ Headlight fuse

*1 PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP

- ☐ A PZ50VT/PZ50MP
- ☐ B PZ50M/PZ50VT/PZ50MP
- ☐ C PZ50VT (STANDARD)/PZ50MP (OPTION)
- ☐ E PZ50/PZ50GT/PZ50M/PZ50VT/PZ50MP
- ☐ F PZ50FX



ECU SELF-DIAGNOSTIC FUNCTION

The ECU is equipped with a self-diagnostic function in order to ensure that the fuel injection system is operating normally. If this function detects a malfunction in the system, it immediately operates the engine under substitute characteristics and the warning light and self-diagnosis warning indicator come on to alert the rider that a malfunction has occurred in the system. Once a malfunction has been detected, a fault code is stored in the memory of the ECU.

- To inform the rider that the fuel injection system is not functioning, the warning light and self-diagnosis warning indicator flash when the main switch is being turned to the start position.
- If a malfunction is detected in the system by the self-diagnostic function, the ECU provides an appropriate substitute characteristic operation, and the warning light and self-diagnosis warning indicator flash to alert the rider of the detected malfunction.
- After the engine has been stopped, the lowest fault code number appears on the odometer/tripmeter LCD. Once a fault code has been displayed, it remains stored in the memory of the ECU until it is deleted.

SELF-DIAGNOSTIC FUNCTION TABLE

If the ECU detects an abnormal signal from a sensor while the vehicle is being driven, the warning light and self-diagnosis warning indicator come on to alert the rider that a malfunction has occurred and the ECU provides the engine with alternate operating instructions that are appropriate for the type of malfunction.

When an abnormal signal is received from a sensor, the ECU processes the specified values that are programmed for each sensor in order to provide the engine with alternate operating instructions that enable the engine to continue to operate or stop operating, depending on the conditions.

Self-Diagnostic-Function table

Faultcode No.	Item	Symptom	Able/unable to start	Able/unable to drive
11	Cylinder identification sensor	No normal signals are received from the cylinder identification sensor.	Unable	Able
12	Crankshaft position sensor	No normal signals are received from the crankshaft position sensor.	Unable	Unable
13	Cylinder-#1 intake air pressure sensor (open or short circuit)	Cylinder-#1 intake air pressure sensor: open or short circuit detected.	Able	Able
14	Cylinder-#1 intake air pressure sensor (hose line)	Cylinder-#1 intake air pressure sensor: hose system malfunction (clogged or detached hose).	Able	Able
15	Throttle position sensor (open or short circuit)	Throttle position sensor: open or short circuit detected.	Able	Able
16	Throttle position sensor (stuck)	Stuck throttle position sensor detected.	Able	Able
21	Coolant temperature sensor	Coolant temperature sensor: open or short circuit detected.	Able	Able
22	Intake air temperature sensor	Intake air temperature sensor: open or short circuit detected.	Able	Able
25	Cylinder-#2 intake air pressure sensor (open or short circuit)	Cylinder-#2 intake air pressure sensor: open or short circuit detected.	Able	Able
26	Cylinder-#2 intake air pressure sensor (hose line)	Cylinder-#2 intake air pressure sensor: hose system malfunction (clogged or detached hose).	Able	Able
30	Oil pressure dropped	Engine stops when an oil pressure drop is detected.	Unable	Unable
33	Cylinder-#1 ignition coil (faulty ignition)	Open circuit detected in the primary lead of the cylinder-#1 ignition coil.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)

FUEL INJECTION SYSTEM

FI



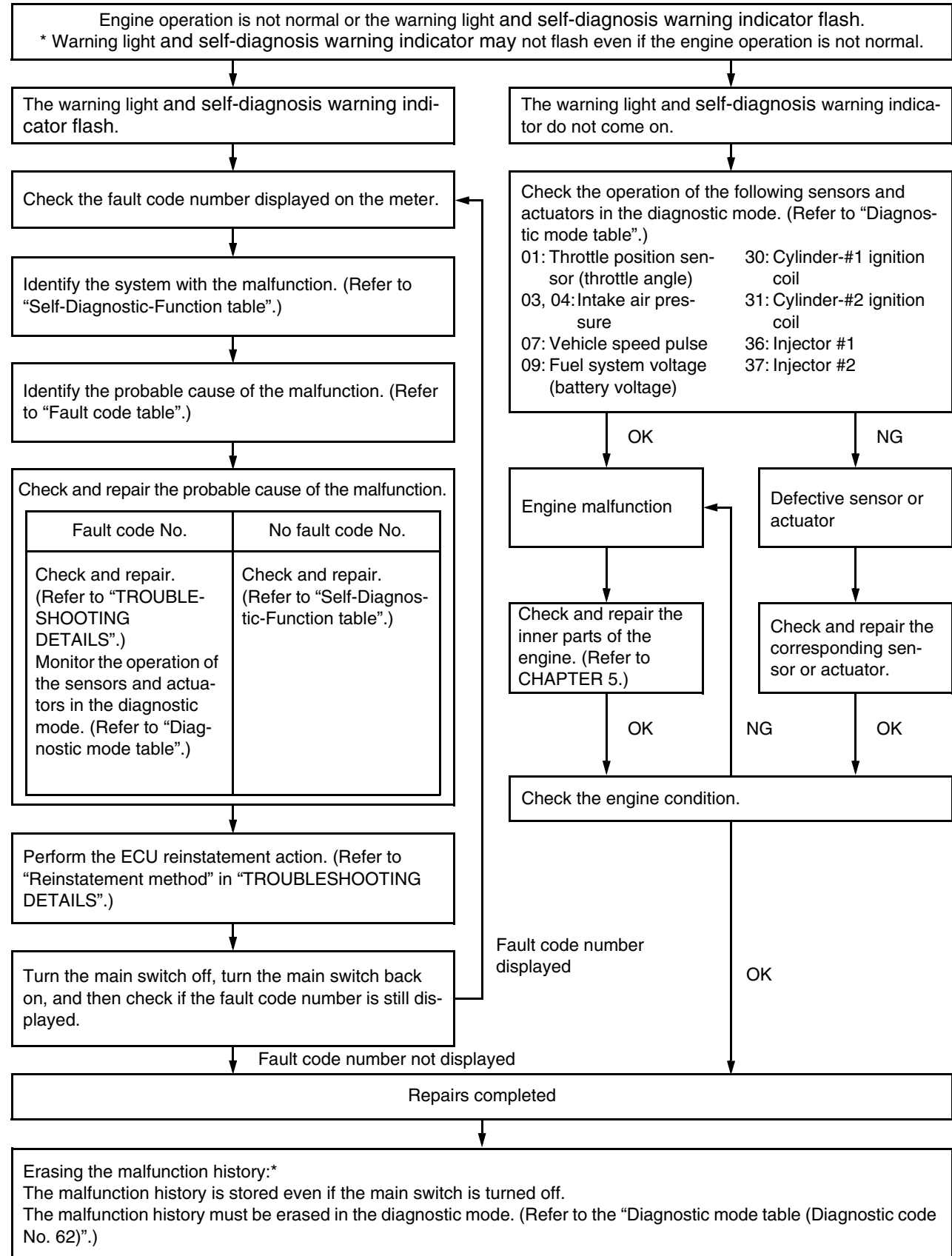
Faultcode No.	Item	Symptom	Able/unable to start	Able/unable to drive
34	Cylinder-#2 ignition coil (faulty ignition)	Open circuit detected in the primary lead of the cylinder-#2 ignition coil.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)
42	Speed sensor	No normal signals are received from the speed sensor.	Able	Able
43	Fuel system voltage (monitoring voltage)	ECU is unable to monitor the battery voltage (an open or short circuit in the line to the ECU).	Able	Able
44	Error in writing the amount of CO adjustment on EEPROM	Error is detected while reading or writing on EEPROM (CO adjustment value).	Able	Able
46	Vehicle system power supply (monitoring voltage)	Power supply to the fuel injection system is not normal.	Able	Able
50	ECU internal malfunction (memory check error)	Faulty ECU memory. (When this malfunction is detected in the ECU, the fault code number might not appear on the meter.)	Unable	Unable
65	Knock sensor	Knock sensor: open or short circuit detected.	Able	Able
81	Grip warmer	Grip warmer: open or short circuit detected.	Able	Able
83	Thumb warmer	Thumb warmer: short circuit detected.	Able	Able
84	T.O.R.S.	Conditions requiring T.O.R.S. operation are detected.	Able	Unable
85	Oil pressure switch	Oil pressure switch: open circuit detected.	Able	Able
88	Drive position switch	Drive position switch: short circuit detected.	Able	Able
	Reverse position switch	Reverse position switch: short circuit detected.		

Communication error with the meter

Faultcode No.	Item	Symptom	Able/unable to start	Able/unable to drive
Er-1	ECU internal malfunction (output signal error)	No signals are received from the ECU.	Unable	Unable
Er-2	ECU internal malfunction (output signal error)	No signals are received from the ECU within the specified duration.	Unable	Unable
Er-3	ECU internal malfunction (output signal error)	Data from the ECU cannot be received correctly.	Unable	Unable
Er-4	ECU internal malfunction (input signal error)	Non-registered data has been received from the meter.	Unable	Unable



TROUBLESHOOTING CHART

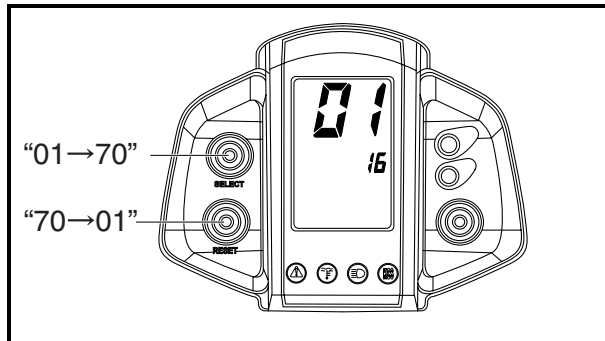
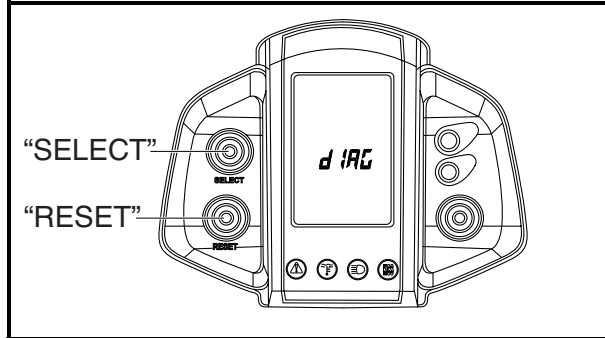


* Operated when the warning light and self-diagnosis warning indicator flash.



DIAGNOSTIC MODE

It is possible to monitor the sensor output data or check the activation of actuators without connecting the measurement equipment by simply switching the meter indication from the normal mode to the diagnostic monitoring mode.



Setting the diagnostic mode

1. Turn the main switch off and set the engine stop switch to "RUN".
2. Disconnect the wire harness coupler from the fuel pump.
3. Simultaneously press and hold the "SELECT" and "RESET" buttons, turn the main switch on, and continue to press the buttons for 8 seconds or more.

NOTE:

- All displays on the meter disappear except the odometer/tripmeter displays.
- "dIAC" appears on the odometer/tripmeter LCD.

4. Check that "dIAC" appears, and then simultaneously press the "SELECT" and "RESET" buttons for 2 seconds or more to activate the diagnostic mode. The diagnostic code number "01" appears on the speedometer LCD.
5. Select the diagnostic code number corresponding to the fault code number by pressing the "SELECT" and "RESET" buttons.

NOTE:

- To decrease the selected diagnostic code number, press the "RESET" button. Press the "RESET" button for 1 second or longer to automatically decrease the diagnostic code numbers.
- To increase the selected diagnostic code number, press the "SELECT" button. Press the "SELECT" button for 1 second or longer to automatically increase the diagnostic code numbers.



6. Verify the operation of the sensor or actuator.

- Sensor operation

The data representing the operating conditions of the sensor appears on the odometer/tripmeter LCD.

- Actuator operation

Push the grip warmer side of the grip/thumb warmer adjustment switch to operate the actuator.

If the grip warmer side of the switch is pushed again while the actuator is operating, the actuator operation will stop and restart from the beginning.

7. Turn the main switch off to cancel the diagnostic mode.

NOTE: _____

To perform a reliable diagnosis, make sure to turn off the power supply before every check and then start right from the beginning.


Fault code table

Fault code No.	Symptom	Probable cause of malfunction	Diagnostic code No.
11	No normal signals are received from the cylinder identification sensor.	• Open or short circuit in wire harness. • Defective cylinder identification sensor. • Malfunction in ECU. • Improperly installed cylinder identification sensor.	—
12	No normal signals are received from the crankshaft position sensor.	• Open or short circuit in wire harness. • Defective crankshaft position sensor. • Malfunction in A.C. magneto rotor. • Malfunction in ECU. • Improperly installed crankshaft position sensor.	—
13	Cylinder-#1 intake air pressure sensor: open or short circuit detected.	• Open or short circuit in wire harness. • Defective cylinder-#1 intake air pressure sensor. • Malfunction in ECU.	03
14	Cylinder-#1 intake air pressure sensor: hose system malfunction (clogged or detached hose).	• Cylinder-#1 intake air pressure sensor hose is detached, clogged, kinked, or pinched. • Malfunction in ECU.	03
15	Throttle position sensor: open or short circuit detected.	• Open or short circuit in wire harness. • Defective throttle position sensor. • Malfunction in ECU. • Improperly installed throttle position sensor.	01
16	Stuck throttle position sensor detected.	• Stuck throttle position sensor. • Malfunction in ECU.	01
21	Coolant temperature sensor: open or short circuit detected.	• Open or short circuit in sub-wire harness 2. • Open or short circuit in wire harness. • Defective coolant temperature sensor. • Malfunction in ECU.	06
22	Intake air temperature sensor: open or short circuit detected.	• Open or short circuit in wire harness. • Defective intake air temperature sensor. • Malfunction in ECU.	05
25	Cylinder-#2 intake air pressure sensor: open or short circuit detected.	• Open or short circuit in wire harness. • Defective cylinder-#2 intake air pressure sensor. • Malfunction in ECU.	04
26	Cylinder-#2 intake air pressure sensor: hose system malfunction (clogged or detached hose).	• Cylinder-#2 intake air pressure sensor hose is detached, clogged, kinked, or pinched. • Malfunction in ECU.	04
30	Engine stops when an oil pressure drop is detected.	• Oil pressure dropped.	—
33	Open circuit detected in the primary lead of the cylinder-#1 ignition coil.	• Open or short circuit in sub-wire harness 1. • Open or short circuit in wire harness. • Malfunction in cylinder-#1 ignition coil. • Malfunction in ECU. • Malfunction in a component of ignition cut-off circuit system.	30
34	Open circuit detected in the primary lead of the cylinder-#2 ignition coil.	• Open or short circuit in sub-wire harness 1. • Open or short circuit in wire harness. • Malfunction in cylinder-#2 ignition coil. • Malfunction in ECU. • Malfunction in a component of ignition cut-off circuit system.	31
42	No normal signals are received from the speed sensor.	• Open or short circuit in wire harness. • Defective speed sensor. • Malfunction in ECU.	07
43	ECU is unable to monitor the battery voltage (an open or short circuit in the line to the ECU).	• Open or short circuit in wire harness. • Malfunction in ECU.	09
44	Error is detected while reading or writing on EEPROM (CO adjustment value).	• Malfunction in ECU. (The CO adjustment value is not properly written on or read from the internal memory.)	60

FUEL INJECTION SYSTEM

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Fault code No.	Symptom	Probable cause of malfunction	Diagnostic code No.
46	Power supply to the fuel injection system is not normal.	• Malfunction in the charging system. (Refer to "CHARGING SYSTEM" in CHAPTER 8.)	—
50	Faulty ECU memory. (When this malfunction is detected in the ECU, the fault code number might not appear on the meter.)	• Malfunction in ECU. (The program and data are not properly written on or read from the internal memory.)	—
65	Knock sensor: open or short circuit detected.	• Open or short circuit in wire harness. • Defective knock sensor. • Malfunction in ECU. • Improperly installed knock sensor.	—
81	Grip warmer: open or short circuit detected.	• Open or short circuit in wire harness. • Defective grip warmer. • Malfunction in ECU.	26
83	Thumb warmer: short circuit detected.	• Short circuit in wire harness. • Defective thumb warmer. • Malfunction in ECU.	27
84	Conditions requiring T.O.R.S. operation are detected.	• Open or short circuit in wire harness. • Defective throttle position sensor. • Defective throttle switch. • Defective speed sensor. • Malfunction in ECU. • Improperly installed throttle position sensor.	01 07 24
85	Oil pressure switch: open circuit detected.	• Open circuit in wire harness. • Defective oil pressure switch. • Malfunction in ECU.	—
88	Drive position switch: short circuit detected.	• Short circuit in gear motor sub-wire harness. • Short circuit in wire harness. • Defective drive position switch. • Malfunction in ECU. • Improperly installed drive position switch.	—
	Reverse position switch: short circuit detected.	• Short circuit in gear motor sub-wire harness. • Short circuit in wire harness. • Defective reverse position switch. • Malfunction in ECU. • Improperly installed reverse position switch.	
Er-1	No signals are received from the ECU.	• Open or short circuit in wire harness. • Malfunction in speedometer unit. • Malfunction in ECU. • Defective wire connection of the ECU coupler.	—
Er-2	No signals are received from the ECU within the specified duration.	• Improper connection in wire harness. • Malfunction in speedometer unit. • Malfunction in ECU.	—
Er-3	Data from the ECU cannot be received correctly.	• Improper connection in wire harness. • Malfunction in speedometer unit. • Malfunction in ECU.	—
Er-4	Non-registered data has been received from the meter.	• Improper connection in wire harness. • Malfunction in speedometer unit. • Malfunction in ECU.	—



Diagnostic mode table

Switch the meter display from the regular mode to the diagnostic mode. To switch the display, refer to “DIAGNOSTIC MODE”.

NOTE:

- Check the intake air temperature and coolant temperature as close as possible to the intake air temperature sensor and the coolant temperature sensor respectively.
- If it is not possible to check the intake air temperature, use the ambient temperature as reference.

Diagnostic code No.	Item	Description of action	Data displayed on meter (reference value)
01	Throttle angle	Displays the throttle angle. • Check with throttle fully closed. • Check with throttle fully open.	0 ~ 125 degrees • Fully closed position (15 ~ 18) • Fully open position (95 ~ 100)
03	Pressure difference (atmospheric pressure and cylinder-#1 intake air pressure)	Displays the pressure difference (atmospheric pressure and cylinder-#1 intake air pressure). • Generate the pressure difference by cranking the engine with the starter, without actually starting the engine.	• Not cranking: atmospheric pressure • Cranking: intake air pressure decreases to less than the atmospheric pressure.
04	Pressure difference (atmospheric pressure and cylinder-#2 intake air pressure)	Displays the pressure difference (atmospheric pressure and cylinder-#2 intake air pressure). • Generate the pressure difference by cranking the engine with the starter, without actually starting the engine.	• Not cranking: atmospheric pressure • Cranking: intake air pressure decreases to less than the atmospheric pressure.
05	Intake air temperature	Displays the intake air temperature. • Check the temperature in the air filter case.	Compare it to the value displayed on the meter. (Minimum displayed value: -30 [°C])
06	Coolant temperature	Displays the coolant temperature. • Check the temperature of the coolant.	Compare it to the value displayed on the meter. (Minimum displayed value: -30 [°C])
07	Vehicle speed pulse	Displays the cumulative number of vehicle pulses that are generated when the tire is spun.	(0 ~ 999; resets to 0 after 999) OK if the numbers appear on the meter.
09	Fuel system voltage (battery voltage)	Displays the fuel system voltage (battery voltage).	0 ~ 18.7 V Normally, approximately 12.0 V
24	Throttle switch	Displays that the switch is on or off.	Throttle open: on Throttle closed: off
26	Grip warmer operation	Operates the grip warmer and displays the self-diagnosis warning indicator 1 second after the grip warmer side of the grip/thumb warmer adjustment switch is pushed. The grip warmer operates and the self-diagnosis warning indicator remains on for 120 seconds. This operation is performed each time the grip warmer side of the switch is pushed. However, if the grip warmer side of the switch is pushed again while the operation is being performed, the operation will stop immediately and restart from the beginning.	—
27	Thumb warmer operation	Operates the thumb warmer and displays the self-diagnosis warning indicator 1 second after the grip warmer side of the grip/thumb warmer adjustment switch is pushed. The thumb warmer operates and the self-diagnosis warning indicator remains on for 120 seconds. This operation is performed each time the grip warmer side of the switch is pushed. However, if the grip warmer side of the switch is pushed again while the operation is being performed, the operation will stop immediately and restart from the beginning.	—

FUEL INJECTION SYSTEM

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Diagnostic code No.	Item	Description of action	Data displayed on meter (reference value)
30	Cylinder-#1 ignition coil	Actuates the cylinder-#1 ignition coil five times at 1-second intervals and displays the self-diagnosis warning indicator 1 second after the grip warmer side of the grip/thumb warmer adjustment switch is pushed. Connect an ignition checker. This operation is performed each time the grip warmer side of the switch is pushed. However, if the grip warmer side of the switch is pushed again while the operation is being performed, the operation will stop immediately and restart from the beginning.	After pushing the switch, check the spark five times.
31	Cylinder-#2 ignition coil	Actuates the cylinder-#2 ignition coil five times at 1-second intervals and displays the self-diagnosis warning indicator 1 second after the grip warmer side of the grip/thumb warmer adjustment switch is pushed. Connect an ignition checker. This operation is performed each time the grip warmer side of the switch is pushed. However, if the grip warmer side of the switch is pushed again while the operation is being performed, the operation will stop immediately and restart from the beginning.	After pushing the switch, check the spark five times.
36	Injector #1	Actuates injector #1 five times at 1-second intervals and displays the self-diagnosis warning indicator 1 second after the grip warmer side of the grip/thumb warmer adjustment switch is pushed. This operation is performed each time the grip warmer side of the switch is pushed. However, if the grip warmer side of the switch is pushed again while the operation is being performed, the operation will stop immediately and restart from the beginning.	After pushing the switch, check the operating sound of the injector five times.
37	Injector #2	Actuates injector #2 five times at 1-second intervals and displays the self-diagnosis warning indicator 1 second after the grip warmer side of the grip/thumb warmer adjustment switch is pushed. This operation is performed each time the grip warmer side of the switch is pushed. However, if the grip warmer side of the switch is pushed again while the operation is being performed, the operation will stop immediately and restart from the beginning.	After pushing the switch, check the operating sound of the injector five times.
50	Fuel injection system relay	Actuates the fuel injection system relay five times at 1-second intervals and displays the self-diagnosis warning indicator 1 second after the grip warmer side of the grip/thumb warmer adjustment switch is pushed. (The indicator is off when the relay is on and it is on when the relay is off.) This operation is performed each time the grip warmer side of the switch is pushed. However, if the grip warmer side of the switch is pushed again while the operation is being performed, the operation will stop immediately and restart from the beginning.	After pushing the switch, check the operating sound of the fuel injection system relay five times.
51	Radiator fan motor relay	Actuates the radiator fan motor relay for five cycles of 5 seconds and displays the self-diagnosis warning indicator 1 second after the grip warmer side of the grip/thumb warmer adjustment switch is pushed. (The relay is on for 2 seconds and off for 3 seconds.) This operation is performed each time the grip warmer side of the switch is pushed. However, if the grip warmer side of the switch is pushed again while the operation is being performed, the operation will stop immediately and restart from the beginning.	After pushing the switch, check the operating sound of the radiator fan motor relay five times. (At that time, the fan motor rotates.)

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Diagnostic code No.	Item	Description of action	Data displayed on meter (reference value)
52	Headlight relay	Actuates the headlight relay for five cycles of 5 seconds and displays the self-diagnosis warning indicator 1 second after the grip warmer side of the grip/thumb warmer adjustment switch is pushed. (The relay is on for 2 seconds and off for 3 seconds.) This operation is performed each time the grip warmer side of the switch is pushed. However, if the grip warmer side of the switch is pushed again while the operation is being performed, the operation will stop immediately and restart from the beginning.	After pushing the switch, check the operating sound of the headlight relay five times. (At that time, the headlight and taillight come on.)
59	Passenger grip warmer relay	Actuates the passenger grip warmer relay for five cycles of 5 seconds and displays the self-diagnosis warning indicator 1 second after the grip warmer side of the grip/thumb warmer adjustment switch is pushed. (The relay is on for 2 seconds and off for 3 seconds.) This operation is performed each time the grip warmer side of the switch is pushed. However, if the grip warmer side of the switch is pushed again while the operation is being performed, the operation will stop immediately and restart from the beginning.	After pushing the switch, check the operating sound of the passenger grip warmer relay five times.
60	EEPROM fault code display	- Displays the cylinder number if an error is detected in the EEPROM CO adjustment value for the cylinder as fault code No. 44. - If both cylinders are defective, the display alternates every 2 seconds.	(01 ~ 02) Displays the cylinder number. (00) Displays when there is no malfunction.
61	Malfunction history code display	- Displays the code numbers of past malfunctions (i.e., a code number of a malfunction that occurred once and which has been corrected). - If more than one code number is detected, the display alternates every 2 seconds to show all the detected code numbers. When all code numbers are shown, the display repeats the same process.	11 ~ 85 (00) Displays when there is no malfunction.
62	Malfunction history code erasure	- Displays the total number of codes that are being detected through self diagnosis and the fault codes in the past history. - Erases only the history codes when the grip warmer side of the grip/thumb warmer adjustment switch is pushed.	00 ~ 24 (00) Displays when there is no malfunction.
70	Control number	Displays the program control number.	00 ~ 255



TROUBLESHOOTING DETAILS

This section describes the measures per fault code number displayed on the meter. Check and service the items or components that are the probable cause of the malfunction following the order given.

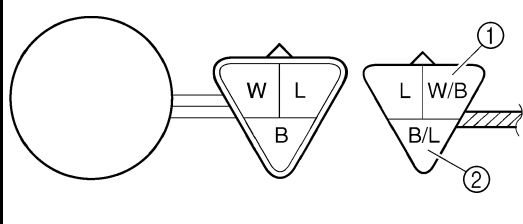
After the check and service of the malfunctioning part have been completed, reset the meter display according to the reinstatement method.

Fault code No.:

Code number displayed on the meter when the engine failed to work normally. (Refer to "Fault code table".)

Diagnostic code No.:

Code number to be used when the diagnostic mode is operated. (Refer to "DIAGNOSTIC MODE".)

Fault code No.	11	Symptom	No normal signals are received from the cylinder identification sensor.	
Diagnostic code No. --				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Installed condition of cylinder identification sensor.		Check for looseness or pinching.	Starting the engine and operating it at idle.
2	Connections Cylinder identification sensor coupler Wire harness ECU coupler		Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	
3	Open or short circuit in wire harness.		Repair or replace if there is an open or short circuit. Between cylinder identification sensor coupler and ECU coupler. Blue – Blue White/Black – White/Black Black/Blue – Black/Blue	
4	Defective cylinder identification sensor.		Replace if defective. 1. Connect the pocket tester (DC 20 V) to the cylinder identification sensor coupler terminals as shown. Positive tester probe → White/Black ① Negative tester probe → Black/Blue ②   Cylinder identification sensor output voltage: When sensor is on: 4.8 V or more When sensor is off: 0.8 V or less	
			4. Is the cylinder identification sensor OK?	

FUEL INJECTION SYSTEM

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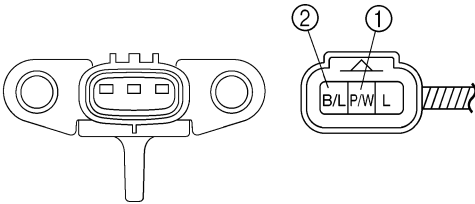


Fault code No.	12	Symptom	No normal signals are received from the crankshaft position sensor.	
Diagnostic code No. --				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Installed condition of crankshaft position sensor.		Check for looseness or pinching.	Cranking the engine.
2	Connections Crankshaft position sensor coupler Wire harness ECU coupler		Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	
3	Open or short circuit in wire harness.		Repair or replace if there is an open or short circuit. Between crankshaft position sensor coupler and ECU coupler. Gray – Gray Black/Blue – Black/Blue	
4	Defective crankshaft position sensor.		Replace if defective. Refer to “CRANKSHAFT POSITION SENSOR” in CHAPTER 8.	

FUEL INJECTION SYSTEM

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Fault code No.	13	Symptom	Cylinder-#1 intake air pressure sensor: open or short circuit detected.	
Diagnostic code No. 03 (cylinder-#1 intake air pressure sensor)				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Connections Cylinder-#1 intake air pressure sensor coupler Wire harness ECU coupler		Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch on.
2	Open or short circuit in wire harness.		Repair or replace if there is an open or short circuit. Between cylinder-#1 intake air pressure sensor coupler and ECU coupler. Black/Blue – Black/Blue Pink/White – Pink/White Blue – Blue	
3	Defective cylinder-#1 intake air pressure sensor.		Execute the diagnostic mode (code No. 03). Replace if defective. 1. Connect the pocket tester (DC 20 V) to the cylinder-#1 intake air pressure sensor coupler terminals as shown. Positive tester probe → Pink/White ① Negative tester probe → Black/Blue ②  2. Turn the main switch on. 3. Measure the cylinder-#1 intake air pressure sensor output voltage.  Cylinder-#1 intake air pressure sensor output voltage: 2.55 ~ 4.25 V 4. Is the cylinder-#1 intake air pressure sensor OK?	

FUEL INJECTION SYSTEM

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Fault code No.	14	Symptom	Cylinder-#1 intake air pressure sensor: hose system malfunction (clogged or detached hose).	
Diagnostic code No. 03 (cylinder-#1 intake air pressure sensor)				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Cylinder-#1 intake air pressure sensor hose is detached, clogged, kinked, or pinched. Cylinder-#1 intake air pressure sensor malfunction at intermediate electrical potential.		Repair or replace the sensor hose. Inspect and repair the connection.	Starting the engine and operating it at idle.
2	Connections Cylinder-#1 intake air pressure sensor coupler Wire harness ECU coupler		Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	
3	Defective cylinder-#1 intake air pressure sensor.		Execute the diagnostic mode (code No. 03). Replace if defective. Refer to "Fault code No. 13".	

Fault code No.	15	Symptom	Throttle position sensor: open or short circuit detected.		
Diagnostic code No. 01 (throttle position sensor)					
Order	Item/components and probable cause		Check or maintenance job		Reinstatement method
1	Installed condition of throttle position sensor.		Check for looseness or pinching. Check that it is installed in the specified position. Refer to “THROTTLE BODY”.		Turning the main switch on.
2	Connections Throttle position sensor coupler Wire harness ECU coupler		Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.		
3	Open or short circuit in wire harness.		Repair or replace if there is an open or short circuit. Between throttle position sensor coupler and ECU coupler. Black/Blue – Black/Blue Yellow – Yellow Blue – Blue		
4	Throttle position sensor lead wire open circuit output voltage check.		Check for open circuit and replace the throttle position sensor. Black/Blue – Yellow		
			Open circuit item	Output voltage	
			Ground wire open circuit	5 V	
			Output wire open circuit	0 V	
			Power supply wire open circuit	0 V	
5	Defective throttle position sensor.		Execute the diagnostic mode (code No. 01). Replace if defective. Refer to “THROTTLE BODY”.		

FUEL INJECTION SYSTEM

FI



Fault code No.	16	Symptom	Stuck throttle position sensor detected.	
Diagnostic code No. 01 (throttle position sensor)				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Installed condition of throttle position sensor.		Check for looseness or pinching. Check that it is installed in the specified position. Refer to "THROTTLE BODY".	Starting the engine, operating it at idle, and then racing it.
2	Defective throttle position sensor.		Execute the diagnostic mode (code No. 01). Replace if defective. Refer to "THROTTLE BODY".	

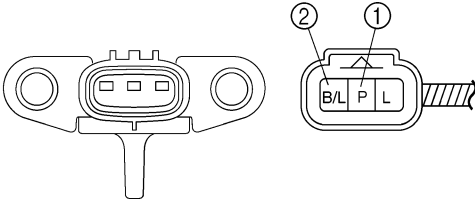
Fault code No.	21	Symptom	Coolant temperature sensor: open or short circuit detected.	
Diagnostic code No. 06 (coolant temperature sensor)				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Connections Coolant temperature sensor coupler Wire harness ECU coupler Sub-wire harness 2 coupler		Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch on.
2	Open or short circuit in wire harness and/or sub-wire harness 2.		Repair or replace if there is an open or short circuit. Between coolant temperature sensor coupler and ECU coupler. Black/Blue – Black/Blue Green/White – Green/White	
3	Defective coolant temperature sensor.		Execute the diagnostic mode (code No. 06). Replace if defective. Refer to “SIGNAL SYSTEM” in CHAPTER 8.	

Fault code No.	22	Symptom	Intake air temperature sensor: open or short circuit detected.	
Diagnostic code No. 05 (intake air temperature sensor)				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Connections Intake air temperature sensor coupler Wire harness ECU coupler		Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch on.
2	Open or short circuit in wire harness.		Repair or replace if there is an open or short circuit. Between intake air temperature sensor coupler and ECU coupler. Black/Blue – Black/Blue Brown/White – Brown/White	
3	Defective intake air temperature sensor.		Execute the diagnostic mode (code No. 05). Replace if defective. Refer to “INTAKE AIR TEMPERATURE SENSOR”.	

FUEL INJECTION SYSTEM

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Fault code No.	25	Symptom	Cylinder-#2 intake air pressure sensor: open or short circuit detected.	
Diagnostic code No. 04 (cylinder-#2 intake air pressure sensor)				
Order	Item/components and probable cause	Check or maintenance job	Reinstatement method	
1	Connections Cylinder-#2 intake air pressure sensor coupler Wire harness ECU coupler	Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch on.	
2	Open or short circuit in wire harness.	Repair or replace if there is an open or short circuit. Between cylinder-#2 intake air pressure sensor coupler and ECU coupler. Black/Blue – Black/Blue Pink – Pink Blue – Blue		
3	Defective cylinder-#2 intake air pressure sensor.	Execute the diagnostic mode (code No. 04). Replace if defective. 1. Connect the pocket tester (DC 20 V) to the cylinder-#2 intake air pressure sensor coupler terminals as shown. Positive tester probe → Pink ① Negative tester probe → Black/Blue ②  2. Turn the main switch on. 3. Measure the cylinder-#2 intake air pressure sensor output voltage.  Cylinder-#2 intake air pressure sensor output voltage: 2.55 ~ 4.25 V 4. Is the cylinder-#2 intake air pressure sensor OK?		

FUEL INJECTION SYSTEM

FI



Fault code No.	26	Symptom	Cylinder-#2 intake air pressure sensor: hose system malfunction (clogged or detached hose).	
Diagnostic code No. 04 (cylinder-#2 intake air pressure sensor)				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Cylinder-#2 intake air pressure sensor hose is detached, clogged, kinked, or pinched. Cylinder-#2 intake air pressure sensor malfunction at intermediate electrical potential.		Repair or replace the sensor hose. Inspect and repair the connection.	Starting the engine and operating it at idle.
2	Connections Cylinder-#2 intake air pressure sensor coupler Wire harness ECU coupler		Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	
3	Defective cylinder-#2 intake air pressure sensor.		Execute the diagnostic mode (code No. 04). Replace if defective. Refer to "Fault code No. 25".	

Fault code No.	30	Symptom	Engine stops when an oil pressure drop is detected.	
Diagnostic code No. — —				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Oil pressure dropped.		Place the snowmobile on a level surface, and then check the oil pressure after warming up the engine. Refer to “ENGINE OIL REPLACEMENT” in CHAPTER 2.	Starting the engine and operating it at idle.
2	Short circuit in oil pressure switch lead.		Disconnect the ECU coupler, and then use the circuit tester to check for continuity between the engine ground and the oil pressure switch coupler (yellow/green). Repair or replace if there is no continuity.	
3	Defective oil pressure switch.		Start the engine, warm it up for 1 minute, and then use the circuit tester to check for continuity between the oil pressure switch coupler (yellow/green) and the switch body. Replace if there is continuity.	

FUEL INJECTION SYSTEM

FI



Fault code No.	33	Symptom	Open circuit detected in the primary lead of the cylinder-#1 ignition coil.	
Diagnostic code No. 30 (cylinder-#1 ignition coil)				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Connections Cylinder-#1 ignition coil coupler Wire harness ECU coupler		Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	Starting the engine and operating it at idle.
2	Open or short circuit in wire harness and/or sub-wire harness 1.		Repair or replace if there is an open or short circuit. Between cylinder-#1 ignition coil coupler and ECU coupler. Orange – Orange Red/White – Red/White	
3	Detective cylinder-#1 ignition coil.		Execute the diagnostic mode (code No. 30). Test the primary and secondary coils for continuity. Replace if defective. Refer to “IGNITION SYSTEM” in CHAPTER 8.	

Fault code No.	34	Symptom	Open circuit detected in the primary lead of the cylinder-#2 ignition coil.	
Diagnostic code No. 31 (cylinder-#2 ignition coil)				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Connections Cylinder-#2 ignition coil coupler Wire harness ECU coupler		Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	Starting the engine and operating it at idle.
2	Open or short circuit in wire harness and/or sub-wire harness 1.		Repair or replace if there is an open or short circuit. Between cylinder-#2 ignition coil coupler and ECU coupler. Gray/Red – Gray/Red Red/White – Red/White	
3	Defective cylinder-#2 ignition coil.		Execute the diagnostic mode (code No. 31). Test the primary and secondary coils for continuity. Replace if defective. Refer to “IGNITION SYSTEM” in CHAPTER 8.	

FUEL INJECTION SYSTEM

FI

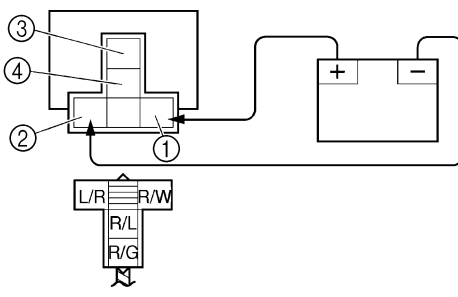


Fault code No.	42	Symptom	No normal signals are received from the speed sensor.	
Diagnostic code No. 07 (speed sensor)				
Order	Item/components and probable cause	Check or maintenance job	Reinstatement method	
1	Connections Speed sensor coupler Wire harness ECU coupler	Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	Starting the engine, and inputting the vehicle speed signals by operating the snowmobile at a low speed of 20 to 30 km/h.	
2	Open or short circuit in wire harness.	Repair or replace if there is an open or short circuit. Between speed sensor coupler and ECU coupler. Blue – Blue White/Yellow – White/Yellow Black/Blue – Black/Blue		
3	Defective speed sensor.	Execute the diagnostic mode (code No. 07). Replace if defective. Refer to “SIGNAL SYSTEM” in CHAPTER 8.		
4	Gear for detecting vehicle speed has broken.	Replace if defective. Refer to “FRONT AXLE AND TRACK” in CHAPTER 4.		

FUEL INJECTION SYSTEM

FI



Fault code No.	43	Symptom	ECU is unable to monitor the battery voltage (an open or short circuit in the line to the ECU).	
Diagnostic code No. 09 (fuel system voltage)				
Order	Item/components and probable cause	Check or maintenance job	Reinstatement method	
1	Connections Fuel injection system relay coupler Wire harness ECU coupler	Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	Starting the engine and operating it at idle.	
2	Open or short circuit in wire harness.	Repair or replace if there is an open or short circuit. Between fuel injection system relay coupler and ECU coupler. Blue/Red – Blue/Red Between fuel injection system relay coupler and engine stop switch coupler. Red/White – Red/White Between engine stop switch coupler and main switch coupler. Brown – Brown		
3	Malfunction or open circuit in fuel injection system relay.	Execute the diagnostic mode (code No. 09). Replace if defective. NOTE: _____ When the leads are disconnected, the voltage check by the code No. 09 is impossible. 1. Disconnect the fuel injection system relay from the wire harness and remove it. 2. Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the fuel injection system relay terminals as shown. Positive battery terminal → Red/White ① Negative battery terminal → Blue/Red ② Positive tester probe → Red/Green ③ Negative tester probe → Red/Blue ④  3. Does the fuel injection system relay have continuity between the red/green and red/blue terminals?		

FUEL INJECTION SYSTEM

FI



Fault code No.	44	Symptom	Error is detected while reading or writing on EEPROM (CO adjustment value).
Diagnostic No. 60 (EEPROM improper cylinder indication)			
Order	Item/components and probable cause	Check or maintenance job	Reinstatement method
1	Malfunction in ECU.	Execute the diagnostic mode (code No. 60). 1. Check the faulty cylinder. (If both cylinders are defective, the display alternates every 2 seconds.) 2. Readjust the CO of the displayed cylinder. Replace ECU if defective.	Turning the main switch on.

Fault code No.	46	Symptom	Power supply to the fuel injection system is not normal.
Diagnostic code No. --			
Order	Item/components and probable cause	Check or maintenance job	Reinstatement method
1	Connections Wire harness ECU coupler	Check the coupler for any pins that may have pulled out. Check the locking condition of the coupler. If there is a malfunction, repair it and connect the coupler securely.	Starting the engine and operating it at idle.
2	Faulty battery.	Replace or charge the battery. Refer to "BATTERY INSPECTION" in CHAPTER 2.	
3	Malfunction in rectifier/regulator.	Replace if defective. Refer to "CHARGING SYSTEM" in CHAPTER 8.	
4	Open or short circuit in wire harness.	Repair or replace if there is an open or short circuit. • Between battery and ignition fuse. Red – Red • Between ignition fuse and main switch coupler. Red/Yellow – Red/Yellow • Between main switch coupler and load control relay coupler. Brown – Brown • Between load control relay coupler and ECU coupler. Brown/Blue – Brown/Blue	

Fault code No.	50	Symptom	Faulty ECU memory. (When this malfunction is detected in the ECU, the fault code number might not appear on the meter.)
Diagnostic code No. --			
Order	Item/components and probable cause	Check or maintenance job	Reinstatement method
1	Malfunction in ECU.	Replace the ECU.	Turning the main switch on.

FUEL INJECTION SYSTEM

FI



Fault code No.	65	Symptom	Knock sensor: open or short circuit detected.	
Diagnostic code No. – –				
Order	Item/components and probable cause	Check or maintenance job	Reinstatement method	
1	Installed condition of knock sensor	Check for looseness or pinching.	Starting the engine and operating it at idle.	
2	Connections Knock sensor coupler Wire harness ECU coupler	Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.		
3	Open or short circuit in wire harness.	Repair or replace if there is an open or short circuit. Between knock sensor coupler and ECU coupler. White – White		
4	Defective knock sensor.	Replace if defective. Refer to “KNOCK SENSOR” in CHAPTER 8.		

Fault code No.	81	Symptom	Grip warmer: open or short circuit detected.	
Diagnostic code No. 26 (grip warmer operation)				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Open or short circuit in wire harness.		Repair or replace if there is an open or short circuit. Between grip warmer coupler and ECU coupler. Yellow/Red – Yellow/Red	Turning the main switch on.

Fault code No.	83	Symptom	Thumb warmer: short circuit detected.	
Diagnostic code No. 27 (thumb warmer operation)				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Short circuit in wire harness.		Repair or replace if there is a short circuit. Between thumb warmer coupler and ECU coupler. Light green – Light green	Turning the main switch on.

FUEL INJECTION SYSTEM

FI


Fault code No.	85	Symptom	Oil pressure switch: open circuit detected.	
Diagnostic code No. --				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Connections Oil pressure switch coupler Wire harness ECU coupler		Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	Starting the engine and operating it at idle.
2	Open circuit in wire harness.		Repair or replace if there is an open circuit. Between oil pressure switch coupler and ECU coupler. Yellow/Green – Yellow/Green	
3	Defective oil pressure switch.		With the engine stopped, check that there is continuity between the oil pressure switch terminals and oil pressure switch body metal components.	

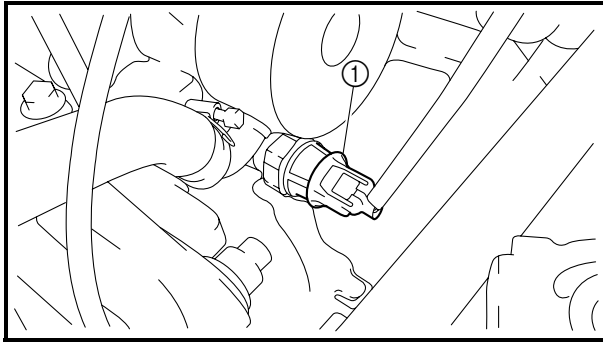
Fault code No.	88	Symptom	Drive position switch: short circuit detected. Reverse position switch: short circuit detected.	
Diagnostic code No. --				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Installed condition of switch		Check for looseness or pinching.	Starting the engine and operating it at idle.
2	Connections Drive position switch connector Reverse position switch connector Wire harness ECU coupler		Check the couplers for any pins that may have pulled out. Check the locking condition of the couplers. If there is a malfunction, repair it and connect the coupler securely.	
3	Short circuit in wire harness and/or gear motor sub-wire harness.		Repair or replace if there is an short circuit. Between drive position switch connector and ECU coupler. White/Blue – White/Blue Between reverse position switch connector and ECU coupler. White/Red – White/Red	
4	Defective drive position switch and/or reverse position switch.		Replace if defective. Refer to “DRIVE POSITION SWITCH AND REVERSE POSITION SWITCH (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)” in CHAPTER 8.	

FUEL INJECTION SYSTEM

FI

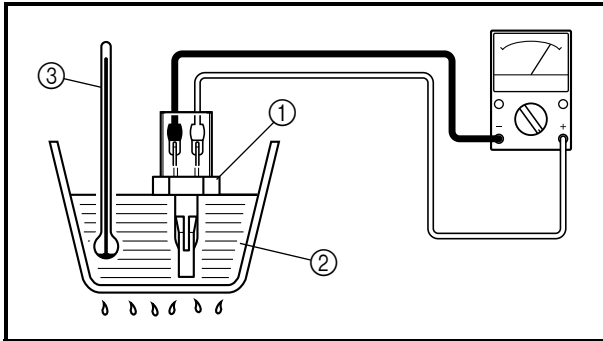
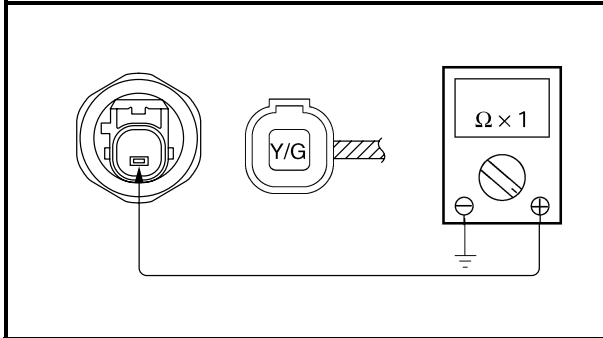


Fault code No.	Er-1	Symptom	No signals are received from the ECU.	
	Er-2	Symptom	No signals are received from the ECU within the specified duration.	
	Er-3	Symptom	Data from the ECU cannot be received correctly.	
	Er-4	Symptom	Non-registered data has been received from the meter.	
Diagnostic code No. --				
Order	Item/components and probable cause		Check or maintenance job	Reinstatement method
1	Connections Wire harness ECU coupler		Check the coupler for any pins that may have pulled out. Check the locking condition of the coupler. If there is a malfunction, repair it and connect the coupler securely.	Turning the main switch on.
2	Open or short circuit in wire harness.		Repair or replace if there is an open or short circuit. Between speedometer unit coupler and ECU coupler. Blue/Yellow – Blue/Yellow Black/Red – Black/Red	
3	Malfunction in speedometer unit.		Replace the speedometer unit.	
4	Malfunction in ECU.		Replace the ECU.	



OIL PRESSURE SWITCH

1. Disconnect:
 - Oil pressure switch coupler ①
2. Connect:
 - Pocket tester
(between the engine ground and oil pressure switch terminal)
3. Check:
 - Oil pressure switch continuity
No continuity → Replace the oil pressure switch.



INTAKE AIR TEMPERATURE SENSOR

1. Remove the intake air temperature sensor.

CAUTION:

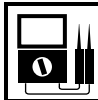
Handle the intake air temperature sensor with special care. Never subject it to shock or allow it to be dropped. If it is dropped, it must be replaced.

2. Connect:
 - Pocket tester
(to the intake temperature sensor)

NOTE:

Set the tester selector to the “ $\Omega \times 100$ ” position.

3. Immerse the intake temperature sensor ① in water ② and check the intake temperature sensor operation.



Intake temperature sensor resistance:
290 ~ 390 Ω at 80 °C (176 °F)

③ Temperature gauge

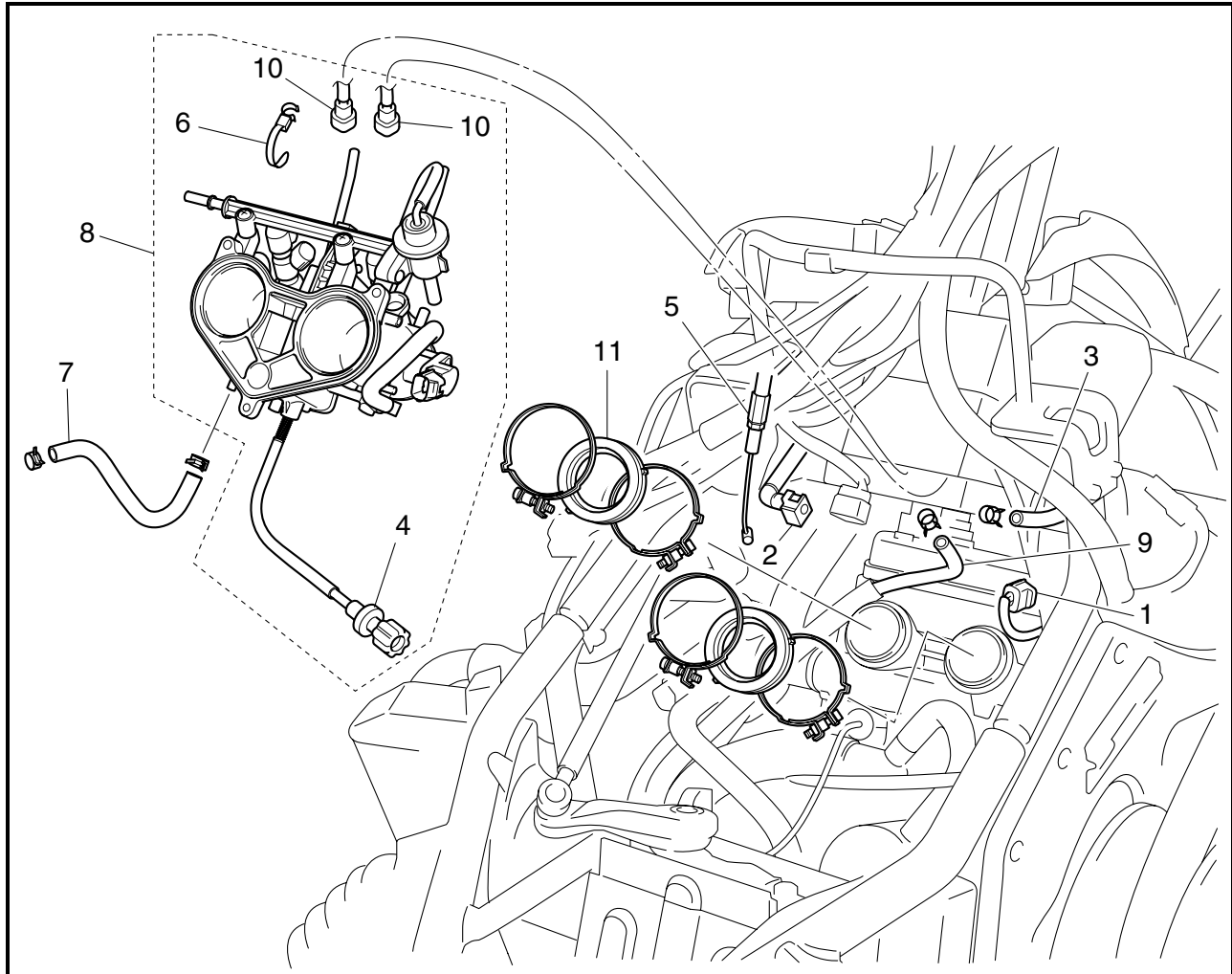
CAUTION:

Never heat the water to a temperature of 120 °C (248 °F) or more.

4. If the intake air temperature sensor operation is defective, replace it.
5. Install the intake air temperature sensor and connect the intake air temperature sensor coupler.



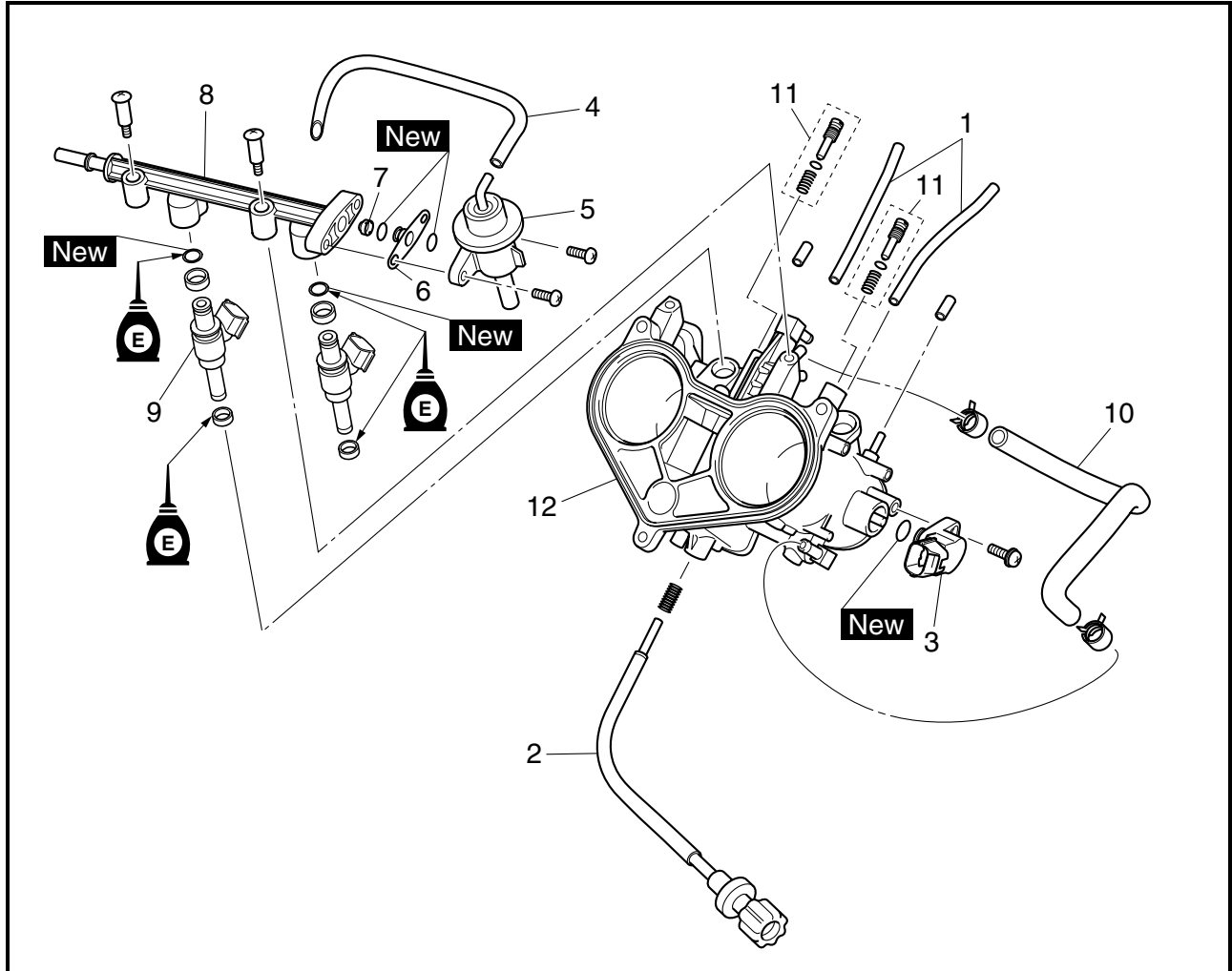
THROTTLE BODY



Order	Job name/Part name	Q'ty	Remarks
	Throttle body removal		Remove the parts in the order listed below. Refer to "COWLINGS" in CHAPTER 3.
1	Throttle position sensor coupler	1	Disconnect.
2	Fuel hose	2	
3	Fuel return hose	1	Disconnect.
4	Idle adjusting screw	1	
5	Throttle cable	1	
6	Plastic band	1	
7	Throttle body heater inlet hose	1	
8	Throttle body assembly	1	
9	Throttle body heater outlet hose	1	Disconnect.
10	Injector coupler	2	Disconnect.
11	Throttle body joint	2	
			For installation, reverse the removal procedure.



INJECTORS



Order	Job name/Part name	Q'ty	Remarks
	Injector removal		Remove the parts in the order listed below.
1	Negative pressure hose	1	
2	Idle adjusting screw	1	
3	Throttle position sensor	1	
4	Pressure regulator hose	1	
5	Pressure regulator	1	
6	Fuel strainer seat	1	
7	Fuel strainer	1	
8	Fuel rail	1	
9	Injector	4	
10	Throttle body heater hose	1	
11	Air screw	2	
12	Throttle body assembly	1	
			For installation, reverse the removal procedure.



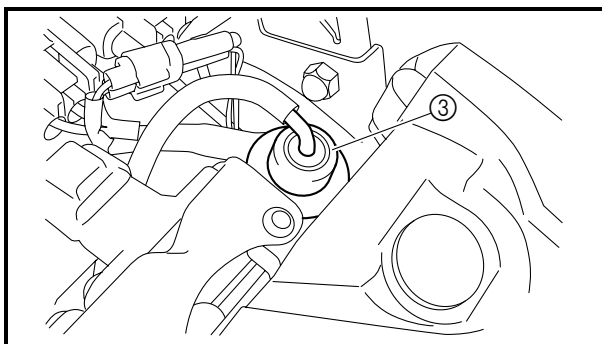
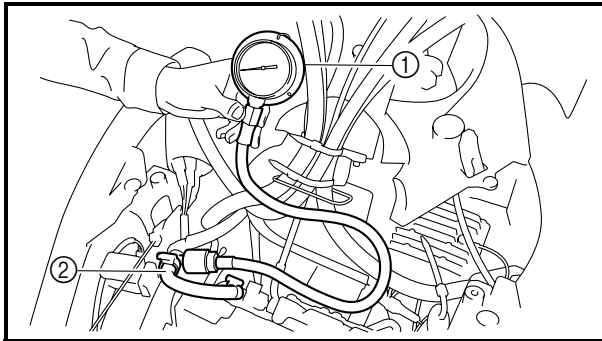
INSPECTION

1. Inspect:
 - Injectors
Damage → Replace.
2. Inspect:
 - Throttle body
Cracks/damage → Replace the throttle body.
3. Check:
 - Fuel passages
Obstructions → Clean.

NOTE:

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

4. Check:
 - Throttle body joints
Cracks/damage → Replace.



PRESSURE REGULATOR OPERATION

1. Remove:
 - Right side panel
Refer to “COWLINGS” in CHAPTER 3.
2. Inspect:
 - Fuel pump and pressure regulator operation

Measurement steps:

- Connect the pressure gauge ① and fuel pressure adapter ② onto the fuel injection pipe.
- Connect the mity vac to the pressure regulator ③.



Pressure gauge:
90890-03153, YU-03153
Fuel pressure adapter:
90890-03176, YM-03176
Mity vac:
90890-06756, YS-42423

- Start the engine.
- Measure the fuel pressure.



Fuel pressure:
300 kPa (3.0 kg/cm², 42.7 psi)



- Use the mity vac set to adjust the fuel pressure in relation to the vacuum pressure as described below.

NOTE:

The vacuum pressure should not exceed 100 kPa (760 mmHg).

Increase the vacuum pressure → Fuel pressure is decreased

Decrease the vacuum pressure → Fuel pressure is increased

Faulty → Replace the pressure regulator.

INSPECTION AND ADJUSTMENT

NOTE:

Before adjusting the throttle position sensor, the engine idling speed should be properly adjusted.

1. Inspect:

- Throttle position sensor

Checking steps:

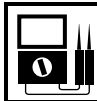
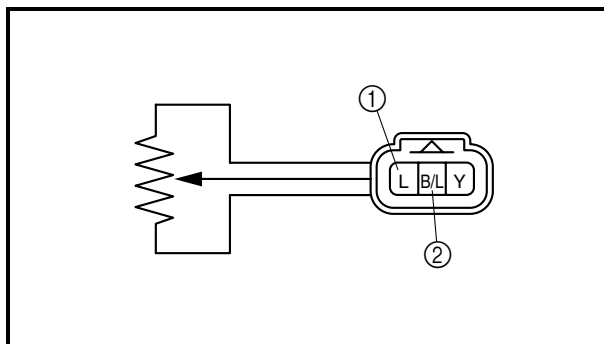
- Disconnect the throttle position sensor coupler.
- Remove the throttle position sensor from the throttle body.
- Connect the pocket tester ($\Omega \times 1k$) to the throttle position sensor.

Positive tester probe → blue terminal ①

Negative tester probe → black/blue terminal ②

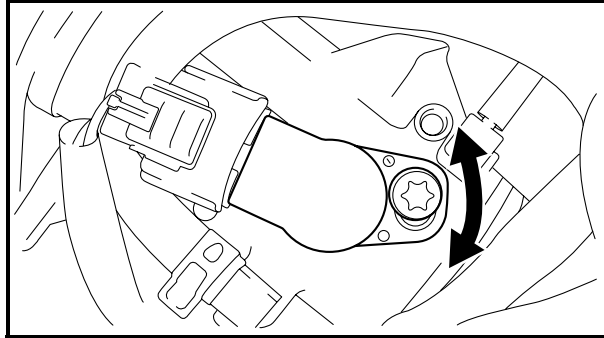
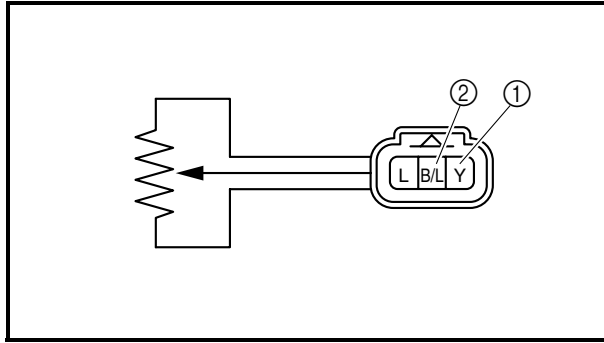
- Measure the maximum throttle position sensor resistance.

Out of specification → Replace the throttle position sensor.



Maximum throttle position sensor resistance:

4.0 ~ 6.0 k Ω at 20 °C (68 °F)
(blue – black/blue)



2. Adjust:

- Throttle position sensor angle

Adjusting steps:

- Connect the throttle position sensor coupler to the wire harness.
- Connect the digital circuit tester to the throttle position sensor.

Positive tester probe → **yellow terminal ①**

Negative tester probe → **black/blue terminal ②**



Digital circuit tester:
90890-03174

- Measure the throttle position sensor voltage.
- Adjust the throttle position sensor angle so the measured voltage is within the specified range.

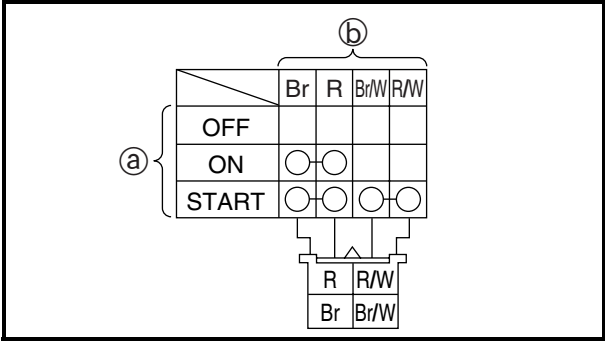
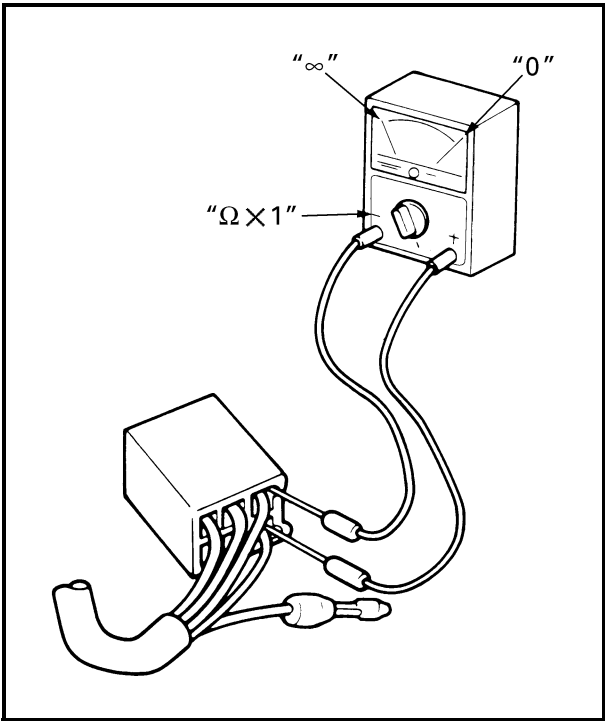


Throttle position sensor voltage:
0.63 ~ 0.73 V
(yellow – black/blue)

- After adjusting the throttle position sensor angle, tighten the throttle position sensor screws.

FI	
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ELECTRICAL

SWITCH INSPECTION
SWITCH INSPECTION

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

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

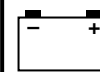
- NOTE:
- Set the pocket tester to “0” before starting a test.
 - When testing the switch for continuity the pocket tester should be set to the “ $\times 1 \Omega$ ” range.
 - When checking the switch turn it on and off a few times.

INSPECTING A SWITCH SHOWN IN THE
MANUAL

The terminal connections for switches (main switch, handlebar switch, engine stop switch, light switch, etc.) are shown in a chart similar to the one on the left. This chart shows the switch positions ① in the column and the switch lead colors ② in the top row. For each switch position, “○—○” indicates the terminals with continuity.

The example chart shows that:
There is continuity between the “Brown and Red” leads when the switch is set to “ON”.
There is continuity between the “Brown/White and Red/White” leads when the switch is set to “START”.

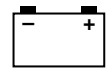




IGNITION SYSTEM

CIRCUIT DIAGRAM

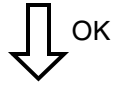
- ① Crankshaft position sensor
- ④ Main switch
- ⑤ Main fuse
- ⑩ Battery
- ⑫ Engine stop switch
- ⑬ Throttle switch
- ⑳ ECU (engine control unit)
- ㉑ Cylinder-#1 ignition coil
- ㉒ Spark plug
- ㉓ Cylinder-#2 ignition coil
- ㉔ Throttle position sensor
- ㉖ Ignition fuse



TROUBLESHOOTING

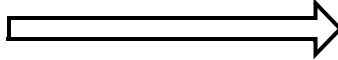
NO SPARK OR WEAK SPARK.

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



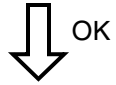
OK

FAULTY



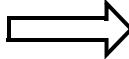
Replace the main fuse and/or ignition fuse.

Check the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.



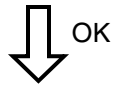
OK

OUT OF SPECIFICATION



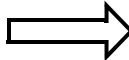
Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

Check the spark plug gap.
Refer to "SPARK PLUGS" in CHAPTER 2.



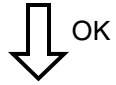
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OUT OF SPECIFICATION



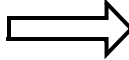
Repair or replace the spark plug.
Refer to "SPARK PLUGS" in CHAPTER 2.

Check the ignition spark gap.



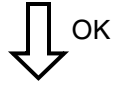
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OUT OF SPECIFICATION



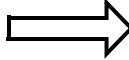
Replace the ignition coil.

Check the ignition coil resistance.



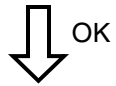
OK

OUT OF SPECIFICATION



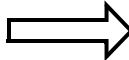
Replace the ignition coil.

Check the crankshaft position sensor.



OK

OUT OF SPECIFICATION



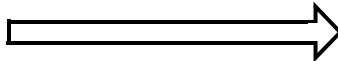
Replace the stator coil assembly.

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



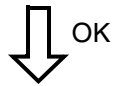
OK

FAULTY



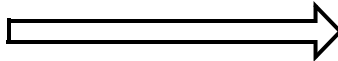
Replace the right handlebar switch, and/or main switch.

Check the throttle position sensor.
Refer to "THROTTLE BODY" in CHAPTER 7.



OK

FAULTY



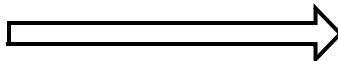
Replace the throttle position sensor.

Check the ignition system's wiring.
Refer to "CIRCUIT DIAGRAM".



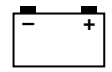
OK

FAULTY



Properly connect or repair the ignition system's wiring.

Correct the connection and/or ECU.



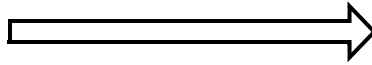
T.O.R.S. OPERATES.

Is self-diagnosis code 15, 16, or 42 displayed?



NO

YES



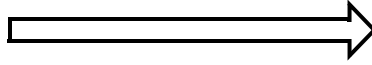
Check the affected item(s).

Has throttle body icing occurred or is foreign material stuck in the throttle body?



NO

YES



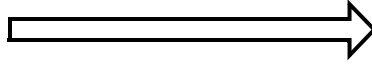
Perform throttle body maintenance.

Is the throttle switch malfunctioning?



NO

YES



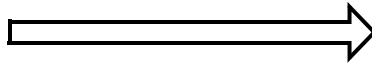
Repair or replace the throttle switch.

Is the throttle cable free play out of specification?



NO

YES



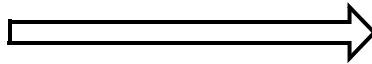
Adjust the throttle cable free play.
Refer to "THROTTLE CABLE FREE PLAY
ADJUSTMENT" in CHAPTER 2.

Was the engine revved with the V-belt removed?



NO

YES



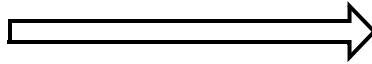
When the engine is revved with the V-belt removed, the speed sensor is diagnosed as malfunctioning and T.O.R.S. operates.

Is the throttle position sensor, speedometer unit, or speed sensor installed incorrectly?



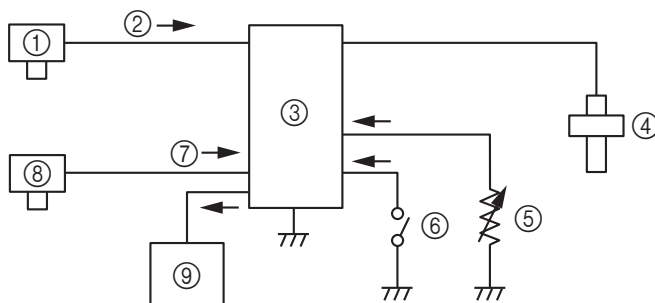
NO

YES

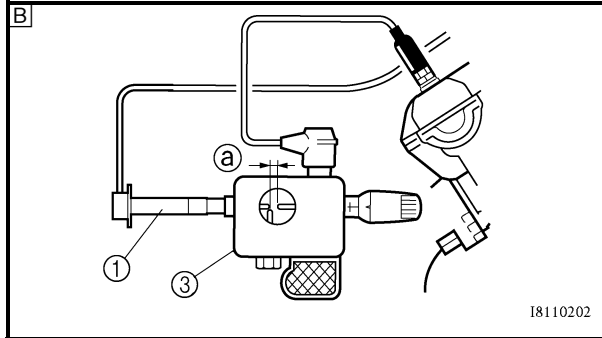
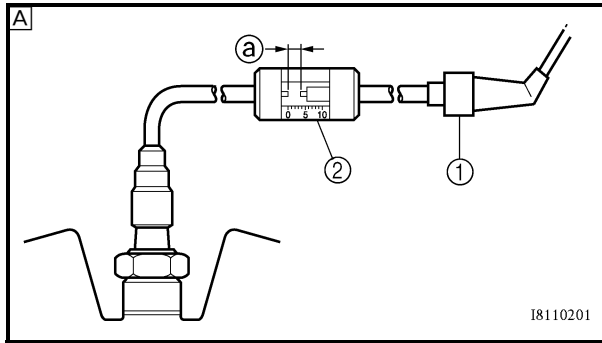
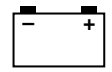


Install correctly.

Correct the connection and/or replace the speedometer unit and/or ECU.



- ① Crankshaft position sensor
- ② Engine speed
- ③ ECU (engine control unit)
- ④ Ignition
- ⑤ Throttle position sensor
- ⑥ Throttle switch
- ⑦ Speed
- ⑧ Speed sensor
- ⑨ Speedometer unit



IGNITION SPARK GAP

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

Measurement steps:

- Disconnect the ignition coil (1) from the spark plug.
- Connect the dynamic spark tester (2) or ignition checker (3).



Dynamic spark tester:

YM-34487

Ignition checker:

90890-06754

- Measure the ignition spark gap (a).
- Crank the engine by turning the main switch to start and gradually increase the spark gap until a misfire occurs.

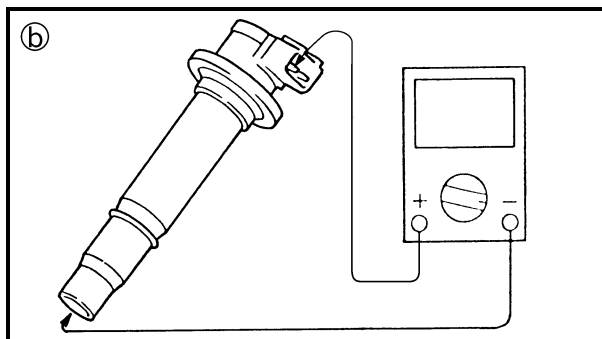
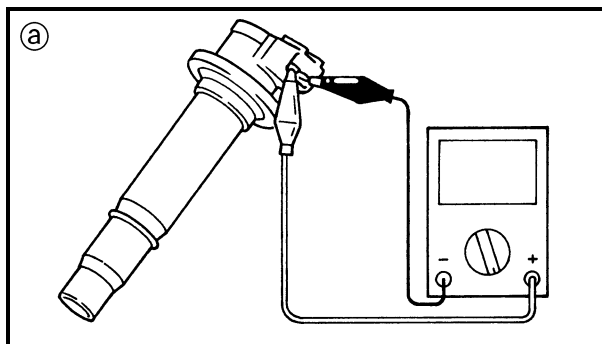


Ignition spark gap:

6.0 mm (0.24 in)

[A] For USA/Canada

[B] For Europe



IGNITION COIL

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

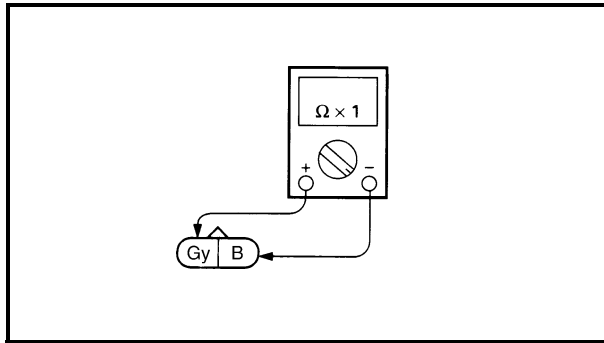
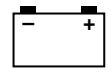


Primary coil resistance:

1.19 ~ 1.61 Ω at 20 °C (68 °F)

Secondary coil resistance:

8.5 ~ 11.5 k Ω at 20 °C (68 °F)

**CRANKSHAFT POSITION SENSOR**

1. Disconnect:
 - Crankshaft position sensor coupler
2. Connect:
 - Pocket tester
(to the crankshaft position sensor coupler)
3. Measure:
 - Crankshaft position sensor resistance
Out of specification → Replace.

**Crankshaft position sensor resistance:**

**189 ~ 231 Ω at 20 °C (68 °F)
(Gray – Black)**



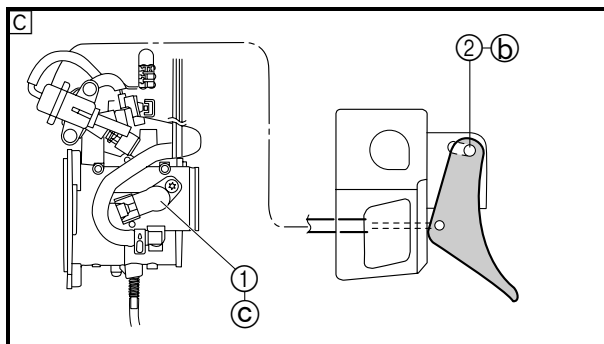
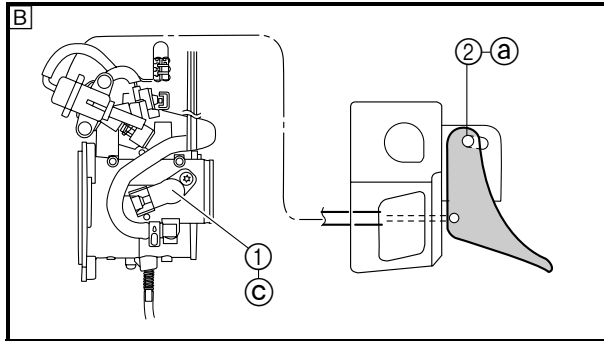
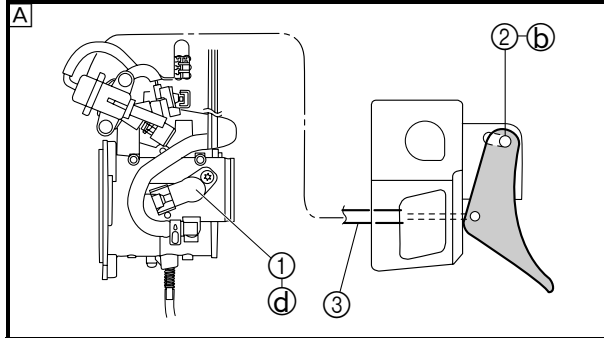
THROTTLE OVERRIDE SYSTEM (T.O.R.S.)

If the throttle bodies or throttle cable malfunctions during operation, the T.O.R.S. will operate when the throttle lever is released.

The T.O.R.S. is designed to interrupt the fuel injection and keep the engine speed between 2,800 and 3,000 r/min if the throttle valves fail to return to the idle position when the throttle lever is released.

⚠ WARNING

- If the T.O.R.S. is activated, make sure that the cause of the malfunction has been corrected and that the engine can be operated without a problem before restarting the engine.
- Be sure to use the specified spark plug and spark plug cap. Otherwise, the T.O.R.S. will not work properly.



Mode \ Item	A Idling/starting	B Running	C Trouble
Throttle switch	Off	On	Off
Throttle position sensor	Closed	Open	Open
Engine	Run	Run	T.O.R.S. will operate

A Idling/starting

B Running

C Trouble

1 Throttle position sensor (throttle valve position)

2 Throttle switch

3 Throttle cable

a On

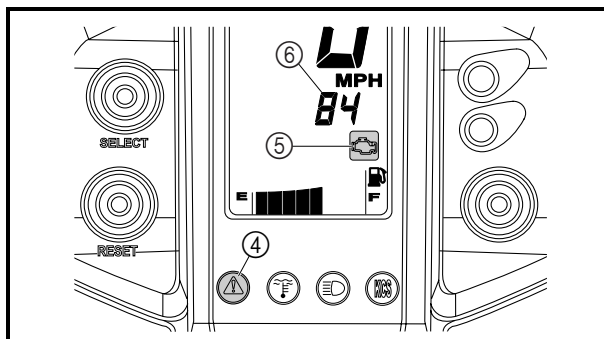
b Off

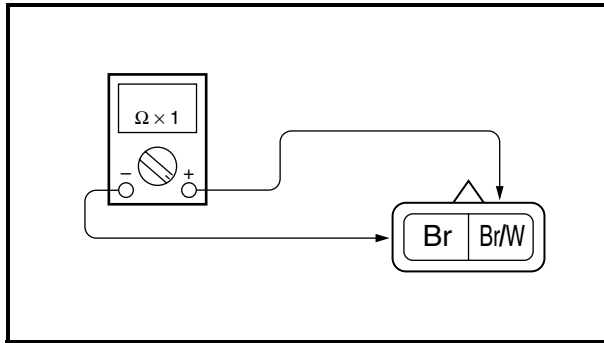
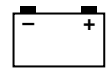
c Open

d Closed

NOTE:

- When the T.O.R.S. is activated, the warning light ④ and self-diagnosis warning indicator ⑤ will flash and the two-digit code "84" ⑥ will flash in the clock display.
- The T.O.R.S. monitors the condition of the throttle position sensor, speedometer assembly, and speed sensor, and will operate if any of the monitored items is disconnected or malfunctioning.



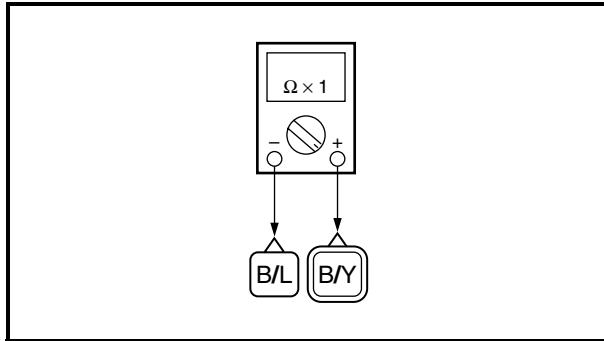


ENGINE STOP SWITCH

1. Disconnect:
 - Engine stop switch coupler
2. Connect:
 - Pocket tester
3. Check:
 - Engine stop switch continuity

Faulty → Replace the right handlebar switch.

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

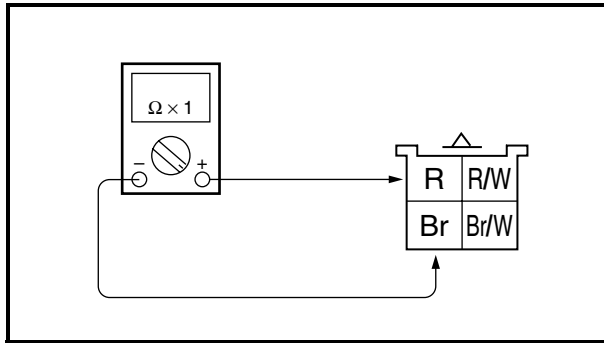
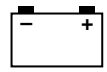


THROTTLE SWITCH

1. Disconnect:
 - Throttle switch couplers
2. Connect:
 - Pocket tester
3. Check:
 - Throttle switch continuity

Faulty → Replace the right handlebar switch.

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



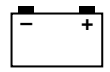
MAIN SWITCH

1. Disconnect:
 - Main switch coupler
2. Connect:
 - Pocket tester
3. Check:
 - Main switch continuity

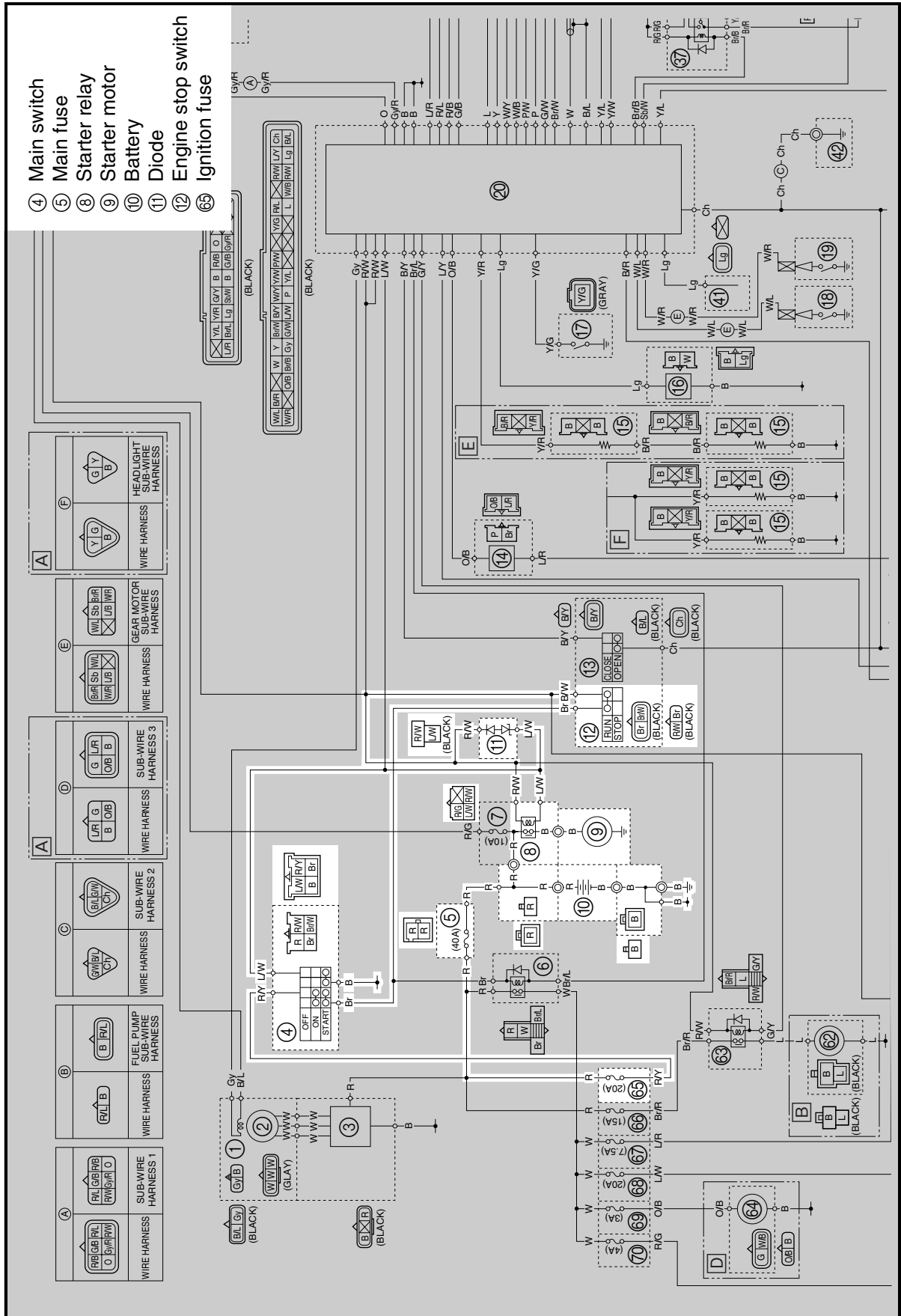
Faulty → Replace.

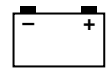
Switch position	Color code			
	Br	R	Br/W	R/W
OFF				
ON	○ ——— ○			
START	○ ——— ○	○ ——— ○	○ ——— ○	○ ——— ○

○ ——— ○ Continuity



ELECTRICAL STARTING SYSTEM CIRCUIT DIAGRAM



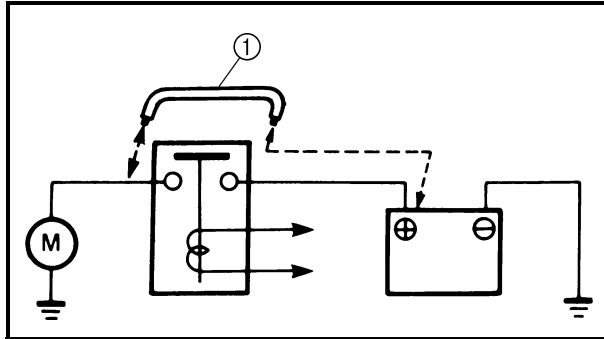


TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

1. Connect:

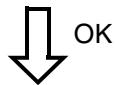
- Starter relay terminals (battery side and starter motor side)



① Jumper lead

2. Check:

- Starter motor operation



NO

Check the battery and connectors.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

OK

NO

Charge and/or replace the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

Repair or replace the starter motor.

⚠ WARNING

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

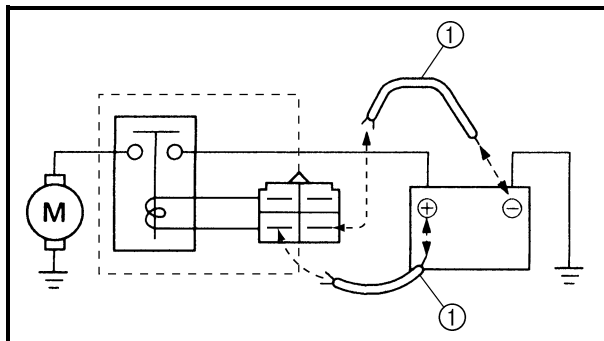
This check is likely to produce sparks, so be sure that no flammable gas or fluid is in the vicinity.

3. Disconnect:

- Starter relay coupler

4. Connect:

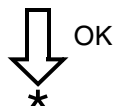
- Starter relay coupler terminals



① Jumper lead

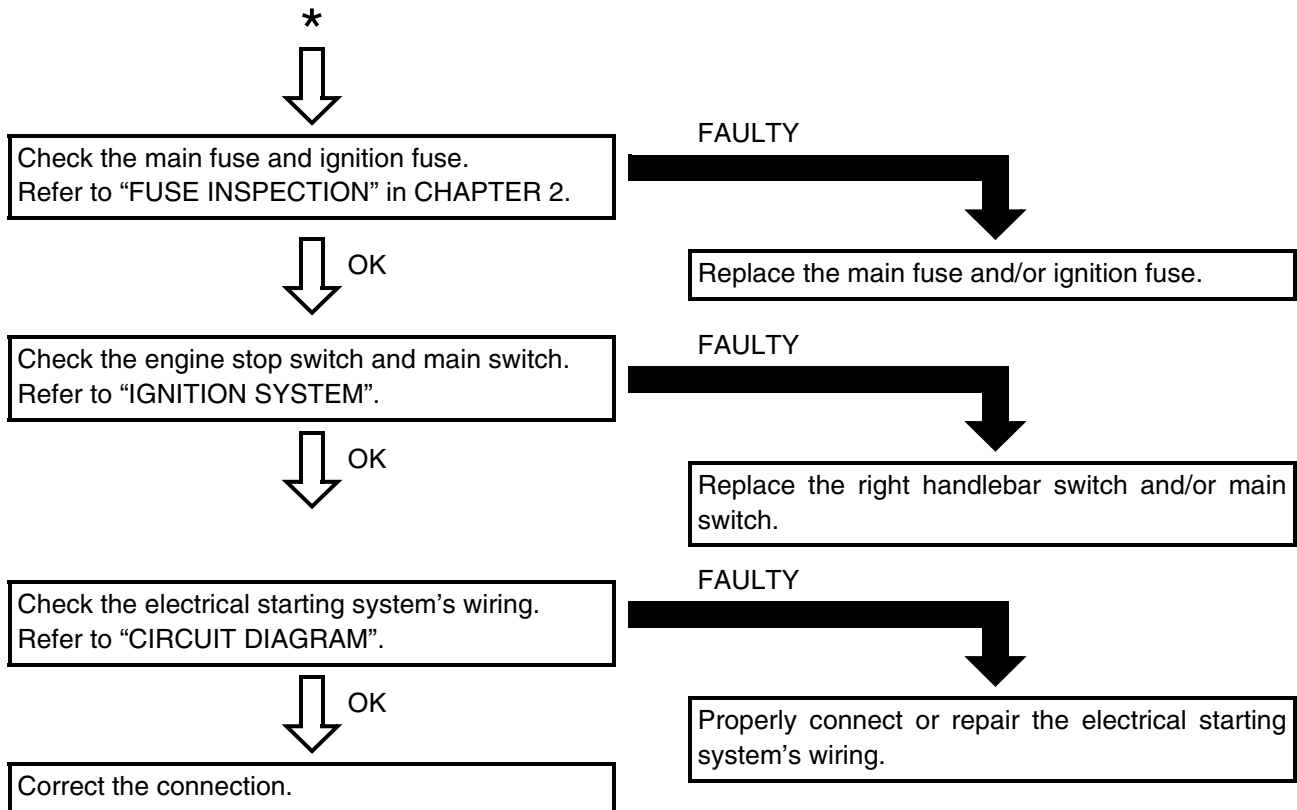
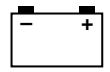
5. Check:

- Starter motor operation



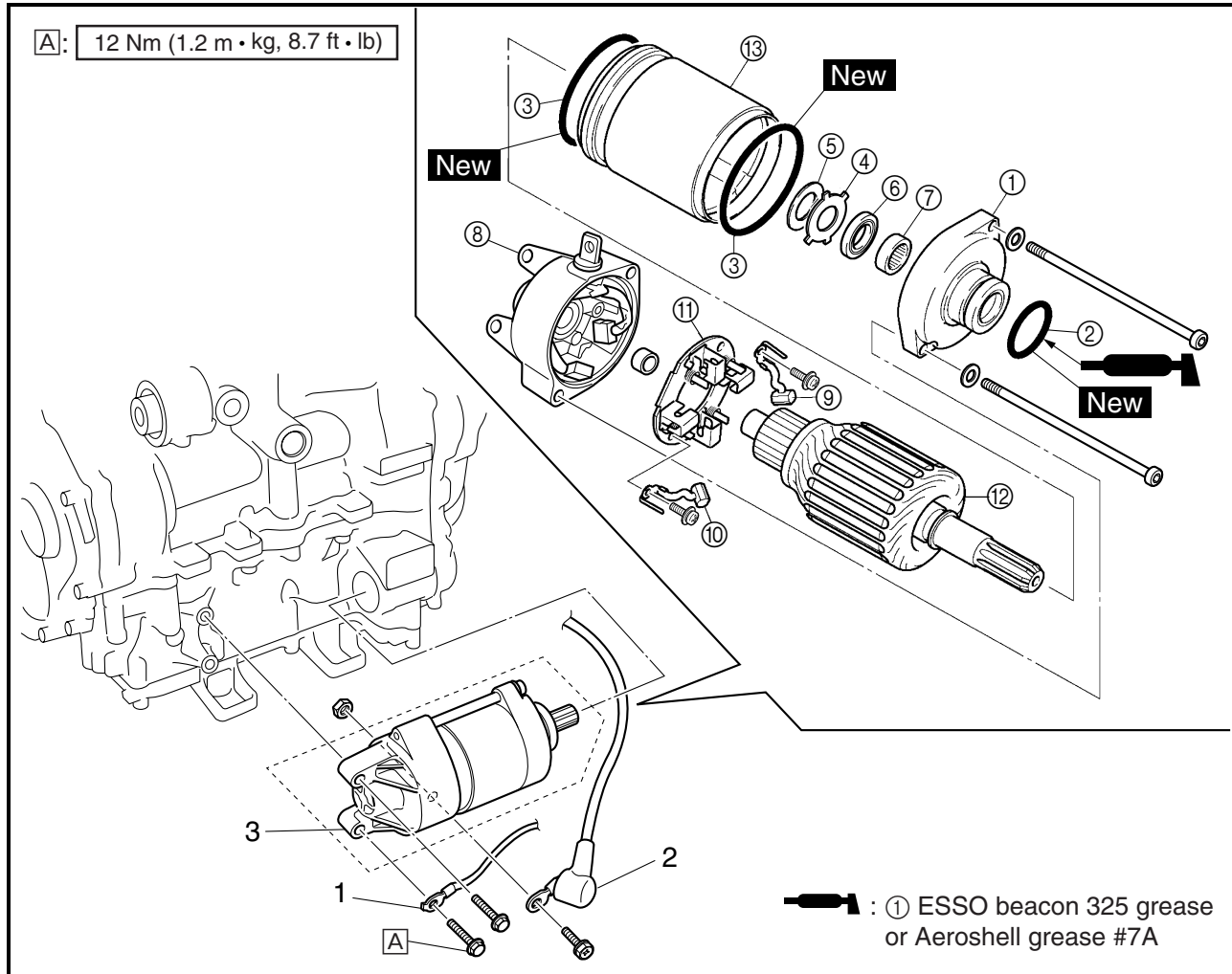
NO

Replace the starter relay.

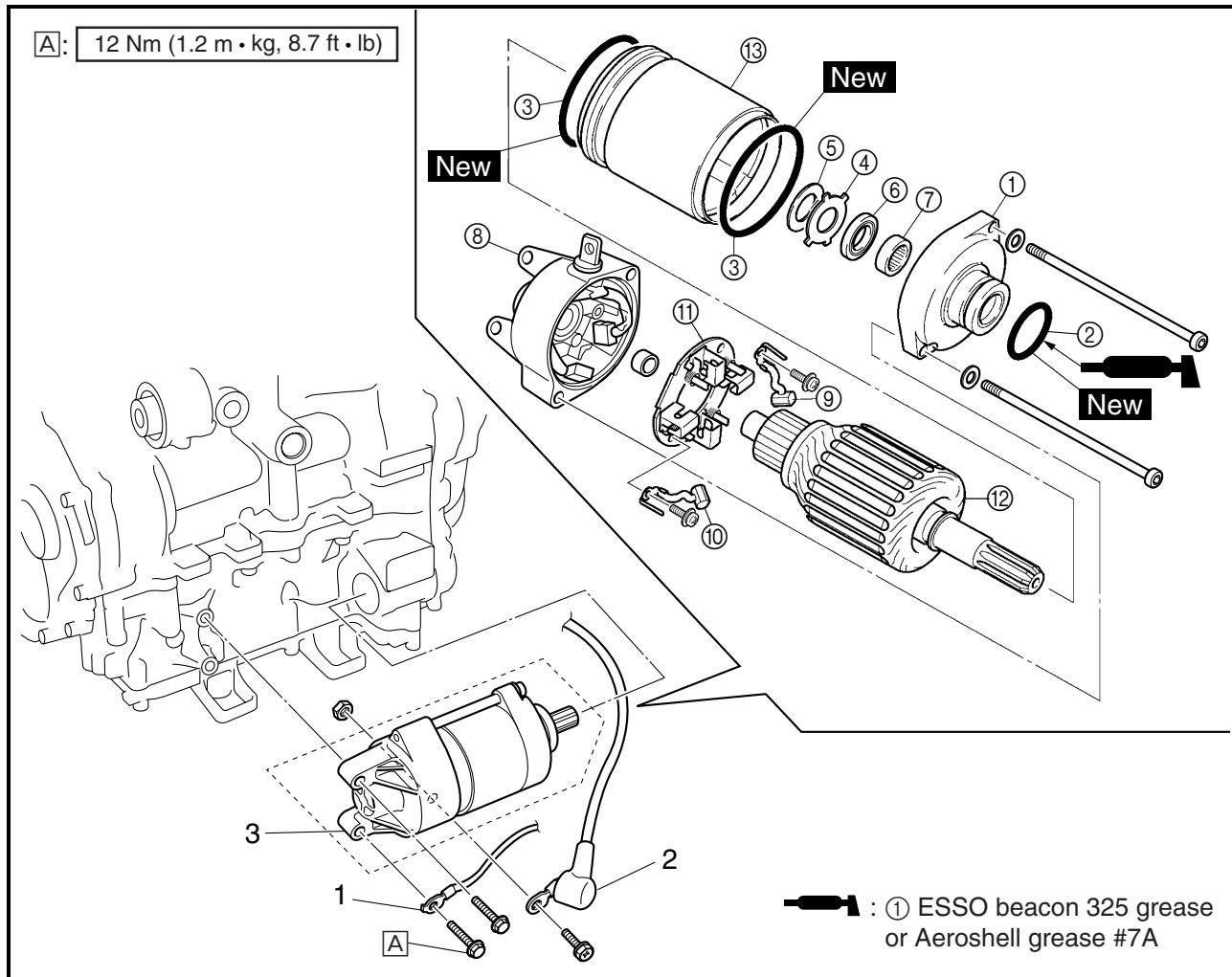
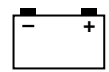




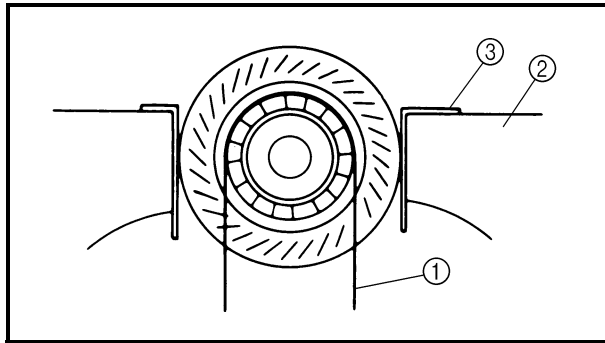
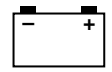
STARTER MOTOR



Order	Job name/Part name	Q'ty	Remarks
	Starter motor removal		Remove the parts in the order listed below. Refer to "ENGINE ASSEMBLY" in CHAPTER 5.
1	Negative battery lead	1	Disconnect.
2	Starter motor lead	1	Disconnect.
3	Starter motor assembly	1	For installation, reverse the removal procedure.
	Starter motor disassembly		Remove the parts in the order listed below.
①	Front bracket	1	
②	O-ring	1	
③	O-ring	2	
④	Lock washer	1	
⑤	Shim	—	
⑥	Oil seal	1	
⑦	Bearing	1	
⑧	Rear bracket	1	
⑨	Brush 1	3	
⑩	Brush 2	1	



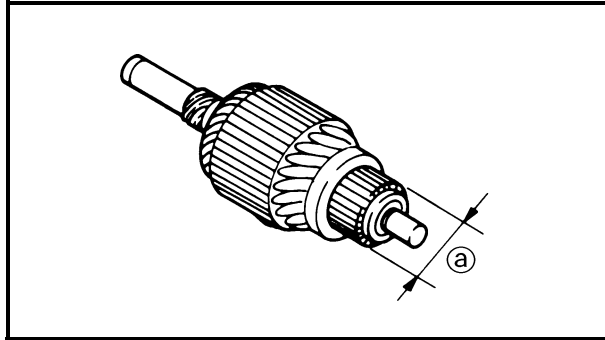
Order	Job name/Part name	Q'ty	Remarks
⑪	Brush holder	1	For assembly, reverse the disassembly procedure.
⑫	Armature assembly	1	
⑬	Starter motor yoke	1	

**Inspection****1. Inspect:**

- Commutator (outer surface)
Dirty → Clean with #600 grit sandpaper ①.
Hold the armature in a vise ② and copper or aluminium plate ③.

CAUTION:

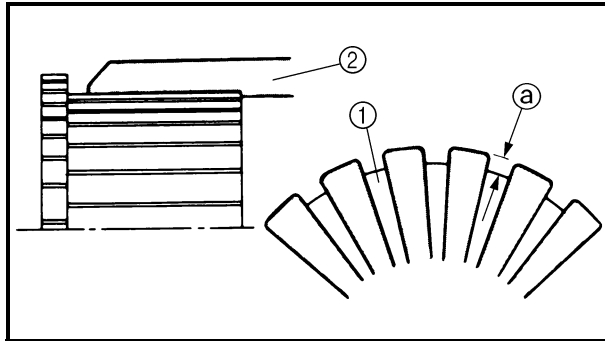
Lightly grip the armature with a vise.

**2. Measure:**

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



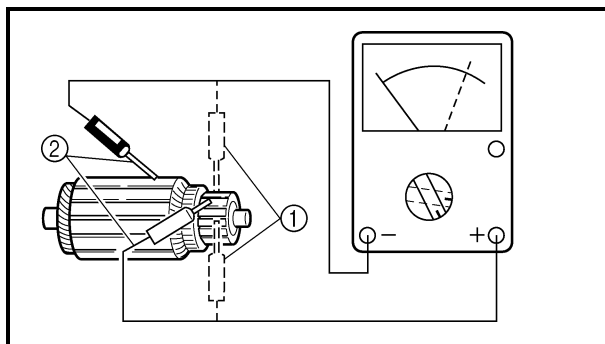
Commutator diameter wear limit:
23.5 mm (0.93 in)

**3. Measure:**

- Mica undercut (insulation depth) ①
(between commutator segments)
Out of specification → Scrape mica ① to proper limits.
Use a hacksaw blade ② that is ground to fit.



Mica undercut:
1.5 mm (0.06 in)

**4. Measure:**

- Armature coil resistance
(insulation/continuity)
Defect(s) → Replace the starter motor.

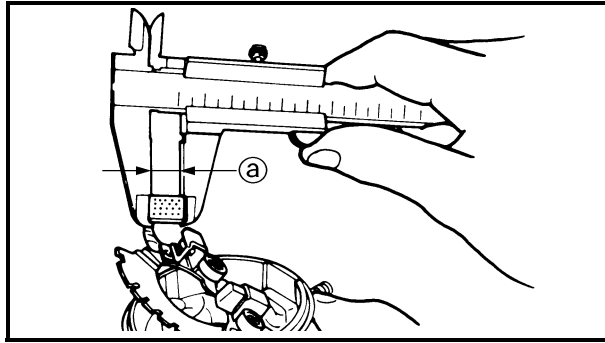
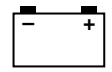
Inspecting steps:

- Connect the pocket tester for the continuity check ① and the insulation check ②.
- Measure the armature coil resistances.



Armature coil resistance:
Continuity check:
0.009 ~ 0.011 Ω at 20 °C (68 °F)
Insulation check:
More than 100 k Ω at 20 °C (68 °F)

- If the resistance is incorrect, replace the starter motor.



5. Measure:

- Brush length ①

Out of specification → Replace the starter motor.



Brush length wear limit:
3.65 mm (0.14 in)

6. Measure:

- Brush spring pressure

Fatigue/out of specification → Replace as a set.

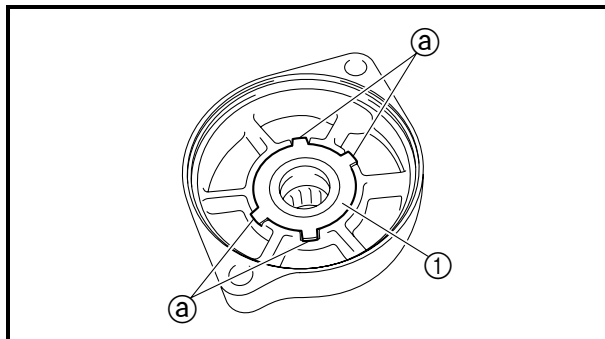
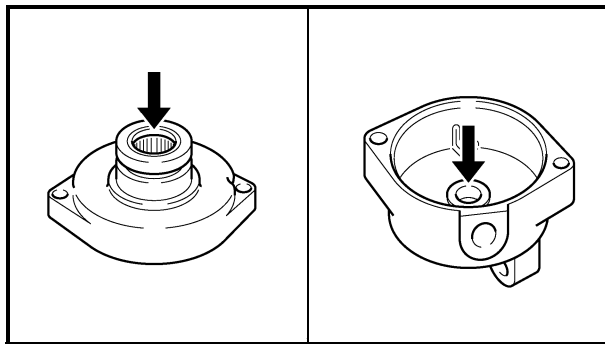


Brush spring pressure:
5.28 ~ 7.92 N
(538 ~ 808 g, 19.01 ~ 28.51 oz)

7. Check:

- Bearing
- Oil seal
- Bushing

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

**Assembly**

Reverse the "Disassembly" procedure.

Note the following points.

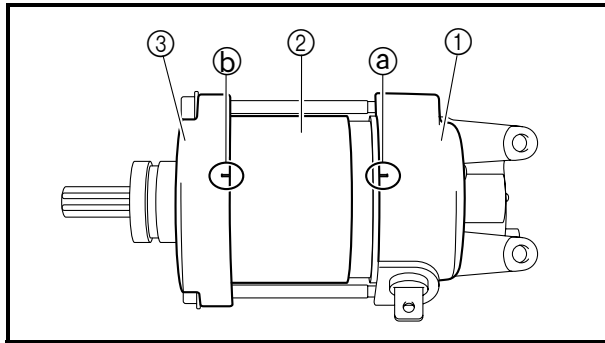
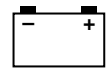
1. Before installing the front bracket and rear bracket, apply bearing grease to the bearing and bushing of the front bracket and rear bracket.

2. Install:

- Oil seal **New**
- Lock washer ①

NOTE:

Align the projection ① on the lock washer ① with the slot in the front bracket.



3. Install:

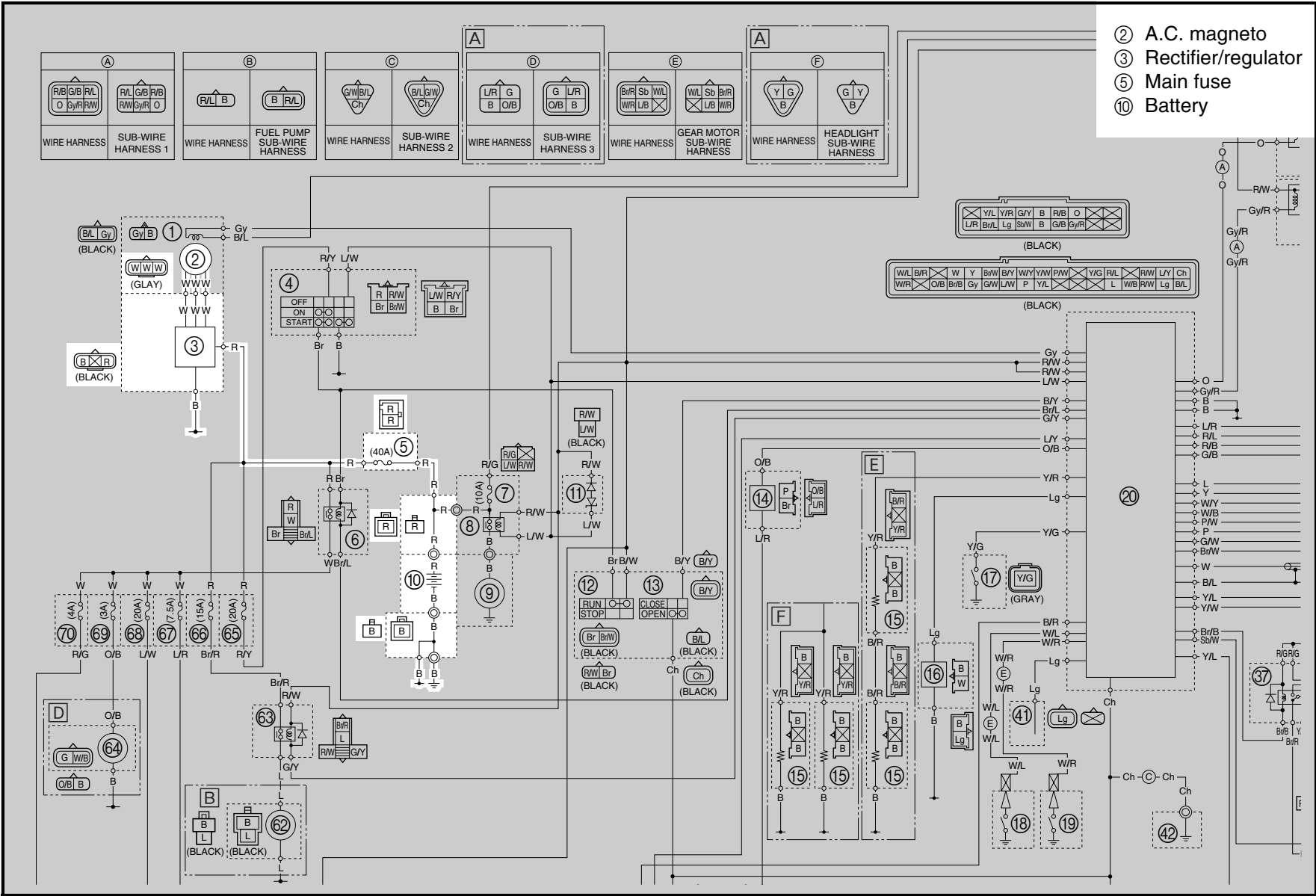
- O-rings **New**
- Rear bracket ①
- Starter motor yoke ②
- Front bracket ③

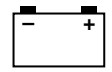
NOTE:

Align the match mark ① on the rear bracket with the match mark ② on the front bracket.

CHARGING SYSTEM CIRCUIT DIAGRAM

8-19





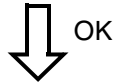
TROUBLESHOOTING

BATTERY IS NOT CHARGED.

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



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



3. Start the engine and accelerate to 5,000 r/min.

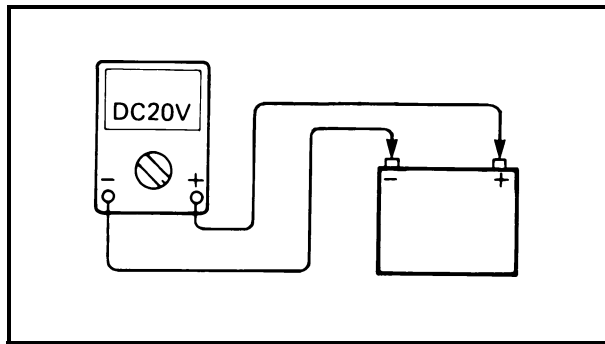
NOTE:

Place the machine onto a suitable stand to raise the track off of the ground.

4. Measure:
 - Charging voltage



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

**CAUTION:**

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



Check the charging system's wiring.
Refer to "CIRCUIT DIAGRAM".



Correct the connector.

OUT OF SPECIFICATION

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

OUT OF SPECIFICATION

- Check the main fuse.
Refer to "FUSE INSPECTION" in CHAPTER 2.
- Check the stator coil.

OK

FAULTY

Replace the main fuse and/or the stator coil assembly.

Replace the rectifier/regulator.

FAULTY

Properly connect or repair the charging system's wiring.

**BATTERY****Inspection**

1. Inspect:

- Battery condition

Refer to "BATTERY INSPECTION" in CHAPTER 2.

Battery Storage

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

1. Remove:

- Battery

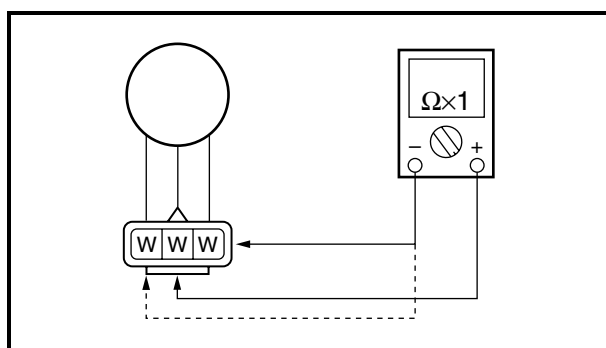
 WARNING

When removing the battery, disconnect the negative lead first.

Battery storage and maintenance tips:

- Recharge the battery periodically.
- Store the battery in a cool, dry place.
- Recharge the battery before reinstalling.

Refer to "BATTERY INSPECTION" in CHAPTER 2.

**A.C. MAGNETO**

1. Disconnect:

- A.C. magneto coupler

2. Connect:

- Pocket tester
(to A.C. magneto coupler)

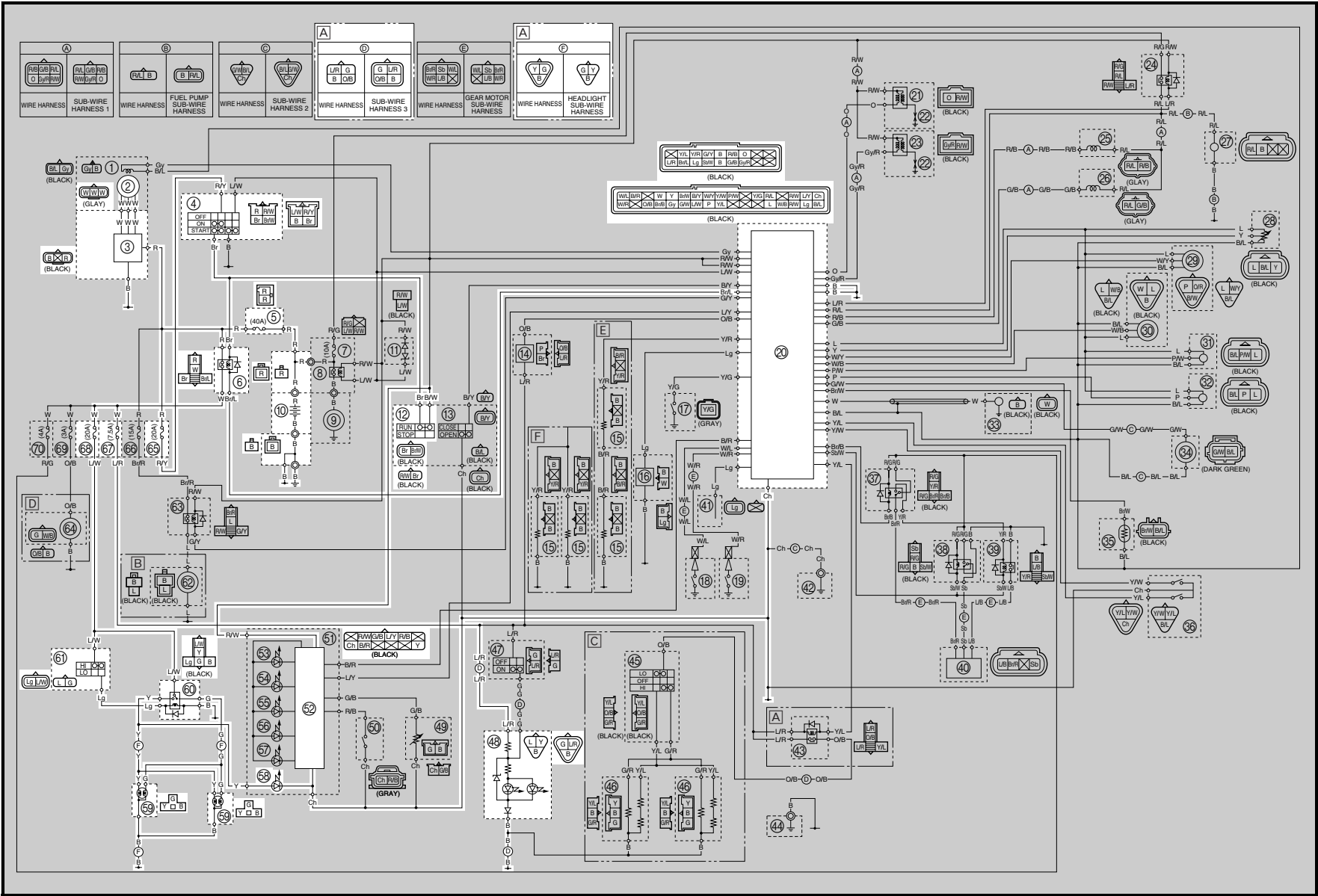
3. Measure:

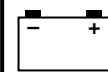
- Stator coil resistance
Out of specification → Replace.



Stator coil resistance:
0.22 ~ 0.26 Ω at 20 °C (68 °F)
(White – White)

**LIGHTING SYSTEM
CIRCUIT DIAGRAM**



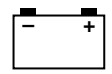


LIGHTING SYSTEM

CIRCUIT DIAGRAM

- ② A.C. magneto
- ③ Rectifier/regulator
- ④ Main switch
- ⑤ Main fuse
- ⑥ Load control relay
- ⑩ Battery
- ⑫ Engine stop switch
- ⑳ ECU (engine control unit)
- ④⑧ Tail/brake light
- ⑤② Multi-function meter
- ⑤⑧ High beam indicator light
- ⑤⑨ Headlight
- ⑥⑩ Headlight relay
- ⑥① Headlight beam switch
- ⑥⑤ Ignition fuse
- ⑥⑦ Signal fuse
- ⑥⑧ Headlight fuse

Ⓐ PZ50VT/PZ50MP



TROUBLESHOOTING

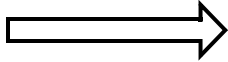
HEADLIGHT AND/OR HIGH BEAM INDICATOR LIGHT AND/OR METER LIGHT DO NOT COME ON.

Check the headlight bulb(s).



OK

NO CONTINUITY



Replace the bulb(s).

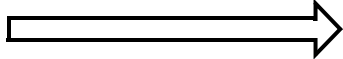
Check the main fuse, ignition fuse, and headlight fuse.

Refer to “FUSE INSPECTION” in CHAPTER 2.



OK

FAULTY



Replace the main fuse, ignition fuse, and/or headlight fuse.

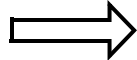
Check the battery.

Refer to “BATTERY INSPECTION” in CHAPTER 2.



OK

OUT OF SPECIFICATION



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

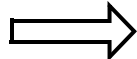
Check the stator coil.

Refer to “CHARGING SYSTEM”.



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

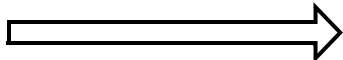
Check the engine stop switch and main switch.

Refer to “IGNITION SYSTEM”.



OK

FAULTY



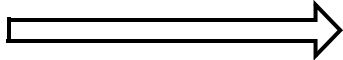
Replace the right handlebar switch and/or main switch.

Check the headlight beam switch.



OK

FAULTY



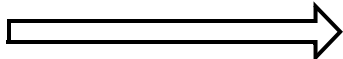
Replace the left handlebar switch.

Check the headlight relay.



OK

FAULTY



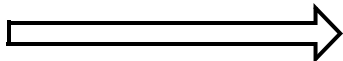
Replace the headlight relay.

Check the load control relay.



OK

FAULTY



Replace the load control relay.

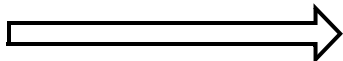
Check the lighting system's wiring.

Refer to “CIRCUIT DIAGRAM”.



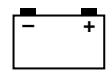
OK

FAULTY



Properly connect or repair the lighting system's wiring.

Correct the connection and/or replace the speedometer unit, rectifier/regulator, and/or ECU.

**TAIL LIGHT DOES NOT COME ON.**

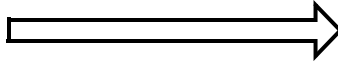
Check the main fuse, ignition fuse, and signal fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

FAULTY



Replace the main fuse, ignition fuse, and/or signal fuse.

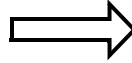
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

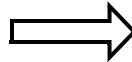
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

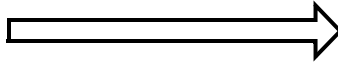
Check the engine stop switch and main switch.

Refer to "IGNITION SYSTEM".



OK

FAULTY



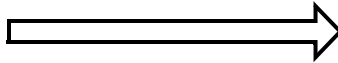
Replace the right handlebar switch and/or main switch.

Check the load control relay.



OK

FAULTY



Replace the load control relay.

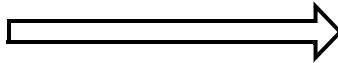
Check the lighting system's wiring.

Refer to "CIRCUIT DIAGRAM".



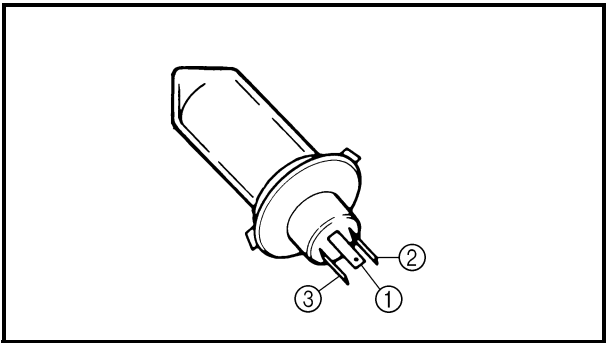
OK

FAULTY



Properly connect or repair the lighting system's wiring.

Correct the connection and/or replace the tail/brake light, rectifier/regulator, and/or ECU.



BULB(S)

NOTE: _____
Do not check any of the lights that use LEDs.

1. Remove:
- Headlight bulb
2. Connect:
- Pocket tester
(to the bulb terminals)

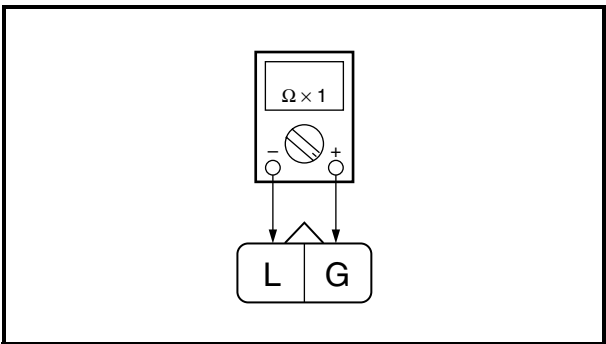
⚠ WARNING _____
Keep flammable products and your hands away from the bulb while it is on; it will be hot. Do not touch the bulb until it cools down.

3. Check:
- Bulb(s)

Terminal	Continuity
① – ③	Yes
② – ③	Yes

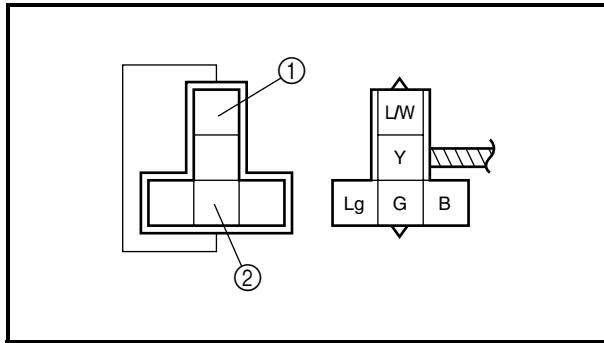
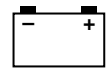
HEADLIGHT BEAM SWITCH

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



3. Check:
- Headlight beam switch continuity
Faulty → Replace the left handlebar switch.

Switch position	Continuity
HI	Yes
LO	No



HEADLIGHT RELAY

1. Remove:

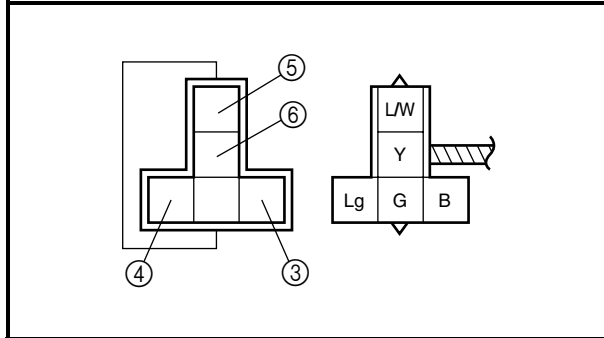
- Headlight relay (with the black coupler)

Inspection steps:

- Connect the pocket tester ($\Omega \times 1$) to the headlight relay terminals as shown.

Positive tester probe → Blue/White ①

Negative tester probe → Green ②



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

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

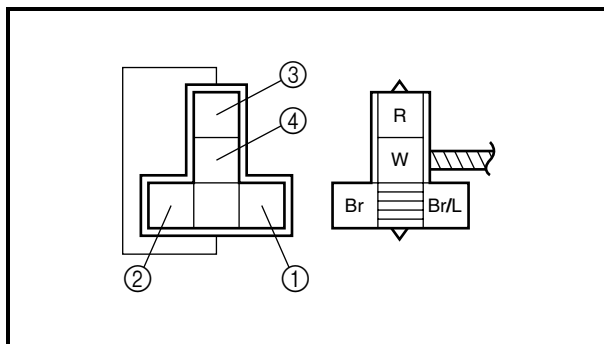
Positive battery terminal → Light green ③

Negative battery terminal → Black ④

Positive tester probe → Blue/White ⑤

Negative tester probe → Yellow ⑥

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



LOAD CONTROL RELAY

1. Remove:

- Load control relay

Inspection steps:

- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the load control relay terminals as shown.

Positive battery terminal → Brown ①

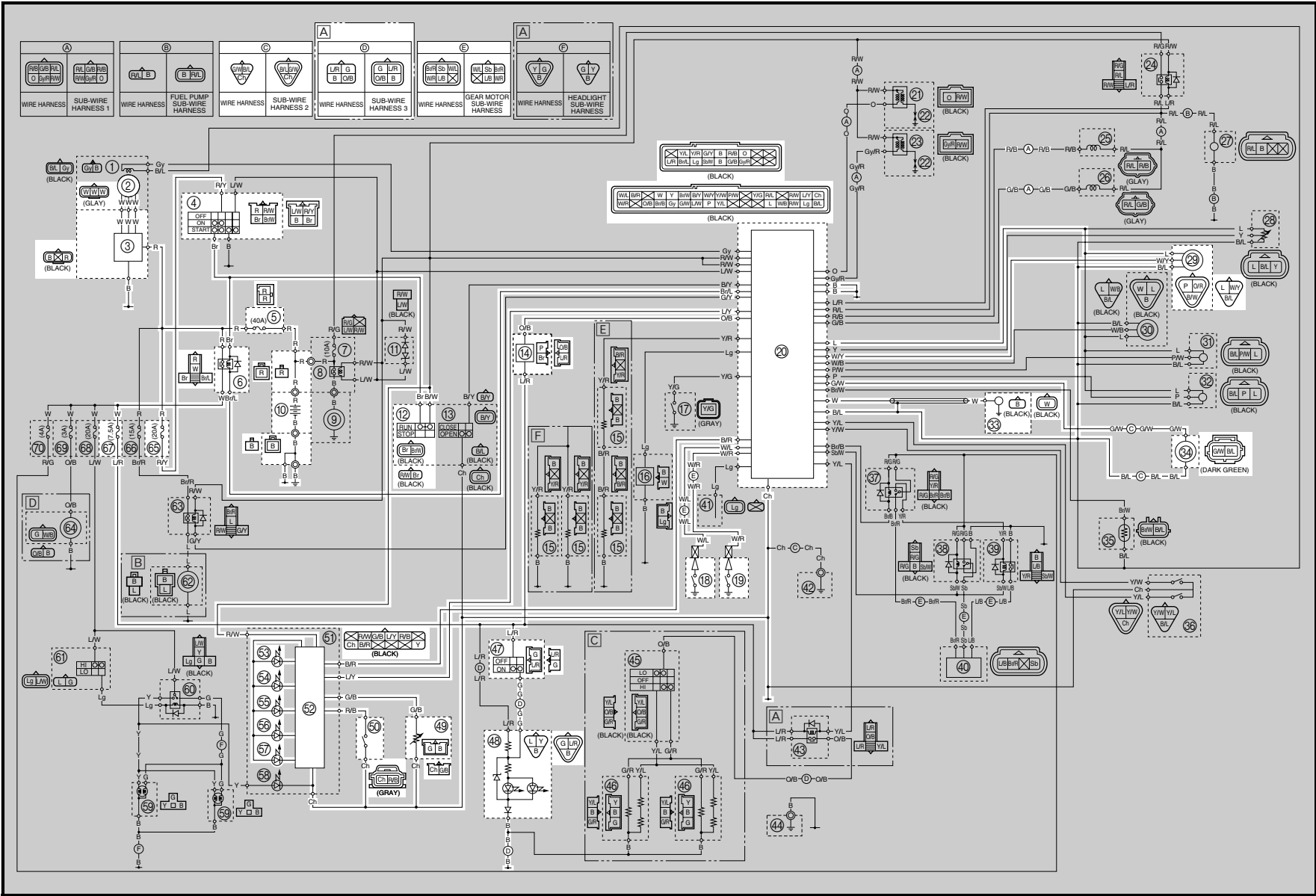
Negative battery terminal → Brown/Blue ②

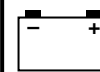
Positive tester probe → Red ③

Negative tester probe → White ④

- If load control relay does not have continuity between the red and white terminals, replace it.

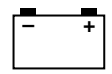
SIGNAL SYSTEM
CIRCUIT DIAGRAM



**SIGNAL SYSTEM****CIRCUIT DIAGRAM**

- ② A.C. magneto
 - ③ Rectifier/regulator
 - ④ Main switch
 - ⑤ Main fuse
 - ⑥ Load control relay
 - ⑩ Battery
 - ⑫ Engine stop switch
 - ⑭ DC back buzzer*¹
 - ⑮ Drive position switch*¹
 - ⑯ Reverse position switch*¹
 - ⑳ ECU (engine control unit)
 - ㉑ Speed sensor
 - ㉓ Knock sensor
 - ㉔ Coolant temperature sensor
 - ㉗ Brake light switch
 - ㉘ Tail/brake light
 - ㉙ Fuel sender
 - ㉚ Oil level switch
 - ㉛ Multi-function meter
 - ㉜ Warning light
 - ㉝ Low coolant temperature indicator light
 - ㉞ Knock control system indicator light
 - ㉟ Drive position indicator light*¹
 - ㊱ Reverse position indicator light*¹
 - ㊲ Ignition fuse
 - ㊳ Signal fuse
- *¹ PZ50GT/PZ50FX/PZ50M/
PZ50VT/PZ50MP

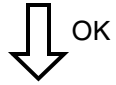
Ⓐ PZ50VT/PZ50MP



TROUBLESHOOTING

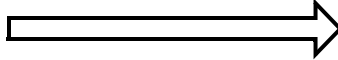
BRAKE LIGHT DOES NOT COME ON.

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



OK

FAULTY



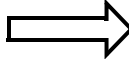
Replace the main fuse, ignition fuse, and/or signal fuse.

Check the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



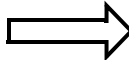
Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

Check the stator coil.
Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



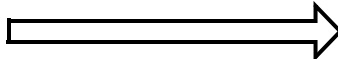
Replace the stator coil assembly.

Check the engine stop switch and main switch.
Refer to "IGNITION SYSTEM".



OK

FAULTY



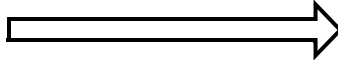
Replace the right handlebar switch and/or main switch.

Check the brake light switch.



OK

FAULTY



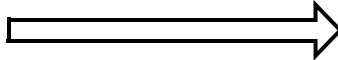
Replace the brake light switch.

Check the load control relay.
Refer to "LIGHTING SYSTEM".



OK

FAULTY



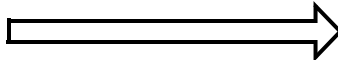
Replace the load control relay.

Check the signal system's wiring.
Refer to "CIRCUIT DIAGRAM".



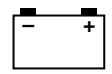
OK

FAULTY



Properly connect or repair the signal system's wiring.

Correct the connection and/or replace the tail/brake light, rectifier/regulator, and/or ECU.

**LOW COOLANT TEMPERATURE INDICATOR LIGHT, COOLANT TEMPERATURE WARNING INDICATOR AND/OR WARNING LIGHT DO NOT COME ON.**

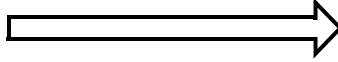
Check the main fuse and ignition fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

FAULTY



Replace the main fuse and/or ignition fuse.

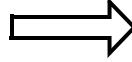
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

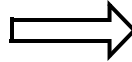
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

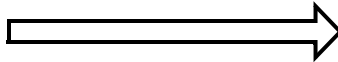
Check the engine stop switch and main switch.

Refer to "IGNITION SYSTEM".



OK

FAULTY



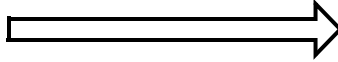
Replace the right handlebar switch and/or main switch.

Check the coolant temperature sensor.



OK

FAULTY



Replace the coolant temperature sensor.

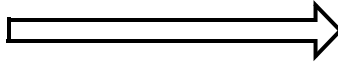
Check the load control relay.

Refer to "LIGHTING SYSTEM".



OK

FAULTY



Replace the load control relay.

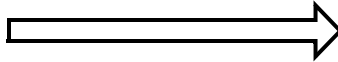
Check the signal system's wiring.

Refer to "CIRCUIT DIAGRAM".



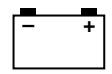
OK

FAULTY



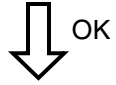
Properly connect or repair the signal system's wiring.

Correct the connection and/or replace the speedometer unit, rectifier/regulator, and/or ECU.

**FUEL METER AND/OR FUEL LEVEL WARNING INDICATOR AND/OR WARNING LIGHT DO NOT COME ON.**

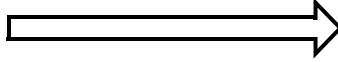
Check the main fuse and ignition fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

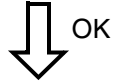
FAULTY



Replace the main fuse and/or ignition fuse.

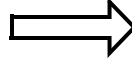
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

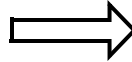
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

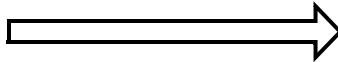
Check the engine stop switch and main switch.

Refer to "IGNITION SYSTEM".



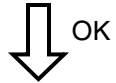
OK

FAULTY



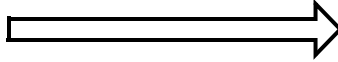
Replace the right handlebar switch and/or main switch.

Check the fuel sender.



OK

FAULTY



Replace the fuel sender.

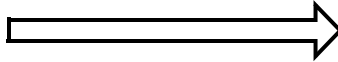
Check the load control relay.

Refer to "LIGHTING SYSTEM".



OK

FAULTY



Replace the load control relay.

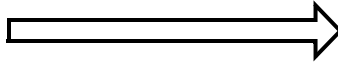
Check the signal system's wiring.

Refer to "CIRCUIT DIAGRAM".



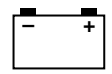
OK

FAULTY



Properly connect or repair the signal system's wiring.

Correct the connection and/or replace the speedometer unit, rectifier/regulator, and/or ECU.

**OIL LEVEL WARNING INDICATOR AND/OR WARNING LIGHT DO NOT COME ON.**

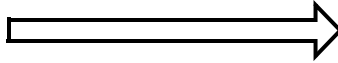
Check the main fuse and ignition fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

FAULTY



Replace the main fuse and/or ignition fuse.

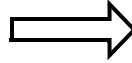
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

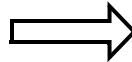
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

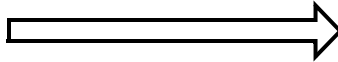
Check the engine stop switch and main switch.

Refer to "IGNITION SYSTEM".



OK

FAULTY



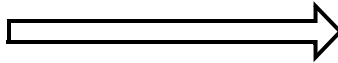
Replace the right handlebar switch and/or main switch.

Check the oil level switch.



OK

FAULTY



Replace the oil level switch.

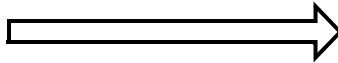
Check the load control relay.

Refer to "LIGHTING SYSTEM".



OK

FAULTY



Replace the load control relay.

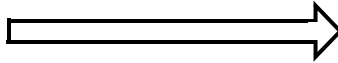
Check the signal system's wiring.

Refer to "CIRCUIT DIAGRAM".



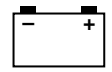
OK

FAULTY



Properly connect or repair the signal system's wiring.

Correct the connection and/or replace the speedometer unit, rectifier/regulator, and/or ECU.

**KNOCK CONTROL SYSTEM INDICATOR LIGHT DO NOT COME ON.**

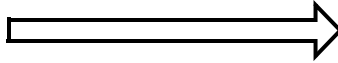
Check the main fuse and ignition fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

FAULTY



Replace the main fuse and/or ignition fuse.

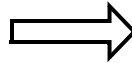
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

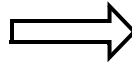
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

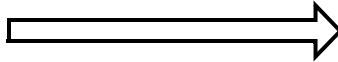
Check the engine stop switch and main switch.

Refer to "IGNITION SYSTEM".



OK

FAULTY



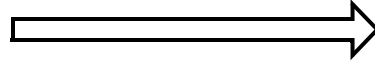
Replace the right handlebar switch and/or main switch.

Is self-diagnosis code 65 displayed?



NO

YES



Check the knock sensor.

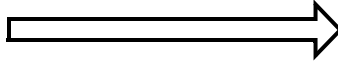
Check the signal system's wiring.

Refer to "CIRCUIT DIAGRAM".



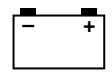
OK

FAULTY



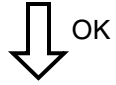
Properly connect or repair the signal system's wiring.

Correct the connection and/or replace the speedometer unit, rectifier/regulator, and/or ECU.

**DRIVE POSITION INDICATOR LIGHT AND/OR REVERSE POSITION INDICATOR LIGHT DO NOT COME ON.**

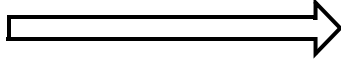
Check the main fuse and ignition fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

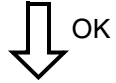
FAULTY



Replace the main fuse and/or ignition fuse.

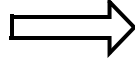
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

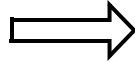
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

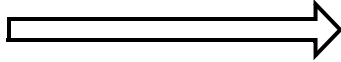
Check the engine stop switch and main switch.

Refer to "IGNITION SYSTEM".



OK

FAULTY



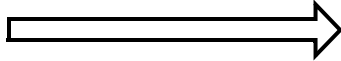
Replace the right handlebar switch and/or main switch.

Check the drive position switch and reverse position switch.



OK

FAULTY



Replace the drive position switch and/or reverse position switch.

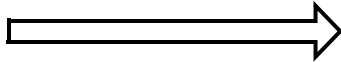
Check the load control relay.

Refer to "LIGHTING SYSTEM".



OK

FAULTY



Replace the load control relay.

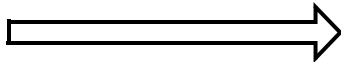
Check the signal system's wiring.

Refer to "CIRCUIT DIAGRAM".



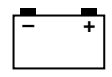
OK

FAULTY



Properly connect or repair the signal system's wiring.

Correct the connection and/or replace the speedometer unit, rectifier/regulator, and/or ECU.

**SPEEDOMETER DOES NOT OPERATE.**

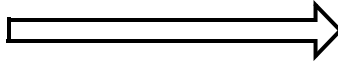
Check the main fuse and ignition fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

FAULTY



Replace the main fuse and/or ignition fuse.

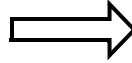
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

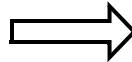
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

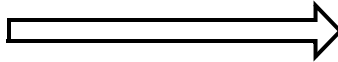
Check the engine stop switch and main switch.

Refer to "IGNITION SYSTEM".



OK

FAULTY



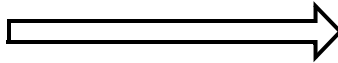
Replace the left handlebar switch and/or main switch.

Check the speed sensor.



OK

FAULTY



Replace the speed sensor.

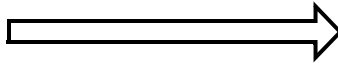
Check the load control relay.

Refer to "LIGHTING SYSTEM".



OK

FAULTY



Replace the load control relay.

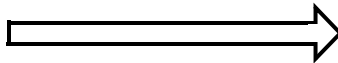
Check the signal system's wiring.

Refer to "CIRCUIT DIAGRAM".



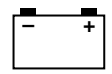
OK

FAULTY



Properly connect or repair the signal system's wiring.

Correct the connection and/or replace the speedometer unit, rectifier/regulator, and/or ECU.

**BACK BUZZER DOES NOT SOUND. (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)**

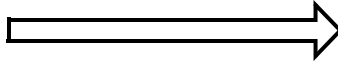
Check the main fuse, ignition fuse, and signal fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

FAULTY



Replace the main fuse, ignition fuse, and/or signal fuse.

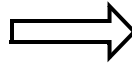
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

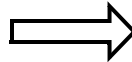
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

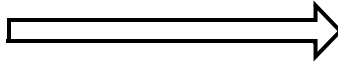
Check the engine stop switch and main switch.

Refer to "IGNITION SYSTEM".



OK

FAULTY



Replace the left handlebar switch and/or main switch.

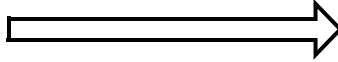
Check the load control relay.

Refer to "LIGHTING SYSTEM".



OK

FAULTY



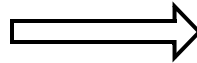
Replace the load control relay.

Check the DC back buzzer.



OK

DOES NOT SOUND



Replace the DC back buzzer.

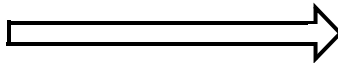
Check the signal system's wiring.

Refer to "CIRCUIT DIAGRAM".



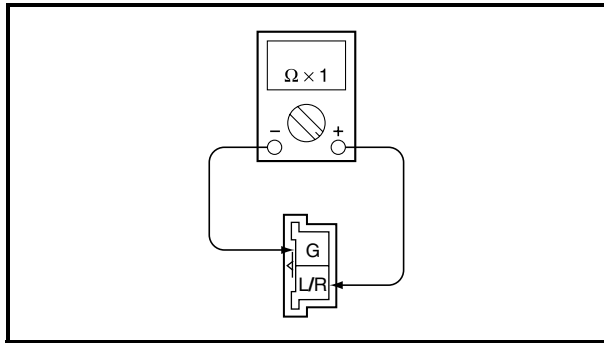
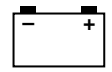
OK

FAULTY



Properly connect or repair the signal system's wiring.

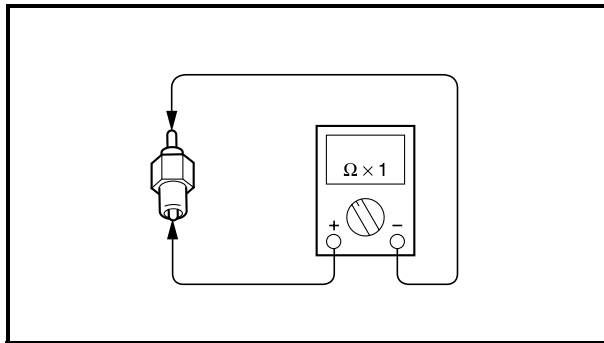
Correct the connection and/or replace the rectifier/
regulator and/or ECU.



BRAKE LIGHT SWITCH

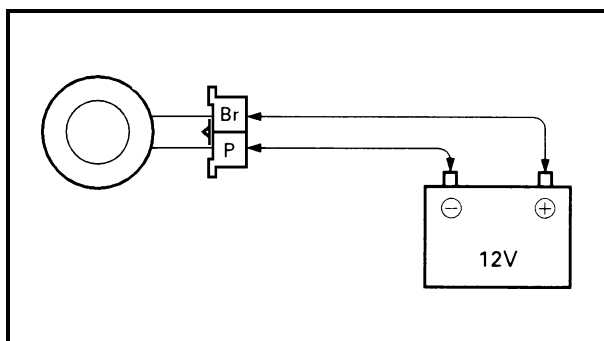
1. Disconnect:
 - Brake light switch coupler
2. Connect:
 - Pocket tester
(to the brake light switch coupler)
3. Check:
 - Brake light switch continuity
Faulty → Replace.

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



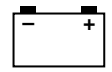
DRIVE POSITION SWITCH AND REVERSE POSITION SWITCH (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)

1. Remove:
 - Drive position switch and reverse position switch
2. Connect:
 - Pocket tester
(to the drive position switch and reverse position switch)
3. Check:
 - Drive position switch and reverse position switch continuity
Faulty → Replace.



DC BACK BUZZER (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)

1. Disconnect:
 - DC back buzzer coupler
2. Connect:
 - Battery
3. Check:
 - DC back buzzer
Does not sound → Replace.

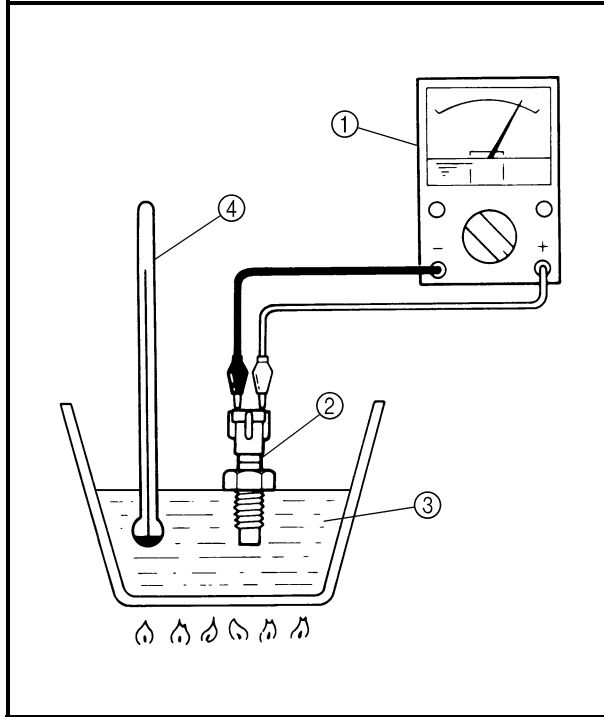


COOLANT TEMPERATURE SENSOR

1. Remove the coolant temperature sensor.

CAUTION:

Handle the coolant temperature sensor with special care. Never subject it to shock or allow it to be dropped. If it is dropped, it must be replaced.



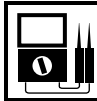
2. Connect:

- Pocket tester ①
(to the coolant temperature sensor)

NOTE:

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

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



Coolant temperature sensor resistance:

5.21 ~ 6.37 k Ω at 0 °C (32 °F)

0.290 ~ 0.354 k Ω at 80 °C (176 °F)

④ Temperature gauge

CAUTION:

Never heat the coolant to a temperature of 120 °C (248 °F) or more.

4. If the coolant temperature sensor operation is defective, replace it.

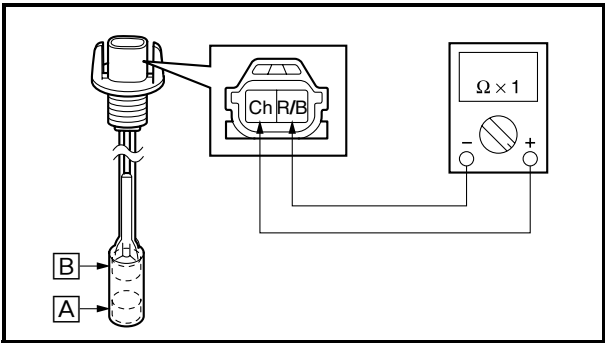
5. Install the coolant temperature sensor and connect the coolant temperature sensor coupler.



Coolant temperature sensor:
23 Nm (2.3 m · kg, 17 ft · lb)

CAUTION:

Do not overtighten the coolant temperature sensor.

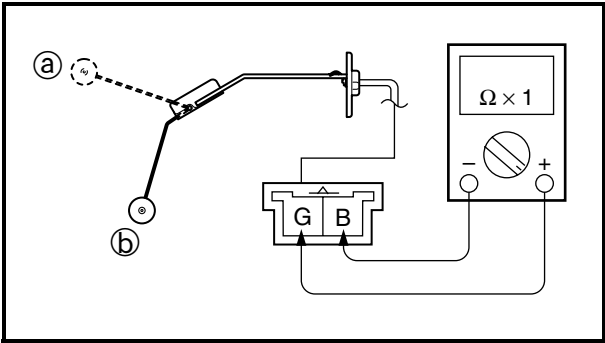


OIL LEVEL SWITCH

1. Remove:
 - Oil level switch
2. Connect:
 - Pocket tester
(to the oil level switch coupler)
3. Check:
 - Oil level switch continuity
Faulty → Replace.

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

○ : Continuity × : No continuity

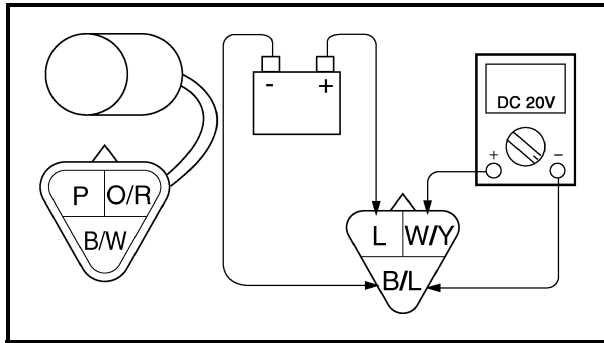
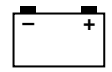


FUEL SENDER

1. Remove:
 - Fuel sender
(from the fuel tank)
2. Connect:
 - Pocket tester
(to the fuel sender coupler)
3. Measure:
 - Fuel sender resistance (full a)
 - Fuel sender resistance (empty b)
 - Out of specification → Replace.



Fuel sender resistance (full):
10 ~ 12 Ω at 20 °C (68 °F)
Fuel sender resistance (empty):
179 ~ 185 Ω at 20 °C (68 °F)



SPEED SENSOR

1. Inspect:

- Speed sensor

Inspection steps:

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

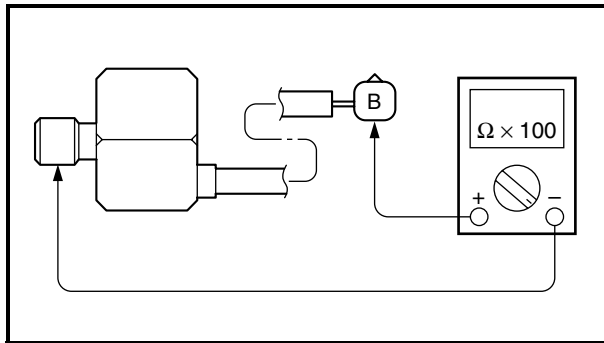
Positive tester probe → White/Yellow

Negative tester probe → Black/Blue

Positive battery terminal → Blue

Negative battery terminal → Black/Blue

- Elevate the track and slowly rotate it.
 - Measure the voltage (DC 5 V) of white/yellow and black/blue. 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.



KNOCK SENSOR

1. Remove:

- Knock sensor

CAUTION:

Handle the knock 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 (to the knock sensor coupler and sensor body)

3. Measure:

- Knock sensor resistance

Out of specification → Replace.



Knock sensor resistance:
504 ~ 616 kΩ at 20 °C (68 °F)

4. Install the knock sensor and connect the knock sensor coupler.

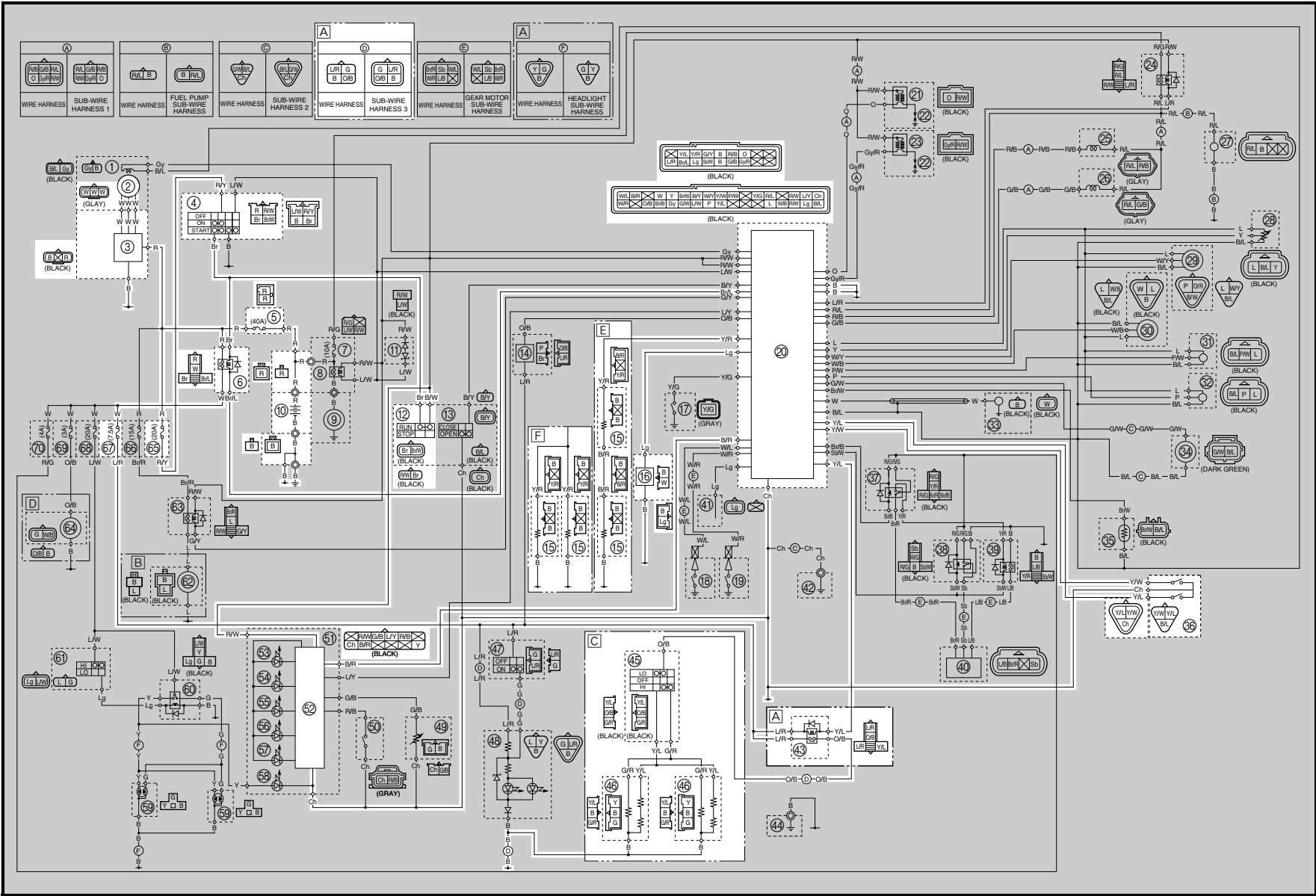


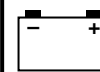
Knock sensor:
27 Nm (2.7 m · kg, 19 ft · lb)

CAUTION:

Do not overtighten the knock sensor.

GRIP WARMER SYSTEM
CIRCUIT DIAGRAM





GRIP WARMER SYSTEM

CIRCUIT DIAGRAM

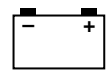
- ② A.C. magneto
- ③ Rectifier/regulator
- ④ Main switch
- ⑤ Main fuse
- ⑥ Load control relay
- ⑩ Battery
- ⑫ Engine stop switch
- ⑮ Grip warmer
- ⑯ Thumb warmer
- ⑳ ECU (engine control unit)
- ③⑥ Grip/thumb warmer adjustment switch
- ④③ Passenger grip warmer relay
- ④⑤ Passenger grip warmer switch
- ④⑥ Passenger grip warmer
- ⑤② Multi-function meter
- ⑥⑤ Ignition fuse
- ⑥⑦ Signal fuse

[A] PZ50VT/PZ50MP

[C] PZ50VT (STANDARD)/PZ50MP
(OPTION)

[E] PZ50/PZ50GT/PZ50M/PZ50VT/
PZ50MP

[F] PZ50FX

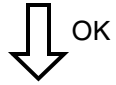


TROUBLESHOOTING

GRIP WARMER AND THUMB WARMER DO NOT OPERATE.

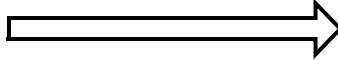
Check the main fuse and ignition fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

FAULTY



Replace the main fuse and/or ignition fuse.

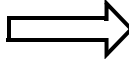
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

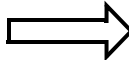
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

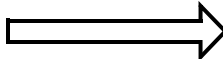
Check the engine stop switch and main switch.

Refer to "IGNITION SYSTEM".



OK

NO CONTINUITY



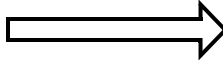
Replace the right handlebar switch and/or main switch.

Check the grip and thumb warmer.



OK

NO CONTINUITY



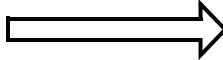
Replace the grip and/or thumb warmer.

Check the grip/thumb warmer adjustment switch.



CORRECT

NO CONTINUITY



Replace the left handlebar switch.

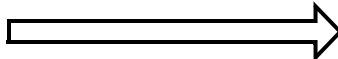
Check the load control relay.

Refer to "LIGHTING SYSTEM".



OK

FAULTY



Replace the load control relay.

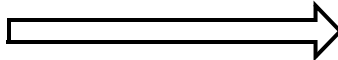
Check the grip warmer system's wiring.

Refer to "CIRCUIT DIAGRAM".



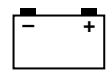
OK

FAULTY

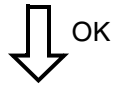


Properly connect or repair the grip warmer system's wiring.

Correct the connection and/or replace the speedometer unit, rectifier/regulator, and/or ECU.

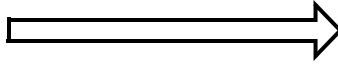
**PASSENGER GRIP WARMER DOES NOT OPERATE. (PZ50VT)**

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



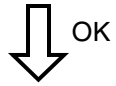
OK

FAULTY



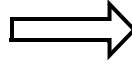
Replace the main fuse, ignition fuse, and/or signal fuse.

Check the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.



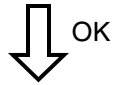
OK

OUT OF SPECIFICATION



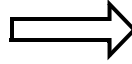
Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

Check the stator coil.
Refer to "CHARGING SYSTEM".



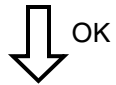
OK

OUT OF SPECIFICATION



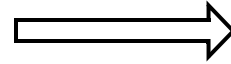
Replace the stator coil assembly.

Check the engine stop switch and main switch.
Refer to "IGNITION SYSTEM".



OK

NO CONTINUITY



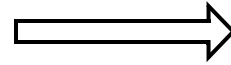
Replace the right handlebar switch and/or main switch.

Check the passenger grip warmer.



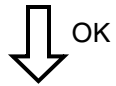
OK

NO CONTINUITY



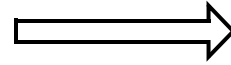
Replace the passenger grip warmer.

Check the passenger grip warmer switch.



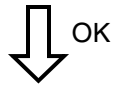
OK

NO CONTINUITY



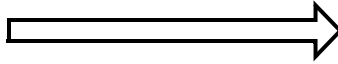
Replace the passenger grip warmer switch.

Check the passenger grip warmer relay.



OK

FAULTY



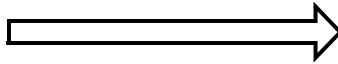
Replace the passenger grip warmer relay.

Check the load control relay.
Refer to "LIGHTING SYSTEM".



OK

FAULTY



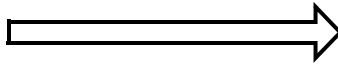
Replace the load control relay.

Check the grip warmer system's wiring.
Refer to "CIRCUIT DIAGRAM".



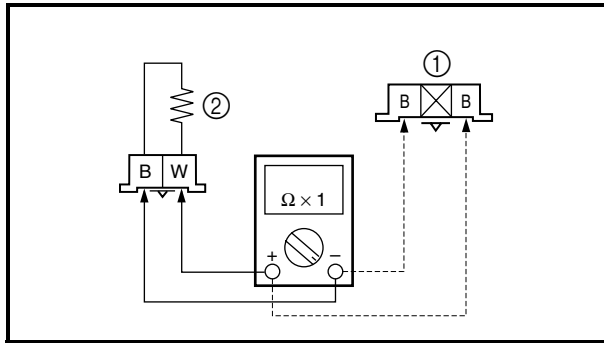
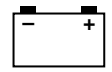
OK

FAULTY



Properly connect or repair the grip warmer system's wiring.

Correct the connection and/or replace the rectifier/regulator and/or ECU.



GRIP AND THUMB WARMER

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

Out of specification → Replace.



Grip warmer resistance:
PZ50/PZ50GT/PZ50M/PZ50VT/
PZ50MP:

1.53 ~ 1.87 Ω at 20 °C (68 °F)
(Black – Black)

PZ50FX:

6.12 ~ 7.48 Ω at 20 °C (68 °F)
(Black – Black)

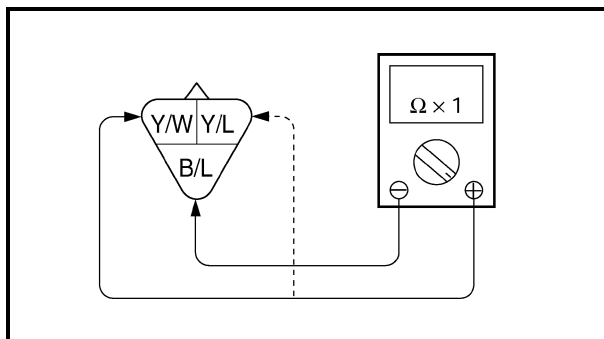
Thumb warmer resistance:

37.0 ~ 45.2 Ω at 20 °C (68 °F)
(White – Black)

GRIP/THUMB WARMER ADJUSTMENT SWITCH

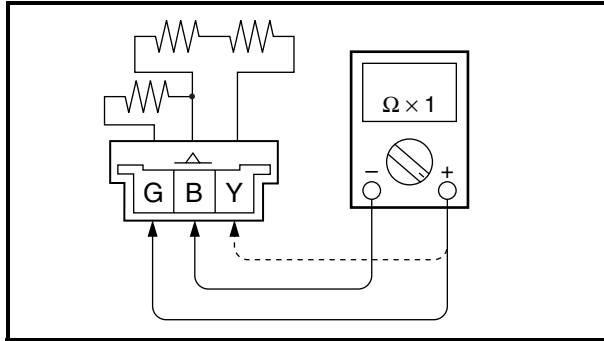
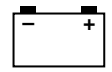
1. Disconnect:
 - Grip/thumb warmer adjustment switch coupler
2. Connect:
 - Pocket tester
(to the grip/thumb warmer adjustment switch coupler)
3. Check:
 - Grip/thumb warmer adjustment switch continuity

Faulty → Replace the left handlebar switch.



Switch position	Color code		
	Y/W	B/L	Y/L
THUMB			
OFF			
GRIP			

Continuity



PASSENGER GRIP WARMER (PZ50VT)

1. Disconnect:
 - Passenger grip warmer coupler
2. Connect:
 - Pocket tester
(to the passenger grip warmer coupler)
3. Measure:
 - Passenger grip warmer resistance
Out of specification → Replace.

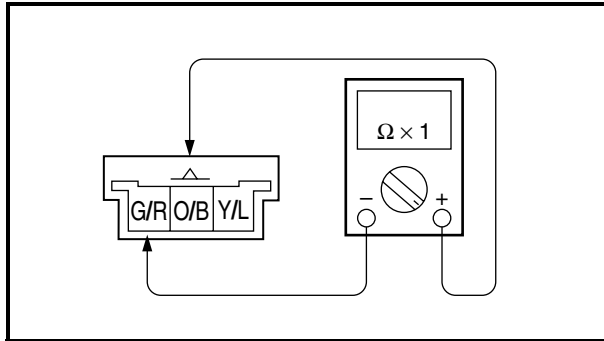


Passenger grip warmer resistance (high):

8.82 ~ 10.78 Ω (Green – Black)

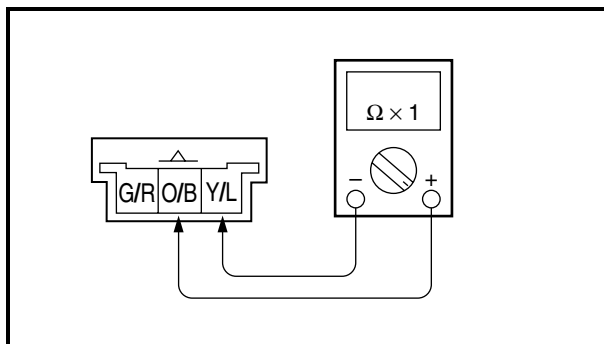
Passenger grip warmer resistance (low):

14.67 ~ 17.93 Ω (Yellow – Black)



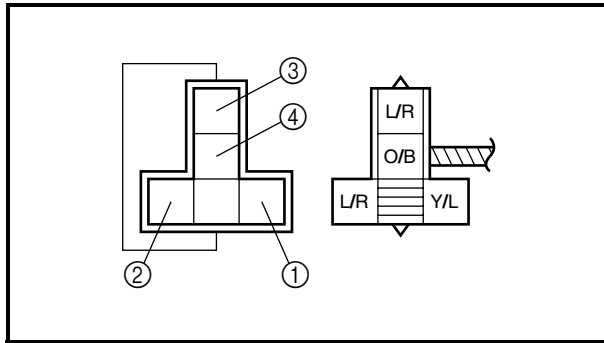
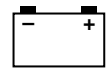
PASSENGER GRIP WARMER SWITCH (PZ50VT)

1. Disconnect:
 - Passenger grip warmer switch coupler
2. Connect:
 - Pocket tester
(to the passenger grip warmer switch coupler)
3. Check:
 - Passenger grip warmer switch continuity
Faulty → Replace.



Switch position	Color code		
	G/R	O/B	Y/L
LO		○	○
OFF			
HI	○	○	

○ — ○ Continuity



PASSENGER GRIP WARMER RELAY (PZ50VT/PZ50MP)

1. Remove:

- Passenger grip warmer relay

Inspection steps:

- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the passenger grip warmer relay terminals as shown.

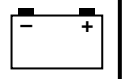
Positive battery terminal → **Blue/Red** ①

Negative battery terminal → **Yellow/Blue** ②

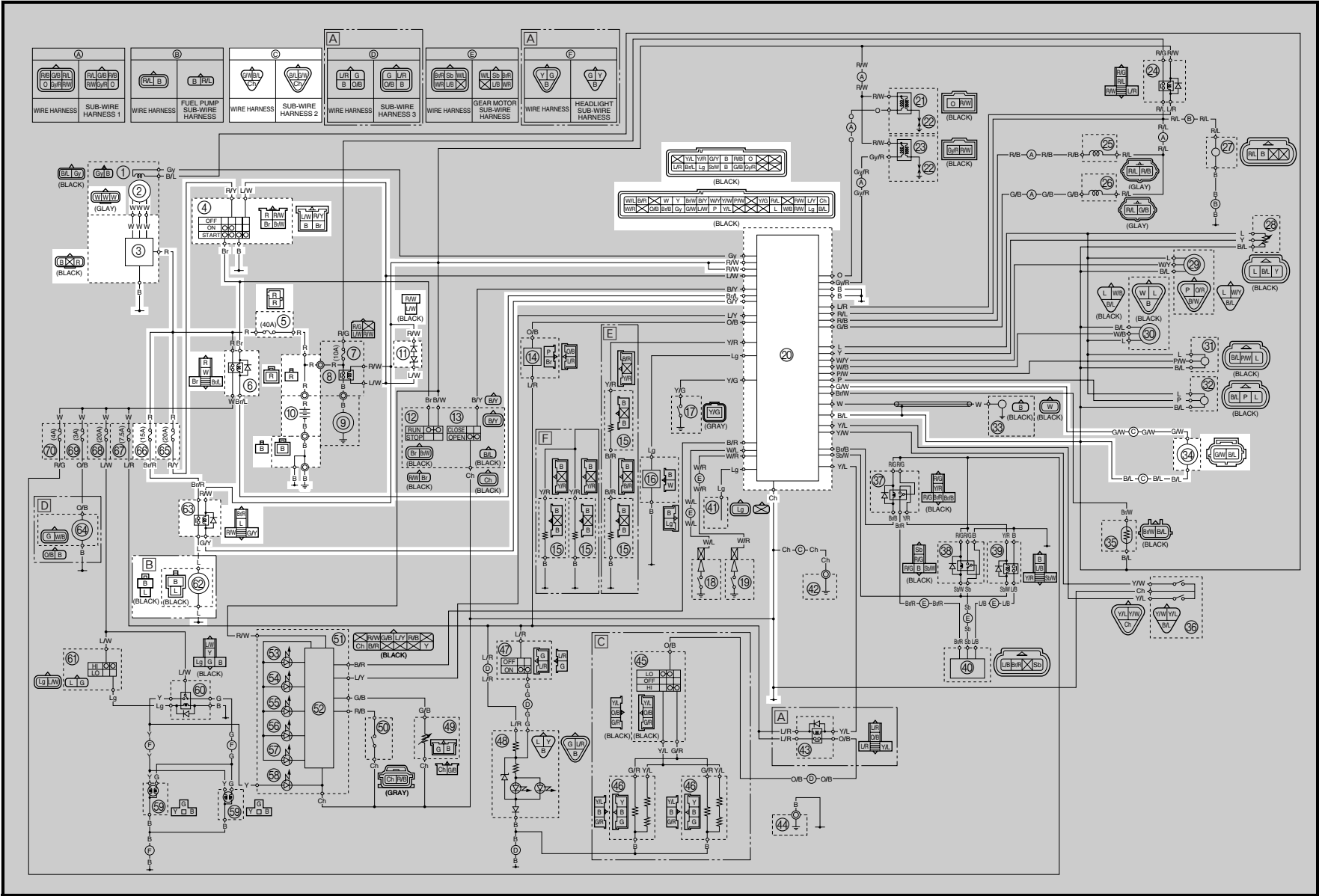
Positive tester probe → **Blue/Red** ③

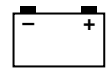
Negative tester probe → **Orange/Black** ④

- If passenger grip warmer relay does not have continuity between the blue/red and orange/black terminals, replace it.



COOLING SYSTEM (PZ50M/PZ50VT/PZ50MP)
CIRCUIT DIAGRAM



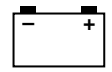


COOLING SYSTEM (PZ50M/PZ50VT/ PZ50MP)

CIRCUIT DIAGRAM

- ② A.C. magneto
- ③ Rectifier/regulator
- ④ Main switch
- ⑤ Main fuse
- ⑥ Load control relay
- ⑩ Battery
- ⑪ Diode
- ⑳ ECU (engine control unit)
- ③④ Coolant temperature sensor
- ⑥② Radiator fan motor
- ⑥③ Radiator fan motor relay
- ⑥⑤ Ignition fuse
- ⑥⑥ Radiator fan motor fuse

[B] PZ50M/PZ50VT/PZ50MP

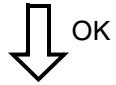


TROUBLESHOOTING

THE RADIATOR FAN MOTOR DOES NOT MOVE

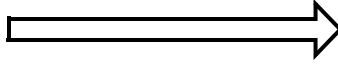
Check the main fuse, ignition fuse, and radiator fan motor fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

FAULTY



Replace the main fuse, ignition fuse, and/or radiator fan motor fuse.

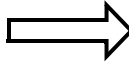
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

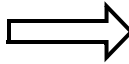
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

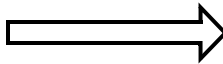
Check the main switch.

Refer to "IGNITION SYSTEM".



OK

NO CONTINUITY



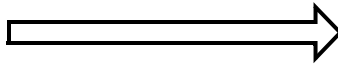
Replace the main switch.

Check the radiator fan motor.



OK

FAULTY



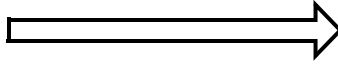
Replace the radiator fan motor.

Check the radiator fan motor relay.



OK

FAULTY



Replace the radiator fan motor relay.

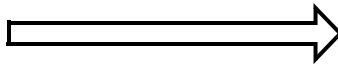
Check the coolant temperature sensor.

Refer to "SIGNAL SYSTEM".



OK

FAULTY



Replace the coolant temperature sensor.

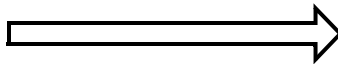
Check the load control relay.

Refer to "LIGHTING SYSTEM".



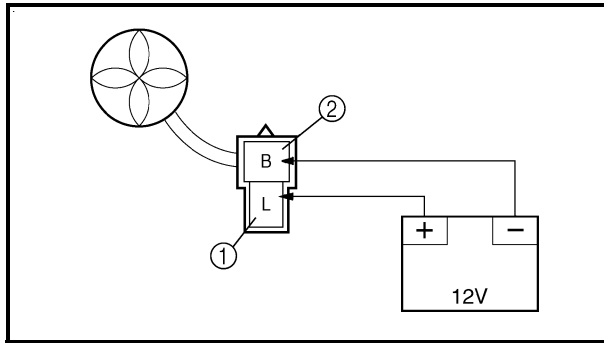
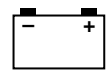
OK

FAULTY



Replace the load control relay.

Correct the connection and/or replace the rectifier/regulator and/or the ECU.



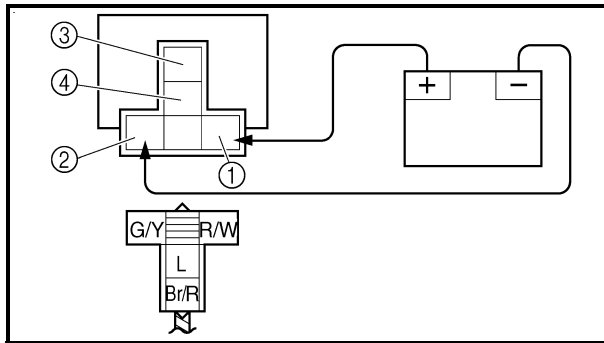
RADIATOR FAN MOTOR

1. Disconnect:
 - Radiator fan motor coupler
2. Connect:
 - Battery
3. Inspect:
 - Radiator fan motor

Positive battery terminal → Blue ①

Negative battery terminal → Black ②

Does not move → Replace the radiator fan motor.



RADIATOR FAN MOTOR RELAY

1. Remove:
 - Radiator fan motor relay

Inspection steps:

- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the radiator fan motor relay terminals as shown.

Positive battery terminal → Red/White ①

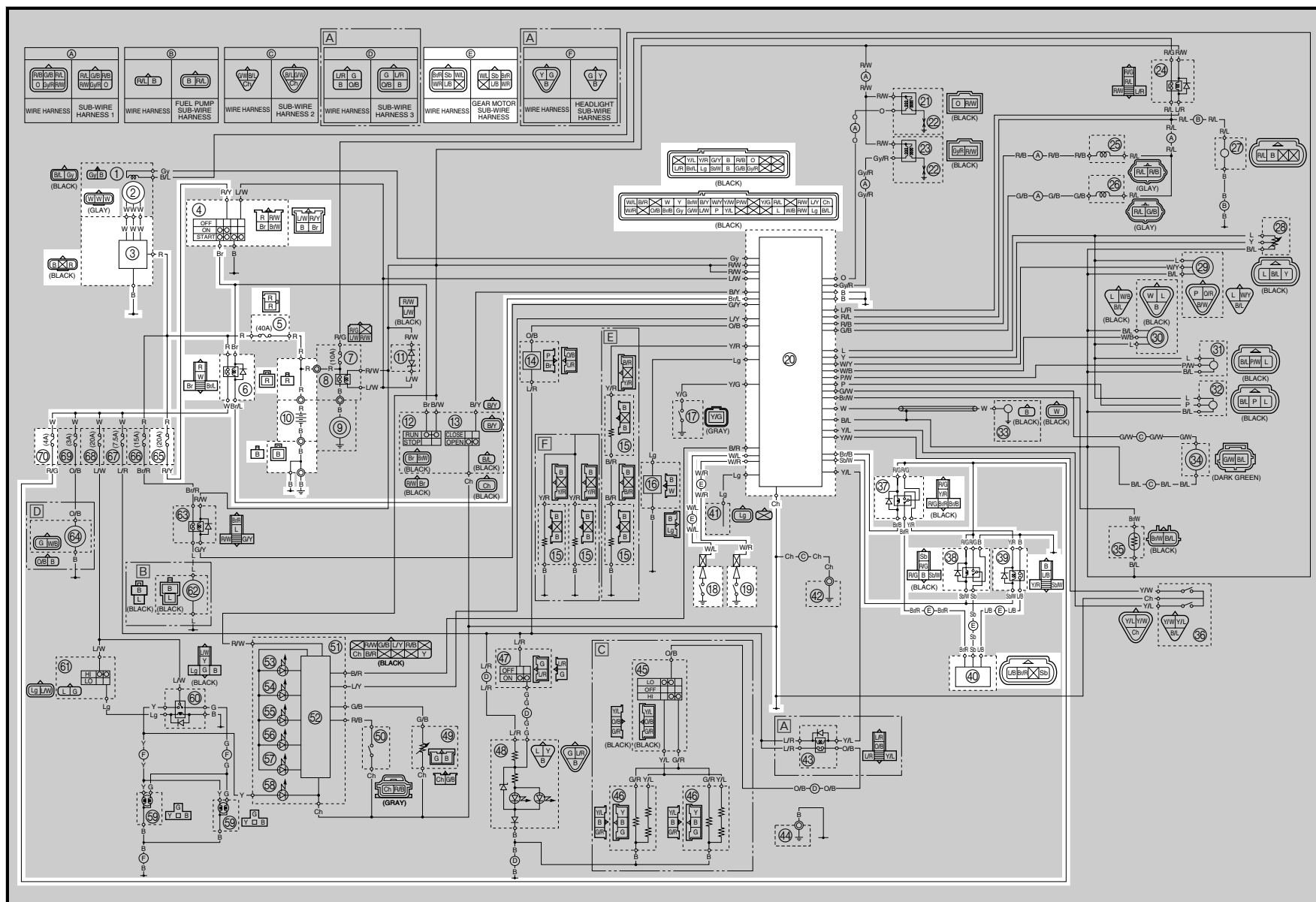
Negative battery terminal → Green/Yellow ②

Positive tester probe → Brown/Red ③

Negative tester probe → Blue ④

- If radiator fan motor relay does not have continuity between the brown/red and blue terminals, replace it.

DRIVE/REVERSE SELECTING SYSTEM (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)



DRIVE/REVERSE SELECTING SYSTEM (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)

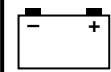
ELEC





**DRIVE/REVERSE
SELECTING SYSTEM
(PZ50GT/PZ50FX/
PZ50M/PZ50VT/
PZ50MP)
CIRCUIT DIAGRAM**

- ② A.C. magneto
- ③ Rectifier/regulator
- ④ Main switch
- ⑤ Main fuse
- ⑥ Load control relay
- ⑩ Battery
- ⑱ Drive position switch
- ⑲ Reverse position switch
- ⑳ ECU (engine control unit)
- ③⑦ Gear motor relay 1
- ③⑧ Gear motor relay 2
- ③⑨ Gear motor relay 3
- ④⑩ Gear motor
- ⑥⑤ Ignition fuse
- ⑦⑩ Gear motor fuse

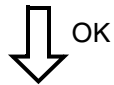


TROUBLESHOOTING

CANNOT SHIFT TO DRIVE OR REVERSE.

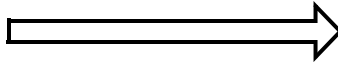
Check the main fuse, ignition fuse, and gear motor fuse.

Refer to "FUSE INSPECTION" in CHAPTER 2.



OK

FAULTY



Replace the main fuse, ignition fuse, and/or gear motor fuse.

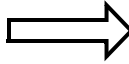
Check the battery.

Refer to "BATTERY INSPECTION" in CHAPTER 2.



OK

OUT OF SPECIFICATION



Replace and/or charge the battery.
Refer to "BATTERY INSPECTION" in CHAPTER 2.

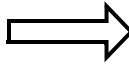
Check the stator coil.

Refer to "CHARGING SYSTEM".



OK

OUT OF SPECIFICATION



Replace the stator coil assembly.

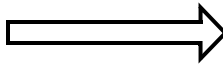
Check the main switch.

Refer to "IGNITION SYSTEM".



OK

NO CONTINUITY



Replace the main switch.

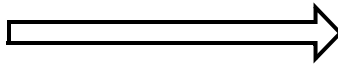
Check the drive position switch and reverse position switch.

Refer to "SIGNAL SYSTEM".



OK

FAULTY



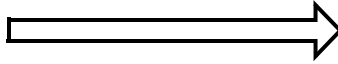
Replace the drive position switch and/or reverse position switch.

Check the gear motor.



OK

FAULTY



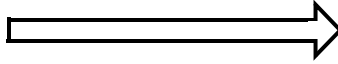
Replace the gear motor.

Check the gear motor relay 1, 2, and 3.



CORRECT

FAULTY



Replace the gear motor relay 1, 2, and/or 3.

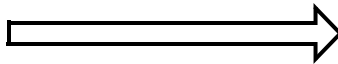
Check the load control relay.

Refer to "LIGHTING SYSTEM".



OK

FAULTY



Replace the load control relay.

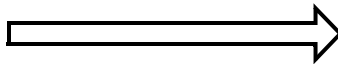
Check the drive/reverse selecting system's wiring.

Refer to "CIRCUIT DIAGRAM".



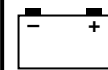
OK

FAULTY



Properly connect or repair the drive/reverse selecting system's wiring.

Correct the connection and/or replace the rectifier/regulator and/or ECU.



GEAR MOTOR

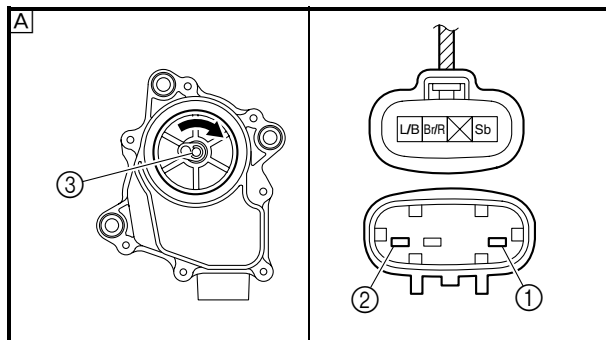
1. Remove:

- Gear motor

Refer to “SECONDARY SHAFT AND REVERSE GEAR CASE” in CHAPTER 4.

NOTE:

Since the pinion gear is in the drive position when the gear motor is removed, be sure to perform the reverse position inspection first.



Reverse position inspection steps [A]:

- Connect the battery (12 V) to the gear motor terminals as shown.

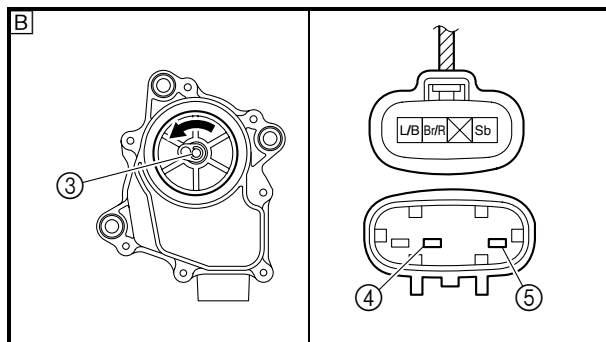
Positive battery terminal → Sky blue ①

Negative battery terminal → Blue/Black ②

- Check that the pinion gear ③ turns clockwise.
Incorrect → Replace the gear motor.

NOTE:

The pinion gear should rotate clockwise and stop in the reverse position.



Drive position inspection steps [B]:

- Connect the battery (12 V) to the gear motor terminals as shown.

Positive battery terminal → Brown/Red ④

Negative battery terminal → Sky blue ⑤

- Check that the pinion gear ③ turns counter-clockwise.
Incorrect → Replace the gear motor.

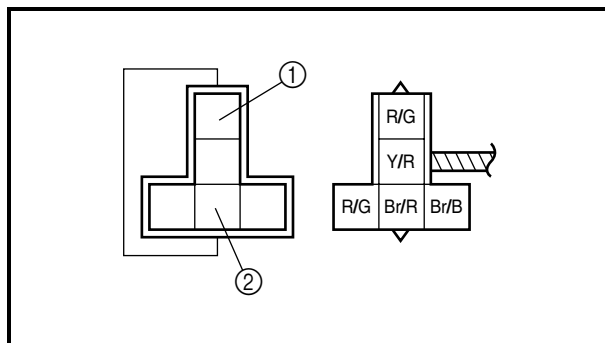
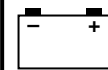
NOTE:

The pinion gear should rotate counterclockwise and stop in the drive position.

2. Install:

- Gear motor

Refer to “SECONDARY SHAFT AND REVERSE GEAR CASE” in CHAPTER 4.



GEAR MOTOR RELAY 1

1. Remove:

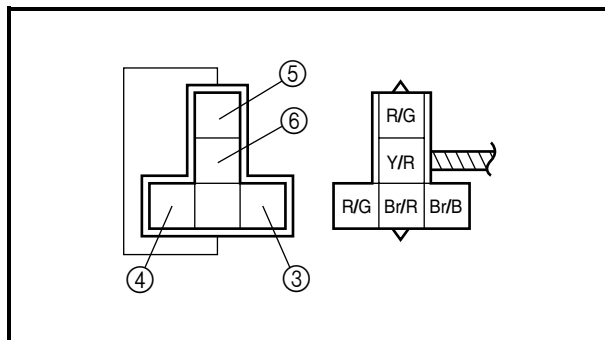
- Gear motor relay 1 (with the black coupler)

Inspection steps:

- Connect the pocket tester ($\Omega \times 1$) to the gear motor relay 1 terminals as shown.

Positive tester probe → **Red/Green** ①

Negative tester probe → **Brown/Red** ②



- If gear motor relay 1 does not have continuity between the red/green and brown/red terminals, replace it.

- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the gear motor relay 1 terminals as shown.

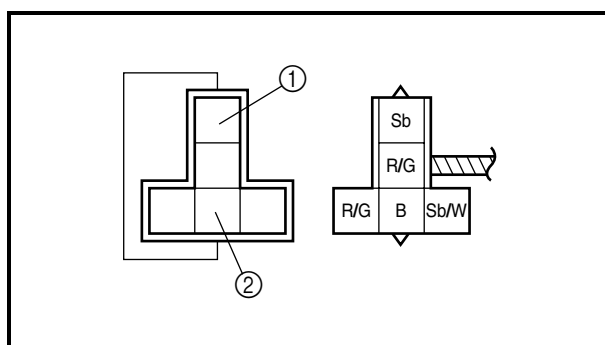
Positive battery terminal → **Red/Green** ③

Negative battery terminal → **Brown/Black** ④

Positive tester probe → **Red/Green** ⑤

Negative tester probe → **Yellow/Red** ⑥

- If gear motor relay 1 does not have continuity between the red/green and yellow/red terminals, replace it.



GEAR MOTOR RELAY 2

1. Remove:

- Gear motor relay 2 (with the black coupler)

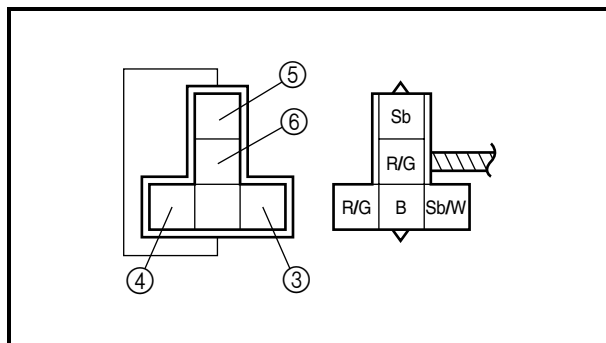
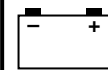
Inspection steps:

- Connect the pocket tester ($\Omega \times 1$) to the gear motor relay 2 terminals as shown.

Positive tester probe → **Sky blue** ①

Negative tester probe → **Black** ②

- If gear motor relay 2 does not have continuity between the sky blue and black terminals, replace it.



- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the gear motor relay 2 terminals as shown.

Positive battery terminal → Red/Green ③

Negative battery terminal → Sky blue/White ④

Positive tester probe → Sky blue ⑤

Negative tester probe → Red/Green ⑥

- If gear motor relay 2 does not have continuity between the sky blue and red/green terminals, replace it.

GEAR MOTOR RELAY 3

1. Remove:

- Gear motor relay 3

Inspection steps:

- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the gear motor relay 3 terminals as shown.

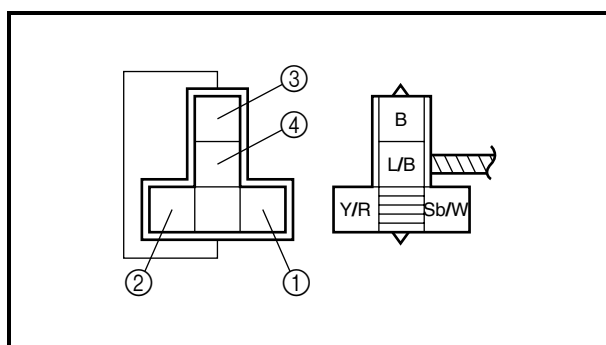
Positive battery terminal → Yellow/Red ①

Negative battery terminal → Sky blue/White

②

Positive tester probe → Black ③

Negative tester probe → Blue/Black ④



- If gear motor relay 3 does not have continuity between the black and blue/black terminals, replace it.



SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Model code number:	8GC1 (PZ50 "USA/Canada") 8GC2 (PZ50 "Europe") 8GK1 (PZ50GT "USA/Canada") 8GK2 (PZ50GT "Europe") 8GN1 (PZ50FX "USA/Canada") 8GN2 (PZ50FX "Europe") 8GP1 (PZ50M "USA/Canada") 8GP2 (PZ50M "Europe") 8GJ1 (PZ50VT "USA/Canada") 8GJ2 (PZ50VT "Europe") 8GR1 (PZ50MP "Canada") 8GR2 (PZ50MP "Europe")
Dimensions:	
Overall length	2,820 mm (111.0 in) (PZ50/PZ50GT/PZ50FX) 3,195 mm (125.8 in) (PZ50M)
Overall width	3,150 mm (124.0 in) (PZ50VT "USA/Canada") 3,160 mm (124.4 in) (PZ50VT "Europe"/PZ50MP)
Overall height	1,215 mm (47.8 in) (PZ50/PZ50GT/PZ50FX/PZ50VT "USA/Canada") 1,165 mm (45.9 in) (PZ50M) 1,265 mm (49.8 in) (PZ50VT "Europe"/PZ50MP) 1,190 mm (46.9 in) (PZ50/PZ50FX) 1,340 mm (52.8 in) (PZ50GT/PZ50M) 1,380 mm (54.3 in) (PZ50VT/PZ50MP)
Weight:	
Dry weight	215 kg (474.0 lb) (PZ50 "USA/Canada") 217 kg (478.4 lb) (PZ50 "Europe") 221 kg (487.2 lb) (PZ50GT "USA/Canada"/PZ50FX "USA/Canada") 222 kg (489.4 lb) (PZ50GT "Europe"/PZ50FX "Europe") 233 kg (513.7 lb) (PZ50M "USA/Canada") 234 kg (515.9 lb) (PZ50M "Europe") 268 kg (590.8 lb) (PZ50VT "USA/Canada") 271 kg (597.4 lb) (PZ50VT "Europe") 262 kg (577.6 lb) (PZ50MP "Canada") 272 kg (599.7 lb) (PZ50MP "Europe")
Minimum turning radius:	
Clockwise	3.7 m (12.14 ft) (PZ50/PZ50GT/PZ50FX) 4.0 m (13.12 ft) (PZ50M)
Counterclockwise	4.2 m (13.78 ft) (PZ50VT/PZ50MP) 3.4 m (11.16 ft) (PZ50/PZ50GT/PZ50FX) 4.2 m (13.78 ft) (PZ50M) 3.9 m (12.80 ft) (PZ50VT/PZ50MP)



Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Engine: Engine type Cylinder type Displacement Bore × stroke Compression ratio Maximum hose power r/min Maximum torque r/min Vacuum pressure at engine idling speed Standard compression pressure (at sea level) Starting system	Liquid-cooled, 4-stroke, DOHC Backward-inclined parallel 2-cylinder 499 cm ³ (30.45 cu.in) 77.0 × 53.6 mm (3.03 × 2.11 in) 12.4 : 1 58.8 kw (80.0 PS)/11,250 r/min 51.0 Nm (5.2 kgf)/9,000 r/min 20.27 ~ 22.93 kPa (0.20 ~ 0.23 kg/cm ² , 2.88 ~ 3.26 psi) 1,450 kPa (14.5 kg/cm ² , 206 psi) at 400 r/min Electric starter
Lubrication system:	Dry sump
Engine oil: Type Oil capacity Periodic oil change With oil filter replacement Total amount Oil tank capacity	API SE, SF, SG or higher SAE 0W-30 2.45 L (2.16 Imp qt, 2.59 US qt) 2.63 L (2.31 Imp qt, 2.78 US qt) 3.00 L (2.64 Imp qt, 3.17 US qt) 2.00 L (1.76 Imp qt, 2.11 US qt)
Oil filter: Oil filter type	Cartridge (paper)
Drive chain oil: Type Capacity	Gear oil "GL-3" 75W or 80W 0.25 L (0.22 Imp qt, 0.26 US qt)
Coolant: Filler cap opening pressure Capacity	93.3 ~ 122.7 kPa (0.93 ~ 1.23 kg/cm ² , 13.2 ~ 17.5 psi) 3.60 L (3.17 Imp qt, 3.81 US qt) (PZ50/PZ50GT/PZ50FX/PZ50M) 3.70 L (3.26 Imp qt, 3.91 US qt) (PZ50VT/PZ50MP)
Fuel: Type Tank capacity	Premium unleaded gasoline Pump Octane (R + M)/2; 91 or higher (USA/Canada) Research Octane; 95 or higher (Europe) 30.1 L (6.6 Imp gal, 8.0 US gal) (PZ50/PZ50GT/PZ50FX/PZ50M) 36.0 L (7.9 Imp gal, 9.5 US gal) (PZ50VT/PZ50MP)
Throttle body: Type/Quantity Manufacture	TSK43 × 1 KEIHIN
Spark plug: Type Manufacture Gap	CR9EKB NGK 0.6 ~ 0.7 mm (0.024 ~ 0.028 in)



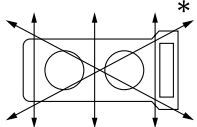
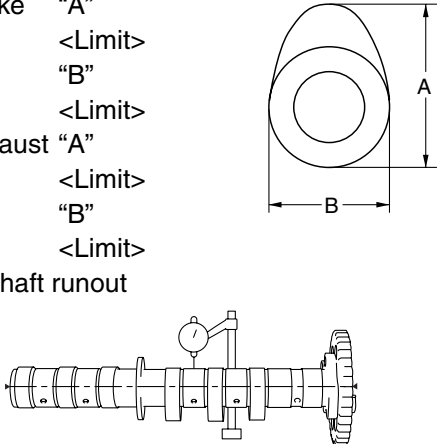
Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Transmission: Primary reduction system Primary reduction ratio Clutch type Secondary reduction system Secondary reduction ratio Reverse system Reverse gear ratio	V-Belt 3.80 ~ 0.95 : 1 Automatic centrifugal engagement Chain 2.28 (41/18) (PZ50/PZ50FX) 2.05 (41/20) (PZ50GT) 2.41 (41/17) (PZ50M "USA/Canada") 2.16 (41/19) (PZ50M "Europe") 2.37 (45/19) (PZ50VT "USA/Canada") 2.50 (45/18) (PZ50VT "Europe"/PZ50MP) No (PZ50) Yes (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP) 2.73 (PZ50GT) 3.04 (PZ50FX) 3.21 (PZ50M "USA/Canada") 2.88 (PZ50M "Europe") 3.16 (PZ50VT "USA/Canada") 3.33 (PZ50VT "Europe"/PZ50MP)
Chassis: Frame type Caster Ski stance (center to center)	Monocoque 18.0° 1,080 mm (42.5 in) (PZ50/PZ50GT/PZ50FX/PZ50VT/ PZ50MP) 980 mm (38.6 in) (PZ50M)
Suspension: Front suspension type Rear suspension type	Double wishbone Slide rail suspension
Track: Track type Track width Length on ground Track deflection mm/100 N (10 kg, 22 lb)	Internal drive type 355.6 mm (14.00 in) (PZ50/PZ50GT/PZ50FX/PZ50M) 381.0 mm (15.00 in) (PZ50VT) 406.4 mm (16.00 in) (PZ50MP) 769 mm (30.28 in) (PZ50/PZ50GT/PZ50FX) 1,084 mm (42.68 in) (PZ50M) 985 mm (38.78 in) (PZ50VT/PZ50MP) 30 ~ 35 mm (1.18 ~ 1.38 in)
Brake: Brake type Operation method	Caliper type disc brake Handlebar, left hand operated
Electrical: Ignition system Generator system	T.C.I. A.C. magneto



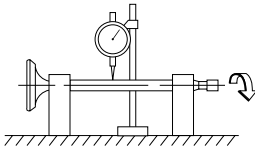
Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Headlight bulb type:	Halogen bulb
Bulb wattage × Quantity:	
Headlight	12 V, 60/55 W × 2
Tail/brake light	LED
Meter light	LED
Warning light	LED
High beam indicator light	LED
Low coolant temperature indicator light	LED
Knock control system indicator light	LED
Drive position indicator light	LED (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)
Reverse position indicator light	LED (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)



MAINTENANCE SPECIFICATIONS ENGINE

Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Cylinder head: Volume (with spark plug) <Warpage limit> 	13.82 ~ 14.62 cm³ (0.84 ~ 0.89 cu.in) 0.10 mm (0.0039 in) * Lines indicate straight edge measurement.
Cylinder: Material Bore size <Taper limit> <Out of round>	Aluminum alloy with dispersion coating 77.000 ~ 77.010 mm (3.0315 ~ 3.0319 in) 0.050 mm (0.0020 in) 0.050 mm (0.0020 in)
Camshaft: Drive system Camshaft cap inside diameter Camshaft journal diameter Camshaft-journal-to-camshaft-cap clearance Camshaft dimensions Intake "A" <Limit> "B" <Limit> Exhaust "A" <Limit> "B" <Limit> Camshaft runout 	Chain drive (left) 22.000 ~ 22.021 mm (0.8661 ~ 0.8670 in) 21.959 ~ 21.972 mm (0.8645 ~ 0.8650 in) 0.028 ~ 0.062 mm (0.0011 ~ 0.0024 in) 30.450 ~ 30.550 mm (1.1988 ~ 1.2028 in) 30.350 mm (1.1949 in) 22.610 ~ 22.710 mm (0.8902 ~ 0.8941 in) 22.510 mm (0.8862 in) 30.700 ~ 30.800 mm (1.2087 ~ 1.2126 in) 30.600 mm (1.2047 in) 22.593 ~ 22.693 mm (0.8895 ~ 0.8934 in) 22.493 mm (0.8856 in) 0.03 mm (0.0012 in)
Timing chain: Model/Number of links Tensioning system	98XRH2015/118 Automatic

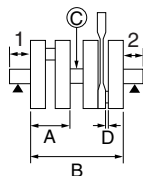


Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Valves, valve seats, valve guides:	
Valve clearance (cold)	
Intake	0.11 ~ 0.20 mm (0.0043 ~ 0.0079 in)
Exhaust	0.21 ~ 0.25 mm (0.0083 ~ 0.0098 in)
Valve dimensions	
Valve head diameter A	
Intake	23.4 ~ 23.6 mm (0.9213 ~ 0.9291 in)
Exhaust	24.9 ~ 25.1 mm (0.9803 ~ 0.9882 in)
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)
Valve seat width C	
Intake	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
Exhaust	1.2 ~ 1.4 mm (0.0472 ~ 0.0551 in)
Valve margin thickness D	
Intake	0.5 ~ 0.9 mm (0.0197 ~ 0.0354 in)
Exhaust	0.5 ~ 0.9 mm (0.0197 ~ 0.0354 in)
Valve stem diameter	
Intake	3.975 ~ 3.990 mm (0.1565 ~ 0.1571 in)
<Limit>	3.945 mm (0.1553 in)
Exhaust	3.960 ~ 3.975 mm (0.1559 ~ 0.1565 in)
<Limit>	3.930 mm (0.1547 in)
Valve guide inside diameter	
Intake	4.000 ~ 4.012 mm (0.1575 ~ 0.1580 in)
<Limit>	4.050 mm (0.1594 in)
Exhaust	4.000 ~ 4.012 mm (0.1575 ~ 0.1580 in)
<Limit>	4.050 mm (0.1594 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 seat width	
Intake	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
<Limit>	1.6 mm (0.0630 in)
Exhaust	1.2 ~ 1.4 mm (0.0472 ~ 0.0551 in)
<Limit>	1.9 mm (0.0748 in)



Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Valve spring: Free length Intake <Limit> Exhaust <Limit> Installed length (valve closed) Intake Exhaust Compressed spring force (installed) Intake Exhaust Spring tilt Intake Exhaust Winding direction (top view) Intake Exhaust	36.51 mm (1.44 in) 34.68 mm (1.37 in) 37.92 mm (1.49 in) 36.02 mm (1.42 in) 30.13 mm (1.19 in) 30.50 mm (1.20 in) 120.7 ~ 138.9 N (12.3 ~ 14.2 kg, 27.1 ~ 31.2 lb) 150.6 ~ 173.2 N (15.4 ~ 17.7 kg, 33.9 ~ 38.9 lb) 2.5°/1.6 mm (0.06 in) 2.5°/1.7 mm (0.07 in) Clockwise Clockwise
Valve lifter: Valve lifter outside diameter Intake <Limit> Exhaust <Limit> Valve lifter hole inside diameter Intake <Limit> Exhaust <Limit>	19.982 ~ 19.988 mm (0.7867 ~ 0.7869 in) 19.957 mm (0.7857 in) 22.482 ~ 22.488 mm (0.8851 ~ 0.8854 in) 22.457 mm (0.8841 in) 20.000 ~ 20.018 mm (0.7874 ~ 0.7881 in) 20.048 mm (0.7893 in) 22.500 ~ 22.518 mm (0.8858 ~ 0.8865 in) 22.548 mm (0.8877 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 <Limit>	76.955 ~ 76.970 mm (3.0297 ~ 3.0303 in) 11.0 mm (0.43 in) 0.030 ~ 0.055 mm (0.0012 ~ 0.0022 in) 0.120 mm (0.0047 in) 0.5 mm (0.0197 in) Intake side 17.002 ~ 17.013 mm (0.6694 ~ 0.6698 in) 17.043 mm (0.6710 in)
Piston pin: Piston pin outside diameter <Limit> Piston pin length Piston pin to piston pin bore clearance <Limit>	16.991 ~ 17.000 mm (0.6689 ~ 0.6693 in) 16.971 mm (0.6681 in) 42.7 ~ 43.0 mm (1.6811 ~ 1.6929 in) 0.002 ~ 0.022 mm (0.0001 ~ 0.0009 in) 0.072 mm (0.0028 in)



Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Piston ring: Sectional sketch Top ring Ring type Dimensions (B × T) 2nd ring Top ring (same or no) 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 Oil ring Plating/coating Top ring 2nd ring	Barrel 0.90 × 2.75 mm (0.035 × 0.108 in) No Taper 0.80 × 2.75 mm (0.031 × 0.108 in) 1.50 × 2.25 mm (0.059 × 0.089 in) 0.15 ~ 0.25 mm (0.006 ~ 0.010 in) 0.30 ~ 0.45 mm (0.012 ~ 0.018 in) 0.10 ~ 0.40 mm (0.004 ~ 0.016 in) 0.030 ~ 0.065 mm (0.0012 ~ 0.0026 in) 0.020 ~ 0.055 mm (0.0008 ~ 0.0022 in) 0.040 ~ 0.160 mm (0.0016 ~ 0.0063 in) Chrome plated/parkerizing Ferox coating
Connecting rod: Small end diameter Big end diameter Crankshaft-pin-to-big-end-bearing clearance Bearing color code	17.005 ~ 17.018 mm (0.6695 ~ 0.6700 in) 37.000 ~ 37.016 mm (1.4567 ~ 1.4573 in) 0.034 ~ 0.058 mm (0.0013 ~ 0.0023 in) 0 = White 1 = Blue 2 = Black 3 = Brown
Crank pin: Crank pin outside diameter	33.976 ~ 34.000 (1.3376 ~ 1.3386 in)
Crankshaft:  Measuring point 1 Measuring point 2 Width A Width B Crankshaft runout C Big end side clearance D Crankshaft-journal-to-crankshaft-journal-bearing clearance Bearing color code	57.5 mm (2.26 in) 88.0 mm (3.46 in) 61.0 ~ 61.6 mm (2.402 ~ 2.425 in) 144.0 ~ 145.2 mm (5.67 ~ 5.72 in) 0.03 mm (0.0012 in) 0.160 ~ 0.262 mm (0.0063 ~ 0.0103 in) 0.020 ~ 0.044 mm (0.0008 ~ 0.0017 in) 0 = White 1 = Blue 2 = Black 3 = Brown 4 = Green



Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Throttle body: Type × Quantity Manufacturer I.D. mark Throttle valve (Th.V) Throttle cable free play Engine idle speed	TSK43 × 1 KEIHIN 8GC1 00 N503-89A00 ($\theta = 8^\circ$) 2.0 ~ 3.0 mm (0.08 ~ 0.12 in) 1,700 ~ 1,900 r/min
Fuel pump: Type Model/Manufacturer	Electrical 8GC/DENSO
Oil filter: Oil filter type Bypass valve opening pressure	Cartridge (paper) 78 ~ 118 kPa (0.78 ~ 1.18 kg/cm ² , 11.1 ~ 16.8 psi)
Oil pump: Oil pump type Inner-rotor-to-outer-rotor-tip clearance Outer-rotor-to-oil-pump-housing clearance Relief valve operating pressure Oil pressure (hot)	Trochoidal Less than 0.12 mm (0.005 in) 0.09 ~ 0.15 mm (0.004 ~ 0.006 in) 430 ~ 550 kPa (4.3 ~ 5.5 kg/cm ² , 61.1 ~ 78.2 psi) 50 kPa (0.5 kg/cm ² , 7.11 psi) at 1,500 r/min
Cooling system: Filler cap opening pressure Thermostat opening temperature Valve lift Water pump type Coolant type Coolant mixing ratio (coolant: water) Capacity Max. impeller shaft tilt	93.3 ~ 122.7 kPa (0.93 ~ 1.23 kg/cm ² , 13.2 ~ 17.5 psi) 80.0 ~ 84.0 °C (176.0 ~ 183.2 °F) 7.0 mm/95.0 °C (0.28 in/203.0 °F) Single-suction centrifugal pump (Impeller type) High quality silicate-free ethylene glycol antifreeze containing corrosion inhibitors 3 : 2 (60% : 40%) 3.60 L (3.17 Imp qt, 3.81 US qt) (PZ50/PZ50GT/PZ50FX/PZ50M) 3.70 L (3.26 Imp qt, 3.91 US qt) (PZ50VT/PZ50MP) 0.15 mm (0.0059 in)



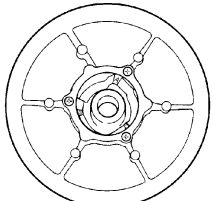
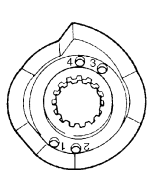
POWER TRAIN

Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Transmission: Type Range of ratio Engagement speed r/min Shift r/min Sheave distance Sheave offset Secondary sheave free play (clearance) V-belt height (standard)	V-belt automatic 3.80 ~ 0.95 : 1 3,700 ~ 4,100 r/min (PZ50/PZ50GT/PZ50FX) 4,100 ~ 4,500 r/min (PZ50M "USA/Canada") 3,900 ~ 4,300 r/min (PZ50M "Europe") 3,300 ~ 3,700 r/min (PZ50VT "USA/Canada") 2,900 ~ 3,300 r/min (PZ50VT "Europe"/PZ50MP) 10,800 ~ 11,800 r/min 267 ~ 270 mm (10.51 ~ 10.63 in) 14.5 ~ 17.5 mm (0.57 ~ 0.69 in) 1.0 ~ 2.0 (0.04 ~ 0.08 in) -0.5 ~ 1.5 mm (-0.02 ~ 0.06 in)
V-belt: Part number/Manufacturer Circumference Width "A" Wear limit "B"	8GS-17641-00/MITSUBOSHI 1,132 ~ 1,138 mm (44.6 ~ 44.8 in) 34.1 mm (1.34 in) 32.5 mm (1.28 in)
 Primary sheave spring: Part number Color code Outside diameter Wire diameter Preload Spring rate Number of coils	90501-606G9 (PZ50/PZ50GT/PZ50FX) 90501-605G7 (PZ50M) 90501-556G7 (PZ50VT "USA/Canada") 90501-526G4 (PZ50VT "Europe"/PZ50MP) Pink-Blue-Pink (PZ50/PZ50GT/PZ50FX) Green-Yellow-Green (PZ50M) Yellow-Blue-Yellow (PZ50VT "USA/Canada") Blue-Gold-Blue (PZ50VT "Europe"/PZ50MP) 60.0 mm (2.36 in) 6.0 mm (0.236 in) (PZ50/PZ50GT/PZ50FX/PZ50M) 5.5 mm (0.217 in) (PZ50VT "USA/Canada") 5.2 mm (0.205 in) (PZ50VT "Europe"/PZ50MP) 196 N (20.0 kg, 44.1 lb) (PZ50/PZ50GT/PZ50FX/PZ50VT "USA/Canada") 235 N (24.0 kg, 52.9 lb) (PZ50M) 147 N (15.0 kg, 33.1 lb) (PZ50VT "Europe"/PZ50MP) 29.4 N/mm (3.00 kg/mm, 168 lb/in) (PZ50/PZ50GT/PZ50FX) 26.9 N/mm (2.74 kg/mm, 153 lb/in) (PZ50M) 24.5 N/mm (2.50 kg/mm, 140 lb/in) (PZ50VT "USA/Canada") 19.6 N/mm (2.00 kg/mm, 112 lb/in) (PZ50VT "Europe"/PZ50MP) 4.86 (PZ50/PZ50GT/PZ50FX) 5.00 (PZ50M) 4.36 (PZ50VT "USA/Canada") 4.32 (PZ50VT "Europe"/PZ50MP)



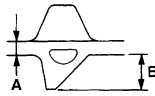
Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Free length	72.1 mm (2.84 in) (PZ50/PZ50GT/PZ50FX) 74.1 mm (2.92 in) (PZ50M) 73.4 mm (2.89 in) (PZ50VT "USA/Canada") 72.9 mm (2.87 in) (PZ50VT "Europe"/PZ50MP)
Set length	65.4 mm (2.57 in)
Primary sheave weight arm: Part number (with bush)	8GC-17605-00 (PZ50/PZ50GT/PZ50FX/PZ50VT/PZ50MP) 8DN-17605-30 (PZ50M)
Weight (without bush and rivets)	47.28 g (1.669 oz) (PZ50/PZ50GT/PZ50FX/PZ50VT/ PZ50MP) 39.76 g (1.404 oz) (PZ50M)
Additional weight type	Rivet
Rivet: Outer Part number	90261-06019 (PZ50/PZ50GT/PZ50FX) 90261-06015 (PZ50M "USA/Canada") 90261-06034 (PZ50M "Europe") 90261-06033 (PZ50VT/PZ50MP)
Material	Steel
Size	13.3 mm (0.524 in) (PZ50/PZ50GT/PZ50FX) 10.3 mm (0.406 in) (PZ50M "USA/Canada") 13.9 mm (0.547 in) (PZ50M "Europe") 17.2 mm (0.677 in) (PZ50VT/PZ50MP)
Quantity	3 pcs
Hole quantity	3 pcs
Center	None (PZ50M)
Part number	90261-06015 (PZ50/PZ50GT/PZ50FX) 90261-06033 (PZ50VT/PZ50MP)
Material	Steel
Size	10.3 mm (0.406 in) (PZ50/PZ50GT/PZ50FX) 17.2 mm (0.677 in) (PZ50VT/PZ50MP)
Quantity	3 pcs
Hole quantity	3 pcs
Inner	None (PZ50M "USA/Canada")
Part number	90261-06015 (PZ50/PZ50GT/PZ50FX) 90261-06034 (PZ50M "Europe"/PZ50VT "USA/Canada") 90261-06033 (PZ50VT "Europe"/PZ50MP)
Material	Steel
Size	10.3 mm (0.406 in) (PZ50/PZ50GT/PZ50FX) 13.9 mm (0.547 in) (PZ50M "Europe"/PZ50VT "USA/ Canada") 17.2 mm (0.677 in) (PZ50VT "Europe"/PZ50MP)
Quantity	3 pcs
Hole quantity	3 pcs



Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Secondary sheave spring: Part number Color code Outside diameter Wire diameter Hole position Sheave side-spring seat side (twist angle)   Spring rate Compression Torsion Number of coils Free length Torque cam angle	90508-55007 (PZ50/PZ50GT/PZ50FX/PZ50M) 90508-58007 (PZ50VT/PZ50MP) Red (PZ50/PZ50GT/PZ50FX/PZ50M) Blue (PZ50VT/PZ50MP) 66.0 mm (2.598 in) 5.5 mm (0.217 in) (PZ50/PZ50GT/PZ50FX/PZ50M) 5.8 mm (0.228 in) (PZ50VT/PZ50MP) A-1 (45°) (PZ50/PZ50GT/PZ50FX) B-1 (55°) (PZ50M) A-1 (50°) (PZ50VT/PZ50MP) 10.58 N/mm (1.08 kg/mm, 60.41 lb/in) (PZ50/PZ50GT/PZ50FX/PZ50M) 11.33 N/mm (1.16 kg/mm, 64.69 lb/in) (PZ50VT/PZ50MP) 9,131 N · mm/rad (931 kg · mm/rad, 52,137 lb · in/rad) (PZ50/PZ50GT/PZ50FX/PZ50M) 10,098 N · mm/rad (1,030 kg · mm/rad, 57,659 lb · in/rad) (PZ50VT/PZ50MP) 5.33 (PZ50/PZ50GT/PZ50FX/PZ50M) 5.99 (PZ50VT/PZ50MP) 85 mm (3.35 in) 39° (PZ50/PZ50GT/PZ50FX) 37° (PZ50M/PZ50VT/PZ50MP)
Drive chain: Type Number of links Secondary reduction ratio Maximum 14 link drive chain section length <Limit>	Borg Warner Morse TEC 23RH302.5-80ASM (PZ50/PZ50GT/PZ50FX/PZ50M) Borg Warner Morse TEC 23RH302.5-82ASM (PZ50VT/PZ50MP) 80L (PZ50/PZ50GT/PZ50FX/PZ50M) 82L (PZ50VT/PZ50MP) 2.28 (41/18) (PZ50/PZ50FX) 2.05 (41/20) (PZ50GT) 2.41 (41/17) (PZ50M "USA/Canada") 2.16 (41/19) (PZ50M "Europe") 2.37 (45/19) (PZ50VT "USA/Canada") 2.50 (45/18) (PZ50VT "Europe"/PZ50MP) 133.35 mm (5.25 in) 137.35 mm (5.41 in)



Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Track: Part number	8GK-47110-00 (PZ50/PZ50FX) 8GN-47110-00 (PZ50GT) 8GP-47110-00 (PZ50M) 8ET-47110-10 (PZ50VT) 8GR-47110-00 (PZ50MP)
Width	355.6 mm (14.0 in) (PZ50/PZ50GT/PZ50FX/PZ50M) 381.0 mm (15.0 in) (PZ50VT) 406.4 mm (16.0 in) (PZ50MP)
Length	3,072.4 mm (120.96 in) (PZ50/PZ50GT/PZ50FX) 3,648.5 mm (143.64 in) (PZ50M/PZ50VT/PZ50MP)
Pitch	64.0 mm (2.52 in)
Number of links	48 (PZ50/PZ50GT/PZ50FX) 57 (PZ50M/PZ50VT/PZ50MP)
Thickness "A"	5.1 mm (0.20 in) (PZ50/PZ50GT/PZ50FX/PZ50VT/ PZ50MP) 5.5 mm (0.22 in) (PZ50M)
Height "B"	25.4 mm (1.00 in) (PZ50/PZ50GT/PZ50FX) 50.8 mm (2.00 in) (PZ50M) 31.8 mm (1.25 in) (PZ50MP/PZ50VT)
Track deflection at 100 N (10 kg, 22 lb)	30 ~ 35 mm (1.18 ~ 1.38 in)
Slide rail suspension (rear suspension): Front travel	221.0 mm (8.70 in) (PZ50/PZ50FX) 209.0 mm (8.23 in) (PZ50GT) 205.0 mm (8.07 in) (PZ50M) 184.0 mm (7.24 in) (PZ50VT) 216.0 mm (8.50 in) (PZ50MP)
Rear travel	412.0 mm (16.22 in) (PZ50/PZ50FX) 407.0 mm (16.02 in) (PZ50GT) 364.0 mm (14.33 in) (PZ50M) 292.0 mm (11.50 in) (PZ50VT) 313.0 mm (12.32 in) (PZ50MP)
Suspension spring rate Front	40.00 N/mm (4.08 kg/mm, 228.40 lb/in) (PZ50/PZ50FX) 25.00 N/mm (2.55 kg/mm, 142.75 lb/in) (PZ50GT "USA/ Canada") 18.00 N/mm (1.84 kg/mm, 102.78 lb/in) (PZ50GT "Europe") 22.00 N/mm (2.24 kg/mm, 125.62 lb/in) (PZ50M) 28.00 N/mm (2.86 kg/mm, 159.88 lb/in) (PZ50VT "USA/ Canada") 23.00 N/mm (2.35 kg/mm, 131.33 lb/in) (PZ50VT "Europe") 31.00 N/mm (3.16 kg/mm, 177.01 lb/in) (PZ50MP)
Rear	2,500 N · mm/deg (254.9 kg · mm/deg, 14,274 lb · in/deg) (PZ50/PZ50FX/PZ50VT "Europe"/PZ50MP) 2,100 N · mm/deg (214.1 kg · mm/deg, 11,991 lb · in/deg) (PZ50GT) 1,700 N · mm/deg (173.3 kg · mm/deg, 9,707 lb · in/deg) (PZ50M) 3,000 N · mm/deg (305.9 kg · mm/deg, 17,130 lb · in/deg) (PZ50VT "USA/Canada")





Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Suspension wire diameter Front Rear	8.8 mm (0.346 in) (PZ50/PZ50FX) 7.8 mm (0.307 in) (PZ50GT "USA/Canada") 7.5 mm (0.295 in) (PZ50GT "Europe"/PZ50M/PZ50VT "Europe") 8.2 mm (0.322 in) (PZ50VT "USA/Canada"/PZ50MP) 11.2 mm (0.441 in) (PZ50/PZ50FX/PZ50VT "Europe"/PZ50MP) 10.9 mm (0.429 in) (PZ50GT) 10.3 mm (0.406 in) (PZ50M) 11.5 mm (0.453 in) (PZ50VT "USA/Canada")
Shock absorber: Damping force Front Extension Compression	830.0 N/0.3 m/s (84.6 kg/0.3 m/s, 186.6 lb/0.3 m/s) (PZ50) 660.0 N/0.3 m/s (67.3 kg/0.3 m/s, 148.4 lb/0.3 m/s) (PZ50GT "USA/Canada") 630.0 N/0.3 m/s (64.2 kg/0.3 m/s, 141.6 lb/0.3 m/s) (PZ50GT "Europe") 610.0 N/0.3 m/s (62.2 kg/0.3 m/s, 137.1 lb/0.3 m/s) (PZ50FX/PZ50M) 760.0 N/0.3 m/s (77.5 kg/0.3 m/s, 170.8 lb/0.3 m/s) (PZ50VT "USA/Canada"/PZ50MP) 520.0 N/0.3 m/s (53.0 kg/0.3 m/s, 116.9 lb/0.3 m/s) (PZ50VT "Europe") 690.0 N/0.3 m/s (70.4 kg/0.3 m/s, 155.1 lb/0.3 m/s) (PZ50) 500.0 N/0.3 m/s (51.0 kg/0.3 m/s, 112.4 lb/0.3 m/s) (PZ50GT "USA/Canada") 400.0 N/0.3 m/s (40.8 kg/0.3 m/s, 89.9 lb/0.3 m/s) (PZ50GT "Europe") 610.0 N/0.3 m/s (62.2 kg/0.3 m/s, 137.1 lb/0.3 m/s) (PZ50FX) 710.0 N/0.3 m/s (72.4 kg/0.3 m/s, 159.6 lb/0.3 m/s) (PZ50M) 770.0 N/0.3 m/s (78.5 kg/0.3 m/s, 173.1 lb/0.3 m/s) (PZ50VT "USA/Canada") 920.0 N/0.3 m/s (93.8 kg/0.3 m/s, 206.8 lb/0.3 m/s) (PZ50VT "Europe") 810.0 N/0.3 m/s (82.6 kg/0.3 m/s, 182.1 lb/0.3 m/s) (PZ50MP)



Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Rear Extension Compression	3,170.0 N/0.3 m/s (323.2 kg/0.3 m/s, 712.6 lb/0.3 m/s) (PZ50) 1,450.0 N/0.3 m/s (147.9 kg/0.3 m/s, 326.0 lb/0.3 m/s) (PZ50GT "USA/Canada") 1,710.0 N/0.3 m/s (174.4 kg/0.3 m/s, 384.4 lb/0.3 m/s) (PZ50GT "Europe") 3,070.0 N/0.3 m/s (313.0 kg/0.3 m/s, 690.1 lb/0.3 m/s) (PZ50FX) 1,430.0 N/0.3 m/s (145.8 kg/0.3 m/s, 321.5 lb/0.3 m/s) (PZ50M) 1,260.0 N/0.3 m/s (128.5 kg/0.3 m/s, 283.2 lb/0.3 m/s) (PZ50VT "USA/Canada") 530.0 N/0.3 m/s (54.0 kg/0.3 m/s, 119.1 lb/0.3 m/s) (PZ50VT "Europe"/PZ50MP) 730.0 N/0.3 m/s (74.4 kg/0.3 m/s, 164.1 lb/0.3 m/s) (PZ50) 630.0 N/0.3 m/s (64.2 kg/0.3 m/s, 141.6 lb/0.3 m/s) (PZ50GT "USA/Canada") 980 N/0.3 m/s (99.9 kg/0.3 m/s, 220.3 lb/0.3 m/s) (PZ50GT "Europe") 1,470.0 N/0.3 m/s (149.9 kg/0.3 m/s, 330.5 lb/0.3 m/s) (PZ50FX) 710.0 N/0.3 m/s (72.4 kg/0.3 m/s, 159.6 lb/0.3 m/s) (PZ50M) 530.0 N/0.3 m/s (54.0 kg/0.3 m/s, 119.1 lb/0.3 m/s) (PZ50VT "USA/Canada") 840.0 N/0.3 m/s (85.7 kg/0.3 m/s, 188.8 lb/0.3 m/s) (PZ50VT "Europe"/PZ50MP)
Slide runner: Thickness Wear limit	18.3 mm (0.72 in) 10.5 mm (0.41 in)
Track sprocket wheel: Material Number of teeth	Quadruple polyethylene 9 T (PZ50/PZ50GT/PZ50FX/PZ50VT/PZ50MP) 8 T (PZ50M)
Rear guide wheel: Material Outside diameter	High molecular weight polyethylene with rubber 178.0 mm (7.01 in)
Brake: Recommended brake fluid Pad thickness Pad wear limit Pad to disc clearance Parking brake cable distance Disc outside diameter Disc thickness Disc minimum thickness	DOT 4 9.4 mm (0.37 in) 4.7 mm (0.19 in) 0.08 ~ 0.20 mm (0.0031 ~ 0.0079 in) 43.5 ~ 46.5 mm (1.713 ~ 1.831 in) 200.0 mm (7.87 in) 4.0 mm (0.16 in) 3.5 mm (0.14 in)



CHASSIS

Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Frame: Frame material Seat height Luggage box location	Monocoque (Aluminum and Steel) 719 mm (28.31 in) (PZ50/PZ50GT/PZ50FX/PZ50M) 724 mm (28.50 in) (PZ50VT/PZ50MP) Not available
Steering: Lock-to-lock angle (left) (right) Ski alignment Toe-out size Caster angle Ski stance (center to center)	32.4° (R ski) 37.6° (L ski) 37.6° (R ski) 32.4° (L ski) Toe-out 0 ~ 15 mm (0 ~ 0.59 in) 18.0° 1,080 mm (42.5 in) (PZ50/PZ50GT/PZ50FX/PZ50VT/ PZ50MP) 980 mm (38.6 in) (PZ50M)
Ski: Ski material Length Width Ski runner material Ski cover Ski runner wear limit Plastic ski wear limit	Plastic 1,021.0 mm (40.20 in) (PZ50/PZ50GT/PZ50FX/PZ50M/ PZ50VT "USA/Canada") 1,073.0 mm (42.24 in) (PZ50VT "Europe"/PZ50MP) 132.0 mm (5.20 in) (PZ50/PZ50GT/PZ50FX/PZ50VT "USA/Canada") 182.0 mm (7.17 in) (PZ50M) 180.0 mm (7.09 in) (PZ50VT "Europe"/PZ50MP) Steel No 6 mm (0.24 in) 13 mm (0.51 in) (PZ50/PZ50GT/PZ50FX/PZ50VT "USA/ Canada") 24 mm (0.95 in) (PZ50M/PZ50VT "Europe"/PZ50MP)
Ski suspension (front suspension): Type Travel Spring type Spring rate	Independent wishbone 235.0 mm (9.25 in) (PZ50/PZ50FX) 214.0 mm (8.43 in) (PZ50GT) 220.0 mm (8.66 in) (PZ50M) 181.0 mm (7.13 in) (PZ50VT "USA/Canada") 182.0 mm (7.17 in) (PZ50VT "Europe") 224.0 mm (8.82 in) (PZ50MP) Coil spring 30 N/mm (3.06 kg/mm, 171.3 lb/in) (PZ50) 21 N/mm (2.14 kg/mm, 119.9 lb/in) (PZ50GT) 26 N/mm (2.65 kg/mm, 148.5 lb/in) (PZ50FX) 21~ 32 N/mm (2.14 ~ 3.26 kg/mm, 119.9 ~ 182.7 lb/in) (PZ50M) 55 N/mm (5.61 kg/mm, 314.0 lb/in) (PZ50VT "USA/Can- ada") 15 ~ 35 N/mm (1.53 ~ 3.57 kg/mm, 85.6 ~ 199.8 lb/in) (PZ50VT "Europe") 24 N/mm (2.45 kg/mm, 137.0 lb/in) (PZ50MP)



Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Wire diameter	8.8 mm (0.346 in) (PZ50) 7.8 mm (0.307 in) (PZ50GT/PZ50VT “Europe”) 8.5 mm (0.335 in) (PZ50FX) 8.2 mm (0.323 in) (PZ50M) 9.8 mm (0.386 in) (PZ50VT “USA/Canada”) 8.0 mm (0.315 in) (PZ50MP)
Shock absorber: Damping force	
Extension	2,260 N/0.3 m/s (230.4 kg/0.3 m/s, 508.0 lb/0.3 m/s) (PZ50) 690 N/0.3 m/s (70.4 kg/0.3 m/s, 155.1 lb/0.3 m/s) (PZ50GT) 1,120 N/0.3 m/s (114.2 kg/0.3 m/s, 251.8 lb/0.3 m/s) (PZ50FX) 490 N/0.3 m/s (50.0 kg/0.3 m/s, 110.2 lb/0.3 m/s) (PZ50M) 640 N/0.3 m/s (65.3 kg/0.3 m/s, 143.9 lb/0.3 m/s) (PZ50VT “USA/Canada”) 740 N/0.3 m/s (75.5 kg/0.3 m/s, 166.4 lb/0.3 m/s) (PZ50VT “Europe”) 730 N/0.3 m/s (74.4 kg/0.3 m/s, 164.1 lb/0.3 m/s) (PZ50MP)
Compression	890 N/0.3 m/s (90.8 kg/0.3 m/s, 200.1 lb/0.3 m/s) (PZ50) 670 N/0.3 m/s (68.3 kg/0.3 m/s, 150.6 lb/0.3 m/s) (PZ50GT) 885 N/0.3 m/s (90.2 kg/0.3 m/s, 198.9 lb/0.3 m/s) (PZ50FX) 850 N/0.3 m/s (86.7 kg/0.3 m/s, 191.1 lb/0.3 m/s) (PZ50M) 970 N/0.3 m/s (98.9 kg/0.3 m/s, 218.1 lb/0.3 m/s) (PZ50VT “USA/Canada”) 1,440 N/0.3 m/s (146.8 kg/0.3 m/s, 323.7 lb/0.3 m/s) (PZ50VT “Europe”) 820 N/0.3 m/s (83.6 kg/0.3 m/s, 184.3 lb/0.3 m/s) (PZ50MP)



ELECTRICAL

Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Voltage	12 V
Ignition system: Ignition timing (B.T.D.C.) Advanced type	5° at 1,800 r/min Digital type
Ignition coil: Model/Manufacturer Ignition spark gap Primary coil resistance Secondary coil resistance	F6T567/MITSUBISHI 6.0 mm (0.24 in) 1.19 ~ 1.61 Ω at 20 °C (68 °F) 8.5 ~ 11.5 kΩ at 20 °C (68 °F)
Charging system: Type Nominal output	A.C. magneto 14 V/less than 35 A at 5,000 r/min
DC-T.C.I.: Magneto model/Manufacturer Standard Stator coil resistance (color code) ECU model/Manufacturer	F4T39471/MITSUBISHI 14 V 31.5 A, 440 W at 5,000 r/min 0.22 ~ 0.26 Ω at 20 °C (68 °F) (White – White) F8T83571/MITSUBISHI (PZ50/PZ50GT/PZ50FX/PZ50VT/ PZ50MP) F8T83572/MITSUBISHI (PZ50M)
Rectifier/regulator: Type Model/Manufacturer No load regulated voltage (DC) Capacity (DC) Withstand voltage	Short circuit type FH012/SHINDENGEN 14.2 ~ 14.8 V 50 A 40 V
Battery: Specific gravity Manufacturer Type Ten hour rate amperage	1.32 YUASA YTX14-BS 12V-12Ah 12 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	8GC/MORIC 0.90 kW 0.009 ~ 0.011 Ω at 20 °C (68 °F) More than 100 kΩ at 20 °C (68 °F) 10.8 mm (0.43 in) 3.65 mm (0.14 in) 5.28 ~ 7.92 N (538 ~ 808 g, 19.01 ~ 28.51 oz) 24.5 mm (0.96 in) 23.5 mm (0.93 in) 1.5 mm (0.06 in)
Starter relay: Model/Manufacturer Amperage rating Coil resistance	MS5F-571/JIDECO 180 A 4.18 ~ 4.62 Ω at 20 °C (68 °F)



Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
T.P.S. (throttle position sensor): Model/Manufacturer Resistance	8GC/KEIHIN 4 ~ 6 kΩ at 20 °C (68 °F) (Blue – Black/Blue)
Oil level switch: Model/Manufacturer	8GC/ASTI
Fuel sender: Model/Manufacturer Sender resistance Full Empty	8GC/NIPPON SEIKI 10 ~ 12 Ω at 20 °C (68 °F) 179 ~ 185 Ω at 20 °C (68 °F)
Headlight relay: Model/Manufacturer Coil resistance	5DM/OMRON 94.5 ~ 115.5 Ω at 20 °C (68 °F)
Grip warmer: Heater resistance (left) (right)	1.53 ~ 1.87 Ω at 20 °C (68 °F) (Black – Black) (PZ50/ PZ50GT/PZ50M/PZ50VT/PZ50MP) 6.12 ~ 7.48 Ω at 20 °C (68 °F) (Black – Black) (PZ50FX) 1.53 ~ 1.87 Ω at 20 °C (68 °F) (Black – Black) (PZ50/ PZ50GT/PZ50M/PZ50VT/PZ50MP) 6.12 ~ 7.48 Ω at 20 °C (68 °F) (Black – Black) (PZ50FX)
Thumb warmer: Heater resistance	37.0 ~ 45.2 Ω at 20 °C (68 °F) (White – Black)
Passenger grip warmer: Heater resistance (high) Heater resistance (low)	8.82 ~ 10.78 Ω (Green – Black) (PZ50VT) 14.67 ~ 17.93 Ω (Yellow – Black) (PZ50VT)
Circuit breaker: Type Amperage for individual circuit Main fuse Fuel injection system fuse Headlight fuse Signal fuse Ignition fuse Auxiliary DC jack fuse Radiator fan motor fuse Gear motor fuse Reserve fuse Reserve fuse Reserve fuse Reserve fuse Reserve fuse	Fuse 40 A × 1 10 A × 1 20 A × 1 7.5 A × 1 20 A × 1 3 A × 1 (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP) 15 A × 1 (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP) 4 A × 1 (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP) 20 A × 1 15 A × 1 (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP) 10 A × 1 7.5 A × 1 4 A × 1 (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP) 3 A × 1 (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)
Coolant temperature sensor: Model/Manufacturer Resistance Indicator light (ON) (OFF)	8CC/MITSUBISHI 5.21 ~ 6.37 kΩ at 0 °C (32 °F) 0.290 ~ 0.354 kΩ at 80 °C (176 °F) 90 ~ 110 °C (194 ~ 230 °F) 85 ~ 105 °C (185 ~ 221 °F)



Model	PZ50/PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP
Speed sensor: Model/Manufacture	8FP/NIPPON SEIKI
Cylinder identification sensor: Model/Manufacture	8GC/NIPPON SEIKI
Crankshaft position sensor: Model/Manufacture Resistance	8GC/MITSUBISHI 189 ~ 231 Ω at 20 °C (68 °F) (Gray – Black)
Intake air pressure sensor: Model/Manufacture	5PS/DENSO
Intake air temperature sensor: Model/Manufacture Resistance	8FP/MITSUBISHI 290 ~ 390 k Ω at 80 °C (176 °F)
Knock sensor: Model/Manufacture Resistance	8GC/MITSUBISHI 504 ~ 616 k Ω at 20 °C (68 °F)



TIGHTENING TORQUE

ENGINE

Parts to be tightened	Tightening torque			Remarks	
	Nm	m · kg	ft · lb		
Spark plug	13	1.3	9.4	Apply the engine oil.	
Cylinder head bolt (M10 × 1.25)	See NOTE.*1				
Cylinder head bolt	12	1.2	8.7		
Camshaft cap and cylinder head	9	0.9	6.5		
Cylinder head cover	12	1.2	8.7		
Cylinder identification sensor	8	0.8	5.8		
Ignition coil	10	1.0	7.2		
Camshaft and camshaft sprocket	24	2.4	17		
Oil check bolt	10	1.0	7.2		
Timing chain tensioner	12	1.2	8.7	Apply LOCTITE®	
Timing chain guide (intake)	12	1.2	8.7	Apply LOCTITE®	
Thermostat housing cover	10	1.0	7.2	Apply LOCTITE®	
Coolant temperature sensor	23	2.3	17		
Hose band	2	0.2	1.4		
Water pump	12	1.2	8.7		
Coolant reservoir tank	10	1.0	7.2		
Radiator	10	1.0	7.2		
Radiator fan motor	8	0.8	5.8		
Water jacket joint	10	1.0	7.2		
Knock sensor	27	2.7	19		
Oil cooler	10	1.0	7.2	Apply LOCTITE®	
Rear engine mounting bolt spacer	7	0.7	5.1		
Engine mounting nut	40	4.0	29		
Engine mounting bracket	23	2.3	17		
Oil pan	10	1.0	7.2		
Oil pan engine oil drain bolt	30	3.0	22		
Oil filter cartridge	17	1.7	12		
Oil filter bolt	30	3.0	22		
Oil pressure switch	15	1.5	11		
Oil pump	12	1.2	8.7	Apply LOCTITE®	
Oil pump drive chain guide	10	1.0	7.2		
Oil pump housing cover	5	0.5	3.6		
Oil tank engine oil drain bolt	16	1.6	11		
Oil tank and frame	10	1.0	7.2		
Exhaust pipe joint	25	2.5	18		
Exhaust pipe joint upper cover	6	0.6	4.3		
Exhaust pipe joint lower cover	8	0.8	5.8		
Exhaust pipe band	18	1.8	13		
Exhaust pipe/muffler	33	3.3	24	Apply LOCTITE® (PZ50/PZ50GT/PZ50FX/PZ50M)	
Muffler dumper holder	10	1.0	7.2		
Muffler end cover	10	1.0	7.2		
Crankcase (M9 × 1.25)	See NOTE.*2				Apply the engine oil.
Crankcase (M6 × 1.0)	12	1.2	8.7		Apply the engine oil.
Primary sheave drive shaft cover	12	1.2	8.7		
Primary sheave drive shaft assembly bolt	12	1.2	8.7		
Balancer shaft drive gear	75	7.5	54		
Balancer shaft driven gear	50	5.0	36		



Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Bearing retainer	10	1.0	7.2	Apply LOCTITE®
Right balancer weight	50	5.0	36	
Connecting rod and cap	See NOTE.*3			Apply the engine oil.
A.C. magneto rotor	130	13.0	94	
A.C. magneto rotor cover bolt (M6 × 1.0) × 7	12	1.2	8.7	Apply LOCTITE®
A.C. magneto rotor cover bolt (M6 × 1.0) × 6	12	1.2	8.7	
Starter clutch	12	1.2	8.7	Apply LOCTITE®
Stator coil	10	1.0	7.2	Apply LOCTITE®
Pickup coil	7	0.7	5.1	Apply LOCTITE®
A.C. magneto lead holder	10	1.0	7.2	Apply LOCTITE®
Starter motor	12	1.2	8.7	
Fuel pump	7	0.7	5.1	
Fuel tank	10	1.0	7.2	
Starter motor lead	7	0.7	5.1	
Throttle cable locknut	6	0.6	4.3	
Rectifier/regulator	7	0.7	5.1	
Frame ground lead (rectifier/regulator)	7	0.7	5.1	
Engine ground lead (water jacket joint)	10	1.0	7.2	
Frame rear cross member (front)	25	2.5	18	
Frame rear cross member (rear)	30	3.0	22	

NOTE:

- *1: Tighten the cylinder head bolts to 25 Nm (2.5 m · kg, 18 ft · lb) in the proper tightening sequence, loosen and retighten the cylinder head bolts to 25 Nm (2.5 m · kg, 18 ft · lb) in the proper tightening sequence, and then tighten the cylinder head bolts further to reach the specified angle 175 ~ 185° in the proper tightening sequence.
- *2: Tighten the crankcase bolts to 15 Nm (1.5 m · kg, 11 ft · lb) in the proper tightening sequence, loosen and retighten the crankcase bolts to 15 Nm (1.5 m · kg, 11 ft · lb) in the proper tightening sequence, and then tighten the crankcase bolts further to reach the specified angle 65 ~ 70° in the proper tightening sequence.
- *3: Tighten the connecting rod nuts to 20 Nm (2.0 m · kg, 14 ft · lb), and then tighten the connecting rod nuts further to reach the specified angle 120 ~ 130°.



POWER TRAIN

Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Primary sheave	See NOTE.			Apply engine oil.
Spider and sliding sheave	200	20.0	145	Left-hand thread. Apply LOCTITE®
Primary sheave cap and sliding sheave	14	1.4	10	
Roller and weight (primary sheave)	6	0.6	4.3	
Secondary sheave	60	6.0	43	
Bushing stopper bolt (secondary sheave)	7	0.7	5.1	
Drive chain cover and frame	24	2.4	17	
Drive chain oil drain bolt	16	1.6	11	
Drive chain adjusting locknut	25	2.5	18	
Driven sprocket	48	4.8	35	Apply LOCTITE®
Bearing holder (secondary shaft)	24	2.4	17	
Set bolt (secondary shaft)	9	0.9	6.5	Apply LOCTITE®
Frame and secondary shaft assembly	10	1.0	7.2	(PZ50GT/PZ50FX/PZ50M/ PZ50VT/PZ50MP)
Gear motor and secondary shaft assembly	17	1.7	12	(PZ50GT/PZ50FX/PZ50M/ PZ50VT/PZ50MP)
Right reverse gear case and left reverse gear case	6	0.6	4.3	(PZ50GT/PZ50FX/PZ50M/ PZ50VT/PZ50MP)
Drive position switch	17	1.7	12	(PZ50GT/PZ50FX/PZ50M/ PZ50VT/PZ50MP)
Reverse position switch	17	1.7	12	(PZ50GT/PZ50FX/PZ50M/ PZ50VT/PZ50MP)
Battery bracket	23	2.3	17	
Brake caliper bracket and drive chain cover	48	4.8	35	
Brake caliper bleed screw	6	0.6	4.3	
Brake caliper retaining pin	18	1.8	13	
Brake hose union bolt	30	3.0	22	
Parking brake assembly and drive chain cover	10	1.0	7.2	
Lever and parking brake assembly	16	1.6	11	
Brake master cylinder holder and brake master cylinder	10	1.0	7.2	
Brake master cylinder holder and parking brake lever	23	2.3	17	
Parking brake cable and parking brake lever	10	1.0	7.2	
Parking brake cable locknut	6	0.6	4.3	
Slide rail suspension mounting bolt (M10)	72	7.2	52	Apply LOCTITE®
Slide rail suspension mounting bolt (M10) (front side)	72	7.2	52	(PZ50VT/PZ50MP)
Slide rail suspension mounting bolt (M10) (rear side)	110	11.0	80	Apply LOCTITE®
Stopper band	4	0.4	2.9	(PZ50/PZ50GT/PZ50FX/PZ50M)
Shock absorber and front pivot arm	49	4.9	35	
Shock absorber and front suspension bracket	49	4.9	35	
Shaft and sliding frame	60	6.0	43	
Front pivot arm and connecting arm	110	11.0	80	(PZ50/PZ50GT/PZ50FX/PZ50M)



Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Front pivot arm and connecting arm	72	7.2	52	(PZ50VT/PZ50MP) Apply LOCTITE® (PZ50M)
Front pivot arm and sliding frame	60	6.0	43	
Front suspension bracket and connecting arm	72	7.2	52	
Sliding frame and wheel bracket	72	7.2	52	
Suspension wheel	60	6.0	43	(PZ50/PZ50GT/PZ50FX/PZ50M) (PZ50VT/PZ50MP)
Front suspension bracket shaft and sliding frame	60	6.0	43	
Set bolt (wheel bracket)	6	0.6	4.3	
Shock absorber and connecting arm	49	4.9	35	
Pull rod, shock absorber, and rear suspension bracket	49	4.9	35	(PZ50VT/PZ50MP) (PZ50/PZ50GT/PZ50FX/PZ50M)
Rear suspension bracket shaft and sliding frame	60	6.0	43	
Rear pivot arm and pull rod	49	4.9	35	
Shock absorber and rear pivot arm	49	4.9	35	
2-up adjusting block	60	6.0	43	(PZ50VT/PZ50MP) (PZ50VT/PZ50MP) (PZ50/PZ50GT/PZ50FX/PZ50M)
Set bolt (collar)	9	0.9	6.5	
Rear pivot arm joint	35	3.5	25	
Rear pivot arm and rear pivot arm bracket	72	7.2	52	
Rear pivot arm bracket and sliding frame	72	7.2	52	(PZ50/PZ50GT/PZ50FX/PZ50M) Apply LOCTITE® (PZ50/PZ50GT/PZ50FX/PZ50M)
Rear pivot arm bracket stopper and sliding frame	60	6.0	43	
Wheel bracket, shaft, and sliding frame	60	6.0	43	
Rear pivot arm and control rod stopper	60	6.0	43	
Control rod adjusting locknut	25	2.5	18	(PZ50VT/PZ50MP) (PZ50VT/PZ50MP) Apply LOCTITE® Inside
Control rod shaft and sliding frame	72	7.2	52	
Rear axle	75	7.5	54	
Set bolt (front axle)	9	0.9	6.5	
Bearing holder (front axle)	24	2.4	17	Apply LOCTITE® Outside
Bearing holder (front axle)	24	2.4	17	
Speed sensor	24	2.4	17	
Bearing housing	24	2.4	17	
Gear unit (speed sensor)	40	4.0	29	

NOTE:

Tightening steps:

1. Tighten the bolt to a torque at 120 Nm (12.0 m · kg, 85 ft · lb).
2. Loosen the bolt completely.
3. Retighten the bolt to a torque of 60 Nm (6.0 m · kg, 43 ft · lb).



CHASSIS

Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Front bumper	23	2.3	17	
Wind shield bracket	16	1.6	11	(PZ50GT/PZ50FX/PZ50M)
Mirror	18	1.8	13	(PZ50VT/PZ50MP)
Headlight bracket	10	1.0	7.2	(PZ50/PZ50GT/PZ50FX/PZ50M)
Side panel	8	0.8	5.8	(PZ50/PZ50GT/PZ50FX/PZ50M)
Lower cover	8	0.8	5.8	
Seat rail assembly bolt	47	4.7	34	(PZ50/PZ50GT/PZ50FX/PZ50M)
Seat rail assembly nut	23	2.3	17	(PZ50/PZ50GT/PZ50FX/PZ50M)
Seat	10	1.0	7.2	(PZ50/PZ50GT/PZ50FX/PZ50M)
Rider seat	23	2.3	17	(PZ50VT/PZ50MP)
Rear cover	7	0.7	5.1	(PZ50/PZ50GT/PZ50FX/PZ50M)
Side cover	11	1.1	8.0	(PZ50VT/PZ50MP)
Passenger grip warmer and frame	23	2.3	17	(PZ50VT/PZ50MP)
Passenger grip warmer and rear carrier	7	0.7	5.1	(PZ50VT/PZ50MP)
Rear side cover	8	0.8	5.8	(PZ50VT/PZ50MP)
Rear side lower cover	8	0.8	5.8	(PZ50VT/PZ50MP)
Passenger seat bracket	23	2.3	17	(PZ50VT/PZ50MP)
Passenger seat	7	0.7	5.1	(PZ50VT/PZ50MP)
Rear cover	8	0.8	5.8	(PZ50VT/PZ50MP)
Sub frame panel	7	0.7	5.1	(PZ50VT/PZ50MP)
Rear carrier	23	2.3	17	(PZ50VT/PZ50MP)
Tail/brake light assembly	10	1.0	7.2	(PZ50VT/PZ50MP)
Handlebar holder	15	1.5	11	
Multi-function meter bracket	20	2.0	14	
Steering joint and steering joint bracket	21	2.1	15	(PZ50VT/PZ50MP)
Steering joint bracket and steering column	16	1.6	11	(PZ50VT/PZ50MP)
Steering column and relay rod	21	2.1	15	
Relay rod and steering control arm	21	2.1	15	
Steering column (upper)	23	2.3	17	
Steering column (lower)	23	2.3	17	
Steering control arm and steering control arm bracket	35	3.5	25	
Steering control arm bracket and frame	25	2.5	18	
Steering control arm and steering shaft	21	2.1	15	
Steering shaft and steering arm	35	3.5	25	
Steering arm pinch bolt	30	3.0	22	
Steering shaft end locknut	25	2.5	18	Apply LOCTITE®
Pivot arm bracket	35	3.5	25	
Pivot arm bracket and relay arm	38	3.8	27	
Pivot arm bracket and pivot arm shaft	90	9.0	65	
Pivot arm shaft and idler arm	38	3.8	27	
Relay arm and idler arm	38	3.8	27	
Idler arm and tie rod	25	2.5	18	
Tie rod and steering knuckle	28	2.8	20	
Tie rod end locknut	25	2.5	18	Apply LOCTITE®
Ski	48	4.8	35	
Ski runner	19	1.9	14	
Ski and ski handle (M8 × 55)	12	1.2	8.7	
Ski and ski handle (M8 × 100)	17	1.7	12	

TIGHTENING TORQUE

SPEC

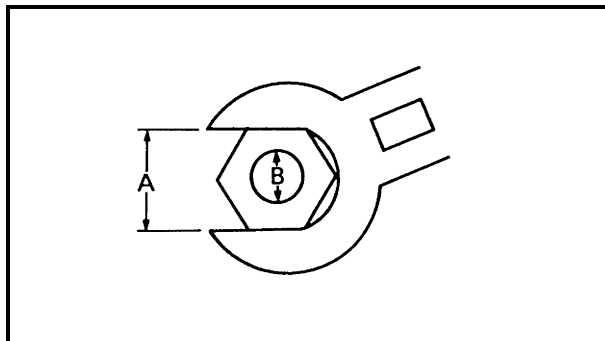


Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Shock absorber (upper)	45	4.5	33	
Shock absorber (lower)	45	4.5	33	
Upper arm ball joint and upper arm	60	6.0	43	
Upper arm and frame	45	4.5	32	
Upper arm ball joint and steering knuckle	45	4.5	32	
Lower arm and frame	65	6.5	47	
Lower arm and steering knuckle	65	6.5	47	
Stabilizer and stabilizer joint	45	4.5	32	
Stabilizer joint and lower arm	34	3.4	25	
Stabilizer bracket	7	0.7	5.1	
Stabilizer holder	34	3.4	25	
				(PZ50/PZ50FX/PZ50M)
				(PZ50/PZ50FX/PZ50M)
				(PZ50GT/PZ50VT/PZ50MP)

GENERAL TORQUE SPECIFICATIONS

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

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



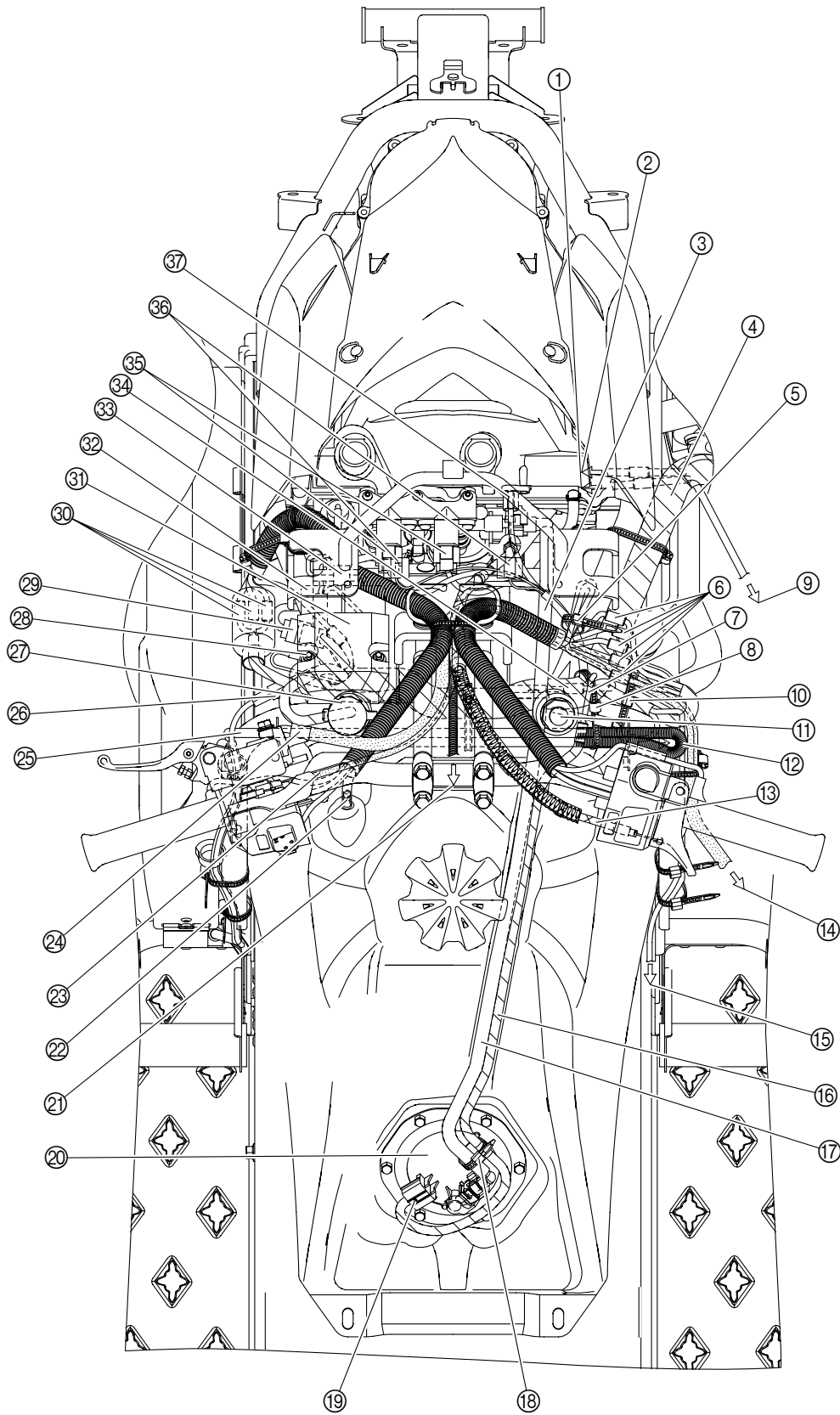
A: Distance across flats

B: Outside thread diameter

DEFINITION OF UNITS

Unit	Read	Definition	Measurement
mm	Millimeter	10^{-3} meter	Length
cm	Centimeter	10^{-2} meter	Length
kg	Kilogram	10^3 gram	Weight
N	Newton	$1 \text{ kg} \times \text{m/sec}^2$	Force
Nm	Newton meter	$\text{N} \times \text{m}$	Torque
m · kg	Meter kilogram	$\text{m} \times \text{kg}$	Torque
Pa	Pascal	N/m^2	Pressure
N/mm	Newtons per millimeter	N/mm	Spring rate
L	Liter	—	Volume or capacity
cm^3	Cubic centimeter	—	Volume or capacity
r/min	Rotations per minute	—	Engine speed



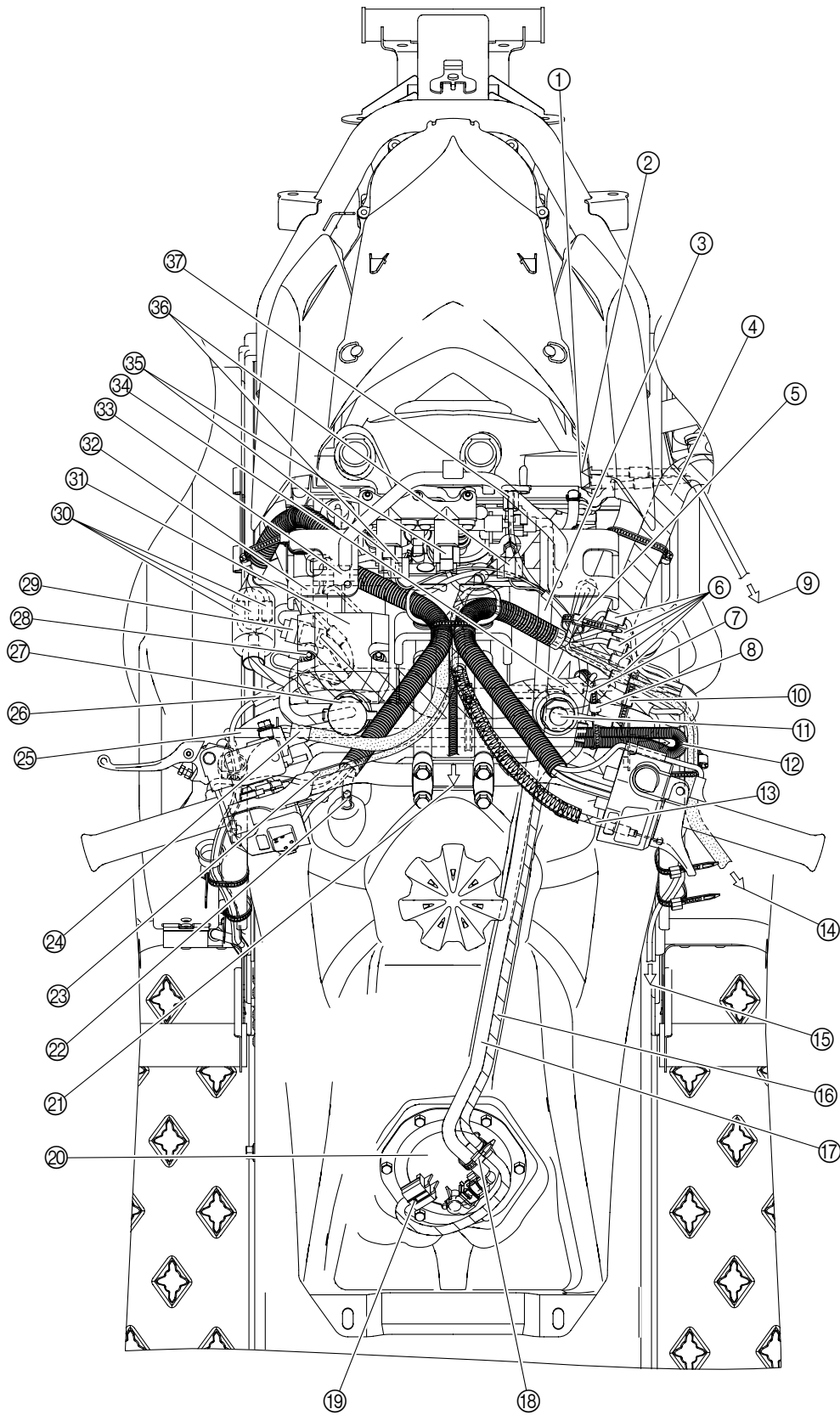




CABLE ROUTING

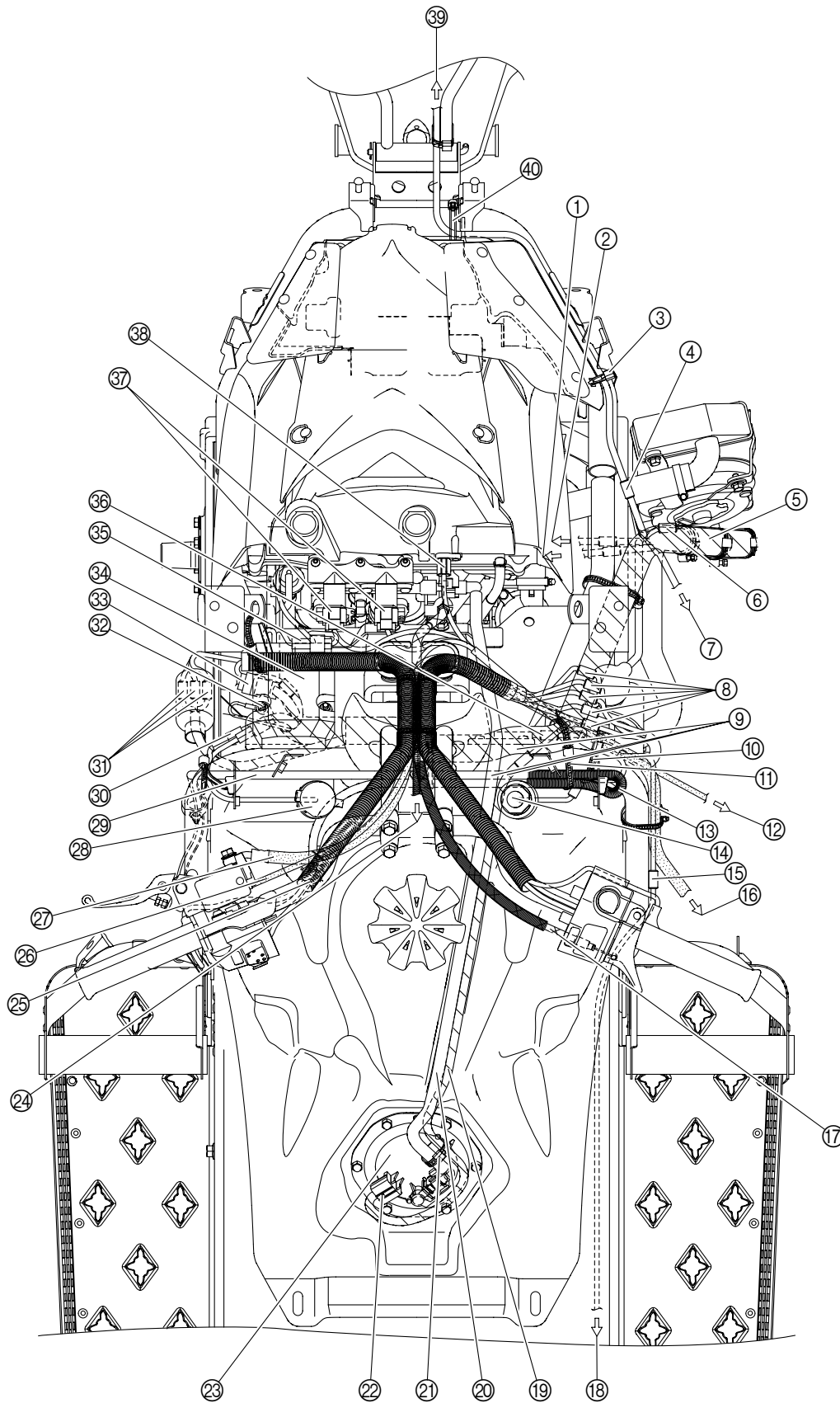
PZ50/PZ50M/PZ50FX/PZ50GT

- ① To the coolant temperature sensor
- ② To the knock sensor
- ③ Route the fuel hose over the wire harness and fuel tank breather hose.
- ④ Wire harness
- ⑤ Bundle the slack in the wire harness and fasten it with the plastic band.
- ⑥ Right handlebar switch lead couplers
- ⑦ Route the sub-wire harness over the wire harness and fuel tank breather hose.
- ⑧ Fasten the sub-wire harness and fuel tank breather hose to the steering gate with the plastic band.
- ⑨ To the oil level switch
- ⑩ Fasten the sub-wire harness, parking brake cable, and brake hose to the steering gate with the plastic band.
- ⑪ Main switch
- ⑫ Fuel tank breather hose
- ⑬ Throttle cable
- ⑭ To the brake caliper
- ⑮ To the tail/brake light
- ⑯ Fuel pump lead
- ⑰ Fuel hose
- ⑱ Fasten the fuel pump lead at the white tape to the fuel hose with the plastic band.
- ⑲ Fuel pump coupler
- ⑳ Fuel pump
- ㉑ To the multi-function meter
- ㉒ Install the fuel tank breather hose to the fuel tank with the hose clamp. Be sure to connect the hose end that does not have a paint mark to the fuel tank.





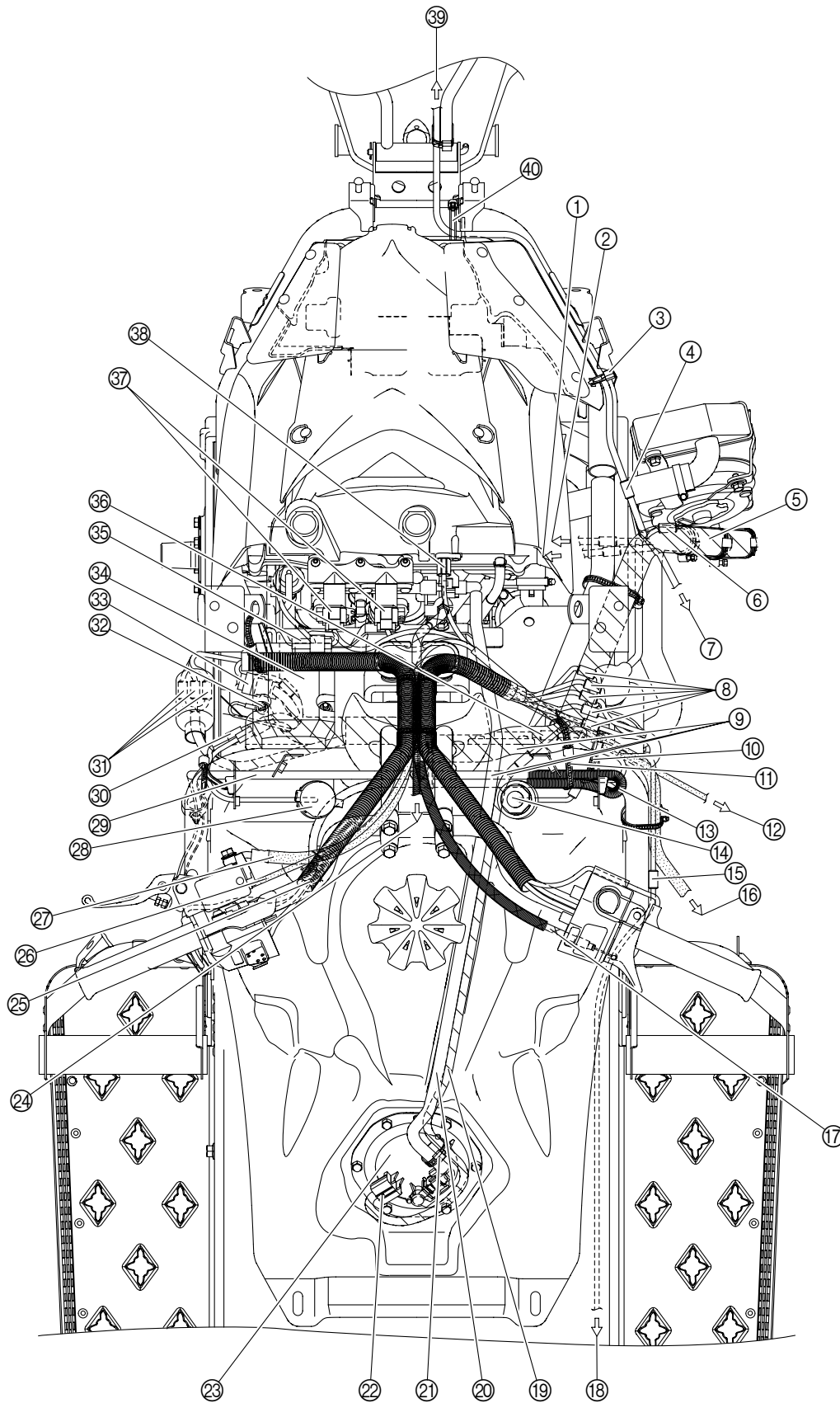
- ②③ Parking brake cable
- ②④ Brake hose
- ②⑤ Route the fuel tank breather hose along the steering gate.
- ②⑥ Speed sensor coupler
- ②⑦ Auxiliary DC jack (PZ50GT/PZ50FX/PZ50M)
- ②⑧ Install the frame ground lead terminal and the Rectifier/regulator using the same nut.
- ②⑨ Sub-wire harness coupler
- ③⑩ Left handlebar switch lead couplers
- ③① Rectifier/regulator
- ③② Connect the wire harness coupler to the Rectifier/regulator coupler shown in the illustration.
- ③③ A.C. magneto lead coupler
- ③④ Fuel pump lead coupler
- ③⑤ Intake air pressure sensor coupler
- ③⑥ Headlight coupler
- ③⑦ Intake air temperature sensor coupler





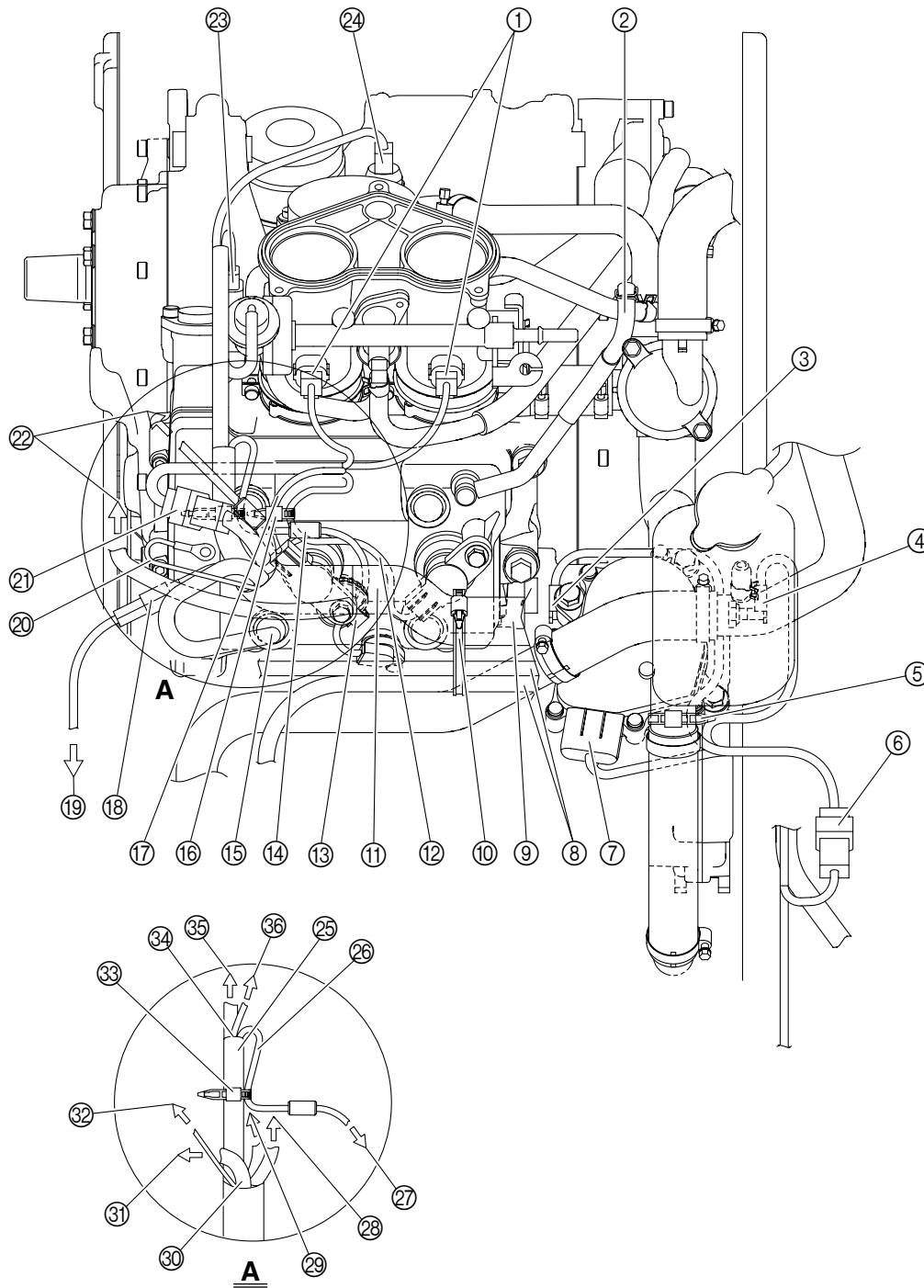
PZ50VT/PZ50MP

- ① To the coolant temperature sensor
- ② To the knock sensor
- ③ Pass the plastic band through the hole in the frame front cross member, and then fasten the wire harness with the band. Position the buckle of the plastic band on top of the leads, with the end facing to the left.
- ④ Headlight lead coupler
- ⑤ Wire harness
- ⑥ Radiator fan motor lead coupler
- ⑦ To the oil level switch
- ⑧ Right handlebar switch lead couplers
- ⑨ Route the fuel hose and sub-wire harness over the wire harness and fuel tank breather hose.
- ⑩ Fasten the sub-wire harness, parking brake cable, and brake hose to the steering gate with the plastic band.
- ⑪ Fasten the sub-wire harness and fuel tank breather hose to the steering gate with the plastic band.
- ⑫ To parking brake
- ⑬ Fuel tank breather hose
- ⑭ Main switch
- ⑮ Tail/brake light harness coupler
- ⑯ To the brake caliper
- ⑰ Throttle cable
- ⑱ To the tail/brake light
- ⑲ Fuel pump lead
- ⑳ Fuel hose
- ㉑ Fasten the fuel pump lead at the white tape to the fuel hose with the plastic band.
- ㉒ Fuel pump coupler
- ㉓ Fuel pump
- ㉔ To the multi-function meter



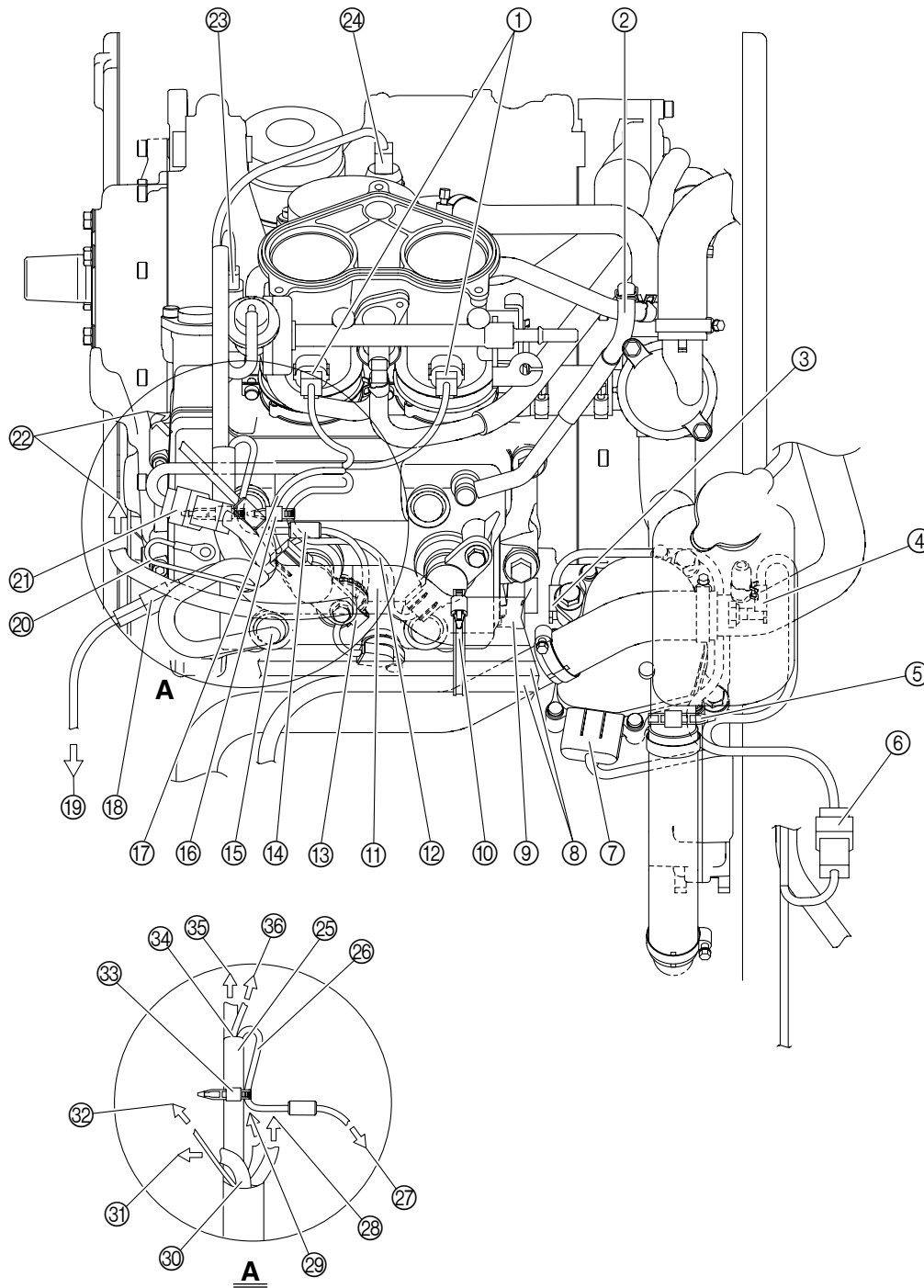


- ②⑤ Install the fuel tank breather hose to the fuel tank with the hose clamp. Be sure to connect the hose end that does not have a paint mark to the fuel tank.
- ②⑥ Parking brake cable
- ②⑦ Brake hose
- ②⑧ Auxiliary DC jack
- ②⑨ Route the fuel tank breather hose along the steering gate.
- ③⑩ Speed sensor coupler
- ③⑪ Left handlebar switch lead couplers
- ③⑫ Install the frame ground lead terminal and the Rectifier/regulator using the same nut.
- ③⑬ Sub-wire harness coupler
- ③⑭ Rectifier/regulator
- ③⑮ Crankshaft position sensor coupler
- ③⑯ Fuel pump coupler
- ③⑰ Intake air pressure sensor coupler
- ③⑱ Intake air temperature sensor coupler
- ③⑲ To the Headlight
- ④⑩ Fasten the headlight lead coupler to the frame front cross member with the plastic band.



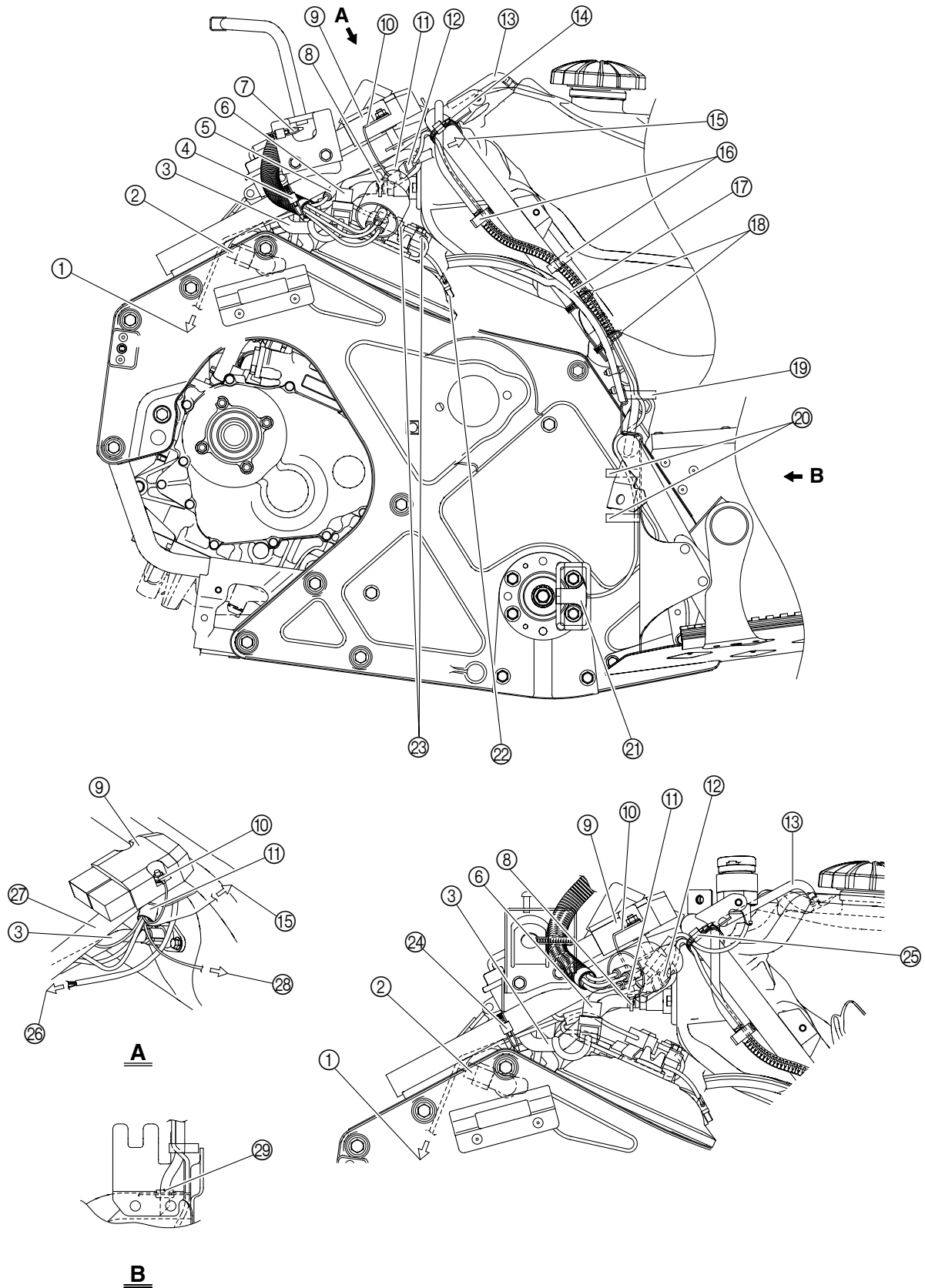


- ① Injector coupler
- ② Cylinder head breather hose
- ③ Reverse position switch coupler
(PZ50GT/PZ50FX/PZ50M/
PZ50VT/PZ50MP)
- ④ Drive position switch coupler
(PZ50GT/PZ50FX/PZ50M/
PZ50VT/PZ50MP)
- ⑤ Fasten the sub-wire harness to
the coolant reservoir with the
plastic band, making sure to
route the harness to the front of
the gear motor. Install the plastic
band with its buckle positioned
towards the front of the machine
and its end facing to the right.
(PZ50GT/PZ50FX/PZ50M/
PZ50VT/PZ50MP)
- ⑥ Sub-wire harness coupler
- ⑦ Gear motor coupler (PZ50GT/
PZ50FX/PZ50M/PZ50VT/
PZ50MP)
- ⑧ Fuel tank breather hose
- ⑨ Wire harness
- ⑩ Fasten the wire harness and fuel
tank breather hose to the steer-
ing gate with the plastic band,
making sure to fasten the hose
before and after the bend in the
hose.
- ⑪ Route the wire harness under the
steering gate.
- ⑫ Cylinder #1 ignition coil lead
- ⑬ Fasten the cylinder identification
sensor lead to the cylinder head
cover with the plastic band.
- ⑭ Cylinder identification sensor
lead coupler
- ⑮ To the auxiliary DC jack
(PZ50GT/PZ50FX/PZ50M/
PZ50VT/PZ50MP)
- ⑯ Fasten the cylinder #1 ignition
coil lead and cylinder #2 ignition
coil lead with the plastic band.
Position the plastic band 20 mm
(0.79 in) from the cylinder #1
ignition coil coupler. Install the
plastic band on the leads' protec-
tive sleeves.



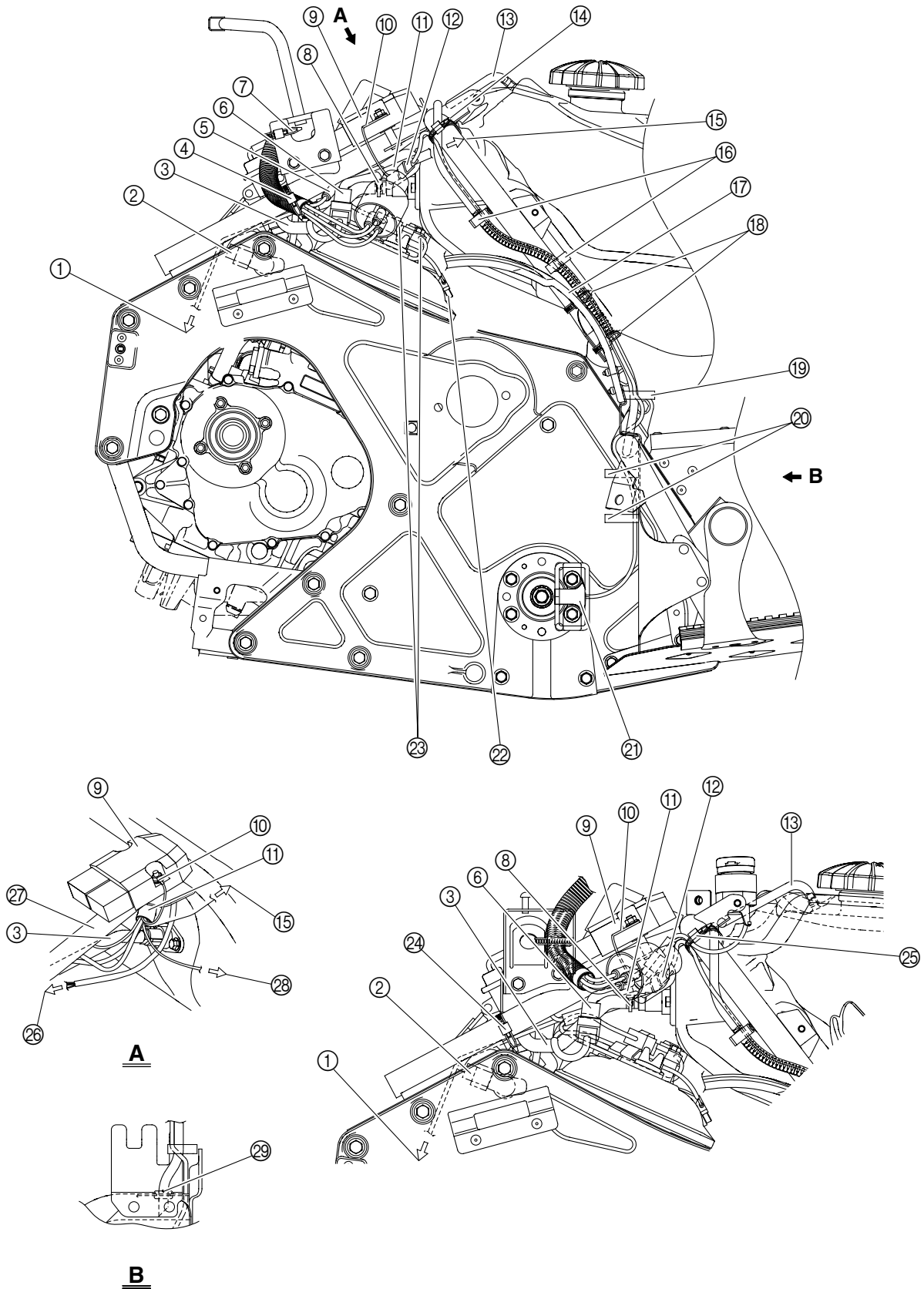


- ⑰ Cylinder #2 ignition coil lead
- ⑱ Speed sensor lead coupler
- ⑲ To the speed sensor
- ⑳ Frame ground lead
- ㉑ Connect the sub-wire harness coupler to the wire harness coupler.
- ㉒ To the handlebar switch
- ㉓ Throttle position sensor coupler
- ㉔ Oil pressure switch coupler
- ㉕ Wire harness
- ㉖ Cylinder identification sensor lead
- ㉗ To the cylinder identification sensor
- ㉘ To the handlebar switch
- ㉙ To the sub-wire harness
- ㉚ Location where the sub-wire harness branches off from the wire harness.
- ㉛ To the speed sensor
- ㉜ To the frame ground lead
- ㉝ Fasten the cylinder identification sensor lead and wire harness with the plastic band as shown in the illustration, making sure to position the band halfway between where the lead and where the sub-wire harness branch off from the wire harness.
- ㉞ Location where the sub-wire harness branches off from the wire harness.
- ㉟ To the throttle position sensor coupler and oil pressure switch coupler
- ㊱ To the Rectifier/regulator



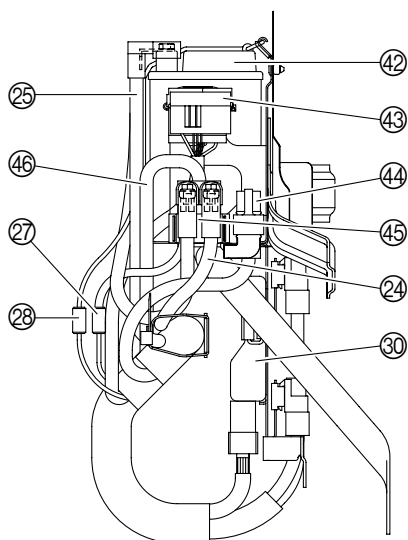
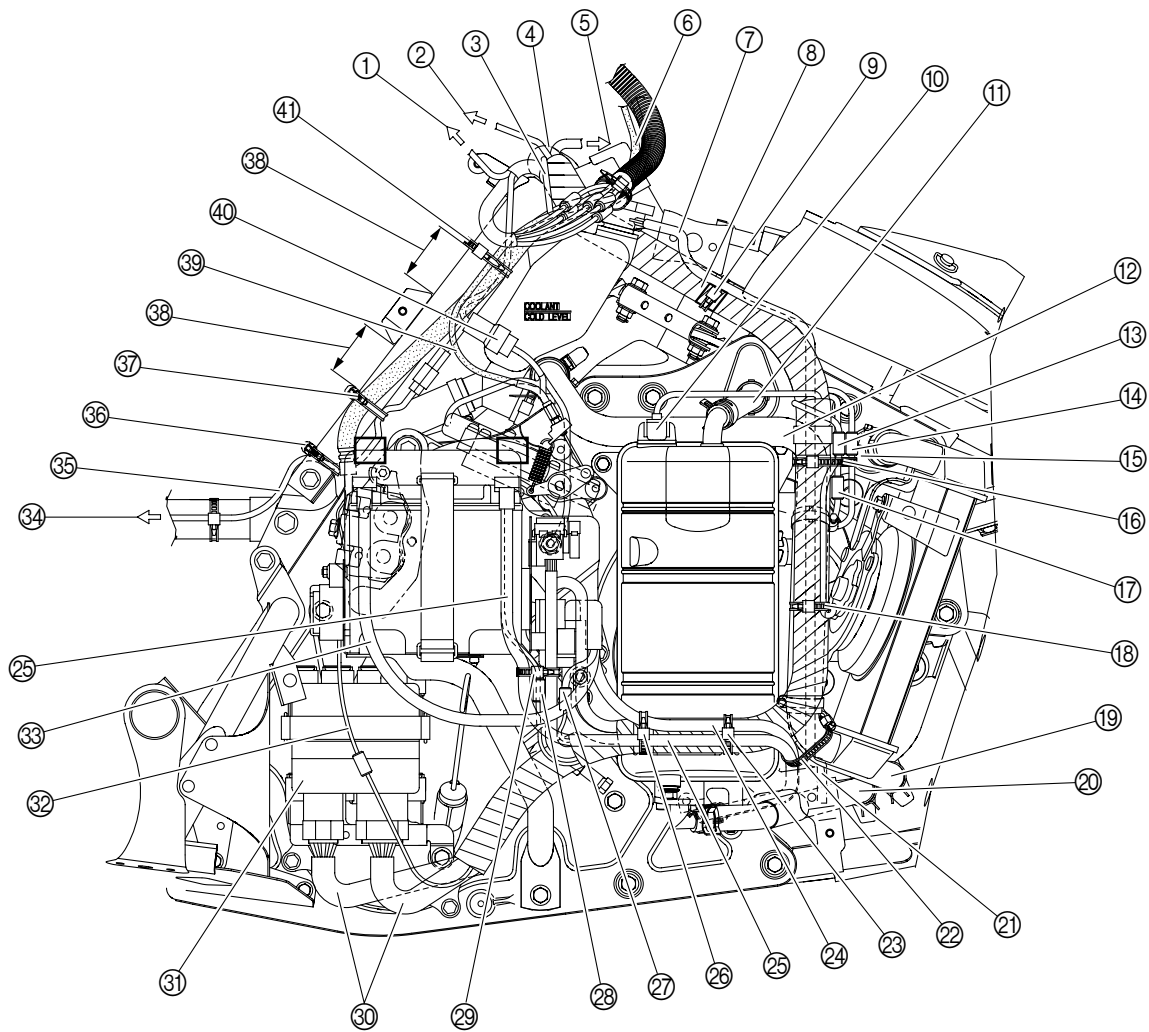


- ① To the oil pressure switch
- ② Throttle position sensor coupler
- ③ Fuel hose
- ④ Fasten the corrugated tube and sub-wire harness to the frame front cross member with the plastic band. (PZ50/PZ50GT/PZ50FX/ PZ50M)
- ⑤ Brake light switch (PZ50/PZ50GT/PZ50FX/PZ50M)
- ⑥ Sub-wire harness coupler
- ⑦ Fasten the corrugated tube to the headlight stay.
- ⑧ Fasten the fuel hose with the hose clamp. Face the ends of the hose clamp outward, angled 45° downward.
- ⑨ Rectifier/regulator
- ⑩ Frame ground lead
- ⑪ Wire harness
- ⑫ Speed sensor coupler
- ⑬ Fuel tank breather hose
- ⑭ Fasten the speed sensor lead and fuel tank breather hose to the frame rear cross member with the plastic band.
- ⑮ To the auxiliary DC jack (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)
- ⑯ Fasten the speed sensor lead and fuel tank breather hose with the holder.
- ⑰ Drive guard
- ⑱ Fasten the speed sensor lead and fuel tank breather hose with a plastic locking tie.
- ⑲ Fasten the speed sensor lead and fuel tank breather hose with the holder. Be sure to bend the holder so that the lead and hose will not come loose.
- ⑳ Fasten the speed sensor lead with the holder. Be sure to bend the holder so that the lead will not come loose.
- ㉑ Speed sensor

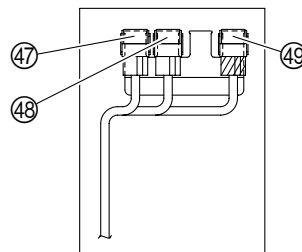




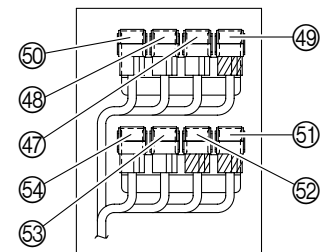
- ②② Cylinder identification sensor
- ②③ Ignition coil
- ②④ Fasten the sub-wire harness to the frame front cross member with the plastic band. (PZ50VT/PZ50MP)
- ②⑤ Fasten the fuel tank breather hose, auxiliary DC jack lead, and speed sensor with the plastic band. (PZ50VT/PZ50MP)
- ②⑥ To the left handlebar switch
- ②⑦ Frame rear cross member
- ②⑧ To the speed sensor
- ②⑨ Align the paint mark on the fuel tank breather hose with the top of the grommet.



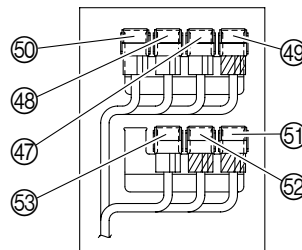
PZ50



PZ50VT/PZ50MP

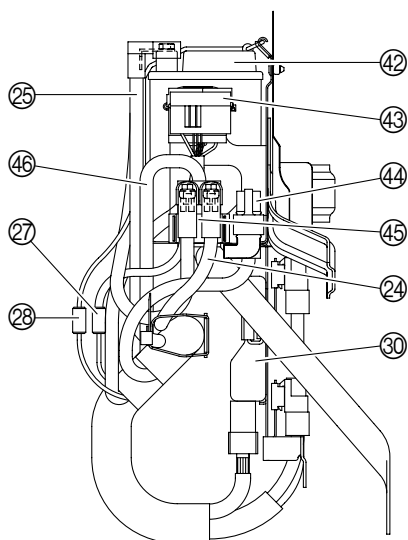
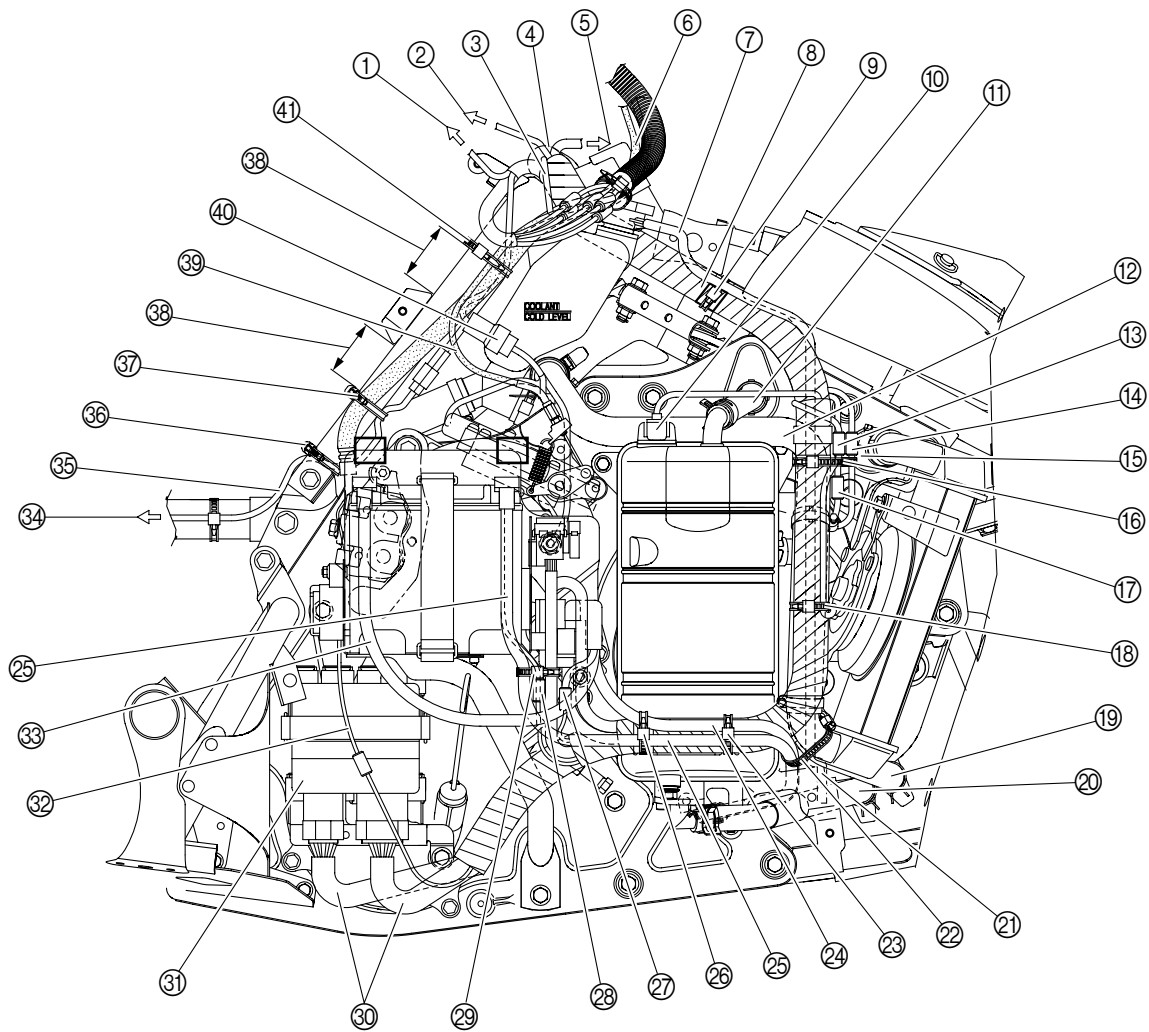


PZ50GT/PZ50FX/PZ50M

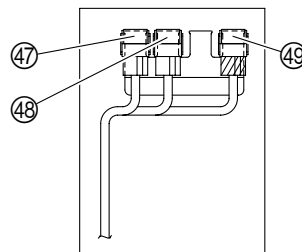




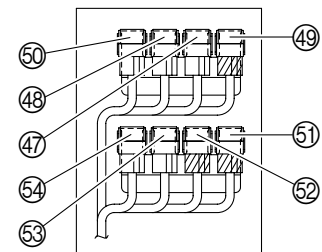
- ① To the main switch
- ② To the main switch
- ③ To the fuel pump
- ④ Route the wire harness over the frame rear cross member.
- ⑤ To the multi-function meter unit
- ⑥ Brake hose
- ⑦ Coolant reservoir breather hose
- ⑧ Wire harness
- ⑨ Fasten the wire harness at the white tape to the frame rear cross member with the plastic band. Face the end of the plastic band downward.
- ⑩ Oil level switch coupler
- ⑪ Oil tank breather hose
- ⑫ Radiator outlet pipe
- ⑬ Radiator fan motor coupler (PZ50M/PZ50VT/PZ50MP)
- ⑭ Knock sensor coupler
- ⑮ Radiator inlet hose
- ⑯ Fasten the wire harness, radiator fan motor lead and knock sensor lead to the radiator outlet pipe with the plastic band, making sure to align the radiator fan motor coupler with the wire harness joint coupler. Install the plastic band with its buckle positioned to the outside of the pipe and its end facing rearward. (PZ50M/PZ50VT/PZ50MP)
- ⑰ Coolant temperature sensor coupler
- ⑱ Fasten the wire harness and radiator fan motor lead to the radiator outlet hose with the plastic band. Install the plastic band with its buckle positioned to the outside of the hose and its end facing rearward. (PZ50M/PZ50VT/PZ50MP)



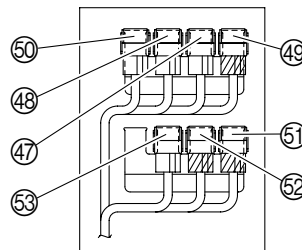
PZ50



PZ50VT/PZ50MP

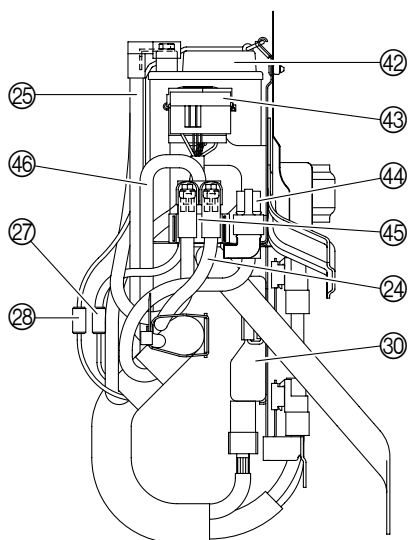
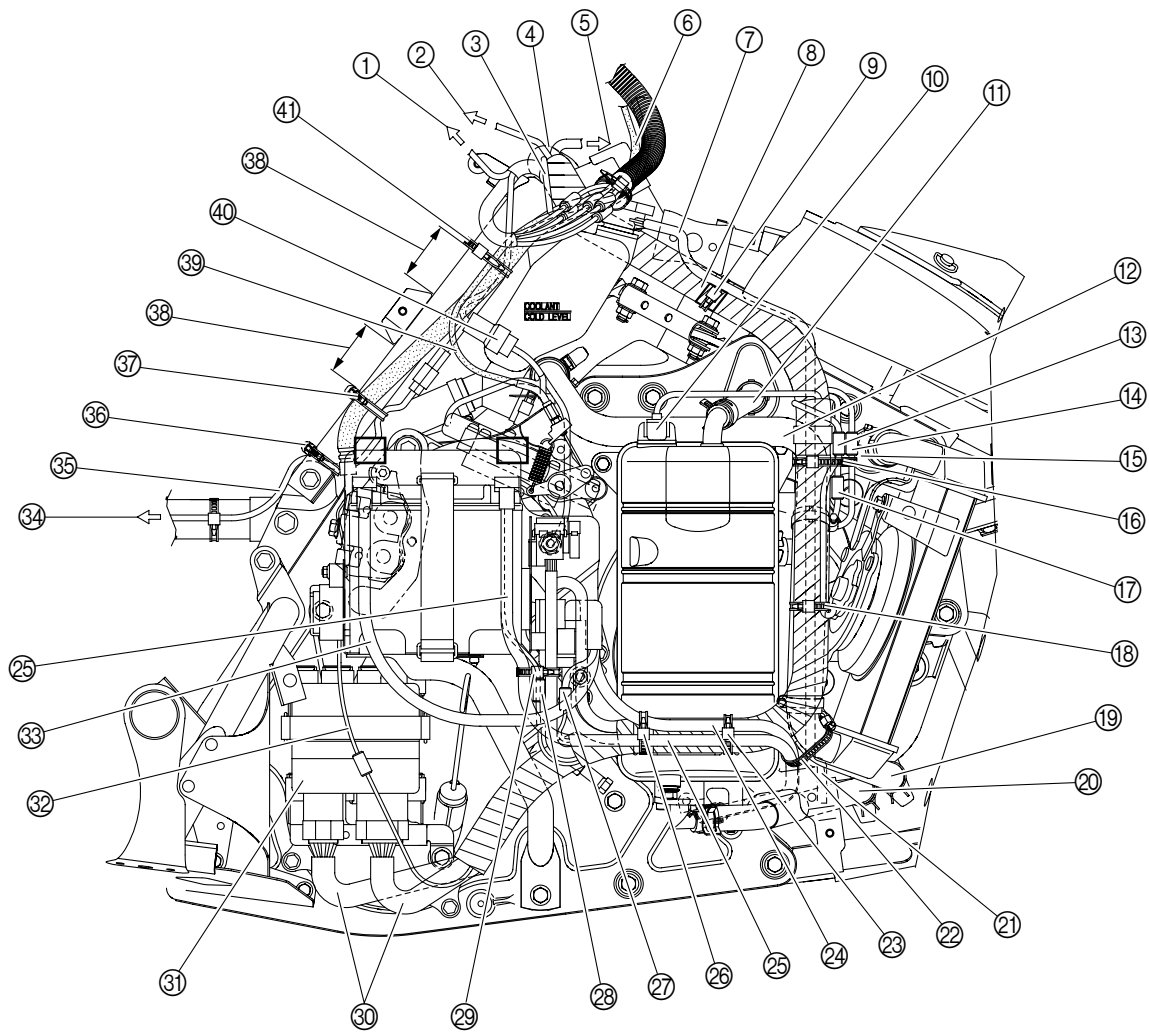


PZ50GT/PZ50FX/PZ50M

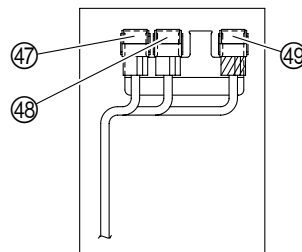




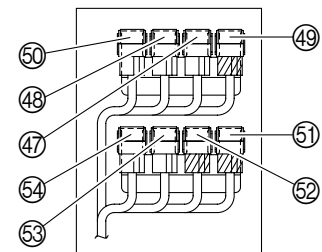
- ⑲ Oil tank inlet hose
- ⑳ Oil tank outlet hose
- ㉑ Place the end of the coolant reservoir breather hose to the inside of the frame rear cross member.
- ㉒ Fasten the starter motor lead and negative battery lead to the radiator joint pipe with the plastic band.
- ㉓ Fasten the wire harness, starter motor lead, and negative battery lead to the oil tank with the plastic band. Face the end of the plastic band upward.
- ㉔ Starter motor lead
- ㉕ Negative battery lead
- ㉖ Fasten the starter motor lead, negative battery lead, and wire harness at the white tape to the oil tank with the plastic band. Face the end of the plastic band upward.
- ㉗ Positive battery lead coupler
- ㉘ Negative battery lead coupler
- ㉙ Fasten the fuse box lead and negative battery leads with the plastic band. The buckle of the plastic band on the right side of the leads.
- ㉚ ECU lead
- ㉛ ECU
- ㉜ DC back buzzer lead (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)
- ㉝ Positive battery lead
- ㉞ To the tail/brake light
- ㉟ Tail/brake light lead
- ㊱ Fasten the tail/brake light lead to the frame rear cross member with the plastic band, making sure to route the lead to the inside of the cross member. Install the plastic band with its buckle positioned towards the front of the machine and its end facing to the right.



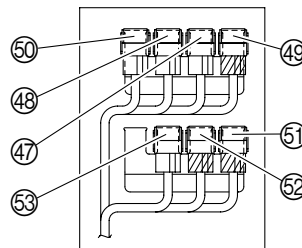
PZ50



PZ50VT/PZ50MP

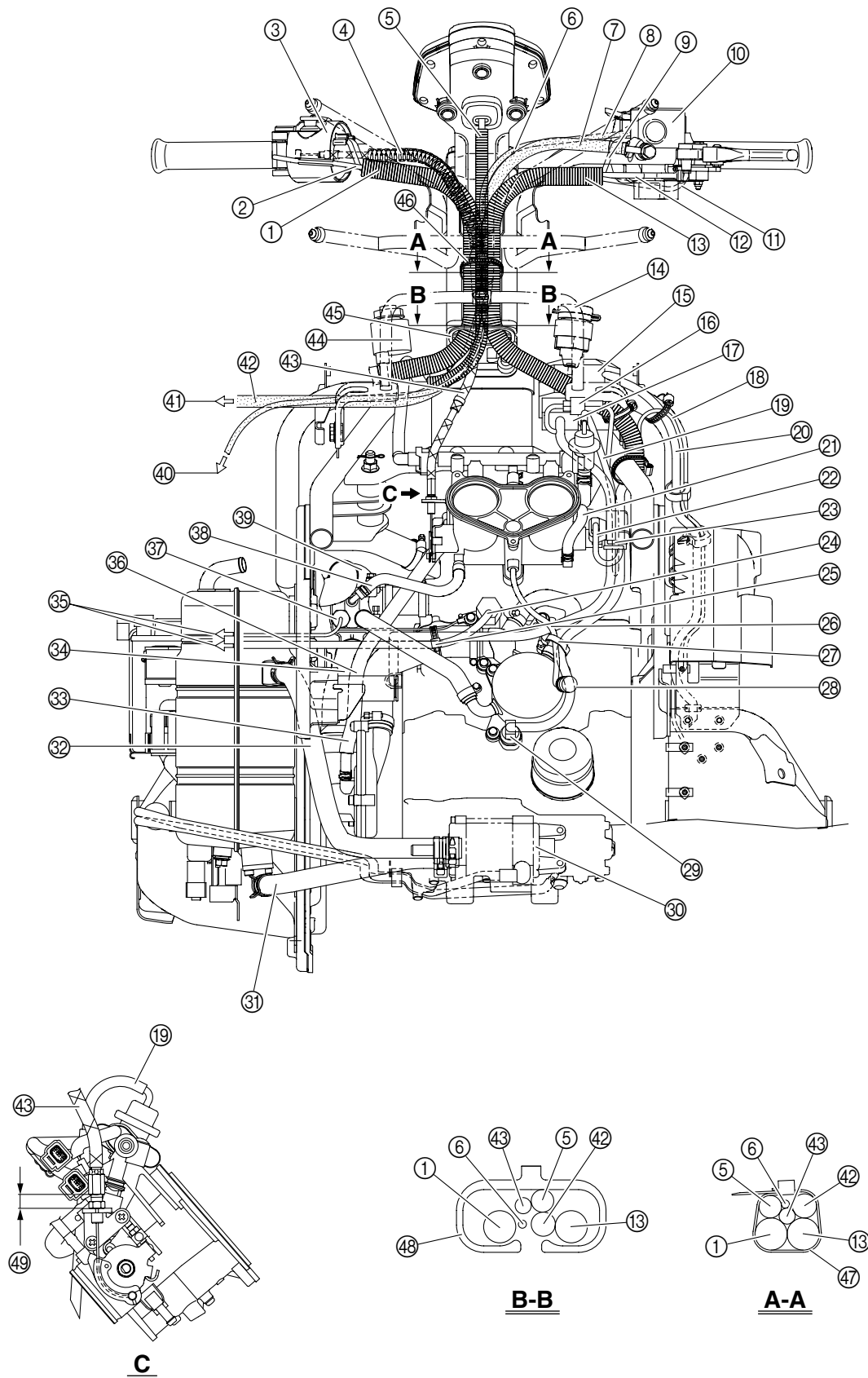


PZ50GT/PZ50FX/PZ50M





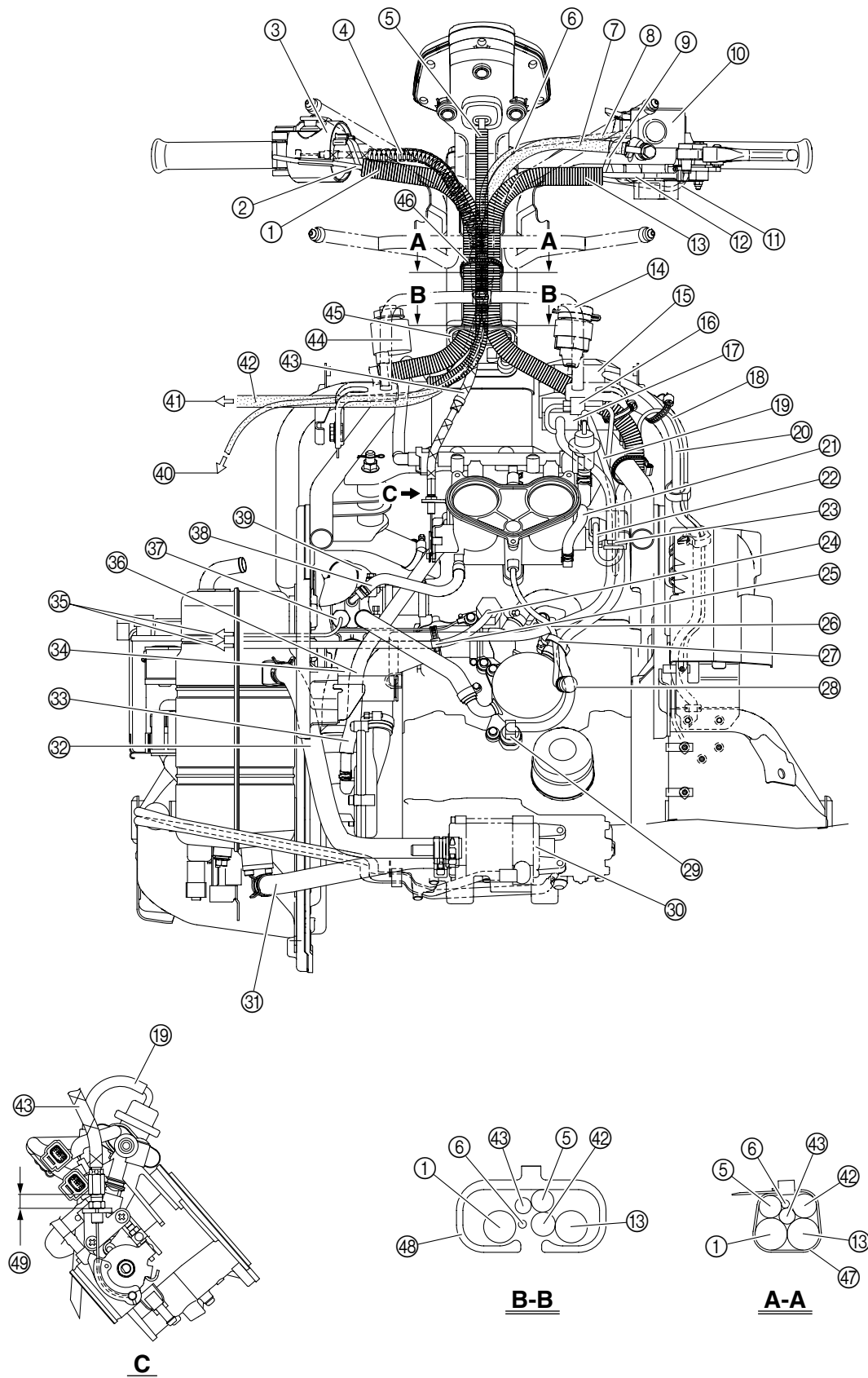
- ③⑦ Fasten the tail/brake light lead and brake hose to the frame rear cross member with the plastic band. Install the plastic band with its buckle positioned towards the front of the machine and its end facing to the right.
- ③⑧ 40 ~ 50 mm (1.6 ~ 2.0 in)
- ③⑨ Parking brake cable
- ④① Gear motor lead coupler (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)
- ④① Fasten the wire harness, brake hose, and parking brake cable with the plastic band.
- ④② Battery
- ④③ Fuse box
- ④④ Main fuse
- ④⑤ Starter relay
- ④⑥ Starter relay lead
- ④⑦ Load control relay
- ④⑧ Fuel injection system relay
- ④⑨ Headlight relay
- ⑤① Radiator fan motor relay (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)
- ⑤① Gear motor relay 1 (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)
- ⑤② Gear motor relay 2 (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)
- ⑤③ Gear motor relay 3 (PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP)
- ⑤④ Passenger grip warmer relay (PZ50VT/PZ50MP)





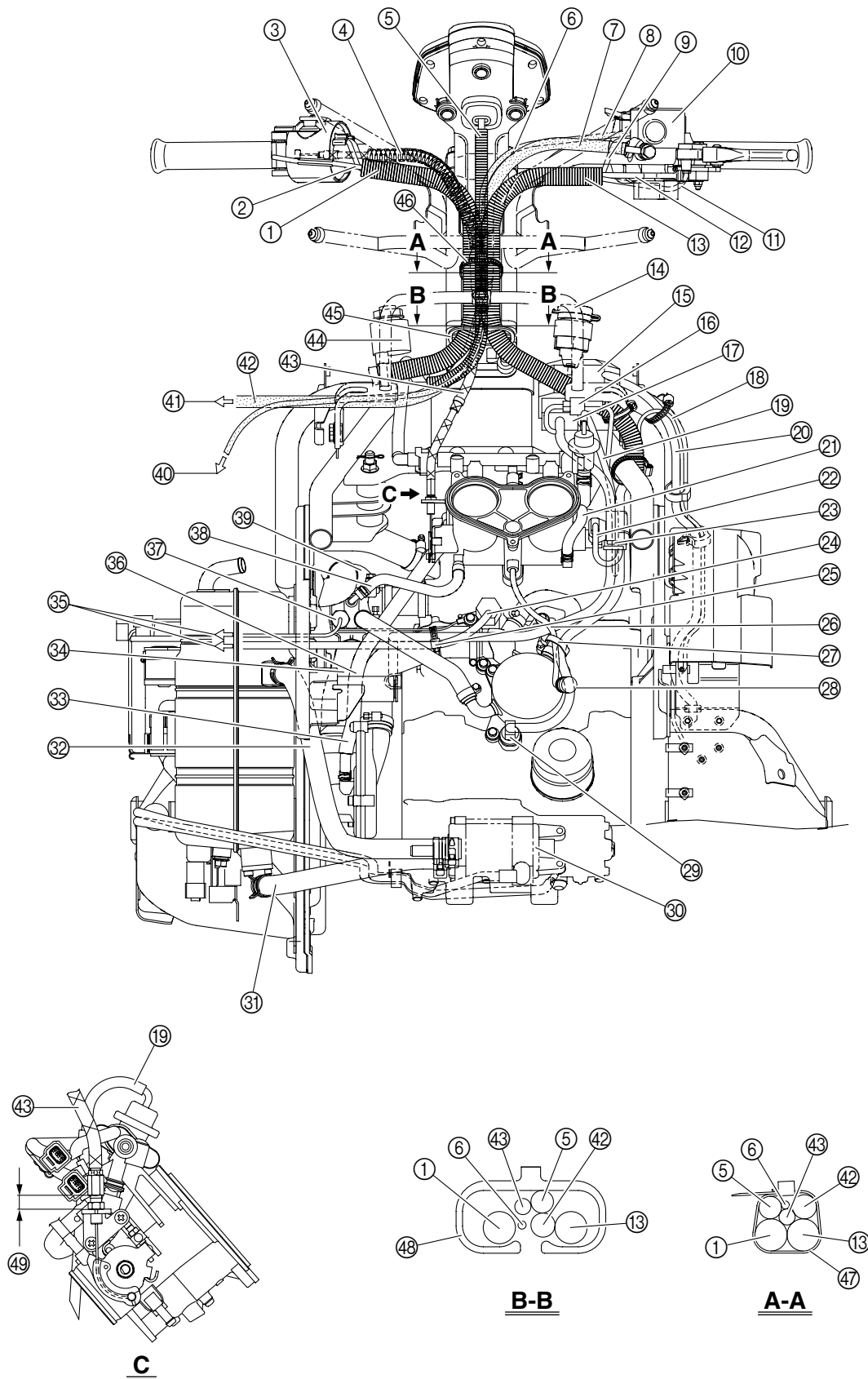
PZ50/PZ50GT/PZ50FX/PZ50M

- ① Corrugated tube (engine stop switch lead, throttle switch lead, right grip warmer lead, and thumb warmer lead)
- ② Right grip warmer lead
- ③ Right handlebar switch
- ④ Route the throttle cable over the handlebar.
- ⑤ Multi-function meter unit lead
- ⑥ Parking brake cable
- ⑦ Route the brake hose over the top rod of the windshield bracket. (Except for PZ50)
- ⑧ Route the parking brake cable between the top and bottom rods of the windshield bracket. (Except for PZ50)
- ⑨ Route the left handlebar switch leads behind the handlebar.
- ⑩ Brake master cylinder
- ⑪ Left grip warmer
- ⑫ Brake light switch
- ⑬ Corrugated tube (left grip warmer lead, grip/thumb warmer adjustment switch lead, brake light switch lead, and headlight beam switch lead)
- ⑭ Auxiliary DC jack (PZ50GT/PZ50FX/PZ50M)
- ⑮ Rectifier/regulator
- ⑯ Cylinder identification sensor coupler
- ⑰ A.C. magneto coupler
- ⑱ Speed sensor lead
- ⑲ Pressure regulator hose
- ⑳ Fuel tank breather hose
- ㉑ Throttle body heater hose
- ㉒ Throttle position sensor
- ㉓ Fasten the A.C. magneto lead, oil pressure switch lead, and pressure regulator hose with the holder.
- ㉔ Knock sensor
- ㉕ Fasten the A.C. magneto lead, water pump outlet hose, and knock sensor lead with the plastic band.



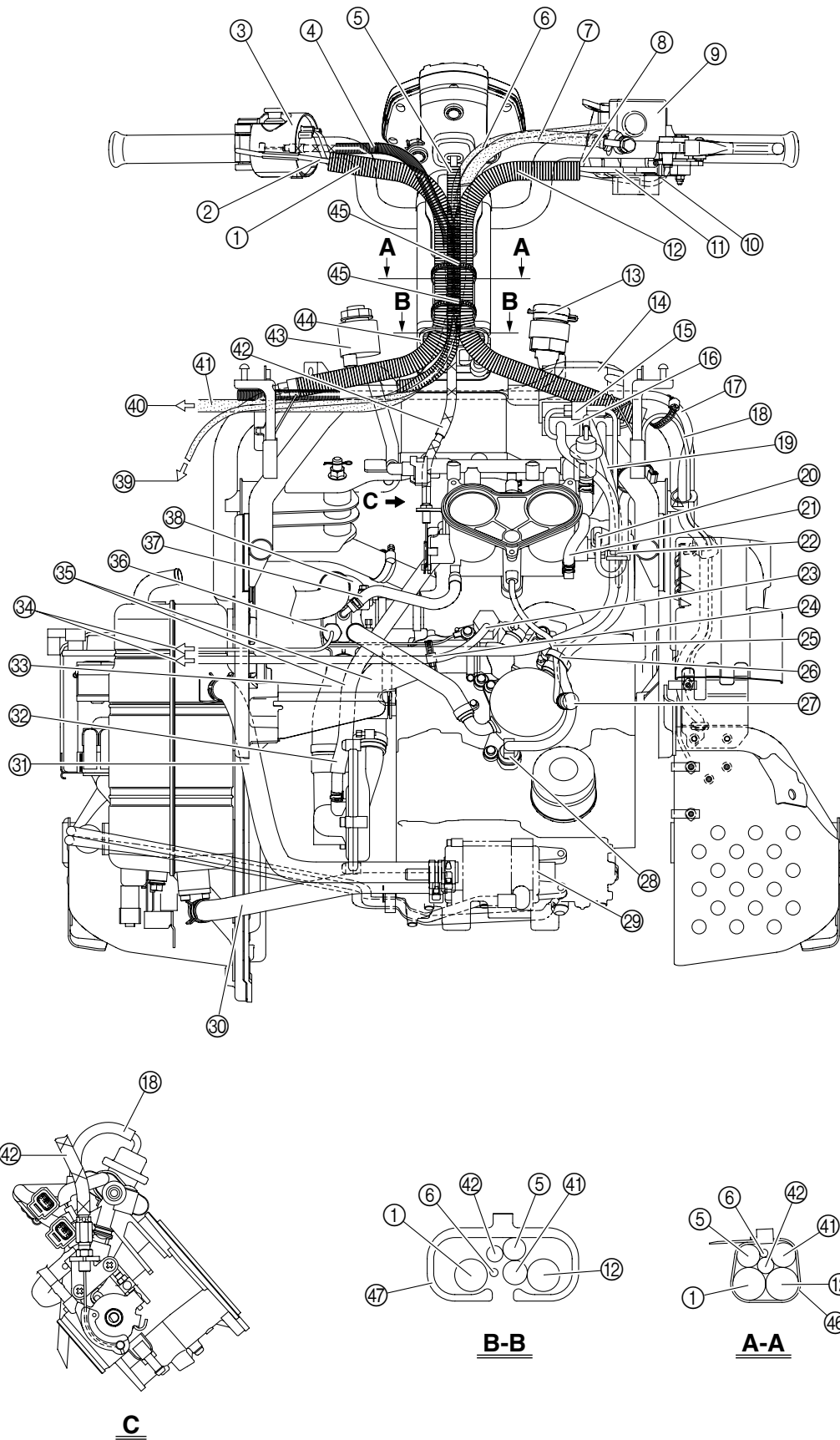


- ②6 Route the A.C. magneto lead behind the idling adjusting screw remote adjustment cable.
- ②7 Fasten the idling adjusting screw and oil pressure switch lead at the white tape with the plastic band. Install the plastic band with its buckle positioned towards the rear of the machine and its end facing to the right.
- ②8 Route the oil pressure switch lead under the idling adjusting screw. Make sure that there is no slack in the oil pressure switch lead.
- ②9 Oil pressure switch coupler
- ③0 Starter motor
- ③1 Oil tank outlet hose
- ③2 Oil tank inlet hose
- ③3 Throttle body heater outlet hose
- ③4 Water pump inlet hose
- ③5 To the wire harness
- ③6 Route the water pump outlet hose and throttle body heater outlet hose behind the engine mounting bracket.
- ③7 Coolant temperature sensor
- ③8 Throttle body heater inlet hose
- ③9 Thermostat cover
- ④0 To the parking brake
- ④1 To the brake caliper
- ④2 Brake hose
- ④3 Throttle cable
- ④4 Main switch
- ④5 Pass the corrugated tube (engine stop switch lead, throttle switch lead, right grip warmer lead, and thumb warmer lead), corrugated tube (left grip warmer lead, grip/thumb warmer adjustment switch lead, brake light switch lead, and headlight beam switch lead), parking brake cable, throttle cable, speedometer unit lead, and brake hose with the holder.





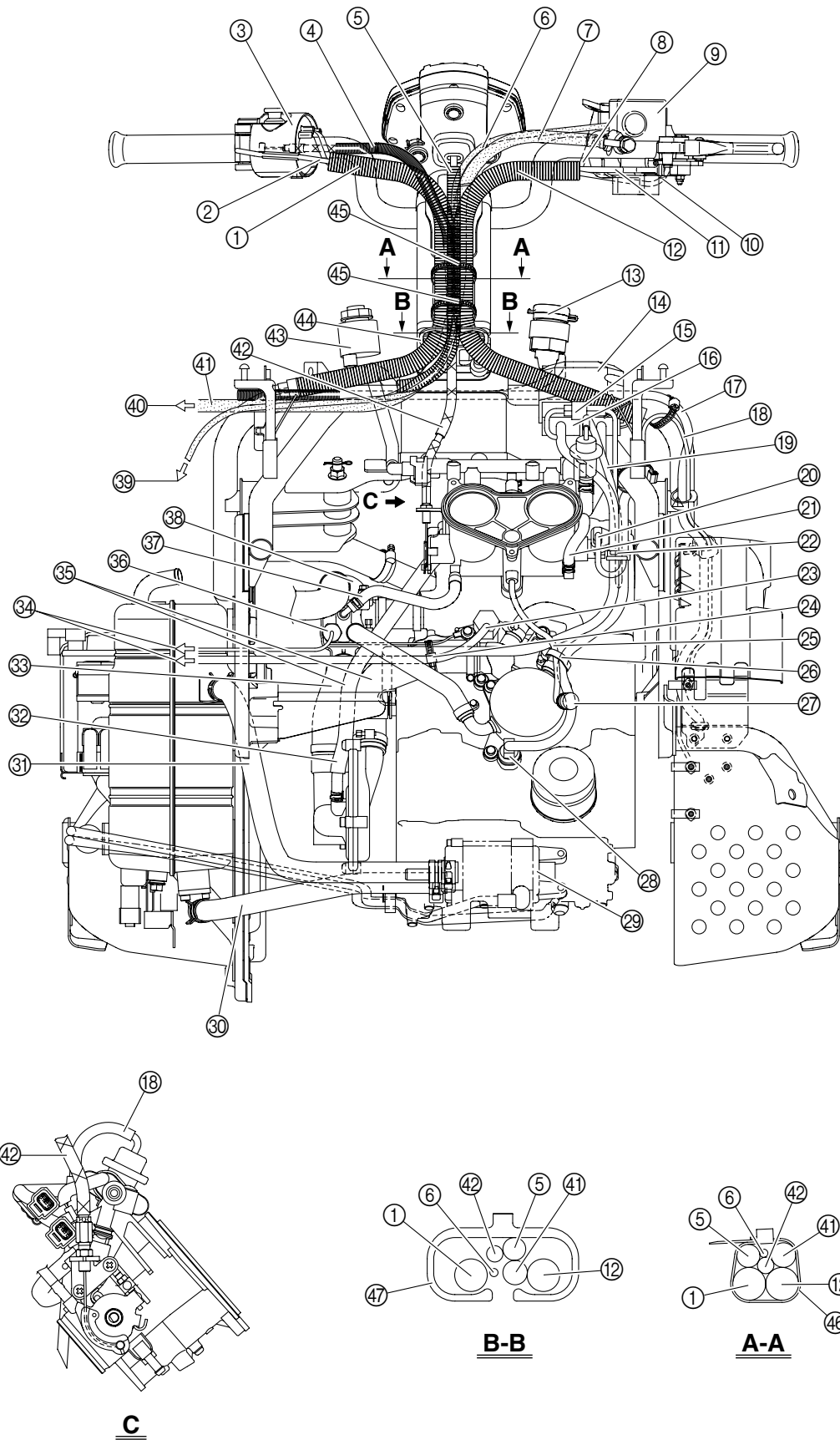
- ④⑥ Fasten the corrugated tube (engine stop switch lead, throttle switch lead, right grip warmer lead, and thumb warmer lead), corrugated tube (left grip warmer lead, grip/thumb warmer adjustment switch lead, brake light switch lead, and headlight beam switch lead), parking brake cable, throttle cable, speedometer unit lead, and brake hose with the plastic band.
- ④⑦ Install the plastic band with its buckle positioned behind the leads, cables, and hose and its end facing to the right. Be sure to position the corrugated tube (engine stop switch lead, throttle switch lead, right grip warmer lead, and thumb warmer lead) and corrugated tube (left grip warmer lead, grip/thumb warmer adjustment switch lead, brake light switch lead, and headlight beam switch lead) towards the front and fasten the throttle cable at the throttle cable adjusting nut.
- ④⑧ Position the corrugated tube (engine stop switch lead, throttle switch lead, right grip warmer lead, and thumb warmer lead) and corrugated tube (left grip warmer lead, grip/thumb warmer adjustment switch lead, brake light switch lead, and headlight beam switch lead) towards the front of the guide.
- ④⑨ 10 mm (0.39 in)





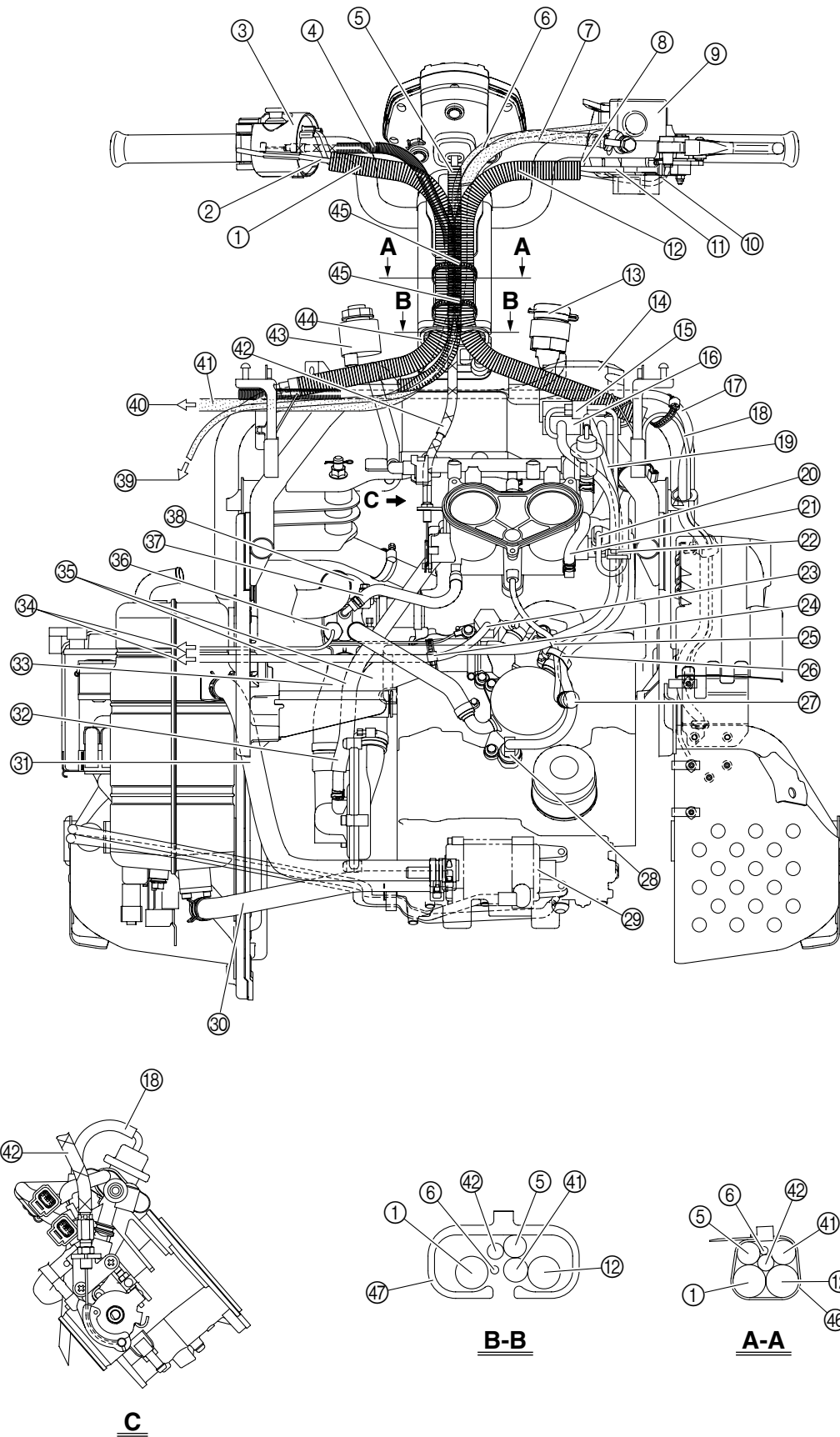
PZ50VT/PZ50MP

- ① Corrugated tube (engine stop switch lead, throttle switch lead, right grip warmer lead, and thumb warmer lead)
- ② Right grip warmer lead
- ③ Right handlebar switch
- ④ Route the throttle cable over the handlebar.
- ⑤ Multi-function meter unit lead
- ⑥ Parking brake cable
- ⑦ Route the brake hose in front of the handlebar.
- ⑧ Route the left handlebar switch leads behind the handlebar.
- ⑨ Brake master cylinder
- ⑩ Left grip warmer
- ⑪ Brake light switch
- ⑫ Corrugated tube (left grip warmer lead, grip/thumb warmer adjustment switch lead, brake light switch lead, and headlight beam switch lead)
- ⑬ Auxiliary DC jack
- ⑭ Rectifier/regulator
- ⑮ Cylinder identification sensor coupler
- ⑯ A.C. magneto coupler
- ⑰ Speed sensor lead
- ⑱ Pressure regulator hose
- ⑲ Fuel tank breather hose
- ⑳ Throttle position sensor
- ㉑ Throttle body heater hose
- ㉒ Fasten the A.C. magneto lead, oil pressure switch lead, and pressure regulator hose with the holder.
- ㉓ Knock sensor
- ㉔ Fasten the A.C. magneto lead, water pump outlet hose, and knock sensor lead with the plastic band.
- ㉕ Route the A.C. magneto lead behind the idling adjusting screw remote adjustment cable.



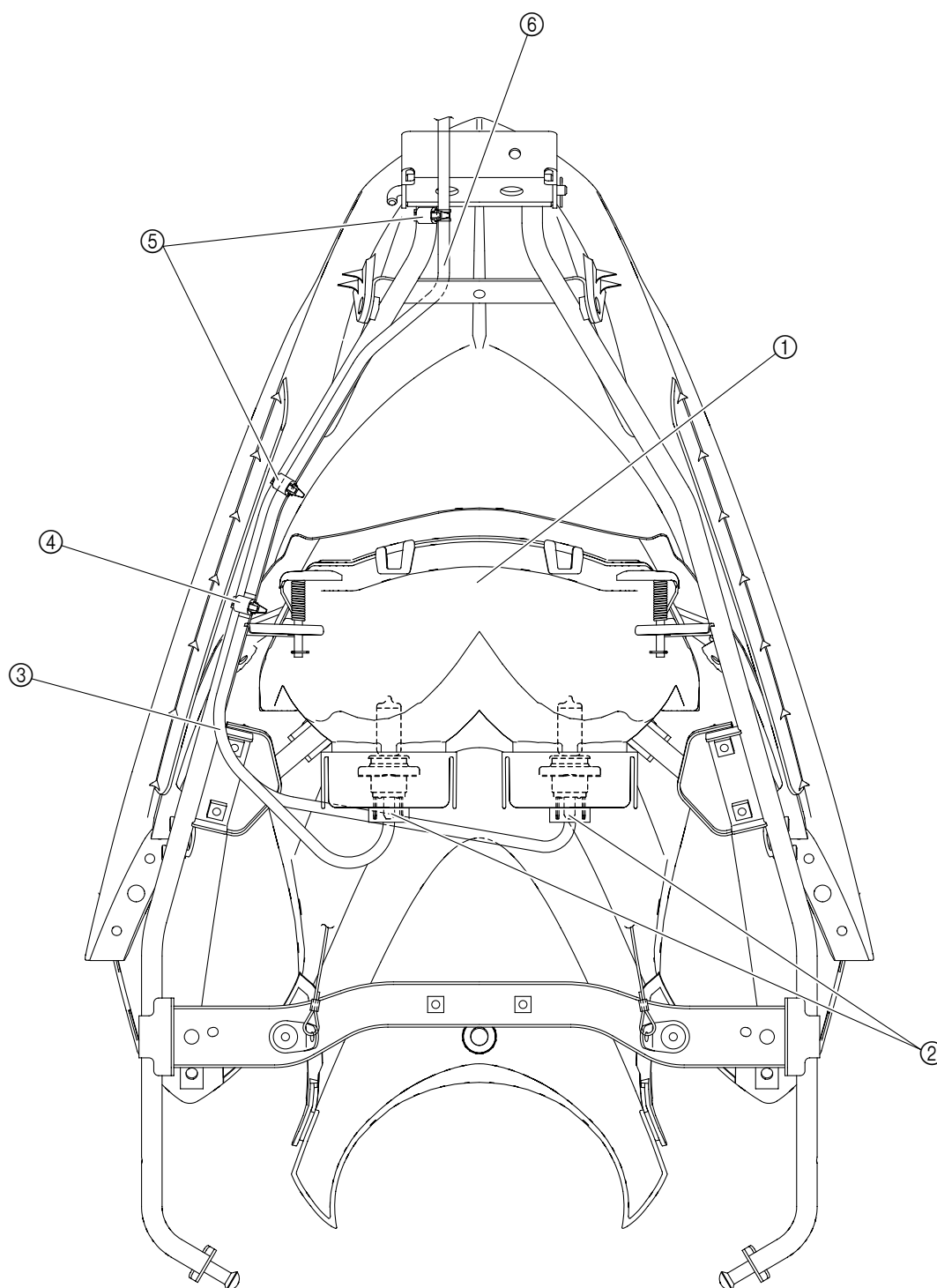


- ②⑥ Fasten the idling adjusting screw and oil pressure switch lead with the plastic band. Install the plastic band with its buckle positioned towards the rear of the machine and its end facing to the right.
- ②⑦ Route the oil pressure switch lead under the idling adjusting screw, making sure that the lead is not taut.
- ②⑧ Oil pressure switch coupler
- ②⑨ Starter motor
- ③⑩ Oil tank outlet hose
- ③① Oil tank inlet hose
- ③② Throttle body heater outlet hose
- ③③ Water pump inlet hose
- ③④ To the wire harness
- ③⑤ Route the water pump outlet hose and throttle body heater outlet hose behind the engine mounting bracket.
- ③⑥ Coolant temperature sensor
- ③⑦ Throttle body heater inlet hose
- ③⑧ Thermostat cover
- ③⑨ To the parking brake
- ④⑩ To the brake caliper
- ④① Brake hose
- ④② Throttle cable
- ④③ Main switch
- ④④ Pass the corrugated tube (engine stop switch lead, throttle switch lead, right grip warmer lead, and thumb warmer lead), corrugated tube (left grip warmer lead, grip/thumb warmer adjustment switch lead, brake light switch lead, and headlight beam switch lead), parking brake cable, throttle cable, speedometer unit lead, and brake hose with the holder.





- ④⑤ Fasten the corrugated tube (engine stop switch lead, throttle switch lead, right grip warmer lead, and thumb warmer lead), corrugated tube (left grip warmer lead, grip/thumb warmer adjustment switch lead, brake light switch lead, and headlight beam switch lead), parking brake cable, throttle cable, speedometer unit lead, and brake hose with the plastic band.
- ④⑥ Install the plastic band with its buckle positioned behind the leads, cables, and hose and its end facing to the right. Be sure to position the corrugated tube (engine stop switch lead, throttle switch lead, right grip warmer lead, and thumb warmer lead) and corrugated tube (left grip warmer lead, grip/thumb warmer adjustment switch lead, brake light switch lead, and headlight beam switch lead) towards the front and fasten the throttle cable at the throttle cable adjusting nut.
- ④⑦ Position the corrugated tube (engine stop switch lead, throttle switch lead, right grip warmer lead, and thumb warmer lead) and corrugated tube (left grip warmer lead, grip/thumb warmer adjustment switch lead, brake light switch lead, and headlight beam switch lead) towards the front of the guide.



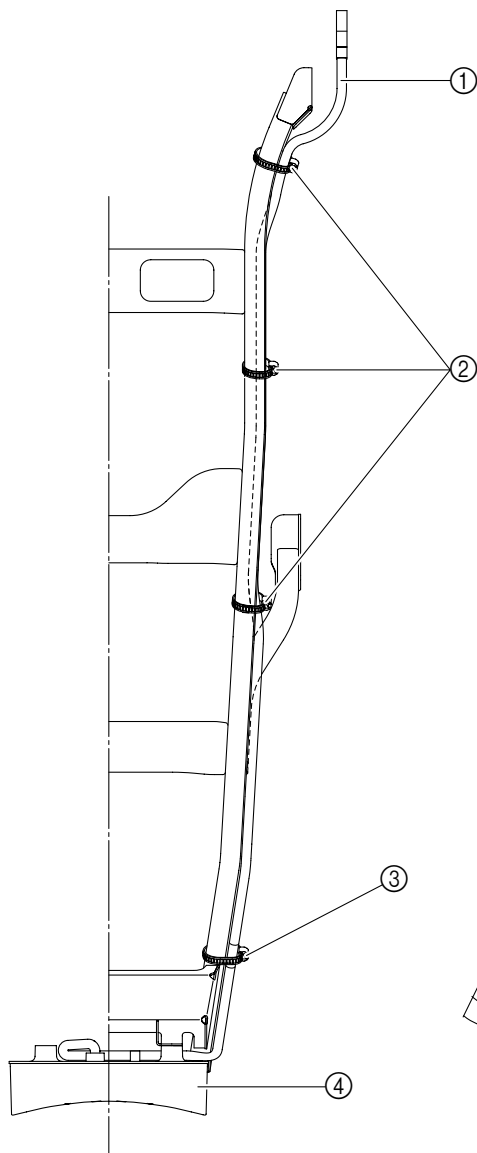


PZ50VT/PZ50MP

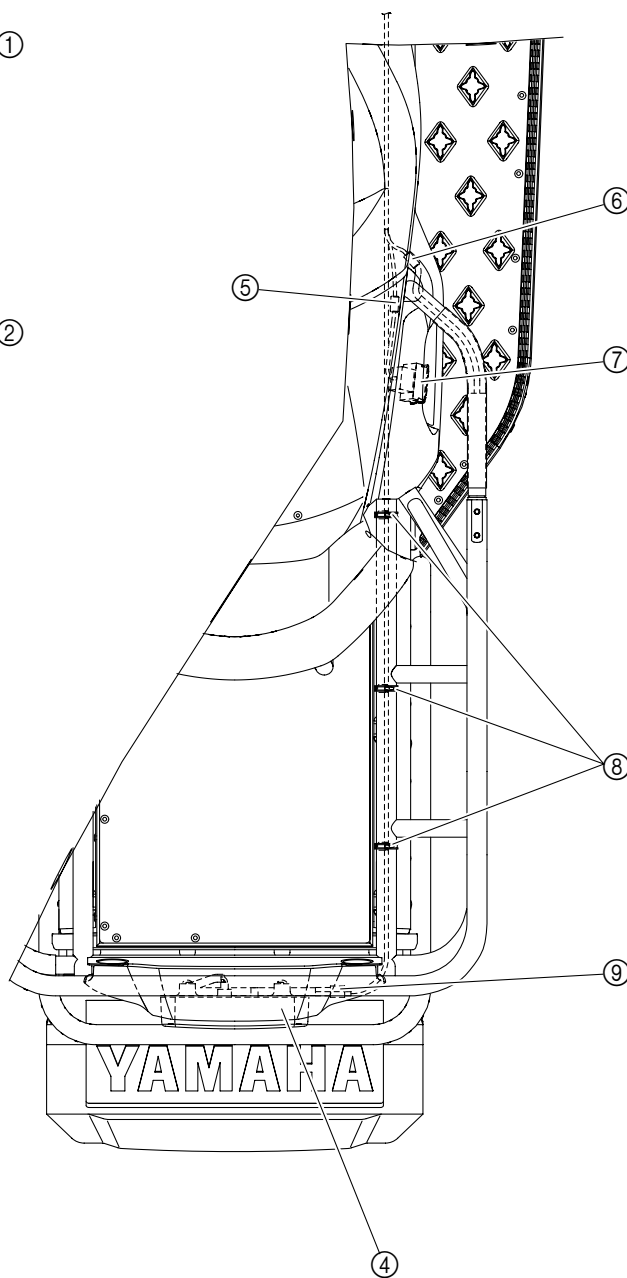
- ① Headlight unit
- ② Headlight lead coupler
- ③ Headlight lead
- ④ Fasten the headlight lead at the white tape to the shroud frame with the plastic band, making sure to position the band near the bracket.
- ⑤ Fasten the headlight lead to the shroud frame with the plastic band, making sure to route the lead along the bend in the frame.
- ⑥ Route the headlight lead to the inside of the shroud frame.



PZ50/PZ50GT/PZ50FX/PZ50M



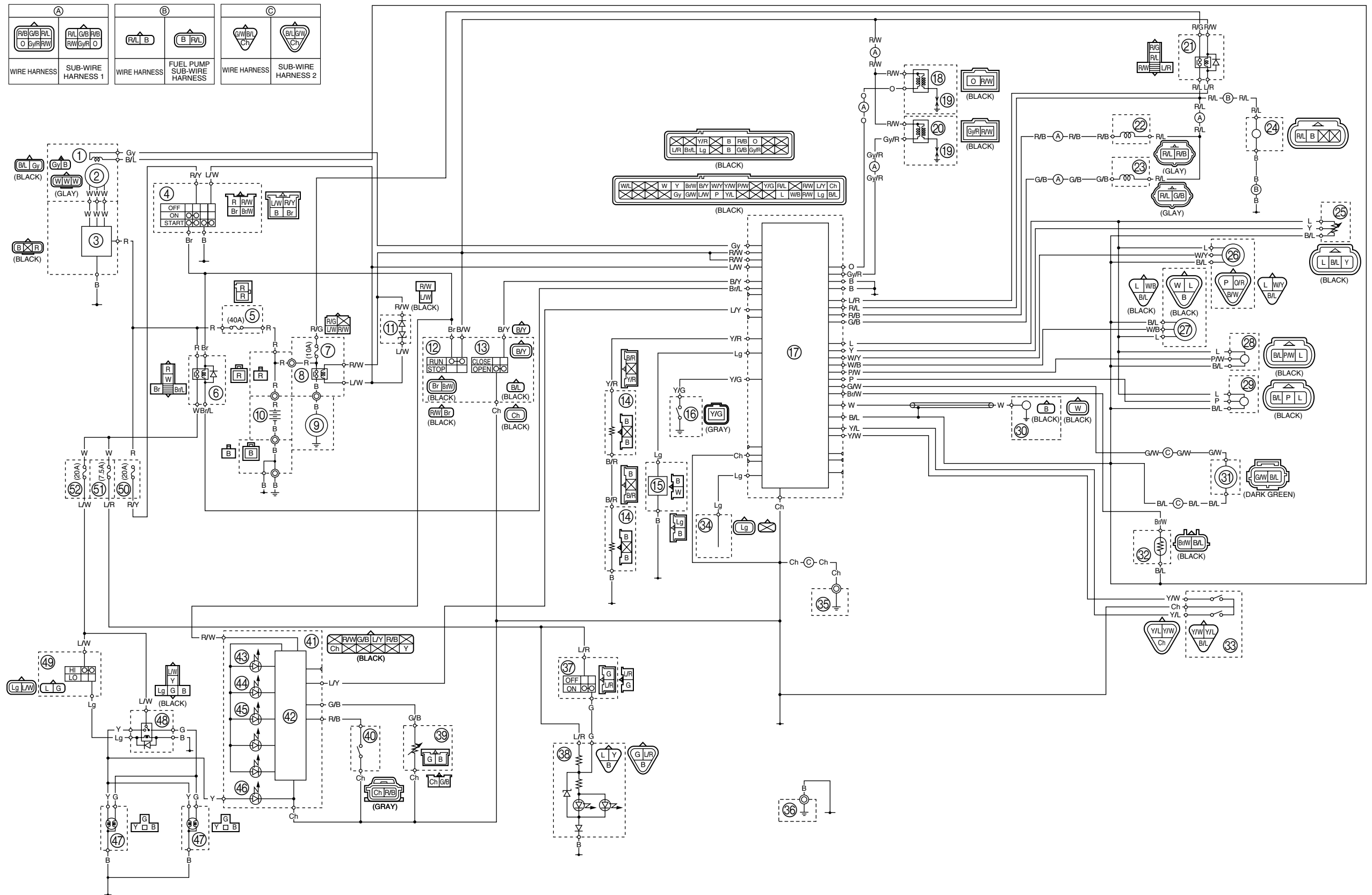
PZ50VT/PZ50MP





- ① Tail/brake light lead
- ② Fasten the tail/brake light lead with the plastic band. Face the end of the plastic band downward.
- ③ Fasten the tail/brake light lead at the white tape with the plastic band. Face the end of the plastic band downward.
- ④ Tail/brake light
- ⑤ Passenger grip warmer switch coupler
- ⑥ Connect the passenger grip warmer coupler, and then place it in the rear lower cover.
- ⑦ Passenger grip warmer switch
- ⑧ Fasten the tail/brake light lead to the rear carrier with the plastic band.
- ⑨ Connect the tail/brake light coupler, and then place it in the tail/brake light cover.

8GC-0F001-00



WIRING DIAGRAM

PZ50 2007

8GC-0F001-00

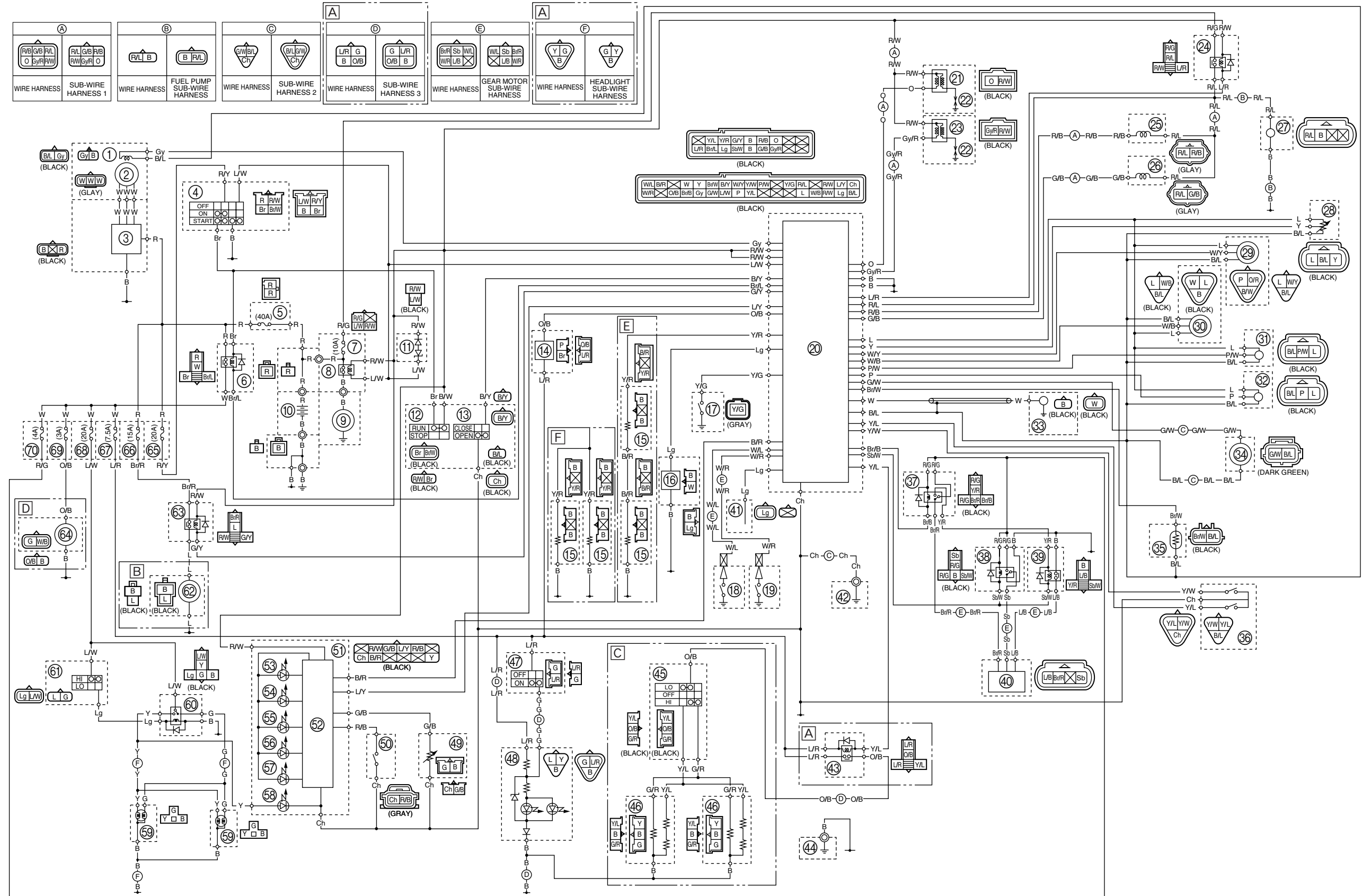
- ① Crankshaft position sensor
- ② A.C. magneto
- ③ Rectifier/regulator
- ④ Main switch
- ⑤ Main fuse
- ⑥ Load control relay
- ⑦ Fuel injection system fuse
- ⑧ Starter relay
- ⑨ Starter motor
- ⑩ Battery
- ⑪ Diode
- ⑫ Engine stop switch
- ⑬ Throttle switch
- ⑭ Grip warmer
- ⑮ Thumb warmer
- ⑯ Oil pressure switch
- ⑰ ECU (engine control unit)
- ⑱ Cylinder-#1 ignition coil
- ⑲ Spark plug
- ⑳ Cylinder-#2 ignition coil
- ㉑ Fuel injection system relay
- ㉒ Injector #1
- ㉓ Injector #2
- ㉔ Fuel pump
- ㉕ Throttle position sensor
- ㉖ Speed sensor
- ㉗ Cylinder identification sensor
- ㉘ Cylinder-#1 intake air pressure sensor
- ㉙ Cylinder-#2 intake air pressure sensor
- ㉚ Knock sensor
- ㉛ Coolant temperature sensor
- ㉜ Intake air temperature sensor
- ㉝ Grip/thumb warmer adjustment switch
- ㉞ CO adjustment coupler
- ㉟ Engine ground
- ㊱ Frame ground
- ㊲ Brake light switch
- ㊳ Tail/brake light
- ㊴ Fuel sender
- ㊵ Oil level switch
- ㊶ Speedometer unit
- ㊷ Multi-function meter
- ㊸ Warning light
- ㊹ Low coolant temperature indicator light
- ㊺ Knock control system indicator light
- ㊻ High beam indicator light
- ㊼ Headlight
- ㊽ Headlight relay
- ㊾ Headlight beam switch
- ㊿ Ignition fuse
- 1 Signal fuse
- 2 Headlight fuse

COLOR CODE

- B Black
- Br Brown
- Ch Chocolate
- G Green
- Gy Gray
- L Blue
- Lg Light green
- O Orange
- P Pink
- R Red
- W White
- Y Yellow
- B/L Black/Blue
- B/R Black/Red
- B/W Black/White
- B/Y Black/Yellow
- Br/L Brown/Blue
- Br/R Brown/Red
- Br/W Brown/White
- G/B Green/Black
- G/W Green/White
- Gy/R Gray/Red
- L/R Blue/Red
- L/W Blue/White
- L/Y Blue/Yellow
- P/W Pink/White
- R/B Red/Black
- R/G Red/Green
- R/L Red/Blue
- R/W Red/White
- R/Y Red/Yellow
- W/B White/Black
- W/Y White/Yellow
- YG Yellow/Green
- Y/L Yellow/Blue
- Y/R Yellow/Red
- Y/W Yellow/White

WIRING DIAGRAM
PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP 2007

8GK-0F001-00/8GN-0F001-00/8GJ-0F001-00



WIRING DIAGRAM

PZ50GT/PZ50FX/PZ50M/PZ50VT/PZ50MP 2007

8GK-0F001-00/8GN-0F001-00/8GJ-0F001-00

① Crankshaft position sensor	warmer relay	COLOR CODE
② A.C. magneto	④④ Frame ground	BBlack
③ Rectifier/regulator	④⑤ Passenger grip warmer switch	BrBrown
④ Main switch	④⑥ Passenger grip warmer	ChChocolate
⑤ Main fuse	④⑦ Brake light switch	GGreen
⑥ Load control relay	④⑧ Tail/brake light	GyGray
⑦ Fuel injection system fuse	④⑨ Fuel sender	LBlue
⑧ Starter relay	⑤① Oil level switch	LgLight green
⑨ Starter motor	⑤② Speedometer unit	OOrange
⑩ Battery	⑤③ Multi-function meter	PPink
⑪ Diode	⑤④ Warning light	RRed
⑫ Engine stop switch	⑤⑤ Low coolant temperature indicator light	SbSky blue
⑬ Throttle switch	⑤⑥ Knock control system indicator light	WWhite
⑭ DC back buzzer	⑤⑦ Drive position indicator light	YYellow
⑮ Grip warmer	⑤⑧ Reverse position indicator light	B/LBlack/Blue
⑯ Thumb warmer	⑤⑨ High beam indicator light	B/WBlack/White
⑰ Oil pressure switch	⑤⑩ Headlight	B/RBlack/Red
⑱ Drive position switch	⑤⑪ Headlight relay	B/YBlack/Yellow
⑲ Reverse position switch	⑤⑫ Headlight beam switch	Br/BBrown/Black
⑳ ECU (engine control unit)	⑤⑬ Radiator fan motor	Br/LBrown/Blue
㉑ Cylinder-#1 ignition coil	⑤⑭ Radiator fan motor relay	Br/RBrown/Red
㉒ Spark plug	⑤⑮ Auxiliary DC jack	Br/WBrown/White
㉓ Cylinder-#2 ignition coil	⑤⑯ Ignition fuse	G/BGreen/Black
㉔ Fuel injection system relay	⑤⑰ Radiator fan motor fuse	G/RGreen/Red
㉕ Injector #1	⑤⑱ Signal fuse	G/WGreen/White
㉖ Injector #2	⑤⑲ Headlight fuse	G/YGreen/Yellow
㉗ Fuel pump	⑤⑳ Auxiliary DC jack fuse	Gy/RGray/Red
㉘ Throttle position sensor	⑥① Gear motor fuse	L/BBlue/Black
㉙ Speed sensor		L/RBlue/Red
㉚ Cylinder identification sensor		L/WBlue/White
㉛ Cylinder-#1 intake air pressure sensor	[A] PZ50VT/PZ50MP	L/YBlue/Yellow
㉜ Cylinder-#2 intake air pressure sensor	[B] PZ50M/PZ50VT/PZ50MP	O/BOrange/Black
㉝ Knock sensor	[C] PZ50VT (STANDARD)/PZ50MP (OPTION)	O/ROrange/Red
㉞ Coolant temperature sensor	[D] PZ50VT/PZ50MP (STANDARD)/PZ50GT/PZ50FX/PZ50M (OPTION)	P/WPink/White
㉟ Intake air temperature sensor	[E] PZ50GT/PZ50M/PZ50VT/PZ50MP	R/BRed/Black
㊱ Grip/thumb warmer adjustment switch	[F] PZ50FX	R/GRed/Green
㊲ Gear motor relay 1		R/LRed/Blue
㊳ Gear motor relay 2		R/WRed/White
㊴ Gear motor relay 3		R/YRed/Yellow
㊵ Gear motor		Sb/WSky blue/White
㊶ CO adjustment coupler		W/BWhite/Black
㊷ Engine ground		W/LWhite/Blue
㊸ Passenger grip		W/RWhite/Red

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